DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		030387	1	71
				(2) OZAN CREEK & RELIEF STRS. & APPRS. (S)				

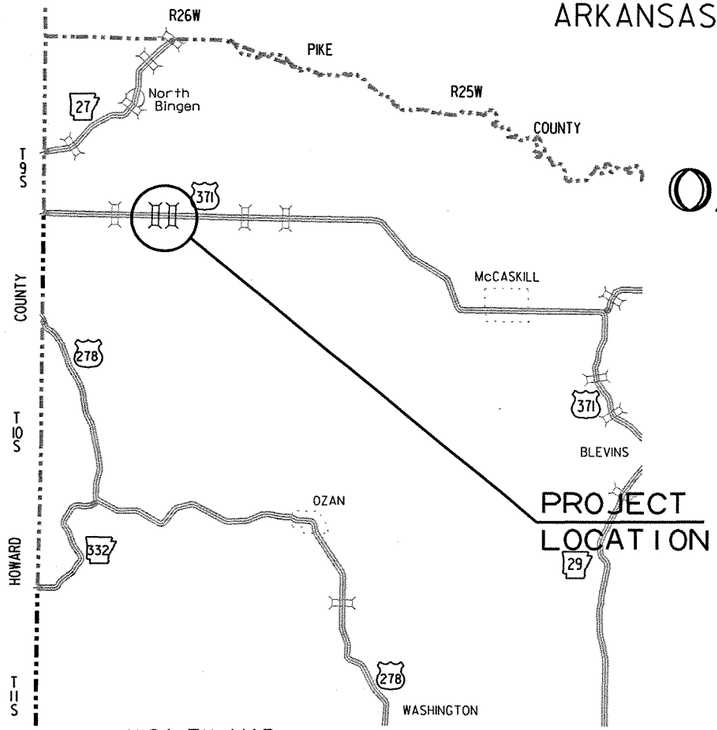
ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT
CONSTRUCTION PLANS FOR STATE HIGHWAY

OZAN CREEK & RELIEF STRS. & APPRS. (S)

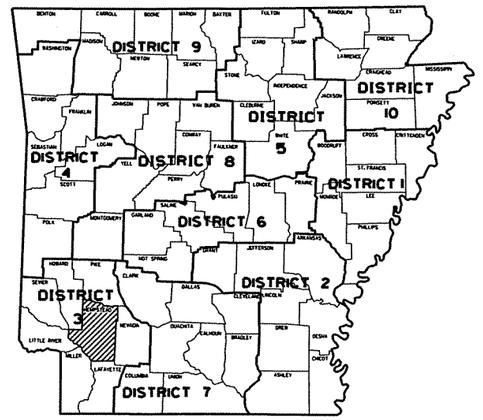
HEMPSTEAD COUNTY
ROUTE 371 SECTION 3

JOB 030387

FED. AID PROJ. BRN-0029(29)

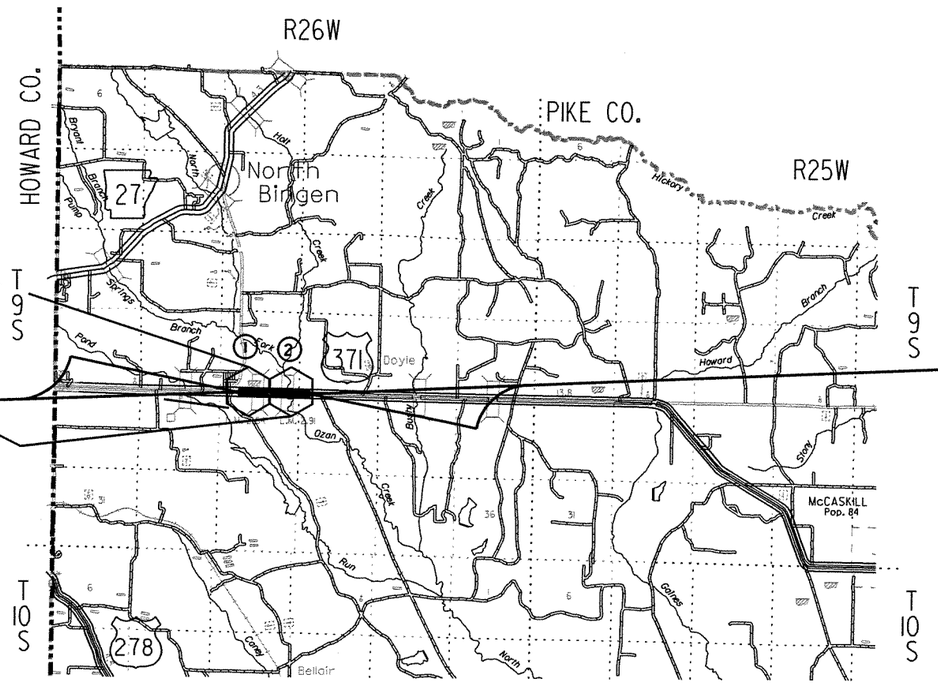


VICINITY MAP



ARK. HWY. DIST. NO. 3

0 1 2 MILE
BAR SCALE



STRUCTURES OVER 20'-0" SPAN

(1) BR. END STA. 106+58.50
BRIDGE NO. 07214
40'-00" CLEAR ROADWAY
181'-0" TOTAL LENGTH
180'-0" CONTINUOUS COMPOSITE INTEGRAL W-BEAM UNIT
(55', 70', 55')
BR. END STA. 108+39.50

(2) BR. END STA. 120+76.50
BRIDGE NO. 07215
40'-00" CLEAR ROADWAY
181'-0" TOTAL LENGTH
180'-0" CONTINUOUS COMPOSITE INTEGRAL W-BEAM UNIT
(55', 70', 55')
BR. END STA. 122+57.50

STA 103+20.02 - BEGIN
JOB 030387
L.M. 2.57

STA 128+09.58 - END
JOB 030387
L.M. 3.04

BEGINNING: LAT: N33° 56' 58" LONG: W93° 46' 52"
MID POINT: LAT: N33° 56' 57" LONG: W93° 46' 34"
ENDING: LAT: N33° 56' 57" LONG: W93° 46' 17"

• DESIGN TRAFFIC DATA •

DESIGN YEAR	2031
2011 ADT	2200
2031 ADT	2600
2031 DHV	286
DIRECTIONAL DISTRIBUTION	60 %
TRUCKS	16 %
DESIGN SPEED	60 MPH

GROSS LENGTH OF PROJECT	2489.56	FEET	OR	0.472	MILES
NET " " ROADWAY	2127.56	"	"	0.403	"
NET " " BRIDGES	362.00	"	"	0.069	"
NET " " PROJECT	2489.56	"	"	0.472	"

P.E. 030387
NON-PART.

N

APPROVED

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 3917
FRANK VOZEL

10/18/11

DEPUTY DIRECTOR
AND CHIEF ENGINEER

10-10-2011 r030387.dgn

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

INDEX OF SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL B. FUGETT
10-19-11

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	SUPLLEMENT - 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 COURSE AND BOND BREAKERS
411-1	ASPHALT CONCRETE COLD PLANT MIX
600-1	WATER FOR VEGETATION
603-1	MAINTENANCE OF TRAFFIC
604-1	RETROREFLECTIVE SHEETING FOR TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES
606-1	PIPE CULVERTS FOR SIDE DRAINS
606-2	PIPE CULVERTS
718-2	REFLECTORIZED PAINT PAVEMENT MARKINGS
719-2	THERMOPLASTIC PAVEMENT MARKING MATERIAL
JOB 030387	BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB 030387	BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB 030387	CONSTRUCTION IN SPECIAL FLOOD HAZARD AREAS
JOB 030387	GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
JOB 030387	HIGH PERFORMANCE PAVEMENT MARKING
JOB 030387	INTERNET BIDDING
JOB 030387	NESTING SITES OF MIGRATORY BIRDS
JOB 030387	PARTNERING REQUIREMENTS
JOB 030387	SECTION 404 LETTER OF PERMISSION REQUIREMENTS
JOB 030387	SOIL STABILIZATION
JOB 030387	STORM WATER POLLUTION PREVENTION PLAN
JOB 030387	SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB 030387	UTILITY ADJUSTMENTS
JOB 030387	VALUE ENGINEERING
JOB 030387	WARM MIX ASPHALT
JOB 030387	WATER GATE

GENERAL NOTES

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

R030387.DGN 9/16/2011

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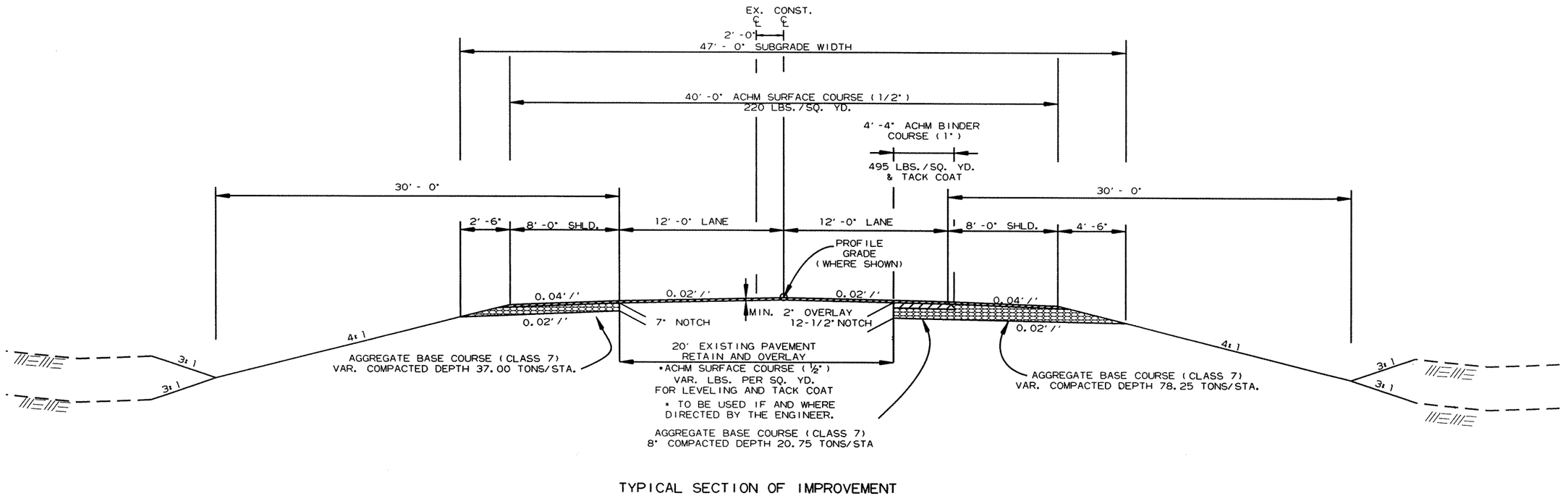
(2) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
NO. 7605
MICHAEL D. FUGETT
10-19-11



TYPICAL SECTION OF IMPROVEMENT

STA.	103+20.02	TO STA.	106+58.50
STA.	108+39.50	TO STA.	120+76.50
STA.	122+57.20	TO STA.	128+09.58

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

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

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.

ZBORDER.CEL 8/23/2011

TYPICAL SECTIONS OF IMPROVEMENT

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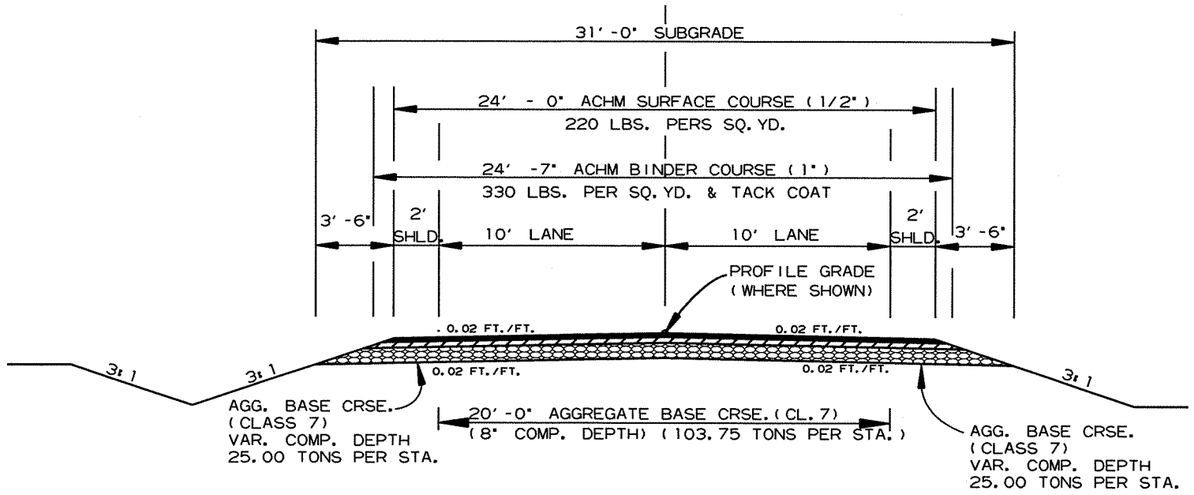
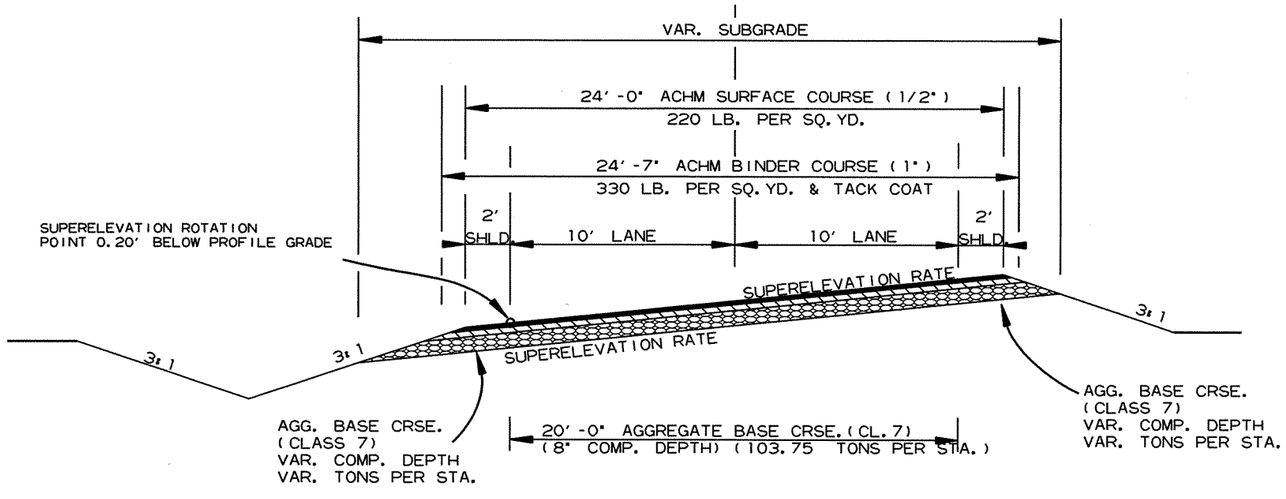
(2) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
N.C.7605
MICHAEL D. PUGETT
10-19-11



TYPICAL SECTION OF IMPROVEMENT - DETOUR ROAD
NORMAL CROWN
STA. 201+00.00 TO STA. 229+29.60

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



TYPICAL SECTION OF IMPROVEMENT - DETOUR ROAD
SUPERELEVATION

ZBORDER.CEL 12/6/2010

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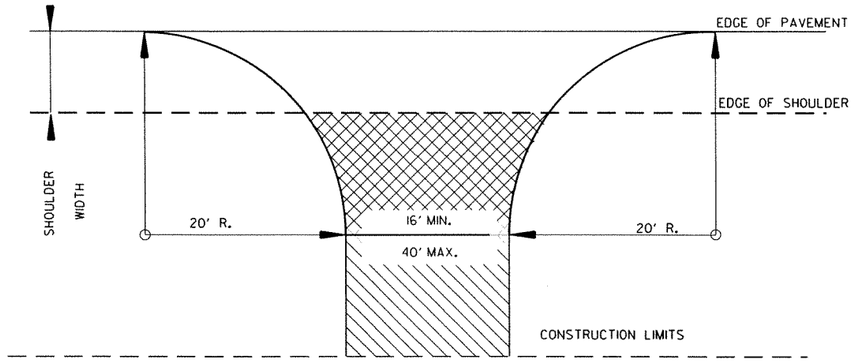
(2) SPECIAL DETAILS

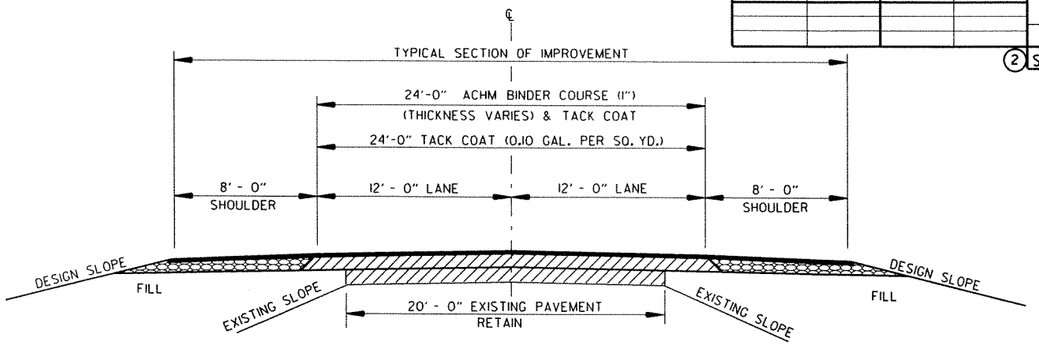


ASPHALT CONCRETE HOT MIX SURFACE COURSE(1/2") (220 LBS. PER SQ. YD.) AGGREGATE BASE COURSE (CLASS 7) 7" IF ASPHALT DRIVE EXISTS OR 6" CONCRETE IF CONCRETE DRIVE EXISTS.

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

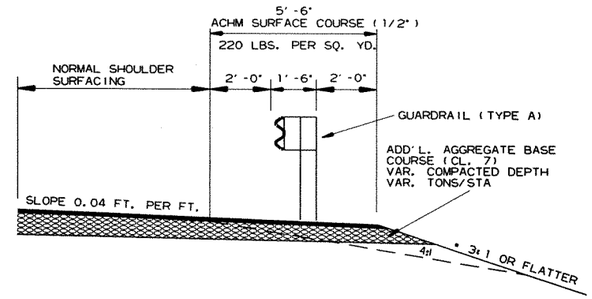
DETAIL FOR DRIVEWAY TURNOUTS

(COLLECTORS)



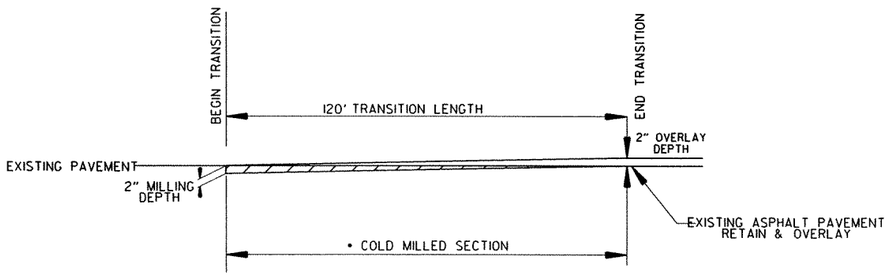
METHOD OF RAISING GRADE

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



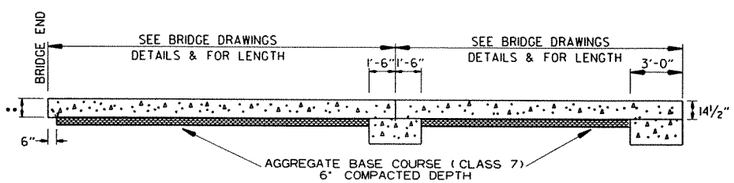
DETAIL OF WIDENING FOR GUARDRAIL

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



DETAIL SHOWING TRANSITION TO EXISTING PAVEMENT

* TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER



SPECIAL DETAIL OF APPROACH SLAB

** DEPTH VARIES SEE BRIDGE PLANS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
12760S
MICHAEL D. FUGETT
10-19-11

R050229.DGN 3/2/2011

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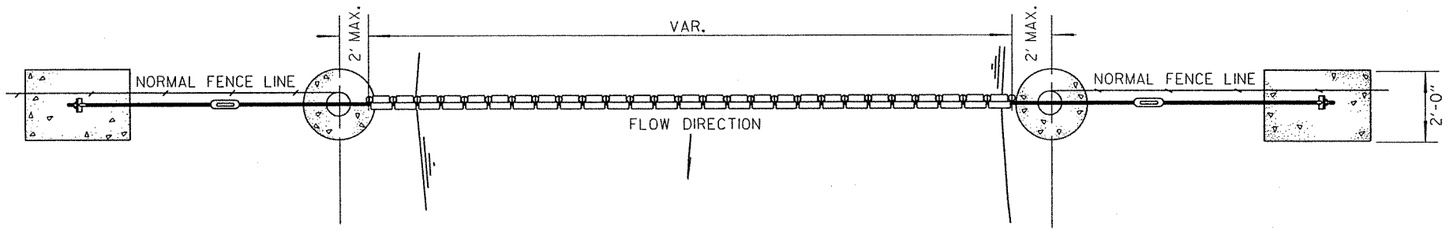
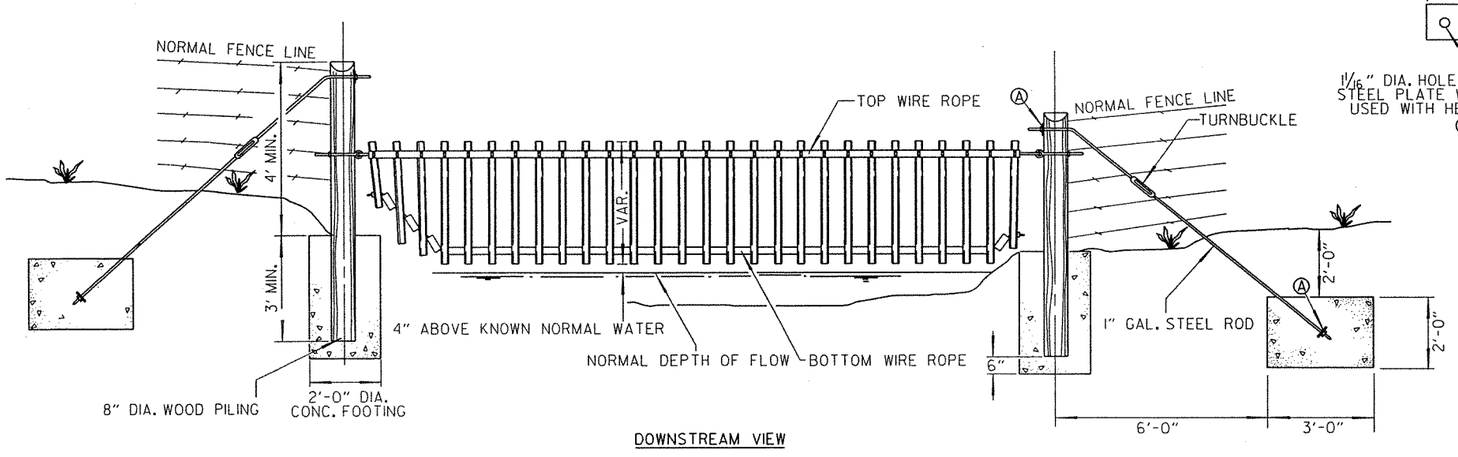
(2) SPECIAL DETAILS

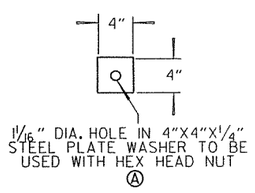
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
10-19-11

PLAN VIEW

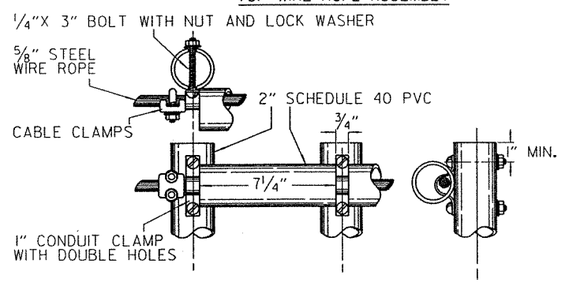




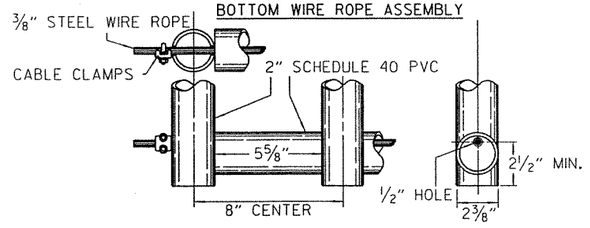
DOWNSTREAM VIEW



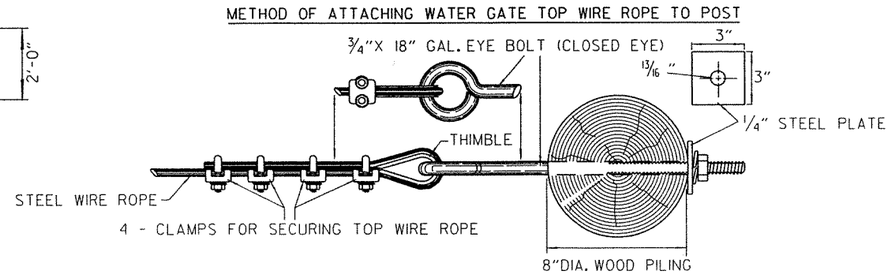
TOP WIRE ROPE ASSEMBLY



BOTTOM WIRE ROPE ASSEMBLY



METHOD OF ATTACHING WATER GATE TOP WIRE ROPE TO POST



SPECIAL DETAILS

030387.DGN 10-11-2011

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(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
MICHAEL D. FUGETT
No. 7605
10-19-11

SILT FENCE (E-11)

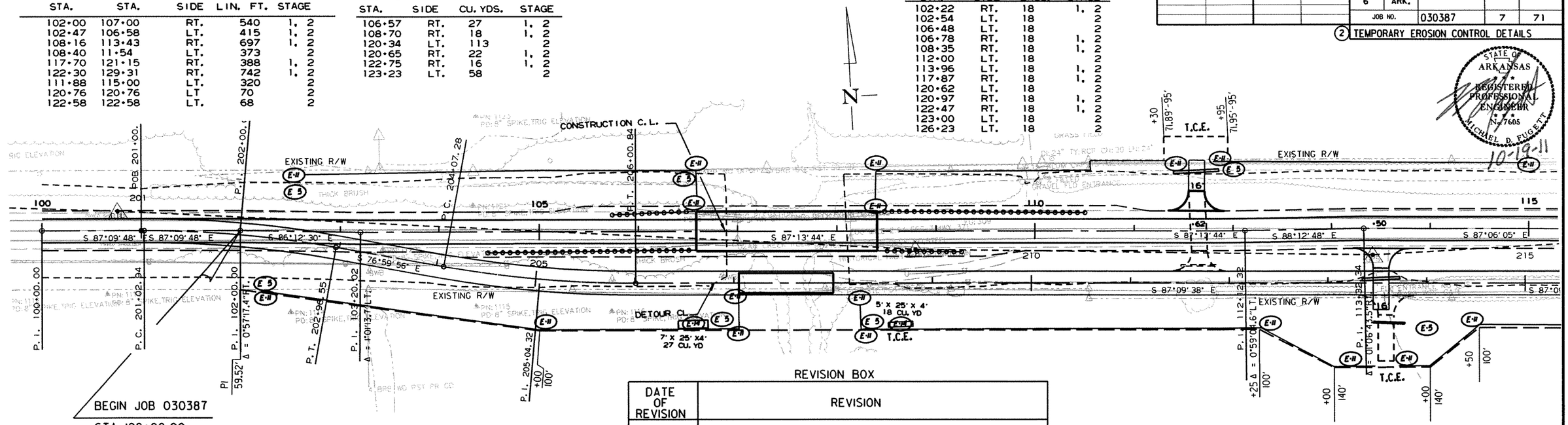
STA.	STA.	SIDE	LIN. FT.	STAGE
102+00	107+00	RT.	540	1, 2
102+47	106+58	LT.	415	1, 2
108+16	113+43	RT.	697	1, 2
108+40	111+54	LT.	373	2
117+70	121+15	RT.	388	1, 2
122+30	129+31	RT.	742	1, 2
111+88	115+00	LT.	320	2
120+76	120+76	LT	70	2
122+58	122+58	LT.	68	2

SEDIMENT BASIN (E-14)

STA.	SIDE	CU. YDS.	STAGE
106+57	RT.	27	1, 2
108+70	RT.	18	1, 2
120+34	LT.	113	2
120+65	RT.	22	1, 2
122+75	RT.	16	1, 2
123+23	LT.	58	2

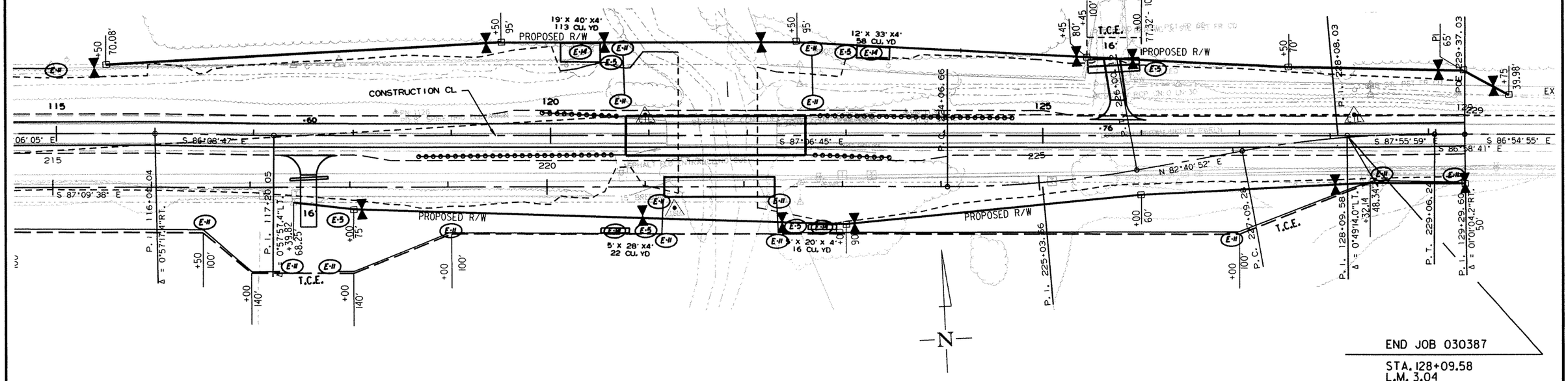
SAND BAG DITCH CHECKS (E-5)

STA.	SIDE	BAGS.	STAGE
102+22	RT.	18	1, 2
102+54	LT.	18	2
106+48	LT.	18	2
106+78	RT.	18	1, 2
108+35	RT.	18	1, 2
112+00	LT.	18	2
113+96	LT.	18	1, 2
117+87	RT.	18	1, 2
120+62	LT.	18	2
120+97	RT.	18	1, 2
122+47	RT.	18	1, 2
123+00	LT.	18	2
126+23	LT.	18	2



REVISION BOX

DATE OF REVISION	REVISION



TEMPORARY EROSION CONTROL DETAILS

R030387.DGN 10/11/2011

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(2) MAINTENANCE OF TRAFFIC DETAILS

SEQUENCE OF WORK

STAGE 1
PLACE ADVANCE WARNING SIGNS, MAINTAIN TRAFFIC ON EXISTING ROADWAY. CONSTRUCT DETOUR ROADWAY AND BRIDGES AS SHOWN ON THE PLANS AND/OR AS DIRECTED BY THE ENGINEER.

STAGE 2
MAINTAIN TRAFFIC ON DETOUR ROADWAY, REMOVE EXISTING BRIDGES AND CONSTRUCT TWO BRIDGE STRUCTURES, PERMANENT DRIVEWAYS, AS SHOWN ON THE PLANS AND/OR AS DIRECTED BY THE ENGINEER.

STAGE 3
COMPLETE FINAL SURFACE, FINAL STRIPING AND PERMANENT SEEDING. MAINTAIN TRAFFIC ON EXISTING ROADWAY AND REMOVE DETOUR ROADWAY AND BRIDGE STRUCTURES.

SEQUENCE OF STRIPING

STAGE 2
REMOVAL OF PERMANENT PAVEMENT MARKINGS = 1620 LIN. FT.
CONSTRUCTION PAVEMENT MARKING = 11,224 LIN. FT.
RAISED PAVEMENT MARKERS TYPE II (YEL/YEL) = 70 EACH

STAGE 3
THERMOPLASTIC PAVEMENT MARKINGS 4" WHITE = 4996 LIN. FT.
THERMOPLASTIC PAINT PAVEMENT MARKINGS 4" YELLOW = 2498 LIN. FT.
HIGH PERFORMANCE CONTRAST PAVEMENT MARKINGS -
DBL. CENTERLINE BRIDGE DECK 724 LIN. FT. (YELLOW)

STATE OF ARKANSAS
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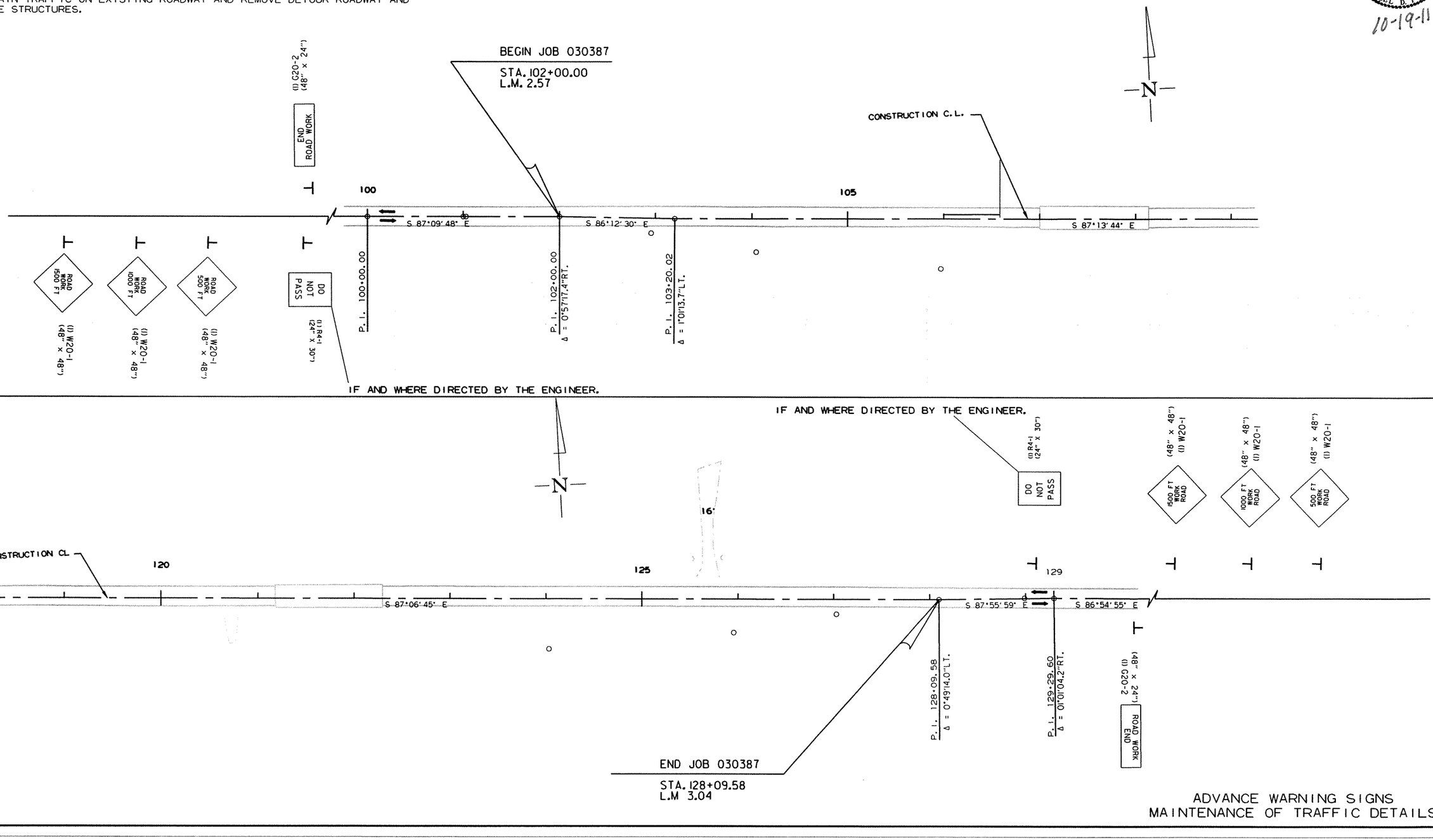
MICHAEL D. FUGETT
10-19-11



ADVANCE WARNING SIGNS
MAINTENANCE OF TRAFFIC DETAILS

r030387.dgn 9/2/2011

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(2) MAINTENANCE OF TRAFFIC DETAILS

SEQUENCE OF WORK

STAGE 1
PLACE ADVANCE WARNING SIGNS. MAINTAIN TRAFFIC ON EXISTING ROADWAY. CONSTRUCT DETOUR ROADWAY AND TEMPORARY BRIDGES AS SHOWN ON THE PLANS AND/OR AS DIRECTED BY THE ENGINEER.

TRAFFIC DRUMS = 43 EACH
BARRICADES = 136 LIN. FT.
SIGNS = 120 SQ. FT.

STATE OF ARKANSAS
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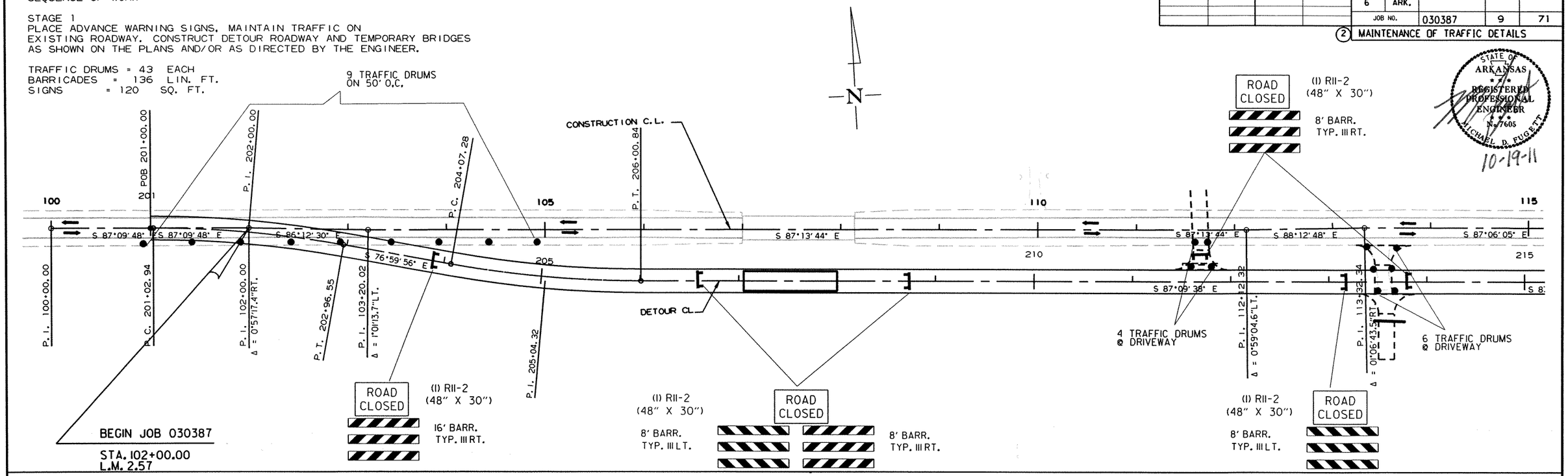
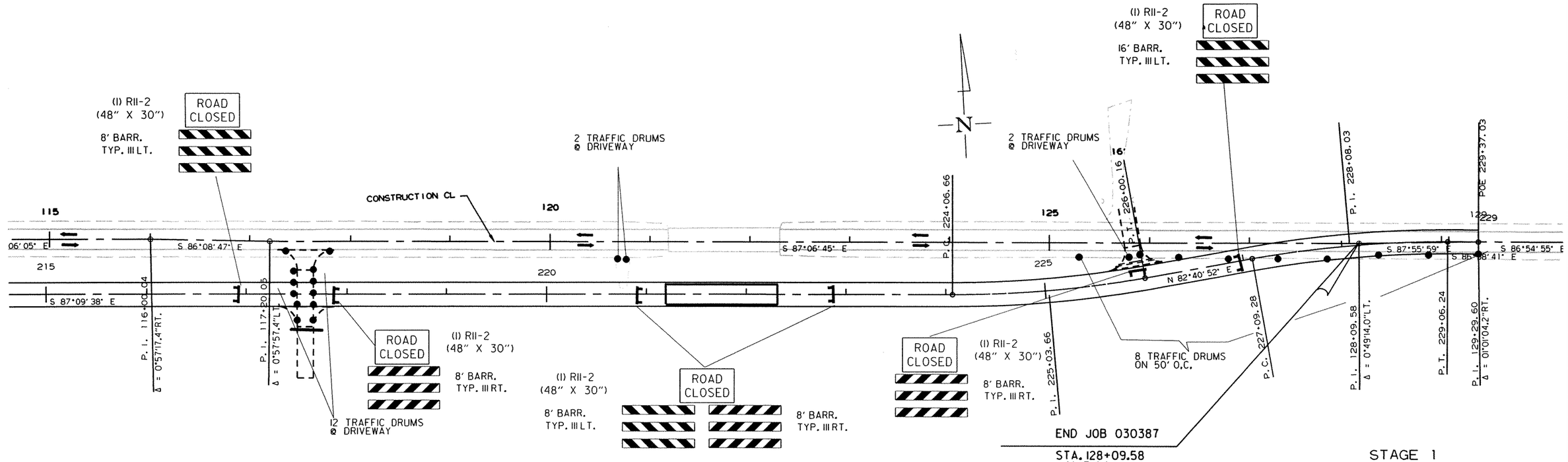
MICHAEL D. FUGETT
10-19-11





STAGE 1
MAINTENANCE OF TRAFFIC DETAILS

r030387.dgn 9/2/2011

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.		030387	10	71

(2) MAINTENANCE OF TRAFFIC DETAILS

SEQUENCE OF WORK

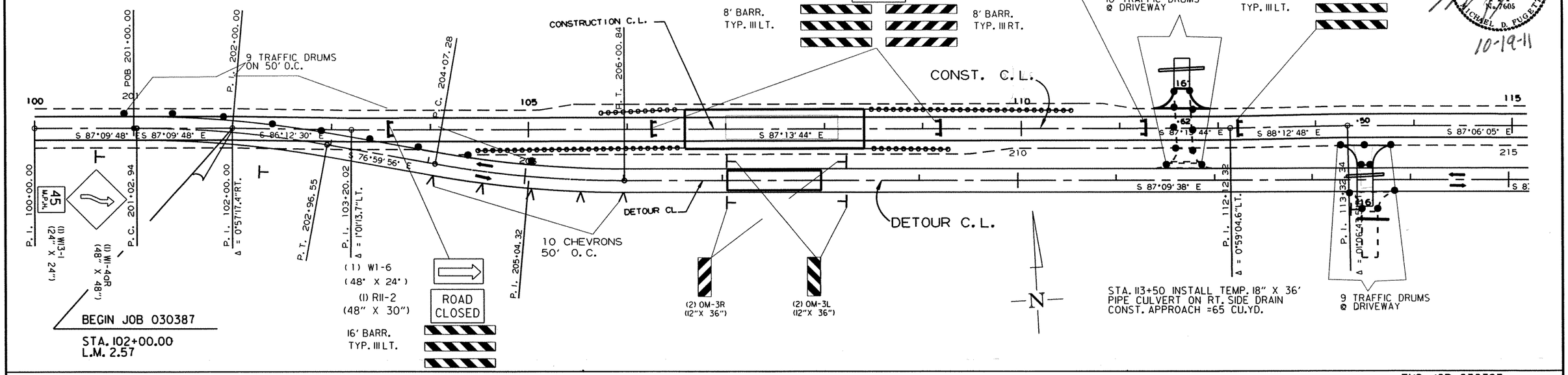
STAGE 1
PLACE ADVANCE WARNING SIGNS. MAINTAIN TRAFFIC ON EXISTING ROADWAY. CONSTRUCT DETOUR ROADWAY AND BRIDGES AS SHOWN ON THE PLANS AND/OR AS DIRECTED BY THE ENGINEER.

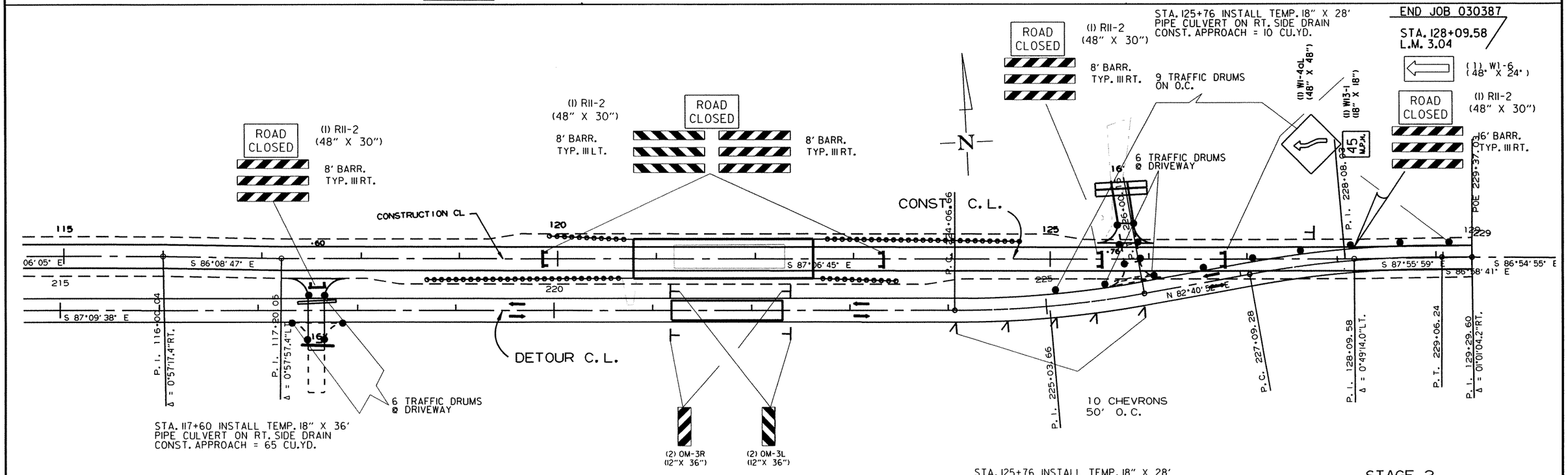
STAGE 2
SHIFT AND MAINTAIN TRAFFIC ON DETOUR ROADWAY. REMOVE EXISTING BRIDGES AND CONSTRUCT TWO BRIDGE STRUCTURES. PERMANENT DRIVEWAYS. AS SHOWN ON THE PLANS AND/OR AS DIRECTED BY THE ENGINEER.

SEQUENCE OF STRIPING

STAGE 2
REMOVAL OF PERMANENT PAVEMENT MARKINGS = 1620 LIN. FT.
CONSTRUCTION PAVEMENT MARKINGS = 11,224 LIN. FT.
RAISED PAVEMENT MARKERS TYPE II (YEL/YEL) = 70 EACH
TRAFFIC DRUMS = 49 EACH
BARRICADES = 128 LIN. FT.
SIGNS = 158 SQ. FT.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGATT
10-19-11





STAGE 2
MAINTENANCE OF TRAFFIC DETAILS

r030387.dgn 9/2/2011

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.		030387	11	71

(2) MAINTENANCE OF TRAFFIC DETAILS

SEQUENCE OF WORK

STAGE 2
SHIFT AND MAINTAIN TRAFFIC ON DETOUR ROADWAY, REMOVE EXISTING BRIDGES AND CONSTRUCT TWO BRIDGE STRUCTURES, PERMANENT DRIVEWAYS, AS SHOWN ON THE PLANS AND/OR AS DIRECTED BY THE ENGINEER.

STAGE 3
COMPLETE FINAL SURFACE, FINAL STRIPING AND PERMANENT SEEDING. SHIFT AND MAINTAIN TRAFFIC ON EXISTING ROADWAY. REMOVE DETOUR ROADWAY TEMPORARY BRIDGE STRUCTURES.

