

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST. NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BR4401	2	60
④ INDEX OF SHEETS AND STANDARD DRAWINGS								

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TITLE

BRIDGE NO.

DRWG. NO.

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Freeling, Bryan E.
Date: 2026.09.18
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ROADWAY STANDARD DRAWINGS		
DRWG. NO.	TITLE	DATE
CDP-1	CONCRETE DITCH PAVING	12-08-16
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GR-11	GUARDRAIL DETAILS	11-07-19
GR-12	GUARDRAIL DETAILS	05-14-20
GRT-1	GUARDRAIL DETAILS	11-07-19
PCC-1	CONCRETE PIPE CULVERT FILL HEIGHTS & BEDDING	02-27-14
PCM-1	METAL PIPE CULVERT FILL HEIGHTS & BEDDING	02-27-14
PCP-1	PLASTIC PIPE CULVERT (HIGH DENSITY POLYETHYLENE)	02-27-14
PCP-2	PLASTIC PIPE CULVERT (PVC F949)	02-27-14
PCP-3	PLASTIC PIPE CULVERT (POLYPROPYLENE)	02-27-20
PM-1	PAVEMENT MARKING DETAILS	04-09-26
SHS-1	STANDARD HIGHWAY SIGNS AND SUPPORT ASSEMBLIES	09-12-13
SHS-2	U-CHANNEL POST ASSEMBLIES	07-25-19
TC-1	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	08-14-25
TC-1A	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	04-09-26
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TEC-1	TEMPORARY EROSION CONTROL DEVICES	11-16-17
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WF-4	WIRE FENCE TYPE C AND D	08-22-02

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DRWG. NO.	TITLE	DATE
55000	STANDARD DETAILS FOR EMBANKMENT CONSTRUCTION AND BACKFILL AT BRIDGE ENDS	02-27-14
55001	STANDARD DETAILS FOR DUMPED RIPRAP AND FILTER BLANKET AND COMPUTING EXCAVATION FOR STRUCTURES	02-27-14
55005	STANDARD DETAILS FOR PERMANENT STEEL BRIDGE DECK FORMS FOR STEEL & CONCRETE GIRDER SPANS	03-24-16
55006	STANDARD GENERAL NOTES FOR STEEL BRIDGE STRUCTURES	09-02-15
55007	STANDARD DETAILS FOR STEEL BRIDGE STRUCTURES	02-11-16
55008	STANDARD DETAILS FOR POURED SILICONE JOINTS	02-11-16
55011	STANDARD DETAILS FOR TYPE C BRIDGE NAME PLATES	02-27-20
55020	STANDARD DETAILS FOR STEEL H-PILES AND PILE ENCASEMENTS	03-24-16
55030F	STANDARD DETAILS FOR TYPE F APPROACH GUTTERS	04-08-21
55070	STANDARD DETAILS FOR BRIDGE TRAFFIC RAIL TYPE SSTR36	09-27-22

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GOVERNING SPECIFICATIONS

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

NUMBER

TITLE

ERRATA

ERRATA FOR THE BOOK OF STANDARD SPECIFICATIONS

FHWA-1273

REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS

FHWA-1273

SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - NOTICE TO CONTRACTORS

FHWA-1273

SUPPLEMENT - SPECIFIC EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITIES (23 U.S.C. 140)

FHWA-1273

SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - GOALS AND TIMETABLES

FHWA-1273

SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - FEDERAL STANDARDS

FHWA-1273

SUPPLEMENT - POSTERS AND NOTICES REQUIRED FOR FEDERAL-AID PROJECTS

FHWA-1273

SUPPLEMENT - WAGE RATE DETERMINATION

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808-2

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BUY AMERICA - CONSTRUCTION MATERIALS

JOB BR4401

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VEGETATED BUFFER ZONE

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VENDOR REGISTRATION REQUIREMENT

JOB BR4401

WARM MIX ASPHALT

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WATER POLLUTION CONTROL

GENERAL NOTES

1. GRADE LINE DENOTES FINISHED GRADE WHERE SHOWN IN PLANS

2. UTILITIES INTERFERING WITH CONSTRUCTION SHALL BE MOVED BY THE OWNERS.

3. ALL LAND MONUMENTS LOCATED WITHIN THE CONSTRUCTION AREA SHALL BE PROTECTED IN ACCORDANCE WITH SECTION 107.12 OF THE STANDARD SPECIFICATIONS.

4. 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 ENSURE THAT ALL TREES NOT TO BE REMOVED SHALL BE HARMED AS LITTLE AS POSSIBLE DURING THE CONSTRUCTION OPERATIONS.

5. THE CONTRACTOR SHALL PROVIDE 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.

6. PAVEMENT TO BE REMOVED SHALL BE SEPARATED BY SAWING ALONG A NEAT LINE. PAVEMENT SHALL BE REMOVED IN A MANNER THAT WILL NOT DAMAGE THE PAVEMENT RETAINED. ANY DAMAGE TO RETAINED PAVEMENT SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.

7. TEMPORARY EASEMENTS ARE PROVIDED FOR CONTRACTOR ACCESS. AREAS OUTSIDE THE CONSTRUCTION LIMITS SHALL NOT BE CLEARED OR GRUBBED UNLESS DIRECTED BY THE ENGINEER.

8. AREAS WITHIN CONSTRUCTION LIMITS NOT CLASSIFIED AS CLEARING AND GRUBBING SHALL BE SCALPED AS DIRECTED BY THE ENGINEER. SCALPING WILL NOT BE PAID FOR SEPARATELY, BUT WILL BE CONSIDERED INCLUDED IN THE CONTRACT PRICES BID FOR OTHER ITEMS OF THE CONTRACT.

9. AGGREGATE BASE TO BE PLACED AND SPREAD TO CONFORM TO TYPICAL SECTION. THE MATERIAL IN THE BASE COURSE SHALL BE UNIFORMLY COMPACTED, STABLE, AND FREE OF SEGREGATED AREAS. DENSITY REQUIREMENTS ARE NOT A PART OF THIS CONTRACT.

10. THE ROAD SHALL BE MAINTAINED AND REMAIN OPEN TO TRAFFIC THROUGHOUT THE PROJECT.

11. EXISTING BRIDGE NO. 21595 SHALL BE REMOVED IN ACCORDANCE WITH SECTION 205 OF THE STANDARD SPECIFICATIONS, EDITION OF 2014, PRIOR TO CONSTRUCTION OF THE NEW BRIDGE. ALL MATERIAL FROM THE EXISTING BRIDGE SHALL BECOME THE PROPERTY OF THE CONTRACTOR.

12. THE SEQUENCE AS SHOWN ON THE MAINTENANCE OF TRAFFIC PLANS IS A GENERAL OUTLINE FOR THE CONSTRUCTION OF THIS PROJECT, AND IN NO WAY IS IT INTENDED TO COVER EVERY ITEM IN THE PROJECT. ITEMS NOT CRITICAL TO THE CONSTRUCTION SEQUENCE MAY BE CONSTRUCTED IN ANY STAGE AS APPROVED BY THE RESIDENT ENGINEER.

13. THE CONTRACTOR SHALL CLIP GRASS AND DEBRIS FROM THE EDGE OF THE EXISTING ROADWAY. THESE "CLIPPINGS" SHALL BE PULLED UP TO THE EDGE OF THE NEW PAVEMENT IN SECTIONS WHERE THE SHOULDERS ARE NOT BEING REBUILT WITH AGGREGATE OR BORROW. NO DIRECT PAYMENT WILL BE MADE FOR THIS WORK.

14. INSTALLATION OF PERMANENT TRAFFIC SAFETY SIGNS NOT SHOWN IN HE PLANS IS THE RESPONSIBILITY OF MADISON COUNTY.

4

GOVERNING SPECIFICATIONS & GENERAL NOTES

STATE OF ARKANSAS

LICENSED PROFESSIONAL ENGINEER

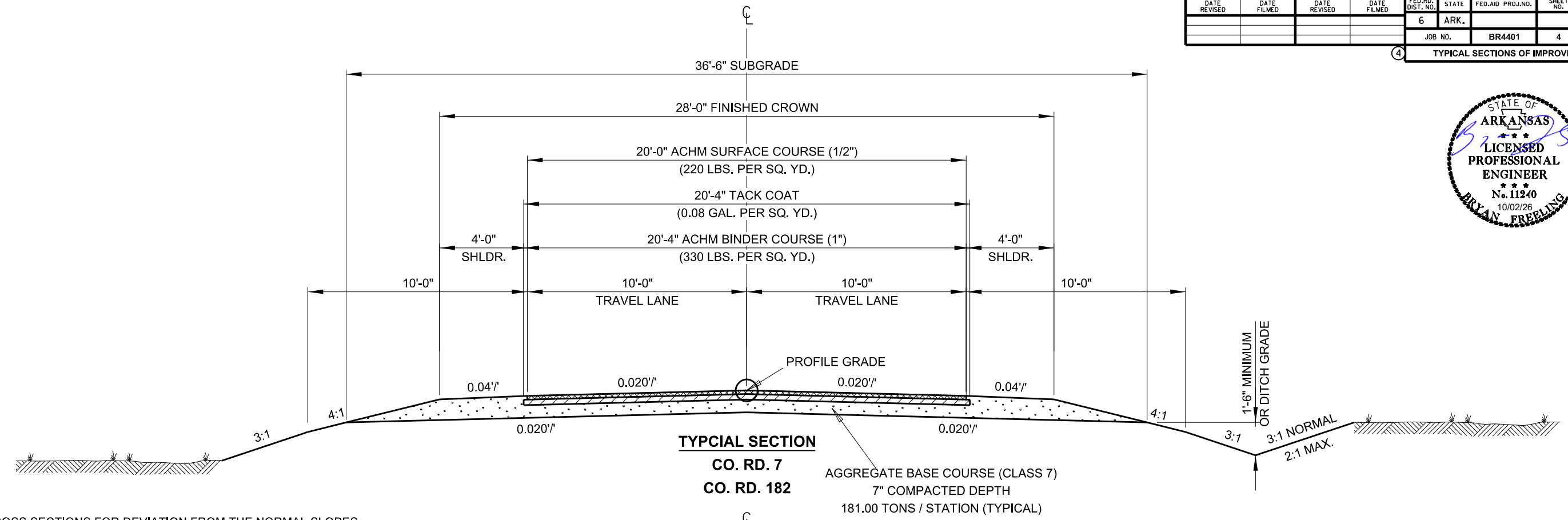
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10/02/26

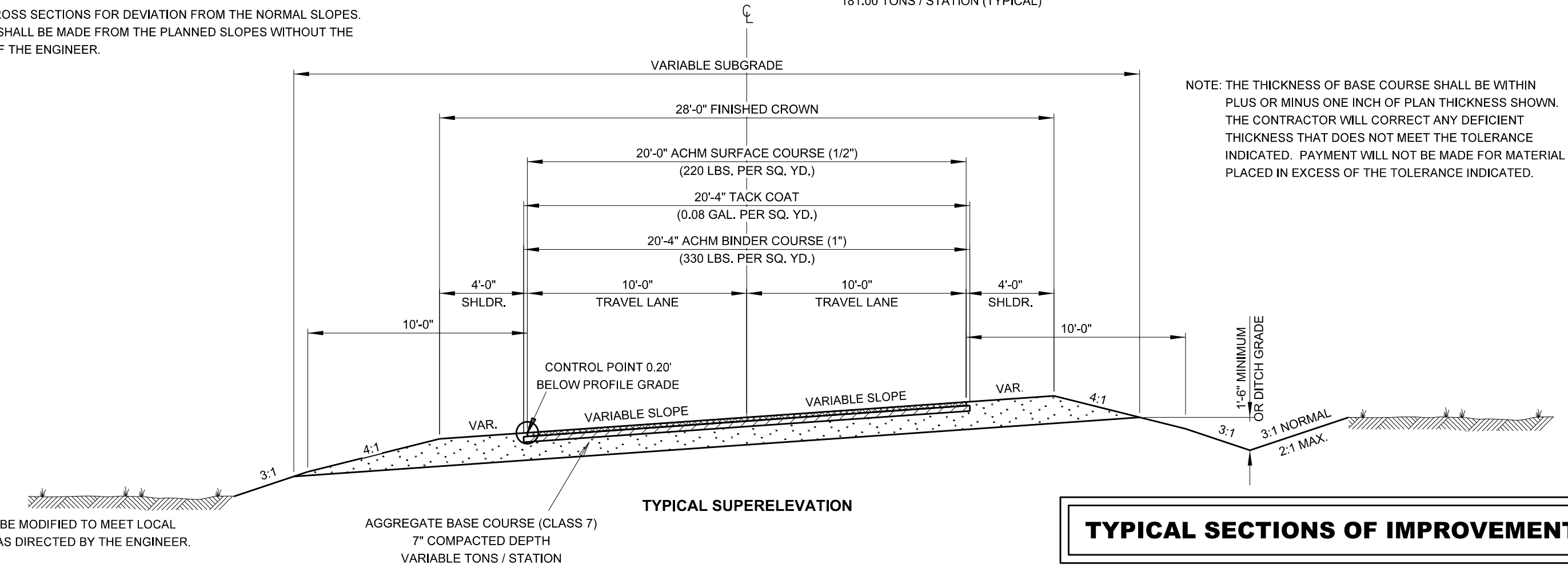
BRYAN FREELING

GOVERNING SPECIFICATIONS AND GENERAL NOTES

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BR4401	4	60
④ TYPICAL SECTIONS OF IMPROVEMENT								



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

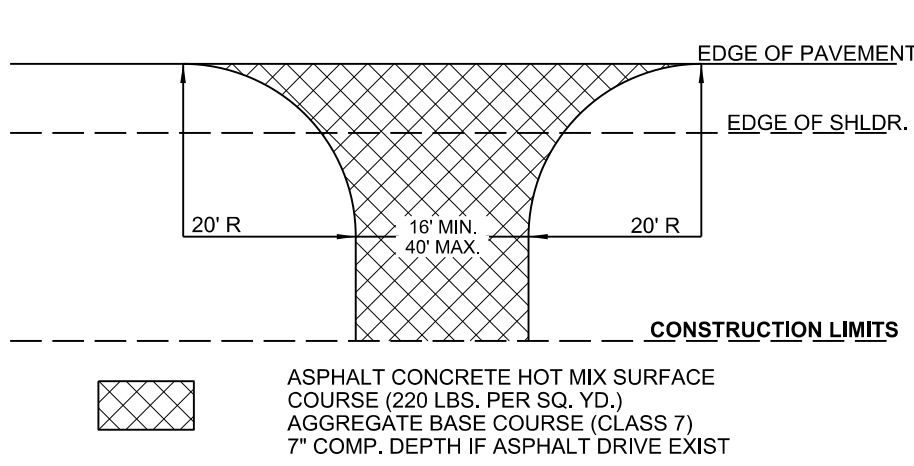


NOTE: THE THICKNESS OF BASE COURSE SHALL BE WITHIN
PLUS OR MINUS ONE INCH OF PLAN THICKNESS SHOWN.
THE CONTRACTOR WILL CORRECT ANY DEFICIENT
THICKNESS THAT DOES NOT MEET THE TOLERANCE
INDICATED. PAYMENT WILL NOT BE MADE FOR MATERIAL
PLACED IN EXCESS OF THE TOLERANCE INDICATED.

NOTE: DETAILS MAY BE MODIFIED TO MEET LOCAL
CONDITIONS AS DIRECTED BY THE ENGINEER.

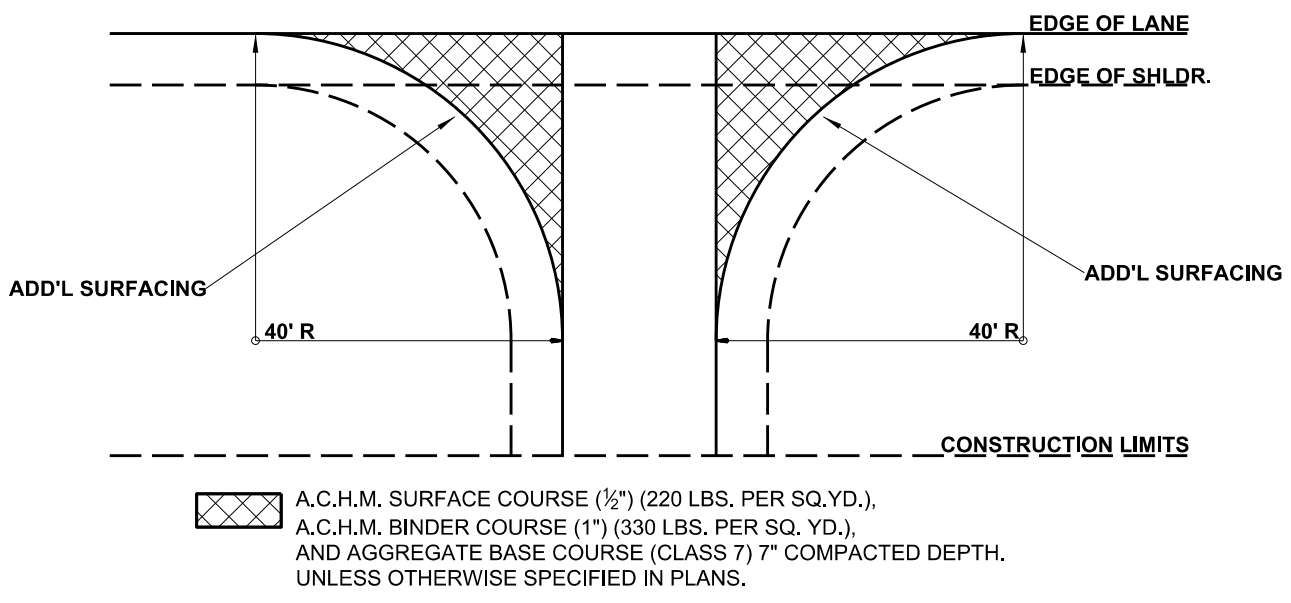
TYPICAL SECTIONS OF IMPROVEMENT

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BR4401	5	60
				④	SPECIAL DETAILS			



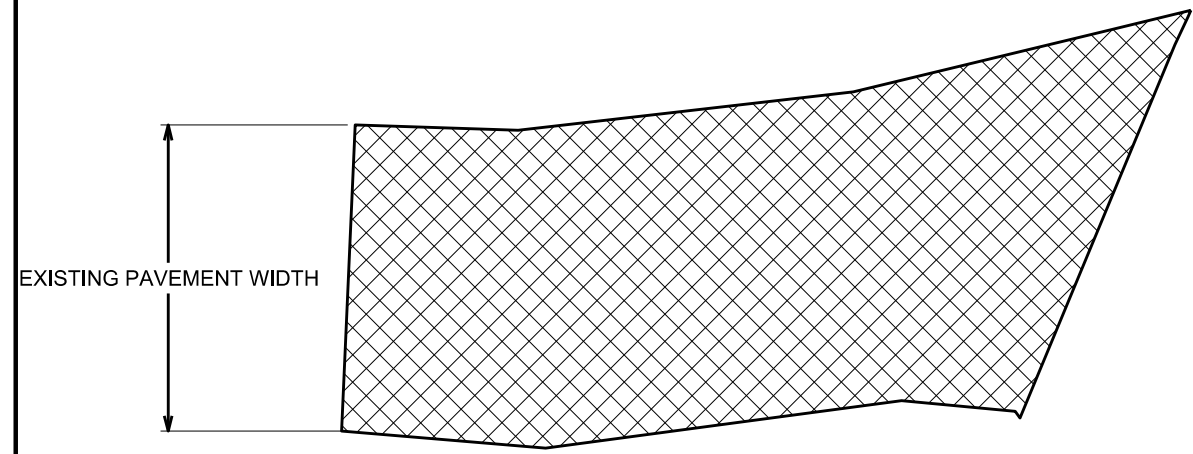
DETAIL FOR DRIVEWAY TURNOUTS

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



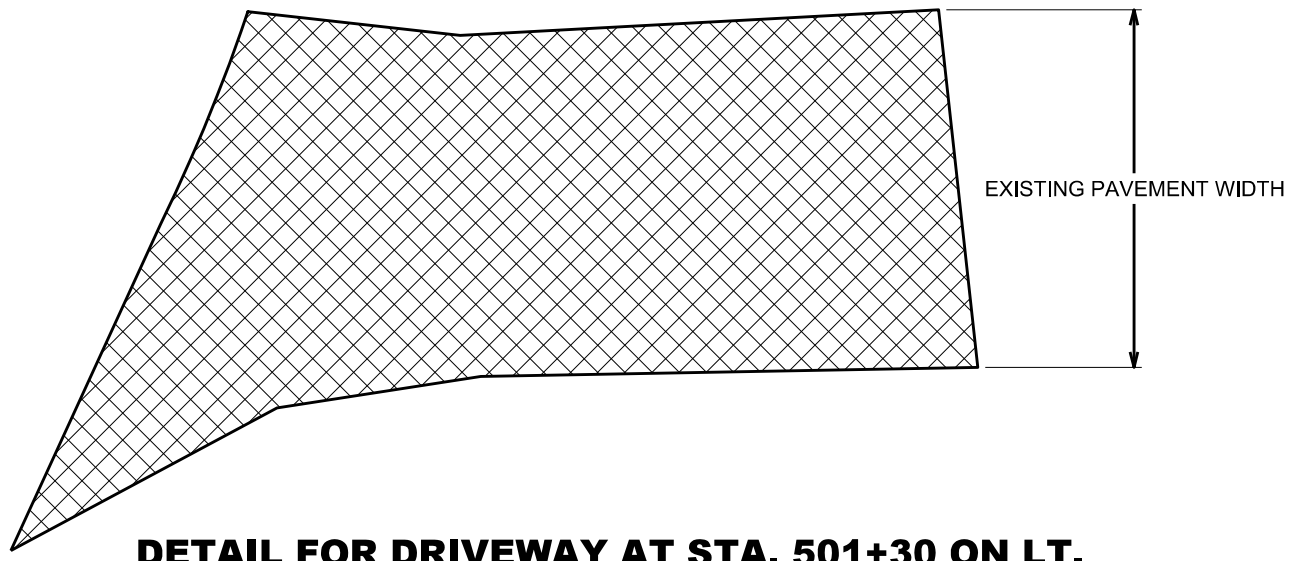
DETAIL FOR COUNTY ROAD TURNOUTS

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



**DETAIL FOR DRIVEWAY AT STA. 501+45 ON RT.
ADD'L SURFACING = 118.17 SQ. YD.**

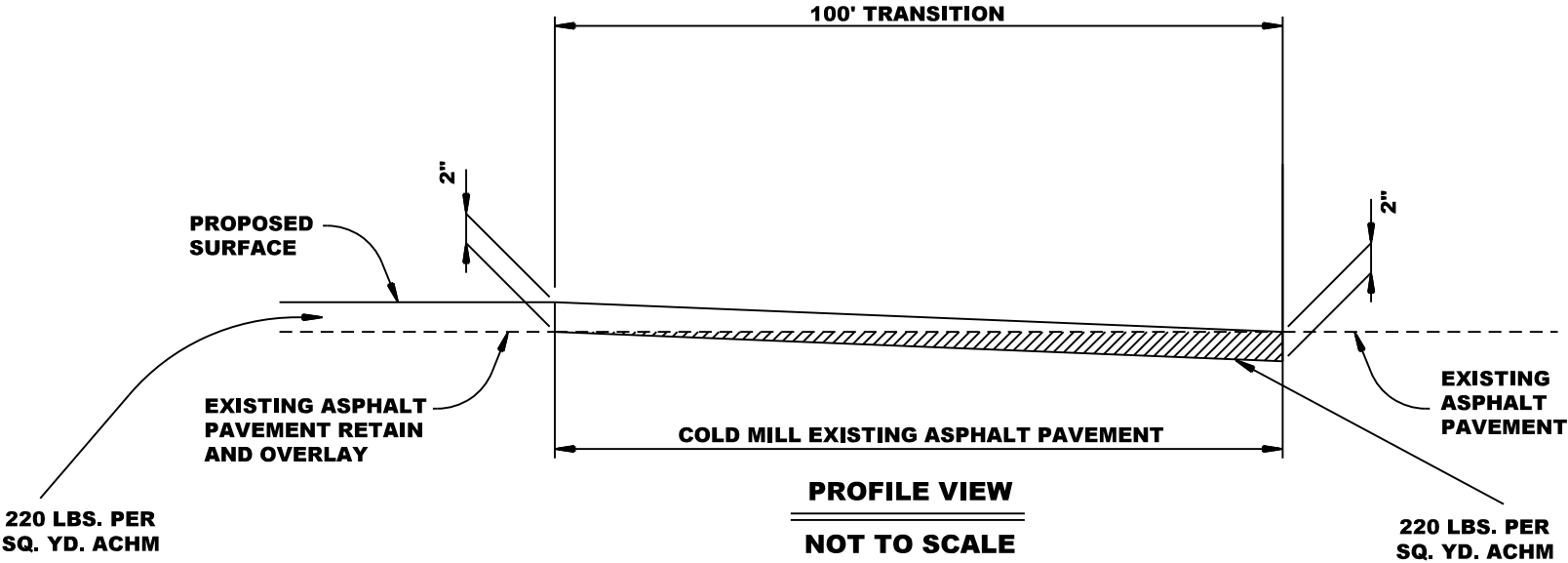
ASPHALT CONCRETE HOT MIX SURFACE COURSE (220 LBS. PER SQ. YD.)
AGGREGATE BASE COURSE (CLASS 7)
7" COMP. DEPTH IF ASPHALT DRIVE EXIST



**DETAIL FOR DRIVEWAY AT STA. 501+30 ON LT.
ADD'L SURFACING = 168.80 SQ. YD.**

SPECIAL DETAILS

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						JOB NO. BR4401	6	60
4 SPECIAL DETAILS								

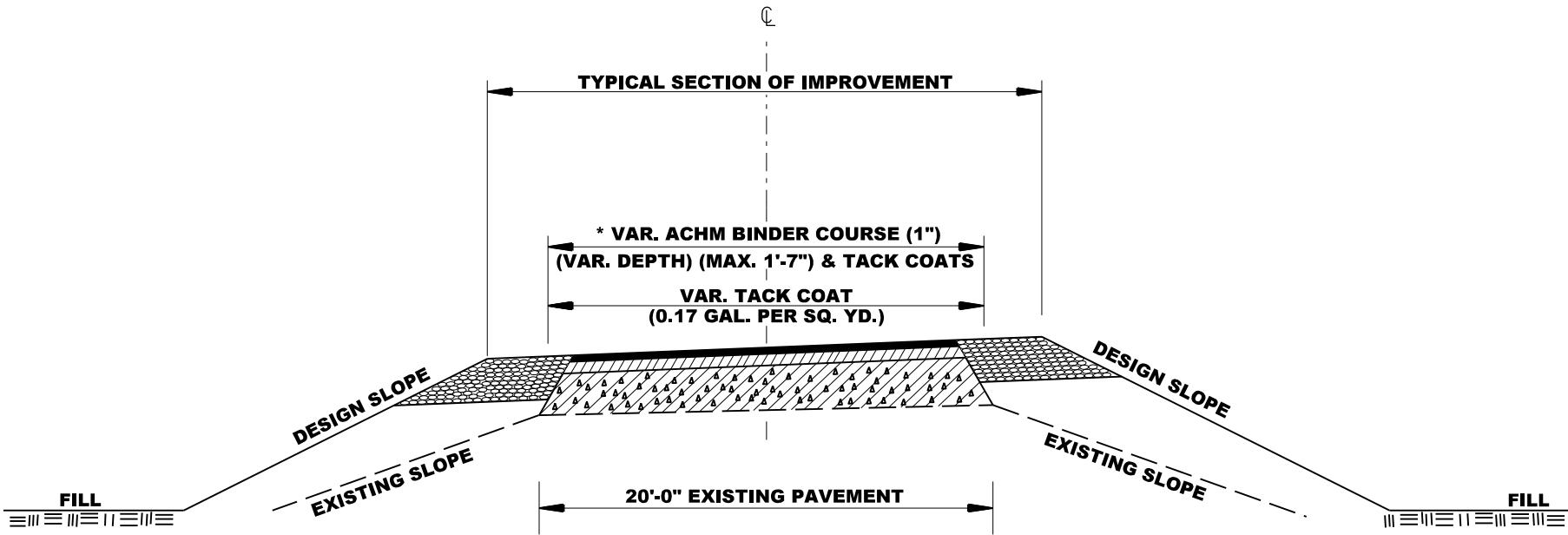


**PAVEMENT TRANSITION
DETAILS FOR COLD MILLING**

**NOTE: DIMENSIONS ARE APPROXIMATED AND MAY BE
MODIFIED AS DIRECTED BY THE ENGINEER.**

**NOTE: FOR COLD MILLING ASPHALT PAVEMENT
TRANSITION, TAPER 100' OF FINAL SURFACE
TO CREATE A 2" PAVING NOTCH, AT
VARIOUS LOCATIONS, AS SHOWN ABOVE.
OVERLAY MILLED AREAS USING 220 LBS.
PER SQ. YD. OF ACHM.**

**NOTE: MATERIAL PRODUCED FROM COLD MILLING
ASPHALT PAVEMENT SHALL REMAIN THE
PROPERTY OF THE CONTRACTOR.**



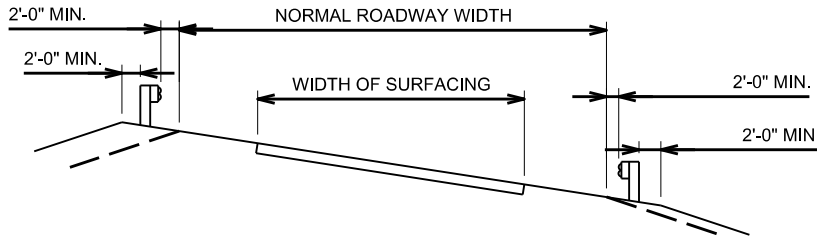
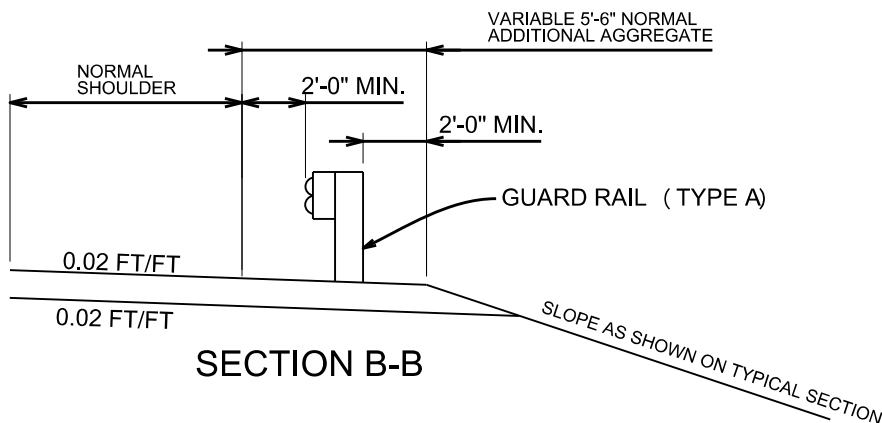
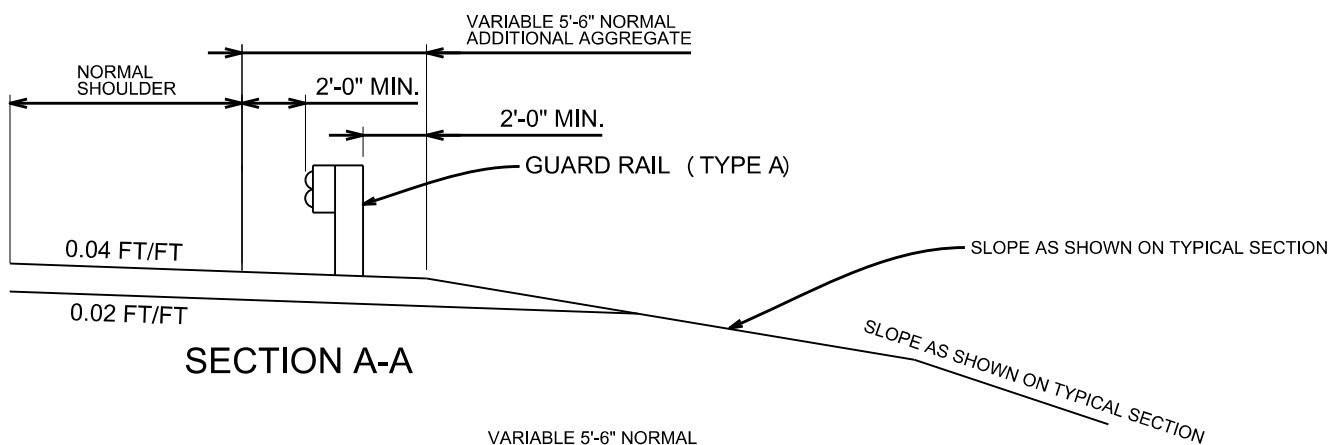
METHOD OF RAISING GRADE

*** 7" AGGREGATE BASE COURSE (CLASS 7)
TO BE REPLACED WITH ACHM BINDER COURSE (1")**

- 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.**

SPECIAL DETAILS

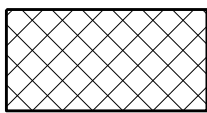
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
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				JOB NO.	BR4401		7	60
SPECIAL DETAILS								

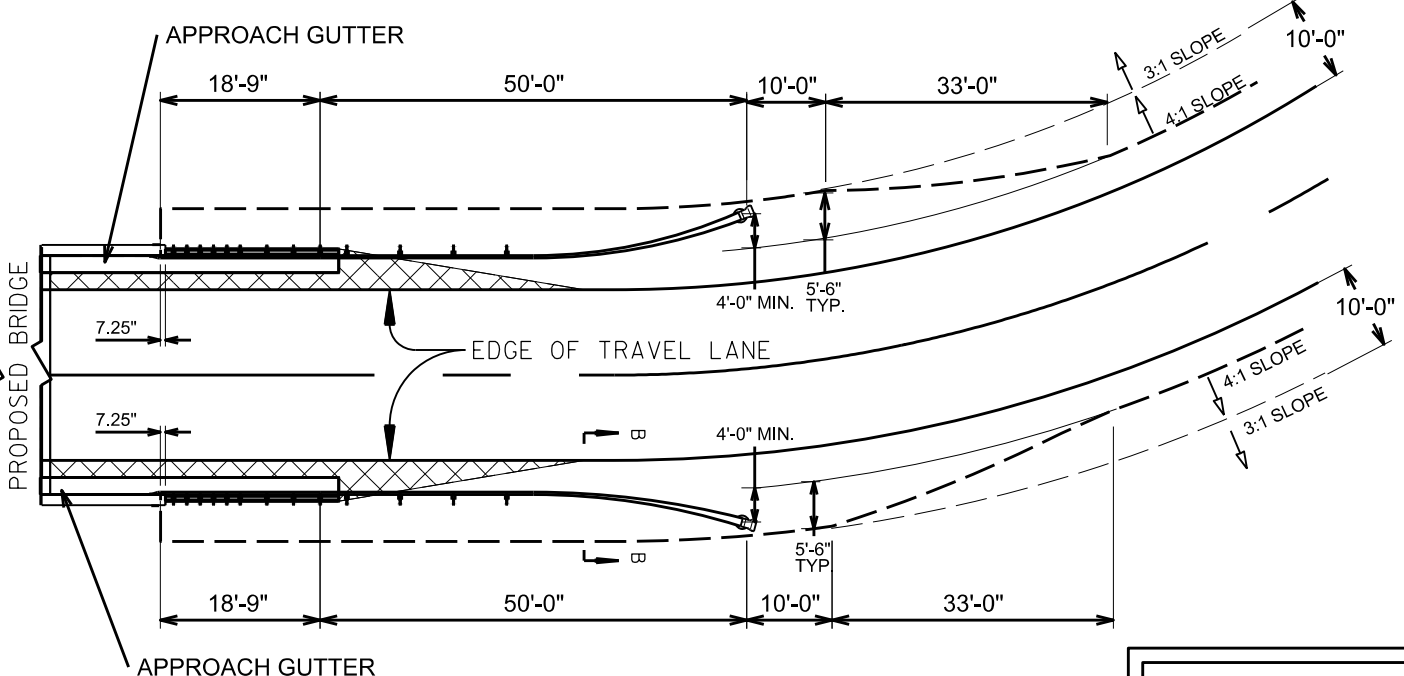
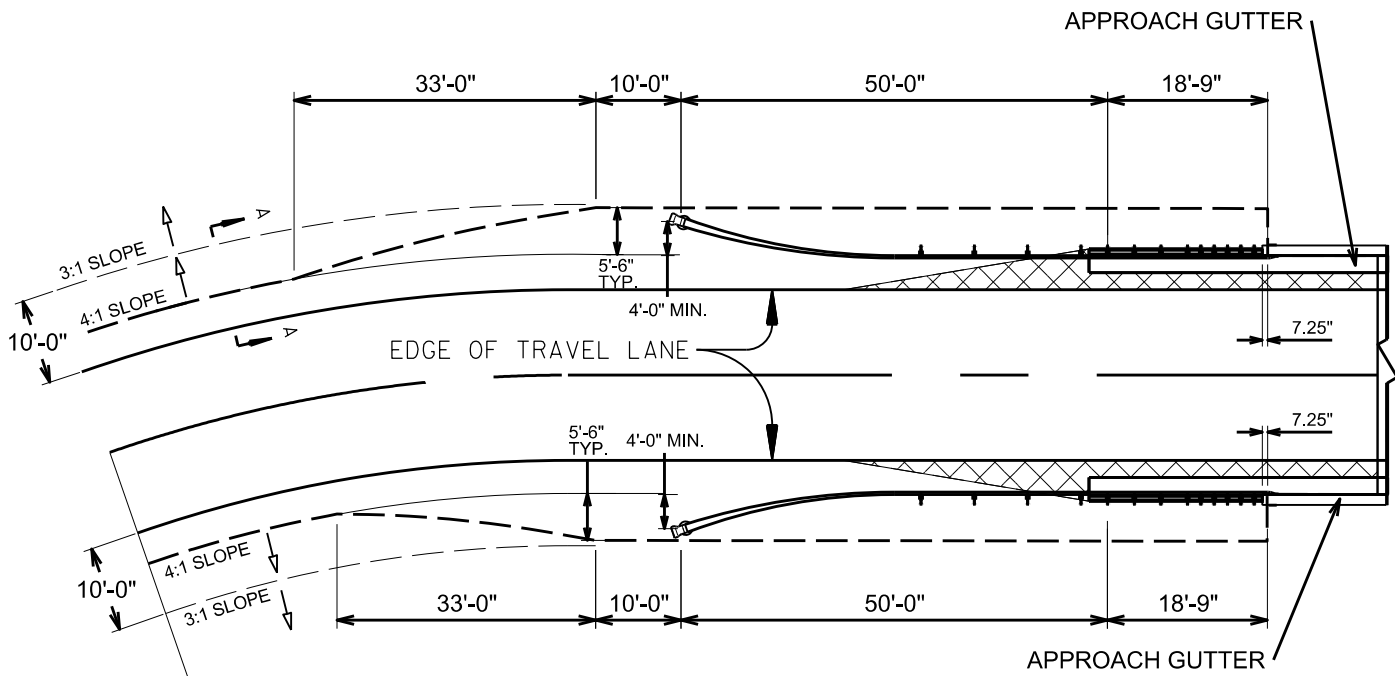


SECTION ON CURVE

DETAILS SHOWING POSITION OF GUARD RAIL

DETAILS OF WIDENING FOR GUARD RAIL

 ADD'L A.C.H.M. SURFACE COURSE = 60.6 SQ. YD.
ADD'L A.C.H.M. BINDER COURSE = 63.9 SQ. YD.



SPECIAL DETAILS

EROSION CONTROL ITEMS ARE SUBJECT TO IMMEDIATE PLACEMENT AS DIRECTED BY THE ENGINEER. EXACT LOCATIONS TO BE DETERMINED IN THE FIELD BY THE ENGINEER.

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

ALL TEMPORARY EROSION CONTROL QUANTITIES ARE ESTIMATED. TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER. SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, EDITION OF 2014.

ROCK DITCH CHECKS (E-6)

COUNTY ROAD 7				
STA. 92+00	LT. & RT.	= 6	CU. YD.	3.0 CU. YD.
STA. 93+50	LT. & RT.	= 6	CU. YD.	3.0 CU. YD.
STA. 95+00	LT. & RT.	= 6	CU. YD.	3.0 CU. YD.
STA. 95+90	RT.	= 3	CU. YD.	1.5 CU. YD.
STA. 97+00	LT. & RT.	= 6	CU. YD.	3.0 CU. YD.
STA. 99+00	LT. & RT.	= 3	CU. YD.	1.5 CU. YD.
STA. 101+00	LT. & RT.	= 6	CU. YD.	3.0 CU. YD.
STA. 103+00	LT. & RT.	= 6	CU. YD.	3.0 CU. YD.

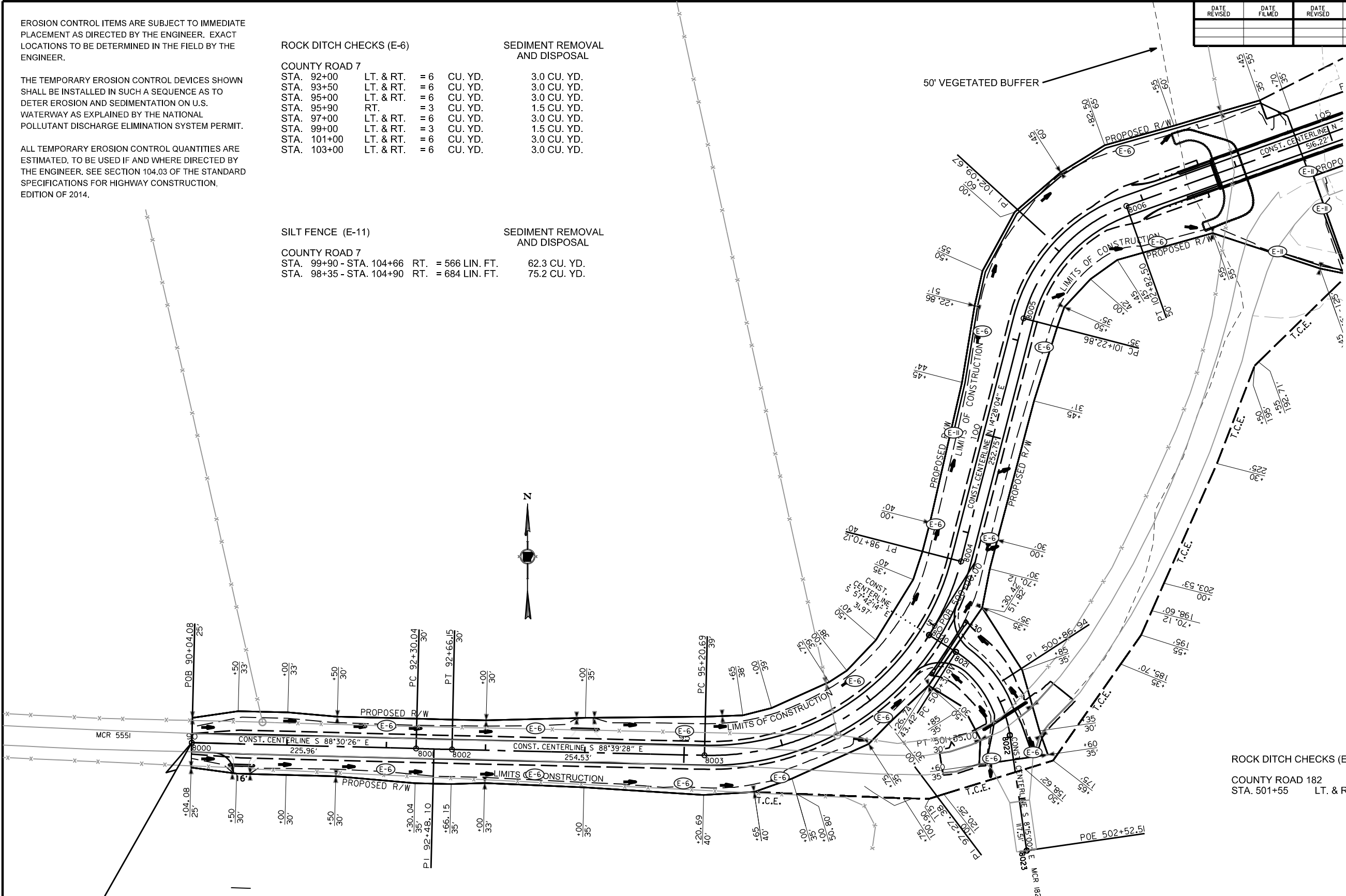
SEDIMENT REMOVAL AND DISPOSAL

SILT FENCE (E-11)

COUNTY ROAD 7			
STA. 99+90 - STA. 104+66	RT.	= 566 LIN. FT.	62.3 CU. YD.
STA. 98+35 - STA. 104+90	RT.	= 684 LIN. FT.	75.2 CU. YD.

SEDIMENT REMOVAL AND DISPOSAL

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				JOB NO.	BR4401	8	60	
TEMPORARY EROSION CONTROL DETAILS								



ROCK DITCH CHECKS (E-6)

COUNTY ROAD 182			
STA. 501+55	LT. & RT.	= 6	CU. YD.

SEDIMENT REMOVAL AND DISPOSAL

3.0 CU. YD.

TEMPORARY EROSION CONTROL DETAILS

EROSION CONTROL ITEMS ARE SUBJECT TO IMMEDIATE PLACEMENT AS DIRECTED BY THE ENGINEER. EXACT LOCATIONS TO BE DETERMINED IN THE FIELD BY THE ENGINEER.

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

ALL TEMPORARY EROSION CONTROL QUANTITIES ARE ESTIMATED. TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER. SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, EDITION OF 2014.

ROCK DITCH CHECKS (E-6)

COUNTY ROAD 7

STA. 107+30	RT.	= 3	CU. YD.	1.5	CU. YD.
STA. 108+00	RT.	= 3	CU. YD.	1.5	CU. YD.
STA. 109+00	RT.	= 3	CU. YD.	1.5	CU. YD.
STA. 109+50	RT.	= 3	CU. YD.	1.5	CU. YD.
STA. 110+00	RT.	= 3	CU. YD.	1.5	CU. YD.
STA. 110+50	RT.	= 3	CU. YD.	1.5	CU. YD.
STA. 111+00	RT.	= 3	CU. YD.	1.5	CU. YD.
STA. 111+50	RT.	= 3	CU. YD.	1.5	CU. YD.
STA. 112+00	RT.	= 3	CU. YD.	1.5	CU. YD.
STA. 112+50	RT.	= 3	CU. YD.	1.5	CU. YD.
STA. 113+00	RT.	= 3	CU. YD.	1.5	CU. YD.
STA. 113+50	RT.	= 3	CU. YD.	1.5	CU. YD.

SEDIMENT REMOVAL AND DISPOSAL

SILT FENCE (E-11)

COUNTY ROAD 7
STA. 104+10 - STA. 104+66 RT. = 161 LIN. FT.

SEDIMENT REMOVAL AND DISPOSAL

17.8 CU. YD.

50' VEGETATED BUFFER

50' VEGETATED BUFFER

END JOB
STA. 113+90.00

50' VEGETATED BUFFER

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	BR4401	9	60	
TEMPORARY EROSION CONTROL DETAILS								



TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST. NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BR4401	10	60
				④	QUANTITIES			

CLEARING AND GRUBBING

STATION	STATION	LOCATION	CLEARING	GRUBBING
			STATION	
90+04	91+50	MAIN LANES ON LT. & RT.	2	2
91+50	93+00	MAIN LANES ON LT. & RT.		2
93+00	97+00	MAIN LANES ON LT. & RT.	4	4
97+00	104+00	MAIN LANES ON LT. & RT.		7
104+00	105+00	MAIN LANES ON LT. & RT.	1	1
107+00	113+90	MAIN LANES ON LT. & RT.	7	7
TOTALS:			14	23

COLD MILLING ASPHALT PAVEMENT

STATION	STATION	LOCATION	AVG. WIDTH	COLD MILLING ASPHALT PAVEMENT
			FEET	SQ. YD.
90+04.00	91+04.00	MAIN LANES	20.00	222.22
112+90.00	113+90.00	MAIN LANES	20.00	222.22
500+60.00	501+60.00	COUNTY ROAD 182	20.00	222.22
TOTAL:				666.66
USE:				667

NOTE: QUANTITY ESTIMATED. TO BE USE IF AND WHERE AS DIRECTED BY THE ENGINEER
SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.



REMOVAL AND DISPOSAL OF ITEMS

STATION	STATION	LOCATION	FENCE	GATES	RETAINING WALLS	ROCK WALLS	PIPE CULVERTS	PIPE RAILING
			LIN. FT.	EACH	LIN. FT.	LIN. FT.	EACH	LIN. FT.
90+04	96+54	5 STRAND BARB WIRE ON LT.	714					
90+04	90+44	5 STRAND BARB WIRE ON RT.	40					
90+64	95+58	5 STRAND BARB WIRE ON RT.	500					
96+54	103+65	5 STRAND BARB WIRE ON RT.	713					
103+65	104+04	BARB WIRE ON RT. & LT.	129					
90+55		GATE ON RT.		1				
104+78		RETAINING WALL ON LT.			26			
104+78		RETAINING WALL ON RT.			25			
106+14		RETAINING WALL ON LT.			35			
106+14		RETAINING WALL ON RT.			31			
103+98	104+08	ROCK WALL ON LT.				61		
104+80						11		
90+55		18" X 24' CMP CULVERT ON RT.					1	
104+78		BRIDGE END ON LT.						25
104+78		BRIDGE END ON RT.						20
106+14		BRIDGE END ON LT.						30
106+14		BRIDGE END ON RT.						30
TOTALS:			2096	1	117	72	1	105

EARTHWORK

STATION	STATION	LOCATION / DESCRIPTION	UNCLASSIFIED EXCAVATION	COMPACTED EMBANKMENT
			CU. YD.	
90+04	106+98	MAIN LANES	895	5765
	90+55	DRIVE ON RT.		15
	94+00	DRIVE ON LT.		20
96+00	96+55	OBLITERATION OF EXISTING ROADWAY ON RT.	42	
103+77	107+33	EXCAVATION AT BRIDGE	2920	
103+83	104+08	OBLITERATION OF EXISTING ROADWAY ON RT.	9	
106+92	113+90	MAIN LANES	92	21365
108+85	109+69	OBLITERATION OF EXISTING ROADWAY ON RT.	17	
500+10	501+60	COUNTY ROAD 182	64	356
	501+30	DRIVE ON LT.	4	17
	501+45	DRIVE ON RT.	12	10
TOTALS:			4055	27548

NOTE: EARTHWORK QUANTITIES SHALL BE PAID AS PLAN QUANTITIES.

QUANTITIES

BASE AND SURFACING

STATION	STATION	LOCATION	LENGTH	AGGREGATE BASE COURSE (CLASS 7)		TACK COAT				ACHM BINDER COURSE (1")				ACHM SURFACE COURSE (1/2")			
				TON / STATION	TON	WIDTH	SQ.YD.	GAL. / SQ.YD.	GALLONS	WIDTH	SQ.YD.	POUND / SQ.YD.	PG 64-22	WIDTH	SQ.YD.	POUND / SQ.YD.	PG 64-22
			FEET			FEET				FEET			TON	FEET			TON
MAIN LANES																	
90+04.08	90+54.08	MAIN LANES	50.00	VAR.	68.10	20.33	112.94	0.08	9.04	20.33	112.94	330.00	18.64	20.00	106.94	220.00	11.76
90+54.08	91+00.00	MAIN LANES	45.92	181.00	83.12	20.33	103.73	0.08	8.30	20.33	103.73	330.00	17.12	20.00	102.04	220.00	11.22
91+00.00	95+75.00	MAIN LANES	475.00	VAR.	403.61	20.33	1072.97	0.08	85.84	20.33	1072.97	330.00	177.04	20.00	1055.56	220.00	116.11
95+75.00	103+77.40	MAIN LANES	802.40	181.00	1452.34	20.33	1812.53	0.08	145.00	20.33	1812.53	330.00	299.07	20.00	1783.11	220.00	196.14
107+32.60	112+90.00	MAINLANES	557.40	181.00	1008.89	20.33	1259.10	0.08	100.73	20.33	1259.10	330.00	207.75	20.00	1238.67	220.00	136.25
112+90.00	113+90.00	MAIN LANES	100.00	VAR.	125.00	20.33	225.89	0.08	18.07	20.33	225.89	330.00	37.27	20.00	222.22	220.00	24.44
500+10.00	500+53.00	COUNTY ROAD 182 - TURNOUT	43.00	VAR.	93.76	VAR.	157.86	0.08	12.63	VAR.	157.86	330.00	26.05	VAR.	155.52	220.00	17.11
500+53.00	501+10.00	COUNTY ROAD 182	57.00	190.50	108.59	20.33	128.76	0.08	10.30	20.33	128.76	330.00	21.25	20.00	126.67	220.00	13.93
501+10.00	501+60.00	COUNTY ROAD 182	50.00	VAR.	89.29	VAR.	188.98	0.08	15.12	VAR.	190.90	330.00	31.50	VAR.	188.98	220.00	20.79
ADDITIONAL FOR METHOD OF RAISING GRADE*																	
91+00.00	95+75.00	MAIN LANES	475.00			VAR.	993.19	0.17	168.84	VAR.	993.19	VAR.	392.32				
111+60.00	112+90.00	MAIN LANES	130.00			VAR.	255.56	0.17	43.45	VAR.	255.56	VAR.	124.30				
501+30.00	501+50.00	COUNTY ROAD 182	20.00			VAR.	22.22	0.17	3.78	VAR.	3.78	VAR.	12.05				
ADDITIONAL FOR SUPERELEVATION																	
94+38.19	95+48.19	SUPERELEVATION TRANSITION	110.00	4.00	4.40												
95+48.19	98+42.62	FULL SUPERELEVATION	294.43	4.75	13.99												
98+42.62	99+52.62	SUPERELEVATION TRANSITION	110.00	4.00	4.40												
100+46.62	101+71.62	SUPERELEVATION TRANSITION	125.00	4.50	5.63												
101+71.62	102+33.75	FULL SUPERELEVATION	62.13	6.58	4.09												
102+33.75	103+58.75	SUPERELEVATION TRANSITION	125.00	4.50	5.63												
107+18.72	108+78.72	SUPERELEVATION TRANSITION	160.00	5.00	8.00												
108+78.72	109+75.69	FULL SUPERELEVATION	96.97	8.50	8.24												
109+75.69	111+35.69	SUPERELEVATION TRANSITION	160.00	5.00	8.00												
ADDITIONAL FOR APPROACH GUTTERS																	
103+15.00	103+77.42	APPROACH GUTTER ON LT. AND RT.	62.42			VAR.	31.94	0.08	2.56	VAR.	31.94	330.00	5.27	VAR.	30.30	220.00	3.33
107+32.60	107+95.02	APPROACH GUTTER ON LT. AND RT.	62.42			VAR.	31.94	0.08	2.56	VAR.	31.94	330.00	5.27	VAR.	30.30	220.00	3.33
ADDITIONAL FOR GUARDRAIL WIDENING																	
101+62.77	101+95.77	TAPER ON RT.	33.00	22.00	7.26												
101+95.77	103+77.40	WIDENING ON RT.	181.63	43.75	79.46												
102+37.77	102+70.77	TAPER ON LT.	33.00	22.00	7.26												
102+70.77	103+77.40	WIDENING ON LT.	106.63	43.75	46.65												
107+32.60	108+39.23	WIDENING ON RT.	106.63	43.75	46.65												
108+39.23	108+72.23	TAPER ON RT.	33.00	22.00	7.26												
107+32.60	109+14.23	WIDENING ON LT.	181.63	43.75	79.46												
109+14.23	109+47.23	TAPER ON LT.	33.00	22.00	7.26												
ENTIRE PROJECT AS DIRECTED*					500.00												
TOTALS:					4276.34				626.22				1374.90				554.41
USE:					4276				626				1375				554

BASIS OF ESTIMATE:
TACK COAT..... 0.08 GAL. PER SQ. YD.
TACK COAT (METHOD OF RAISING GRADE)..... 0.17 GAL. PER SQ. YD.

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

VOLUME CONTROL:
ASPHALT BINDER (PG 64-22) IN ACHM BINDER COURSE (1")..... 4.5%
MINERAL AGGREGATE IN ACHM BINDER COURSE (1")..... 95.5%
ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2")..... 5.8%
MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2")..... 94.2%



APPROACH GUTTERS

STATION	STATION	LOCATION	APPROACH GUTTER (TYPE F)	REINFORCING STEEL-RDWY. (GR. 60)
			CU.YD.	POUND
103+42.40	103+77.40	LT. SIDE	3.95	215
103+42.40	103+77.40	RT. SIDE	3.95	215
107+32.60	107+67.60	LT. SIDE	3.95	215
107+32.60	107+67.60	RT. SIDE	3.95	215
TOTALS:			15.80	860

QUANTITIES

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST. NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
					JOB NO.	BR4401	12	60
④ QUANTITIES								

CONCRETE DITCH PAVING							
STATION	STATION	LOCATION	LENGTH	"W"	CONCRETE DITCH PAVING (TYPE B)	SOLID SODDING	WATER
			LIN. FT.	FEET	SQ. YD.	SQ. YD.	M. GAL.
109+75.00	113+90.00	MAIN LANES - RIGHT SIDE DITCH	415.00	8.00	368.89	184.44	2.32
TOTALS:					368.89	184.44	2.32
USE:					368.89	184	2.3

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



ADVANCE WARNING SIGNS AND DEVICES																			
LOCATION	W20-1								G20-2		R2-6aP		R2-11		WZ-4		*BARRICADES (TYPE III)	*TRAFFIC DRUMS	STANDARD DRAWING NUMBER
	1500 FT.		1000 FT.		500 FT.		AHEAD		END ROAD WORK		FINES DOUBLE		END HIGHER FINES ZONE		NO HAND-HELD PHONE USE BY DRIVER				
	NO.	SQ. FT.	NO.	SQ. FT.	NO.	SQ. FT.	NO.	SQ. FT.	NO.	SQ. FT.	NO.	SQ. FT.	NO.	SQ. FT.	NO.	SQ. FT.	LIN. FT.	EACH	
BEGINNING OF JOB	1	16.00	1	16.00	1	16.00	1	16.00	1	16.00	1	12.00	1	12.00	1	13.50			TC-1, TC-2, TC-3, & TC-6
COUNTY ROAD 182							1	16.00	1	16.00									TC-1, TC-2, TC-3, & TC-6
END OF JOB							1	16.00	1	16.00	1	12.00	1	12.00	1	13.50			TC-1, TC-2, TC-3, & TC-6
*ENTIRE PROJECT - TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.																	32	50	TC-1, TC-2, TC-3, & TC-6
SUBTOTALS:	1	16.00	1	16.00	1	16.00	3	48.00	3	48.00	2	24.00	2	24.00	2	27.00	32	50	
TOTALS:																219.00	32	50	
USE:																219	32	50	

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

NOTE: LOCATION OF THE TRAFFIC CONTROL DEVICES TO BE AS DIRECTED BY THE ENGINEER. SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

*QUANTITIES ESTIMATED. SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.

STATION	DESCRIPTION	PIPE CULVERT ALTERNATES		FLARED END SECTIONS FOR PIPE CULVERT ALTERNATES		ARCH PIPE CULVERT ALTERNATES		FLARED END SECTIONS FOR ARCH PIPE CULVERT ALTERNATES		SOLID SODDING	WATER	STD. DWG. NOS.
		ALT. 1 (CLASS V)	ALTS. 2, 3, & 4	REINFORCED CONCRETE ALT. 1	PIPE CULVERT ALTS. 2, 3, & 4	ALT. 1 (CLASS V)	ALTS. 2, 3, & 4	REINFORCED CONCRETE ALT. 1	PIPE CULVERT ALTS. 2, 3, & 4			
		18"	18"	18"	18"	22" X 14"	21" X 15"	22" X 14"	21" X 15"			
		LIN. FT.		EACH		LIN. FT.		EACH		SQ.YD.	M.GAL.	
500+24	CONSTRUCT PIPE CULVERT WITH F.E.S. LT. & RT.					52	56	2	2	10	0.1	PCC-1, PCM-1, PCP-1, PCP-2, FES-1, & FES-2
501+15	CONSTRUCT PIPE CULVERT WITH F.E.S. LT. & RT.	44	50	2	2					10	0.1	PCC-1, PCM-1, PCP-1, PCP-2, FES-1, & FES-3
TOTALS:		44	50	2	2	52	56	2	2	20	0.2	

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

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

QUANTITIES

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST. NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BR4401	13	60
				④	QUANTITIES			

DRIVEWAYS AND TURNOUTS									
STATION	SIDE	LOCATION	WIDTH	ACHM SURFACE COURSE (1/2") 220 LBS. PER SQ. YD. (PG 64-22)		AGGREGATE BASE COURSE (CLASS 7)		SIDE DRAINS	STANDARD DRAWINGS
				FEET	SQ. YD.	TON	SQ. YD.	TON	
90+55	RT.	MAIN LANES ON RT.	16	54.06	5.95	54.06	22.07	28	PCC-1, PCM-1, PCP-1, PCP-2
94+00	LT.	MAIN LANES ON LT.	16	63.46	6.98	63.46	30.30	28	PCC-1, PCM-1, PCP-1, PCP-2
501+30	LT.	COUNTY ROAD 182 ON LT.	20	168.80	18.57	168.80	59.58		
501+45	RT.	COUNTY ROAD 182 ON RT.	20	118.17	13.00	118.17	55.01		
ENTIRE PROJECT TEMPORARY DRIVES							20.00		
TOTALS:				404.49	44.50		186.96	56	

USE:
BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....94.2% MIN. AGGR.....5.8% ASPHALT BINDER

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

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

SELECTED PIPE BEDDING	
LOCATION	SELECTED PIPE BEDDING
	CU.YD.
ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER	15
TOTAL:	15
NOTE: QUANTITY ESTIMATED. SEE SECTION 104.03 OF THE STD. SPECS.	



FENCING					
STATION	STATION	LOCATION	WIRE FENCE	*12'-0" GATES	*16'-0" GATES
			(TYPE D-1)		
			LIN. FT.	EACH	EACH
90+04	93+91	MAIN LANES ON LT.	390		
94+00		MAIN LANES ON LT.			1
94+09	104+04	MAIN LANES ON LT.	1000		
90+04	90+46	MAIN LANES ON RT.	44		
90+55		MAIN LANES ON RT.			1
90+64	95+75	MAIN LANES ON RT.	521		
98+35	104+70	MAIN LANES ON RT.	629		
500+27	501+36	COUNTY ROAD 182 ON RT.	78		
500+30	501+14	COUNTY ROAD 182 ON LT.	112		
501+26		COUNTY ROAD 182 ON LT.			2
501+50		COUNTY ROAD 182 ON RT.		2	
501+40	501+60	COUNTY ROAD 182 ON LT.	20		
TOTALS:			2794	2	4

* DENOTES ALTERNATE BID ITEM.

GUARDRAIL					
STATION	STATION	LOCATION	GUARDRAIL (TYPE A)	THRIE BEAM GUARDRAIL TERMINAL	TERMINAL ANCHOR POST (TYPE 1)
			LIN. FT.	EACH	
102+95.75	103+64.50	MAIN LANES ON RT. SIDE	50	1	1
102+95.75	103+64.50	MAIN LANES ON LT. SIDE	50	1	1
107+45.50	108+12.52	MAIN LANES ON RT. SIDE	50	1	1
107+45.50	108+15.68	MAIN LANES ON LT. SIDE	50	1	1
TOTALS:			200	4	4

REFLECTORIZED PAINT PAVEMENT MARKINGS			
STATION	STATION	REFLECTORIZED PAINT PAVEMENT MARKINGS	
		YELLOW (4")	WHITE (4")
		CONTINUOUS LIN. FT.	
90+04	113+90	4772	4772
500+10	501+60	300	300
TOTALS:		5072	5072

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

QUANTITIES



TEMPORARY EROSION CONTROL

STATION	STATION	LOCATION	TEMPORARY EROSION CONTROL									
			TEMPORARY SEEDING	MULCH COVER	WATER	FILTER SOCK (18")	SAND BAG DITCH CHECK	ROCK DITCH CHECK	SILT FENCE	SEDIMENT BASIN	OBLITERATION OF SEDIMENT BASIN	*SEDIMENT REMOVAL & DISPOSAL
						(E-3) LIN. FT.	(E-5) BAG	(E-6) CU.YD.	(E-11) LIN. FT.	(E-14) CU.YD.		
90+04	113+91	MAINLANES	3.54	3.54	72.2			78	1411			194.2
500+14	501+60	COUNTY ROAD 182	0.10	0.10	2.0			6				3.0
* ENTIRE	PROJECT	TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.	1.00	1.00	20.4	500	396	21	353	111	111	187.3
TOTALS:			4.64	4.64	94.6	500	396	105	1764	111	111	385

BASIS OF ESTIMATE:
WATER.....20.4 M.G. / ACRE OF TEMPORARY SEEDING
SAND BAG DITCH CHECKS.....22 BAGS / LOCATION
ROCK DITCH CHECKS.....3 CU.YD./LOCATION

*QUANTITIES ESTIMATED. SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

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

PERMANENT EROSION CONTROL

STATION	STATION	LOCATION	PERMANENT EROSION CONTROL				
			SEEDING	LIME	MULCH COVER	WATER	SECOND SEEDING APPLICATION
			ACRE	TON	ACRE	M.GAL.	ACRE
90+04	104+70	MAINLANES	1.73	3.46	1.73	176.5	1.73
106+75	113+91	MAINLANES	1.81	3.62	1.81	184.6	1.81
500+14	501+60	COUNTY ROAD 182	0.10	0.20	0.10	10.2	0.10
TOTALS:			3.64	7.28	3.64	371.3	3.64
USE:			3.64	7	3.64	371.3	3.64

BASIS OF ESTIMATE:
LIME2 TONS / ACRE OF SEEDING
WATER.....102.0 M.G. / ACRE OF SEEDING

QUANTITIES ESTIMATED. SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

STANDARD HIGHWAY SIGNS AND SUPPORT ASSEMBLIES

LOCATION	SIDE	STANDARD SIGN NUMBER			SUPPORT ASSEMBLY	SUPPORT ASSEMBLY	STANDARD DRAWING NUMBER
		R1-1	OM-3L	OM-3R	(TYPE A)	(TYPE C)	
		SQ. FT.					
103+77.40	LT. & RT.		3.00	3.00		2	SHS-1 & SHS-2
107+32.60	LT. & RT.		3.00	3.00		2	SHS-1 & SHS-2
500+16.00	RT.	6.25				1	SHS-1 & SHS-2
					1	1	SHS-1 & SHS-2
SUBTOTALS:		6.25	6.00	6.00	1	6	
TOTALS:				18.25	1	6	

NOTES: ALL STANDARD SIGN BLANKS TO BE 0.080" THICK.
REFER TO STANDARD DRAWING SHS-2 FOR CHANNEL POST SPLICING DETAILS.

QUANTITIES



SUMMARY OF QUANTITIES (BOX 1 OF 2)			
ITEM NUMBER	ITEM	QUANTITY	UNIT
201	CLEARING	14	STATION
201	GRUBBING	23	STATION
202	REMOVAL AND DISPOSAL OF FENCE	2096	LIN. FT.
202	REMOVAL AND DISPOSAL OF GATES	1	EACH
202	REMOVAL AND DISPOSAL OF RETAINING WALLS	117	LIN. FT.
202	REMOVAL AND DISPOSAL OF ROCK WALLS	72	LIN. FT.
202	REMOVAL AND DISPOSAL OF PIPE CULVERTS	1	EACH
202	REMOVAL AND DISPOSAL OF PIPE RAILING	105	LIN. FT.
SP, SS, & 210	UNCLASSIFIED EXCAVATION	4055	CU. YD.
SP & 210	COMPACTED EMBANKMENT	27548	CU. YD.
SP, SS, & 303	AGGREGATE BASE COURSE (CLASS 7)	4463	TON
SS & 401	TACK COAT	626	GAL.
SP, SS, & 406	MINERAL AGGREGATE IN ACHM BINDER COURSE (1")	1313	TON
SP, SS, & 406	ASPHALT BINDER (PG 64-22) IN ACHM BINDER COURSE (1")	62	TON
SP, SS, & 407	MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2")	564	TON
SP, SS, & 407	ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2")	35	TON
SP & 412	COLD MILLING ASPHALT PAVEMENT	667	SQ. YD.
SP, SS & 504	APPROACH GUTTERS	15.80	CU. YD.
601	MOBILIZATION	1.00	LUMP SUM
SP & 602	FURNISHING FIELD OFFICE	1	EACH
603	MAINTENANCE OF TRAFFIC	1.00	LUMP SUM
SS & 604	SIGNS	219	SQ. FT.
SS & 604	BARRICADES	32	LIN. FT.
SS & 604	TRAFFIC DRUMS	50	EACH
SP, SS, & 605	CONCRETE DITCH PAVING (TYPE B)	368.89	SQ. YD.
* SS & 606	18" REINFORCED CONCRETE PIPE CULVERTS (CLASS V) (ALT. NO. 1)	44	LIN. FT.
* SS & 606	18" ASPHALT COATED CORRUGATED STEEL PIPE CULVERTS (16 GAUGE) (ALT. NO. 2)	50	LIN. FT.
* SS & 606	18" ALUMINUM COATED CORRUGATED STEEL PIPE CULVERTS (16 GAUGE) (ALT. NO. 3)	50	LIN. FT.
* SS & 606	18" POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL PIPE CULVERT (16 GAUGE) (ALT. NO. 4)	50	LIN. FT.
* SS & 606	22" X 14" REINFORCED CONCRETE ARCH PIPE CULVERTS (CLASS V) (ALT. NO. 1)	52	LIN. FT.
* SS & 606	21" X 15" ASPHALT COATED CORRUGATED STEEL ARCH PIPE CULVERTS (16 GAUGE) (ALT. NO. 2)	56	LIN. FT.
* SS & 606	21" X 15" ALUMINUM COATED CORRUGATED STEEL ARCH PIPE CULVERTS (16 GAUGE) (ALT. NO. 3)	56	LIN. FT.
* SS & 606	21" X 15" POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL ARCH PIPE CULVERT (16 GAUGE) (ALT. NO. 4)	56	LIN. FT.
SS & 606	21" X 15" SIDE DRAIN	56	LIN. FT.
* SS & 606	18" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS (ALT. NO. 1)	2	EACH
* SS & 606	18" FLARED END SECTIONS FOR CORRUGATED STEEL PIPE CULVERTS (ALT. NO. 2)	2	EACH
* SS & 606	22" X 14" FLARED END SECTIONS FOR REINFORCED CONCRETE ARCH PIPE CULVERTS (ALT. NO. 1)	2	EACH
* SS & 606	21" X 15" FLARED END SECTIONS FOR CORRUGATED STEEL ARCH PIPE CULVERT (ALT. NO. 2)	2	EACH
606	SELECTED PIPE BEDDING	15	CU. YD.
SS & 617	GUARDRAIL (TYPE A)	200	LIN. FT.
SS & 617	TERMINAL ANCHOR POSTS (TYPE 1)	4	EACH
SS & 617	THRIE BEAM GUARDRAIL TERMINAL	4	EACH
SS & 619	WIRE FENCE (TYPE D-1)	2794	LIN. FT.
* SS & 619	12' STEEL GATES (ALT. NO. 1)	2	EACH
* SS & 619	12' ALUMINUM GATES (ALT. NO. 2)	2	EACH
* SS & 619	16' STEEL GATES (ALT. NO. 1)	4	EACH
* SS & 619	16' ALUMINUM GATES (ALT. NO. 2)	4	EACH
620	LIME	7	TON
620	SEEDING	3.64	ACRE
SS & 620	MULCH COVER	8.28	ACRE
620	WATER	468.4	M. GAL.
621	TEMPORARY SEEDING	4.64	ACRE
621	SILT FENCE	1764	LIN. FT.
621	SAND BAG DITCH CHECKS	396	BAG
621	SEDIMENT BASIN	111	CU. YD.
621	OBLITERATION OF SEDIMENT BASIN	111	CU. YD.
621	SEDIMENT REMOVAL AND DISPOSAL	385	CU. YD.
621	ROCK DITCH CHECKS	105	CU. YD.
SS & 621	FILTER SOCK (18")	500	LIN. FT.
623	SECOND SEEDING APPLICATION	3.64	ACRE
624	SOLID SODDING	204	SQ. YD.
635	ROADWAY CONSTRUCTION CONTROL	1.00	LUMP SUM
718	REFLECTORIZED PAINT PAVEMENT MARKING WHITE (4")	5072	LIN. FT.
718	REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (4")	5072	LIN. FT.
SS & 726	STANDARD SIGN	18.25	SQ. FT.
SS & 729	CHANNEL POST SIGN SUPPORT (TYPE A)	1	EACH
SS & 729	CHANNEL POST SIGN SUPPORT (TYPE C)	6	EACH
SS & 804	REINFORCING STEEL-ROADWAY (GRADE 60)	860	POUND

* DENOTES ALTERNATE BID ITEMS.

SUMMARY OF QUANTITIES (BOX 2 OF 2)			
ITEM NUMBER	ITEM	QUANTITY	UNIT
STRUCTURES OVER 20' SPAN			
205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 1)	1.00	LUMP SUM
636	BRIDGE CONSTRUCTION CONTROL	1.00	LUMP SUM
SP, SS, & 802	CLASS S CONCRETE-BRIDGE	152.20	CU. YD.
SP, SS, & 802	CLASS S(AE) CONCRETE-BRIDGE	349.00	CU. YD.
SP & 803	CLASS 2 PROTECTIVE SURFACE TREATMENT	1412.9	SQ. YD.
SS & 804	REINFORCING STEEL-BRIDGE (GRADE 60)	25670	POUND
SS & 804	EPOXY COATED REINFORCING STEEL (GRADE 60)	98020	POUND
SS & 805	STEEL PILING (HP 12X53)	357	LIN. FT.
SS & 805	PREBORING	339	LIN. FT.
SP, SS, & 807	STRUCTURAL STEEL IN PLATE GIRDER SPANS (A709, GR. 50W)	361150	POUND
SS & 807	PAINTING STRUCTURAL STEEL	43.1	TON
SS & 808	ELASTOMERIC BEARINGS	13008.0	CU. IN.
SS & 809	SILICONE JOINT SEALANT	62	LIN. FT.
812	BRIDGE NAME PLATE (TYPE C)	1	EACH
SS & 816	FILTER BLANKET	1006	SQ. YD.
SS & 816	FOUNDATION PROTECTION RIPRAP	1835	TON
SP	DRILLED SHAFT (60" DIAMETER)	113	LIN. FT.
SP	PERMANENT STEEL CASING (72" DIAMETER)	58	LIN. FT.
SP	CROSSHOLE SONIC LOGGING (60" DIAMETER)	4	EACH
SP	CORING DRILLED SHAFT	57	LIN. FT.

* DENOTES ALTERNATE BID ITEMS.

REVISIONS		
DATE	REVISION	SHEET NUMBER

SUMMARY OF QUANTITIES AND REVISIONS

SURVEY CONTROL COORDINATES

Project Name: sBR4401
Date: 8/7/2018
Coordinate System: ARKANSAS STATE PLANE - NORTH ZONE BASED ON AVERAGE POINTS 1-9
PROJECTED TO GROUND.
Units: U.S. SURVEY FOOT

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST. NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BR4401	16	60
				4 SURVEY CONTROL DETAILS				

Point Name	Northing	Easting	Elev	Feature	Description
1	615128.1513	806220.47691377.890		CTL	ARDOT STD. MON. STAMPED PN: 1
2	614428.8093	806457.57211425.210		CTL	ARDOT STD. MON. STAMPED PN: 2
3	614053.9286	806438.53361395.711		CTL	ARDOT STD. MON. STAMPED PN: 3
4	613724.8798	806583.69901351.568		CTL	ARDOT STD. MON. STAMPED PN: 4
5	613541.1563	806095.50421339.060		CTL	ARDOT STD. MON. STAMPED PN: 5
6	612946.7440	805834.71761344.055		CTL	ARDOT STD. MON. STAMPED PN: 6
7	612941.4484	805012.95261350.771		CTL	ARDOT STD. MON. STAMPED PN: 7
8	612989.2012	804308.91801360.527		CTL	ARDOT STD. MON. STAMPED PN: 8
9	612666.3062	803989.41361366.002		CTL	ARDOT STD. MON. STAMPED PN: 9
900	615274.1652	806107.86831372.397		TBM	CHISELED SQUARE ON CONC HD
901	614465.9688	806417.49991420.755		TBM	CHISELED SQUARE ON CONC FIRE PIT
902	613548.2644	806120.44921340.129		TBM	CHISELED SQUARE ON NW WING WALL
903	612936.0810	805838.59521344.773		TBM	CHISELED SQUARE ON NE WING WALL
904	612990.9645	804191.72541365.842		TBM	HEAD OF BOLT BY ARROW ON HYDRANT
990	618356.0135	806524.11861328.380		BM	NGS BM J 51
991	609273.5087	808714.79471373.094		BM	NGS BM H 51 RESET

*Note - Rebar and Cap - Standard - 5/8" Rebar with 2" Aluminum Cap stamped
*(standard markings common to all caps), or as indicated
(other markings indicated in the point description of the individual point).
ALL DISTANCES ARE GROUND.
USE CAF = 1.0 FOR STAKEOUT FOR THIS PROJECT.
A PROJECT CAF OF 0.999902151 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 sBR4401gi.CTL
HORIZONTAL DATUM: NAD 83 (2011)
VERTICAL DATUM: NAVD 88 POSITIONAL ACCURACY THIRD ORDER, UNLESS SPECIFIED OTHERWISE
AT A SPECIFIC POINT.

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

BASIS OF BEARING:
ARKANSAS STATE PLANE GRID BEARINGS - 0301-NORTH ZONE
DETERMINED FROM GPS CONTROL POINTS:
CONVERGENCE ANGLE: 00-59-46 LEFT AT LT: 36-00-24N LG: 093-42-42W
GRID AZIMUTH = ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE.

