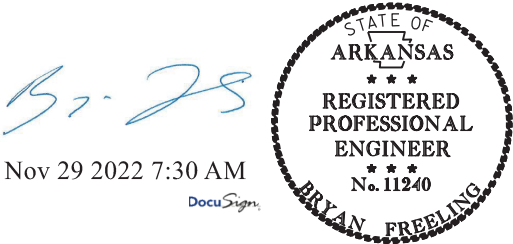


DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
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4 INDEX OF SHEETS AND STANDARD DRAWINGS



INDEX OF SHEETS

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13 - 15	SURVEY CONTROL DETAILS			
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22	SHEET 2 OF 3 DETAILS OF BENT 1	04948		64555
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30	DETAILS OF ELASTOMERIC BEARINGS	04948		64563
31	SHEET 1 OF 8 DETAILS OF 310'-0" CONTINUOUS PLATE GIRDER UNITS	04948		64564
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34	SHEET 4 OF 8 DETAILS OF 310'-0" CONTINUOUS PLATE GIRDER UNITS	04949		64566A
35	SHEET 5 OF 8 DETAILS OF 310'-0" CONTINUOUS PLATE GIRDER UNITS	04948		64567
36	SHEET 6 OF 8 DETAILS OF 310'-0" CONTINUOUS PLATE GIRDER UNITS	04949		64567A
37	SHEET 7 OF 8 DETAILS OF 310'-0" CONTINUOUS PLATE GIRDER UNITS	04948		64568
38	SHEET 8 OF 8 DETAILS OF 310'-0" CONTINUOUS PLATE GIRDER UNITS	04948		64569
39	SHEET 1 OF 2 DETAILS OF EXPANSION JOINTS	04948		64570
40	SHEET 2 OF 2 DETAILS OF EXPANSION JOINTS	04948		64571
41 - 55	CROSS SECTIONS			

NOTE: CROSS SECTIONS NOT INCLUDED IN PROSPECTIVE BIDDERS' PLANS MAY BE OBTAINED UPON REQUEST.

BRIDGE STANDARD DRAWINGS

	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
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

ROADWAY STANDARD DRAWINGS

DRWG. NO.	TITLE	DATE
GR-10	GUARD RAIL DETAILS	11-07-19
GR-11	GUARD RAIL DETAILS	11-07-19
GR-12	GUARD RAIL DETAILS	05-14-20
GRT-1	GUARD RAIL 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
PM-1	PAVEMENT MARKING DETAILS	02-27-20
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	11-07-19
TC-2	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	05-20-21
TC-3	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	08-12-21
TEC-1	TEMPORARY EROSION CONTROL DEVICES	11-16-17
TEC-2	TEMPORARY EROSION CONTROL DEVICES	06-02-94
TEC-3	TEMPORARY EROSION CONTROL DEVICES	11-03-94
WF-3	CHAIN LINK FENCE	11-17-10
WF-4	WIRE FENCE TYPE C AND D	08-22-02

INDEX OF SHEETS AND STANDARD DRAWINGS

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

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 INSURE 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. ALL FLEXIBLE BASE AND ASPHALTIC PAVEMENTS REMOVED SHALL BE PAID FOR UNDER THE ITEM NO. 210 - UNCLASSIFIED EXCAVATION.
7. 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.
8. TEMPORARY EASEMENTS ARE PROVIDED FOR CONTRACTOR ACCESS. AREAS OUTSIDE THE CONSTRUCTION LIMITS SHALL NOT BE CLEARED OR GRUBBED UNLESS DIRECTED BY THE ENGINEER.
9. 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.
0. SUPERELEVATION SHALL BE COMPUTED IN ACCORDANCE WITH STANDARD DRAWING SE-2 USING 30 M.P.H. DESIGN VALUES AND REVOLVE ABOUT THE INNER EDGE OF TRAVEL LANE UNLESS OTHERWISE SHOWN.
1. 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.
2. THE ROAD WILL BE CLOSED TO THROUGH TRAFFIC DURING CONSTRUCTION OF NEW BRIDGE.
3. EXISTING BRIDGE NO. 13090 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.
4. THE CONTRACTOR WILL BE REQUIRED TO PROTECT THE BRIDGE DECK DURING PRIME AND PAVING OPERATIONS.
5. 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.
6. 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.
7. INSTALLATION OF PERMANENT TRAFFIC SAFETY SIGNS NOT SHOWN IN THE PLANS IS THE RESPONSIBILITY OF CRAWFORD COUNTY AND FRANKLIN COUNTY.

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4 GOVERNING SPECIFICATIONS & GENERAL NOTES

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
100-3	CONTRACTOR'S LICENSE
100-4	DEPARTMENT NAME CHANGE
102-2	ISSUANCE OF PROPOSALS
105-4	MAINTENANCE DURING CONSTRUCTION
107-2	RESTRAINING CONDITIONS
108-1	LIQUIDATED DAMAGES
108-2	WORK ALLOWED PRIOR TO ISSUANCE OF WORK ORDER
210-1	UNCLASSIFIED EXCAVATION
303-1	AGGREGATE BASE COURSE
306-1	QUALITY CONTROL AND ACCEPTANCE
400-1	TACK COATS
400-4	DESIGN AND QUALITY CONTROL OF ASPHALT MIXTURES
400-5	PERCENT AIR VOIDS FOR ACHM MIX DESIGNS
400-6	LIQUID ANTI-STRIP ADDITIVE
400-7	TRACKLESS TACK
404-3	DESIGN OF ASPHALT MIXTURES
410-1	CONSTRUCTION REQUIREMENTS AND ACCEPTANCE OF ASPHALT CONCRETE PLANT MIX COURSES
410-2	DEVICES FOR MEASURING DENSITY FOR ROLLING PATTERNS
410-4	EVALUATION OF ACHM SUBLOT REPLACEMENT MATERIAL
604-1	RETROREFLECTIVE SHEETING FOR TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES
604-3	TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES (MASH)
606-1	PIPE CULVERTS FOR SIDE DRAINS
617-1	GUARDRAIL TERMINAL (TYPE 2)
723-1	GENERAL REQUIREMENTS FOR SIGNS
729-1	CHANNEL POST SIGN SUPPORT
800-1	STRUCTURES
802-3	CONCRETE FOR STRUCTURES
802-4	CEMENT
804-2	REINFORCING STEEL FOR STRUCTURES
807-2	STEEL STRUCTURES
808-1	INSTALLATION OF ELASTOMERIC BEARINGS
808-2	ELASTOMERIC BEARINGS
JOB BR7615	BIDDING REQUIREMENTS AND CONDITIONS
JOB BR7615	BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB BR7615	BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB BR7615	BUY AMERICA - CONSTRUCTION MATERIALS
JOB BR7615	CARGO PREFERENCE ACT REQUIREMENTS
JOB BR7615	CLASS C FLY ASH IN PORTLAND CEMENT CONCRETE PAVEMENT AND CLASS S(AE) CONCRETE
JOB BR7615	CONCRETE BRIDGE DECK CURING AND SURFACE TREATMENT RESTRICTIONS
JOB BR7615	CONSTRUCTION IN SPECIAL FLOOD HAZARD AREAS
JOB BR7615	DESIGN AND QUALITY CONTROL OF ASPHALT MIXTURES
JOB BR7615	DIRECT TENSION INDICATORS FOR HIGH STRENGTH BOLT ASSEMBLIES
JOB BR7615	DISADVANTAGED BUSINESS ENTERPRISE BIDDER'S RESPONSIBILITIES
JOB BR7615	DRILLED SHAFT FOUNDATIONS
JOB BR7615	ESTABLISHING CONTRACT TIME - WORKING DAY CONTRACT
JOB BR7615	GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
JOB BR7615	LIQUIDATED DAMAGES PROCEDURE FOR BID LETTINGS
JOB BR7615	MANDATORY ELECTRONIC CONTRACT
JOB BR7615	MANDATORY ELECTRONIC DOCUMENT SUBMITTAL
JOB BR7615	NESTING SITES OF MIGRATORY BIRDS
JOB BR7615	NONDESTRUCTIVE TESTING OF DRILLED SHAFTS
JOB BR7615	OFF-SITE RESTRAINING CONDITIONS FOR INDIANA AND NORTHERN LONG-EARED BATS
JOB BR7615	PARTNERING REQUIREMENTS
JOB BR7615	PRICE ADJUSTMENT FOR ASPHALT BINDER
JOB BR7615	PRICE ADJUSTMENT FOR FUEL
JOB BR7615	PROHIBITION OF CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT
JOB BR7615	RECYCLED ASPHALT SHINGLES
JOB BR7615	REMOVAL OF HISTORIC BRIDGE TRUSS SPANS ON BRIDGE NO. 13091
JOB BR7615	SECTION 404 NATIONWIDE 14 PERMIT REQUIREMENTS
JOB BR7615	SPECIAL CLEARING REQUIREMENTS
JOB BR7615	STORM WATER POLLUTION PREVENTION PLAN
JOB BR7615	SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB BR7615	UTILITY ADJUSTMENTS
JOB BR7615	VALUE ENGINEERING
JOB BR7615	VEGETATED BUFFER ZONE
JOB BR7615	WARM MIX ASPHALT
JOB BR7615	WATER POLLUTION CONTROL

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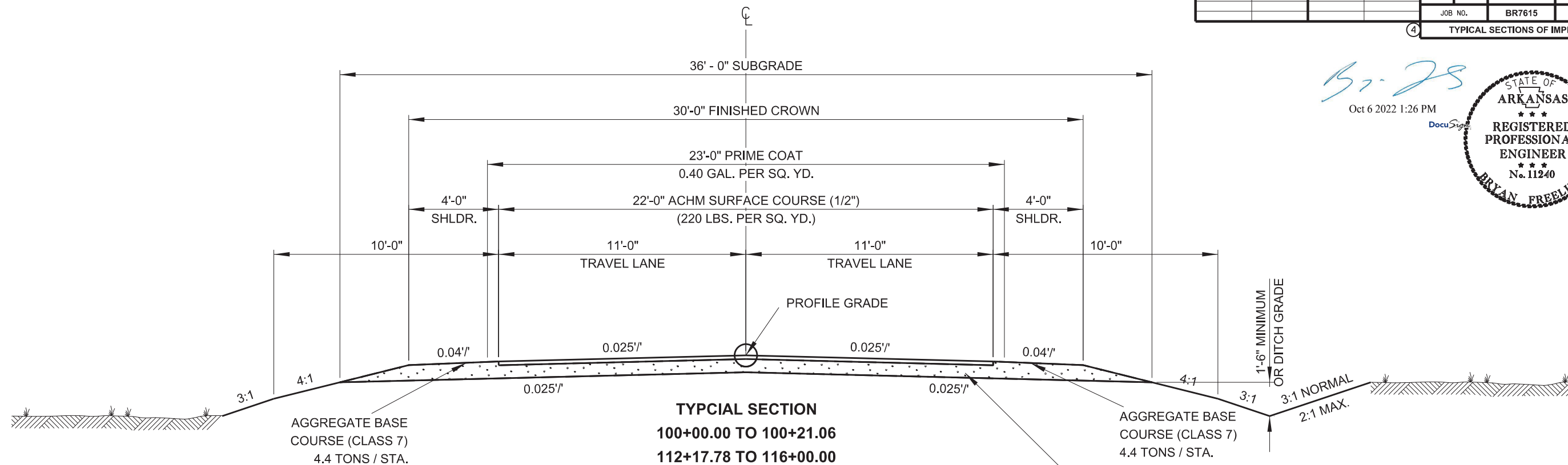
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GOVERNING SPECIFICATIONS AND GENERAL NOTES

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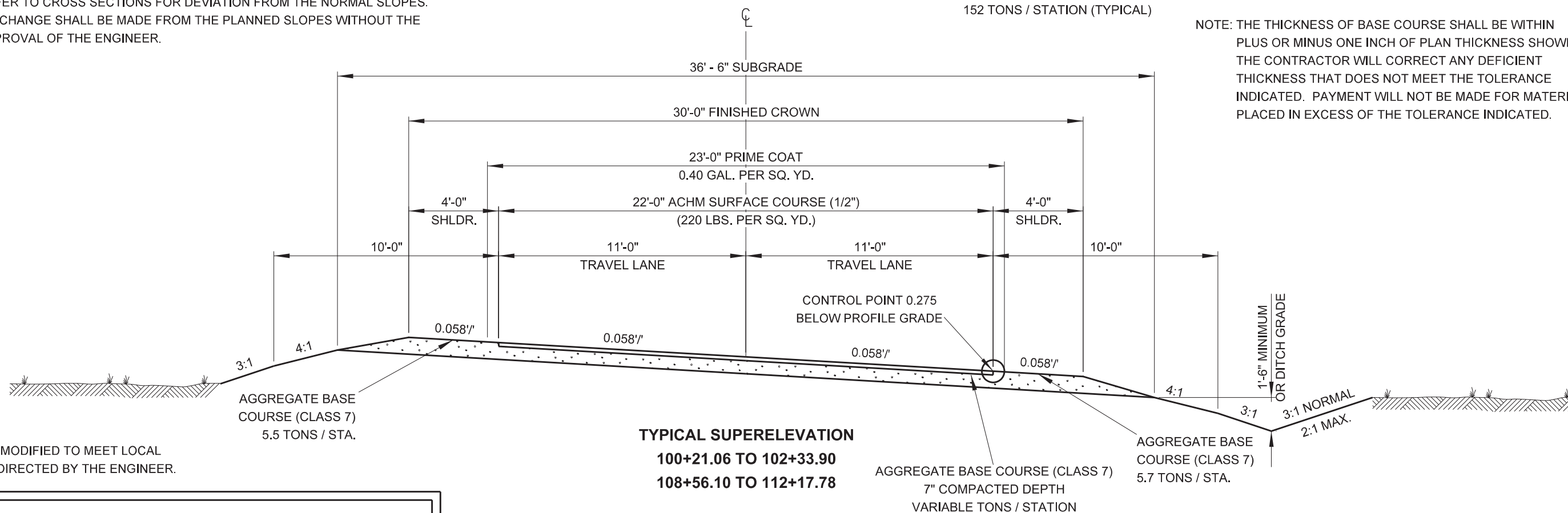
4 TYPICAL SECTIONS OF IMPROVEMENT

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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.

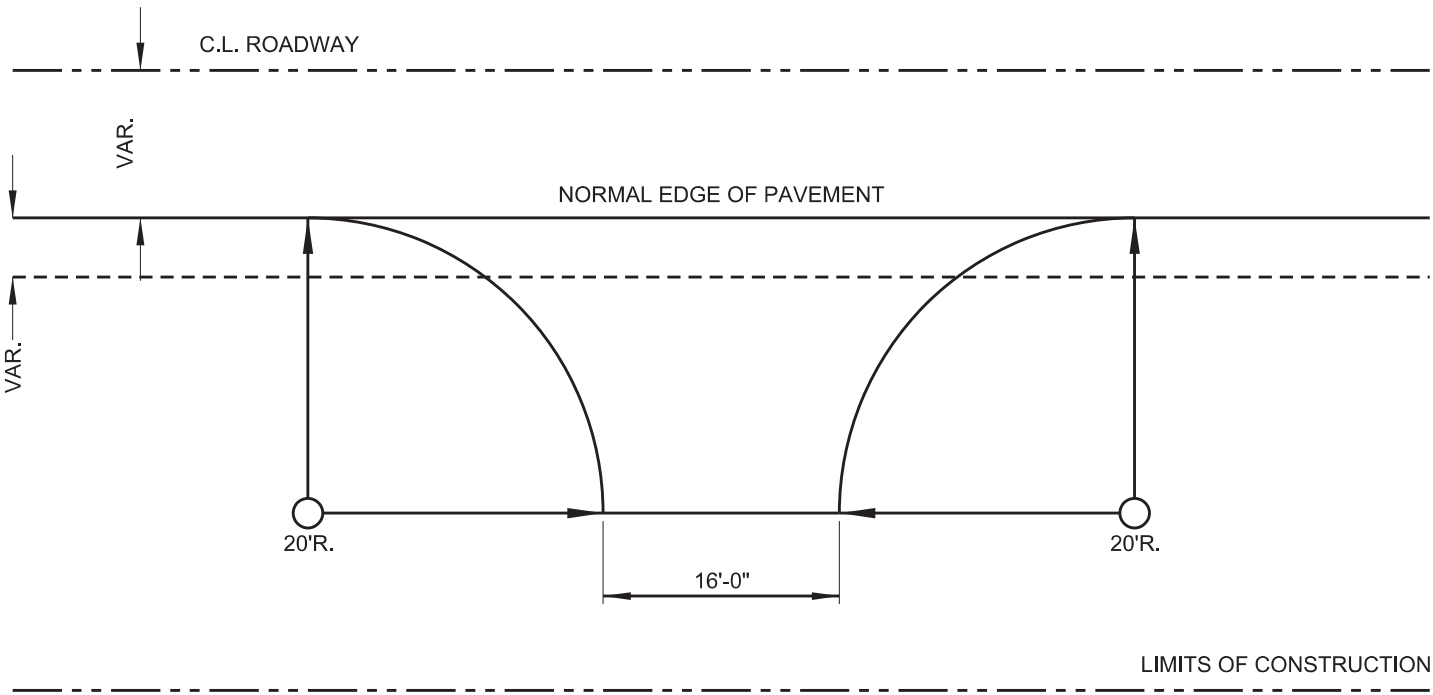
NOTE: THE THICKNESS OF BASE COURSE SHALL BE WITHIN
PLUS OR MINUS ONE INCH OF PLAN THICKNESS SHOWN.
THE CONTRACTOR WILL CORRECT ANY DEFICIENT
THICKNESS THAT DOES NOT MEET THE TOLERANCE
INDICATED. PAYMENT WILL NOT BE MADE FOR MATERIAL
PLACED IN EXCESS OF THE TOLERANCE INDICATED.



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
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				④	SPECIAL DETAILS			



TYPICAL DRIVEWAY
ADDITIONAL SURFACING AREA = 54.6 SQ. YDS.

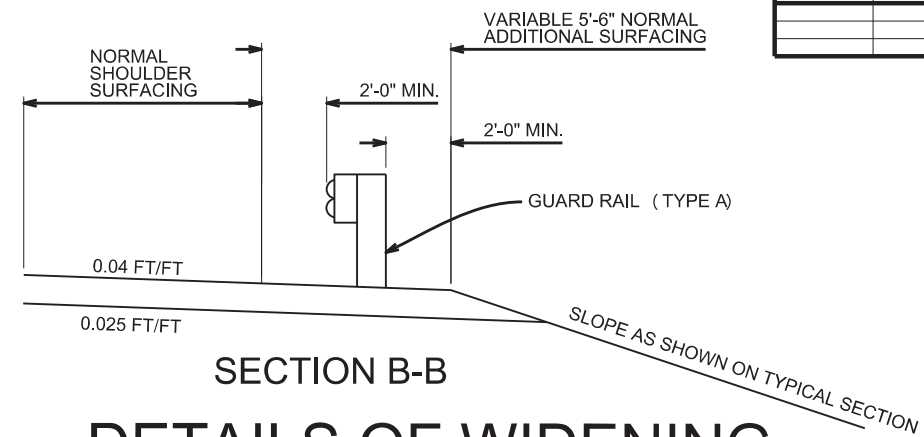
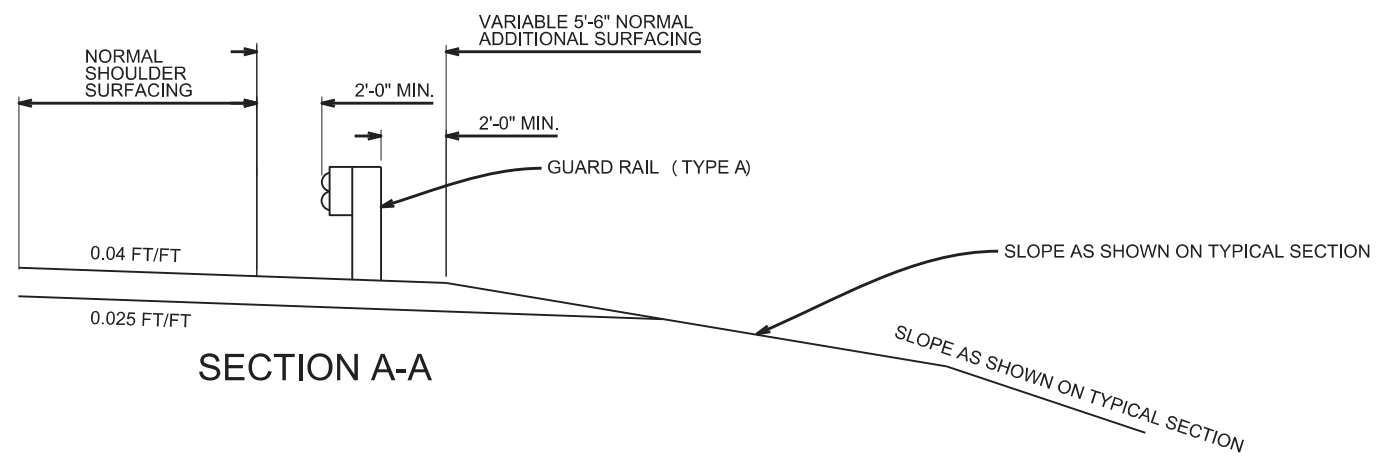
NOTE: DIMENSIONS MAY BE MODIFIED TO MEET
LOCAL CONDITIONS AS DIRECTED BY THE ENGINEER.

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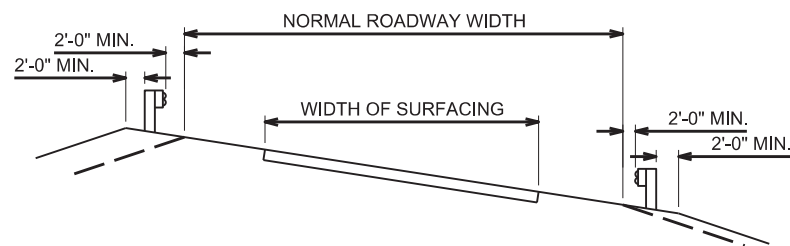


SPECIAL DETAILS

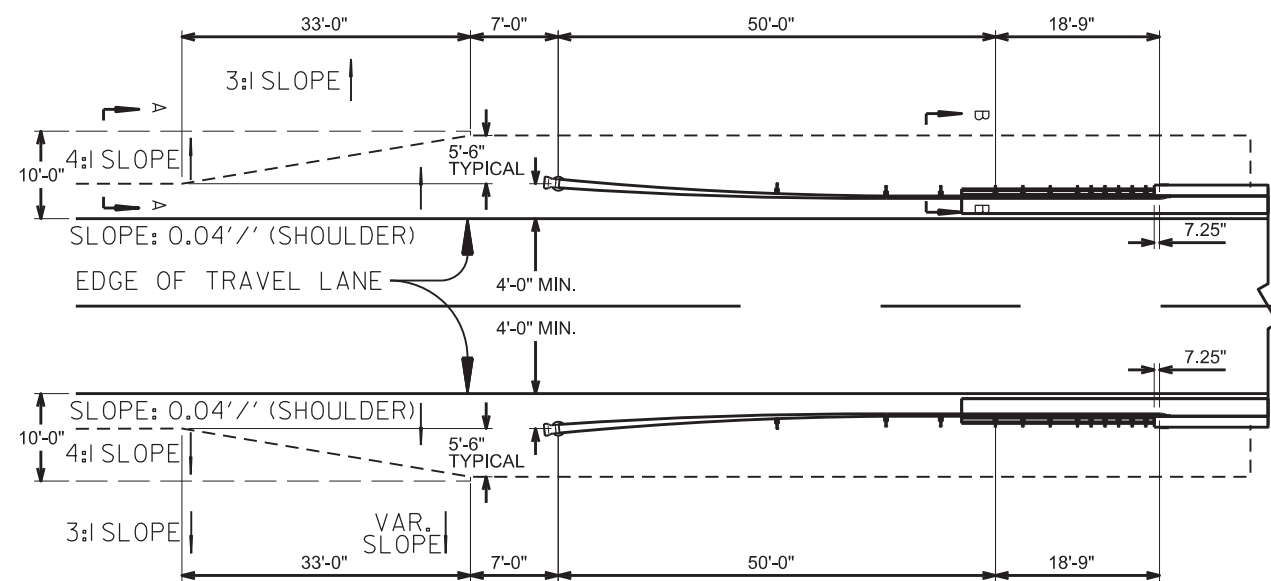
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SPECIAL DETAILS								



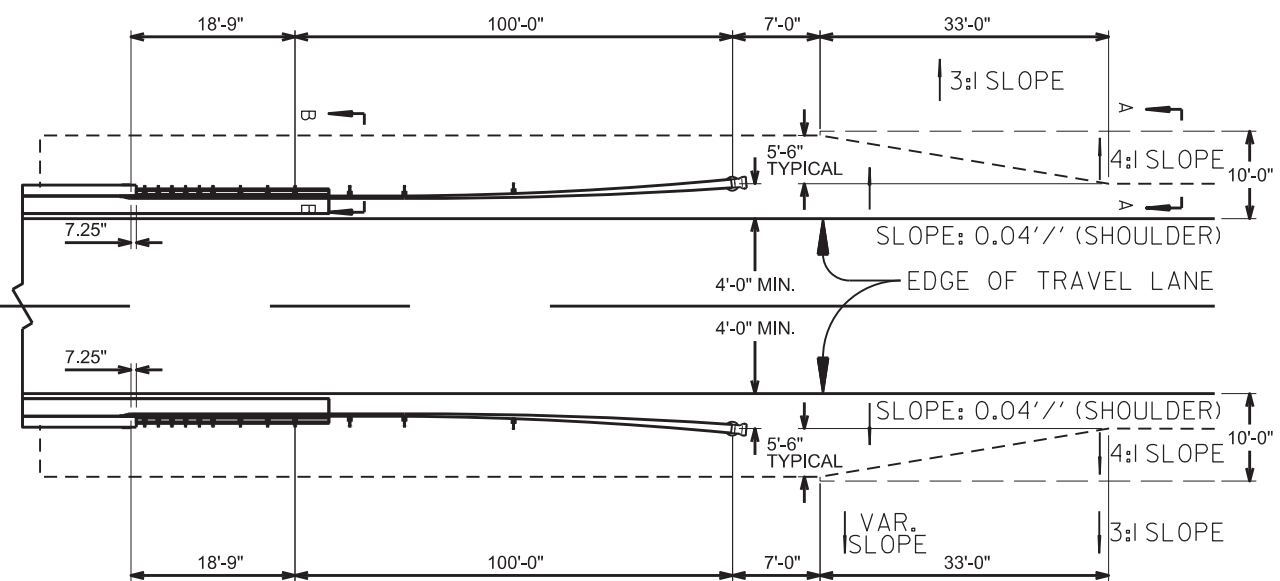
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SECTION ON CURVE DETAILS SHOWING POSITION OF GUARD RAIL



PROPOSED BRIDGE



SPECIAL DETAILS

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4 TEMPORARY EROSION CONTROL DETAILS

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P.I. = 106+55.56
Δ = 53°48'12.33" RT.
D = 6°00'00.00"
T = 484.50'
L = 896.72'
e = 5.8%
BEGIN SUPER = 100+21.06
BEGIN FULL SUPER = 102+21.06
END FULL SUPER = 110+17.78
END SUPER = 112+17.78



FLOOD PLAIN LIMITS
ENTIRE PROJECT

TEMPORARY EROSION CONTROL				SEDIMENT REMOVAL AND DISPOSAL			
ROCK DITCH CHECK (E-6)							
STA. 100+80	ON RT.	3	CJ. YD.	1.5	CU. YD.		
STA. 102+00	ON LT. & RT.	6	CJ. YD.	3.0	CU. YD.		
SILT FENCE (E-11)				SEDIMENT REMOVAL AND DISPOSAL			
STA. 100+00 TO STA. 101+00	ON LT. & RT.	299	LN. FT.	32.9	CU. YD.		
STA. 101+00 TO STA. 101+16	ON LT.	16	LN. FT.	1.8	CU. YD.		
STA. 101+16 TO STA. 102+54	ON LT. & RT.	342	LN. FT.	37.6	CU. YD.		
STA. 102+54 TO STA. 102+75	ON RT.	20	LN. FT.	2.2	CU. YD.		
STA. 105+58 TO STA. 107+50	ON LT.	227	LN. FT.	25.0	CU. YD.		

REVISIONS

DATE	DESCRIPTION

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
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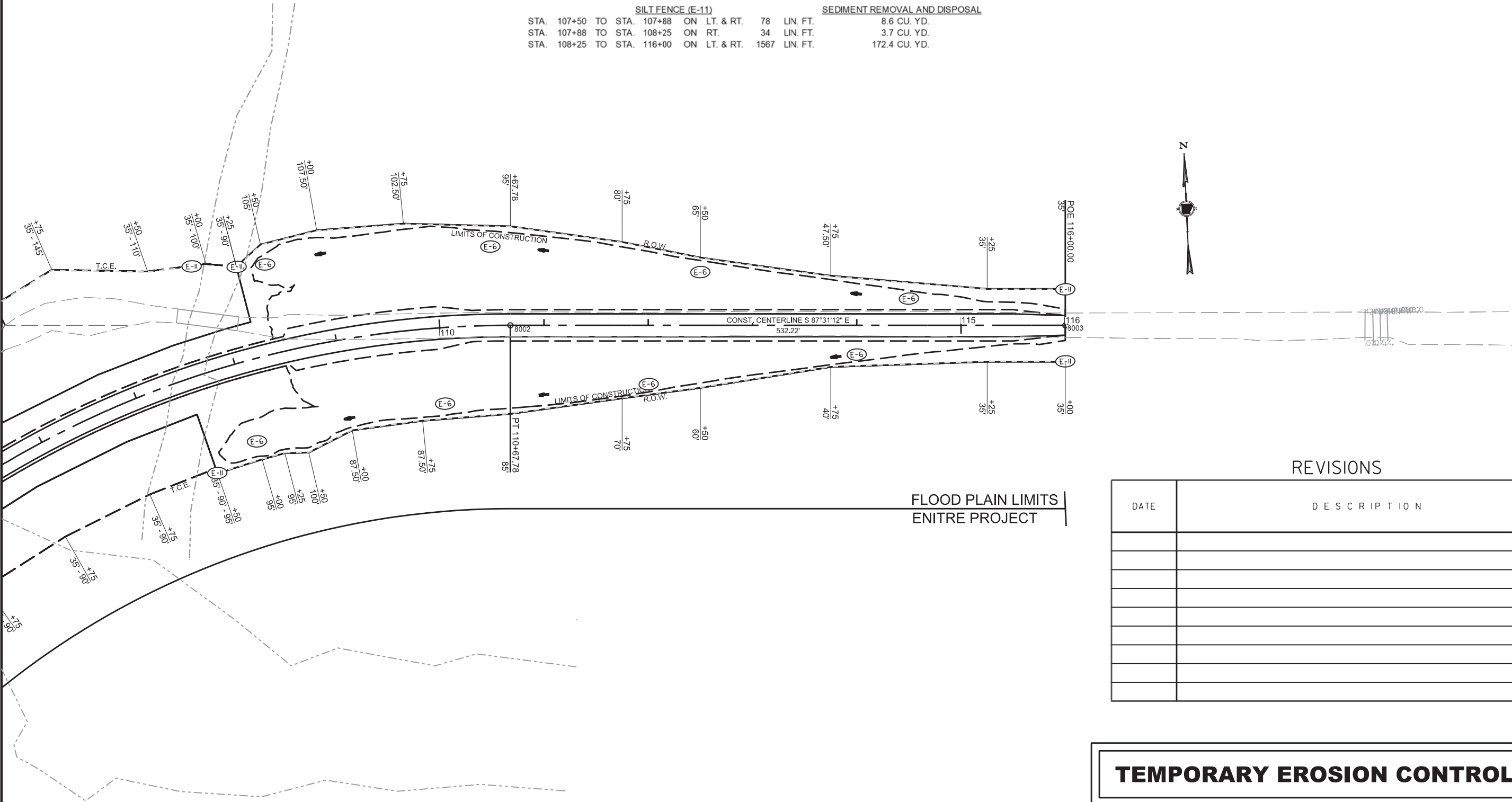
4 TEMPORARY EROSION CONTROL DETAILS

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TEMPORARY EROSION CONTROL					
ROCK DITCH CHECK (E-6)			SEDIMENT REMOVAL AND DISPOSAL		
STA. 108+00	ON RT.	3 CU. YD.	1.5 CU. YD.		
STA. 108+50	ON LT.	3 CU. YD.	1.5 CU. YD.		
STA. 110+00	ON RT.	3 CU. YD.	1.5 CU. YD.		
STA. 110+50	ON LT.	3 CU. YD.	1.5 CU. YD.		
STA. 112+00	ON RT.	3 CU. YD.	1.5 CU. YD.		
STA. 112+50	ON LT.	3 CU. YD.	1.5 CU. YD.		
STA. 114+00	ON RT.	3 CU. YD.	1.5 CU. YD.		
STA. 114+50	ON LT.	3 CU. YD.	1.5 CU. YD.		
STA. 116+00	ON LT. & RT.	3 CU. YD.	1.5 CU. YD.		

SILT FENCE (E-11)					
SEDIMENT REMOVAL AND DISPOSAL			SEDIMENT REMOVAL AND DISPOSAL		
STA. 107+50 TO STA. 107+88	ON LT. & RT.	78 LIN. FT.	8.6 CU. YD.		
STA. 107+88 TO STA. 108+25	ON RT.	34 LIN. FT.	3.7 CU. YD.		
STA. 108+25 TO STA. 116+00	ON LT. & RT.	1567 LIN. FT.	172.4 CU. YD.		



REVISIONS

DATE	DESCRIPTION

TEMPORARY EROSION CONTROL DETAILS

	4	QUANTITIES
--	---	------------

STATION	STATION	LOCATION	LENGTH	PRIME COAT				AGGREGATE BASE COURSE (CLASS 7)		ACHM SURFACE COURSE (1/2")			
				AVG. WIDTH	SQ. YD.	GALLONS PER SQ. YD.	GALLONS	TONS/STA.	TONS	AVG. WIDTH	LBS./SQ. YD.	SQ. YD.	TON
				FEET						FEET			
100+00.00	100+21.06	MAIN LANES	21.06	23.00	53.8	0.40	21.5	161	33.9	22.00	220	51.5	5.7
100+21.06	101+15.00	MAIN LANES	93.94	23.00	240.1	0.40	96.0	165	155.0	22.00	220	229.6	25.3
	101+09.00	DRIVEWAY ON RT.	89.00	17.00	192.4	0.40	77.0	VAR.	90.0	16.00	220	177.3	19.5
101+15.00	101+48.00	MAIN LANES	33.00	23.00	84.3	0.40	33.7	197	65.0	22.00	220	80.7	8.9
101+48.00	102+33.90	MAIN LANES	85.90	23.00	219.5	0.40	87.8	229	196.7	22.00	220	210.0	23.1
108+56.10	109+92.00	MAIN LANES	135.90	23.00	347.3	0.40	138.9	229	311.2	22.00	220	332.2	36.5
109+92.00	110+25.00	MAIN LANES	33.00	23.00	84.3	0.40	33.7	197	65.0	22.00	220	80.7	8.9
110+25.00	112+17.78	MAIN LANES	192.78	23.00	492.7	0.40	197.1	165	318.1	22.00	220	471.2	51.8
112+17.78	115+50.00	MAIN LANES	332.22	23.00	849.0	0.40	339.6	161	534.9	22.00	220	812.1	89.3
115+50.00	116+00.00	MAIN LANES	50.00	21.38	118.8	0.40	47.5	154	77.0	20.38	220	113.2	12.5
MAINTENANCE OF TRAFFIC*									200.0*				
TOTAL:							1072.8		2046.8				281.5
USE:							1073		2047				282

AGGREGATE BASE COURSE (CLASS 7)	152 TON PER STA. (TYPICAL)
AGGREGATE BASE COURSE (CLASS 7) FOR SHOULDERS	4.4 TON PER STA. (TYPICAL, EACH SIDE)
PRIME COAT	0.40 GAL. PER SQ. YD.
ACHM SURFACE COURSE (1/2")	220 LBS. PER SQ. YD.

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

STATION	STATION	SIDE	6' STEEL CHAIN LINK FENCE	16' STEEL GATES	FENCE REMOVED AND RECONSTRUCTED	WIRE FENCE (TYPE D-1)
			LIN. FT.	EACH	LIN. FT.	LIN. FT.
100+00	100+99	LT. & RT.	100			100
100+99	101+15	LT.		1		16
101+15	102+75	LT. & RT.	155			155
108+00	109+66	RT.				152
109+66	116+00	LT.			641	715
109+66	116+00	RT.				636
TOTAL:			255	1	641	1774

STATION	STATION	SIDE	REMOVAL AND DISPOSAL OF FENCE	REMOVAL AND DISPOSAL OF PIPE FENCE	14'-0" GATES
			LIN. FT.	LIN. FT.	EACH
100+00	100+99	RT.		100	
101+07		LT.			1
101+13	102+75	RT.		98	
108+00	108+20	RT.	97		
108+20	108+68	LT.	67		
108+68	109+62	RT.	94		
109+62	116+00	LT. & RT.	135		
TOTAL:			1609	198	1

STATION	STATION	SIDE	GUARDRAIL (TYPE A)	THREE BEAM GUARDRAIL TERMINAL	TERMINAL ANCHOR POST (TYPE 1)
			LIN. FT.	EACH	EACH
101+50	102+19	L.T.	50	1	1
101+50	102+19	RT.	50	1	1
108+71	109+90	L.T.	100	1	1
108+71	109+90	RT.	100	1	1
TOTALS:			300	4	4

STATION	STATION	CLEARING	GRUBBING
		STATION	STATION
100+00	103+00	3	3
105+00	116+00	11	11
TOTAL:		14	14

STATION	STATION	SIDE	APPROACH GUTTERS (TYPE F)	REINFORCING STEEL - ROADWAY (GRADE 60)
			CU. YDS.	LB.
101+99	102+34	LT.	3.90	208
101+99	102+34	RT.	3.89	207
108+56	108+91	LT.	3.90	208
108+56	108+91	RT.	3.89	207
TOTALS:			15.58	830

STATION	SIDE	STANDARD SIGN NUMBER								SUPPORT ASSEMBLIES	STANDARD DRAWING NUMBER
		W1-2R		W1-2L		W8-3 (PAVEMENT ENDS)		W8-13 (BRIDGE ICES BEFORE ROAD)		TYPE A	
		NO.	SQ. FT.	NO.	SQ. FT.	NO.	SQ. FT.	NO.	SQ. FT.		
99+96	RT.	1	6.25							1	SHS 1&2
100+58	RT.							1	9.00	1	SHS 1&2
110+32	LT.							1	9.00	1	SHS 1&2
112+43	LT.			1	6.25					1	SHS 1&2
114+25	RT.					1	9.00			1	SHS 1&2
TOTALS:		1	6.25	1	6.25	1	9.00	2	18.00	5	

STATION	DESCRIPTION	SIDE DRAINS	STANDARD DRAWING NUMBERS
		18"	
		LINEAR FT.	
101+08.	INSTALL SIDE DRAIN ON RT.	36	PCM-1, PCC-1, PCP-1, PCP-2
TOTAL:		36	

LOCATION	4" PIPE UNDERDRAIN	UNDERDRAIN OUTLET PROTECTORS
	LIN. FT.	EACH
ENTIRE PROJECT	200	201
TOTAL:	200	10

QUANTITIES

4	QUANTITIES
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PERMANENT EROSION CONTROL

QUANTITIES

PRINT DATE: 9/27/2022

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.		BR7615	11	55
① 04948 - Quantities - 64550								

SCHEDULE OF BRIDGE QUANTITIES - JOB NO. BR7615

BRIDGE NO.	NAME PLATE TITLE	UNIT OF STRUCTURE	ITEM NO.	SP & 205	801	SF, SS, & 802	SP, SS, & 802	803	SS & 804	SS & 804	SS & 805	SP, SS, & 807	SS & 807	SS & 808	SS & 809	812	SS & 816	SS & 816	SP JOB BR7615	SP JOB BR7615	SP JOB BR7615	SP JOB BR7615	SP JOB BR7615
			ITEM	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. _)	UNCLASSIFIED EXCAVATION FOR STRUCTURES - BRIDGE	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)	② STEEL PILING (HP 12X53)	STRUCTURAL STEEL IN PLATE GIRDER SPANS (A709, GR. 50W)	③ PAINTING STRUCTURAL STEEL	ELASTOMERIC BEARINGS	ARMORED JOINT WITH NEOPRENE STRIP SEAL	BRIDGE NAME PLATE (TYPE C)	FILTER BLANKET	DUMPED RIPRAP	DRILLED SHAFT (84" DIA.)	DRILLED SHAFT (36" DIA.)	PERMANENT STEEL CASING (96" DIA.)	CROSSHOLE SONIC LOGGING (84" DIA.)	CORING DRILLED SHAFT
			UNIT	LUMP SUM	CU. YD.	CU. YD.	CU. YD.	SQ. YD.	LB.	LB.	LIN. FT.	LB.	TON	CU. IN.	LIN. FT.	EACH	SQ. YD.	CU. YD.	LIN. FT.	LIN. FT.	LIN. FT.	EACH	LIN. FT.
04948	MULBERRY RIVER & MULBERRY RELIEF CREEK																						
		BENT 1		22	47.74		18.2	7,456	632		290		3,060.0		1	103	61		24				
		BENT 2			40.54			8,078			355		5,220.0					76		48	2	38	
		BENT 3			36.27			7,456			580		6,120.0					88		60	2	44	
		BENT 4			35.55			7,353			355		5,220.0					76		48	2	38	
		BENT 5			45.70		18.2	6,637	632	346	290		3,060.0			292	160						
		310'-0" PLATE GIRDER UNIT 1				306.35	1,217.8		83,153		468,260	71.0		47									
		310'-0" PLATE GIRDER UNIT 2				306.35	1,217.8		83,153		468,260	71.0		47									
		SITE NO. 1 (EXISTING BR. NO. 13090)	1																				
SITE NO. 1 (EXISTING BR. NO. 13091)	1																						
TOTALS FOR JOB NO. BR7615				① 22	205.80	612.70	2,472.0	36,980	167,570	346	938,390	142.0	22,680.0	94	1	395	221	240	24	156	6	④ 120	

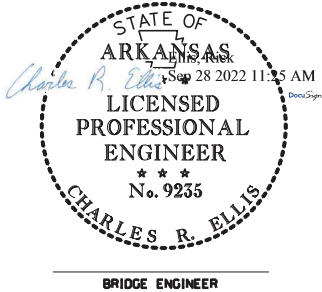
- ① Includes approx. 22 Cu. Yd. of rock excavation.
- ② All steel piling shall be Grade 50 and are required to have approved driving points which will not be paid for directly, but will be considered subsidiary to the item "Steel Piling (HP 12x53)". All piles shall conform to Standard Drawing No. 55020.
- ③ The following weathering steel surfaces shall be painted as specified in Subsection 807.75:

All steel surfaces within 10 feet of bridge deck expansion joints, including cross-frames, connection bolts and bearings, but not including the expansion device.