SEQUENCE OF STRIPING

STAGE 2
REMOVAL OF PERMANENT PAVEMENT MARKINGS = 1620 LIN. FT.
CONSTRUCTION PAVEMENT MARKINGS = 11,224 LIN. FT.
RAISED PAVEMENT MARKERS TYPE II (YEL/YEL) = 70 EACH

STAGE 3
THERMOPLASTIC PAVEMENT MARKINGS 4" WHITE = 4996 LIN. FT. (PAVEMENT EDGE)
THERMO PLASTIC PAVEMENT MARKINGS 4" YELLOW = 2498 LIN. FT. (CENTERLINE)
HIGH PERFORMANCE CONSTRAST PAVEMENT MARKINGS -
DBL. CENTERLINE BRIDGE DECK 724 LIN. FT. (YELLOW)
RAISED PAVEMENT MARKERS TYPE II (YEL/YEL) = 72 EACH

STATE OF ARKANSAS
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MICHAEL D. FUGETT
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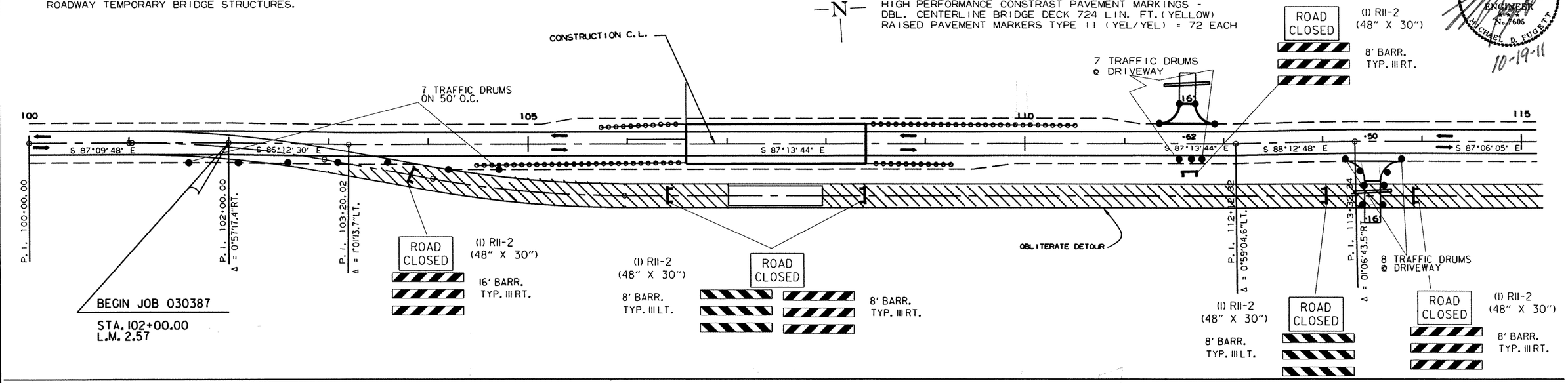

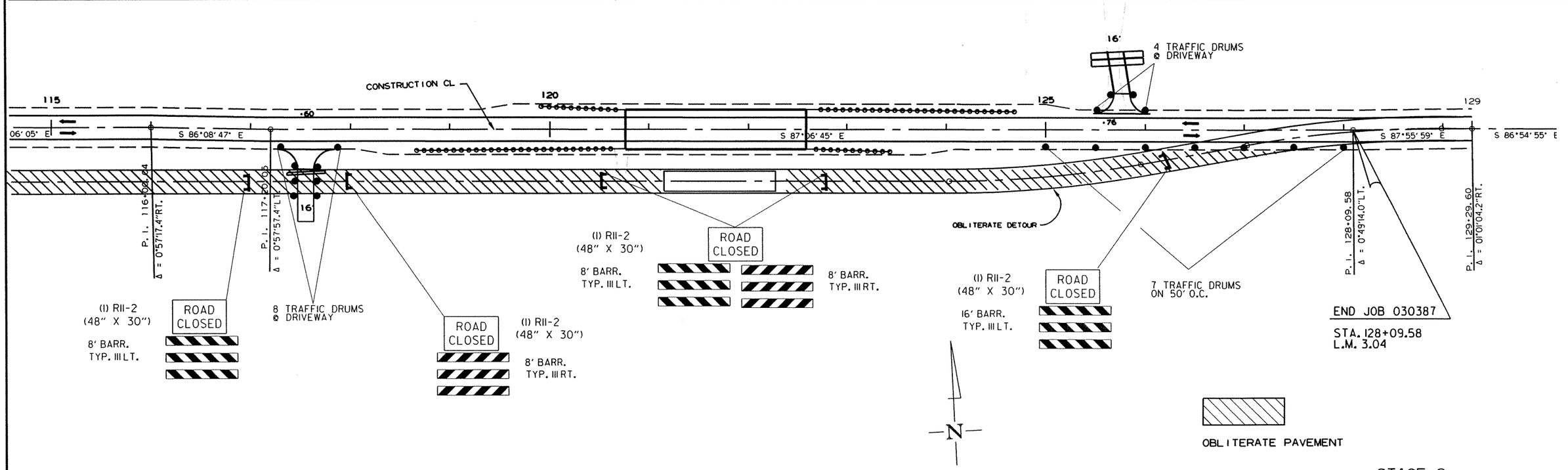

OBLITERATE PAVEMENT

STAGE 3
MAINTENANCE OF TRAFFIC DETAILS

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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.		030387	12	71

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
10-19-11

ADVANCE WARNING SIGNS AND TRAFFIC CONTROL DEVICES

SIGN NUMBER	DESCRIPTION	SIGN SIZE	STAGE 1	STAGE 2	STAGE 3	MAXIMUM NUMBER REQUIRED	TOTAL SIGNS REQUIRED		VERTICAL PANELS	TRAFFIC DRUMS	BARRICADES (TYPE III)
							NO.	SQ. FT.	EACH	EACH	LIN. FT.
W20-1	ROAD WORK 1500 FT.	48" X 48"	2	2	2	2	2	32			
W20-1	ROAD WORK 1000 FT.	48" X 48"	2	2	2	2	2	32			
W20-1	ROAD WORK 500 FT.	48" X 48"	2	2	2	2	2	32			
W20-1	ROAD WORK AHEAD	48" X 48"	1	1	1	1	1	16			
G20-2	END ROAD WORK	48" X 24"	2	2	2	2	2	16			
W1-4aR	REVERSE CURVE RT.	48" X 48'		1	1	1	1	16			
W1-4aL	REVERSE CURVE LT.	48" X 48"		1	1	1	1	16			
W13-1	SPEED LIMIT (ADVISORY)	24" X 24"		2	2	2	2	8			
W1-6	ARROWS	48"X24"		2		2	2	16			
OM-3R	OBJECT MARKER	12" X 36"	4	4	4	4	4	12			
OM-3L	OBJECT MARKER	12" X 36"	4	4	4	4	4	12			
WI-8	CHEVRONS	18" X 24"		20		20	20	60			
R4-1	DO NOT PASS	24" X 30"		2	2	2	2	10			
R11-2	ROAD CLOSED	48"X30"	12	9	11	12	12	120			
	VERTICAL PANELS								10		
	TRAFFIC DRUMS		43	49	41	49				49	
	TYPE III BARRICADES - RT. (8')		8	7	7	8					64
	TYPE III BARRICADES - LT. (8')		7	5	7	7					56
	TYPE III BARRICADES - RT. (16')		1	1	1	1					16
	TYPE III BARRICADES - LT. (16')		1	1	1	1					16
TOTALS								398	10	49	152

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

CONSTRUCTION PAVEMENT MARKINGS AND PERMANENT PAVEMENT MARKINGS

DESCRIPTION	STAGE 1	STAGE 2	STAGE 3	CONSTRUCTION PAVEMENT MARKINGS	REMOVAL OF PERMANENT PAVEMENT MARKINGS	THERMOPLASTIC PAVEMENT MARKINGS (4")		RAISED PAVEMENT MARKERS TYPE II	HIGH PERFORMANCE CONTRAST PAVEMENT MARKING
						WHITE	YELLOW	(YEL/YEL)	4" YELLOW
				LIN. FT.	LIN. FT.	LIN. FT.		EACH	LIN. FT.
CONSTRUCTION PAVEMENT MARKINGS		11224		11224					
REMOVAL OF PERMANENT PAVEMENT MARKINGS		1620			1620				
THERMOPLASTIC PAVEMENT MARKINGS WHITE (4")			4996			4996			
THERMOPLASTIC PAVEMENT MARKINGS YELLOW (4")			2498				2498		
RAISED PAVEMENT MARKERS (TYPE II) (YEL/YEL)		70						70	
HIGH PERFORMANCE CONTRAST PAVEMENT MARKINGS YELLOW (4")			724						724
TOTALS				11224	1620	4996	2498	70	724

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

REMOVAL AND DISPOSAL OF STRUCTURES

STATION	STATION	DESCRIPTION	SIDE	*PIPE CULVERT	GUARDRAIL
				EACH	LIN. FT.
109+98		24" X 24' RCP SIDE DRAIN	LT.	1	
125+76		96" X 30' RCP SIDE DRAIN	LT.	1	
106+00	109+14	GUARDRAIL	LT. & RT.		400
120+16	123+30	GUARDRAIL	LT. & RT.		330
TOTAL				2	730

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

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				6	ARK.			
				JOB NO.		030387	13	71

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
MICHAEL D. FUGETT
No. 7605
10-19-11

SOIL LOG

STATION	LOCATION	DEPTH	LIQUID LIMIT	PLASTICITY INDEX	AASHTO SOIL CLASS	COLOR
		FEET				
103+00	5' RT. OF CENTER	0 - 5	17	4	A-2-4(0)	BROWN
103+00	25' RT. OF CENTER	0 - 5	15	3	A-4(0)	BROWN
103+00	13' RT. OF CENTER	0 - 5	ND	NP	A-2-4(0)	BROWN
112+00	5' LT. OF CENTER	0 - 5	ND	NP	A-2-4(0)	BROWN
112+00	13' LT. OF CENTER	0 - 5	ND	NP	A-2-4(0)	BROWN
112+00	25' LT. OF CENTER	0 - 5	23	7	A-4(1)	BROWN
119+00	5' RT. OF CENTER	0 - 5	ND	NP	A-4(0)	BROWN
119+00	15' RT. OF CENTER	0 - 5	17	2	A-4(0)	BROWN
119+00	25' RT. OF CENTER	0 - 5	22	4	A-4(0)	BROWN
125+00	5' LT. OF CENTER	0 - 5	ND	NP	A-2-4(0)	BROWN
125+00	13' LT. OF CENTER	0 - 5	ND	NP	A-2-4(0)	BROWN
125+00	25' LT. OF CENTER	0 - 5	24	9	A-4(2)	BROWN

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

CLEARING AND GRUBBING

STATION	STATION	CLEARING	GRUBBING
		STATION	
102+00.00	109+00.00	7	7
111+00.00	112+00.00	1	1
113+00.00	116+00.00	3	3
117+00.00	118+00.00		1
121+00.00	126+00.00	5	5
128+00.00	129+00.00	1	1
TOTALS		17	18

BENCH MARK CAPS

STATION	LOCATION	BENCH MARKS
		EACH
106+58.50	BRIDGE END	1

NOTE: FOR INFORMATIONAL PURPOSES ONLY. BENCH MARK CAPS TO BE FURNISHED, PLACED AND RECORDED BY STATE FORCES.

COLD MILLING ASPHALT PAVEMENT

STATION	STATION	DESCRIPTION	LENGTH	WIDTH	COLD MILLING ASPHALT PAVEMENT
			LIN. FT.		SQ. YD.
102+00.00	103+20.02	120' TRANSITION	120	20	267
128+09.58	129+29.60	120' TRANSITION	120	20	267
TOTAL					534

QUANTITY ESTIMATED. TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER. SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS. 1" AVG. DEPTH.

SELECTED PIPE BEDDING AND BACKFILL

STATION	STATION	BEDDING	BACKFILL
		CU. YD.	
ENTIRE	PROJECT	25	50
TOTALS		25	50

QUANTITY ESTIMATED. TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER. SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC

LOCATION	ASPHALT CONC. PATCHING FOR MAINTENANCE OF TRAFFIC	TACK COAT
	TON	GALLON
ENTIRE PROJECT - IF AND WHERE DIRECTED BY THE ENGINEER	50	100
TOTALS	50	100

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

ADDITIONAL BASE AND SURFACING - DRIVEWAYS

STATION	SIDE	LOCATION	DESCRIPTION	WIDTH	ACHM EXTENSION LENGTH	TURNOUT AREA	TOTAL DRIVEWAY AREA	AGGREGATE BASE COURSE (CLASS 7) (7" COMP. DEPTH)	ACHM SURFACE CRSE. (1/2") (220 LB./SQ. YD.)	SIDE DRAIN		18" TEMPORARY CULVERT
										30"	78"	
				LIN.FT.		SQ. YD.	SQ. YD.	TON	TON	LIN. FT.	LIN. FT.	LIN. FT.
111+62	LT.	MAIN LANES	PRIVATE DRIVEWAY	16	30	55	108	44	6	46		28
113+50	RT.	MAIN LANES	PRIVATE DRIVEWAY	16	40	55	126	51	6	38		36
117+60	RT.	MAIN LANES	PRIVATE DRIVEWAY	16	40	55	126	51	6	38		36
125+76	LT.	MAIN LANES	PRIVATE DRIVEWAY	16	45	55	135	55	6		104	40
		ENTIRE PROJECT	TEMPORARY DRIVES					150				
TOTALS								351	24	122	104	140

BASIS OF ESTIMATE:
MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2").....94.7%.....ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2") 5.3%
ADDITIONAL BASE AND SURFACING DRIVEWAY QUANTITIES CARRIED TO THE BASE AND SURFACING QUANTITY BOX. UNLESS OTHERWISE NOTED, ALL METAL PIPES ARE TO HAVE A TYPE 2 BEDDING.
Nmax= 115 GYRATIONS

ACHM PATCHING OF EXISTING ROADWAY

LOCATION	ACHM PATCHING OF EXISTING ROADWAY	TACK COAT
	TON	GALLON
ENTIRE PROJECT - IF AND WHERE DIRECTED BY THE ENGINEER	50	100
TOTALS	50	100

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

4" 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 - TEMPORARY

LOCATION	SAND BAG DITCH CHECKS (E-5)	SILT FENCE (E-11)	SEDIMENT BASIN (E-14)	OBLITERATION OF SEDIMENT BASIN	*SEDIMENT REMOVAL AND DISPOSAL	TEMPORARY SEEDING	MULCH COVER	WATER	DIVERSION DITCH
	BAG	LIN. FT.	CU. YD.		CU. YD.	ACRE	ACRE	M.GAL.	LIN. FT.
MAIN LANES - STAGE 1	126	2367	83	83	100	1.71	0.45	34.9	
MAIN LANES - STAGE 2	234	3641	254	254	200				
ENTIRE PROJECT DETOUR						0.20		4.1	400
TOTALS	360	6008	337	337	300	1.91	0.45	39.0	400

*QUANTITY ESTIMATED. TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER. SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.
BASIS OF ESTIMATE:
WATER .....20.4 M.G. / ACRE OF TEMPORARY SEEDING
SAND BAG DITCH CHECKS..... 18 BAGS / LOCATION

NOTE: 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.

EROSION CONTROL ITEMS - PERMANENT

STATION	STATION	LOCATION	SEEDING	LIME	MULCH COVER	WATER	SECOND SEEDING APPLICATION
			ACRE	TON	ACRE	M. GAL.	ACRE
102+00.00	128+09.58	MAIN LANES	3.76	8	3.76	383.5	3.76
ENTIRE	PROJECT	DETOUR REMOVAL	1.72	3	1.72	175.4	1.72
*ENTIRE	PROJECT	MAIN LANES	1.00	2	1.00	102.0	1.00
TOTALS			6.48	13	6.48	660.9	6.48

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

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				6	ARK.			
				JOB NO.		030387	14	71

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
10-19-11

EARTHWORK

STATION	STATION	LOCATION	UNCLASSIFIED EXCAVATION	COMPACTED EMBANKMENT	* SOIL STABILIZATION
			CU. YD.		TON
102+00	128+09	MAIN LANES	2928	14197	
ENTIRE	PROJECT	DETOUR CONSTRUCTION		21419	
ENTIRE	PROJECT	DETOUR REMOVAL	22223		
ENTIRE	PROJECT	DRIVEWAYS		520	
ENTIRE	PROJECT	CHANNEL EXCAVATION	1993		
ENTIRE	PROJECT	TEMPORARY DRIVEWAY	175	175	200
TOTALS			27319	36311	200

NOTE: EARTHWORK QUANTITIES TO BE PAID AS PLAN QUANTITY.
* NOTE: QUANTITY ESTIMATED. SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

APPROACH SLABS

STATION	STATION	APPROACH SLABS (TYPE SP. 1) WIDTH = 24'-0"	REINFORCING STEEL - ROADWAY (GRADE 60)
		CU. YD.	POUND
106+31.50	106+58.05	38.80	4260
108+39.50	108+66.50	38.80	4260
120+49.50	120+76.50	38.80	4260
122+57.50	122+84.50	38.80	4260
TOTALS		**155.20**	**17040**

APPROACH GUTTERS

STATION	STATION	SIDE	APPROACH GUTTERS (TYPE B) (W=8')	REINFORCING STEEL - ROADWAY (GRADE 60)
			CU. YD.	POUND
106+31.50	106+58.05	LT. & RT.	13.50	1180
108+39.50	108+66.50	LT. & RT.	13.50	1180
120+49.50	120+76.50	LT. & RT.	13.50	1180
122+57.50	122+84.50	LT. & RT.	13.50	1180
TOTALS			**54.00**	**4720**

GUARDRAIL

STATION	STATION	SIDE	GUARDRAIL (TYPE A)	TERMINAL ANCHOR POSTS (TYPE 1)	THRIE BEAM GUARDRAIL TERMINAL
			LIN. FT.	EACH	
104+29.75	106+48.50	RT.	200	1	1
105+54.75	106+48.50	LT.	75	1	1
108+48.50	109+42.25	RT.	75	1	1
108+48.50	110+67.25	LT.	200	1	1
118+47.75	120+66.50	RT.	200	1	1
119+72.75	120+66.50	LT.	75	1	1
122+67+50	123+61.25	RT.	75	1	1
122+67.50	124+86.25	LT.	200	1	1
TOTALS			**1100**	**8**	**8**

FENCING ITEMS

STATION	STATION	SIDE	REMOVAL AND DISPOSAL OF FENCE	WIRE FENCE (TYPE D-1)	WIRE FENCE (TYPE D-2)	16' GATE	WATER GATE
			LIN. FT.	LIN.FT.	LIN.FT.	EACH	EACH
103+32	113+42	RT.	837	1010			
111+62		LT.				1	
113+50		RT.				1	
113+58	120+76.50	RT.	766	756			
115+50	120+76.50	LT.	504		661		
117+60		RT.				1	
121+00	122+00	RT.					1
122+35	129+28.6	RT.	1060	1024			
122+13	125+45	LT.	714		435		
125+88	129+57	LT.	561		398		
TOTALS			4442	2790	1494	3	1

BASE COURSE AND SURFACING

STATION	STATION	DESCRIPTION	LENGTH	AGGREGATE BASE COURSE (CLASS 7) TONS PER STATION	AGGREGATE BASE COURSE (CLASS 7) TON	TACK COAT AVERAGE WIDTH FEET	TACK COAT SQ. YD.	TACK COAT GAL PER SQ. YD.	TACK COAT AVERAGE WIDTH FEET	TACK COAT SQ. YD.	TACK COAT GAL PER SQ. YD.	TACK COAT GALLON	ACHM BINDER COURSE (1 ") (330 LBS. PER SQ. YD.) AVERAGE WIDTH FEET	ACHM BINDER COURSE (1 ") (330 LBS. PER SQ. YD.) SQ. YD.	ACHM BINDER COURSE (1 ") (330 LBS. PER SQ. YD.) LBS. PER SQ. YD.	ACHM BINDER COURSE (1 ") (330 LBS. PER SQ. YD.) TON	ACHM SURFACE COURSE (1/2 ") (220 LBS. PER SQ. YD.) AVERAGE WIDTH FEET	ACHM SURFACE COURSE (1/2 ") (220 LBS. PER SQ. YD.) SQ.YD.	ACHM SURFACE COURSE (1/2 ") (220 LBS. PER SQ. YD.) LBS. PER SQ. YD.	ACHM SURFACE COURSE (1/2 ") (220 LBS. PER SQ. YD.) TON
102+00.00	103+20.02	MAIN LANES 120' TRANSITION	120.02						2.09	28	0.03	1	2.17	29	495	8	30.00	400	220	44
103+20.02	106+31.50	MAIN LANES - NOTCH & WIDEN	311.48	115.25	359				4.17	144	0.03	4	4.33	150	495	38	40.00	1384	220	153
108+66.50	120+49.50	MAIN LANES - NOTCH & WIDEN	1183.00	115.25	1364				4.17	548	0.03	16	4.33	569	495	141	40.00	5258	220	579
122+84.50	128+09.58	MAIN LANES - NOTCH & WIDEN	525.08	115.25	606				2.09	122	0.03	4	4.33	253	495	63	40.00	2334	220	257
128+09.58	129+29.60	MAIN LANES 120' TRANSITION	120.02										2.17	29	495	8	30.00	400	220	44
103+20.02	106+31.50	MAIN LANES - LEVELING	311.48			20.00	692	0.10	20.00	692	0.03	90	20.00	692	110	39	20.00	692	385	134
108+66.50	120+49.50	MAIN LANES - LEVELING	1183.00			20.00	2629	0.10	20.00	2629	0.03	342	20.00	2629	110	145	20.00	2629	385	507
122+84.50	128+09.58	MAIN LANES - LEVELING	525.08			20.00	1167	0.10	20.00	1167	0.03	152	20.00	1167	110	65	20.00	1167	385	225
103+87.35	104+20.35	MAIN LANES ADD'L - GUARDRAIL WIDENING TAPER RT.	33.00	12.50	5												2.75	10	220	2
104+20.35	106+58.50	MAIN LANES ADD'L - GUARDRAIL WIDENING RT.	238.15	25.00	60												5.50	146	220	17
105+12.35	105+45.35	MAIN LANES ADD'L - GUARDRAIL WIDENING TAPER LT.	33.00	12.50	5												2.75	10	220	2
105+45.35	106+58.50	MAIN LANES ADD'L - GUARDRAIL WIDENING LT.	113.15	25.00	29												5.50	69	220	8
108+39.50	109+52.65	MAIN LANES ADD'L - GUARDRAIL WIDENING RT.	113.15	25.00	29												5.50	69	220	8
109+52.65	109+85.65	MAIN LANES ADD'L - GUARDRAIL WIDENING TAPER RT.	33.00	12.50	5												2.75	10	220	2
108+39.50	110+77.65	MAIN LANES ADD'L - GUARDRAIL WIDENING LT.	238.15	25.00	60												5.50	146	220	17
110+77.65	111+10.65	MAIN LANES ADD'L - GUARDRAIL WIDENING TAPER LT.	33.00	12.50	5												2.75	10	220	2
118+05.35	118+38.35	MAIN LANES ADD'L - GUARDRAIL WIDENING TAPER RT.	33.00	12.50	5												2.75	10	220	2
118+38.35	120+76.50	MAIN LANES ADD'L - GUARDRAIL WIDENING RT.	238.15	25.00	60												5.50	146	220	17
119+30.35	119+63.35	MAIN LANES ADD'L - GUARDRAIL WIDENING TAPER LT.	33.00	12.50	5												2.75	10	220	2
119+63.35	120+76.50	MAIN LANES ADD'L - GUARDRAIL WIDENING LT.	113.15	25.00	29												5.50	69	220	8
122+57.50	123+70.65	MAIN LANES ADD'L - GUARDRAIL WIDENING RT.	113.15	25.00	29												5.50	69	220	8
123+70.65	124+03.65	MAIN LANES ADD'L - GUARDRAIL WIDENING TAPER RT.	33.00	12.50	5												2.75	10	220	2
122+57.50	124+95.65	MAIN LANES ADD'L - GUARDRAIL WIDENING LT.	238.15	25.00	60												5.50	146	220	17
124+95.65	125+28.65	MAIN LANES ADD'L - GUARDRAIL WIDENING TAPER LT.	33.00	12.50	5												2.75	10	220	2
202+96.55	227+09.28	DETOUR LANES	2412.73	153.75	3710				24.17	6480	0.03	194	24.58	6589	330	1088	24.00	6434	220	708
ENTIRE	PROJECT	ADDITIONAL FROM DRIVEWAY QUANTITY BOX			351															24
ENTIRE	PROJECT	ADDITIONAL FOR GRADE RAISE LEVELING										584				118				
TOTALS					6786							1387				1713				2791

BASIS OF ESTIMATE:
MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2").....94.7%.....ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2") 5.3%
MINERAL AGGREGATE IN ACHM BINDER COURSE (1") .....95.7%.....ASPHALT BINDER (PG 64-22) IN ACHM BINDER COURSE (1") 4.3%
Nmax= 115 GYRATIONS

r030387.dgn 10-10-2011

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.		030387	15	77
① 07214,07215		QUANTITIES		51953

SCHEDULE OF BRIDGE QUANTITIES - JOB NO. 030387

BRIDGE NO. / CODE NO. / NAME PLATE TITLE	UNIT OF STRUCTURE	ITEM NO.	205	603	801	802	802	803	804	804	805	805	805	805	805	807	808	812	816	816
		ITEM	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO.)	TEMPORARY BRIDGE STRUCTURE (24' ROADWAY WIDTH)	UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE	CLASS S CONCRETE-BRIDGE	CLASS S (AE) CONCRETE-BRIDGE	CLASS 1 PROTECTIVE SURFACE TREATMENT	REINFORCING STEEL-BRIDGE (GRADE 60)	EPOXY COATED REINFORCING STEEL (GRADE 60)	①CONCRETE PILING (16" SQ.)	②CONCRETE PILING (18" SQ.)	① TEST PILE (16" SQ.)	② TEST PILE (18" SQ.)	PREBORING	STRUCTURAL STEEL IN BEAM SPANS (M 270, GRADE 50W)	ELASTOMERIC BEARINGS	BRIDGE NAME PLATE (TYPE D)	DUMPED RIPRAP	FILTER BLANKET
		UNIT	LUMP SUM	LIN. FT.	CU. YD.	CU. YD.	CU. YD.	GAL.	LB.	LB.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LB.	CU. IN.	EACH	CU. YD.	SQ. YD.
07214 / XO71 / OZAN CREEK RELIEF	BENT NO. 1				51	16.49		0.2	1,404	548	104		31		50				197	366
	BENT NO. 2					14.41			1,875			180			108		1,642.5			
	BENT NO. 3					14.41			1,875			150		35	108		1,642.5			
	BENT NO. 4				51	16.49		0.2	1,404	548	130				50				162	293
	180'-0" CONT. INTEGRAL W-BEAM UNIT						271.70	18.9	2,252	58,674						139,810		1		
SITE NO. 1 (BRIDGE NO. 03221)			1	95																
TOTALS FOR BRIDGE NO. 07214				95	102	61.80	271.70	19.3	8,810	59,770	234	330	31	35	316	139,810	3,285.0	1	359	659
07215 / XO71 / OZAN CREEK	BENT NO. 1				51	16.49		0.2	1,404	548	170				50				189	350
	BENT NO. 2					14.41			1,875			185		42	156		1,642.5			
	BENT NO. 3					14.41			1,875			222			114		1,642.5			
	BENT NO. 4				51	16.49		0.2	1,404	548	140		40		50				212	390
	180'-0" CONT. INTEGRAL W-BEAM UNIT						271.70	18.9	2,252	58,674						139,810		1		
SITE NO. 2 (BRIDGE NO. 03026)			1	112																
TOTALS FOR BRIDGE NO. 07215				112	102	61.80	271.70	19.3	8,810	59,770	310	407	40	42	370	139,810	3,285.0	1	401	740
TOTALS FOR JOB NO. 030387				207	204	123.60	543.40	38.6	17,620	119,540	544	737	71	77	686	279,620	6570.0	2	760	1399

① Concrete in 16" square prestressed piles shall be Class S(AE) and shall have a minimum compressive strength equal to 5,000 psi at 28 days.
② Concrete in 18" square prestressed piles shall be Class S(AE) and shall have a minimum compressive strength equal to 6,000 psi at 28 days.

STEWART LINZ
DESIGN SECTION SUPERVISOR

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7510
CARL J. FUSELIER
5/5/11

BRIDGE ENGINEER

SCHEDULE OF BRIDGE QUANTITIES
BRIDGES OVER OZAN CREEK & RELIEF
OZAN CREEK & RELIEF STRS. & APPRS. (S)
HEMPSTEAD COUNTY
ROUTE 371 SEC. 3
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CMW DATE: 2/07/11 FILENAME: b030387_qi.dgn
CHECKED BY: RBR DATE: 3-23-11 SCALE: NO SCALE
DESIGNED BY: CMW DATE: 3/11
BRIDGE NO. 07214,07215 DRAWING NO. 51953

r030387.dgn 10-19-2011

SUMMARY OF QUANTITIES

ITEM NUMBER	ITEM		QUANTITY	UNIT
201	CLEARING		17	STATION
201	GRUBBING		18	STATION
202	REMOVAL AND DISPOSAL OF FENCE		4442	LIN. FT.
202	REMOVAL AND DISPOSAL OF PIPE CULVERTS		2	EACH
202	REMOVAL AND DISPOSAL OF GUARDRAIL		730	LIN. FT.
210	UNCLASSIFIED EXCAVATION		27319	CU. YD.
210	COMPACTED EMBANKMENT		36311	CU. YD.
SP& 210	SOIL STABILIZATION		200	TON
SS& 303	AGGREGATE BASE COURSE (CLASS 7)		6786	TON
401	TACK COAT		1587	GALLON
SP,SS&406	MINERAL AGGREGATE IN ACHM BINDER COURSE (1")		1639	TON
SP,SS&406	ASPHALT BINDER (PG 64-22) IN ACHM BINDER COURSE (1")		74	TON
SP,SS&407	MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2")		2643	TON
SP,SS&407	ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2")		148	TON
412	COLD MILLING ASPHALT PAVEMENT		534	SQ. YD.
SP,SS&414	ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC		50	TON
SP,SS&415	ACHM PATCHING OF EXISTING ROADWAY		50	TON
504	APPROACH SLABS (TYPE SPECIAL 1)		155.20	CU. YD.
504	APPROACH GUTTERS (TYPE B)		54.00	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		140	LIN. FT.
SS& 604	SIGNS		398	SQ. FT.
SS& 604	BARRICADES		152	LIN. FT.
SS& 604	TRAFFIC DRUMS		49	EACH
SS& 604	VERTICAL PANELS		10	EACH
SS& 604	CONSTRUCTION PAVEMENT MARKINGS		11224	LIN. FT.
604	REMOVAL OF PERMANENT PAVEMENT MARKINGS		1620	LIN. FT.
SS& 606	30" SIDE DRAIN		122	LIN. FT.
SS& 606	78" SIDE DRAIN		104	LIN. FT.
606	SELECTED PIPE BEDDING		25	CU. YD.
606	SELECTED PIPE BACKFILL		50	CU. YD.
611	4" PIPE UNDERDRAINS		1000	LIN. FT.
611	UNDERDRAIN OUTLET PROTECTORS		8	EACH
SS& 617	GUARDRAIL (TYPE A)		1100	LIN. FT.
SS& 617	TERMINAL ANCHOR POSTS (TYPE 1)		8	EACH
SS& 617	THRIE BEAM GUARDRAIL TERMINAL		8	EACH
619	WIRE FENCE (TYPE D -1)		2790	LIN. FT.
619	WIRE FENCE (TYPE D-2)		1494	LIN. FT.
SP	WATER GATE		1	EACH
* 619	16' STEEL GATES	(ALTERNATE NO. 1)	3	EACH
* 619	16' ALUMINUM GATES	(ALTERNATE NO. 2)	3	EACH
620	LIME		13	TON
620	SEEDING		6.48	ACRE
620	MULCH COVER		6.93	ACRE
SS& 620	WATER		699.9	M. GAL.
621	TEMPORARY SEEDING		1.91	ACRE
621	SILT FENCE		6008	LIN. FT.
621	SAND BAG DITCH CHECKS		360	BAG
621	SEDIMENT BASIN		337	CU. YD.
621	OBLITERATION OF SEDIMENT BASIN		337	CU. YD.
621	DIVERSION DITCH		400	LIN. FT.
621	SEDIMENT REMOVAL AND DISPOSAL		300	CU. YD.
623	SECOND SEEDING APPLICATION		6.48	ACRE
635	ROADWAY CONSTRUCTION CONTROL		1.00	LUMP SUM
SS& 719	THERMOPLASTIC PAVEMENT MARKING WHITE (4")		4996	LIN. FT.
SS& 719	THERMOPLASTIC PAVEMENT MARKING YELLOW (4")		2498	LIN. FT.
* SP& 719	INVERTED PROFILE THERMOPLASTIC CONTRAST PAVEMENT MARKING YELLOW (4")	(ALTERNATE NO. 1)	724	LIN. FT.
* SP	HIGH PERFORMANCE CONTRAST MARKING TAPE YELLOW (4")	(ALTERNATE NO. 2)	724	LIN. FT.
721	RAISED PAVEMENT MARKERS (TYPE II)		70	EACH
804	REINFORCING STEEL-ROADWAY (GRADE 60)		21760	POUND
	STRUCTURES OVER 20' 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
603	TEMPORARY BRIDGE STRUCTURE (24' ROADWAY WIDTH)		207	LIN. FT.
636	BRIDGE CONSTRUCTION CONTROL		1.00	LUMP SUM
801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE		204	CU. YD.
802	CLASS S CONCRETE-BRIDGE		123.60	CU. YD.
802	CLASS S (AE) CONCRETE-BRIDGE		543.40	CU. YD.
803	CLASS 1 PROTECTIVE SURFACE TREATMENT		38.6	GALLON
804	REINFORCING STEEL-BRIDGE (GRADE 60)		17620	POUND
804	EPOXY COATED REINFORCING STEEL (GRADE 60)		119540	POUND
805	CONCRETE PILING (16" SQUARE)		544	LIN. FT.
805	CONCRETE PILING (18" SQUARE)		737	LIN. FT.
805	TEST PILE (16" SQUARE)		71	LIN. FT.
805	TEST PILE (18" SQUARE)		77	LIN. FT.
805	PREBORING		686	LIN. FT.
807	STRUCTURAL STEEL IN BEAM SPANS (M 270-GR50W)		279620	POUND
808	ELASTOMERIC BEARINGS		6570.0	CU. IN.
812	BRIDGE NAME PLATE (TYPE D)		2	EACH
816	DUMPED RIPRAP		760	CU. YD.
816	FILTER BLANKET		1399	SQ. YD.

* DENOTES ALTERNATE BID ITEMS.

REVISION BOX

DATE	REVISION	SHEET NUMBER(S)

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

10-28-11

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		030387	16	71

(2) SUMMARY OF QUANITITES AND REVISIONS

SUMMARY OF QUANITITES 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.		030387	17	71

(2) SURVEY CONTROL DETAILS

SURVEY CONTROL COORDINATES

Project Name: s030387
Date: 7/1/2010
Coordinate System: ARKANSAS STATE PLANE - SOUTH ZONE BASED ON GPS CONTROL, PROJECTED TO GROUND.
Units: U.S. SURVEY FOOT

Point Name	Northing	Easting	Elev	Feature	Description
1	1784115.6467	770852.9155	420.203	CTL	*5/8" Rebar with 2" Aluminum Cap
2	1784098.8177	771324.1512	395.420	CTL	*5/8" Rebar with 2" Aluminum Cap
3	1784040.1018	772365.0444	368.885	CTL	*5/8" Rebar with 2" Aluminum Cap, 20' N OF CL HWY 371
4	1783961.0660	773165.4095	368.766	CTL	*5/8" Rebar with 2" Aluminum Cap
5	1783939.9019	774383.0187	369.160	CTL	*5/8" Rebar with 2" Aluminum Cap
6	1783904.1201	775102.4234	369.215	CTL	*5/8" Rebar with 2" Aluminum Cap
7	1783862.4893	775863.6831	370.953	CTL	*5/8" Rebar with 2" Aluminum Cap
8	1783842.6839	776511.3779	374.837	CTL	*5/8" Rebar with 2" Aluminum Cap
100	1784088.3373	771774.4995	382.172	GPS	*AHTD GPS 290021
101	1783932.4367	773626.9170	367.559	GPS	*AHTD GPS 290021A
900	1771775.2710	770742.6832	435.124	TBM	*5/8" Rebar with 2" Aluminum Cap
901	1772233.7171	773447.9540	405.802	TBM	*5/8" Rebar with 2" Aluminum Cap
903	1772787.6520	776491.9376	375.226	TBM	*BOLT IN FH
904	1776030.7303	776042.2364	371.289	TBM	*5/8" Rebar with 2" Aluminum Cap
905	1778589.6424	774232.4536	375.649	TBM	*SQUARE CUT HEADWALL, 10.5' NE C\L CR27S
906	1781551.4903	772514.2454	402.553	TBM	*5/8" Rebar with 2" Aluminum Cap
907	1784008.0688	770787.5544	425.464	TBM	*BOLT IN FH
908	1784059.6516	767839.4248	370.434	TBM	*SQUARE CUT SW CNR OF OZAN CREEK
909	1783844.0054	774407.7970	370.240	TBM	*SQUARE CUT SW CNR OF OZAN CREEK
910	1783804.6697	776682.0834	375.266	TBM	*TOP FH, RD 25, 29'E. 36" TWIN GUM
990	1769443.2462	771123.4909	411.910	BM	*NGS MARK RV 605
1500	1784587.3632	771064.9116	446.383	CTL	*5/8" Rebar with 2" Aluminum Cap
1501	1785030.7526	771324.6718	436.577	CTL	*5/8" Rebar with 2" Aluminum Cap
1502	1783032.5877	776991.2880	371.752	CTL	*5/8" Rebar with 2" Aluminum Cap
1503	1782260.0423	777349.7700	364.806	CTL	*5/8" Rebar with 2" Aluminum Cap

Note - Rebar and Cap - Standard -" 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 0.999906176 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. s030387gi.CTL
HORIZONTAL DATUM: NAD 83 (1997)
VERTICAL DATUM: NAVD 88 POSITIONAL ACCURACY THIRD ORDER, UNLESS SPECIFIED OTHERWISE AT A SPECIFIC POINT.

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

BASIS OF BEARING:
ARKANSAS STATE PLANE GRID BEARINGS - 0302-SOUTH ZONE
DETERMINED FROM GPS CONTROL POINTS: 290021-290021A
CONVERGENCE ANGLE: 0-59-43.01 LEFT AT LT: 33-56-57.9 LG: 093-46-41.8
GRID AZIMUTH = ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. PUGETT
10-19-11

CONST

POINT NO.	TYPE	STATION	NORTHING	EASTING
8000	POB	100+00.00	1784024.2312	772288.2976
8001	PI	102+00.00	1784014.3330	772488.0525
8002	PI	103+20.02	1784006.3966	772607.8065
8003	PI	112+12.32	1783963.2565	773499.0666
8004	PI	113+32.34	1783959.5149	773619.0249
8005	PI	116+00.04	1783945.9776	773886.3819
8006	PI	117+20.05	1783937.9118	774006.1273
8007	PI	128+09.58	1783883.0261	775094.2708
8008	POE	129+29.60	1783878.6974	775214.2093

DETOUR

POINT NO.	TYPE	STATION	NORTHING	EASTING
8020	POB	201+00.00	1784019.2821	772388.1751
8021	PC	201+02.94	1784019.1365	772391.1129
8023	PT	202+96.55	1783992.4976	772582.6230
8024	PC	204+07.28	1783967.5853	772690.5200
8026	PT	206+00.84	1783940.9490	772881.9789
8027	PC	224+06.66	1783851.4927	774685.5828
8029	PT	226+00.16	1783859.0446	774878.6747
8030	PC	227+09.28	1783872.9459	774986.9079
8032	PT	229+06.24	1783880.3202	775183.4688
8033	POE	229+37.03	1783878.6974	775214.2094

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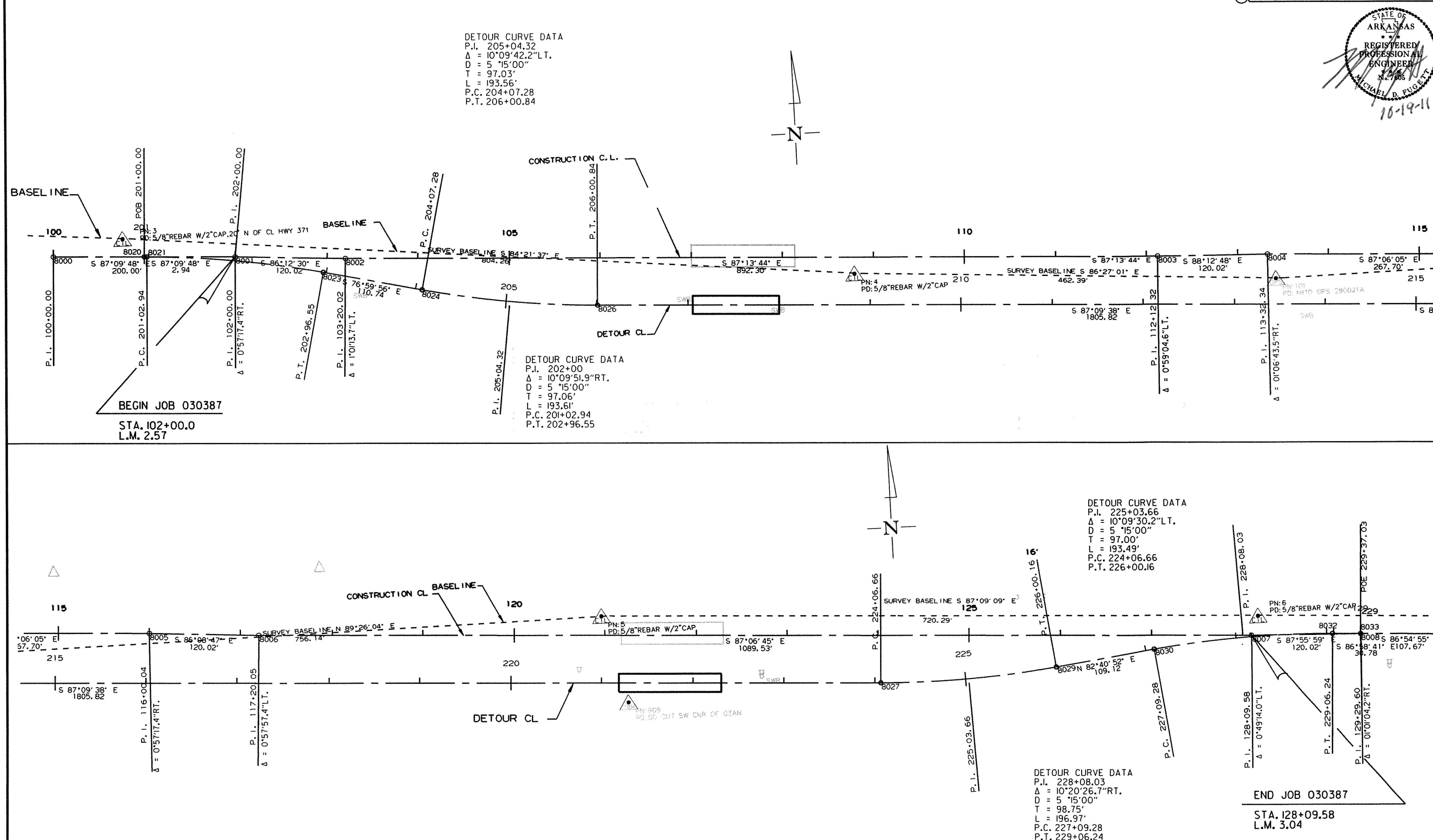
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		030387	18	71

(2) SURVEY CONTROL DETAILS



SURVEY CONTROL DETAILS

R030387.DGN 10/14/2011

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.		030387	19	71

(2) PLAN & PROFILE STA. 100+00 TO STA. 115+00

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
M. D. FUGETT
10-19-11

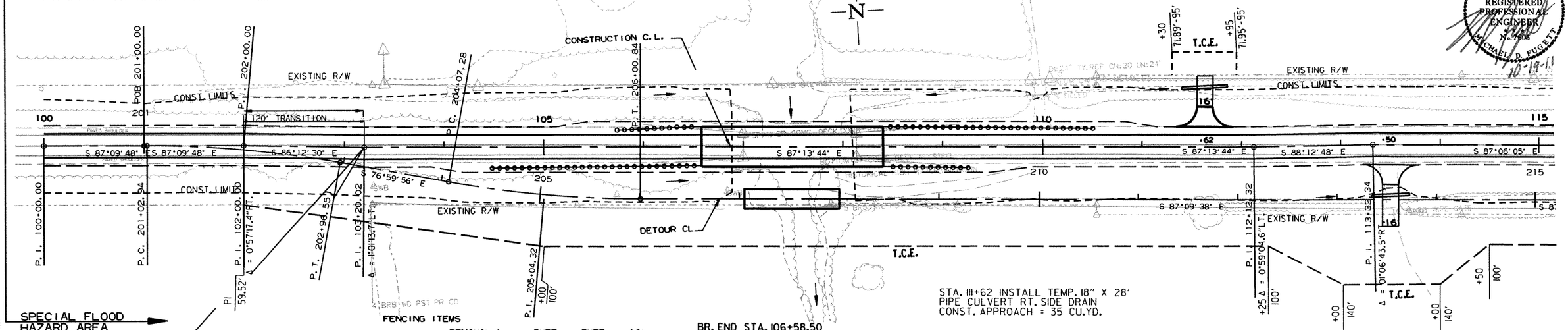
SPECIAL FLOOD HAZARD AREA

STATION	STATION	SIDE	GUARDRAIL (TYPE A) LIN. FT.	THRIE BEAM GUARDRAIL TERMINAL EACH	TERMINAL ANCHOR POSTS (TYPE 1) EACH
104+30.35	106+49.10	RT.	200	1	1
105+55.35	106+49.10	LT.	75	1	1
108+48.90	109+42.65	RT.	75	1	1
108+48.90	110+67.65	LT.	200	1	1

STA. 106+99.98 - STA. 108+14.16 IN PLACE (114' X 24' CLEAR ROADWAY BRIDGE) CONSISTING OF 5 SPAN CONC. DECK BRIDGE, REMOVE AS EXISTING BRIDGE STRUCTURE (SITE NO. 1) = 1.00 LUMP SUMS

STA. 109+98 IN PLACE 24" X 24' RCP LT. SIDE DRAIN REMOVE

STA. 111+62 INSTALL 30" X 46' PIPE CULVERT LT. SIDE DRAIN CONST. APPROACH = 115 CU.YD.



STA. 111+62 INSTALL TEMP. 18" X 28' PIPE CULVERT RT. SIDE DRAIN CONST. APPROACH = 35 CU.YD.

STA. 113+50 INSTALL 30" X 38' PIPE CULVERT RT. SIDE DRAIN RT. CONSTRUCT APPROACH = 95 CU.YD.

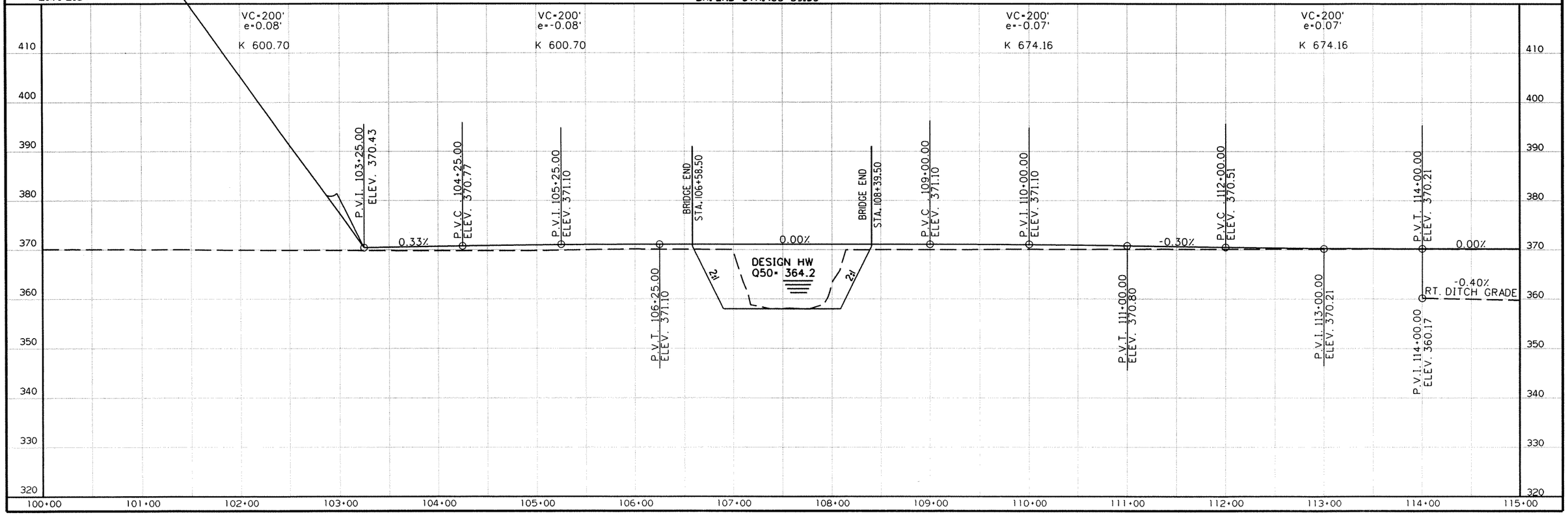
SPECIAL FLOOD HAZARD AREA

BEGIN JOB 030387
STA. 103+20.02
L.M. 2.57

STATION	STATION	SIDE	REMOVAL & DISPOSAL LIN. FT.	TYPE D-1 LIN. FT.	TYPE D-2 LIN. FT.	16' GATE EACH
103+32	113+42	RT.	837	1010		
111+62		LT.				1
113+58	120+76.50	RT.	766	756		
115+50	120+76.50	LT.	504		661	

BR. END STA. 106+58.50
BRIDGE NO. 07214
40'-00" CLEAR ROADWAY
181'-0" TOTAL LENGTH
180'-0" CONTINUOUS COMPOSITE INTEGRAL W-BEAM UNIT
(55', 70', 55')
BR. END STA. 108+39.50

NOTE: ENTIRE PROJECT CONSTRUCTION AREA IS LOCATED IN SPECIAL FLOOD HAZARD AREA.



R030387.DGN 10/17/2011

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		030387	20	71

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

(2) PLAN & PROF. STA. 115+00 TO STA. 129+29.60

GUARDRAIL (TYPE A)

STATION	STATION	SIDE	GUARDRAIL (TYPE A) LIN. FT.	THRIE BEAM GUARDRAIL TERMINAL EACH	TERMINAL ANCHOR POSTS (TYPE 1) EACH
118+48.35 -	120+67.10	RT.	200	1	1
119+73.35 -	120+67.10	LT.	75	1	1
122+66.90 -	123+60.65	RT.	75	1	1
122+66.90 -	124+85.65	LT.	200	1	1

FENCING ITEMS

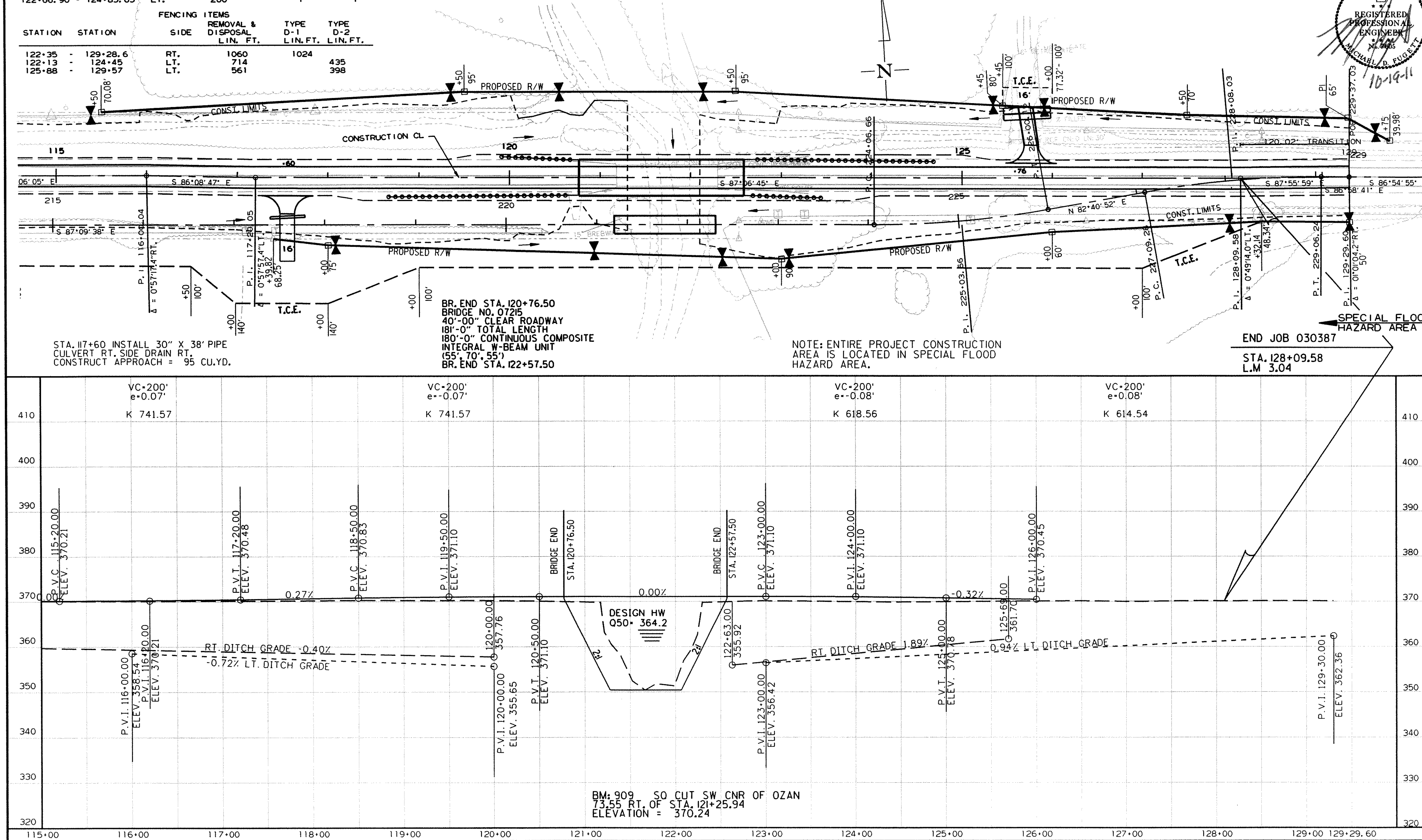
STATION	STATION	SIDE	REMOVAL & DISPOSAL LIN. FT.	TYPE D-1 LIN. FT.	TYPE D-2 LIN. FT.
122+35 -	129+28.6	RT.	1060	1024	
122+13 -	124+45	LT.	714		435
125+88 -	129+57	LT.	561		398

STA. 121+18.05 - STA. 122+30.05 IN PLACE (112' X 24' CLEAR ROADWAY BRIDGE) CONSISTING OF 5 SPAN CONC. DECK BRIDGE. REMOVE AS EXISTING BRIDGE STRUCTURE (SITE NO. 2) = 1.00 LUMP SUM

STA. 125+76 IN PLACE 109+96
96" X 30' RCP
REMOVE AND INSTALL DBL. 78" X 52' PIPE CULVERT LT. SIDE DRAIN
CONST. APPROACH = 160 CU.YD.