CONSTRUCTION CENTERLINE COORDINATES: COUNTY ROAD 7

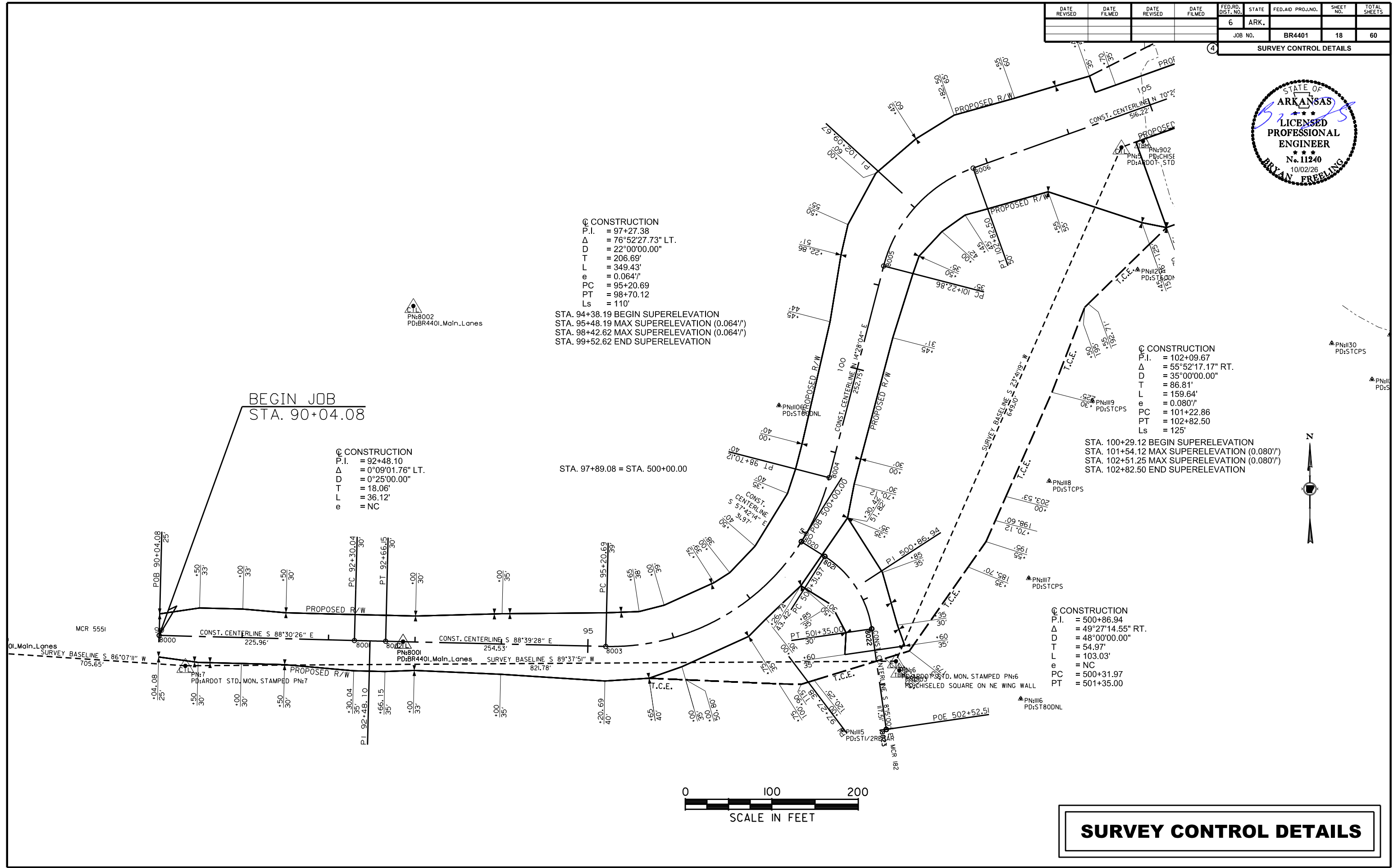
POINT NAME	TYPE	STATION	NORTHING	EASTING
8000	POB	90+04.08	612976.5870	804982.6325
8001	PC	92+30.04	612970.7012	805208.5133
	PI	92+48.10	612970.2308	805226.5658
8002	PT	92+66.15	612969.8078	805244.6195
8003	PC	95+20.69	612963.8459	805499.0837
	PI	97+27.38	612959.0045	805705.7208
8004	PT	98+70.12	613159.1438	805757.3603
8005	PC	101+22.86	613403.8753	805820.5054
	PI	102+09.67	613487.9290	805842.1927
8006	PT	102+82.50	613517.1352	805923.9386
8007	PC	107+98.72	613690.8187	806410.0659
	PI	109+62.24	613745.8367	806564.0575
8008	PT	110+55.68	613899.8878	806509.2063
8013	PC	112+43.44	614076.7695	806446.2262
	PI	112+91.52	614122.0573	806430.1011
8015	PT	113+38.56	614170.1237	806430.8920
8016	PI	113+40.99	614172.5586	806430.9320
8017	POE	113+90.00	614221.5530	806432.0582

CONSTRUCTION CENTERLINE COORDINATES: COUNTY ROAD 182

POINT NAME	TYPE	STATION	NORTHING	EASTING
8020	POB	500+00.00	613085.0607	805725.3294
8021	PC	500+31.97	613067.9792	805752.3539
	PI	500+86.94	613038.6087	805798.8204
8022	PT	501+35.00	612984.2070	805806.7081
8023	POE	502+52.51	612867.9112	805823.5700



SURVEY CONTROL DETAILS

A circular professional engineer seal for the State of Arkansas. The outer ring contains the text "STATE OF ARKANSAS" at the top and "BRYAN FREELING" at the bottom. Inside the ring, the text "LICENSED PROFESSIONAL ENGINEER" is centered, with three stars above and below it. Below the stars, the license number "No. 11240" and the expiration date "10/02/26" are printed. A blue ink signature is written across the seal.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	BR4401	19	60	
SURVEY CONTROL DETAILS								



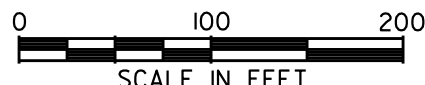
END JOB
STA. 113+90.00

CONSTRUCTION
P.I. = 113+40.99
 Δ = 0°22'26.59" RT.

CONSTRUCTION
P.I. = 112+91.52
 Δ = 20°32'28.81" RT.
D = 21°35'47.76"
T = 48.08'
L = 95.12'
e = NC
PC = 112+43.44
PT = 113+38.56

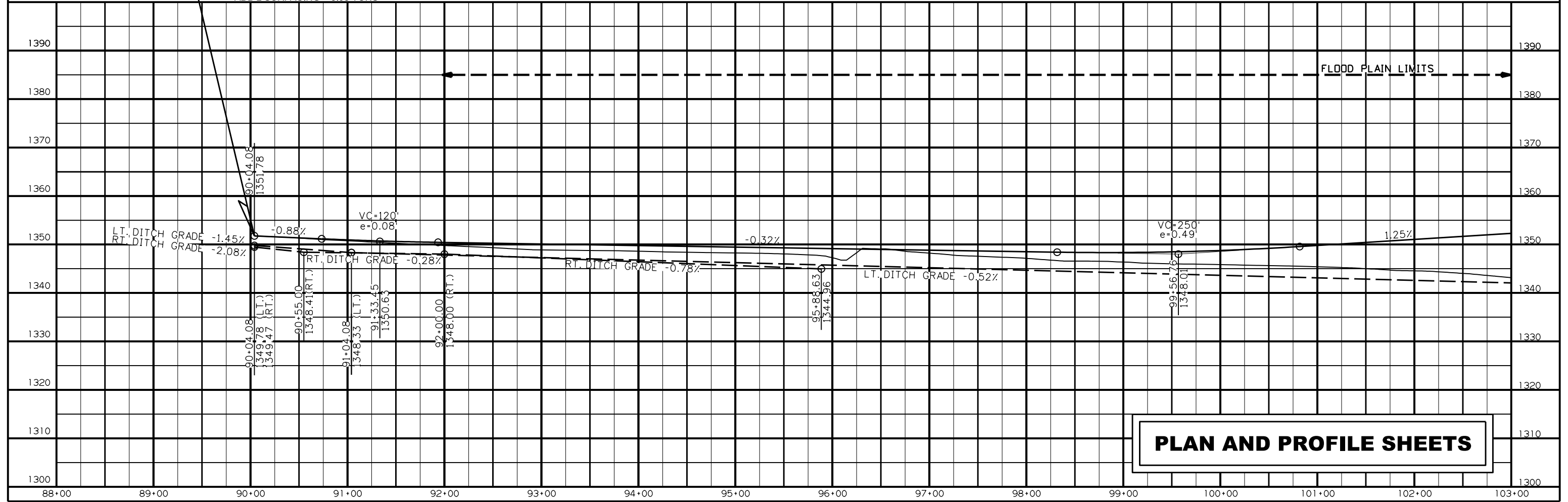
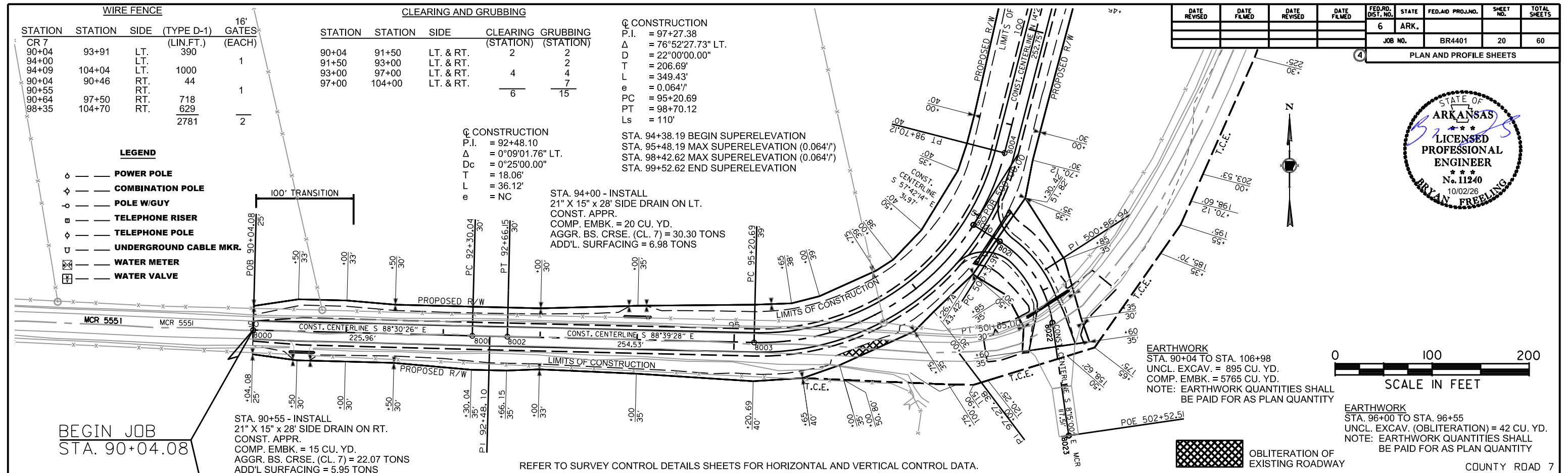
CONSTRUCTION
P.I. = 109+62.24
 Δ = 89°56'16.44" LT.
D = 35°00'00.00"
T = 163.52'
L = 256.96'
e = 0.096'/'
PC = 107+98.72
PT = 110+55.68
Ls = 160'
STA. 107+18.72 BEGIN SUPERELEVATION
STA. 108+78.72 MAX SUPERELEVATION (0.096'/')
STA. 109+75.69 MAX SUPERELEVATION (0.096'/')
STA. 111+35.69 END SUPERELEVATION

CONSTRUCTION
P.I. = 102+09.67
 Δ = 55°52'17.17" RT.
D = 35°00'00.00"
T = 86.81'
L = 159.64'
e = 0.080'/'
PC = 101+22.86
PT = 102+82.50
Ls = 125'
STA. 100+29.12 BEGIN SUPERELEVATION
STA. 101+54.12 MAX SUPERELEVATION (0.080'/')
STA. 102+51.25 MAX SUPERELEVATION (0.080'/')
STA. 102+82.50 END SUPERELEVATION

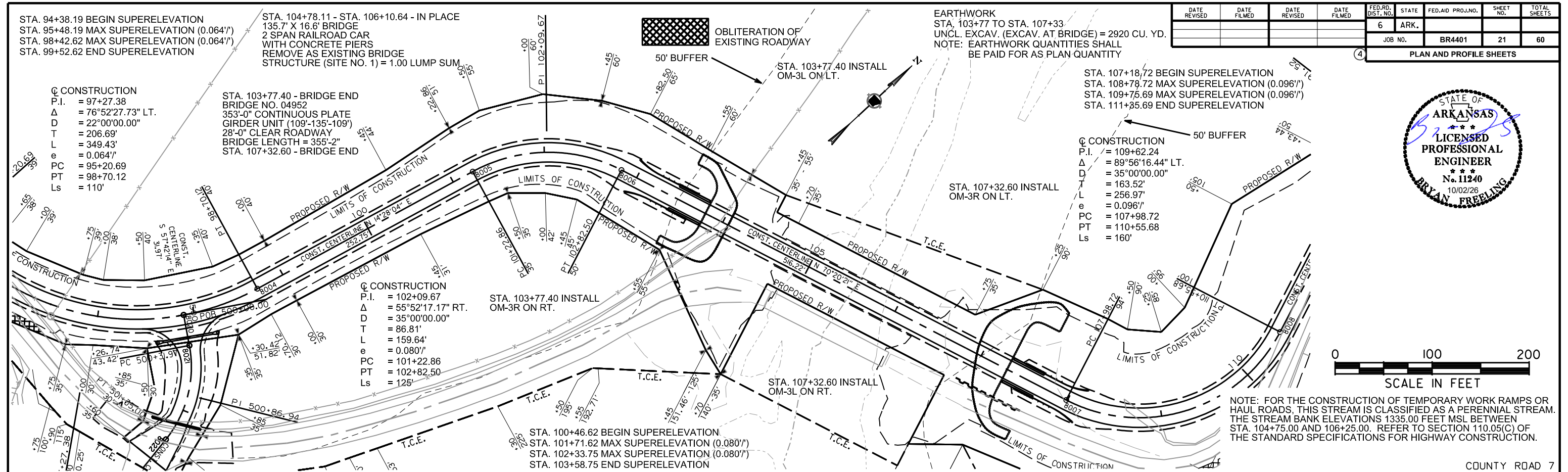


SURVEY CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BR4401	20	60
				(4)	PLAN AND PROFILE SHEETS			



DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BR4401	21	60
4 PLAN AND PROFILE SHEETS								

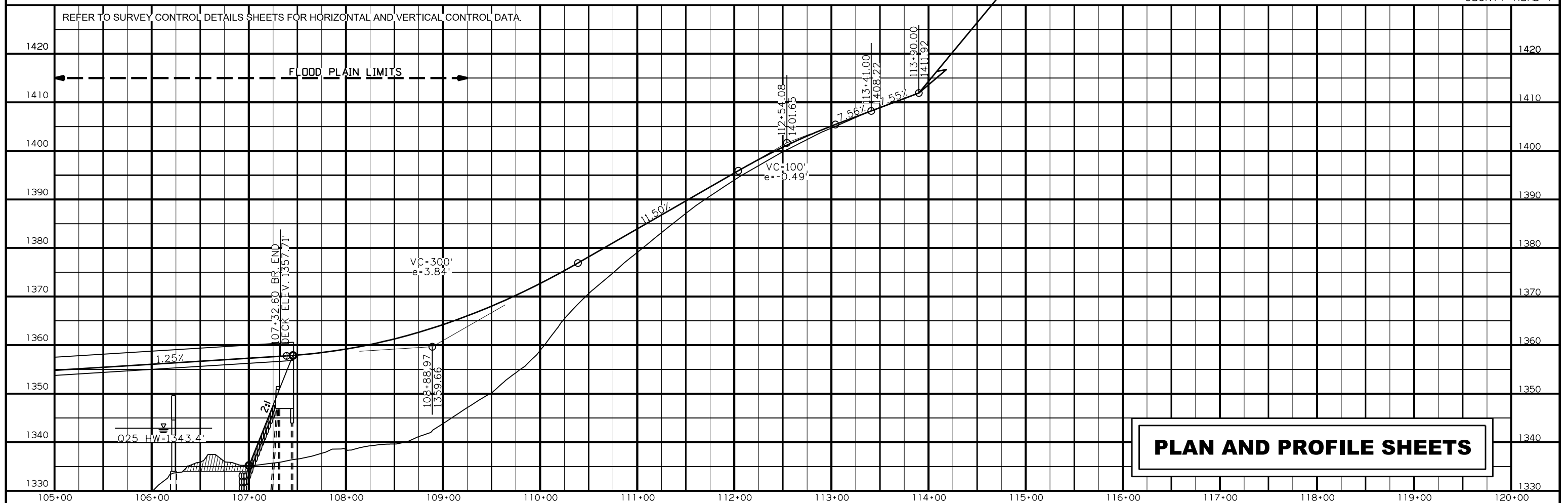
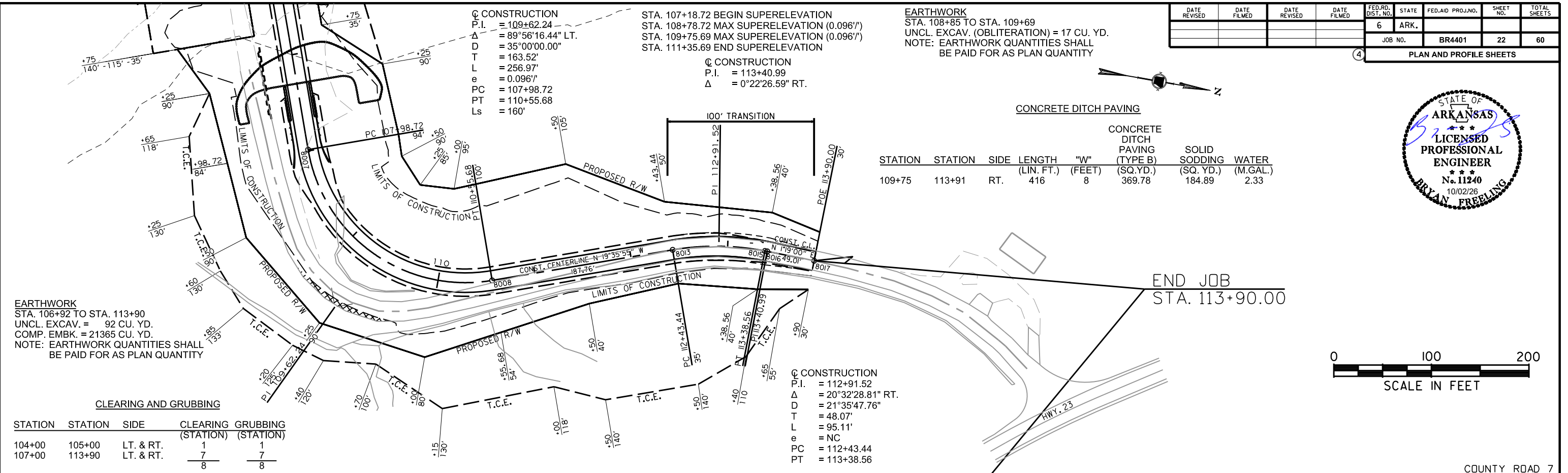


			GUARDRAIL		
			GUARDRAIL	THRIE BEAM	TERMINAL
STATION	STATION	SIDE.	(TYPE A)	GUARDRAIL	ANCHOR POST
			(LIN.FT.)	TERMINAL	(TYPE 1)
				(EACH)	(EACH)
102+95.75	103+64.50	RT.	50	1	1
102+95.75	103+64.50	LT.	50	1	1
107+45.50	108+12.52	RT.	50	1	1
107+45.50	108+15.68	LT.	50	1	1
			200	4	4

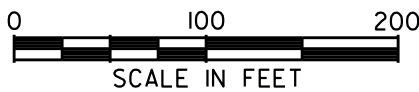
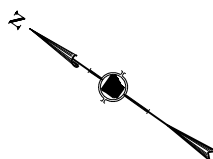
PLAN AND PROFILE SHEETS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BR4401	22	60
				4 PLAN AND PROFILE SHEETS				

A circular professional engineer seal for the State of Arkansas. The seal features a black border with a dotted pattern. Inside the border, the text "STATE OF ARKANSAS" is at the top, followed by three stars. Below the stars is "LICENSED PROFESSIONAL ENGINEER", followed by three more stars. The license number "No. 11240" and the expiration date "10/02/26" are at the bottom. The name "BRYAN FREELING" is written along the bottom inner edge. A blue ink signature is written across the seal.



DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	BR4401	23	60	
PLAN AND PROFILE SHEETS								



STA. 500+23.78 - CONSTRUCT
22" X 14" X 52' ARCH PIPE CULVERT
WITH FES LT. & RT.
D.A. = 0.21 ACRES, Q25 = 1.40 C.F.S.
R.C. PIPE (CLASS V) (TYPE 3 BEDDING) = 52 LIN. FT.
C.M. PIPE (TYPE 2 BEDDING) = 56 LIN. FT.
22" X 14" ARCH F.E.S. = 2 EACH

STA. 501+45
CONST. APPR. ON RT.
COMP. EMBK. = 10 CU. YD.
UNCL. EXCV. = 12 CU. YD.
AGGR. BS. CRSE. (CL. 7) = 55.01 TONS
ADD'L. SURFACING = 13.00 TONS

STA. 501+15 - CONSTRUCT
18" X 56' PIPE CULVERT
ON 15° RT. FWD. SKEW
WITH FES LT. & RT.
R.C. PIPE (CLASS V) (TYPE 3 BEDDING) = 44 LIN. FT.
C.M. PIPE (TYPE 2 BEDDING) = 50 LIN. FT.
18" F.E.S. = 2 EACH

STA. 501+30
CONST. APPR. ON LT.
COMP. EMBK. = 17 CU. YD.
UNCL. EXCV. = 4 CU. YD.
AGGR. BS. CRSE. (CL. 7) = 59.58 TONS
ADD'L. SURFACING = 18.57 TONS

		WIRE FENCE		12'	16'
STATION	STATION	SIDE	(TYPE D-1) (LIN. FT.)	GATES (EACH)	GATES (EACH)
CR 182					
500+27	501+36	RT.	78		
500+30	501+14	LT.	112		
501+26		LT.		2	
501+50		RT.			2
501+40	501+60	LT.	20		
			210	2	2

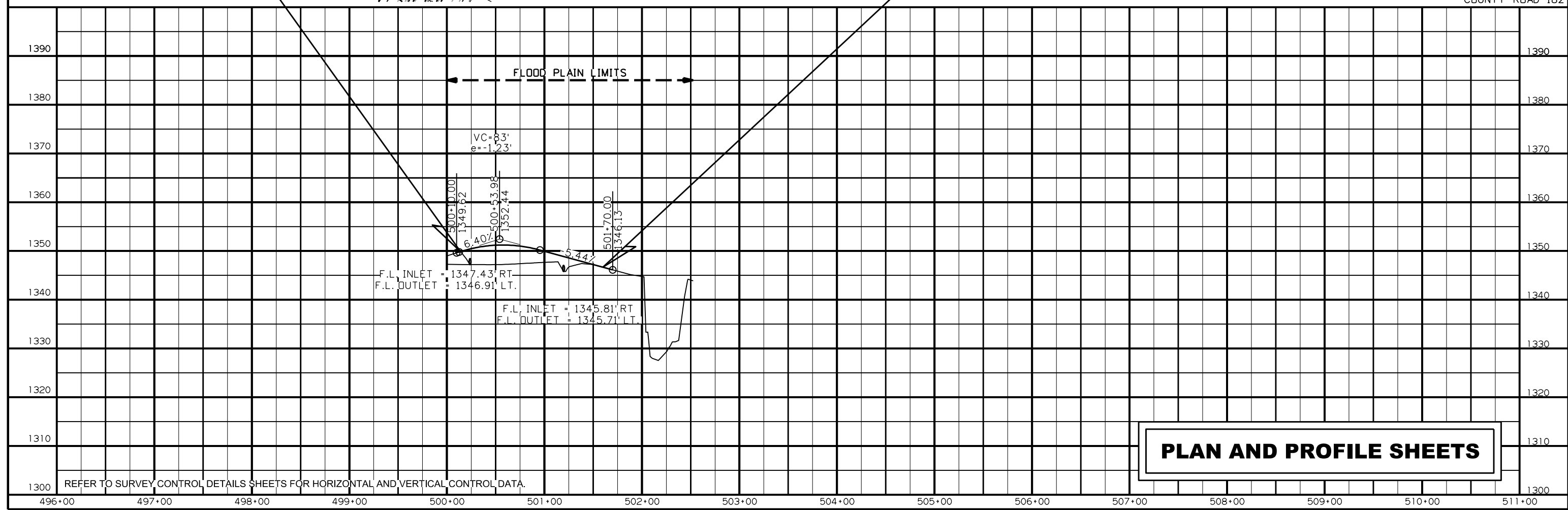
EARTHWORK
COUNTY ROAD 182
STA. 500+14 TO STA. 501+60
UNCL. EXCAV. = 64 CU. YD.
COMP. EMBK. = 356 CU. YD.
NOTE: EARTHWORK QUANTITIES SHALL
BE PAID FOR AS PLAN QUANTITY

STA. 501+16 INSTALL
R1-1 ON LT.

Q CONSTRUCTION
P.I. = 500+86.94
Δ = 49°27'14.55" RT.
D = 48°00'00.00"
T = 54.97'
L = 103.03'
e = NC
PC = 500+31.97
PT = 501+35.00

BEGIN CO. RD. 182
STA. 500+14.00

END CO. RD. 182
STA. 501+60.00



REFER TO SURVEY CONTROL DETAILS SHEETS FOR HORIZONTAL AND VERTICAL CONTROL DATA.

PLAN AND PROFILE SHEETS

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	BR4401	24	60
04952 - QUANTITIES - 68426						

SCHEDULE OF BRIDGE QUANTITIES - JOB NO. BR4401

BRIDGE NO.	NAME PLATE TITLE	UNIT OF STRUCTURE	ITEM NO.	205	SP, SS, & 802	SP, SS, & 802	SP & 803	SS & 804	SS & 804	SS & 805	SS & 805	SP, SS & 807	SS & 807	SS & 808	SS & 809	812	SS & 816	SS & 816	SP JOB BR4401	SP JOB BR4401	SP JOB BR4401	SP JOB BR4401
			ITEM	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO.)	CLASS S CONCRETE-BRIDGE	CLASS S(AE) CONCRETE-BRIDGE	CLASS 2 PROTECTIVE SURFACE TREATMENT	REINFORCING STEEL-BRIDGE (GRADE 60)	EPOXY COATED REINFORCING STEEL (GRADE 60)	① STEEL PILING (HP12x53)	② PREBORING	STRUCTURAL STEEL IN PLATE GIRDER SPANS (A709, GR. 50W)	③ PAINTING STRUCTURAL STEEL	ELASTOMERIC BEARINGS	SILICONE JOINT SEALANT	BRIDGE NAME PLATE (TYPE C)	FILTER BLANKET	FOUNDATION PROTECTION RIPRAP	DRILLED SHAFT (60" DIA.)	PERMANENT STEEL CASING (72" DIA.)	CROSSHOLE SONIC LOGGING (60" DIA.)	② CORING DRILLED SHAFT
			UNIT	LUMP SUM	CU. YD.	CU. YD.	SQ. YD.	POUND	POUND	LIN. FT.	LIN. FT.	POUND	TON	CU.IN.	LIN. FT.	EACH	SQ. YD.	TON	LIN. FT.	LIN. FT.	EACH	LIN. FT.
04952	WAR EAGLE CREEK	BENT 1		43.80		11.9	5,710	580	120	111	590		3696.0	31	1	382	725					
		BENT 2		33.20			7,320					2808.0					49	14	2	25		
		BENT 3		30.80			6,930					2808.0					64	44	2	32		
		BENT 4		44.40		11.9	5,710	580	237	228	590		3696.0	31		624	1110					
		353'-0" CONTINUOUS PLATE GIRDER UNIT			349.00	1389.1		96,860			359,970	43.1										
		SITE NO. 1 (EXISTING BRIDGE NO. 21595)	1																			
TOTALS FOR JOB NO. BR4401				152.20	349.00	1412.9	25,670	98,020	357	339	361,150	43.1	13,008.0	62	1	1,006	1,835	113	58	4	57	

- ① All steel piling shall be Grade 50 and are required to have QPL Approved Driving Points which will not be paid for directly, but will be considered subsidiary to the items "Steel Piling (HP12x53)."
- ② Quantities of Preboring and Coring Drilled Shaft shown are for estimating and bidding purposes only. Actual quantities will be determined in the field.
- ③ The color of paint shall be Brown equal or close to Federal Std. 595B, Color Chip No. 30070 and as approved by the Engineer.

CHRIS WILLIAMS
DESIGN SECTION SUPERVISOR

Ellis, Rick

Digitally signed by Ellis, Rick
DN: cn=Ellis, Rick,
ou=Engineers, ou=Users,
ou=ARSDOT, dc=ARHTD,
dc=com
Date: 2026.04.13
15:02:39-05'00'

BRIDGE ENGINEER

STATE OF
ARKANSAS

LICENSED
PROFESSIONAL
ENGINEER

No. 9235
4/13/26
CHARLES R. ELLIS

SCHEDULE OF BRIDGE QUANTITIES
WAR EAGLE CREEK STR. & APPRS. (S)
MADISON COUNTY

County Road 7 (555th)
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: NAC DATE: 8/19/2024 FILENAME: bbr4401_q1.dgn
CHECKED BY: DBS DATE: 8/27/2024 SCALE: No Scale
DESIGNED BY: DATE:
BRIDGE NO. 04952 DRAWING NO. 68426

PRINT DATE: 4/6/2026

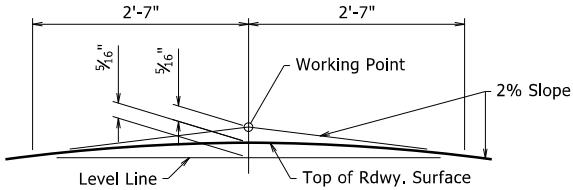
DATE REVISED	DATE REVISED	FED. NO. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	BR4401	25	60
04952 - LAYOUT - 68427						

HYDRAULIC DATA

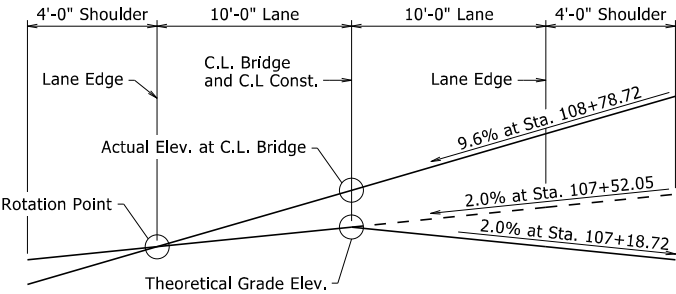
Flood Description	Frequency	Discharge	① Natural Water Surface Elevation	Water Surface Elevation With Backwater
	Years	CFS	FEET	FEET
Design	25	34,900	1343.1	1343.4
Base	100	57,500	1346.5	1347.2
Extreme	500	90,100	1347.8	1351.7
Overtopping	>500	-	-	-

- ① Unconstricted water surface elevation without structure or roadway approaches.
Q100 backwater elevation for existing structure = 1347.5 ft.
- ② Low Bridge Chord Elevation of 1347.53 occurs at Sta. 103+79.50
Drainage Area = 95.0 square miles

Values shown are for 2% Peaked Crown. Dimension for Working Point to Top of Roadway Surface Varies from $\frac{5}{16}$ " at Sta. 107+18.72 to 0" at Sta. 107+52.05.



Working Point matches
Theoretical Roadway Grade
ROUNDING DETAIL
No Scale



STA. 107+18.72 TO STA. 108+78.72

SUPERELEVATION TRANSITION SKETCH

Looking Ahead
No Scale

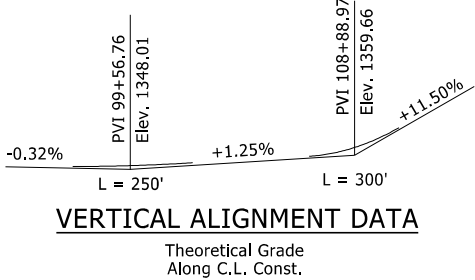
See Roadway Plans for superelevation beyond limits shown.

SHEET 1 OF 2
LAYOUT OF BRIDGE
COUNTY ROAD 7 OVER WAR EAGLE CREEK
WAR EAGLE CREEK STR. & APPRS. (S)
MADISON COUNTY

County Road 7 (555)
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: NAC DATE: 11/2023 FILENAME: bbr4401_1.dgn
CHECKED BY: CMW DATE: 11/2023 SCALE: 1" = 30'
DESIGNED BY: NAC DATE: 10/2023
BRIDGE NO. 04952 DRAWING NO. 68427

VERTICAL ALIGNMENT DATA



See Dwg. No. 68428 for Soil Borings and General Notes.

Stations shown are along C.L. Construction. Elevations shown are theoretical working point elevations at C.L. Bridge. Any vertical dimension referenced to C.L. Deck is based on theoretical working point elevation at C.L. Bridge. See "ROUNDING DETAIL" and "SUPERELEVATION TRANSITION SKETCH" for additional information.



BRIDGE ENGINEER

PLAN VIEW

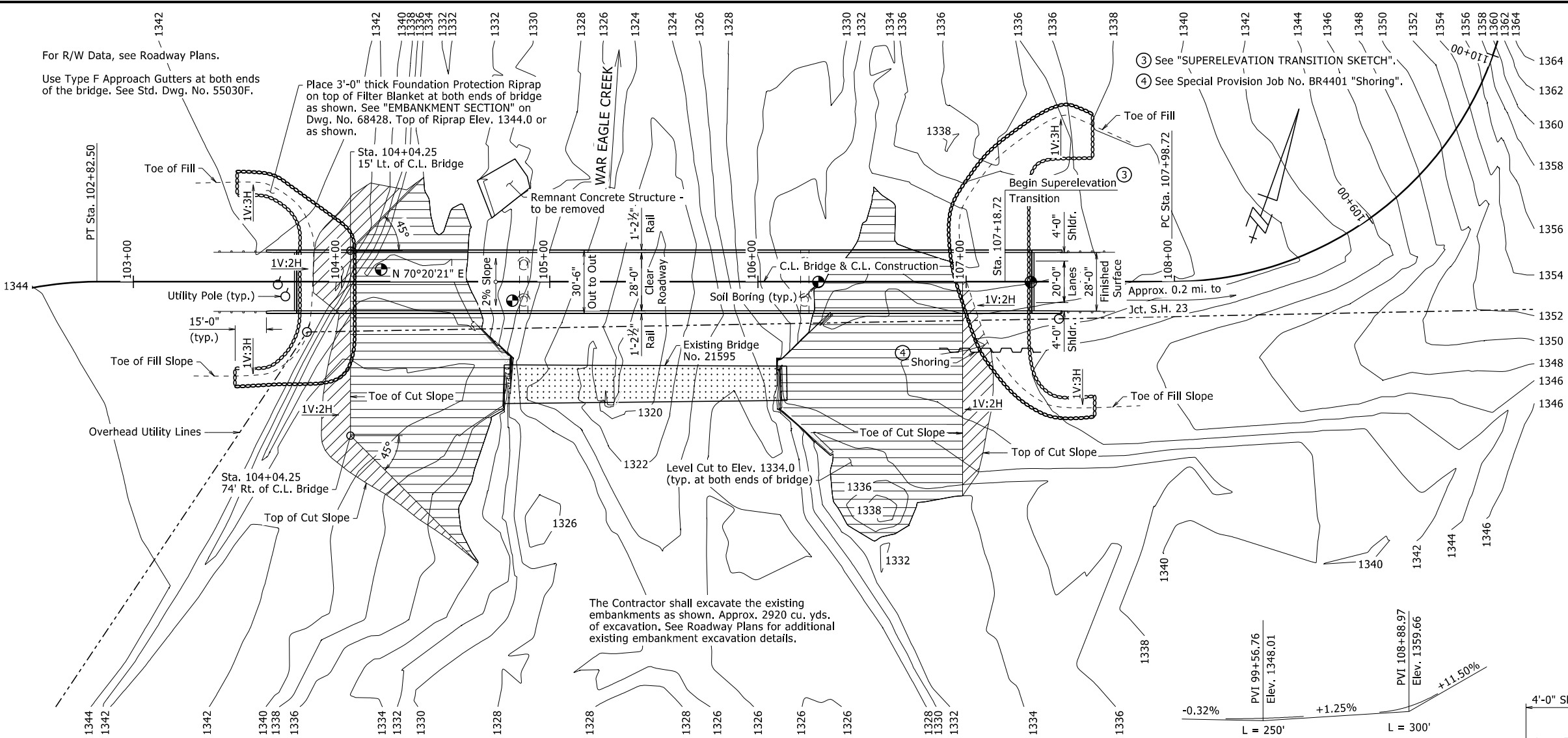


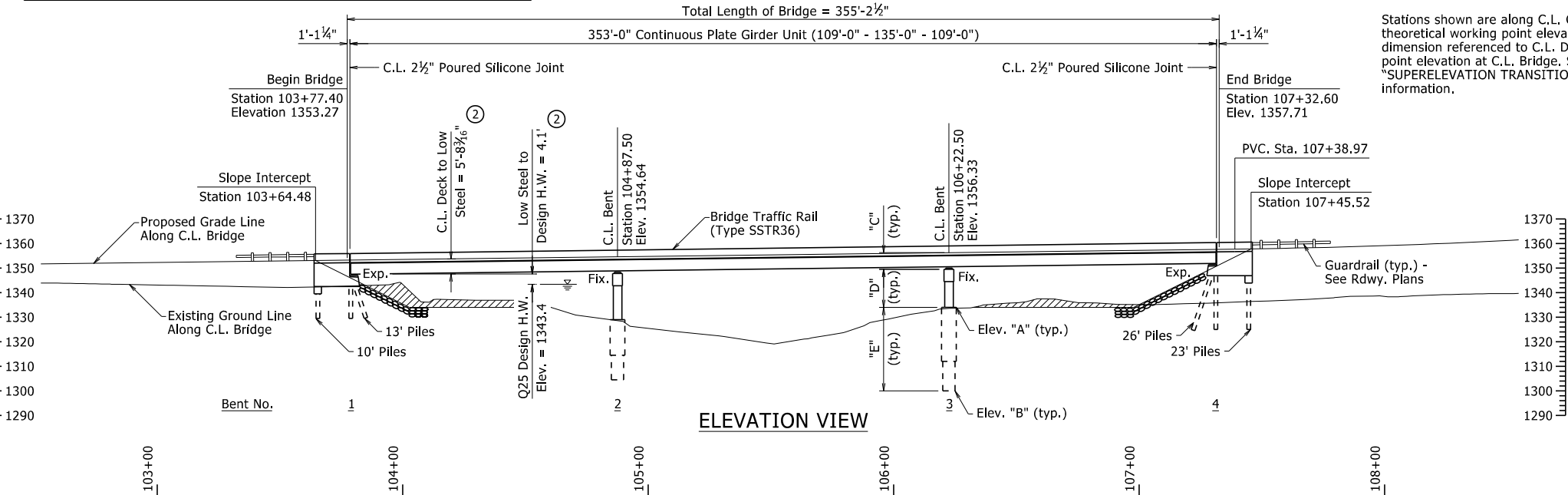
TABLE OF VARIABLES

Bent No.	Top of Shaft Elevation	Bottom of Shaft Elevation	Top of Deck at C.L. Bridge and C.L. Bent to Low Side Top of Cap	Bent Height	Shaft Length
	"A"	"B"	"C"	"D"	"E"
2	1329.00	1304.50	6'-7 $\frac{5}{16}$ "	19'-0 $\frac{3}{8}$ "	24'-6"
3	1334.00	1302.00	6'-7 $\frac{5}{16}$ "	15'-8 $\frac{3}{8}$ "	32'-0"

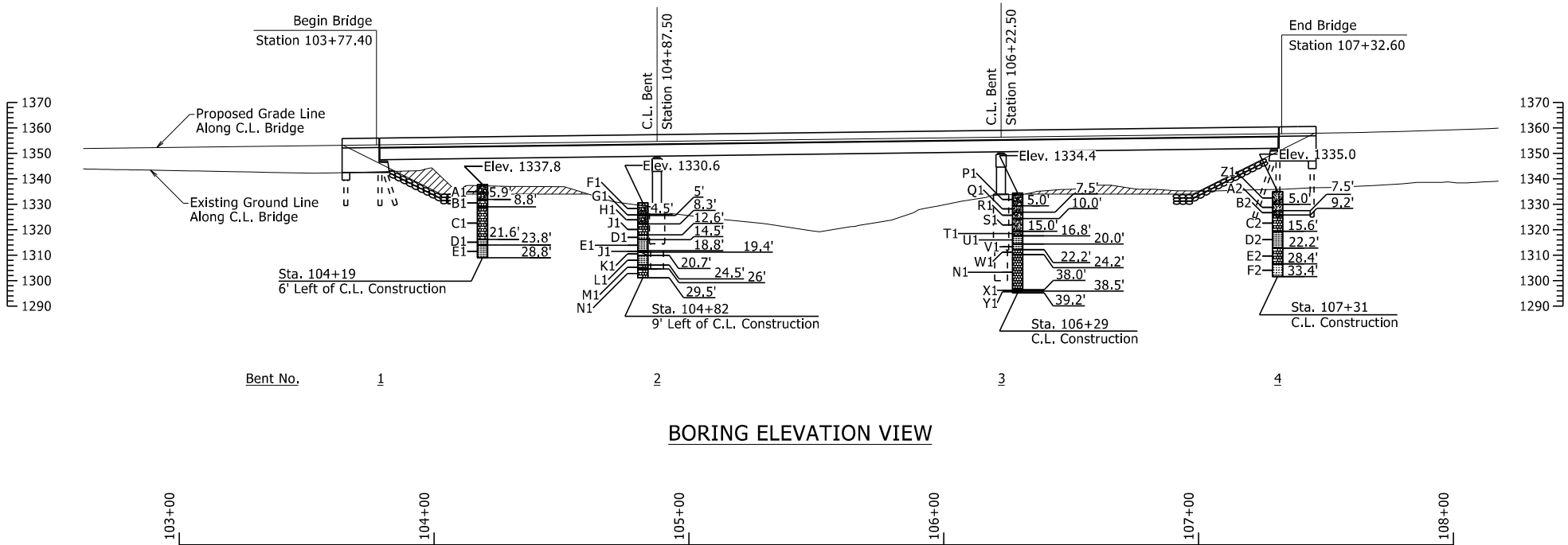
Total Length of Bridge = 355'-2 $\frac{1}{2}$ "

353'-0" Continuous Plate Girder Unit (109'-0" - 135'-0" - 109'-0")

ELEVATION VIEW



DATE REVISED	DATE REVISED	FED. NO. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	BR4401	26	60
04952 - LAYOUT - 68428						



"N" VALUES

Sta. 104+19 - 6' Left of C.L. Construction	Sta. 107+31 - C.L. Construction
5.5 - 5.8 , N=30 (4")	3.0 - 4.0 , N=10
Sta. 104+82 - 9' Left of C.L. Construction	5.5 - 6.5 , N=10
3.0 - 4.0 , N=20	8.0 - 9.0 , N=9
Sta. 106+29 - C.L. Construction	
3.0 - 4.0 , N=10	
5.5 - 6.5 , N=29	
8.0 - 9.0 , N=24	
10.5 - 11.5 , N=9	
15.5 - 16.5 , N=16	
20.0 - 20.1 , N=15 (1")	

BORING LEGEND

- A1 - Moist, Very Dense, Brown Sand with Silt, Gravel, and Cobbles
B1 - LIMESTONE WITH OCCASIONAL SHALE PARTINGS - Unweathered, Moderately Hard, Gray
C1 - LIMESTONE - Unweathered, Moderately Hard, Gray
D1 - SHALE - Weathered, Soft, Dark Gray
E1 - SHALE - Slightly Weathered, Medium Hard, Dark Gray
F1 - Moist, Medium Dense, Brown Poorly Graded Sand with Silt, Gravel, and Cobbles
G1 - LIMESTONE BOULDER
H1 - NO SAMPLE RECOVERY
J1 - LIMESTONE - Slightly Weathered, Moderately Hard, Gray
K1 - SHALE - Highly Weathered, Soft, Dark Gray
L1 - SHALE - Slightly Weathered with Weathered Layers, Medium Hard, Dark Gray
M1 - LIMESTONE WITH FREQUENT SHALE PARTINGS - Slightly Weathered, Moderately Hard, Gray
N1 - LIMESTONE - Unweathered, Moderately Hard, Gray
P1 - Moist, Loose, Dark Brown Poorly Graded Sand with Silt, Gravel, and Cobbles
Q1 - Moist, Medium Dense, Dark Brown Poorly Graded Gravel with Silt and Sand
R1 - Wet, Medium Dense, Dark Brown Silty Sand with Gravel
S1 - Wet, Loose, Dark Brown Gravel with Silty Sand
T1 - Wet, Medium Dense, Dark Brown Poorly Graded Gravel with Silt and Sand
U1 - SHALE
V1 - SHALE - Weathered, Medium Hard, Gray
W1 - LIMESTONE - Slightly Weathered, Moderately Hard with Hard Layers, Gray
X1 - Clay Layer with Rock Fragments
Y1 - LIMESTONE WITH OCCASIONAL SHALE PARTINGS - Unweatherd, Moderately Hard, Gray
Z1 - Moist, Loose, Dark Brown Clayey Sand with Gravel
A2 - Moist, Loose, Dark Brown Clayey Sand
B2 - Wet, Loose, Dark Brown Clayey Sand with Gravel
C2 - LIMESTONE - Unweathered, Moderately Hard, Occasional Fractures, Gray
D2 - SHALE - Weathered, Medium Hard with Soft Layers, Occasional Fractures, Gray
E2 - LIMESTONE - Unweathered, Moderately Hard, Occasional Fractures, Gray
F2 - SANDSTONE WITH FREQUENT SHALE PARTINGS AND SEAMS - Unweathered, Cemented, Calcareous, Gray

GENERAL NOTES

BENCHMARK: Vertical Control Data are shown on the Survey Control Data Sheets.

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

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications, Ninth Edition (2020).

LIVE LOADING: HL-93

SEISMIC ZONE: 1 SD1: 0.101 SITE CLASS: C

SEISMIC OPERATIONAL CLASSIFICATION: Other

MATERIALS AND STRENGTHS:
Class S(AE) Concrete (superstructure) f 'c = 4,000 psi
Class S Concrete (substructure) f 'c = 3,500 psi
Reinforcing Steel (AASHTO M 31 or M 322, Type A) fy = 60,000 psi
Structural Steel (ASTM A709, Gr. 50) Fy = 50,000 psi
Structural Steel (ASTM A709, Gr. 50W) Fy = 50,000 psi
Structural Steel (ASTM A709, Gr. 36) Fy = 36,000 psi

BORING LOGS: Boring logs may be obtained from the Construction Contract Development Section of the Program Management Division.

STEEL PILING: All piling shall be HP12x53 (Grade 50) and shall be driven with an approved air, steam, or diesel hammer to a minimum safe bearing capacity of 96 tons per pile and into the material designated as Slightly Weathered Limestone or Unweathered Limestone on the boring legend, whichever is lower. The actual size and depth of preboring shall be determined in the field by the Engineer. The Contractor shall be responsible for keeping prebored holes free of debris prior to driving piles and backfilling which may require the use of temporary casings or other approved methods. After driving is completed, the prebored hole shall be backfilled with Class S Concrete to the top of the rock and the remaining length backfilled in accordance with Subsection 805.08(a). Any related cost for backfilling and temporary casing will not be paid for directly, but shall be considered subsidiary to the item "Preboring".

PREBORING: Preboring is required for all piles in Bents 1 and 4. The depth of preboring shall be to a depth sufficient to provide the specified minimum penetration and to a minimum 3' depth into material designated as Slightly Weathered Limestone or Unweathered Limestone on the boring legend, whichever is lower. The actual size and depth of preboring shall be determined in the field by the Engineer. The Contractor shall be responsible for keeping prebored holes free of debris prior to driving piles and backfilling which may require the use of temporary casings or other approved methods. After driving is completed, the prebored hole shall be backfilled with Class S Concrete to the top of the rock and the remaining length backfilled in accordance with Subsection 805.08(a). Any related cost for backfilling and temporary casing will not be paid for directly, but shall be considered subsidiary to the item "Preboring".

DRILLED SHAFTS: Drilled shafts at Bents 2 & 3 shall be constructed in accordance with Special Provision Job No. BR4401 "Drilled Shaft Foundations". Drilled shafts shall be socketed into material designated as Slightly Weathered Limestone or Unweathered Limestone on the boring legend and to the minimum rock penetrations and tip elevations shown in the plans. No adjustment to plan tip elevations shall be made without prior approval from the Engineer. Temporary casing may be required.

NONDESTRUCTIVE TESTING: Crosshole Sonic Logging (CSL) shall be performed on each drilled shaft. Testing shall be performed in accordance with Special Provision Job No. BR4401 "Nondestructive Testing of Drilled Shafts".

PAINTING: The following weathering steel surfaces shall be painted as specified in Section 807:

All steel surfaces within eight feet of bridge deck expansion joints, including diaphragms, cross-frames, connection bolts and bearings.

All steel surfaces exposed to the outside face of the bridge, including outside faces & bottom of the exterior beams or girders, splice plates and bolts, stiffeners, drip plates and bearings. ASTM F3125, Grade A325 Type 3 bolts shall be used within these painted zones and shall be painted.

Galvanized members, the expansion device, and surfaces in contact with concrete shall not be painted. The color of paint shall be Brown equal or close to Fed. Std. 595B, Color Chip No. 30070 and as approved by the Engineer. The finish system may be applied in the shop. Any damage to the paint system occurring during transport or installation shall be corrected according to the manufacturer's recommendations at no cost to the Department.

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.

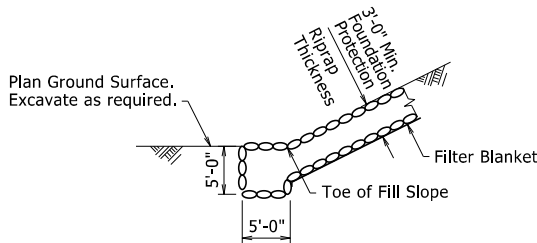
PROTECTIVE SURFACE TREATMENT: Class 2 Protective Surface Treatment shall be applied to the roadway surface and to the roadway face and top of the concrete bridge rails in accordance with Section 803.

DETAIL DRAWINGS:
End Bents 68429 - 68432
Intermediate Bents 68433 - 68434
Elastomeric Bearings 68435
353'-0" Continuous Plate Girder Unit 68436 - 68441
General Notes For Steel Bridge Structures 55006
Details For Steel Bridge Structures 55007
Poured Silicone Joints 55008
Steel H-Piling 55020
Bridge Traffic Rail 55070

EXISTING BRIDGE: Existing Bridge No. 21595 (Log Mile 9.57) is 14.5' wide (16.6' clear roadway) and 135.7' long and consists of two spans of railroad cars supported by concrete piers. The existing bridge is located approximately 49' downstream from the proposed new bridge. Plans of the existing structure, if available, may be obtained upon request to the Construction Contract Development Section of the Program Management Division.

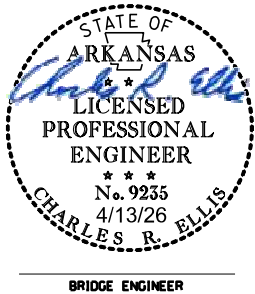
REMOVAL AND SALVAGE: After the new bridge is open to traffic, the Contractor shall remove existing Bridge No. 21595 in accordance with Section 205. Existing concrete from a previous structure shall also be removed. This work shall be considered subsidiary to the item "Removal of Existing Bridge Structure (Site No.)". All material from the existing bridge shall become the property of the Contractor.

MAINTENANCE OF TRAFFIC: See Roadway Plans.



EMBANKMENT SECTION

No Scale

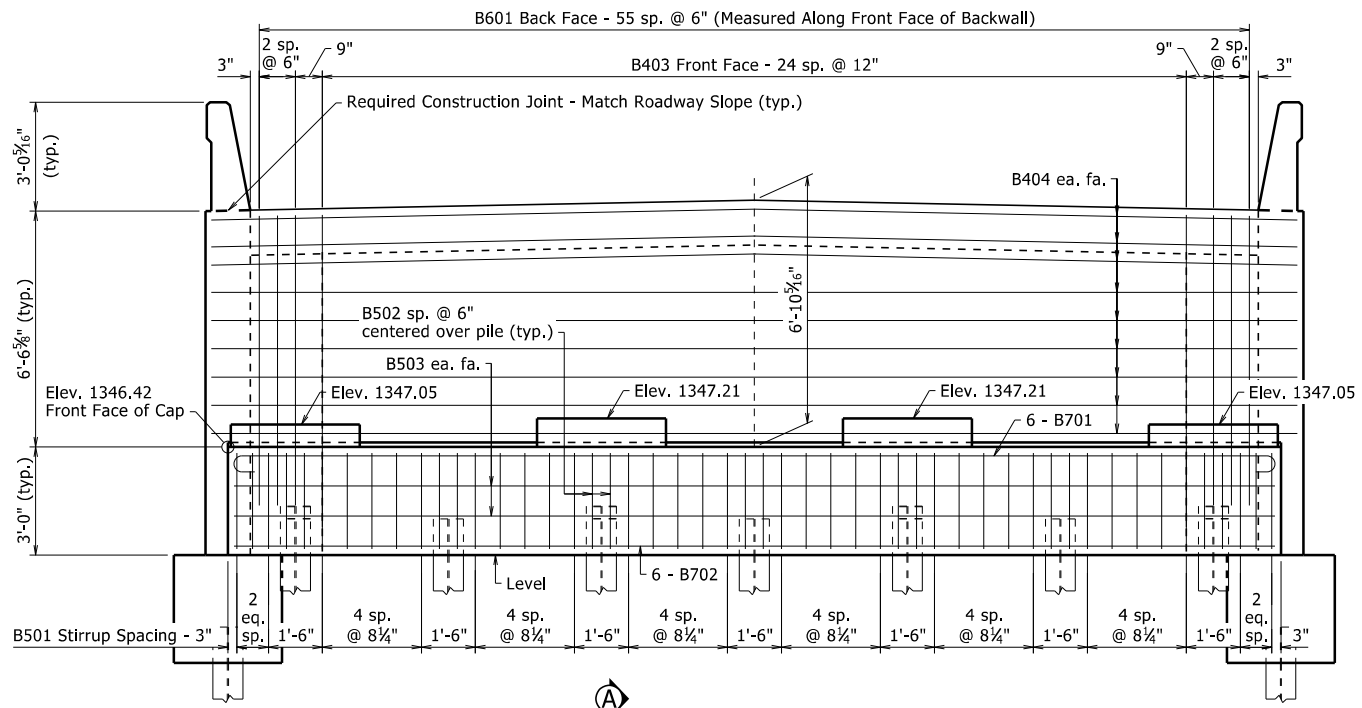
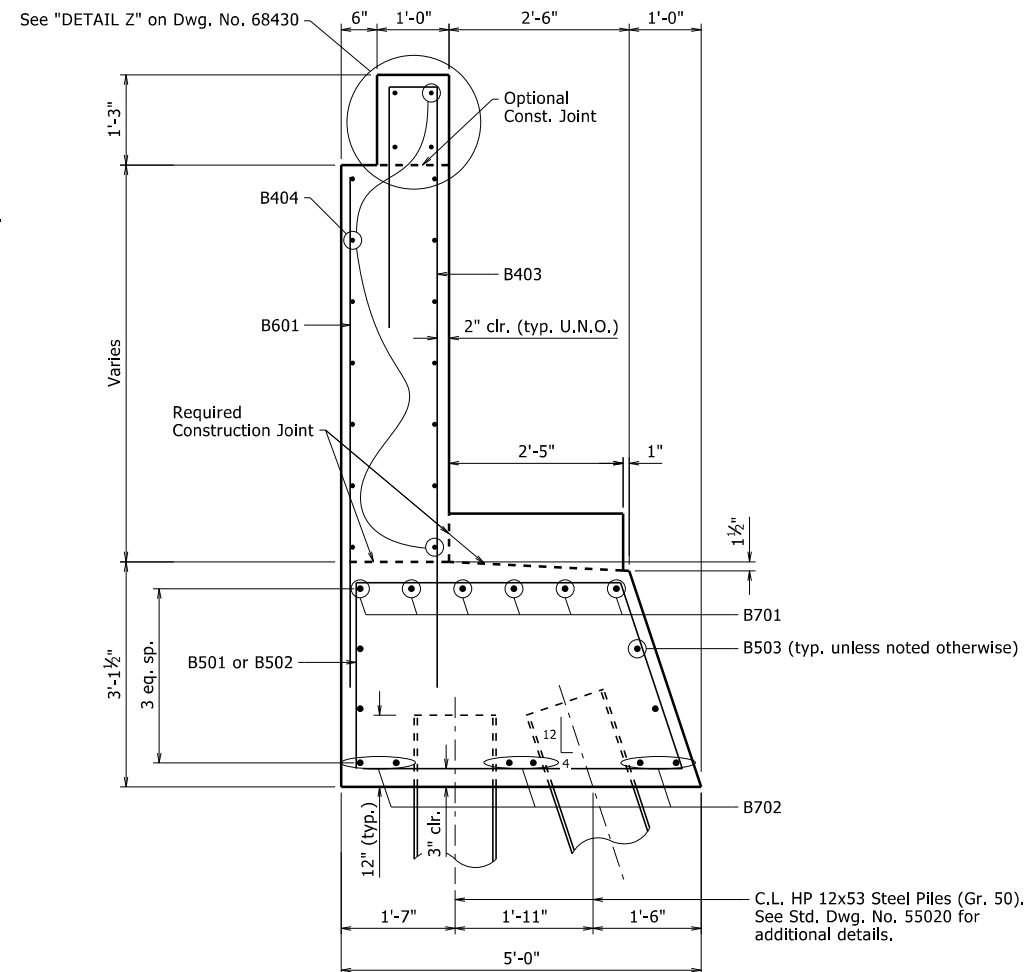
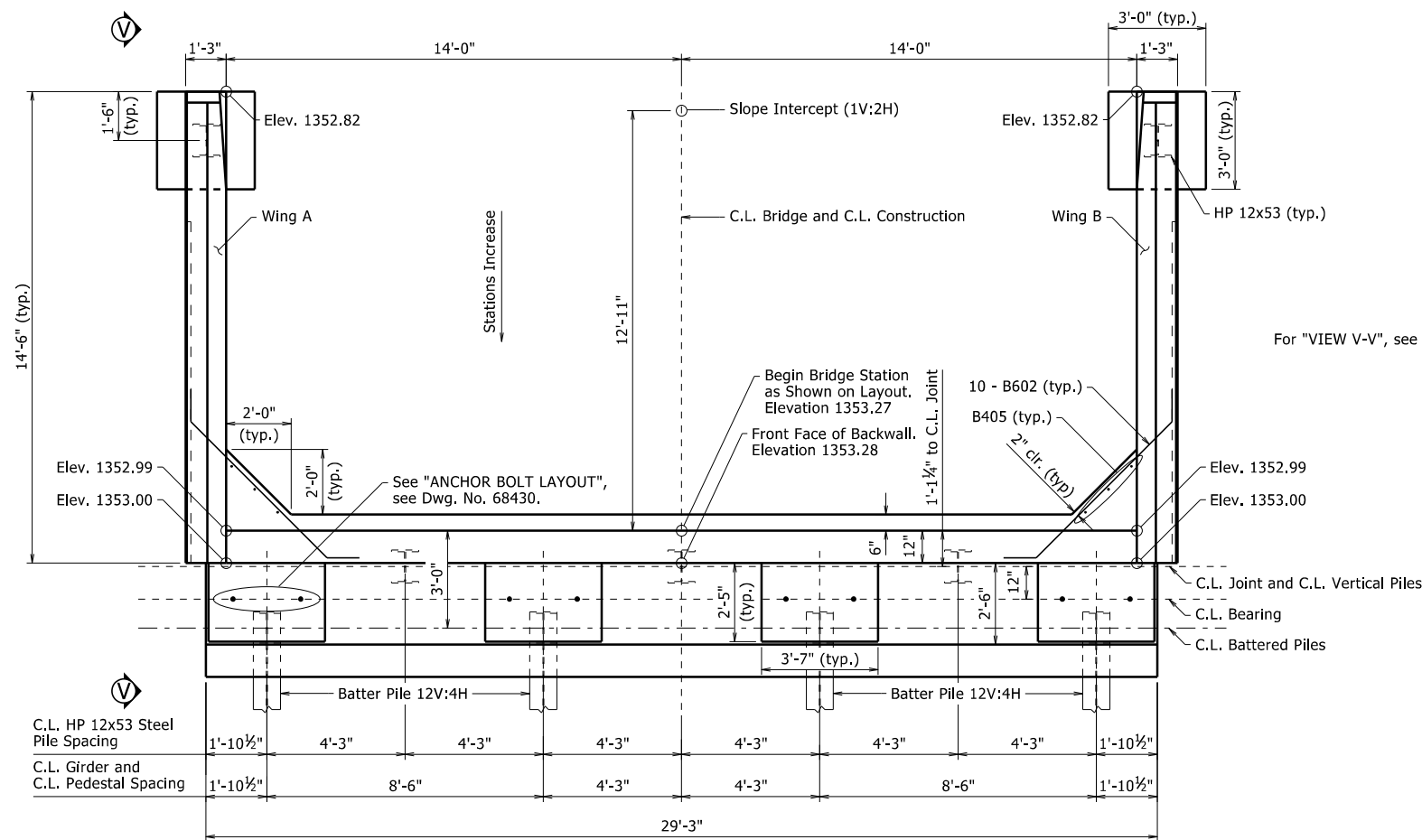


SHEET 2 OF 2
LAYOUT OF BRIDGE
COUNTY ROAD 7 OVER WAR EAGLE CREEK
WAR EAGLE CREEK STR. & APPRS. (S)
MADISON COUNTY

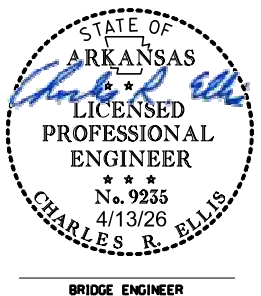
County Road 7 (5551)
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: NAC DATE: 11/2023 FILENAME: bbr4401_11.dgn
CHECKED BY: CMW DATE: 11/2023 SCALE: 1" = 30'
DESIGNED BY: NAC DATE: 10/2023
BRIDGE NO. 04952 DRAWING NO. 68428

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	BR4401	27	60
04952 - END BENTS - 68429						



No portion of the backwall shall be poured before the girders are in place. The portion of the backwall above the optional construction joint at the paving bracket shall not be placed until the adjacent deck pour has been made. Refer to the "EXPANSION DEVICE INSTALLATION AT END BENTS" note on Std. Dwg. No. 55008. No heavy construction equipment shall be allowed within 10' of the backwall before the deck concrete placement for the adjacent span has been completed.

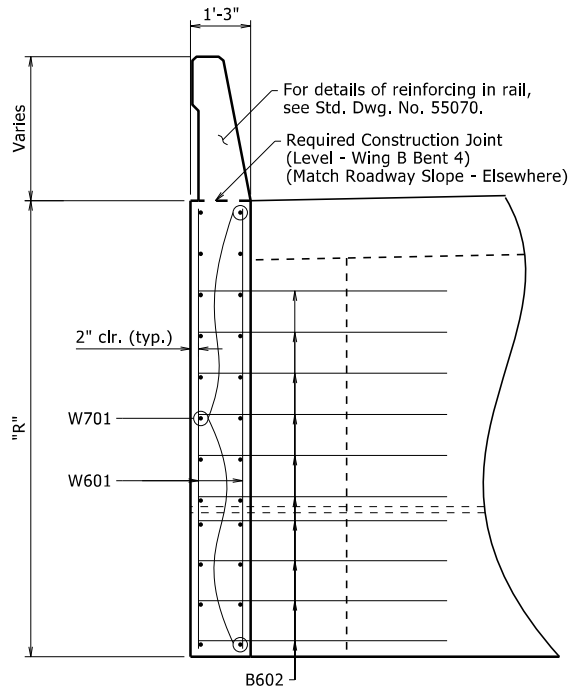


SHEET 1 OF 4
DETAILS OF END BENTS

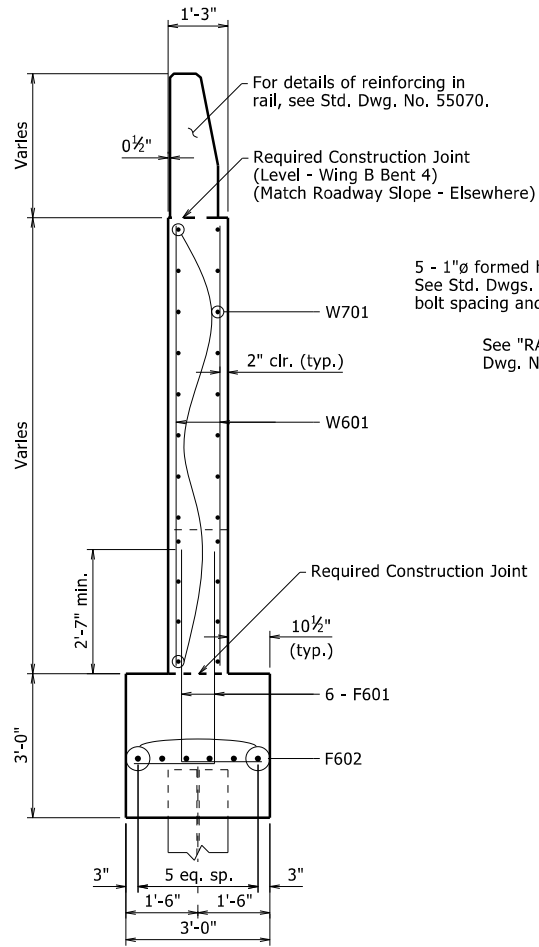
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: NAC DATE: 7/20/2024 FILENAME: bbr4401_b1.dgn
CHECKED BY: DBS DATE: 8/21/2024 SCALE: AS NOTED
DESIGNED BY: NAC DATE: 5/2024
BRIDGE NO. 04952 DRAWING NO. 68429

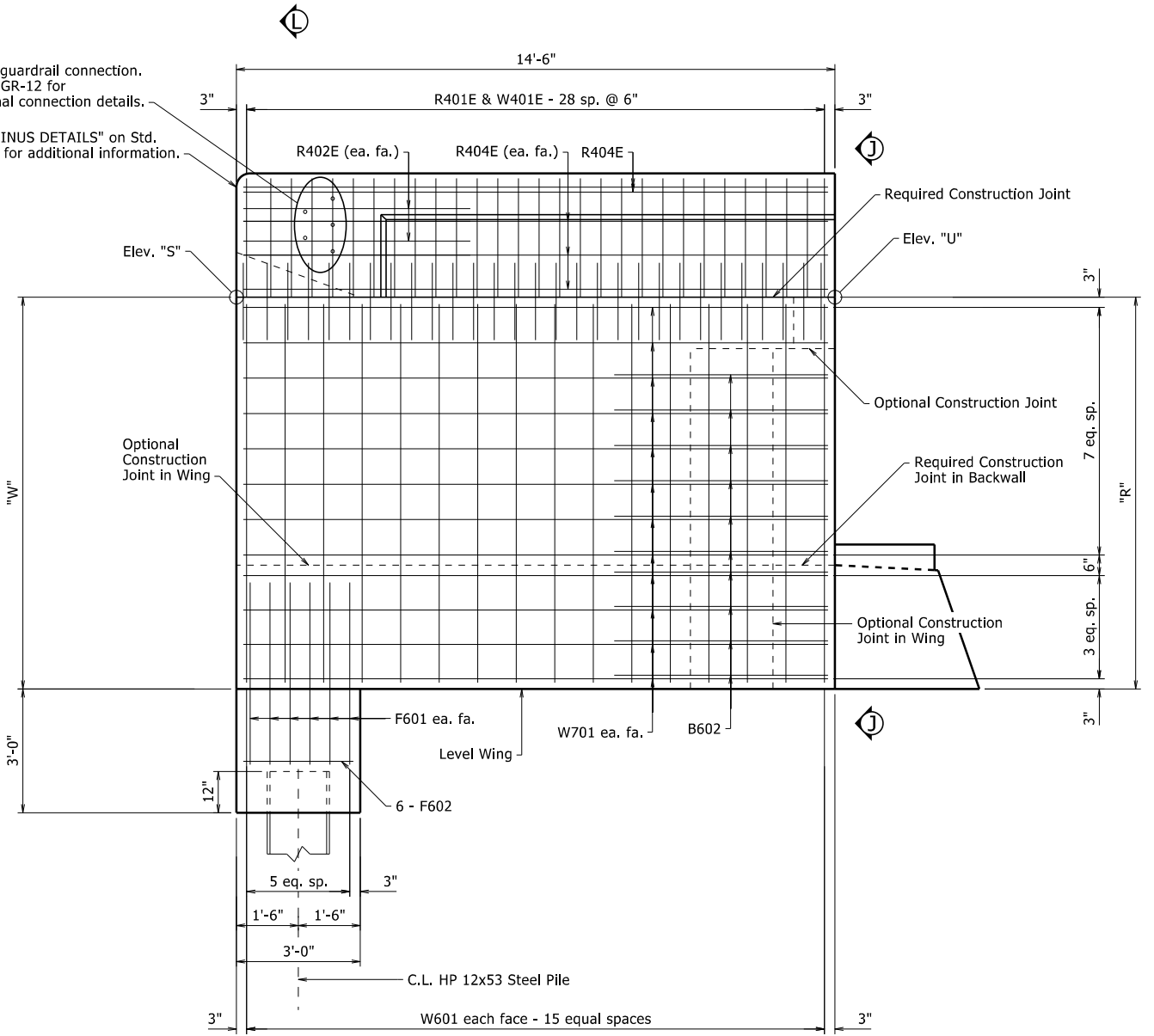
DATE REVISED	DATE REVISED	FED. NO. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	BR4401	29	60
04952 - END BENTS - 68431						



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



SECTION L-L
1/2" = 1'-0"



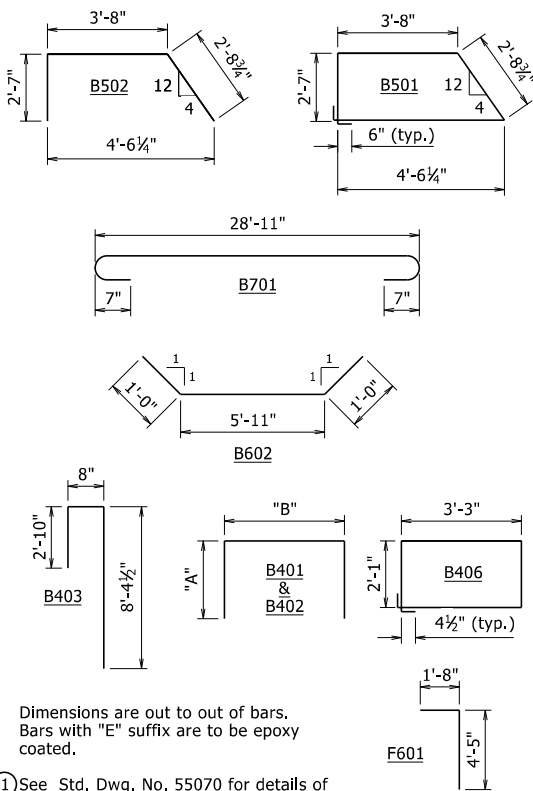
VIEW V-V

Wing A Shown, Wing B Similar
1/2" = 1'-0"

BAR LIST - PER BENT

MARK	NO. REQ'D.	LENGTH	"A"	"B"	PIN DIA.
B401	16	7'-5"	2'-2 1/2"	3'-2"	2"
B402	20	6'-3"	2'-2 1/2"	2'-0"	2"
B403	31	11'-8"	-	-	2"
B404	18	30'-2"	-	-	Str.
B405	6	7'-10"	-	-	Str.
B406	"X"	11'-0"	-	-	2"
B501	36	14'-0"	-	-	2 1/2"
B502	14	8'-9"	-	-	2 1/2"
B503	4	28'-11"	-	-	Str.
B601	56	7'-1 1/2"	-	-	Str.
B602	20	7'-11"	-	-	4 1/2"
B701	6	30'-7"	-	-	5 1/4"
B702	6	28'-11"	-	-	Str.
W601	64	8'-11"	-	-	Str.
W701	48	14'-2"	-	-	Str.
F601	24	6'-0"	-	-	4 1/2"
F602	12	2'-8"	-	-	Str.
R401E	58	6'-4"	-	-	2 1/2"
R402E	8	5'-6"	-	-	Str.
R404E	16	14'-2"	-	-	Str.
W401E	58	3'-11"	-	-	3 3/4"

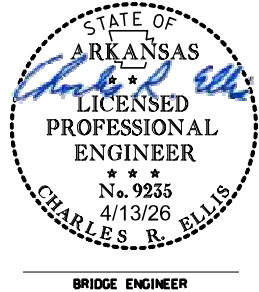
BENDING DIAGRAMS



Dimensions are out to out of bars.
Bars with "E" suffix are to be epoxy coated.
See Std. Dwg. No. 55070 for details of Rail bars.

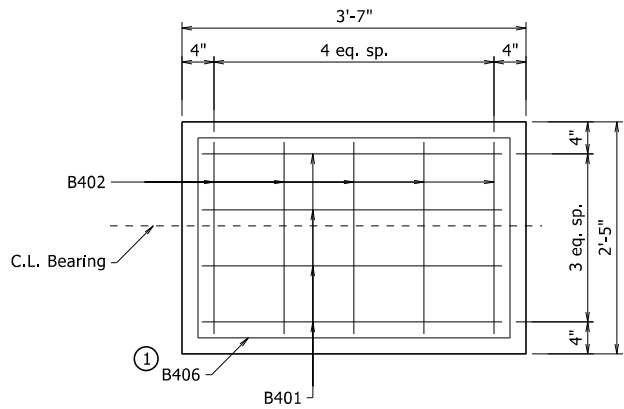
TABLE OF VARIABLES

BENT NO.	WING	"W"	"R"	"S"	"U"	"X"
1	A	9'-4 1/2"	9'-6 1 1/6"	1352.79	1352.97	6
	B	9'-4 1/2"	9'-6 1 1/6"	1352.79	1352.97	
4	A	9'-9 5/16"	9'-7"	1357.58	1357.39	7
	B	10'-3"	9'-9 7/8"	1358.06	1357.63	

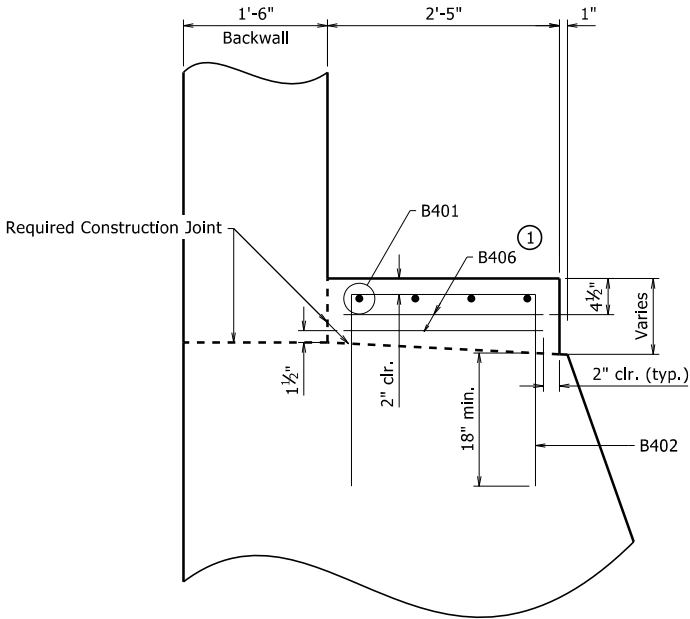


SHEET 3 OF 4
DETAILS OF END BENTS
ROUTE 100
SEC. 1
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.
DRAWN BY: NAC
CHECKED BY: DBS
DESIGNED BY: NAC
DATE: 7/20/2024
DATE: 8/21/2024
DATE: 5/2024
FILENAME: bbr4401_b1.dgn
SCALE: AS NOTED
BRIDGE NO. 04952
DRAWING NO. 68431

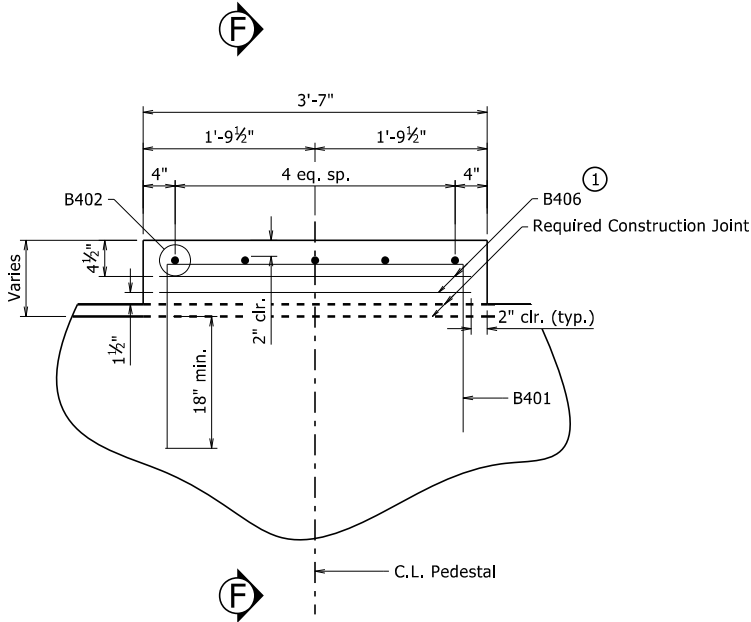
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	BR4401	30	60
04952 - END BENTS - 68432						



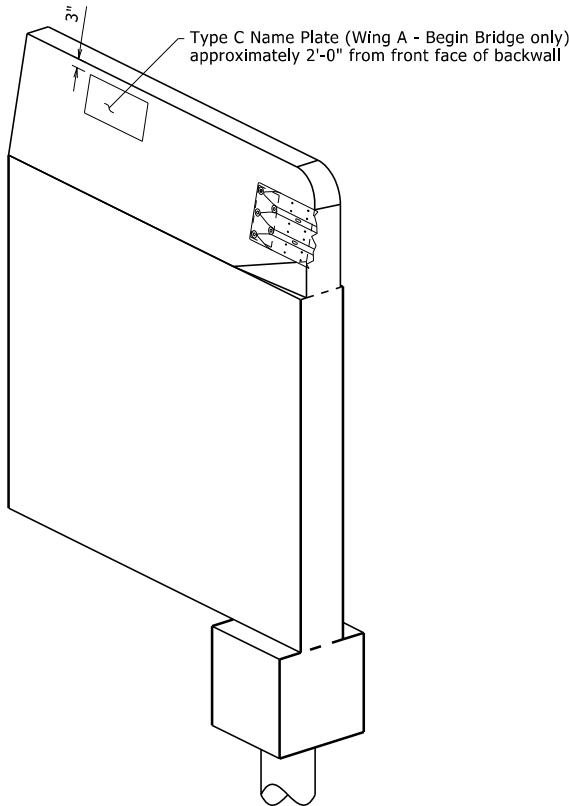
PEDESTAL PLAN
1" = 1'-0"



SECTION F-F
1" = 1'-0"



TYPICAL PEDESTAL DETAILS
1" = 1'-0"



THREE DIMENSIONAL
VIEW AT WING
No Scale

Pedestals shall be cast level at the elevations shown in "ELEVATION - BENT 1" on Drawing No. 68429 and "ELEVATION - BENT 4" on Drawing No. 68430, with a tolerance of $\pm 1/8$ inch. Pedestal reinforcing shall be adjusted to provide a minimum 1" clearance from sheet metal sleeves. All pedestal reinforcing may be shifted as required to clear bent cap reinforcing.

- ① Provide two B406 ties for pedestal heights ≥ 9 inches.
Provide one B406 tie for pedestal heights < 9 inches.

Pedestal height shall be measured on the front face of the pedestal, from the top of pedestal to the top of cap.

When only one B406 tie is required, locate it at the center of the pedestal, measured on the front face of the pedestal, from the top of pedestal to the top of cap.