All steel surfaces exposed to the outside face of the bridge, including outside faces & bottom of the exterior girders, splice plates and bolts, stiffeners, and bearings.

Galvanized members and surfaces in contact with concrete shall not be painted. The color of paint shall be Brown equal or close to Fed. Std. 595 B, 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. ASTM F3125, Grade A325 Type 3 bolts shall be used within these painted zones and shall be painted.
- ④ Quantity Shown is for estimating and bidding purposes only. Actual quantities, If any, will be determined in the field.

JIM POOL
DESIGN SECTION SUPERVISOR



SCHEDULE OF BRIDGE QUANTITIES
MULBERRY RIVER STR. & APPRS. (S)
CRAWFORD & FRANKLIN COUNTIES

COUNTY ROAD 67
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTM DATE: 10/27/2021 FILENAME: bbr7615_q1.dgn
CHECKED BY: BHS DATE: 11/18/2021 SCALE: No Scale
DESIGNED BY: - DATE: -
BRIDGE NO. 04948 DRAWING NO. 64550

SUMMARY OF QUANTITIES			
ITEM NO.	ITEM	QUANTITY	UNIT
SP & 201	CLEARING	14	STATION
SP & 201	GRUBBING	14	STATION
202	REMOVAL AND DISPOSAL OF FENCE	1609	LIN. FT.
202	REMOVAL AND DISPOSAL OF PIPE FENCE	198	LIN. FT.
202	REMOVAL AND DISPOSAL OF GATES	1	EACH
208	FENCE REMOVED AND RECONSTRUCTED	641	LIN. FT.
SP, SS, & 210	UNCLASSIFIED EXCAVATION	6243	CU. YD.
SP & 210	COMPACTED EMBANKMENT	13937	CU. YD.
SP, SS, & 303	AGGREGATE BASE COURSE (CLASS 7)	2047	TON
SS & 401	PRIME COAT	1073	GAL.
SP, SS, & 407	MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2")	266	TON
SP, SS, & 407	ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2")	16	TON
SP, SS, & 504	APPROACH GUTTERS	15.58	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	182	SQ. FT.
SS & 604	BARRICADES	32	LIN. FT.
SS & 604	TRAFFIC DRUMS	75	EACH
SP, SS, & 606	18" SIDE DRAIN	36	LIN. FT.
SS & 611	4" PIPE UNDERDRAINS	200	LIN. FT.
SS & 611	UNDERDRAIN OUTLET PROTECTORS	10	EACH
SS & 617	GUARDRAIL (TYPE A)	300	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)	1774	LIN. FT.
* SS & 619	6" STEEL CHAIN LINK FENCE (ALTERNATE NO. 1)	255	LIN. FT.
* SS & 619	6" ALUMINUM CHAIN LINK FENCE (ALTERNATE NO. 2)	255	LIN. FT.
* SS & 619	16" STEEL GATES (ALTERNATE NO. 1)	1	EACH
* SS & 619	16" ALUMINUM GATES (ALTERNATE NO. 2)	1	EACH
620	LIME	4	TON
620	SEEDING	1.88	ACRE
SS & 620	MULCH COVER	3.76	ACRE
620	WATER	230.2	M. GAL.
621	TEMPORARY SEEDING	1.88	ACRE
621	SILT FENCE	2783	LIN. FT.
621	SAND BAG DITCH CHECKS	594	BAG
621	SEDIMENT BASIN	222	CU. YD.
621	OBLITERATION OF SEDIMENT BASIN	222	CU. YD.
621	SEDIMENT REMOVAL AND DISPOSAL	2495.8	CU. YD.
621	ROCK DITCH CHECKS	51	CU. YD.
SS & 621	FILTER SOCK (18")	15270	LIN. FT.
635	ROADWAY CONSTRUCTION CONTROL	1.00	LUMP SUM
718	REFLECTORIZED PAINT PAVEMENT MARKING WHITE (4")	3200	LIN. FT.
718	REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (4")	3200	LIN. FT.
SS & 726	STANDARD SIGN	39.50	SQ. FT.
SS & 729	CHANNEL POST SIGN SUPPORT (TYPE A)	5	EACH
SS & 804	REINFORCING STEEL-ROADWAY (GRADE 60)	830	POUND
SS & 816	DUMPED RIPRAP	1897	CU. YD.
STRUCTURES OVER 20'-0" SPAN			
205	REMOVAL OF EXSTING BRIDGE STRUCTURE (SITE NO. 1)	1.00	LUMP SUM
SP & 205	REMOVAL OF EXSTING BRIDGE STRUCTURE (SITE NO. 2)	1.00	LUMP SUM
636	BRIDGE CONSTRUCTION CONTROL	1.00	LUMP SUM
801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE	22	CU. YD.
SP, SS, & 802	CLASS S CONCRETE-BRIDGE	205.80	CU. YD.
SP, SS, & 802	CLASS S(AE) CONCRETE-BRIDGE	612.70	CU. YD.
803	CLASS 2 PROTECTIVE SURFACE TREATMENT	2472	SQ. YD.
SS & 804	REINFORCING STEEL-BRIDGE (GRADE 60)	36980	POUND
SS & 804	EPOXY COATED REINFORCING STEEL (GRADE 60)	167570	POUND
SS & 805	STEEL PILING (HP 12X53)	346	LIN. FT.
SP	CORING DRILLED SHAFT	120	LIN. FT.
SP	DRILLED SHAFT (36" DIAMETER)	24	LIN. FT.
SP	DRILLED SHAFT (84" DIAMETER)	240	LIN. FT.
SP	PERMANENT STEEL CASING (96" DIAMETER)	156	LIN. FT.
SP	CROSSHOLE SONIC LOGGING (84" DIAMETER)	6	EACH
SP, SS, & 807	STRUCTURAL STEEL IN PLATE GIRDER SPANS (A709, GR. 50)	938390	POUND
SS & 807	PAINTING STRUCTURAL STEEL	27.0	TON
SS & 808	ELASTOMERIC BEARINGS	22680.0	CU. IN.
SS & 809	ARMORED JOINT WITH NEOPRENE STRIP SEAL	94	LIN. FT.
812	BRIDGE NAME PLATE (TYPE C)	1	EACH
SS & 816	FILTER BLANKET	395	SQ. YD.
SS & 816	DUMPED RIPRAP	221	CU. YD.

* DENOTES ALTERNATE BID ITEMS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
12-29-2022				6	ARK.			
				JOB NO.		BR7615	12	55

4 SUMMARY OF QUANTITIES AND REVISIONS



Dec 29 2022 10:59 AM


STATE OF
ARKANSAS

REGISTERED
PROFESSIONAL
ENGINEER
No. 11240
BRYAN FREELING

REVISIONS

DATE	REVISION	SHEET NO.
12/29/2022	REVISED TEMPORARY WORK RAMPS NOTE ON PLAN AND PROFILE SHEETS.	12, 16, & 17

SUMMARY OF QUANTITIES AND REVISIONS

SURVEY CONTROL COORDINATES

Project Name: sbr7615
Date: 2/27/2020
Coordinate System: ARKANSAS STATE PLANE - NORTH ZONE BASED ON GPS CONTROL,
PROJECTED TO GROUND.
Units: U.S. SURVEY FOOT

Point Name	Northing	Easting	Elev	Feature	Description
1	441723.2869	704267.4331	471.618	CTL	ARDOT STD. MON. STAMPED PN: 1
2	441569.8930	704664.5100	453.981	CTL	ARDOT STD. MON. STAMPED PN: 2
3	441930.4720	705096.3107	417.140	CTL	ARDOT STD. MON. STAMPED PN: 3
4	442301.0794	705401.0721	409.354	CTL	ARDOT STD. MON. STAMPED PN: 4
5	442238.0029	706047.8681	408.341	CTL	ARDOT STD. MON. STAMPED PN: 5
6	442243.6371	706737.9673	404.630	CTL	ARDOT STD. MON. STAMPED PN: 6
100	442193.5775	706963.9604	404.904	GPS	ARDOT GPS #240015
101	442174.1117	708565.9957	421.402	GPS	ARDOT GPS #240015A
901	441720.9210	704250.9037	469.280	TBM	SQ. CUT. HDWL, 25.3' SW OF C\L RD

*Note - Rebar and Cap - Standard - 5/8" Rebar with 2" Aluminum Cap stamped
*(standard markings common to all caps), or as indicated
(other markings indicated in the point description of the individual point).
USE CAF = 1.0 FOR STAKEOUT FOR THIS PROJECT
A PROJECT CAF OF 0.9999205000 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 sBR7615gi.ctl
HORIZONTAL DATUM: NAD 83 (2011)
VERTICAL DATUM: NAVD 88 POSITIONAL ACCURACY THIRD ORDER, UNLESS SPECIFIED OTHERWISE
AT A SPECIFIC POINT.

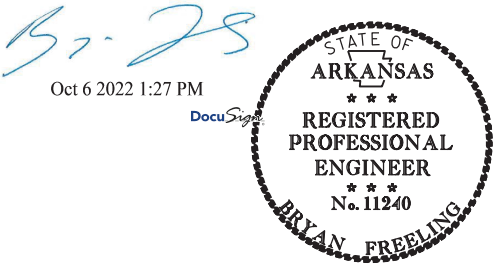
REFERENCE POINTS (1500 SERIES) ARE TO BE USED TO ESTABLISH CONTROL
IF THE PRIMARY CONTROL POINTS LISTED ABOVE HAVE BEEN DESTROYED.
REFERENCE POINTS ARE NOT TO BE USED FOR VERTICAL CONTROL

BASIS OF BEARING:
ARKANSAS STATE PLANE GRID BEARINGS - 0301-NORTH ZONE
DETERMINED FROM GPS CONTROL POINTS: 240015 - 240015A
CONVERGENCE ANGLE: 01 11 13.90 LEFT AT LAT: 35 31 52.10 LON: 094 02 24.75
GRID AZIMUTH = ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE.

CONSTRUCTION CENTERLINE COORDINATES

POINT NAME	NORTHING	EASTING	DESCRIPTION	STATION
8000	441772.2606	704956.2112	POB	100+00.00
8001	441905.8028	705063.1093	PC	101+71.06
	442284.0443	705365.8849	PI	106+55.56
8002	442263.0790	705849.9304	PT	110+67.78
8003	442240.0488	706381.6505	POE	116+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.		BR7615	13	55
				4 SURVEY CONTROL DETAILS				

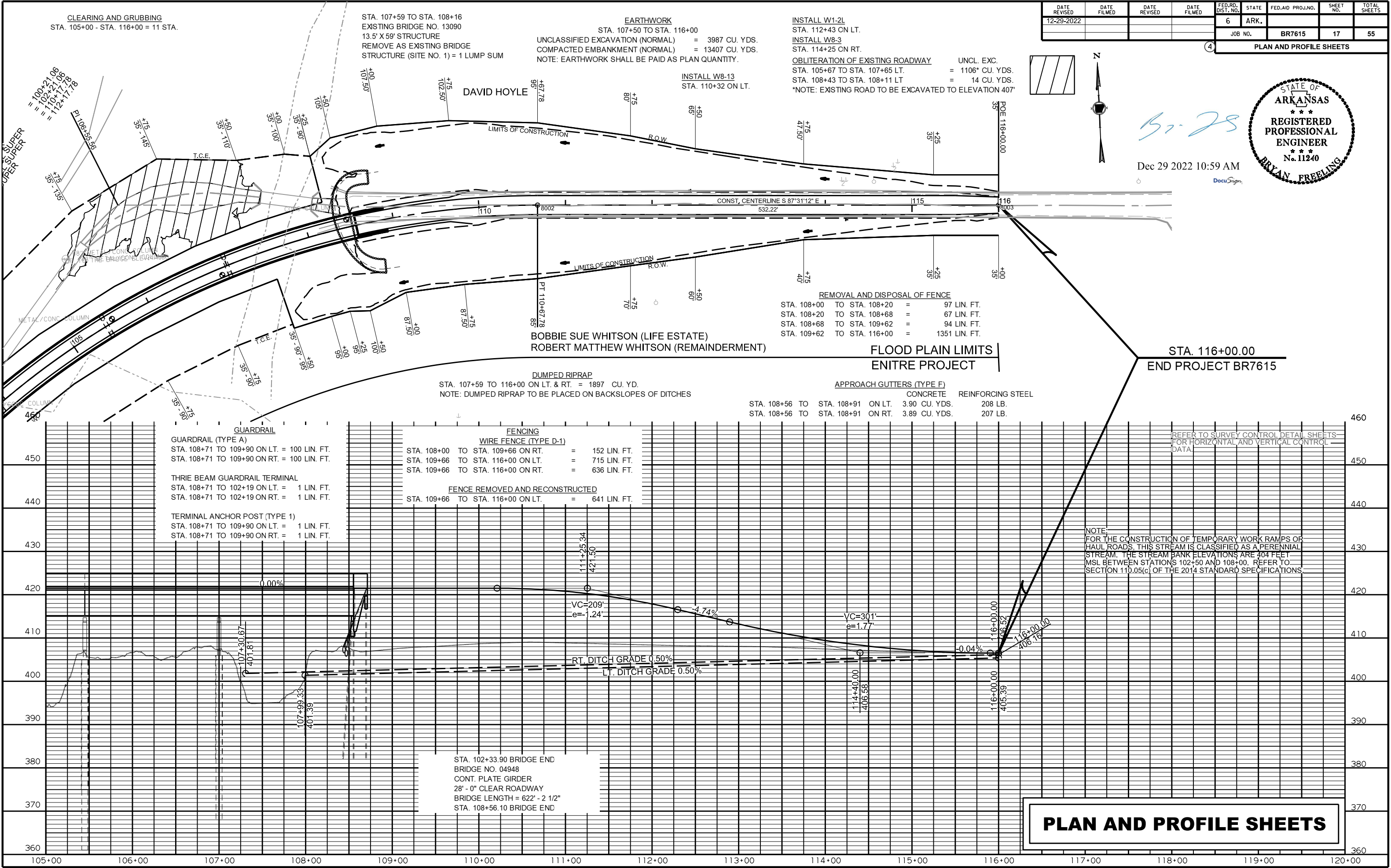


SURVEY CONTROL DETAILS

4 PLAN AND PROFILE SHEETS

Br. JS





FOR R/W DATA, SEE RDWY. PLANS

The Contractor shall excavate the existing embankment as shown at the beginning of bridge. Approx. 400 cubic yards of excavation. See "Excavation at Bridge End", Dwg. No. 64552.

Use Type F Approach Gutters at both ends of bridge. See Std. Dwg. 55030F.

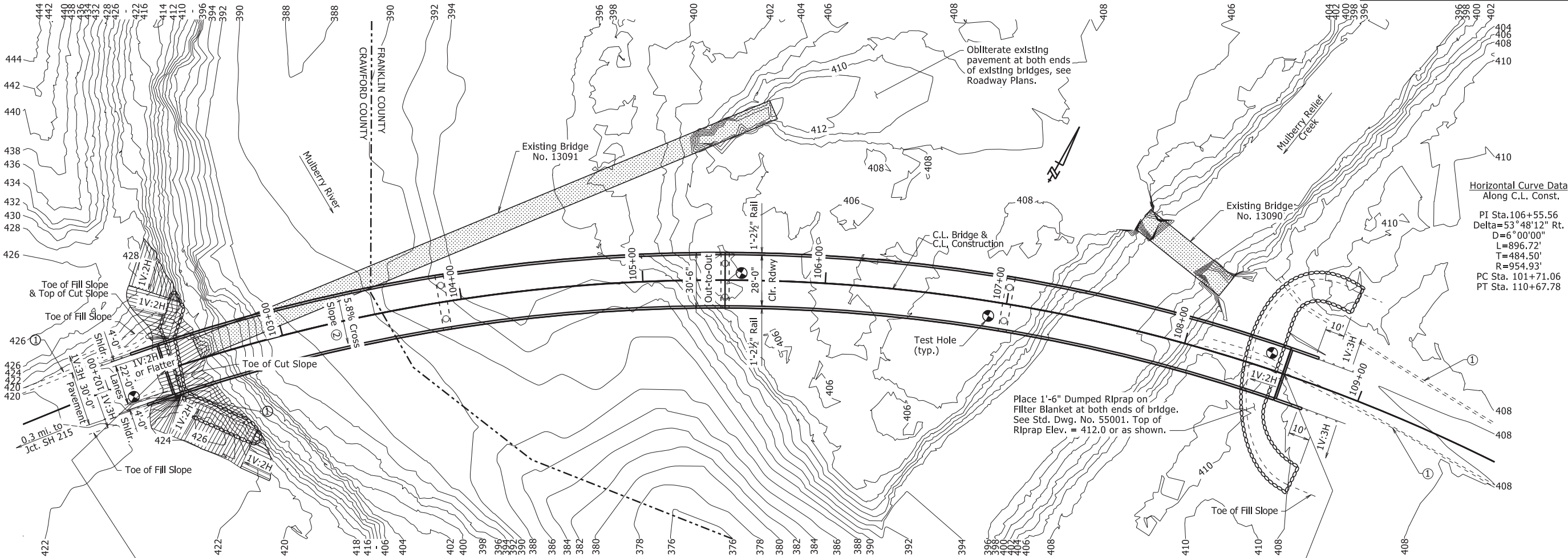
C.L. Construction is on a 6°00'00" curve right. C.L. girders and the longitudinal lines of the bridge shall be constructed on curves concentric with C.L. Construction. C.L. Joints and C.L. Bearings of end bents and C.L. Caps and C.L. Bearings of bents 2-4 shall be constructed on radial lines to C.L. Contruction.

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.		BR7615	18	55

04948 - LAYOUT - 64551

① Existing Roadway Ditch to be Relocated, See Roadway Plans.

② See Dwg. No. 64552 for "Superelevation Sketch."



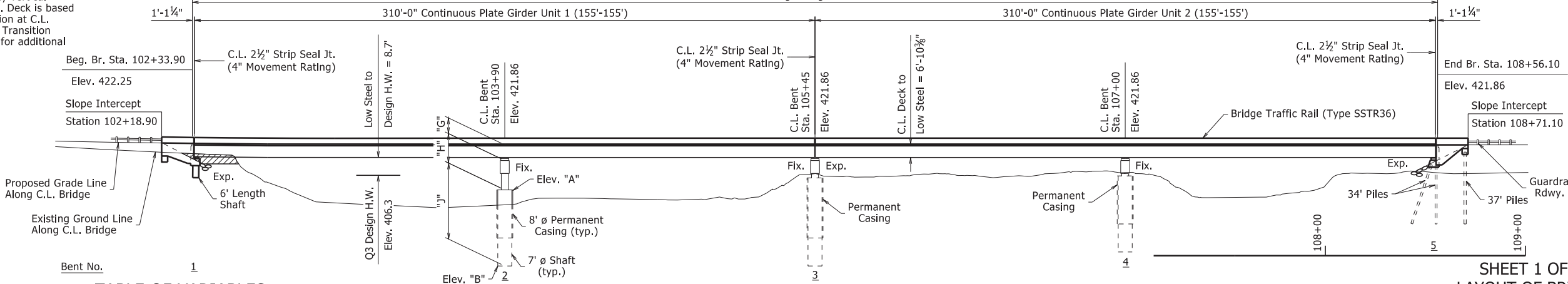
Horizontal Curve Data Along C.L. Const.

PI Sta. 106+55.56
Delta=53°48'12" Rt.
D=6°00'00"
L=896.72'
T=484.50'
R=954.93'
PC Sta. 101+71.06
PT Sta. 110+67.78

Stations shown are along C.L. Construction. Elevations shown are actual top of deck elevations at C.L. Bridge. Any vertical dimension referenced to C.L. Deck is based on actual top of deck elevation at C.L. Bridge. See "Superelevation Transition Sketch" on Dwg. No. 64552 for additional information.

PLAN

Total Bridge Length = 622'-2 1/2"



Vertical Curve Data
Theoretical Grade Along C.L. Const.
L=299.84'

-4.685% 0.00%

PVI Sta. 101+54.23
PVI Elev. 421.50

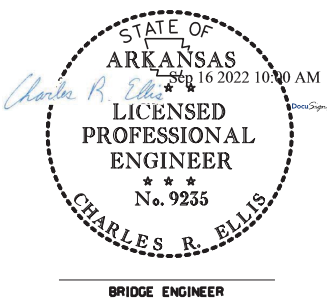
TABLE OF VARIABLES

Bent No.	C.L. Deck at C.L. Bent to Low Side Top of Cap	Bent Height	Shaft Length	Top of Shaft Elevation	Bottom of Shaft Elevation
	"G"	"H"	"J"	"A"	"B"
2	8'-0 3/8"	14'-10"	38'-0"	399.00	361.00
3	8'-0 3/8"	8'-10 3/8"	44'-0"	405.00	361.00
4	8'-0 3/8"	7'-10"	38'-0"	406.00	368.00

ELEVATION

For General Notes and Hydraulic Data, see Dwg. No. 64552

For Soil Borings, see Dwg. No. 64553



SHEET 1 OF 3
LAYOUT OF BRIDGE
COUNTY ROAD 67 OVER MULBERRY RIVER
& MULBERRY RELIEF CREEK
MULBERRY RIVER STR. & APPRS. (S)
CRAWFORD & FRANKLIN COUNTIES

COUNTY ROAD 67
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTM
CHECKED BY: JYP
DESIGNED BY: CTM
BRIDGE NO. 04948

DATE: 8-27-2020
DATE: 9-17-2020
DATE: 8-2020

FILENAME: bbr7615_J1.dgn
SCALE: 1"=30'

DRAWING NO. 64551

PRINT DATE: 9/16/2022

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.		BR7615	19	55
04948 - LAYOUT - 64552								

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, Eighth Edition (2017).

LIVE LOADING: HL-93

SEISMIC ZONE: 1 S_D : 0.09 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) f_y = 60,000 psi
Structural Steel (ASTM A709, Gr. 50) F_y = 50,000 psi
Structural Steel (ASTM A709, Gr. 50W) F_y = 50,000 psi
Structural Steel (ASTM A709, Gr. 36) F_y = 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 HP 12 x 53 (Grade 50) and shall be driven with an approved air, steam, or diesel hammer to a minimum safe bearing capacity of 95 tons per pile and into the material designated as Unweathered or Slightly Weathered Shale on the boring legend. Minimum penetration shall be 10' below bottom of cap for all piles in Bent 5. Piling in Bent 5 shall be driven after embankment to bottom of cap is in place. Lengths of piling shown are for estimating quantities and for use in determining payment for cut-off and build-up in accordance with Section 805. Actual pile lengths are to be determined in the field. The Contractor shall use approved steel H-Pile driving points on all piles.

DRILLED SHAFTS: Drilled shafts at Bents 1 thru 4 shall be constructed in accordance with Special Provision "Drilled Shaft Foundations". Drilled shafts shall be socketed into material designated as Unweathered or Slightly Weathered Shale 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 in Bents 2-4. Testing shall be performed in accordance with Special Provision "Nondestructive Testing of Drilled Shafts".

PAINTING: The following weathering steel surfaces shall be painted as specified in Subsection 807.75:

All steel surfaces within 10 feet of bridge deck expansion joints, including cross-frames, connection bolts and bearings, but not including the expansion device.

All steel surfaces exposed to the outside face of the bridge, including outside faces & bottom of the exterior girders, splice plates and bolts, stiffeners, and bearings.

Galvanized members and surfaces in contact with concrete shall not be painted. The color of paint shall be Brown equal or close to Fed. Std. 595 B, 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. ASTM F3125, Grade A325 Type 3 bolts shall be used within these painted zones and shall be painted.

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 64554-64556 & 64560-64562
Intermediate Bents 64557-64559
Elastomeric Bearings 64563
310' Continuous Plate Girder Units 64564-64569
Details of Expansion Joints 64570-64571
General Notes For Steel Bridge Structures 55006
Details For Steel Bridge Structures 55007
Steel H-Piling 55020
Bridge Traffic Rail 55070

EXISTING BRIDGES: Existing Bridge No. 13091 (Log Mile 10.97) is 12.0' wide (11.2' clear roadway) and 342.0' long and consists of 3 steel thru-truss main spans and 1 steel beam end span on concrete abutments, and steel and concrete piers. Existing Bridge No. 13090 (Log Mile 10.92) is 15.3' wide (13.1' clear roadway) and 60.3' long and consists of steel beams supported by concrete abutments and a concrete pier. Existing Bridges Nos. 13090 & 13091 are approximately 30' upstream of the proposed new bridge.

REMOVAL AND SALVAGE: The Contractor shall remove existing Bridge Nos. 13090 & 13091 in accordance with Section 205 and Special Provision "Removal of Historic Truss Spans of Bridge Number 13091". Additionally, concrete remnants at both existing bridges shall be removed. Removal of concrete remnants shall not be paid for directly but shall be considered subsidiary to the item "Removal of Existing Bridge Structure". All material from the existing bridges shall become the property of the Contractor except for the three steel Pratt through-truss spans which shall be salvaged for re-erection and shall become the property of the City of Mulberry. The Contractor shall coordinate with the Engineer and the City of Mulberry Public Works Director for removal and delivery of salvaged material. This material shall be delivered and unloaded to 453 US-64, Mulberry, Arkansas 72947. Payment for this work shall be considered incidental to "Removal of Existing Bridge Structure".

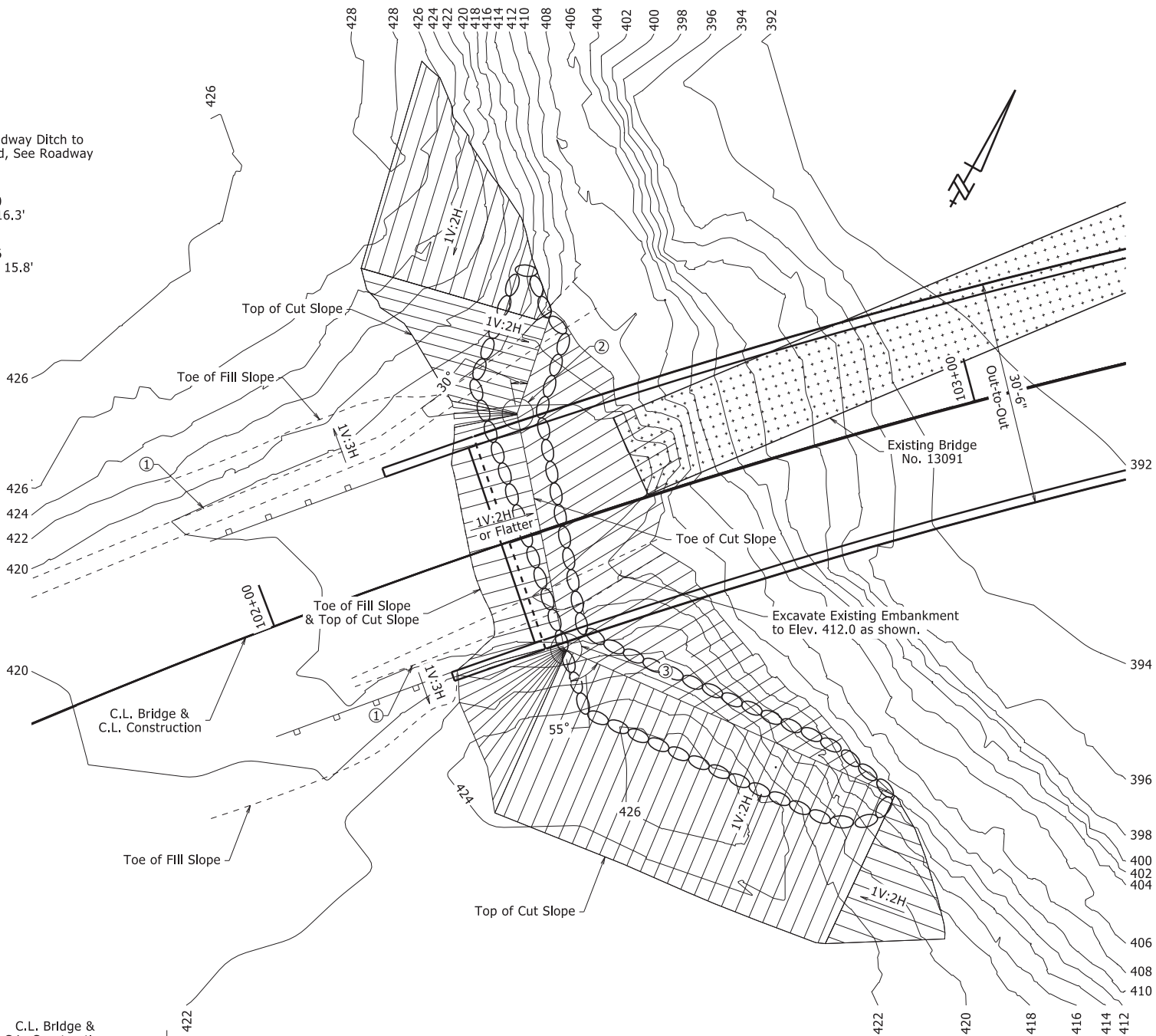
MAINTENANCE OF TRAFFIC: The road will be closed during the construction of this project.

SHEET 2 OF 3
LAYOUT OF BRIDGE
COUNTY ROAD 67 OVER MULBERRY RIVER
& MULBERRY RELIEF CREEK
MULBERRY RIVER STR. & APPRS. (S)
CRAWFORD & FRANKLIN COUNTIES

COUNTY ROAD 67
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTM DATE: 8-27-2020 FILENAME: bbr7615_J1.dgn
CHECKED BY: JYP DATE: 9-17-2020 SCALE: 1"=10'
DESIGNED BY: CTM DATE: 8-2020 or As Noted
BRIDGE NO. 04948 DRAWING NO. 64552

- Existing Roadway Ditch to be Relocated, See Roadway Plans.
- Sta. 102+40
Offset Left 16.3'
- Sta. 102+36
Offset Right 15.8'



EXCAVATION AT BRIDGE END

HYDRAULIC DATA

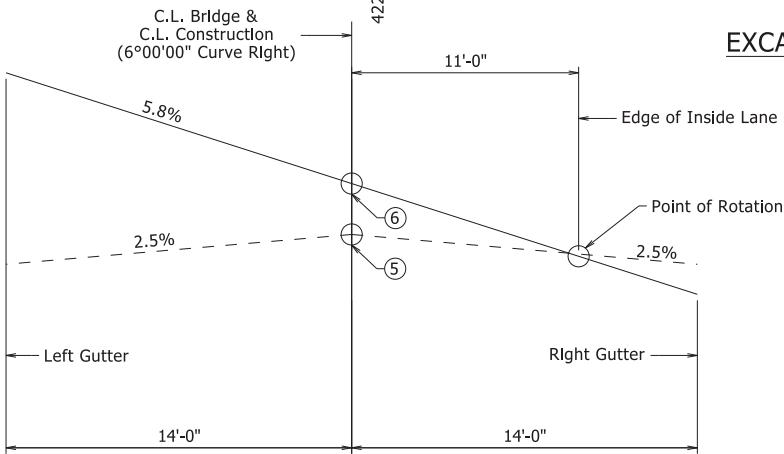
FLOOD DESCRIPTION	FREQUENCY	DISCHARGE	④ NATURAL WATER SURFACE ELEVATION	WATER SURFACE ELEV. WITH BACKWATER
	YEARS	CFS	FEET	FEET
DESIGN	3	22,200	406.2	406.3
BASE	100	114,400	413.1	413.6
EXTREME	500	173,300	415.6	415.6
OVERTOPPING	3	22,200	406.2	406.3

If the approach grade is raised above the design stage elevation, additional waterway opening will be required.

- ④ Unconstricted water surface without structure or roadway approaches.

Q100 backwater elevation for existing structure = 413.2
Proposed Low Bridge Chord Elev. = 415.00 occurs from Sta. 103+04.14 to end of bridge, 12.75' Rt.

Drainage area = 399 square miles
Historical H.W. Elev. = 414.65



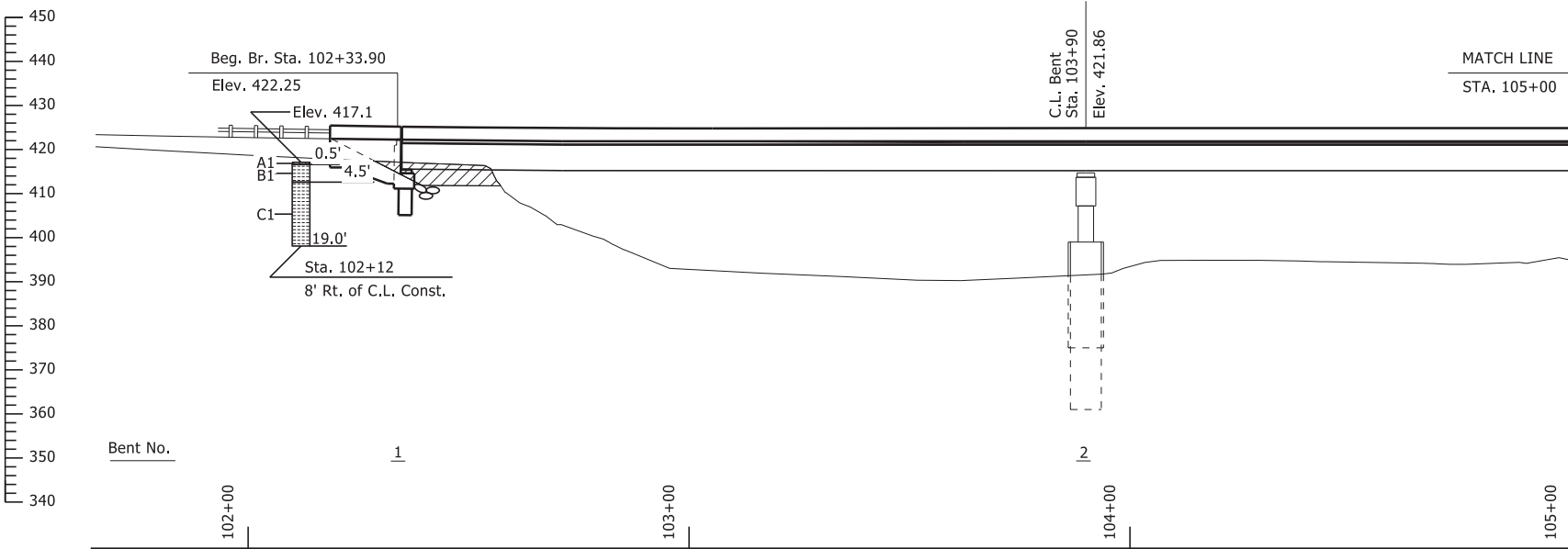
SUPERELEVATION SKETCH

Looking Ahead
No Scale

- Theoretical Grade Line along C.L. Construction
- Actual Elevation at C.L. Bridge

PRINT DATE: 9/16/2022

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.		BR7615	20	55
04948 - LAYOUT - 64553								



BORING LEGEND

A1-Moist, Brown Sandy Clay
B1-SHALE - Slightly Weathered, Medium Hard, Gray
C1-SHALE - Unweathered, Medium Hard, Gray
D1-Moist, Very Loose, Brown Clayey Sand
E1-Moist, Loose, Brown Sand with Clay
F1-Moist, Medium Dense, Brown Sand with Some Gravel
G1-Moist, Very Dense, Brown Gravel with Sand
H1-Wet, Dense, Brown Gravel with Sand
J1-Wet, Very Dense, Brown Sand with Gravel
K1-SHALE - Unweathered, Medium Hard, Slightly Dipping, Gray
L1-SHALE - Unweathered, Medium Hard, Frequent Fractures, Slightly Dipping, Gray
M1-SHALE - Unweathered, Medium Hard, Occasional Fractures, Gray
N1-SHALE - Unweathered, Medium Hard w/lt Soft Layers, Frequent Fractures, Gray
P1-Moist, Very Loose, Brown Sand with Clay
Q1-Moist, Loose, Brown Sand
R1-Moist, Dense, Brown Sand with Gravel
S1-Sandstone Gravel, Cobbles, and Boulders
T1-SHALE - Slightly Weathered, Medium Hard, Occasional Fractures, Gray
U1-SHALE - Unweathered, Medium Hard with Occasional Soft Layers, Frequent Fractures, Gray
V1-SHALE - Unweathered, Medium Hard, Frequent Fractures, Dark Gray
W1-Moist, Medium Dense, Brown Sand with Gravel
X1-Moist, Dense, Brown Sand with Gravel
Y1-Wet, Very Dense, Brown Sand with Gravel, Cobbles, and Boulders
Z1-LIMESTONE - Unweathered, Moderately Hard, Gray

"N" VALUES

Sta. 102+12 - 8' Rt. of C.L. Const.

0.5 - 1.5, N=65
5.0 - 6.0, N=10 (0")

Sta. 105+54 - 4' Lt. of C.L. Const.