SPECIAL FLOOD HAZARD AREA

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 6405 MICHAEL D. FUGETT 10-19-11



DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		030387	21	71

(2) PLAN & PROFILE STA. 201+00-STA. 214+50

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
10-19-11

P. I. 205+04.32
P. C. 204+07.28
P. T. 206+00.84
Delta: 10°09' 42.2" LT.
Degree: 5°15' 00.00"
Tangent: 97.03'
Length: 193.56'
e = 0.086 '/'
Ls = 300'

STA. 111+62 INSTALL TEMP. 18" X 28' PIPE CULVERT ON RT. SIDE DRAIN CONST. APPROACH =35 CU.YD.

CONSTRUCTION C.L.
CONST. LIMITS
EXISTING R/W
DETOUR CL.
DET. CONST. LIMITS
T.C.E.
POB 201+00.00
P.I. 100+00.00
P.C. 201+02.94
P.I. 202+00.00
P.C. 204+07.28
P.T. 206+00.84
P.T. 202+96.55
P.I. 103+20.02
Δ = 10°13.7' LT.
P.I. 205+04.32
+00 100'
+30 71.89'-9
+95 71.95'-9
P.I. 112+12.32
Δ = 0°59'04.6" T.
+25 100'
+00 140'
P.I. 113+32.34
Δ = 01°06'43.5" RT.
+00 140'
+50 100'
S 87°09' 48" E
S 86°12' 30" E
S 76°59' 56" E
S 87°13' 44" E
S 87°09' 38" E
S 88°12' 48" E
S 87°06' 05" E
S 87°

P. I. 202+00.00
P. C. 201+02.94
P. T. 202+96.55
Delta: 10°09' 51.9" RT.
Degree: 5°15' 00.00"
Tangent: 97.0586
Length: 193.6078
NO SUPER

P.I. 102+00.00
Δ = 0°57'17.4" RT.
PI 59.52'

STA.207+05 - STA.208+00 CONSTRUCT TEMPORARY 95' X 24' CLEAR ROADWAY DETOUR BRIDGE (SEE BRIDGE PLANS FOR DETAILS)

STA. 113+50 INSTALL TEMP. 18" X 36' PIPE CULVERT ON RT. SIDE DRAIN CONST. APPROACH = 65 CU.YD.

BEGIN DETOUR - JOB 030387
STA. 201+00.00

NOTE: ENTIRE PROJECT CONSTRUCTION AREA IS LOCATED IN SPECIAL FLOOD HAZARD AREA.

DETOUR

STA. 203+04.00 BEGIN SUPERELEVATION
STA. 205+03.00 MAX. SUPERELEVATION (0.057 '/')
STA. 205+04.00 MAX. SUPERELEVATION (0.057 '/')
STA. 207+03.00 END SUPERELEVATION

VC=200'
e=0.01'
K 3554.22

STREAM	STATION	STREAM TYPE	TOP OF CHANNEL ELEVATION
OZAN CREEK RELIEF	107+00 - 108+15	INTERMITTENT	260 FT. MSL
OZAN CREEK	121+20 - 122+25	PERENNIAL	256 FT. MSL

P.V.I. 201+00.00 ELEV. 370.05
P.V.I. 202+96.55 ELEV. 369.95
P.V.C. 204+40.00 ELEV. 369.86
P.V.I. 205+40.00 ELEV. 369.80
P.V.T. 206+40.00 ELEV. 369.80
STA. 207+05 DETOUR BRIDGE END
STA. 208+00 DETOUR BRIDGE END
-0.06%
0.00%
1:1
2:1

400 390 380 370 360 350 340 330 320

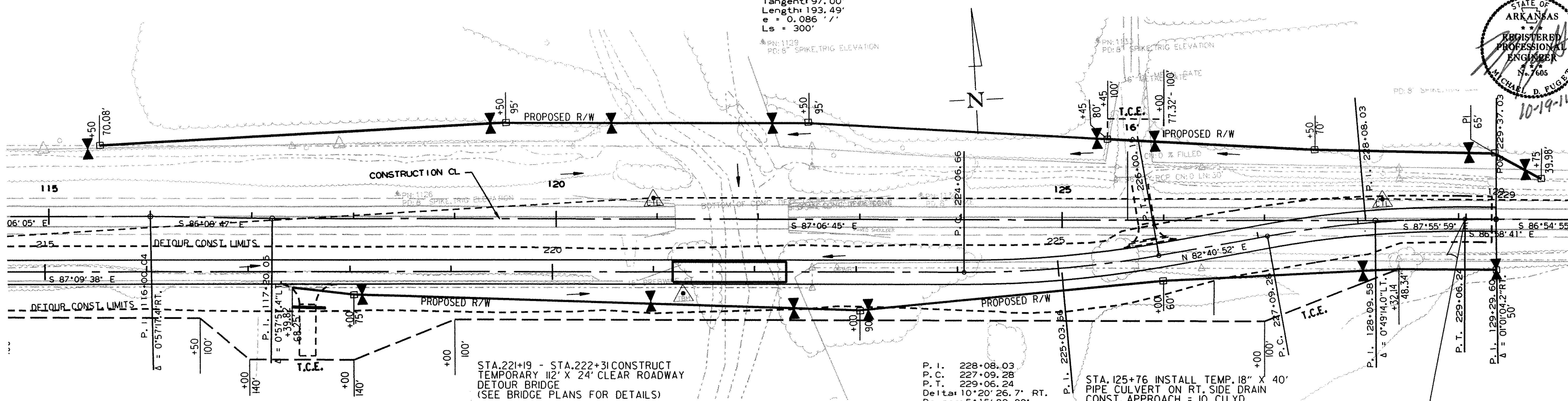
200+00 201+00 202+00 203+00 204+00 205+00 206+00 207+00 208+00 209+00 210+00 211+00 212+00 213+00 214+00 215+00

R030387.DGN 10/12/2011

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 7605 MICHAEL D. FUGETT
10-19-11

P.I. 225+03.66
P.C. 224+06.66
P.T. 226+00.16
Delta: 10°09'30.2" LT.
Degree: 5°15'00.00"
Tangent: 97.00'
Length: 193.49'
e = 0.086 '/'
Ls = 300'

STA. 125+76 INSTALL TEMP. 18" X 28' PIPE CULVERT ON RT. SIDE DRAIN
CONST. APPROACH = 10 CU.YD.



STA. 117+60 INSTALL TEMP. 18" X 36' PIPE CULVERT ON RT. SIDE DRAIN
CONST. APPROACH = 65 CU.YD.

STA. 221+19 - STA. 222+31 CONSTRUCT TEMPORARY 112' X 24' CLEAR ROADWAY DETOUR BRIDGE
(SEE BRIDGE PLANS FOR DETAILS)

NOTE: ENTIRE PROJECT CONSTRUCTION AREA IS LOCATED IN SPECIAL FLOOD HAZARD AREA.

P.I. 228+08.03
P.C. 227+09.28
P.T. 229+06.24
Delta: 10°20'26.7" RT.
Degree: 5°15'00.00"
Tangent: 98.75'
Length: 196.97'
NO SUPER

STA. 125+76 INSTALL TEMP. 18" X 40' PIPE CULVERT ON RT. SIDE DRAIN
CONST. APPROACH = 10 CU.YD.

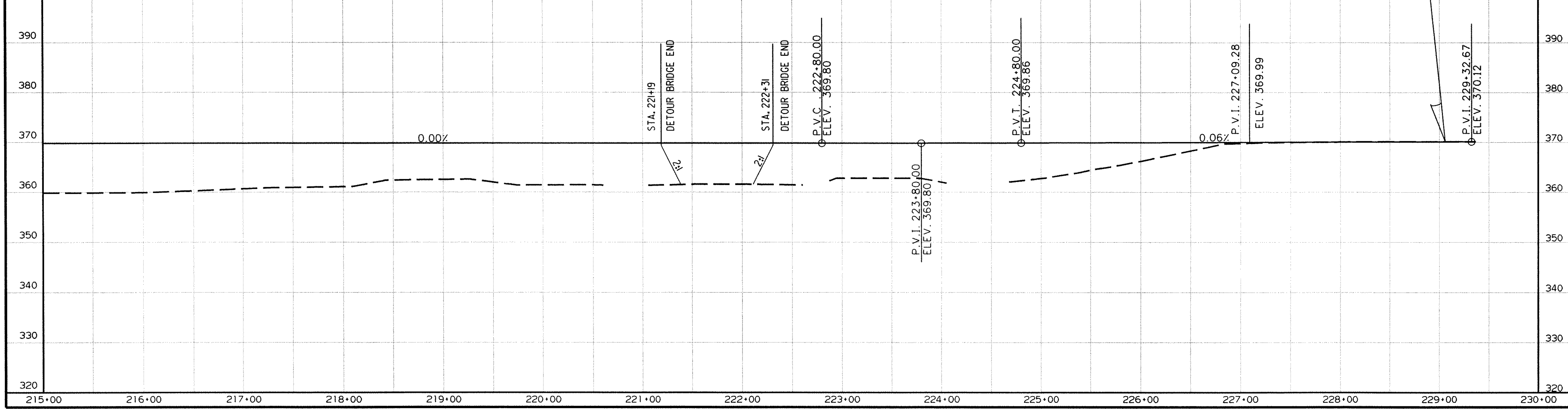
END DETOUR - JOB 030387
STA. 229+06.24

DETOUR

VC=200'
e=0.01'
K 3465.57

STA. 222+99.00 BEGIN SUPERELEVATION
STA. 225+03.00 MAX. SUPERELEVATION (0.058 '/')
STA. 225+04.00 MAX. SUPERELEVATION (0.058 '/')
STA. 227+08.00 END SUPERELEVATION

STREAM	STATION	STREAM TYPE	TOP OF CHANNEL ELEVATION
OZAN CREEK RELIEF	107+00 - 108+15	INTERMITTENT	260 FT. MSL
OZAN CREEK	121+20 - 122+25	PERENNIAL	256 FT. MSL



R030387.DGN 10/12/2011

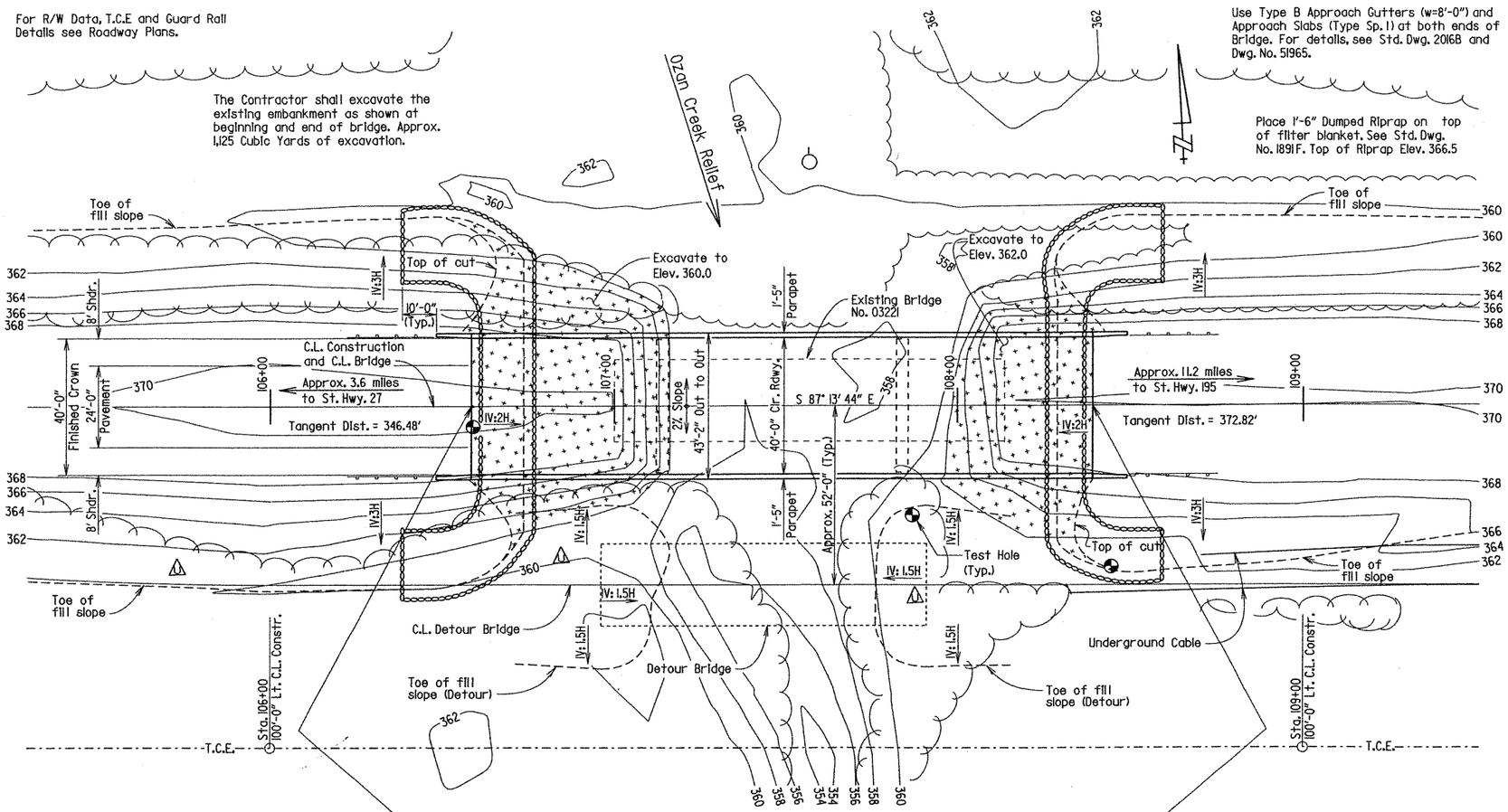
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		030387	25	27
				07214		LAYOUT	51954	

For R/W Data, T.C.E and Guard Rail Details see Roadway Plans.

The Contractor shall excavate the existing embankment as shown at beginning and end of bridge. Approx. 1,125 Cubic Yards of excavation.

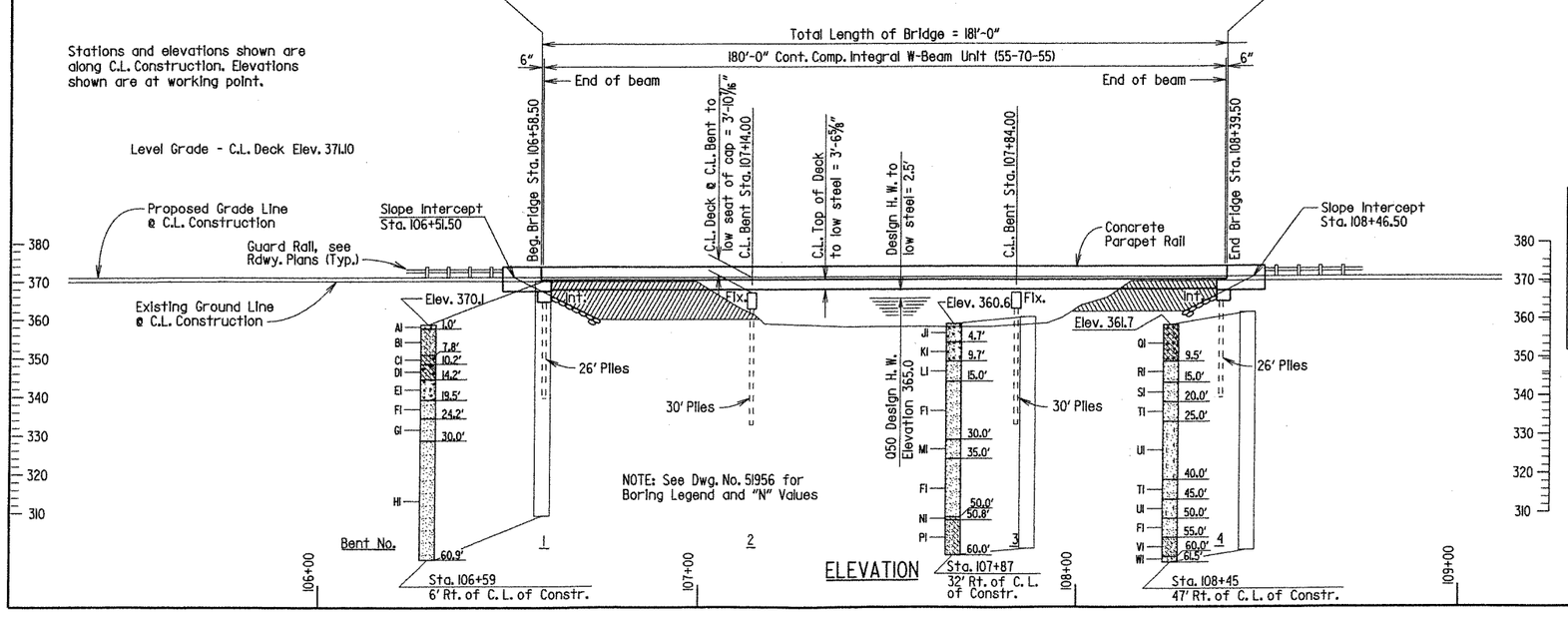
Use Type B Approach Gutters (w=8'-0") and Approach Slabs (Type Sp. 1) at both ends of Bridge. For details, see Std. Dwg. 2016B and Dwg. No. 51965.

Place 1'-6" Dumped Riprap on top of filter blanket. See Std. Dwg. No. 1891F. Top of Riprap Elev. 366.5



PLAN

Stations and elevations shown are along C.L. Construction. Elevations shown are at working point.



NOTE: See Dwg. No. 51956 for Boring Legend and "N" Values

ELEVATION

GENERAL NOTES

BENCH MARK: 909 Chiseled Square on SW corner of Bridge, 12.00' Rt. of Sta. 121+25.94, Elevation 370.24

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, section and subsection numbers in the plans refer to the Construction Specifications.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications 5th Edition (2010), with 2010 interims.

LIVE LOADING: HL-93

SEISMIC ZONE : 1 S_{D1} = 0.125 SITE CLASS = D

MATERIALS AND STRENGTHS:

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

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

CONCRETE PILING: Piling for Bents 1 and 4 shall be 16" square prestressed concrete and shall be driven with an approved air, steam or diesel hammer to a minimum safe bearing capacity of 60 tons. Drive all piles at Bents 1 and 4 to a minimum penetration of 20 feet below the bottom of cap. Piling for bents 2 and 3 shall be 18" square prestressed concrete and shall be driven with an approved air, steam or diesel hammer to a minimum safe bearing capacity of 75 tons. Drive all piles at Bents 2 and 3 to a minimum penetration of 20' below channel bottom. Length of piling shown are for estimating quantities and for use in determining payment for cut-off and build-up in accordance with the standard specifications. Piles in end bents to be driven after embankment to bottom of cap is in place. Drive one 31' test pile in Bent 1 and one 35' test pile in Bent 3.

PREBORING: Preboring is required for piling at all bents. Prebored holes at Bents 1 and 4 shall have a diameter 6" greater than the greatest cross-sectional dimension of the pile for a depth of 10' below the bottom of the cap. Additional preboring may be required to obtain minimum penetration. The void space around the pile after completion of driving shall be backfilled with sand or pea gravel for 10' below the bottom of the cap. Any preboring below 10' of the bottom of the cap shall be in accordance with subsection 805.08(a). Preboring at Bents 2 and 3 will be required to obtain minimum penetration and shall be in accordance with subsection 805.08(a). The Contractor shall be responsible for keeping prebored holes free of debris prior to backfilling, which may require the use of temporary casing or other approved methods. Any related cost for backfilling and temporary casing will not be paid for separately but shall be considered subsidiary to the item "Preboring". Preboring will be paid for in accordance with section 805.

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.

DETAIL DRAWINGS:

	DRAWING NO.
Bents	51957
180' Integral W-Beam Unit	51958 - 51962
Elastomeric Bearings	51963
Concrete Piles	51964
Type Special 1 Approach Slab	51965
Type B Approach Gutters	2016B

EXISTING BRIDGE: Existing Bridge No. 03221 (Log Mile 2.64) is 25.1' wide and 114' long and consists of six 19' precast concrete spans supported by steel pile bents.

TEMPORARY BRIDGE: Construct a 95'-0" long (minimum) temporary bridge approximately 52'-0" downstream from centerline construction with a C.L. deck minimum elevation of 364.3 feet. See roadway plans for actual detour grade and alignment. The temporary bridge shall have a minimum span length of 19'-0", a minimum clear roadway width of 24'-0", and a minimum live load capacity of HS5. A timber deck will not be allowed. If timber piling and pine timber are used on this temporary bridge structure the materials shall be treated with a preservative according to the Standard Specifications. See Section 603 and Std. Drawing numbers 2465, 2466, and 2467 for temporary bridge details.

REMOVAL AND SALVAGE: After the detour bridge is completed and opened to traffic, existing Bridge No. 03221 shall be removed in accordance with Section 205 of the Standard Specifications. All salvageable approach guard rail, bridge rail posts and bolts, precast units, concrete guard rail posts, concrete guard rail blocks and H-piles, as determined by the Engineer, shall remain the property of the Department. The Contractor shall coordinate with the Engineer to provide temporary storage and on site loading onto Department equipment for removal of all salvaged items. All other material from the existing bridge shall become the property of the Contractor. Concrete rubble used for bank stabilization shall be considered part of the existing bridge.

MAINTENANCE OF TRAFFIC: See Roadway Plans.

HYDRAULIC DATA

FLOOD DESCRIPTION	FREQUENCY	②TOTAL DISCHARGE	DISCHARGE THRU BRIDGE OPENING	①NATURAL WATER SURFACE ELEVATION	WATER SURFACE ELEVATION W/ BACKWATER
	YEARS	CFS	CFS	FEET	FEET
Design	50	17,800	7,360	364.3	366.4
Base	100	21,500	9,010	364.7	367.3
Extreme	500	25,600	10,810	365.2	369.3
Overtopping	>500	—	—	—	—

① Unconstricted water surface elevation without structure and roadway approaches.

② Includes Bridges No. 07214 and 07215.

Estimated 100-Year backwater elevation with Existing Structures in place is 370.2 ft.

Proposed Low Bridge Member Elevation = 367.55

Drainage area = 28.8 square miles (Includes relief structure over Ozan Creek).

Historical H.W. Elev. = 370.7 ft.

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

BRIDGE ENGINEER

LAYOUT OF BRIDGE OVER OZAN CREEK RELIEF OZAN CREEK & RELIEF STRS. & APPRS. (S) HEMPSTEAD COUNTY

ROUTE US 371 SEC. 3

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 12/08/10 FILENAME: b030387_lll.dgn

CHECKED BY: QHP DATE: 3-23-11 SCALE: 1"=20'-0"

DESIGNED BY: CSL DATE: Dec 2010

BRIDGE NO. 07214 DRAWING NO. 51954

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.		030387	24	71
				① 07215		LAYOUT	51955	

For R/W Data, T.C.E and Guard Rail Details see Roadway Plans.

Use Type B Approach Gutters (w=8'-0") and Approach Slabs (Type Sp.1) at both ends of Bridge. For details, see Std. Dwg. 2016B and Dwg. No. 51965.

Place 1'-6" Dumped Riprap on top of filter blanket. See Std. Dwg. No. 1891F. Top of Riprap Elev. 366.5

Ozan Creek

Toe of fill slope

Top of cut

Excavate to Elev. 362.0

Existing Bridge No. 03026

1'-5" Parapet

25'-0"

8' Shdr.

1V:3H

C.L. Construction and C.L. Bridge

Approx. 3.9 miles to St. Hwy. 27

Tangent Dist. = 356.45'

S 81° 06' 45" E

40'-0" Finished Crown

24'-0" Pavement

120+00

121+00

122+00

123+00

2% Slope Out to Out

43'-2" Out to Out

40'-0" Clr. Rdwy.

Approx. 52'-0" (Typ.)

1V:2H

1V:1.5H

Approx. 10.9 miles to St. Hwy. 195

Tangent Dist. over 500'

Test Hole (Typ.)

10'-0"

Toe of fill slope

Underground Cable

C.L. Construction - Detour Bridge

Toe of fill slope (Detour)

Detour Bridge

Sta. 119+75 100'-0" Lt. C.L. Constr.

Sta. 123+25 100'-0" Lt. C.L. Constr.

T.C.E.

The Contractor shall excavate the existing embankment as shown at beginning and end of bridge. Approx. 868 Cubic Yards of excavation.

PLAN

Stations and elevations shown are along C.L. Construction. Elevations shown are at working point.

Total Length of Bridge = 181'-0"

6" 180'-0" Cont. Comp. Integral W-Beam Unit (55-70-55) 6"

End of Beam — End of Beam

Beg. Bridge Sta. 120+76.50

C.L. Deck @ C.L. Bent to low seat of cap = 3'-10⅞"

C.L. Bent Sta. 121+32.00

C.L. Top of Deck to low steel = 3'-6⅝"

Design H.W. to low steel = 2.2'

C.L. Bent Sta. 122+02.00

End Bridge Sta. 122+57.50

Level Grade - C.L. Deck Elev. 371.10

Proposed Grade Line @ C.L. Construction

Slope Intercept Sta. 120+69.50

Guard Rail, see Rdwy. Plans (Typ.)

Existing Ground Line @ C.L. Construction

Concrete Parapet Rail

Slope Intercept Sta. 122+64.50

Elev. 369.2

Elev. 369.9

Int.

Fix.

34' Piles

37' Piles

35' Piles

Q50 Design H.W. Elevation 365.3

NOTE: See Dwg. No. 51956 for Boring Legend and "N" Values

Bent No.	1		2		3		4	
	X1	9.5'					A1	1.0'
	Y1	15.0'					G2	9.2'
	Z1	25.0'					H2	14.2'
	A2	30.0'					J2	20.0'
	B2	35.0'					K2	25.0'
	C2	40.0'					L2	30.0'
	B2	50.0'					E2	35.0'
	D2	55.0'					B2	40.0'
	E2	60.0'					F1	45.0'
	F2	60.8'					M2	50.0'
							N2	55.0'
							B2	60.0'
							E2	61.5'

Sta. 120+77 27' Rt. of C.L. of Constr.

Sta. 122+63 9' Rt. of C.L. of Constr.

ELEVATION

GENERAL NOTES

BENCH MARK: 909 Chiseled Square on SW corner of Bridge, 12.00' Rt. of Sta. 121+25.94, Elevation 370.24

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, section and subsection numbers in the plans refer to the Construction Specifications.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications 5th Edition (2010), with 2010 Interims.

LIVE LOADING: HL-93

SEISMIC ZONE : 1 S_{DI} = 0.125 SITE CLASS = D

MATERIALS AND STRENGTHS:

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

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

CONCRETE PILING: Piling for Bents 1 and 4 shall be 16" square prestressed concrete and shall be driven with an approved air, steam or diesel hammer to a minimum safe bearing capacity of 60 tons. Drive all piles at Bents 1 and 4 to a minimum penetration of 20 feet below the bottom of cap. Piling for bents 2 and 3 shall be 18" square prestressed concrete and shall be driven with an approved air, steam or diesel hammer to a minimum safe bearing capacity of 75 tons. Drive all piles at Bents 2 and 3 to a minimum penetration of 20' below channel bottom. Length of piling shown are for estimating quantities and for use in determining payment for cut-off and build-up in accordance with the standard specifications. Piles in end bents to be driven after embankment to bottom of cap is in place. Drive one 42' test pile in Bent 2 and one 40' test pile in Bent 4.

PREBORING: Preboring is required for piling at all bents. Prebored holes at Bents 1 and 4 shall have a diameter 6" greater than the greatest cross-sectional dimension of the pile for a depth of 10' below the bottom of the cap. The void space around the pile after completion of driving shall be backfilled with sand or pea gravel. Preboring at Bents 2 and 3 shall be in accordance with subsection 805.08(a) and is required to obtain minimum penetration. The Contractor shall be responsible for keeping prebored holes free of debris prior to backfilling, which may require the use of temporary casing or other approved methods. Any related cost for backfilling and temporary casing will not be paid for separately but shall be considered subsidiary to the item "Preboring". Preboring will be paid for in accordance with section 805.

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.

DETAIL DRAWINGS:	DRAWING NO.
Bents	51957
180' Integral W-Beam Unit	51958 - 51962
Elastomeric Bearings	51963
Concrete Piles	51964
Type Special 1 Approach Slabs	51965
Type B Approach Gutters	2016B

EXISTING BRIDGE: Existing Bridge No. 03026 (Log Mile 2.91) is 26.5' wide and 112' long and consists of four - 28' concrete slab spans supported by concrete bents with spread footings.

TEMPORARY BRIDGE: Construct a 112'-0" long (minimum) temporary bridge approximately 50'-0" downstream from centerline construction with a C.L. deck minimum elevation of 364.3 feet. See roadway plans for actual detour grade and alignment. The temporary bridge shall have a minimum span length of 25'-0", a minimum clear roadway width of 24'-0", and a minimum live load capacity of H15. A timber deck will not be allowed. If timber piling and pine timber are used on this temporary bridge structure the materials shall be treated with a preservative according to the Standard Specifications. See Section 603 and Std. Drawing numbers 2465, 2466, and 2467 for temporary bridge details.

REMOVAL AND SALVAGE: After the detour bridge is completed and opened to traffic, existing Bridge No. 03026 shall be removed in accordance with Section 205 of the Standard Specifications. Remove spread footing foundation in its entirety to avoid interference with new construction. All salvageable concrete guard rail posts, guard rails and concrete guard rail blocks, as determined by the Engineer, shall remain the property of the Department. The Contractor shall coordinate with the Engineer to provide temporary storage and on site loading onto Department equipment for removal of all salvaged items. All other material from the existing bridge shall become the property of the Contractor. Concrete rubble used for bank stabilization shall be considered part of the existing bridge.

MAINTENANCE OF TRAFFIC: See Roadway Plans.

HYDRAULIC DATA

FLOOD DESCRIPTION	FREQUENCY	②TOTAL DISCHARGE	DISCHARGE THRU BRIDGE OPENING	①NATURAL WATER SURFACE ELEVATION	WATER SURFACE ELEVATION W/ BACKWATER
	YEARS	CFS	CFS	FEET	FEET
Design	50	17,800	10,440	364.3	366.4
Base	100	21,500	12,490	364.7	367.3
Extreme	500	25,600	14,790	365.2	369.3
Overtopping	>500	—	—	—	—

① Unconstricted water surface elevation without structure and roadway approaches.

② Includes Bridge Nos. 07214 and 07215.

Estimated 100-Year backwater elevation with existing structures in place is 370.2 ft.

Proposed Low Bridge Member Elevation = 367.55 (Includes relief structure over Ozan Creek Relief.)

Drainage area = 28.8 square miles. (Includes relief structure over Ozan Creek).

Historical H.W. Elev. = 370.7 ft.

STATE OF ARKANSAS Carl S. Fuselier REGISTERED PROFESSIONAL ENGINEER No. 7510 CARL S. FUSELIER 5/5/11

BRIDGE ENGINEER

LAYOUT OF BRIDGE OVER OZAN CREEK OZAN CREEK & RELIEF STRS. & APPRS. (S) HEMPSTEAD COUNTY

ROUTE 371 SEC. 3

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 12/08/10 FILENAME: b030387_121.dgn

CHECKED BY: DHP DATE: 3-23-11 SCALE: 1"=20'-0"

DESIGNED BY: CSL DATE: Dec 2010

BRIDGE NO. 07215 DRAWING NO. 51955

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.		030387	26	71
				① 07214,07215		LAYOUT		51956

BORING LEGEND

AI-Asphalt Pavement
BI-Moist, Medium Dense, Reddish Brown and Gray Sand with Clay and Trace of Gravel and Organic Matter
CI-Moist, Very Soft, Gray Clay with Sand and Organic Matter
DI-Wet, Very Soft, Gray Clay with Sand and Organic Matter ①
EI-Wet, Medium Dense, Gray Gravel with Sand
FI-Wet, Very Dense, Gray Sand
GI-Wet, Dense, Gray Sand
HI-Wet, Very Dense, Gray Sand with Cemented Sand Seams
JI-Dry, Very Dense, Brown Sand with Gravel, Concrete Fragments, and some Clay ②
KI-Moist, Very Dense, Brown Sand with Gravel
LI-Wet, Medium Dense, Brown to Gray Sand with some Gravel and Organic Matter
MI-Wet, Very Dense, Gray Sand with some Organic Matter (Wood)
NI-Wet, Very Hard, Gray Clay
PI-Wet, Very Dense, Gray Clayey Sand with some Organic Matter
QI-Wet, Very Stiff, Gray Clay with Sand and Gravel
RI-Wet, Very Dense, Gray Sand with some Organic Matter ③
SI-Wet, Very Dense, Gray Sand with some Organic Matter and Trace of Gravel
TI-Wet, Very Dense, Gray Sand with Trace of Gravel
UI-Wet, Very Dense, Gray Sand with Silt
VI-Wet, Very Dense, Gray Sand with Clay and Trace of Gravel
WI-Wet, Very Dense, Gray Sand with Clay
XI-Moist, Medium Dense, Brown Sand with Clay and some Organic Matter
YI-Moist, Loose, Brown Sand with Clay and some Organic Matter
ZI-Wet, Medium Dense, Gray to Brown Sand with Gravel
A2-Moist, Very Stiff, Gray Clay with Gravel
B2-Moist, Very Hard, Gray Clay
C2-Moist, Hard, Gray Clay
D2-Moist, Very Hard, Gray Clay with some Organic Matter
E2-Moist, Very Hard, Gray Clay with Sand
F2-Moist, Very Dense, Gray Sand with Clay
G2-Moist, Medium Dense, Brown Sand with Clay and Gravel
H2-Moist, Loose, Brown Sand with some Clay
J2-Moist, Loose, Brown Sand
K2-Wet, Medium Dense, Brown and Gray Gravel with Sand
L2-Wet, Very Dense, Gray Sand with Cemented Seams and Trace of Gravel and Organic Matter
M2-Wet, Very Hard, Gray Clay with Sand
N2-Moist, Very Hard, Gray Clay with Trace of Organic Matter

① A water stratum was encountered at 10.2'
② A water stratum was encountered at 3.8'
③ A water stratum was encountered at 10.0'

"N" VALUES

Sta. 106+59 - 6' Rt. of C. L. of Constr.

4.7- 5.7, N=20
9.7- 10.7, N=1
14.7- 15.7, N=12
19.7- 20.7, N=58
24.7- 25.7, N=47
30.5- 31.2, N=73(9")
35.5- 36.2, N=70(8")
40.5- 41.5, N=69
45.5- 45.9, N=60(5")
50.5- 50.9, N=60(5")
55.5- 55.9, N=60(5")
60.5- 60.9, N=60(5")

Sta. 107+87 - 32' Rt. of C. L. of Constr.

5.2- 5.3, N=44(1")
10.2- 11.2, N=14
15.5- 16.5, N=76
20.5- 21.5, N=78
25.5- 26.5, N=73
30.5- 31.5, N=75
35.5- 36.2, N=80(9")
40.5- 41.2, N=73(8")
45.5- 46.2, N=75(8")
50.5- 50.7, N=60(3")

Sta. 108+45 - 47' Rt. of C. L. of Constr.

5.0- 6.0, N=17
10.0- 11.0, N=67
15.5- 15.8, N=60(4")
20.5- 21.3, N=109(10")
25.5- 26.3, N=104(10")
30.5- 31.3, N=110(10")
35.5- 36.5, N=102
40.5- 41.0, N=60(6")
45.5- 46.5, N=99
50.5- 51.5, N=86
55.5- 56.5, N=68
60.5- 61.5, N=80

Sta. 120+77 - 27' Rt. of C. L. of Constr.

5.0- 6.0, N=19
10.0- 11.0, N=6
15.5- 16.5, N=14
20.5- 21.5, N=15
25.5- 26.5, N=17
30.5- 31.3, N=88(10")
35.5- 36.5, N=44
40.5- 41.3, N=109(10")
45.5- 45.9, N=60(5")
50.5- 51.1, N=107(7")
55.5- 55.9, N=60(5")
60.5- 60.8, N=60(4")

Sta. 122+63 - 9' Rt. of C. L. of Constr.

4.7- 5.7, N=13
9.7- 10.7, N=5
14.7- 15.7, N=5
20.5- 21.5, N=29
25.5- 26.2, N=86(8")
30.5- 31.5, N=85
35.5- 36.5, N=72
40.5- 41.2, N=78(8")
45.5- 46.1, N=79(7")
50.5- 51.5, N=68
55.5- 56.4, N=84(11")
60.5- 61.5, N=74

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
5/5/11
CARL J. FUSELIER

BRIDGE ENGINEER

BORING LEGEND OZAN CREEK & RELIEF

ROUTE US 371 SEC. 3

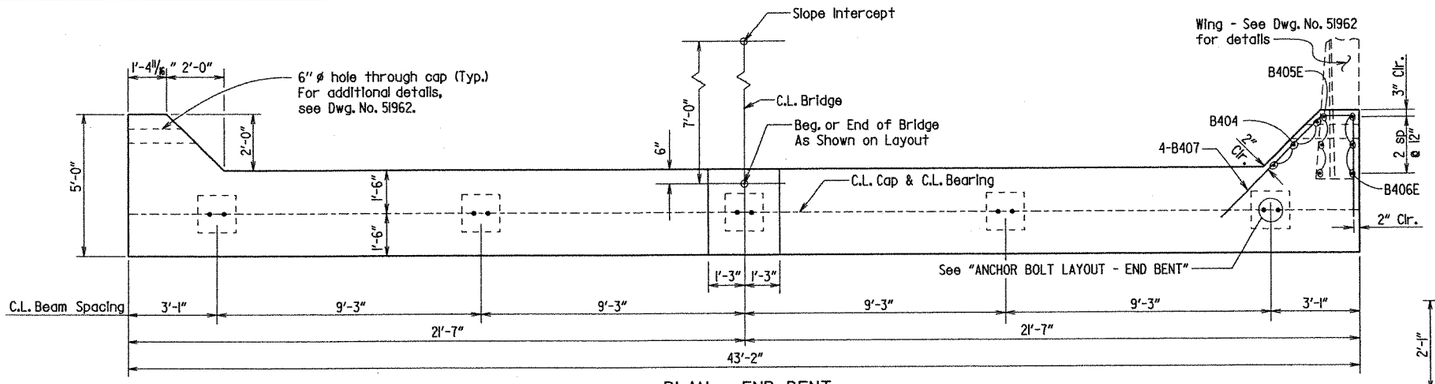
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

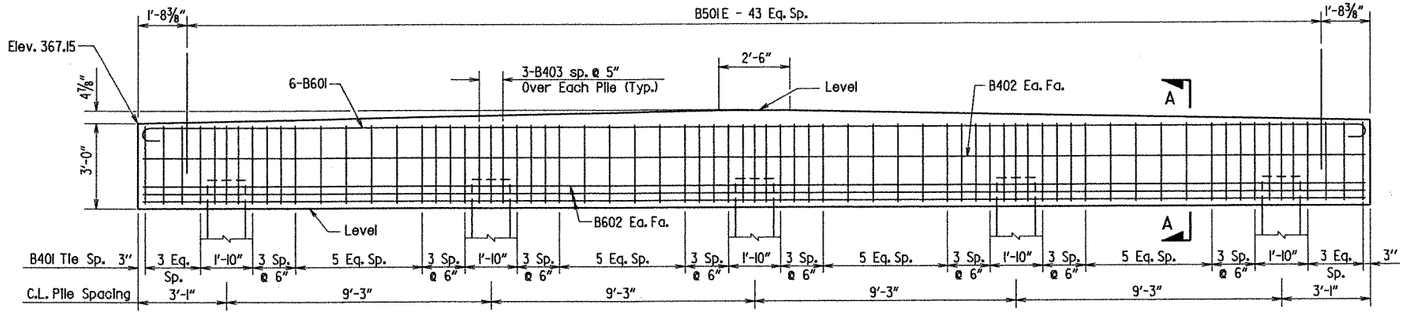
DRAWN BY: MRE DATE: 02/07/11 FILENAME: b030387_I22.dgn
CHECKED BY: CMW DATE: 2-8-11 SCALE: 1"=20'-0"
DESIGNED BY: —— DATE: ——

BRIDGE NO. 07214,07215 DRAWING NO. 51956

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.		030387	26	71
				(1) 07214,07215		DETAILS OF BENTS		51957

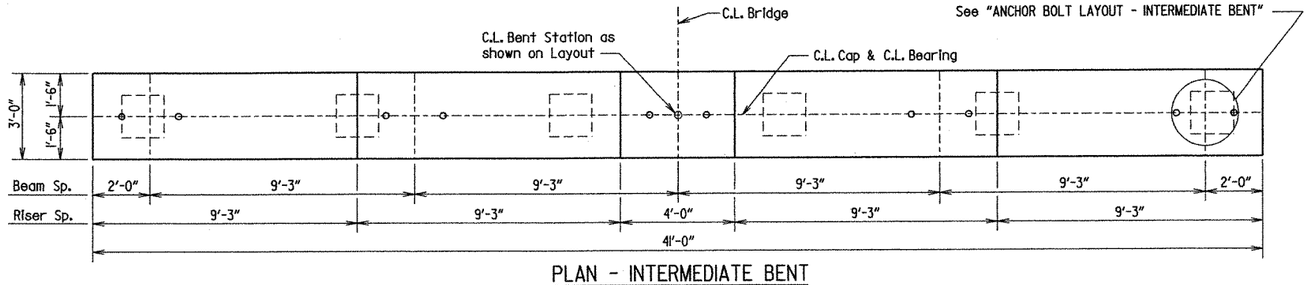


PLAN - END BENT

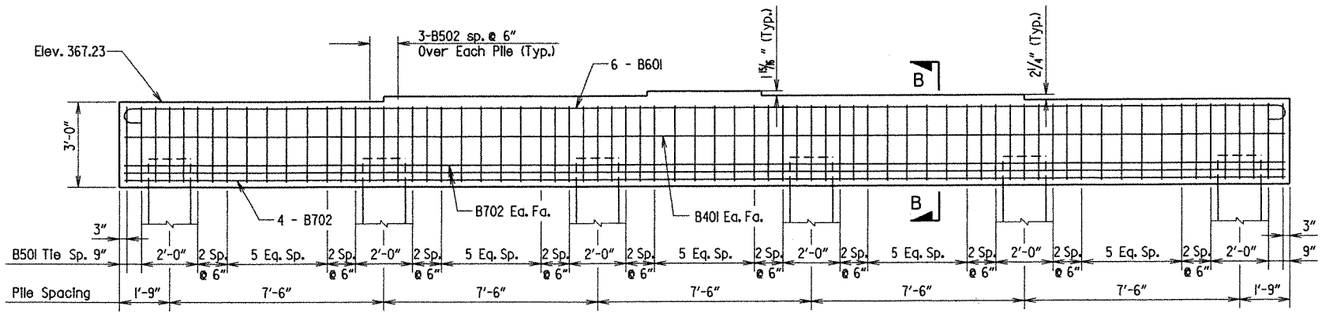


ELEVATION - END BENT

(Bent 1 - Looking Back)
(Bent 4 - Looking Ahead)

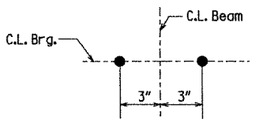


PLAN - INTERMEDIATE BENT



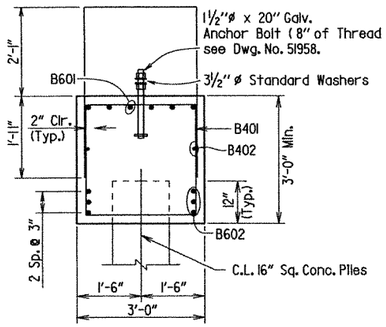
ELEVATION - INTERMEDIATE BENT

(Looking Ahead)



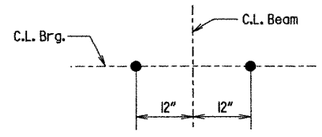
ANCHOR BOLT LAYOUT
END BENT

No Scale



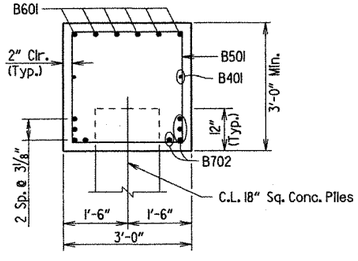
SECTION A-A

No Scale



ANCHOR BOLT LAYOUT
INTERMEDIATE BENT

No Scale

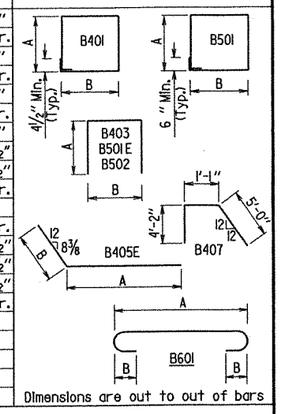


SECTION B-B

No Scale

BAR LIST (PER BENT)

	Mark	No. Req'd.	Length	A	B	Pin Dia.	Bending Diagrams
End Bent	B401	56	11'-0"	2'-8"	2'-8"	2"	
	B402	2	42'-10"	-	-	Str.	
	B403	15	7'-10"	2'-8"	2'-8"	2"	
	B404	6	4'-11"	-	-	Str.	
	B405E	6	7'-9"	6'-7"	1'-2"	2"	
	B406E	6	8'-11"	-	-	Str.	
	B407	8	10'-2"	-	-	2"	
	B501E	44	10'-6"	4'-0"	2'-8"	2½"	
	B601	6	44'-2"	42'-10"	6"	4½"	
	B602	6	42'-10"	-	-	Str.	
Int. Bent	B401	2	40'-8"	-	-	Str.	
	B501	54	11'-2"	2'-8"	2'-8"	2½"	
	B502	18	7'-10"	2'-8"	2'-8"	2½"	
	B601	6	42'-0"	40'-8"	6"	4½"	
	B702	8	40'-8"	-	-	Str.	



Dimensions are out to out of bars

GENERAL NOTES

All concrete shall be Class "S" with a minimum 28 day compressive strength of f'c = 3500 psi and shall be poured in the dry. All exposed corners to be chamfered ¾" unless otherwise noted.

All reinforcing steel shall conform to AASHTO M 31 or M 53, Gr. 60. (Yield strength = 60,000 psi.)

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

For anchor bolt details, see Dwg. No. 51958.

Bars with "E" suffix are Epoxy Coated.

Granular backfill and pipe underdrain required behind end bent caps. See Dwg. No. 51958.

For additional information, see Layout.

STATE OF ARKANSAS
CARL J. FUSELIER
REGISTERED PROFESSIONAL ENGINEER
No. 7510
5/5/11

BRIDGE ENGINEER

DETAILS OF BENTS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

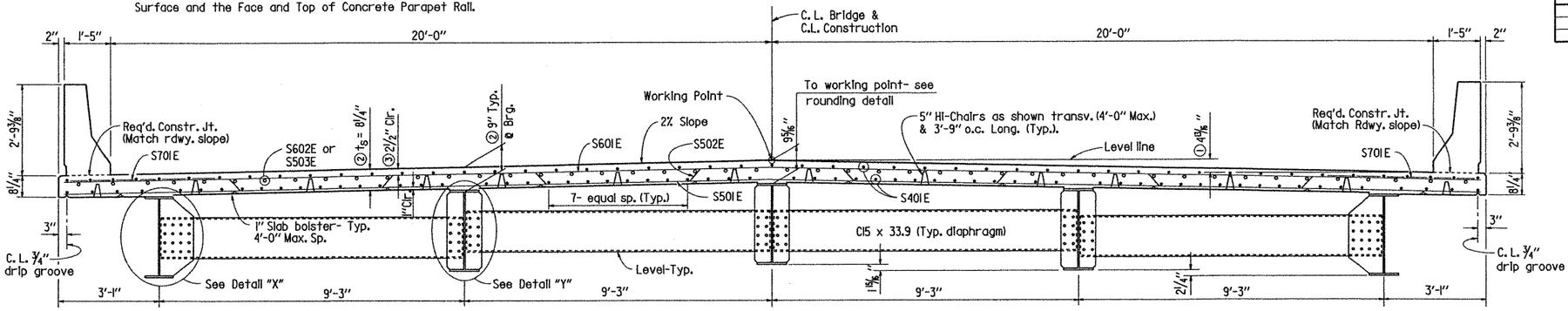
LITTLE ROCK, ARK.

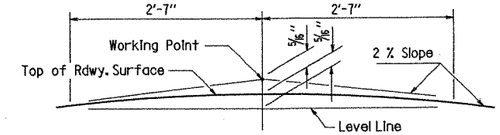
DRAWN BY: CMW DATE: 12/27/10 FILENAME: b030387_bl.dgn
CHECKED BY: RBR DATE: 3-30-11 SCALE: 3/8"= 1'-0" or as noted
DESIGNED BY: CMW DATE: 3-11

BRIDGE NO. 07214,07215 DRAWING NO. 51957

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.		030387	27	71
				(1) 07214,07215		SPAN DETAILS		51958

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





NOTE: Working Point matches Theoretical Roadway Grade.

ROUNDING DETAIL
No Scale

Slab Reinforcing:

Longitudinal: S401E Top & Bottom
S503E placed as shown at ends of unit (See Reinf. Plan)
S602E placed as shown over interior supports (See Reinf. Plan)

Transverse: S502E @ 15"o.c. bent up over beams — Alternate
S601E @ 15"o.c. in top, S501E @ 15"o.c. in bottom, —
S701E @ 15"o.c. in top (See Detail A on Dwg. No. 51960)

NOTE: At the Contractor's option, two straight epoxy coated #5 bars, top and bottom, may be substituted for bar S502E. Payment will be based on weight of S502E.