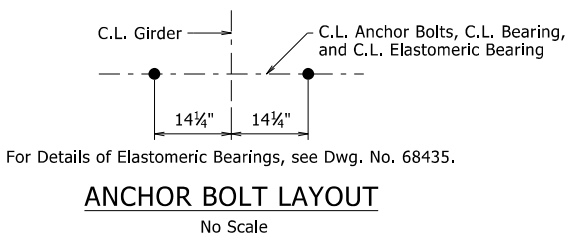
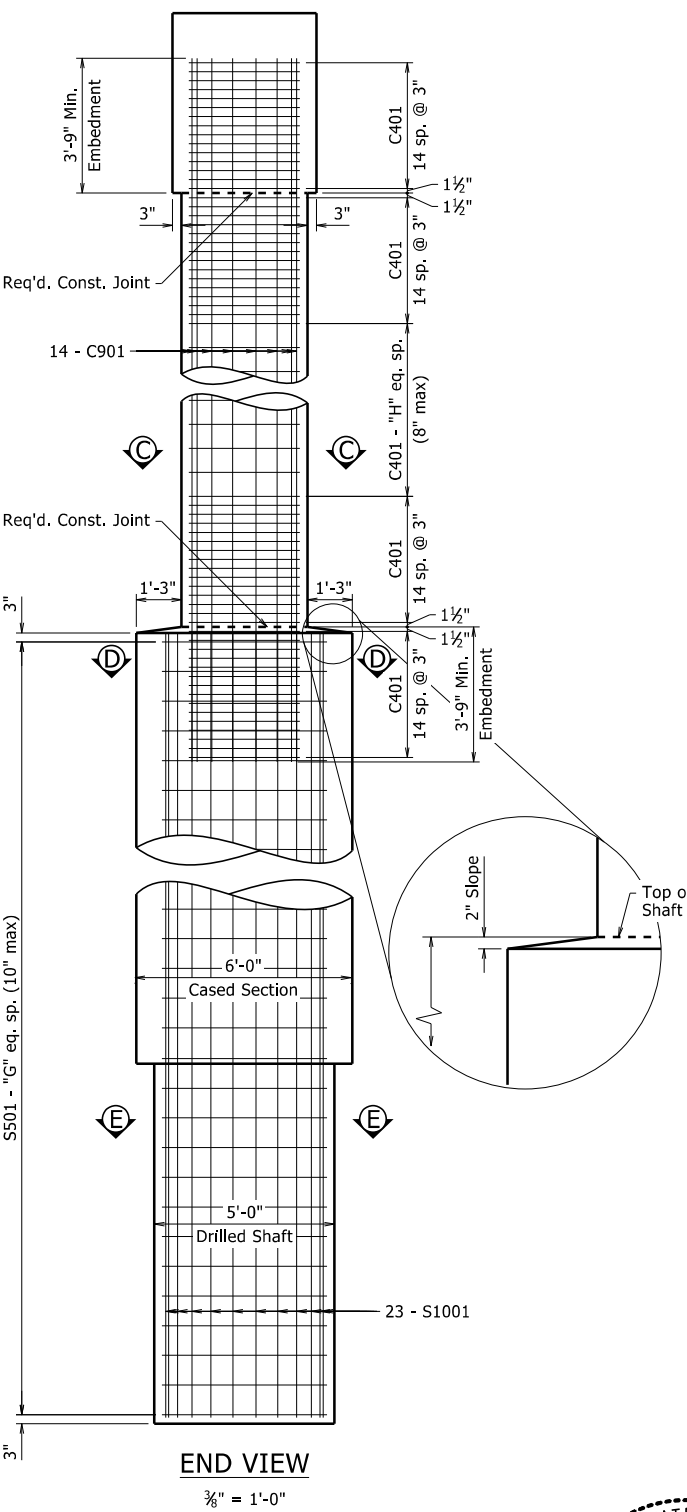
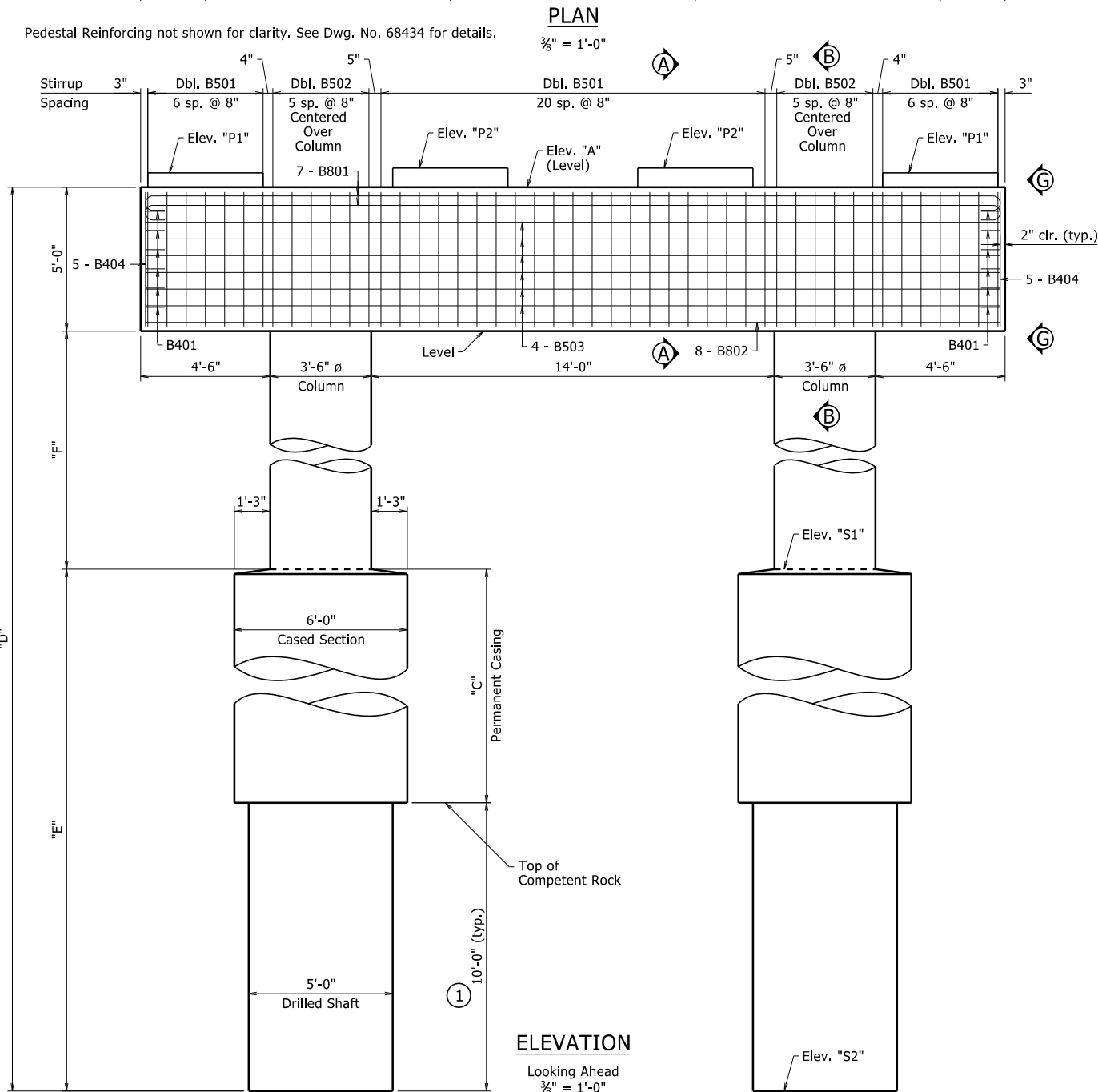
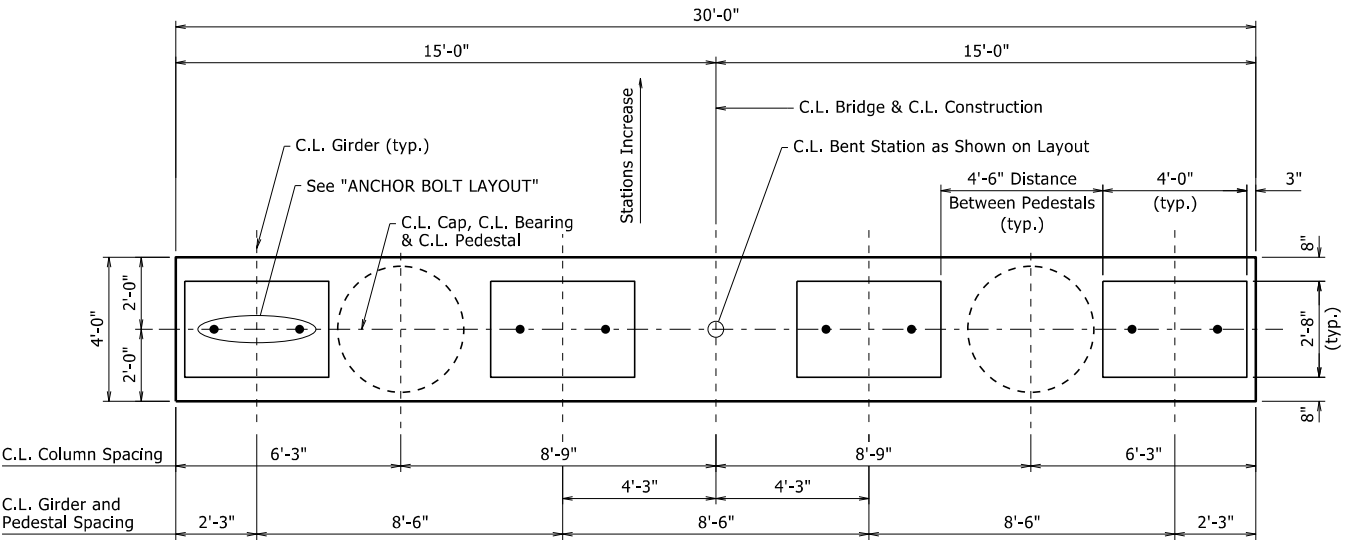
BRIDGE ENGINEER

SHEET 4 OF 4
DETAILS OF END BENTS

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

DRAWN BY: NAC DATE: 7/20/2024 FILENAME: bbr4401_b1.dgn
CHECKED BY: DBS DATE: 8/21/2024 SCALE: AS NOTED
DESIGNED BY: NAC DATE: 5/2024
BRIDGE NO. 04952 DRAWING NO. 68432

DATE REVISED	DATE REVISED	FIG. NO. DST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	BR4401	31	60
04952 - INT. BENTS - 68433						



GENERAL NOTES

For additional information, see Layout.

For additional "General Notes", see Std. Dwg. No 55006.

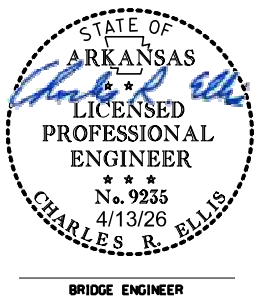
For "SECTION A-A", "SECTION B-B", "SECTION C-C", "SECTION D-D", "SECTION E-E", "VIEW G-G" and "TABLE OF VARIABLES", see Dwg. No. 68434.

Length of Permanent Casing shown is for estimating quantities only. Actual length is to be determined in the field. See Special Provision Job No. BR4401 "DRILLED SHAFT FOUNDATIONS". Permanent casing shall not extend below competent rock without approval from the Engineer.

1 Minimum penetration into competent rock below permanent casing. Competent Rock is designated as Slightly Weathered Limestone or Unweathered Limestone on the Boring Legend.

The column reinforcing cage, consisting of bars C401 and C901, may be placed before or after concrete placement in the shaft is complete. Vibration of concrete in the top 10 feet of the shaft will be needed to ensure the consolidation of concrete around the reinforcing steel and to insert the column reinforcing cage. The contractor will be responsible for obtaining satisfactory results.

Pedestals shall be cast level at the elevations shown in "ELEVATION". See Dwg. No. 68434 for "PEDESTAL PLAN" & "TYPICAL PEDESTAL DETAILS".



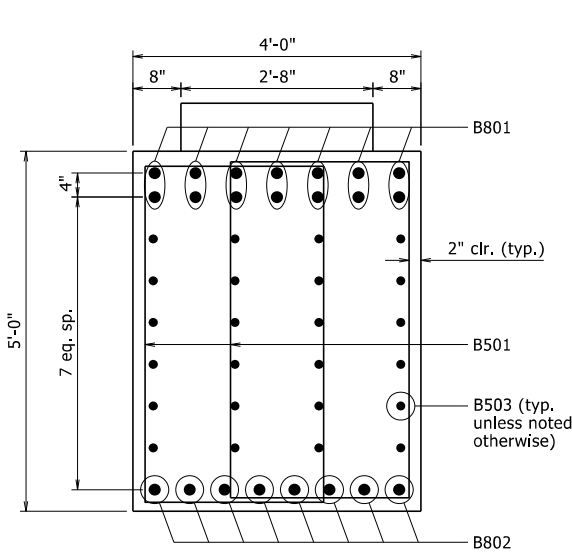
SHEET 1 OF 2
DETAILS OF INTERMEDIATE BENTS

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

DRAWN BY: NAC DATE: 6/20/2024 FILENAME: bbr4401_b2.dgn
CHECKED BY: JWP DATE: 8/20/2024 SCALE: AS NOTED
DESIGNED BY: NAC DATE: 5/2024
BRIDGE NO. 04952 DRAWING NO. 68433

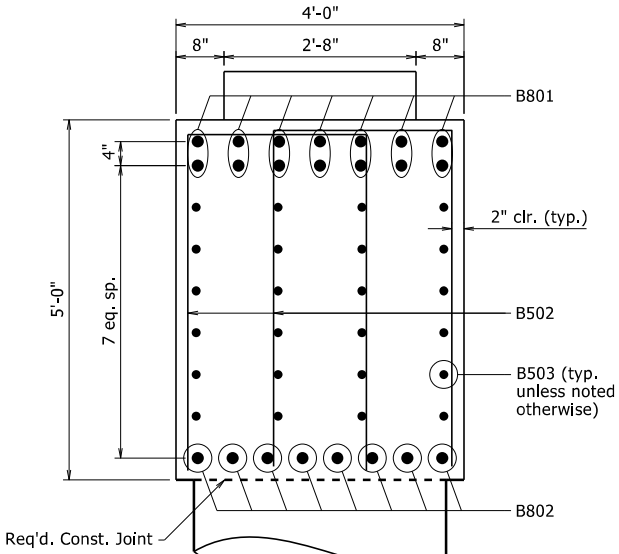
DATE REVISED	DATE REVISED	FED. NO. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	BR4401	32	60
04952 - INT. BENTS - 68434						

Pedestal Reinforcing not shown for clarity. See "TYPICAL PEDESTAL DETAILS" and "PEDESTAL PLAN" for Pedestal Reinforcing Details.



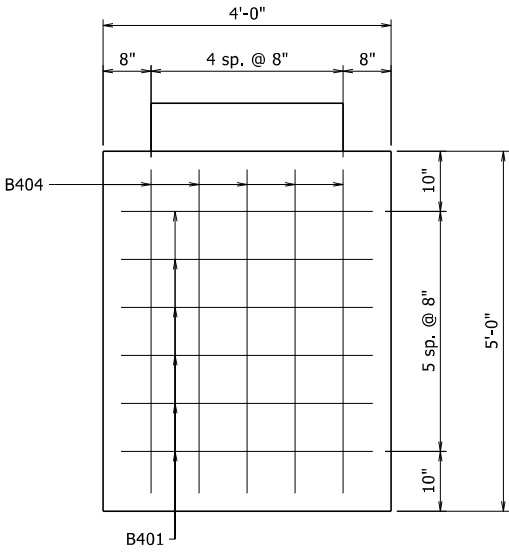
SECTION A-A

¾" = 1'-0"



SECTION B-B

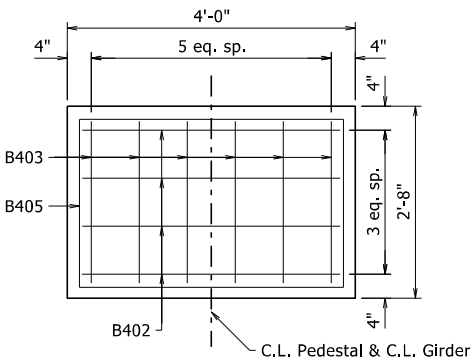
¾" = 1'-0"



VIEW G-G

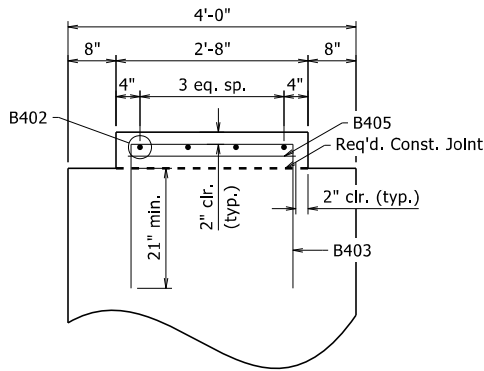
¾" = 1'-0"

Bar B401 and B404 shall be placed to maintain a 2" clear cover to the end of the cap.



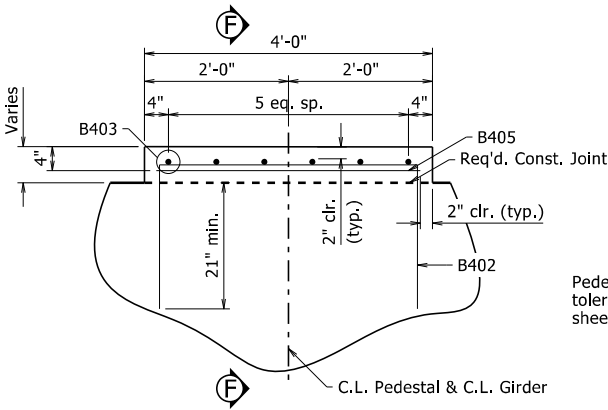
PEDESTAL PLAN

¾" = 1'-0"



SECTION F-F

¾" = 1'-0"



TYPICAL PEDESTAL DETAILS

¾" = 1'-0"

BAR LIST - PER BENT

MARK	NO. REQ'D	LENGTH	"X"	"Y"	PIN DIA.	BENDING DIAGRAMS
B401	12	6'-4"	3'-6"	1'-6"	2"	
B402	16	8'-1"	3'-7"	2'-4"	2"	
B403	24	6'-9"	2'-3"	2'-4"	2"	
B404	10	7'-4"	4'-6"	1'-6"	2"	
B405	4	12'-4"	2'-4"	3'-8"	2"	
B501	70	14'-10"	2'-6"	4'-8"	2½"	
B502	24	11'-8"	2'-6"	4'-8"	2½"	
B503	24	29'-8"	-	-	Str.	
B801	14	31'-6"	-	-	6"	
B802	8	29'-8"	-	-	Str.	
C401	"I"	10'-9"	3'-1"	5"	3"	
C901	28	"J"	-	-	Str.	
S501	"K"	13'-11"	4'-0"	6¼"	3¾"	
S1001	46	"L"	-	-	Str.	

Dimensions are out to out of bars.

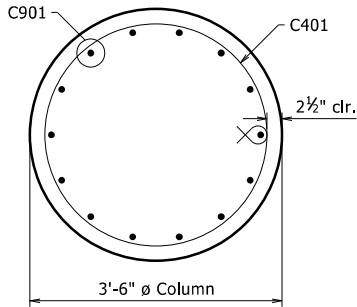
② Non-pay item, subsidiary to Special Provision Job No. BR4401 "Drilled Shaft Foundations".

Pedestals shall be cast level at the elevations shown in "ELEVATION" on Drawing No. 68433, with a tolerance of ±1/8 inch. Pedestal reinforcing shall be adjusted to provide a minimum 1" clearance from sheet metal sleeves. All pedestal reinforcing may be shifted as required to clear bent cap reinforcing.

TABLE OF VARIABLES

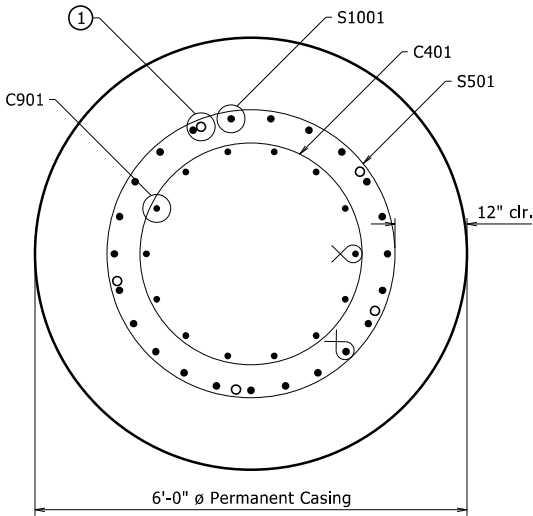
	GEOMETRY								S501	C401	Rebar				
BENT NO.	Elev. "A"	Elev. "P1"	Elev. "P2"	Elev. "S1"	Elev. "S2"	"C"	"D"	"E"	"F"	"G"	"H"	"I"	"J"	"K"	"L"
BENT 2	1348.03	1348.53	1348.70	1329.00	1304.50	14'-6"	43'-6⅞"	24'-6"	14'-0⅜"	29	11	140	21'-6⅞"	60	24'-2"
BENT 3	1349.72	1350.22	1350.39	1334.00	1302.00	22'-0"	47'-8⅞"	32'-0"	10'-8⅞"	38	6	130	18'-2⅞"	78	31'-8"

① 5 - 1½" min. Schedule 40 Steel Pipes equally spaced. See Special Provision Job. No. BR4401 "NONDESTRUCTIVE TESTING OF DRILLED SHAFTS".



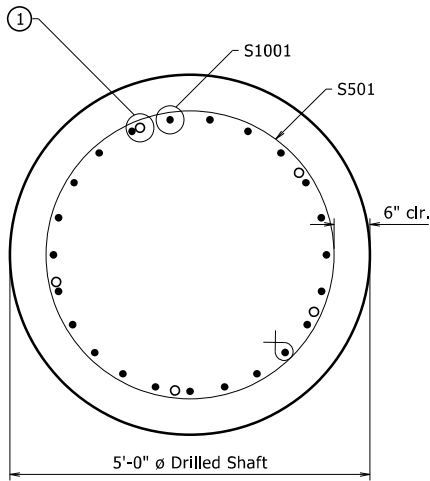
SECTION C-C

¾" = 1'-0"



SECTION D-D

¾" = 1'-0"



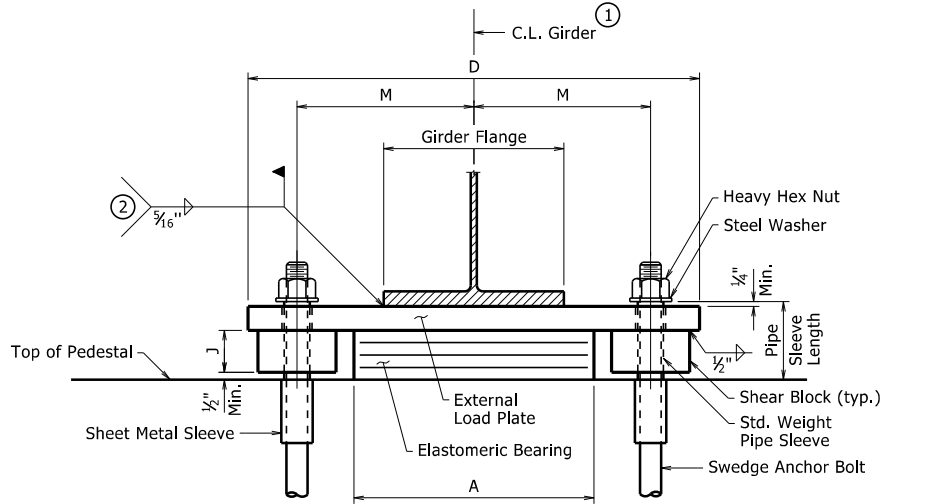
SECTION E-E

¾" = 1'-0"

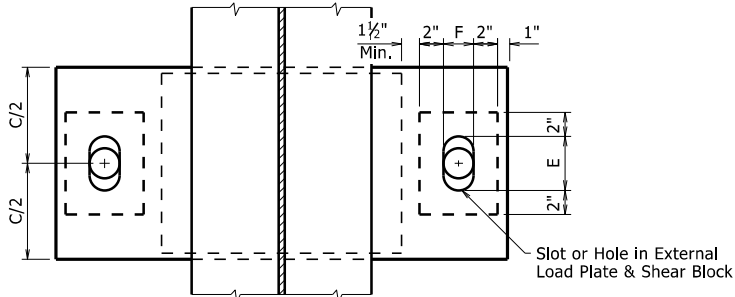


SHEET 2 OF 2
DETAILS OF INTERMEDIATE BENTS
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.
DRAWN BY: NAC DATE: 6/20/2024 FILENAME: bbr4401_b2.dgn
CHECKED BY: JWP DATE: 8/20/2024 SCALE: AS NOTED
DESIGNED BY: NAC DATE: 5/2024
BRIDGE NO. 04952 DRAWING NO. 68434

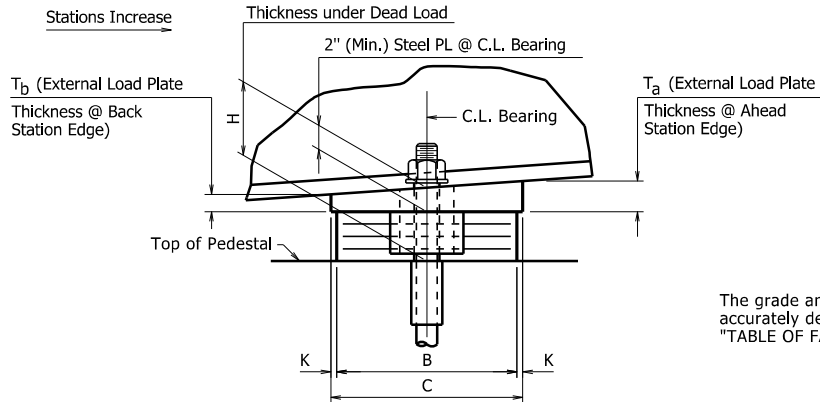
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	BR4401	33	60
04952 - ELASTOMERIC BEARINGS - 68435						



FRONT VIEW - WITH SHEAR BLOCKS



PLAN VIEW - WITH SHEAR BLOCKS

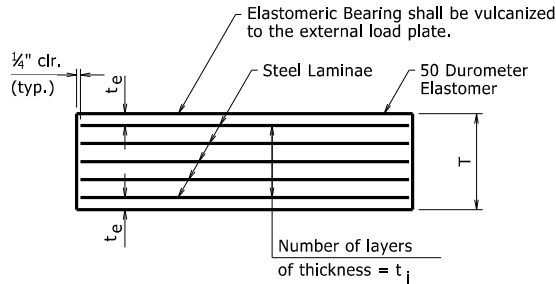


SIDE VIEW - WITH SHEAR BLOCKS

① C.L. Elastomeric Pad shall be aligned with C.L. Girder.

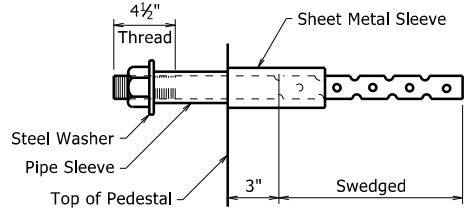
② Unless otherwise approved by the Engineer, welding of the external load plate at expansion bearings to the girder will be allowed only when:
1) the approximate average air temperature during the 24 hour period immediately preceding welding is between 40°F and 80°F; and
2) the slots in the external load plate are positioned to center on the anchor bolts; and
3) no horizontal deformation of the elastomeric pad is evident.
If welding at other temperatures is required, the Engineer will provide adjustment data.

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



t_e = Thickness of elastomer cover on top and bottom of pad.
 t_i = Thickness of elastomer between steel laminae.
 N = Number of elastomer layers of thickness t_i .

ELASTOMERIC BEARING



ANCHOR BOLT DETAIL

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

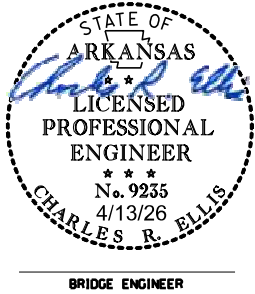
If Anchor Bolts are to be drilled and grouted in place, the Galvanized Sheet Metal Sleeves shall be cast in place as shown. Sleeves shall be dry packed with styrofoam, urethane foam or approved equal prior to pouring of concrete. After pouring of the cap and prior to erection of Structural Steel, the dry pack shall be removed and holes for the anchor bolts shall be accurately drilled into the concrete. 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 shall meet the requirements of ASTM 653, CS Type B or approved equivalent, be of minimum 16 gage thickness, and be galvanized according to ASTM B695, Class 50. Sheet Metal Sleeves will not be paid for directly, but will be considered subsidiary to the item "Structural Steel in Plate Girder Spans (A709, Gr. 50W)".

- ③ Maximum Design Load = Service I Limit State
④ Shear blocks 4 inches or thicker may be fabricated from built-up plates with a $\frac{3}{16}$ " groove weld on all sides. No plate shall be less than 2" nominal thickness.

TABLE OF FABRICATOR VARIABLES

								ELASTOMERIC PAD							EXTERNAL LOAD PLATE								ANCHOR BOLT						
BRIDGE NO.	LOCATION		SHEAR BLOCK	BEARING TYPE	NO. OF BEARINGS EACH BENT	③ MAXIMUM DESIGN LOAD (KIPS)	G	H	A	B	N	ti	te	NO. & THICKNESS OF STEEL LAMINAE	T	C	D	E	F	④ J	K	M	Ta	Tb	ANCHOR BOLT		PIPE SLEEVE SIZE (ø X L)	SHEET METAL SLEEVE SIZE (ø X L)	STEEL WASHER SIZE (O.D.)
	BENT NO(S).	GIRDER NO.																							ø X L	GRADE			
04952	1 & 4	All	YES	Exp.	4	128	9¼"	6⅜"	16"	12"	7	½"	¼"	8 @ 12 Ga.	4⅜"	13"	34"	5⅞"	2¼"	4⅝"	½"	12¾"	2.08	1.92	1½" x 29"	55	1½" x 7"	3" x 16½"	3"
	2 & 3	All	YES	Fix.	4	339	7⅝"	4⅜"	18"	16"	3	½"	¼"	4 @ 12 Ga.	2⅞"	17"	38"	3⅝"	3⅝"	2"	½"	14¼"	2.11	1.89	2" x 32"	55	2½" x 4⅝"	4" x 17"	3¾"

Prior to erection of the girders, the Contractor shall verify the orientation of the bearings with respect to T_a and T_b .

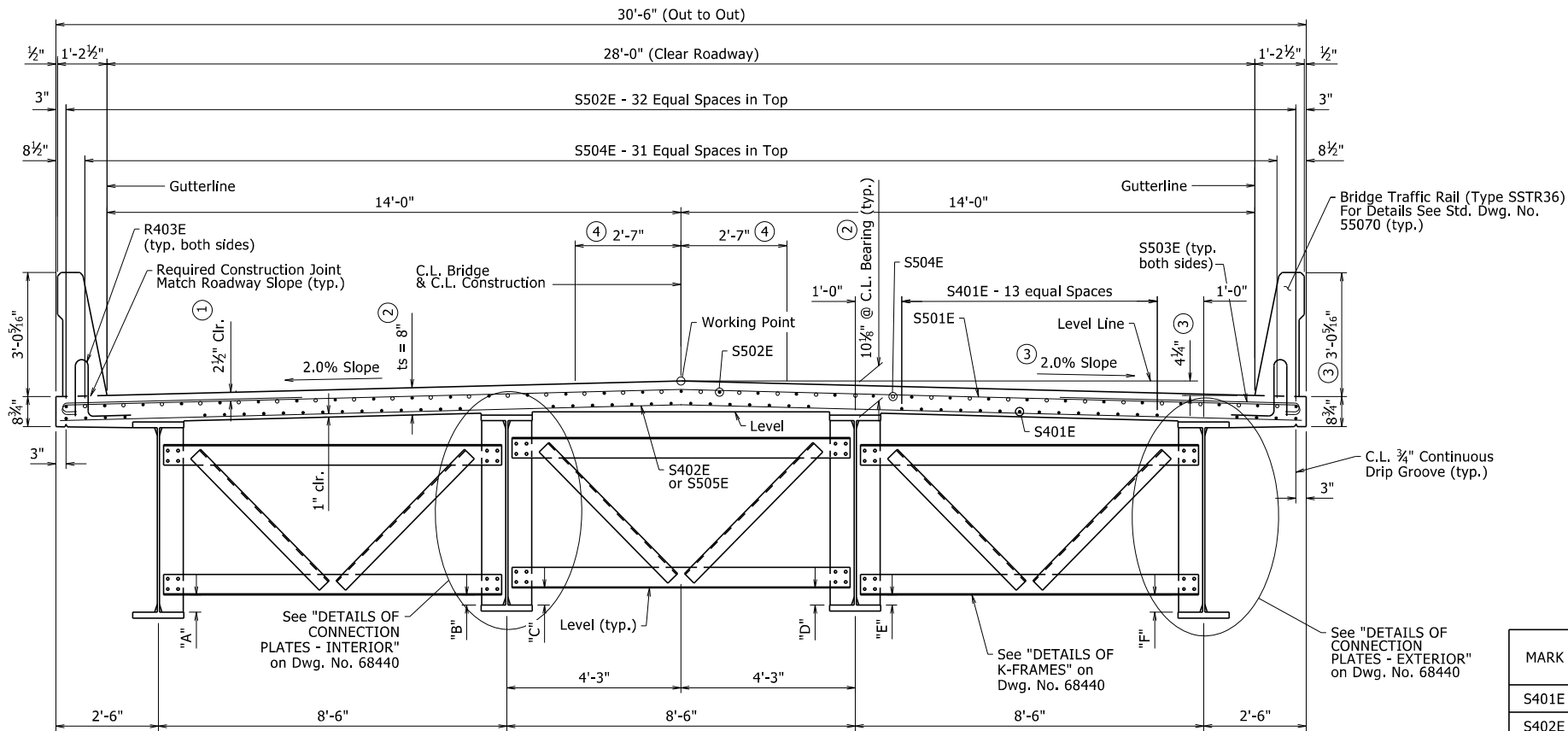


DETAILS OF ELASTOMERIC BEARINGS

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

DRAWN BY: NAC DATE: 8/5/2024 FILENAME: bbr4401_e1.dgn
CHECKED BY: WAC DATE: 8/6/2024 SCALE: No Scale
DESIGNED BY: NAC DATE: 3/2024
BRIDGE NO. 04952 DRAWING NO. 68435

DATE REVISED	DATE REVISED	FED. NO. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	BR4401	34	60
04952 - 353'-0" Unit - 68436						



Slab Reinforcing:

Longitudinal: S502E in Top and S401E in Bottom (placed as shown)
S504E over intermediate supports
See "HALF REINFORCING PLAN
AND SLAB POURING SEQUENCE", Dwg. No. 68438.

Transverse: S501E @ 12" o.c. in Top, S402E @ 12" o.c. in bottom — Alternate
S501E @ 12" o.c. Top and S505E in bottom
S503E @ 6" in Top of overhangs (bundled with No. 5 bars) both sides

Bar positions and clearances from the forms shall be maintained by means of stays, ties, hangers or other approved devices sufficient in size and number to prevent displacement during construction per Subsection 804.06. Placement of slab bolsters or high-chairs with full-length lower runners directly on removable deck forms will not be allowed.

Class 2 Protective Surface Treatment shall be applied to the Roadway Surface and the Roadway Face and Top of Concrete Bridge Rails.

- ① Tolerance: Minus = $\frac{1}{4}$ ";
Plus equal to the amount of slab thickening used to meet slab thickness tolerance. See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE" on Std. Dwg. No. 55007.
- ② See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE" on Std. Dwg. No. 55007.
- ③ These values will vary, see SUPERELEVATION TRANSITION SKETCH, Dwg. No. 68428.
- ④ See "ROUNDING DETAIL" on Layout, Dwg. No. 68427.

BAR LIST - DECK SLAB

MARK	NO. REQ'D	LENGTH	P.D.	BENDING DIAGRAMS
S401E	500	37'-9"	Str.	
S402E	353	30'-2"	Str.	
S501E	705	31'-4"	3 3/4"	
S502E	330	38'-4"	Str.	
S503E	1410	6'-9"	3 3/4"	
S504E	128	45'-2"	Str.	
S505E	352	30'-2"	Str.	
R400E	160	5'-3"	2 1/2"	
R401E	1404	6'-4"	2 1/2"	
R402E	104	5'-6"	Str.	
R403E	1404	3'-6"	3 3/4"	Dimensions are out to out of bars. All bars with an "E" suffix shall be Epoxy Coated. ⑤ See Std. Dwg. No. 55070 for additional Rail information and Bending Diagrams.
R404E	128	15'-2"	Str.	
R405E	160	19'-2"	Str.	
R406E	32	16'-8"	Str.	

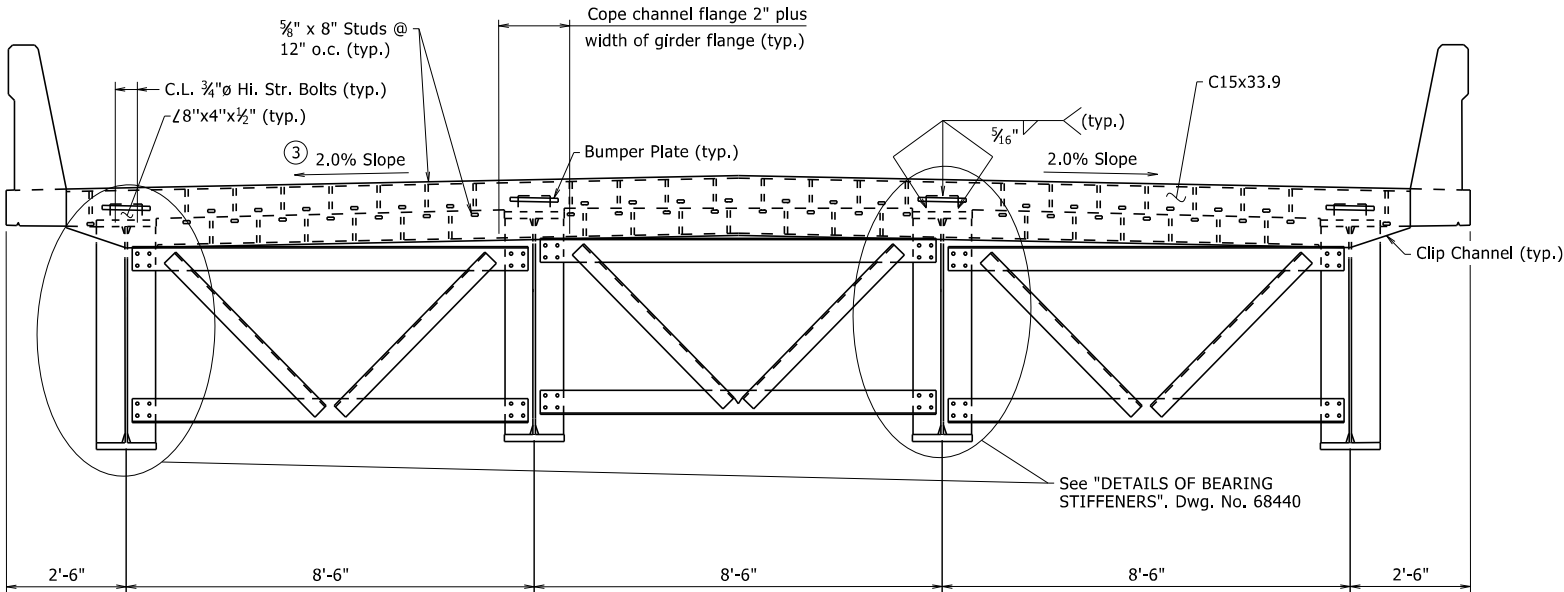
Expansion Device:
Roadway Channel - C15x33.9
Connection Angles - 8"x4"x1/2"
Detail Device 1/8" high and
provide 1/4" shims using 2-1/2"
and 1-1/2" PL's

TYPICAL ROADWAY SECTION

Looking Ahead
1/2" = 1'-0"

TABLE OF VARIABLES

Location	"A"	"B"	"C"	"D"	"E"	"F"
Typical	5"	2 1/2 1/6"	5"	5"	2 1/2 1/6"	5"
Bent 4	5"	2 1 1/6"	5"	4 1 1/6"	4 3/8"	5"

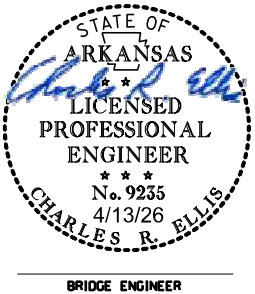


TYPICAL ROADWAY SECTION NEAR JOINTS

Looking Ahead Bent 1
Looking Back Bent 4 Similar
1/2" = 1'-0"

For Details of Poured Silicone Joint, see Std. Dwg. No. 55008.

For "TABLE OF SILICONE JOINT DATA", see Dwg. No. 68439.

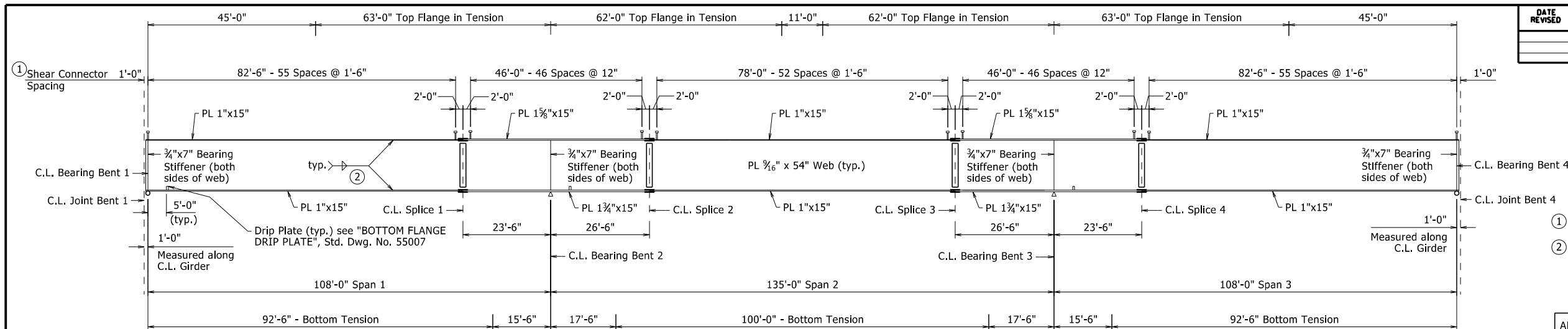


SHEET 1 OF 6
DETAILS OF 353'-0" CONTINUOUS
PLATE GIRDER UNIT

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

DRAWN BY: DBS DATE: 05-29-2024 FILENAME: bbr4401_s1.dgn
CHECKED BY: NAC DATE: 06-11-2024 SCALE: AS NOTED
DESIGNED BY: NAC DATE: 03-2024
BRIDGE NO. 04952 DRAWING NO. 68436

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	BR4401	35	60
		04952 - 353'-0" Unit - 68437				

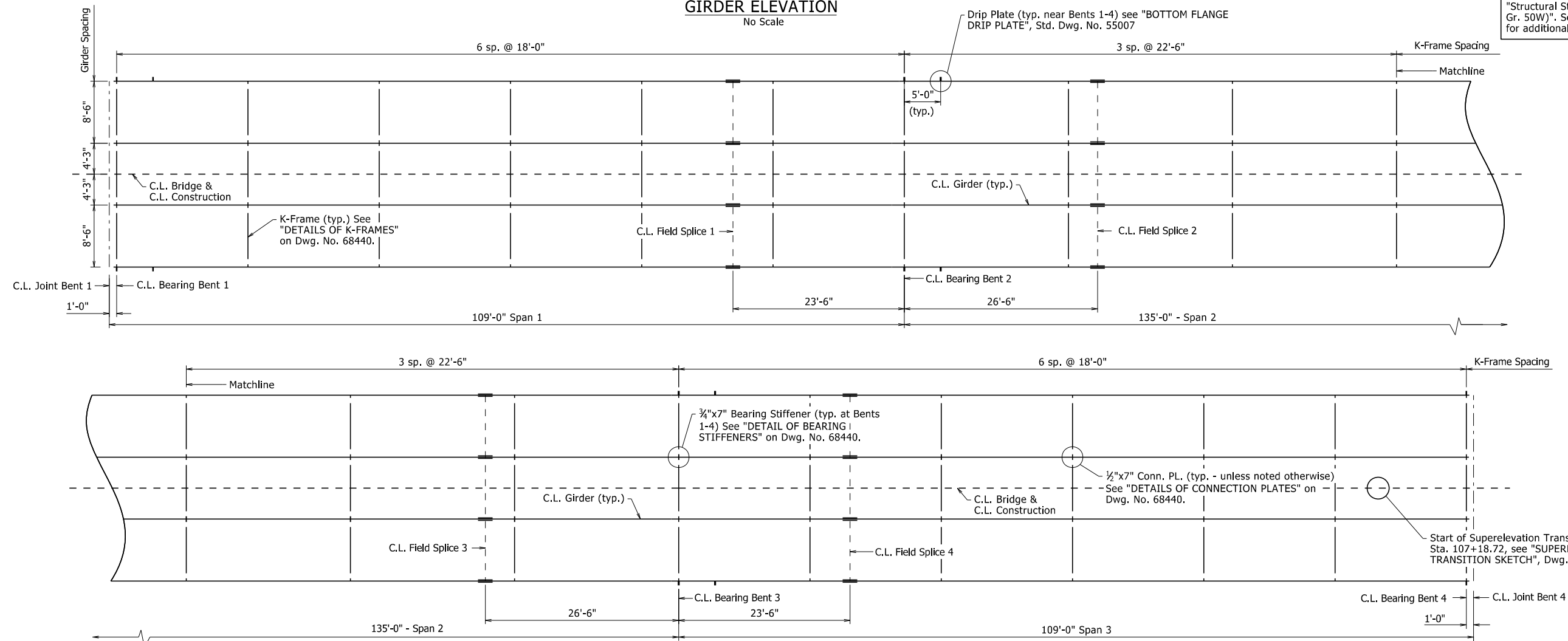


- ① $\frac{7}{8}$ " $\varnothing$ x $4\frac{1}{2}$ " studs - 3 per row. See Std. Dwg. No. 55007.
- ② See "WELD TABLE" for min. weld size on Std. Dwg. No. 55007.

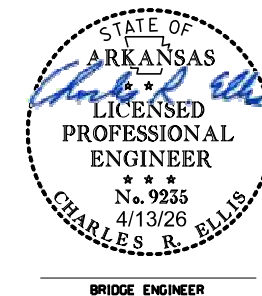
For details of field splices, see "DETAILS OF FIELD SPLICES",
Dwg. No. 68441.

All structural steel shall be ASTM A709, Grade 50W unless otherwise noted and shall be paid for as "Structural Steel in Plate Girder Spans (A709, Gr. 50W)". See Std. Dwg. Nos. 55006 & 55007 for additional notes and details.

GIRDER ELEVATION
No Scale



FRAMING PLAN

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


SHEET 2 OF 6
DETAILS OF 353'-0" CONTINUOUS
PLATE GIRDER UNIT

ARKANSAS STATE HIGHWAY COMMISSION

ROUTE SEC.

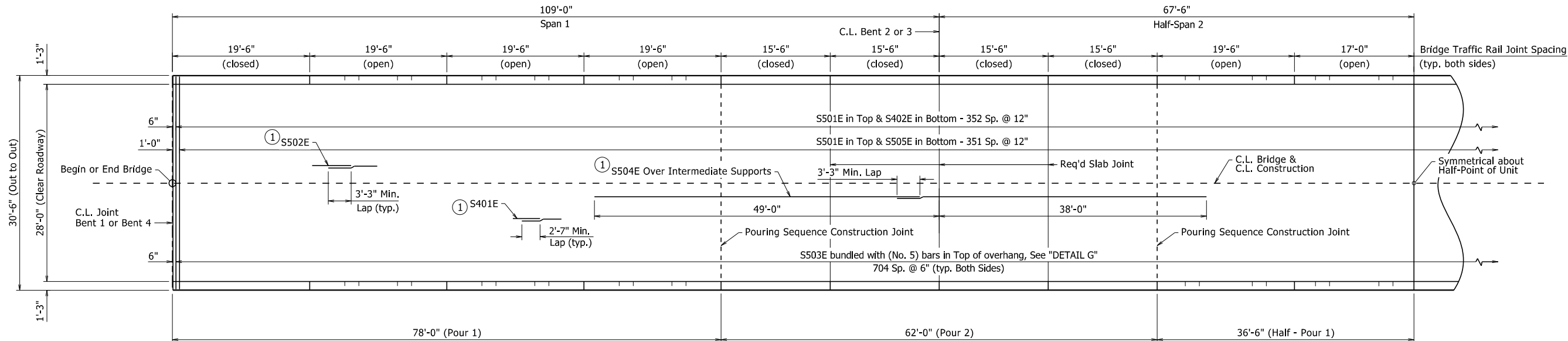
LITTLE ROCK, ARK.

DRAWN BY: DBS	DATE: 05-29-2024	FILENAME: bbr4401_s1.dgn
CHECKED BY: NAC	DATE: 06-11-2024	SCALE: AS NOTED
DESIGNED BY: NAC	DATE: 03-02-2024	

BRIDGE NO. 04952 DRAWING NO. 68437

PRINT DATE: 4/6/2026

DATE REVISED	DATE REVISED	FIG. NO. DS1. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	BR4401	36	60
04952 - 353'-0" Unit - 68438						



HALF REINFORCING PLAN AND SLAB POURING SEQUENCE

1/8" = 1'-0"

GENERAL NOTES

For Reinforcing Details and Joint Depth, See Std. Dwg No. 55070.

① For Bar List, see Dwg. No. 68436.

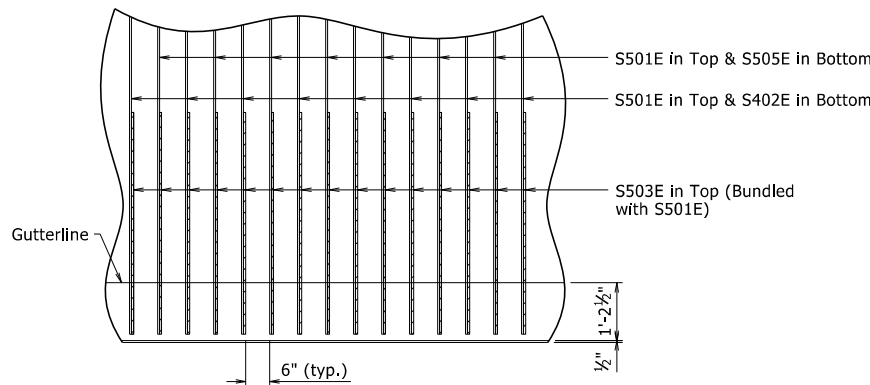
Placed as shown in "TYPICAL ROADWAY SECTION", Dwg. No. 68436.

Pours with the same number may be placed simultaneously or separately. All Pour(s) 1 must be placed before Pour(s) 2 can be placed. A minimum of 48 hours shall elapse between the end of a pour and the start of the next pour. A minimum of 72 hours shall elapse between adjacent pours.

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.

A minimum of 72 hours shall elapse between completion of the slab and the pouring of the bridge railing. Any railing pours made before the entire slab unit has been placed must be approved by the Engineer. The Contractor must obtain approval from the Engineer for any deviations from the pouring sequence(s) shown.

Required slab joints and pouring sequence construction joints shall align with rail joints at base of rail.



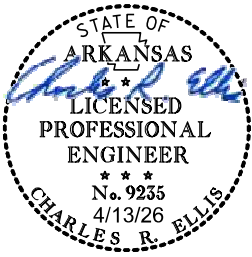
DETAIL G

1/2" = 1'-0"

TABLE OF VARIABLES

(For use with Std. Dwg. No. 55070)

Closed Rail Panels				Open Rail Panels				
Panel Length	A	R4XXE	Panel Length	B	C	D	E	R4XXE
15'-6"	30	R404E	17'-0"	8	3'-0"	13	7'-0"	R406E
19'-6"	38	R405E	19'-6"	11	4'-0"	14	7'-6"	R405E



BRIDGE ENGINEER

SHEET 3 OF 6
DETAILS OF 353'-0" CONTINUOUS
PLATE GIRDER UNIT

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

DRAWN BY: DBS DATE: 05-29-2024 FILENAME: bbr4401_s1.dgn
CHECKED BY: NAC DATE: 06-11-2024 SCALE: AS NOTED
DESIGNED BY: NAC DATE: 03-2024
BRIDGE NO. 04952 DRAWING NO. 68438

TABLE OF DEAD LOAD DEFLECTIONS (INCHES)

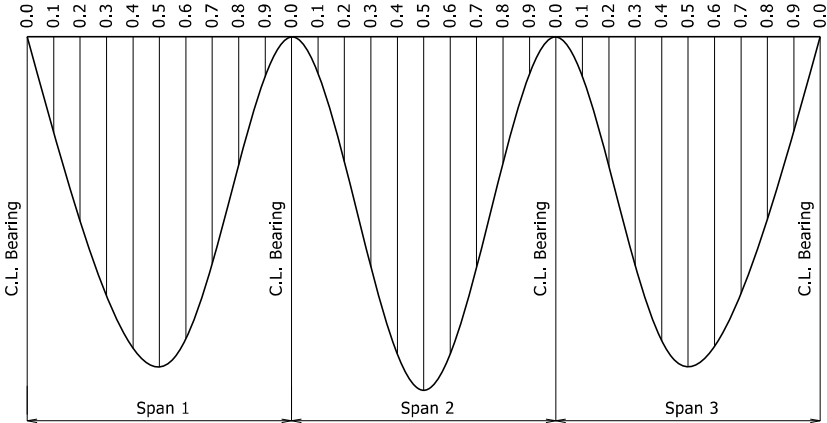
Span	Point of Deflection	Structural Steel		Structural Steel + Slab		Structural Steel + Slab + Railing	
		Ext. Girder	Int. Girder	Ext. Girder	Int. Girder	Ext. Girder	Int. Girder
1	0	0.000	0.000	0.000	0.000	0.000	0.000
	0.1	0.105	0.111	0.477	0.585	0.535	0.638
	0.2	0.194	0.205	0.875	1.072	0.981	1.172
	0.3	0.252	0.267	1.138	1.394	1.276	1.524
	0.4	0.276	0.291	1.238	1.516	1.388	1.657
	0.5	0.262	0.277	1.172	1.435	1.314	1.569
	0.6	0.218	0.230	0.964	1.181	1.082	1.291
	0.7	0.152	0.161	0.666	0.814	0.747	0.891
	0.8	0.082	0.087	0.352	0.431	0.395	0.471
	0.9	0.026	0.027	0.105	0.128	0.117	0.140
2	0	0.000	0.000	0.000	0.000	0.000	0.000
	0.1	0.031	0.033	0.156	0.192	0.178	0.213
	0.2	0.105	0.111	0.506	0.621	0.574	0.685
	0.3	0.189	0.200	0.902	1.108	1.021	1.221
	0.4	0.253	0.268	1.205	1.480	1.363	1.629
	0.5	0.277	0.294	1.317	1.618	1.489	1.780
	0.6	0.253	0.268	1.205	1.480	1.363	1.629
	0.7	0.188	0.200	0.901	1.107	1.020	1.221
	0.8	0.104	0.110	0.505	0.621	0.573	0.684
	0.9	0.031	0.033	0.155	0.191	0.177	0.213
3	0	0.000	0.000	0.000	0.000	0.000	0.000
	0.1	0.027	0.028	0.106	0.129	0.118	0.141
	0.2	0.084	0.088	0.354	0.432	0.397	0.472
	0.3	0.153	0.162	0.667	0.816	0.748	0.892
	0.4	0.218	0.230	0.965	1.181	1.083	1.291
	0.5	0.262	0.277	1.172	1.435	1.314	1.569
	0.6	0.275	0.291	1.238	1.516	1.388	1.657
	0.7	0.252	0.266	1.138	1.394	1.276	1.523
	0.8	0.193	0.204	0.875	1.072	0.981	1.171
	0.9	0.105	0.111	0.477	0.585	0.535	0.639
	0	0.000	0.000	0.000	0.000	0.000	0.000

TABLE OF SILICONE JOINT DATA

"A" Width Perpendicular to Joint at 24 Hour Average Temperature ① of:			"B" Width Perpendicular to Joint at 60°F:	Bumper Plate Size
40° F	60° F	80° F		
2⅞"	2½"	2⅙"	± 3¼"	1" x 1¼" x 12"

① The temperature used to set the joint opening shall be the approximate average air temperature during the 24 hour period immediately before the bolts are tightened. The Engineer shall establish the temperature, interpolation of the table may be necessary.

For details of Poured Silicone Joints, see Std. Dwg. No. 55008.



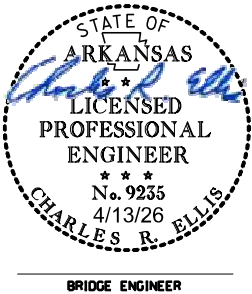
DEAD LOAD DEFLECTION DIAGRAM

No Scale

Camber for Dead Load Deflection +/- 1/8" tolerance. Deflections shown are along C.L. Girder from a chord from C.L. Bearing to C.L. Bearing. Negative sign (-) indicates point above chord. Vertical curve and Superelevation Transition corrections not included.

Dead load deflections shown include an assumed loading of 15 psf to account for stay-in-place metal deck forms.

Revision to the deflection tables may be necessary upon review of the Contractor's submitted forming details.

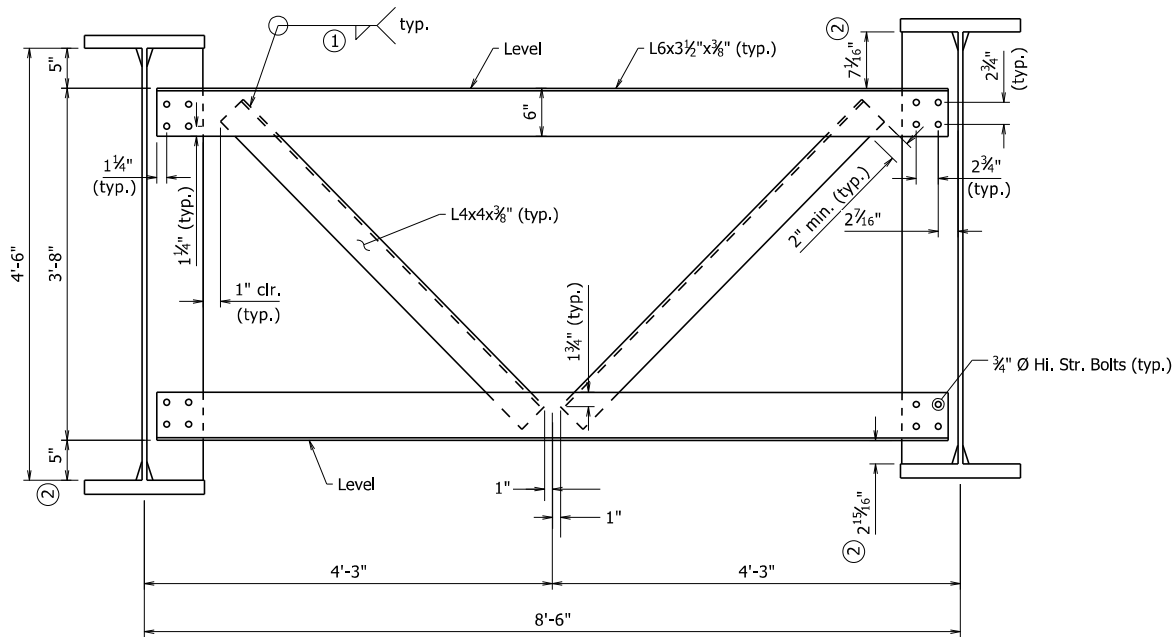


SHEET 4 OF 6
DETAILS OF 353'-0" CONTINUOUS
PLATE GIRDER UNIT

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

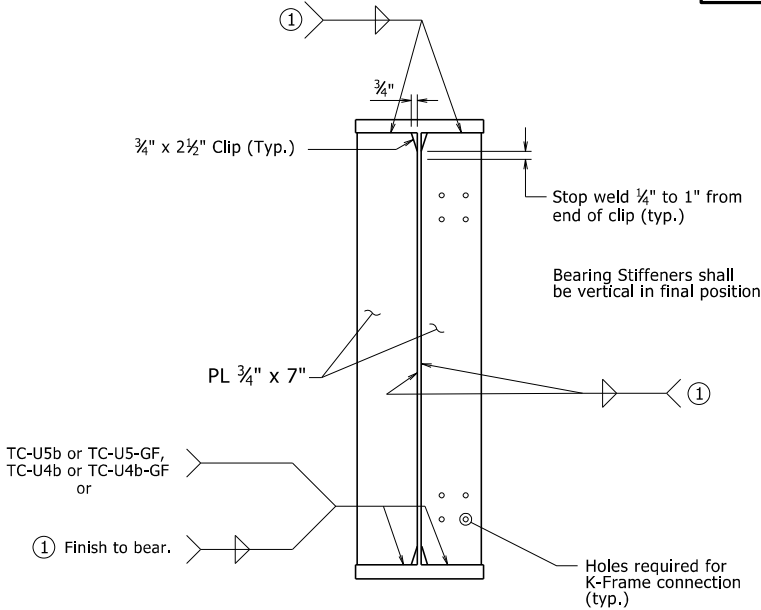
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CHECKED BY: NAC DATE: 06-11-2024 SCALE: AS NOTED
DESIGNED BY: NAC DATE: 03-2024
BRIDGE NO. 04952 DRAWING NO. 68439

DATE REVISED	DATE REVISED	FED. NO. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	BR4401	38	60
04952 - 353'-0" Unit - 68440						



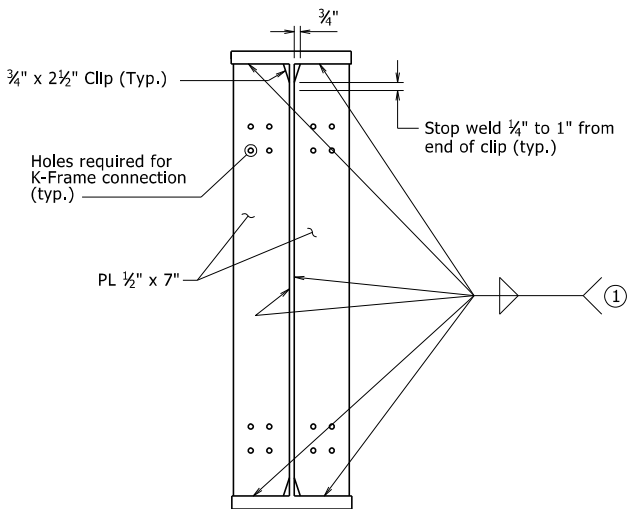
DETAILS OF K-FRAMES
1" = 1'-0"

② Dimensions vary at Bent 4. See "TYPICAL ROADWAY SECTION" and "TABLE OF VARIABLES", Dwg. No. 68436.

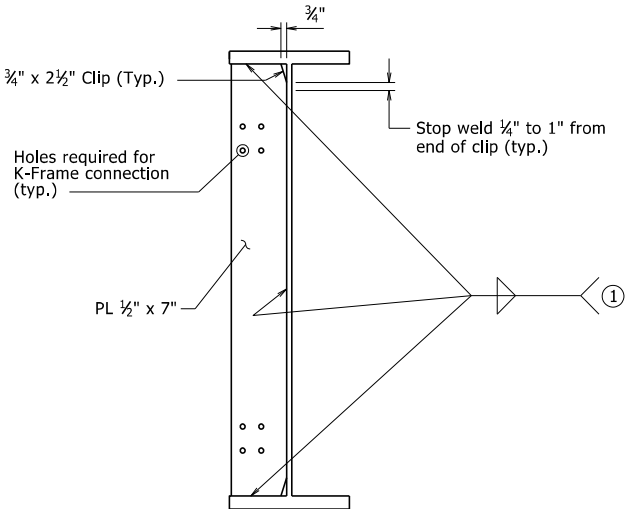


DETAIL OF BEARING STIFFENERS
1" = 1'-0"

① See "WELD TABLE" for min. weld size on Std. Dwg. No. 55007.

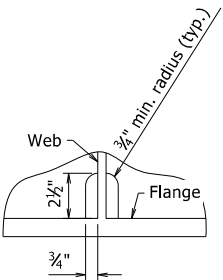


INTERIOR



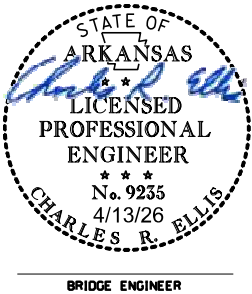
EXTERIOR

DETAILS OF CONNECTION PLATES
1" = 1'-0"



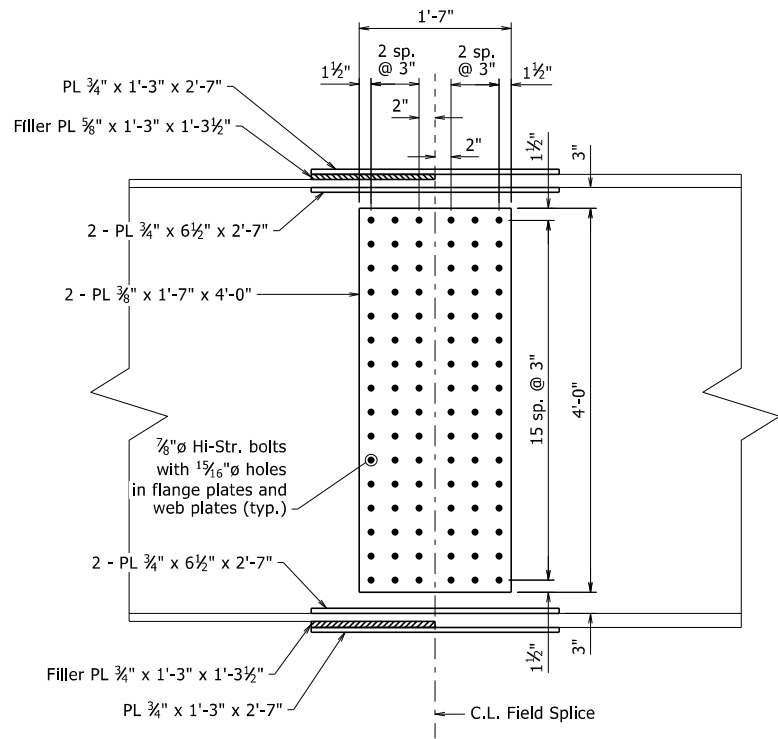
ALTERNATE CLIP DETAIL
No Scale

(For Bearing Stiffeners and K-Frame Connection Plates)



SHEET 5 OF 6
DETAILS OF 353'-0" CONTINUOUS
PLATE GIRDER UNIT
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.
DRAWN BY: DBS DATE: 05-29-2024 FILENAME: bbr4401_s1.dgn
CHECKED BY: NAC DATE: 06-11-2024 SCALE: AS NOTED
DESIGNED BY: NAC DATE: 03-2024
BRIDGE NO. 04592 DRAWING NO. 68440

DATE REVISED	DATE REVISED	FED. NO. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	BR4401	39	60
04952 - 353'-0" Unit - 68441						

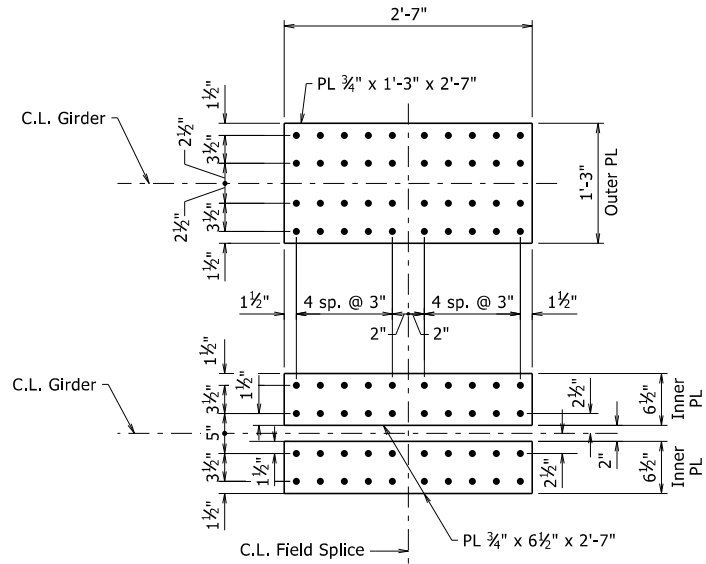


WEB SPLICE

Field Splice 1 and 3 Shown
Field Splice 2 and 4 Similar
1" = 1'-0"

Bolted field splices may be eliminated or shop welded splices may be substituted with the approval of the Engineer. Payment will be made on the basis of plan quantities.

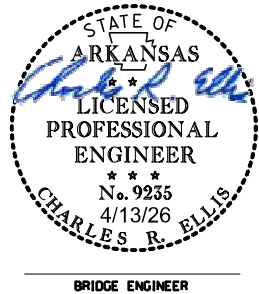
All Field Splice Plates shall be ASTM A709, Gr. 50W.



TOP & BOTTOM FLANGE SPLICE

1" = 1'-0"

DETAILS OF FIELD SPLICES



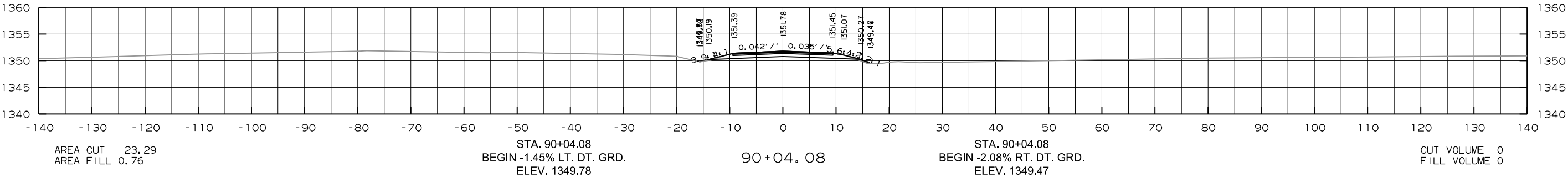
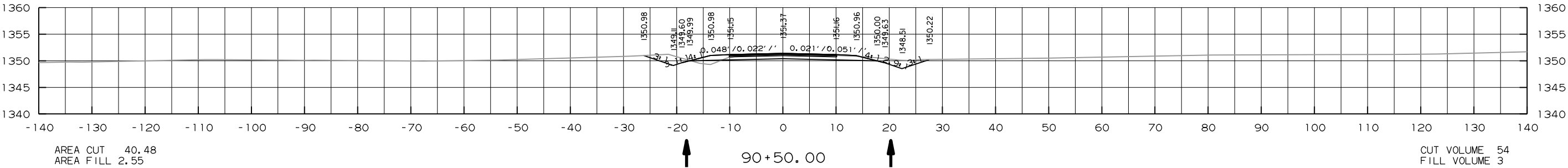
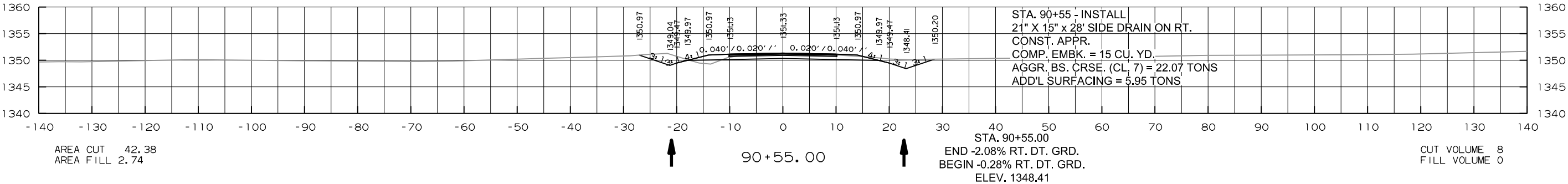
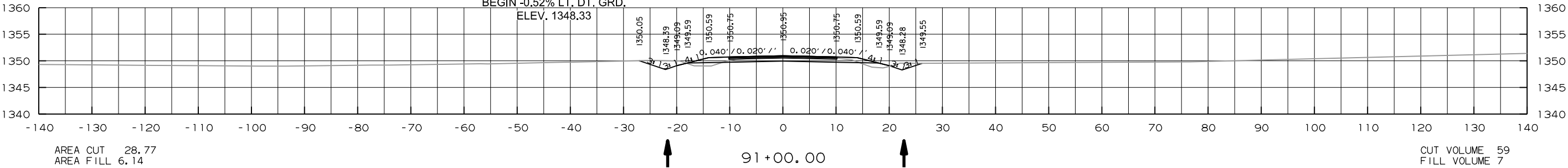
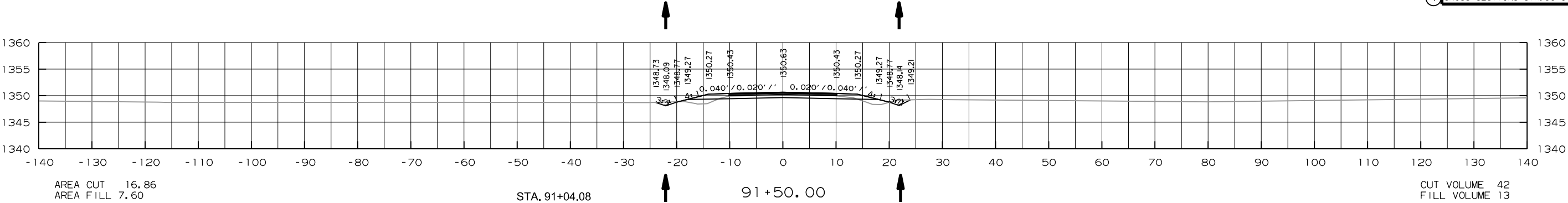
SHEET 6 OF 6
DETAILS OF 353'-0" CONTINUOUS
PLATE GIRDER UNIT

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

DRAWN BY: DBS DATE: 05-29-2024 FILENAME: bbr4401_s1.dgn
CHECKED BY: NAC DATE: 06-11-2024 SCALE: AS NOTED
DESIGNED BY: NAC DATE: 03-2024
BRIDGE NO. 04952 DRAWING NO. 68441

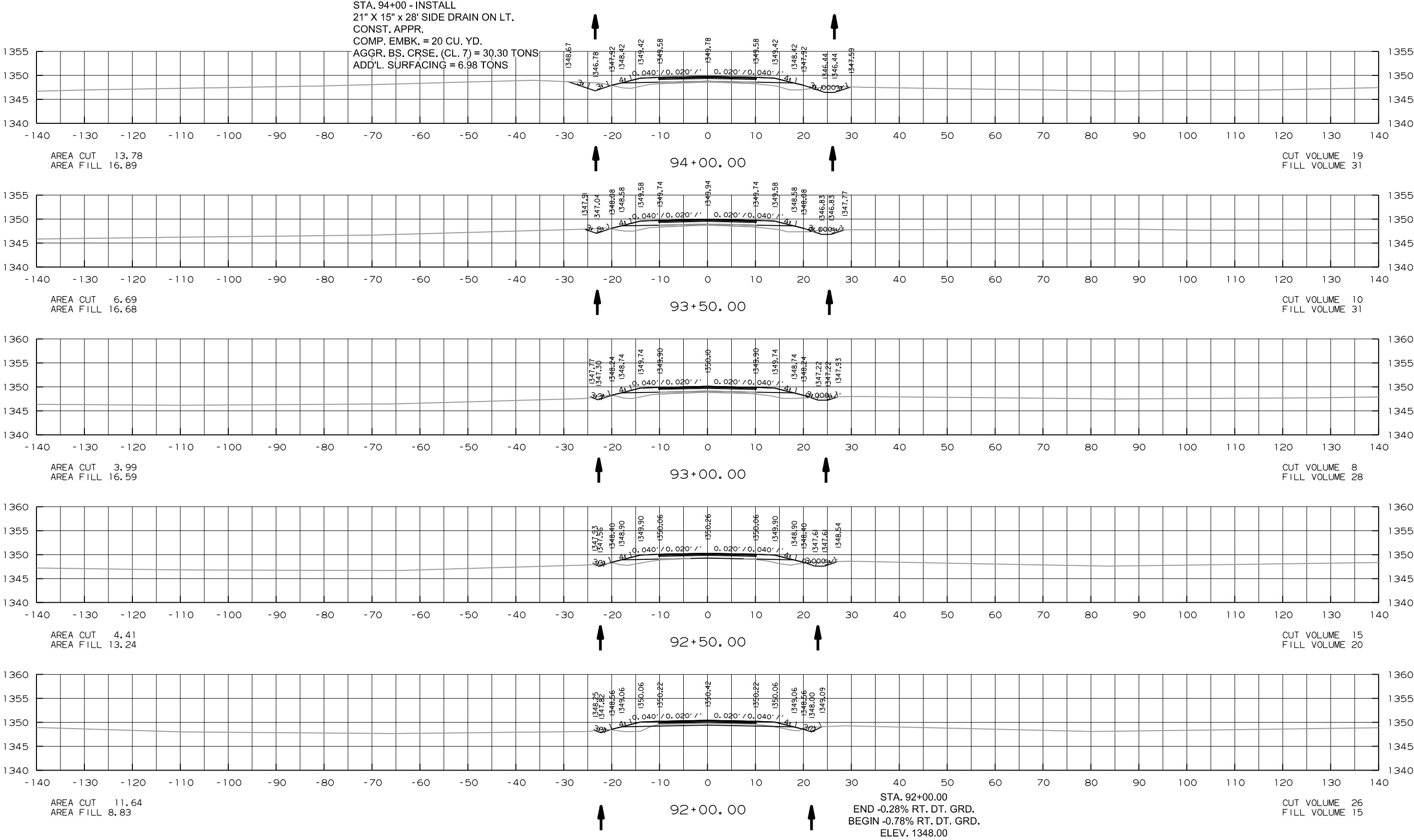
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BR4401	40	60

4 CROSS SECTIONS STA. 90+04.08 TO 91+50.00

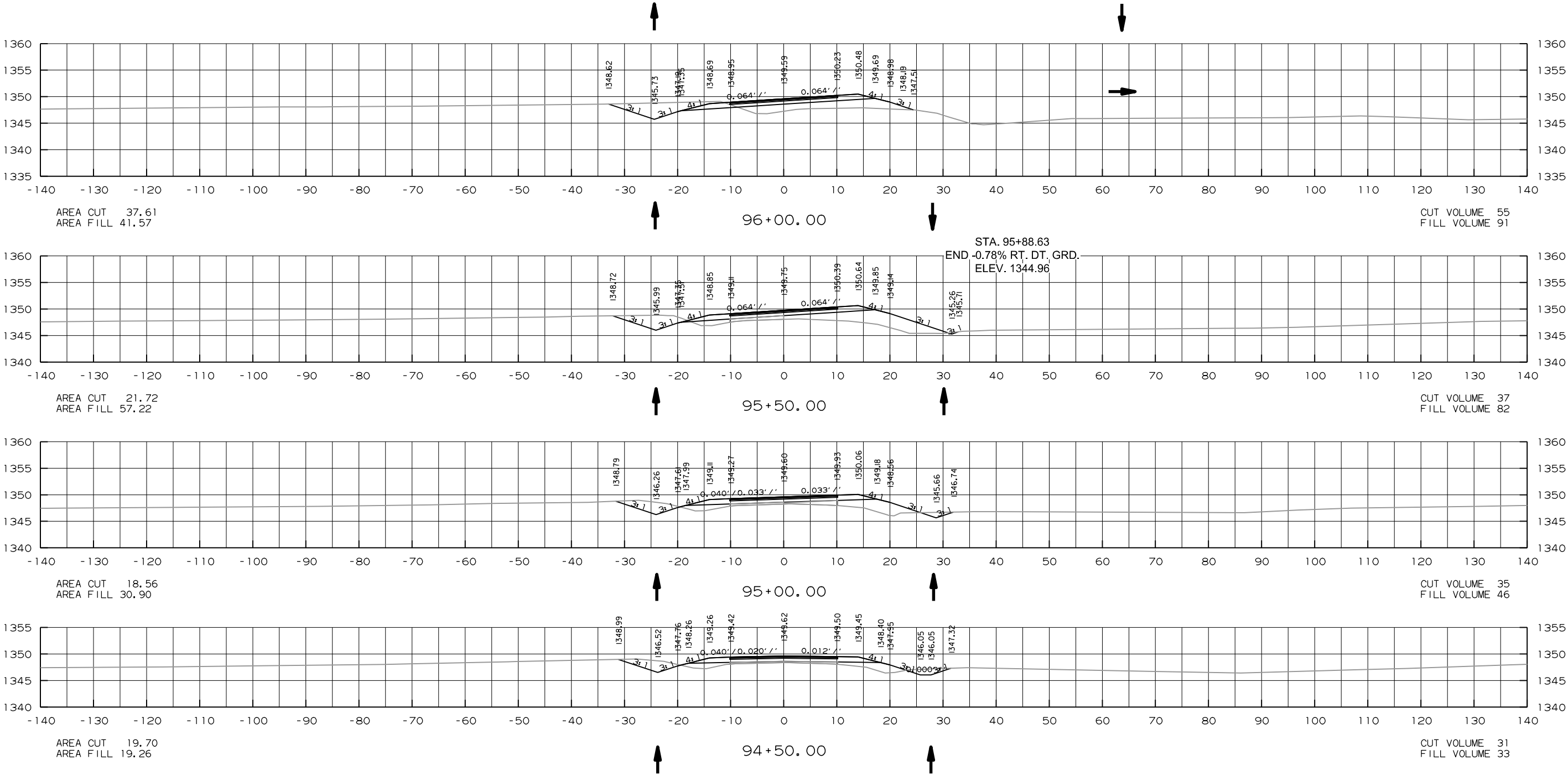


DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BR4401	41	60

4 CROSS SECTIONS STA. 92+00.00 TO 94+00.00

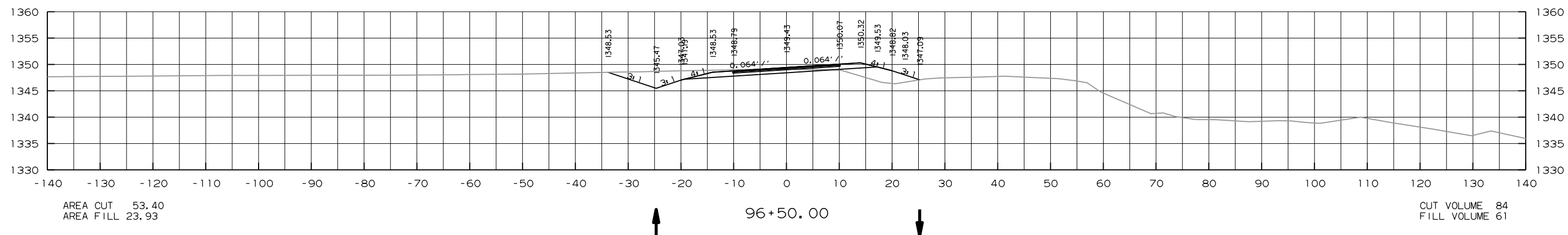
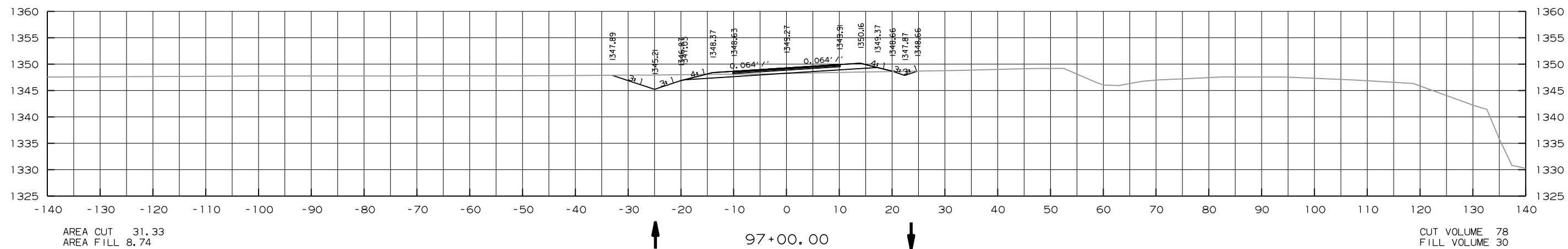
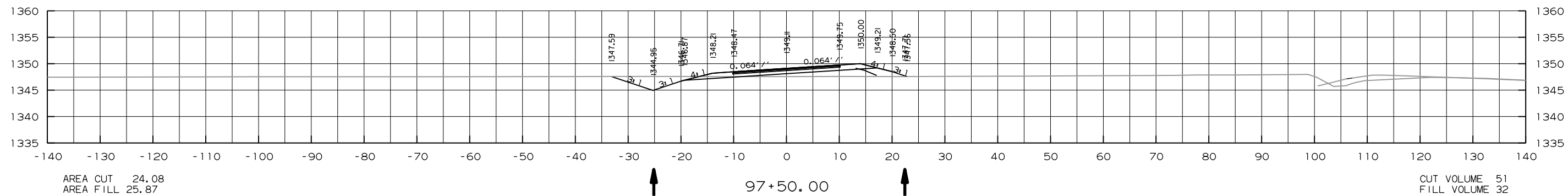
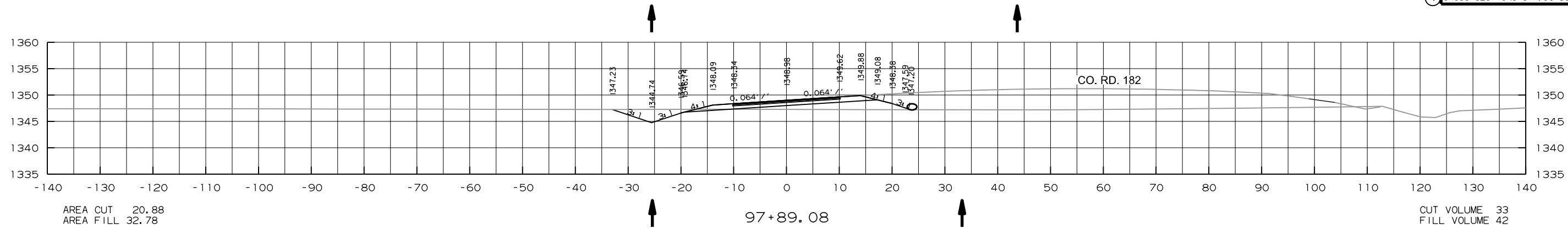


DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BR4401	42	60
				4	CROSS SECTIONS STA. 94+50.00 TO 96+00.00			



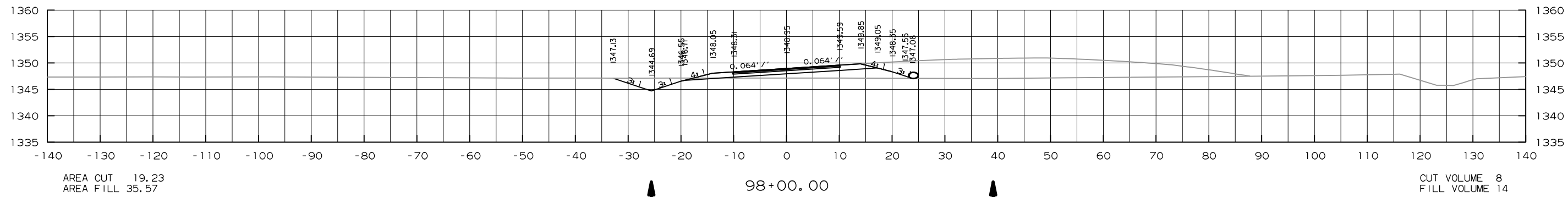
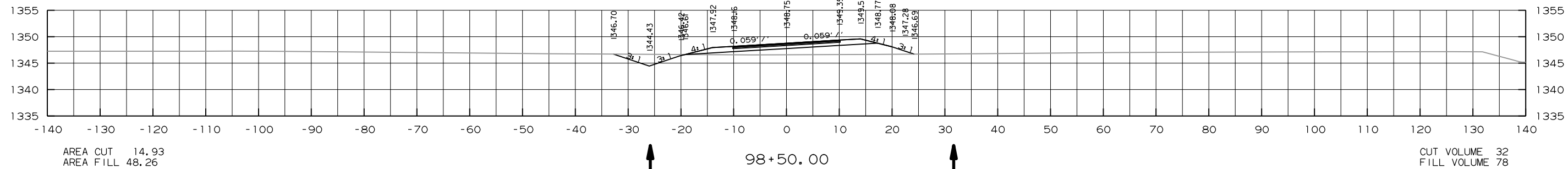
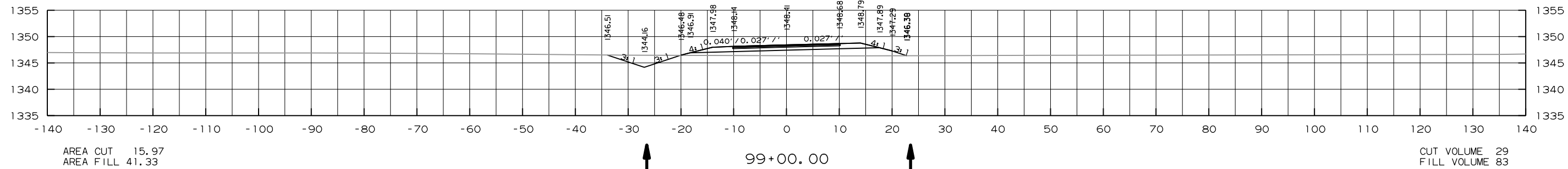
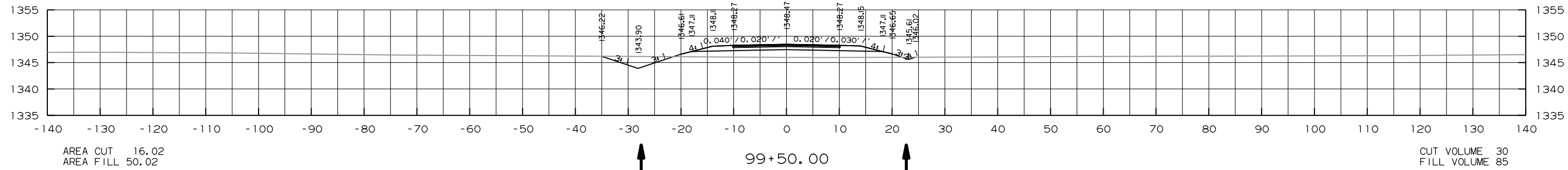
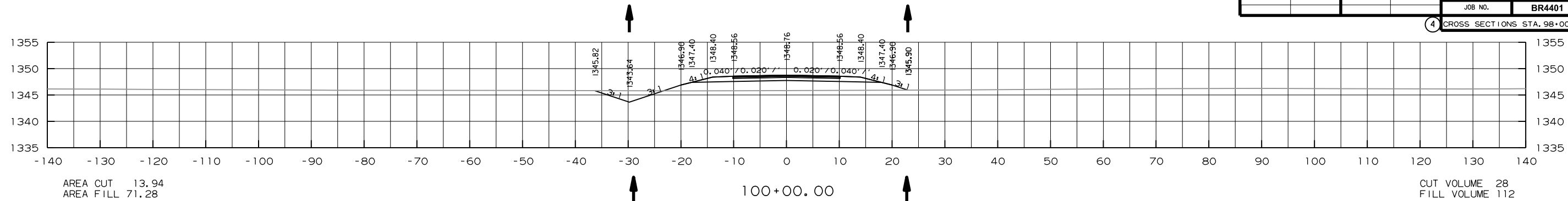
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				6	ARK.			
				JOB NO.		BR4401	43	60

4 CROSS SECTIONS STA. 96+50.00 TO 97+89.08



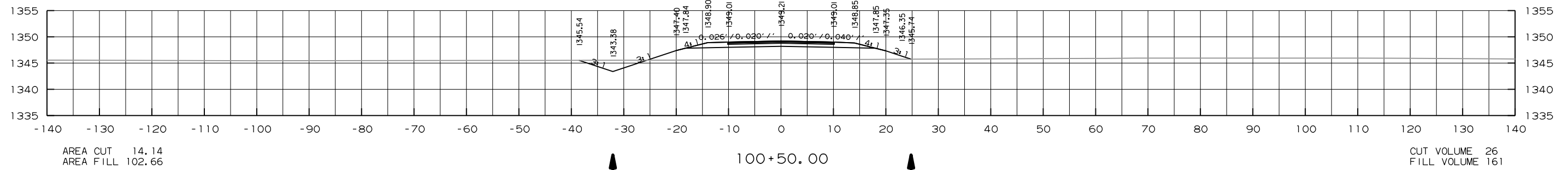
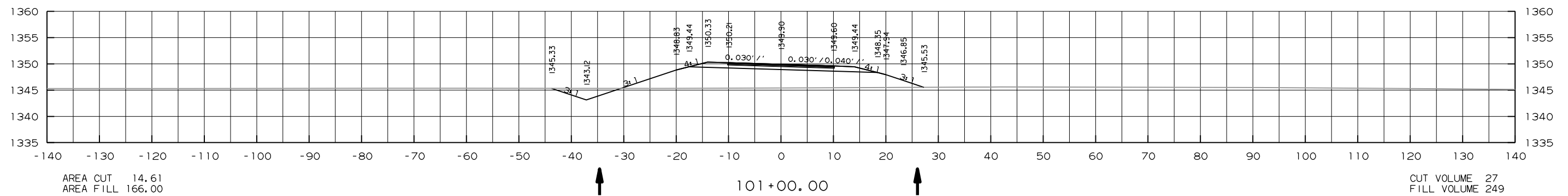
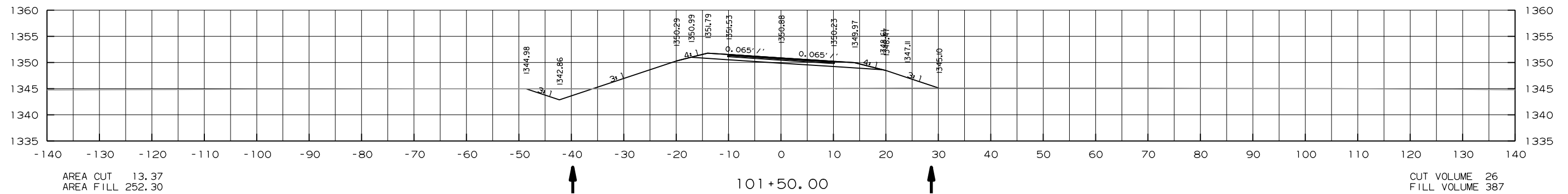
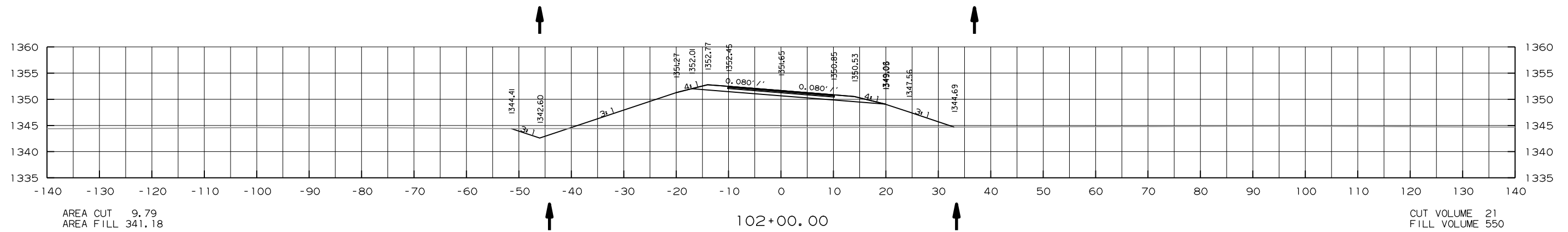
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BR4401	44	60

4 CROSS SECTIONS STA. 98+00.00 TO 100+00.00



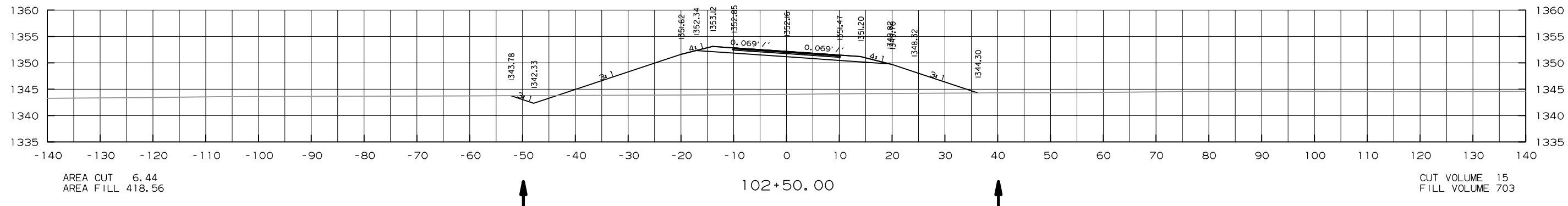
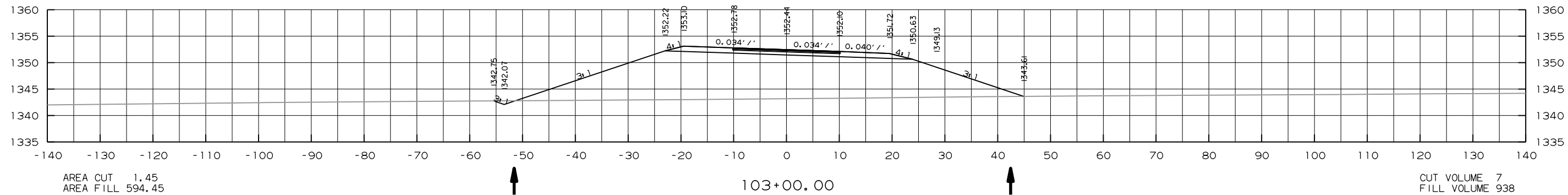
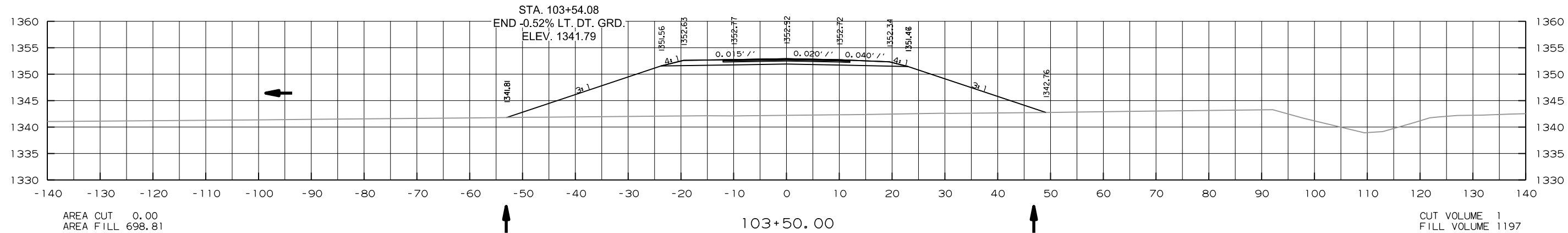
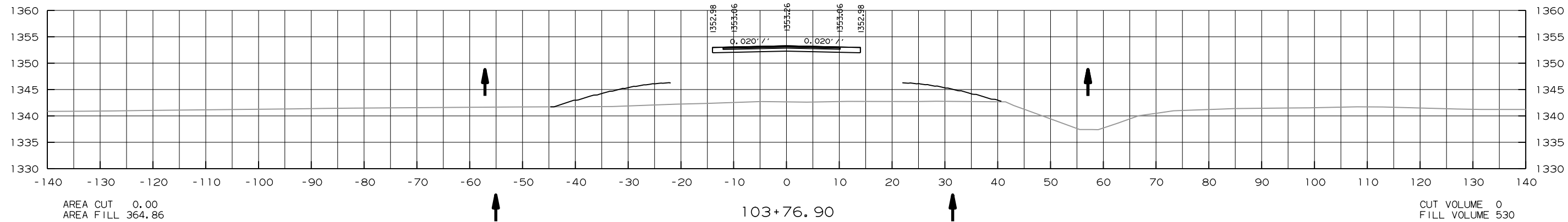
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BR4401	45	60

4 CROSS SECTIONS STA. 100+50.00 TO 102+00.00



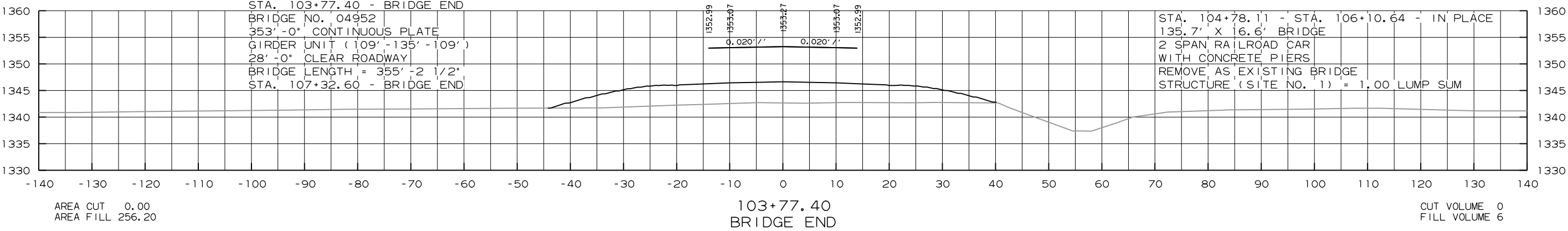
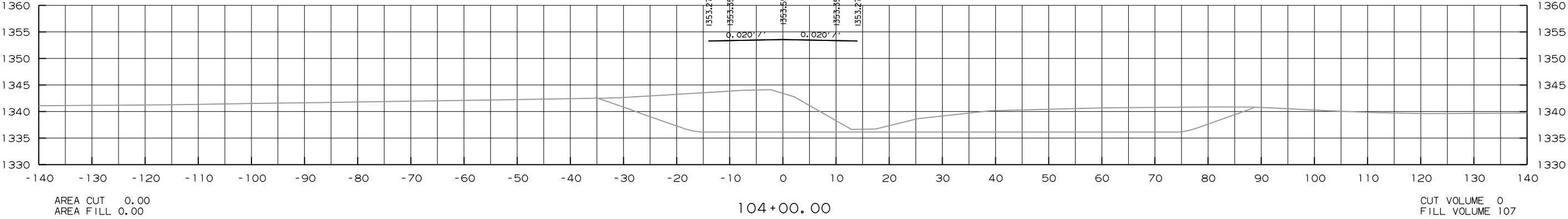
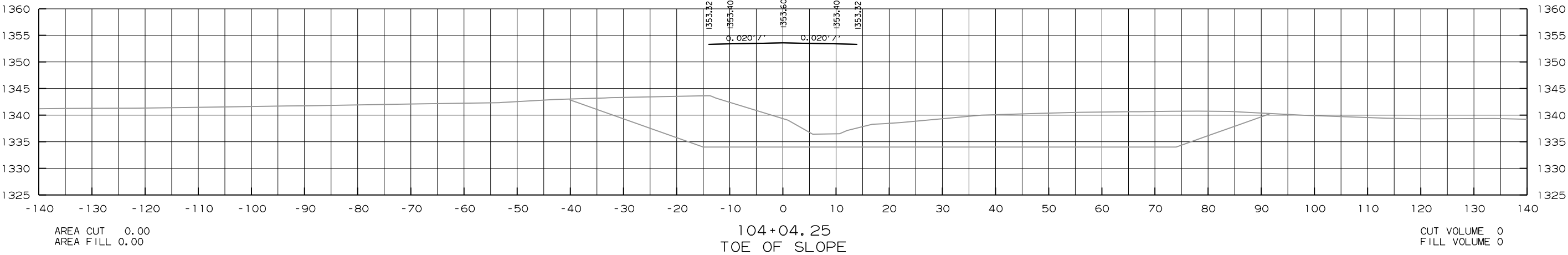
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BR4401	46	60

4 CROSS SECTIONS STA. 102+50.00 TO 103+76.90



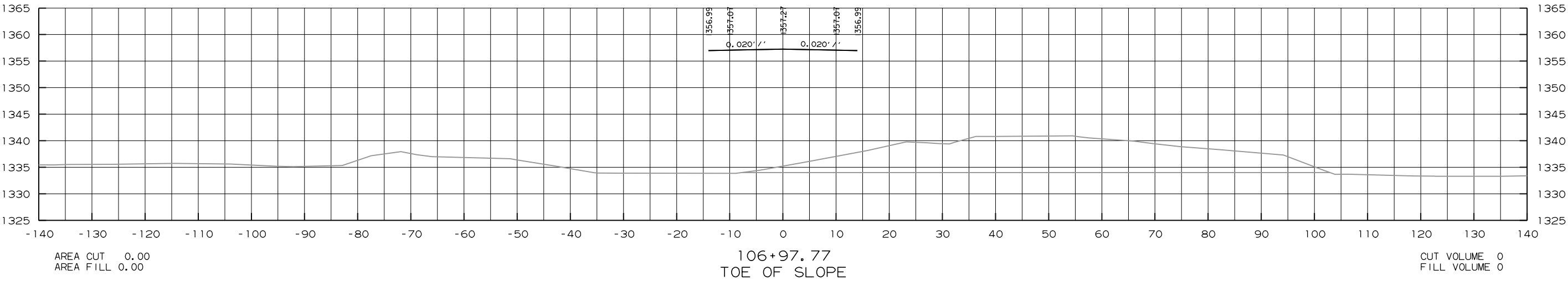
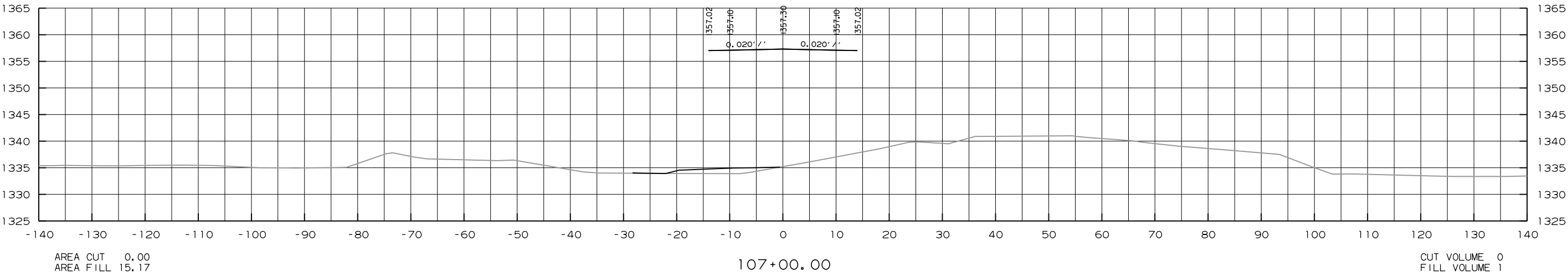
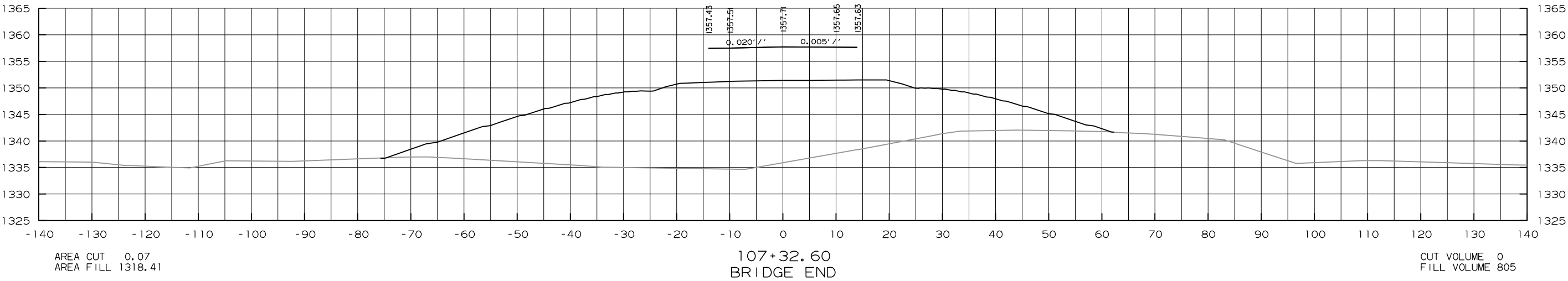
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BR4401	47	60

4 CROSS SECTIONS STA. 103+77.40 TO 104+04.25



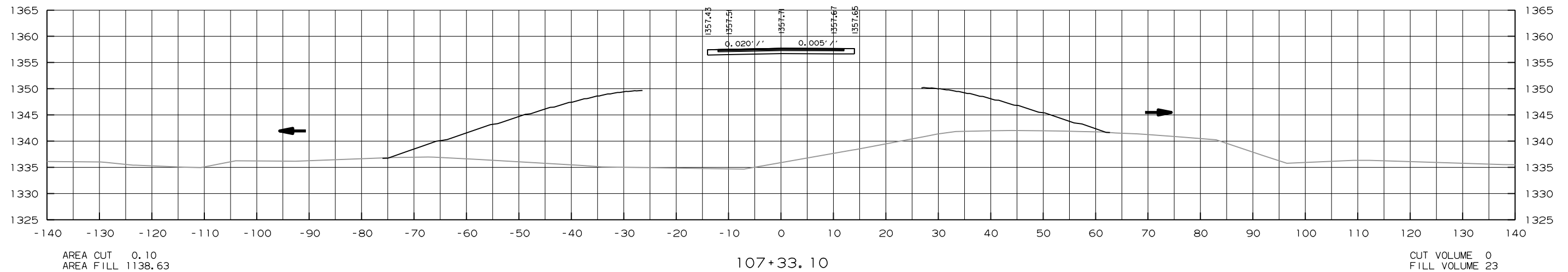
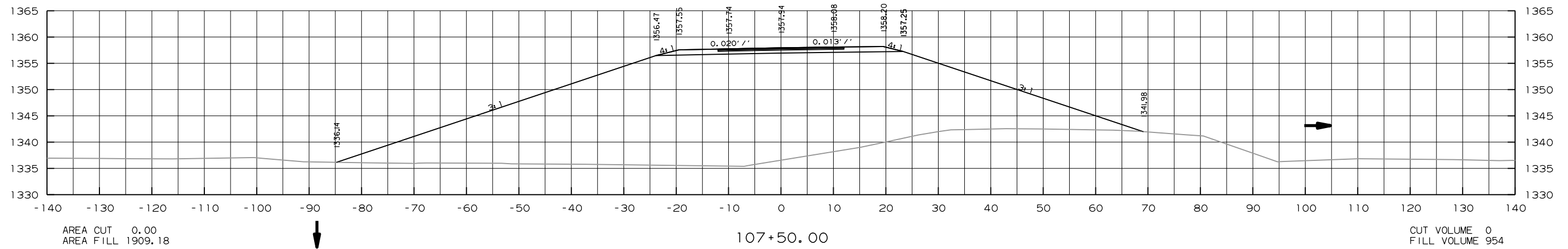
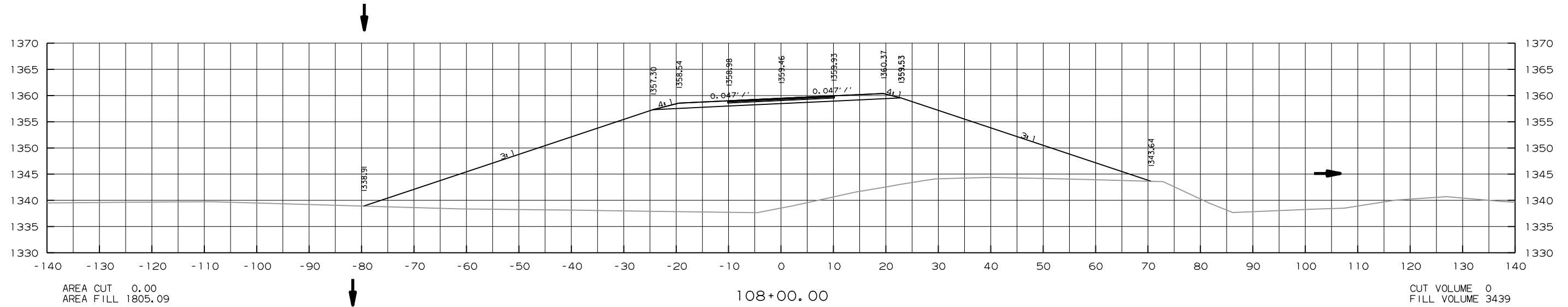
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				6	ARK.			
				JOB NO.		BR4401	48	60

4 CROSS SECTIONS STA. 106+97.77 TO 107+32.60



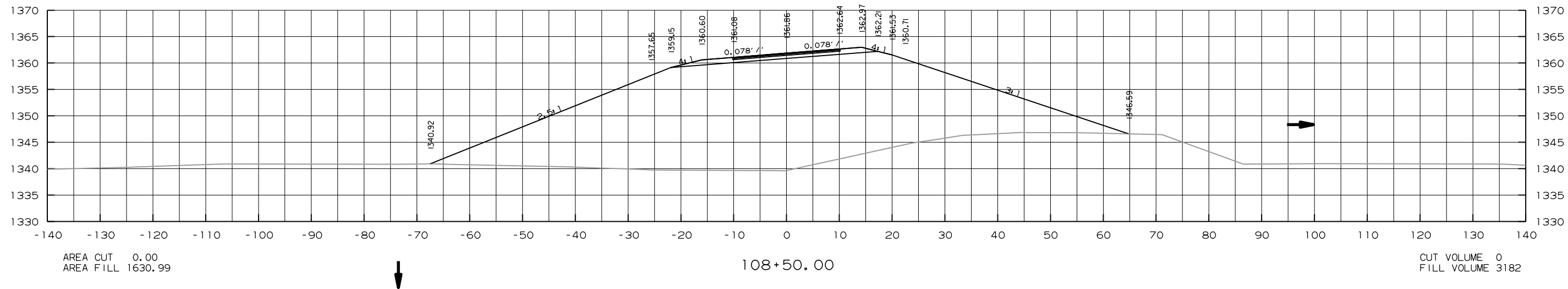
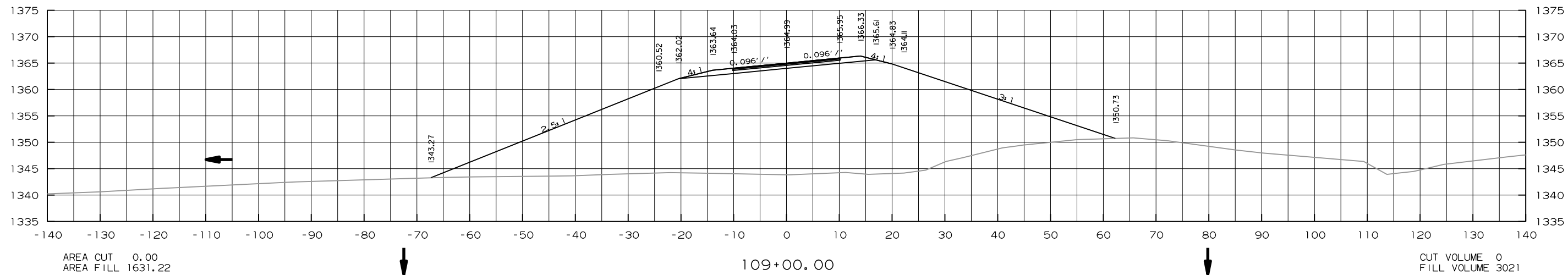
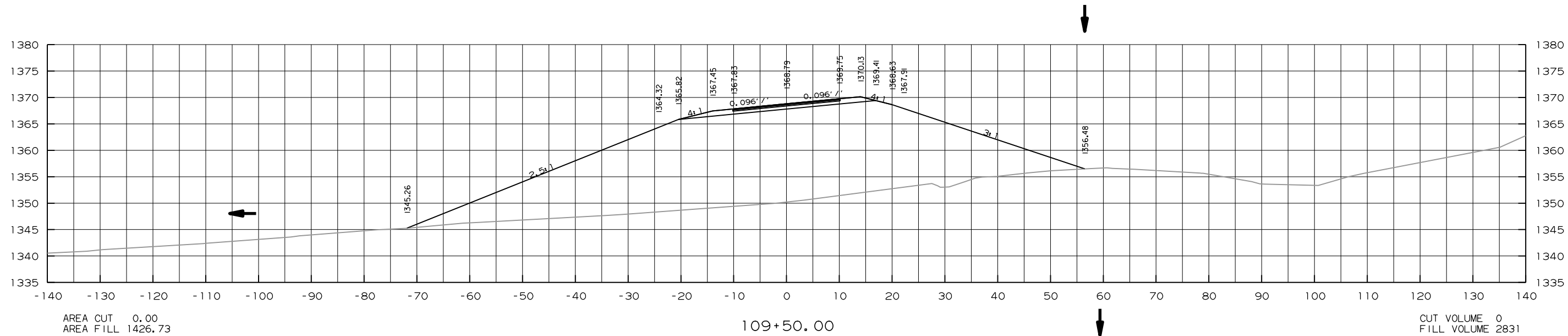
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BR4401	49	60

4 CROSS SECTIONS STA. 107+33.10 TO 108+00.00



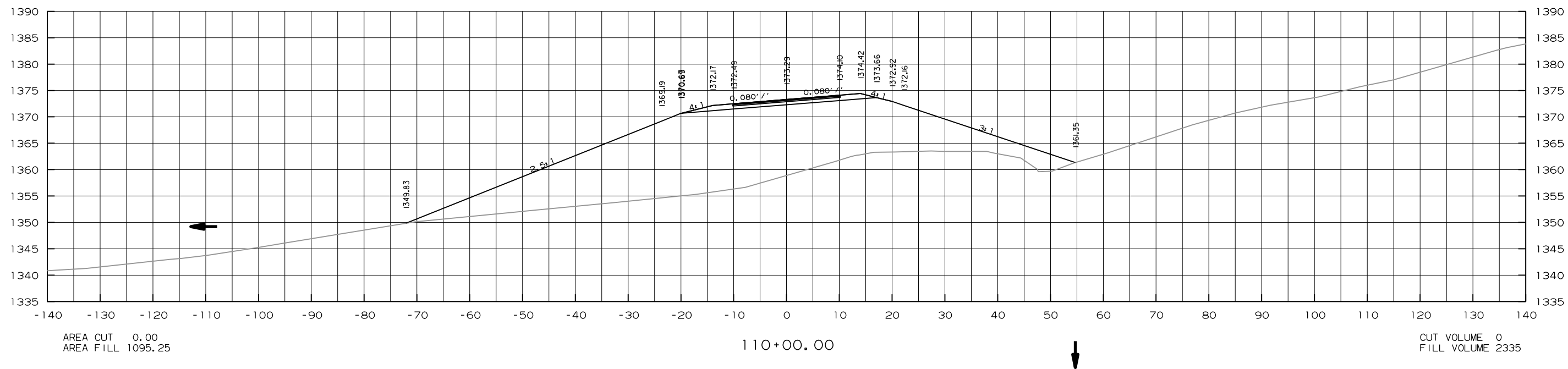
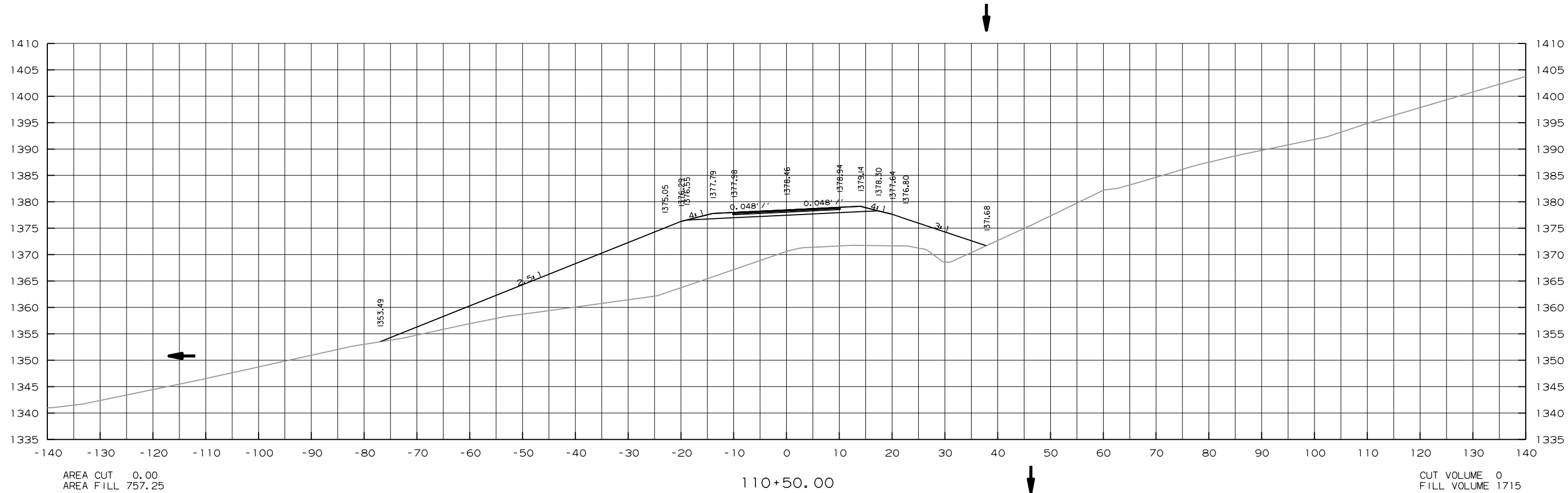
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
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				JOB NO.		BR4401	50	60

4 CROSS SECTIONS STA. 108+50.00 TO 109+50.00



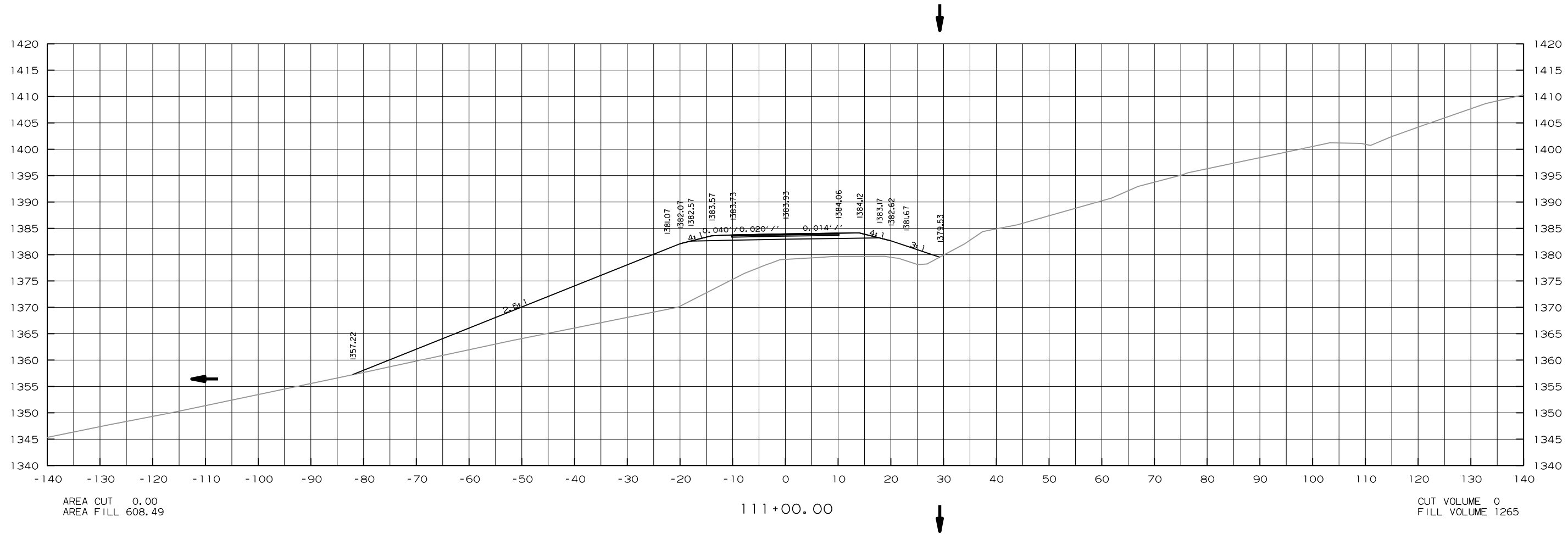
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				JOB NO.		BR4401	51	60

4 CROSS SECTIONS STA. 110+00.00 TO 110+50.00



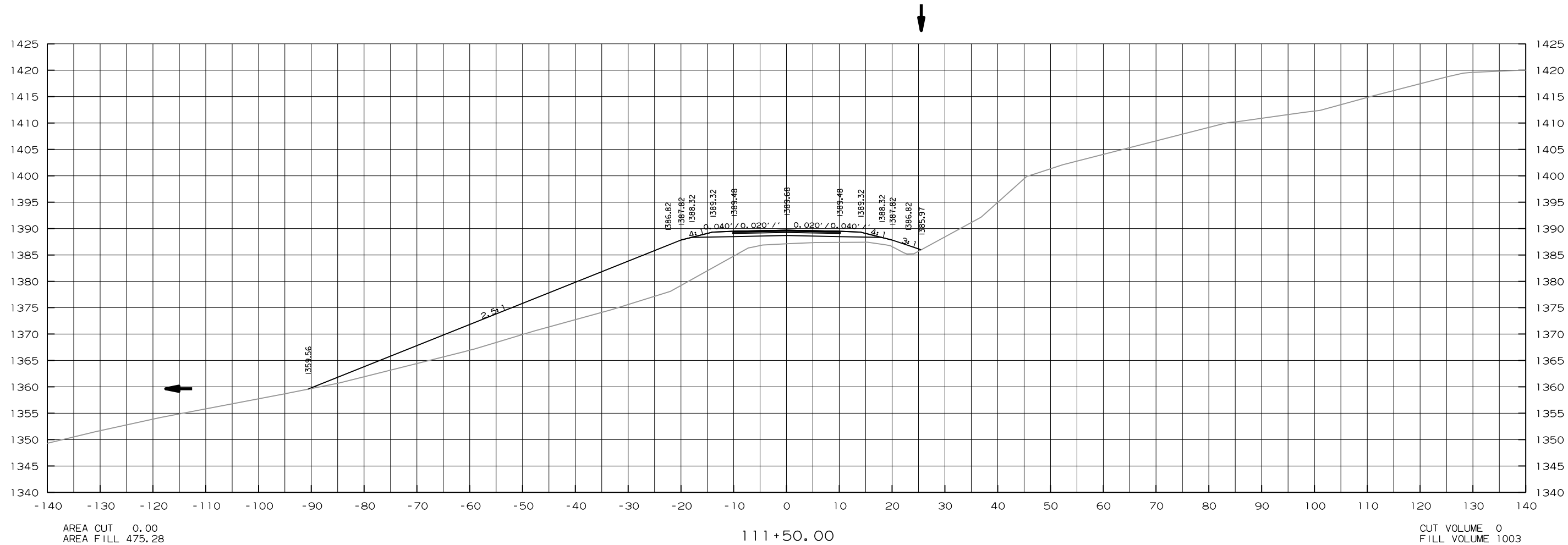
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				JOB NO.		BR4401	52	60

4 CROSS SECTIONS STA. 111+00.00 TO 111+00.00



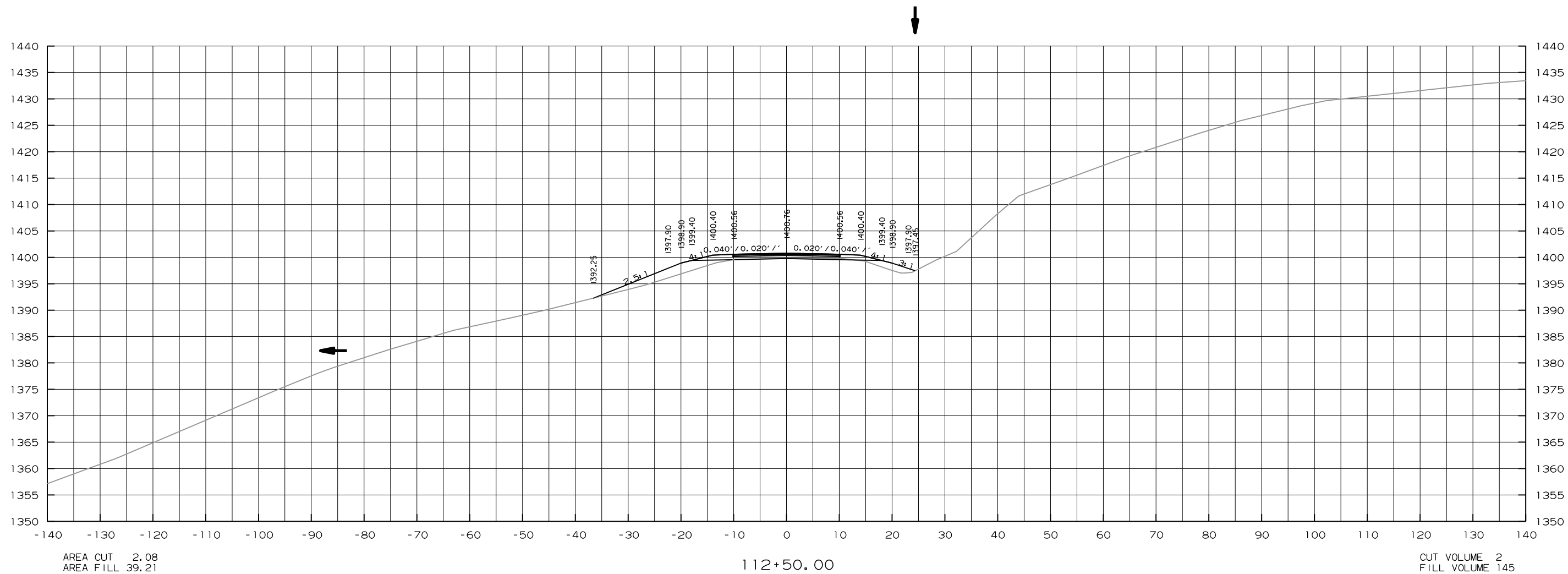
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				JOB NO.		BR4401	53	60

4 CROSS SECTIONS STA. 111+50.00 TO 111+50.00



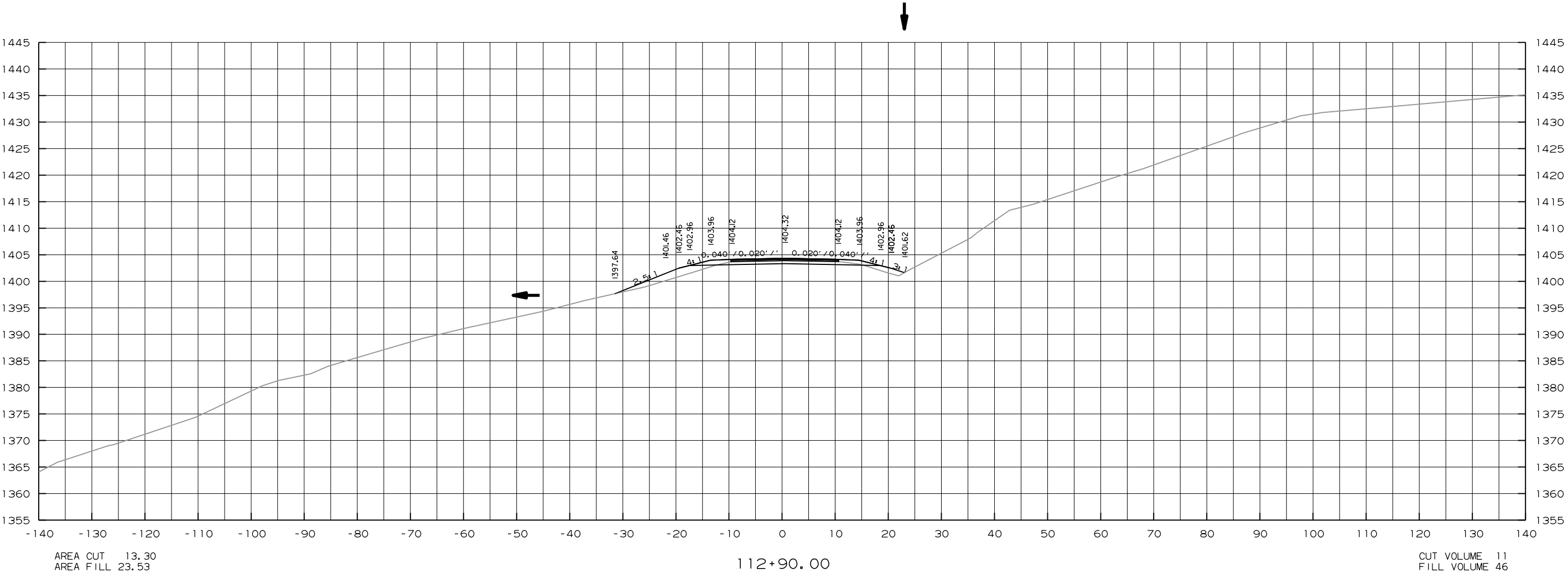
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				JOB NO.		BR4401	55	60

4 CROSS SECTIONS STA. 112+50.00 TO 112+50.00



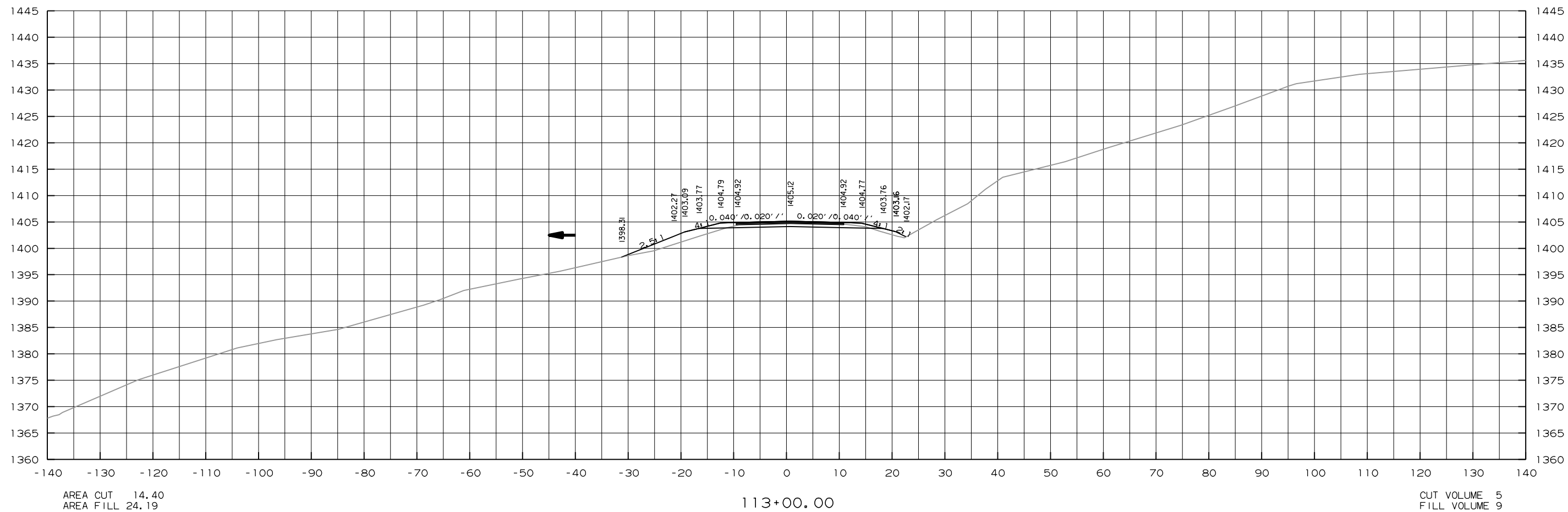
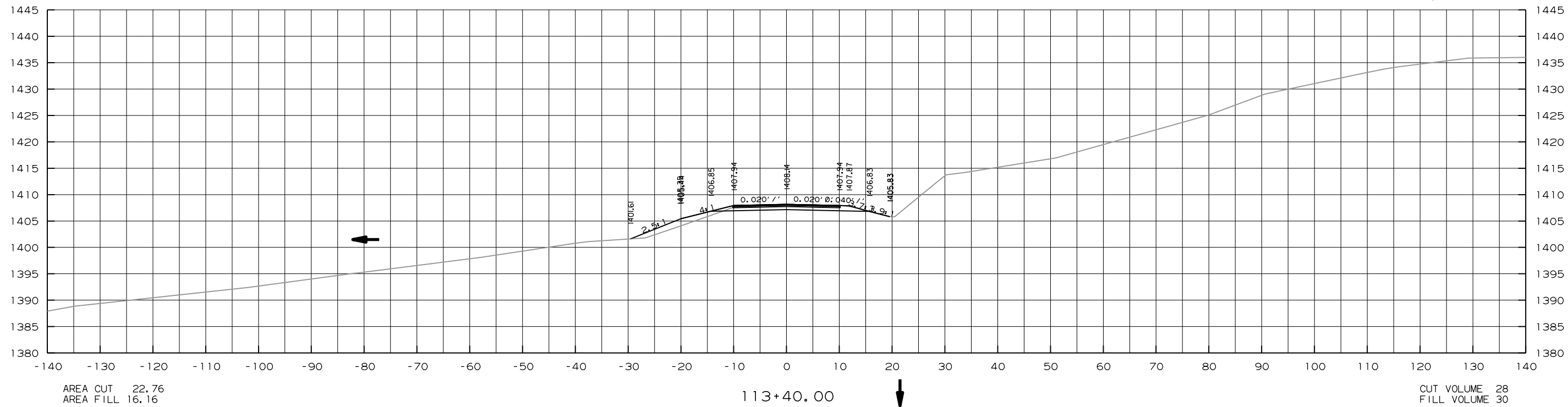
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				6	ARK.			
				JOB NO.		BR4401	56	60

4 CROSS SECTIONS STA. 112+90.00 TO 112+90.00



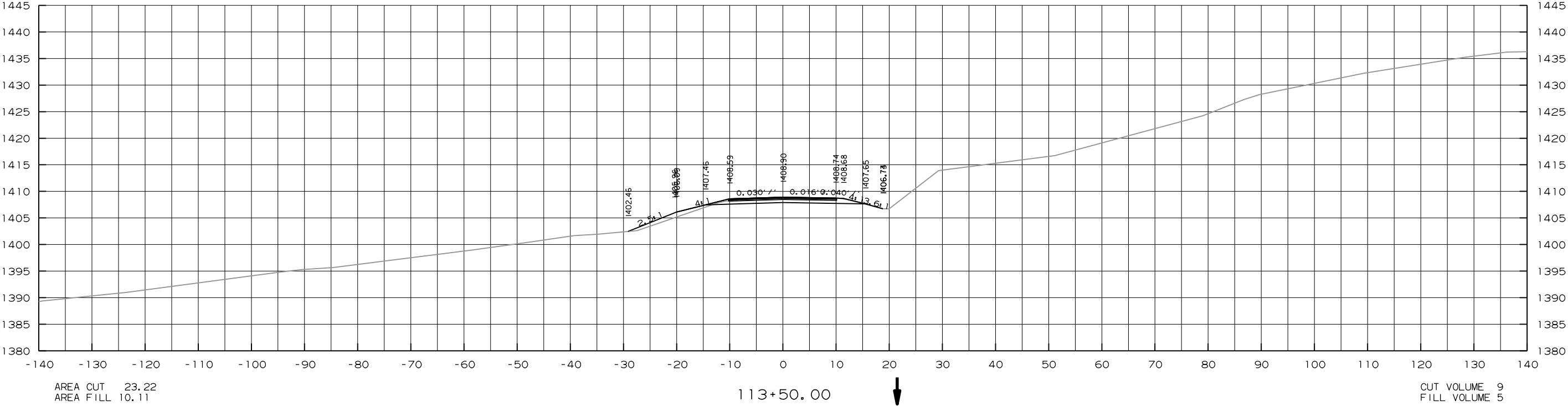
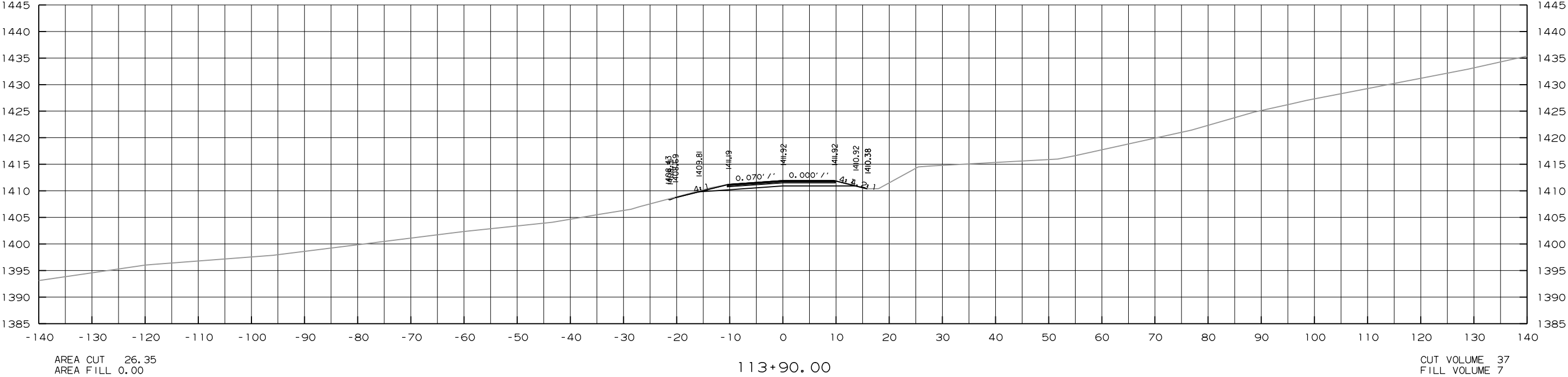
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				JOB NO.		BR4401	57	60

4 CROSS SECTIONS STA. 113+00.00 TO 113+40.00



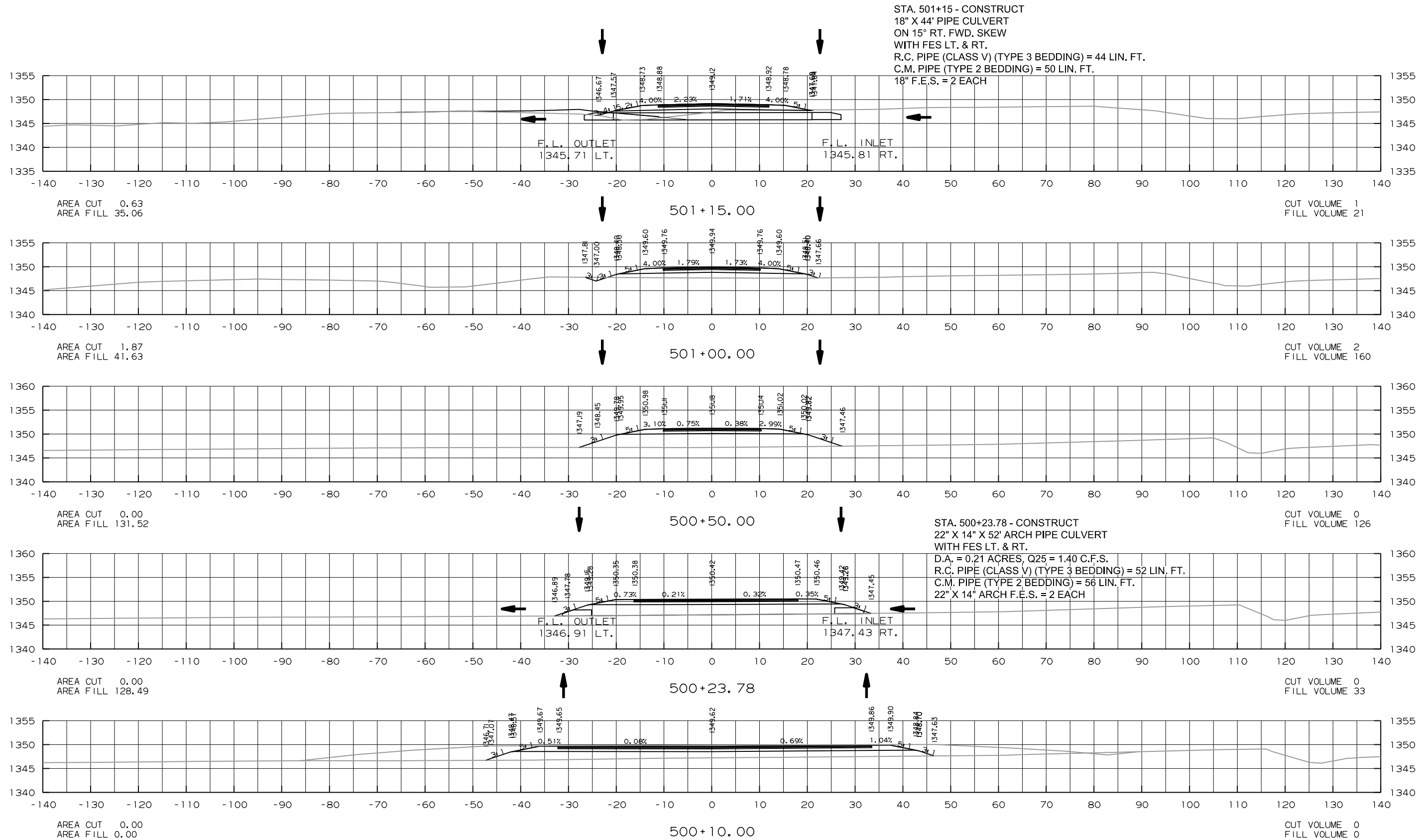
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
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				JOB NO.		BR4401	58	60

4 CROSS SECTIONS STA. 113+50.00 TO 113+90.00



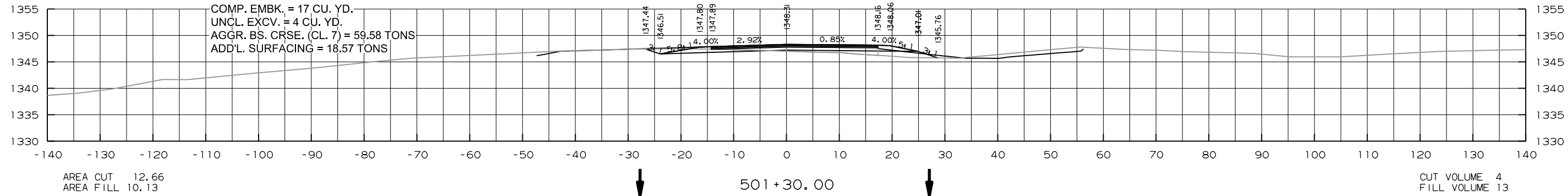
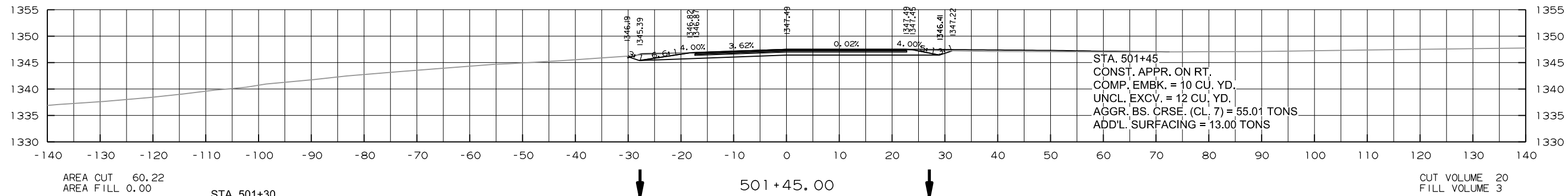
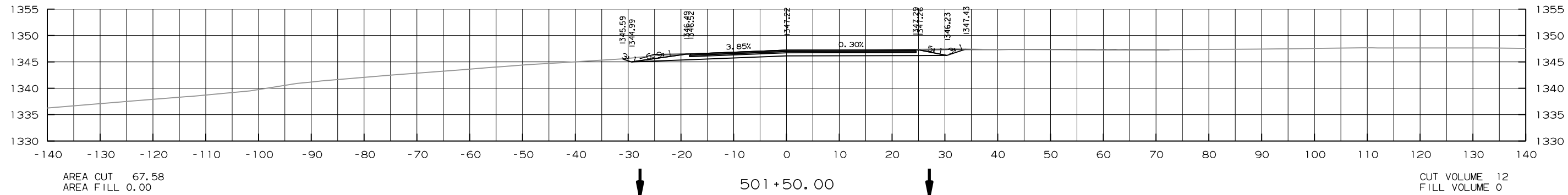
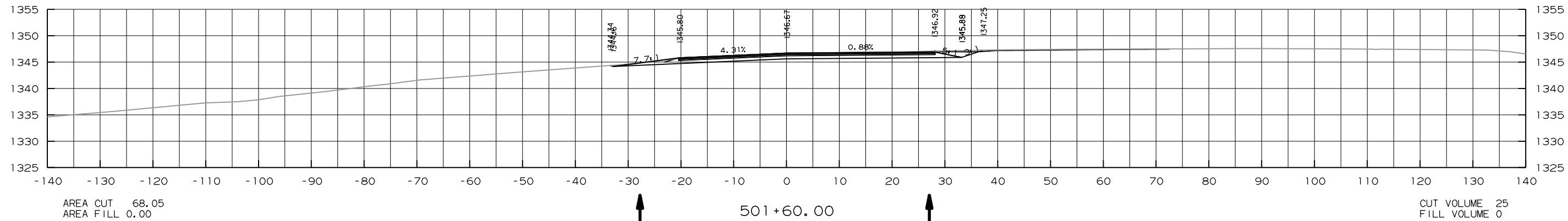
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				JOB NO.		BR4401	59	60

4 CROSS SECTIONS STA. 500+10.00 TO 501+15.00

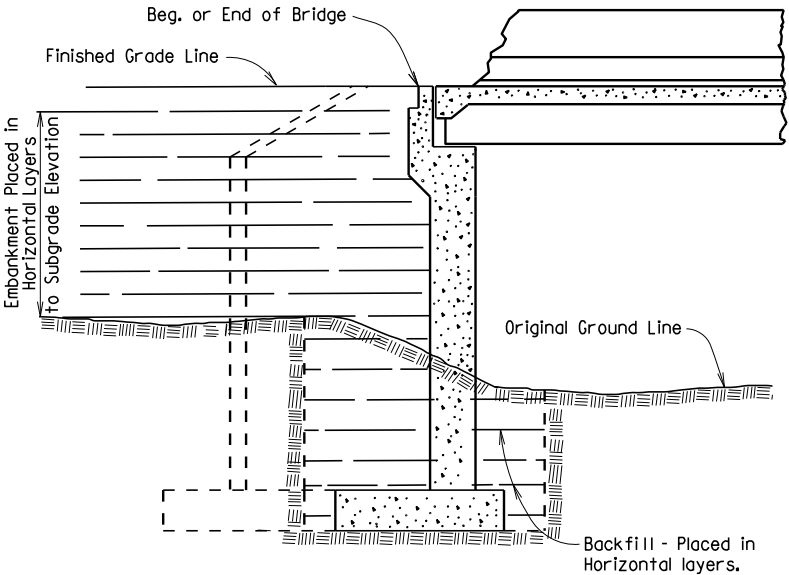


DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
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				JOB NO.		BR4401	60	60

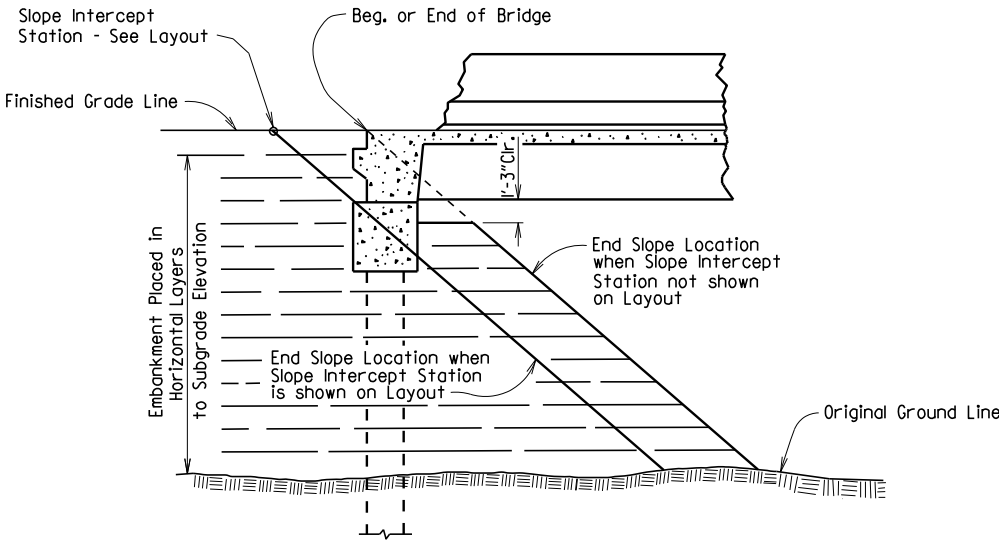
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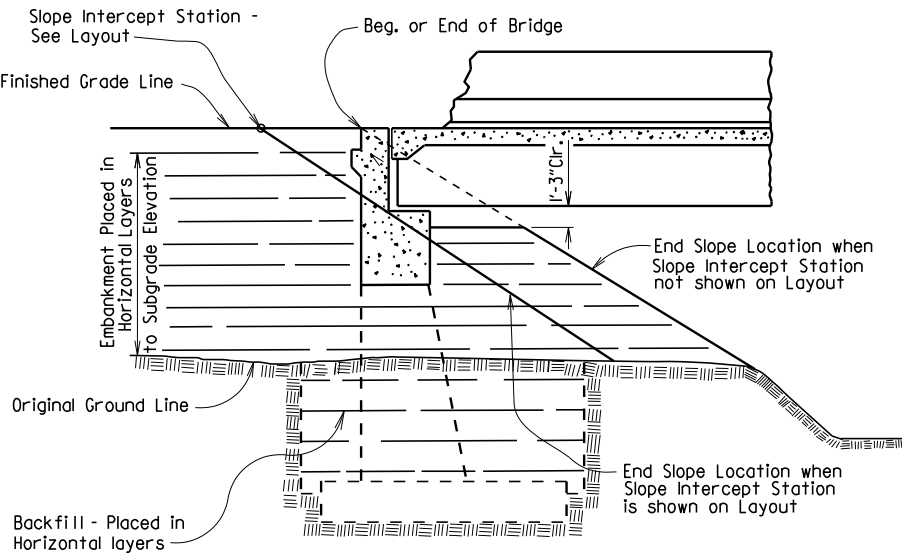
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				6	ARK.			
				JOB NO.				
				EMBANKMENT & BACKFILL			55000	



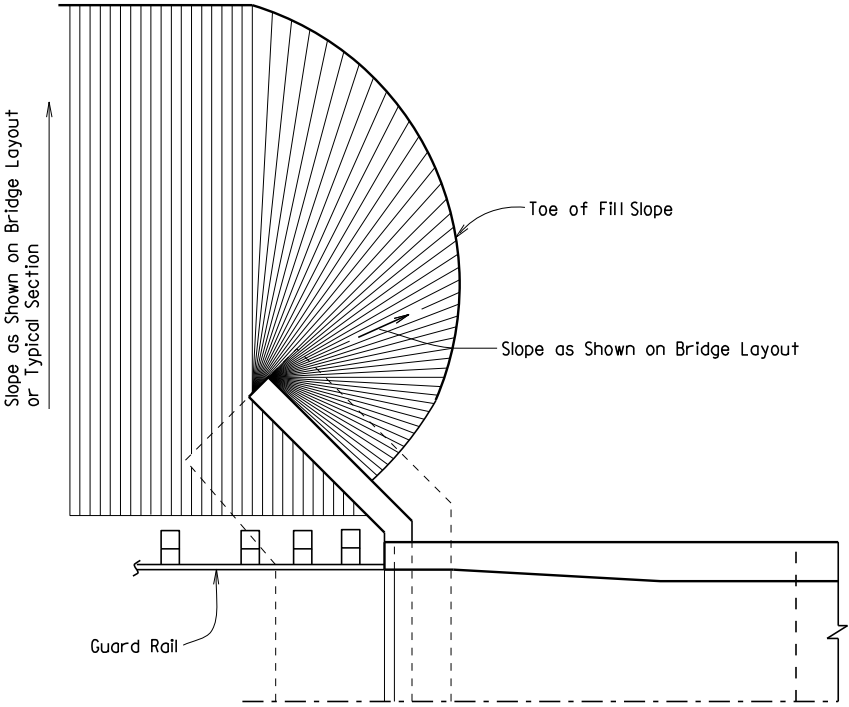
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL
AT VERTICAL WALL ABUTMENTS



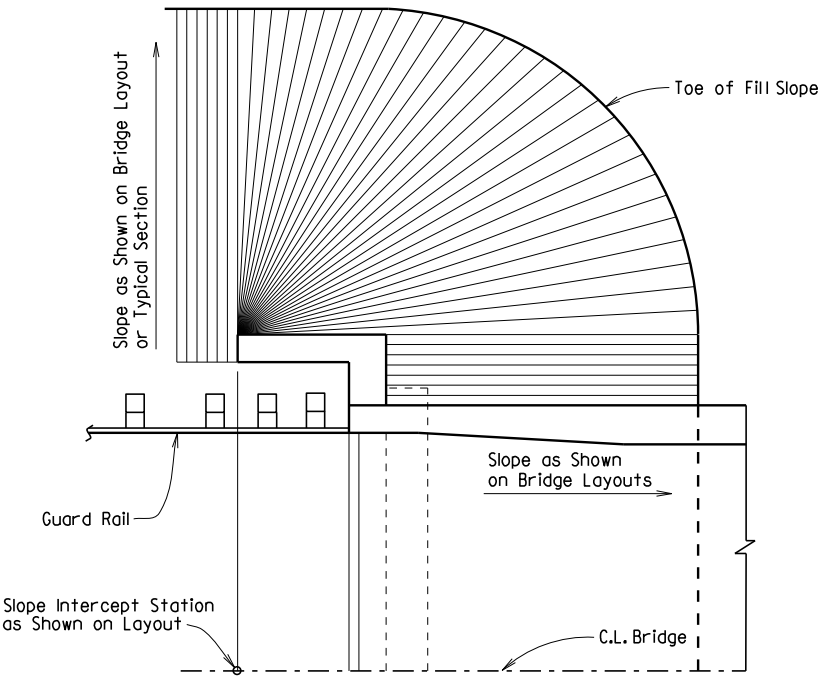
EMBANKMENT CONSTRUCTION AT SPILL-THROUGH
PILE END BENTS



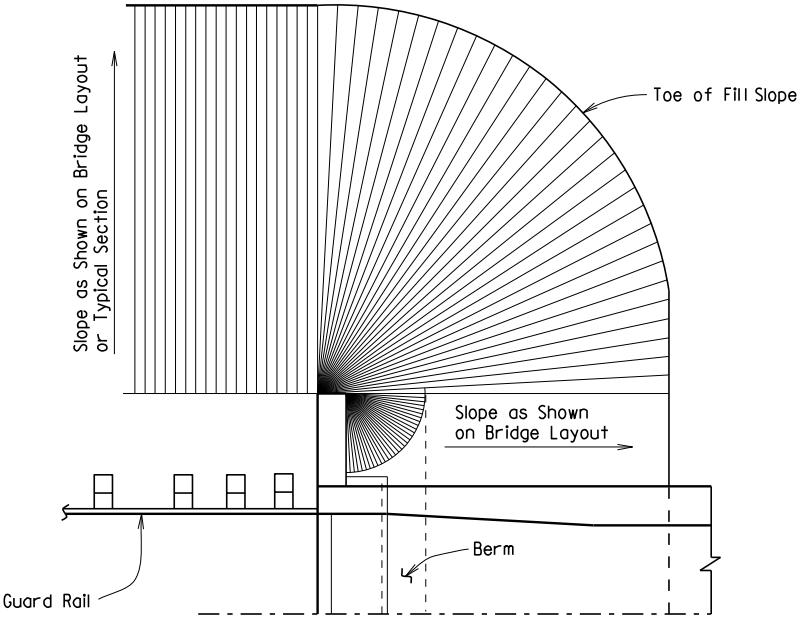
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL
AT SPILL-THROUGH END BENTS



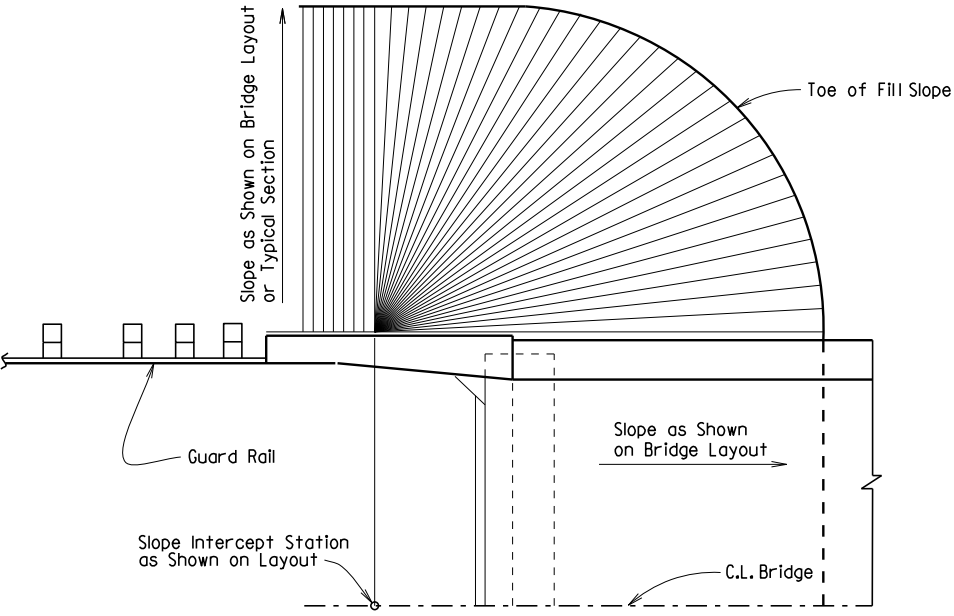
VERTICAL WALL ABUTMENTS



SPILL-THROUGH END BENTS WITH TURNBACK WING



SPILL-THROUGH END BENTS WITH STUB WING



SPILL-THROUGH END BENTS WITH TRANSITION WING

METHOD OF DETERMINING FILL SLOPE LOCATION AT BRIDGE ENDS

GENERAL NOTES

The Bridge End Embankment shall be defined as a section of embankment, not less than 20 feet long adjacent to the bridge end, together with the side slopes and slopes under the bridge end including around the end of wingwalls. Embankment adjacent to structures shall be constructed in 6 inch horizontal layers (loose measure) and compacted by the use of mechanical equipment to the satisfaction of the Engineer. Refer to Subsections 210.09, 210.10 and 801.08 for construction requirements.