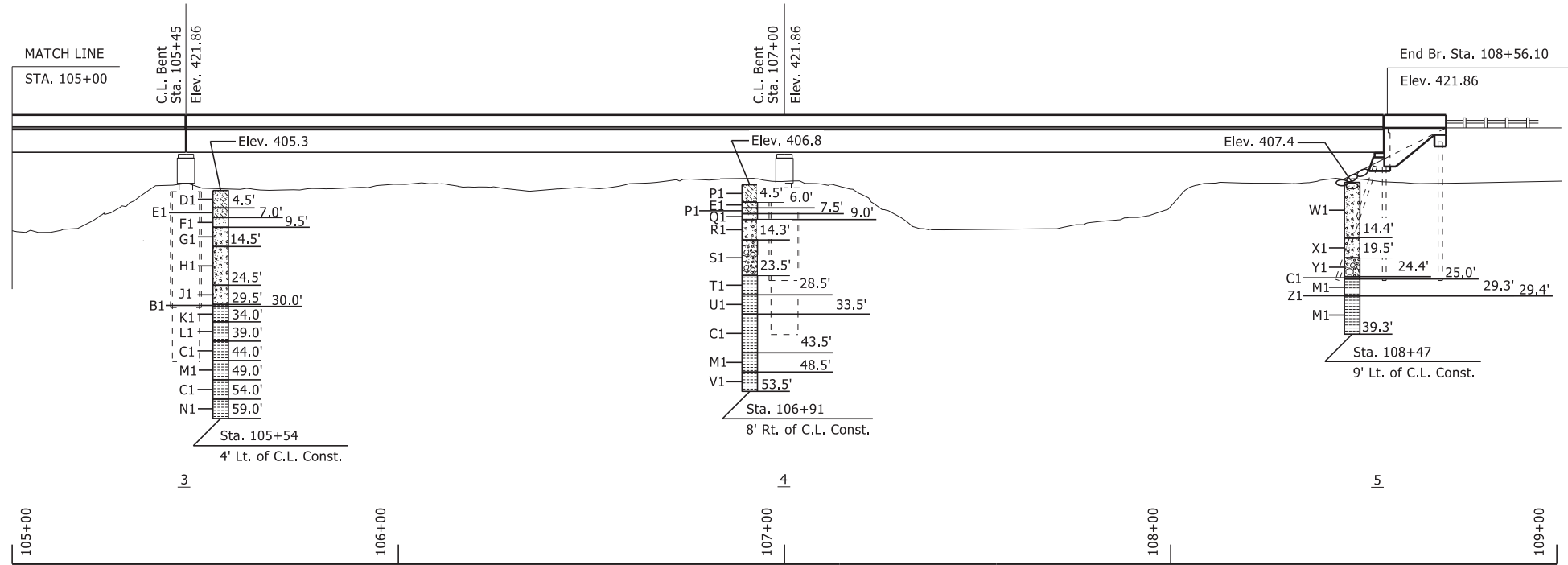
0.5 - 1.5, N=1
5.0 - 6.0, N=7
7.5 - 8.5, N=28
10.0 - 11.0, N=56
15.0 - 16.0, N=38
20.0 - 21.0, N=35
25.0 - 26.0, N=99
30.0 - 31.0, N=64 (6")

Sta. 106+91 - 8' Rt. of C.L. Const.

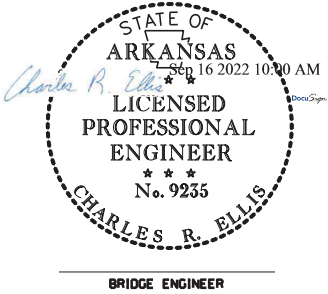
0.5 - 1.5, N=2
2.0 - 3.0, N=0
3.5 - 4.5, N=2
5.0 - 6.0, N=5
6.5 - 7.5, N=4
8.0 - 9.0, N=8
9.5 - 10.5, N=37
14.3 - 14.3, N=15 (0")

Sta. 108+47 - 9' Lt. of C.L. Const.

5.3 - 6.3, N=16
10.3 - 11.3, N=20
14.9 - 15.9, N=33
19.5 - 19.6, N=21 (1")
24.9 - 25.0, N=25 (1")



ELEVATION - SOIL BORINGS



SHEET 3 OF 3
LAYOUT OF BRIDGE
COUNTY ROAD 67 OVER MULBERRY RIVER
& MULBERRY RELIEF CREEK
MULBERRY RIVER STR. & APPRS. (S)
CRAWFORD & FRANKLIN COUNTIES

COUNTY ROAD 67
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTM DATE: 8-27-2020 FILENAME: bbr7615_J1.dgn
CHECKED BY: JYP DATE: 9-17-2020 SCALE: 1"=20'
DESIGNED BY: CTM DATE: 8-2020
BRIDGE NO. 04948 DRAWING NO. 64553

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


No Scale



Looking Back

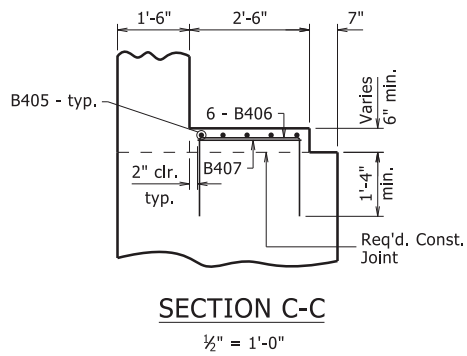
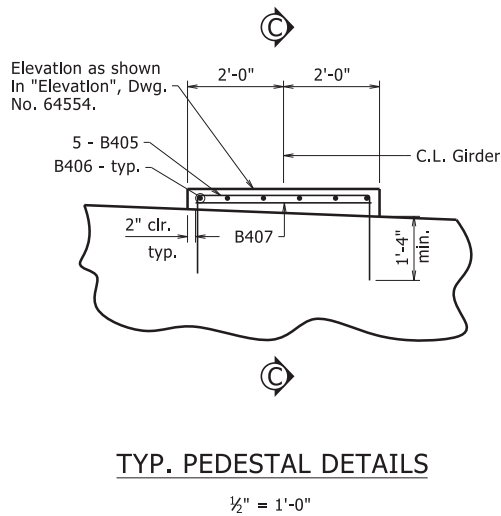
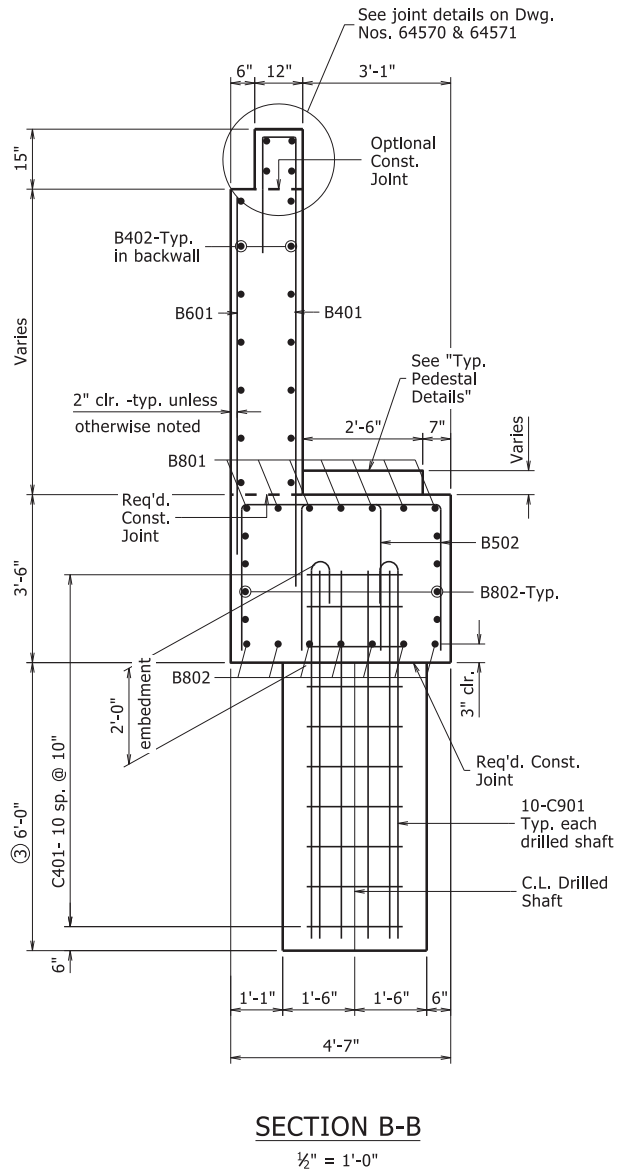
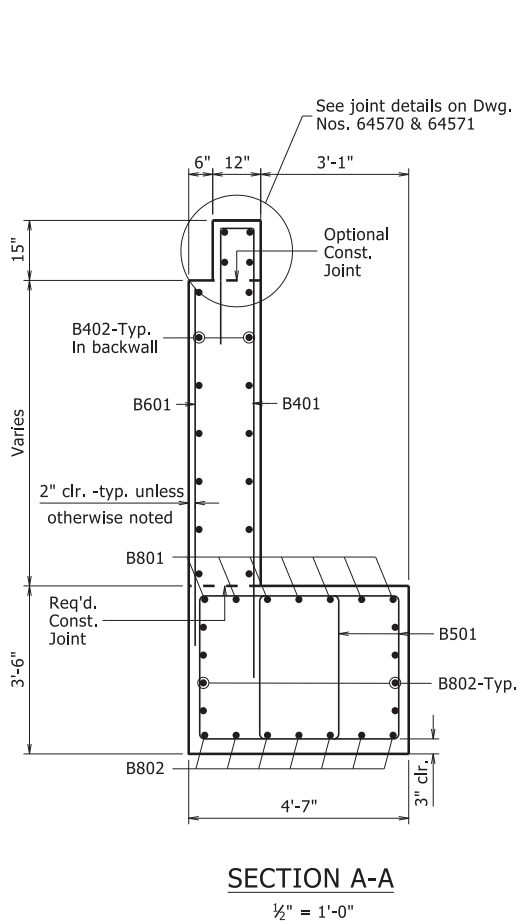
Looking Back
 $\frac{3}{8}" = 1'-0"$

STATE OF
ARKANSAS
Sep 16 2022 10:30 AM
LICENSED
PROFESSIONAL
ENGINEER
No. 9235
CHARLES R. ELLIS

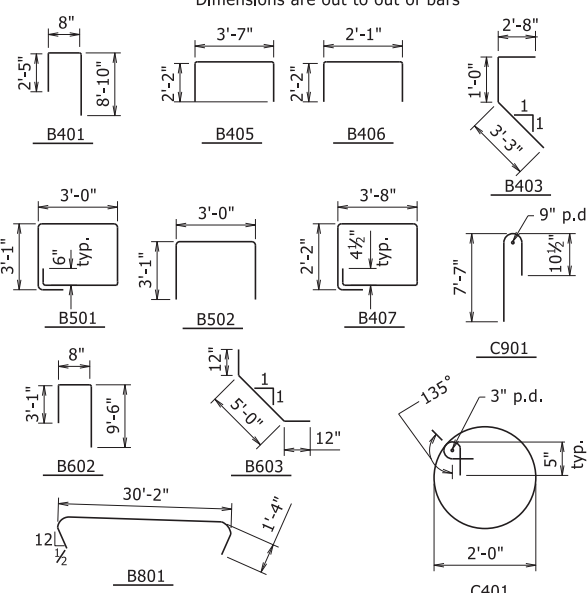
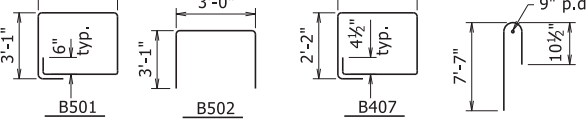
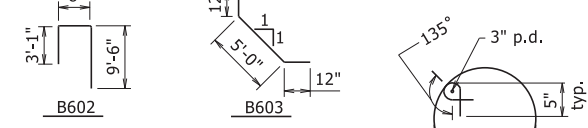
BRIDGE ENGINEER

BRIDGE NO. 04948 DRAWING NO. 64554

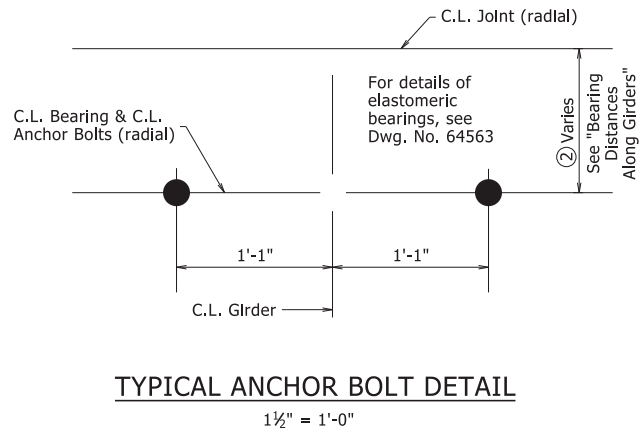
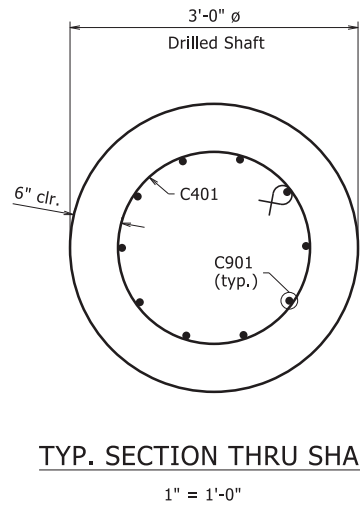
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BR7615	22	55
04948 - Bent 1 - 64555								



BAR LIST - CAP, SHAFT, AND BACKWALL

MARK	NO. REQ'D.	LENGTH	P.D.	BENDING DIAGRAMS
B401	52	11'-9"	2"	Dimensions are out to out of bars 
B402	18	30'-2"	Str.	
B403	2	6'-10"	3"	
B404	6	8'-5"	Str.	
B405	20	7'-9"	2"	
B406	24	6'-3"	2"	
B407	4	12'-0"	2"	
B501	74	12'-8"	2 1/2"	
B502	48	8'-11"	2 1/2"	
B601	56	8'-4"	Str.	
B602	4	12'-11"	4 1/2"	
B603	22	7'-0"	4 1/2"	
B801	7	32'-5"	6"	
B802	15	30'-2"	Str.	
C401	44	7'-6"	3"	
C901	40	8'-10"	9"	

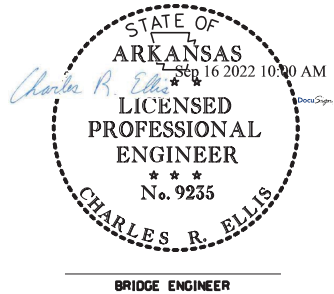
① Non-pay item - Subsidiary to the pay item "Drilled Shaft (36" Dia.)".



- ② Measured along C.L. Girder.
- ③ Minimum penetration into competent rock.

BEARING DISTANCES ALONG GIRDERS

Girder	Bearing Distance
1	11 13/16"
2	11 5/16"
3	1'-0 1/2"
4	1'-0 3/16"

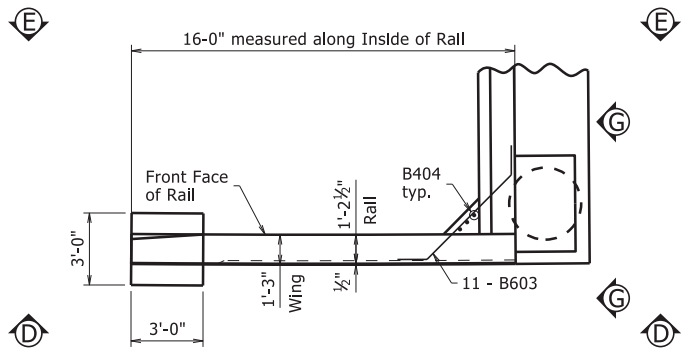


SHEET 2 OF 3
DETAILS OF BENT 1

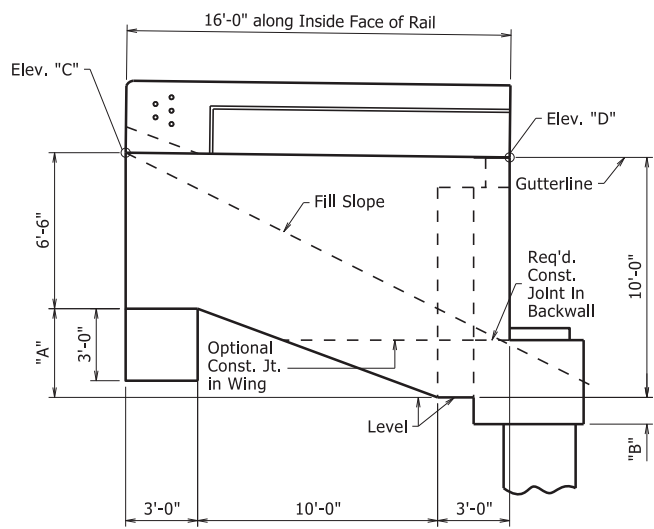
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTM DATE: 7/28/2021 FILENAME: bbr7615_b1.dgn
CHECKED BY: BHS DATE: 11/18/2021 SCALE: As Shown
DESIGNED BY: CTM DATE: 5/2021
BRIDGE NO. 04948 DRAWING NO. 64555

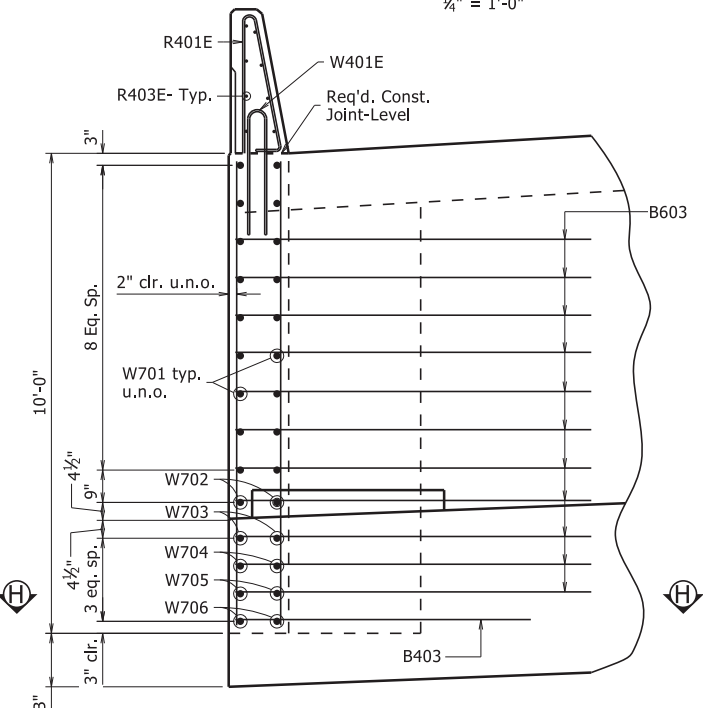
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BR7615	23	55
				1		04948 - Bent 1 - 64556		



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



VIEW D-D
1/4" = 1'-0"



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

Concrete in footings shall be poured directly against excavated surfaces of rock. If rock is lower than anticipated, the Contractor shall notify the Engineer for further analysis.

For additional details of rail and reinforcing, see Std. Dwg. No. 55070.

BAR LIST - PER WING

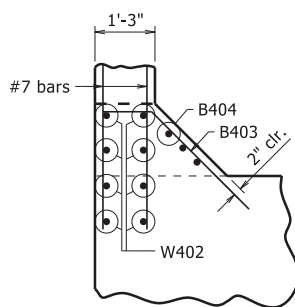
MARK	NO. REQ'D.	LENGTH	P.D.	BENDING DIAGRAMS
W401E	32	3'-11"	3 3/4"	Dimensions are out to out of bars
W402	6	9'-7"	Str.	
W403-W412	2 Each	Var. 6'-3" to 9'-6"	Str.	
W601	12	9'-9"	4 1/2"	
W602	6	2'-8"	Str.	
W701	18	15'-8"	Str.	
W702-W705	2 Each	Var. 4'-11" to 11'-3"	Str.	
W706	2	16'-4"	5 1/4"	
R401E	32	6'-3"	2 1/2"	
R402E	4	5'-6"	Str.	
R403E	8	15'-8"	Str.	

Bars designated with an "E" suffix are epoxy coated.

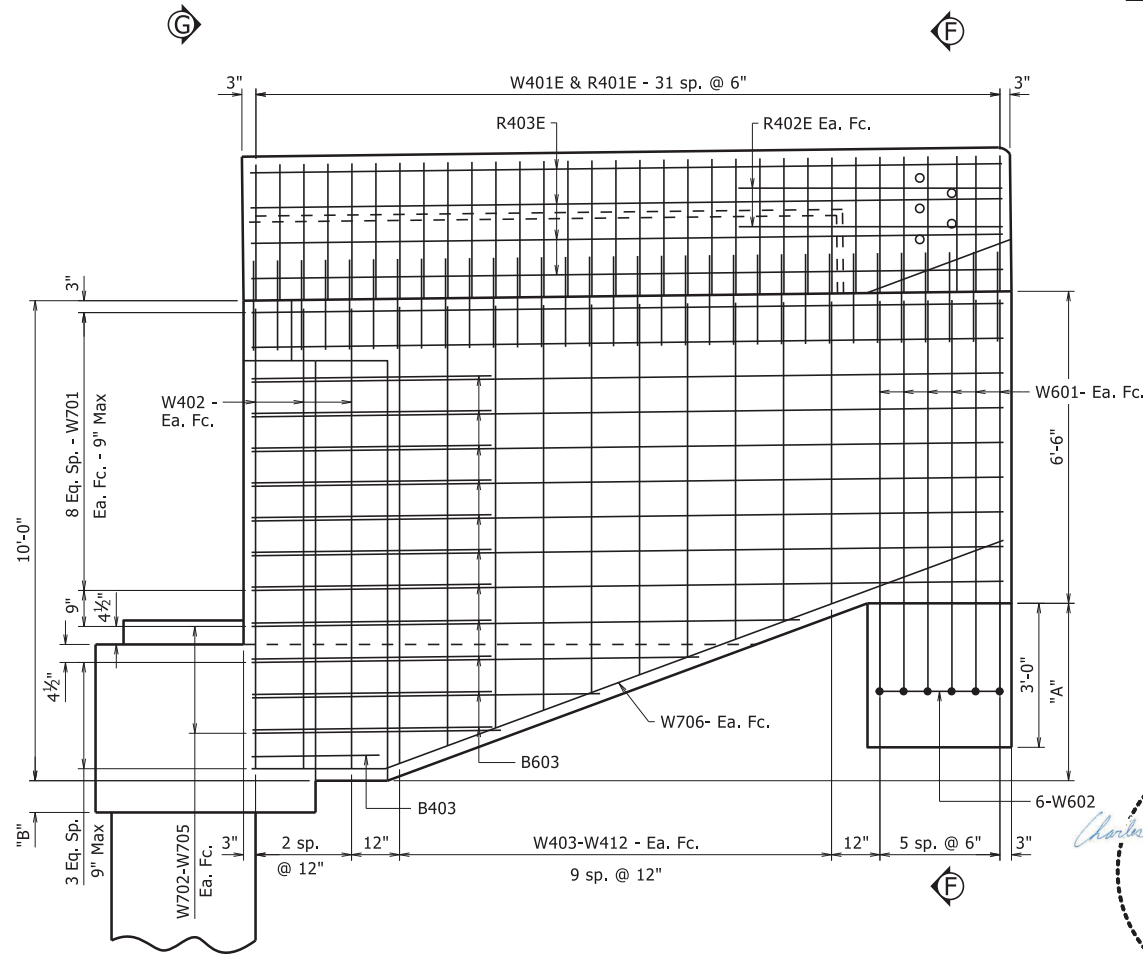
1 See Std. Dwg. No. 55070 for additional details.

TABLE OF VARIABLES

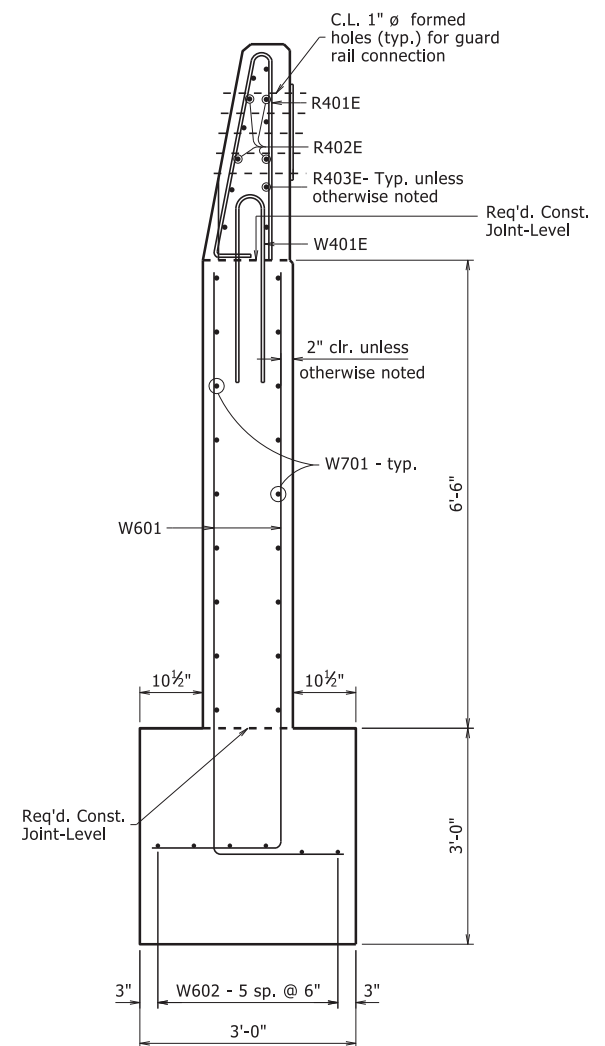
WING	"A"	"B"	"C"	"D"
A	3'-8 1/4"	8 3/16"	421.62	421.43
B	3'-8 3/16"	1'-1 1/16"	423.23	423.05



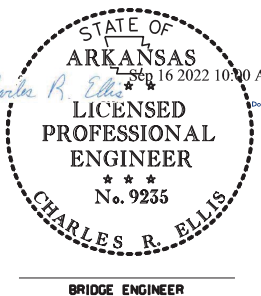
SECTION H-H
1/2" = 1'-0"



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



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



SHEET 3 OF 3
DETAILS OF BENT 1

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

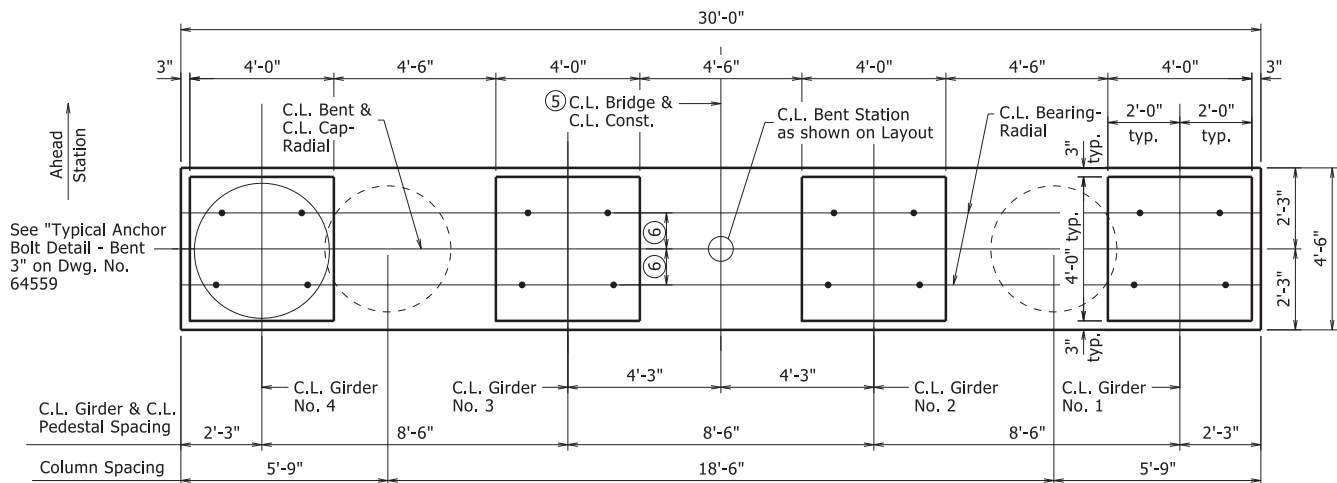
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CHECKED BY: BHS DATE: 11/18/2021 SCALE: As Shown
DESIGNED BY: CTM DATE: 5/2021
BRIDGE NO. 04948 DRAWING NO. 64556

1

1

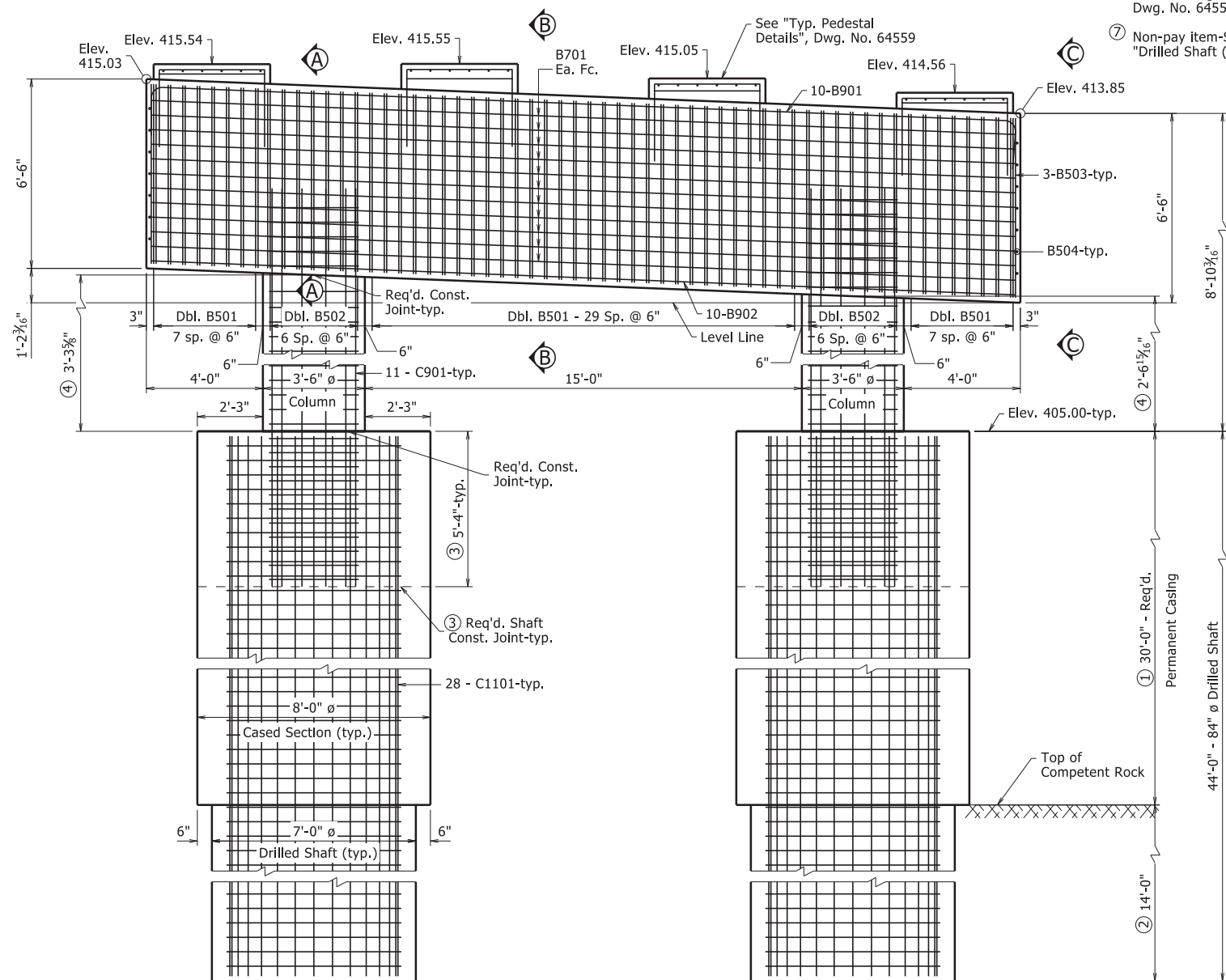
PRINT DATE: 9/16/2022

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.		BR7615	25	55
04948 - Bent 3 - 64558								



PLAN

3/8" = 1'-0"



ELEVATION

Looking Ahead

3/8" = 1'-0"

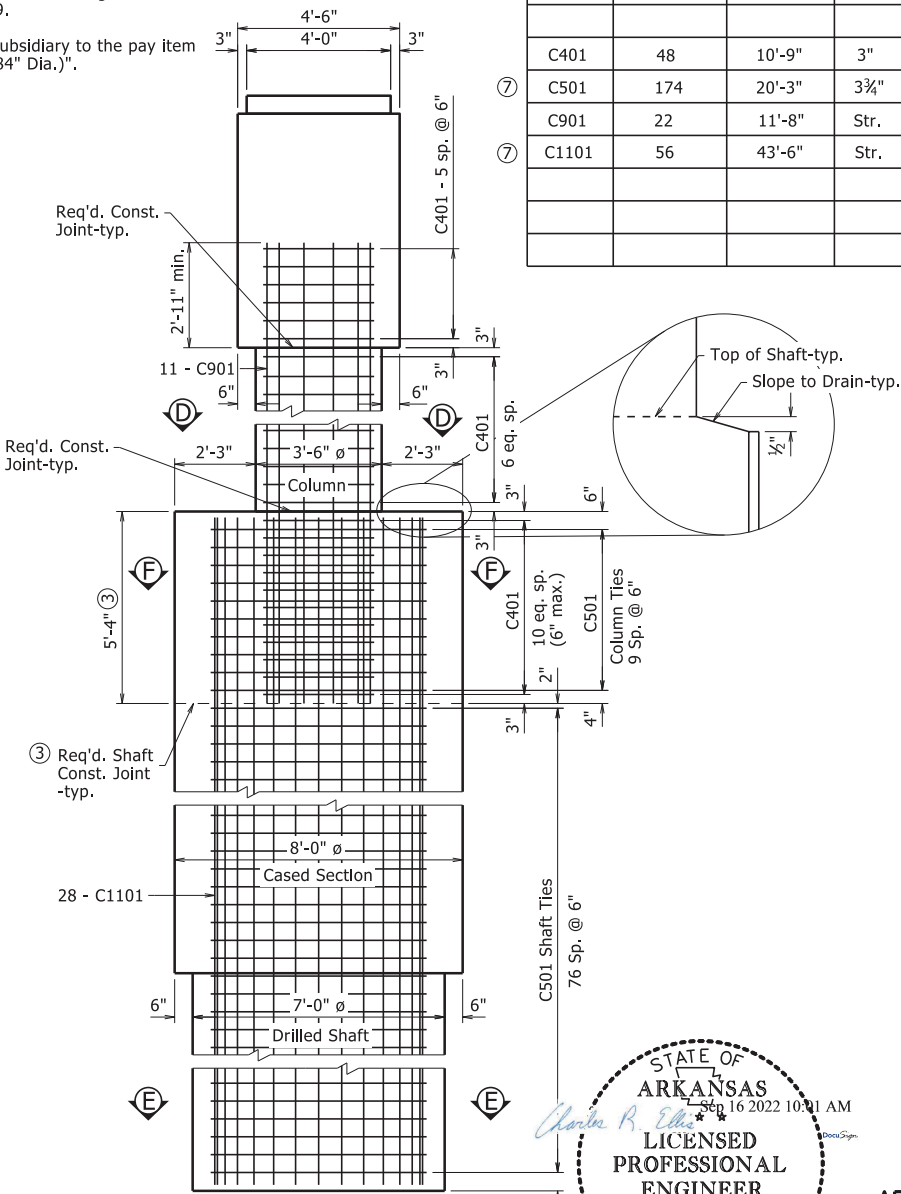
General Notes

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

For all "Sections", See Dwg. No. 64559.

For add'l. information, see Layout.

- Length of Permanent Casing shown is for estimating quantities only. Actual Lengths are to be determined in the field. See Job SP "Drilled Shaft Foundations". Permanent Casing shall not extend below top of competent rock without approval from the Engineer.
- Minimum penetration into competent rock below permanent casing.
- Remove sediment, laitance & weak concrete to sound concrete prior to setting column reinforcement. For additional information, see Job SP "Drilled Shaft Foundations".
- Column Height measured at C.L. Column.
- C.L. Bridge & C.L. Const. on 6°00'00" curve right.
- See "Bearing Distances along Girders" on Dwg. No. 64559.
- Non-pay item-Subsidiary to the pay item "Drilled Shaft (84" Dia.)".



END VIEW

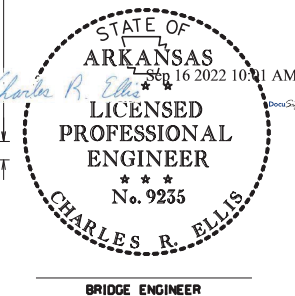
3/8" = 1'-0"

BAR LIST

MARK	NO. REQ'D.	LENGTH	P.D.	BENDING DIAGRAMS
B401	4	15'-0"	2"	Dimensions are out to out of bars
B501	92	18'-6"	2 1/2"	
B502	28	15'-0"	2 1/2"	
B503	6	6'-2"	Str.	
B504	14	4'-2"	Str.	
B505	48	8'-9"	2 1/2"	
B701	22	29'-8"	Str.	
B901	10	32'-6"	9"	
B902	10	29'-8"	Str.	
C401	48	10'-9"	3"	
C501	174	20'-3"	3 3/4"	
C901	22	11'-8"	Str.	
C1101	56	43'-6"	Str.	

7

7



DETAILS OF BENT 3

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

DRAWN BY: CTM DATE: 8/24/2021 FILENAME: bbr7615_b2.dgn
CHECKED BY: BHS DATE: 11/18/2021 SCALE: As Shown
DESIGNED BY: BHS DATE: 8/2021
BRIDGE NO. 04948 DRAWING NO. 64558

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

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

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

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

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

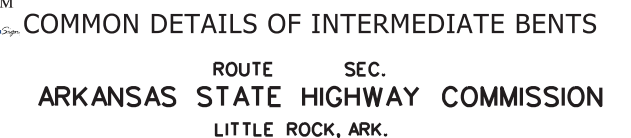
$$\frac{1}{2}'' = 1'-0''$$

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

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

Bent 3

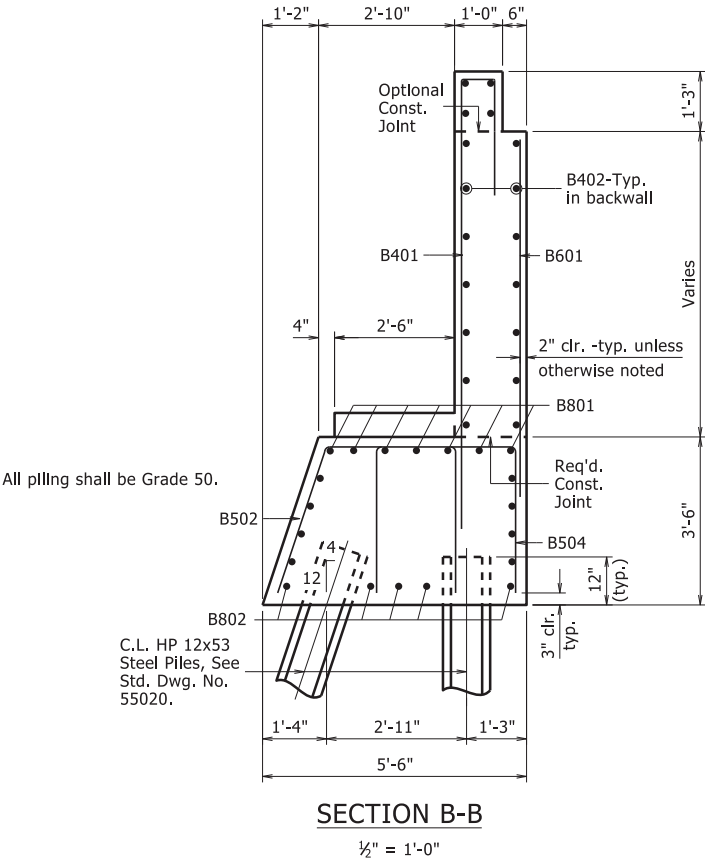
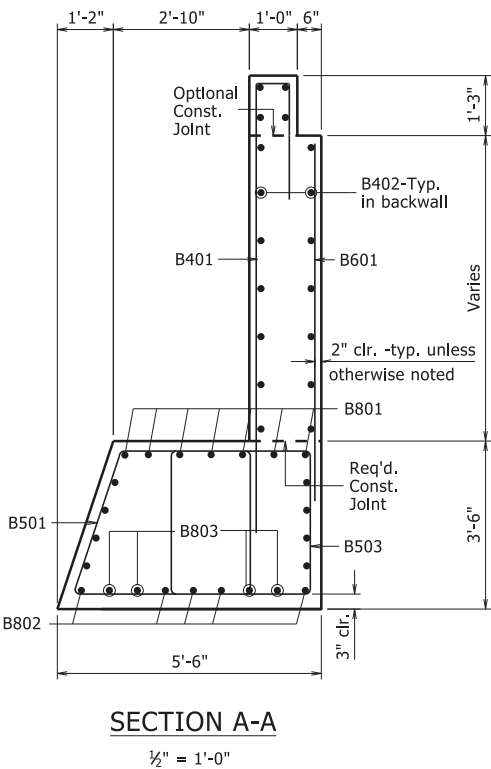
- ① Measured along C.L. Girder.
- ② Varies - 6" min.