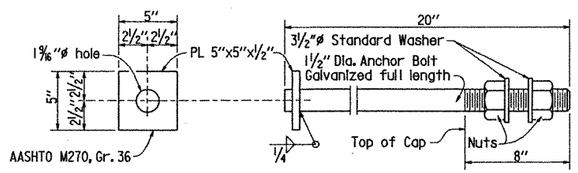
NOTE: Bars with an "E" suffix are epoxy coated.

① Working point to gutter line

② Tolerance: Minus = ¼"
Plus = Equal to amount of slab thickening used to meet slab thickness tolerance-
See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE"

③ See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE"

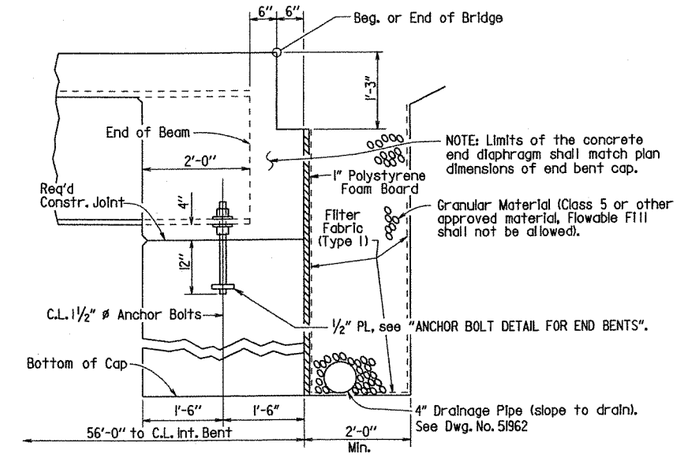
TYPICAL ROADWAY SECTION
½" = 1'-0"



Anchor Bolts and Nuts to be according to subsection 807.07 of the specifications. Washers shall be a standard washer. Anchor Bolts, Washers, and Nuts shall be paid for at the unit price bid for "Structural Steel In Beam Spans (M270, Gr. 50W)". All Anchor Bolts shall be Grade 55.

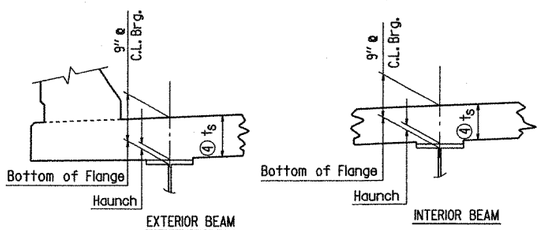
Use lower nut and washer to adjust to grade. Snug tight top nut and washer after grade is adjusted.

ANCHOR BOLT DETAIL FOR END BENTS
No Scale



SECTION AT END BENT
No Scale

NOTE: For additional details of pipe under drain see Std. Dwg. PU-1 and Section 611 of the Standard Specifications. Pipe under drains, 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".



④ Tolerance when removable deck forming is used is + ½", - ¼". Haunch forming is required and shall be adjusted to maintain slab thickness tolerance.

NOTES:

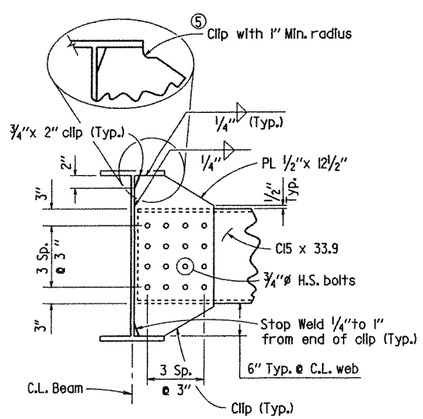
t_S = Slab thickness as shown on Typical Roadway Section.

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 1¾". No increase in concrete and structural steel quantities will be made to maintain tolerances.

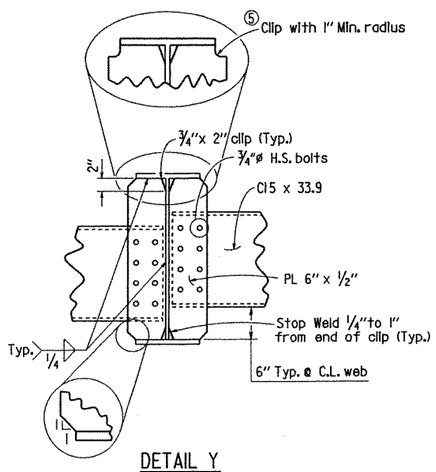
Tolerances shown are applicable only when removable deck forming is used. See Std. Dwg. No. 14991 for tolerances when permanent steel deck forms are used. Payment for concrete shall be based on removable deck forming.

ADJUSTMENT FOR SLAB THICKNESS TOLERANCE
No Scale

⑤ If permanent steel bridge deck forms are used, the Fabricator shall clip the plate as necessary to accommodate the deck form support.



DETAIL X
1"= 1'-0"



DETAIL Y
1"= 1'-0"

STATE OF ARKANSAS
Carl J. Fuselier
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No. 7510
5/5/11
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BRIDGE ENGINEER

SHEET 1 OF 5

DETAILS OF 180'-0" INTEGRAL W-BEAM UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

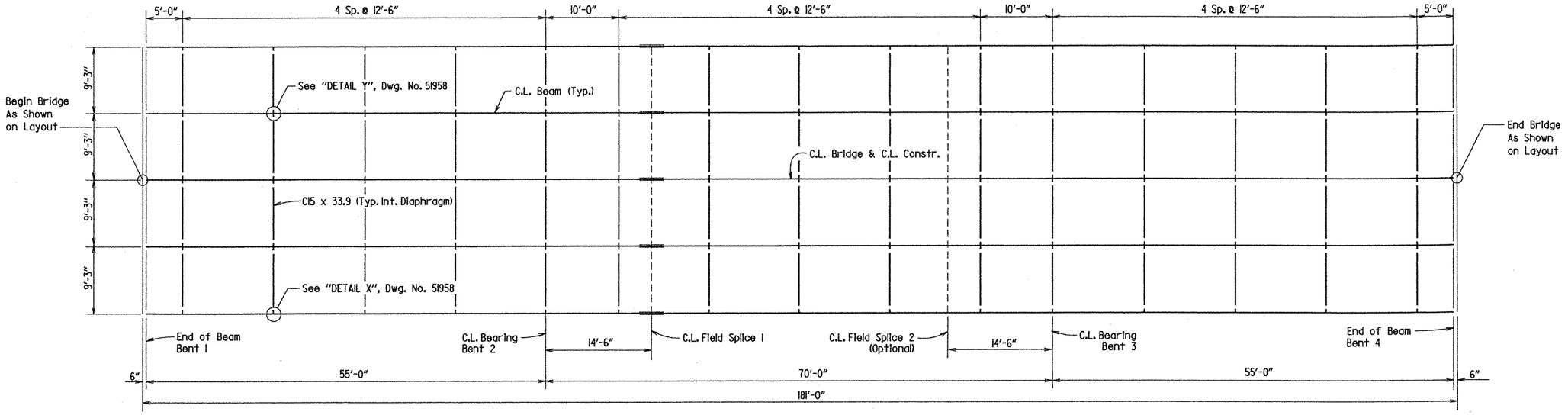
LITTLE ROCK, ARK.

DRAWN BY: CMW DATE: 01/28/11 FILENAME: b030387_sl.dgn
CHECKED BY: RBR DATE: 3-30-11 SCALE: As shown
DESIGNED BY: CMW DATE: 1-11

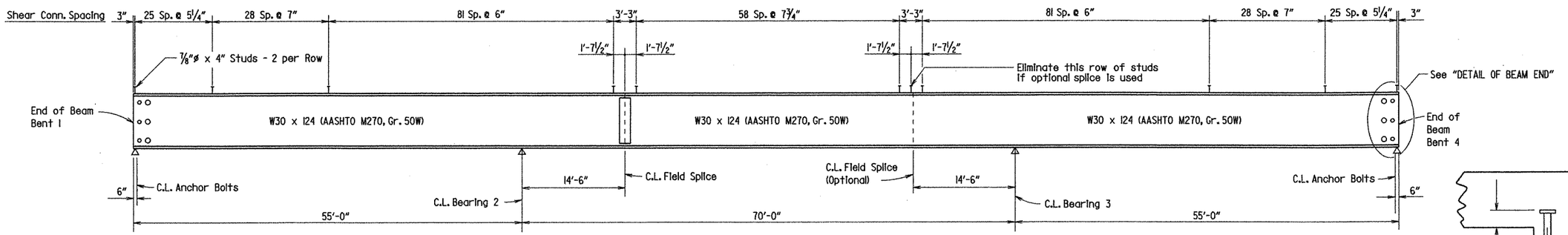
BRIDGE NO. 07214,07215 DRAWING NO. 51958

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

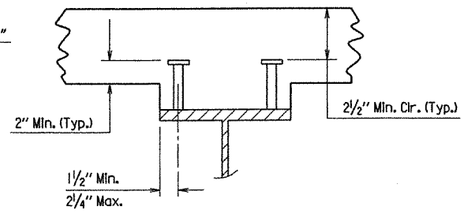
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		030387	28	71
07214,07215		SPAN DETAILS		51959



FRAMING PLAN



TYPICAL BEAM ELEVATION

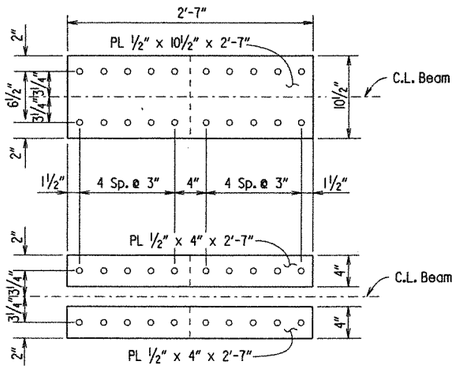


Stud Shear Connectors shown shall be ⅞"ø x 4" long, granular flux filled, solid fluxed or equal, and automatically end welded to the beam flange in accordance with the recommendations of the Manufacturer. ¾"ø studs may be used in place of the ⅞"ø studs shown, at the ratio of 1.361 - ¾"ø studs in place of one ⅞"ø stud. ⅞"ø studs will be used as basis for measurement of structural steel in shear connectors. Maximum stud spacing = 24"

SHEAR CONNECTOR DETAIL

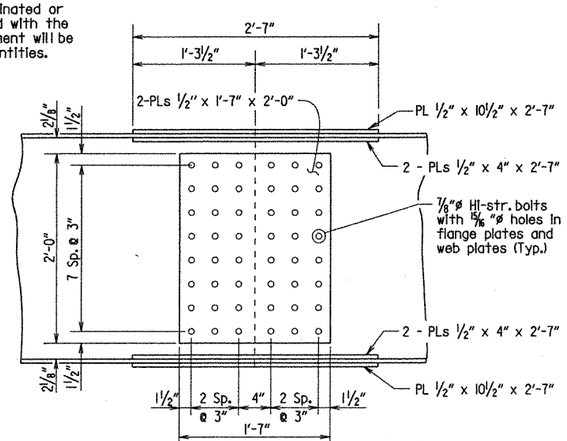
No Scale

NOTE:
Bolted Field Splices may be eliminated or Shop Welded Splices substituted with the approval of the Engineer. Payment will be made on the basis of plan quantities.



FLANGE SPLICE

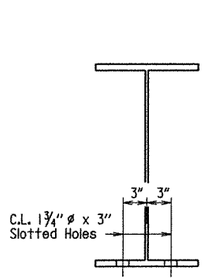
TOP AND BOTTOM



WEB SPLICE

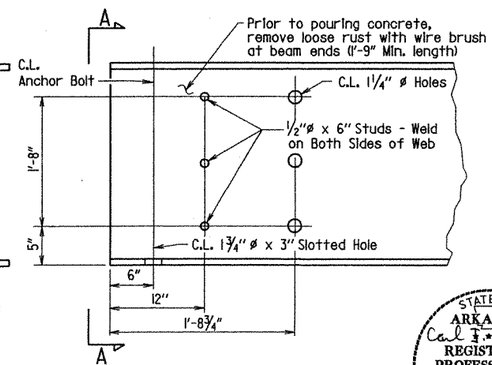
All Field Splice Plates shall be AASHTO M270, Gr. 50W
All Field Splice Bolts shall be ⅞"ø H.S. Bolts
All Field Splice Bolt Holes shall be 15/16 "ø

DETAILS OF FIELD SPLICE



VIEW A-A

No Scale



DETAIL OF BEAM END

No Scale

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
5/5/11
CARL J. FUSELIER

BRIDGE ENGINEER

SHEET 2 OF 5

DETAILS OF 180'-0" INTEGRAL W-BEAM UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

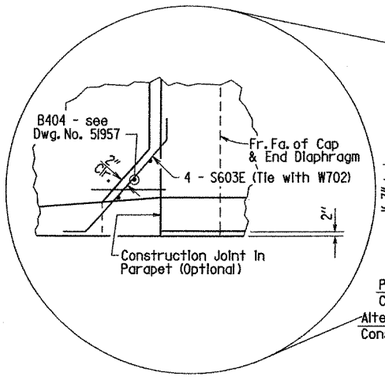
DRAWN BY: CMW	DATE: 01/28/11	FILENAME: b030387_s2.dgn	
CHECKED BY: FGR	DATE: 3-31-11	SCALE: As shown	
DESIGNED BY: CMW	DATE: 1-11		

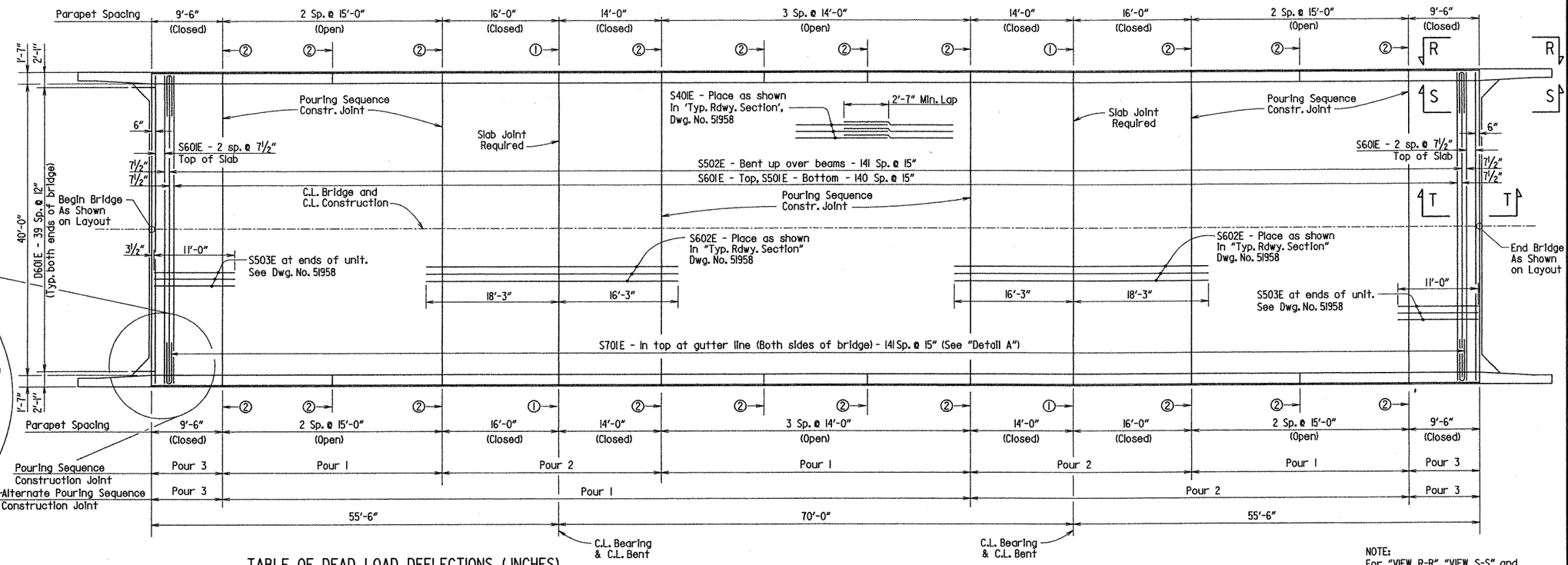
BRIDGE NO. 07214,07215 DRAWING NO. 51959

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.		030387	29	71
				① 07214,07215		SPAN DETAILS		51960

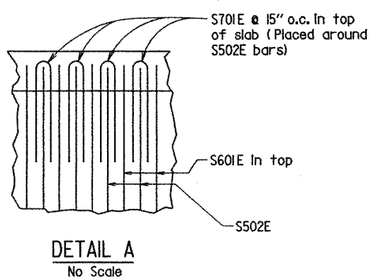
① C.L. Full Depth Parapet Joint (¼" to 1" Max.) Stop 4" from top of slab.

② C.L. Partial Depth Parapet Joint (¼" to 1" Max.) Stop 1'-2" from top of slab.





NOTE:
For "VIEW R-R", "VIEW S-S" and "SECTION T-T" see Dwg. No. 51962



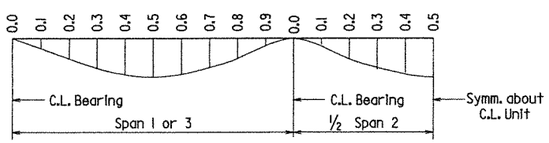
DETAIL A
No Scale

TABLE OF DEAD LOAD DEFLECTIONS (INCHES)

Span	Point of Deflection	Structural Steel		Structural Steel + Slab		Structural Steel + Slab + Parapet	
		Interior	Exterior	Interior	Exterior	Interior	Exterior
1 or 3	0.0	0.000	0.000	0.000	0.000	0.000	0.000
	0.1	0.030	0.030	0.212	0.182	0.213	0.184
	0.2	0.056	0.056	0.390	0.334	0.394	0.341
	0.3	0.073	0.073	0.508	0.436	0.515	0.447
	0.4	0.079	0.079	0.555	0.476	0.563	0.489
	0.5	0.076	0.076	0.529	0.453	0.537	0.466
	0.6	0.063	0.063	0.438	0.375	0.444	0.384
	0.7	0.043	0.043	0.302	0.259	0.304	0.263
	0.8	0.022	0.022	0.154	0.132	0.153	0.131
	0.9	0.005	0.005	0.035	0.030	0.033	0.026
Span 2	0.0	0.000	0.000	0.000	0.000	0.000	0.000
	0.1	0.019	0.019	0.132	0.113	0.143	0.131
	0.2	0.053	0.053	0.372	0.319	0.399	0.362
	0.3	0.089	0.089	0.619	0.531	0.661	0.597
	0.4	0.114	0.114	0.796	0.683	0.848	0.766
½	0.5	0.123	0.123	0.861	0.738	0.917	0.827

C.L. Unit

Table is symmetrical about C.L. Unit



DEAD LOAD DEFLECTIONS DIAGRAM (TYP.)

NOTE:
Camber for Dead Load Deflection plus Vertical curve ± ¼" tolerance. Deflections shown are from a chord from C.L. Bearing to C.L. Bearing. Vertical curve corrections not included. Negative sign (-) indicates point above chord.

REINFORCING PLAN & DECK POURING SEQUENCE

Note: Pours with the same number may be placed simultaneously or separately. All Pours (1) must be placed before Pours (2) can be placed. All Pours (2) must be placed before Pours (3). 48 hours shall elapse between the end of a pour and the start of the next pour. 72 hours shall elapse between the end of a pour and the start of an adjacent pour.

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

Concrete in bridge superstructure shall be consolidated for the entire pour before any concrete has taken its initial set. This may require the use of a retarding agent.

The Contractor must obtain approval from the Engineer for any deviations from the pouring sequence shown.

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SHEET 3 OF 5

DETAILS OF 180'-0" INTEGRAL W-BEAM UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: CMW DATE: 01/28/11 FILENAME: b030387_s3.dgn

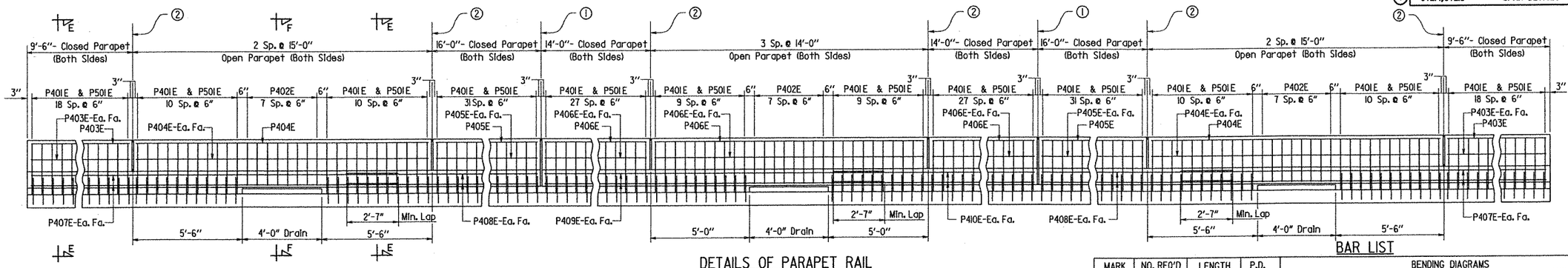
CHECKED BY: RBR DATE: 3-30-11 SCALE: As shown

DESIGNED BY: CMW DATE: 1-11

BRIDGE NO. 07214,07215 DRAWING NO. 51960

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.		030387	30	71
① 07214,07215		SPAN DETAILS		51961



① C.L. Full-Depth Parapet Joint (1¼" to 1" Max.) as shown in "Reinforcing Plan & Deck Pouring Sequence" Dwg. No. 51960. Stop 4" from top of slab.

② C.L. Partial-Depth Parapet Joint (1¼" to 1" Max.) as shown in "Reinforcing Plan & Deck Pouring Sequence" Dwg. No. 51960. Stop 1'-2" from top of slab.

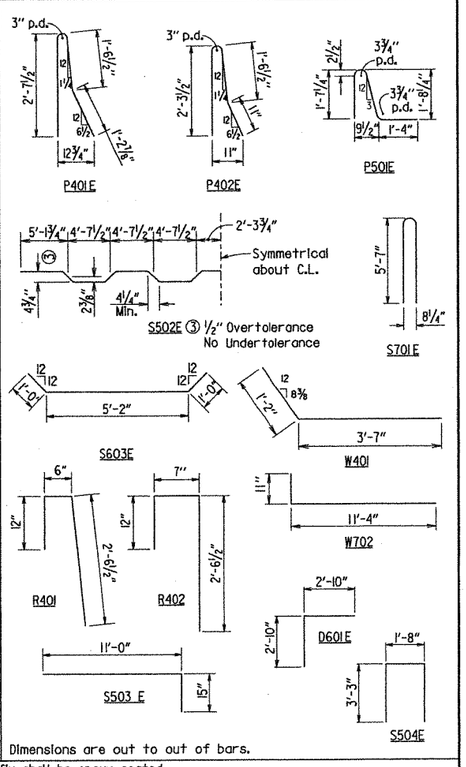
DETAILS OF PARAPET RAIL

Scale: ⅜" = 1'-0"

BAR LIST

MARK	NO. REQ'D	LENGTH	P.D.
S401E	565	38'-2"	Str.
S402E	18	42'-10"	Str.
P401E	612	5'-6"	3"
P402E	112	4'-10"	3"
P403E	12	9'-2"	Str.
P404E	24	14'-8"	Str.
P405E	12	15'-8"	Str.
P406E	30	13'-8"	Str.
P407E	16	37'-8"	Str.
P408E	16	20'-1"	Str.
P409E	8	40'-0"	Str.
P410E	8	32'-3"	Str.
S501E	141	42'-10"	Str.
S502E	142	43'-8"	3"
S503E	92	12'-2"	2½"
S504E	88	8'-0"	2½"
P501E	612	4'-9"	3¾"
S601E	147	42'-10"	Str.
S602E	92	34'-6"	Str.
S603E	16	7'-2"	4½
S701E	284	11'-6"	6½"
R401	16	3'-11"	2"
R402	16	4'-0"	2"
R403	24	9'-8"	Str.
R404	24	2'-0"	Str.
R601	32	5'-11"	Str.
R602	12	5'-0"	Str.
W401	20	4'-9"	2"
W402	20	5'-11"	Str.
W701	12	11'-4"	Str.
W702	48	12'-1"	5¼"
D601E	80	5'-6"	4½"

BENDING DIAGRAMS



Dimensions are out to out of bars.

NOTE: Bars designated with an "E" suffix shall be epoxy coated.

SECTION E-E

Scale: ¾" = 1'-0"

SECTION F-F

Scale: ¾" = 1'-0"

DETAIL Y

No Scale

Use ½" x 1" Type 3, 4 or 6 Joint Sealer. See subsections 501.02(h) and 501.05(j). Backer rod will not be required. Joint Sealer shall be measured and paid for as Class S(AE) Concrete-Bridge. Slab joints shall extend to the outside edge of the deck slab. Slab joints shall be installed before the parapet railing is poured. If slab joints are to be sawed, they shall be sawed as soon as the 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

No Scale

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 SLIP FORMING OF CONCRETE PARAPET RAIL

No Scale

DETAIL Z

No Scale

NOTE:

The surfaces of the ⅜" plates which will not be in contact with concrete shall be painted with aluminum epoxy paint in accordance with Section 638, or as approved by the Engineer. Only one coat is required and shall be applied in the fabricator's shop. Painting will not be paid for directly, but will be considered subsidiary to "Structural Steel in Beam Spans (M270, Gr. 50W)."

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

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SHEET 4 OF 5

DETAILS OF 180'-0" INTEGRAL W-BEAM UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: CMW DATE: 01/28/11 FILENAME: b030387_s4.dgn

CHECKED BY: RBR DATE: 5-9-11 SCALE: As shown

DESIGNED BY: CMW DATE: 1-11

BRIDGE NO. 07214,07215 DRAWING NO. 51961

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.		030387	31	71
				(1) 07214,07215		SPAN DETAILS		51962

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 5th Edition (2010), with 2010 Interims.

LIVE LOADING: HL-93

MATERIALS AND STRENGTHS:
Concrete: All concrete shall be Class S(AE) with a minimum 28 day strength f'c = 4000 psi.

Reinforcing Steel: Reinforcing steel shall conform to AASHTO M31 or M53, Grade 60 (Yield Strength = 60,000 psi.).

Structural Steel: Structural steel shall conform to AASHTO M270, Gr. 50W (Fy = 50,000 psi.) or AASHTO M270 Gr.36 (Fy = 36,000 psi.).

STRUCTURAL STEEL:
All Structural Steel shall be AASHTO M270, Gr. 50W unless otherwise noted. All structural steel shall be paid for as "Structural Steel in Beam Spans (M270, Gr.50W)". Structural Steel completely embedded in concrete may be AASHTO M270 Gr. 36. AASHTO M270, Gr.50W steel shall not be painted. All exposed surfaces shall be cleaned in accordance with subsection 807.84e unless noted otherwise.

Requests for substitution of structural steel shapes shown with shapes of greater size must be submitted by the Contractor to the Engineer for approval. Steels of equal or greater strengths will be accepted only when shown on the approved shop drawings. 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 including web and flange splice plates are considered main load carrying members and shall meet the Longitudinal Charpy V-Notch Test specified in subsection 807.05. This work and material will not be paid for directly, but shall be considered subsidiary to the item "Structural Steel in Beam Spans (M270, Gr.50W)".

Steel plates for main members shall be cut and fabricated so that the primary direction of rolling is parallel to the direction of the main tensile and/or compressive stresses.

Drawings show general features of design only. Shop drawings shall be made in accordance with subsection 807.04, submitted, and approval secured before fabrication is begun.

All stud shear connectors shall be granular flux filled, solid fluxed, or equal and shall be automatically end welded in accordance with the recommendations of the manufacturer.

All beams shall be blocked in their true position in the shop as specified in subsection 807.54 (b)(1). The camber, length of sections, distance between bearings, and opening of joints shall be measured with the beams in their true position and this information shall become part of the permanent record of this job. The component parts shall be match marked in this assembly and those 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" (plus or minus) allowed for camber.

Field connections shall be bolted with high-strength bolts. Bolts shall be 3/4"ø, except as noted, and open holes shall be 15/16"ø unless otherwise noted. Holes for 3/4"ø bolts may be 5/8"ø. If a washer is supplied for use under both the nut and the head of the bolt. Bolt spacing shall be 2 1/2" for 3/4"ø bolts. For field splices, bolts shall be 7/8"ø bolts. Open holes shall be 5/8"ø. Bolt spacing shall be 3" for 7/8"ø bolts unless otherwise noted. Bolts shall be placed with heads on the outside face of the exterior beam web and on the bottom of the beam flanges.

All welding that is to be done during fabrication of structural steel, including temporary welds, shall be detailed on the shop drawings and submitted for approval. If additional welds are required, whether permanent or temporary, a formal request with detailed drawings shall be submitted to the Engineer for approval; however, additional welds used for attaching false work support devices or screed rail supports to the structural steel that do not exceed the limitations of subsection 802.13 will not require approval prior to construction. All welding shall conform to subsection 807.26.

Diaphragms shall be installed as beams are erected. All bolts in diaphragms and field splices shall be installed and tightened in accordance with subsection 807.71 prior to pouring the concrete deck.

Elastomeric Bearings shall be seated in accordance with subsection 808.08. This work and material will not be paid for directly but will be considered subsidiary to the item "Structural Steel in Beam Spans (M270, Gr. 50W)".

REINFORCING STEEL:
The reinforcing steel shall be accurately located in the forms and firmly held in place by steel wire supports, sufficient in size and number, to prevent displacement during the course of construction. The wire supports will not be paid for directly but will be considered subsidiary to the item "Reinforcing Steel-Bridge (Grade 60)".

CONCRETE:
All concrete shall be Class S(AE) with a minimum 28 day compressive strength f'c = 4000 psi. Concrete shall be poured in the dry and all exposed corners to be chamfered 3/4" unless otherwise noted.

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 diaphragms at end bents shall be poured monolithic with the slab.

The concrete deck shall be given a Tine Finish in accordance with subsection 802.19 for Class S, 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.

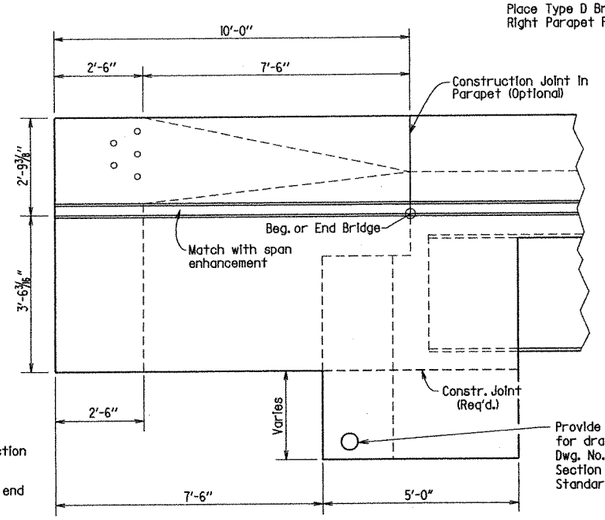
CLASS I PROTECTIVE SURFACE TREATMENT: Class I protective surface treatment shall be applied to the roadway surface and to the roadway face and top of the concrete parapet rail.

A minimum of 72 hours shall elapse between completion of the bridge deck slab and the pouring of the parapet railing. Any railing pours made before the entire slab has been placed and cured must be approved by the Engineer.

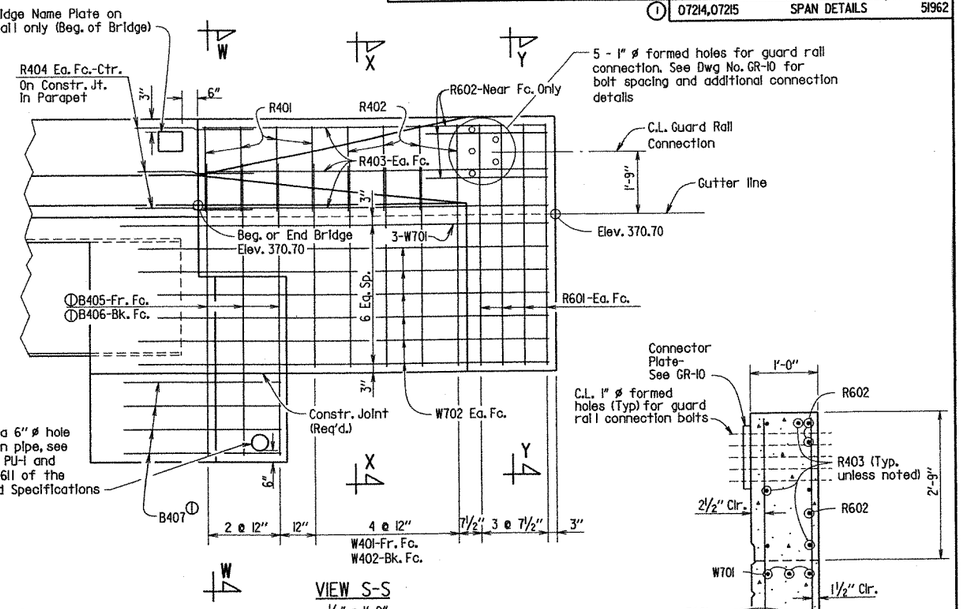
Load Distribution
Dead Load:

A. To W-Beam	Beam No.		
	Beam 1 & 5	795	plf + Wt. of Structural Steel
	Beam 2, 3 & 4	954	plf + Wt. of Structural Steel
B. To Composite Beam	Beam No.		
	Beam 1, 2, 3, 4 & 5	348	plf (2)

(2) Includes 192 plf future wearing surface.

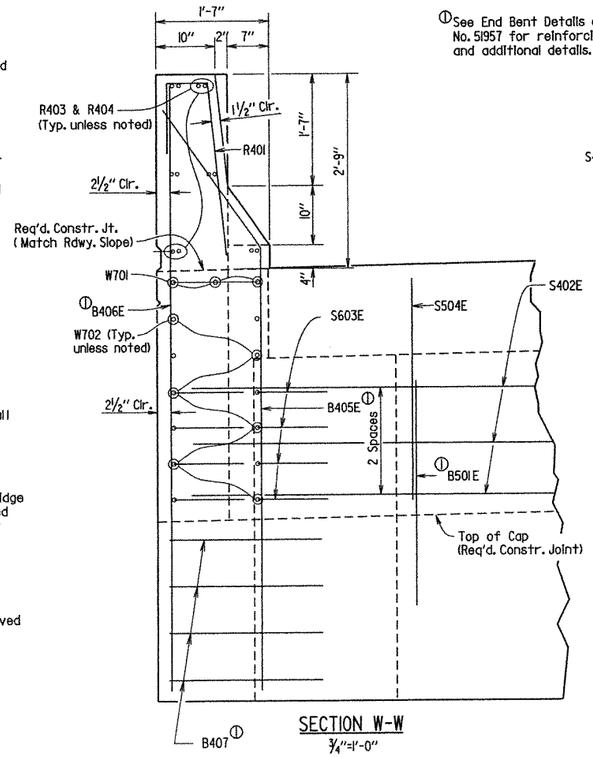


VIEW R-R
No Scale



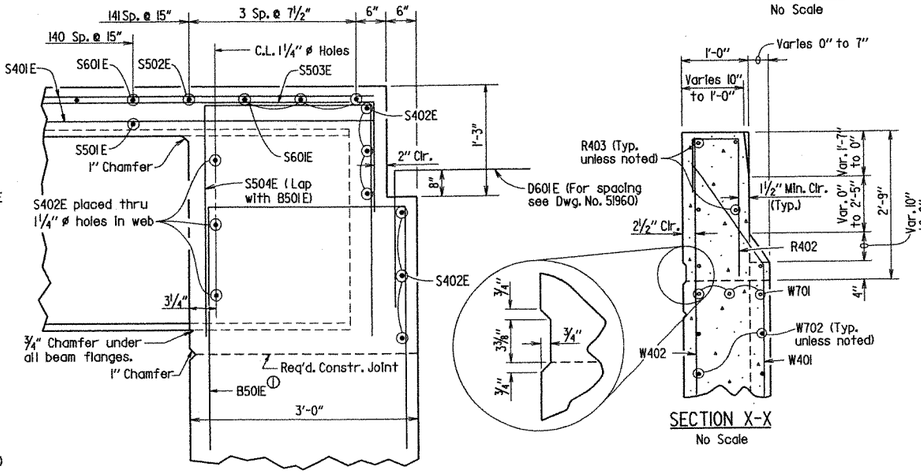
VIEW S-S
1/2" = 1'-0"

SECTION Y-Y
No Scale



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

(1) See End Bent Details on Dwg. No. 51957 for reinforcing and additional details.



SECTION T-T
No Scale

SECTION X-X
No Scale

STATE OF ARKANSAS
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SHEET 5 OF 5

DETAILS OF 180'-0" INTEGRAL W-BEAM UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

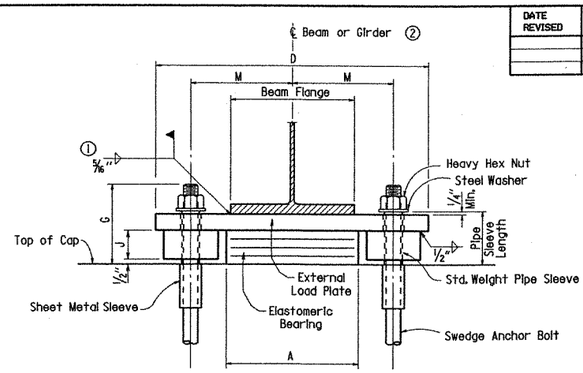
LITTLE ROCK, ARK.

DRAWN BY: CMW DATE: 01/28/11 FILENAME: b030387_s5.dgn
CHECKED BY: RBR DATE: 5-9-11 SCALE: As shown
DESIGNED BY: CMW DATE: 1-11

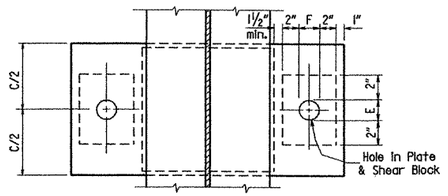
BRIDGE NO. 07214,07215 DRAWING NO. 51962

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.		030387	32	71

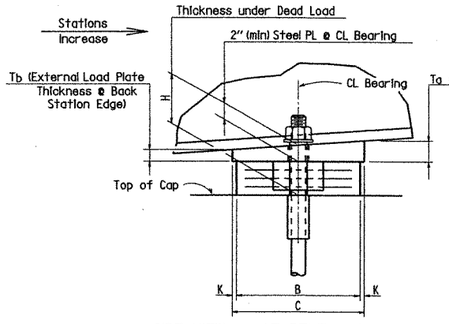
(1) 07214,07215 ELASTOMERIC BEARINGS 51963



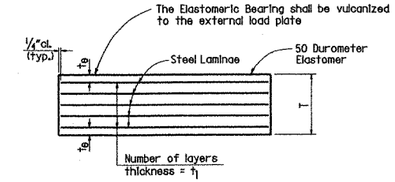
FRONT VIEW - AT BENT NOS. 2 AND 3



PLAN VIEW - AT BENT NOS. 2 AND 3

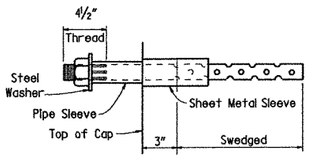


SIDE VIEW - AT BENT NOS. 2 AND 3



t_e = thickness of elastomer cover on top and bottom of pad
t_1 = thickness of elastomer between steel laminae
N = number of elastomer layers of thickness t_1

ELASTOMERIC BEARING



ANCHOR BOLT DETAIL FOR INTERMEDIATE BENTS

NOTE: Anchor Bolts may be cast in place or drilled and grouted into place. If Anchor Bolts are to be cast in place, the Galvanized Sheet Metal Sleeves will not be required.

If Anchor Bolts are to be drilled and grouted in place, the Galvanized Sheet Metal Sleeves shall be cast in place as shown. Sleeves shall be dry packed with styrofoam, urethane foam or approved equal prior to pouring of concrete. After pouring of the cap and prior to erection of Structural Steel, the dry pack shall be removed and holes for the anchor bolts shall be accurately drilled into the masonry. Bolts placed in drilled holes shall be accurately set and fixed using a QPL approved epoxy or non-shrink grout that completely fills the holes. Galvanized Sheet Metal Sleeves will not be paid for directly, but will be considered subsidiary to the Item "Structural Steel in Beam Spans (M 270, Gr. 50W)."

(1) Care shall be taken to ensure that the external load plate is in full and complete contact with the beam or girder flange before welding begins.

(2) Centerline Beam or Girder shall align with centerline bearing.

GENERAL NOTES

Elastomeric Bearings shall conform to Section 808 and shall be paid for at the unit price bid for "Elastomeric Bearings".

External load plates and shear blocks shall conform to AASHTO M 270, Grade 50W. Pipe sleeves shall be ASTM A53, Grade B, and shall be galvanized to conform to AASHTO M 232, Class C or AASHTO M 298, Class 50.

External load plates with shear blocks shall be completely fabricated (including bevel and bolt holes) and shall be cleaned before vulcanizing to the elastomeric bearing. Surfaces in contact with the elastomeric bearing shall be cleaned in accordance with subsection 808.03. Other surfaces shall be blast cleaned in accordance with subsection 807.84(e) for unpainted weathering steel.

Anchor Bolts, Washers and Nuts shall conform to subsection 807.07. The anchor bolt grade of steel shall be as specified in the "Table of Fabricator Variables". Indentations shall be circular with rounded bottoms and staggered as shown in the details.

Pipe Sleeves, Anchor Bolts, Washers and Nuts shall be paid for at the unit price bid for "Structural Steel in Beam Spans (M270, Gr.50W)". External load plates and shear blocks will not be measured or paid for separately but will be considered included in the unit bid price for "Elastomeric Bearings".

TABLE OF FABRICATOR VARIABLES

BRIDGE NO.	LOCATION BENT NO(S).	LOCATION UNIT	LOCATION BEAM NO.	BEARING TYPE	NO. of BEARINGS EACH BENT	*MAXIMUM DESIGN LOAD (KIPS)	ELASTOMERIC PAD G	ELASTOMERIC PAD H	ELASTOMERIC PAD A	ELASTOMERIC PAD B	ELASTOMERIC PAD N	ELASTOMERIC PAD t_1	ELASTOMERIC PAD t_e	ELASTOMERIC PAD NO. & THICKNESS OF STEEL LAMINAE	ELASTOMERIC PAD T	EXTERNAL LOAD PLATE C	D	E	F	J	K	M	T_a	T_b	ANCHOR BOLT (ø x L)	ANCHOR BOLT GRADE	PIPE SLEEVE SIZE (ø x L)	SHEET METAL SLEEVE SIZE (ø x L)	STEEL WASHER SIZE (O.D.)
07214,07215	2	180'	1-5	Fix	5	204.00	6¾"	3 15/16"	14½"	12½"	2	½"	¼"	3 @ 12 Ga.	1 15/16"	13½"	32¼"	2¼"	2¼"	1¼"	½"	12"	2.00"	2.00"	1½"ø x 24"	55	1½"ø x 4⅛"	3"ø x 6"	3"
	3	180'	1-5	Fix	5	204.00	6¾"	3 15/16"	14½"	12½"	2	½"	¼"	3 @ 12 Ga.	1 15/16"	13½"	32¼"	2¼"	2¼"	1¼"	½"	12"	2.00"	2.00"	1½"ø x 24"	55	1½"ø x 4⅛"	3"ø x 6"	3"

*Maximum Design Load = Service I Limit State

Tabular Data by : CMW Date: 2-2-11
Checked by : RBR Date: 3-30-11
Designed by : CMW Date: 1-11

STATE OF ARKANSAS Carl J. Fussellier REGISTERED PROFESSIONAL ENGINEER No. 7510 3/15/11 CARL J. FUSSELLIER

BRIDGE ENGINEER

DETAILS OF ELASTOMERIC BEARINGS

ROUTE SEC.

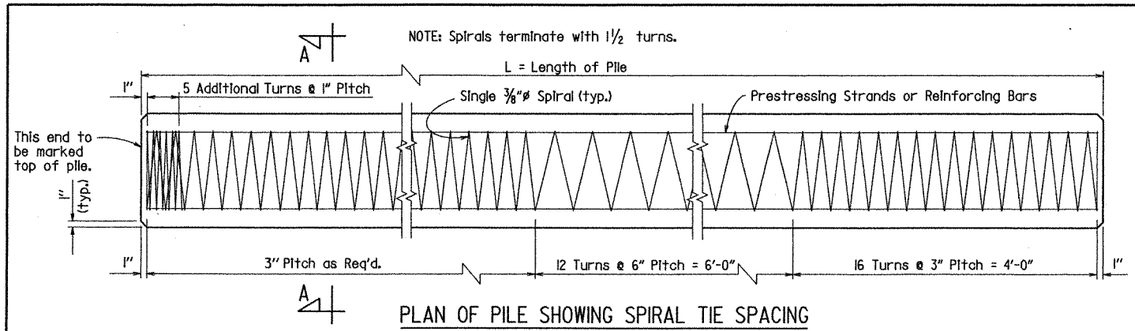
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: CMW DATE: 02/02/11 FILENAME: b030387_el.dgn
CHECKED BY: RBR DATE: 3-30-11 SCALE: No Scale
DESIGNED BY: Std. DATE:

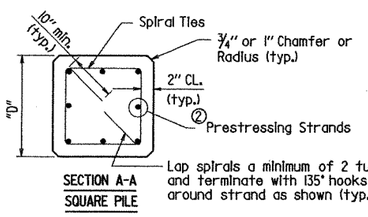
BRIDGE NO. 07214,07215 DRAWING NO. 51963

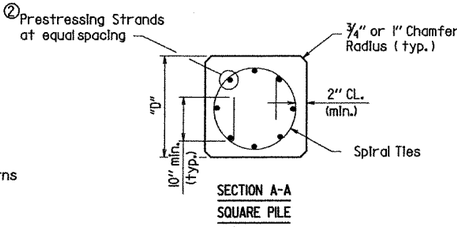
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		030387	33	71
				① 07214,07215		CONCRETE PILES		51964



PLAN OF PILE SHOWING SPIRAL TIE SPACING

For anchorage of pile to bent, see Bent Details.





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

PRESTRESSED CONCRETE PILES

②See table "Prestressed Concrete Pile Properties" for actual number of strands per pile size.

PRESTRESSED PILE CONCRETE STRENGTH

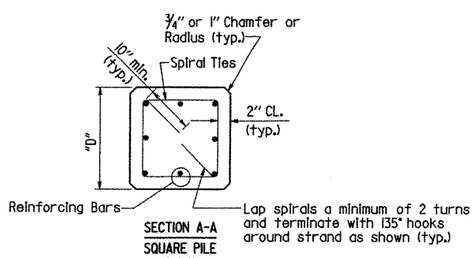
Pile Size	Minimum Concrete Compressive Strength (psi) at 28 days	Minimum Concrete Compressive Strength (psi) at Transfer
16" Sq.	5,000	4,000
18" Sq.	6,000	5,000

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

"B" — 0.75 Low Relaxation; 0.70 Stress-Relieved

PRESTRESSED CONCRETE PILE PROPERTIES

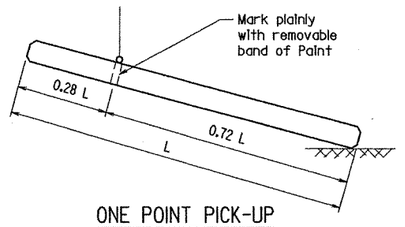
	Grade	Strand Diameter	①Number of Strands per Size "D" 16" Sq.	①Number of Strands per Size "D" 18" Sq.	Minimum Ultimate Tensile Strength Per Strand (Lbs.)	Initial Prestressing Force Per Strand (Lbs.)
Stress-Relieved	250	7/16"	13	-	27,000	18,900
		½"	10	-	36,000	25,200
	270	7/16"	12	-	31,000	21,700
		½"	8	-	41,300	28,900
Low Relaxation	250	7/16"	11	-	27,000	20,200
		½"	8	-	36,000	27,000
	270	7/16"	9	12	31,000	23,300
		½"	7	10	41,300	31,000



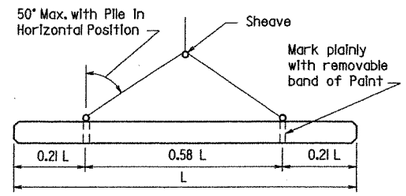
NON-PRESTRESSED CONCRETE PILES

NON-PRESTRESSED PILE REINFORCING

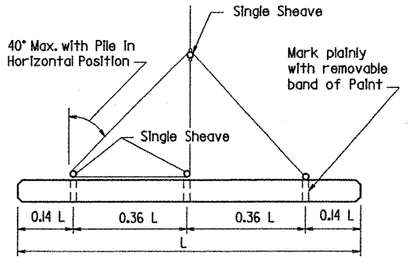
Pile Size	No. Req'd.	Bar Size
16" Sq.	8	# 7
18" Sq.	8	# 8



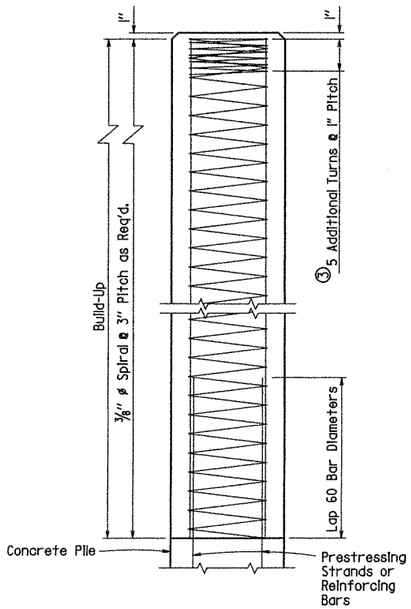
ONE POINT PICK-UP



TWO POINT PICK-UP



THREE POINT PICK-UP



BUILD-UP

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

MAXIMUM PICKUP LENGTHS "L"

Type of Pick-Up	Prestressed 16" Sq.	Prestressed 18" Sq.
One Point	59'	63'
Two Point	84'	90'
Three Point	117'	126'

GENERAL NOTES FOR PRECAST PRESTRESSED CONCRETE PILES:

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

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

SEISMIC PERFORMANCE ZONES: 1

The Contractor shall use prestressed piles and will be measured and paid for at the contract unit price bid for "Concrete Piling".

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

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

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

FORMS: For forming exterior of piles, the use of steel forms on concrete-founded casting beds is required unless otherwise approved by the Engineer. Side forms may have a maximum drift on each side not exceeding ¼" per foot.

TOLERANCES: Pile ends shall be plane surfaces perpendicular to the longitudinal axis of pile with a maximum tolerance of ⅛" per foot transversely.

The maximum sweep (deviation from straightness measured from end to end of the pile, while not subject to bending forces) shall not exceed ⅛" in 10 feet.

BUILD-UPS: To provide for build-ups of piles where authorized by the Engineer, concrete shall be cut back to expose the reinforcing steel for a distance sufficient to provide a lap of 60 diameters of the reinforcing bars required for build-up. Reinforcing for build-ups shall be the reinforcing shown for non-prestressed piles. No additional driving shall take place on a pile that has recieved build-up.