STANDARD DETAILS FOR EMBANKMENT CONSTRUCTION AND BACKFILL AT BRIDGE ENDS

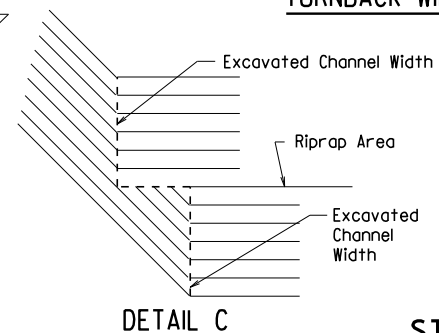
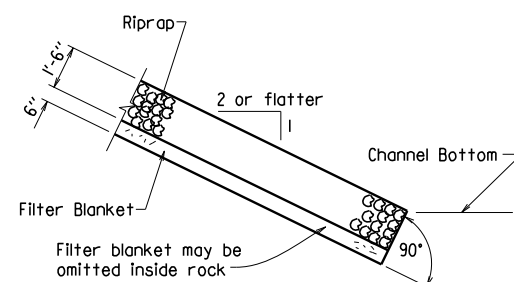
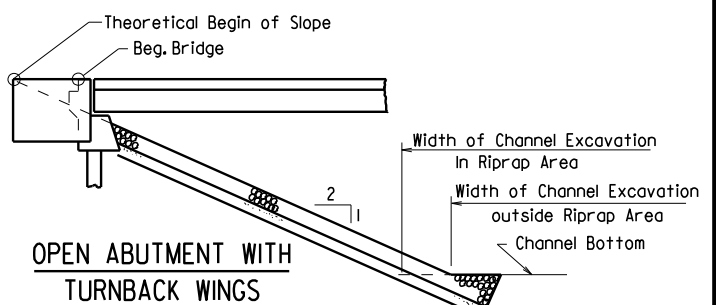
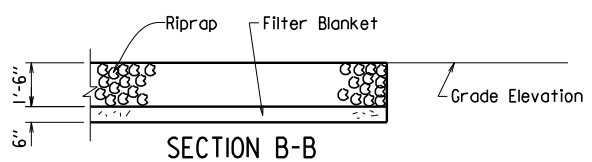
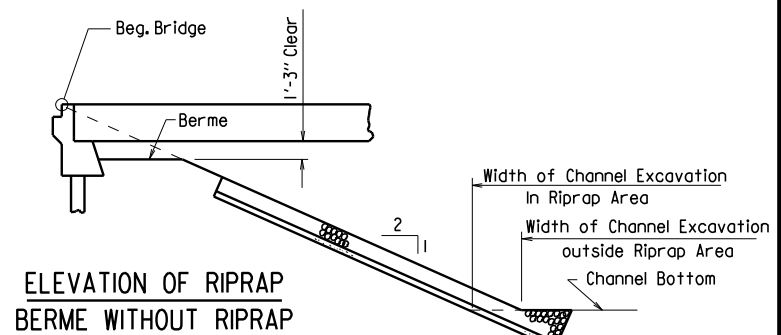
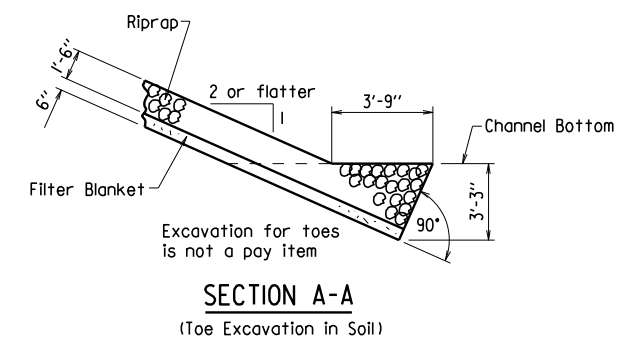
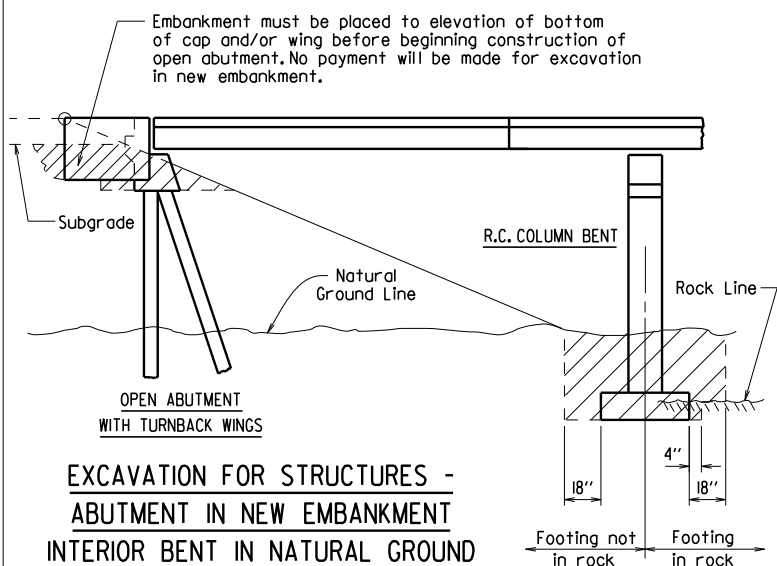
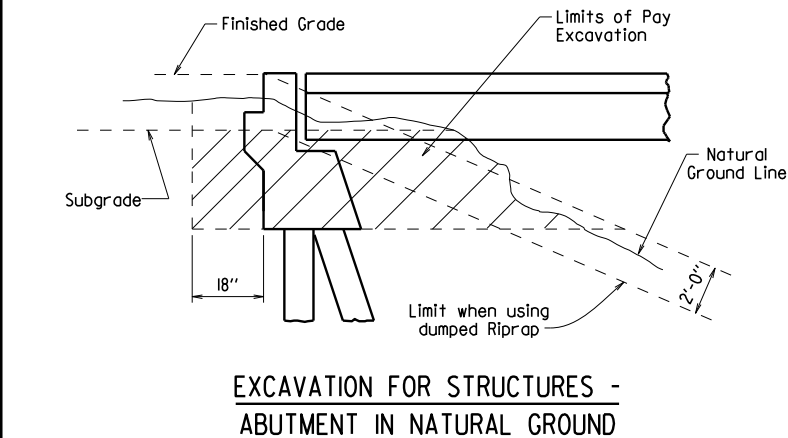
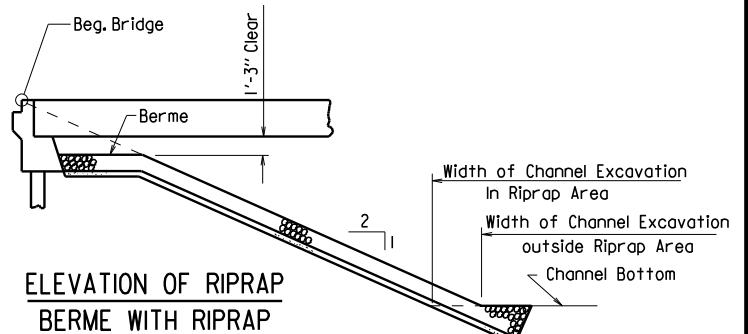
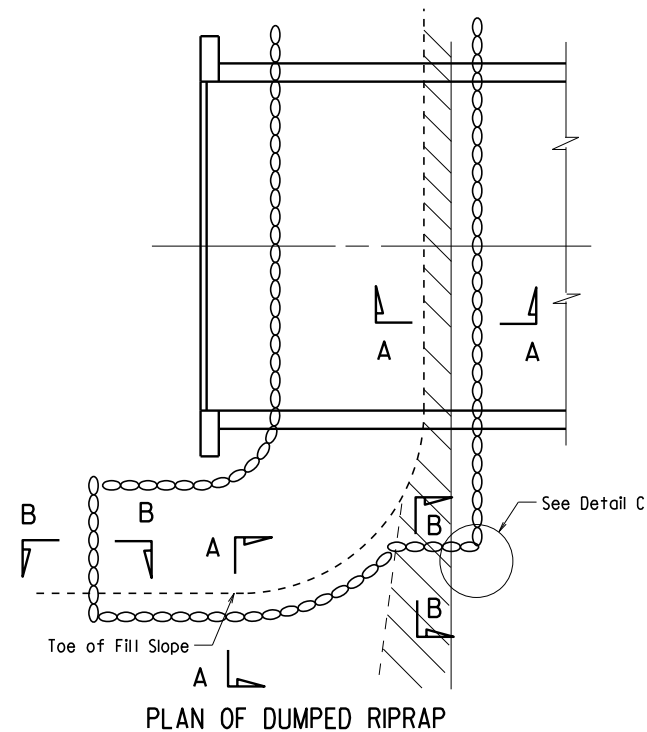
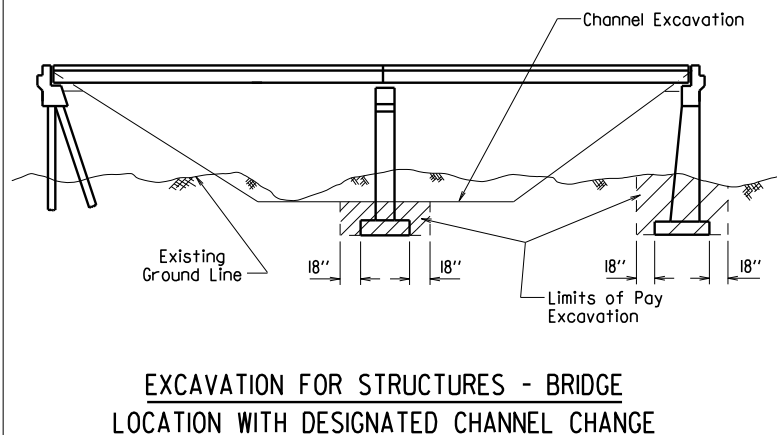
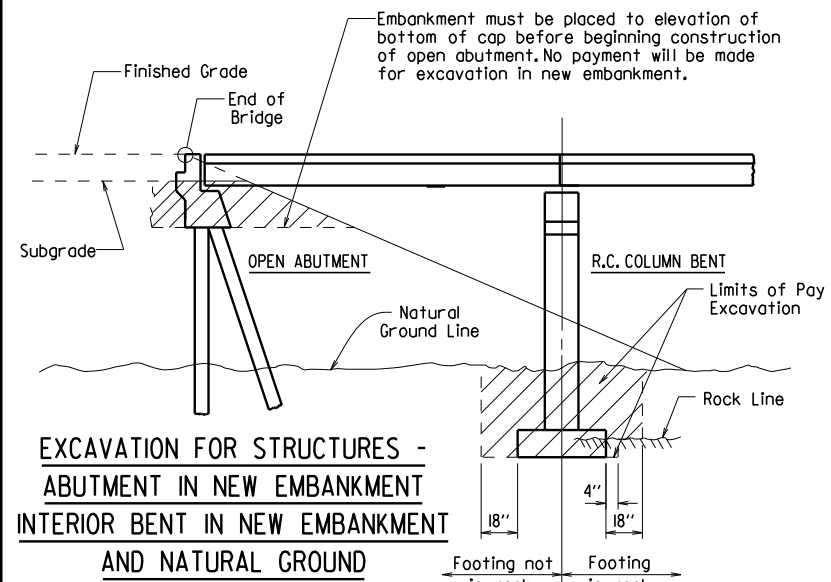
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 2-27-2014 FILENAME: b55000.dgn
CHECKED BY: BEF DATE: 2-27-2014 SCALE: NO SCALE
DESIGNED BY: STD. DATE: -

DRAWING NO. 55000

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	RIPRAP & EXCAV. 5500I			



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.

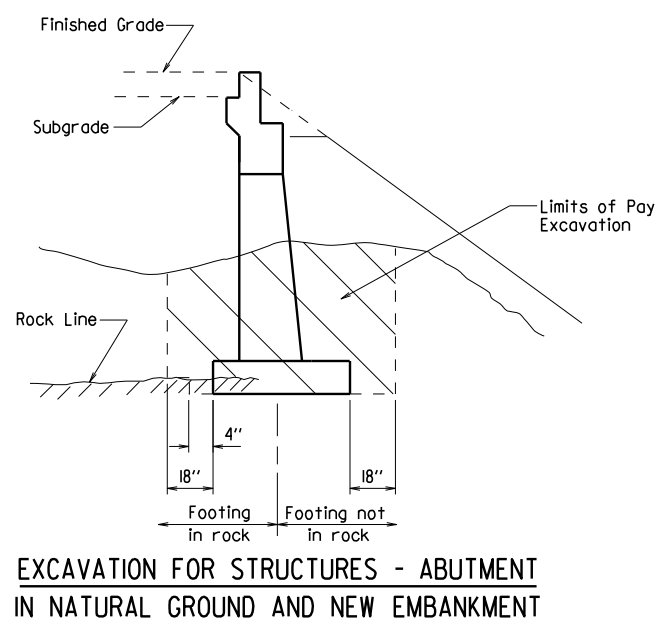
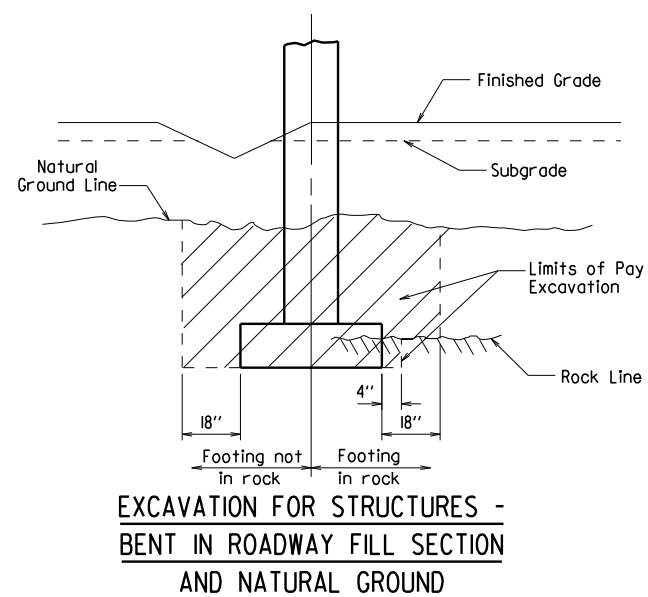
Note: Details for computing excavation for structures are included for information as to how plan quantities were calculated and for use when adjusting quantities when changing footing elevation.

STANDARD DETAILS FOR DUMPED RIPRAP AND FILTER BLANKET AND COMPUTING EXCAVATION FOR STRUCTURES ARKANSAS STATE HIGHWAY COMMISSION

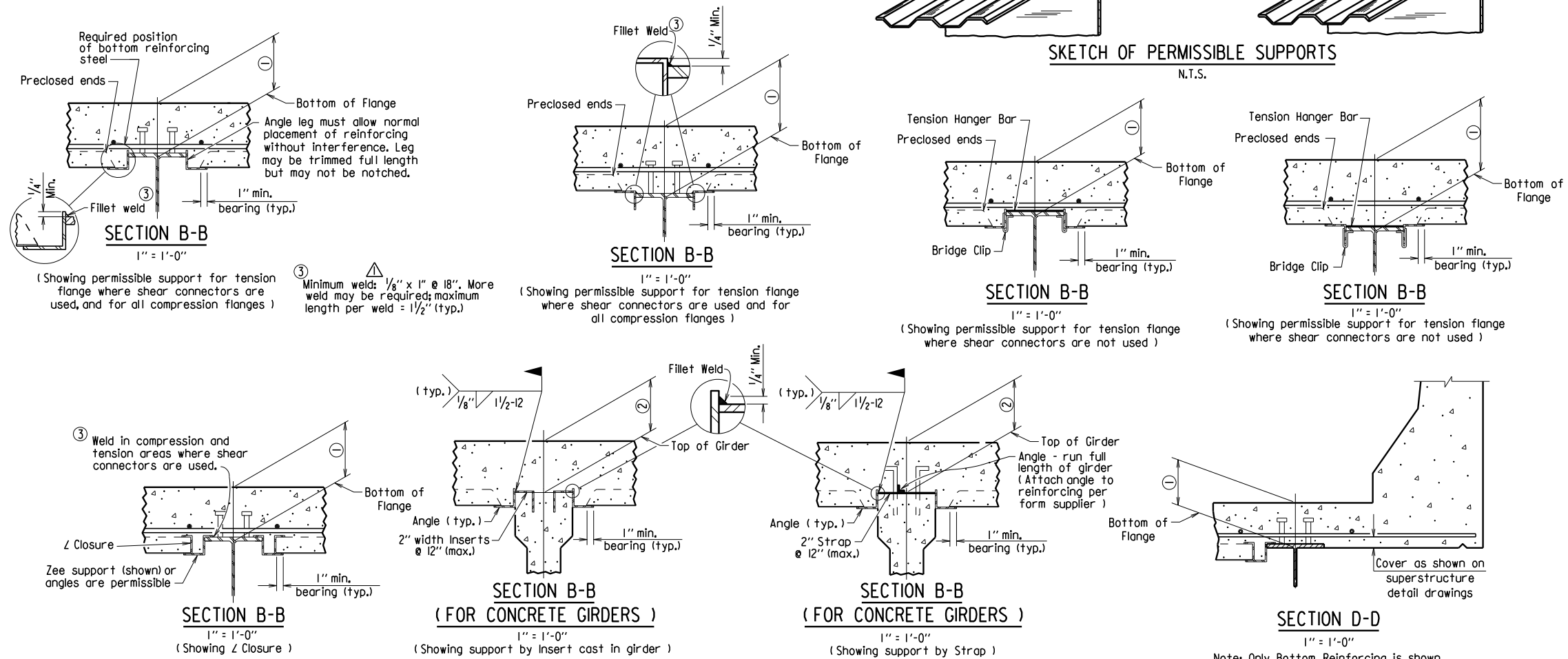
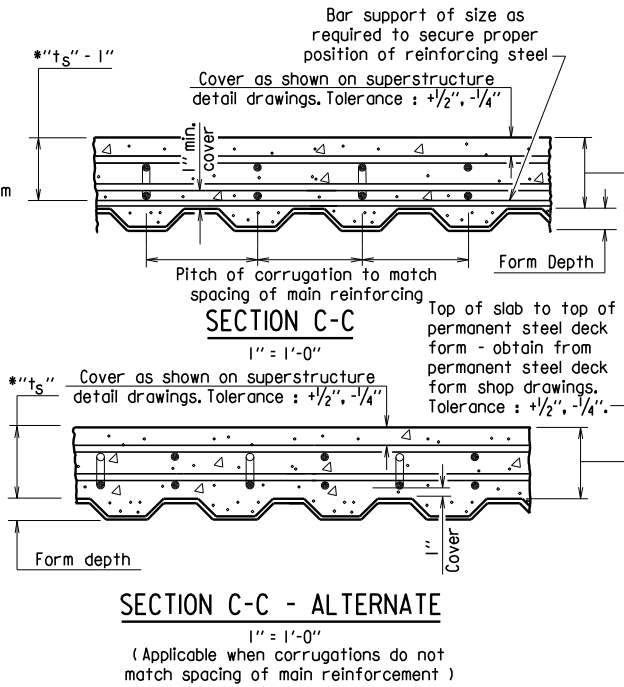
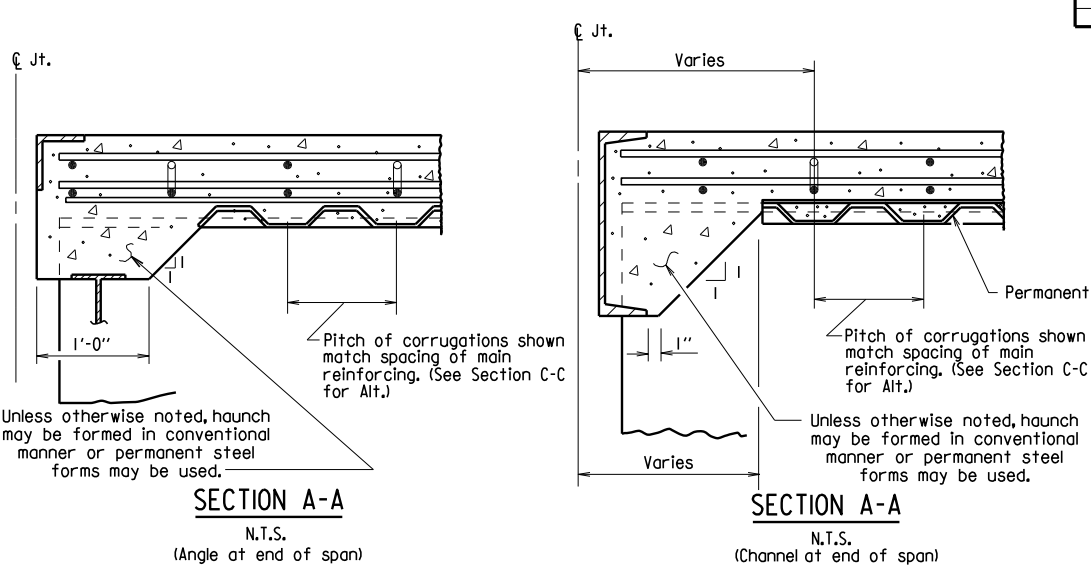
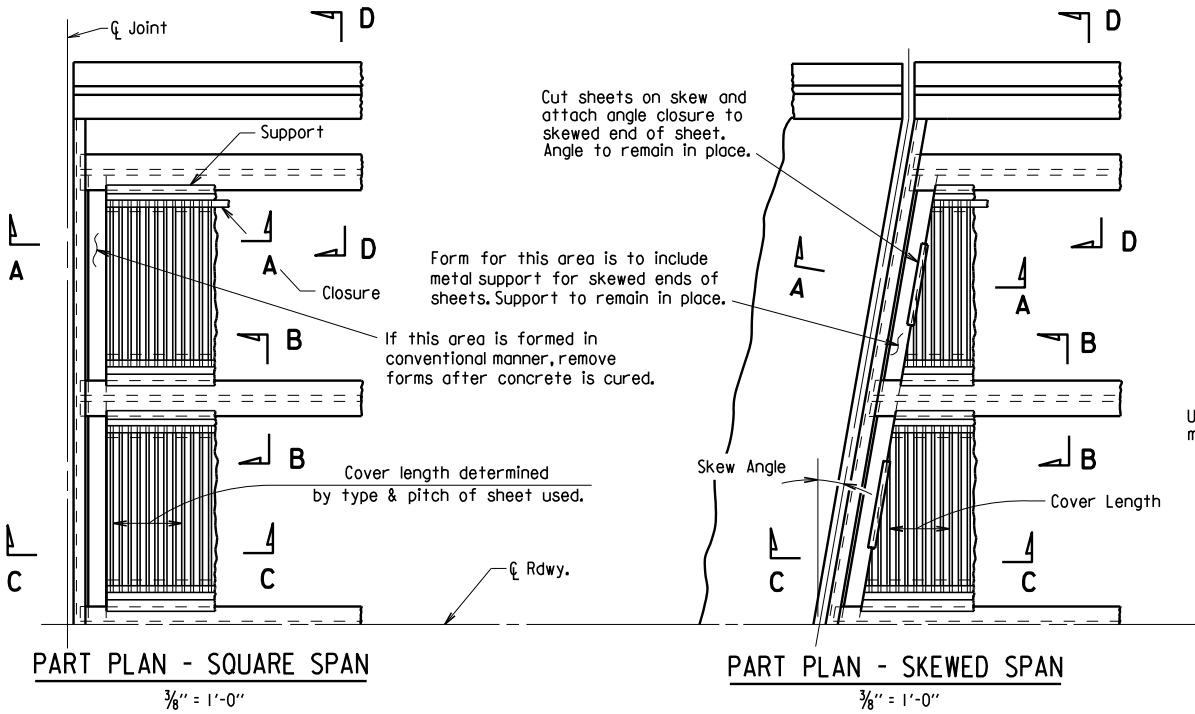
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DESIGNED BY: STD. DATE:

DRAWING NO. 5500I



DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
3/24/16				6	ARK.			
				JOB NO.	BRIDGE DECK FORMS 55005			



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

Permanent steel deck forms shall conform to Subsection 802.14(b). Detailed plans, including detailed calculations and manufacturer's technical brochure, shall be submitted to and approved by the Engineer before work of forming the bridge deck is started.

Welding of form supports to the tension flange of steel girders will be permitted only in areas where shear connectors are used. When welding is not allowed, the method of fastening Z or L supports to the flange must be approved by the Engineer.

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

When the pitch of form corrugations match the reinforcing spacing, transversely align form sheets across the bridge to maintain the correct orientation of continuous reinforcing bars in the corrugations.

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

High chairs shall be sized to support the top mat of reinforcing at the proper position. High chairs shall be placed at locations shown on the detail drawings.

Specifications: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2014 Edition), with applicable Supplemental Specifications and Special Provisions.

STANDARD DETAILS FOR PERMANENT STEEL BRIDGE DECK FORMS FOR STEEL & CONCRETE GIRDER SPANS

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 2-27-2014 FILENAME: b55005.dgn
CHECKED BY: BEF DATE: 2-27-2014 SCALE: NONE
DESIGNED BY: STD. DATE: —

DRAWING NO. 55005

Revised weld dimension by KWH, CK'd by BEF, 3/24/16.

GENERAL NOTES

These GENERAL NOTES are applicable unless otherwise shown in the Plan Details, Special Provisions, or Supplemental Specifications.

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2014 Edition) with applicable Supplemental Specifications and Special Provisions. Section and Subsection refer to the Standard Specifications.

DESIGN SPECIFICATIONS: See Bridge Layout(s).

SUPERSTRUCTURE NOTES:

MATERIALS AND STRENGTHS:

Class S(AE) Concrete	f'c = 4,000 psi
Reinforcing Steel (Gr. 60, AASHTO M 31 or M 322, Type A)	fy = 60,000 psi
Structural Steel (AASHTO M 270, Gr. 36)	Fy = 36,000 psi
Structural Steel (AASHTO M 270, Gr. 50)	Fy = 50,000 psi
Structural Steel (AASHTO M 270, Gr. 50W)	Fy = 50,000 psi
Structural Steel (AASHTO M 270, Gr. HPS70W)	Fy = 70,000 psi

See Plan Details for Gradet(s) of Structural Steel required.

CONCRETE:

All concrete shall be Class S(AE) with a minimum 28 day compressive strength f'c = 4,000 psi. Concrete shall be poured in the dry and all exposed corners shall be chamfered 3/4" unless otherwise noted.

The superstructure details shown are for use when removable deck forming is used and are the basis for measurement of Class S(AE) Concrete. See Standard Drawing No. 55005 for allowable modifications and for tolerances when Permanent Steel Bridge Deck Forms are used.

Use of a longitudinal screed is not permitted on any span of a bridge deck with horizontal curvature.

The concrete deck (roadway surface) shall be given a tine finish in accordance with Subsection 802.19 for Class 5 Tined Bridge Roadway Surface Finish. Sidewalks shall receive a broomed finish as specified for final finishing in Subsection 802.19 for Class 6 Broomed Finish. Movement of the finishing machine across new concrete shall be on planks placed on the surface and shall be prohibited for 72 hours after finishing the pour. Sufficient concrete must be placed ahead of the strike-off to fully load the beam or girder. When permitted, the use of a longitudinal strike-off will require that a vertical camber adjustment be made in the strike-off to account for the future dead load deflection due to any railings, median barrier, and sidewalks.

REINFORCING STEEL:

All reinforcing steel shall be Grade 60 conforming to AASHTO M 31 or M 322, Type A, with mill test reports and shall be epoxy coated. The reinforcing steel is to be accurately located in the forms and firmly held in place by steel wire supports, sufficient in number and size to prevent displacement during the course of construction. The wire supports will not be paid for directly, but will be considered subsidiary to the item "Epoxy Coated Reinforcing Steel (Grade 60)".

STRUCTURAL STEEL (COMMON TO W-BEAMS AND PLATE GIRDERS):

Structural steel shall be AASHTO M 270 with grade and payment as specified in the plans. Grade 50W steel shall not be painted and all exposed surfaces shall be cleaned in accordance with Subsection 807.84(e), Grade 36 and Grade 50 steel shall be painted unless otherwise noted and all exposed surfaces shall be cleaned in accordance with Subsection 807.84. Structural steel completely embedded in concrete may be AASHTO M 270, Gr. 36, Gr. 50 or Gr. 50W unless otherwise noted.

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

Requests for substitution of structural steel shapes shown with shapes of greater size must be submitted by the Contractor to the Engineer for approval. Steels of equal or greater strengths will be accepted only when shown on the approved shop drawings. Payment will be based on the basis of shapes and materials shown in the plans, and no additional compensation will be made for any adjustments due to substitutions.

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

Unless otherwise noted, field connections shall be bolted with 3/4" Ø high-strength bolts using 15/16" Ø open holes. Holes for 3/4" Ø high-strength bolts may be 15/16" Ø if a washer is supplied for use under both the nut and head of the bolt. The use of oversized holes will not be allowed on main members unless otherwise noted. Bolts shall be placed with heads on the outside face of the exterior beam or girder webs and on the bottom of the beam or girder flanges.

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

When painting is required, all structural steel except galvanized steel and steel completely encased in concrete shall be painted in accordance with Subsection 807.75. The color of paint shall be as specified in the plans.

STRUCTURAL STEEL (W-BEAMS):

All beams and field splice plates, and all diaphragms and connection plates attached to horizontally curved beams 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 (M 270, Gr. ___)".

All beams in continuous units and simple spans with field splices shall be blocked in their true position in the shop in groups as specified in Subsection 807.54(b)(2) with the webs horizontal. The camber, length of sections, distance between bearings, and openings of joints shall be measured and this information shall become part of the permanent records. The component parts shall be match marked in this assembly and these marks shall be shown on the erection diagram.

All beams in simple spans without field splices shall be blocked in their true position with webs horizontal. The camber, distance between bearings, and openings of joints shall be measured and this information shall become part of the permanent records.

Flange field splice plates shall be cut and fabricated so that the primary direction of rolling is parallel to the direction of the main tensile and/or compressive stresses.

All beam dimensions are based on a temperature of 60 degrees F. A tolerance of 1/4" +/- is allowed for camber.

Bent plate diaphragms for horizontally curved beams 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. Bent plate diaphragms for straight beams may be cut and fabricated in accordance with Subsection 807.35 or as required for horizontally curved beams.

Unless otherwise noted, 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.

STRUCTURAL STEEL (PLATE GIRDERS):

All references to cross-frames shall include "X" or "K" types.

All girder web and flange plates, all field splice plates, and all diaphragms, cross-frames and connection plates attached to horizontally curved girders 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 Plate Girder Spans (M 270, Gr. ___)".

All girders in continuous units and simple spans with field splices shall be assembled in the shop as specified in Subsection 807.54(b)(2) and blocked in their true position with webs horizontal. The camber, length of sections, distance between bearings, and openings of joints shall be measured and this information shall become part of the permanent records. The component parts shall be match marked in this assembly and these marks shall be shown on the erection diagram.

All girders in simple spans without field splices shall be blocked in their true position with webs horizontal. The camber, distance between bearings, and openings of joints shall be measured and this information shall become part of the permanent records.

Web and flange plates for main members and flange splice 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.

Girder webs may be made by shop splicing with minimum lengths of 25 feet for sections. Flange plates longer than 50 feet may be made by shop splicing with minimum lengths of 25 feet for sections. No additional payment will be made for shop welded splices.

All girder dimensions are based on a temperature of 60 degrees F. A tolerance of 1/4" +/- is allowed for camber.

Groove welds in web and flange plates shall be Quality Control (Q.C.) tested by nondestructive testing, as required in Subsection 807.23(b). Fillet welds at flange to web plate connections shall be Q.C. tested by the magnetic particle method. All Q.C. testing shall be considered subsidiary to the item "Structural Steel in Plate Girder Spans (M 270, Gr. ___)".

Bent plate diaphragms for horizontally curved girders 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. Bent plate diaphragms for straight girders may be cut and fabricated in accordance with Subsection 807.35 or as required for horizontally curved girders.

Unless otherwise noted, cross-frames and diaphragms shall be installed as girders are erected. All bolts in cross-frames, diaphragms, and field splices shall be installed and tightened in accordance with Subsection 807.71 prior to pouring the concrete deck.

SUBSTRUCTURE NOTES:

CONCRETE:

Unless otherwise noted, concrete in caps, columns and footings (except seal footings) shall be Class "S" with a minimum 28 day compressive strength f'c = 3,500 psi and shall be poured in the dry. Seal Concrete for footings shall have a minimum 28 day compressive strength f'c = 2,100 psi.

Concrete in drilled shafts shall be Class "S" as modified by Job SP "Drilled Shaft Foundations".

All exposed corners shall be chamfered 3/4" unless otherwise noted.

REINFORCING STEEL:

All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi) conforming to AASHTO M 31 or M 322, Type A, with mill test reports.

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

STRUCTURAL STEEL:

Structural steel in end bents shall be AASHTO M 270 with grade and payment as specified in the plans.

FOR ADDITIONAL INFORMATION AND NOTES, SEE LAYOUT(S) AND PLAN DETAILS.

STANDARD GENERAL NOTES
FOR STEEL BRIDGE STRUCTURES

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

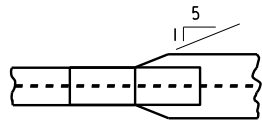
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DRAWING NO. 55006

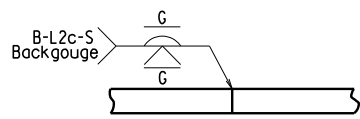


Plan-Unequal Width (Fig.)

FLANGE SPLICE

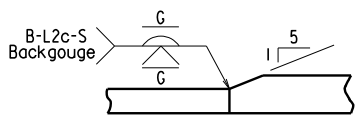


FLANGE SPLICE AT UNEQUAL BOTTOM FLANGE WIDTHS



Equal Thickness

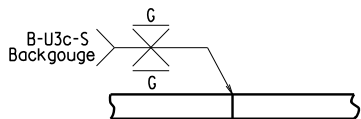
WEB & FLANGE SPLICE



Unequal Thickness

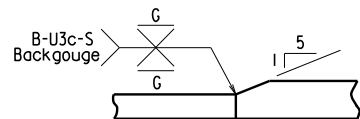
FLANGE SPLICE

(Use when Base Metal Thickness is Equal to or Less than 2")



Equal Thickness

WEB & FLANGE SPLICE

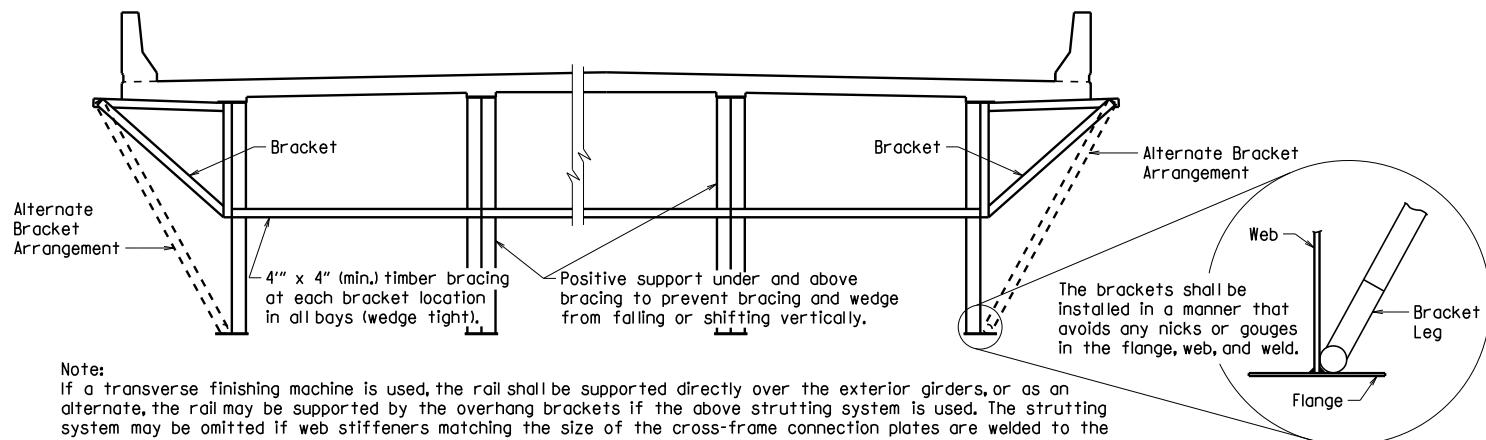


Unequal Thickness

FLANGE SPLICE

(Use when Base Metal Thickness is Greater than 2")

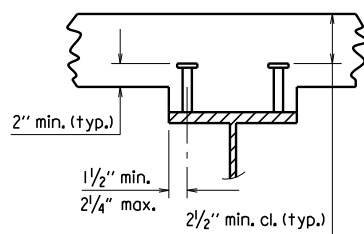
DETAILS OF WELDED SPLICES FOR PLATE GIRDERS



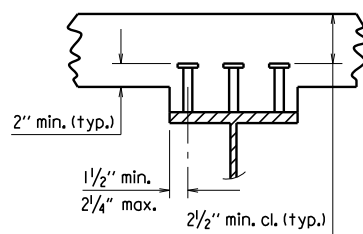
Note:
If a transverse finishing machine is used, the rail shall be supported directly over the exterior girders, or as an alternate, the rail may be supported by the overhang brackets if the above strutting system is used. The strutting system may be omitted if web stiffeners matching the size of the cross-frame connection plates are welded to the insides of the exterior girders at the location of each bracket or if the alternate bracket arrangement shown above is used. The Alternate Bracket arrangement shall extend down to the junction of the web and bottom flange. The stiffener shall conform to the details for cross frame connection plates shown on the plans. No direct payment will be made for brackets, timber bracing, supports, or welded stiffeners. Payment shall be subsidiary to "Structural Steel in Plate Girder Spans ()".

SCREED RAIL SUPPORT FOR PLATE GIRDERS

(USE WHEN WEB DEPTHS ARE 48" OR GREATER)



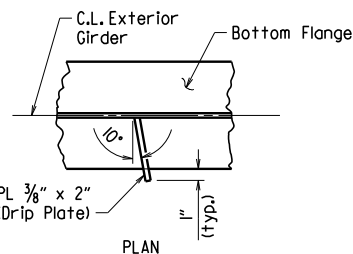
2 STUDS PER ROW



3 STUDS PER ROW

Stud Shear Connectors shall be automatically end welded to the beam or girder flange in accordance with the recommendations of the Manufacturer. See plan details for number and size.

SHEAR CONNECTOR DETAIL

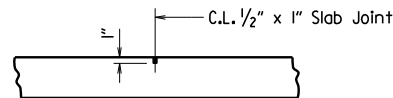


Drip Plate to be welded to the outer side of the bottom flange of the exterior girders.

Locate drip plate 5'-0" from C.L. Bearing on high side of each Bent, unless otherwise noted in the plans.

BOTTOM FLANGE DRIP PLATE

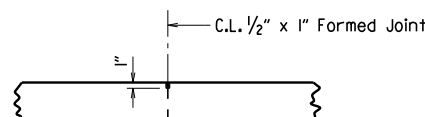
(USE WHEN WEB DEPTHS ARE 54" OR GREATER AND UNIT OR SPAN IS NOT IN LEVEL GRADE)



Use Type 3 or 4 Joint Sealer. See Subsections 50L02(h) and 50L05(j). Backer Rod filler will not be required. Joint Sealer shall be measured and paid for as Class S(AE) Concrete-Bridge. Slab Joints shall extend to the outside edge of the deck slab and shall align with open joints at the front face of the parapet. Slab joints shall be installed before the parapet railing is poured. If slab joints are to be sawed, they shall be sawed as soon as the concrete has sufficiently set to allow sawing of the joint without damage to the slab. Slab joints shall be placed at all pouring sequence construction joints and required slab joint locations. The joint sealer shall extend across the deck from gutterline to gutterline.

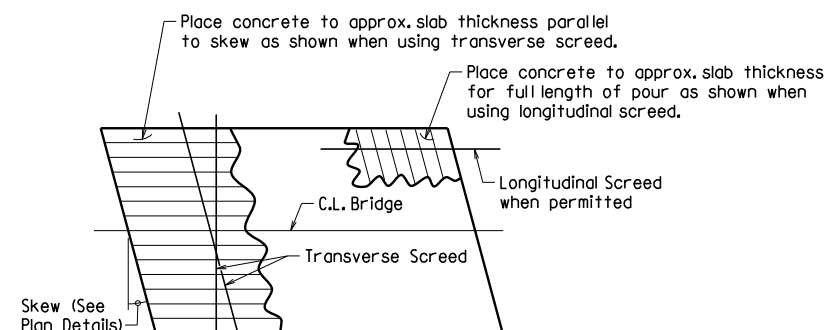
ADDITIONAL NOTES IF SIDEWALKS OR RAISED MEDIANS ARE REQUIRED:
Slab Joints shall be installed before the sidewalk or raised median is poured. After installation of the joint in the sidewalk or raised median and prior to pouring the parapet rail, the joint sealer shall be placed extending across the deck slab from gutterline to gutterline and across the top of the sidewalk or raised median to the edge of the slab. No joint sealer shall be placed on the deck slab under the sidewalk or raised median.

TRANSVERSE SLAB JOINT DETAIL



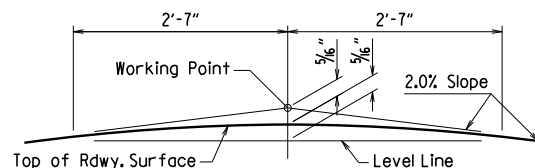
Use 1/2" x 1" Type 3 or 4 Joint Sealer. See Subsections 50L02(h) and 50L05(j). Backer Rod filler will not be required. Joint sealer shall be measured and paid for as Class S(AE) Concrete-Bridge. This joint shall be formed. Seal color shall be gray or other color similar to concrete.

LONGITUDINAL CONSTRUCTION JOINT



Note: At the Contractor's option, the transverse screed may be placed parallel to the skew or perpendicular to C.L. Bridge.

CONCRETE PLACEMENT PROCEDURE FOR BRIDGES WITH SKEW



NOTE: Working Point matches Theoretical Roadway Grade.

ROUNDING DETAIL

BRIDGES IN NORMAL CROWN

WELD TABLE

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

NOTE: When a fillet weld size, as shown on the plans, is larger than the minimum, the first pass shall be that specified for minimum size of fillet weld.

SECTION AND SUBSECTION REFER TO THE ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (2014 EDITION).

THESE DETAILS ARE APPLICABLE UNLESS OTHERWISE SHOWN IN THE PLAN DETAILS, SPECIAL PROVISIONS, OR SUPPLEMENTAL SPECIFICATIONS.

STANDARD DETAILS FOR STEEL BRIDGE STRUCTURES

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: JYP DATE: 2/11/2016 FILENAME: b55007.dgn
CHECKED BY: AMS DATE: 2/11/2016 SCALE: No Scale
DESIGNED BY: STD. DATE: —

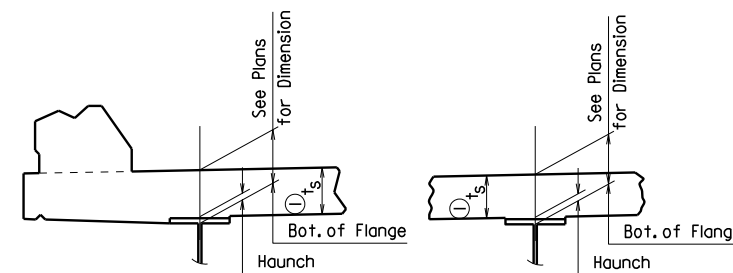
DRAWING NO. 55007

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

1

STEEL BRIDGE STRUCTURES 55007

t_s = slab thickness. See "Typical Roadway Section" in the plans.



EXTERIOR BEAM OR GIRDER

INTERIOR BEAM OR GIRDER

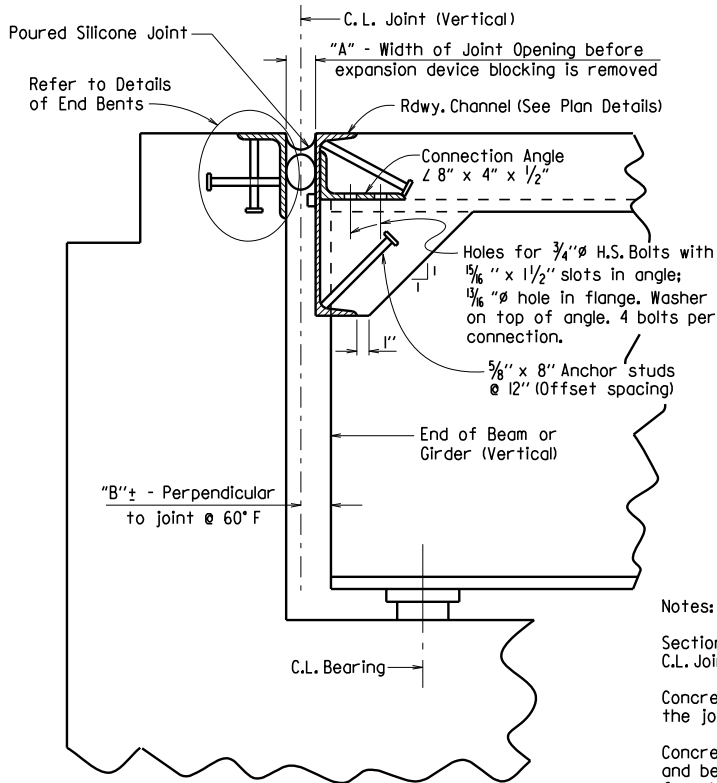
1 Tolerance when removable deck forming is used is + 1/2", - 1/4". Haunch forming is required and shall be adjusted to maintain slab thickness tolerance.

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

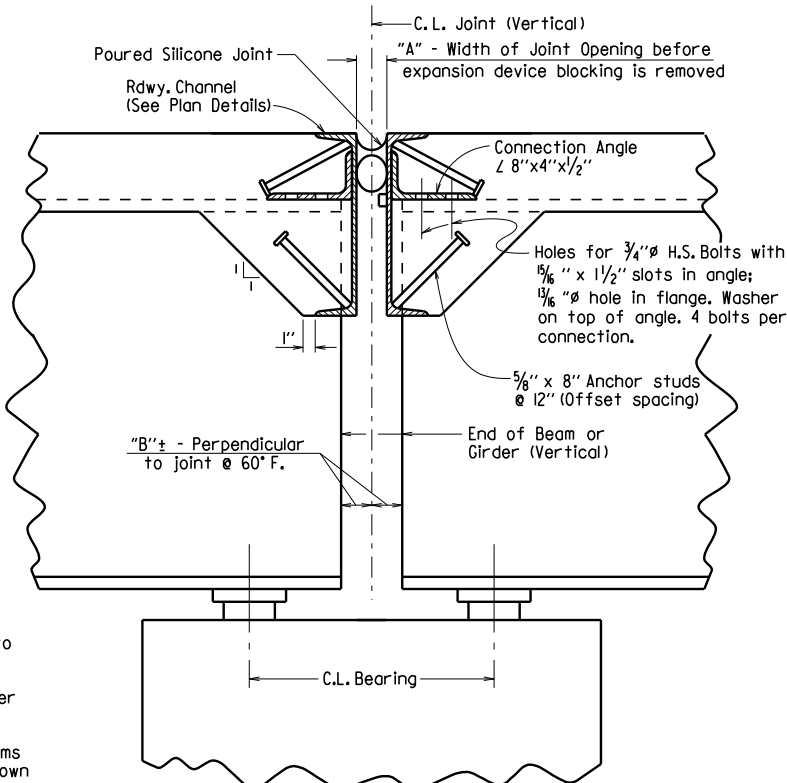
Tolerances shown are applicable only when removable deck forming is used. See Std. Dwg. No. 55005 for tolerances when permanent steel deck forms are used. Payment for concrete shall be based on removable deck forming.

ADJUSTMENT FOR SLAB THICKNESS TOLERANCE

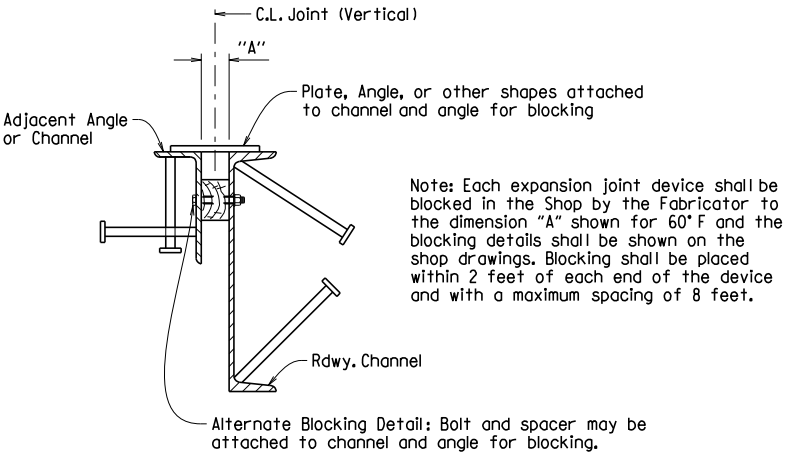
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				6	ARK.			
				JOB NO.				
POURED SILICONE JOINT								55008



SECTION THRU JOINT AT END BENT



SECTION THRU JOINT AT INTERMEDIATE BENT



DETAILS FOR BLOCKING EXPANSION JOINT DEVICE

EXPANSION DEVICE INSTALLATION AT END BENTS:

The Contractor may elect to install the expansion device using one of the following two alternatives:

- 1) The concrete span pour adjacent to joint shall be placed before the end bent backwall is placed. After the end bent backwall forms are in place and the beams or girders erected, the blocked expansion device shall be installed and adjusted for grade. All connection bolts shall be fully tightened prior to placing the deck concrete adjacent to the bent. Immediately prior to pouring the backwall concrete, the blocking shall be removed, and the opening adjusted for temperature and grade.
- 2) The backwall shall be poured to the optional construction joint after beams or girders are erected. The blocked expansion device shall be installed and adjusted for grade. All connection bolts shall be fully tightened prior to placing the deck concrete adjacent to the bent. Immediately prior to pouring the remainder of the backwall concrete, the blocking shall be removed and the opening adjusted for temperature and grade.

EXPANSION DEVICE INSTALLATION AT INTERMEDIATE BENTS:

After all beams or girders on each side of the joint are erected the blocked expansion device shall be installed and adjusted for grade. Deck concrete shall be placed for the entire unit or span on one side of the joint before deck concrete on the other side is placed. Connection bolts for the first side to have deck concrete placed shall be completely bolted. Bolts on the other side shall be loosely installed so that thermal and rotational movements will not be restricted during concrete placement on the first side.

Connection bolts on the second side shall remain loose until the concrete pour adjacent to the joint is to be placed. Immediately prior to pouring the span concrete on the second side, the blocking shall be removed, the joint adjusted for temperature and grade, and the connection bolts tightened.

SECTION AND SUBSECTION REFER TO THE ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (2014 EDITION).

THESE DETAILS ARE APPLICABLE UNLESS OTHERWISE SHOWN IN THE PLAN DETAILS, SPECIAL PROVISIONS, OR SUPPLEMENTAL SPECIFICATIONS. SEE "TABLE OF SILICONE JOINT DATA" IN PLAN DETAILS FOR VARIABLES "A" AND "B", AND BUMPER PLATE SIZE.

STANDARD DETAILS FOR
POURED SILICONE JOINTS

ARKANSAS STATE HIGHWAY COMMISSION

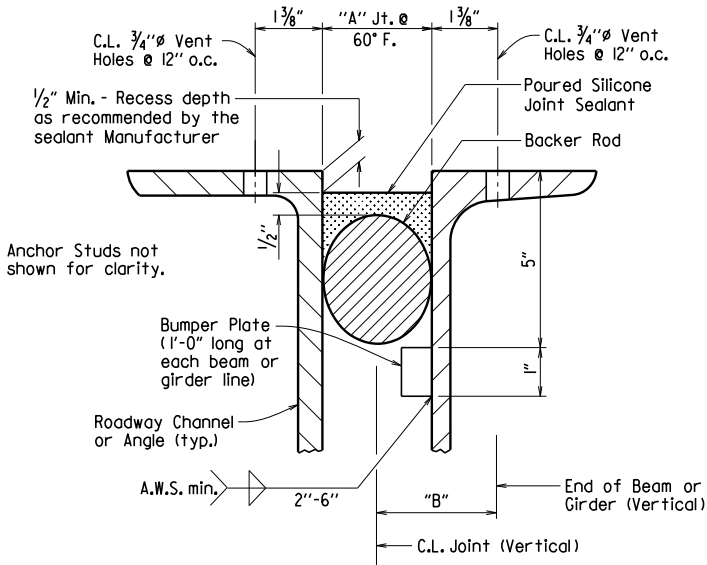
LITTLE ROCK, ARK.

DRAWN BY: A.C.P. DATE: 2/11/2016 FILENAME: b55008.dgn

CHECKED BY: A.M.S. DATE: 2/11/2016 SCALE: No Scale

DESIGNED BY: STD. DATE: —

DRAWING NO. 55008



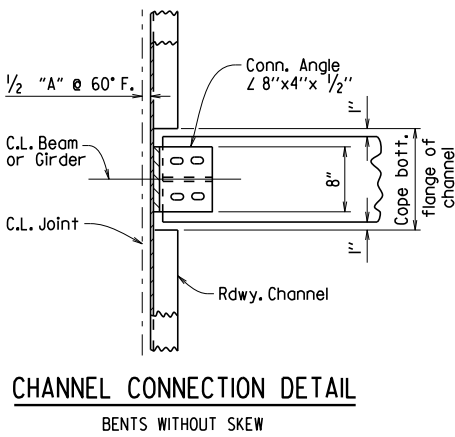
DETAIL OF POURED SILICONE JOINT

Silicone joint material and installation shall conform to Section 809. The temperature limitations recommended by the sealant Manufacturer shall be observed. The sealant shall be installed only when the average 24 hour air temperature is between 40° and 80° F.

Use an appropriately sized backer rod at the depth shown in the Manufacturer's literature based on the joint width at the time of sealing. Unless otherwise noted, do not install more backer rod than can be sealed in the same day.

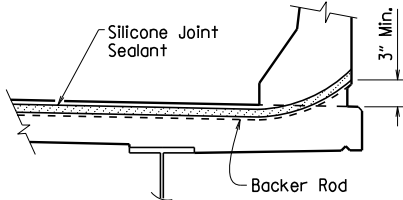
The Contractor shall verify separation of the backer rod from the joint material after the joint material has set.

When bridge deck is constructed in stages, backer rods shall be extended beyond length of poured joint in initial construction stage so that the two pieces can be properly spliced together prior to installing sealant in subsequent stages. Manufacturer's recommendations shall be followed to prevent sealant from "running out of joint" during stage construction.

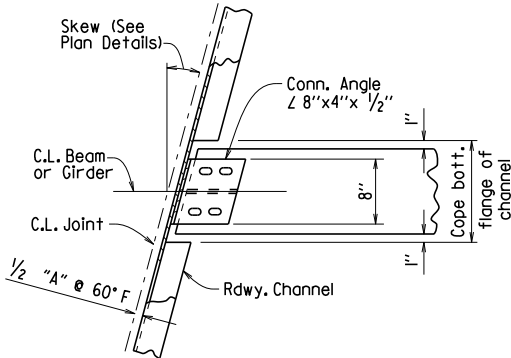


CHANNEL CONNECTION DETAIL

BENTS WITHOUT SKEW

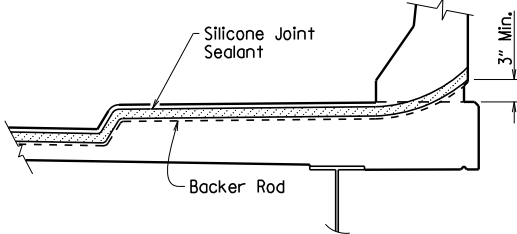


JOINT SEAL PLACEMENT AT RAIL



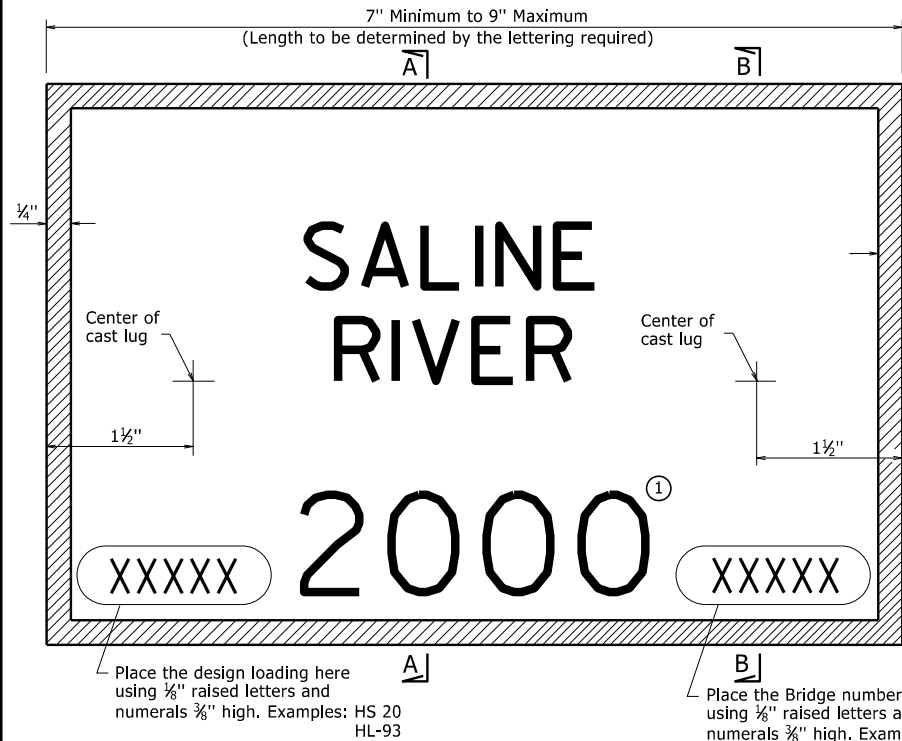
CHANNEL CONNECTION DETAIL

BENTS WITH SKEW

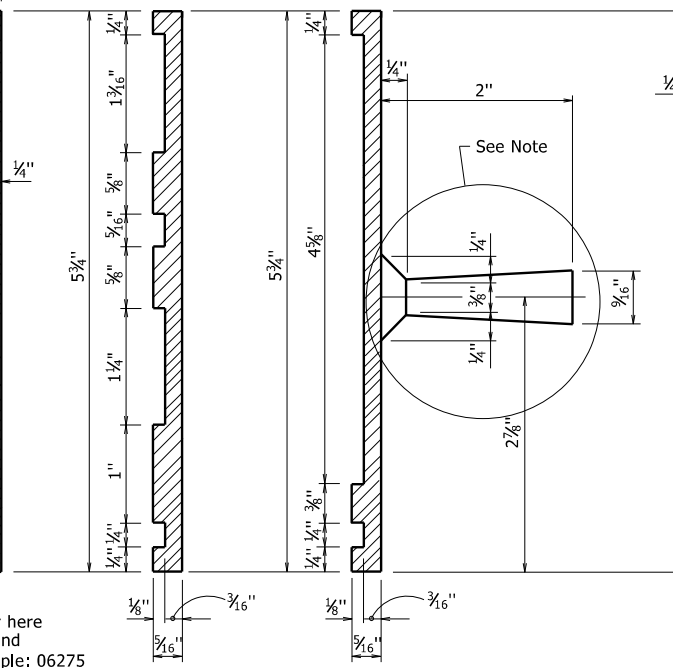


JOINT SEAL PLACEMENT AT SIDEWALK

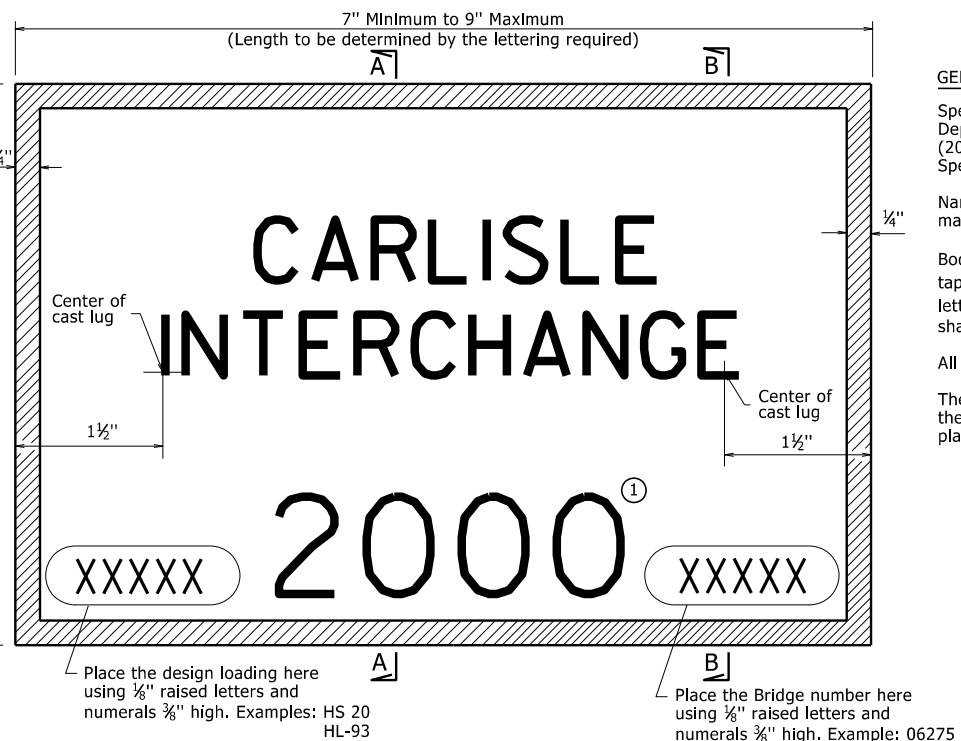
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2/27/2020				6	ARK.			
				JOB NO.	TYPE C NAME PLATE 55011			



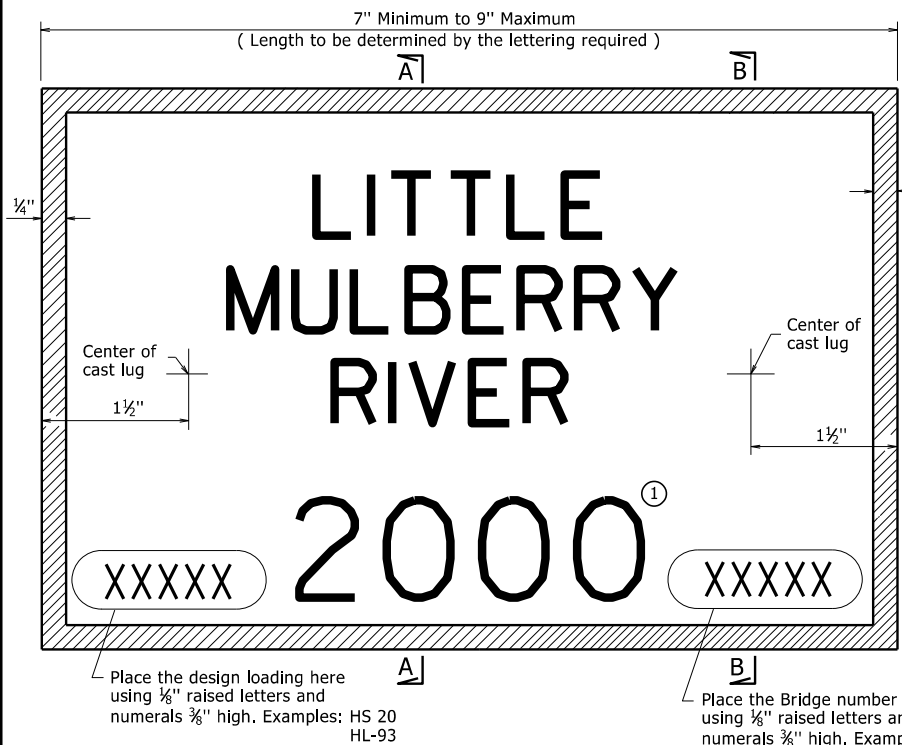
TYPICAL BRIDGE NAME PLATE-STYLE 1 - FULL SIZE
STREAM CROSSINGS



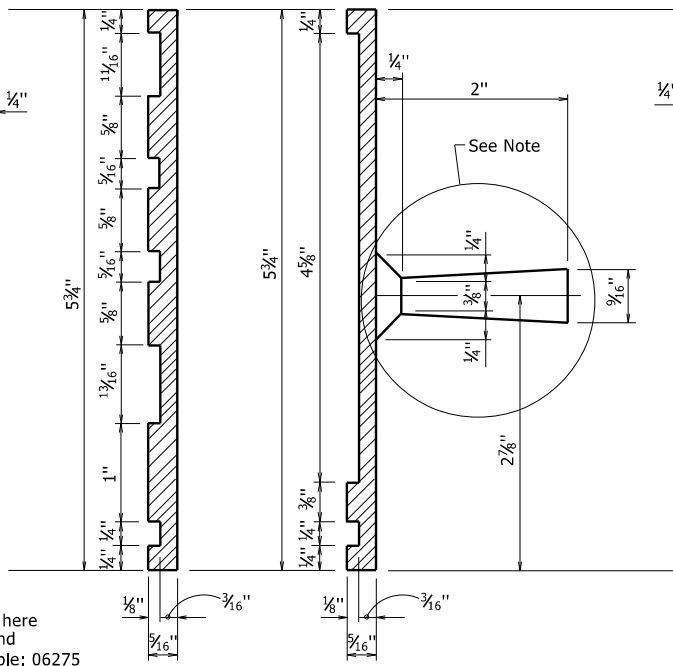
SECTION A-A SECTION B-B



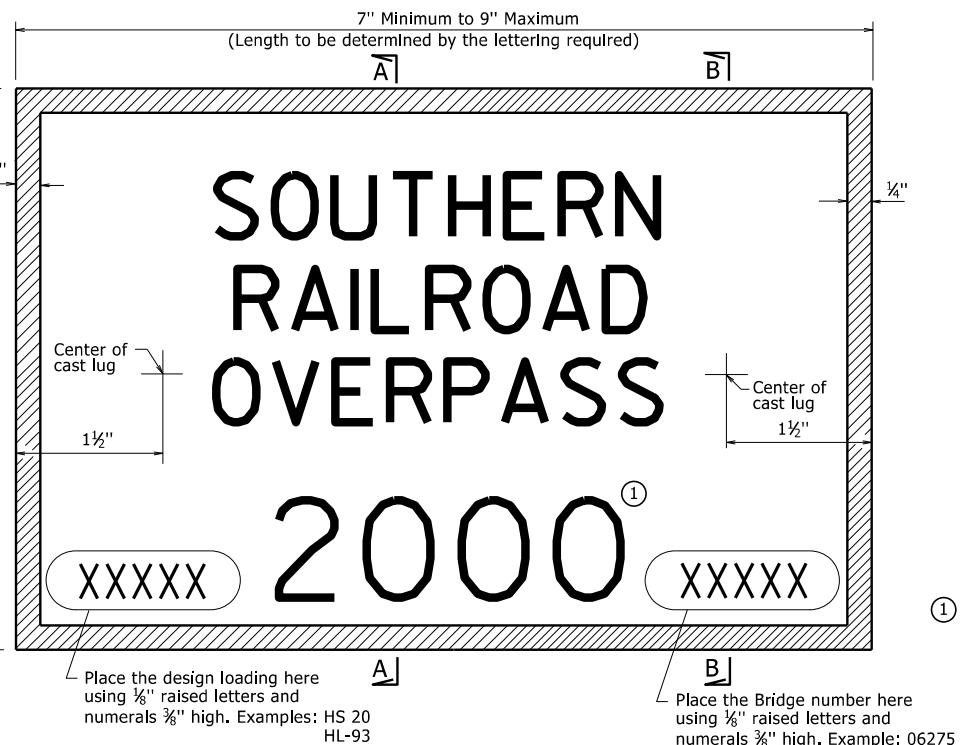
TYPICAL BRIDGE NAME PLATE-STYLE 3 - FULL SIZE
GRADE SEPARATION STRUCTURES



TYPICAL BRIDGE NAME PLATE-STYLE 2 - FULL SIZE
STREAM CROSSINGS



SECTION A-A SECTION B-B



TYPICAL BRIDGE NAME PLATE-STYLE 4 - FULL SIZE
GRADE SEPARATION STRUCTURES

GENERAL NOTES

Specifications: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction, (2014 Edition) with applicable Supplemental Specifications and Special Provisions.

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

Body of plate shall be $\frac{3}{16}$ " thick and shall include two tapering cone lugs $\frac{3}{8}$ " to $\frac{5}{16}$ " x 2" long. The border and all lettering shall be raised $\frac{1}{8}$ " above the face of plate and shall be polished.

All lettering shall be plain gothic, square cut and not tapered.

The number of plates required and the location and name on the plate for each bridge shall be as designated on the plans.

Note: Alternate attachments may be used provided such attachments are submitted and approval secured before fabrication is begun.

① Year in which contract is awarded.

△ Corrected error in detail showing three lines of text for feature intersected instead of two.
By: KWY, Checked by: WAC; 2/27/2020.

STANDARD DETAILS FOR TYPE C BRIDGE NAME PLATES

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 2-27-2014 FILENAME: b55011.dgn
CHECKED BY: BEF DATE: 2-27-2014 SCALE: NO SCALE
DESIGNED BY: STD. DATE: -----

DRAWING NO. 55011

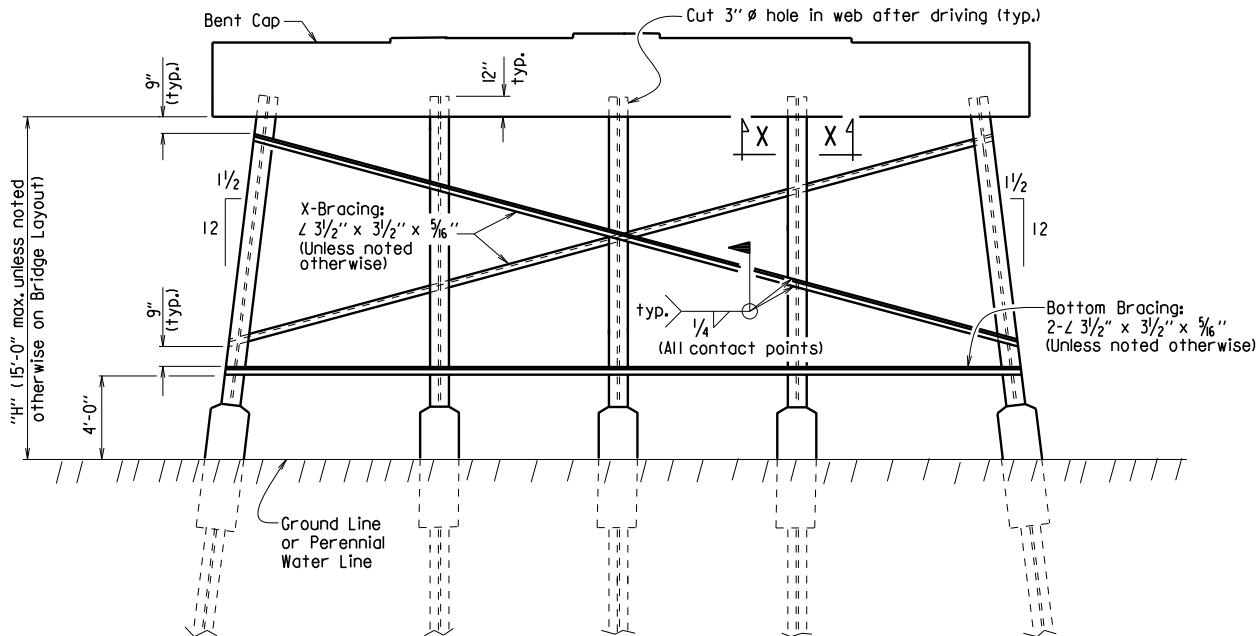
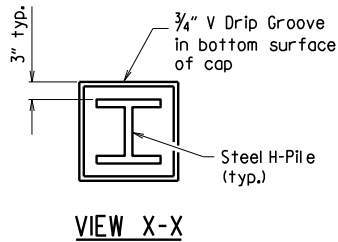
GENERAL NOTES FOR STEEL H-PILES:

Steel H-Piles shall conform to AASHTO M 270, Grade 36 or greater.

See Bridge Layout and Bent Details for pile size, estimated length, spacing, pile anchorage (if required) and for driving information.

Steel H-Piles that extend above the ground and are not protected by pile encasement shall be painted in accordance with Subsection 805.02.

Brackets, lugs, cap plates, pile tips, driving points, pile painting, splicing and welding shall not be paid for directly, but shall be considered subsidiary to the item "Steel Piling".



Notes:

All bracing shall be cut and welded in the field. Each brace shall be furnished in one piece. Payment shall be made under Item 807.

Unless noted otherwise, omit X-Bracing when "H" is less than 8 feet.

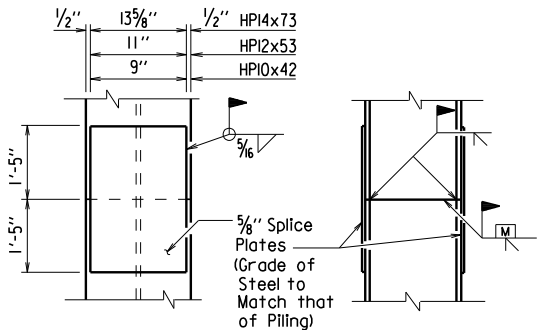
Omit X-Bracing and Bottom Bracing when "H" is 5 feet or less.

When required on the Bridge Layout sheet, pile encasements shall be constructed. See Notes and Details for H-Pile Encasements.

Omit all bracing (and V-groove in cap) when pile encasement is extended to bottom of bent cap.

TYPICAL DETAILS OF H-PILE TRESTLE INTERMEDIATE BENT

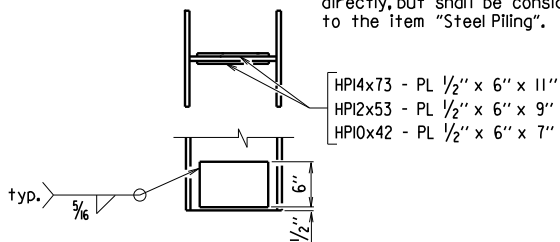
(Shown with Partial Height Encasement)



The Contractor may for his own convenience and at his own expense provide as many as three splices per pile. Minimum spacing between splices shall be 5 feet.

TYPICAL SPLICE DETAILS

H-pile splicers manufactured by Associated Pile and Fitting Corporation, LB Foster Piling, Skyline Steel or equivalent may be used in lieu of the "Typical Splice Details" shown. H-pile splicers shall match the same grade of steel specified for the piling and shall be welded to the pile with a 5/16 inch fillet weld around the entire perimeter of the splice. Flanges shall be welded with a complete penetration groove weld complying with AASHTO/AWS Joint Designation B-U4a or B-U4b. All welding shall conform to Subsection 807.26 of the AHTD Standard Specifications for Highway Construction (2014 Edition).



REINFORCING DETAIL FOR STEEL H-PILE TIP

GENERAL NOTES FOR H-PILE ENCASEMENTS:

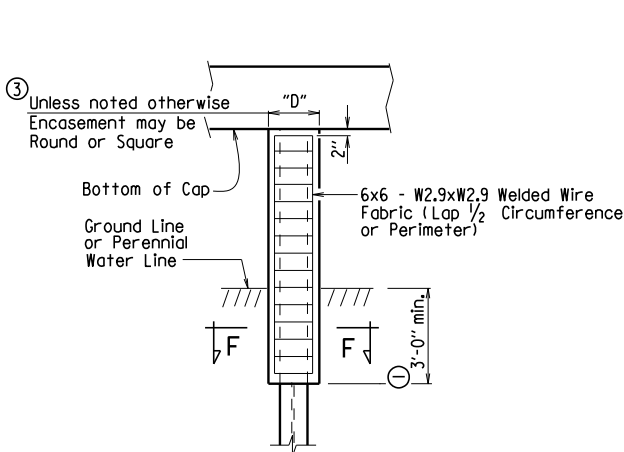
See Bridge Layout for additional notes, any pile encasement restrictions and required location of pile encasements.

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

Reinforcing steel shall be Grade 60 conforming to AASHTO M 31 or M 322, Type A.

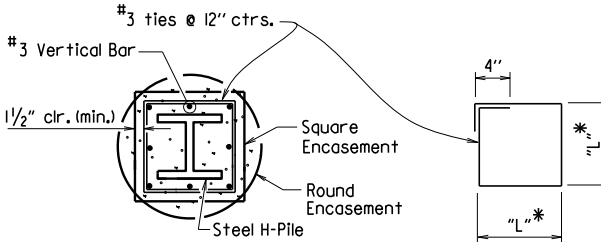
Welded Wire Fabric shall conform to AASHTO M 55 or M 221. Galvanized Corrugated Steel Pipe shall conform to AASHTO M 36 and M 218.

Concrete, welded wire fabric or reinforcing steel and galvanized pipe shall not be paid for directly, but shall be considered subsidiary to the item "Pile Encasement".



PILE ENCASEMENT DETAIL FOR STEEL H-PILES

(Shown with Encasement to Bottom of Cap)

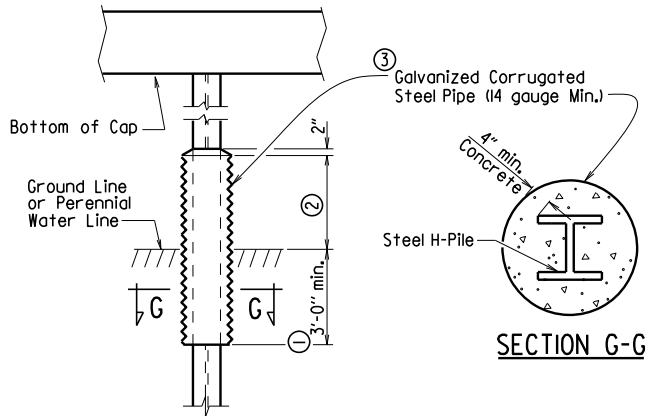


SECTION F-F

* Measured out-to-out of bar.

TABLE OF VARIABLES FOR PILE ENCASEMENT

Pile Size	"D"		"L"*
	Square Encsmt.	Round Encsmt.	
HPI0x42	1'-7"	2'-0"	1'-4"
HPI2x53	1'-8"	2'-2"	1'-5"
HPI4x73	1'-11"	2'-6"	1'-8"



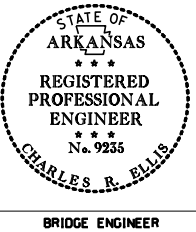
SECTION G-G

ALTERNATE PILE ENCASEMENT DETAIL FOR STEEL H-PILES

(Shown with Partial Height Encasement)

- Unless otherwise noted on Bridge Layout.
- 3'-0" minimum or as shown on Bridge Layout.
- Encasement dimensions shall be sized to maintain a minimum concrete cover of 4" from the H-Pile. Reinforcement shall be sized to provide a minimum concrete cover of 1 1/2" and a minimum clearance of 1 1/4" from the pile.
- Alternate pile encasement, when not extended to bottom of cap, shall have 2" concrete taper for water runoff as shown in the Partial Height Encasement detail.

Added alternate method of splicing H-piles and revised pile encasement note. 3/24/2016 AMS



This document was originally issued and sealed by Charles R. Ellis, PE No. 9235, on March 24, 2016. This copy is not a signed and sealed document.