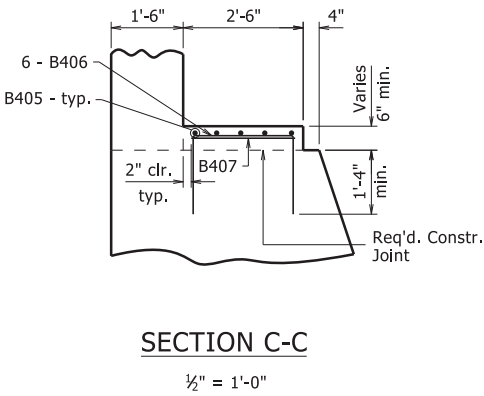
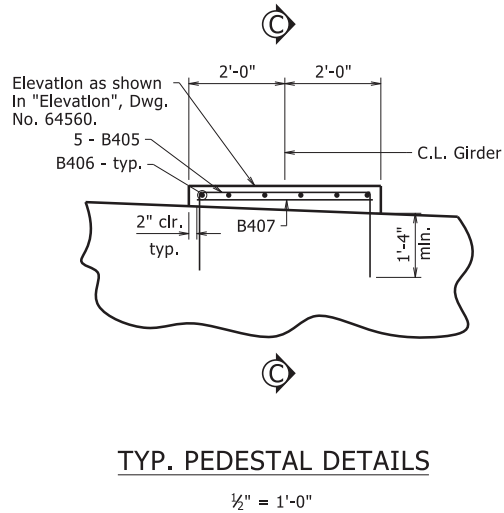
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 CHECKED BY: BHS DATE: 11/18/2021 SCALE: As Shown
 DESIGNED BY: BHS DATE: 8/2021

BRIDGE NO. 04948 DRAWING NO. 64559

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.		BR7615	28	55
04948 - Bent 5 - 64561								

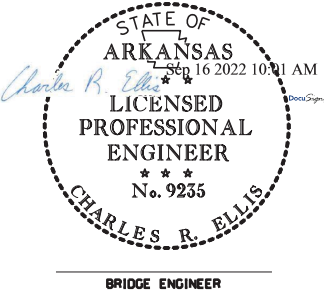
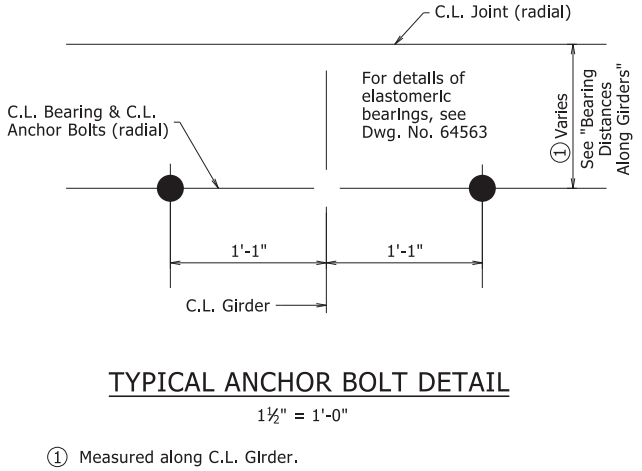


BAR LIST - CAP AND BACKWALL				BENDING DIAGRAMS	
MARK	NO. REQ'D.	LENGTH	P.D.	Dimensions are out to out of bars	
B401	52	11'-9"	2"		
B402	18	30'-2"	Str.		
B403	6	6'-10"	3"		
B404	6	8'-5"	Str.		
B405	20	7'-9"	2"		
B406	24	6'-3"	2"		
B407	4	12'-4"	2"		
B501	53	13'-6"	2 1/2"		
B502	8	8'-11"	2 1/2"		
B503	53	12'-4"	2 1/2"		
B504	8	8'-9"	2 1/2"		
B601	56	8'-4"	Str.		
B602	4	12'-11"	4 1/2"		
B603	20	7'-0"	4 1/2"		
B801	7	32'-5"	6"		
B802	5	30'-2"	Str.		
B803	12	9'-5"	6"		



BEARING DISTANCES ALONG GIRDERS

Girder	Bearing Distance
1	11 ¹ / ₁₆ "
2	11 ¹ / ₁₆ "
3	1'-0 ¹ / ₁₆ "
4	1'-0 ³ / ₁₆ "

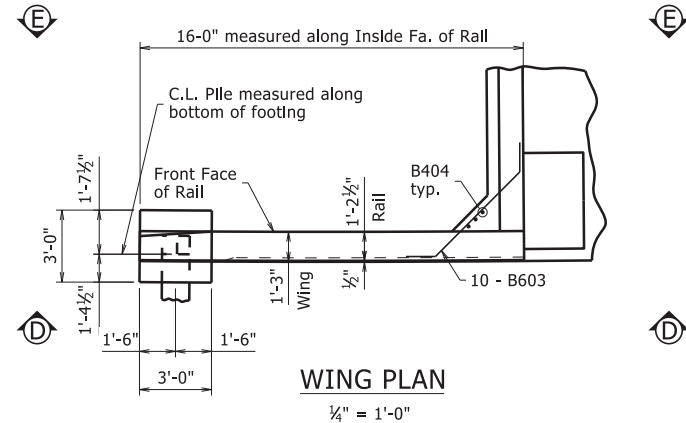


SHEET 2 OF 3
DETAILS OF BENT 5

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

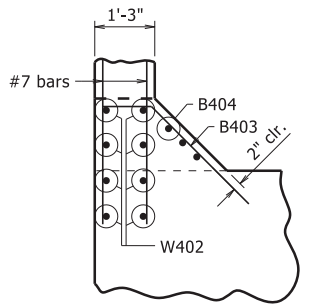
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CHECKED BY: BHS DATE: 11/18/2021 SCALE: As Shown
DESIGNED BY: CTM DATE: 5/2021
BRIDGE NO. 04948 DRAWING NO. 64561

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.		BR7615	29	55
								04948 - Bent 5 - 64562



WING	"A"	"B"	"C"	"D"
A	5'-0"	7'15/16"	421.05	421.05
B	5'-0"	1'-17/16"	422.68	422.68

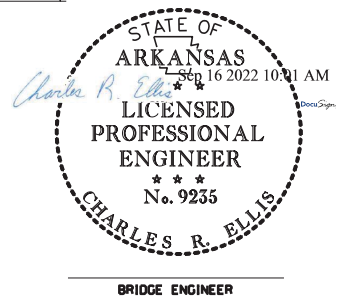
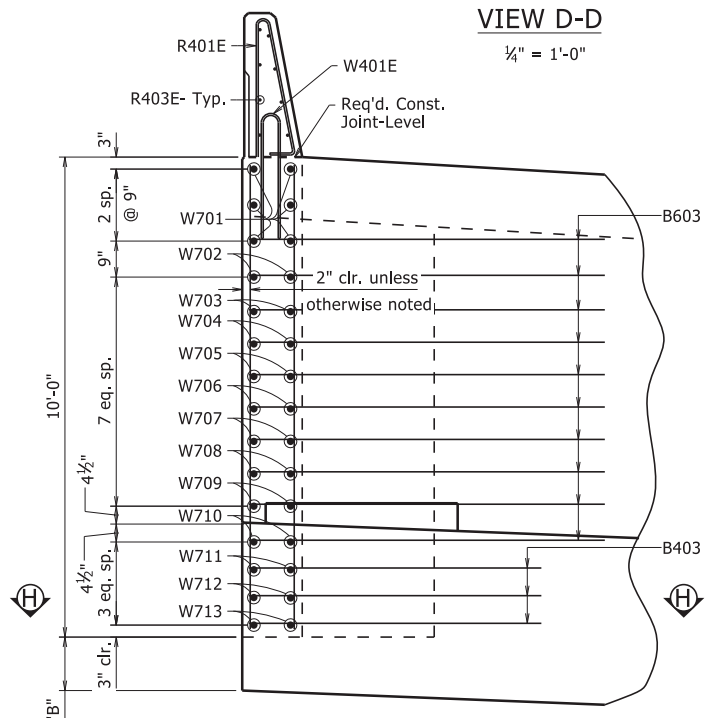
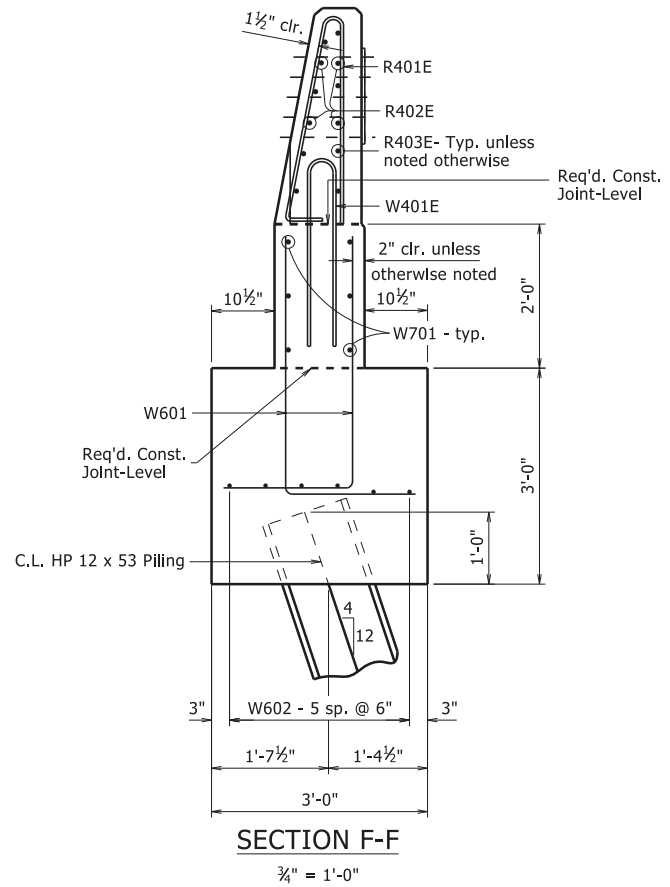
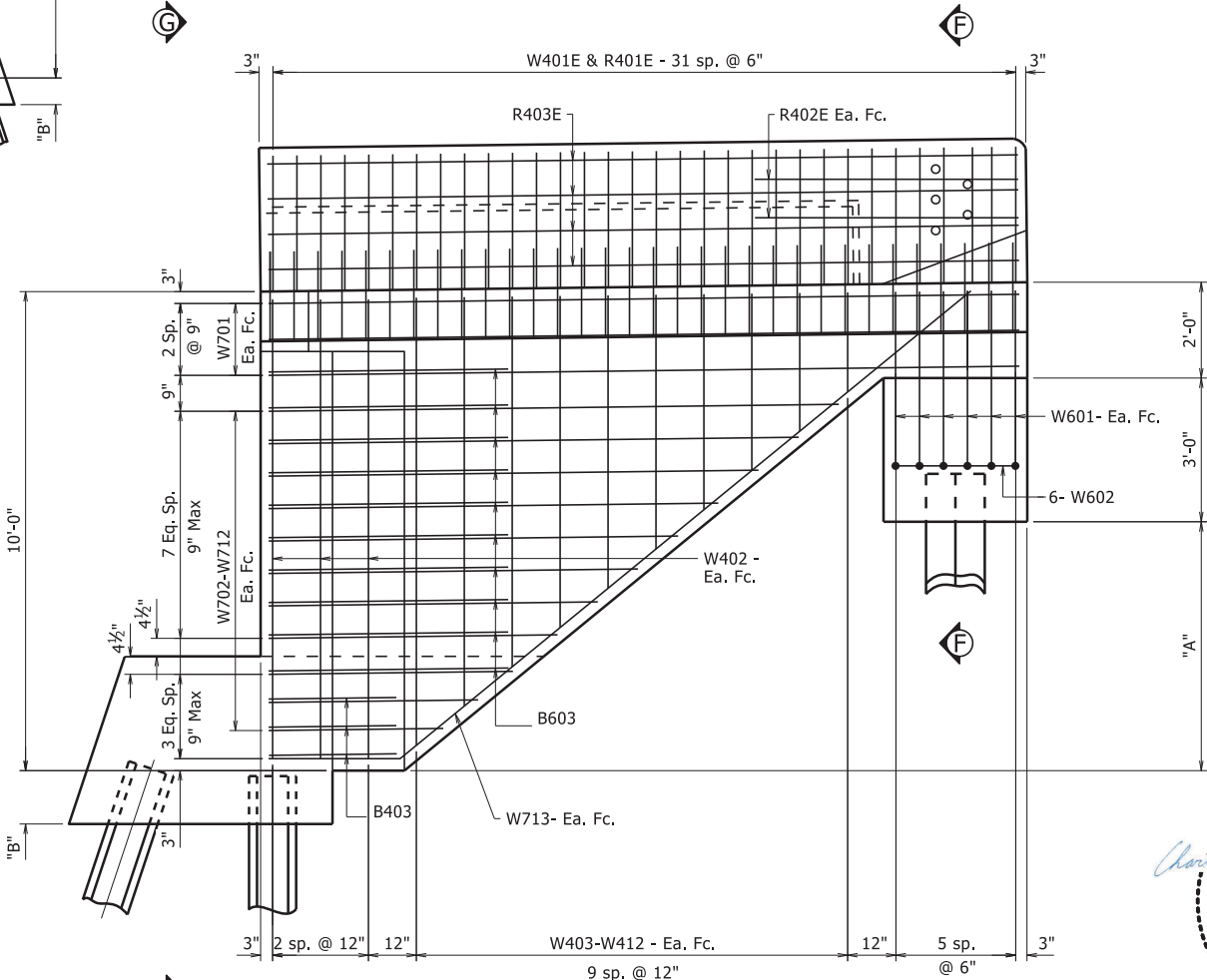
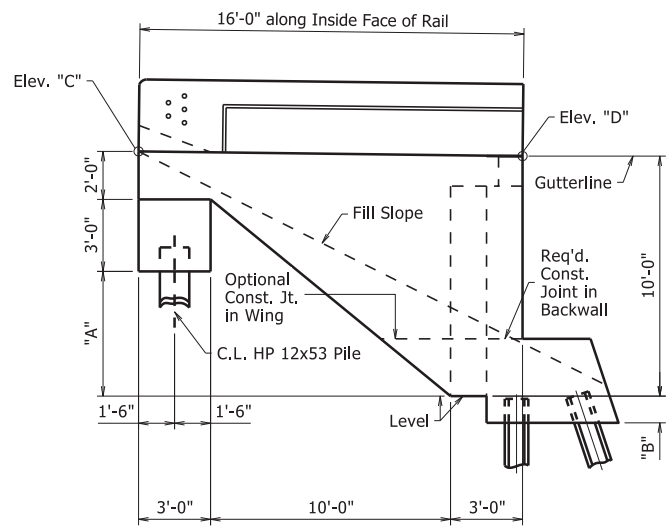
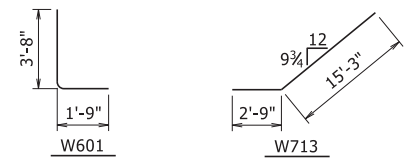
For additional details of rail and reinforcing, see Std. Dwg. No. 55070.



BAR LIST - PER WING

MARK	NO. REQ'D.	LENGTH	P.D.	BENDING DIAGRAMS
W401E	32	3'-11"	3 3/4"	Dimensions are out to out of bars.
W402	6	9'-7"	Str.	Bars with an E designation are to be epoxy coated.
W403-W412	2 Each	Var. 2'-1" to 9'-4"	Str.	
W601	12	5'-3"	4 1/2"	
W602	6	2'-8"	Str.	
W701	6	15'-8"	Str.	
W702-W712	2 Each	Var. 3'-7" to 11'-10"	Str.	
W713	2	17'-11"	5 1/4"	
R401E	32	6'-3"	2 1/2"	
R402E	4	5'-6"	Str.	
R403E	8	15'-8"	Str.	

① See Std. Dwg. No. 55070 for additional details.

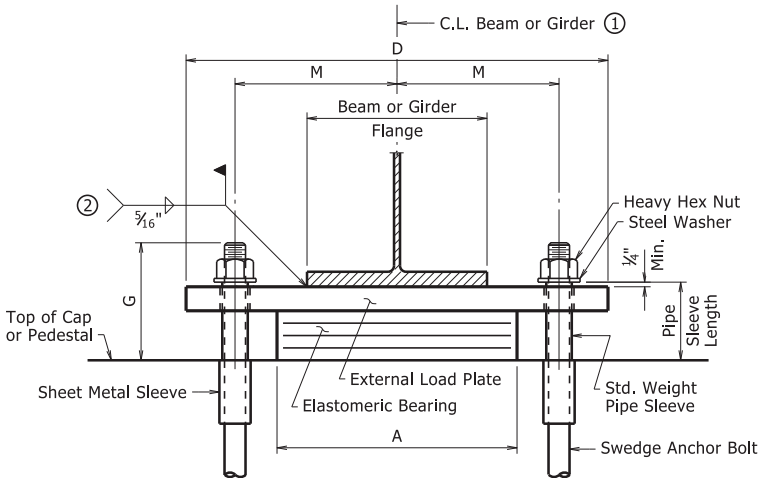


SHEET 3 OF 3
DETAILS OF BENT 5

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

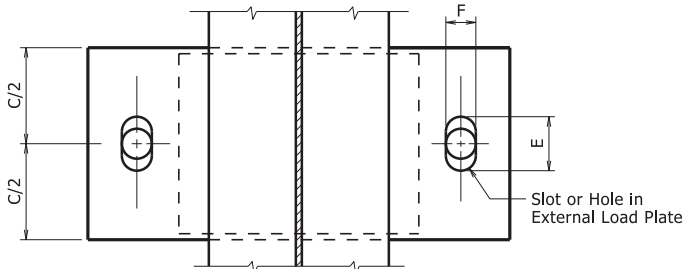
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CHECKED BY: BHS DATE: 11/18/2021 SCALE: As Shown
DESIGNED BY: CTM DATE: 5/2021
BRIDGE NO. 04948 DRAWING NO. 64562

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.		BR7615	30	55
				04948 -		Bearings	- 64563	

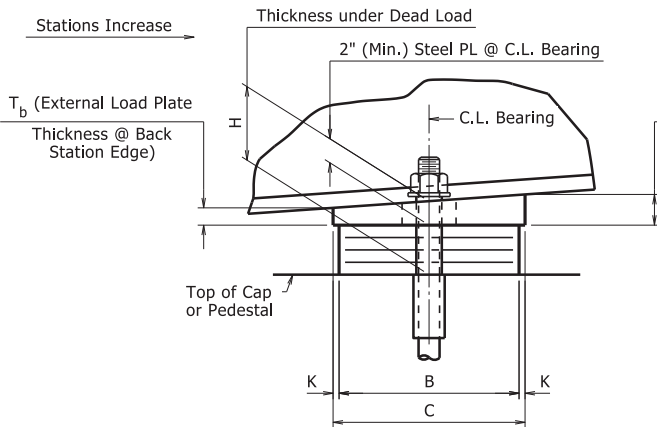


FRONT VIEW - AT BENT NOS. 1, 3 AHEAD, & 5

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



PLAN VIEW - AT BENT NOS. 1, 3 AHEAD, & 5

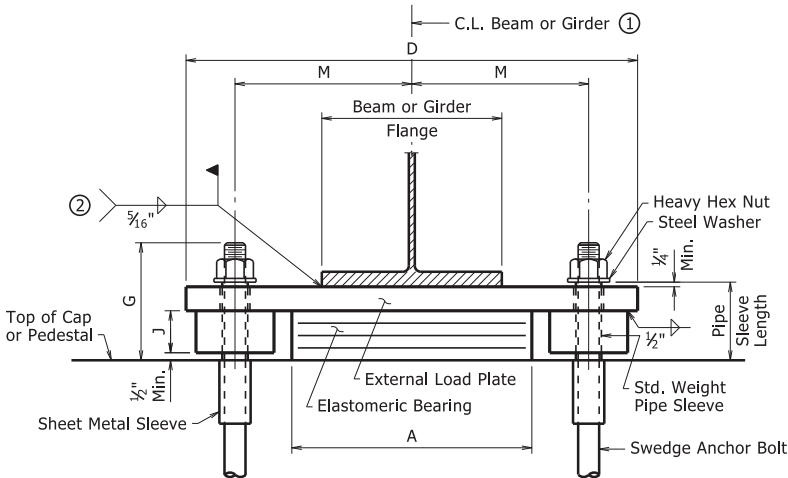


SIDE VIEW - AT BENT NOS. 1, 3 AHEAD, & 5

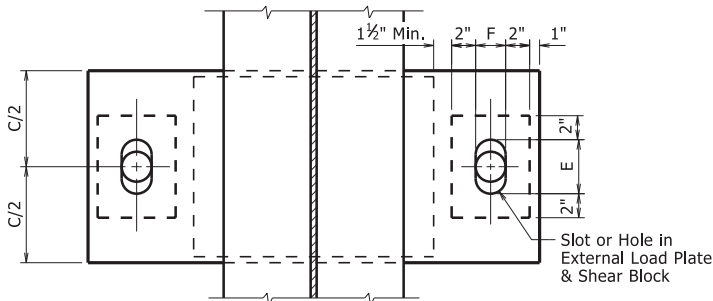
The direction of bevel of the external load plate may not be accurately depicted with respect to Ta and Tb values shown in the "Table of Fabricator Variables."

② Unless otherwise approved by the Engineer, welding of the external load plate at expansion bearings to the beam or 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.

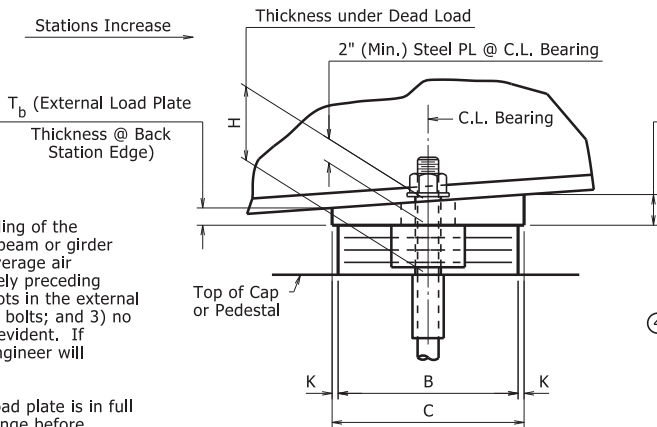
Care shall be taken to ensure that the external load plate is in full and complete contact with the beam or girder flange before welding begins.



FRONT VIEW - AT BENT NOS. 2, 3 BACK, & 4



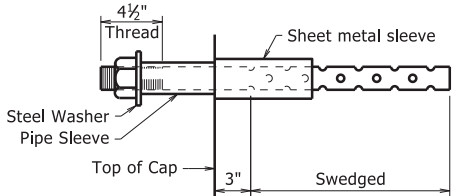
PLAN VIEW - AT BENT NOS. 2, 3 BACK, & 4



SIDE VIEW - AT BENT NOS. 2, 3 BACK, & 4

Prior to erection of the beams or girders, the Contractor shall verify the orientation of the bearings with respect to Ta and Tb.

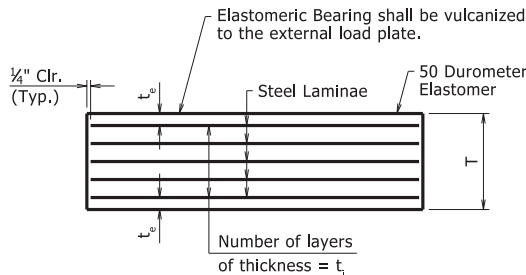
④ Shear blocks 4 inches or thicker may be fabricated from built-up plates with a 1/8" groove weld on all sides. No plate shall be less than 2" nominal thickness.



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 A653, CS Type B or approved equivalent, be of minimum 16 gauge 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)."



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

ELASTOMERIC BEARING

GENERAL NOTES

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

External load plates and shear blocks shall conform to ASTM A709, Grade 50W. Pipe sleeves shall be ASTM A500, Grade B, and shall be galvanized to conform to AASHTO M 232, Class C or ASTM B695, Class 50.

External load plates and shear blocks shall be completely fabricated (including bevel and bolt holes) and shall be cleaned before vulcanizing to the elastomeric bearing. The surface in contact with the elastomeric bearing shall be cleaned in accordance with Subsection 808.03. Other surfaces shall be blast cleaned in accordance with Subsection 807.84(b) for painted steel and 807.84(e) for unpainted Grade 50W steel.

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

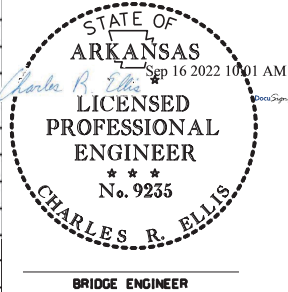
Pipe Sleeves, Anchor Bolts, Washers, and Nuts shall be paid for at the unit price bid for "Structural Steel in Plate Girder Spans (A709, Gr. 50W)." External load plates will not be measured and paid for separately, but will be considered incidental to the unit price bid for "Elastomeric Bearings."

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

TABLE OF FABRICATOR VARIABLES

③ Maximum Design Load = Service 1 Limit State

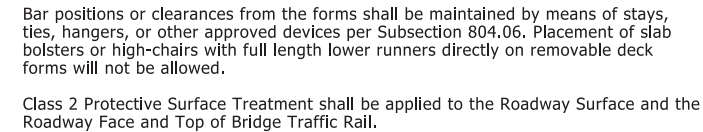
BRIDGE NO.	③ Maxlmm Design Load = Service 1 Lmlt State							ELASTOMERIC PAD							EXTERNAL LOAD PLATE										ANCHOR BOLT					
	LOCATION		BEARING TYPE	NO. of BEARINGS EACH BENT	③ MAXIMUM DESIGN LOAD (KIPS)	G	H	A	B	N	t	t _e	NO. & THICKNESS OF STEEL LAMINAE	T	C	D	E	F	④ J	K	M	T _a	T _b	ANCHOR BOLT		PIPE SLEEVE SIZE (ø x L)	SHEET METAL SLEEVE SIZE (ø x L)	STEEL WASHER SIZE (O.D.)		
	BENT NO (S)	BEAM OR GIRDER NO.																						ø x L	GRADE					
04948	1	All	Exp	4	184	9 3/8"	6 1/8"	20"	9"	6	1/2"	1/4"	7 @ 12 ga.	4 1/4"	12 1/2"	32 1/2"	6 3/8"	3 1/8"	NA	1 3/4"	13"	1.93"	2.07"	2"x 33 1/2"	55	± 1/2" x 6 3/8"	4" x 16"	3 3/4"		
	2	All	Fix	4	482	8 7/8"	5 9/16"	24"	15"	5	1/2"	1/4"	6 @ 12 ga.	3 5/8"	16"	43 3/4"	3 1/8"	3 1/8"	3"	1/2"	17 1/4"	2.00"	2.00"	2"x 33 1/2"	55	± 1/2" x 5 7/8"	4" x 16"	3 3/4"		
	3 Back	All	Fix	4	184	9 3/8"	6 1/8"	20"	9"	6	1/2"	1/4"	7 @ 12 ga.	4 1/4"	10"	39 3/4"	3 1/8"	3 1/8"	3"	1/2"	15 1/4"	2.00"	2.00"	2"x 33 1/2"	55	± 1/2" x 6 3/8"	4" x 16"	3 3/4"		
	3 Ahead	All	Exp	4	184	9 3/8"	6 1/8"	20"	9"	6	1/2"	1/4"	7 @ 12 ga.	4 1/4"	11 3/4"	32 1/2"	5 3/4"	3 1/8"	NA	1 3/8"	13"	2.00"	2.00"	2"x 33 1/2"	55	± 1/2" x 6 3/8"	4" x 16"	3 3/4"		
	4	All	Fix	4	482	8 7/8"	5 9/16"	24"	15"	5	1/2"	1/4"	6 @ 12 ga.	3 5/8"	16"	43 3/4"	3 1/8"	3 1/8"	3"	1/2"	17 1/4"	2.00"	2.00"	2"x 33 1/2"	55	± 1/2" x 5 7/8"	4" x 16"	3 3/4"		
	5	All	Exp	4	184	9 3/8"	6 1/8"	20"	9"	6	1/2"	1/4"	7 @ 12 ga.	4 1/4"	11 3/4"	32 1/2"	5 5/8"	3 1/8"	NA	1 3/8"	13"	2.00"	2.00"	2"x 33 1/2"	55	± 1/2" x 6 3/8"	4" x 16"	3 3/4"		



DETAILS OF
ELASTOMERIC BEARINGS

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

DRAWN BY: BHS DATE: 8-23-2021 FILENAME: bbr7615_e1.dgn
CHECKED BY: CTM DATE: 11/18/2021 SCALE: No Scale
DESIGNED BY: BHS DATE: 8/2021
BRIDGE NO. 04948 DRAWING NO. 64563

1

MARK	NO. REQ'D.	LENGTH	P.D.
S401E	310	30'-2"	Str.
S402E	408	41'-0"	Str.
S501E	928	30'-2"	Str.
S502E	1238	4'-2"	Str.
S503E	198	54'-0"	Str.
S504E	128	60'-0"	Str.
R400E	80	5'-3"	2½"
R401E	1236	6'-3"	2½"
R402E	112	5'-6"	Str.
R403E	1236	3'-6"	3", 3¾"
R404E	32	13'-11"	Str.
R405E	32	14'-4"	Str.
R406E	96	20'-4"	Str.
R407E	96	20'-11"	Str.

Longitudinal: S503E & S402E Top and Bottom placed as shown
S504E Add'l Top over interior support, see
"Half Reinforcing Plan" on Dwg. No. 64569.
Transverse: S501E @ 6" o.c. in top
S501E & S401E alternating @ 6" o.c. in bottom
S502E @ 6" o.c. in top of overhangs
(bundled with S501E)

Looking Ahead
 $\frac{1}{2} = 1'-0"$

-
- Diagram illustrating the connection of a C.L. Girder to a C.L. Brg. (Center Line Bridge). The girder is shown with a 5.8% slope. The connection point is marked with a vertical line labeled "11 1/4" @ C.L. Brg." and "Bot. of Flange Haunch".

Tolerances shown are applicable only when removing deck forming is used. See Std. Dwg. No. 55007 for tolerances when permanent steel deck forms are used. Payment for concrete shall be based on removable deck forming.

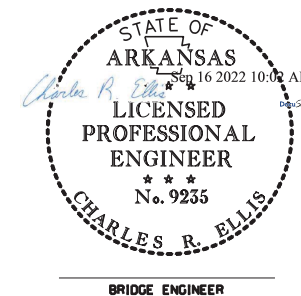
Panel Length	Panel Type	R4XXE	A	B	C	D	E	F
14'-3 $\frac{7}{16}$ "	Closed	R404E	28	-	-	-	-	-
14'-8 $\frac{7}{16}$ "	Closed	R405E	29	-	-	-	-	-
20'-8 $\frac{5}{16}$ "	Open	R406E	-	5	8	3'-0"	21	10'-8 $\frac{5}{16}$ "
20'-8 $\frac{5}{16}$ "	Closed	R406E	41	-	-	-	-	-
21'-3'-1 $\frac{1}{16}$ "	Closed	R407E	42	-	-	-	-	-

⑤ Tolerance when removable deck forming is used is $+ \frac{1}{2}" - \frac{1}{4}"$. Haunch forming is required and shall be adjusted to maintain slab thickness tolerance.

No Scale

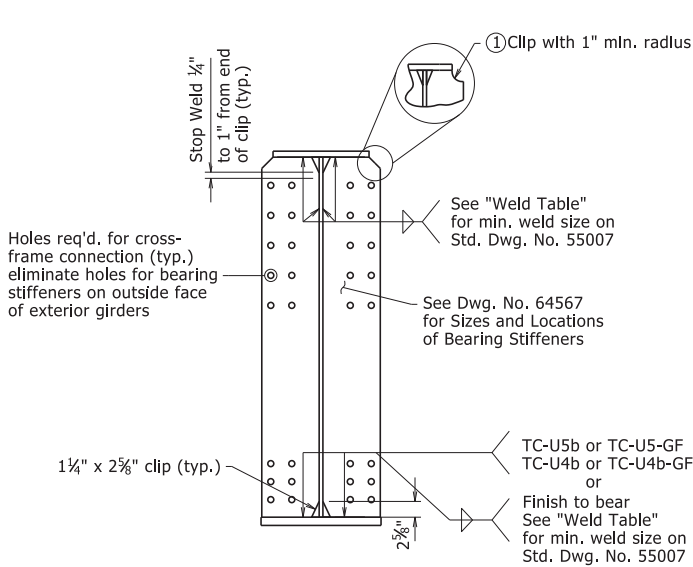
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTM	DATE: 2/22/2021	FILENAME: bbr7615_s1.dgn
CHECKED BY: BHS	DATE: 11/18/2021	SCALE: As Shown
DESIGNED BY: CTM	DATE: 1/2021	
BRIDGE NO. 04948	DRAWING NO. 64564	



PRINT DATE: 9/16/2022

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.		BR7615	32	55
① 04948 - 310' UNIT - 64565								

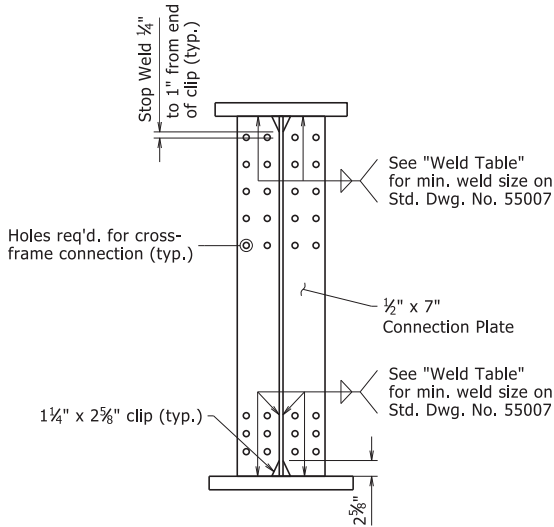


BEARING STIFFENER DETAIL

No Scale

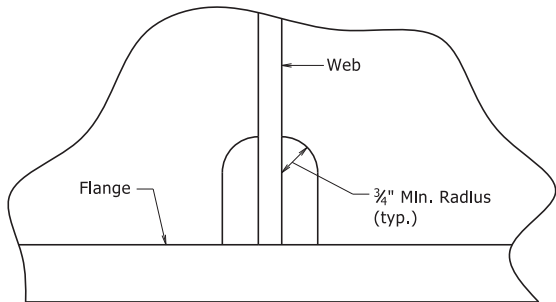
① If permanent steel bridge deck forms are used, the Fabricator shall clip plates as necessary to accommodate the deck form supports.

NOTE: All Bearing Stiffeners shall be vertical in final position.



CONNECTION PLATE DETAIL

No Scale

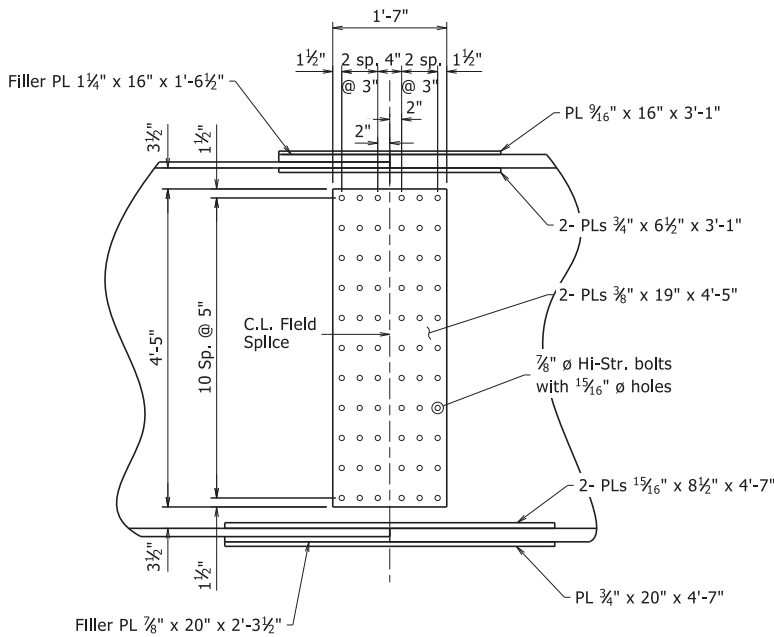


Height and width of clip shall be as noted in other details.

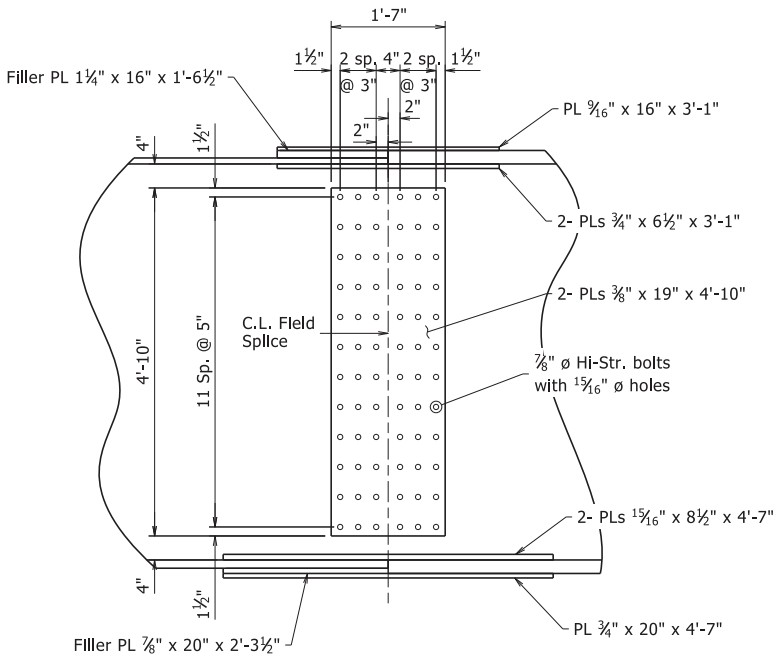
ALTERNATE CLIP DETAIL

For Bearing Stiffeners and Connection Plates

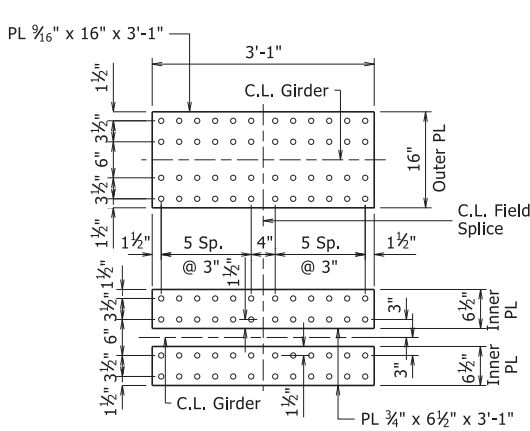
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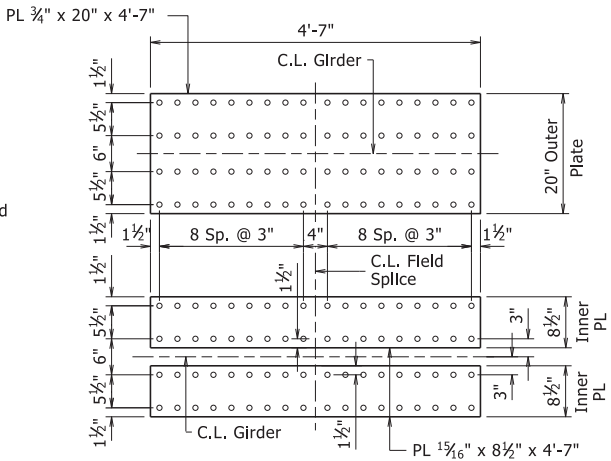
WEB SPLICE GIRDERS 1-3



WEB SPLICE GIRDER 4



TOP FLANGE SPLICE



BOTTOM FLANGE SPLICE

FIELD SPLICE DETAILS

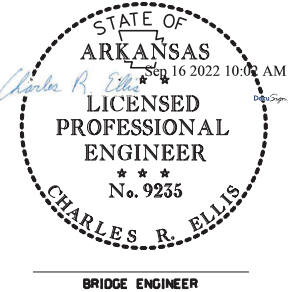
$\frac{3}{4}$ " = 1'-0"

All field splice bolts shall be $\frac{7}{8}$ " $\emptyset$ Hi-Str. bolts.