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

ADDITIONAL NOTES FOR PRESTRESSED PILES:

CONCRETE: Concrete in 18" prestressed piles shall be Class S(AE) and shall have a minimum compressive strength (f'c) of 6,000 psi at 28 days. Compressive strength at transfer of the prestressing force shall be not less than 5,000 psi. Concrete in 16" prestressed piles shall be Class S(AE) and shall have a minimum compressive strength (f'c) of 5,000 psi at 28 days. Compressive strength at transfer of the prestressing force shall be not less than 4,000 psi. Concrete in build-ups shall have a minimum compressive strength of 4,000 psi and shall be cured for a minimum of 10 days.

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

ADDITIONAL NOTES FOR NON-PRESTRESSED PILE BUILD-UP ONLY:

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

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

STATE OF ARKANSAS
CARL J. FUSELIER
REGISTERED PROFESSIONAL ENGINEER
No. 7510
5/5/11

BRIDGE ENGINEER

DETAILS OF CONCRETE PILES

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: CMW DATE: 02/28/11 FILENAME: b030387_cp.dgn

CHECKED BY: RBR DATE: 3-30-11 SCALE: no scale

DESIGNED BY: CMW DATE: 2-11

BRIDGE NO. 07214,07215 DRAWING NO. 51964

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
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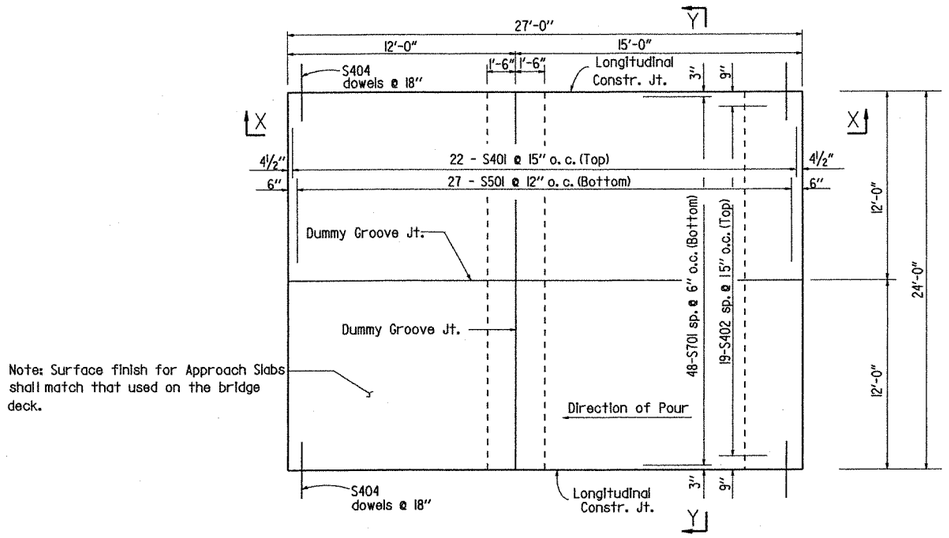
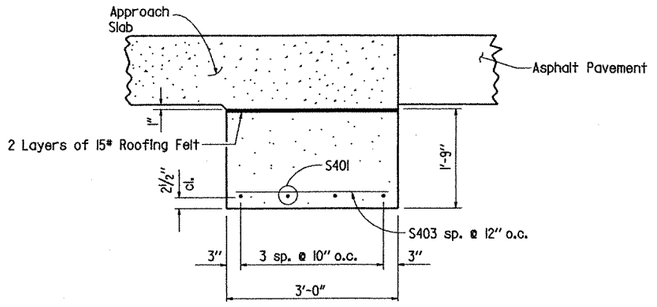
				JOB NO.		030387	54	71
				①	07214,07215	APPROACH SLAB		51965



PLAN - APPROACH SLAB

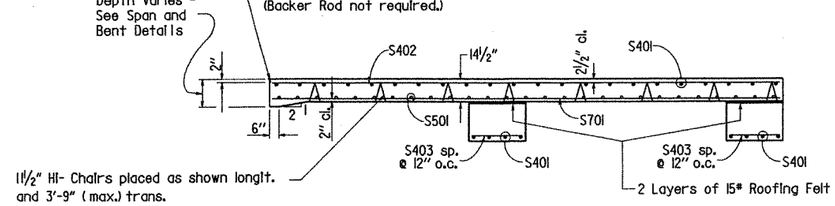
N.T.S.



DETAILS OF SUPPORT AT EXPANSION JOINT

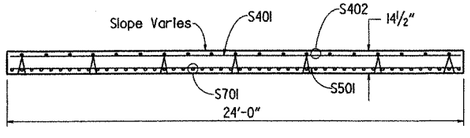
¾" = 1'-0"

Note: Bottom of Approach Slab shall not be poured below Top of Support Beams.



SECTION X - X

N.T.S.



SECTION Y - Y

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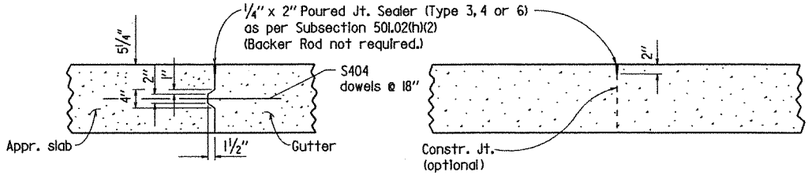

DETAILS OF LONGITUDINAL CONSTRUCTION JOINT

¾" = 1'-0"

DETAILS OF DUMMY GROOVED JOINT

¾" = 1'-0"

BAR LIST

	Mark	No. Req'd.	Length
24'-0" slab width	S401	30	23'-8"
	S402	19	26'-8"
	S403	48	2'-8"
	S404	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"	4,260	38.80

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

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7510
CARL J. FUSELIER
5/5/11

BRIDGE ENGINEER

DETAILS OF APPROACH SLAB (TYPE SPECIAL I)

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: CMW DATE: 12/20/2010 FILENAME: b030387_as.dgn

CHECKED BY: RBR DATE: 3-30-11 SCALE: As Shown

DESIGNED BY: Std. DATE: —

BRIDGE NO. 07214,07215 DRAWING NO. 51965

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
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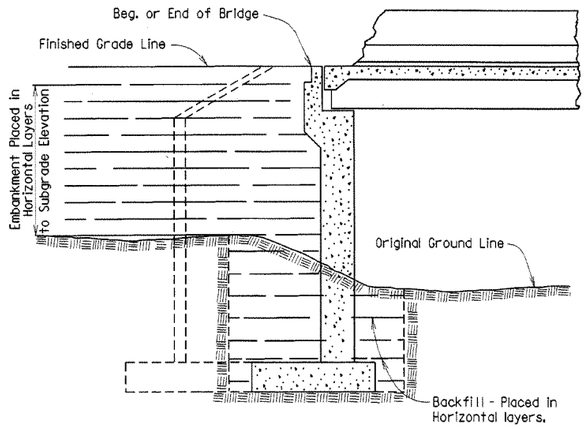
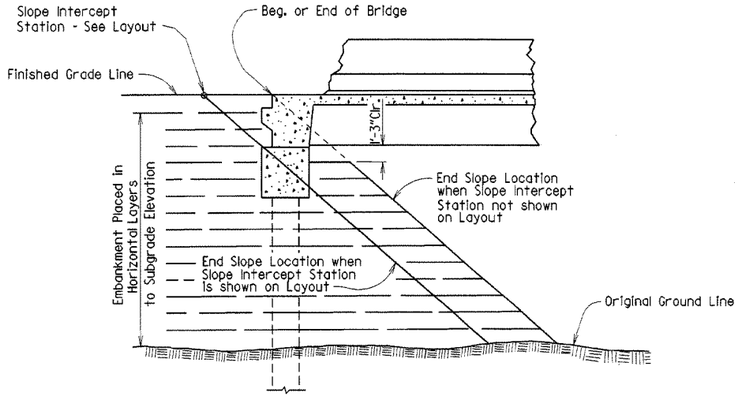
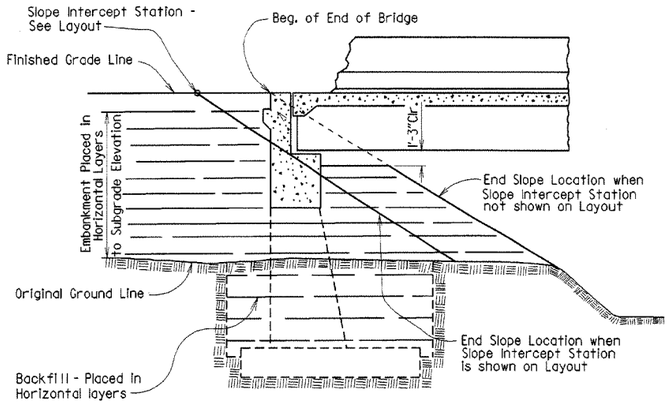
① EMBANKMENT & BACKFILL I888A



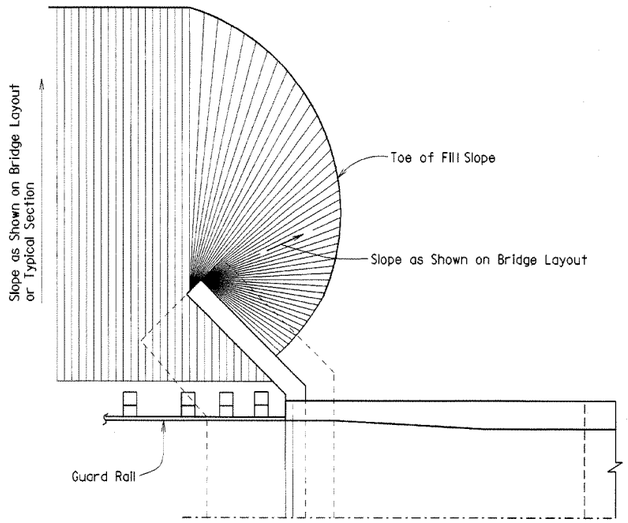
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT VERTICAL WALL ABUTMENTS



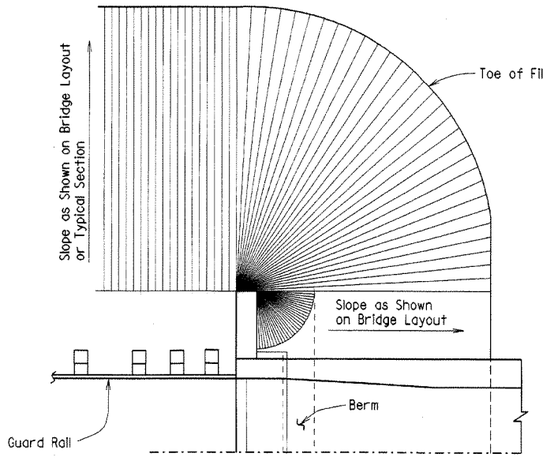
EMBANKMENT CONSTRUCTION AT SPILL-THROUGH PILE END BENTS



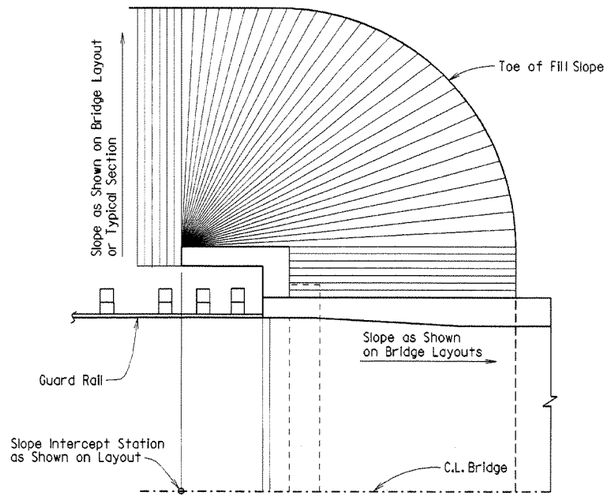
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT SPILL-THROUGH END BENTS



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.

DRAWN BY: MJT DATE: 04-10-2003 FILENAME: BI888A.STD
CHECKED BY: CJF DATE: 04-10-2003 SCALE: NO SCALE
DESIGNED BY: STD. DATE: —

BRIDGE NO. DRAWING NO. I888A

BI888A.STD

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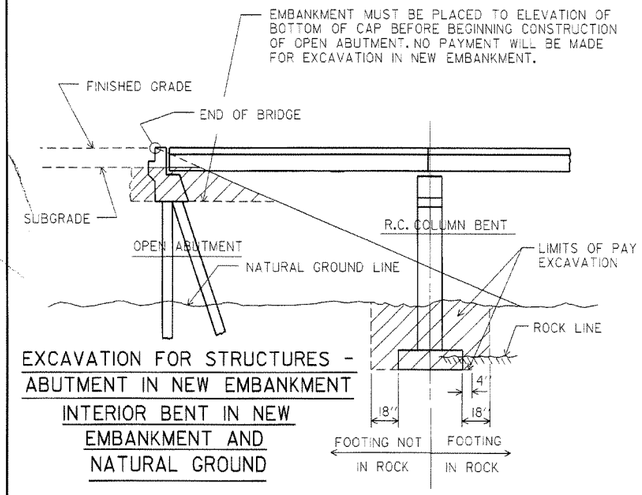
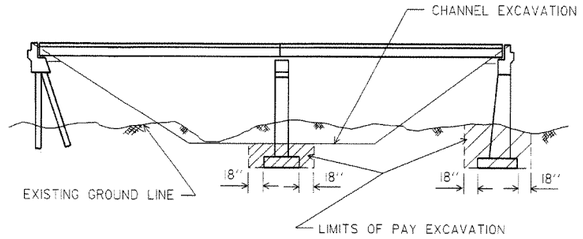
				JOB NO.				

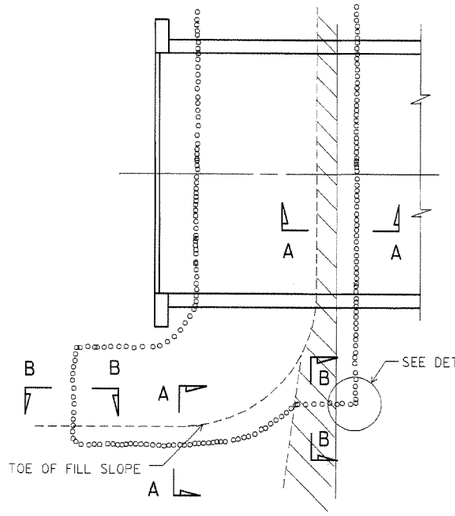
1 RIP. & EXCAV. 1891F



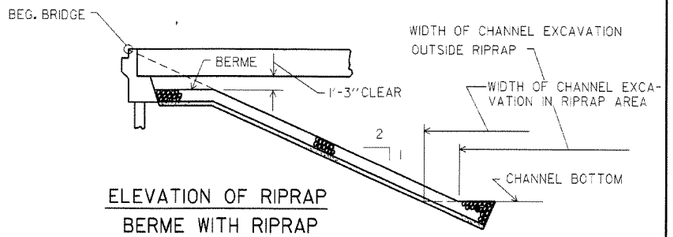
EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NEW EMBANKMENT AND NATURAL GROUND



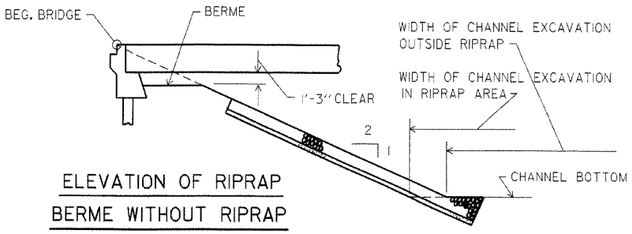
EXCAVATION FOR STRUCTURES - BRIDGE LOCATION WITH DESIGNATED CHANNEL CHANGE



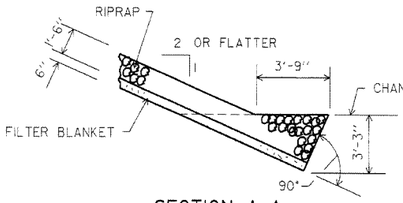
PLAN OF DUMPED RIPRAP



ELEVATION OF RIPRAP BERME WITH RIPRAP



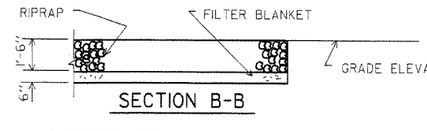
ELEVATION OF RIPRAP BERME WITHOUT RIPRAP



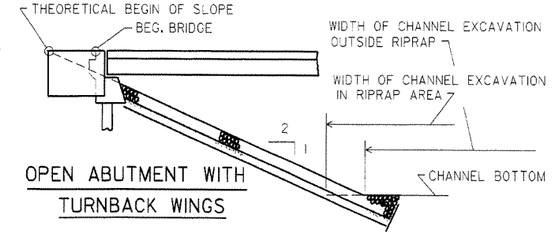
SECTION A-A

(TOE EXCAVATION IN SOIL)

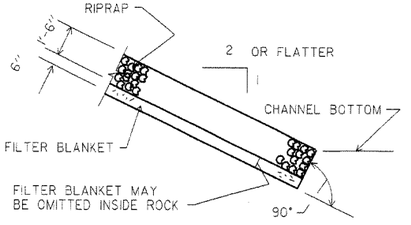
EXCAVATION FOR TOES IS NOT A PAY ITEM



SECTION B-B

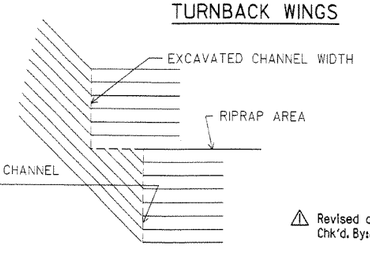


OPEN ABUTMENT WITH TURNBACK WINGS



SECTION A-A

(TOE EXCAVATION IN ROCK)



DETAIL C

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.

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

BRIDGE ENGINEER

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

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

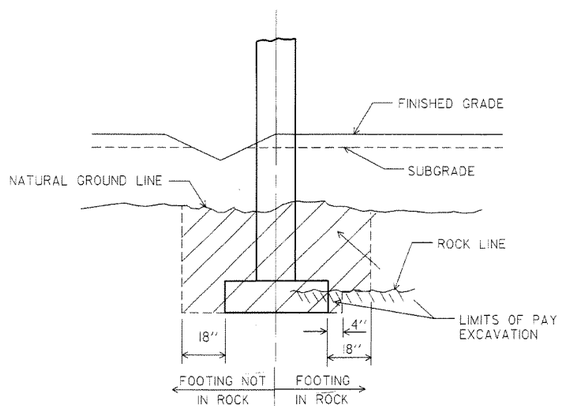
ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

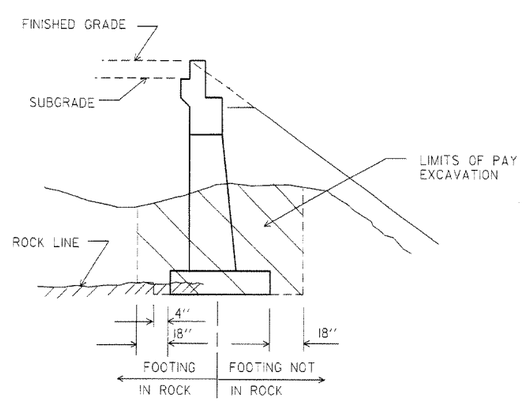
LITTLE ROCK, ARK.

DRAWN BY: MJT DATE: 04-10-2003 FILENAME: BI891F.STD
CHECKED BY: CJF DATE: 04-10-2003 SCALE: NO SCALE
DESIGNED BY: STD. DATE: ——

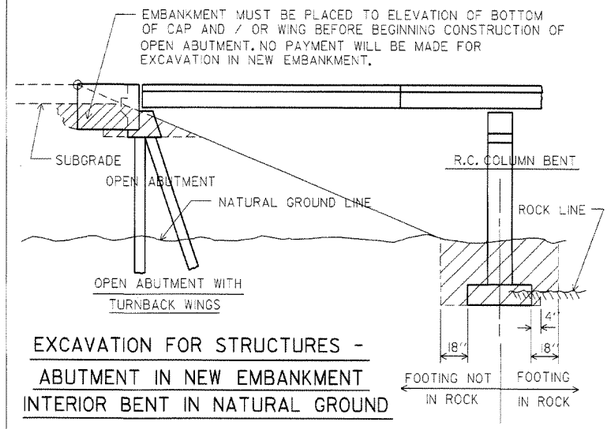
BRIDGE NO. DRAWING NO. 1891F



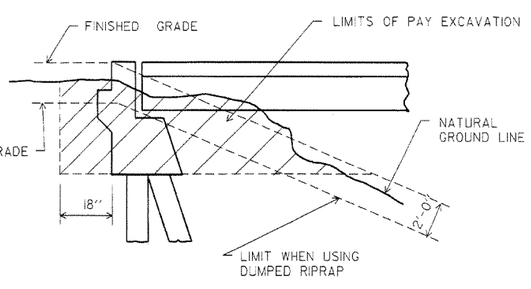
EXCAVATION FOR STRUCTURES - BENT IN ROADWAY FILL SECTION AND NATURAL GROUND



EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND AND NEW EMBANKMENT



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



EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
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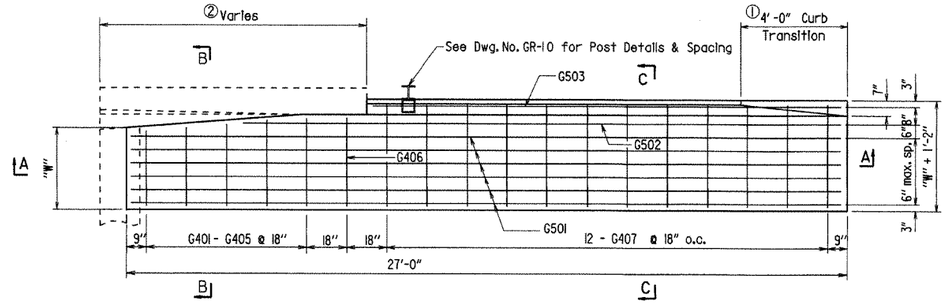
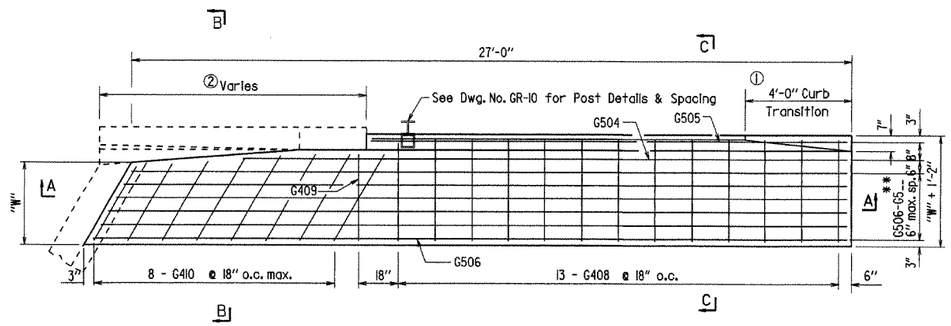
07-14-2010				JOB NO.				
						TYPE B GUTTERS		2016B

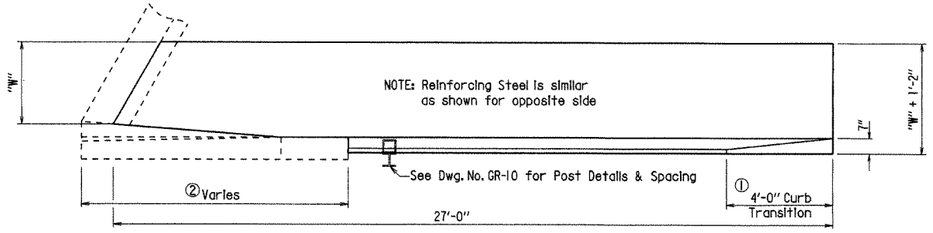
①



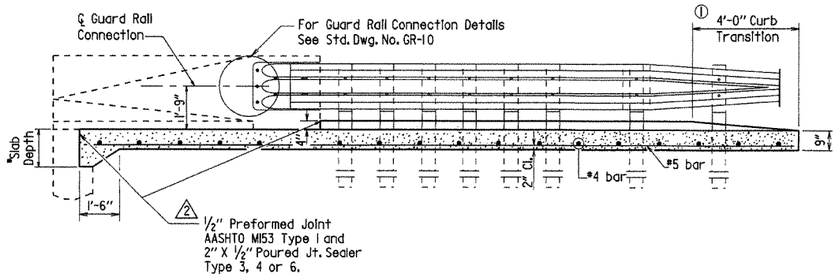
HALF PLAN OF APPROACH GUTTERS FOR SQUARE BRIDGE

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





PLAN OF APPROACH GUTTERS FOR SKEWED BRIDGE

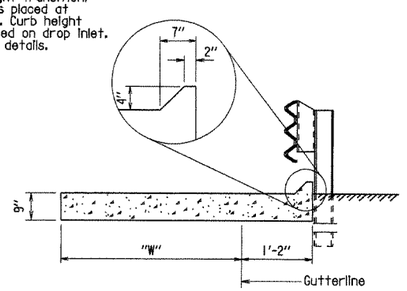


SECTION A - A

*Slab Depth Varies - See Span and Bent Details

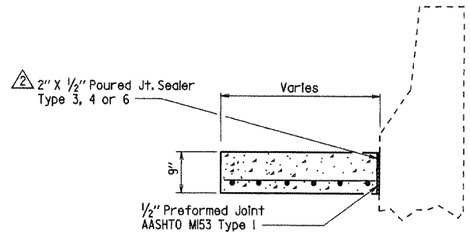
① Construct gutter curb with height-transition as shown if drop inlet is not placed at end of gutter.

Construct gutter curb full height (no height-transition) if drop inlet is placed at end of gutter. Curb height transition placed on drop inlet. See drop inlet details.



SECTION C - C

N.T.S.



SECTION B - B

N.T.S.

QUANTITIES FOR ONE SQUARE APPROACH GUTTER

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

***BAR LIST ②
TYPE B GUTTER

Mark	No. Required for Width "W"				Length	Square or Skewed
	3'-0"	4'-0"	6'-0"	8'-0"		
G401 - G405	1 each	1 each	1 each	1 each	"W" - 3" to "W" + 3"	Square
G406	1	1	1	1	"W" + 3"	Square
G407	12	12	12	12	"W" + 10"	Square
G408	13	13	13	13	"W" + 10"	Skewed
G409	1	1	1	1	"W" + 3"	Skewed
G410	8	8	8	8	*	Skewed
G501	6	8	12	16	26'-8"	Square
G502	1	1	1	1	22'-2"	Square
G503	1	1	1	1	17'-8"	Square
G504	1	1	1	1	*	Skewed
G505	1	1	1	1	*	Skewed
G506-G5_**	1 each	1 each	1 each	1 each	*	Skewed

*Bar Lengths vary with Skew.

**G512 for "W" = 3'
G514 for "W" = 4'
G518 for "W" = 6'
G522 for "W" = 8'

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

GENERAL NOTES

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

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

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

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

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

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

BRIDGE ENGINEER

DETAILS OF STANDARD TYPE B APPROACH GUTTERS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 4-10-2003 FILENAME: B2016B.STD

CHECKED BY: CJF DATE: 4-10-2003 SCALE: 3/8" = 1'-0"

DESIGNED BY: STD DATE:

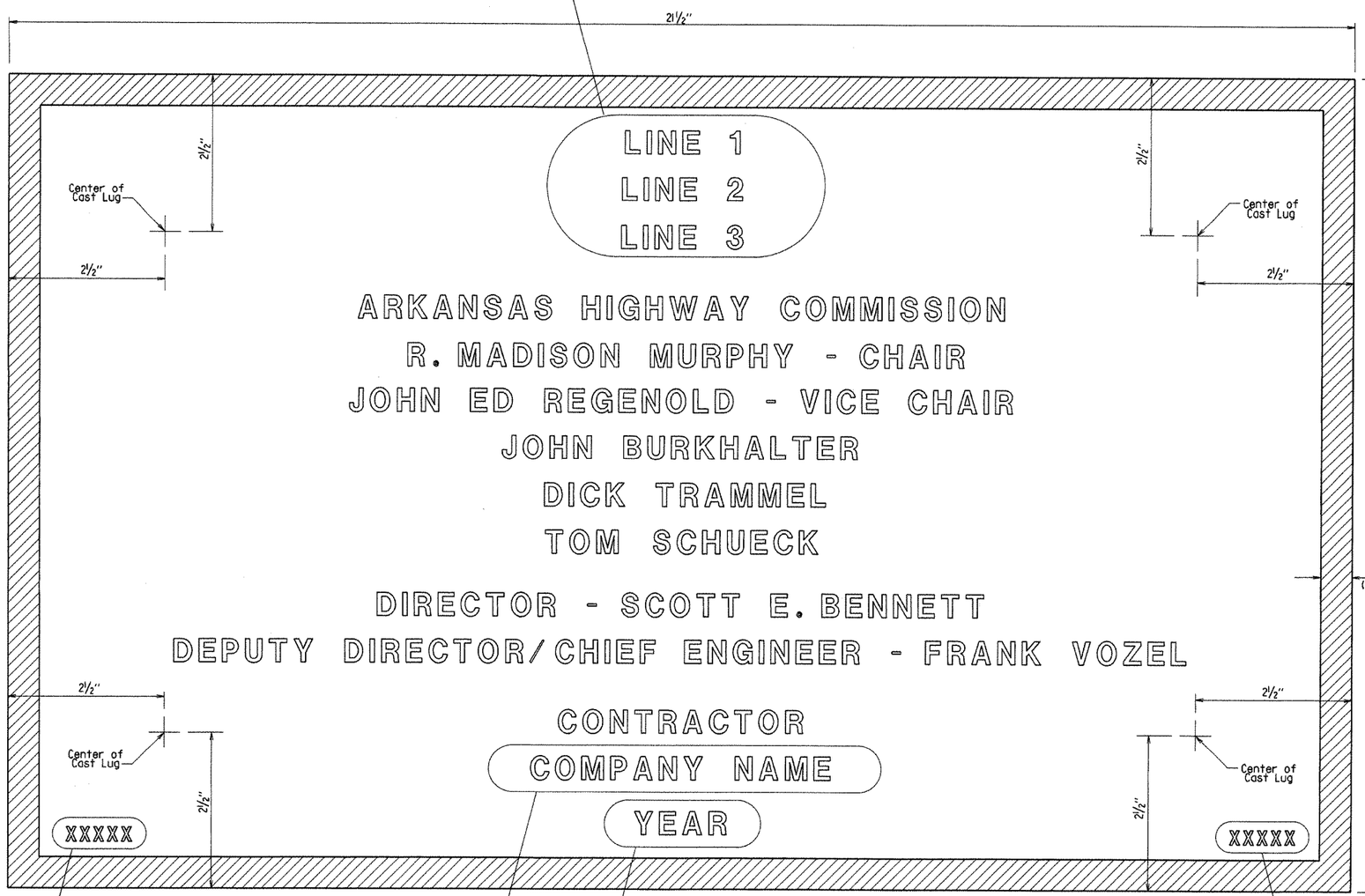
BRIDGE NO. DRAWING NO. 2016B

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
9-8-11				6	ARK.		38	
				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	



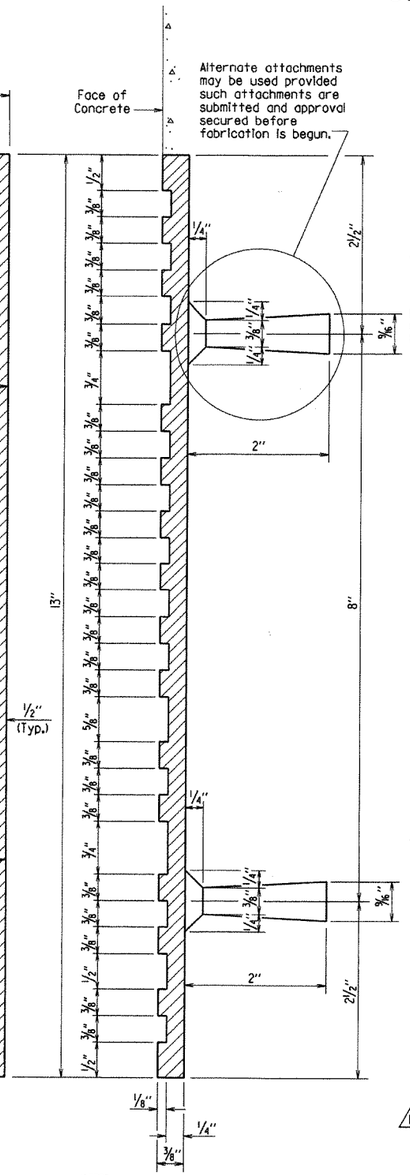
Place the design live loading here using 1/8" raised letters and numerals 1/4" high. Examples : HS 20
HL-93

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 9/16" x 2" long. The border and all lettering shall be raised 1/16" 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. 7610
CARL J. FUSELIER
BRIDGE ENGINEER

DETAILS OF STANDARD TYPE D BRIDGE NAME PLATE

ROUTE SEC.

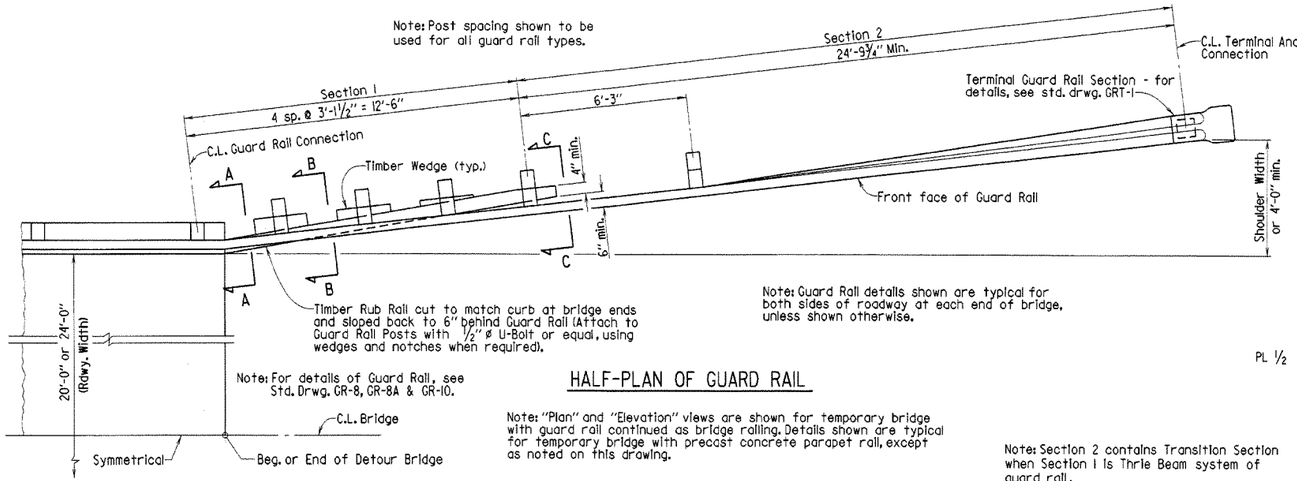
ARKANSAS STATE HIGHWAY COMMISSION

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.		39	
04-10-03				JOB NO.				
						TEMP. BRIDGE		2465

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



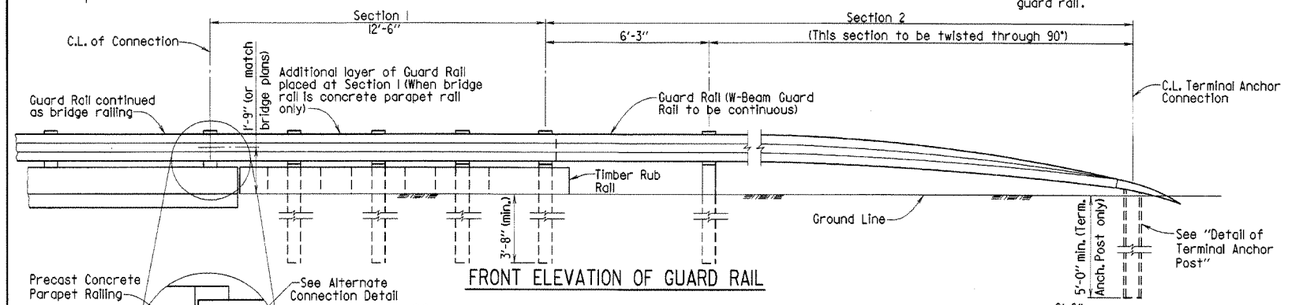
Note: For details of Guard Rail, see Std. Drwg. GR-8, GR-8A & GR-10.

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

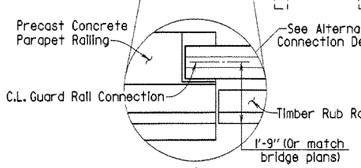
HALF-PLAN OF GUARD RAIL

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.

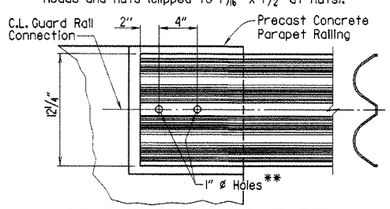


FRONT ELEVATION OF GUARD RAIL



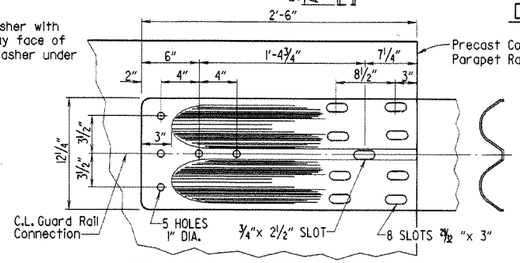
Note: For details of Thrie Beam system of guard rail, see std. drwg. GR-10 & GR-10A. Thrie Beam rail and five bolt connection as shown on GR-10 are required when precast rail has five cast holes for guard rail connection.

** 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 1½" o.d. steel washer under heads and nuts (Clipped to 1⅝" x 1½" at nuts).



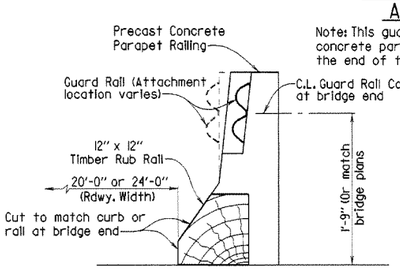
W-BEAM GUARD RAIL CONNECTION AT CONCRETE PARAPET RAIL

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.

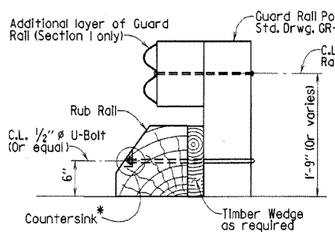


ALTERNATE CONNECTION DETAIL WITH SPECIAL END SHOE FOR W-BEAM GUARD RAIL CONNECTION AT CONCRETE PARAPET RAIL

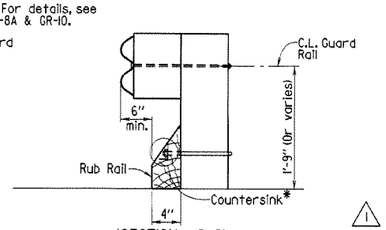
Note: Special End Shoe and four ⅞" ø x 2½" H.S. Bolts are required when concrete insert anchor assembly is present in precast rail unit.



(SECTION A-A)

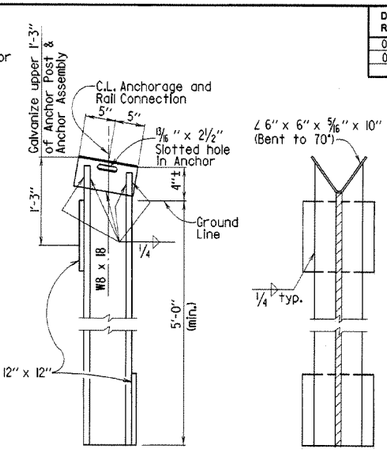


(SECTION B-B)



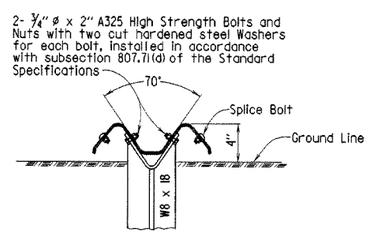
(SECTION C-C)

DETAILS OF RUB RAIL (CONC. PARAPET BRIDGE RAIL)

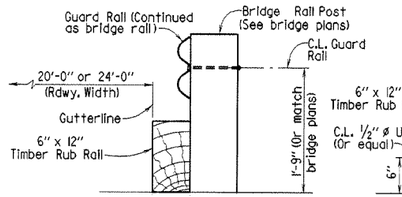


Note: Post shall be driven or set in dug hole and compacted.

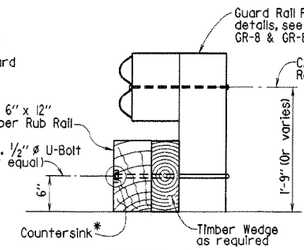
DETAILS OF TERMINAL ANCHOR POST



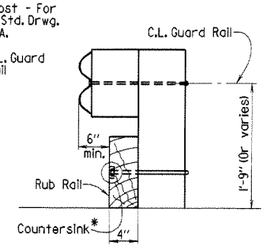
DETAILS OF TERMINAL ANCHOR CONNECTION



(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.

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.

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

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

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.

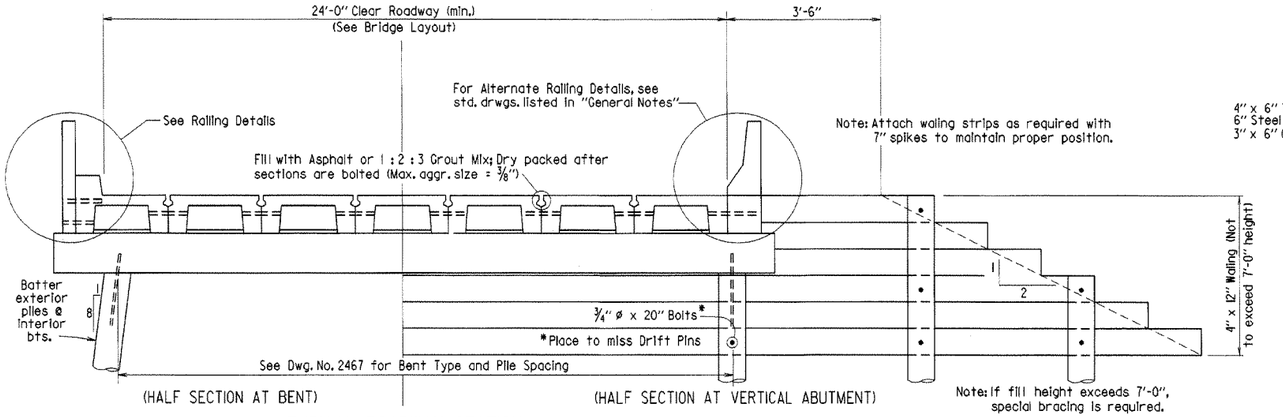
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

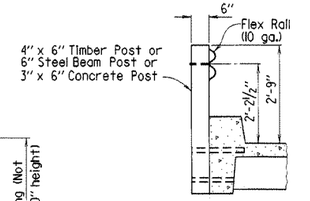
DRAWN BY: KMG DATE: 04-05-01 FILENAME: B2465.STD
CHECKED BY: MEC DATE: 04-05-01 SCALE: No Scale
DESIGNED BY: Std. DATE: ——

BRIDGE NO. DRAWING NO. 2465

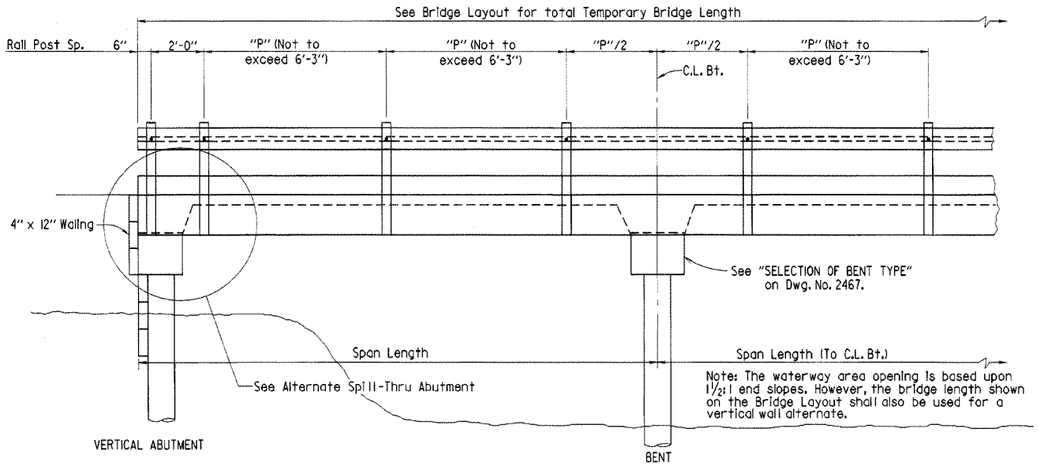
DATE ISSUED	DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
10/18/96	——	10/18/96			6	ARK.		40	
	10/24/02				JOB NO.				
	04/10/03								
					①		TEMP. BRIDGE 2466		



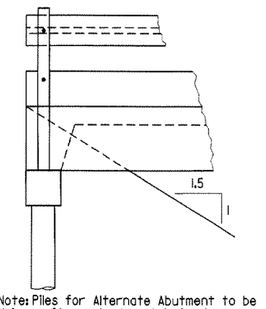
TYPICAL ROADWAY SECTION



RAILING DETAILS

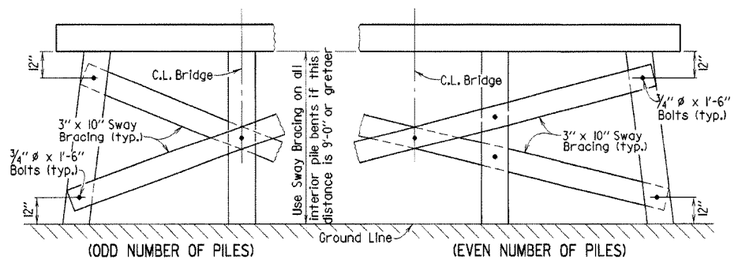


LONGITUDINAL SECTION



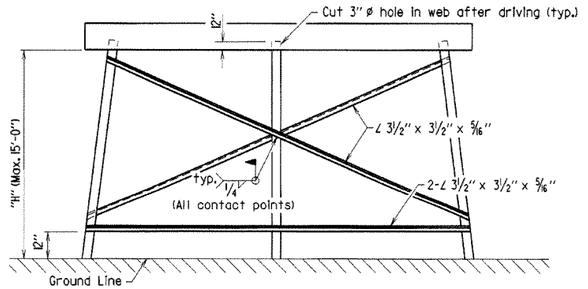
Note: Piles for Alternate Abutment to be driven after embankment is in place.

ALTERNATE SPILL-THRU ABUTMENT



DETAILS OF SWAY BRACING FOR TIMBER PILES

Note: Sway Bracing, if required, shall be used on both lines of piles for Tower Bents.



Note:
All bracing shall be cut and welded in the field. Each brace shall be furnished in one piece. Payment for any bracing required shall be considered incidental to item 603 "Temporary Bridge Structure".

Omit bottom bracing where "H" is less than 10'. Omit all bracing where "H" is less than 5'.

DETAILS OF BRACING FOR STEEL PILES

GENERAL NOTES

2 DESIGN SPECIFICATIONS: AASHTO Standard Specifications for Highway Bridges, 2002 Edition, with current interim specifications.

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

SEISMIC PERFORMANCE CATEGORY: A

DESIGN LIVE LOADS: HS15-44 (No Overload).

DESIGN DEAD LOADS: 50 lbs. per cu. ft. for lumber
150 lbs. per cu. ft. for concrete

Precast Concrete Units shall comply with the requirements of AHTD standard drawings and special provisions. Drawings for old style units are within the drawing series 5291 thru 5307 and 14800 thru 14899. New style units (Current Design) are within the drawing series 15190 thru 15400.

Load Factor Design is used for the new style precast concrete units. Allowable Stress Design is used for the old style precast concrete units and timber components. The allowable unit stresses used assume normal duration of loading for stress grades of sawn lumber and are as follows:

fb=1200 psi
fv=85 psi

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

1 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 shall comply with Section 818 of the Standard Specifications and shall be driven to a minimum bearing capacity of 20 tons per pile. Steel piling shall be HP12X53 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.

Grout placed around Drift Pins in piles shall be allowed to cure for 72 hours before caps are used to support the superstructure. Grout to consist of one part portland cement to two parts sand.

Melted sulfur may be used in lieu of grout placed around drift pins. The superstructure may be placed as soon as the sulfur has hardened.

Bent caps to be handled from points approximately 5' from the ends.

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.

1 Revised Reinf. Stl. to Grade 60. Updated the SEAL jxj 10-24-02 Ck'd by: MEC 10-24-02

2 Revised for 2002 AASHTO Design Specifications and 2003 AHTD Construction Specifications. CRE 04-10-03 Chk'd by:

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

BRIDGE ENGINEER

SHEET 1 OF 2

DETAILS OF STANDARD TEMPORARY BRIDGE STRUCTURE PRECAST CONCRETE SPANS 24'-0" ROADWAY WIDTH

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

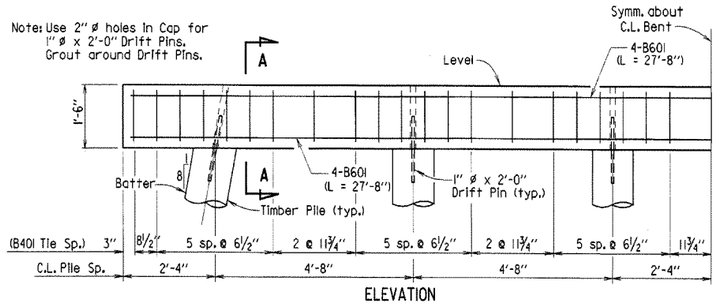
LITTLE ROCK, ARK.

DRAWN BY: MJT DATE: 10-18-96
CHECKED BY: GEC DATE: 10-18-96 SCALE: NO SCALE
DESIGNED BY: Std. DATE: ——
BRIDGE NO. DRAWING NO. 2466

B2466.STD

DATE ISSUED	DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
10/18/96		10/18/96			6	ARK.		41	
	04/10/03				JOB NO.				
							TEMP. BRIDGE 2467		

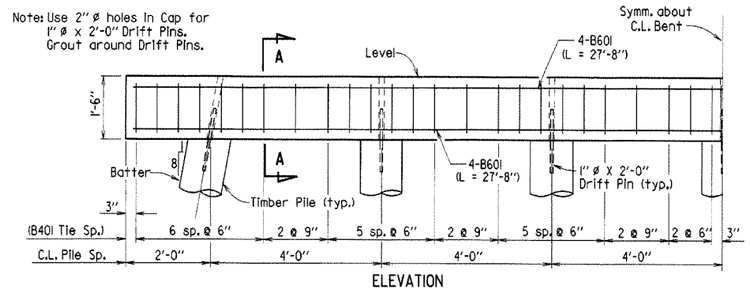
Note: Use 2" ø holes in Cap for 1" ø x 2'-0" Drift Pins. Grout around Drift Pins.