STANDARD DETAILS FOR STEEL H-PILES AND PILE ENCASEMENTS

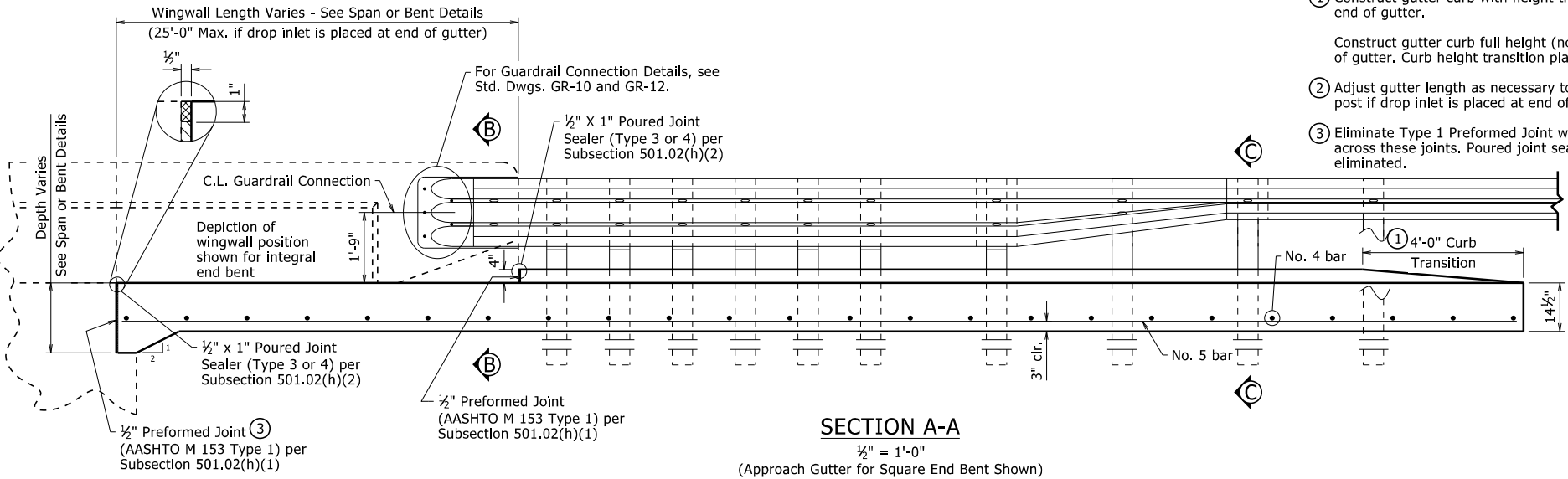
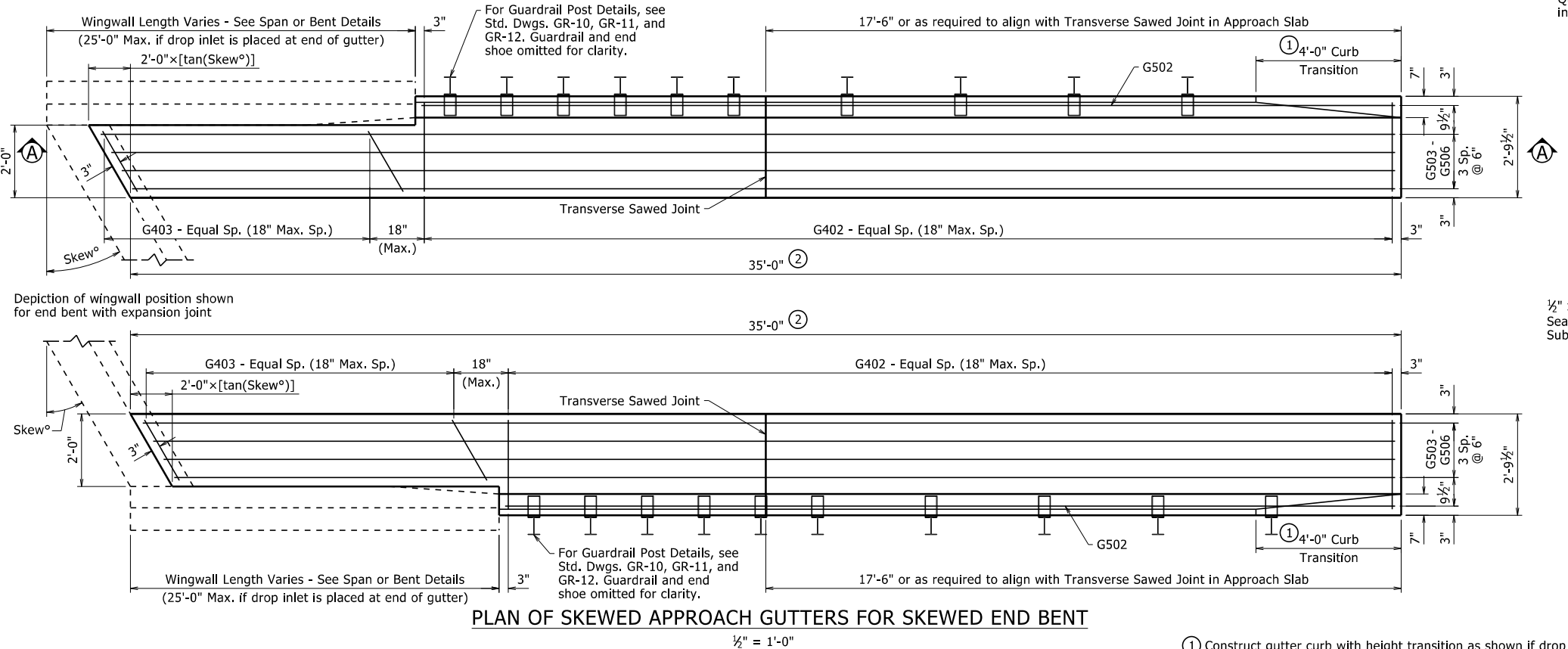
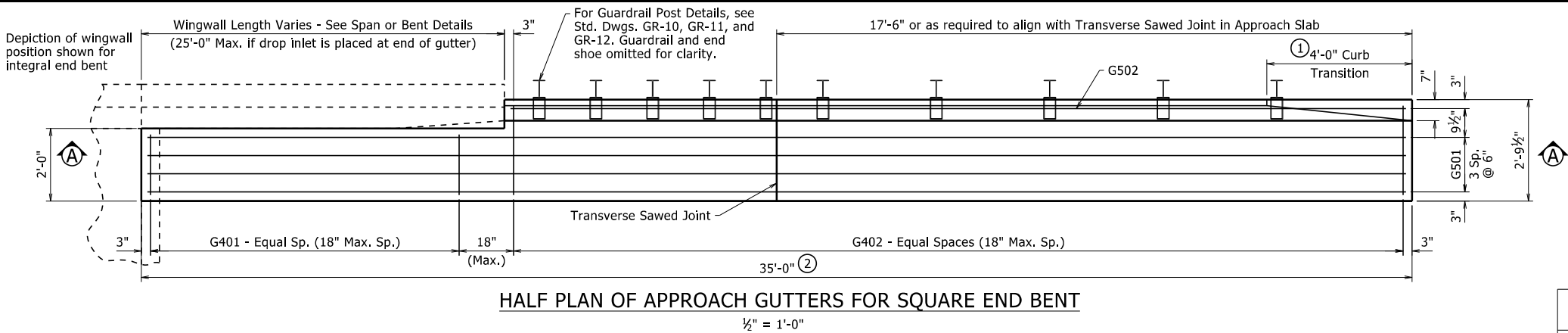
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: A.M.S. DATE: 2/27/2014 FILENAME: b55020.dgn
CHECKED BY: B.E.F. DATE: 2/27/2014 SCALE: NO SCALE
DESIGNED BY: STD. DATE: —

DRAWING NO. 55020

BRIDGE ENGINEER



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

① Type F Approach Gutters - 55030F

BAR LIST FOR ONE APPROACH GUTTER

Mark	No. Req'd.	Length
G401	④	1'-8"
G402	④	2'-5½"
G501	4	34'-8"
G502	1	④
G402	④	2'-5½"
G403	④	④
G502	1	④
G503 - G506	1 ea.	④

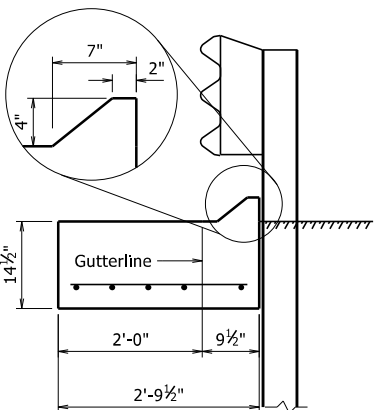
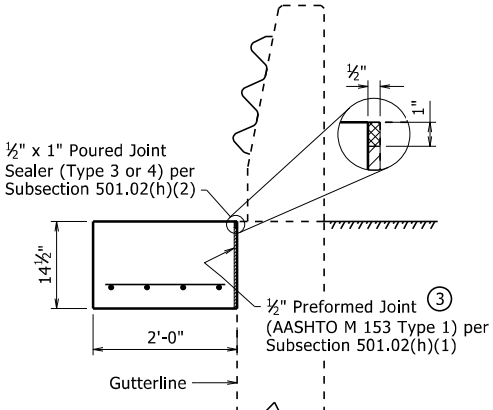
④ Varies with Skew and/or Wingwall Length

QUANTITIES FOR ONE APPROACH GUTTER

(For Information Only)

Reinforcing Steel (Lbs.)	Concrete (Cu. Yds.)
210	4.20

Quantities are based on one gutter for a square, integral end bent and a wingwall length of 10'-0"



GENERAL NOTES

All concrete shall be Class S(AE) with a minimum 28 day compressive strength $f'c = 4,000$ psi and shall be poured in the dry.

All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi) conforming to AASHTO M 31 or M 322, Type A, with mill test reports.

Approach Gutters will be measured and paid for in accordance with Section 504.

All longitudinal lines within the limits of horizontal curves shall be on curves concentric to C.L. Bridge. Adjustment to longitudinal bar lengths may be required. Transverse reinforcing shall be placed on radial lines to C.L. Bridge.

Scales shown are for 22"x34" drawings. When using 11"x17" drawings, reduce scale by one half.

STANDARD DETAILS FOR TYPE F APPROACH GUTTERS

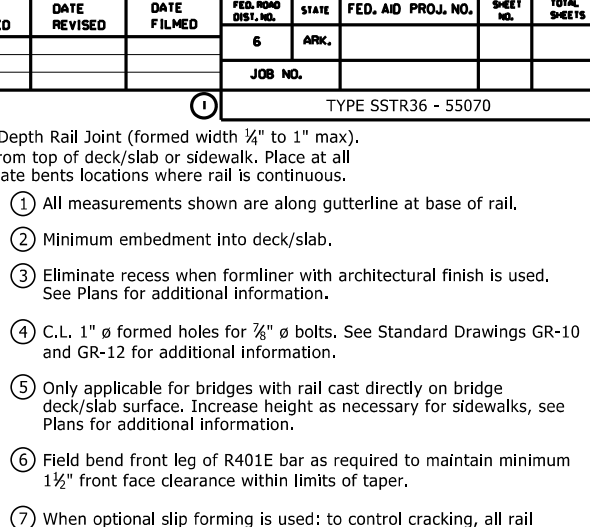
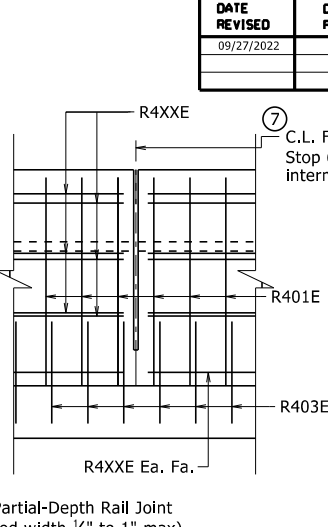
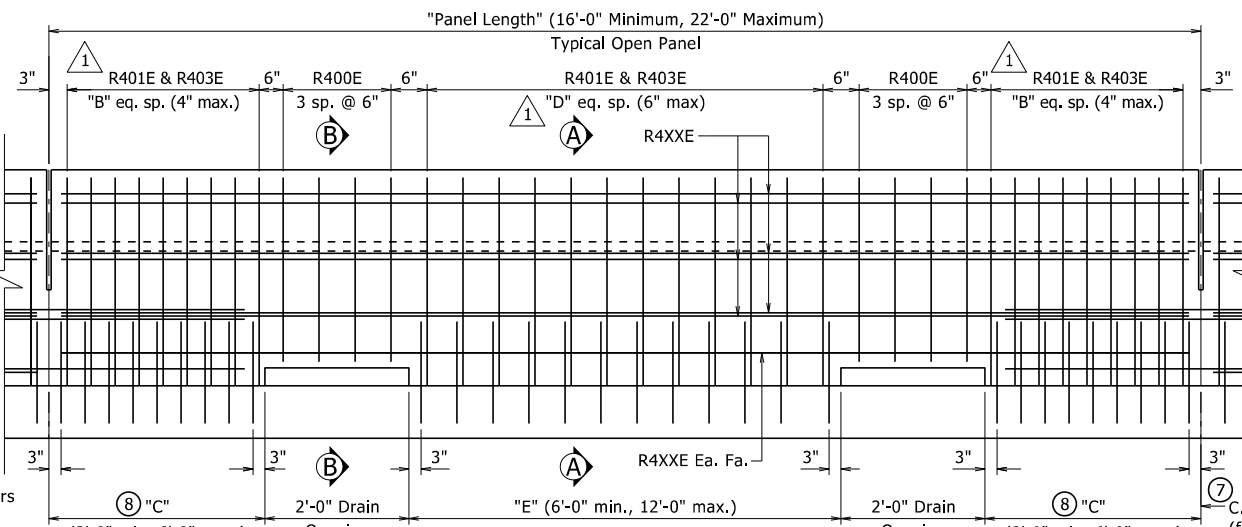
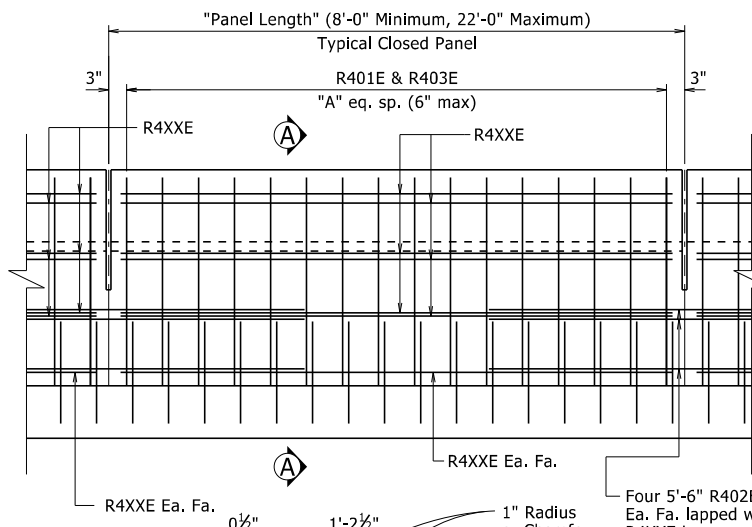
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

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CHECKED BY: LJB	DATE: 4-8-2021	SCALE: AS NOTED
DESIGNED BY: STD	DATE: -	

DRAWING NO.55030F

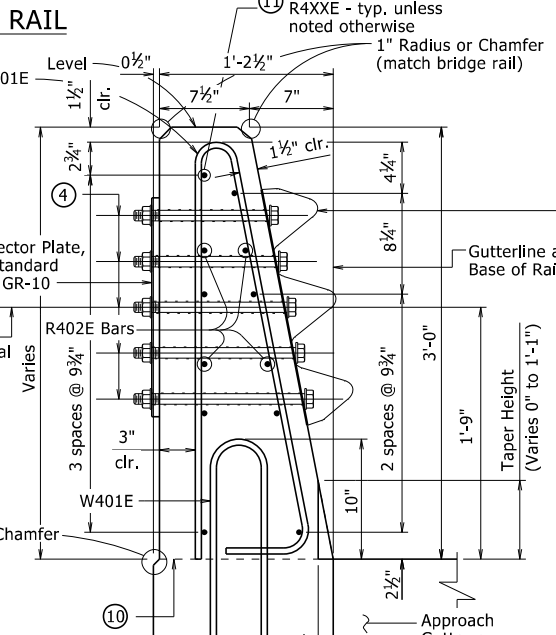
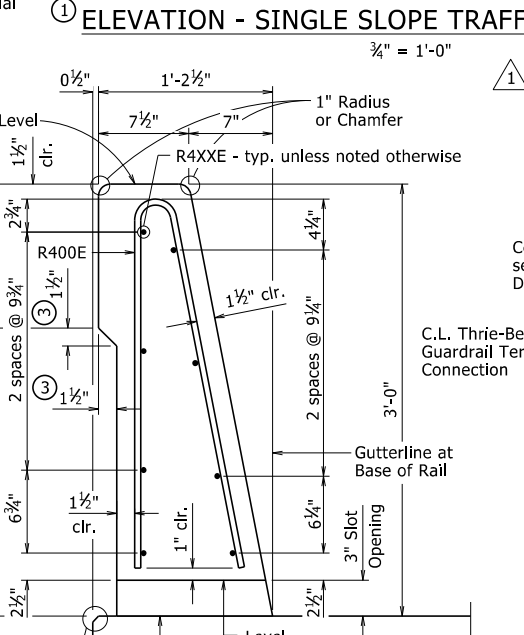
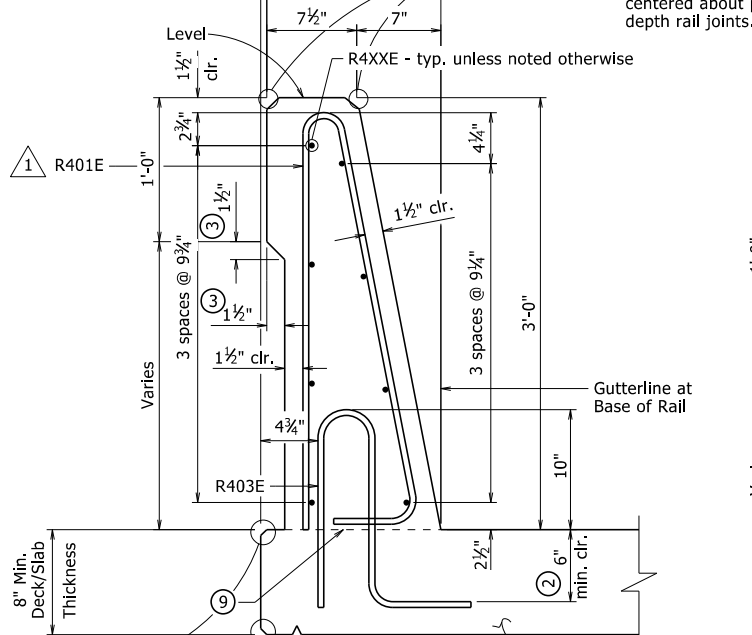
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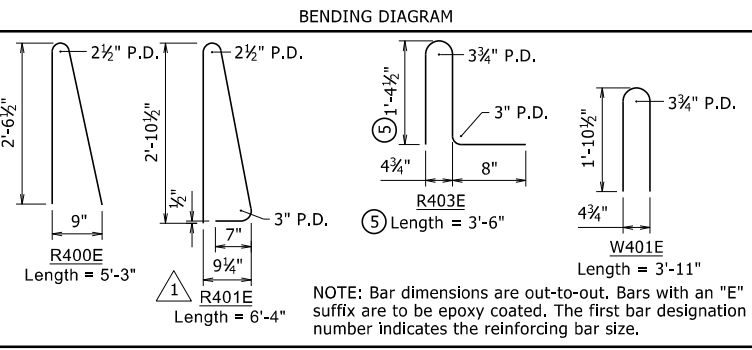
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				JOB NO.				

TYPE SSTR36 - 55070

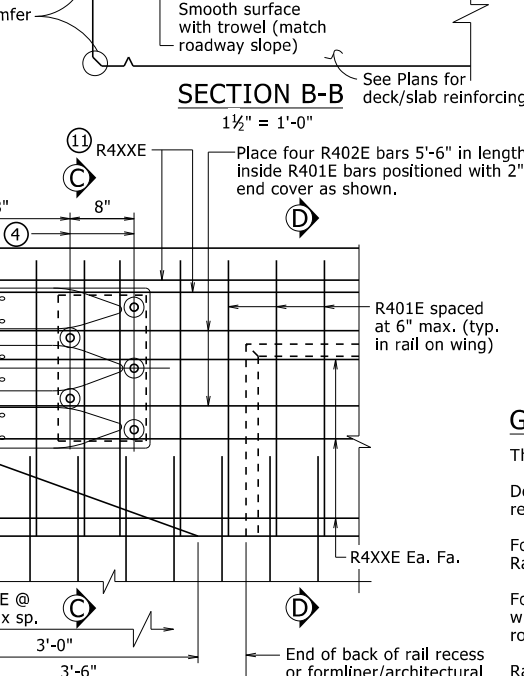
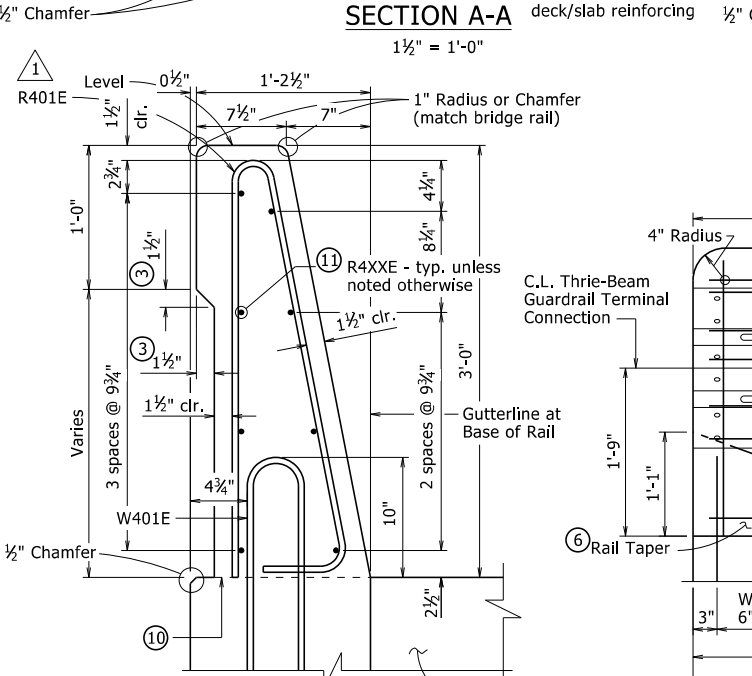
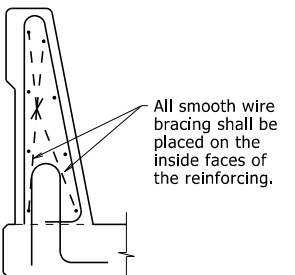
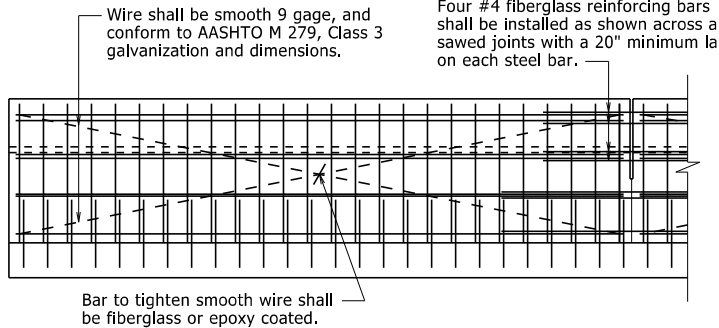
- 1 All measurements shown are along gutterline at base of rail.
- 2 Minimum embedment into deck/slab.
- 3 Eliminate recess when formliner with architectural finish is used. See Plans for additional information.
- 4 C.L. 1" ϕ formed holes for $\frac{7}{8}$ " ϕ bolts. See Standard Drawings GR-10 and GR-12 for additional information.
- 5 Only applicable for bridges with rail cast directly on bridge deck/slab surface. Increase height as necessary for sidewalks, see Plans for additional information.
- 6 Field bend front leg of R401E bar as required to maintain minimum $\frac{1}{2}$ " front face clearance within limits of taper.
- 7 When optional slip forming is used: to control cracking, all rail joints must be V-grooved around the perimeter of the rail prior to concrete set and sawing. Depth of V-groove shall be $\frac{1}{2}$ ". Sawing of the joints shall be done as soon as practical to a width of $\frac{1}{4}$ ", and must be controlled so it will follow the V-Groove.
- 8 End posts shall be the same length within a panel.



Bolt Special End Shoe to face of rail as shown. Tapered washers are not required between the head of the bolts and the sloped face of the rail. Tighten the five terminal connection bolts in a well distributed pattern to prevent damage or distortion of the thrie-beam connection. Cut bolts off after installation so as to extend no more than $\frac{3}{4}$ " beyond nut. Paint ends of cut-off bolts with zinc-rich paint. This work and material will not be paid for directly but shall be considered subsidiary to associated contract items.



NOTE: Bar dimensions are out-to-out. Bars with an "E" suffix are to be epoxy coated. The first bar designation number indicates the reinforcing bar size.



- 9 Required Construction Joint. Level where water flows away from rail, match roadway slope where water flows toward rail.
- 10 Top of Abutment Wing & Required Construction Joint (match bridge deck/slab construction joint slope). See Plans for Wing reinforcing.
- 11 These bars will not be included in the "Table of Variables". See Plans for details.

TABLE OF VARIABLES

Closed Rail Panels			Open Rail Panels				
Panel Length	A	R4XXE	Panel Length	B	C	D	E

See Plans for table with values.

GENERAL NOTES

This rail has been successfully evaluated by full-scale crash test to meet MASH TL-4 criteria.

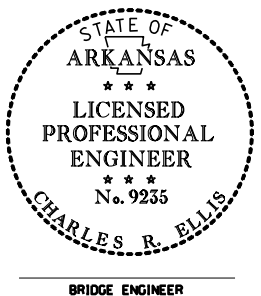
Details shown are general for bridges without sidewalks. See Plans for additional details and requirements specific to bridges with sidewalks.

For Table of Variables, Rail Bar List, locations of Full and Partial Depth Rail Joints, and Wing & Rail Bar Lists, see Plans.

For location of drain openings, see Plans. Drain openings shown are not applicable for bridges with sidewalks. Drain openings will not be allowed over Railroad Right of Way, travelled roadways, and protected waterways.

Rail Terminus details, including Rail Taper, are not applicable for bridges with sidewalks or when bridge railing is continuous with roadway railing.

Scales shown are for 22"x34" drawings. When using 11"x17" drawings, reduce scale by one half.



BRIDGE ENGINEER

DETAILS OF OPTIONAL SLIP FORMING OF BRIDGE TRAFFIC RAIL

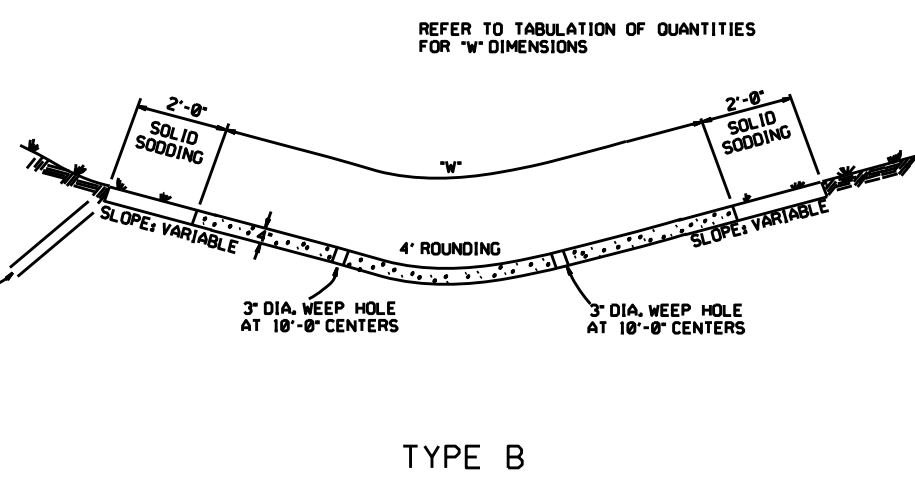
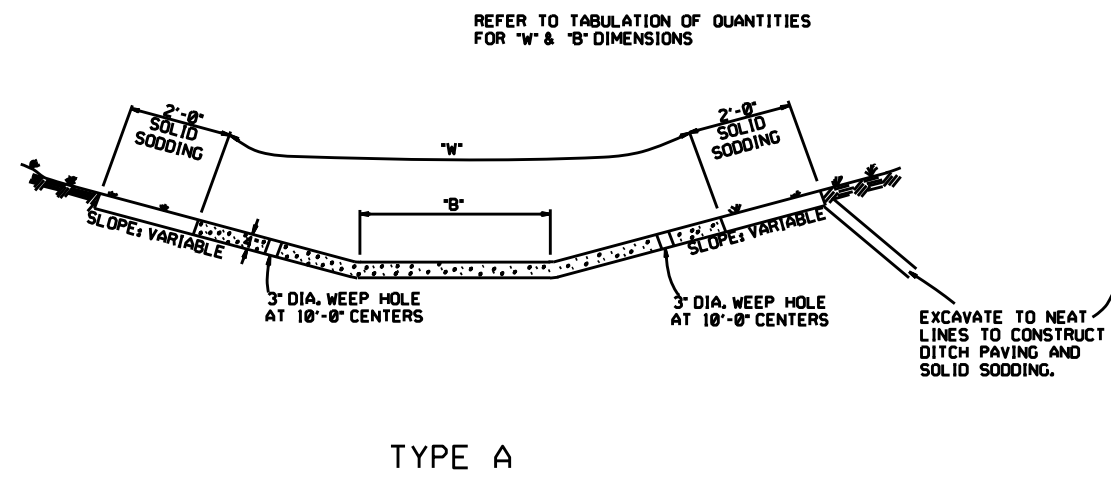
- 1 Modified bending diagram and spacing for R401E bar.
- By: CGP, Checked by: CMW 09/27/2022

THESE DETAILS ARE APPLICABLE UNLESS OTHERWISE SHOWN IN THE PLAN DETAILS, SPECIAL PROVISIONS, OR SUPPLEMENTAL SPECIFICATIONS.

STANDARD DETAILS FOR
BRIDGE TRAFFIC RAIL
TYPE SSTR36
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

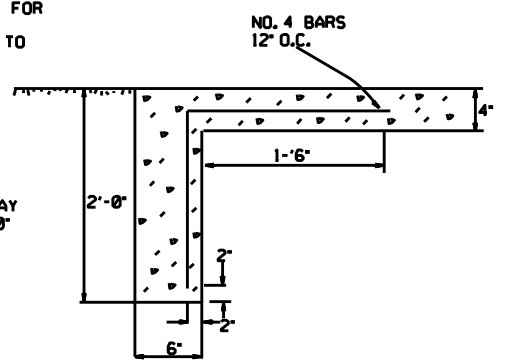
DRAWN BY: Kwy DATE: 11/5/2020 FILENAME: b55070.dgn
CHECKED BY: LJB DATE: 11/5/2020 SCALE: As Noted
DESIGNED BY: STD. DATE: ----

DRAWING NO. 55070



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

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



TOE WALL DETAIL FOR CONCRETE DITCH PAVING

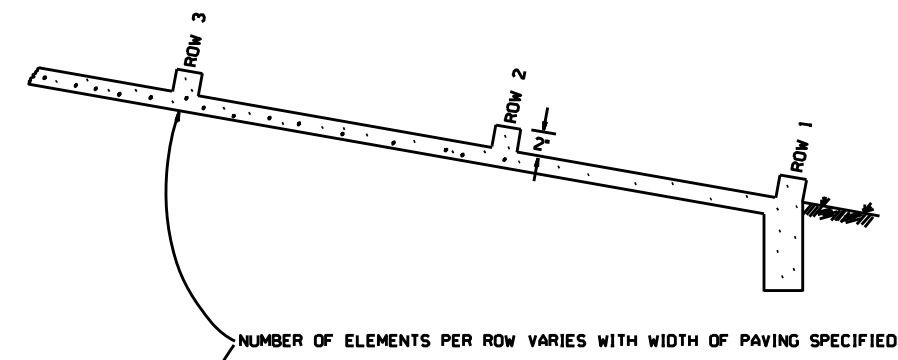
GENERAL NOTES:

THE FULL WIDTH OF EACH SECTION SHALL BE POURED MONOLITHICALLY.

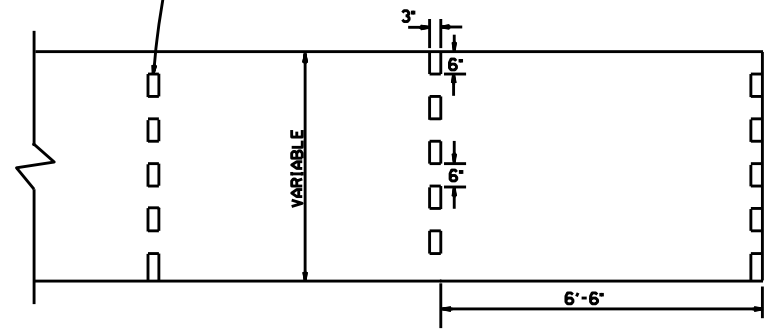
TOE WALLS TO BE CONSTRUCTED FULL WIDTH AT EACH END OF DITCH PAVING, AND POURED MONOLITHICALLY.

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

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



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



ENERGY DISSIPATORS
(NO SCALE)

DATE	REVISION	DATE FILMED
12-8-16	CORRECTED ENERGY DISSIPATOR DRAWING AND NOTE	
11-17-10	ADDED GENERAL NOTE	
6-2-94	ADDED GENERAL NOTE ABOUT SOLID SODDING	
11-30-8	ELIMINATED MIN. ROWS OF ELEMENTS	111-30-89
7-15-88	REVISED DISSIPATOR NOTE	653-7-15-88
4-3-87	REVISED ENERGY DISSIPATOR	671-4-3-87
1-9-87	MODIFIED NOTE ON ENERGY DISS.	532-1-9-87
11-3-86	ADDED NOTE TO ENERGY DISS.	549-12-1-86
11-1-84	ENERGY DISSIPATOR DETAILS	508-11-1-84
	ADDED	
11-1-84	EXCAVATION DETAILS ADDED	
	TYPED A & B	
10-2-72	REVISED AND REDRAWN	508-10-2-72
	DATE	REVISION
		DATE FILMED

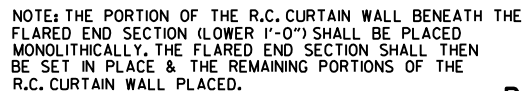
ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE DITCH PAVING

STANDARD DRAWING CDP-1



NOTE: THE CONFIGURATION
OF CONTOURS WILL VARY
WITH FORESLOPE VARIATIONS.



NOTE: THE PRECAST CURTAIN WALL WILL BE SET AND BACKFILLED WITH COMPACTED MATERIAL. THE FLARED END SECTION SHALL THEN BE SET IN PLACE AND THE 1" RECESS FILLED WITH GROUT, WHERE "L" EXCEEDS 11' THE CURTAIN WALL MAY BE CAST IN TWO (2) OR MORE SECTIONS, THE METHOD OF JOINING THE SECTIONS FOR INSTALLATION SHALL BE APPROVED BY THE ENGINEER.

ALL REINFORCING STEEL #4 BARS @ 6" O.C.

NOTE: QUANTITIES SHOWN ABOVE ARE FOR ONE (1) END OF F.E.S.

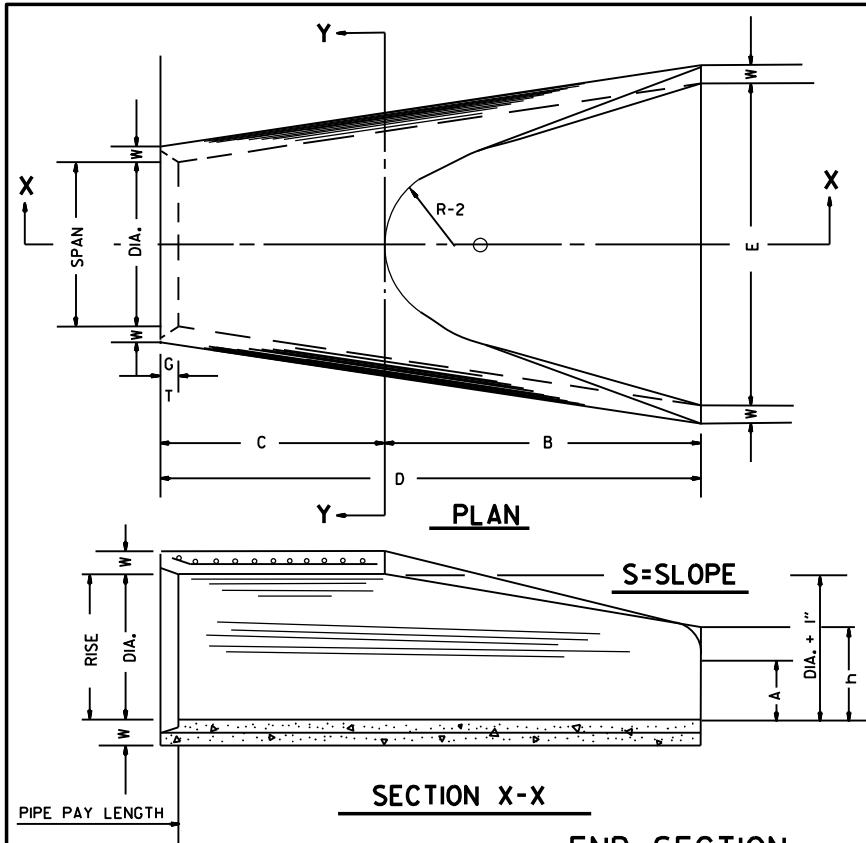
GENERAL NOTES

1. A CAST-IN-PLACE OR PRECAST CURTAIN WALL MAY BE USED. PAYMENT FOR THE CURTAIN WALL SHALL BE CONSIDERED TO BE INCLUDED IN THE UNIT PRICE BID EACH FOR FLARED END SECTIONS OF THE SEVERAL SIZES, WHICH PRICE SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIALS INCLUDING REINFORCING STEEL AND CONCRETE; FOR FORMS, MIXING AND PLACING; FOR EXCAVATION AND BACKFILL, AND FOR ALL LABOR, TOOLS, EQUIPMENT AND INCIDENTALS NECESSARY TO COMPLETE THE WORK.
2. ALL EXPOSED EDGES SHALL BE CHAMFERED $\frac{3}{4}$ ".
3. CONCRETE FOR CURTAIN WALL SHALL MEET THE REQUIREMENTS FOR CLASS A OR S CONCRETE AS PROVIDED IN SECTION 802 OF THE STANDARD SPECIFICATIONS OR FOR PAVING CONCRETE AS PROVIDED IN SECTION 501 OF THE STANDARD SPECIFICATIONS.
4. WELDED WIRE MESH 3×3 W/10 $\times$ W/10 MAY BE USED IN LIEU OF REINFORCING BARS.



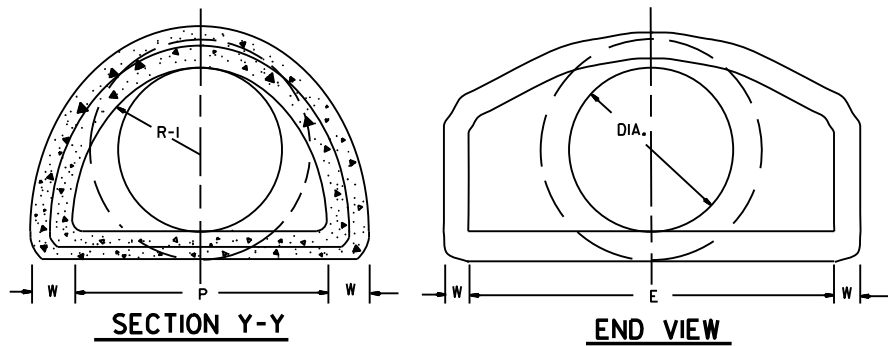
SECTIONAL VIEW "X-X"

10-18-96	ADDED NOTE TO SOLID SODDING		ARKANSAS STATE HIGHWAY COMMISSION
10-12-95	CORRECTED SPELLING		FLARED END SECTION
11- 3-94	ADDED GENERAL NOTE NO. 4		
8-15-91	REV. CURTAIN WALL QUANT. STEEL SCH. & SOLID SOD QUANT.		
11-12-90	ALLOW PRECAST IN 2 OR MORE PIECES CHAMFER EDGES		
5-15-90	ADDED PRECAST WALL & GENERAL NOTES		
10-2-72	REVISED AND REDRAWN		STANDARD DRAWING FES-1
DATE	REVISION	FILMED	



END SECTION
FOR REINFORCED CONCRETE PIPE CULVERTS

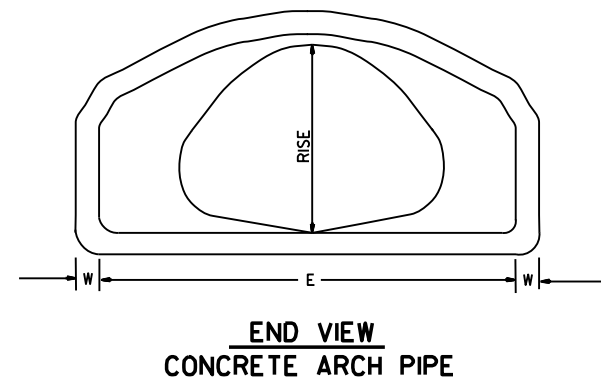
TABLE OF DIMENSIONS															
DIA.	WALL	A	B	C	D	E	S	DIA. + 1"	P	R-1	R-2	G-T	WT.	h	
18"	2 1/2"	9"	2'-3"	3'-10"	6'-1"	3'-0"	3:1	19"	29"	15 1/2"	12"	2"	1000	1'-0 1/2"	
24"	3"	9 1/2"	3'-7 1/2"	2'-6"	6'-1 1/2"	4'-0"	3:1	25"	33 3/8"	16 1/8"	14"	2 1/2"	1600	1'-1 1/2"	
30"	3 1/2"	1'-0"	4'-6"	1'-7 3/4"	6'-1 3/4"	5'-0"	3:1	31"	37"	18 1/2"	15"	3 1/4"	1940	1'-4 5/8"	
36"	4"	1'-3"	5'-3"	2'-10 1/4"	8'-1 3/4"	6'-0"	3:1	37"	47 1/8"	24 5/8"	20"	3 1/2"	4100	1'-8"	
42"	4 1/2"	1'-9"	5'-3"	2'-11"	8'-2"	6'-6"	3:1	43"	53 1/8"	27 1/2"	22"	3 1/2"	5380	2'-2 1/2"	
48"	5"	2'-0"	6'-0"	2'-2"	8'-2"	7'-0"	3:1	49"	56 1/2"	28 1/2"	22"	3 1/2"	6550	2'-6"	
54"	5 1/2"	2'-4"	6'-6"	1'-10"	8'-4"	7'-6"	3:1	55"	65 1/2"	33 1/8"	24"	4"	8750	2'-10 1/2"	
60"	6"	2'-10"	6'-6"	1'-10"	8'-4"	8'-0"	3:1	61"	72 1/2"	36 1/8"	24"	4"	9270	3'-5"	
72"	7"	3'-10"	6'-6"	1'-10"	8'-4"	9'-0"	3:1	73"	77 9/16"	38 1/8"	24"	5"	13250	4'-6"	



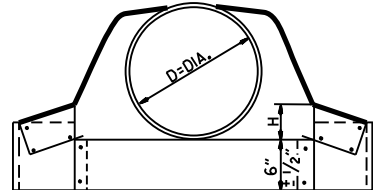
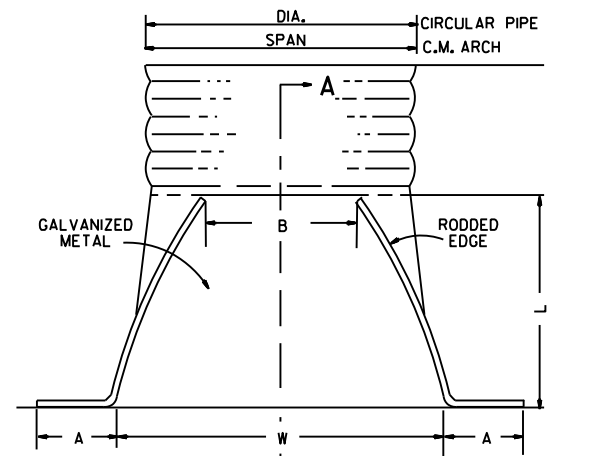
NOTE: TONGUE END ON UPSTREAM SECTION
GROOVE END ON DOWNSTREAM SECTION

ARCH PIPE																		
EQUIV. DIA.	• SPAN				• RISE				W	A	B	C	D	E	P	R2	G-T	S
	AASHTO M 206	AHD NOMINAL	AASHTO M 206	AHD NOMINAL	AASHTO M 206	AHD NOMINAL	AASHTO M 206	AHD NOMINAL										
	INCHES																	
15	18	18	18	18	18	18	18	2"	4"	2'-0"	4'-0"	6'-0"	3'-0"	29"	12"	1/2"	2/21	
18	22	22	22	13/2	14	21/2	5"	2'-0"	4'-1"	6'-1"	3'-6"	32/8	13"	2/2	2/21	2/21		
21	26	26	26	15/2	16	23/4	7"	2'-3"	3'-10"	6'-1"	4'-0"	34/8	14"	2/2	2/21	2/21		
24	28 1/2	29	29	18	18	3"	9"	2'-3"	3'-10"	6'-1"	5'-0"	36 1/8"	15"	2/2	2/21	2/21		
30	36 1/4	36	22 1/2	23	3 1/2	10"	3'-1"	3'-0 1/2	6'-1 1/2	6'-0"	47 1/8"	20"	3"	2/21	2/21			
36	43 3/4	44	26 3/8	27	4"	10 1/2"	4'-0"	2'-11 1/2	6'-1 1/2	6'-6"	54 1/8"	22"	3 1/2	2/21	2/21			
42	51 1/8	51	31 1/2	31	4 1/2	11 1/2"	4'-7"	1'-10 1/4	6'-5 1/4	7'-2"	59 1/2"	23"	3 3/4	2/21	2/21			
48	58 1/2	59	36	36	5"	1'-3"	5'-3"	2'-10 3/4	8'-1 3/4	7'-10"	70 1/8"	24"	4 1/4	2/21	2/21			
54	65	65	40	40	5 1/2	1'-7"	5'-3"	2'-11"	8'-2"	8'-6"	72 1/8"	24"	4 3/4	2/21	2/21			
60	73	73	45	45	6"	1'-10"	5'-6"	2'-8"	8'-2"	9'-0"	77 1/8"	24"	5"	2/21	2/21			

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

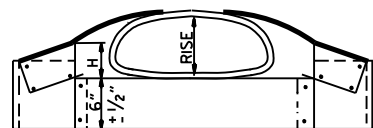


END VIEW
CONCRETE ARCH PIPE



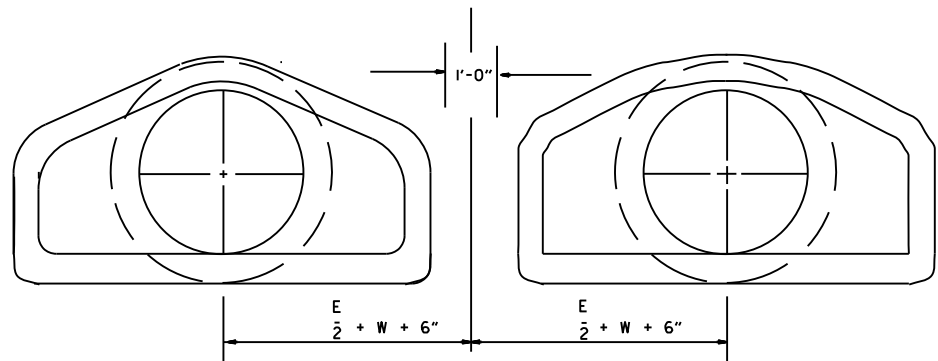
CIRCULAR PIPE

CIRCULAR PIPE								
D. DIA.	GAUGE	A	B.	H	L	W	S	
		1" +	MAX.	1" +	1 1/2" +	2" +		
INCHES								
12	16	6	6	6	21	24	2 1/2	1
15	16	7	8	6	26	30	2 1/2	1
18	16	8	10	6	31	36	2 1/2	1
21	16	9	12	6	36	42	2 1/2	1
24	16	10	13	6	41	48	2 1/2	1
30	14	12	16	8	51	60	2 1/2	1
36	14	14	19	9	60	72	2 1/2	1
42	12	16	22	11	69	84	2 1/2	1
48	12	18	27	12	78	90	2 1/2	1
54	12	18	30	12	84	102	2 1	1
60	12	18	33	12	87	114	1 3/4	1
66	12	18	36	12	87	120	1 1/2	1
72	12	18	39	12	87	126	1 1/3	1

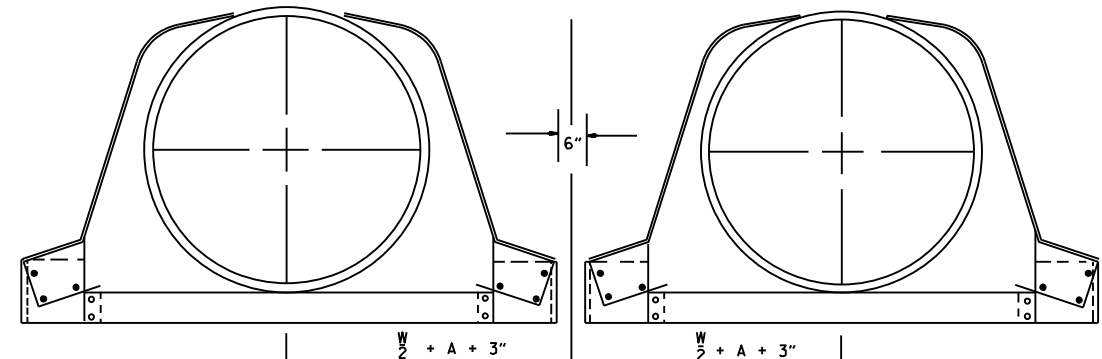


C.M. ARCH PIPE

C.M. ARCH PIPE									
EQUIV. DIA.	SPAN	RISE	A	B	H	L	W	S	GAUGE
			1" ±	MAX.	1" ±	1½" ±	2" ±		
INCHES									
15"	17	13	7	9	6	19	30	2½:1	16
18"	21	15	7	10	6	23	36	2½:1	16
21"	24	18	8	12	6	28	42	2½:1	16
24"	28	20	9	14	6	32	48	2½:1	16
30"	35	24	10	16	6	39	60	2½:1	14
36"	42	29	12	18	8	46	75	2½:1	14
42"	49	33	13	21	9	53	85	2½:1	12
48"	57	38	18	26	12	63	90	2½:1	12
54"	64	43	18	30	12	70	102	2¼:1	12
60"	71	47	18	33	12	77	114	2¼:1	12



MULTIPLE R.C. PIPE CULVERTS



MULTIPLE C.M. PIPE CULVERTS

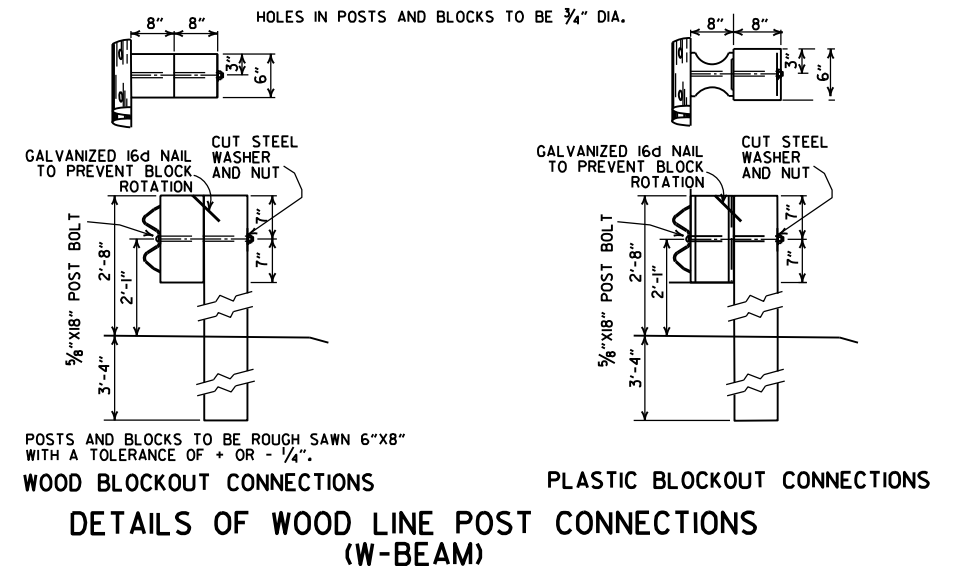
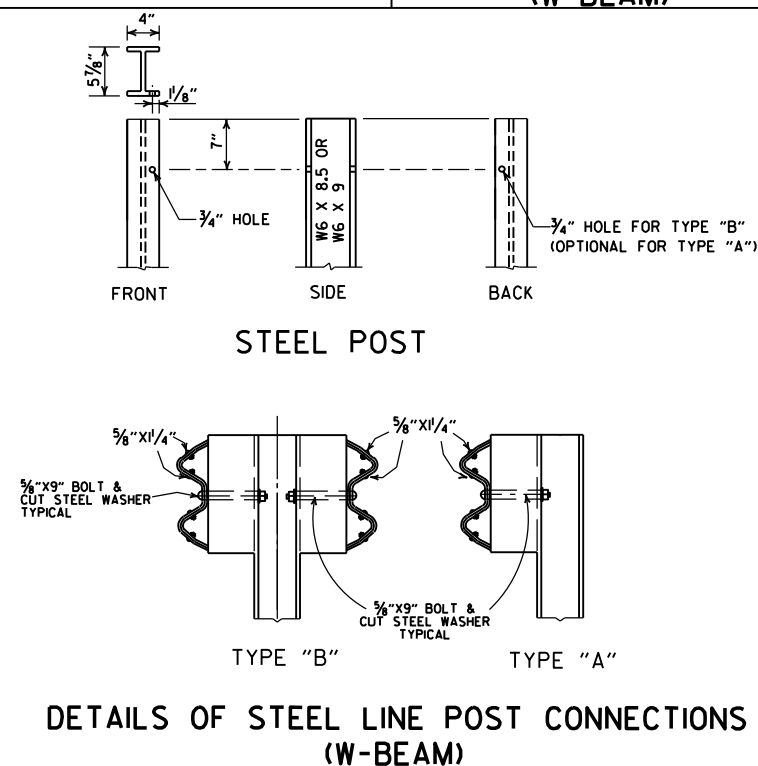
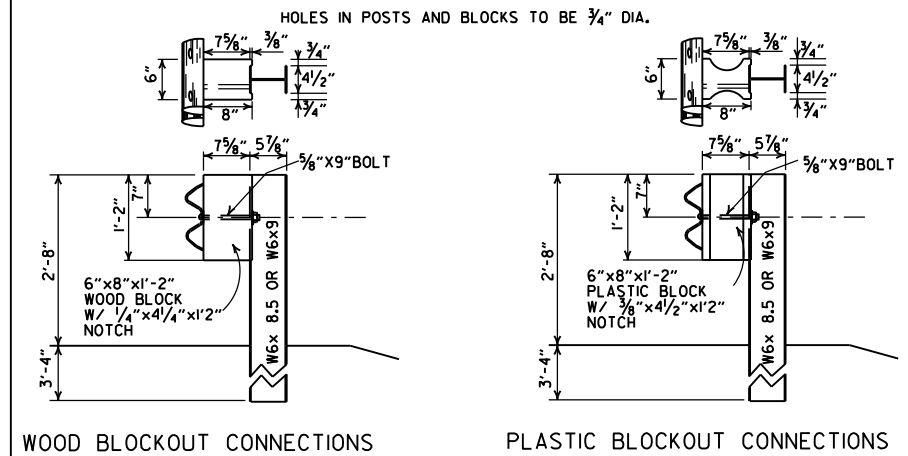
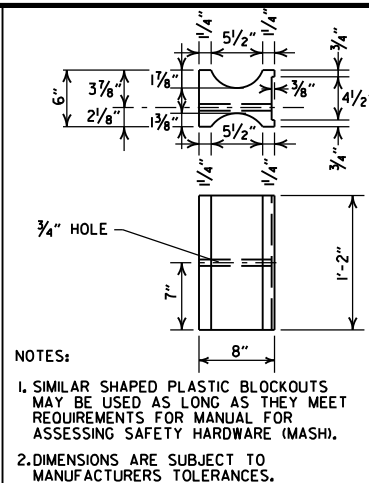
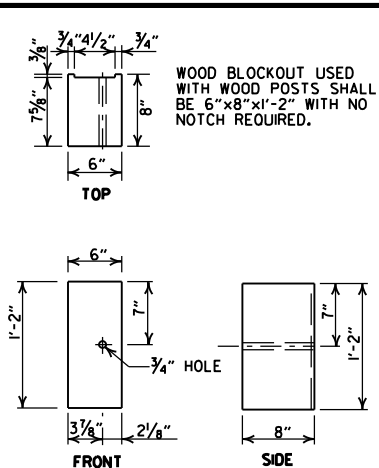
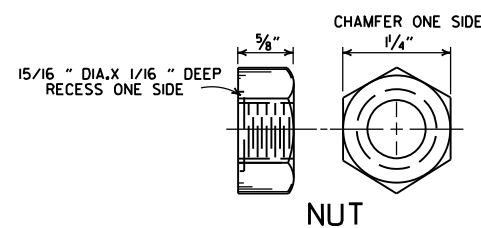
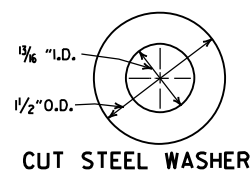
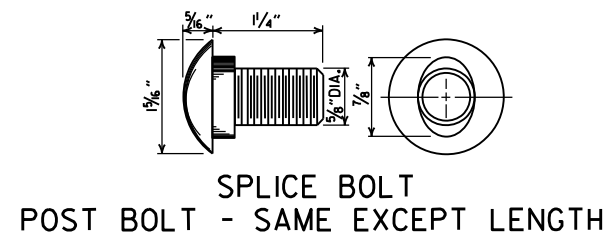
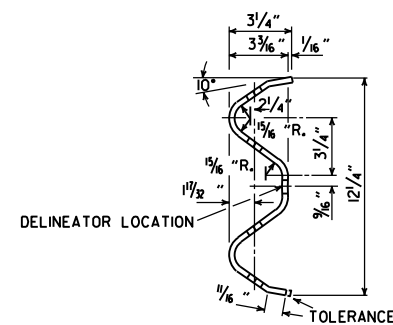
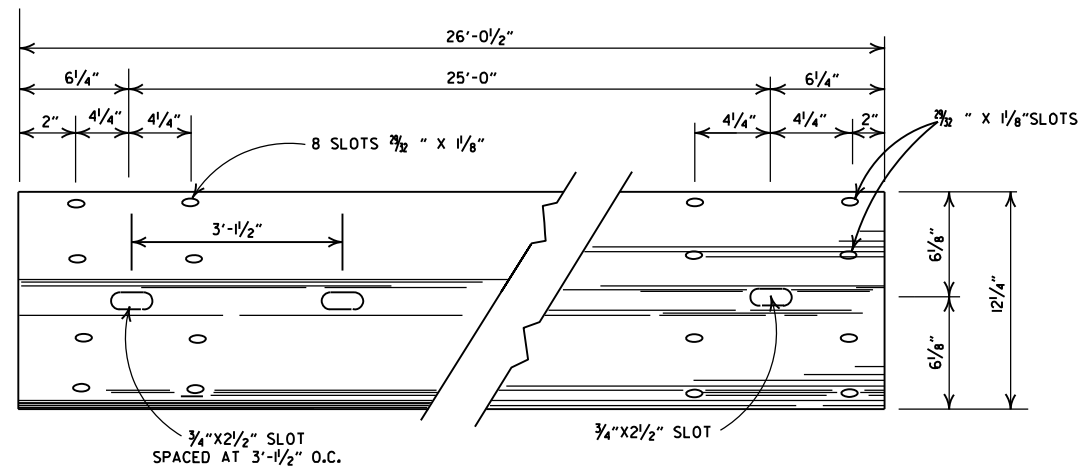
10-18-96	REVISED ASTM REF. TO AASHTO		ARKANSAS STATE HIGHWAY COMMISSION
5-15-80	REVISED DISTANCE BETWEEN MULTIPLE R.C.P. F.E.S.	664-5-15-80	
7-14-78	C.M. ARCH SIZES TO CONFORM WITH AASHTO SIZES	752-7-14-78	
8-22-75	ADDED MULTIPLE PIPE CULVERTS	517-8-22-75	
12-5-74	REMOVED NOTE RE REINF. FOR R.C. F.E.S.	500-12-5-74	
5-24-73	CMP END SECTION, SHOW PIPE PAY LENGTH	627-5-24-73	
10-2-72	REVISED AND REDRAWN	760-10-2-72	
DATE	REVISION	FILED	

FLARED END SECTION

STANDARD DRAWING FES-2

END SECTIONS FOR CORRUGATED METAL PIPE CULVERTS

NOTE: ALTERNATE CONNECTIONS TO THE PIPE CULVERTS, IN ACCORDANCE WITH MANUFACTURER'S STANDARD PRACTICES, MAY BE MADE SUBJECT TO THE APPROVAL OF THE ENGINEER.

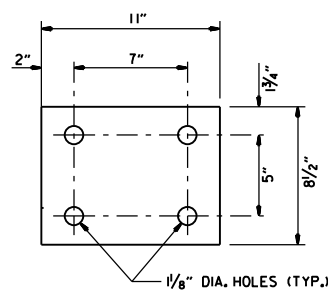


05-19-22	REVISED GENERAL NOTES. ADDED DELINEATOR LOCATION.	
11-07-19	RENUMBERED AND RENAMED	
11-16-17	REVISED GENERAL NOTES AND RAISED GUARDRAIL HEIGHT 3"	
07-14-10	RAISED HEIGHT OF GUARDRAIL 1"	
10-15-09	ADDED REFERENCE TO MASH	
04-10-03	REVISED GENERAL NOTES	
08-22-02	REVISED DIMENSION ON WOOD & PLASTIC BLOCKOUT CONNECTIONS & STEEL POST	
11-16-01	REVISED WOOD BLOCKOUT & DETAILS OF WOOD LINE POST CONNECTIONS	
03-30-00	REMOVED GUARDRAIL AT BRIDGE ENDS	
01-12-00	ADDED PLASTIC BLOCKOUT	
08-12-98	REV. BLOCKOUTS TO WOOD, DELETED CONC. POST & REV. GENERAL NOTE, DELETED DET. OF GUARDRAIL 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	
04-03-97	REMOVED "LAP IN DIRECTION OF TRAFFIC" NOTE & PLACED ARROWS ON WASHERS	
10-18-96	REVISED WOOD POST NOTE	
06-02-94	ADDED ALT. STEEL POST SIZE	
08-05-93	REVISED STEEL POST SIZE	8-5-93
10-01-92	REDRAWN & REVISED	10-1-92
08-15-91	REVISED WASHER NOTE	8-15-91
08-02-90	REV. GEN. NOTE & DEPTH OF ANC. POST IN ROCK	8-2-90
07-15-88	REVISED SECTION 3 & GENERAL NOTES	
03-04-88	REV. ANCHOR POST .ELEV. NOTES & POST IN ROCK	780-3-4-88
10-30-87	REVISED WOOD LINE POST DETAIL	546-10-30-87
10-09-87	REDRAWN & REVISED	802-10-9-87
DATE	REVISION	FILMED

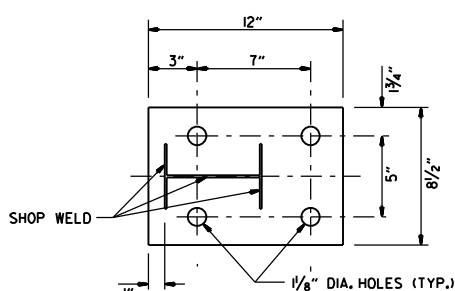
ARKANSAS STATE HIGHWAY COMMISSION

GUARDRAIL DETAILS

STANDARD DRAWING GR-6

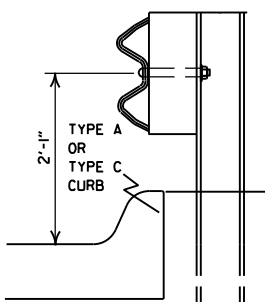


WASHER PLATE

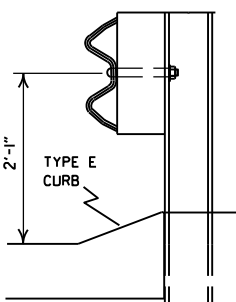


BASE PLATE

Note: Bolts, nuts, washers and plates shall be galvanized in accordance with Section 807 of the Standard Specifications.



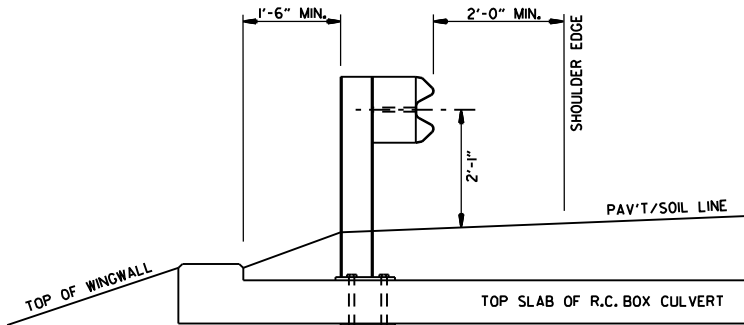
FOR DESIGN SPEEDS OF 50 MPH OR LESS
ALIGN FACE OF GUARDRAIL WITH FACE OF CURB.



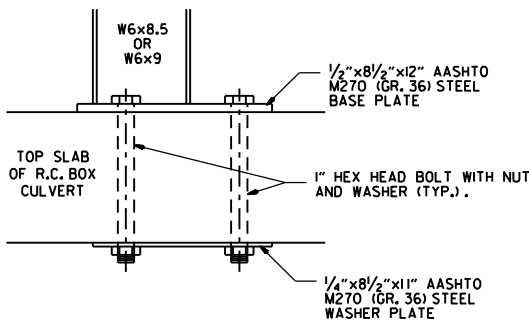
FOR DESIGN SPEEDS OF 55 MPH OR MORE
PLACE GUARDRAIL POSTS AGAINST BACK OF CURB.

DETAIL OF GUARDRAIL PLACEMENT BEHIND CURB (W-BEAM)

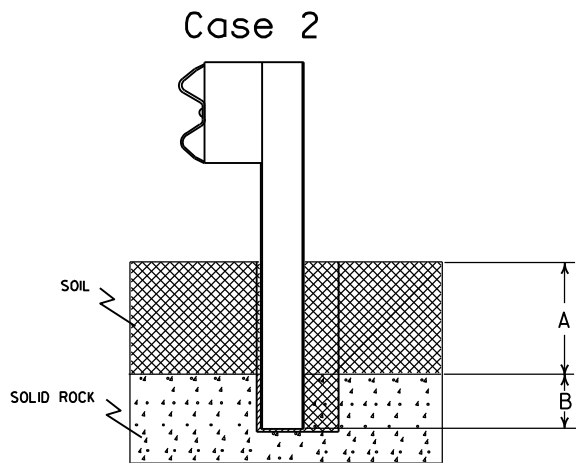
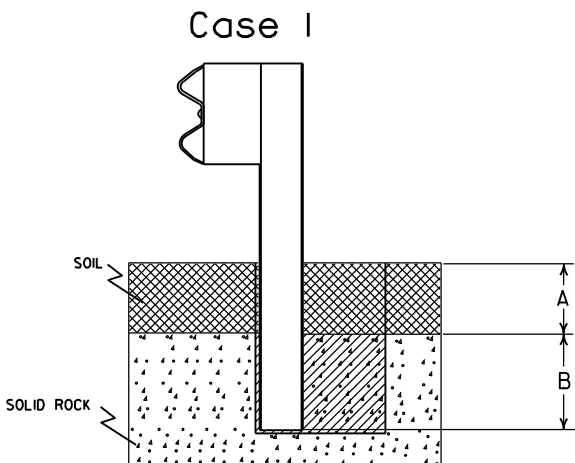
FOR DESIGN SPEEDS OF 50 MPH OR LESS ALL CURB FACES, AS SHOWN ON STD. DRWG. CG-1, MAY BE USED. FOR DESIGN SPEEDS OF 55 MPH OR MORE TYPE "E" CURB FACE SHALL BE USED.



SECTION A-A

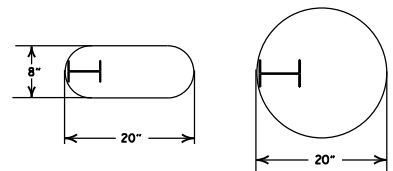


DETAIL OF CONNECTION



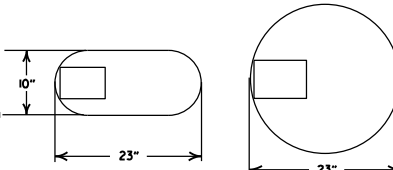
Plan View Steel Posts

Either hole configuration acceptable



Plan View Wood Posts

Either hole configuration acceptable



Notes: For overlying soil depths (A) ranging from 0 to 18", the depth of required drilling (B) is equal to 24".

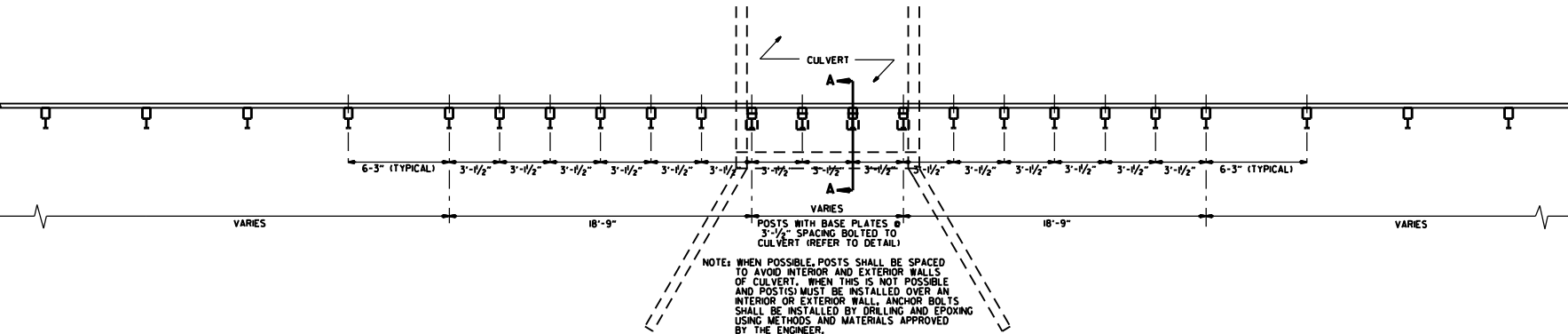
Zone A:
Backfill according to Section 617.03(a).

Zone B:
Backfill hole in 6" lifts with material meeting the requirements of Section 802.02(c) - Alternate gradation. Compact to 95% maximum dry density per ASTM D-698.

Notes: For overlying soil depths (A) ranging from 18" to 44", the depth of required drilling (B) is equal to either 12" or 44" minus the depth of soil whichever is less.

Zone A & B:
Backfill according to Section 617.03(a).

DETAIL OF POST PLACEMENT IN SOLID ROCK (W-BEAM)



PLAN LAYOUT OF TYPE A GUARDRAIL AT LOW-FILL CULVERTS

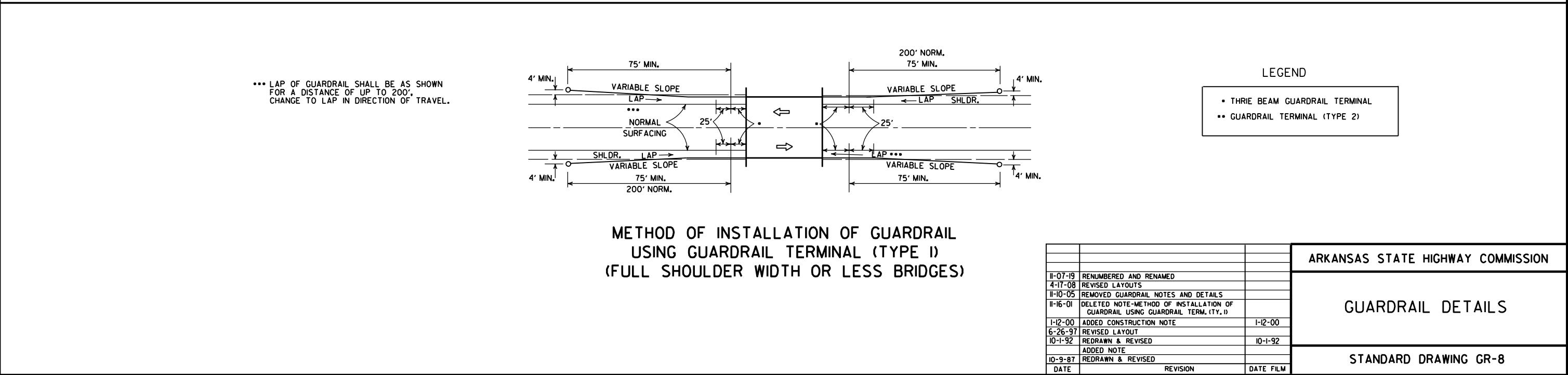
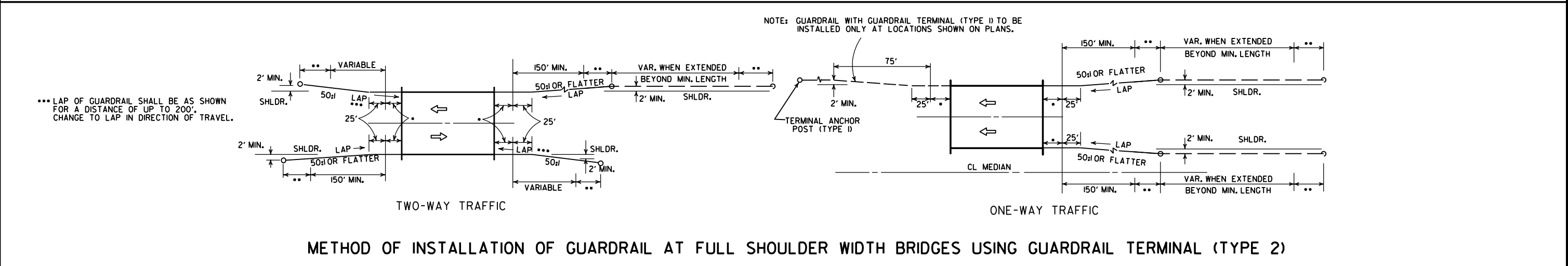
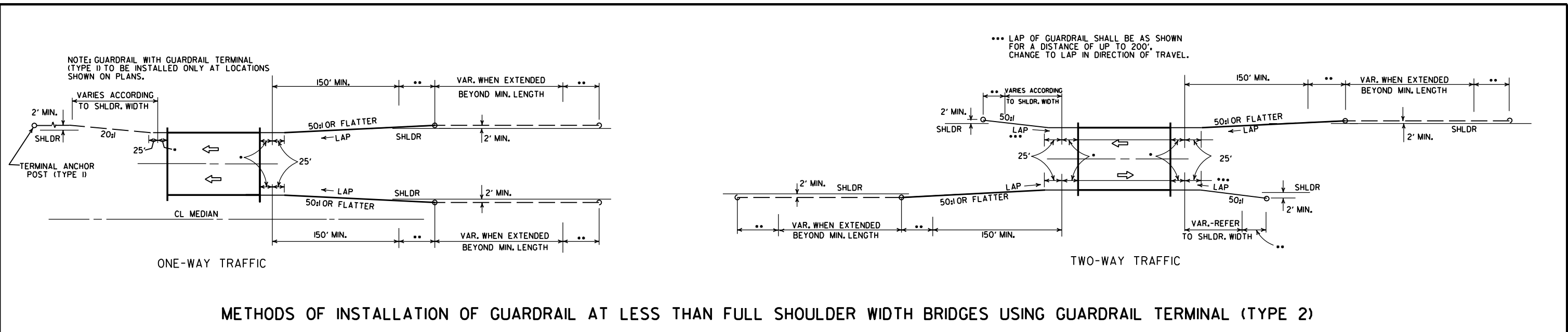
NOTE: THIS DETAIL IS TO BE USED ONLY WHEN THE COVER OVER THE CULVERT DOES NOT PERMIT FULL EMBEDMENT OF GUARDRAIL POSTS AS SHOWN ON STD. DRWG. GR-6.

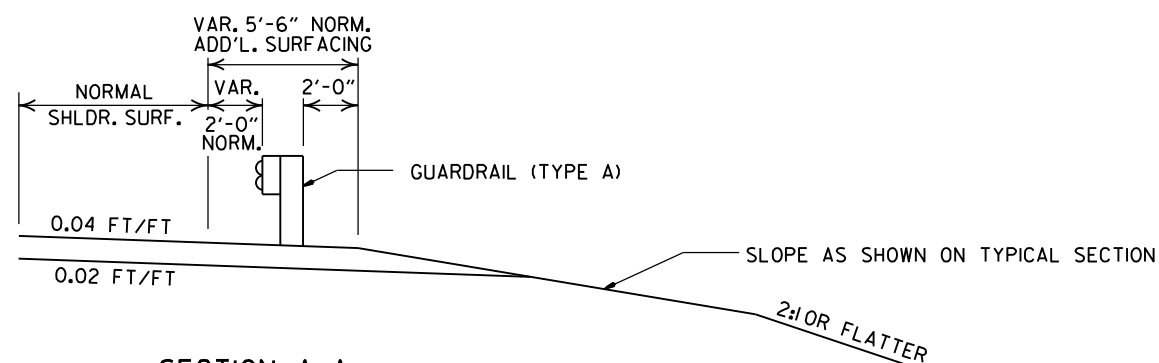
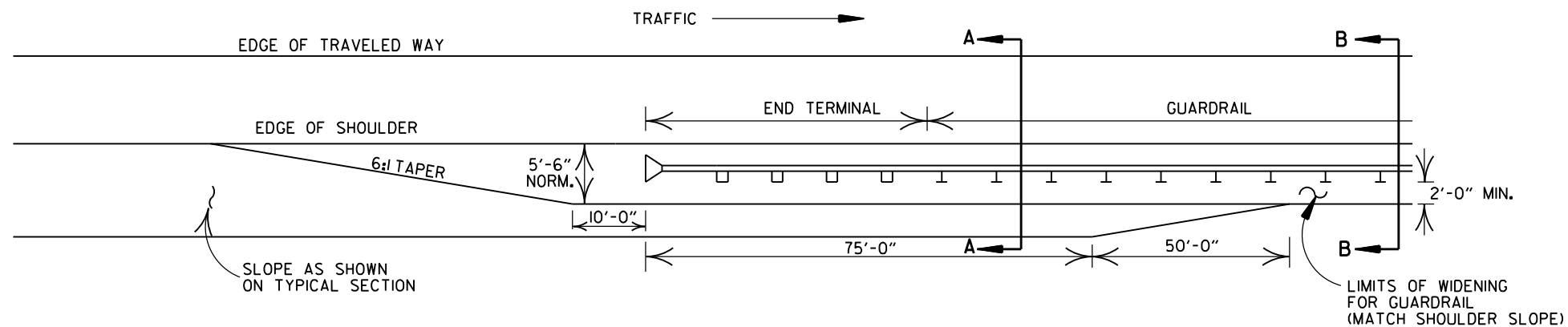
DATE	REVISION	FILMED
11-07-19	RENUMBERED, RENAMED, REVISED REFERENCE	
11-16-17	REVISED GUARDRAIL HEIGHT	
07-14-10	RAISED HEIGHT OF GUARDRAIL 1"	
04-12-07	REVISED DETAIL OF GUARDRAIL PLACEMENT BEHIND CURB	
11-10-05	ADDED GUARDRAIL PLACEMENT BEHIND CURB; REVISED DETAIL OF CONNECTION	
11-18-04	REVISED POST PLACEMENT IN ROCK & CULVERT CONNECTION DETAILS, ADDED DETAIL FOR GUARDRAIL PLACEMENT AT LOW-FILL CULVERTS	
03-30-00	REMOVED CONCRETE INSERT ANCHOR	
08-12-98	CHANGED STEEL SPACER BLOCK TO WOOD BLOCKOUT, ADDED DET. OF GUARDRAIL CONNECTION TO R.C. BOX CULV'T., DELETED DET. OF STEEL LINE POST CONN. & ADDED DET. OF GUARDRAIL PLACE. BEHIND CURB & DET. OF POSTPLACE IN SOLID ROCK	
04-03-96	PLACED ARROWS AT CUT STEEL WASHERS	4-3-96
10-18-96	REV. ASTM REF. TO AASHTO	
11-22-95	ADDED OPTIONAL HOLES	
06-02-94	REVISED ALTERNATE POST SIZE	
08-05-93	REVISED STEEL POST SIZE	
10-01-92	REDRAWN & REVISED	10-1-92
08-02-90	DEL. WASHER ON ANCHOR ASSEMBLY	8-2-90
07-15-88	CONFORMED TO 1988 SPECS	
03-04-88	REVISED ANCHOR NOTE	
10-30-87	REVISED ANCHOR ASSEMBLY	712-10-30-87
10-30-87	REVISED PLACEMENT BEHIND CURB	547-10-30-87
10-09-87	REDRAWN & REVISED	803-10-9-87
DATE	REVISION	FILMED

ARKANSAS STATE HIGHWAY COMMISSION

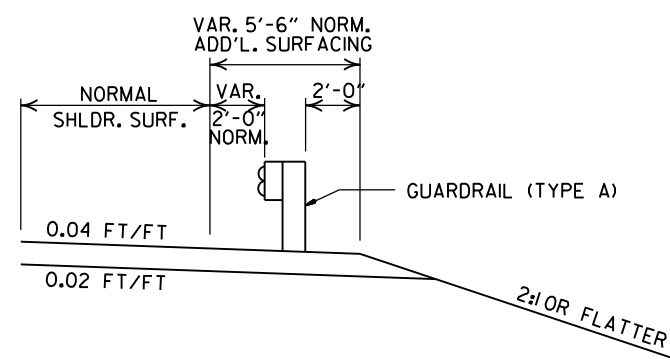
GUARDRAIL DETAILS

STANDARD DRAWING GR-7





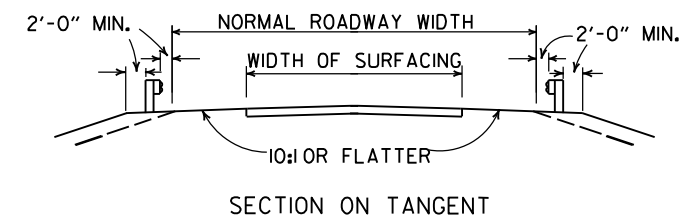
SECTION A-A



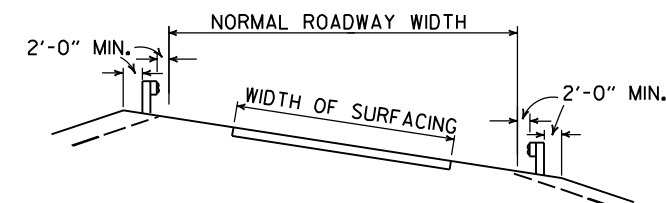
SECTION B-B

DETAILS OF WIDENING FOR GUARDRAIL

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

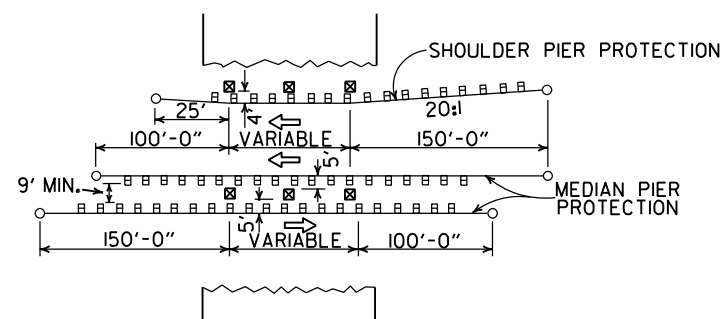


SECTION ON TANGENT



SECTION ON CURVE

DETAILS SHOWING POSITION OF GUARDRAIL ON HIGHWAY



METHOD OF INSTALLATION OF GUARDRAIL AT FIXED OBSTACLE

ARKANSAS STATE HIGHWAY COMMISSION		
GUARDRAIL DETAILS		
STANDARD DRAWING GR-9		
11-07-19	RENUMBERED AND RENAMED	
4-17-08	MINOR REVISION	
11-10-05	DRAWN	
DATE	REVISION	DATE FILM



ATTACH BLOCKOUT TO POST USING
5/8" DIA. HEX HEAD BOLTS WITH 1 1/2"
O.D. CUT STEEL WASHERS AND NUT.