All holes for splice bolts 1 1/16" $\emptyset$

All field splice plates shall be ASTM A709 Gr. 50W

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

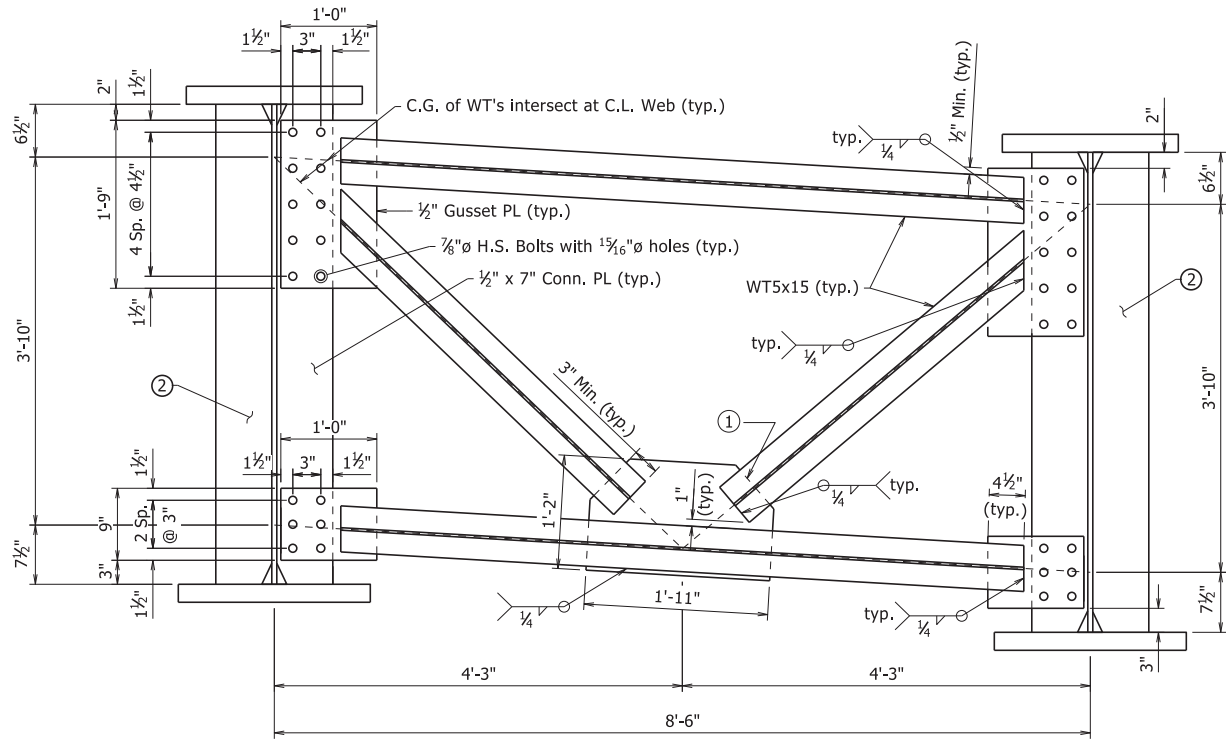


SHEET 2 OF 8
DETAILS OF 310'-0"
CONTINUOUS PLATE GIRDER UNITS

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

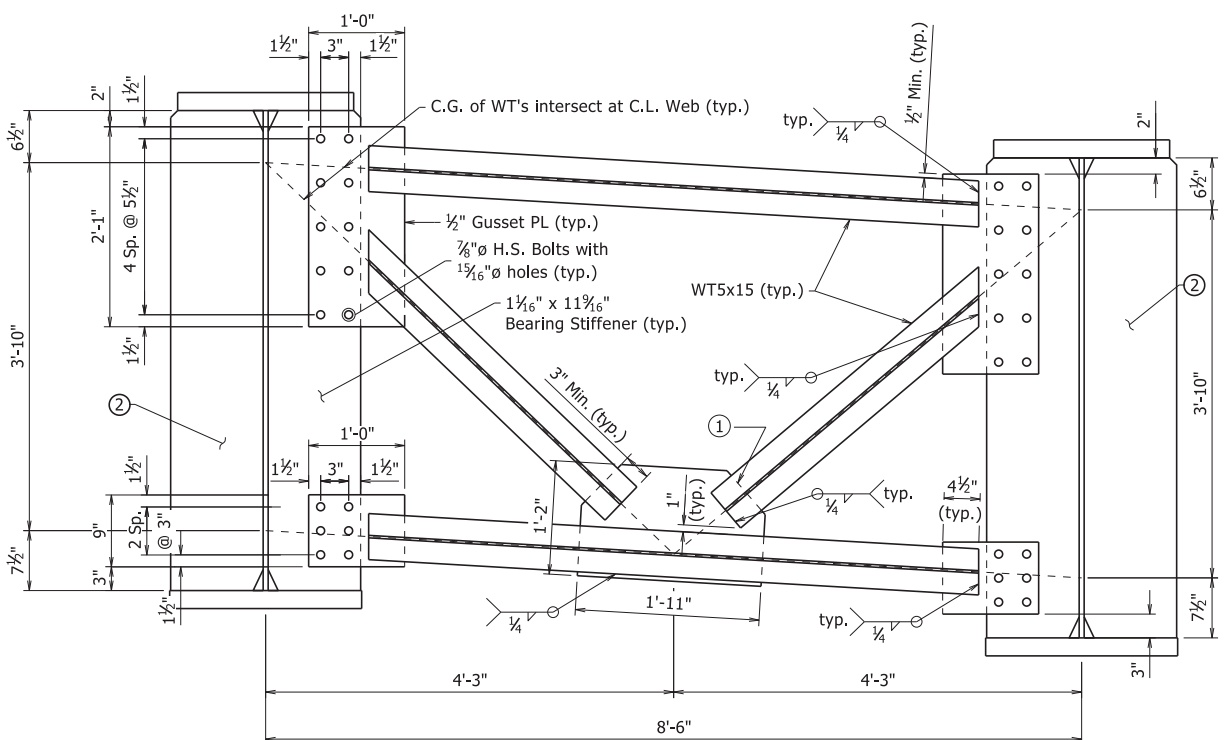
DRAWN BY: CTM DATE: 2/22/2021 FILENAME: bbr7615_s1.dgn
CHECKED BY: BHS DATE: 11/18/2021 SCALE: As Shown
DESIGNED BY: CTM DATE: 1/2021
BRIDGE NO. 04948 DRAWING NO. 64565

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.		BR7615	34	55
1 04948 - 310' UNIT - 64566A								



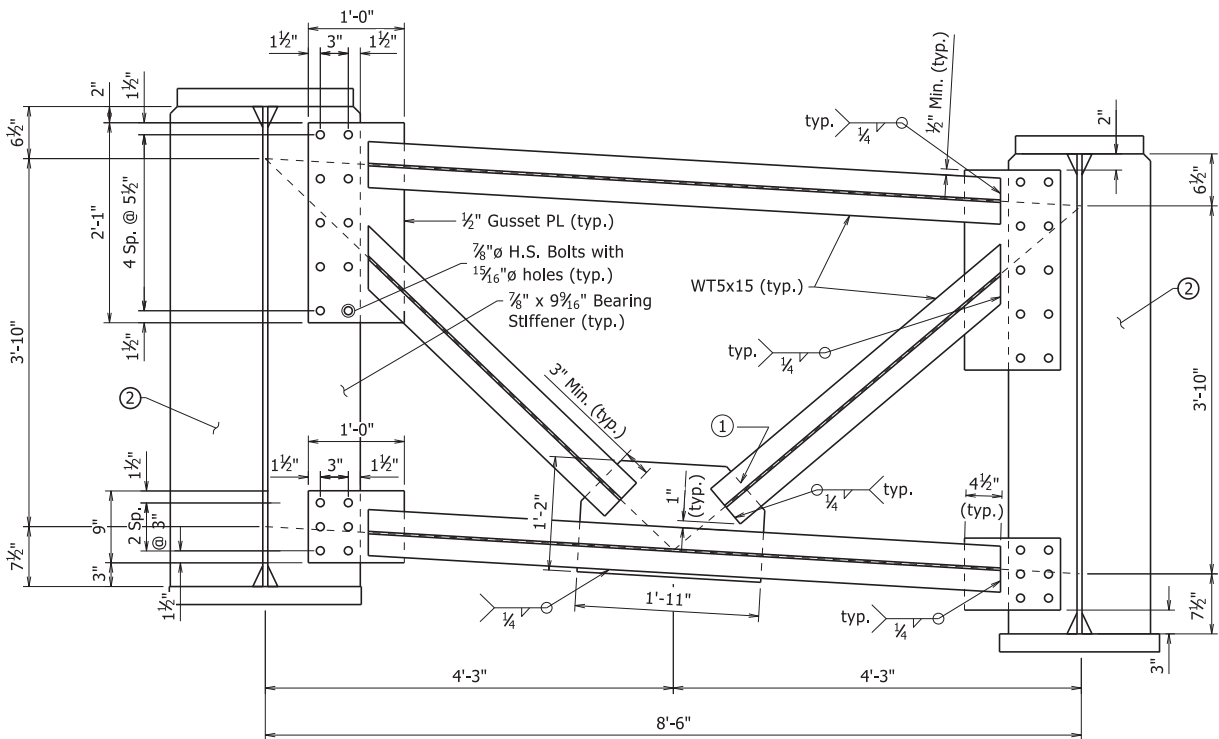
DETAILS OF CROSS-FRAMES AT CONNECTION PLATES

BAYS 1 AND 2
BAY 2 SHOWN, BAY 1 SIMILAR
LOOKING AHEAD
1" = 1'-0"



DETAILS OF CROSS-FRAMES AT BENTS 2 & 4

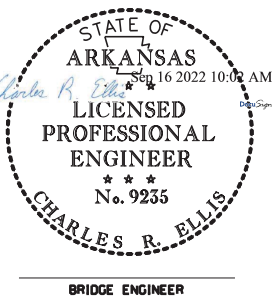
BAYS 1 AND 2
BAY 2 SHOWN, BAY 1 SIMILAR
LOOKING AHEAD
1" = 1'-0"



DETAILS OF CROSS-FRAMES AT BENTS 1, 3, & 5

BAYS 1 AND 2
BAY 2 SHOWN, BAY 1 SIMILAR
LOOKING AHEAD
1" = 1'-0"

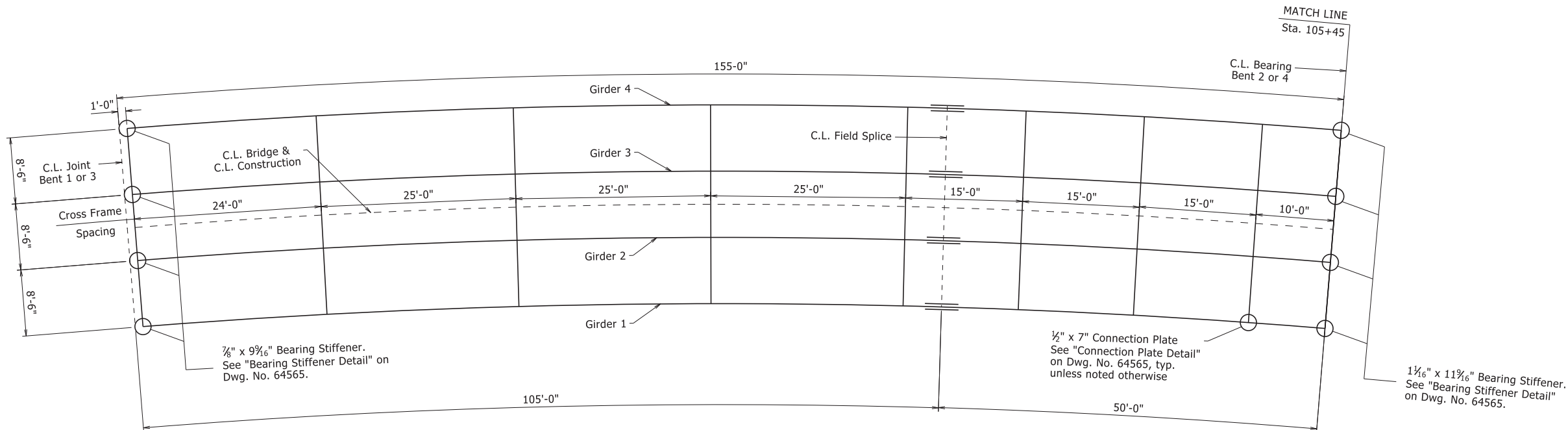
- 1 Clip gusset plate perpendicular to WT 5 x 15 diagonal (typ.)
- 2 Holes in plate/stiffener not shown for clarity.



SHEET 4 OF 8
DETAILS OF 310'-0"
CONTINUOUS PLATE GIRDER UNITS

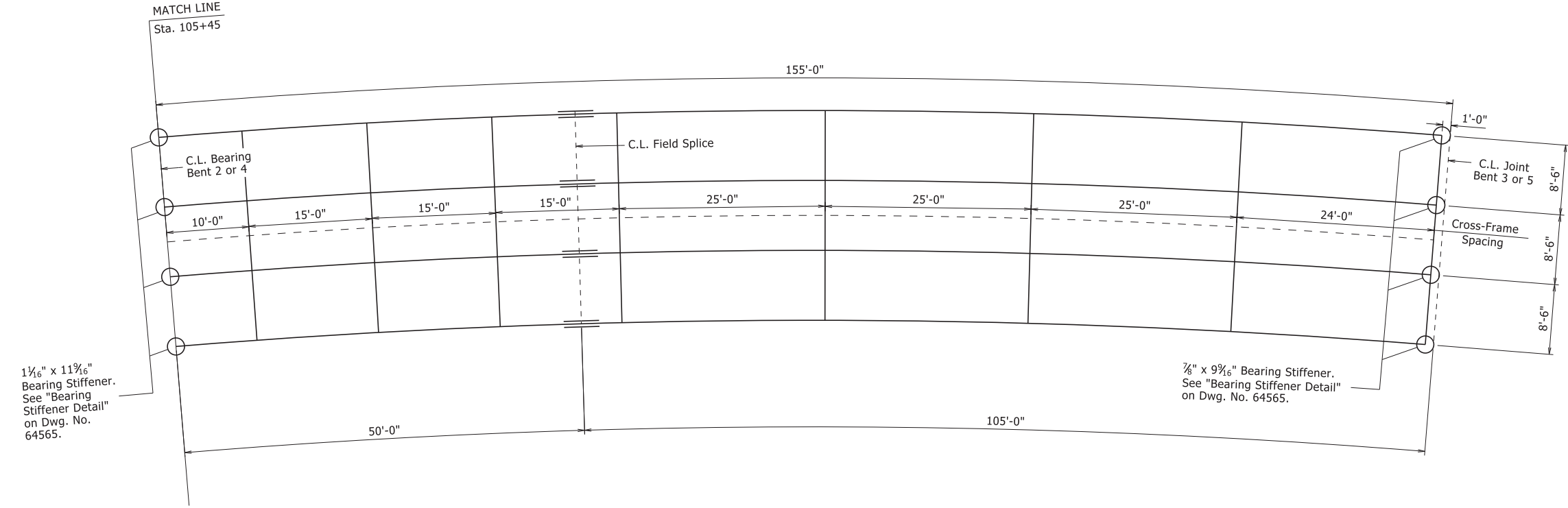
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.
DRAWN BY: CTM DATE: 2/22/2021 FILENAME: bbr7615_s1.dgn
CHECKED BY: BHS DATE: 11/18/2021 SCALE: As Shown
DESIGNED BY: CTM DATE: 1/2021
BRIDGE NO. 04948 DRAWING NO. 64566A

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.		BR7615	35	55
04948 - 310' UNIT - 64567								



FRAMING PLAN

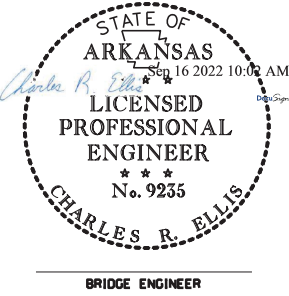
1/8" = 1'-0"



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

Girders are curved and concentric to C.L. Construction. Cross-frames are on radial lines. All longitudinal dimensions are measured along C.L. Construction. C.L. Construction is on a 6°00'00" curve right.

The erection of the structural steel shall be performed according to a plan permitting the steel to be erected plumb with bolts tightened while the steel is as close as possible to the steel dead load condition.

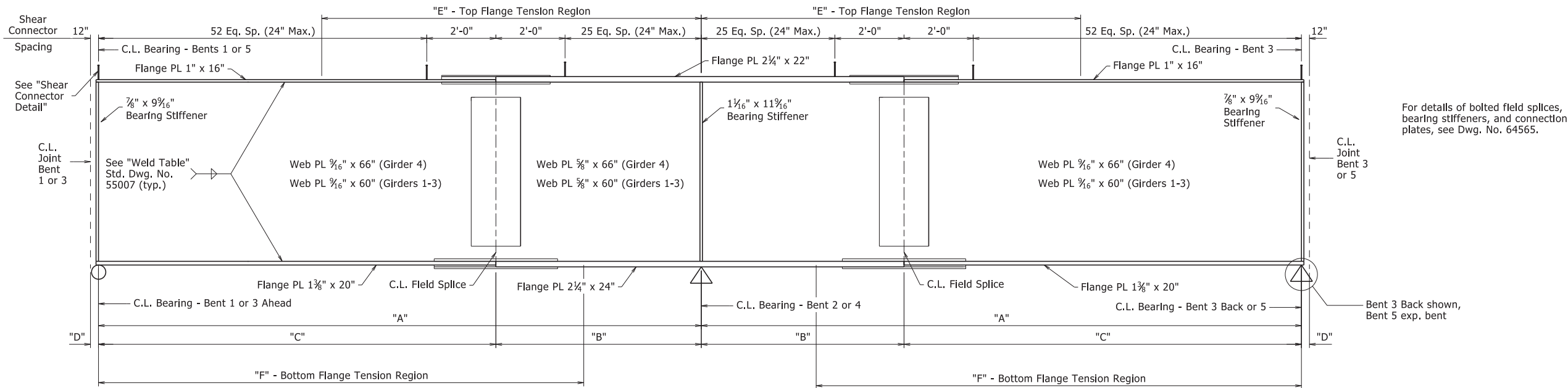


SHEET 5 OF 8
DETAILS OF 310'-0"
CONTINUOUS PLATE GIRDER UNITS

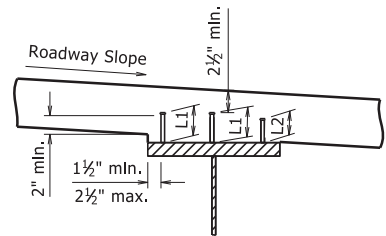
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTM DATE: 2/22/2021 FILENAME: bbr7615_s1.dgn
CHECKED BY: BHS DATE: 11/18/2021 SCALE: As Shown
DESIGNED BY: CTM DATE: 1/2021
BRIDGE NO. 04948 DRAWING NO. 64567

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.		BR7615	36	55
104948 - 310' UNIT - 64567A								



GIRDER ELEVATION
No Scale



SHEAR CONNECTOR DETAIL
Looking Ahead
No Scale

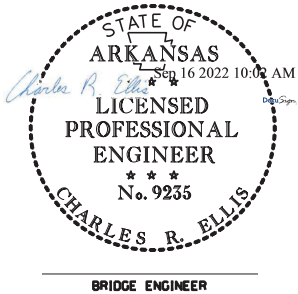
All shear connectors shall be 7/8" ϕ and automatically end welded to the beam or girder flange in accordance with the recommendations of the Manufacturer.

SHEAR CONNECTOR VARIABLES

Top Flange Thickness			
1"		2.25"	
L1	L2	L1	L2
6"	6"	5"	4"

TABLE OF VARIABLES

Girder No.	"A"	"B"	"C"	"D"	"E"	"F"
1	151'-11 5/16"	49'-4"	102'-7 5/16"	11'-1 3/16"	69'-0"	121'-0"
2	153'-3 3/4"	49'-9 9/16"	103'-6 7/16"	11'-1 3/16"	69'-0"	121'-0"
3	154'-8 1/4"	50'-2 1 1/16"	104'-5 5/16"	1'-0 1/16"	72'-0"	123'-0"
4	156'-0 1 1/16"	50'-8"	105'-4 1 1/16"	1'-0 3/16"	86'-0"	123'-0"

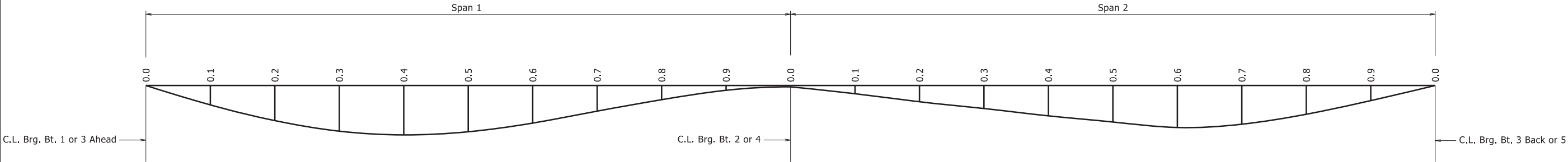


SHEET 6 OF 8
DETAILS OF 310'-0"
CONTINUOUS PLATE GIRDER UNITS

ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.
DRAWN BY: CTM DATE: 2/22/2021 FILENAME: bbr7615_s1.dgn
CHECKED BY: BHS DATE: 11/18/2021 SCALE: As Shown
DESIGNED BY: CTM DATE: 1/2021
BRIDGE NO. 04948 DRAWING NO. 64567A

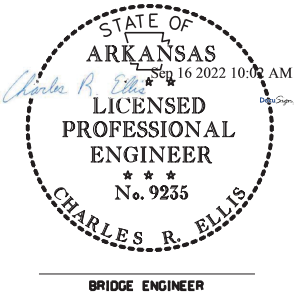
TABLE OF DEAD LOAD DEFLECTIONS (INCHES)

Span	Point of Deflection	Structural Steel				Structural Steel + Slab				Structural Steel + Slab + Rail			
		Girder 1	Girder 2	Girder 3	Girder 4	Girder 1	Girder 2	Girder 3	Girder 4	Girder 1	Girder 2	Girder 3	Girder 4
1	0.0	0	0	0	0	0	0	0	0	0	0	0	0
	0.1	0.337	0.366	0.393	0.421	1.489	1.667	1.814	1.942	1.598	1.786	1.941	2.078
	0.2	0.615	0.669	0.717	0.767	2.722	3.049	3.317	3.555	2.922	3.267	3.550	3.804
	0.3	0.792	0.861	0.918	0.979	3.513	3.916	4.270	4.572	3.772	4.219	4.572	4.894
	0.4	0.857	0.926	0.986	1.045	3.809	4.250	4.612	4.925	4.091	4.556	4.939	5.273
	0.5	0.796	0.855	0.906	0.954	3.547	3.950	4.279	4.555	3.814	4.239	4.586	4.881
	0.6	0.642	0.686	0.724	0.755	2.867	3.135	3.447	3.649	3.087	3.422	3.698	3.913
	0.7	0.437	0.464	0.487	0.503	1.954	2.154	2.338	2.462	2.106	2.327	2.510	2.642
	0.8	0.232	0.245	0.257	0.261	1.054	1.159	1.270	1.329	1.136	1.256	1.361	1.424
	0.9	0.069	0.072	0.075	0.075	0.337	0.379	0.419	0.441	0.361	0.405	0.446	0.469
2	0.0	0	0	0	0	0	0	0	0	0	0	0	0
	0.1	0.068	0.071	0.075	0.075	0.194	0.131	0.167	0.134	0.218	0.206	0.194	0.161
	0.2	0.231	0.244	0.257	0.262	0.772	0.776	0.768	0.719	0.854	0.862	0.859	0.813
	0.3	0.435	0.463	0.487	0.504	1.538	1.531	1.590	1.553	1.690	1.744	1.762	1.733
	0.4	0.640	0.684	0.723	0.756	2.336	2.430	2.475	2.467	2.555	2.666	2.726	2.731
	0.5	0.794	0.854	0.906	0.957	2.972	3.114	3.207	3.248	3.239	3.413	3.514	3.573
	0.6	0.854	0.924	0.986	1.047	3.260	3.457	3.579	3.657	3.542	3.763	3.905	4.004
	0.7	0.789	0.860	0.918	0.980	3.053	3.257	3.393	3.488	3.312	3.549	3.695	3.810
	0.8	0.613	0.668	0.717	0.767	2.394	2.558	2.683	2.767	2.594	2.786	2.916	3.016
	0.9	0.336	0.366	0.393	0.421	1.319	1.416	1.482	1.529	1.428	1.535	1.609	1.665
	0.0	0	0	0	0	0	0	0	0	0	0	0	0



DEAD LOAD DEFLECTION DIAGRAM

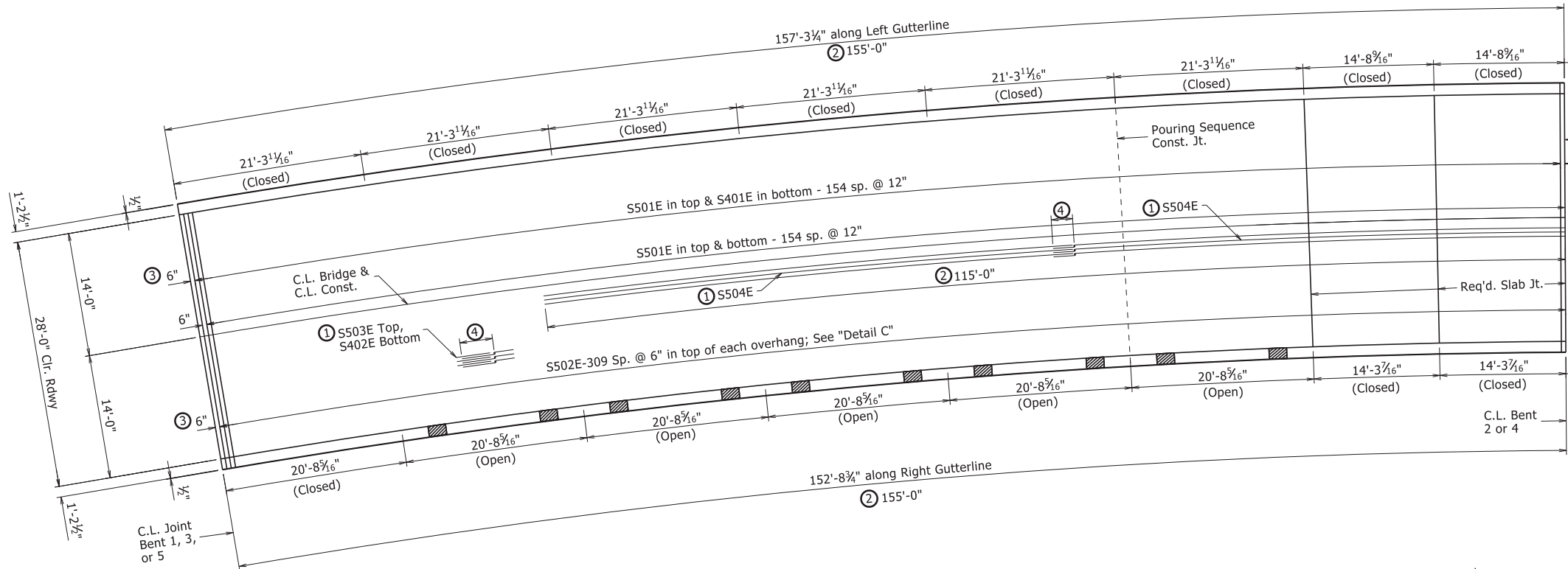
Camber for Dead Load Deflection plus vertical curve +/- 1/4" tolerance. Deflections shown are along C.L. Girder from the plane perpendicular to the web extending from C.L. Bearing to C.L. Bearing. Negative sign (-) indicates point above plane. Vertical curve corrections are not included.



SHEET 7 OF 8
DETAILS OF 310'-0"
CONTINUOUS PLATE GIRDER UNITS

ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.
DRAWN BY: CTM DATE: 2/22/2021 FILENAME: bbr7615_s1.dgn
CHECKED BY: BHS DATE: 11/18/2021 SCALE: As Shown
DESIGNED BY: CTM DATE: 1/2021
BRIDGE NO. 04948 DRAWING NO. 64568

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.		BR7615	38	55
① 04948 - 310' UNIT - 64569								



POURING SEQUENCE NOTES

Pours with the same number may be placed simultaneously or separately. All pours (1) must be placed before pours (2) can be placed. All pours (2) must be placed before pours (3) 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 the end of a pour and the start of an adjacent pour. 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. No deviations from the pouring sequence shown are allowed.

Concrete 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.

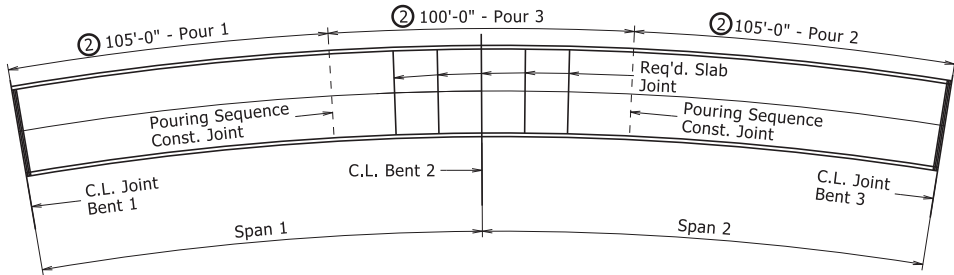
Required slab joints and pouring sequence construction joints shall align with open joints at the front face of the rail.

HALF-REINFORCING PLAN

1/8" = 1'-0"

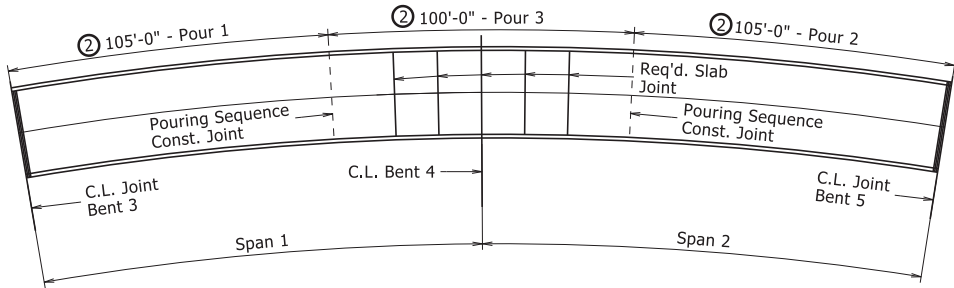
C.L. Bridge is in a 6°00'00" Horizontal Curve to the Right. All longitudinal lines and longitudinal reinforcing steel shall be placed on curves concentric with C.L. Bridge. All transverse reinforcing steel shall be placed on radial lines and shall be measured along C.L. Bridge. Unless noted otherwise, all longitudinal dimensions are along C.L. Bridge & C.L. Construction.

See Dwg. No. 64564 for Bar List.



SLAB POURING SEQUENCE UNIT 1

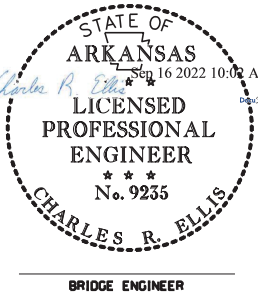
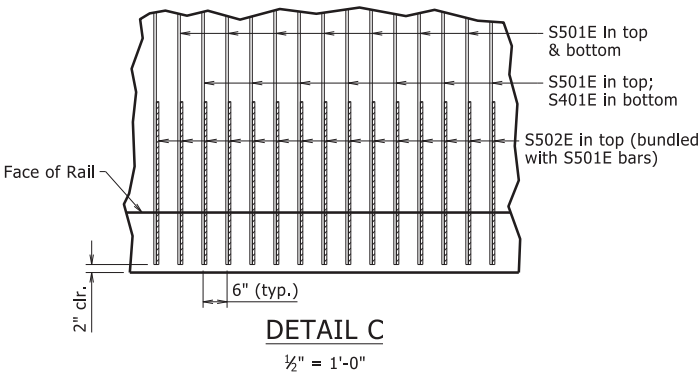
1/32" = 1'-0"



SLAB POURING SEQUENCE UNIT 2

1/32" = 1'-0"

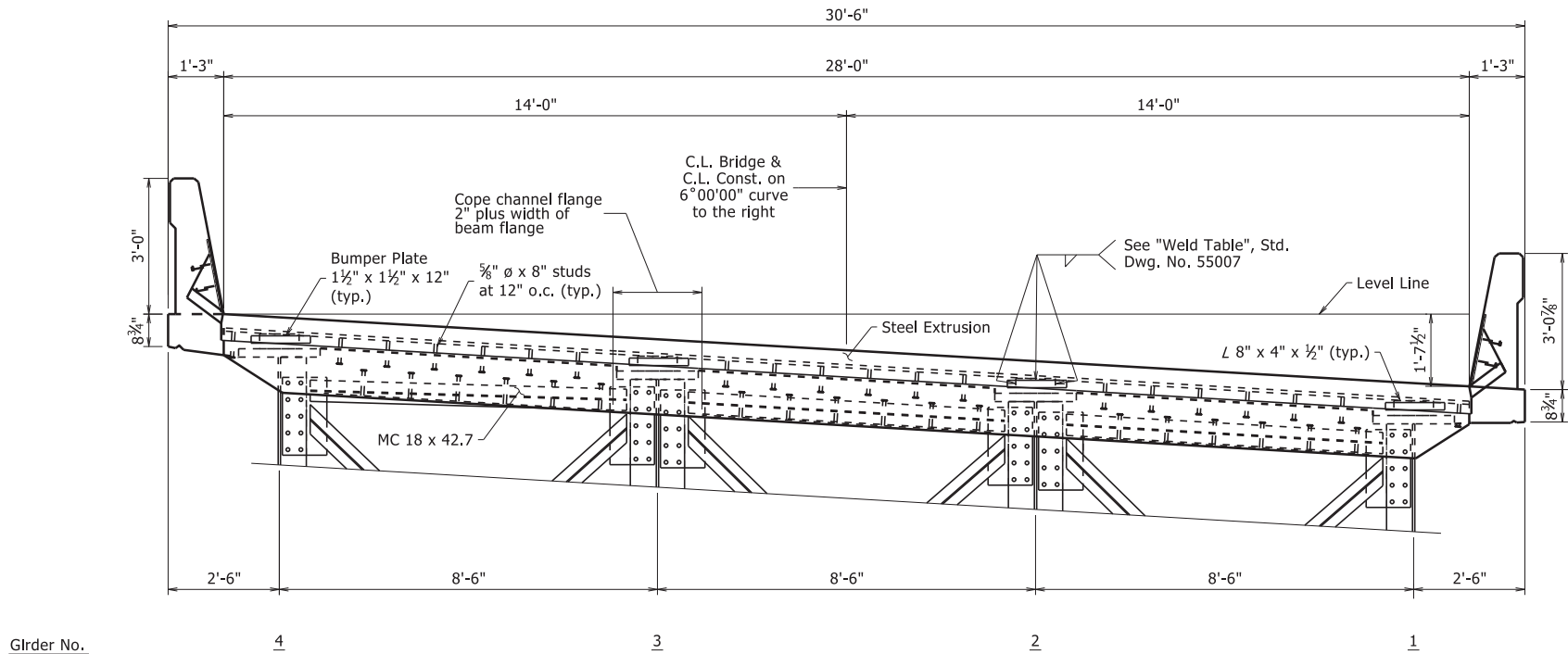
- ① Placed as shown in "Typical Roadway Section," Dwg. No. 64564
- ② Measured Along C.L. Construction
- ③ Measured to C.L. Joint
- ④ Minimum Lap for Bars:
2'-0" - Min. Lap S402E
2'-5" - Min. Lap S503E & S504E



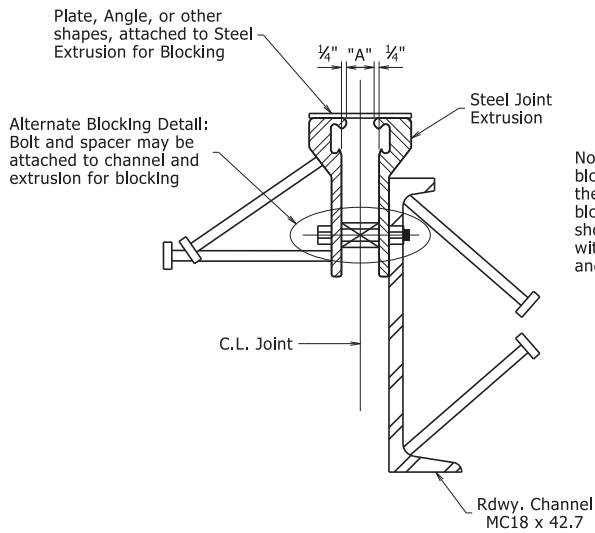
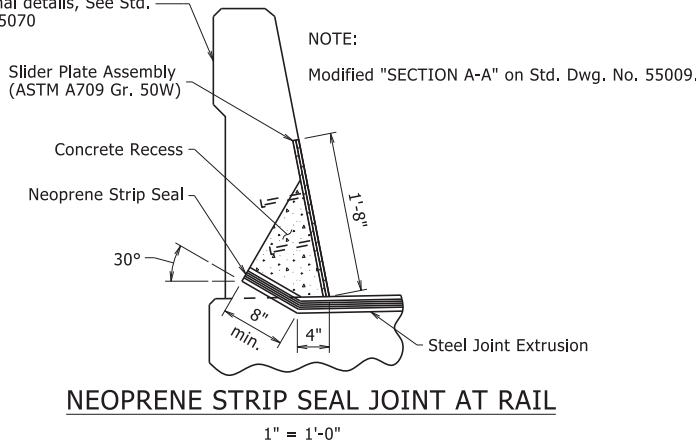
SHEET 8 OF 8
DETAILS OF 310'-0"
CONTINUOUS PLATE GIRDER UNITS

ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.
DRAWN BY: CTM DATE: 2/22/2021 FILENAME: bbr7615_s1.dgn
CHECKED BY: BHS DATE: 11/18/2021 SCALE: As Shown
DESIGNED BY: CTM DATE: 1/2021
BRIDGE NO. 04948 DRAWING NO. 64569

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.		BR7615	39	55
04948 - Joints - 64570								



Bridge Traffic Rail (Type SSTR36).
For additional details, See Std.
Dwg. No. 55070



TYPICAL ROADWAY SECTION NEAR JOINT

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

Expansion Device

Rdwy. Channel - MC 18 x 42.7
Conn. Angles 8" x 4" x 1/2"
Detail Device 1/8" high & provide 1/4" shims using 2- 1/16" & 1- 1/8" PIs

DETAILS FOR BLOCKING EXPANSION JOINT DEVICE

EXPANSION DEVICE INSTALLATION AT END BENTS:

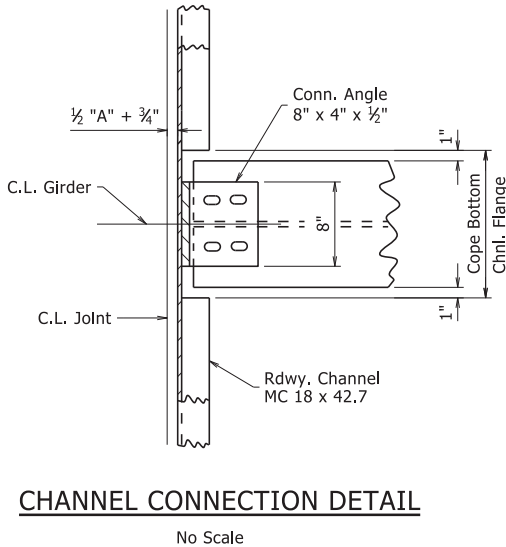
The Contractor may elect to Install the expansion device using one of the following two alternatives:

- 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 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 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.

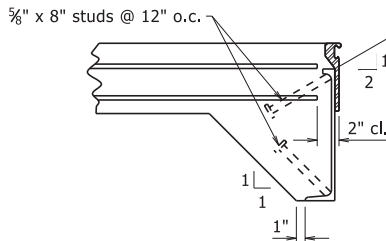
EXPANSION DEVICE INSTALLATION AT INTERMEDIATE BENTS:

After all 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 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.



CHANNEL CONNECTION DETAIL



DETAILS OF ANCHORS AND PLACEMENT OF LONGITUDINAL REINFORCING

DETAILS FOR BLOCKING EXPANSION JOINT DEVICE

No Scale

GENERAL NOTES FOR NEOPRENE STRIP SEAL JOINTS:

The steel extrusion material (D.S. Brown SSPA or approved equal), neoprene strip seal material (D.S. Brown L2-400 or approved equal), installation, and payment shall be in accordance with Section 809.