ELEVATION

PRECAST CAP & TIMBER PILES
(SI + S2 ≤ 38')

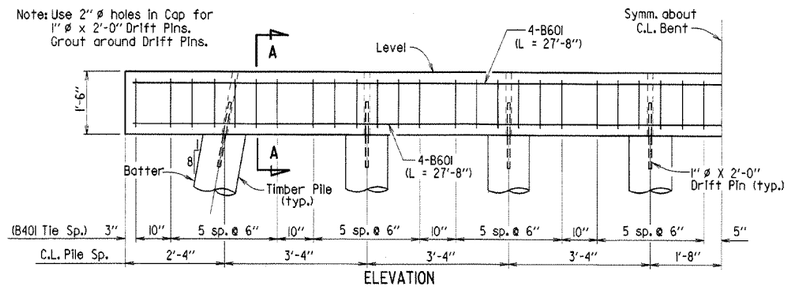
Note: Use 2" ø holes in Cap for 1" ø x 2'-0" Drift Pins. Grout around Drift Pins.



ELEVATION

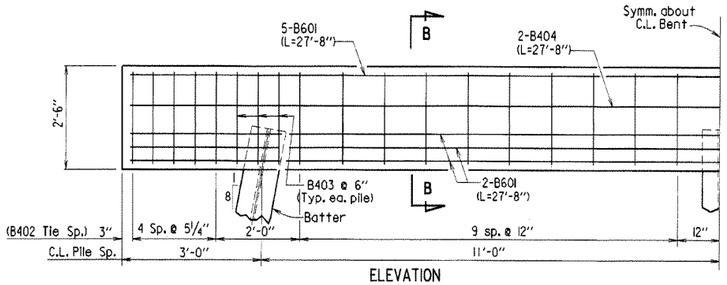
PRECAST CAP & TIMBER PILES
(38' < SI + S2 ≤ 50')

Note: Use 2" ø holes in Cap for 1" ø x 2'-0" Drift Pins. Grout around Drift Pins.



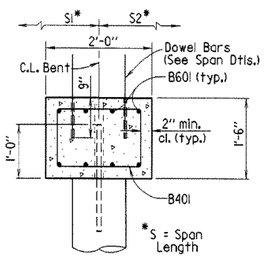
ELEVATION

PRECAST CAP & TIMBER PILES
(50' < SI + S2 ≤ 62')



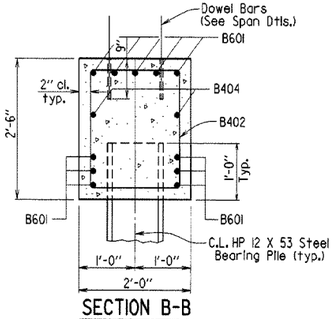
ELEVATION

CAST IN PLACE CAP & HP 12X53 PILES

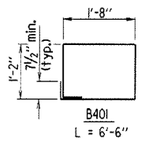


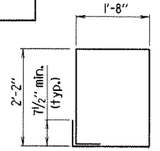
SECTION A-A

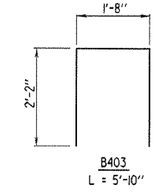
NOTE : ALL PRECAST SPANS SHALL BE FIXED TO THE CAP WITH A MINIMUM OF 2 DOWELS AT EACH END OF SPAN.

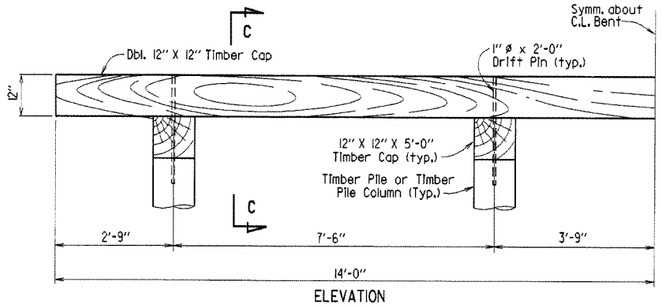


SECTION B-B



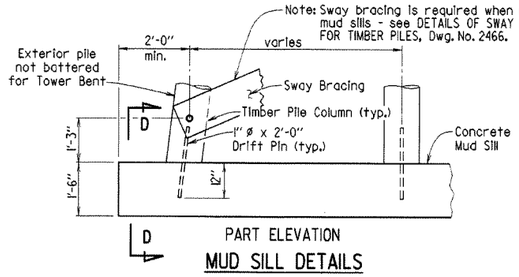






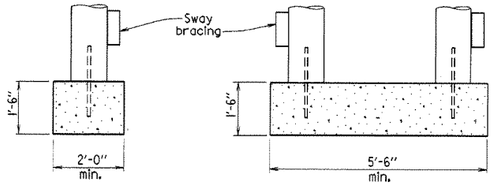
ELEVATION

TOWER BENT - TIMBER CAP & PILES



PART ELEVATION

MUD SILL DETAILS



SECTION D-D
(When bottom of cap to top of mud sill is 10' or less)

SECTION D-D
(When bottom of cap to top of mud sill is greater than 10')

SELECTION OF BENT TYPES

These temporary bridge drawings provide the following bent types:
- Driven timber piles with precast concrete cap.
- Driven steel HP 12X53 piles with cast in place concrete cap.
- Tower bent with driven timber piles and timber cap.
- Mud sill with timber pile columns and precast concrete cap.
- Tower bent with mud sill and timber pile columns and timber cap.

Guidelines to be used in determining the appropriate bent type are:
1) Driven piles may be used at intermediate bents if a pile penetration of at least 15' below the ground line can be obtained. At end bents, a pile penetration of at least 5' below the bottom of cap is required. Pile penetration measurements at end bents can include embankment, but fill material may not be placed around intermediate bent piles in order to meet the 15' requirement.
2) If driven piles are used at intermediate bents and the distance from the bottom of cap to ground line exceeds 15' at any intermediate bent, tower bents must be used at the minimum rate of one tower bent for every 160' of total bridge length. Tower bent(s) when required, shall be placed at the bent location(s) having the greatest distance from bottom of cap to ground line.
3) If piles cannot be practically driven at a bent, mud sills shall be used. All soft and yielding material shall be removed from the bearing area before placing the sill concrete.
4) Timber piles shall be used as columns in mud sills. The column spacing shall be the same as that used for driven timber pile bents for the appropriate span lengths involved.
5) If a mud sill is to be used and the distance from the bottom of cap to ground line is more than 10', a tower bent with mud sill must be used at that location.
6) A timber cap may be used only if tower bents are used.

SECTION C-C

⚠1 Revised for CPB Seal, CRE 04-10-2003
Chk'd By: CSF

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

BRIDGE ENGINEER

SHEET 2 OF 2

DETAILS OF STANDARD TEMPORARY BRIDGE STRUCTURE PRECAST CONCRETE SPANS 24'-0" ROADWAY WIDTH

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

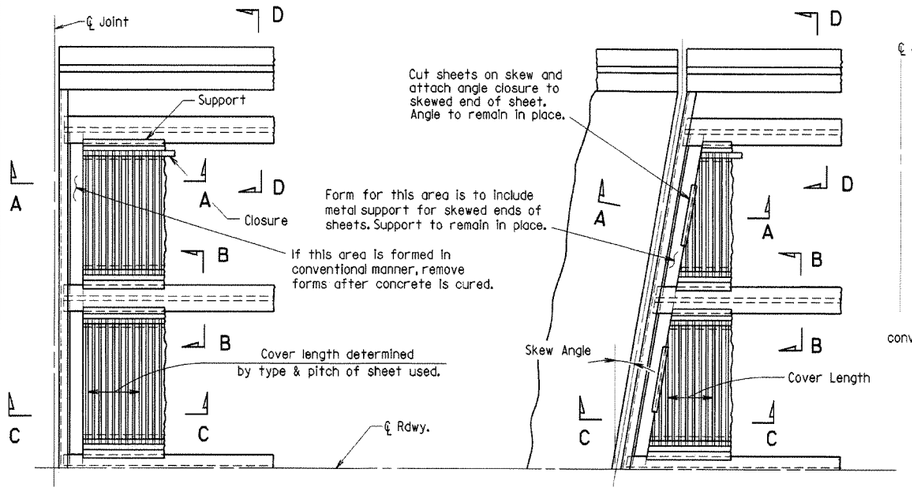
DRAWN BY: MJT DATE: 10-18-96
CHECKED BY: GEC DATE: 10-18-96
DESIGNED BY: Std. DATE: ——
SCALE: NO SCALE

BRIDGE NO.

DRAWING NO. 2467

B2467.STD

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.		42	
04-10-2003						JOB NO.				
								BR. DECK FORMS		14991

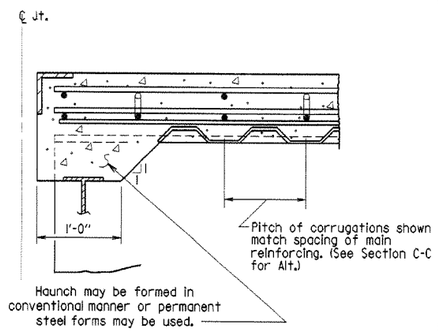


PART PLAN - SQUARE SPAN

3/8" = 1'-0"

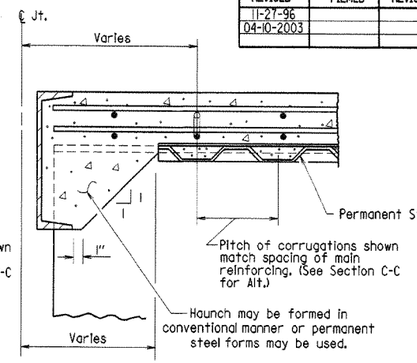
PART PLAN - SKEWED SPAN

3/8" = 1'-0"



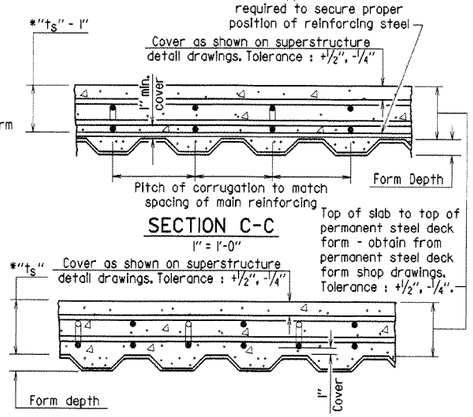
SECTION A-A

N.T.S.
(Angle at end of span)



SECTION A-A

N.T.S.
(Channel at end of span)



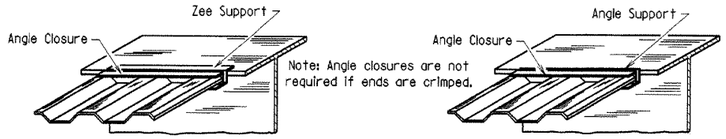
SECTION C-C

1" = 1'-0"

SECTION C-C - ALTERNATE

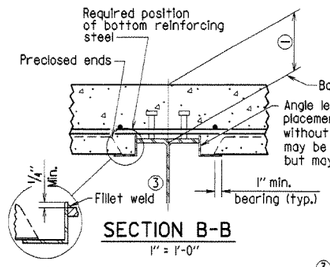
1" = 1'-0"

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



SKETCH OF PERMISSIBLE SUPPORTS

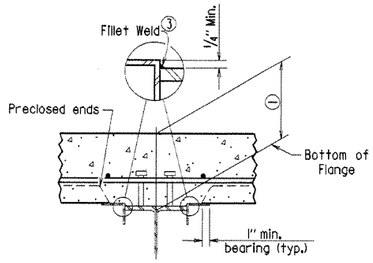
N.T.S.



SECTION B-B

1" = 1'-0"

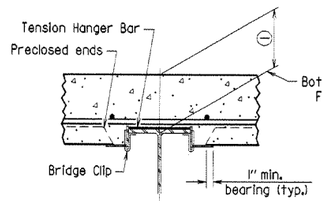
(Showing permissible support for tension flange where shear connectors are used, and for all compression flanges)



SECTION B-B

1" = 1'-0"

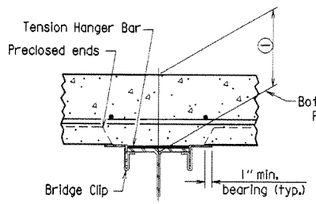
(Showing permissible support for tension flange where shear connectors are used and for all compression flanges)



SECTION B-B

1" = 1'-0"

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

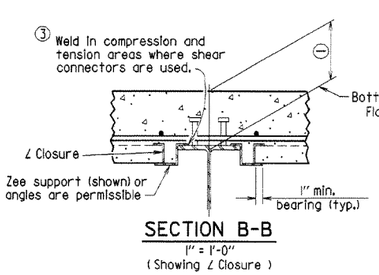


SECTION B-B

1" = 1'-0"

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

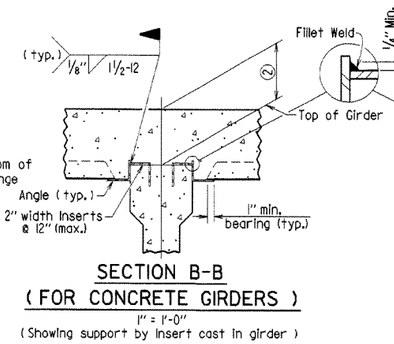
③ Minimum weld: 1/8" x 1" ℄ 18". More weld may be required; maximum length per weld = 1 1/2" (typ.)



SECTION B-B

1" = 1'-0"

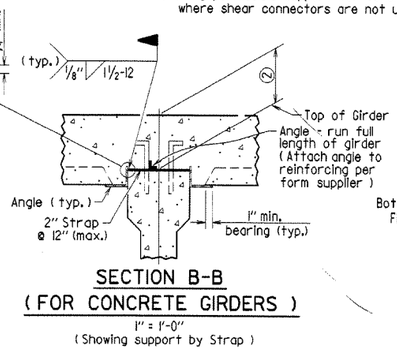
(Showing ∠ Closure)



SECTION B-B (FOR CONCRETE GIRDERS)

1" = 1'-0"

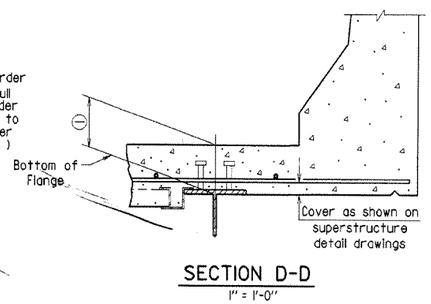
(Showing support by insert cast in girder)



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.

*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.

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. 4337
CHARLES P. BRAND

BRIDGE ENGINEER

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

ROUTE SEC.

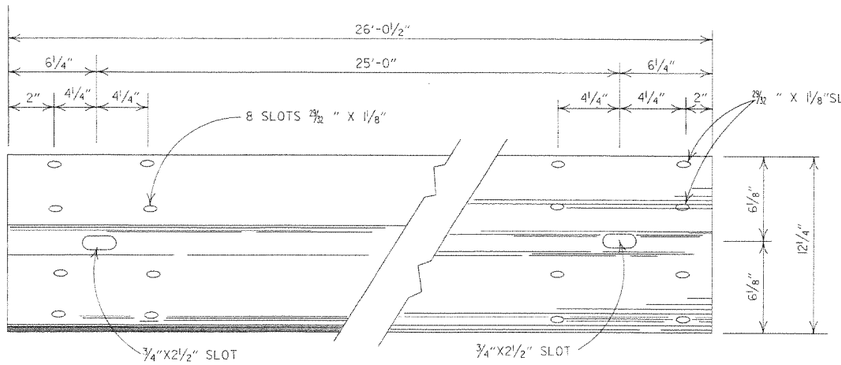
ARKANSAS STATE HIGHWAY COMMISSION

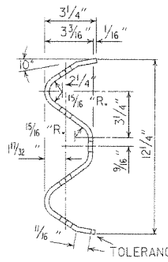
LITTLE ROCK, ARK.

DRAWN BY: MJT DATE: 10-17-96
CHECKED BY: CPB DATE: 10-17-96
DESIGNED BY: STD. DATE: —
SCALE: as noted

BRIDGE NO. DRAWING NO. 14991

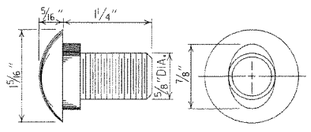
BI4991.STD



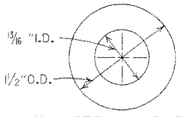


DETAILS OF W-BEAM GUARD RAIL

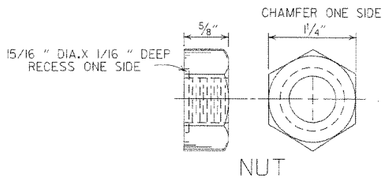
RAIL SECTION OF CLOSELY SIMILAR DIMENSIONS AND COMPARABLE STRENGTH MAY BE SUBSTITUTED IF APPROVED BY THE ENGINEER.



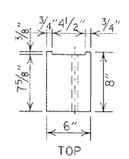
SPLICE BOLT
POST BOLT - SAME EXCEPT LENGTH



CUT STEEL WASHER

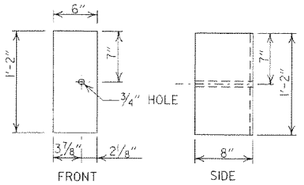


NUT

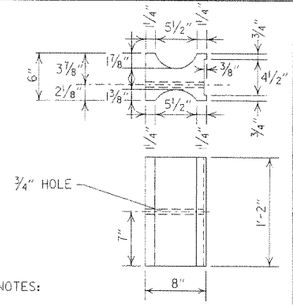


TOP

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



WOOD BLOCKOUT (W-BEAM)

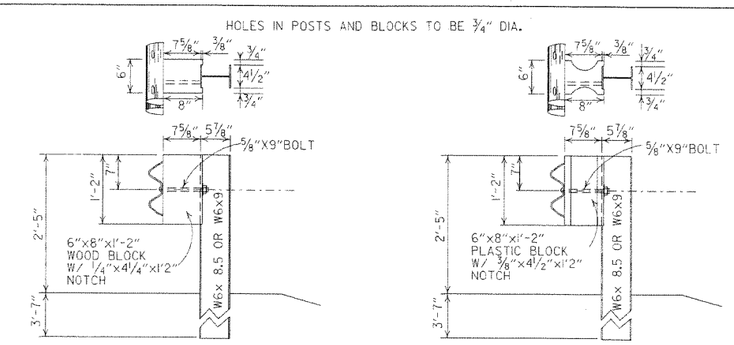


NOTES:

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

PLASTIC BLOCKOUT (W-BEAM)

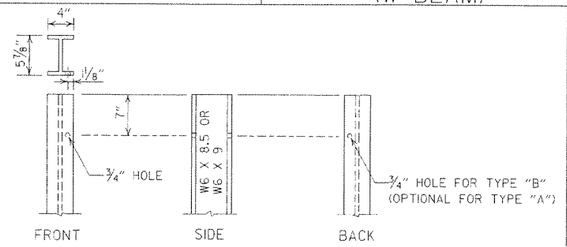
HOLES IN POSTS AND BLOCKS TO BE 3/4" DIA.



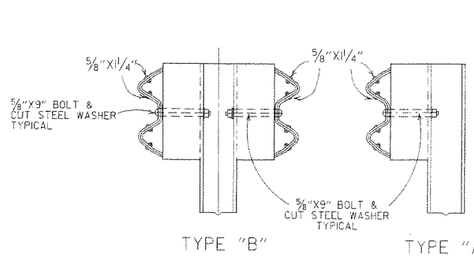
WOOD BLOCKOUT CONNECTIONS

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)

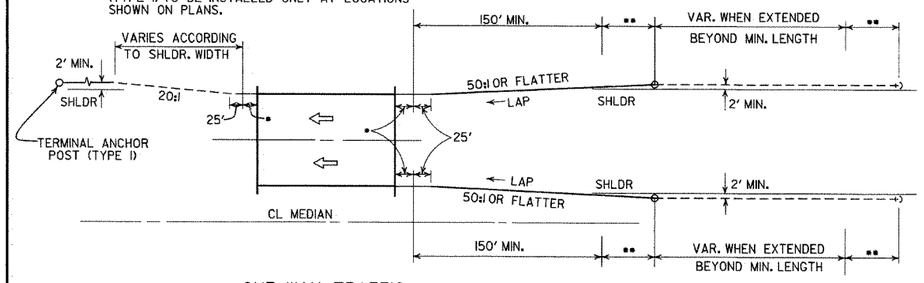
DATE	REVISION	DATE FILM
7-14-10	RAISED HEIGHT OF GUARD RAIL 1"	
10-15-09	ADDED REFERENCE TO MASH	
4-10-03	REVISED GENERAL NOTES	
8-22-02	REVISED DIMENSION ON WOOD & PLASTIC BLOCKOUT CONNECTIONS & ON STEEL POST	
11-16-01	REVISED WOOD BLOCKOUT & DETAILS OF WOOD LINE POST CONNECTIONS	
3-30-00	REMOVED GUARD RAIL AT BRIDGE ENDS	
1-12-00	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	8-5-91
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

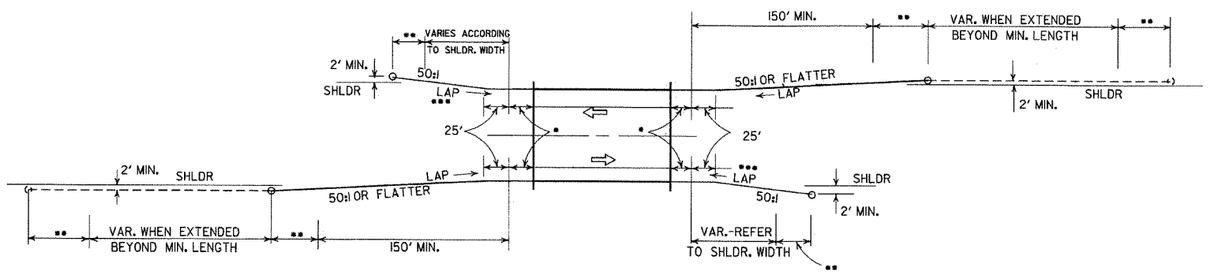
STANDARD DRAWING GR-8

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



ONE-WAY TRAFFIC

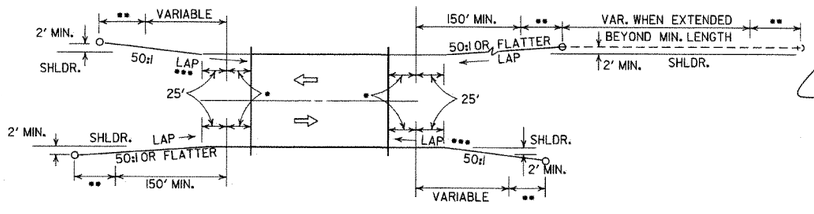
••• LAP OF GUARD RAIL SHALL BE AS SHOWN FOR A DISTANCE OF UP TO 200', CHANGE TO LAP IN DIRECTION OF TRAVEL.



TWO-WAY TRAFFIC

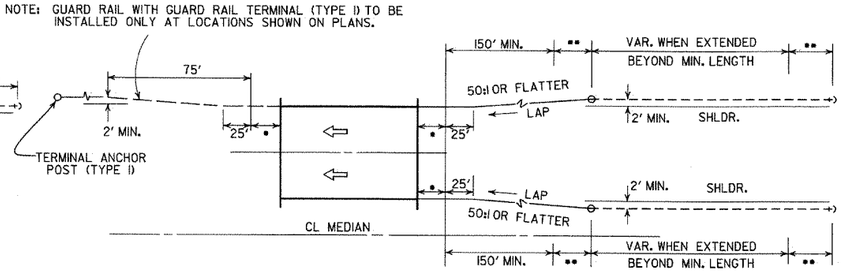
METHODS OF INSTALLATION OF GUARD RAIL AT LESS THAN FULL SHOULDER WIDTH BRIDGES USING GUARD RAIL TERMINAL (TYPE 2)

••• 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

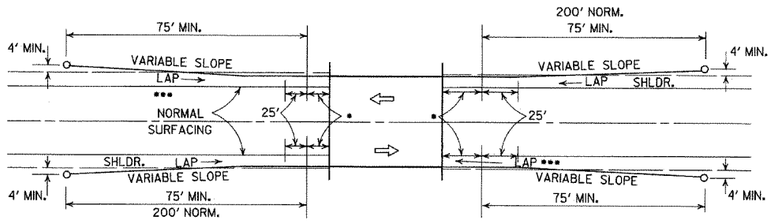
NOTE: GUARD RAIL WITH GUARD RAIL TERMINAL (TYPE I) TO BE INSTALLED ONLY AT LOCATIONS SHOWN ON PLANS.



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

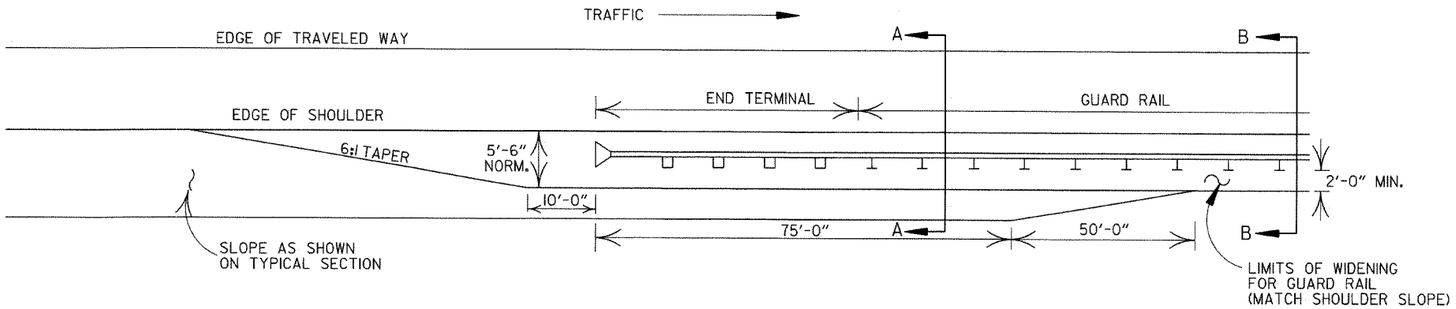
- • THRIE BEAM GUARD RAIL TERMINAL
- •• GUARD RAIL TERMINAL (TYPE 2)

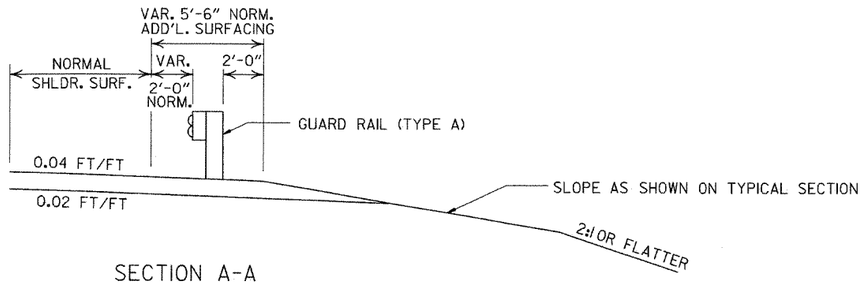
DATE	REVISION	DATE FILM
4-17-08	REVISED LAYOUTS	
11-10-05	REMOVED GUARD RAIL NOTES AND DETAILS	
11-16-01	DELETED NOTE-METHOD OF INSTALLATION OF GUARD RAIL USING GUARD RAIL TERM. (TY. I)	
1-12-00	ADDED CONSTRUCTION NOTE	1-12-00
6-26-97	REVISED LAYOUT	
10-1-92	REDRAWN & REVISED	10-1-92
	ADDED NOTE	
10-9-87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

ARKANSAS STATE HIGHWAY COMMISSION

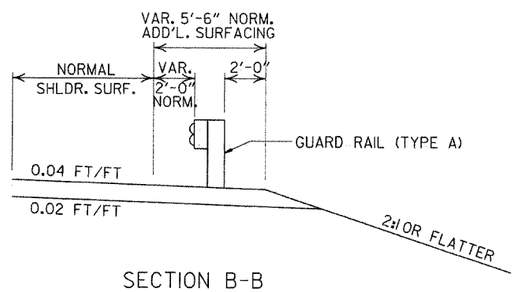
GUARD RAIL DETAILS

STANDARD DRAWING GR-9





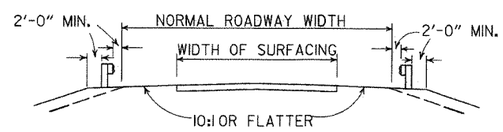
SECTION A-A



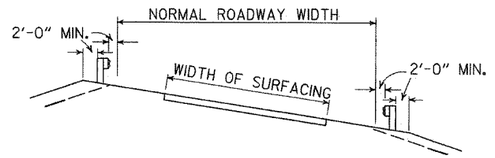
SECTION B-B

DETAILS OF WIDENING FOR GUARD RAIL

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

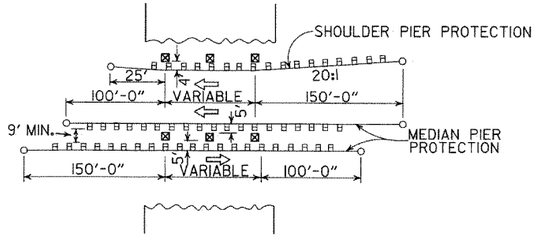


SECTION ON TANGENT



SECTION ON CURVE

DETAILS SHOWING POSITION OF GUARD RAIL ON HIGHWAY



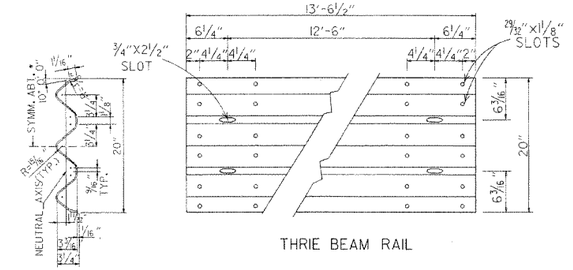
METHOD OF INSTALLATION OF GUARD RAIL AT FIXED OBSTACLE

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

ARKANSAS STATE HIGHWAY COMMISSION

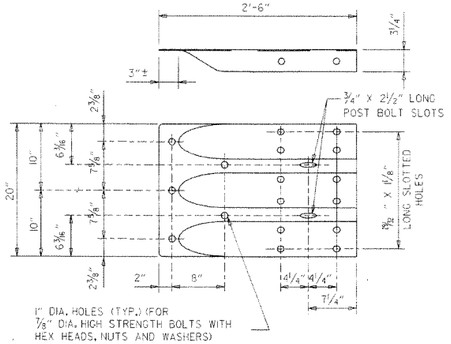
GUARD RAIL DETAILS

STANDARD DRAWING GR-9A

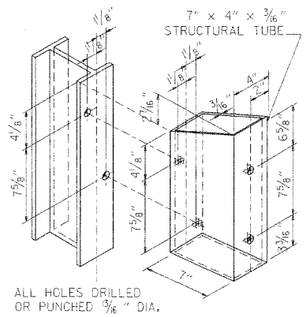


THRIE BEAM RAIL

SECTION THRU THRIE BEAM RAIL

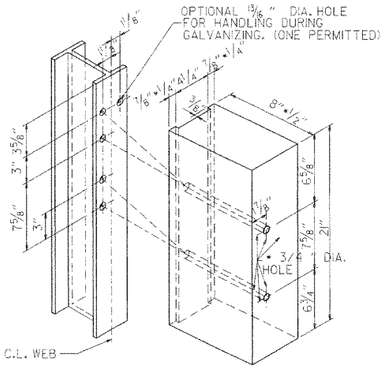


SPECIAL END SHOE



STRUCTURAL STEEL TUBING BLOCKOUT DETAIL

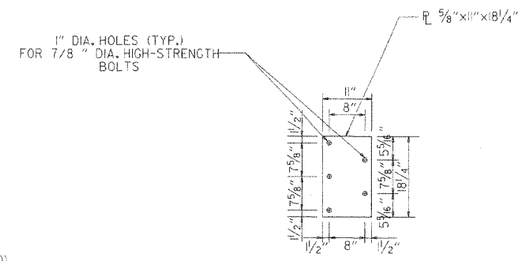
ATTACH BLOCKOUT TO POST USING ⅝" DIA. HEX HEAD BOLTS WITH 1½" O.D. CUT STEEL WASHERS AND NUT.



ALL HOLES 13/16" DIAMETER EXCEPT AS NOTED

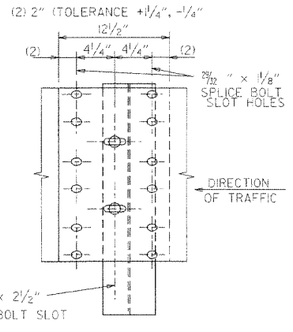
HOLE PUNCHING DETAIL FOR STEEL POST & WOOD OR PLASTIC BLOCKOUTS

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

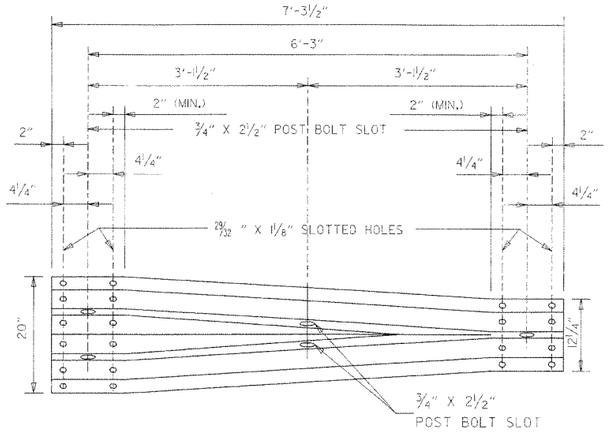


CONNECTOR PLATE

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.

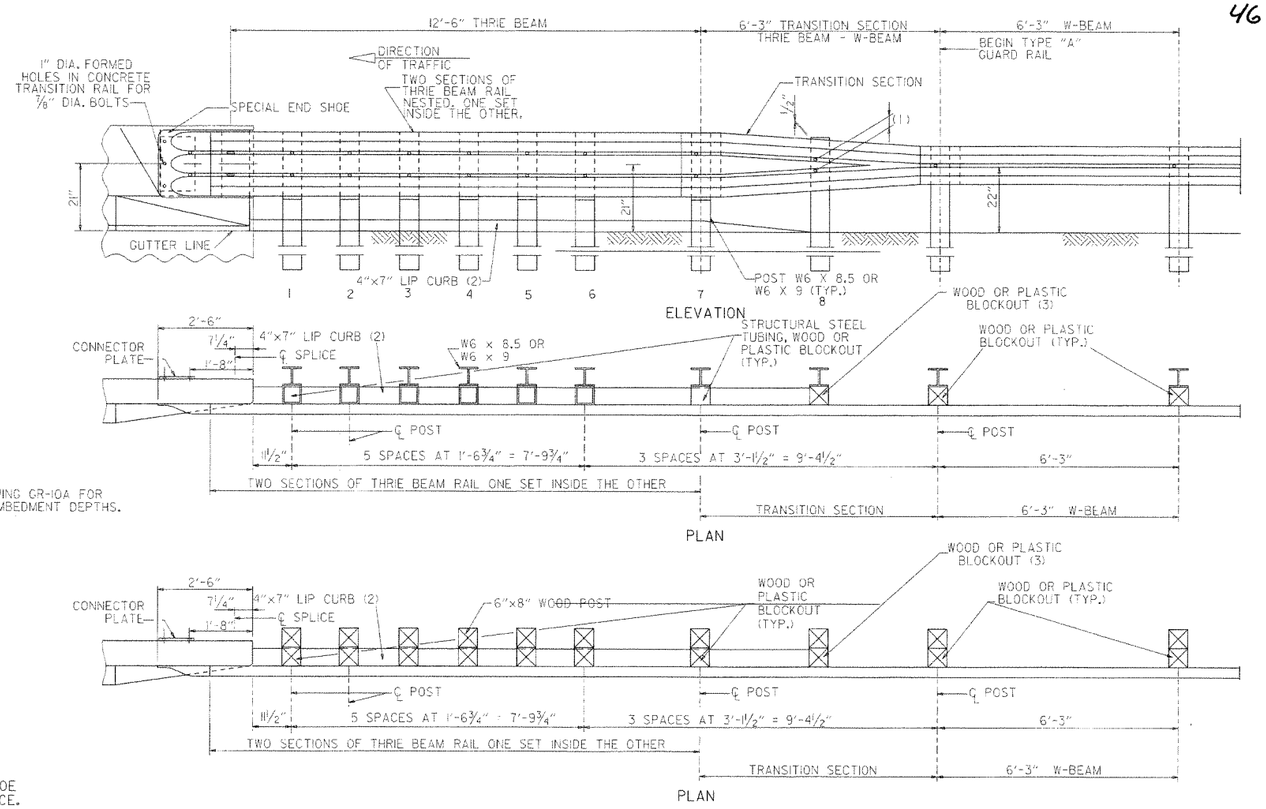


THRIE BEAM RAIL SPLICE AT POST



TRANSITION SECTION

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



(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 I.

RAIL POSTS SHALL BE SET PERPENDICULAR TO THE ROADWAY PROFILE GRADE AND VERTICALLY IN CROSS SECTION.

ALL BOLTS SHALL BE SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND NO MORE THAN ¾" BEYOND IT.

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

WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7# (1400 f) OR NO. 1 1350 f SOUTHERN PINE.

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

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

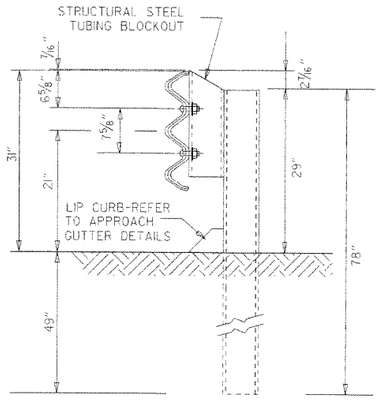
THRIE BEAM POSTS SHALL BE SAME MATERIAL AS W-BEAM POSTS FOR ENTIRE JOB.

DATE	REVISION	DATE FILM
7-14-10	RAISED HEIGHT OF W-BEAM 1"	
11-29-07	ADDED PLASTIC BLOCKOUTS	
11-10-05	ADDED NOTE FOR ATTACHING STEEL BLOCKOUT	
11-18-04	REVISED GENERAL NOTES	
10-9-03	REVISED GENERAL NOTES	
4-10-03	REVISED GENERAL NOTES	
8-22-02	REVISED NOTE (2)	
6-29-00	MOVED DIMENSION LINES	
5-18-00	ADDED NOTE	
3-30-00	DRAWN & ISSUED	

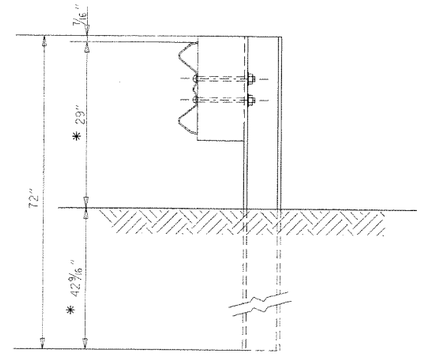
ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR-10

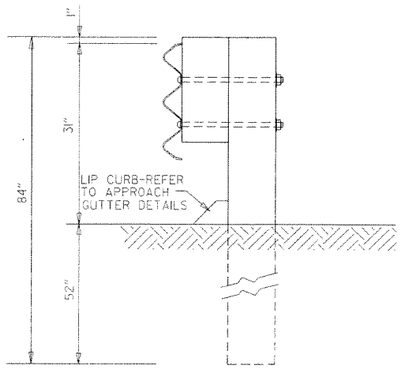


THRIE BEAM RAIL WITH STEEL TUBING BLOCKOUT
AND STEEL POST
POSTS 1-7

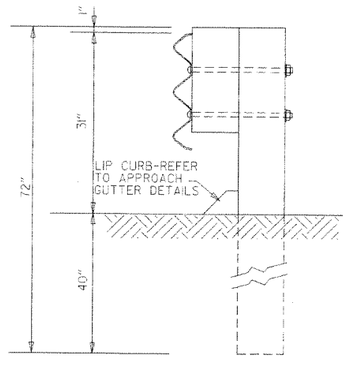


W-BEAM TO THRIE BEAM TRANSITION RAIL
WITH WOOD OR PLASTIC BLOCKOUT AND STEEL POST
POST 8

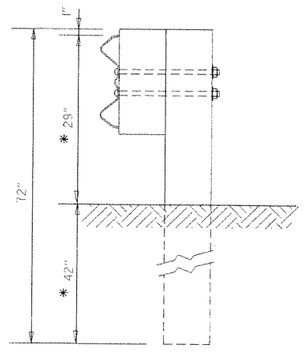
* NOTE:
THESE DIMENSIONS WILL NEED TO BE ADJUSTED IN THE FIELD TO MAKE THE TRANSITION FROM 21" MID POINT OF THRIE BEAM TO 22" MID POINT OF W-BEAM.



THRIE BEAM RAIL
WITH WOOD OR PLASTIC
BLOCKOUTS & WOOD POSTS
POSTS 1-6



THRIE BEAM RAIL
WITH WOOD OR PLASTIC
BLOCKOUT & WOOD POST
POST 7



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

GENERAL NOTES:

RAIL POSTS SHALL BE SET PERPENDICULAR TO THE ROADWAY PROFILE GRADE AND VERTICALLY IN CROSS SECTION.

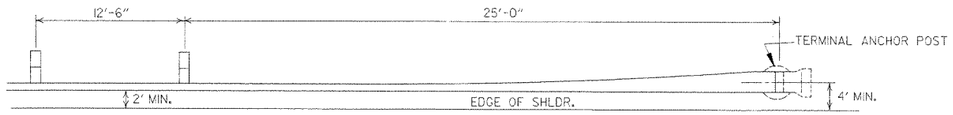
WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7f (1400 f) OR NO. 1 1350 f SOUTHERN PINE.

DATE	REVISION	DATE FILM
7-14-10	REVISED POST 8 DIMENSIONS	
11-29-07	ADDED PLASTIC BLOCKOUTS	
8-22-02	REVISED LIP CURB NOTE	
3-30-00	DRAWN & ISSUED	

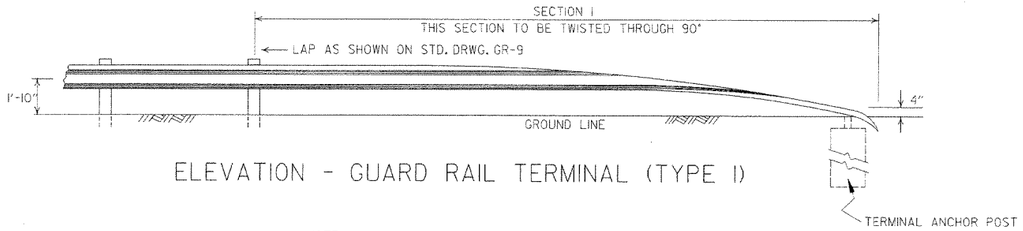
ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR-10A

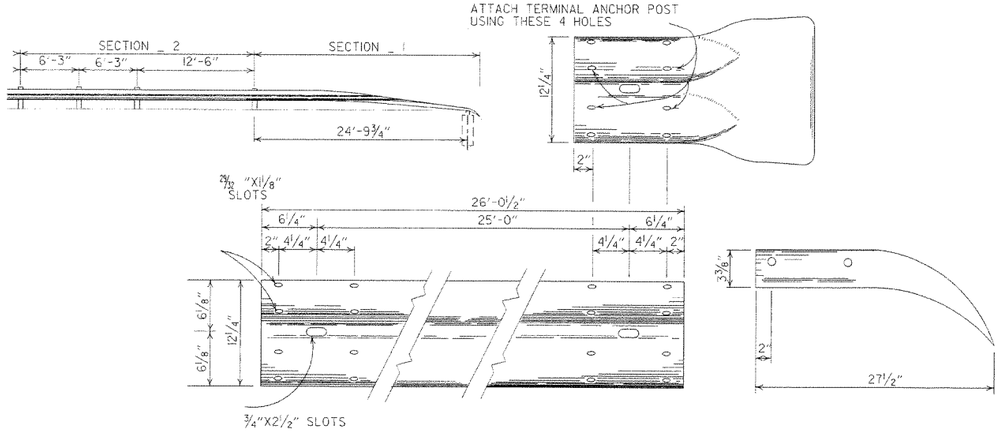


PLAN - GUARD RAIL TERMINAL (TYPE I)



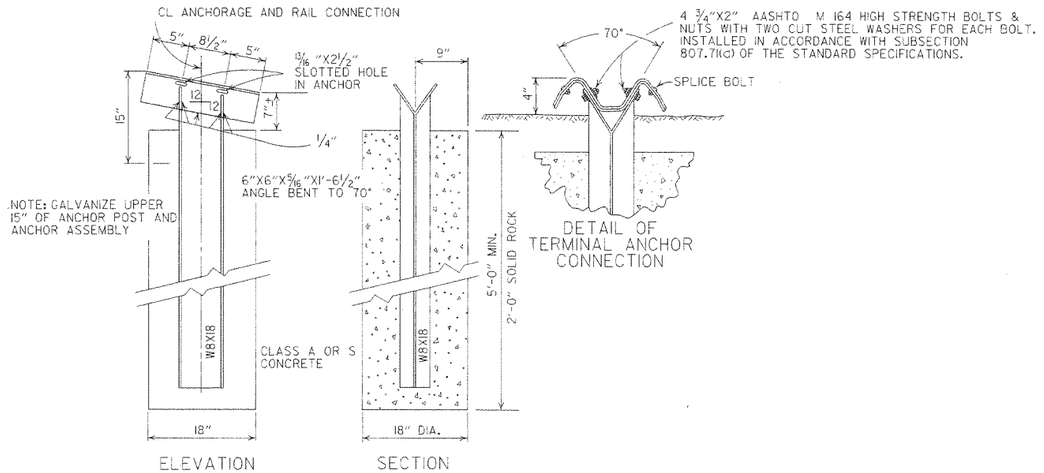
ELEVATION - GUARD RAIL TERMINAL (TYPE I)

NOTE:
SECTIONS 1 AND 2 OF GUARD RAIL TERMINAL SHALL BE PAID FOR AT THE PRICE BID PER LINEAR FOOT OF THE TYPE OF GUARD RAIL SPECIFIED.



SECTION I

TERMINAL SECTION



ELEVATION SECTION

NOTE: RAIL MEMBERS MAY BE BOLTED TO ANGLE AT TERMINAL ANCHOR AND THE TWO ASSEMBLIES POSITIONED TO PROPER ALIGNMENT PRIOR TO PLACING CONCRETE AROUND 8 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

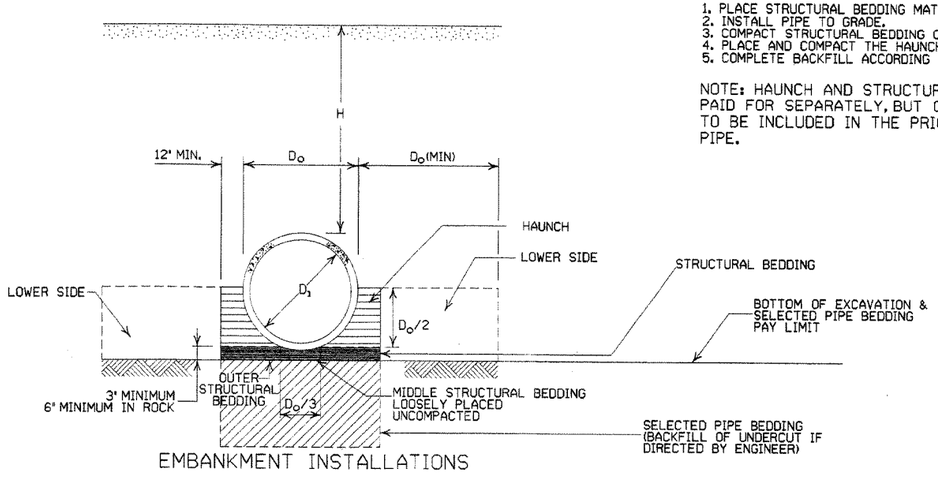
GUARD RAIL DETAILS

STANDARD DRAWING GRT-1

CONSTRUCTION SEQUENCE

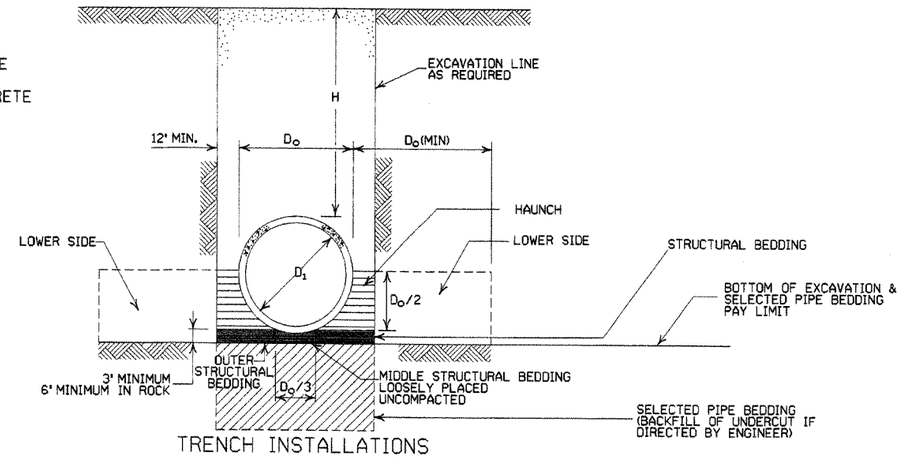
1. PLACE STRUCTURAL BEDDING MATERIAL TO GRADE. DO NOT COMPACT.
2. INSTALL PIPE TO GRADE.
3. COMPACT STRUCTURAL BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE.
4. PLACE AND COMPACT THE HAUNCH AREA UP TO THE MIDDLE OF THE PIPE.
5. COMPLETE BACKFILL ACCORDING TO SPECIFICATIONS.