HOLE PUNCHING DETAIL FOR STEEL POST & WOOD OR PLASTIC BLOCKOUTS

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



NOTE:
SEE STANDARD DRAWING GR-II FOR
GUARDRAIL POST EMBEDMENT DEPTHS.

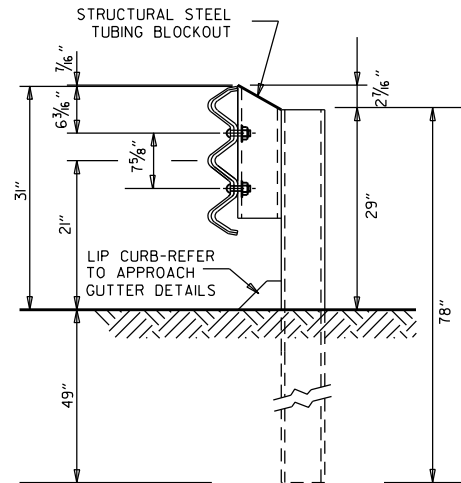
CONNECTOR PLATE

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 3/4" 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.

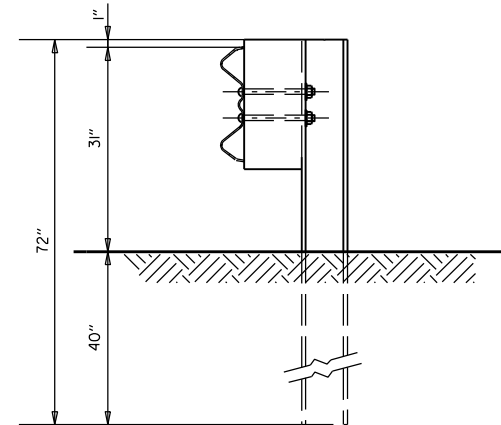


WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7f (1400 f) OR NO. 1 1350 f SOUTHERN PINE.

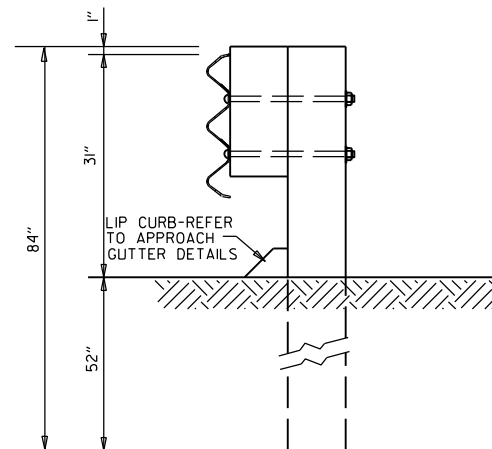
STANDARD DRAWING GR-10



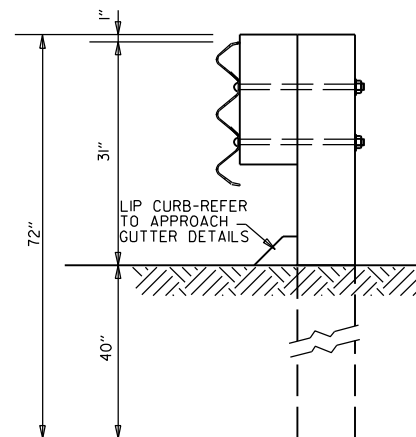
THRIE BEAM RAIL WITH STEEL TUBING BLOCKOUT
AND STEEL POST
POSTS 1-7



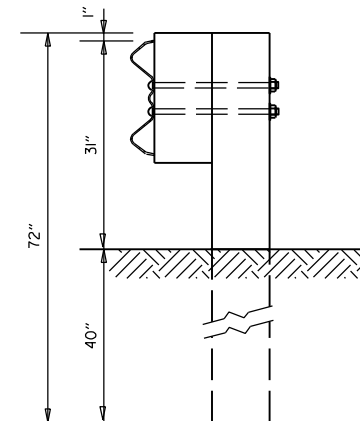
W-BEAM TO THRIE BEAM TRANSITION RAIL
WITH WOOD OR PLASTIC BLOCKOUT AND STEEL POST
POST 8



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



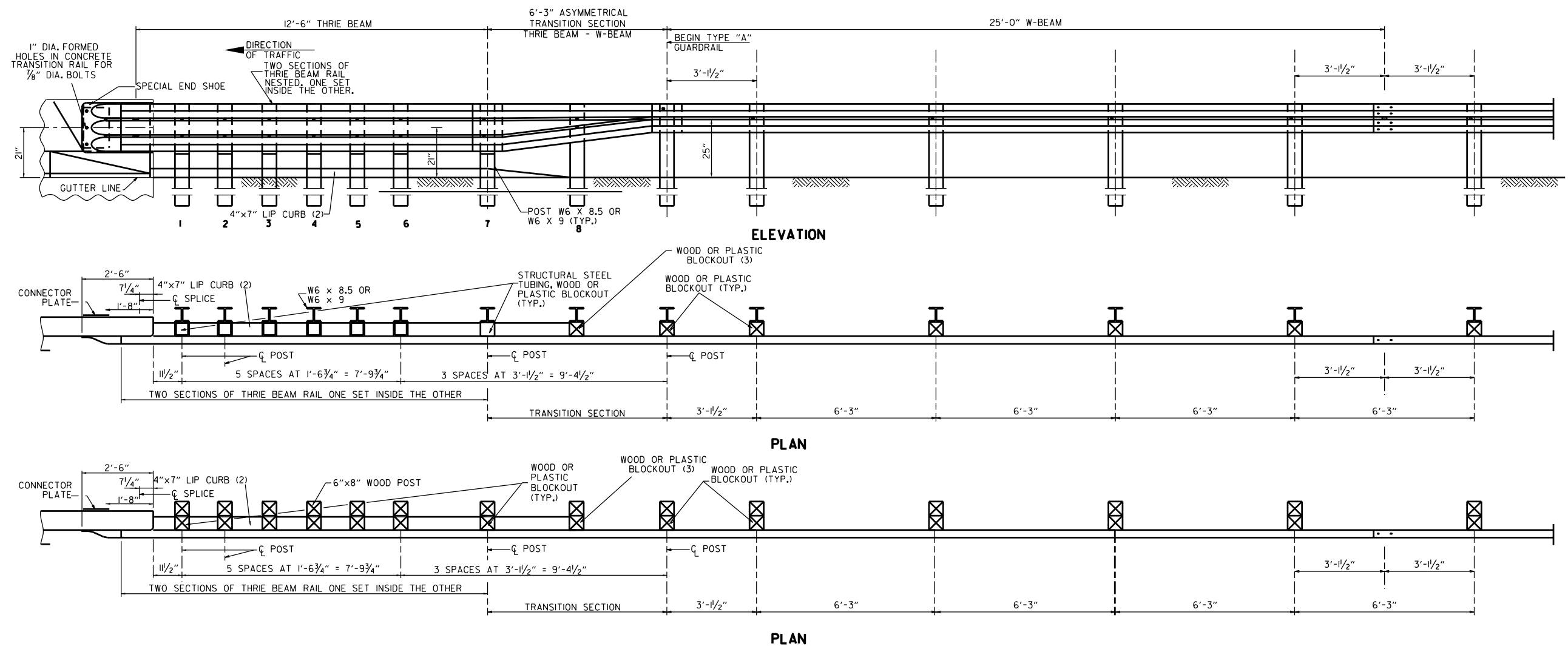
W-BEAM TO THRIE BEAM
TRANSITION RAIL WITH WOOD OR
PLASTIC BLOCKOUT & WOOD POST
POST 8

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 (350 f) SOUTHERN PINE.

			ARKANSAS STATE HIGHWAY COMMISSION
			GUARDRAIL DETAILS
11-07-19	RENAMED		
11-16-17	REVISED GUARDRAIL HEIGHT, CHANGED STD. DWG. NUMBER FROM GR-10A TO GR-II		STANDARD DRAWING GR-II
07-14-10	REVISED POST 8 DIMENSIONS		
11-29-07	ADDED PLASTIC BLOCKOUTS		
08-22-02	REVISED LIP CURB NOTE		
03-30-00	DRAWN & ISSUED		
DATE	REVISION	FILMED	



- (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 GUARDRAIL 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 3/4" BEYOND IT.

ALL LAP SPLICES, INCLUDING SPECIAL END SHOES, SHALL BE MADE IN THE DIRECTION SHOWN ON STANDARD DRAWINGS GR-8 & GR-13.

REFER TO STD. DRWG. GR-11 FOR POST DETAILS.

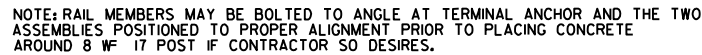
USE THRIE BEAM GUARDRAIL COMPONENTS OF SAME MATERIAL FOR ENTIRE JOB.

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

POSTS SHALL NOT BE PLACED AT SPLICE LOCATIONS ALONG W-BEAM RAILS.

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

			ARKANSAS STATE HIGHWAY COMMISSION
			GUARDRAIL DETAILS
			STANDARD DRAWING GR-12
05-14-20	REVISED NOTES		
11-07-19	RENAMED & REVISED REFERENCES		
11-16-17	RE-DRAWN FROM STD. DRWG. GR-10 & ISSUED		
DATE	REVISION	FILMED	



II-07-19	RENAMED & REVISED REFERENCE.		ARKANSAS STATE HIGHWAY COMMISSION
II-16-17	REVISED GUARDRAIL HEIGHT AND LOCATION OF POSTS		
07-14-10	RAISED HEIGHT OF GUARDRAIL 1"		
06-26-97	REVISED LAP NOTE		
IO-18-96	REVISED ASTM REF. TO AASHTO		
II-03-94	DIMENSION TERMINAL DETAIL		GUARDRAIL DETAILS
II-II-92	ADDED NOTE FOR PAYMENT	II-II-92	STANDARD DRAWING GRT-1
IO-01-92	DRAWN & ISSUED	IO-1-92	
DATE	REVISION	FILED	

REINFORCED CONCRETE
ARCH PIPE DIMENSIONS

EQUIV. DIA.	SPAN		RISE	
	AASHTO M 206	ARDOT NOMINAL	AASHTO M 206	ARDOT 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	26¾	27
42	51½	51	31½	31
48	58½	59	36	36
54	65	65	40	40
60	73	73	45	45
72	88	88	54	54
84	102	102	62	62
90	115	115	72	72
96	122	122	77½	77
108	138	138	87½	87
120	154	154	96¾	97
132	168¾	169	106½	107

THE MEASURED SPAN AND RISE SHALL NOT VARY MORE THAN ± 2 PERCENT FROM THE VALUES SPECIFIED BY AASHTO M206.

REINFORCED CONCRETE
HORIZONTAL ELLIPTICAL
PIPE DIMENSIONS

EQUIV. DIA.	AASHTO M 207	
	SPAN	RISE
INCHES	INCHES	
18	23	14
24	30	19
27	34	22
30	38	24
33	42	27
36	45	29
39	49	32
42	53	34
48	60	38
54	68	43
60	76	48
66	83	53
72	91	58
78	98	63
84	106	68

THE MEASURED SPAN AND RISE SHALL NOT VARY MORE THAN ± 2 PERCENT FROM THE VALUES SPECIFIED BY AASHTO M207.

CONSTRUCTION SEQUENCE

1. PLACE STRUCTURAL BEDDING MATERIAL TO GRADE. DO NOT COMPACT.
2. INSTALL PIPE TO GRADE.
3. COMPACT STRUCTURAL BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE.
4. PLACE AND COMPACT THE HAUNCH AREA UP TO THE MIDDLE OF THE PIPE.
5. COMPLETE BACKFILL ACCORDING TO SUBSECTION 606.03.(f)(ii).

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

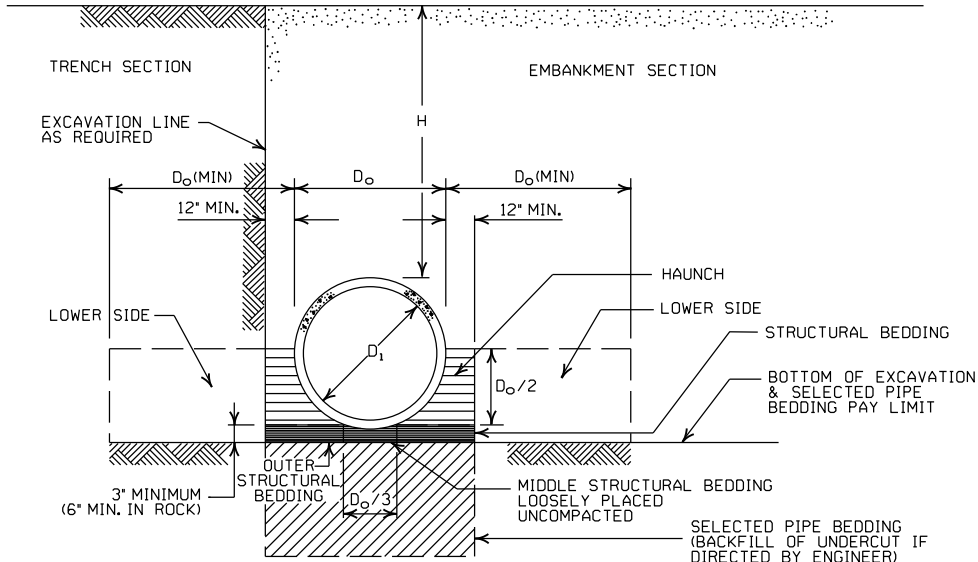
- LEGEND -

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

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

*SM-3 WILL NOT BE ALLOWED.

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



EMBANKMENT AND TRENCH INSTALLATIONS

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

GENERAL NOTES

1. CONCRETE PIPE CULVERT CONSTRUCTION SHALL CONFORM TO ARKANSAS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION), WITH APPLICABLE SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS. UNLESS OTHERWISE NOTED IN THE PLANS, SECTION AND SUBSECTION REFER TO THE STANDARD CONSTRUCTION SPECIFICATIONS.
2. CONCRETE PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) WITH 2010 INTERIMS.
3. ALL PIPE SHALL CONFORM TO SECTION 606, CIRCULAR R.C. PIPE CULVERTS SHALL CONFORM TO AASHTO M10, R.C. ARCH PIPE CULVERTS SHALL CONFORM TO AASHTO M206 AND HORIZONTAL ELLIPTICAL PIPE CULVERTS SHALL CONFORM TO AASHTO M207.
4. ALL PIPE SHALL BE PROTECTED DURING CONSTRUCTION BY A COVER SUFFICIENT TO PREVENT DAMAGE FROM PASSAGE OF EQUIPMENT.
5. THE MINIMUM TRENCH WIDTH SHALL BE THE OUTSIDE DIAMETER OF THE PIPE PLUS 24 INCHES. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PRACTICABLE FOR WORKING CONDITIONS.
6. MULTIPLE PIPE CULVERTS SHALL BE INSTALLED WITH A MINIMUM CLEARANCE OF 24 INCHES BETWEEN STRINGS OF PIPE. REFER TO STD. DWG. FES-2 FOR MINIMUM CLEARANCE WHERE FLARED END SECTIONS ARE USED.
7. IMPERVIOUS MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
8. NOT MORE THAN ONE LIFTING HOLE MAY BE PROVIDED IN CONCRETE PIPE TO FACILITATE HANDLING. HOLE MAY BE CAST IN PLACE, CUT INTO THE FRESH CONCRETE AFTER FORMS ARE REMOVED, OR DRILLED. THE HOLE SHALL NOT BE MORE THAN TWO INCHES IN DIAMETER OR TWO INCHES SQUARE. CUTTING OR DISPLACEMENT OF REINFORCEMENT WILL NOT BE PERMITTED. SPALLED AREAS AROUND THE HOLE SHALL BE REPAIRED IN A WORKMANLIKE MANNER. LIFTING HOLE SHALL BE FILLED WITH MORTAR, CONCRETE, OR OTHER METHOD AS APPROVED BY THE ENGINEER.
9. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH (BELOW THE AREA IDENTIFIED AS "STRUCTURAL BEDDING" ABOVE) WILL BE EXCAVATED AND REPLACED WITH SELECTED PIPE BEDDING. THE QUANTITY OF MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE SELECTED PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS "SELECTED PIPE BEDDING."
10. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED ABOVE AS THE HAUNCH), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."

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

	CLASS OF PIPE			
	CLASS III		CLASS IV	CLASS V
INSTALLATION TYPE	TYPE 1 OR 2	TYPE 3	ALL	ALL
PIPE ID (IN.)	FEET			
12-15	2	2.5	2	1
18-24	2.5	3	2	1
27-33	3	4	2	1
36-42	3.5	5	2	1
48	4.5	5.5	2	1
54-60	5	7	2	1
66-78	6	8	2	1
84-108	7.5	8	2	1

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

MINIMUM HEIGHT OF FILL "H"
OVER R.C. ARCH & HORIZONTAL
ELLIPTICAL PIPE CULVERTS

INSTALLATION TYPE	CLASS OF PIPE	
	CLASS III	CLASS IV
	FEET	
TYPE 2 OR TYPE 3	2.5	1.5

NOTE: TYPE 1 INSTALLATION WILL NOT BE ALLOWED FOR ARCH & HORIZONTAL ELLIPTICAL PIPE CULVERTS.

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

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

INSTALLATION TYPE	CLASS OF PIPE		
	CLASS III	CLASS IV	CLASS V
	FEET		
TYPE 1	21	32	50
TYPE 2	16	25	39
TYPE 3	12	20	30

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

MAXIMUM HEIGHT OF FILL "H"
OVER R.C. ARCH & HORIZONTAL
ELLIPTICAL PIPE CULVERTS

INSTALLATION TYPE	CLASS OF PIPE	
	CLASS III	CLASS IV
	FEET	
TYPE 2	13	21
TYPE 3	10	16

NOTE: TYPE 1 INSTALLATION WILL NOT BE ALLOWED FOR ARCH & HORIZONTAL ELLIPTICAL PIPE CULVERTS.

2-27-14	REVISED GENERAL NOTE 1.	
12-15-11	REVISED FOR LRFD DESIGN SPECIFICATIONS	
5-18-00	REVISED TYPE 3 BEDDING & ADDED NOTE	
3-30-00	REVISED INSTALLATIONS	
11-06-97	ISSUED	
DATE	REVISION	DATE FILMED

ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE PIPE CULVERT
FILL HEIGHTS & BEDDING

STANDARD DRAWING PCC-1



CORRUGATED STEEL PIPE (ROUND)

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

CORRUGATED ALUMINUM PIPE (ROUND)

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

CORRUGATED METAL PIPE ARCHES

EQUIV. DIA. (INCHES)	PIPE DIMENSION SPAN X RISE (INCHES)	MINIMUM CORNER RADIUS (INCHES)	STEEL				
			MIN. THICKNESS REQUIRED INCHES	① MIN. HEIGHT OF FILL, "H" (FT.)	MAX. HEIGHT OF FILL, "H" (FT.)		
				INSTALLATION	INSTALLATION		
					TYPE 1	TYPE 1	
			2 3/8 INCH BY 1/2 INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM				
15	17x13	3	0.064	2	15		
18	21x15	3	0.064	2	15		
21	24x18	3	0.064	2,25	15		
24	28x20	3	0.064	2.5	15		
30	35x24	3	0.079	3	12		
36	42x29	3 1/2	0.079	3	12		
42	49x33	4	0.079	3	12		
48	57x38	5	0.109	3	13		
54	64x43	6	0.109	3	14		
60	71x47	7	0.138	3	15		
66	77x52	8	0.168	3	15		
72	83x57	9	0.168	3	15		
			② 3 INCH BY 1 INCH OR 5 INCH BY 1 INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM				
			INSTALLATION		INSTALLATION		
			TYPE 2	TYPE 1	TYPE 2	TYPE 1	
36	40x31	5	0.079	3	2	12	15
42	46x36	6	0.079	3	2	13	15
48	53x41	7	0.079	3	2	13	15
54	60x46	8	0.079	3	2	13	15
60	66x51	9	0.079	3	2	13	15
66	73x55	12	0.079	3	2	15	15
72	81x59	14	0.079	3	2	15	15
78	87x63	14	0.079	3	2	15	15
84	95x67	16	0.109	3	2	15	15
90	103x71	16	0.109	3	2	15	15
96	112x75	18	0.109	3	2	15	15
102	117x79	18	0.109	3	2	15	15
108	128x83	18	0.138	3	2	15	15

CONSTRUCTION SEQUENCE

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

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

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

③ SM-3 WILL NOT BE ALLOWED.

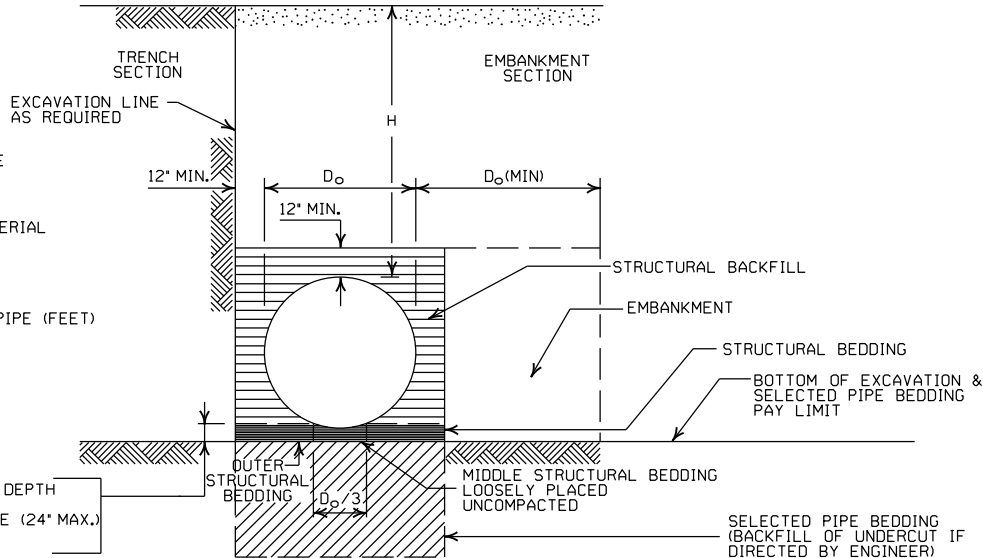
EQUIVALENT METAL THICKNESSES AND GAUGES

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

- LEGEND -

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

IN SOIL-MIN. EQUALS TWICE CORRUGATION DEPTH
IN ROCK-MIN. EQUALS GREATER OF:
1/2' PER FOOT OF FILL OVER PIPE (24' MAX.)
TWICE CORRUGATION DEPTH



EMBANKMENT AND TRENCH INSTALLATIONS

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

GENERAL NOTES

1. METAL PIPE CULVERT CONSTRUCTION SHALL CONFORM TO ARKANSAS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION), WITH APPLICABLE SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS. UNLESS OTHERWISE NOTED IN THE PLANS, SECTION AND SUBSECTION REFER TO THE STANDARD CONSTRUCTION SPECIFICATIONS.
2. METAL PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) WITH 2010 INTERIMS.
3. METAL PIPE CULVERT MATERIALS AND INSTALLATIONS SHALL CONFORM TO SECTION 606 AND JOB SPECIAL PROVISION "METAL PIPE".
4. ALL PIPE SHALL BE PROTECTED DURING CONSTRUCTION BY A COVER SUFFICIENT TO PREVENT DAMAGE FROM PASSAGE OF EQUIPMENT.
5. THE MINIMUM TRENCH WIDTH SHALL BE THE OUTSIDE DIAMETER OF THE PIPE PLUS 24 INCHES. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PRACTICABLE FOR WORKING CONDITIONS.
6. MULTIPLE PIPE CULVERTS SHALL BE INSTALLED WITH A MINIMUM CLEARANCE OF 24 INCHES BETWEEN STRINGS OF PIPE. REFER TO STD. DWG. FES-2 FOR MINIMUM CLEARANCE WHERE FLARED END SECTIONS ARE USED.
7. IMPERVIOUS MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
8. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH (BELOW THE AREA IDENTIFIED AS "STRUCTURAL BEDDING" ABOVE) WILL BE EXCAVATED AND REPLACED WITH SELECTED PIPE BEDDING. THE QUANTITY OF MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE SELECTED PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS "SELECTED PIPE BEDDING."
9. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED AS STRUCTURAL BACKFILL), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."

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

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

2-27-14	REVISED GENERAL NOTE 1	
12-15-11	REVISED FOR LRFD DESIGN SPECS	
3-30-00	REVISED INSTALLATIONS	
11-06-97	ISSUED	
DATE	REVISION	DATE FILMED

ARKANSAS STATE HIGHWAY COMMISSION

METAL PIPE CULVERT
FILL HEIGHTS & BEDDING

STANDARD DRAWING PCM-1



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

- AGGREGATE BASE COURSE (CLASS 4, 5, 6, OR 7) MAY BE USED IN LIEU OF SELECTED MATERIAL.
SM3 WILL NOT BE ALLOWED.
- STRUCTURAL BEDDING MATERIAL SHALL HAVE A MAXIMUM PARTICLE SIZE OF 1/2 INCH. STRUCTURAL BACKFILL MATERIAL SHALL BE FREE OF ORGANIC MATERIAL, STONES LARGER THAN 1.50 INCH IN GREATEST DIMENSION, OR FROZEN LUMPS.
STRUCTURAL BACKFILL AND STRUCTURAL BEDDING MATERIAL WILL NOT BE PAID FOR SEPARATELY, BUT COMPENSATION WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID PER LINEAR FOOT OF HDPE PIPE.

MULTIPLE INSTALLATION OF
HIGH DENSITY POLYETHYLENE PIPES

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

MINIMUM TRENCH WIDTH
BASED ON FILL HEIGHT "H"

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

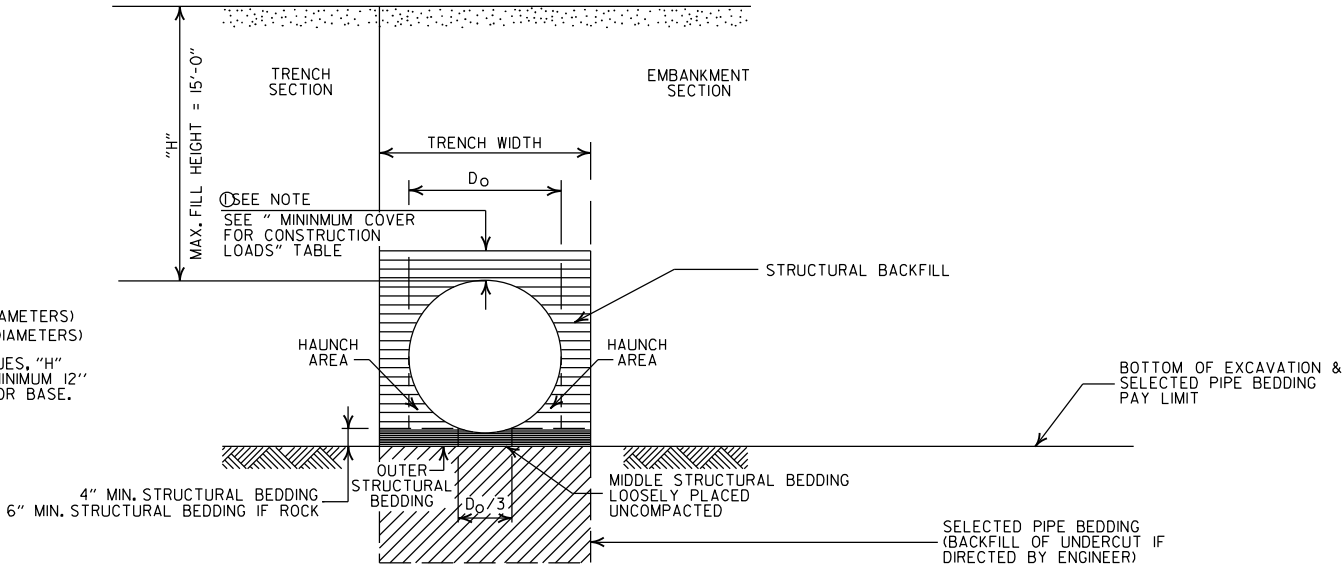
- ①NOTE:
18" MIN. (18" - 30" DIAMETERS)
24" MIN. (36" - 48" DIAMETERS)

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

MINIMUM COVER FOR
CONSTRUCTION LOADS

PIPE DIAMETER	② MIN. COVER (FEET) FOR INDICATED CONSTRUCTION LOADS			
	18.0-50.0 (KIPS)	50.0-75.0 (KIPS)	75.0-110.0 (KIPS)	110.0-175.0 (KIPS)
36" OR LESS	2'-0"	2'-6"	3'-0"	3'-0"
42" OR GREATER	3'-0"	3'-0"	3'-6"	4'-0"

- ②MINIMUM COVER SHALL BE MEASURED FROM TOP OF PIPE TO TOP OF THE MAINTAINED CONSTRUCTION ROADWAY SURFACE. THE SURFACE SHALL BE MAINTAINED.



TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

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

CONSTRUCTION SEQUENCE

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

- LEGEND -

H = FILL HEIGHT (FT.)
D_o = OUTSIDE DIAMETER OF PIPE
MAX. = MAXIMUM
MIN. = MINIMUM

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

GENERAL NOTES

1. PIPE SHALL CONFORM TO AASHTO M294, TYPE S. INSTALLATION SHALL CONFORM TO JOB SPECIAL PROVISION "PLASTIC PIPE" AND SECTION 606 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION).
2. PLASTIC PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) WITH 2010 INTERIMS.
3. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PLUS A SUFFICIENT WIDTH TO ENSURE WORKING ROOM TO PROPERLY AND SAFELY PLACE AND COMPACT HAUNCHING AND OTHER BACKFILL MATERIAL.
4. IMPERVIOUS MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
5. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH (BELOW THE AREA IDENTIFIED AS "STRUCTURAL BEDDING" ABOVE) WILL BE EXCAVATED AND REPLACED WITH SELECTED PIPE BEDDING. THE QUANTITY OF MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE SELECTED PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS "SELECTED PIPE BEDDING."
6. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED ABOVE AS STRUCTURAL BACKFILL), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."
7. FOR PIPE TYPES THAT ARE NOT SMOOTH ON THE OUTSIDE (CORRUGATED OR PROFILE WALLS), BACKFILL GRADATIONS SHOULD BE SELECTED THAT WILL PERMIT THE FILLING OF THE CORRUGATION OR PROFILE VALLEY.
8. HIGH DENSITY POLYETHYLENE PIPES OF DIAMETERS OTHER THAN SHOWN WILL NOT BE ALLOWED.
9. JOINTS FOR HDPE PIPE SHALL MEET THE REQUIREMENTS FOR SOIL TIGHTNESS AS SPECIFIED IN AASHTO SECTION 26.4.2.4 AND 30.4.2 "AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS." JOINTS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

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

ARKANSAS STATE HIGHWAY COMMISSION
PLASTIC PIPE CULVERT (HIGH DENSITY POLYETHYLENE)
STANDARD DRAWING PCP-1

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

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

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

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

MINIMUM TRENCH WIDTH
BASED ON FILL HEIGHT "H"

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

MULTIPLE INSTALLATION OF
PVC PIPES

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

GENERAL NOTES

1. PIPE SHALL CONFORM TO ASTM F949, CELL CLASS 12454. INSTALLATION SHALL CONFORM TO JOB SPECIAL PROVISION "PLASTIC PIPE" AND SECTION 606 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION).
2. PLASTIC PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) WITH 2010 INTERIMS.
3. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PLUS A SUFFICIENT WIDTH TO ENSURE WORKING ROOM TO PROPERLY AND SAFELY PLACE AND COMPACT HAUNCHING AND OTHER BACKFILL MATERIAL.
4. IMPERVIOUS MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
5. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH (BELOW THE AREA IDENTIFIED AS "STRUCTURAL BEDDING" ABOVE) WILL BE EXCAVATED AND REPLACED WITH SELECTED PIPE BEDDING. THE QUANTITY OF MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE SELECTED PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS "SELECTED PIPE BEDDING."
6. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED ABOVE AS STRUCTURAL BACKFILL), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."
7. FOR PIPE TYPES THAT ARE NOT SMOOTH ON THE OUTSIDE (CORRUGATED OR PROFILE WALLS), BACKFILL GRADATIONS SHOULD BE SELECTED THAT WILL PERMIT THE FILLING OF THE CORRUGATION OR PROFILE VALLEY.
8. PVC PIPES OF DIAMETERS OTHER THAN SHOWN WILL NOT BE ALLOWED.
9. JOINTS FOR PVC PIPE SHALL MEET THE REQUIREMENTS FOR SOIL TIGHTNESS AS SPECIFIED IN AASHTO SECTION 26.4.2.4 AND 30.4.2 "AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS." JOINTS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

MAXIMUM FILL HEIGHT
BASED ON STRUCTURAL BACKFILL

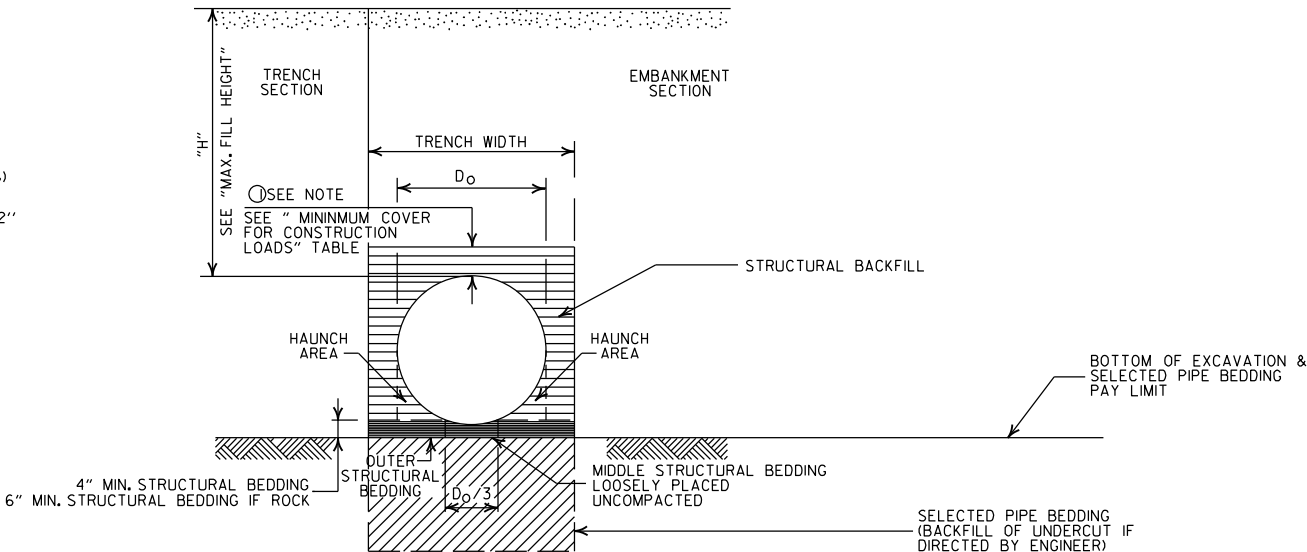
PIPE DIAMETER	"H"
18"	45'-0"
24"	45'-0"
30"	40'-0"
36"	40'-0"

- ① NOTE:
12" MIN. (18" - 36" DIAMETERS)
MINIMUM COVER VALUE, "H"
SHALL INCLUDE A MINIMUM 12"
OF PAVEMENT AND/OR BASE.

MINIMUM COVER FOR
CONSTRUCTION LOADS

PIPE DIAMETER	② MIN. COVER (FEET) FOR INDICATED CONSTRUCTION LOADS			
	18.0-50.0 (KIPS)	50.0-75.0 (KIPS)	75.0-110.0 (KIPS)	110.0-175.0 (KIPS)
18" THRU 36"	2'-0"	2'-6"	3'-0"	3'-0"

- ② MINIMUM COVER SHALL BE MEASURED FROM TOP OF PIPE TO TOP OF THE MAINTAINED CONSTRUCTION ROADWAY SURFACE. THE SURFACE SHALL BE MAINTAINED.



TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

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

CONSTRUCTION SEQUENCE

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

- LEGEND -

H = FILL HEIGHT (FT.)
D_o = OUTSIDE DIAMETER OF PIPE
MAX. = MAXIMUM
MIN. = MINIMUM

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

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

ARKANSAS STATE HIGHWAY COMMISSION	
PLASTIC PIPE CULVERT (PVC F949)	
STANDARD DRAWING PCP-2	

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

* SM3 WILL NOT BE ALLOWED.

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

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

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

PIPE DIAMETER	TRENCH WIDTH (FEET)	
	"H" < 10'-0"	"H" ≥ 10'-0"
18"	4'-6"	4'-6"
24"	5'-0"	6'-0"
30"	5'-6"	7'-6"
36"	6'-0"	9'-0"
42"	7'-0"	10'-6"
48"	8'-0"	12'-0"
60"	10'-0"	15'-0"

① NOTE:
12" MIN. (18" - 42" DIAMETERS)
24" MIN. (60" DIAMETER)

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

MINIMUM COVER FOR CONSTRUCTION LOADS

PIPE DIAMETER	② MIN. COVER (FEET) FOR INDICATED CONSTRUCTION LOADS			
	18.0-50.0 (KIPS)	50.0-75.0 (KIPS)	75.0-110.0 (KIPS)	110.0-150.0 (KIPS)
36" OR LESS	2'-0"	2'-6"	3'-0"	3'-0"
42" OR GREATER	3'-0"	3'-0"	3'-6"	4'-0"

② MINIMUM COVER SHALL BE MEASURED FROM TOP OF PIPE TO TOP OF THE MAINTAINED CONSTRUCTION ROADWAY SURFACE. THE SURFACE SHALL BE MAINTAINED.

MULTIPLE INSTALLATION OF POLYPROPYLENE PIPES

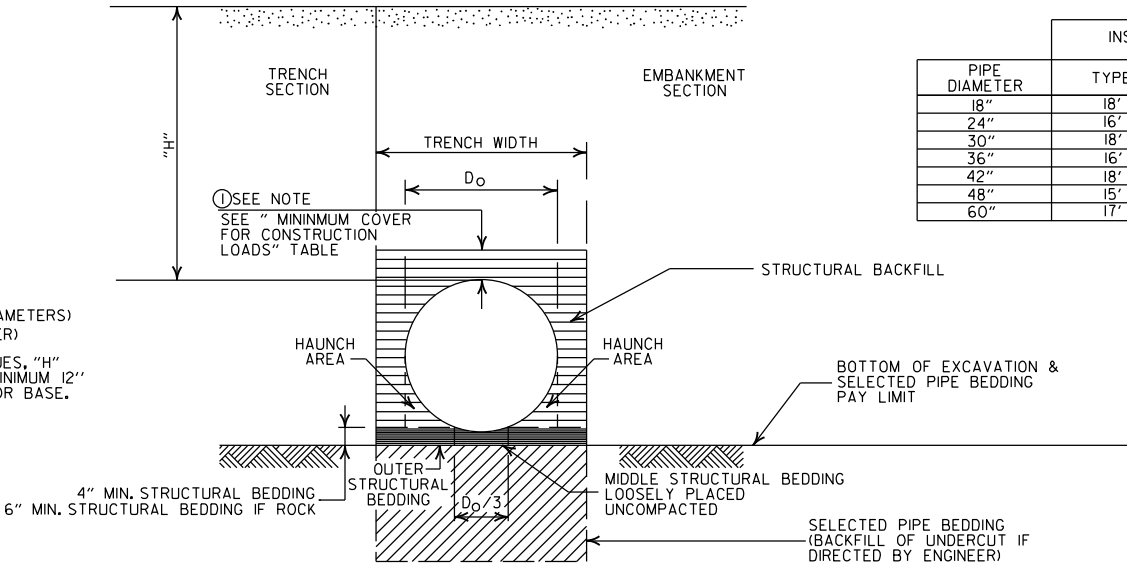
PIPE DIAMETER	CLEAR DISTANCE BETWEEN PIPES
18"	1'-6"
24"	2'-0"
30"	2'-6"
36"	3'-0"
42"	3'-6"
48"	4'-0"
60"	5'-0"

GENERAL NOTES

- PIPE SHALL CONFORM TO AASHTO M330, TYPE S. INSTALLATION SHALL CONFORM TO JOB SPECIAL PROVISION "PLASTIC PIPE" AND SECTION 606 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION).
- PLASTIC PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SIXTH EDITION (2012) WITH 2013 INTERIMS.
- THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PLUS A SUFFICIENT WIDTH TO ENSURE WORKING ROOM TO PROPERLY AND SAFELY PLACE AND COMPACT HAUNCHING AND OTHER BACKFILL MATERIAL.
- 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.
- 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."
- 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."
- FOR PIPE TYPES THAT ARE NOT SMOOTH ON THE OUTSIDE (CORRUGATED OR PROFILE WALLS), BACKFILL GRADATIONS SHOULD BE SELECTED THAT WILL PERMIT THE FILLING OF THE CORRUGATION OR PROFILE VALLEY.
- POLYPROPYLENE PIPES OF DIAMETERS OTHER THAN SHOWN WILL NOT BE ALLOWED.
- JOINTS FOR POLYPROPYLENE PIPE SHALL MEET THE REQUIREMENTS FOR SOIL TIGHTNESS AS SPECIFIED IN SECTION 26.4.2.4 AND 30.4.2 OF THE AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS 3RD EDITION (2010) WITH 2012 INTERIMS. JOINTS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

MAXIMUM HEIGHT OF FILL "H"

PIPE DIAMETER	INSTALLATION TYPE	
	TYPE 1	TYPE 2
18"	18'	14'
24"	16'	12'
30"	18'	14'
36"	16'	12'
42"	18'	13'
48"	15'	11'
60"	17'	12'



EMBANKMENT AND TRENCH INSTALLATIONS

- 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

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

- LEGEND -

H = FILL HEIGHT (FT.)
 D_o = OUTSIDE DIAMETER OF PIPE
MAX. = MAXIMUM
MIN. = MINIMUM

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

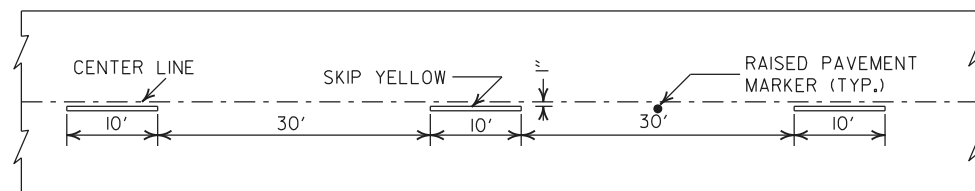
02-27-20	REVISED	
11-07-19	ISSUED	
DATE	REVISION	DATE FILMED

ARKANSAS STATE HIGHWAY COMMISSION

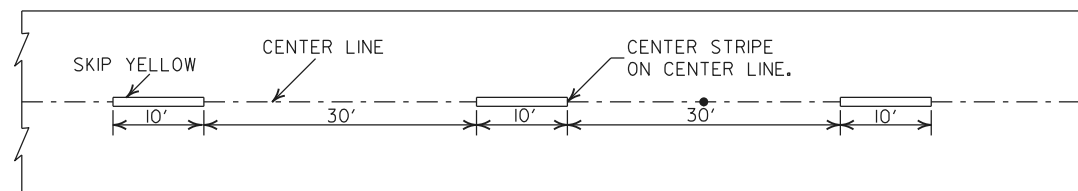
PLASTIC PIPE CULVERT
(POLYPROPYLENE)

STANDARD DRAWING PCP-3



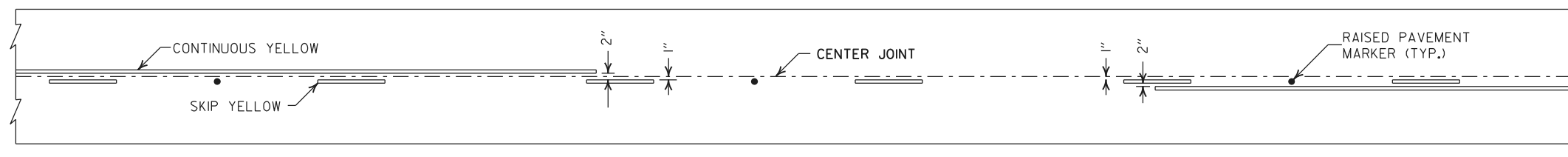


CONCRETE PAVEMENT

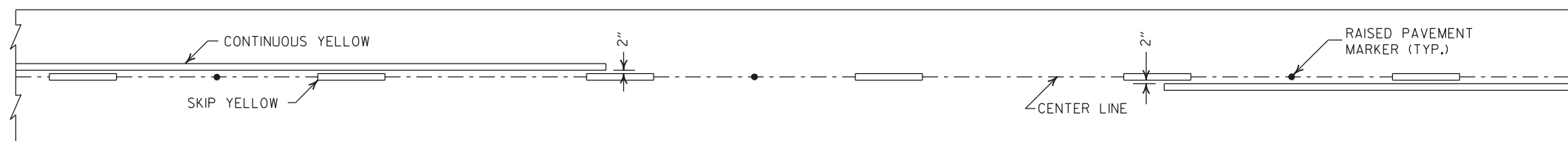


ASPHALT PAVEMENT

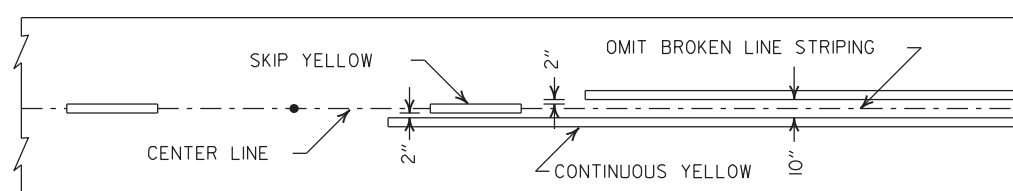
BROKEN LINE STRIPING



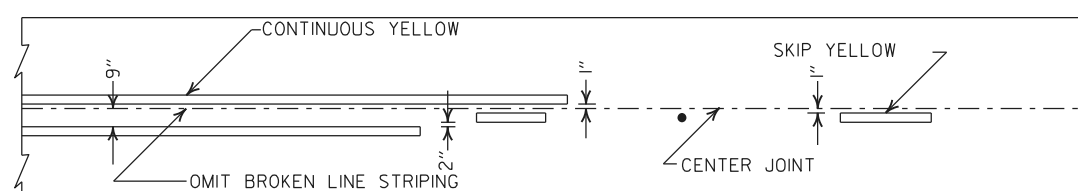
SOLID LINE STRIPING ON CONCRETE PAVEMENT



SOLID LINE STRIPING ON ASPHALT PAVEMENT

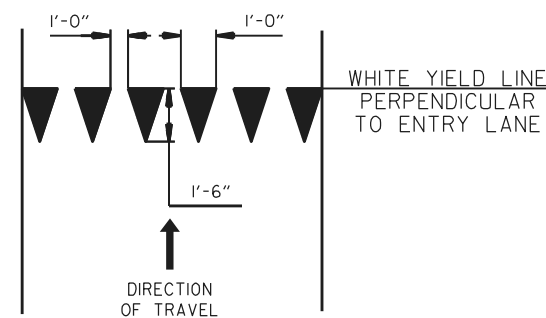


ASPHALT PAVEMENT

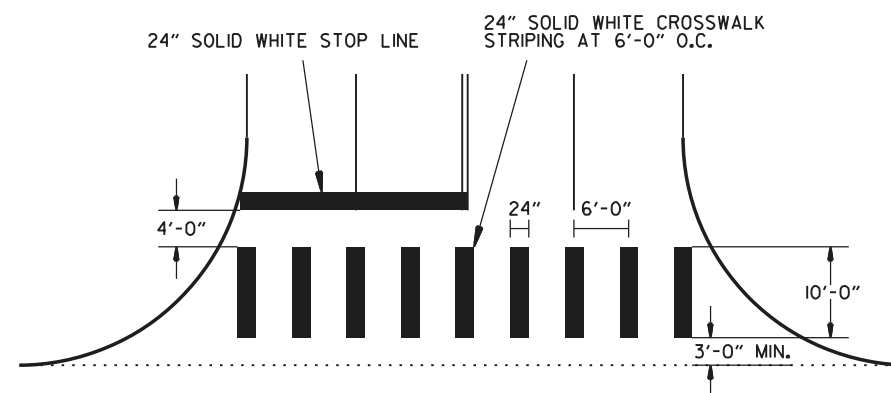


CONCRETE PAVEMENT

STRIPING AT ADJACENT NO PASSING LANES



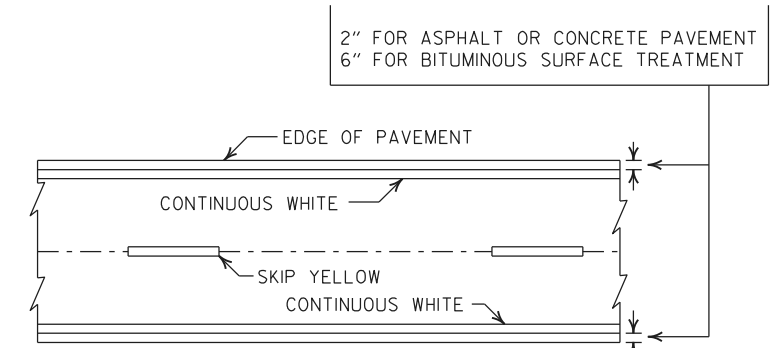
YIELD LINE DETAIL



CROSSWALK AND STOP LINE DETAILS

NOTES:

1. REFER TO THE STRIPING DETAILS FOR PAVEMENT MARKING LINE WIDTHS.
2. THIS DRAWING SHALL BE USED IN CONJUNCTION WITH THE LATEST REVISED ADDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES."
3. RAISED PAVEMENT MARKERS SHALL BE PLACED ON AN 80 FEET SPACING UNLESS OTHERWISE SHOWN IN THE PLANS.



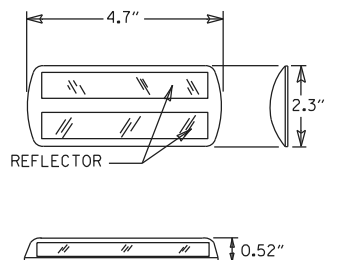
PAVEMENT EDGE LINE MARKING

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

TYPE II
RED/CLEAR OR
YELLOW/YELLOW

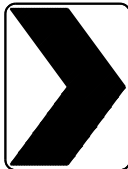
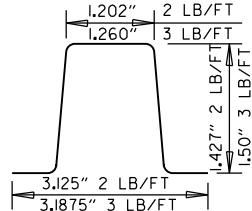
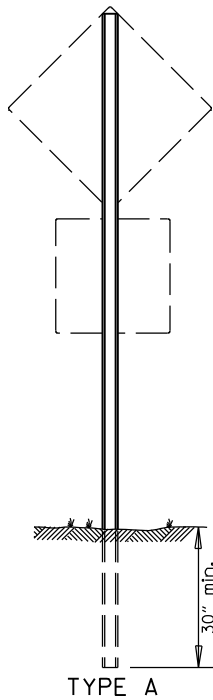
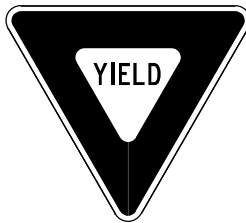
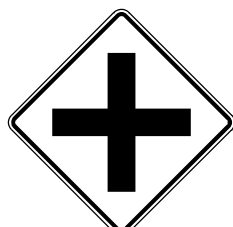
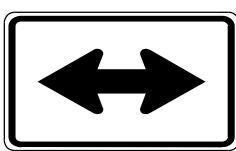
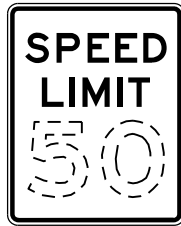
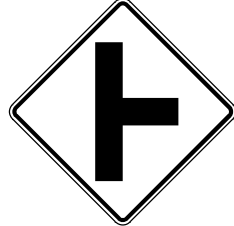
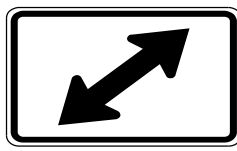
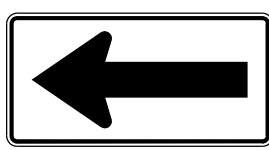
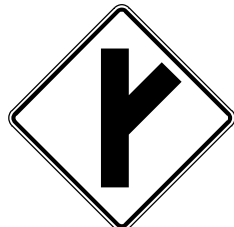
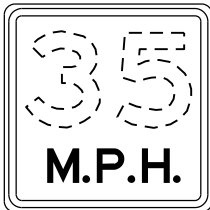
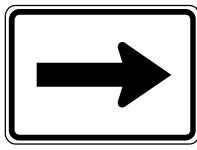
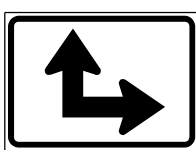
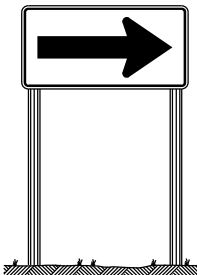
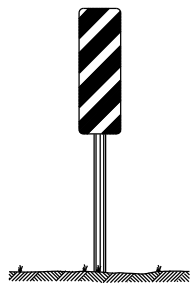
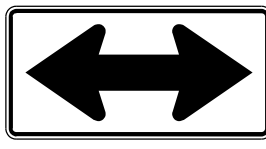
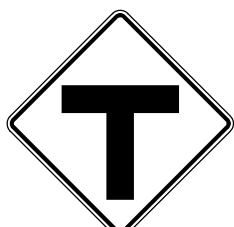
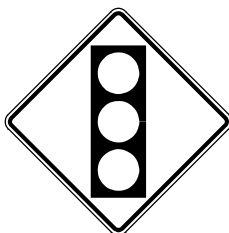
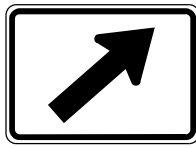
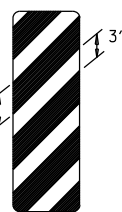
PRISMATIC REFLECTOR

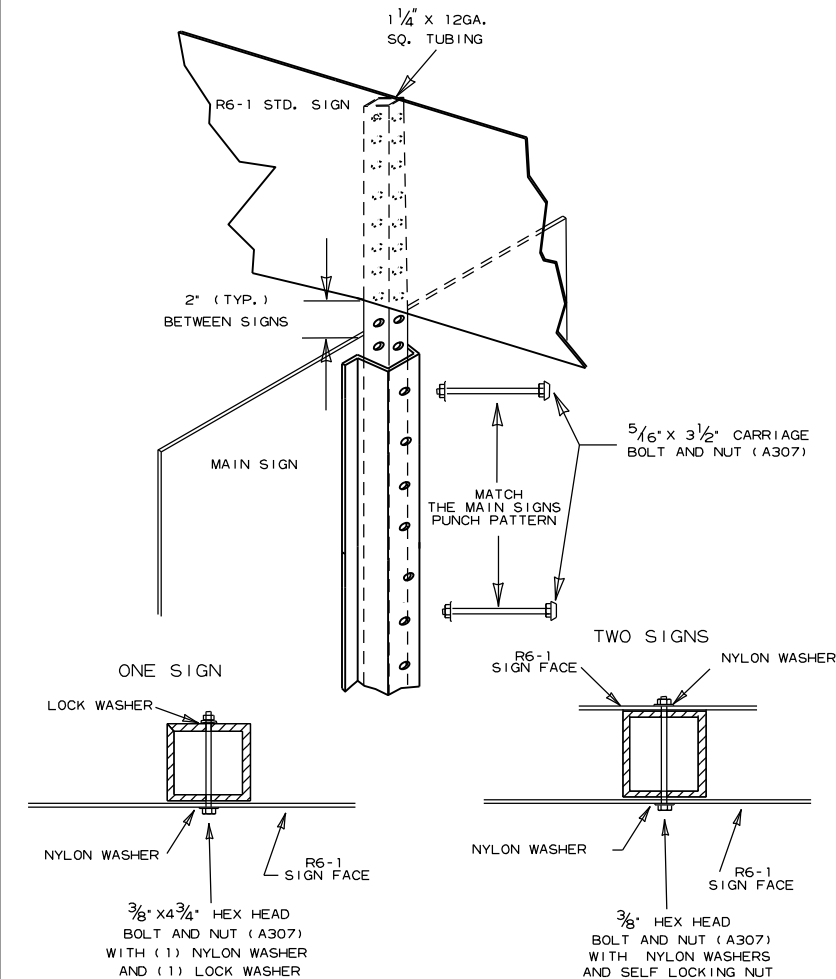
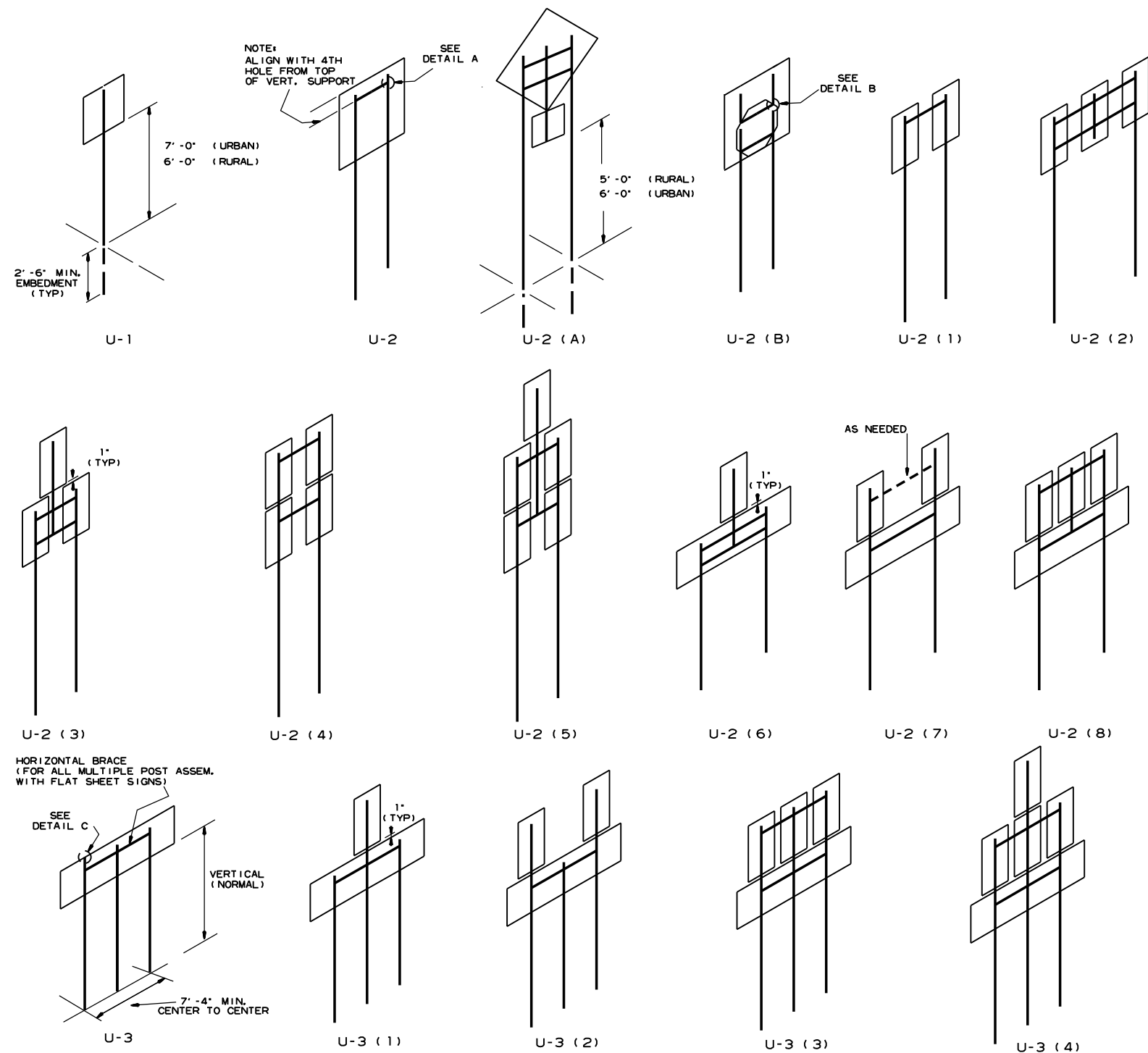
NOTE:
DIMENSIONS SHOWN FOR RAISED PAVEMENT MARKERS ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR MARKERS WITH THE APPROVAL OF THE ENGINEER, REQUESTING APPROVAL FOR SIMILAR MARKERS MAY BE MADE BY REFERRING TO THE ARDOT QUALIFIED PRODUCTS LIST.



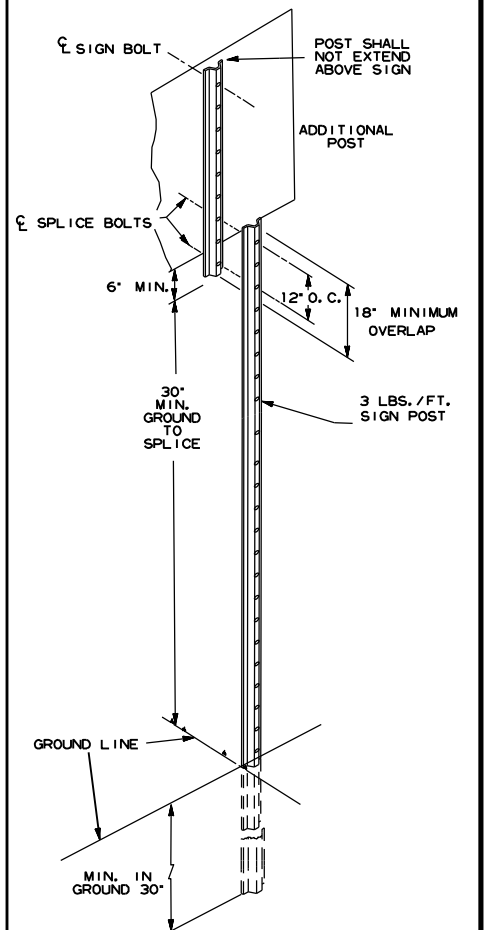
DETAIL OF STANDARD RAISED PAVEMENT MARKERS

REV. CROSSWALK & STOP LINE DETAILS		REV. STOP LINE DETAILS		REV. YIELD LINE DETAIL		REVISED LINE WIDTHS, SPACING, & NOTES.		REVISED DETAIL OF STANDARD RAISED PAVEMENT MARKERS		DESCRIPTION		AR DOT ARKANSAS DEPARTMENT OF TRANSPORTATION ARKANSAS STATE HIGHWAY COMMISSION			
PAVEMENT MARKING DETAILS															
04-09-26	02-27-20	06-01-17	05-12-16	09-12-13	DATE	REV	DATE EFFECTIVE					STANDARD DRAWING		PM-1	
							04-09-2026								

 RI-1 30"x30"	 WI-3 30"x30" (LT. OR RT.)	 WI-8 18"x24"	 W2-5 30"x30"	 W3-1 36"x36"	 W5-1 36"x36"	 M6-3 21"x15"	MINIMUM DIMENSIONS SHOWN SUPPORT SECTION  (U-CHANNEL) STANDARD SUPPORT ASSEMBLIES  TYPE A NOTE: LENGTH OF SIGN POSTS SHALL BE DETERMINED SO AS TO PROVIDE FOR MINIMUM VERTICAL CLEARANCES AS CALLED FOR IN THE SPECIFICATIONS PLUS A MINIMUM VERTICAL PENETRATION OF 30" IN THE SOIL.																																
 RI-2 36"x36"x36"	 WI-4 30"x30" (LT. OR RT.)	 W2-1 30"x30"	 SI-1 36"x36"	 W3-2 36"x36"	 LASSEN 16 COUNTY County Route Marker MI-6 24"x24" NOTE: REFLECTORIZED YELLOW LEGEND (COUNTY NAME, ROUTE LETTER & NUMBER) & BORDER ON A BLUE BACKGROUND.	 M6-4 21"x15"																																	
 R2-1 24"x30"	 WI-5 30"x30" (LT. OR RT.)	 W2-2 30"x30"	 W5-2 36"x36"	 W8-3 36"x36"	NOTE: REFLECTORIZED YELLOW LEGEND (COUNTY NAME, ROUTE LETTER & NUMBER) & BORDER ON A BLUE BACKGROUND.  RI-3P 18"x6"	 M6-5 21"x15"																																	
 WI-1 30"x30" (LT. OR RT.)	 WI-6 48"x24"	 W2-3 30"x30" (LT. OR RT.)	 W5-3 36"x36"	 W13-1P 18"x18" NOTE: ALL M6 SIGNS TO BE MADE WITH REFLECTORIZED YELLOW ARROW & BORDER WITH BLUE BACKGROUND.	 M6-1 21"x15"	 M6-6 21"x15"	 TYPE B  TYPE C MINIMUM WEIGHT TYPE A & B = 3 LBS./FT. TYPE C = 2 LBS./FT.																																
 WI-2 30"x30" (LT. OR RT.)	 WI-7 48"x24"	 W2-4 30"x30"	 W10-1 36" DIAMETER	 W3-3 36"x36"	 M6-2 21"x15"	 S4-3P 24"x8"  S4-2P 24"x10"  QM-3 12"x36" (LT. OR RT.)																																	
STANDARD HIGHWAY SIGNS						<table><tr><td>9-12-13</td><td>DELETED JOB NO. BLOCK; REVISED RI-3 TO RI-3P</td><td></td></tr><tr><td>4-17-08</td><td>REVISED SIGN DESIGNATION - W3-1 & W3-2</td><td></td></tr><tr><td>4-10-03</td><td>REVISED W5-2, W8-3, QM-3; ADDED WI-8</td><td></td></tr><tr><td>1-5-81</td><td>REDRAWN</td><td>960-1-15-81</td></tr><tr><td>9-15-78</td><td>ADDED W4-3</td><td>877-9-15-78</td></tr><tr><td>9-2-76</td><td>POST WT.</td><td>623-9-3-76</td></tr><tr><td>5-3-76</td><td>STEEL POST WT. FROM 2* - 3*; ADDED S4-2 & S4-3</td><td>504-5-3-76</td></tr><tr><td>8-12-74</td><td>REV. HT. TYPE "C" ASSEMBLY</td><td>500-8-21-74</td></tr><tr><td>12-21-72</td><td>ADDED M6-2,3,4,5,6</td><td>500-12-21-72</td></tr><tr><td>12-1-72</td><td>ISSUED</td><td>562-12-1-72</td></tr><tr><td>DATE</td><td>REVISION</td><td>DATE FILMED</td></tr></table>		9-12-13	DELETED JOB NO. BLOCK; REVISED RI-3 TO RI-3P		4-17-08	REVISED SIGN DESIGNATION - W3-1 & W3-2		4-10-03	REVISED W5-2, W8-3, QM-3; ADDED WI-8		1-5-81	REDRAWN	960-1-15-81	9-15-78	ADDED W4-3	877-9-15-78	9-2-76	POST WT.	623-9-3-76	5-3-76	STEEL POST WT. FROM 2* - 3*; ADDED S4-2 & S4-3	504-5-3-76	8-12-74	REV. HT. TYPE "C" ASSEMBLY	500-8-21-74	12-21-72	ADDED M6-2,3,4,5,6	500-12-21-72	12-1-72	ISSUED	562-12-1-72	DATE	REVISION
9-12-13	DELETED JOB NO. BLOCK; REVISED RI-3 TO RI-3P																																						
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12-1-72	ISSUED	562-12-1-72																																					
DATE	REVISION	DATE FILMED																																					
						SUPPORT ASSEMBLIES																																	
						ARKANSAS STATE HIGHWAY COMMISSION STANDARD HIGHWAY SIGNS AND SUPPORT ASSEMBLIES STANDARD DRAWING SHS-1																																	



DETAIL E
R6-1 EXTENSION
FOR U-CHANNEL POST



DETAIL F
DETAIL OF SPLICES

NOTES:

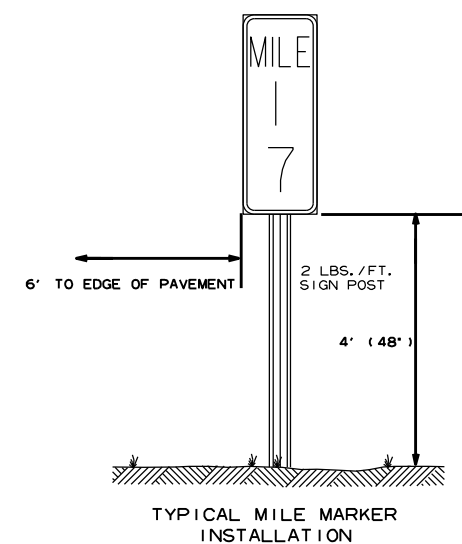
SIGNS AT LEAST 8' IN LENGTH MAY BE INSTALLED ON THREE 3 LB. POST. IN NO CASE SHALL THERE BE MORE THAN TWO 3 LB. POSTS WITHIN A 7' PATH.

SPLICES NECESSARY TO ATTAIN PROPER MOUNTING HEIGHT SHALL BE AS SHOWN IN DETAIL (F).

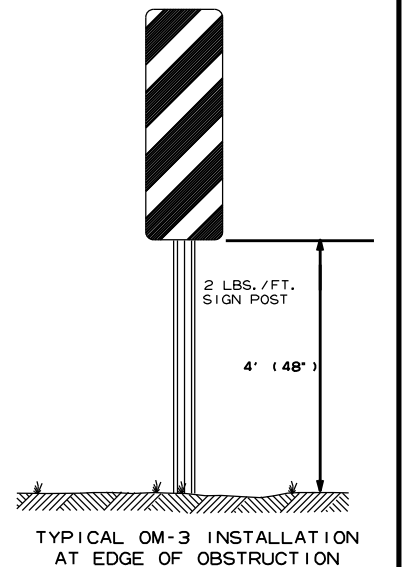
NORMAL INSTALLATIONS WILL REQUIRE 5/16" DIA. CARRIAGE BOLTS TO MOUNT SIGNS TO POST AND TO ASSEMBLE THE VARIOUS POST SUPPORTS.

ALL SIGN POSTS SHALL BE PLUMB.

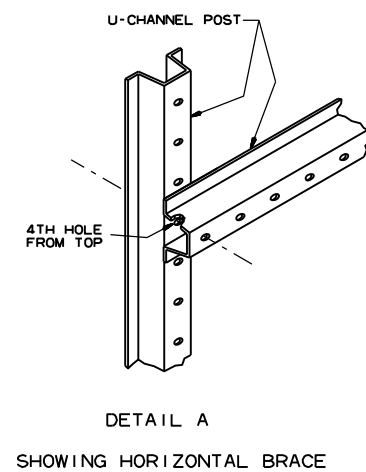
THE POST FOR 'TYPE U' SUPPORTS SHALL BE HOT DIP GALVANIZED.