The expansion device shall provide for the movement rating(s) shown in the "TABLE OF STRIP SEAL JOINT DATA" in the plan details. The expansion joint shall be capable of sealing the deck surface and rail area to prevent moisture and other contaminants from descending through the joint.

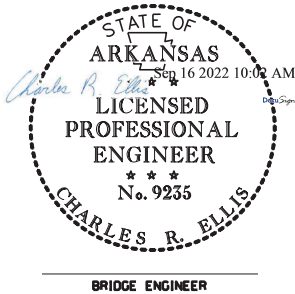
Details of proposed slider plate assembly shall be submitted to the Engineer for approval prior to the fabrication of any structural steel at the expansion device.

All structural steel shall conform to ASTM A709, Grade 50W and all exposed surfaces shall be cleaned in accordance with Subsection 807.84(e). Structural Steel shall be paid for as "Structural Steel in Plate Girder Spans (ASTM A709, Gr. 50W)

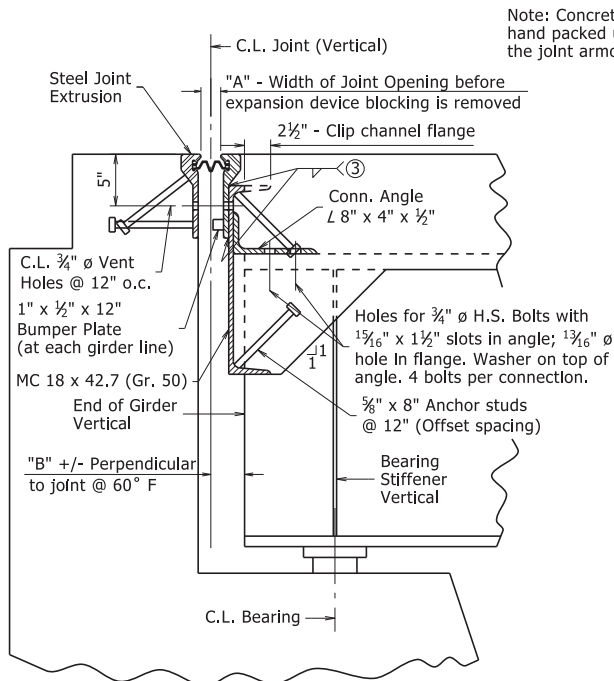
SHEET 1 OF 2 DETAILS OF EXPANSION JOINTS

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

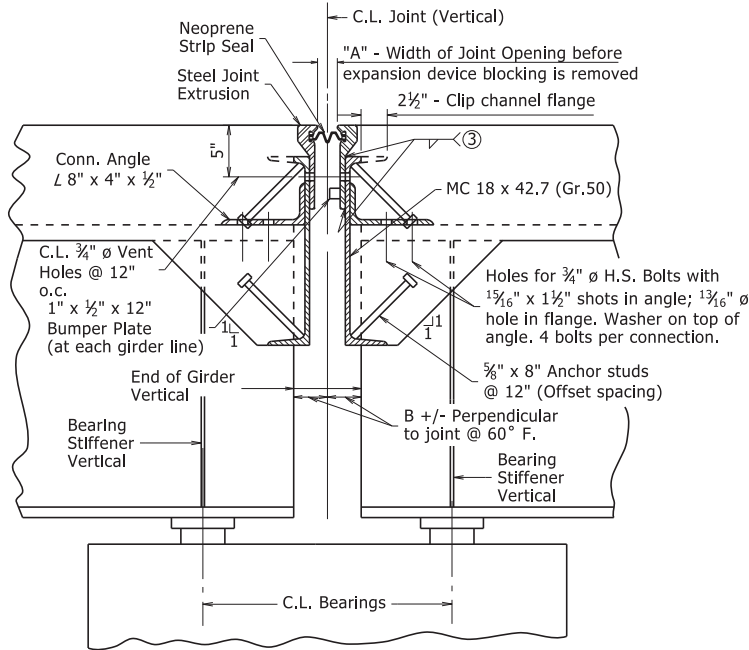
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CHECKED BY: BHS DATE: 11/18/2021 SCALE: As Shown
DESIGNED BY: CTM DATE: 1/2021
BRIDGE NO. 04948 DRAWING NO. 64570



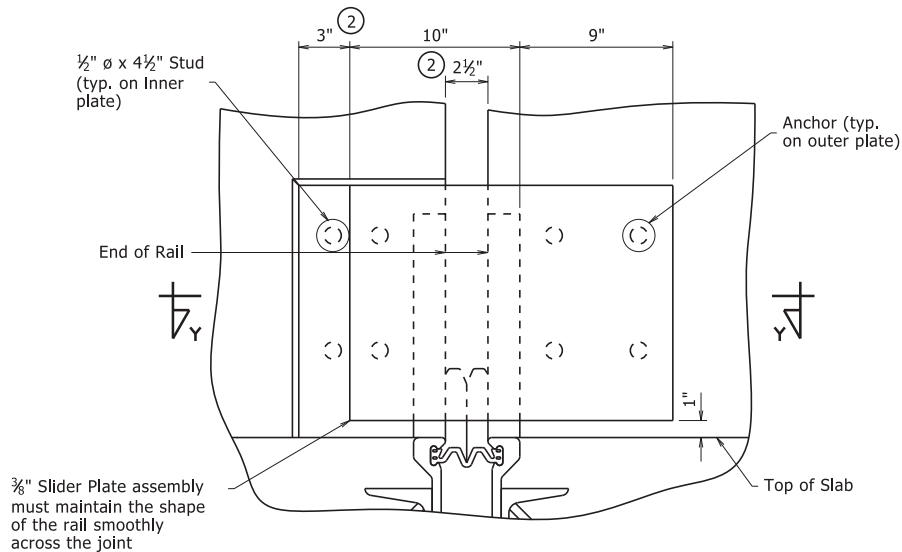
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BR7615	40	55
① 04948 - Joints - 64571								



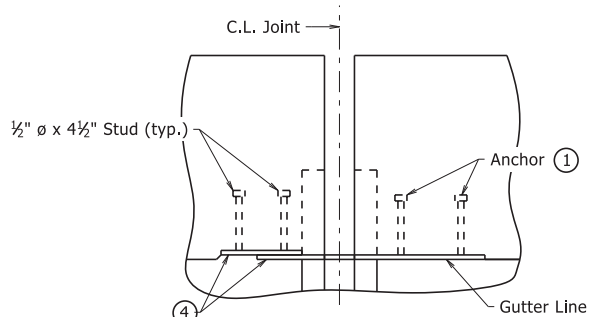
SECTION THRU JOINT
Bents 1 & 5



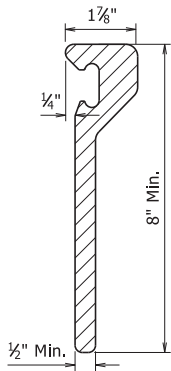
SECTION THRU JOINT
Bent 3



ELEVATION FOR SLIDER PLATE ASSEMBLY
Type SSTR36 Rail



SECTION Y-Y



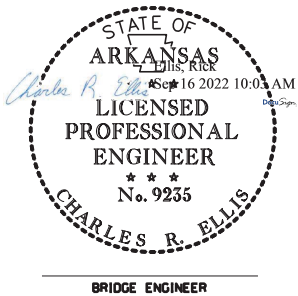
STEEL EXTRUSION

- ① The method of attachment of the cover slider plate assembly or similar device must be such that it may be removed in order to provide for future replacement of the neoprene seal.
Anchors will not be paid for directly but will be considered subsidiary to "Structural Steel in Plate Girder Spans (ASTM A709, Gr. 50W)".
- ② Dimension shown @ 60° F.
- ③ See "Weld Table", Std. Dwg. No. 55007.
- ④ Joint slider plates shall be ASTM A709, Gr. 50W and shall be paid for as "Structural Steel in Plate Girder Spans (ASTM, A709, Gr. 50W)".

TABLE OF STRIP SEAL JOINT DATA

Bent. No.	Movement Rating	"A" - Width perpendicular to joint at 24 hour average temperature of:			"B" - Width perpendicular to joint at 24 hour average temperature of:
		40° F	60° F	80° F	60° F
1	4"	2 1 3/16"	2 1/2"	2 3/16"	3 1/4"
3	4"	2 1 5/16"	2 1/2"	2 1/16"	3 1/4"
5	4"	2 3/4"	2 1/2"	2 1/4"	3 1/4"

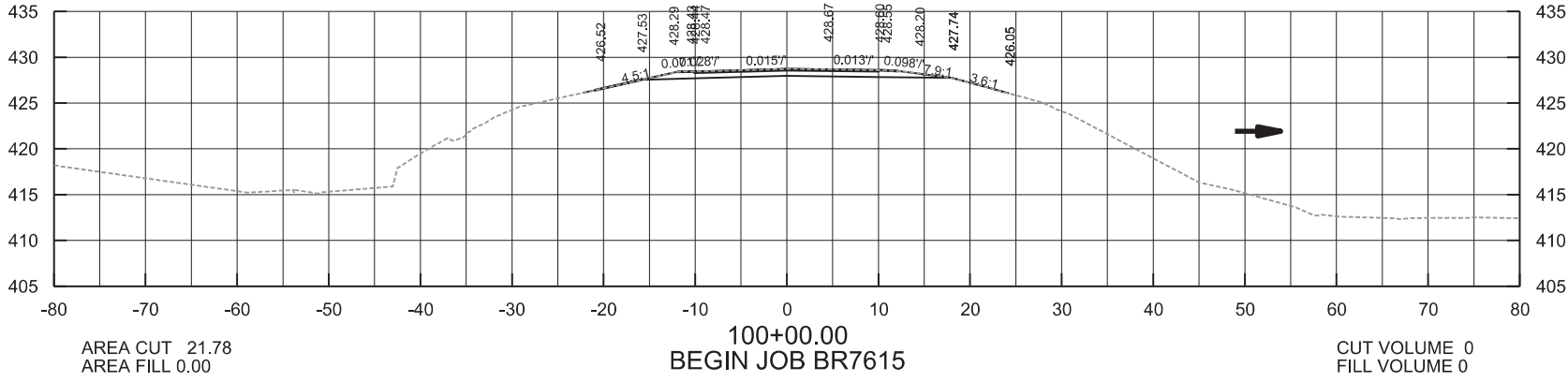
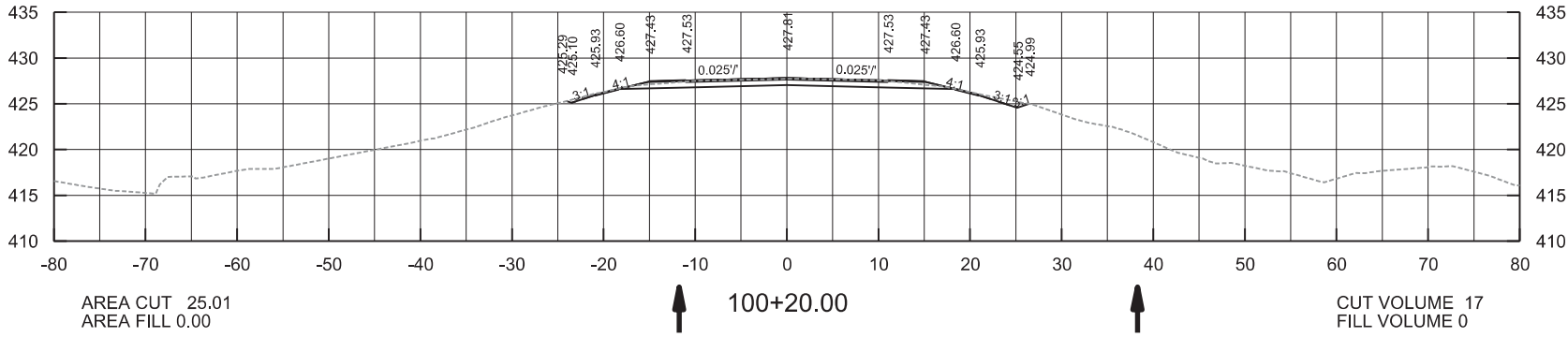
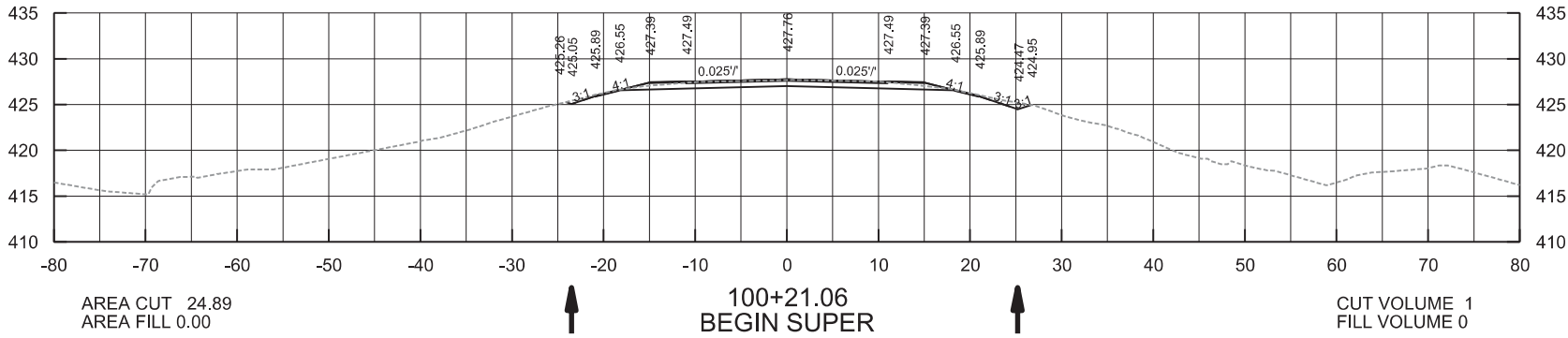
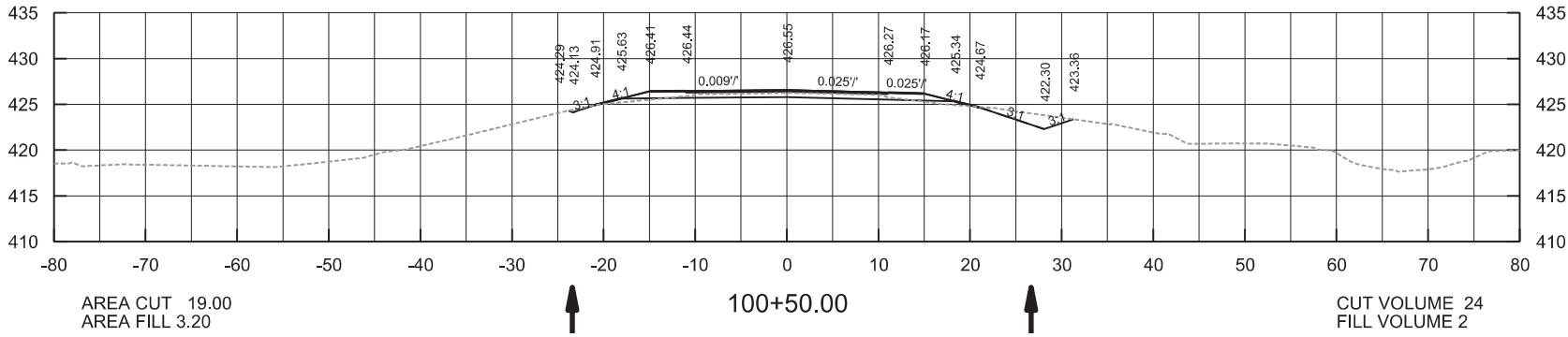
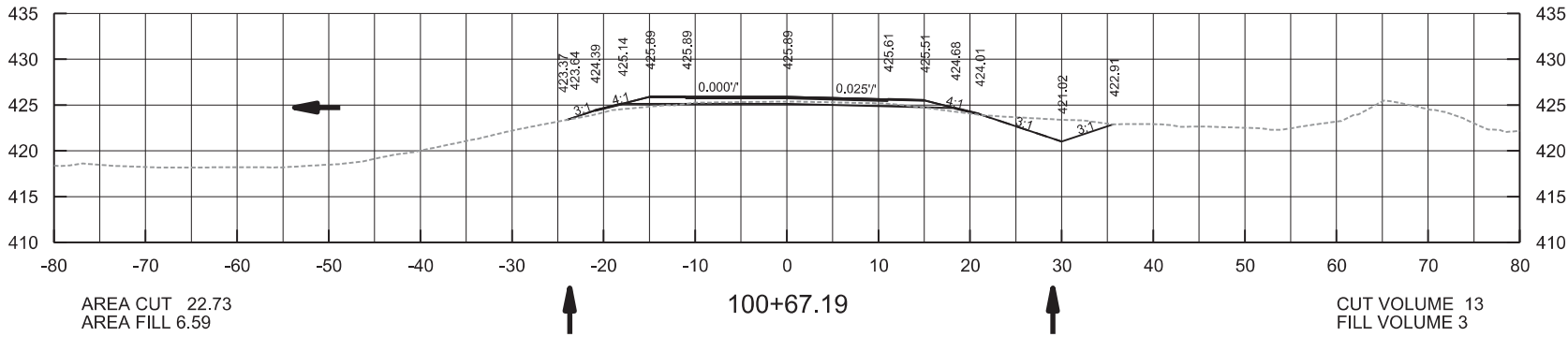
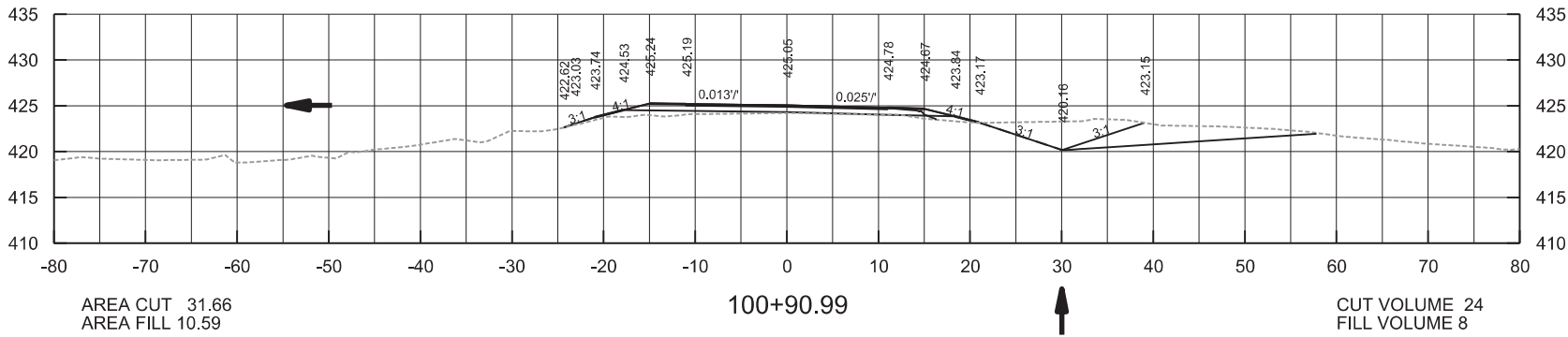
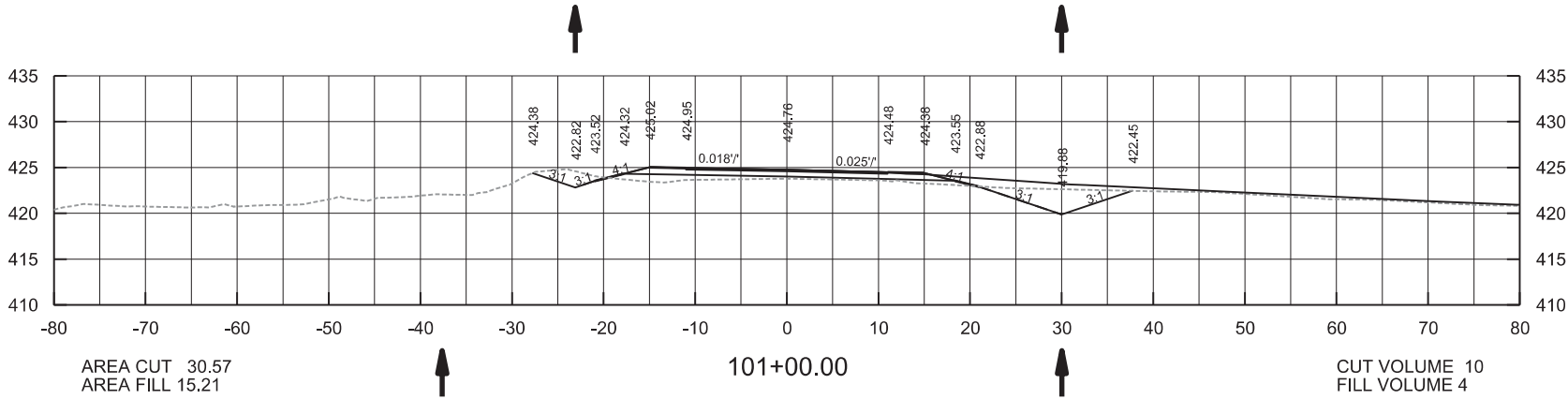
The temperature used to set the joint opening shall be the approximate average air temperature during the 24 hour period immediately before the bolts are tightened. The Engineer shall establish the temperature. Interpolation of the table may be necessary. Installation is limited to 40° F min. and 80° F max. The temperature limitations by the lubricant-adhesive manufacturer shall be observed.



BRIDGE ENGINEER

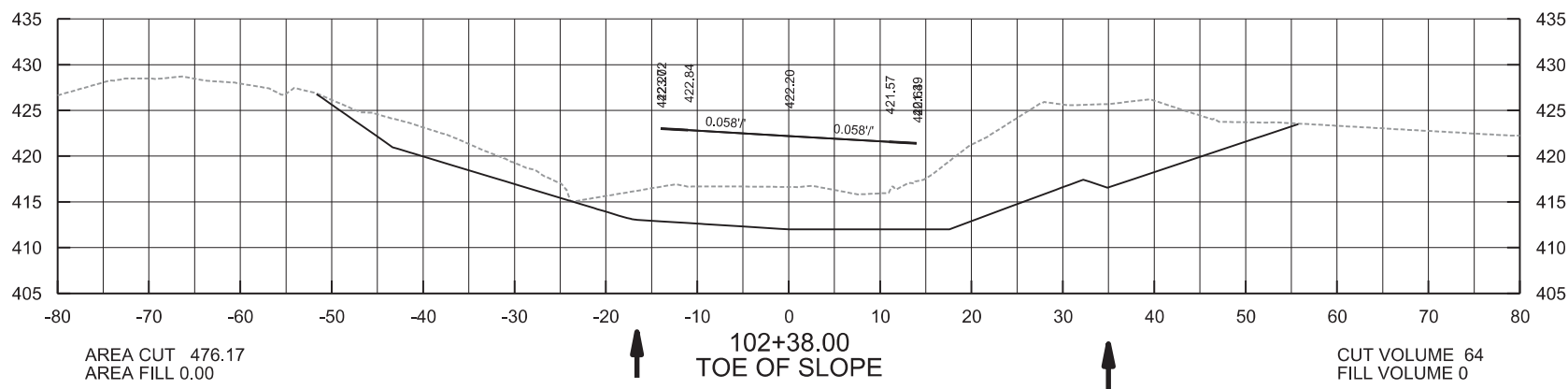
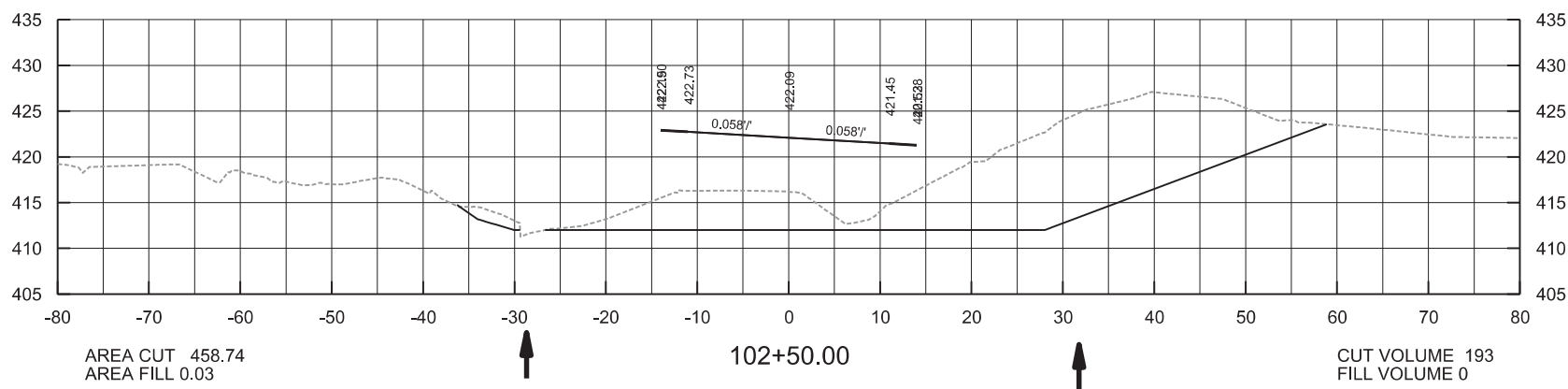
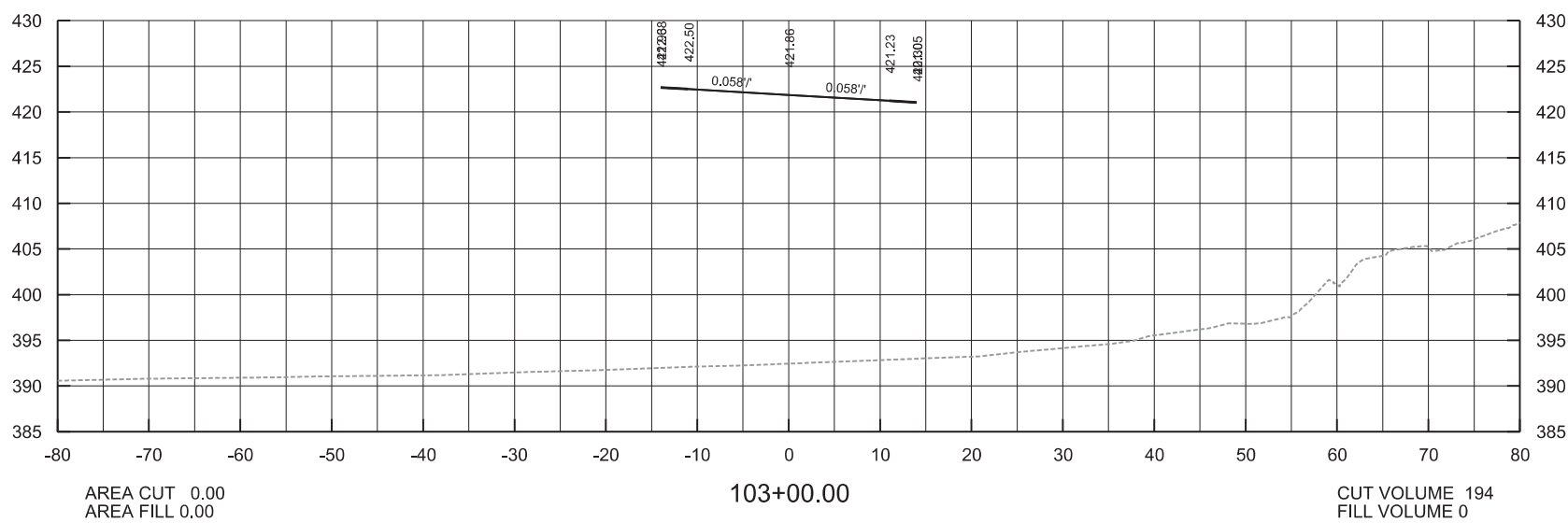
SHEET 2 OF 2
DETAILS OF EXPANSION JOINTS

ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.
DRAWN BY: CTM DATE: 2/22/2021 FILENAME: bbr7615_j1.dgn
CHECKED BY: BHS DATE: 11/18/2021 SCALE: No Scale
DESIGNED BY: CTM DATE: 1/2021
BRIDGE NO. 04948 DRAWING NO. 64571

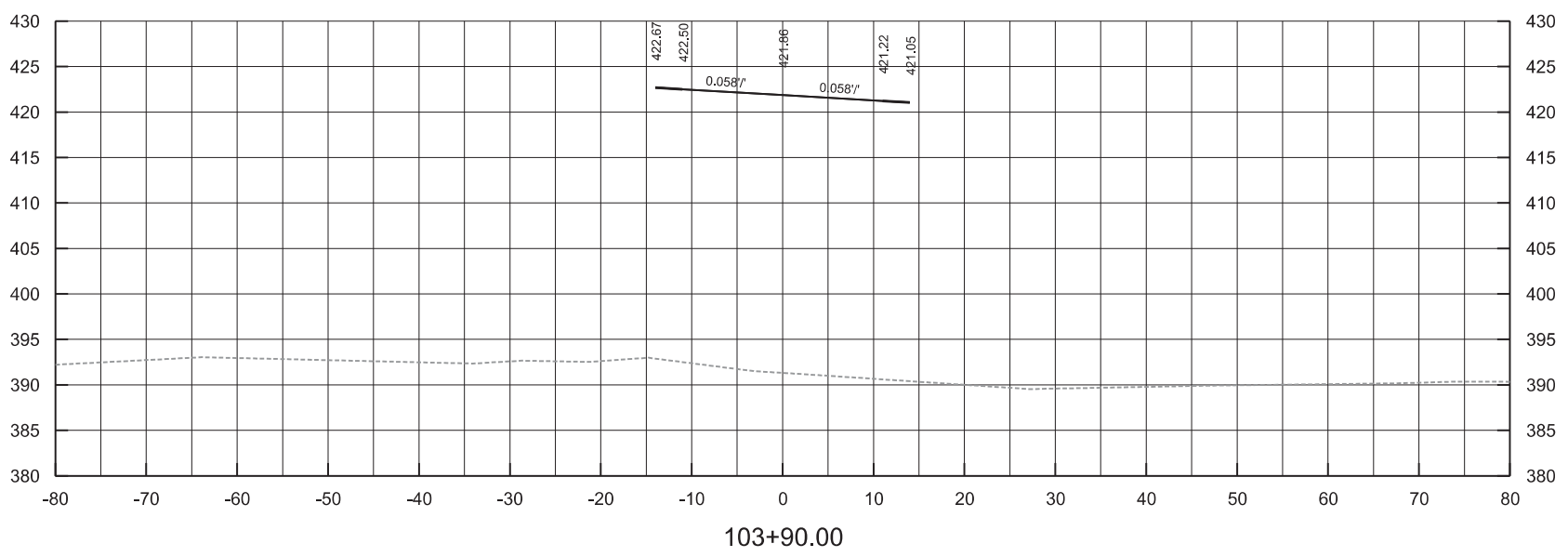
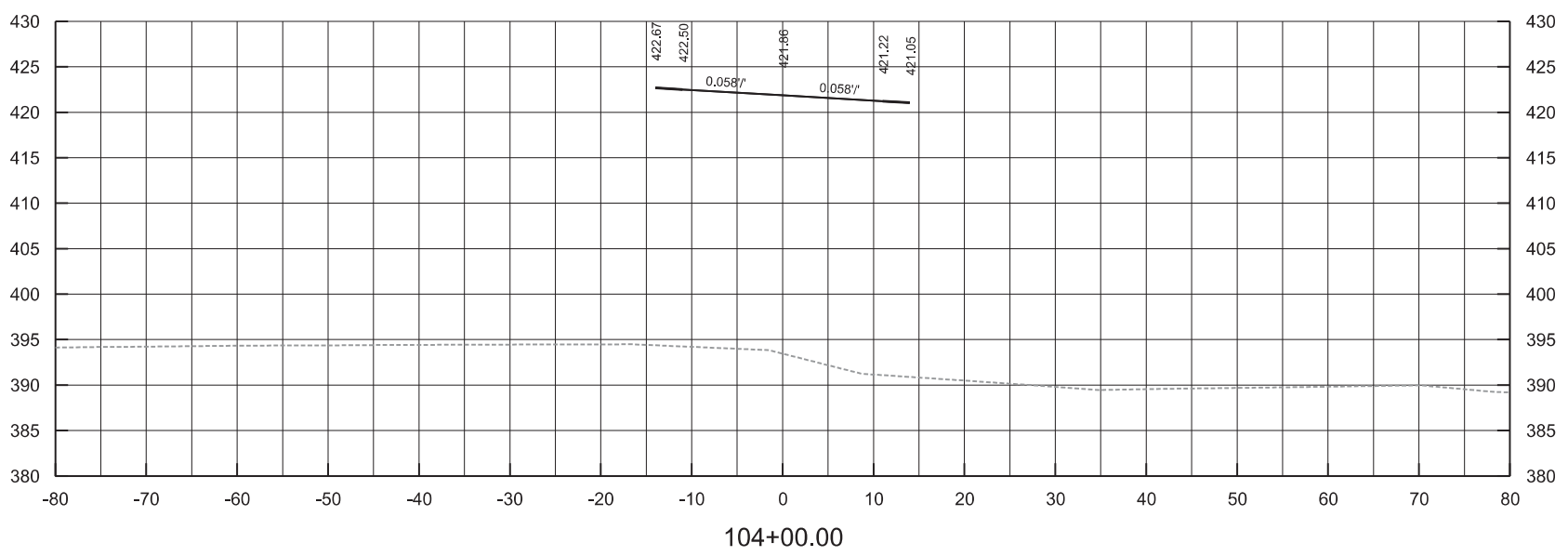
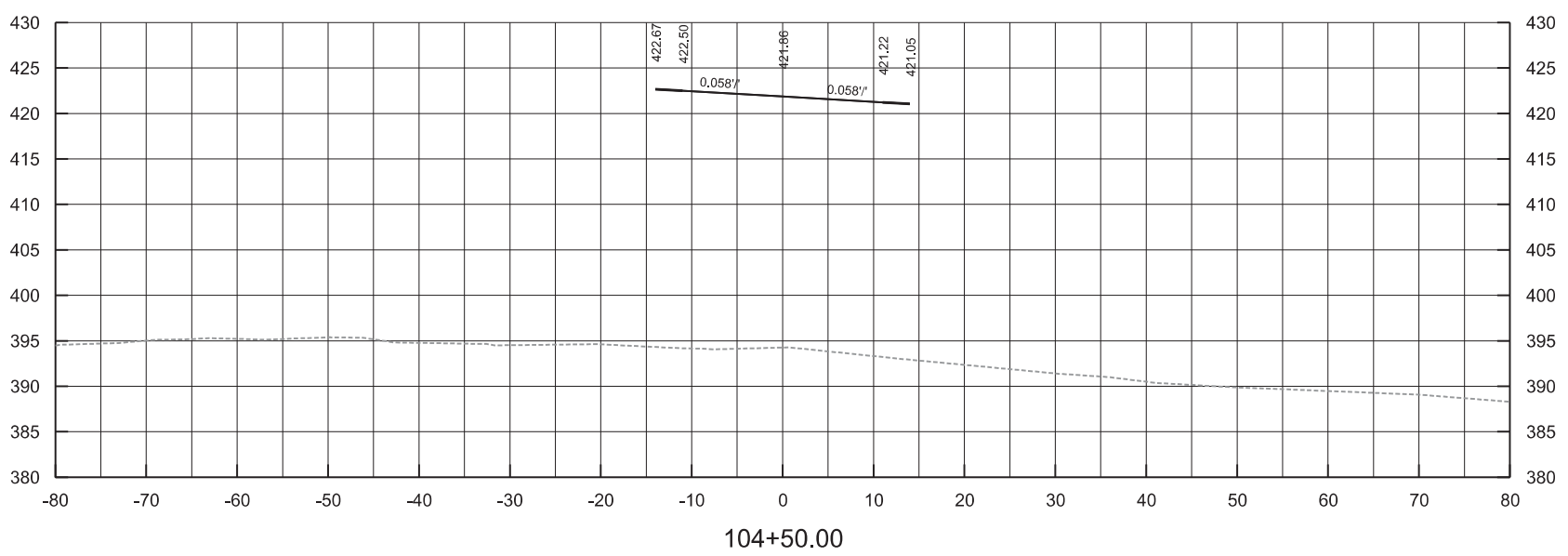
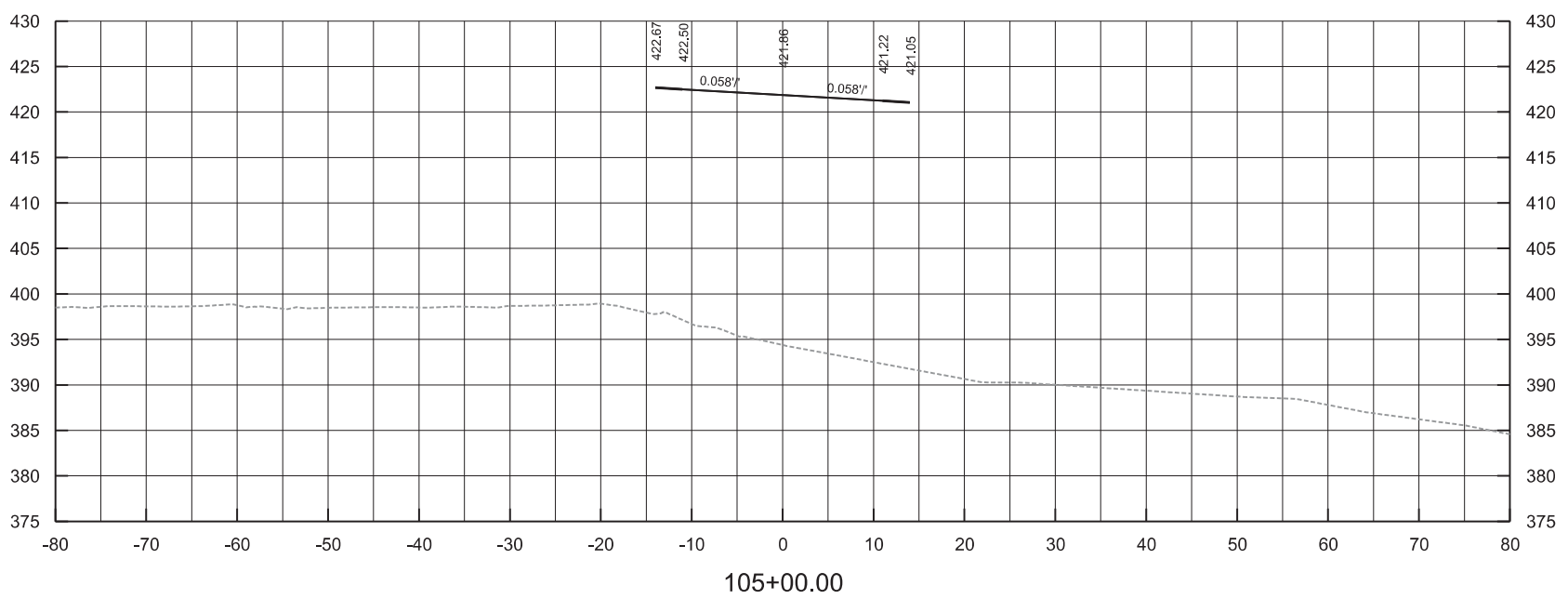