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	31⅛	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	87⅛	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

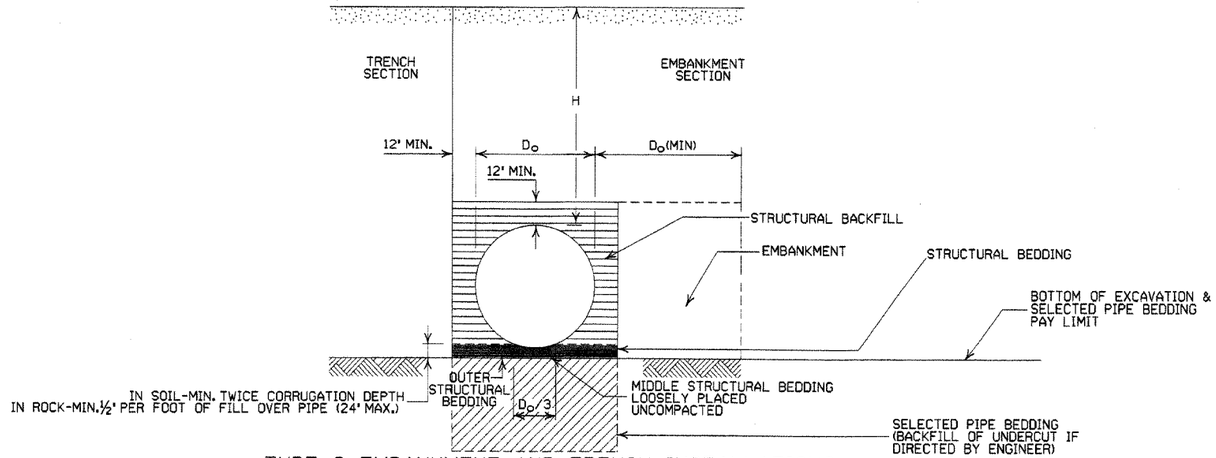
METAL THICKNESS IN INCHES			GAUGE NUMBER
STEEL			
ZINC COATED	UNCOATED	ALUMINUM	
0.064	0.0598	0.060	16
0.079	0.0747	0.075	14
0.109	0.1046	0.105	12
0.138	0.1345	0.135	10
0.168	0.1644	0.164	8
0.188	0.1838		7
0.218	0.2145		5
0.249	0.2451		3
0.280	0.2758		1

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	17x13	3	12	0.064	13	15+	0.060	15	
18	21x15	3	12	0.064	12	15+	0.060	14	
21	24x18	3	12	0.064	10	15+	0.060	12	15+
24	28x20	3	12	0.064	10	15	0.060	10	15+
30	35x24	3	12	0.079	9	14	0.075	9	14
36	42x29	3½	12	0.079	9	13	0.075	9	13
42	49x33	4	12	0.079	8	12	0.105	8	12
48	57x38	5	12	0.109	8	12	0.135	8	12
54	64x43	6	12	0.109	8	12	0.135	8	12
60	71x47	7	12	0.138	8	12	0.164	8	12
66	77x52	8	12	0.168	8	12	0.164	8	12
72	83x57	9	12	0.168	9	13			
			3 INCH BY 1 INCH OR 5 INCH BY 1 INCH CORRUGATION•• RIVETED, WELDED, OR HELICAL						
36	40x31	5	12	0.079	15	15+			
42	46x36	6	12	0.079	15	15+			
48	53x41	7	12	0.079	15	15+			
54	60x46	8	12	0.079	15	15+			
60	66x51	9	12	0.079	15	15+			
66	73x55	12	12	0.079	15	15+			
72	81x59	14	18	0.079	15	15+			
78	87x63	14	18	0.079	14	15+			
84	95x67	16	18	0.109	13	15+			
90	103x71	16	24	0.109	12	15+			
96	112x75	18	24	0.109	11	15+			
102	117x79	18	24	0.109	10	15			
108	128x83	18	24	0.138	9	14			

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

•• WHERE THE STANDARD 2 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 -

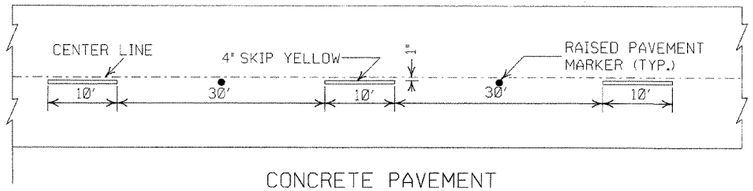
D_o = OUTSIDE DIAMETER OF PIPE
MAX. = MAXIMUM
MIN. = MINIMUM
= STRUCTURAL BACKFILL MATERIAL
= UNDISTURBED SOIL
ELONG. = ELONGATED
EQUIV. DIA. = EQUIVALENT DIAMETER
H = FILL COVER HEIGHT OVER PIPE (FEET)

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

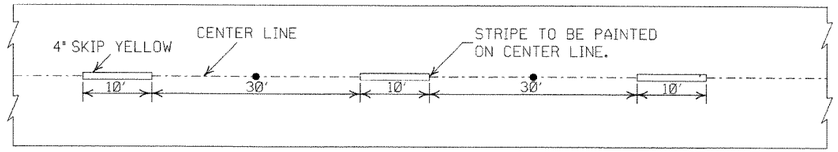
ARKANSAS STATE HIGHWAY COMMISSION

METAL PIPE CULVERT FILL HEIGHTS & BEDDING

STANDARD DRAWING PCM-1

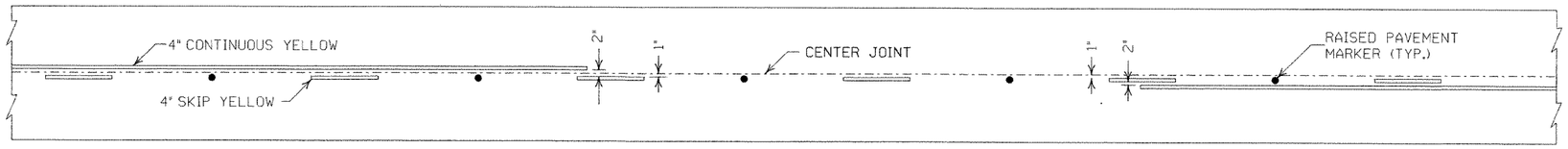


CONCRETE PAVEMENT

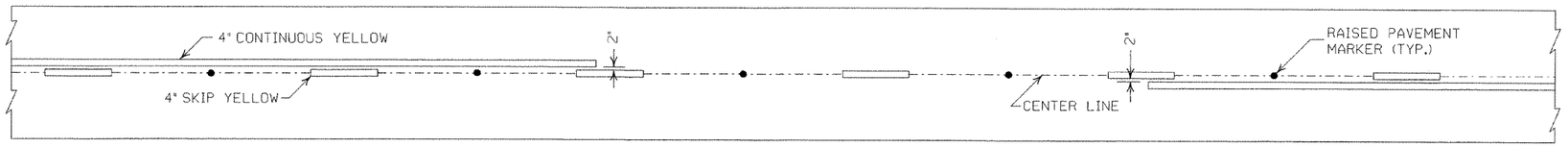


ASPHALT PAVEMENT

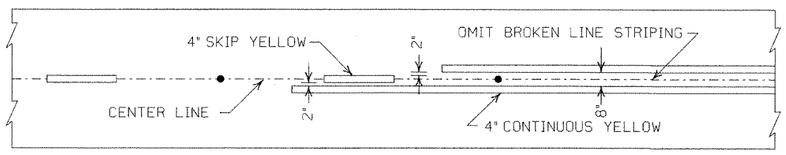
BROKEN LINE STRIPING



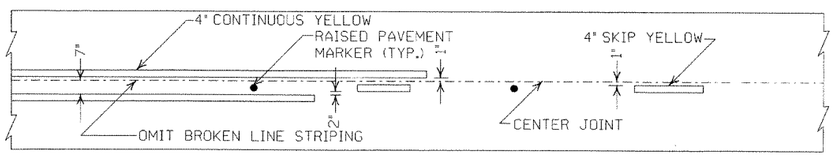
SOLID LINE STRIPING ON CONCRETE PAVEMENT



SOLID LINE STRIPING ON ASPHALT PAVEMENT

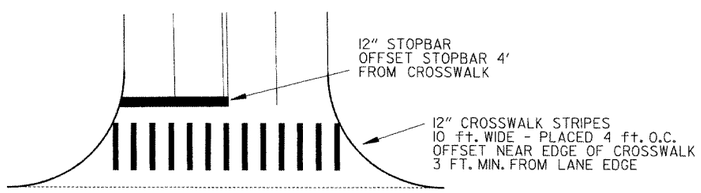


ASPHALT PAVEMENT



CONCRETE PAVEMENT

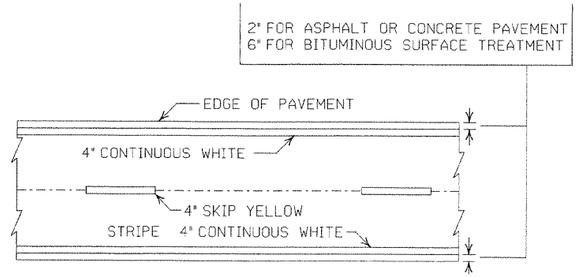
STRIPING AT ADJACENT NO PASSING LANES



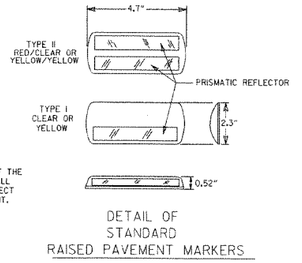
CROSSWALK AND STOPBAR DETAILS

NOTES:

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



PAVEMENT EDGE LINE MARKING



DETAIL OF STANDARD RAISED PAVEMENT MARKERS

GENERAL NOTES:

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

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

NOTE:

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

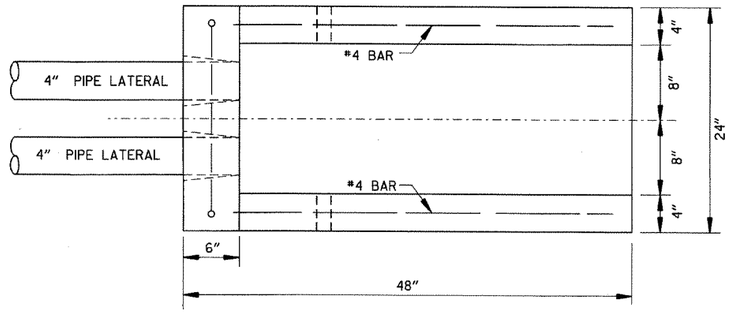
DATE	REVISION	FILMED
11-17-10	REVISED GENERAL NOTES & REMOVED PLOWABLE PVMT MRKRS	
11-18-04	REVISED NOTE 2 & GENERAL NOTES	
8-22-02	ADDED CROSSWALK & STOPBAR DTLS.	
7-02-98	ADDED DETAILS OF STD. RAISED PAV'T. MARKERS	
4-26-96	REV. NOTES 3&4; ADDED R.P.M.	
9-30-80	DRAWN	1-9-30-80

ARKANSAS STATE HIGHWAY COMMISSION

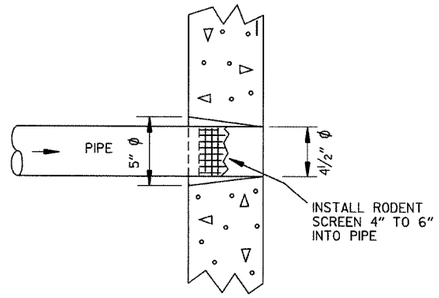
PAVEMENT MARKING DETAILS

STANDARD DRAWING PM-1

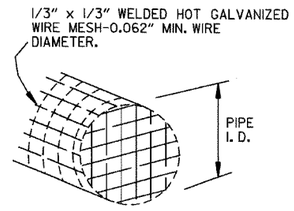
NOTE:
1. GRANULAR BACKFILL TO BE SUBSIDIARY TO PIPE UNDERDRAIN.
2. UNLESS OTHERWISE SPECIFIED ON THE PLANS, THE UNDERDRAIN COVER SHALL BE THOROUGHLY COMPACTED EARTH AND SHALL BE SUBSIDIARY TO PIPE UNDERDRAIN.
3. GRANULAR MATERIAL SHALL BE WRAPPED WITH GEOTEXTILE FABRIC. LAP FABRIC 12" OR THE WIDTH OF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



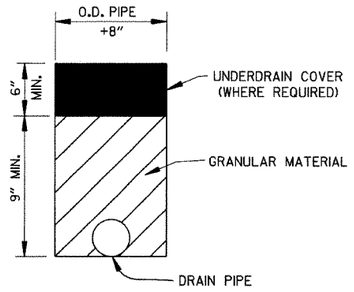
PLAN VIEW

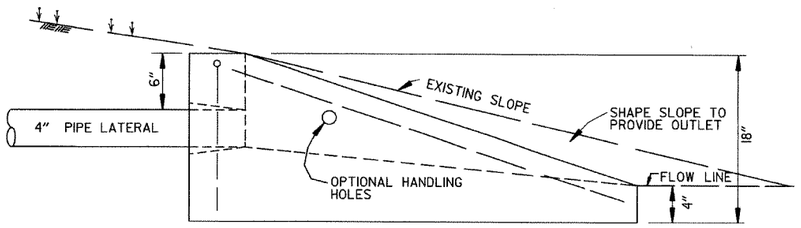


DETAIL OF HOLE FOR 4" PIPE

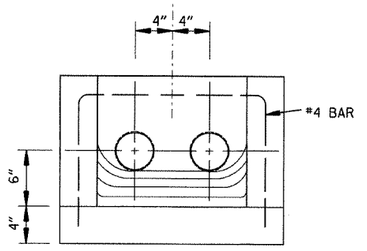


DETAIL OF RODENT SCREEN

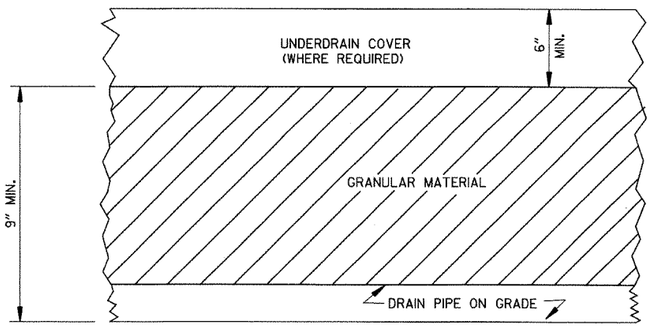




SIDE VIEW

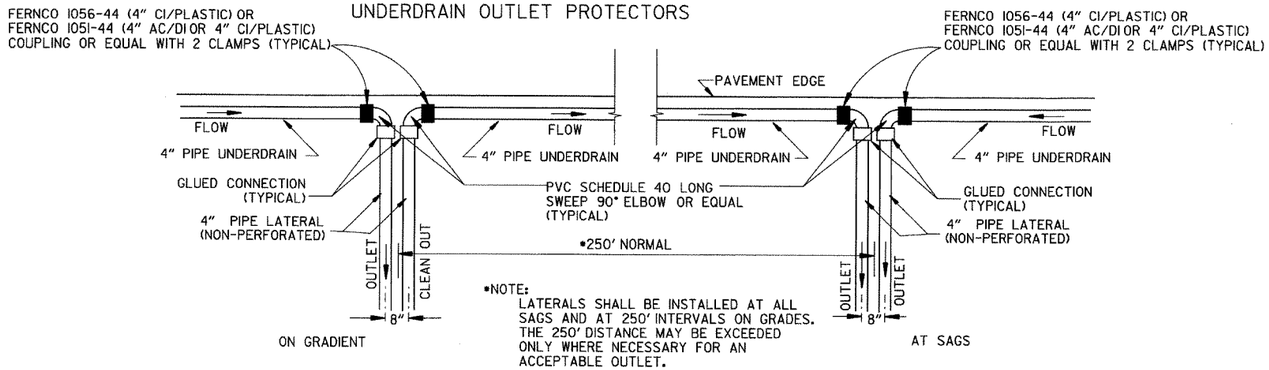


FRONT VIEW



DETAILS OF PIPE UNDERDRAIN

UNDERDRAIN OUTLET PROTECTORS



DETAIL OF PIPE UNDERDRAIN LATERALS WHEN PLACED ALONG PAVEMENT EDGE

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

DATE	REVISION	DATE FILMED
4-10-03	REVISED NOTE 3	
1-12-00	REVISED DETAIL OF UNDERDRAIN LATERALS	
11-18-98	REVISED NOTE	
10-18-96	REVISED MIN. DEPTH & GEOTEXTILE FABRIC	
4-26-96	ADDED LATERAL NOTE; 5½" TO 5"	
11-22-95	REVISED LATERALS	
7-20-95	REVISED LATERALS & ADDED NOTE	
11- 3-94	REVISED FOR DUAL LATERALS	11- 3-94
10- 1-92	SUBSTITUTED GEOTEXTILE	10- 1-92
8-15-91	ADDED POLYEDTHYLENE PIPE	8-15-91
11- 8-90	DELETED ALTERNATE NOTE	11- 8-90
1-25-90	ADDED 4" SNAP ADAPTER	1-25-90
11-30-89	DEL. (SUBGRADE); ADDED (WHERE REQUIRED)	11-30-89
7-15-88	ISSUED P.L.M.	647-7-15-88

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF PIPE UNDERDRAIN

STANDARD DRAWING PU-1

7-20-95 INSTD.PUI

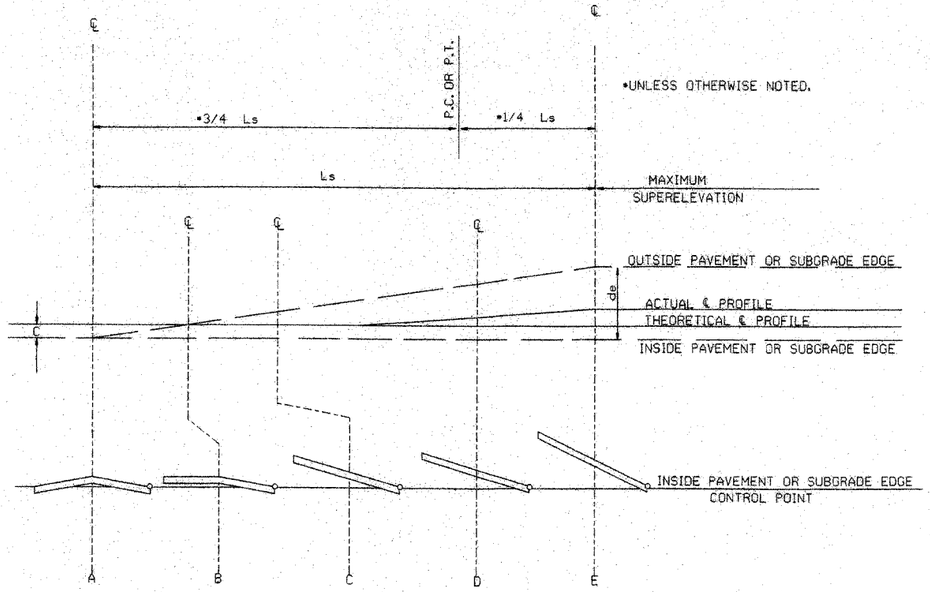
SUPERELEVATION TABLE FOR TWO - WAY TRAFFIC

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′	R. 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	350
2° 30′	0.021			0.034			0.049			0.058			0.067			0.085	315	
2° 45′	0.023			0.037		200	0.053			0.063			0.072			0.091	335	
3° 00′	0.025			0.040			0.057			0.067	230		0.077	260		0.096	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			0.065	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		0.100	290										
8° 30′	0.061			0.087	225	250												
9° 00′	0.063			0.089	230													
10° 00′	0.068	160		0.094	235													
11° 00′	0.072	170		0.097	250													
12° 00′	0.076	175		0.099	250													
13° 00′	0.080	180		0.100	250													
14° 00′	0.083	190																
15° 00′	0.086	195																
16° 00′	0.089	200																
17° 00′	0.091	200																
18° 00′	0.093	205																
19° 00′	0.095	210																
20° 00′	0.097	215	250															
21° 00′	0.098	215																
22° 00′	0.099	215																
23° 00′	0.099	215																
24° 00′	0.100	220																

D MAX = 24° 45′ | D MAX = 13° 15′ | D MAX = 8° 15′ | D MAX = 6° 30′ | D MAX = 5° 15′ | D MAX = 3° 30′

ABBREVIATIONS

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



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

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

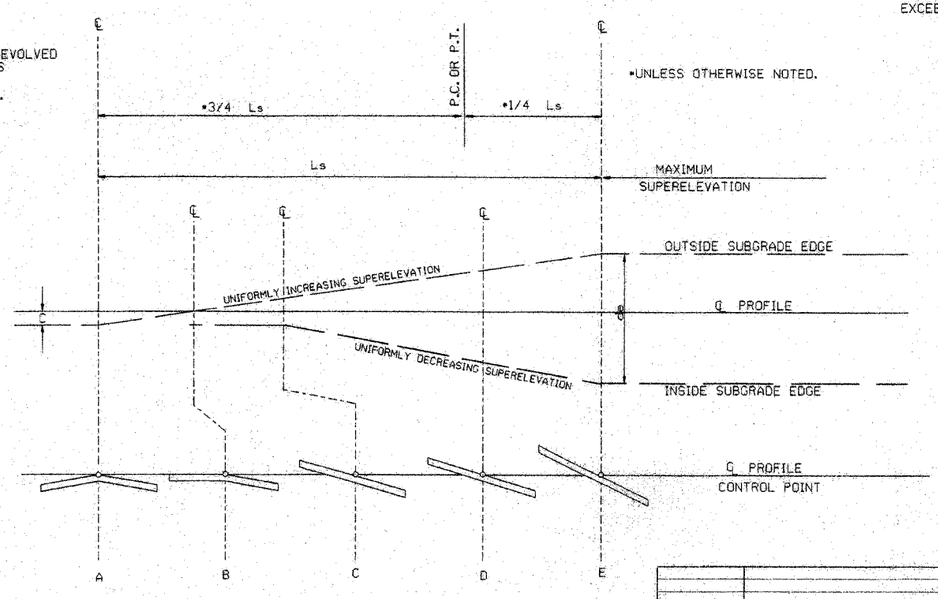
GENERAL NOTES

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

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

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

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



STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND CENTER LINE

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

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

ARKANSAS STATE HIGHWAY COMMISSION

TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC

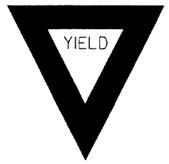
STANDARD DRAWING SE-2

FILE STDSE2.DGN

R1-1

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

R1-2



STD. 36"X36"X36"
EXPWY. 48"X48"X48"
FWY. 60"X60"X60"

R2-1

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

R2-5A

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

R2-5C

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

R4-1

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

R4-2

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

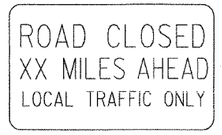
R5-1

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

R11-2

48"X30"

R11-3A



60"X30"

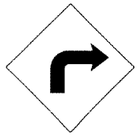
R11-4

60"X30"

RSP-1

48"X30"

W1-1



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

W1-2

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

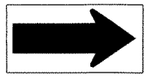
W1-3

STD. 48"X48"

W1-4

STD. 48"X48"

W1-6

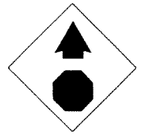


STD. 48"X24"
SPECIAL 60"X30"

W1-8

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

W3-1

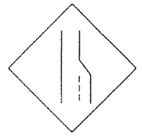


STD. 36"X36"
SPECIAL 48"X48"

W3-2

STD. 36"X36"
SPECIAL 48"X48"

W4-2



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

W5-1

STD. 36"X36"
SPECIAL 48"X48"

W6-3

EXPWY. 36"X36"
SPECIAL 48"X48"

W8-7

EXPWY. 36"X36"
FWY. 48"X48"

W9-2

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

W13-1

STD. 24"X24"

W20-1

STD. 48"X48"

W20-2

STD. 48"X48"

W20-3

STD. 48"X48"

W20-4

STD. 48"X48"

W20-5

STD. 48"X48"

W20-7a

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

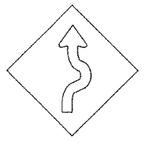
W21-2

STD. 30"X30"
SPECIAL 36"X36"

W21-5

STD. 30"X30"
SPECIAL 36"X36"

W24-1



STD. 36"X36"

W1-4b

STD. 48"X48"

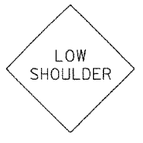
R56-1

STD. 18"X18"

W8-11

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

W8-9



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

G20-1

60"X24"

G20-2

48"X24"

OM-3L OM-3R

12"X36"

M4-9

STD. 30"X24"
SPECIAL 48"X36"
SPECIAL 60"X48"

M4-10

48"X18"

R55-1

36"X60"

* USE 6" C LETTERS
** USE 4" D LETTERS

ADVANCE DISTANCES
(XXXX)

500 FT	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.

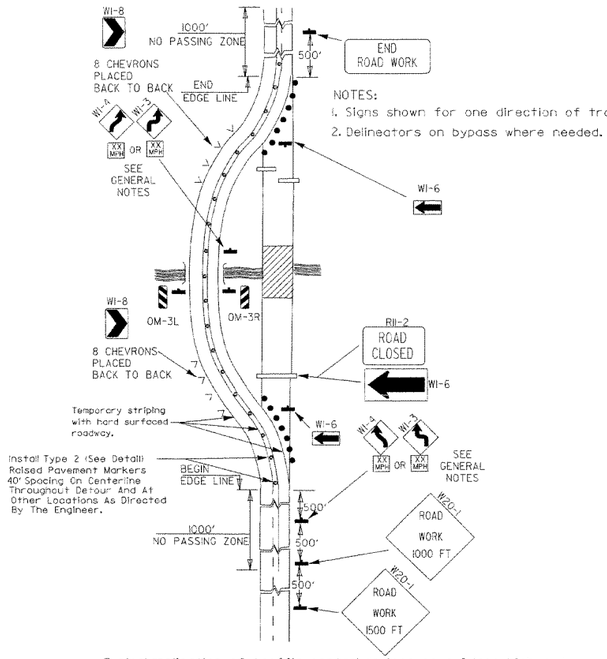
* NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE REQUIREMENTS SHOWN IN NOTES 4 & 5, BUT MEET THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH), WILL BE ACCEPTED. COMPLIANCE WITH THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY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

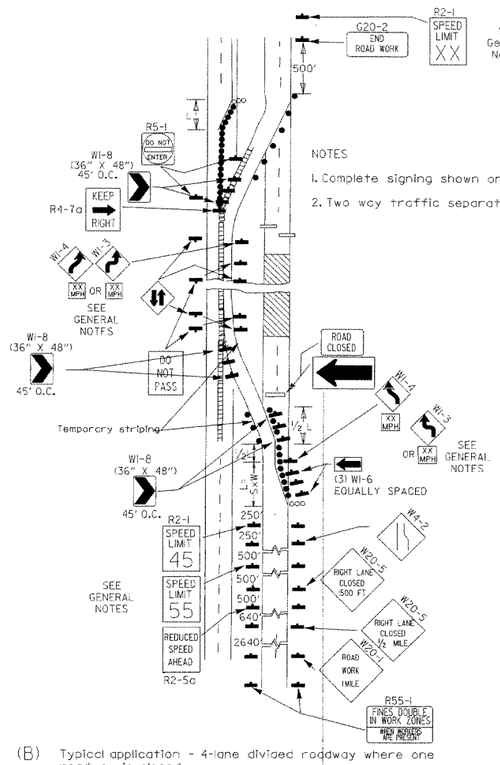
STANDARD DRAWING TC-1



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

NOTES:

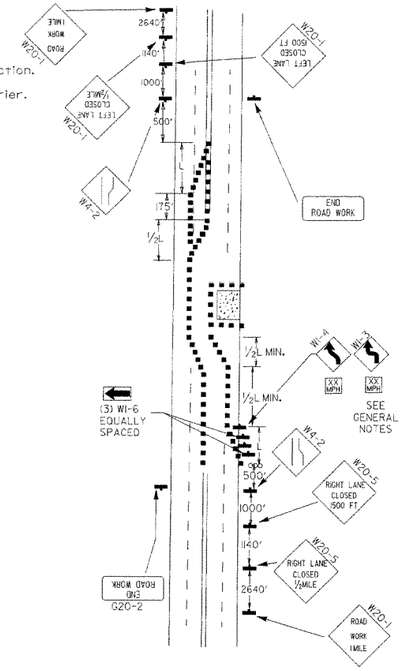
1. Signs shown for one direction of travel only.
2. Delineators on bypass where needed.



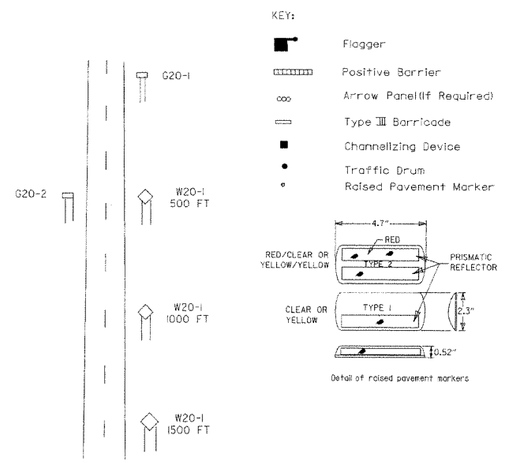
NOTES

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

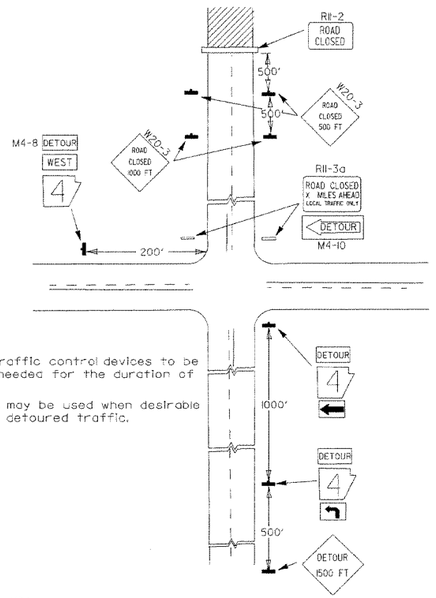
(B) Typical application - 4-lane divided roadway where one roadway is closed.



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



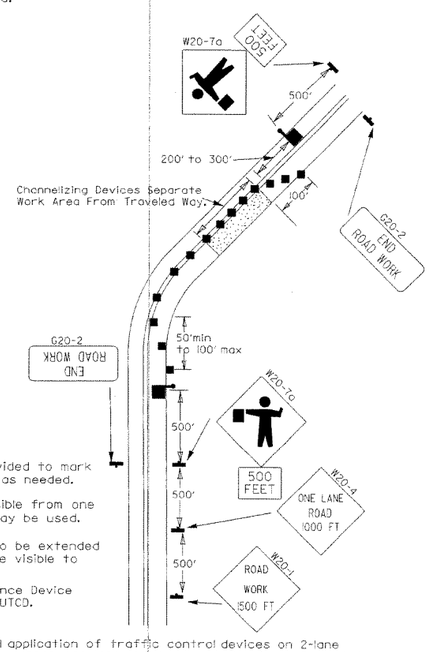
Typical advance warning sign placement



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.

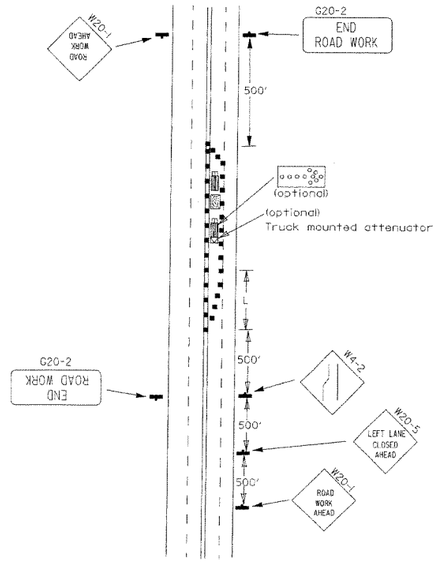
(D) Typical application - roadway closed beyond detour point.



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=SxW for speeds of 45mph or more.

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

Where:

L= Minimum length of taper.

S= Numerical value of posted speed limit prior to work or 85th percentile speed.

W= Width of offset.

GENERAL NOTES:

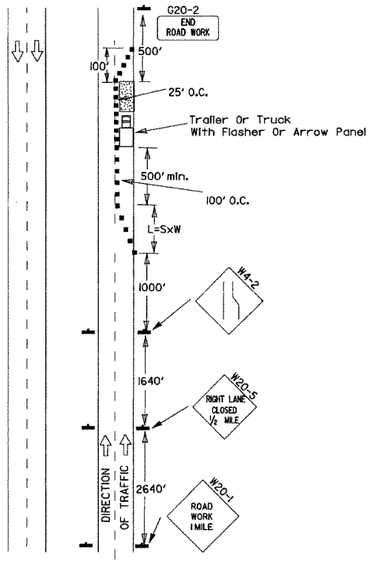
1. Advisory speed posted on WI-3 or WI-4 curve warning signs to be determined at site. Use WI-4 when speed is greater than 30mph and WI-3 when 30mph or less.
2. When the existing speed limit is 55mph and the plans require a speed limit of 45mph, the R2-1(55) shall be omitted and the R2-5A shall be installed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

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

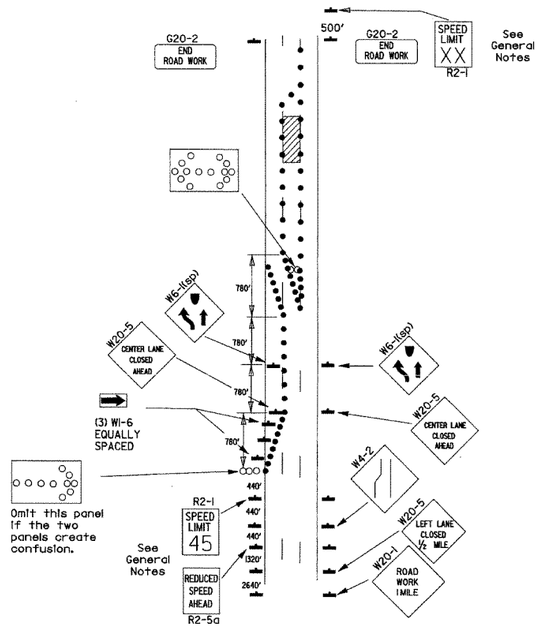
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

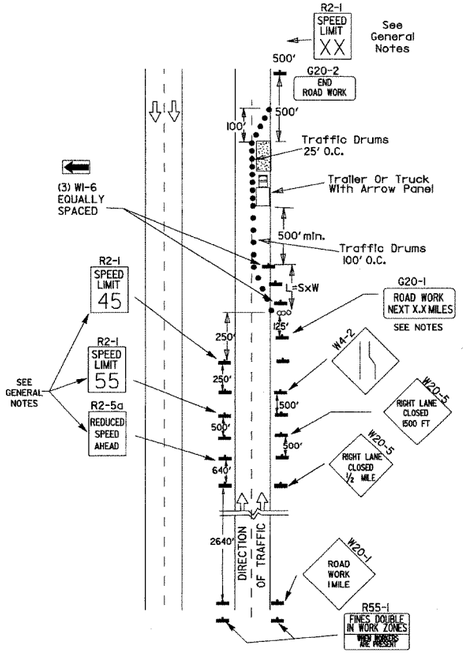
STANDARD DRAWING TC-2



(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:

ooo Arrow Panel (If Required)

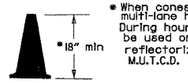
■ Channelizing Device

● Traffic drum

GENERAL NOTES:

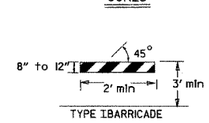
1. A speed limit reduction may be implemented ONLY when designated in the plan or when recommended by the Roadway Design Division.
2. When the existing speed limit is 55mph and the plans require a speed limit of 45mph, the R2-1(55) shall be omitted and the R2-5A shall be installed at that location. Additional 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



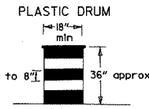
CONES

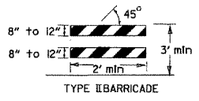
* When cones are used on freeways and multi-lane highways, they shall be 28" min. During hours of darkness, 28" cones shall be used on all roadways, and shall be reflectorized in accordance with the M.U.T.C.D.



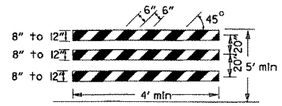
TYPE I BARRICADE

PLASTIC DRUM



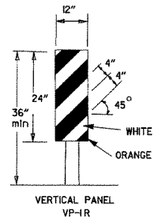


TYPE II BARRICADE



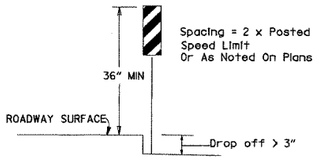
TYPE III BARRICADE

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



VERTICAL PANEL
VP-1R

VERTICAL PANEL PLACEMENT

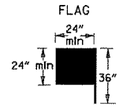


TRAFFIC CONTROL DEVICES
FOR
VERTICAL PAVEMENT DIFFERENTIALS

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

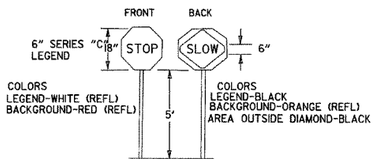
* When shown on the plans concrete barrier will be used.
When the shoulder area is used as part of the traveled lane and there is insufficient width to place drums on the remaining shoulder width, then vertical panels shall be used.

FLAG

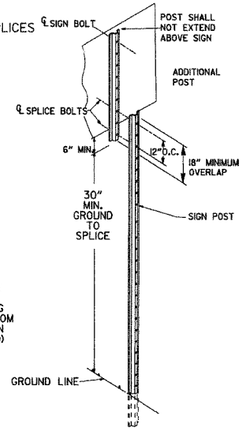


Flag shall be of good grade red material

STOP SLOW PADDLE



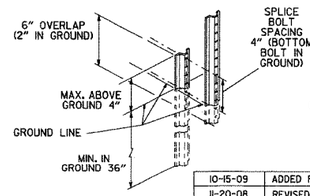
DETAIL OF SPLICES

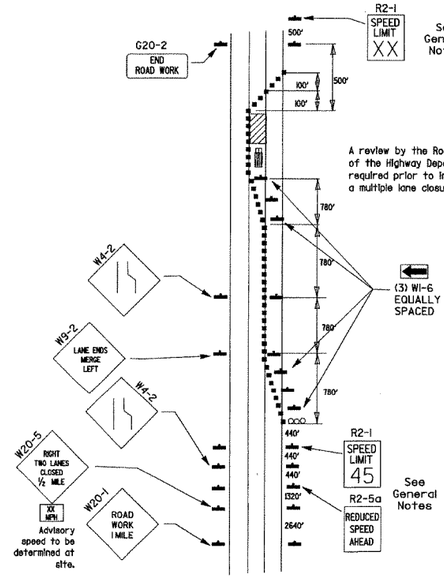


NOTES: USE SPLICES ONLY WHEN NECESSARY FOR INSTALLATION. TYPICAL INSTALLATION SHOULD HAVE NO SPLICES (SEE STD. DRAWING NO. SHS-21)

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

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





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

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

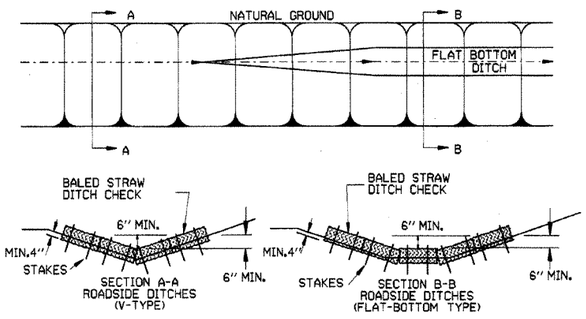
STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-3

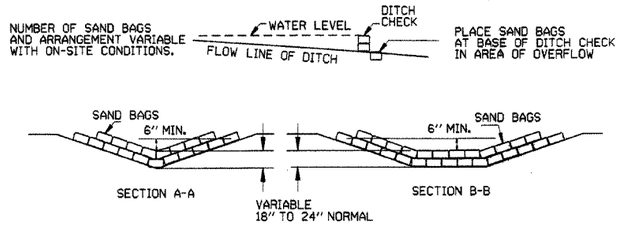
GENERAL NOTES

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.

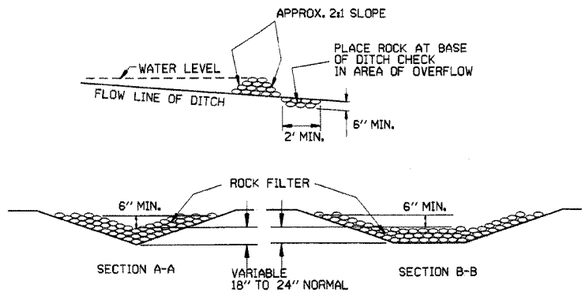
2. STRAW BALES SHALL BE KEYED INTO SOIL A MINIMUM OF 4' AND NO GAPS SHALL BE LEFT BETWEEN BALES.



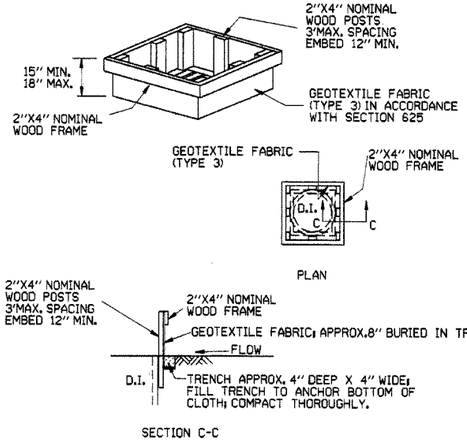
BALED STRAW DITCH CHECK (E-1)



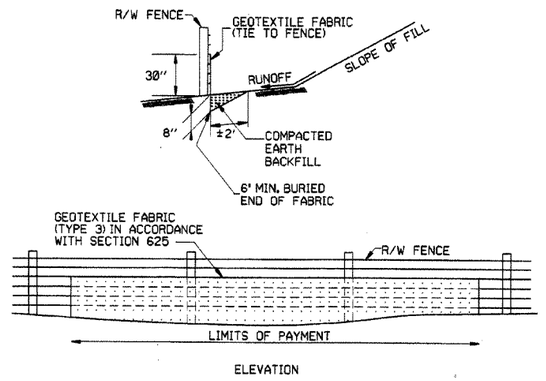
SAND BAG DITCH CHECK (E-5)



ROCK DITCH CHECK (E-6)



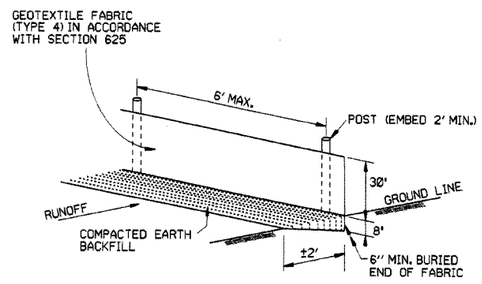
DROP INLET SILT FENCE (E-7)



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.



SILT FENCE (E-11)

GENERAL NOTES

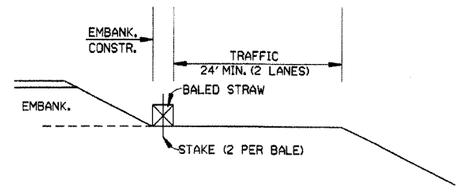
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST, OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

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.



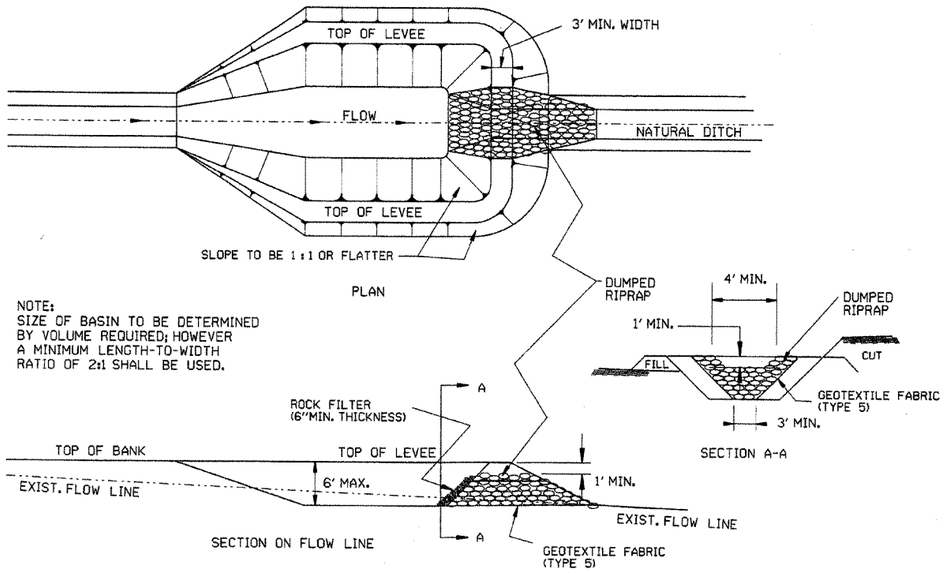
BALED STRAW FILTER BARRIER (E-2)

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

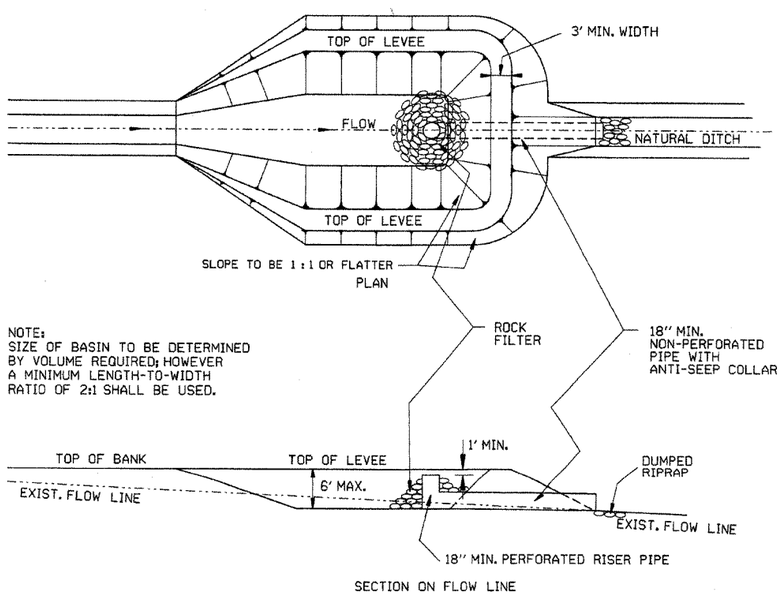
ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

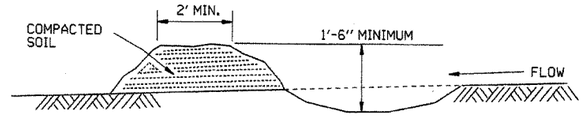
STANDARD DRAWING TEC-1



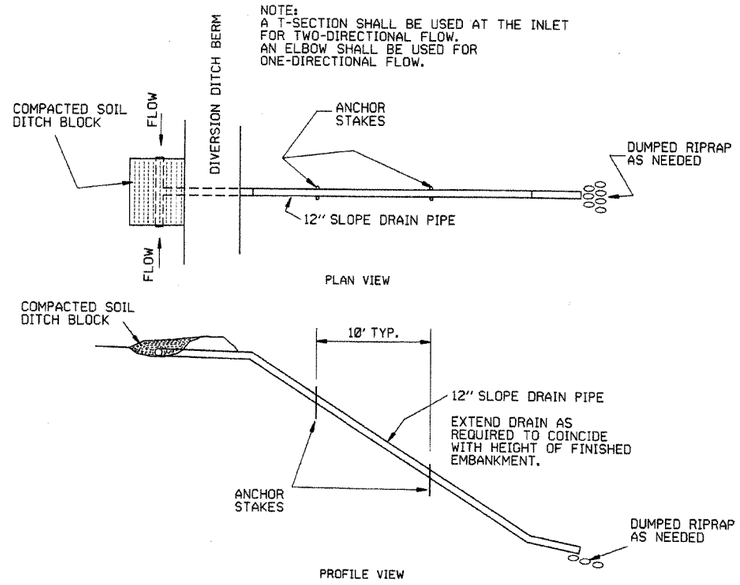
SEDIMENT BASIN WITH RIPRAP OUTLET (E-9)



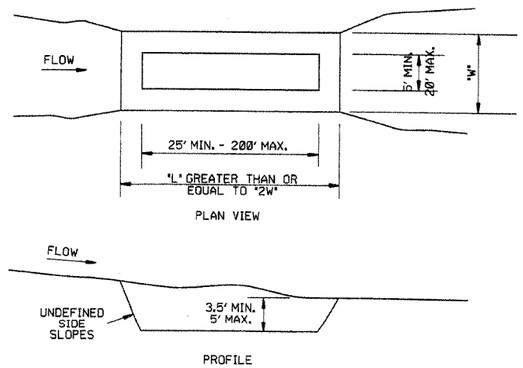
SEDIMENT BASIN WITH PIPE OUTLET (E-10)



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

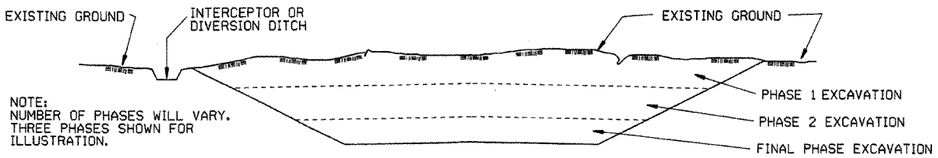
STANDARD DRAWING TEC-2

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



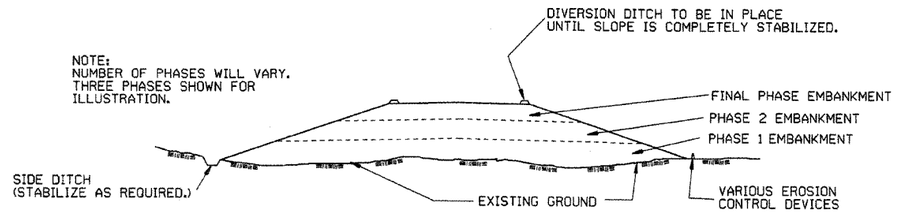
GENERAL NOTE

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.