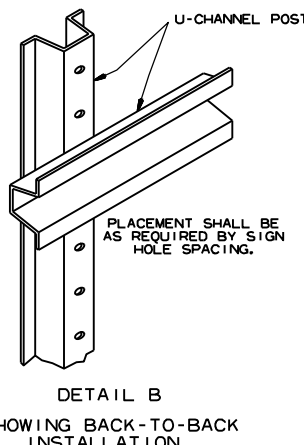
TYPICAL MILE MARKER
INSTALLATION



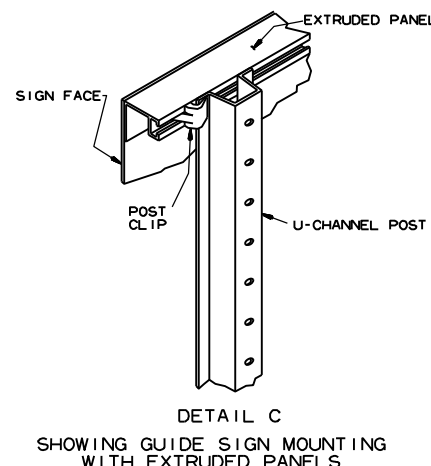
TYPICAL OM-3 INSTALLATION
AT EDGE OF OBSTRUCTION



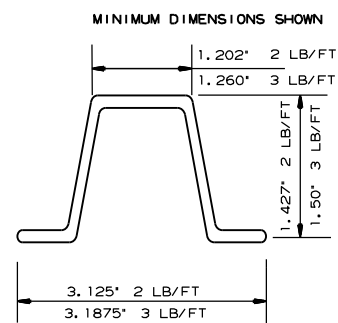
DETAIL A
SHOWING HORIZONTAL BRACE



DETAIL B
SHOWING BACK-TO-BACK
INSTALLATION



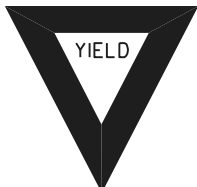
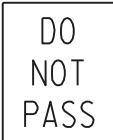
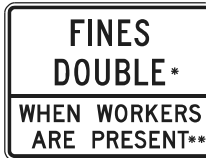
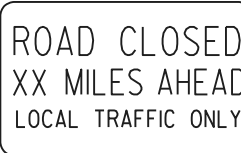
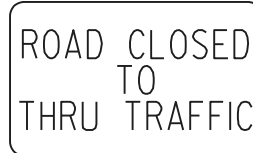
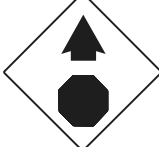
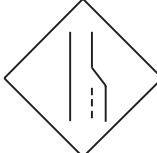
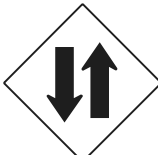
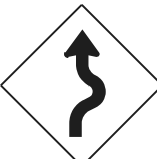
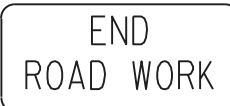
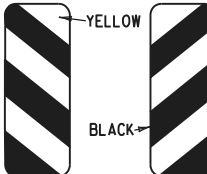
DETAIL C
SHOWING GUIDE SIGN MOUNTING
WITH EXTRUDED PANELS

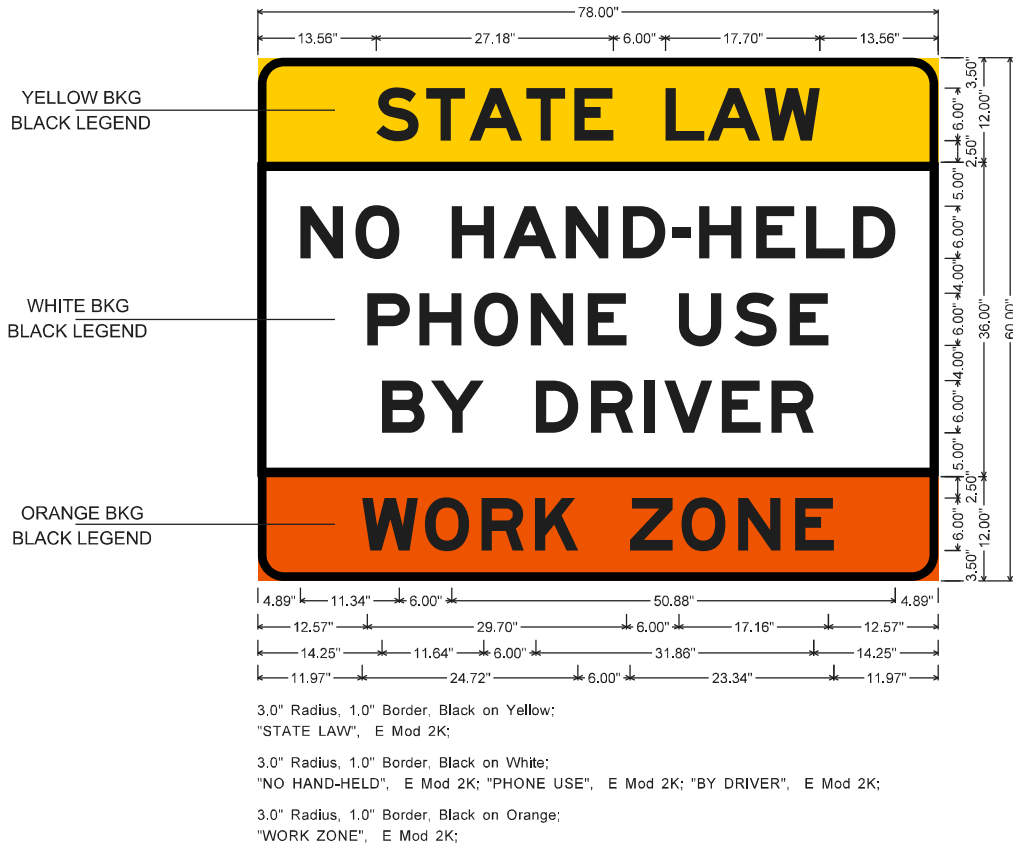


DETAIL C
U-CHANNEL POST

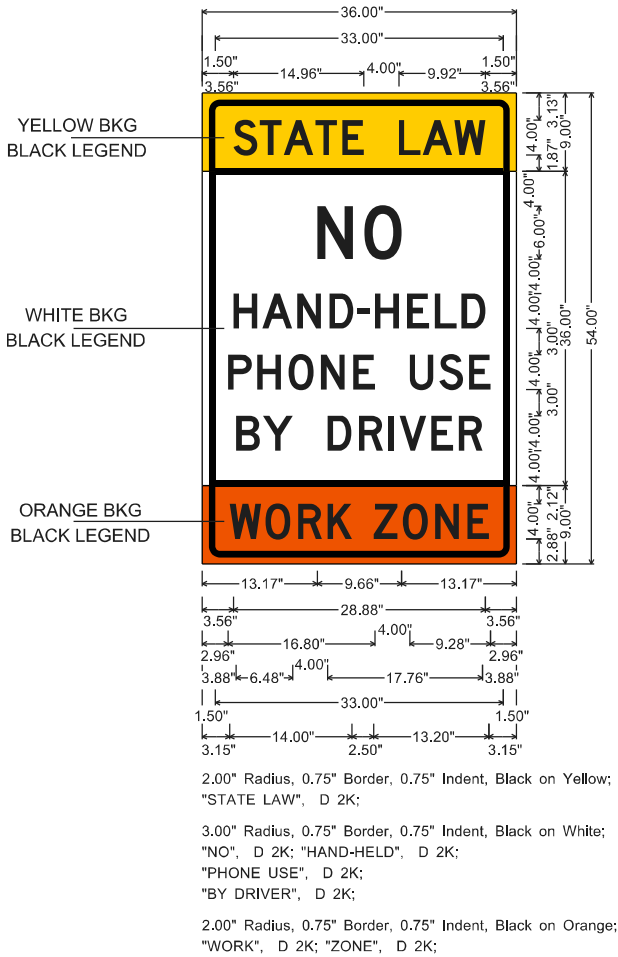
7-25-19	REVISED CARRIAGE BOLT WITH MATERIAL REQUIREMENT	
2-27-14	REVISED NOTES.	
9-12-13	REVISED U-2(3), U-2(6), U-3(1), DETAIL D; ADDED DETAILS E & F; ADDED TYPICAL MARKERS	
10-9-03	REMOVED ROUND POST & REVISED SPACING	
10-12-95	MOVED UPPER SPLICE	
6-8-95	REVISED SPLICE DETAIL	6-8-95
2-2-95	REDRAWN	2-2-95
DATE	REVISION	FILMED

ARKANSAS STATE HIGHWAY COMMISSION	
U-CHANNEL POST ASSEMBLIES	
STANDARD DRAWING SHS-2	

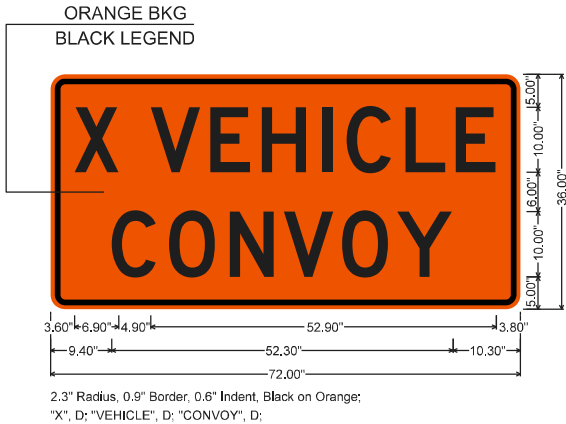
RI-I  STANDARD 30"x30" EXPRESSWAY 36"x36" SPECIAL 48"x48"	RI-2  STD. 36"x36"x36" EXPWY. 48"x48"x48" FWY. 60"x60"x60"	R2-I  STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"	W3-5  STD. 36"x36" EXPWY. 48"x48" FWY. 48"x48"	W3-5a  STD. 36"x36" EXPWY. 48"x48" FWY. 48"x48"	R4-I  STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"	R4-2  STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"	R2-6aP  48"x36" * USE 6" C LETTERS ** USE 4" D LETTERS	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 SO. 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. R2-6aP PLAQUES SHALL BE MOUNTED BELOW AN APPLICABLE ADVANCE WARNING SIGN THAT IS LOCATED AT LEAST 1500' BUT NOT MORE THAN 1 MILE IN ADVANCE OF THE WORK ZONE. IF A SPEED LIMIT REDUCTION IS IN EFFECT, THE PLAQUE SHALL BE PLACED A MINIMUM OF 500' IN ADVANCE OF THE W3-5 "REDUCED SPEED AHEAD" SIGN. R2-II SIGNS SHALL BE INSTALLED AT OR NEAR THE DOWNSTREAM END OF THE WORK ZONE. SEE STANDARD DRAWINGS TC-2, TC-3, AND TC-6 FOR TYPICAL PLACEMENT LOCATIONS. * NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE REQUIREMENTS SHOWN IN NOTES 4 & 5, BUT MEET THE REQUIREMENTS OF MANUAL FOR ASSESSING SAFETY HARDWARE (MASH), WILL BE ACCEPTED. COMPLIANCE WITH THE REQUIREMENTS OF MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) IS REQUIRED FOR ALL PROJECTS.													
R5-I  STD. 30"x30" EXPWY. 36"x36" SPECIAL 48"x48"	RII-2  48"x30"	RII-3A  60"x30"	RII-4  60"x30"	W2I-5a  STD. 36"x36" FWY. 48"x48"	WI-I  STD. 36"x36" FWY. 48"x48"	WI-2  STD. 36"x36" FWY. 48"x48"	R2-II  36"x48"														
WI-3  STD. 48"x48"	WI-4  STD. 48"x48"	WI-6  STD. 48"x24" SPECIAL 60"x30"	WI-8  STD. 18"x24" SPECIAL 24"x30" EXPWY. 30"x36" FWY. 36"x48"	W3-I  STD. 36"x36" SPECIAL 48"x48"	W3-2  STD. 36"x36" SPECIAL 48"x48"	W4-2  STD. 36"x36" FWY. 48"x48"	R56-I  STD. 18"x18"														
W5-I  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-I  STD. 24"x24"	W20-I  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  18" 500 FEET W16-2 24" STD. 36"x36" FWY. 48"x48"	W2I-2  STD. 30"x30" SPECIAL 36"x36"	W2I-5  STD. 30"x30" SPECIAL 36"x36"	W24-I  STD. 36"x36"	WI-4b  STD. 48"x48"															
W8-II  STD. 36"x36" FWY. 48"x48"	W8-9  STD. 36"x36" FWY. 48"x48"	G20-I  60"x24"	G20-2  48"x24"	OM-3L OM-3R  YELLOW BLACK 12"x36"	M4-9  STD. 30"x24" SPECIAL 48"x36" SPECIAL 60"x48"	M4-10  48"x18"															
							<table><tr><td rowspan="2">08-14-25</td><td rowspan="2">11-07-19</td><td rowspan="2">04-13-17</td><td rowspan="2">09-02-15</td><td rowspan="2">12-15-11</td><td rowspan="2">DATE</td><td rowspan="2">REV</td><td rowspan="2">DESCRIPTION</td><td colspan="3">  ARKANSAS STATE HIGHWAY COMMISSION STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION </td></tr><tr><td>DATE EFFECTIVE</td><td>STANDARD DRAWING</td><td>TC-1</td></tr></table>	08-14-25	11-07-19	04-13-17	09-02-15	12-15-11	DATE	REV	DESCRIPTION	 ARKANSAS STATE HIGHWAY COMMISSION STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION			DATE EFFECTIVE	STANDARD DRAWING	TC-1
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								DATE EFFECTIVE	STANDARD DRAWING	TC-1											



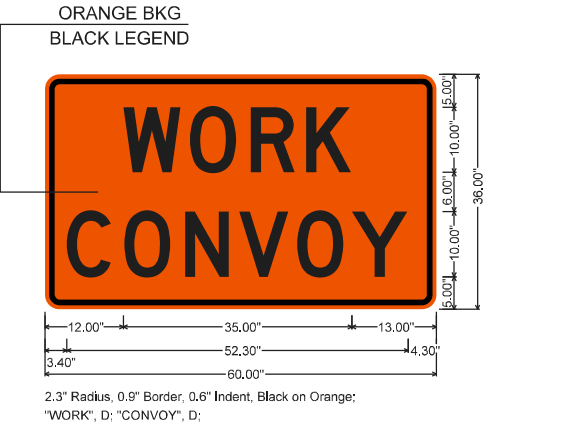
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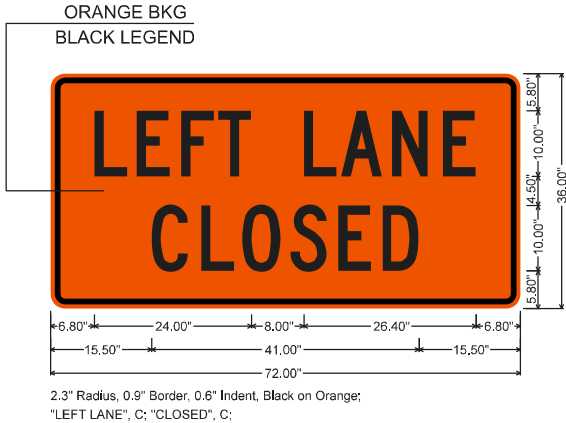
WZ-4 (NON-INTERSTATE) SIGN



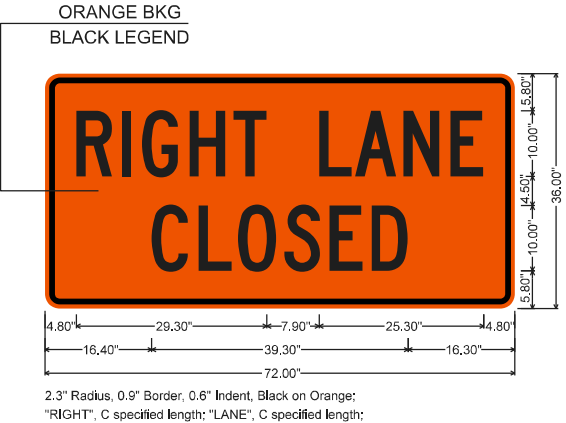
WZ-2 SIGN



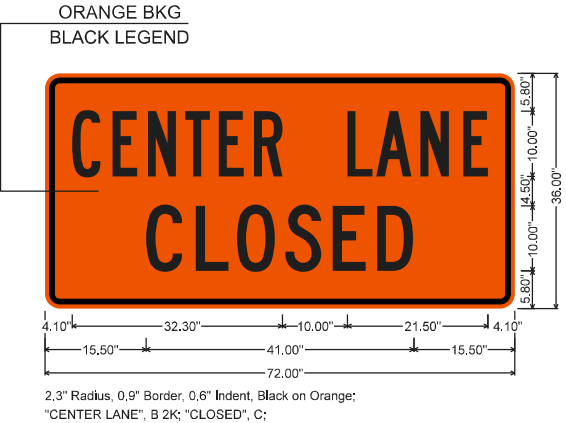
WZ-3 SIGN



WZ-W20-5L SIGN



WZ-W20-5R SIGN



WZ-W20-5C SIGN

MOBILE WORK ZONE SIGNS

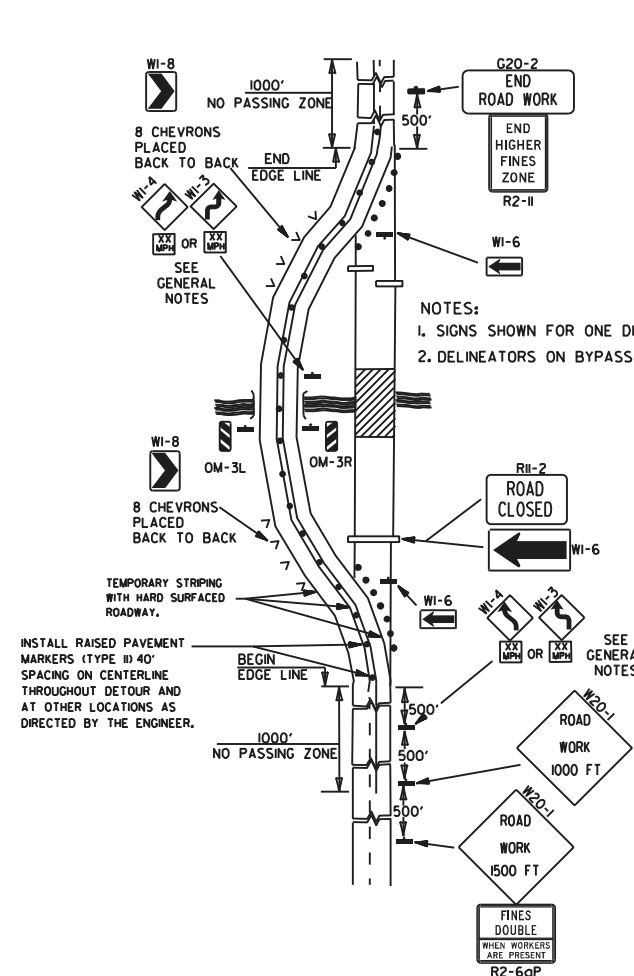


CONSTRUCTION PROJECT INFORMATION SIGN

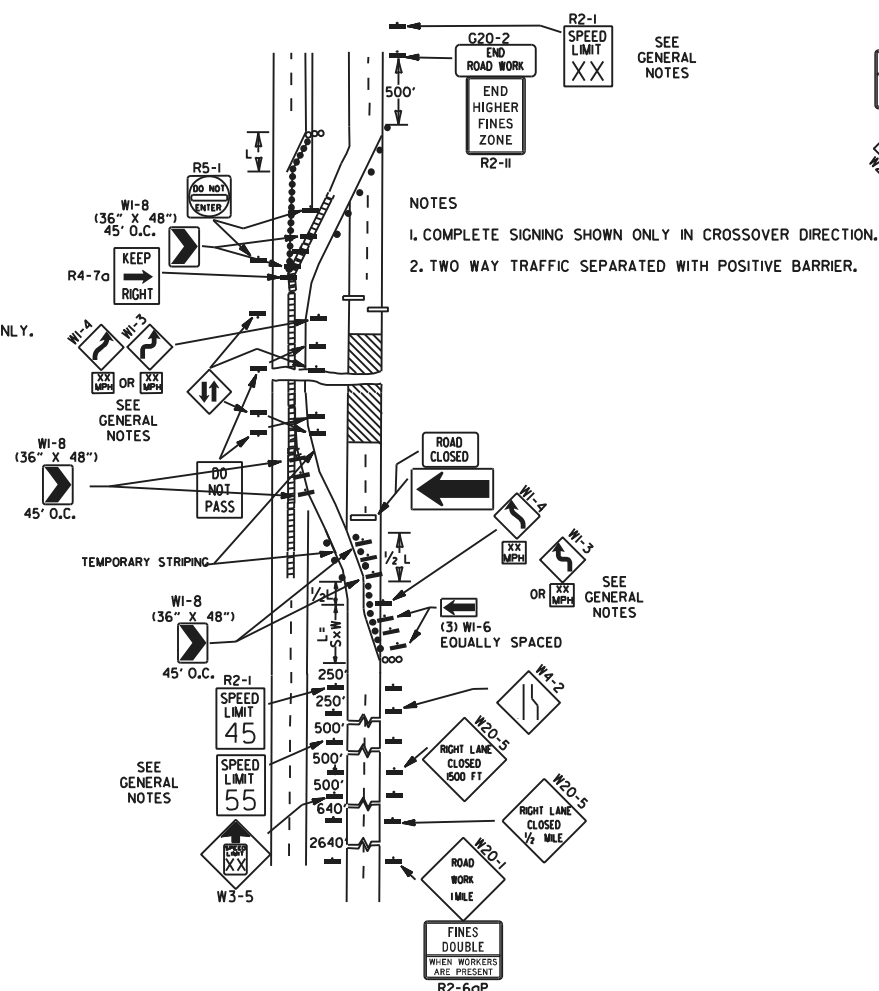


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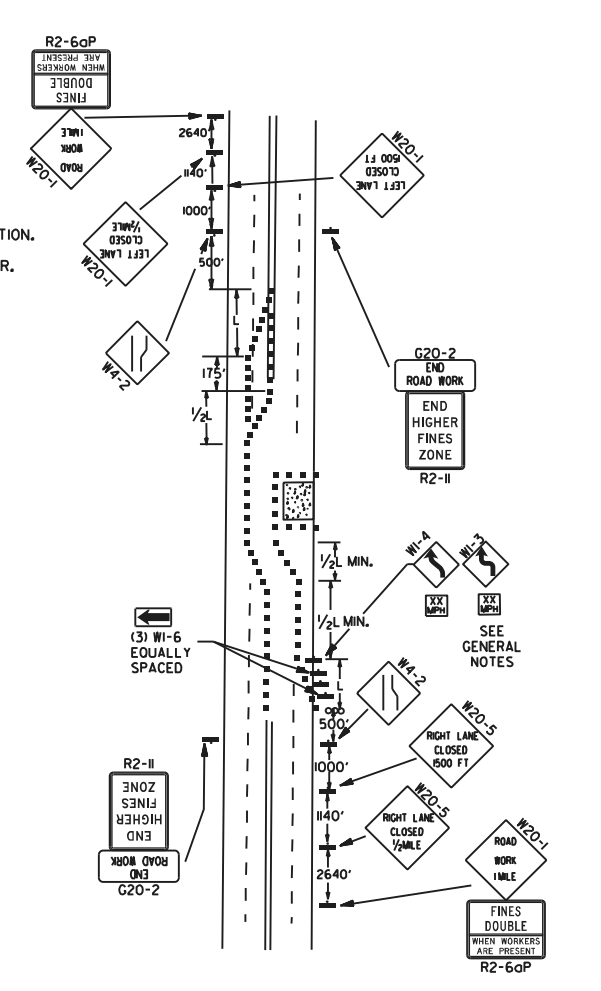
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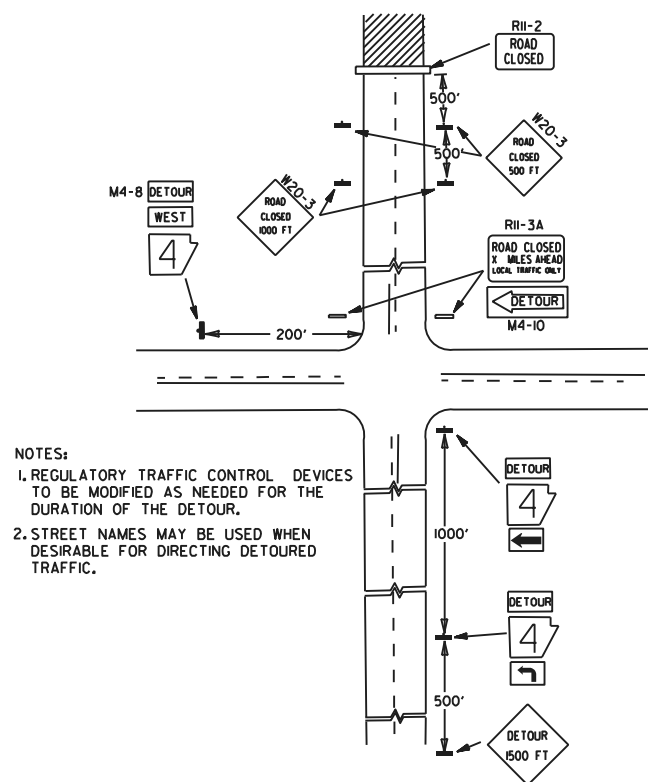
(A) TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES ON A 2-LANE HIGHWAY WHERE THE ENTIRE ROADWAY IS CLOSED AND A BYPASS DETOUR IS PROVIDED.



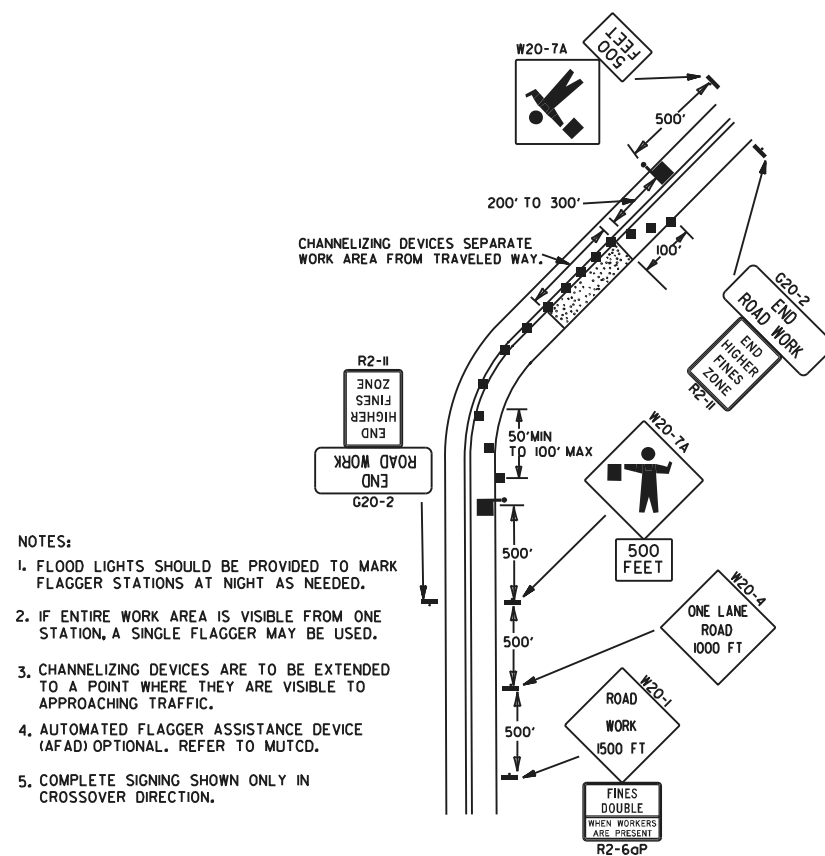
(B) TYPICAL APPLICATION - 4-LANE DIVIDED ROADWAY WHERE ONE ROADWAY IS CLOSED.



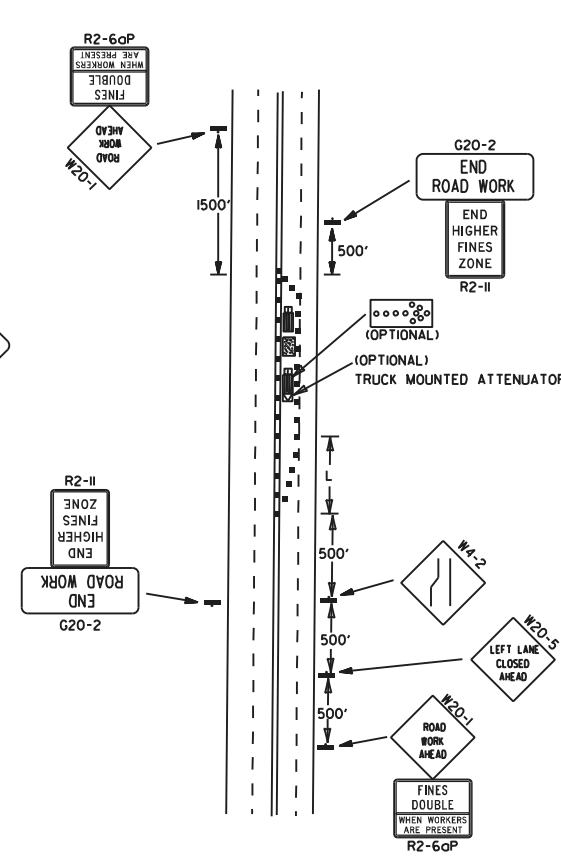
(C) TYPICAL APPLICATION - 4-LANE UNDIVIDED ROADWAY WHERE HALF OF THE ROADWAY IS CLOSED.



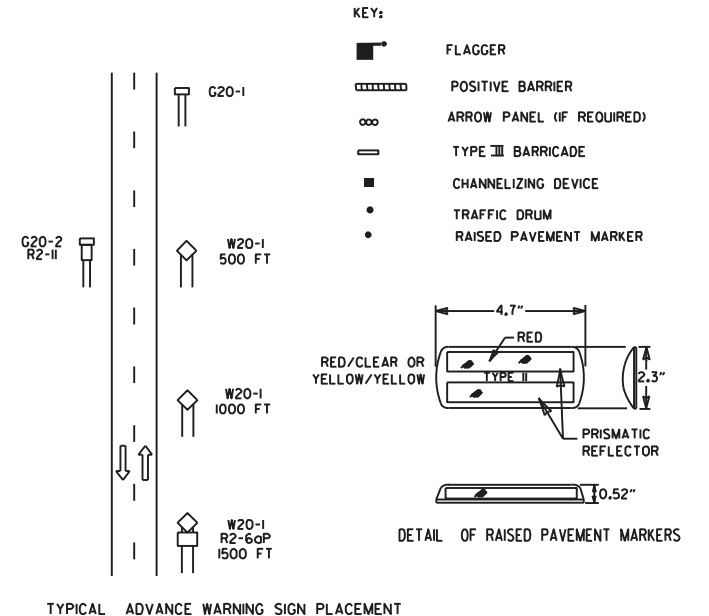
(D) TYPICAL APPLICATION - ROADWAY CLOSED BEYOND DETOUR POINT.



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



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



- GENERAL NOTES:
1. THE MAINTENANCE DIVISION SHALL CONDUCT A BALL BANK STUDY TO DETERMINE THE ADVISORY SPEED LIMIT PRIOR TO OPENING TO TRAFFIC. THE ADVISORY SPEED WILL BE POSTED ON W1-3 OR W1-4 CURVE WARNING SIGNS. USE W1-4 WHEN SPEED IS GREATER THAN 30MPH AND W1-3 WHEN 30MPH OR LESS.
 2. WHEN THE EXISTING SPEED LIMIT IS 55MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 45MPH, THE R2-155 SHALL BE OMITTED AND THE W3-5 SHALL BE INSTALLED AT THAT LOCATION. ADDITIONAL R2-145MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1/2 MILE INTERVALS. AT THE END OF THE WORK AREA A R2-1XX 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 R2-145 SHALL BE OMITTED. ADDITIONAL R2-155MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1/2 MILE INTERVALS. AT THE END OF THE WORK AREA A R2-1XX 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. PAYMENT FOR TRAFFIC DRUMS SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR VARIOUS TRAILER MOUNTED DEVICES.
 8. DIMENSIONS SHOWN FOR RAISED PAVEMENT MARKERS ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR MARKERS WITH THE APPROVAL OF THE ENGINEER. REQUESTING APPROVAL FOR SIMILAR MARKERS MAY BE MADE BY REFERRING TO THE ADOT QUALIFIED PRODUCTS LIST.
 9. ALL TRAILER MOUNTED DEVICES SUCH AS ARROW PANELS AND PORTABLE CHANGEABLE MESSAGE SIGNS SHALL MEET THE REQUIREMENTS OF THE MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).

REVISIONS		DESCRIPTION	
DATE	REV	DESCRIPTION	DATE
08-14-25	ADDED R2-6aP AND R2-11		
05-20-21	REVISED NOTE 7		
11-07-19	ADDED NOTE 1, 8, 9		
09-02-15	REVISED NOTE 2, 8, 9		
09-12-13	REVISED DETAIL OF RAISED PAVEMENT MARKERS		
DATE EFFECTIVE		STANDARD DRAWING	
08-14-2025		TC-2	

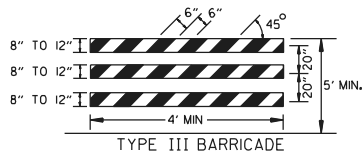
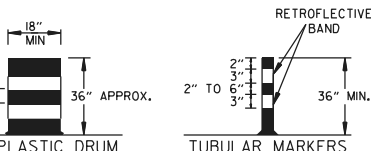
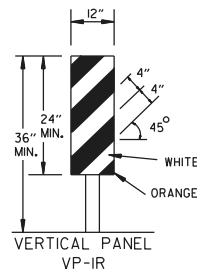
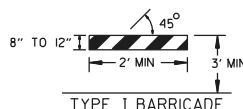
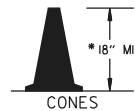
(A) TYPICAL APPLICATION - DAYTIME MAINTENANCE OPERATIONS OF SHORT DURATION ON A 4-LANE DIVIDED ROADWAY WHERE HALF OF THE ROADWAY IS CLOSED.

(C) TYPICAL APPLICATION - CONSTRUCTION OPERATIONS OF INTERMEDIATE TO LONG TERM DURATION ON A 4-LANE DIVIDED ROADWAY WHERE HALF OF THE ROADWAY IS CLOSED.

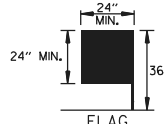
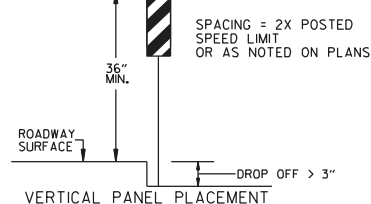
(B) TYPICAL APPLICATION - 3-LANE ONEWAY ROADWAY WHERE CENTER LANE IS CLOSED.

CHANNELIZING DEVICES

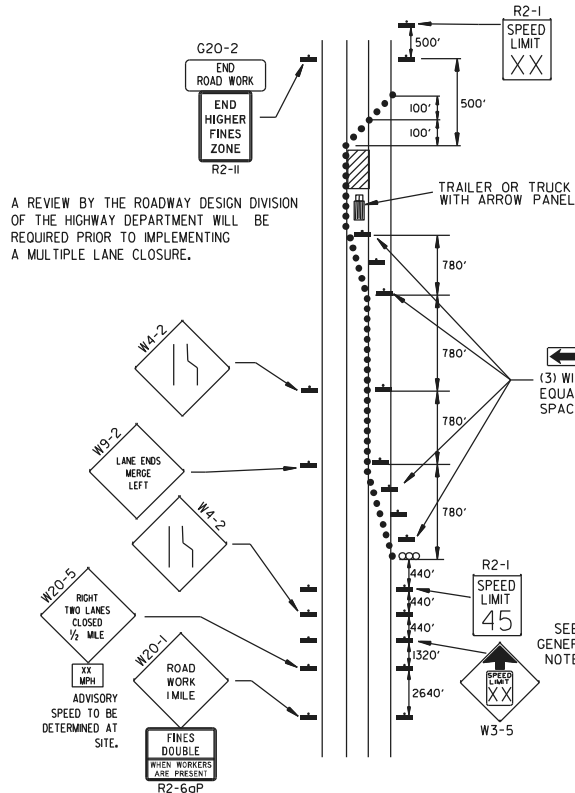
* WHEN CONES ARE USED ON FREEWAYS AND MULTI-LANE HIGHWAYS, THEY SHALL BE 28" MIN. DURING HOURS OF DARKNESS, 28" CONES SHALL BE USED ON ALL ROADWAYS, AND SHALL BE REFLECTORIZED IN ACCORDANCE WITH THE M.U.T.C.D.



NOTE: FOR ALL ROAD CLOSURES, THE TYPE III BARRICADES SHALL BE OF SUFFICIENT LENGTH TO EXTEND ACROSS ENTIRE ROADWAY.



FLAG SHALL BE OF GOOD GRADE RED MATERIAL



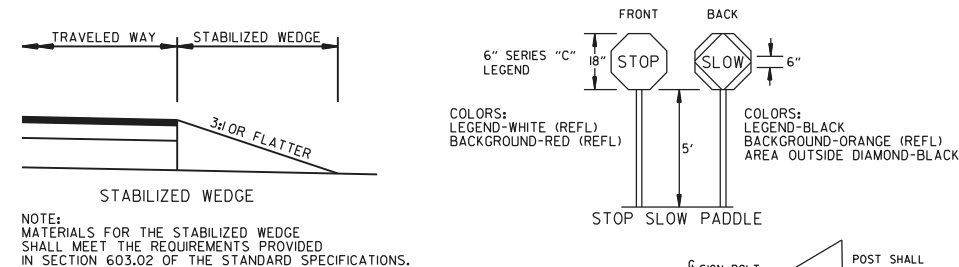
(D) TYPICAL APPLICATION - CLOSING MULTIPLE LANES OF A MULTILANE HIGHWAY.

TRAFFIC CONTROL DEVICES

VERTICAL DIFFERENTIAL	LOCATION	NON-INTERSTATE	
		TRAFFIC CONTROL	
		≤ 45 MPH	> 45 MPH
≤ 1"	CENTERLINE	W8-11	W8-11
> 1"	CENTERLINE	W8-11 AND CENTERLINE LANE STRIPING	W8-11 AND CENTERLINE LANE STRIPING
> 3"	CENTERLINE	STANDARD LANE CLOSURE ⁽⁶⁾	STANDARD LANE CLOSURE ⁽⁶⁾
≤ 3"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-9 AND TRAFFIC DRUMS ⁽¹⁾	W8-9 AND TRAFFIC DRUMS ⁽¹⁾
> 3"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-17 EDGE LINE STRIPING, AND TRAFFIC DRUMS ⁽¹⁾	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS ⁽¹⁾
> 6"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-17 EDGE LINE STRIPING, AND TRAFFIC DRUMS ⁽¹⁾	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS ⁽²⁾
> 18"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-17 EDGE LINE STRIPING, AND TRAFFIC DRUMS ⁽¹⁾	A STABILIZED WEDGE, W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS ⁽³⁾
> 24"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	PRECAST CONCRETE BARRIER ⁽⁴⁾ & EDGE LINES	PRECAST CONCRETE BARRIER ⁽⁴⁾ & EDGE LINES

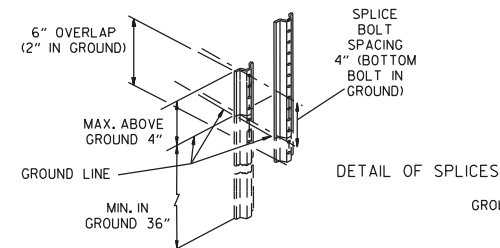
VERTICAL DIFFERENTIAL	LOCATION	INTERSTATE	
		TRAFFIC CONTROL	
		≤ 3"	> 3"
≤ 3"	CENTERLINE	W8-11 AND LANE STRIPING	W8-9, EDGE LINE STRIPING, AND TRAFFIC DRUMS ⁽²⁾
≤ 3"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-9, EDGE LINE STRIPING, AND TRAFFIC DRUMS ⁽²⁾	W8-17 EDGE LINE STRIPING, AND TRAFFIC DRUMS ⁽²⁾
> 3"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-17 EDGE LINE STRIPING, AND TRAFFIC DRUMS ⁽²⁾	PRECAST CONCRETE BARRIER & EDGE LINES

INTERSTATE AND NON-INTERSTATE		
FORESLOPE	HEIGHT	TRAFFIC CONTROL
1:1	≥ 2 FT	PRECAST CONCRETE BARRIER
2:1	≥ 5 FT	TRAFFIC DRUMS
2:1	> 5 FT	PRECAST CONCRETE BARRIER
Flatter than 2:1	N/A	TRAFFIC DRUMS



NOTE: MATERIALS FOR THE STABILIZED WEDGE SHALL MEET THE REQUIREMENTS PROVIDED IN SECTION 603.02 OF THE STANDARD SPECIFICATIONS.

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



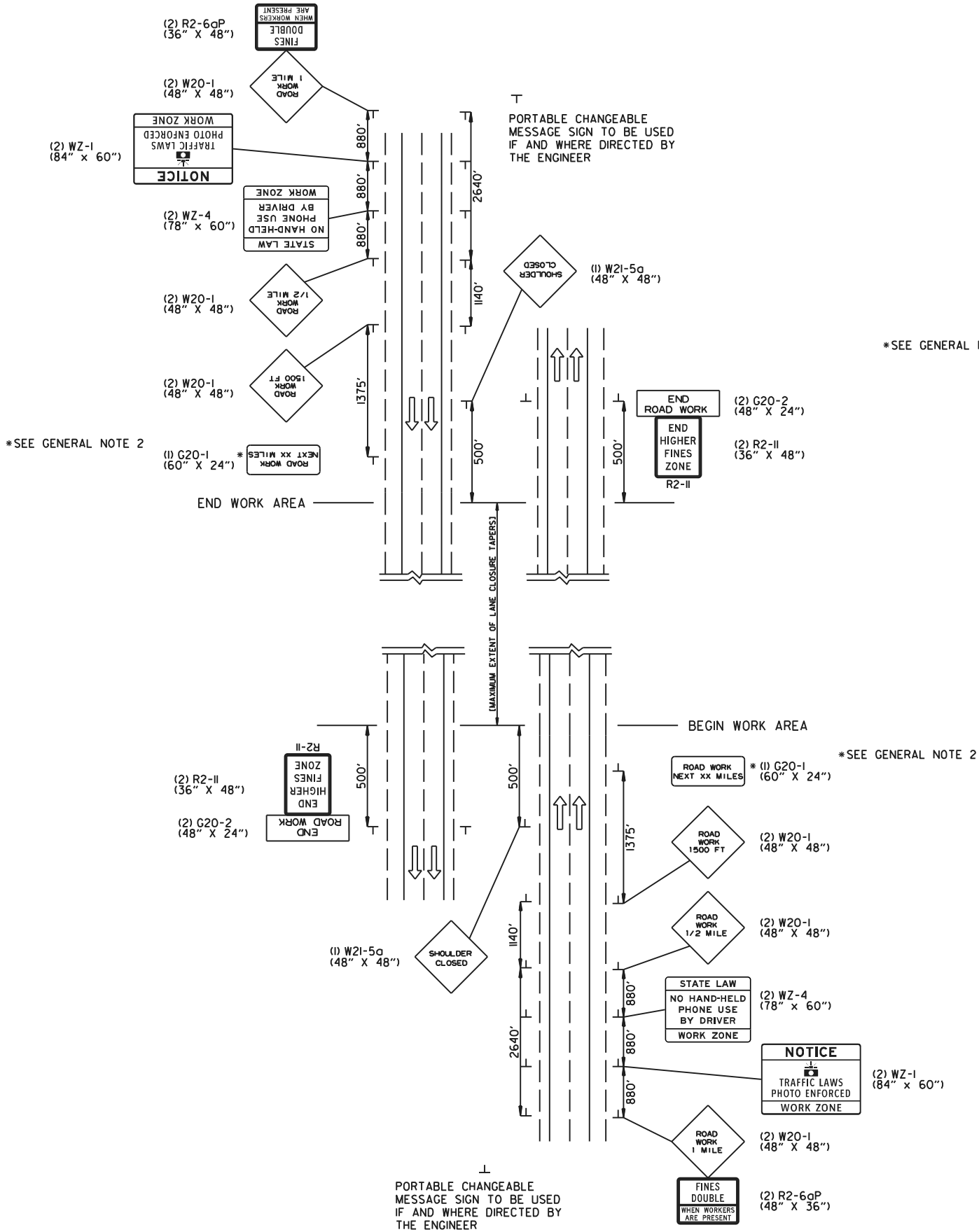
REVISIONS		DESCRIPTION	DATE	EFFECTIVE	STANDARD DRAWING	TC-3
NO.	DATE					
08-14-25	ADDED R2-6SP AND R2-11	REVISED TRAFFIC CONTROL DEVICES AND NOTES, ADDED NOTE 12	05-22-25			
08-12-21	REVISED TRAFFIC CONTROL DEVICES AND NOTES	REVISED NOTE 10	05-20-21			
02-27-20	REVISED TRAFFIC CONTROL DEVICES DETAILS					
DATE		REV				
08-14-2025						



ARKANSAS STATE
HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

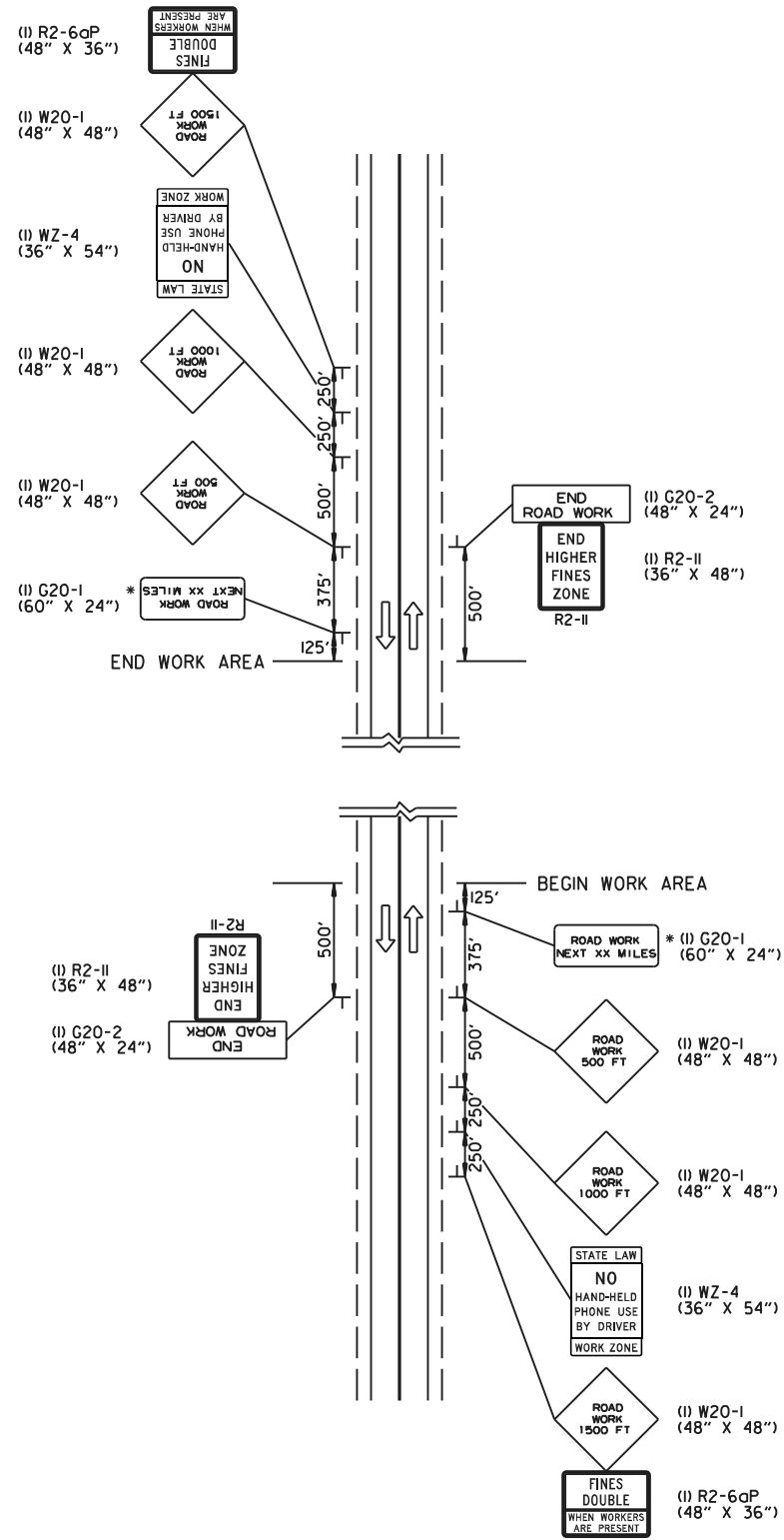
NOTE : W20-1 (VARIOUS DISTANCE) ADVANCE SIGNS
TO BE REPLACED AS NEEDED BY EQUIVALENT W20-5 SIGNS
AS WORKING AREA SHIFTS.



(A) TYPICAL APPLICATION - ADVANCE WARNING SIGNS AT BEGINNING AND
END OF JOB (FULLY CONTROLLED ACCESS FACILITIES) (ALL STAGES)

NOTE : W20-1 (VARIOUS DISTANCE) ADVANCE SIGNS
TO BE REPLACED AS NEEDED BY EQUIVALENT W20-5 SIGNS
AS WORKING AREA SHIFTS.

*SEE GENERAL NOTE 2

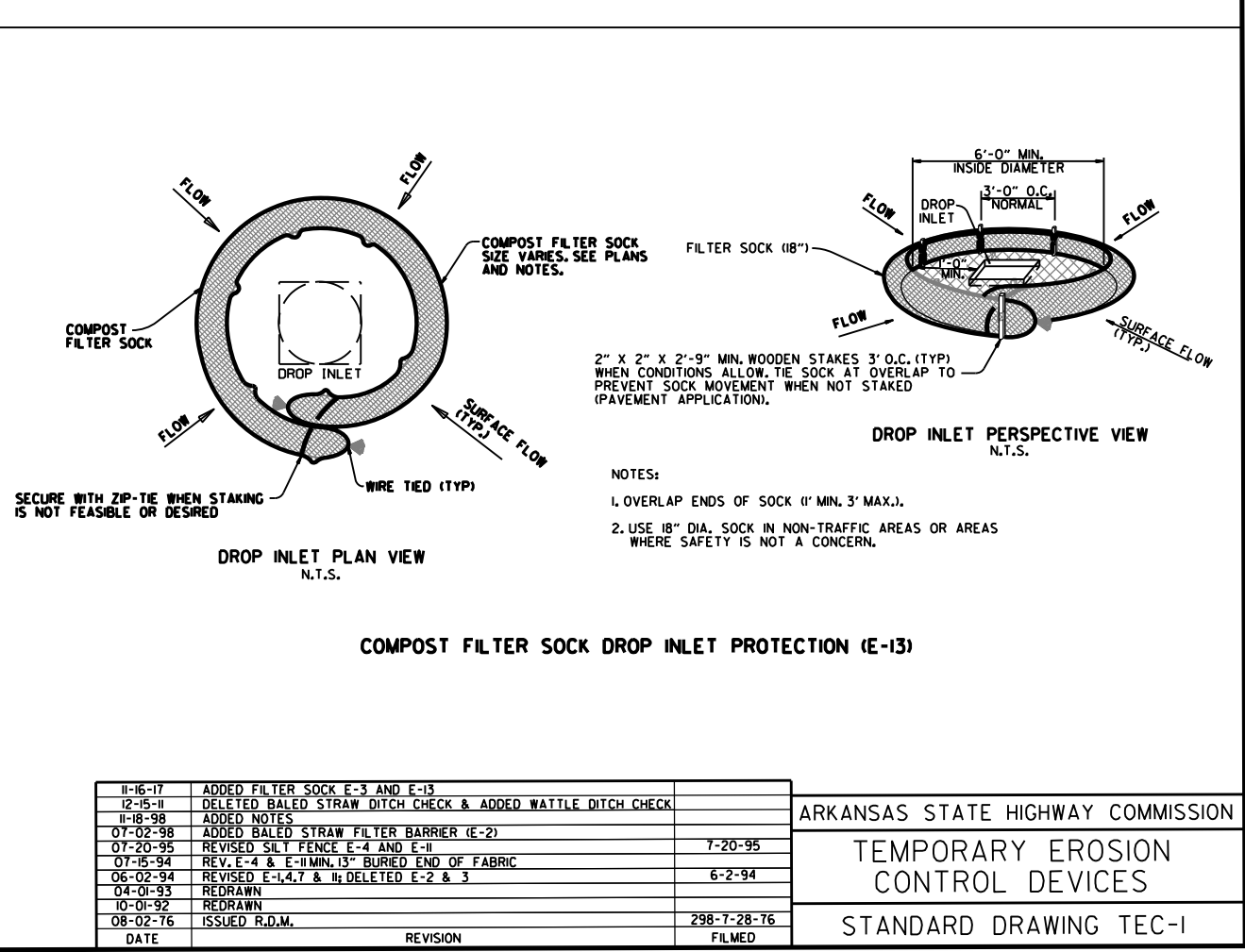
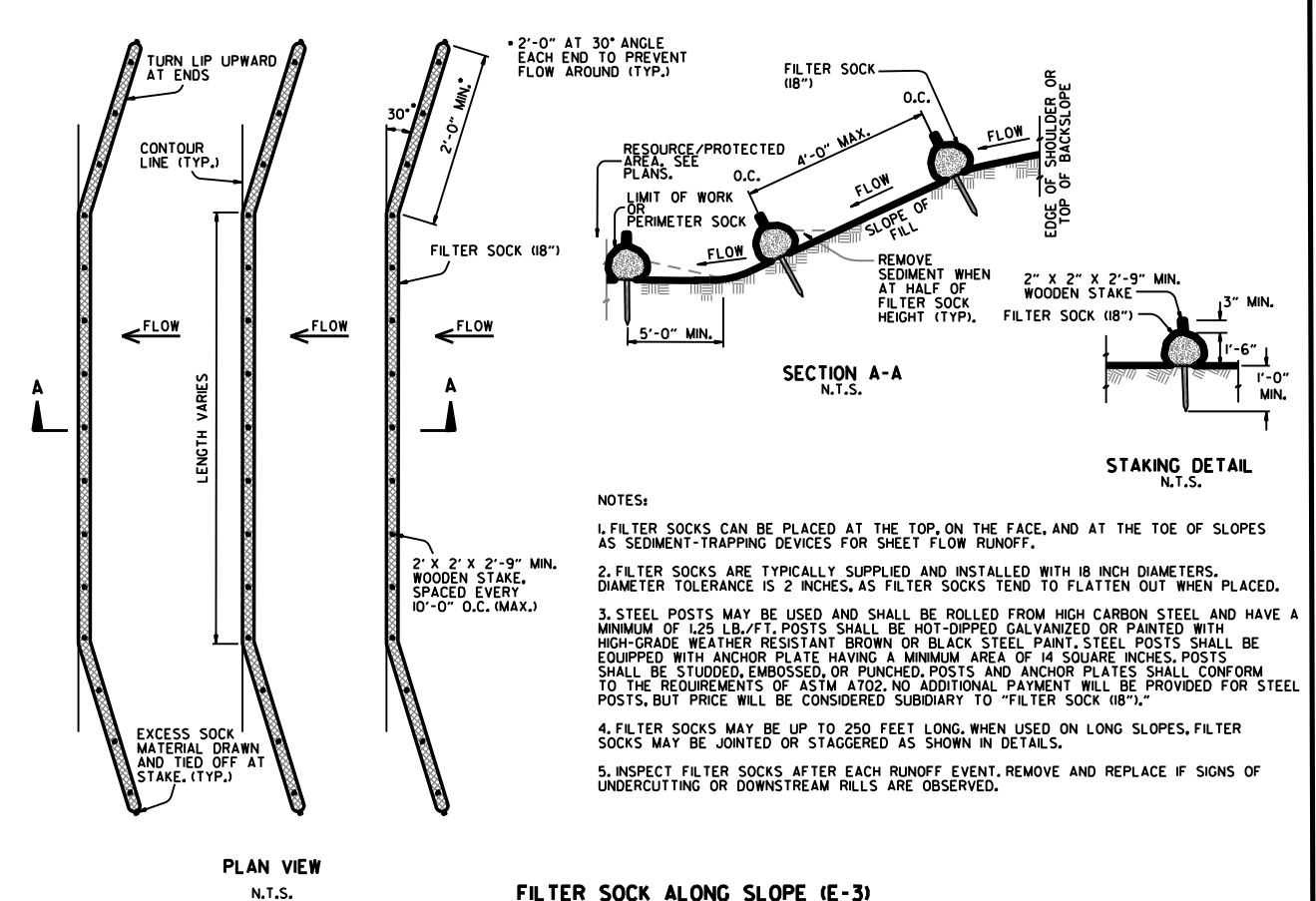
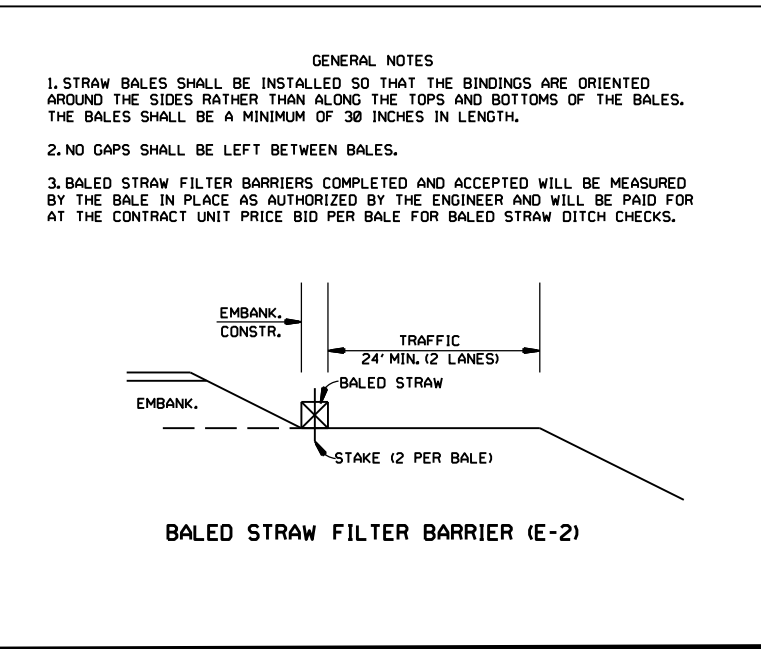
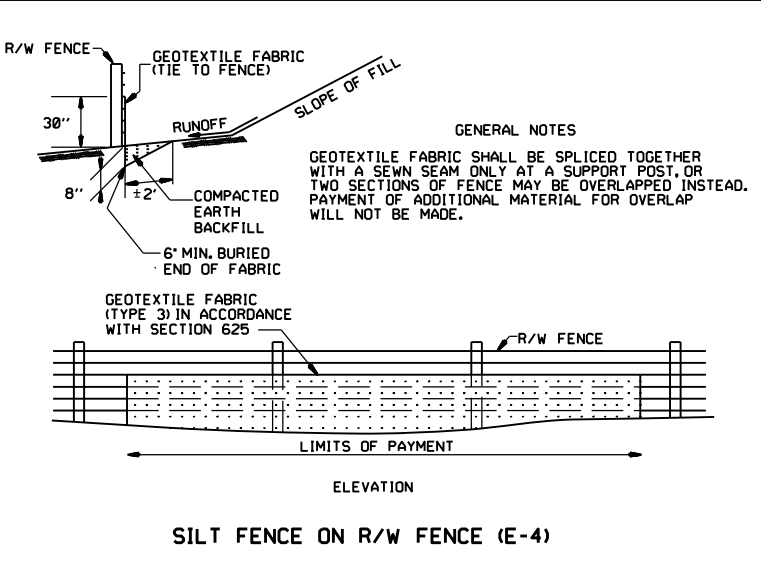
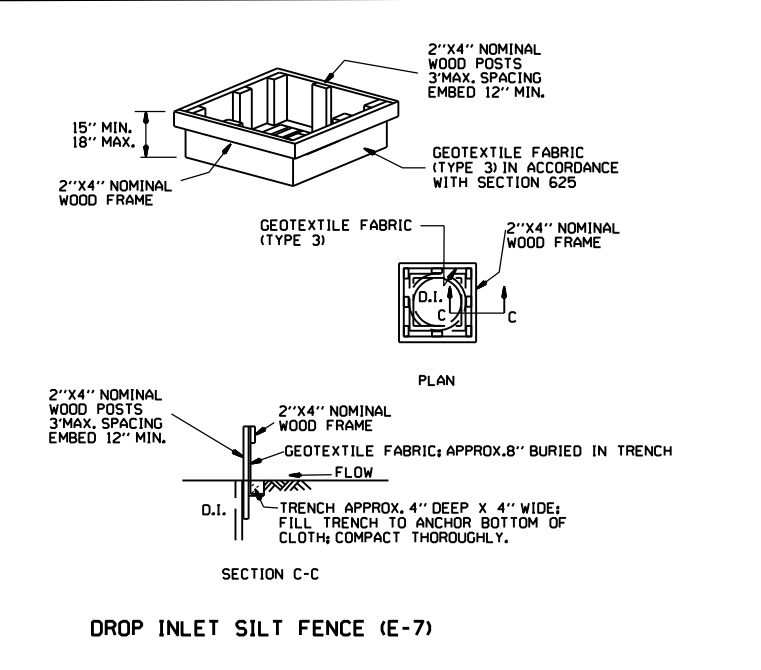
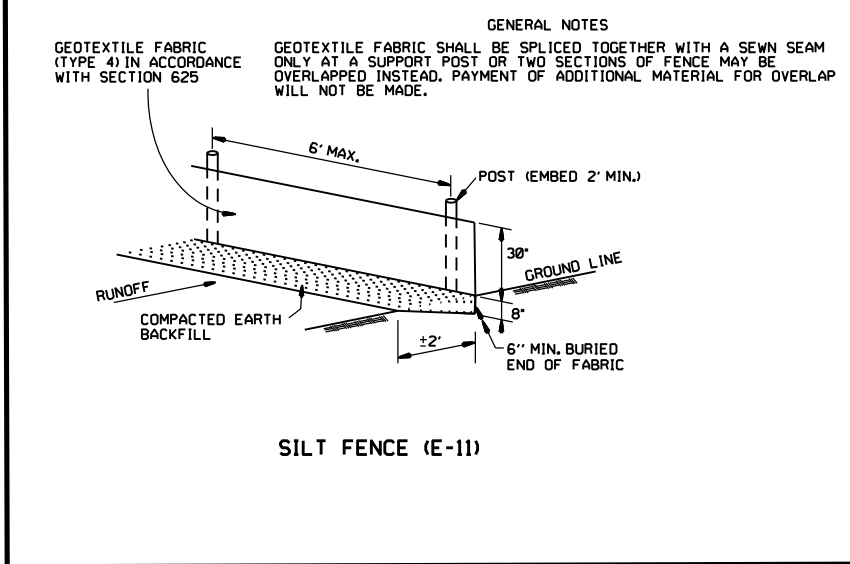
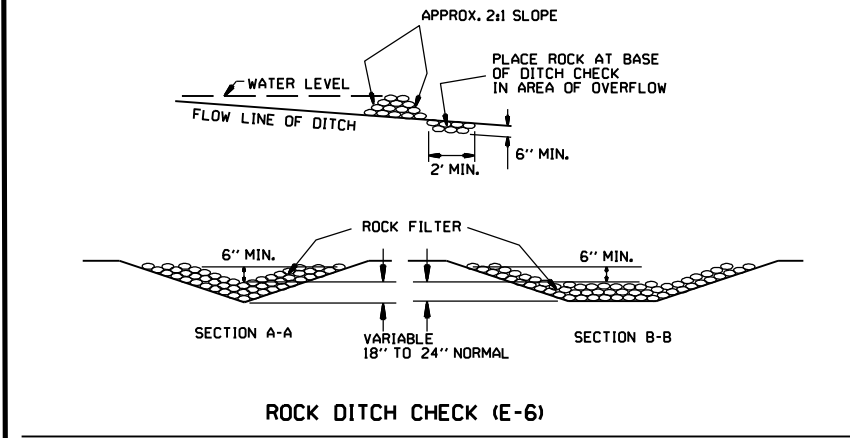
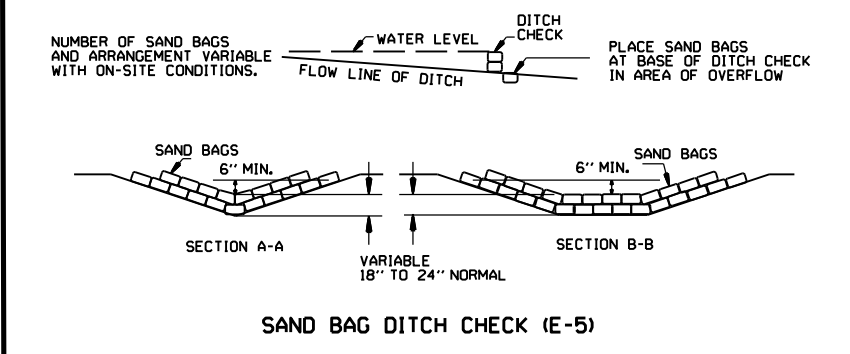
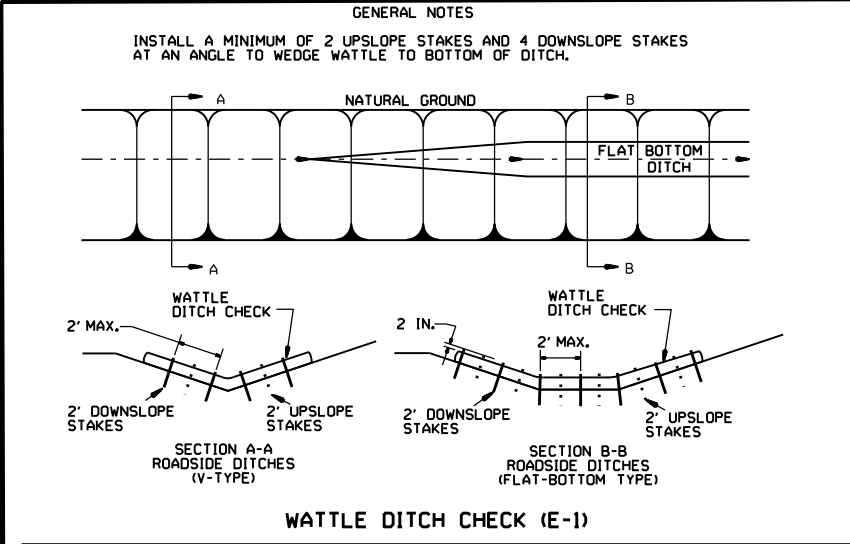


(B) TYPICAL APPLICATION - ADVANCE WARNING SIGNS AT BEGINNING AND
END OF JOB (NON-FULLY CONTROLLED ACCESS FACILITIES) (ALL STAGES)

- GENERAL NOTES:
1. FLAGS MAY BE MOUNTED TO SIGNS AT NIGHT AS NEEDED.
 2. THE G20-1 SIGN SHOULD BE INSTALLED 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 OR 1500 FT) SIGNS ARE NOT REQUIRED IN ADVANCE OF LANE CLOSURES THAT BEGIN INSIDE THE PROJECT LIMITS. THE DISTANCE DISPLAYED ON THE G20-1 SIGN SHALL BE STATED TO THE NEAREST WHOLE MILE.
 3. 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, THIS DEVICE SHALL BE DELINEATED BY PLACING FIVE (5) TRAFFIC DRUMS, EQUALLY SPACED ALONG THE TRAFFIC SIDE OF THE DEVICE. PAYMENT FOR TRAFFIC DRUMS SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR PORTABLE CHANGEABLE MESSAGE SIGNS.
 4. PORTABLE CHANGEABLE MESSAGE SIGNS SHALL MEET THE REQUIREMENTS OF THE MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).

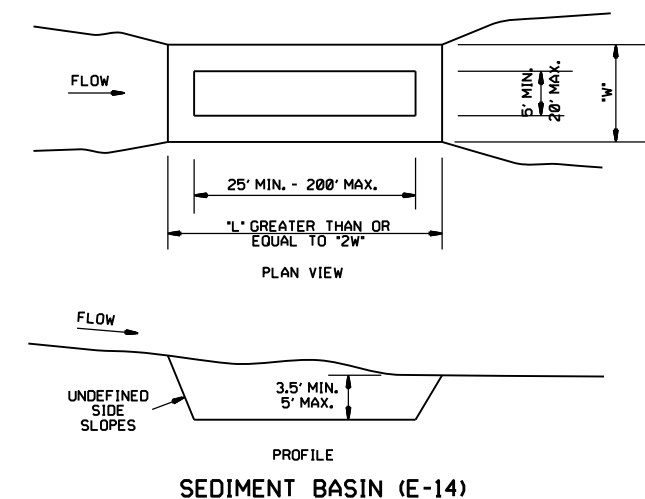
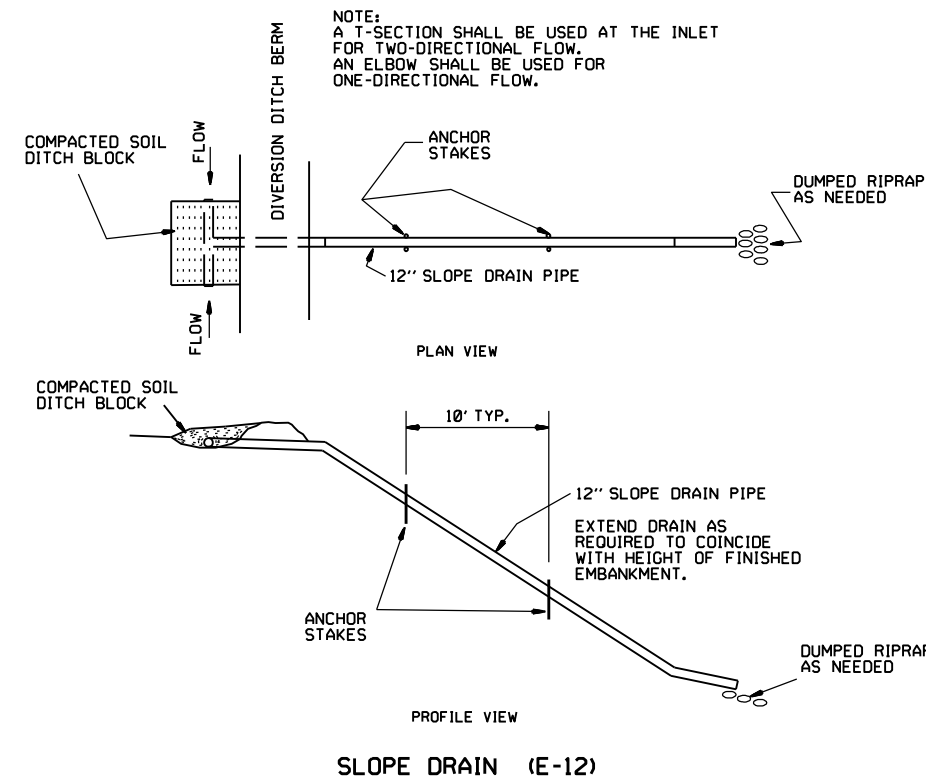
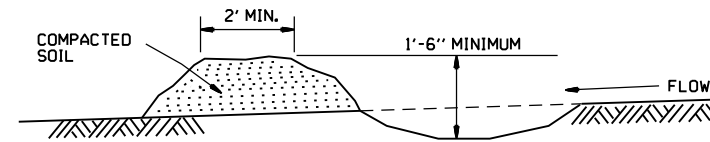
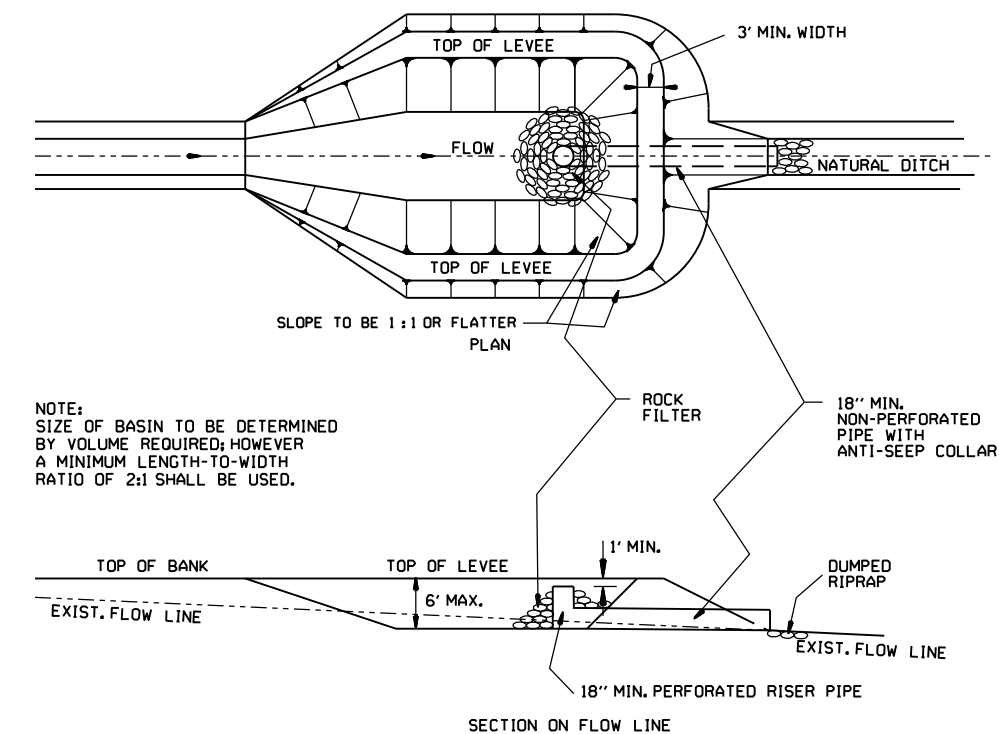
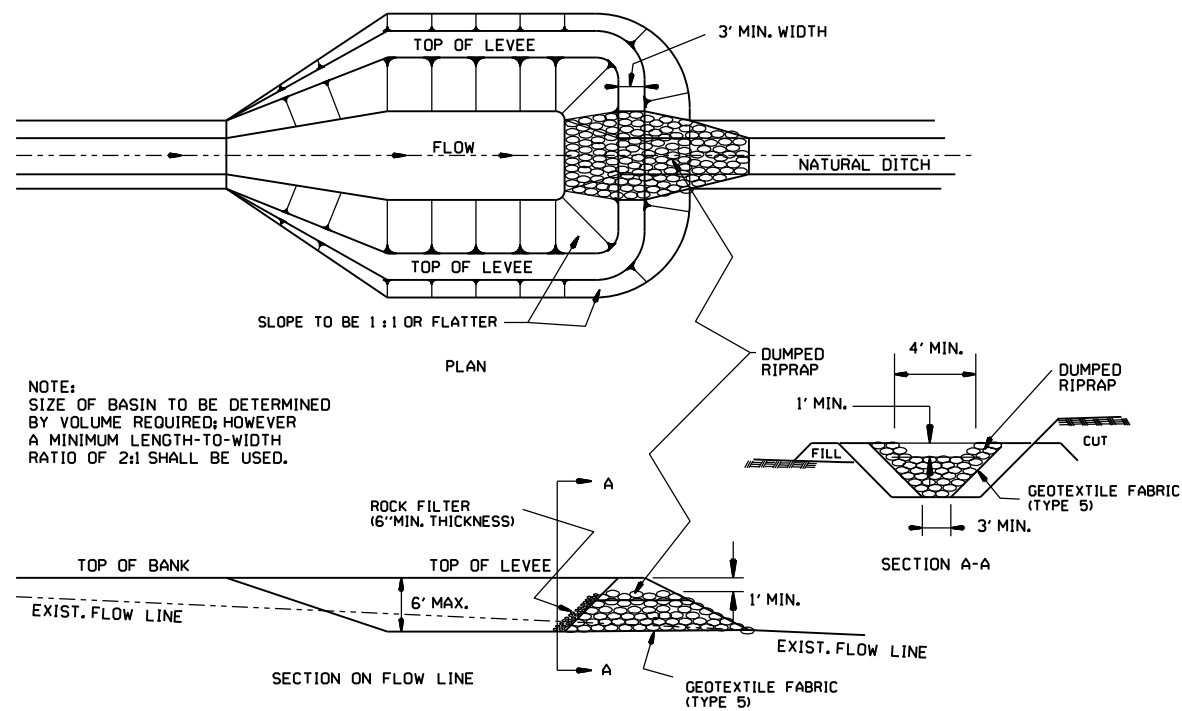
*SEE GENERAL NOTE 2

04-09-26		CORRECTED WZ-4 SIGN DIMENSIONS		ADDED WZ-4 AND REVISED GENERAL NOTE 1		REPLACED "SPEED" WITH "TRAFFIC LAWS" ON WZ-1		ISSUED		DESCRIPTION	
01-22-26				11-06-25		08-14-25		DATE		REV	
										AR  ARKANSAS DEPARTMENT OF TRANSPORTATION	
										ARKANSAS STATE HIGHWAY COMMISSION	
										STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	
										DATE EFFECTIVE	
										04-09-2026	
										STANDARD DRAWING	
										TC-6	



11-16-17	ADDED FILTER SOCK E-3 AND E-13		
12-15-11	DELETED BALED STRAW DITCH CHECK & ADDED WATTLE DITCH CHECK		
11-18-98	ADDED NOTES		
07-02-98	ADDED BALED STRAW FILTER BARRIER (E-2)		
07-20-95	REVISED SILTS FENCE E-4 AND E-11	7-20-95	
07-15-94	REV. E-4 & E-11 MIN. 13" BURIED END OF FABRIC		
06-02-94	REVISED E-1, 4, 7 & 11; DELETED E-2 & 3	6-2-94	
04-01-93	REDRAWN		
10-01-92	REDRAWN		
08-02-76	ISSUED R.D.M.	298-7-28-76	
DATE	REVISION	FILMED	

ARKANSAS STATE HIGHWAY COMMISSION
TEMPORARY EROSION CONTROL DEVICES
STANDARD DRAWING TEC-1

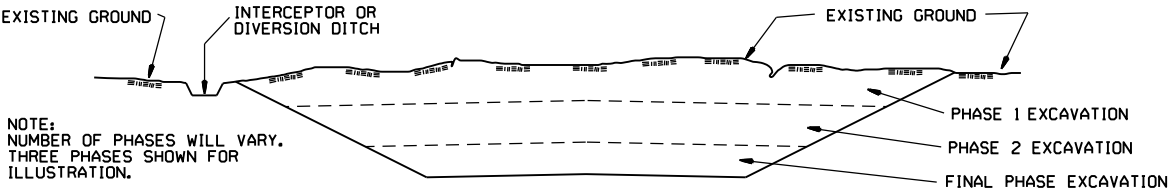


				ARKANSAS STATE HIGHWAY COMMISSION
				TEMPORARY EROSION CONTROL DEVICES
6-2-94	Revised E-8 & E-12; Added E-14 & Deleted E-13			
4-1-93	ISSUED			STANDARD DRAWING TEC-2
DATE	REVISION		FILMED	

CLEARING AND GRUBBING

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

EXCAVATION

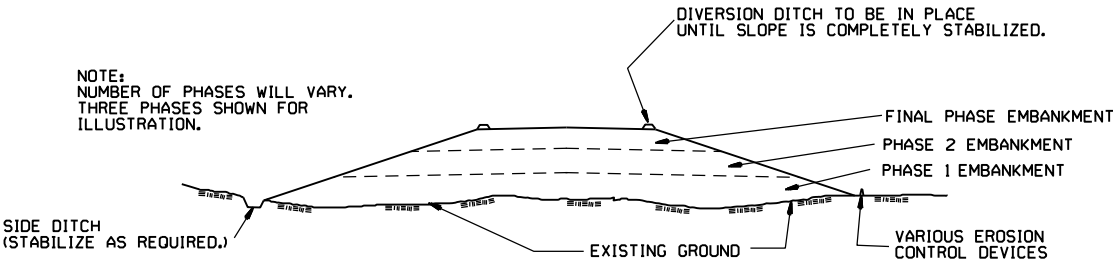


GENERAL NOTE

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

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

EMBANKMENT

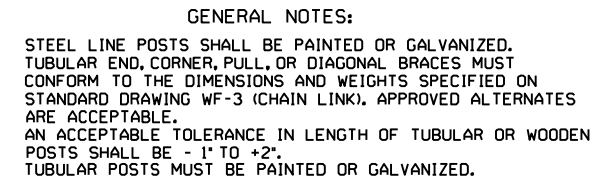


GENERAL NOTE

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

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

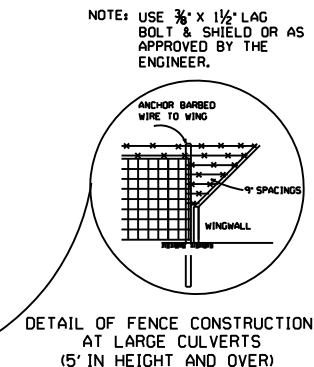
			ARKANSAS STATE HIGHWAY COMMISSION
			TEMPORARY EROSION CONTROL DEVICES
			STANDARD DRAWING TEC-3
11-03-94	CORRECTED SPELLING		
6-2-94	Drawn & Issued	6-2-94	
DATE	REVISION	FILMED	



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.

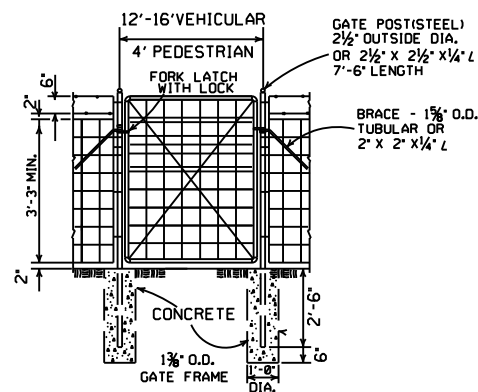
AT STREAM CROSSINGS, THE FENCE SHALL NOT BE CONSTRUCTED ACROSS LARGE STREAMS, WHERE CLEARANCE IS SUFFICIENT FROM THE TOP OF THE BANK TO THE BRIDGE STRUCTURE A CROSS CONNECTION SHALL BE CONSTRUCTED BETWEEN THE FENCE ON EACH SIDE OF THE ROAD, WHERE THE CLEARANCE IS NOT SUFFICIENT, THE FENCE SHALL BE TERMINATED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



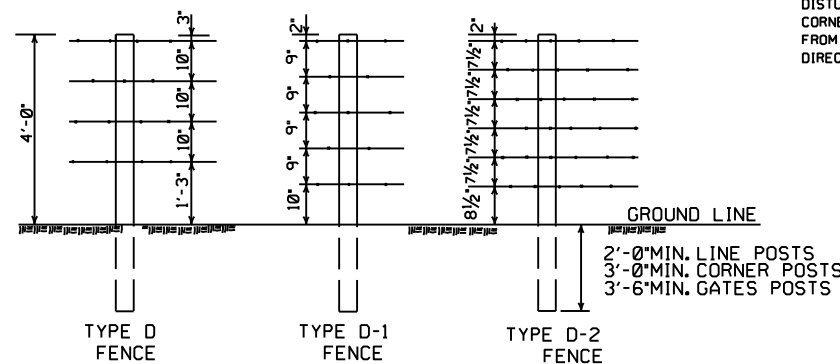
SPOLICE FOR BARBED WIRE BETWEEN PULL
PULL ASSEMBLY SHALL BE BY THE "EYE
METHOD" AS DESCRIBED AS FOLLOWS:
THE ENDS OF THE BARBED WIRE SHALL BE
BENT TO FORM A LOOP. THE LOOPS SHALL
BE CONNECTED. AFTER THE LOOPS ARE
CONNECTED THE ENDS OF THE WIRE SHALL
BE WRAPPED AROUND THE PROJECTING WIRES
A MINIMUM OF 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.

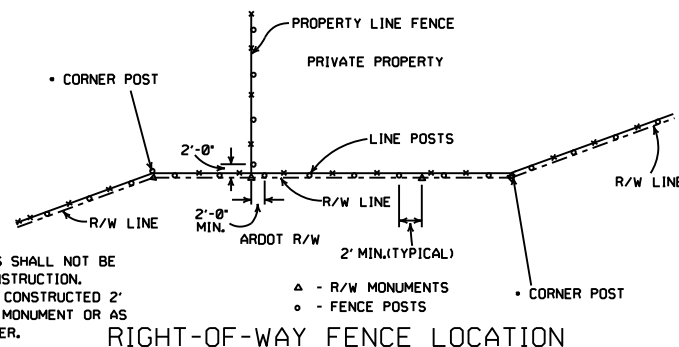
STAPLE AT LEAST TOP, BOTTOM AND ALTERNATE
WIRES OF WOVEN FABRIC FOR WOOD LINE POSTS.



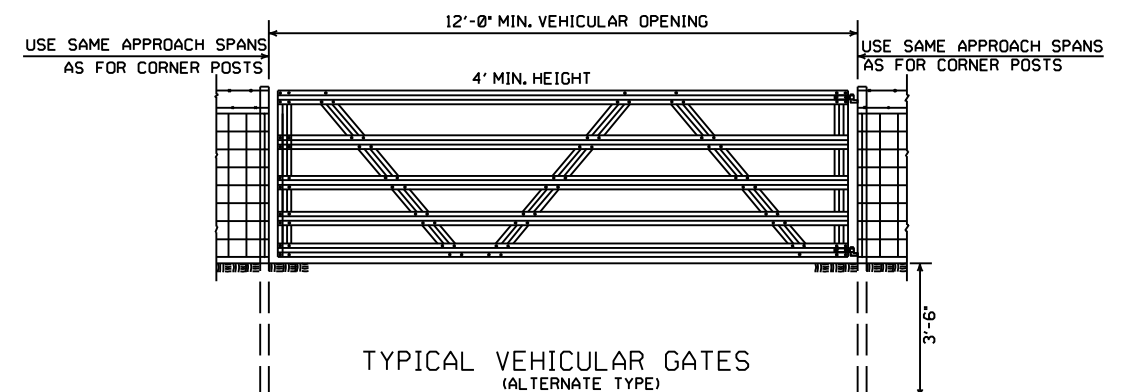
4 STRANDS BARBED WIRE (D)
5 STRANDS BARBED WIRE (D-1)
6 STRANDS BARBED WIRE (D-2)



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.



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.

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

ARKANSAS STATE HIGHWAY COMMISSION

WIRE FENCE
TYPE C AND D

STANDARD DRAWING WF-4