DATE	DATE	DATE	FED. NO.	STATE	FED. PROJ. NO.	SHEET	TOTAL
REVISED	FILED	FILED	6	ARK.		NO.	SHEETS
			JOB NO.	BR7615		41	55

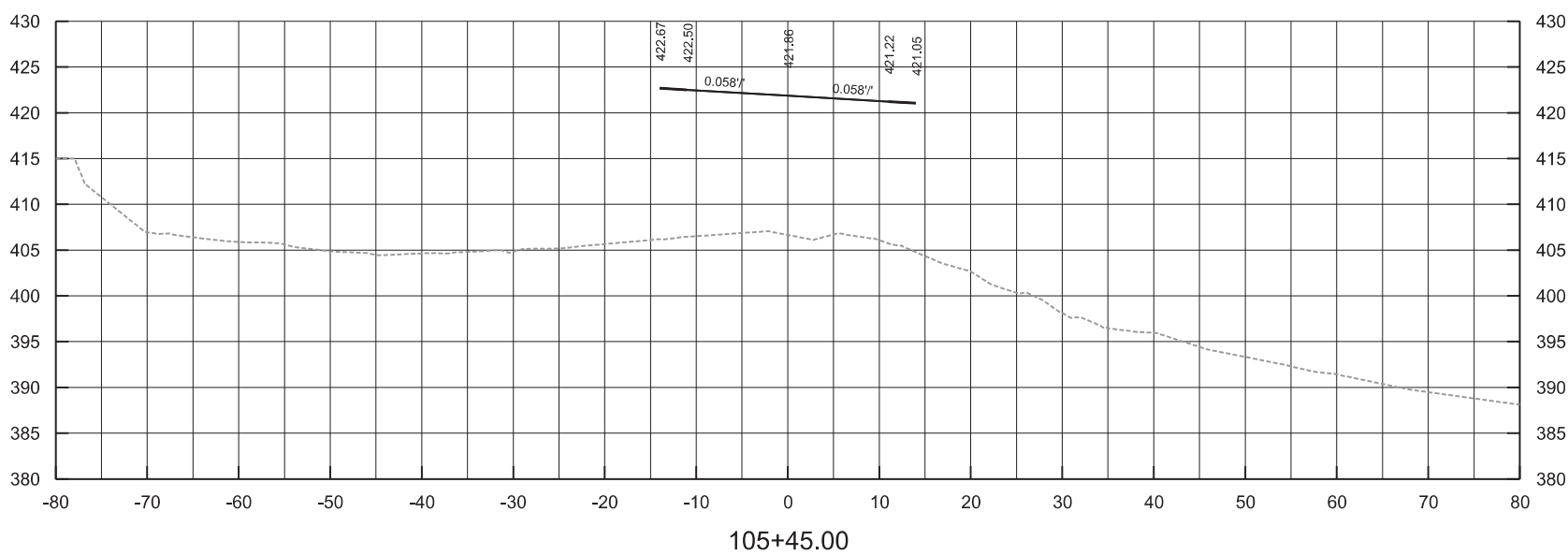
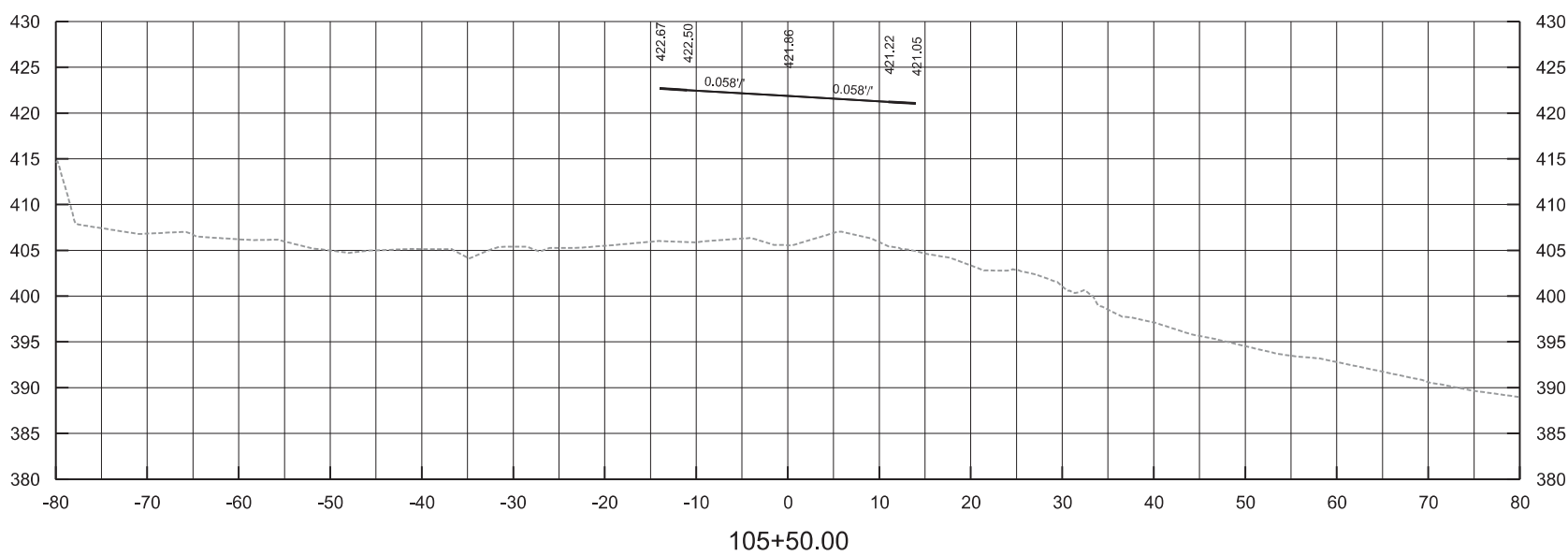
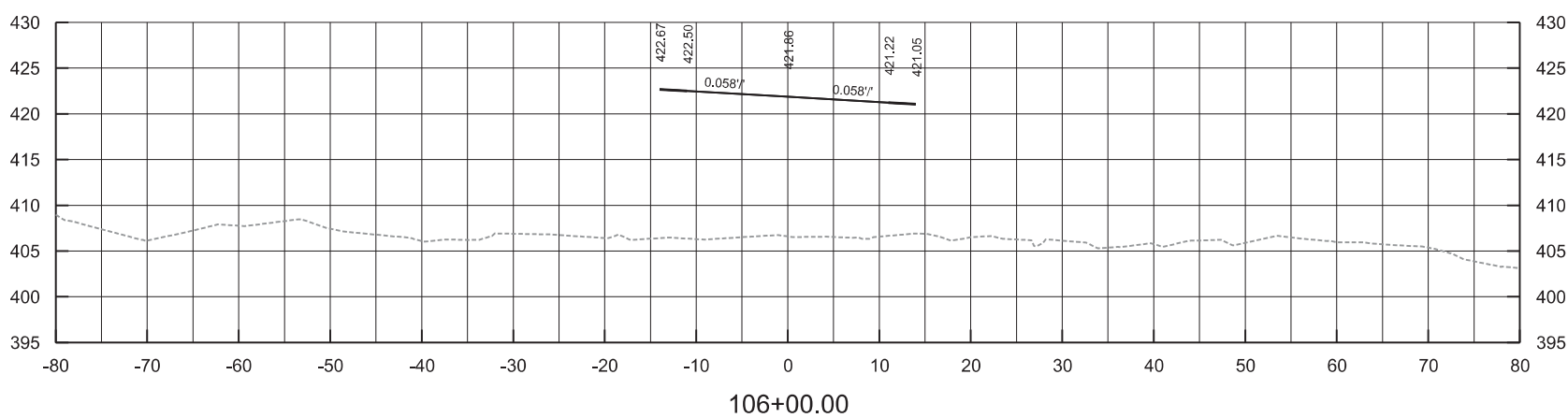
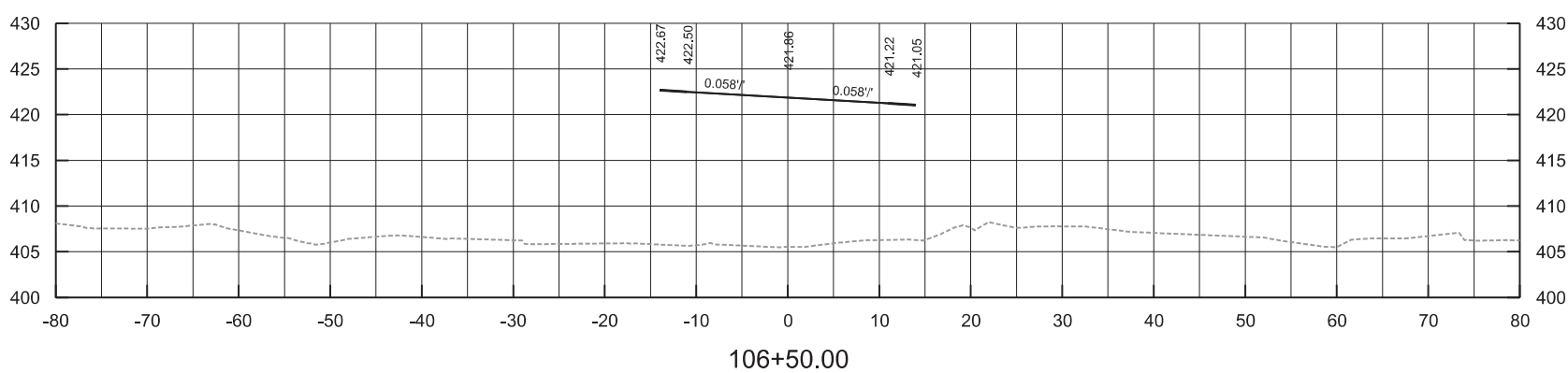
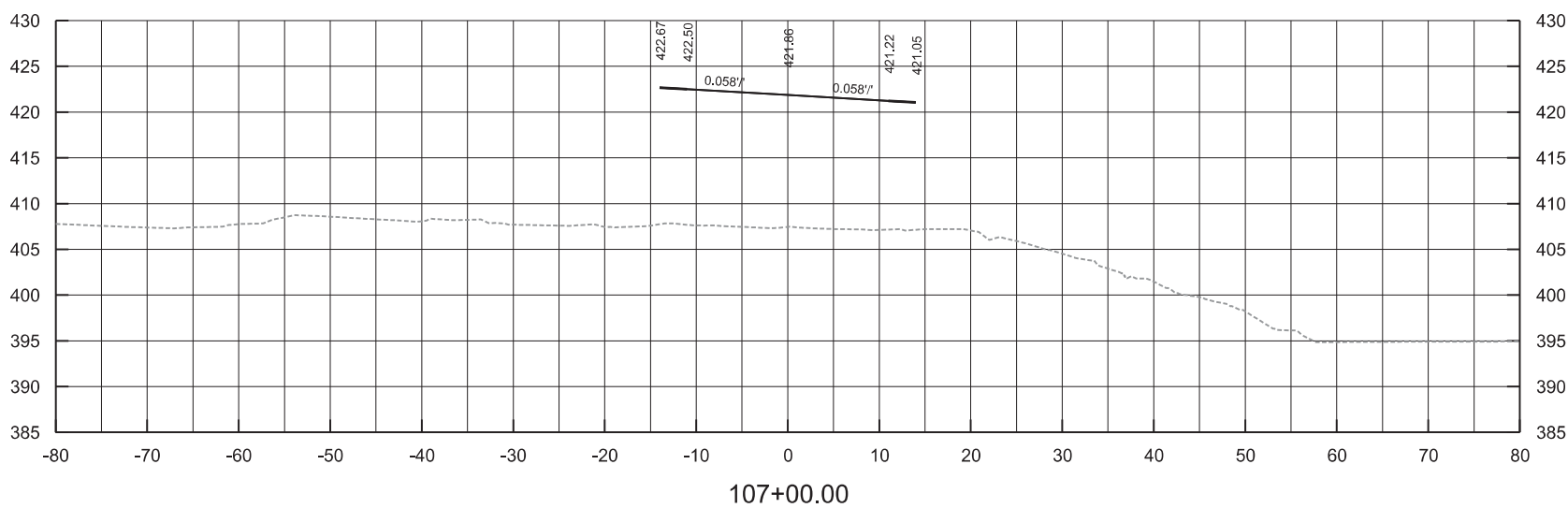
4 CROSS SECTIONS STA. 100+00.00 TO 101+00.00



DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. REG. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		B77615	43	55
4 GROSS SECTIONS STA. 102+38.00 TO 103+50.00								



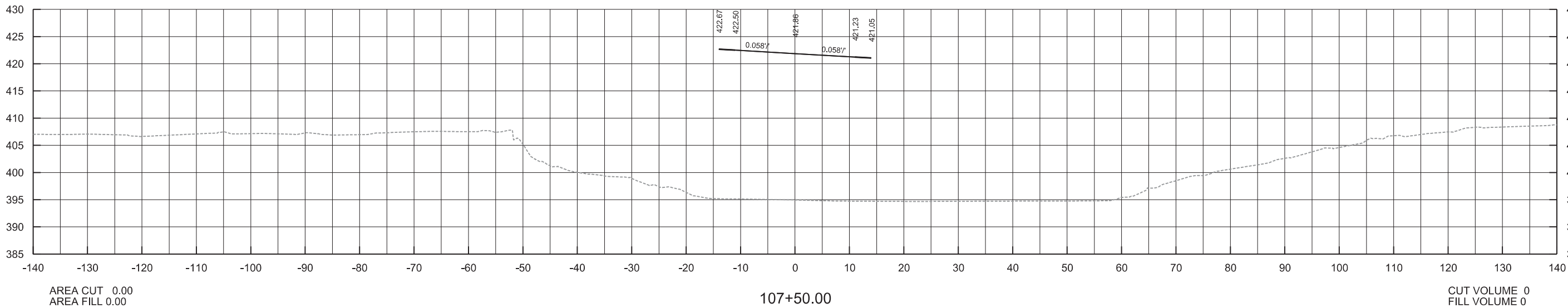
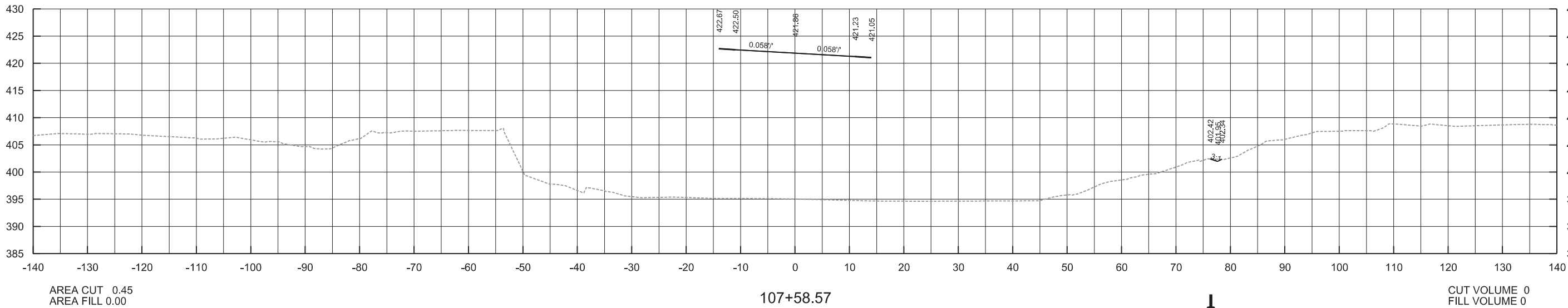
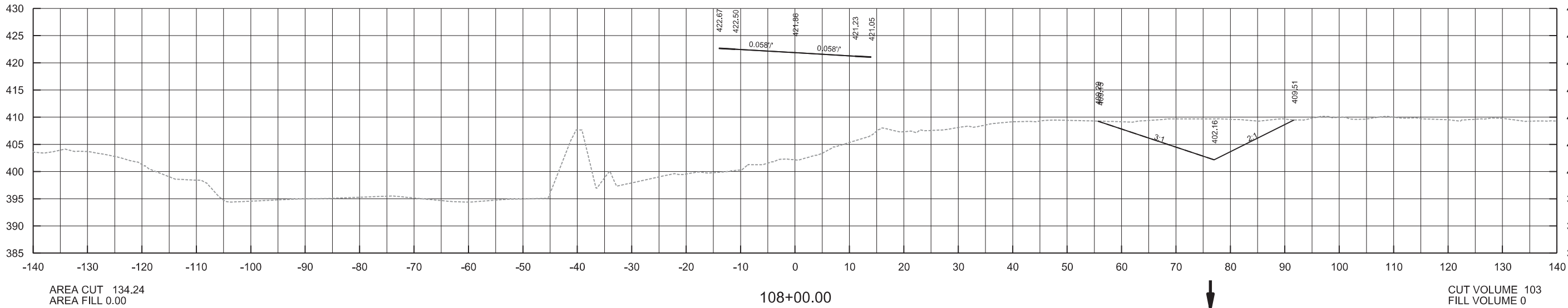
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4 CROSS SECTIONS STA. 103+90.00 TO 106+00.00							



DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FIELD NO.	STATE	FEDLAND PROJNO.	SHEET TOTAL	SHEET NO.	SHEET %S
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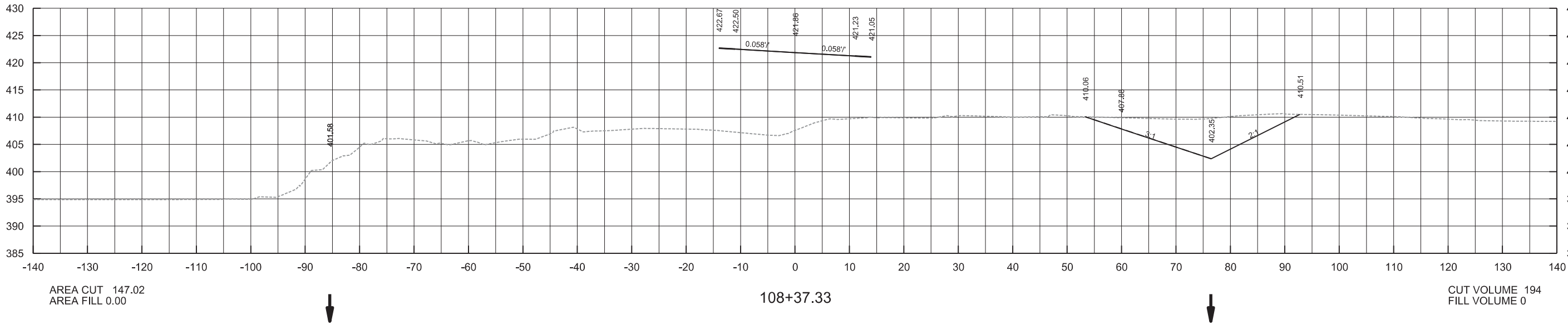
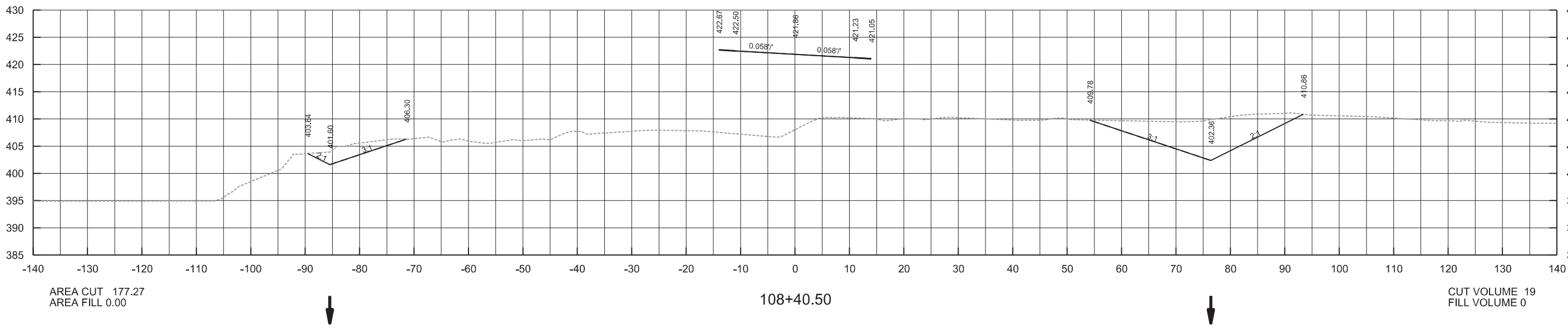
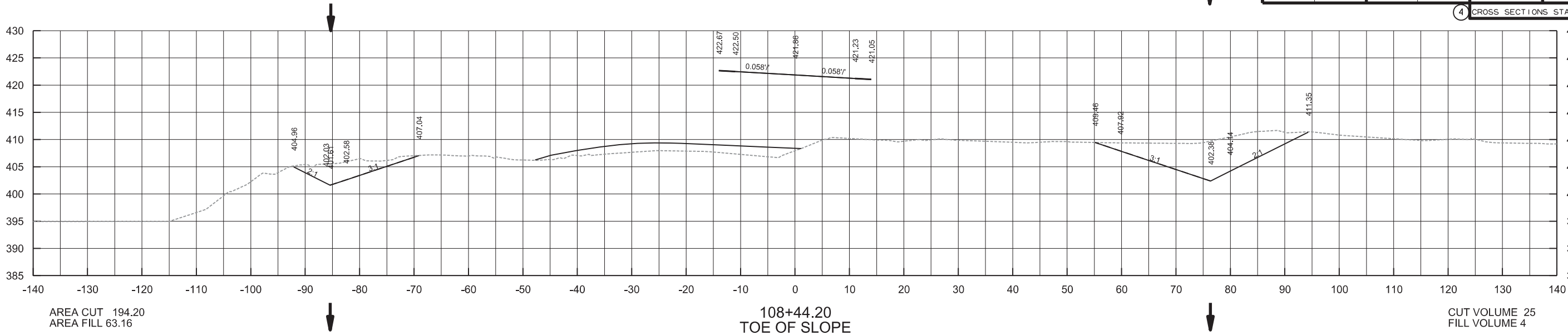
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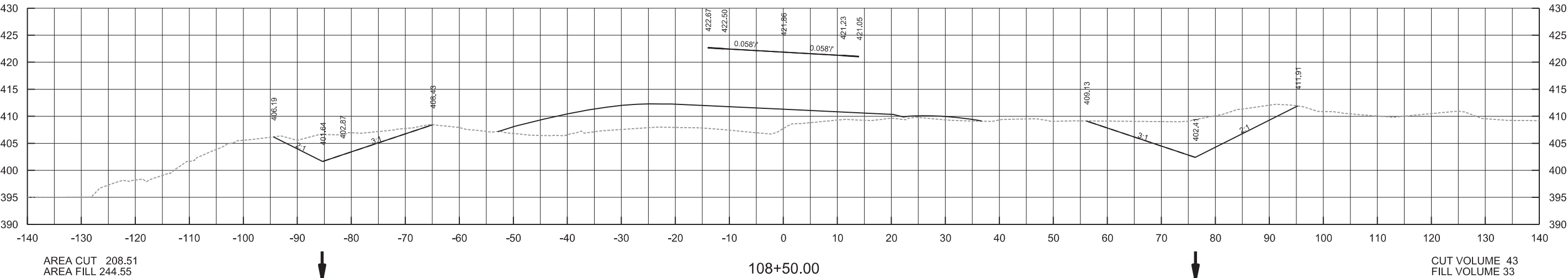
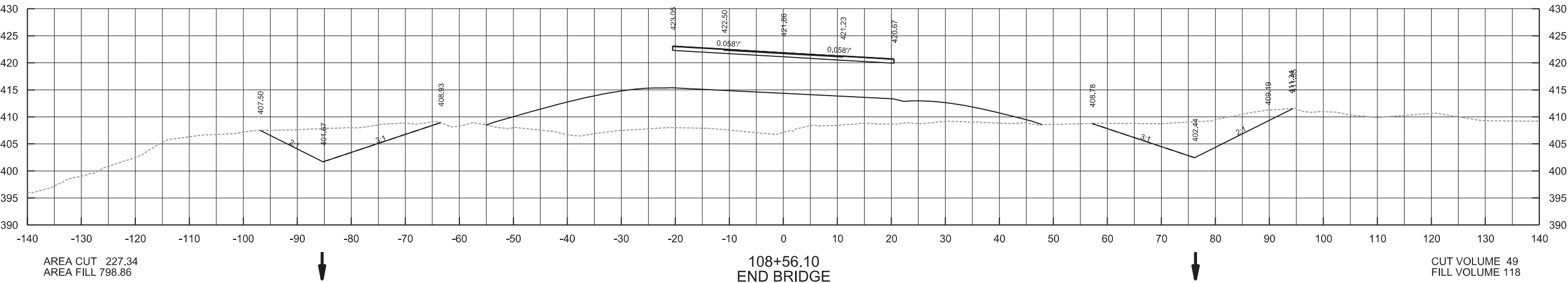
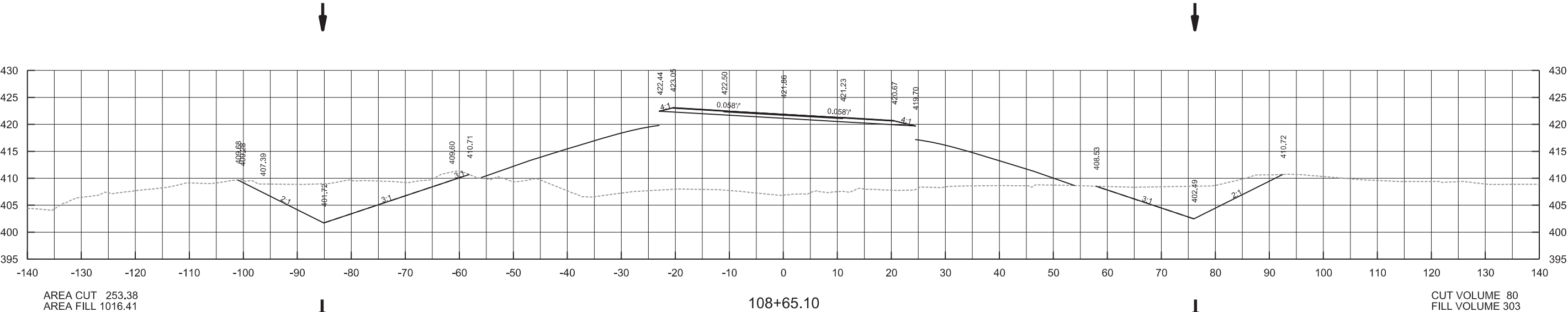
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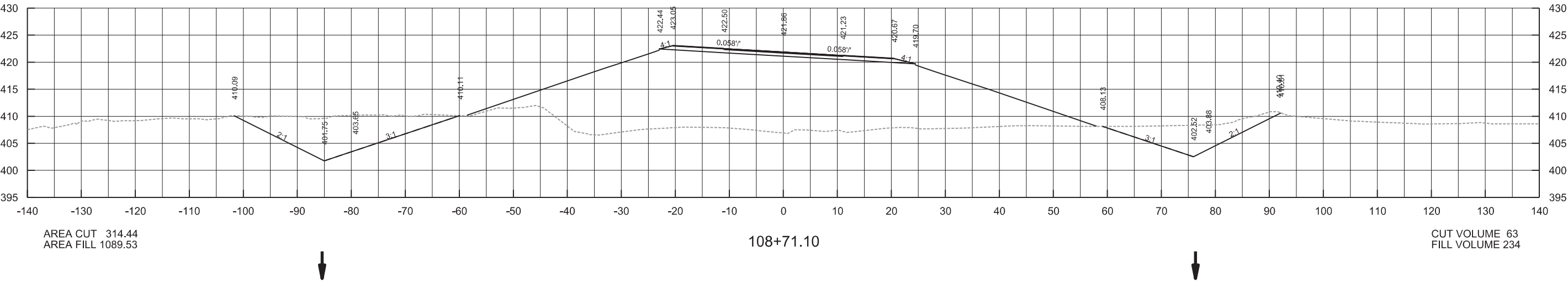
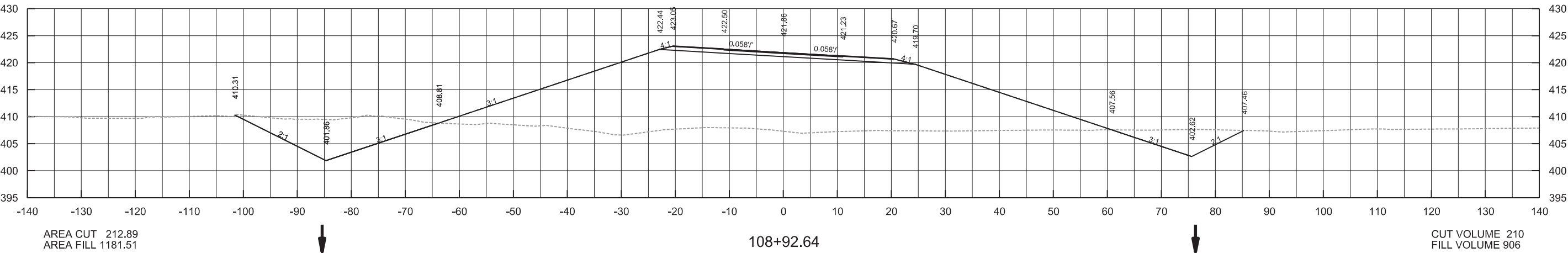
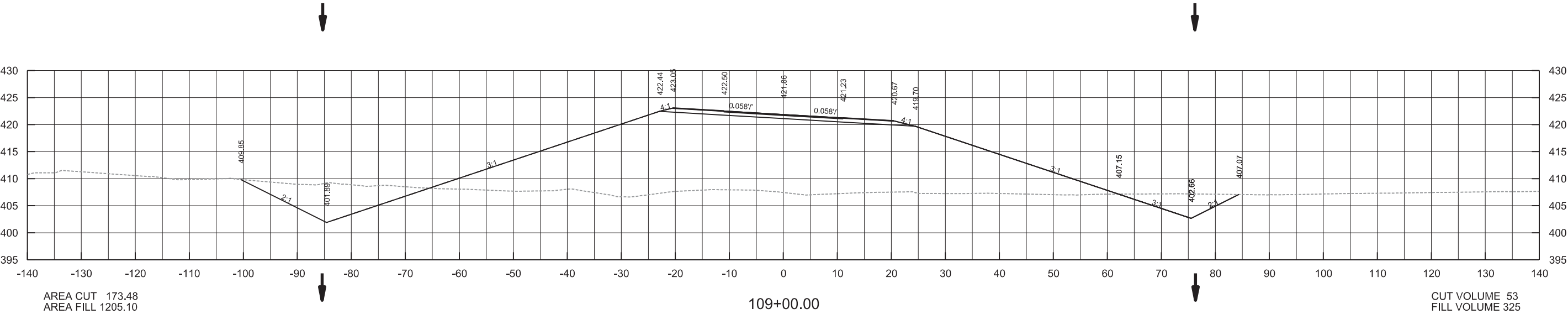
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4 CROSS SECTIONS STA. 108+50.00 TO 108+65.10



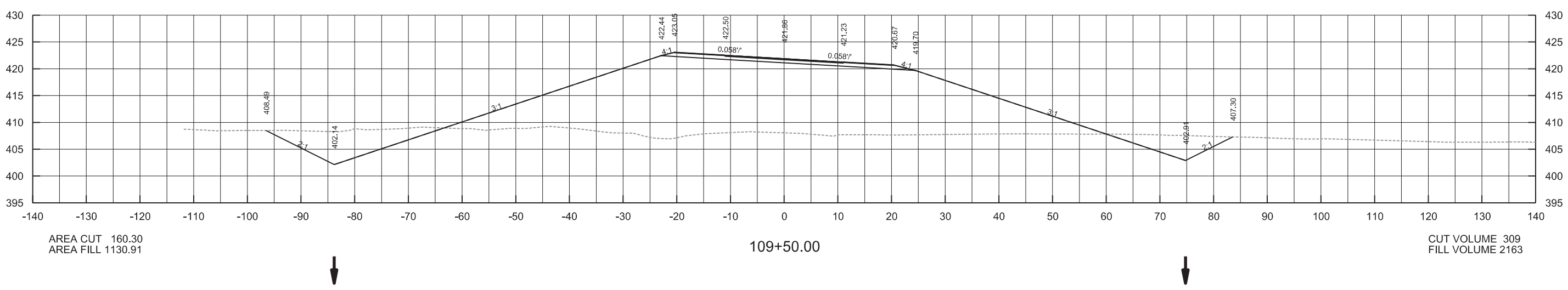
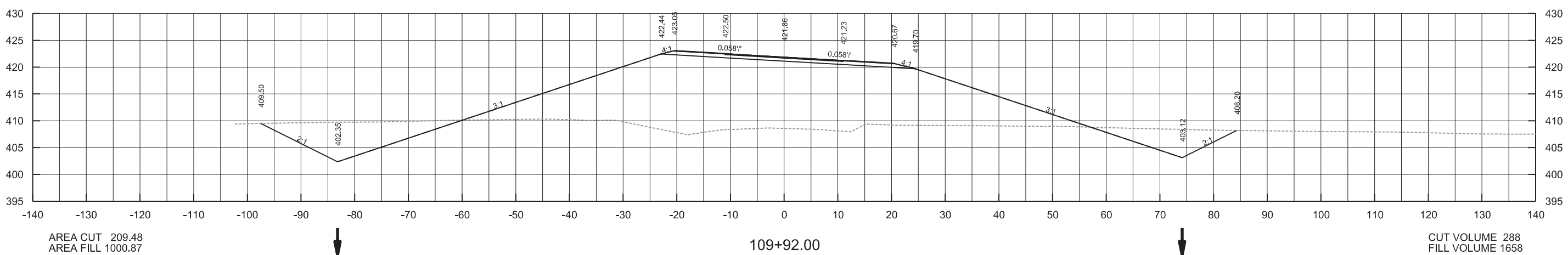
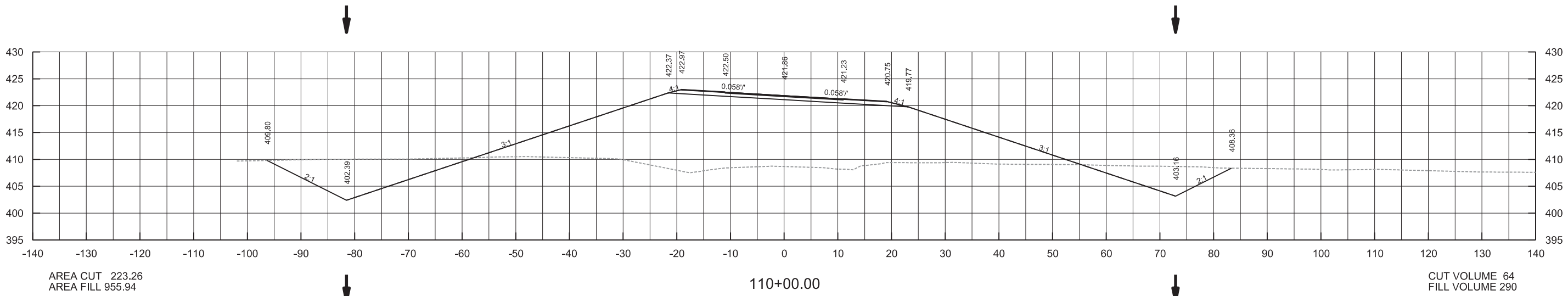
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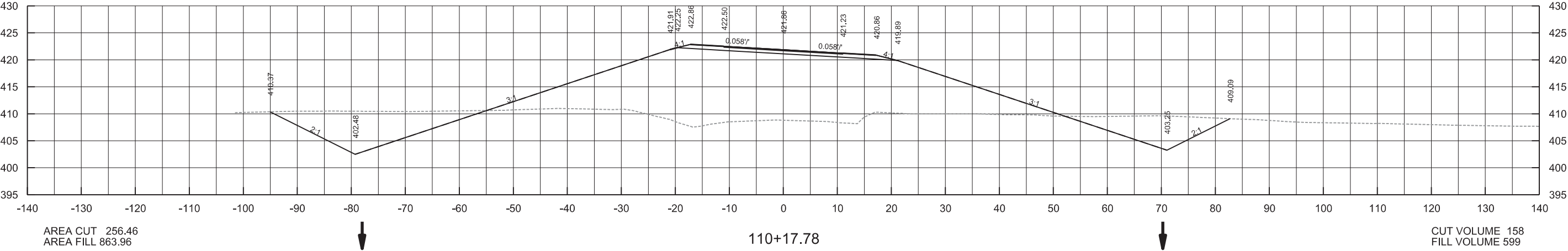
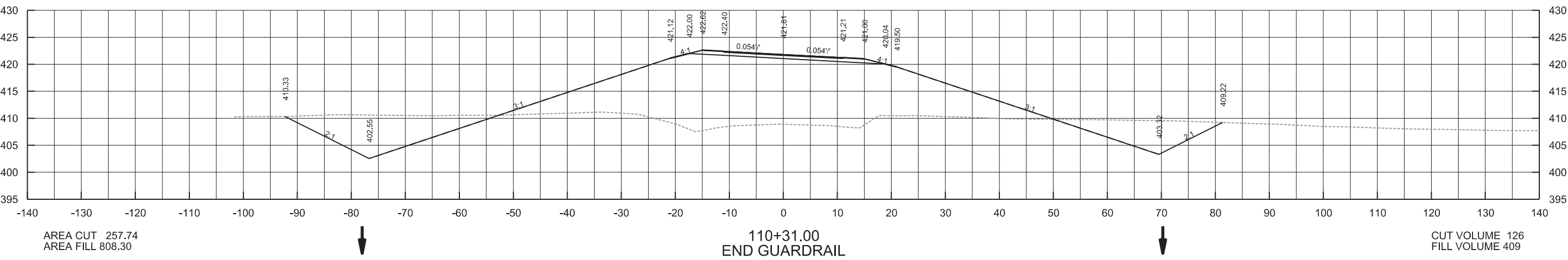
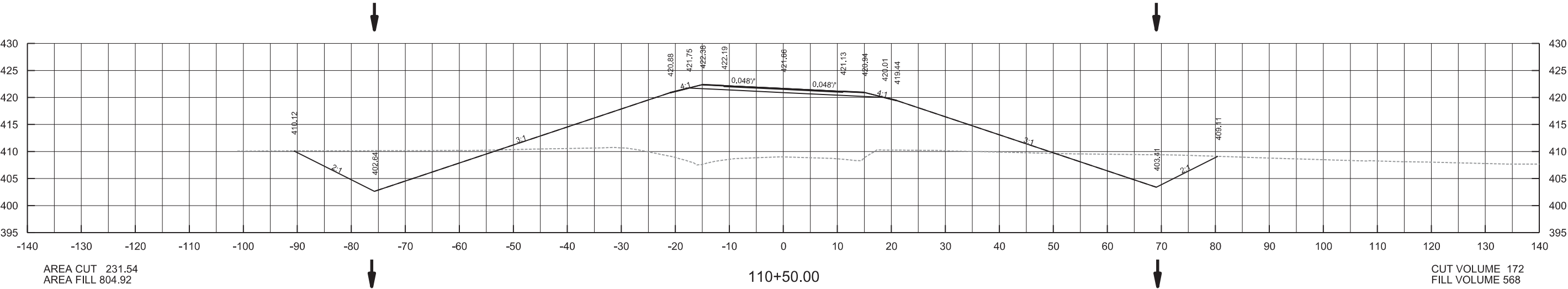
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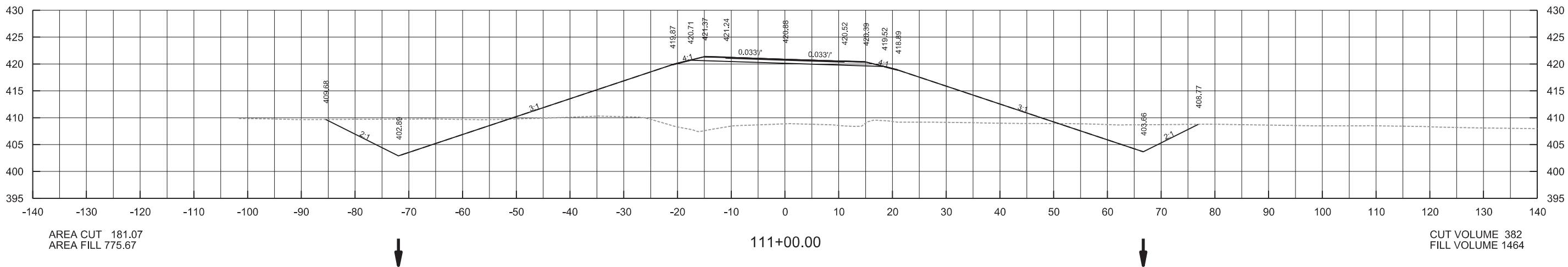
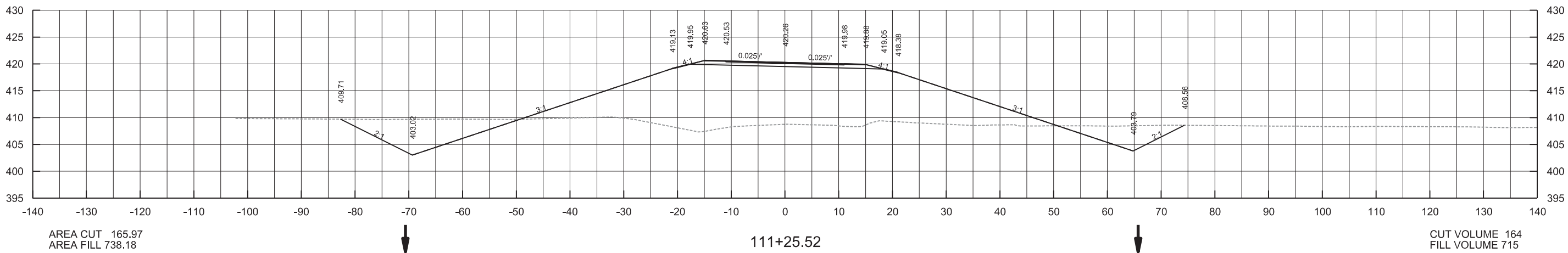
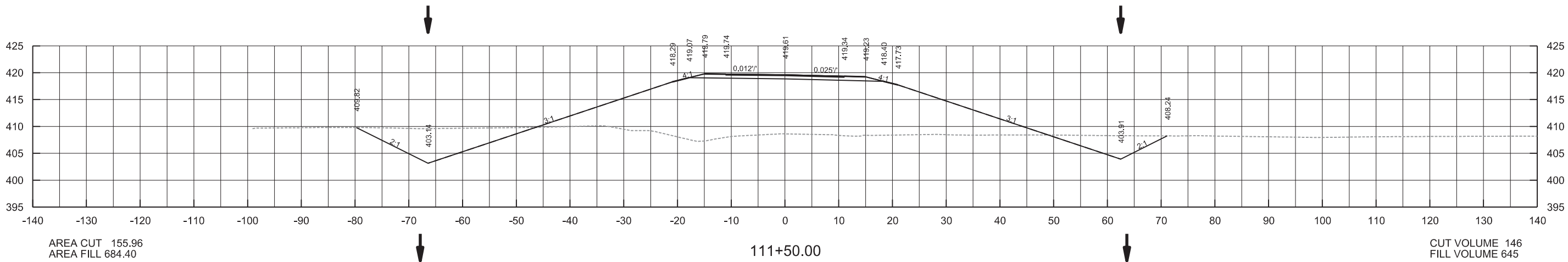
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4 CROSS SECTIONS STA. 110+17.78 TO 110+50.00