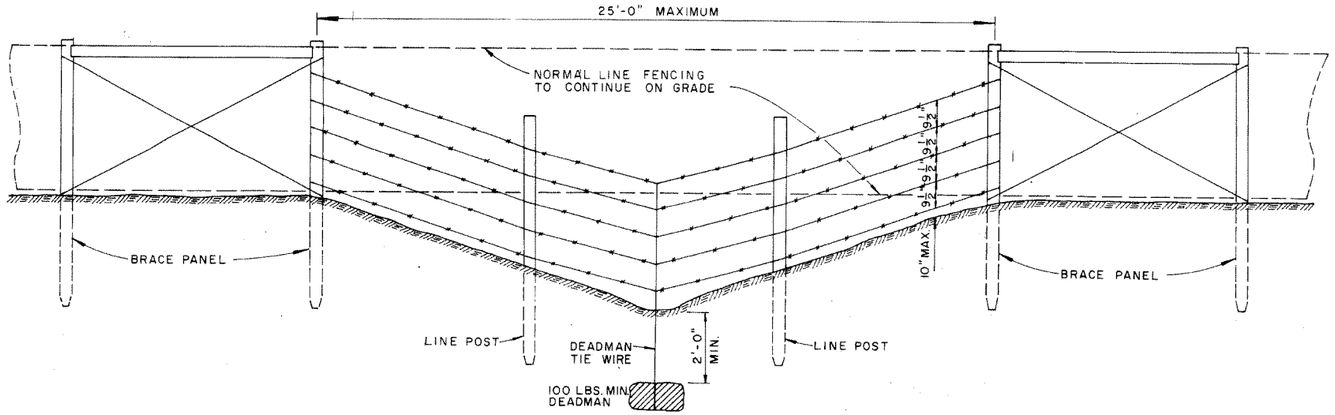
DATE	REVISION	FILMED
11-03-94	CORRECTED SPELLING	
6-2-94	Drawn & Issued	6-2-94

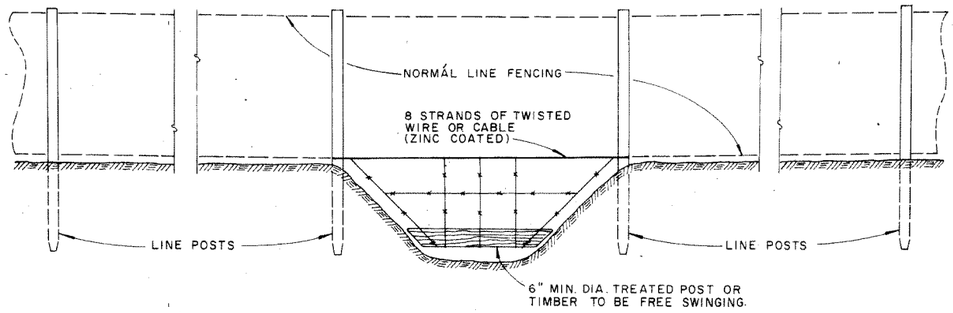
ARKANSAS STATE HIGHWAY COMMISSION

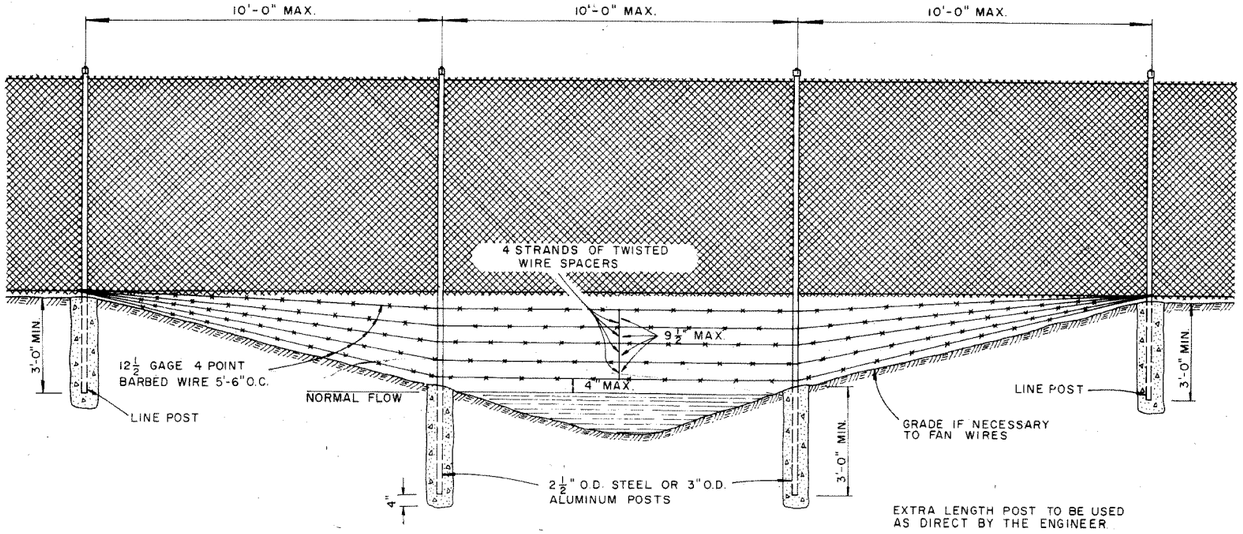
TEMPORARY EROSION CONTROL DEVICES

STANDARD DRAWING TEC-3

stdtec3.dgn







EXTRA LENGTH POST TO BE USED AS DIRECT BY THE ENGINEER.

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

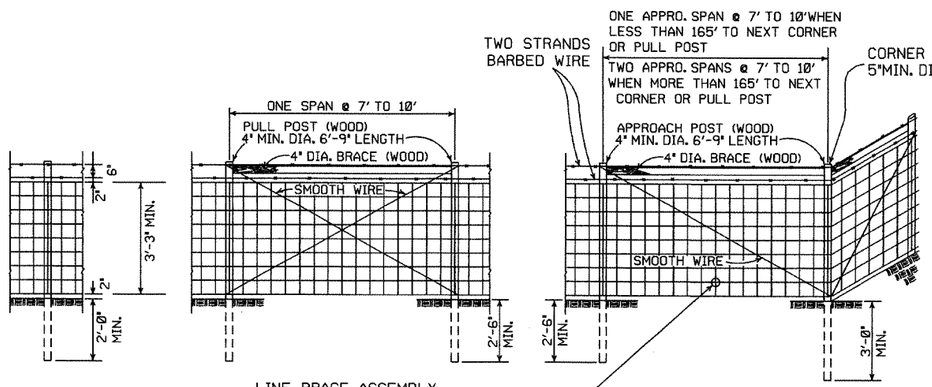
ARKANSAS STATE HIGHWAY COMMISSION

WIRE FENCE WATER GAPS

STANDARD DRAWING

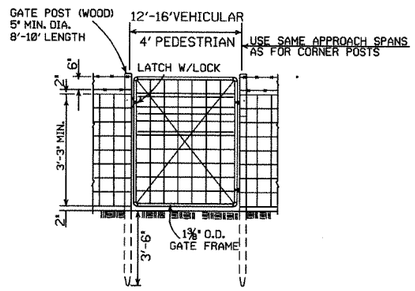
WF-2

1M—11-71—67001—PP&SC



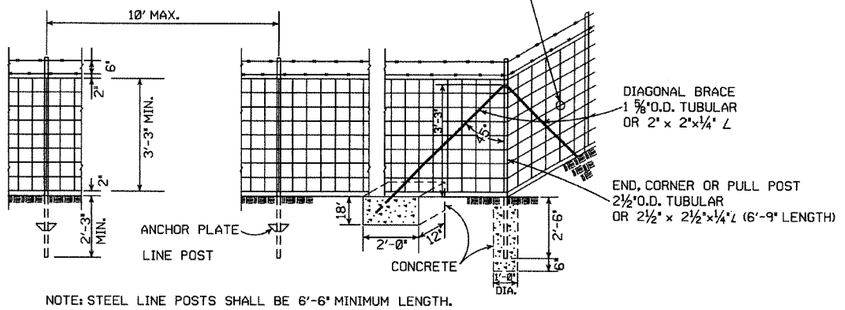
LINE POST
3" MIN. DIA. 6'-3" LENGTH
MAX. SPACING TO BE 10'-0"

LINE BRACE ASSEMBLY
MAX. SPACING TO BE 330'

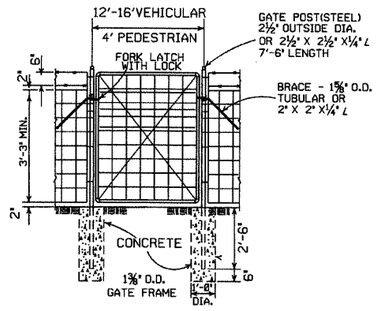


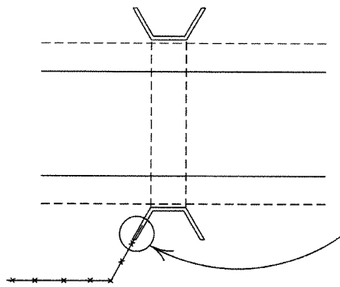
TYPE C FENCE (WOOD POSTS)

OTHER APPROVED TIES WILL BE PERMITTED

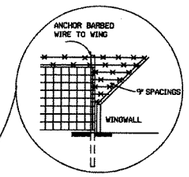


NOTE: STEEL LINE POSTS SHALL BE 6'-6" MINIMUM LENGTH.





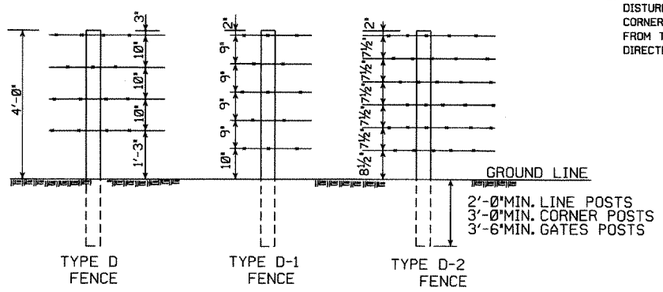
NOTE: USE ⅜" X 1½" LAG BOLT & SHIELD OR AS APPROVED BY THE ENGINEER.



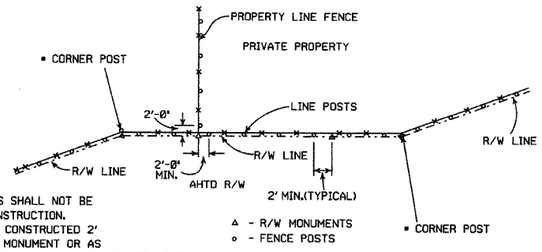
DETAIL OF FENCE CONSTRUCTION AT LARGE CULVERTS (5' IN HEIGHT AND OVER)

TYPE C FENCE (STEEL POSTS)

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

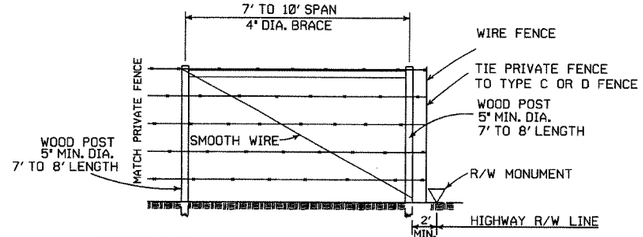


NOTE: SPACING AND SIZE (EXCEPT LENGTH) OF POSTS, APPROACH SPANS, PULL POST ASSEMBLIES, AND CORNER BRACING FOR TYPE D FENCE SHALL CONFORM TO TYPE C FENCE. USE GALVANIZED STAPLES ON WOOD POSTS AND APPROVED FASTENERS ON STEEL POSTS.



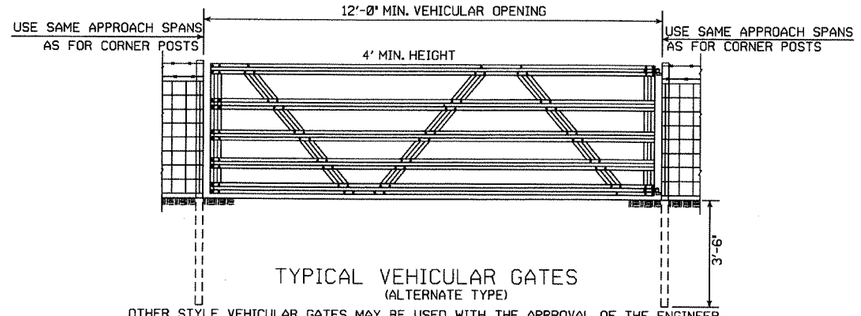
▪ NOTE: RIGHT-OF-WAY MONUMENTS SHALL NOT BE DISTURBED BY FENCE CONSTRUCTION. CORNER POSTS SHALL BE CONSTRUCTED 2' FROM THE RIGHT-OF-WAY MONUMENT OR AS DIRECTED BY THE ENGINEER.

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.

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.

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

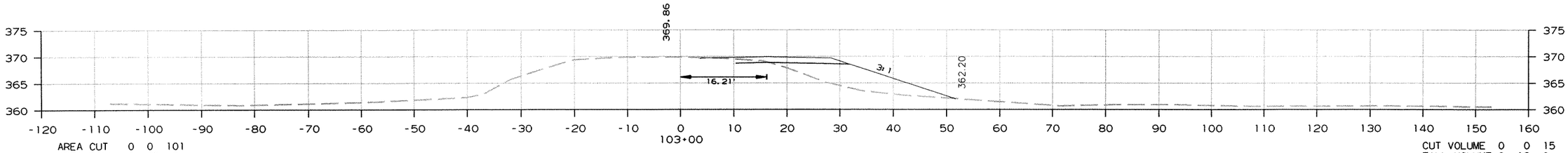
STANDARD DRAWING WF-4

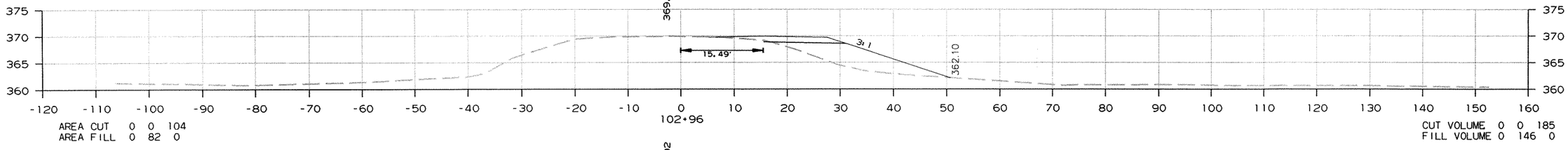
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		030387	62	71

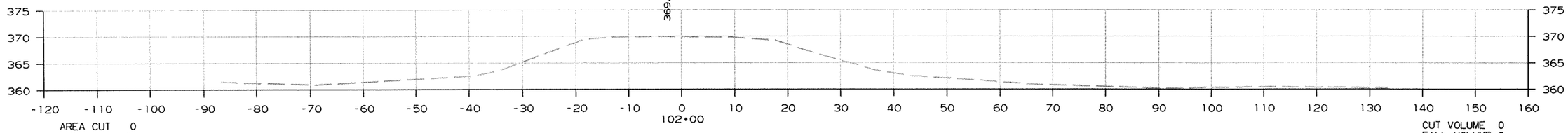
(2) CROSS SECTIONS

STA. 103+20.02 - BEGIN JOB 030387

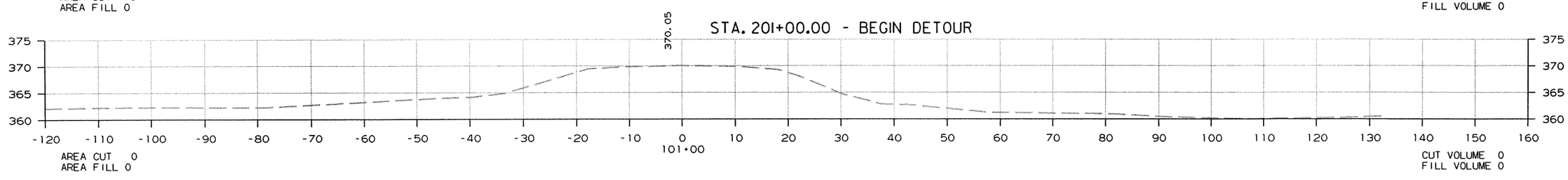
MAIN LANES DETOUR DETOUR REMOVAL







STA. 201+00.00 - BEGIN DETOUR



ZBORDER.CEL 9/16/2011

CROSS SECTION STA. 101+00 TO STA. 103+00

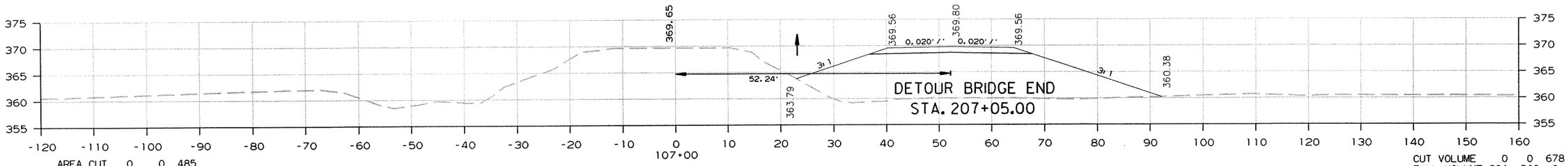
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		030387	63	71

(2) CROSS SECTIONS

STATION	STATION	SIDE	GUARDRAIL (TYPE A) LIN. FT.	THRIE BEAM GUARDRAIL TERMINAL EACH	TERMINAL ANCHOR POSTS (TYPE 1) EACH
104+30.35 -	106+49.10	RT.	200	1	1
105+55.35 -	106+49.10	LT.	75	1	1

MAIN LANES DETOUR DETOUR REMOVAL

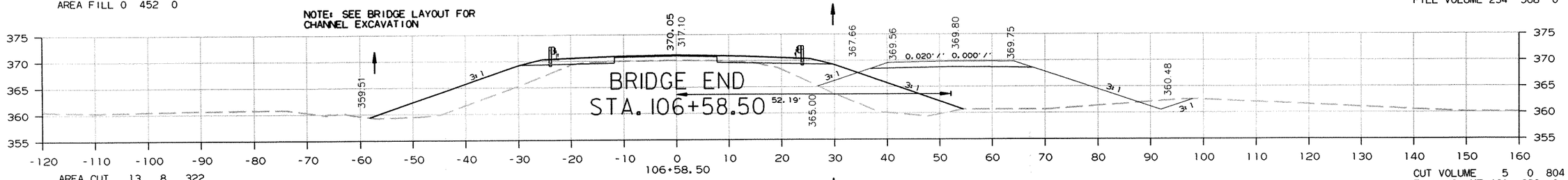
STA. 107+15 TOE OF SLOPE



AREA CUT 0 0 485
AREA FILL 0 452 0

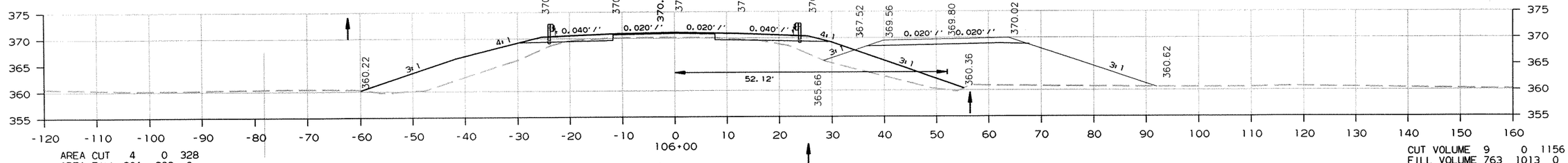
CUT VOLUME 0 0 678
FILL VOLUME 234 568 0

NOTE: SEE BRIDGE LAYOUT FOR CHANNEL EXCAVATION



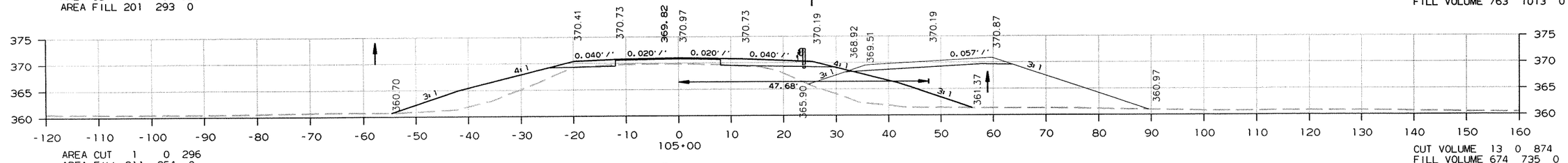
AREA CUT 13 8 322
AREA FILL 224 287 8

CUT VOLUME 5 0 804
FILL VOLUME 460 628 0



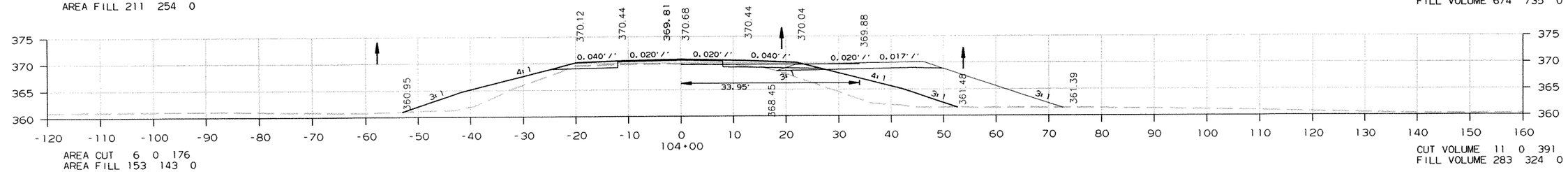
AREA CUT 4 0 328
AREA FILL 201 293 0

CUT VOLUME 9 0 1156
FILL VOLUME 763 1013 0



AREA CUT 1 0 296
AREA FILL 211 254 0

CUT VOLUME 13 0 874
FILL VOLUME 674 735 0



AREA CUT 6 0 176
AREA FILL 153 143 0

CUT VOLUME 11 0 391
FILL VOLUME 283 324 0

CROSS SECTION STA. 104+00 TO STA. 107+00

ZBORDER.CEL 9/16/2011

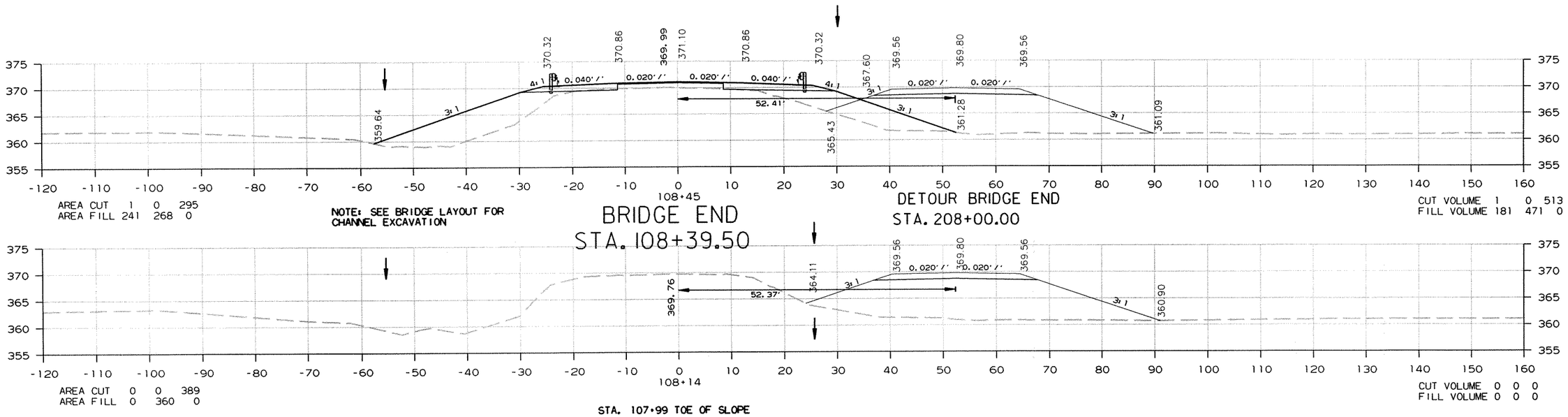
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		030387	64	71

(2) CROSS SECTIONS

MAIN LANES DETOUR DETOUR REMOVAL

STATION	STATION	SIDE	GUARDRAIL (TYPE A) LIN. FT.	THRIE BEAM GUARDRAIL TERMINAL EACH	TERMINAL ANCHOR POSTS (TYPE 1) EACH
108+48.90	- 109+42.65	RT.	75	1	1
108+48.90	- 110+67.65	LT.	200	1	1

MAIN LANES DETOUR DETOUR REMOVAL



AREA CUT 1 0 295
AREA FILL 241 268 0

CUT VOLUME 1 0 513
FILL VOLUME 181 471 0

NOTE: SEE BRIDGE LAYOUT FOR CHANNEL EXCAVATION

AREA CUT 0 0 389
AREA FILL 0 360 0

CUT VOLUME 0 0 0
FILL VOLUME 0 0 0

STA. 107+99 TOE OF SLOPE

ZBORDER.CEL 9/16/2011

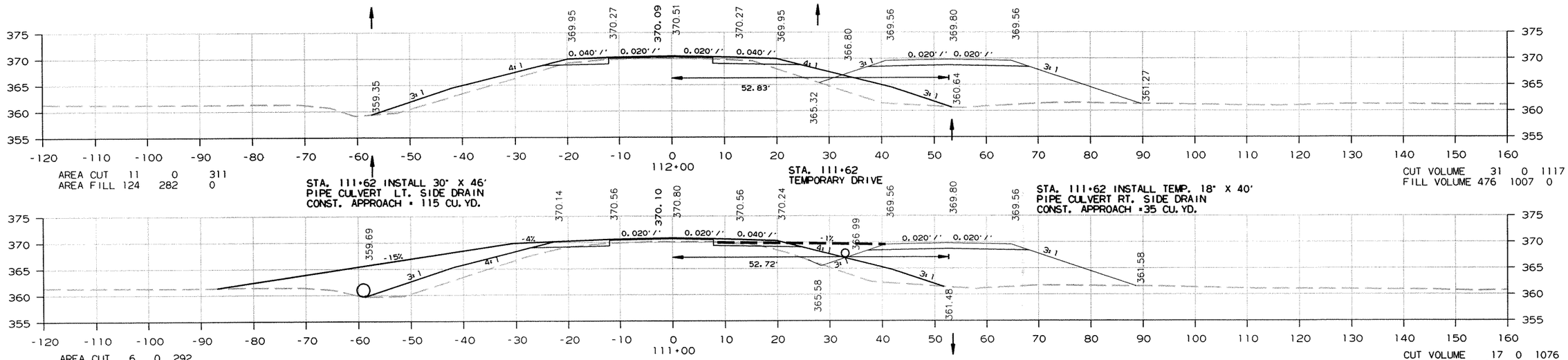
CROSS SECTION STA. 108+14 TO STA. 108+45

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		030387	65	71

(2) CROSS SECTIONS

MAIN LANES DETOUR DETOUR REMOVAL

MAIN LANES DETOUR DETOUR REMOVAL



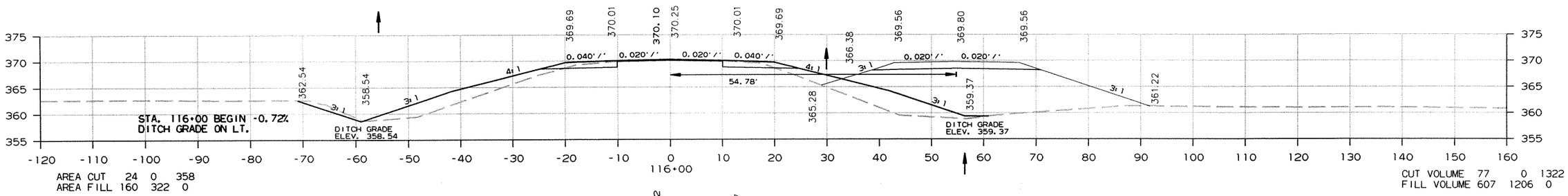
CROSS SECTION STA. 109+00 TO STA. 112+00

ZBORDER.CEL 9/16/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		030387	66	71

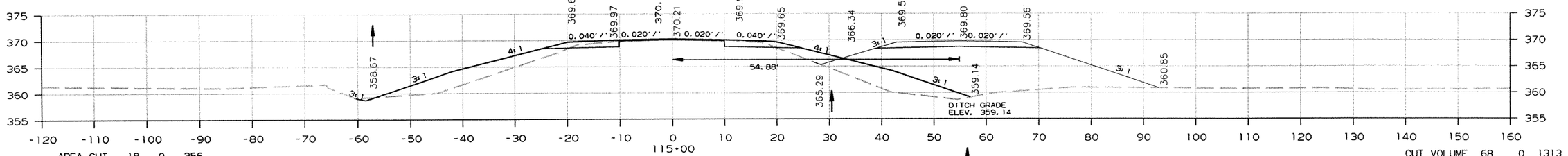
(2) CROSS SECTIONS

MAIN LANES DETOUR DETOUR REMOVAL



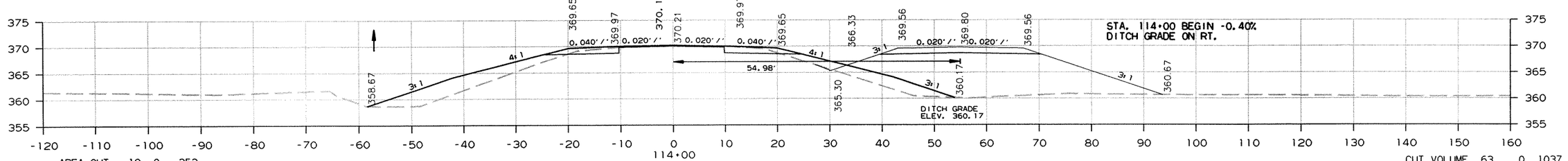
AREA CUT 24 0 358
AREA FILL 160 322 0

CUT VOLUME 77 0 1322
FILL VOLUME 607 1206 0



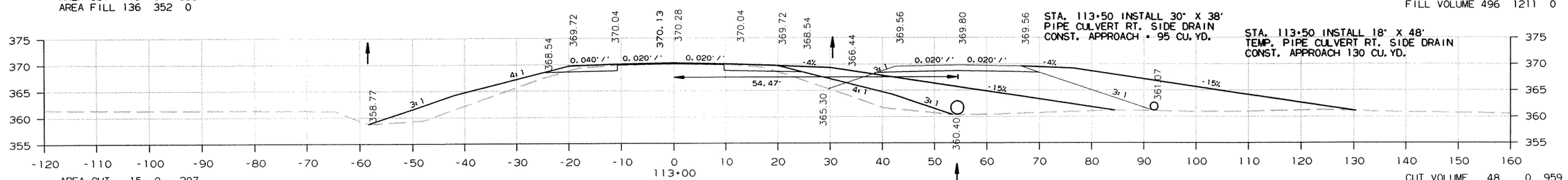
AREA CUT 18 0 356
AREA FILL 168 329 0

CUT VOLUME 68 0 1313
FILL VOLUME 563 1261 0



AREA CUT 19 0 353
AREA FILL 136 352 0

CUT VOLUME 63 0 1037
FILL VOLUME 496 1211 0



AREA CUT 15 0 207
AREA FILL 132 302 0

CUT VOLUME 48 0 959
FILL VOLUME 474 1081 0

CROSS SECTION STA. 113+00 TO STA. 116+00

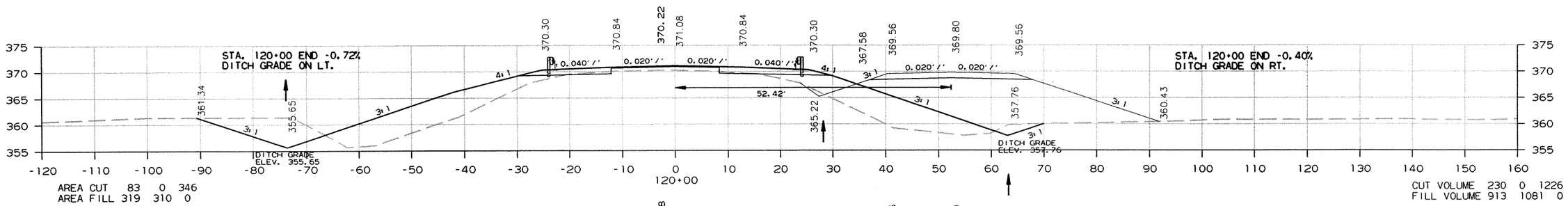
ZBORDER.CEL 9/16/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		030387	67	71

(2) CROSS SECTIONS

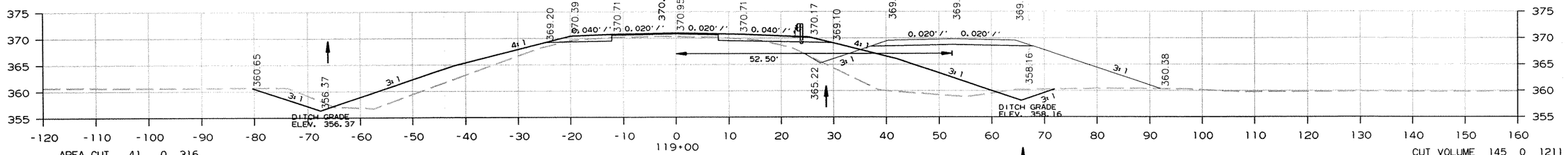
MAIN LANES DETOUR DETOUR REMOVAL

STATION	STATION	SIDE	GUARDRAIL (TYPE A) LIN. FT.	THRIE BEAM GUARDRAIL TERMINAL EACH	TERMINAL ANCHOR POSTS (TYPE 1) EACH
118+48.35 -	120+67.10	RT.	200	1	1
119+73.35 -	120+67.10	LT.	75	1	1



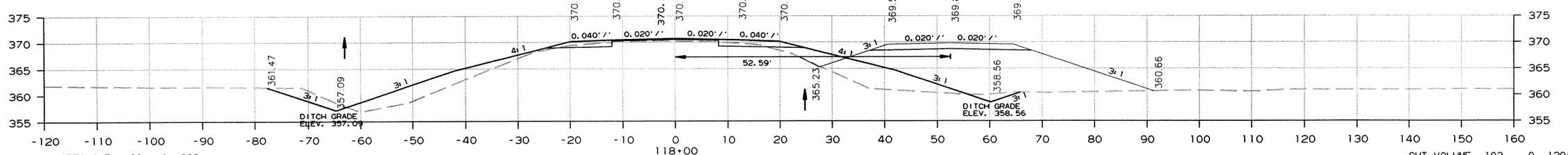
AREA CUT 83 0 346
AREA FILL 319 310 0

CUT VOLUME 230 0 1226
FILL VOLUME 913 1081 0



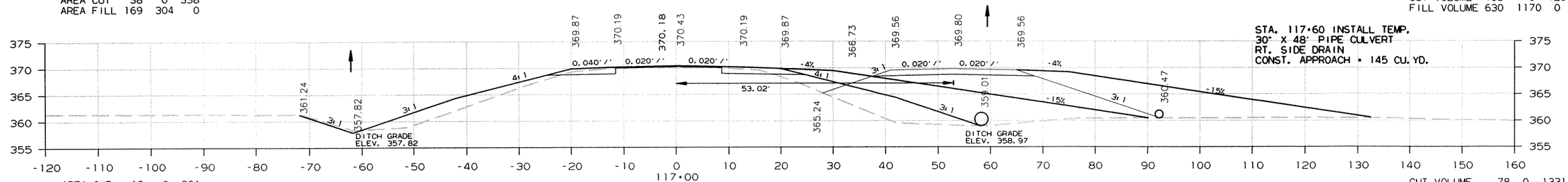
AREA CUT 41 0 316
AREA FILL 174 274 0

CUT VOLUME 145 0 1211
FILL VOLUME 635 1070 0



AREA CUT 38 0 338
AREA FILL 169 304 0

CUT VOLUME 103 0 1294
FILL VOLUME 630 1170 0



AREA CUT 18 0 361
AREA FILL 171 328 0

CUT VOLUME 78 0 1331
FILL VOLUME 613 1204 0

STA. 117+60 INSTALL TEMP.
30" X 48' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPROACH = 145 CU.YD.

CROSS SECTION STA. 117+00 TO STA. 120+00

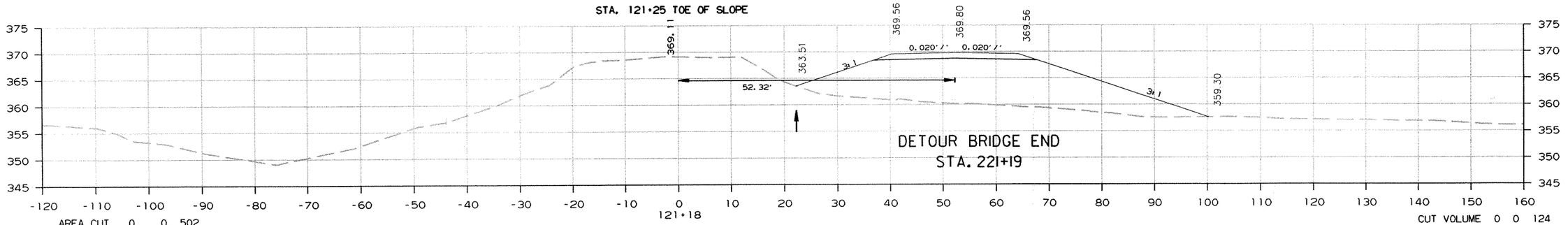
ZBORDER.CEL 9/16/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		030387	68	71

(2) CROSS SECTIONS

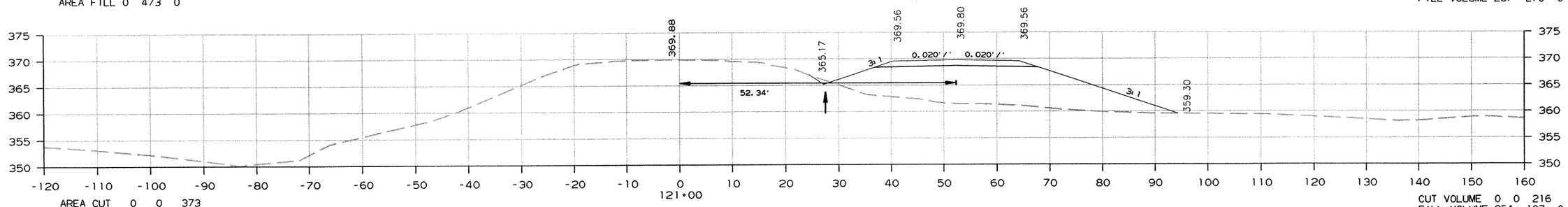
MAIN LANES DETOUR DETOUR REMOVAL

MAIN LANES DETOUR DETOUR REMOVAL



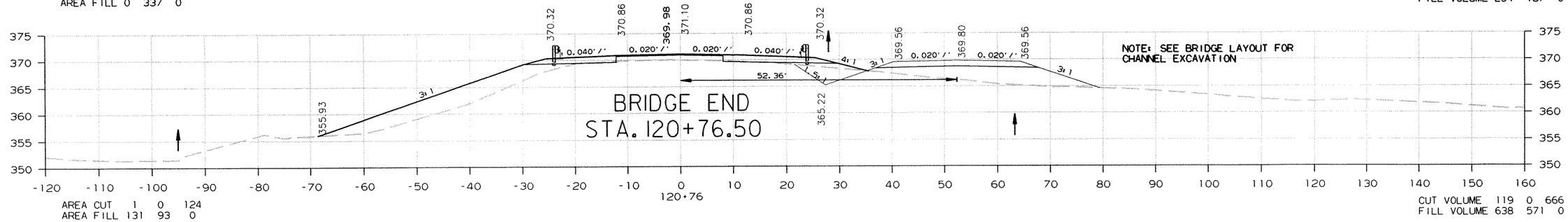
AREA CUT 0 0 502
AREA FILL 0 473 0

CUT VOLUME 0 0 124
FILL VOLUME 267 270 0



AREA CUT 0 0 373
AREA FILL 0 337 0

CUT VOLUME 0 0 216
FILL VOLUME 254 187 0



AREA CUT 1 0 124
AREA FILL 131 93 0

CUT VOLUME 119 0 666
FILL VOLUME 638 571 0

CROSS SECTION STA. 120+76 TO STA. 121+18

ZBORDER.CEL 9/15/2011

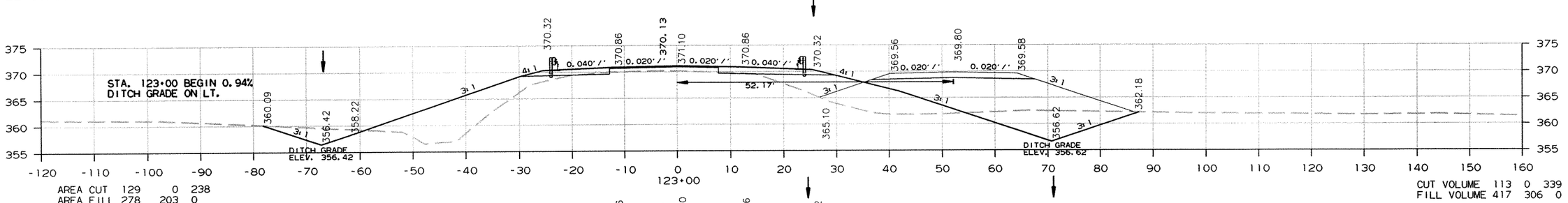
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		030387	69	71

(2) CROSS SECTIONS

MAIN LANES DETOUR DETOUR REMOVAL

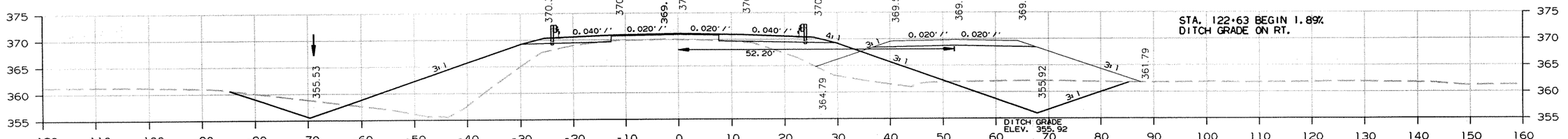
STATION	STATION	SIDE	GUARDRAIL (TYPE A) LIN. FT.	THRIE BEAM GUARDRAIL TERMINAL EACH	TERMINAL ANCHOR POSTS (TYPE 1) EACH
122+66.90 -	123+60.65	RT.	75	1	1
122+66.90 -	124+85.65	LT.	200	1	1

MAIN LANES DETOUR DETOUR REMOVAL



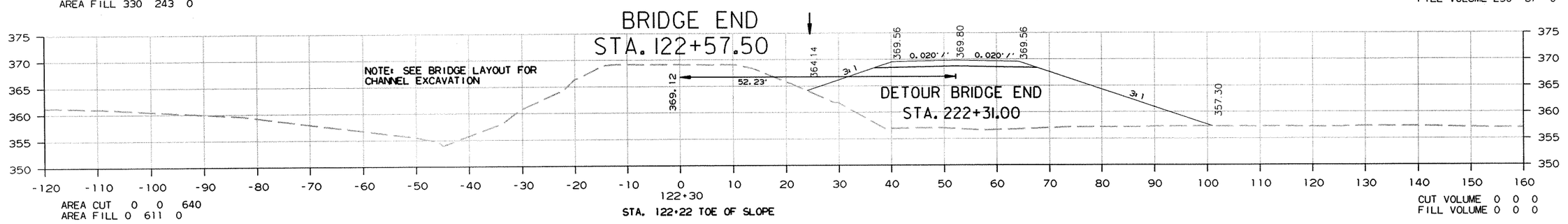
AREA CUT 129 0 238
AREA FILL 278 203 0

CUT VOLUME 113 0 339
FILL VOLUME 417 306 0



AREA CUT 36 0 256
AREA FILL 330 243 0

CUT VOLUME 27 0 92
FILL VOLUME 250 87 0



AREA CUT 0 0 640
AREA FILL 0 611 0

CUT VOLUME 0 0 0
FILL VOLUME 0 0 0

STA. 122+22 TOE OF SLOPE

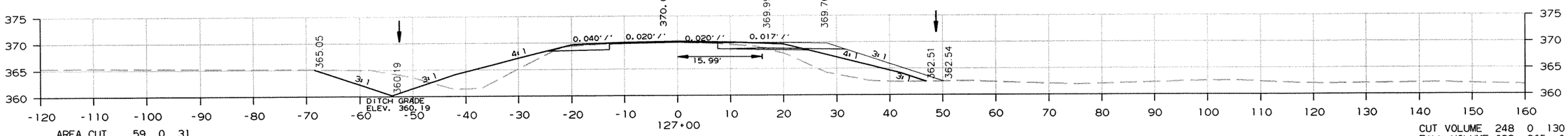
ZBORDER.CEL 8/30/2010

CROSS SECTION STA. 122+30 TO STA. 123+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.		030387	70	71

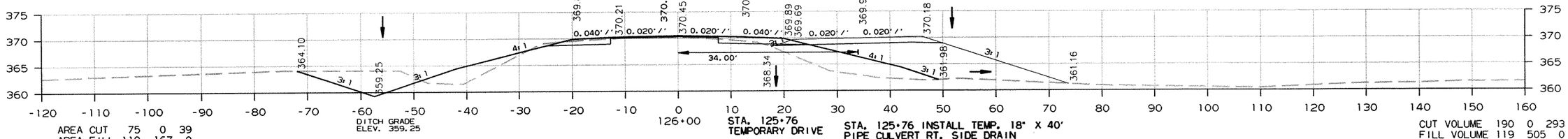
(2) CROSS SECTIONS

MAIN LANES DETOUR DETOUR REMOVAL



AREA CUT 59 0 31
AREA FILL 233 30 0

CUT VOLUME 248 0 130
FILL VOLUME 633 365 0



AREA CUT 75 0 39
AREA FILL 119 167 0

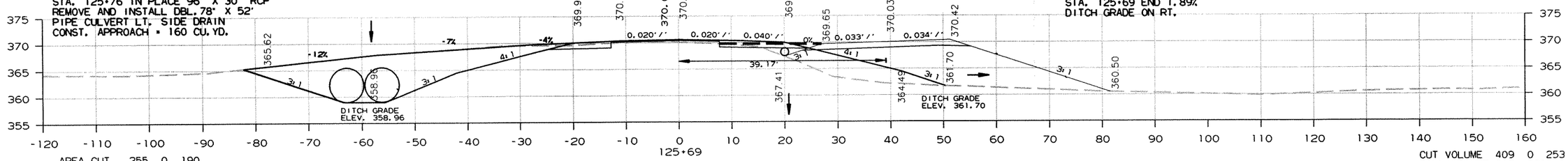
STA. 125+76
TEMPORARY DRIVE

STA. 125+76 INSTALL TEMP. 18" X 40' PIPE CULVERT RT. SIDE DRAIN
CONST. APPROACH = 10 CU.YD.

CUT VOLUME 190 0 293
FILL VOLUME 119 505 0

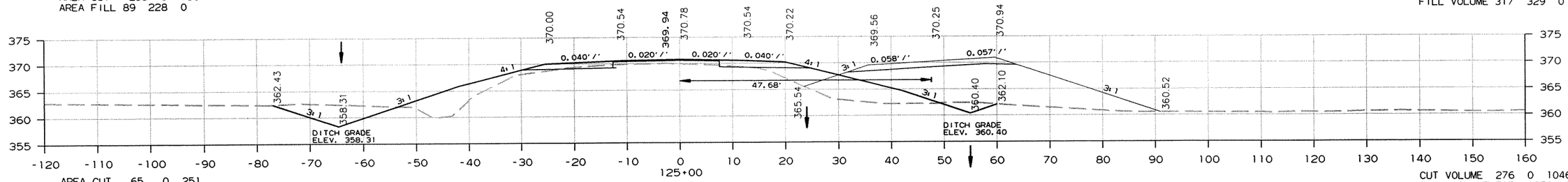
STA. 125+76 IN PLACE 96" X 30' RCP
REMOVE AND INSTALL DBL. 78" X 52' PIPE CULVERT LT. SIDE DRAIN
CONST. APPROACH = 160 CU.YD.

STA. 125+69 END 1.89% DITCH GRADE ON RT.



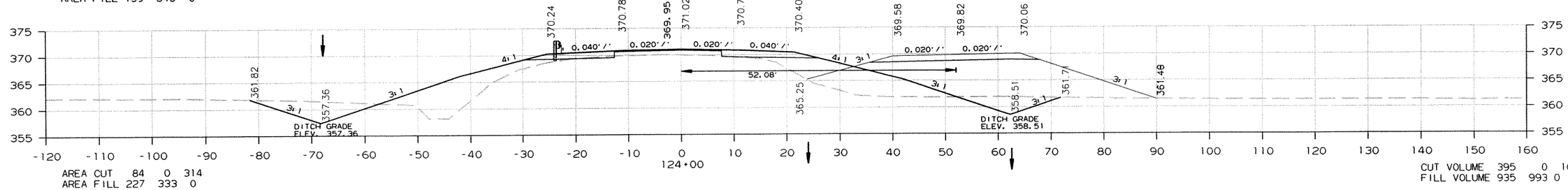
AREA CUT 255 0 190
AREA FILL 89 228 0

CUT VOLUME 409 0 253
FILL VOLUME 317 329 0



AREA CUT 65 0 251
AREA FILL 159 345 0

CUT VOLUME 276 0 1046
FILL VOLUME 715 1256 0



AREA CUT 84 0 314
AREA FILL 227 333 0

CUT VOLUME 395 0 1022
FILL VOLUME 935 993 0

CROSS SECTION STA. 124+00 TO STA. 127+00

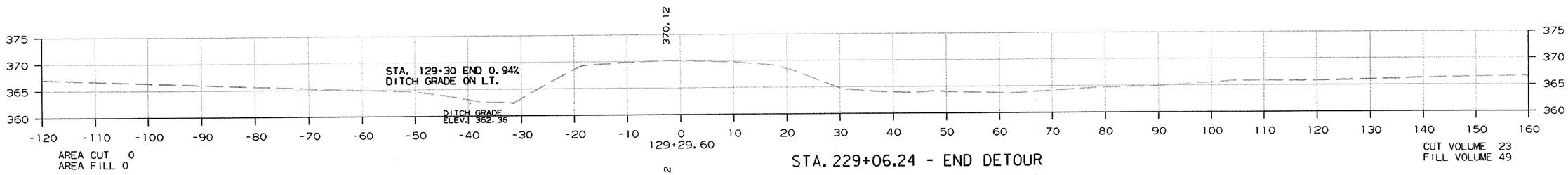
R030387.DGN 9/15/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		030387	71	71

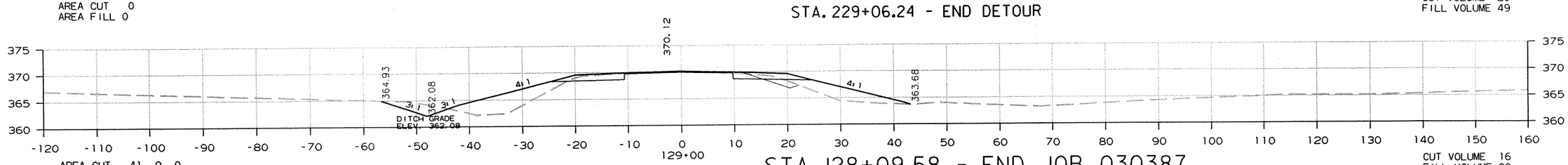
(2) CROSS SECTIONS

MAIN LANES DETOUR DETOUR REMOVAL

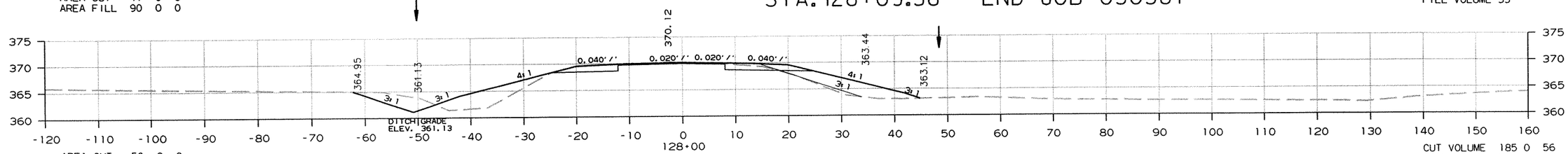
MAIN LANES DETOUR DETOUR REMOVAL

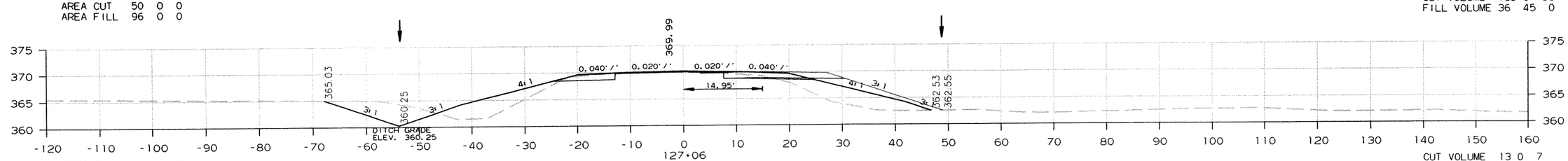


STA. 229+06.24 - END DETOUR



STA. 128+09.58 - END JOB 030387





CROSS SECTION STA. 127+06 TO STA. 129+30

ZBORDER.CEL 9/15/2011