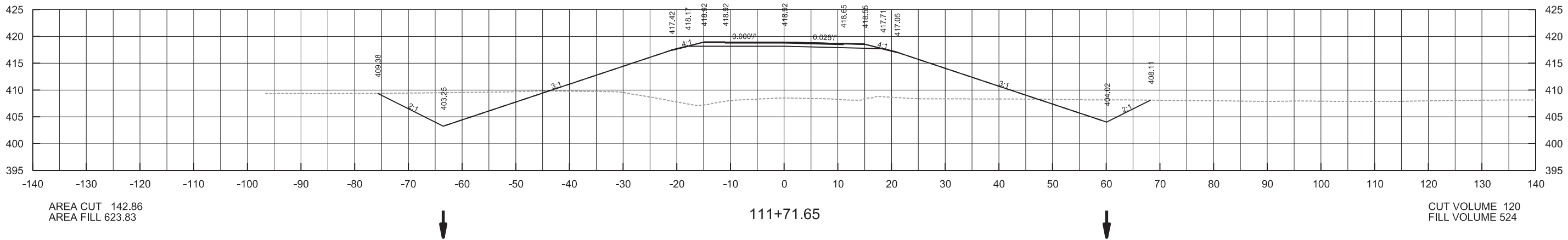
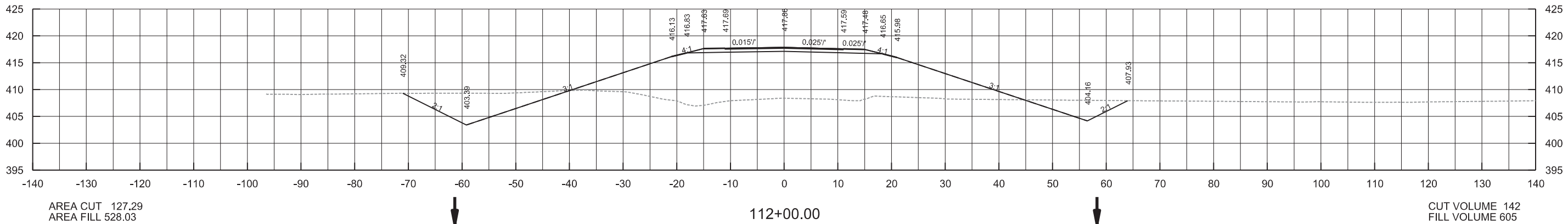
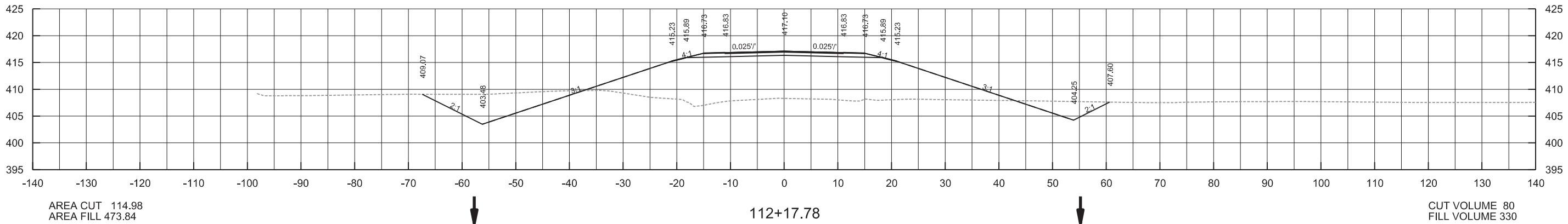
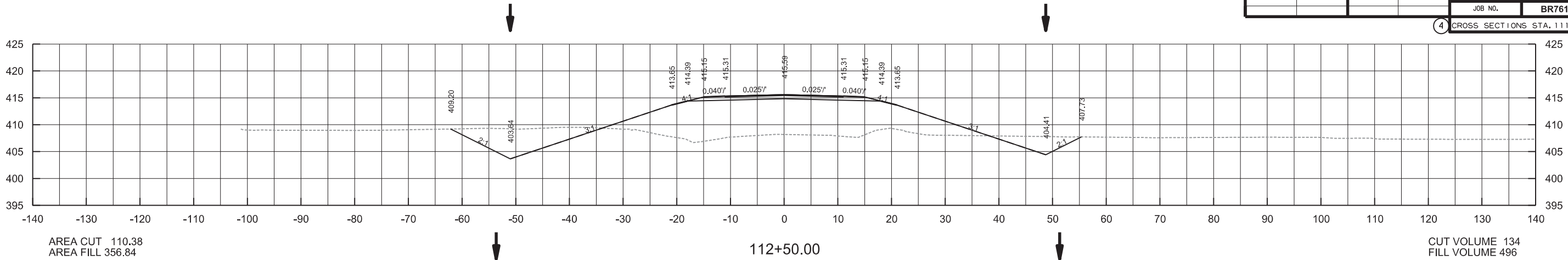
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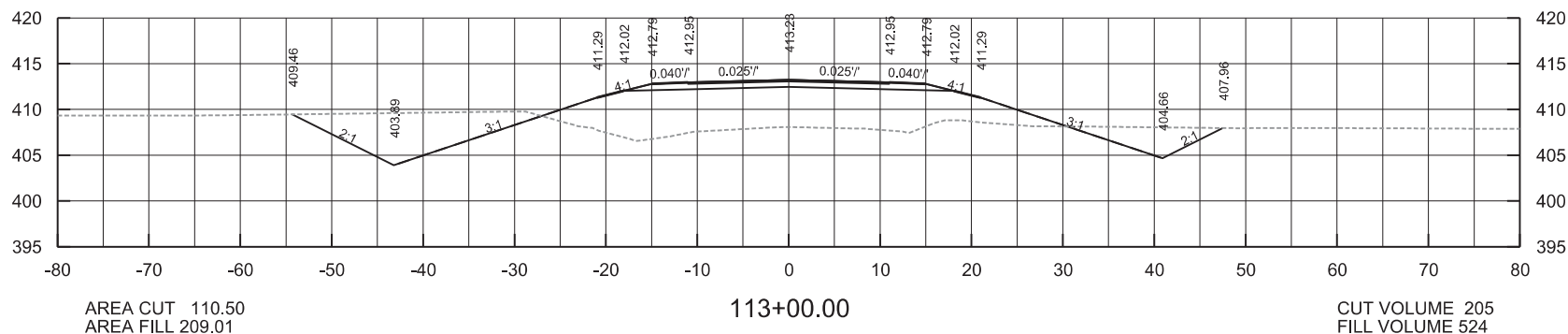
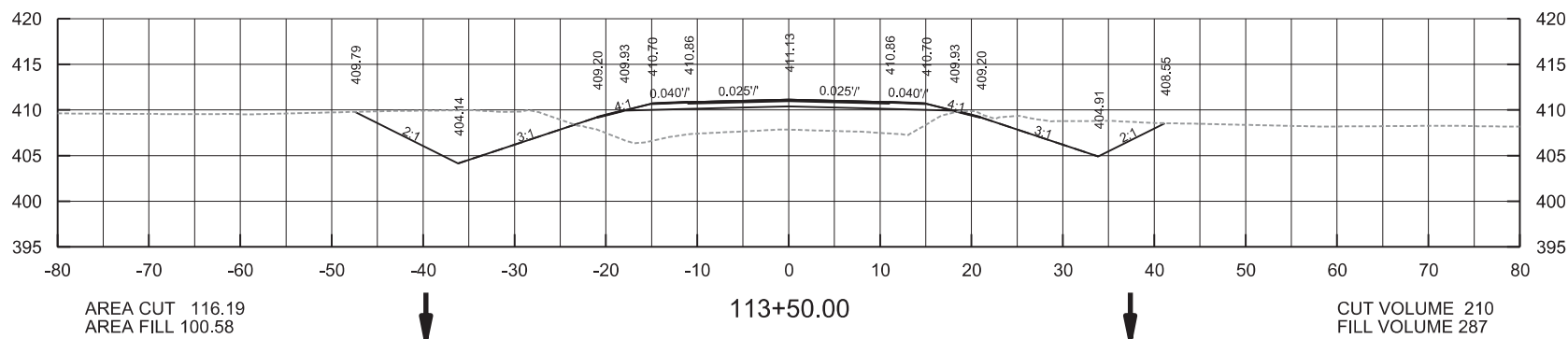
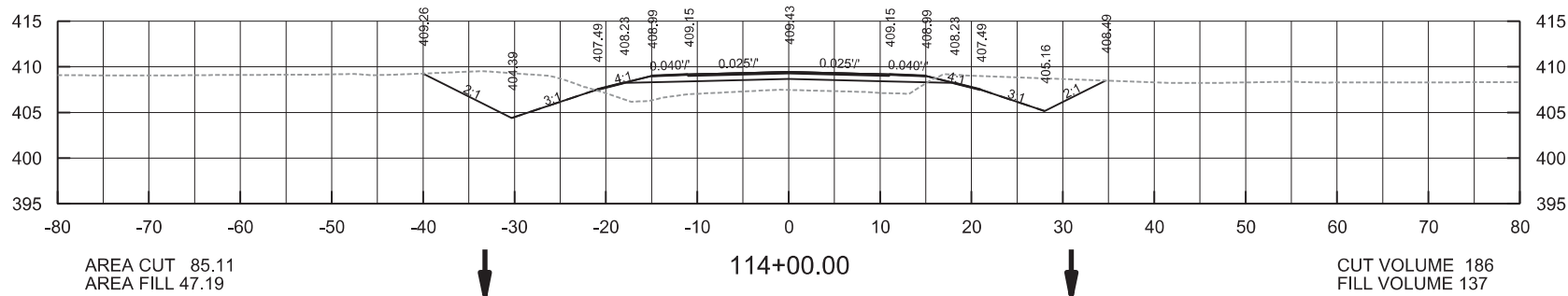
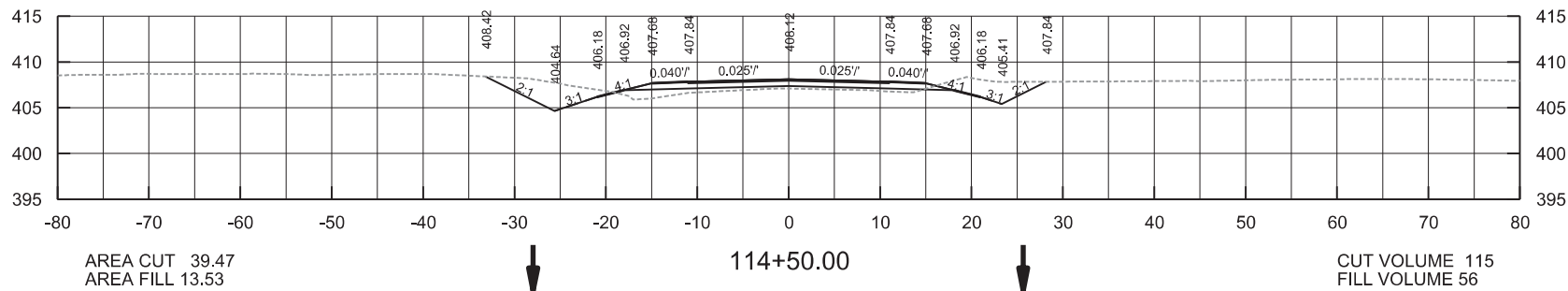
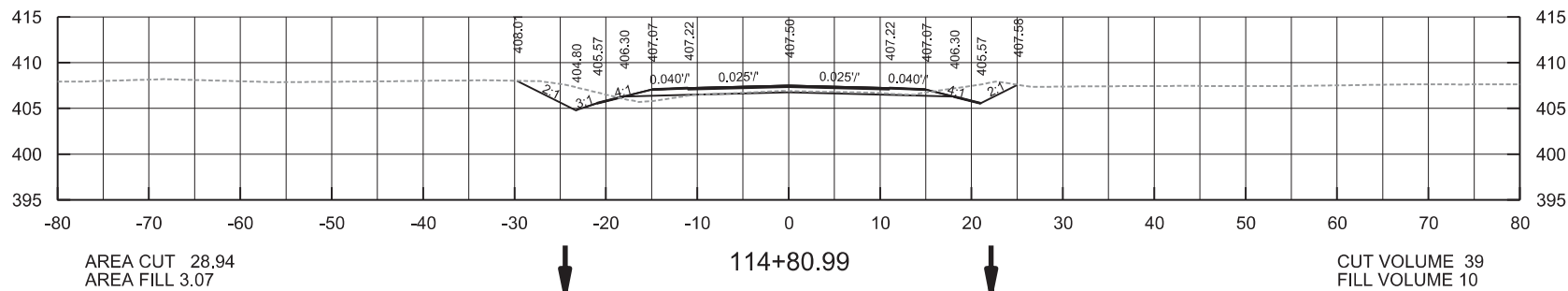
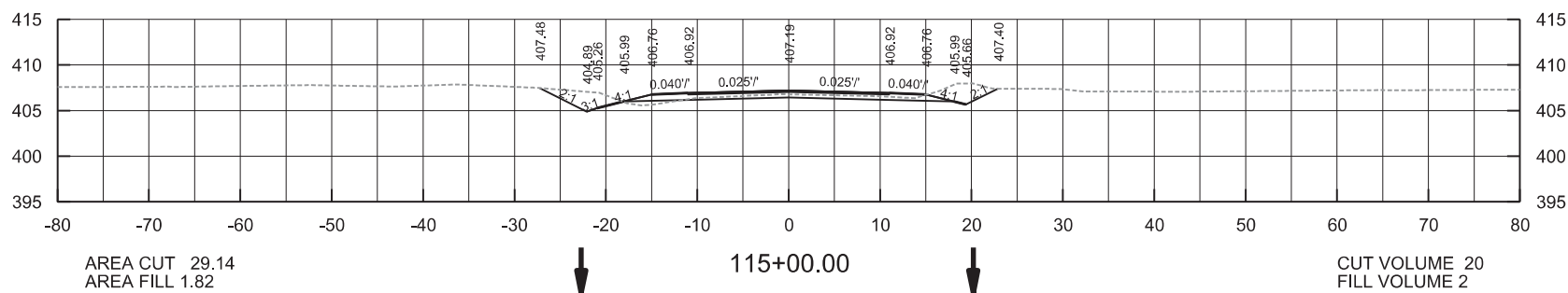
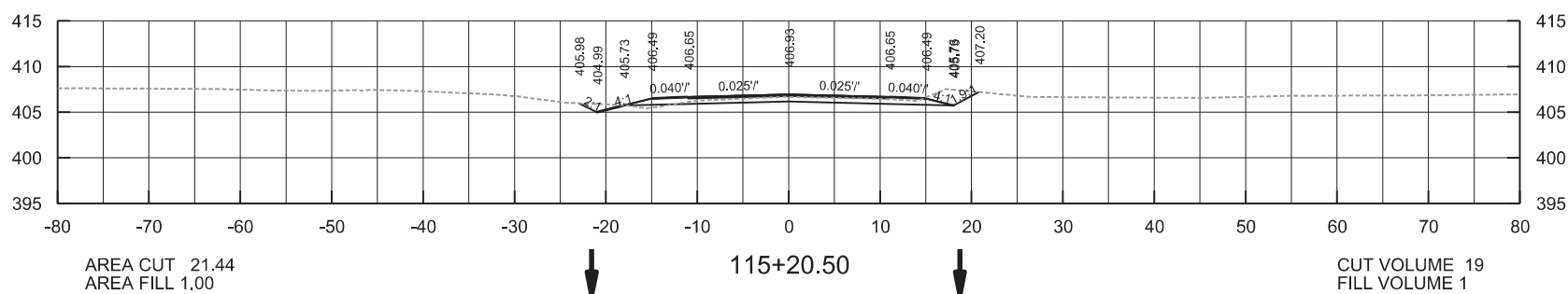
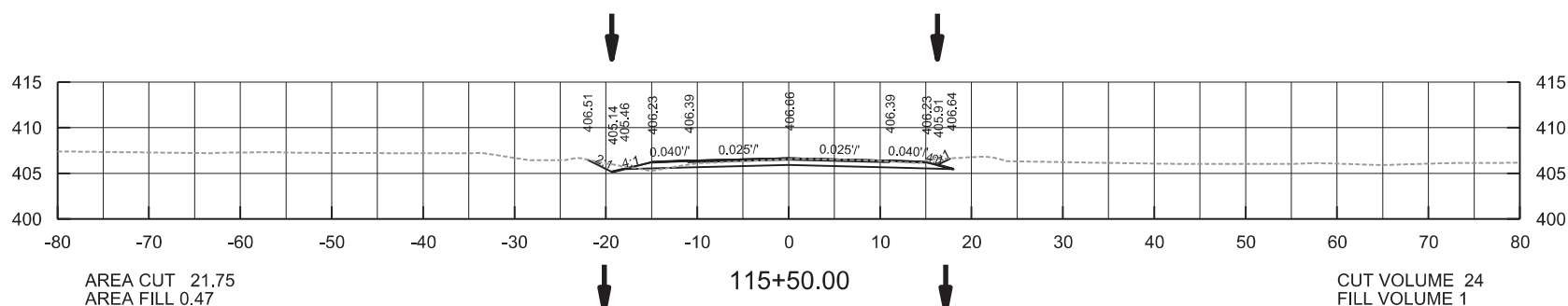
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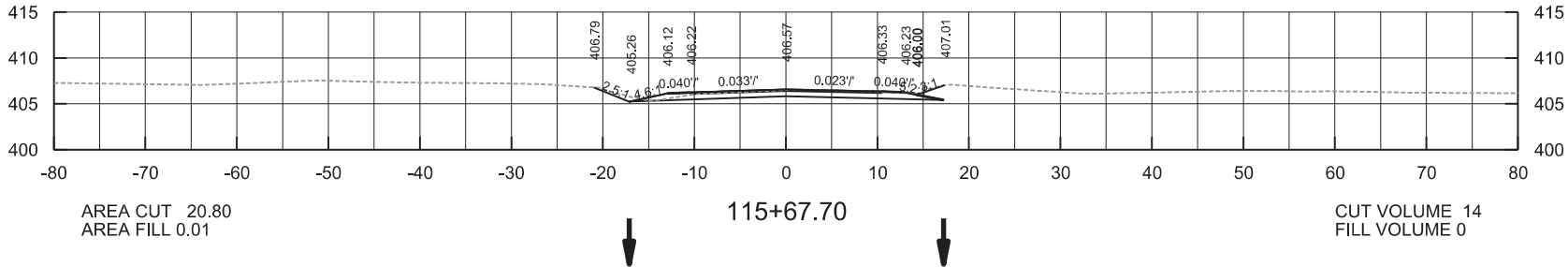
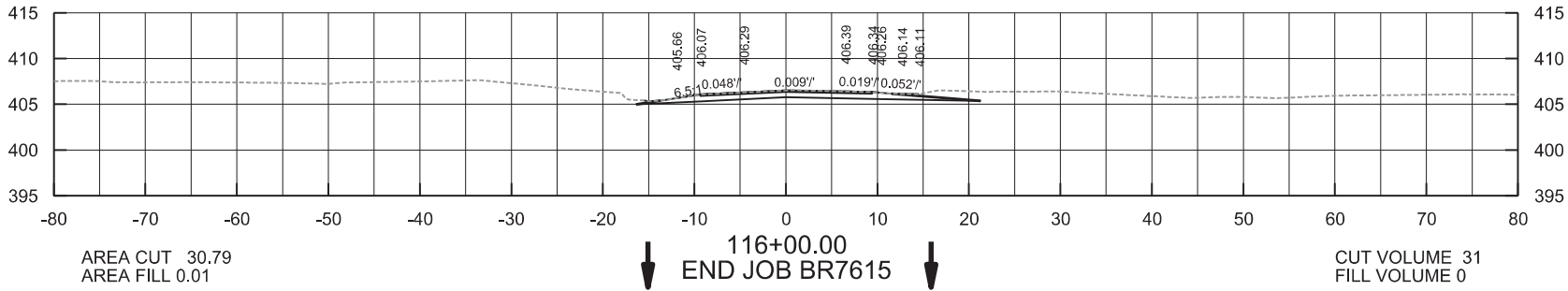
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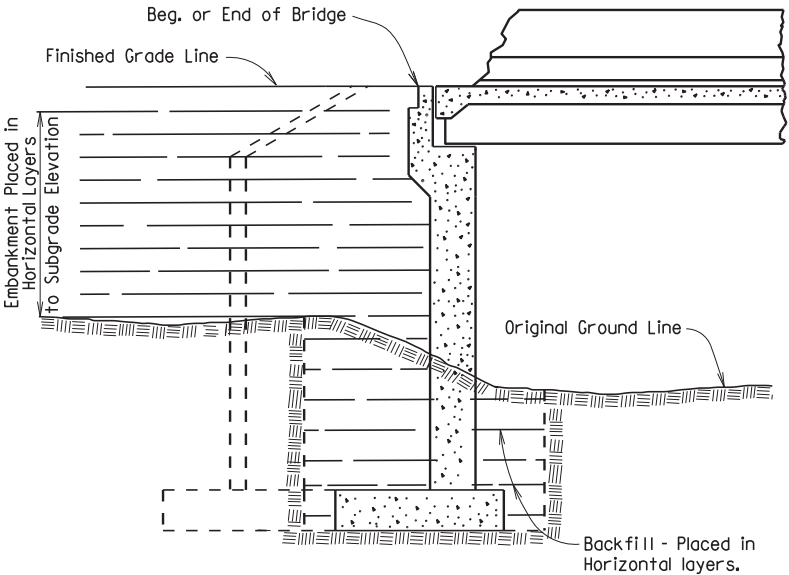
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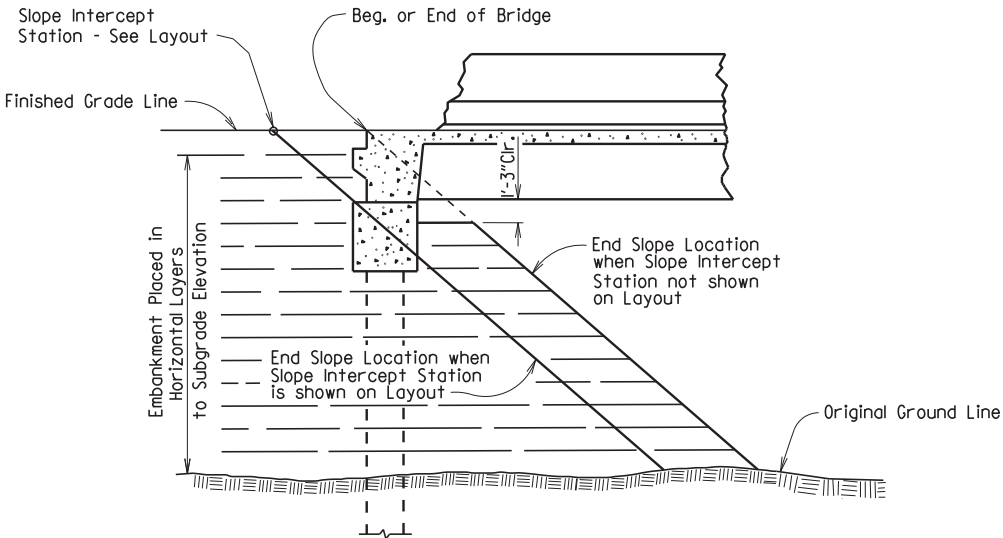


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CROSS SECTIONS STA. 115+67.70 TO 116+00.00			TOTAL SHEETS 55

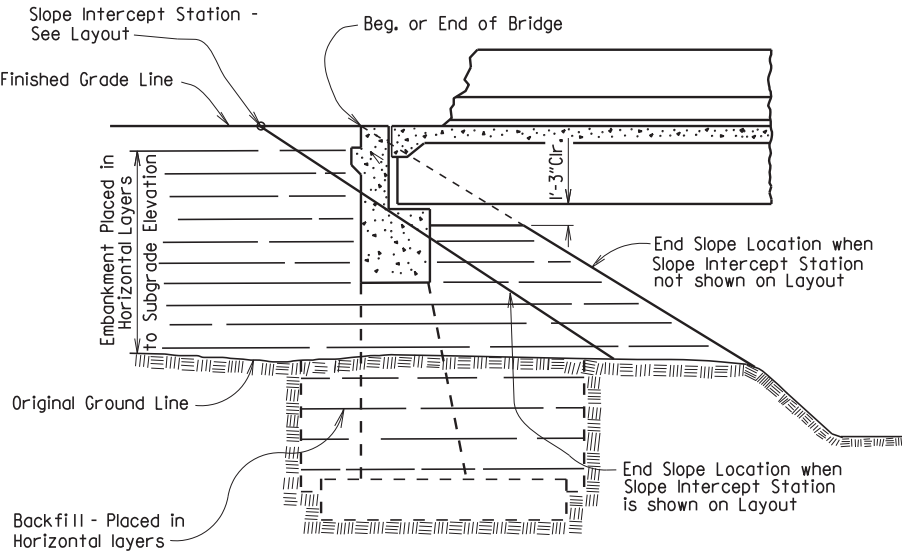
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				JOB NO.				
				1 EMBANKMENT & BACKFILL 55000				



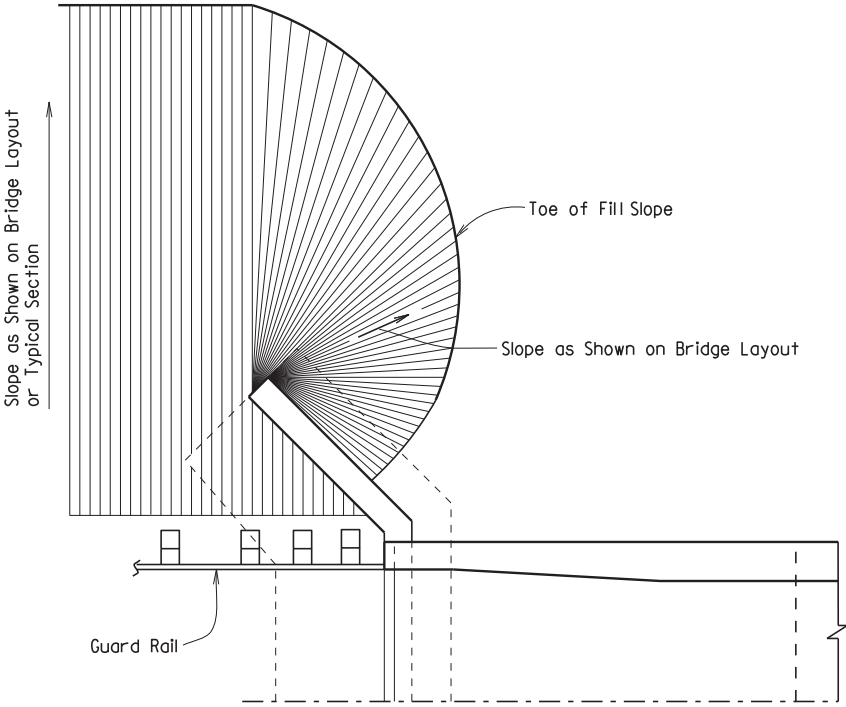
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL
AT VERTICAL WALL ABUTMENTS



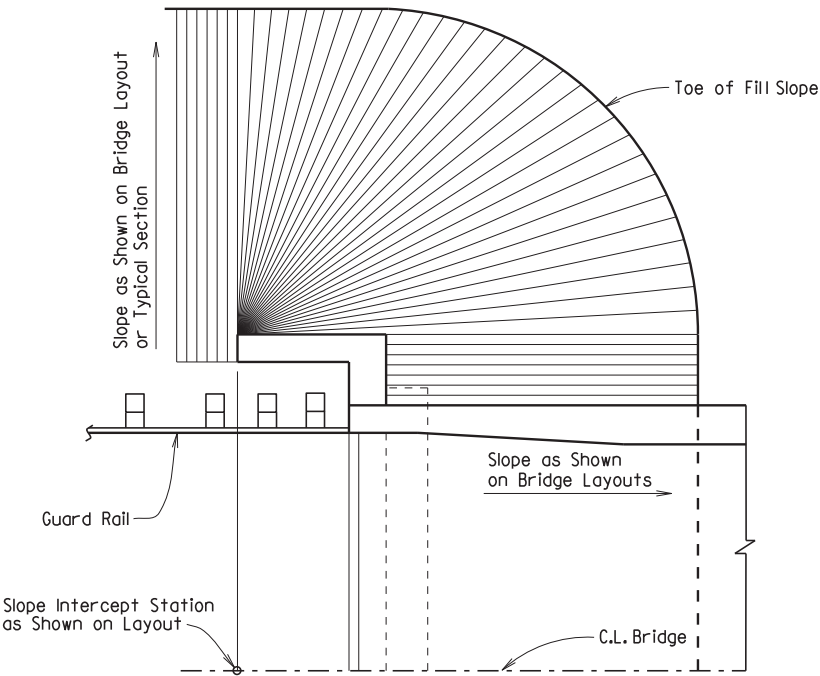
EMBANKMENT CONSTRUCTION AT SPILL-THROUGH
PILE END BENTS



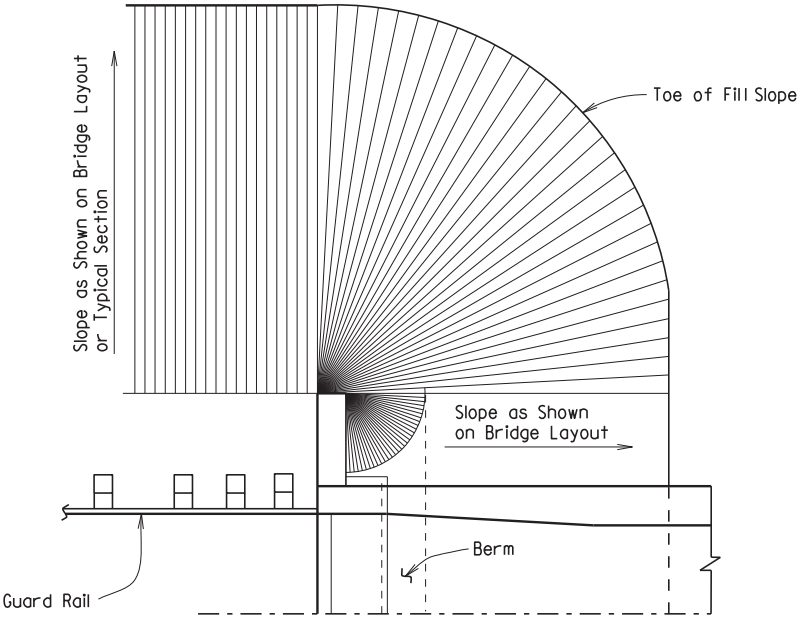
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL
AT SPILL-THROUGH END BENTS



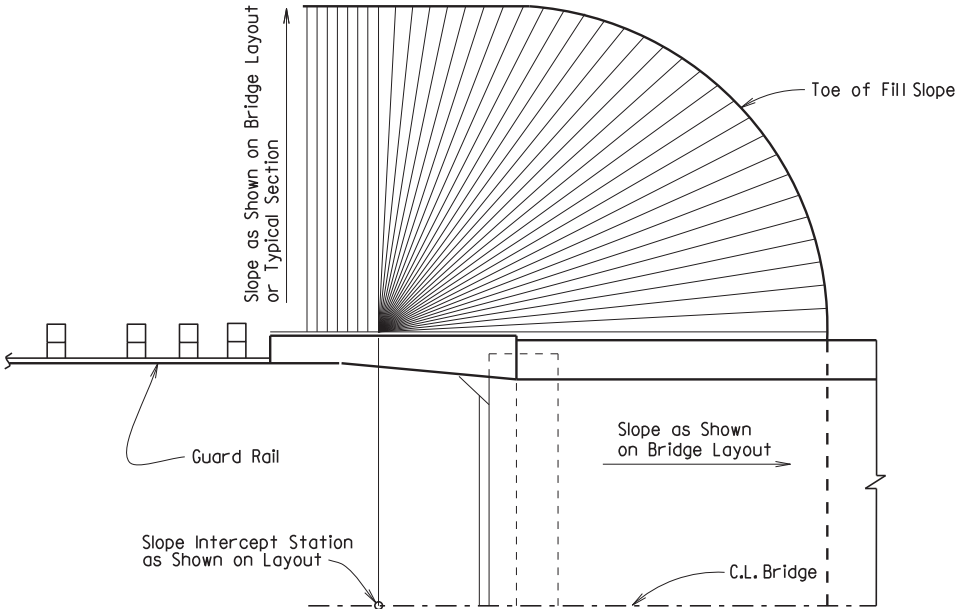
VERTICAL WALL ABUTMENTS



SPILL-THROUGH END BENTS WITH 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

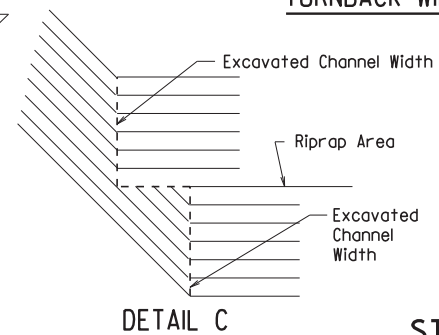
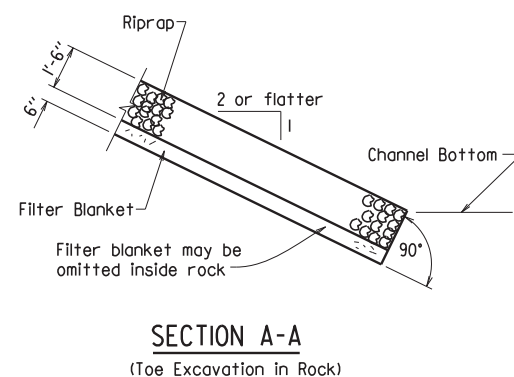
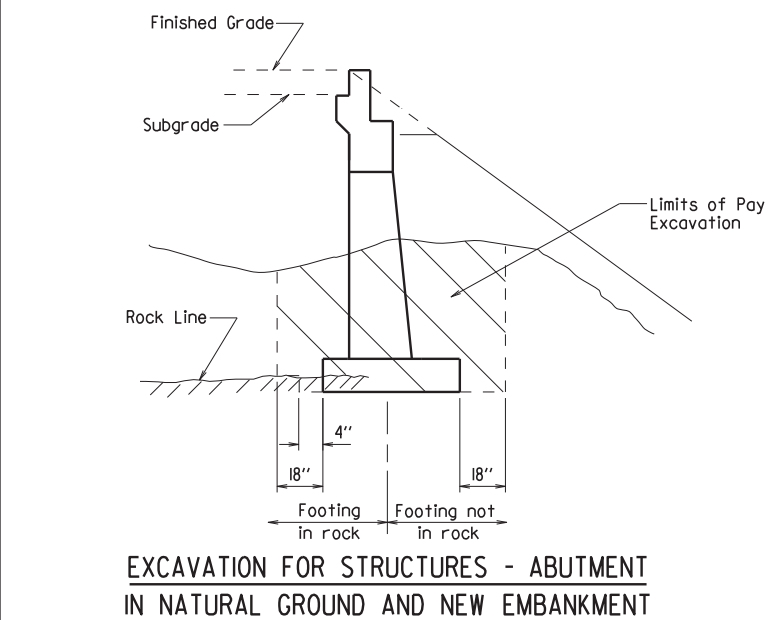
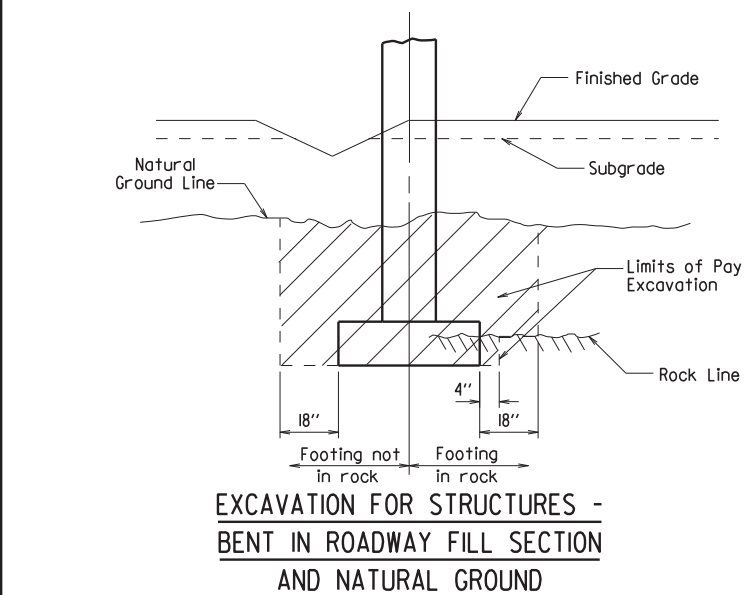
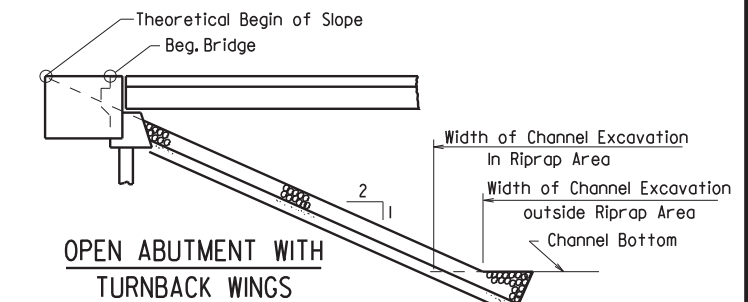
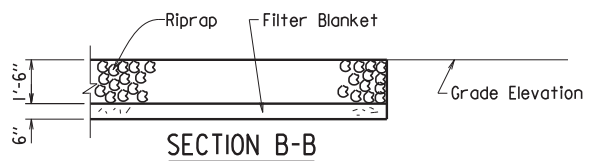
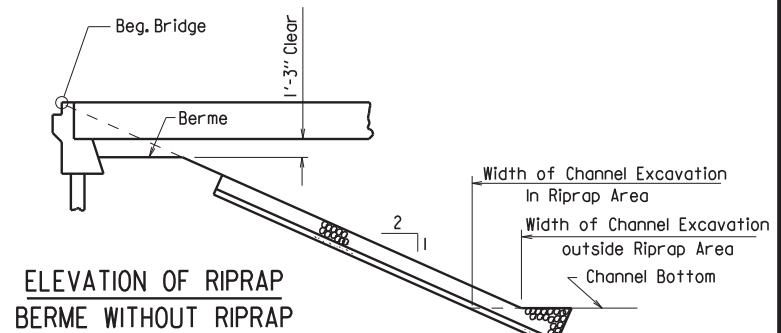
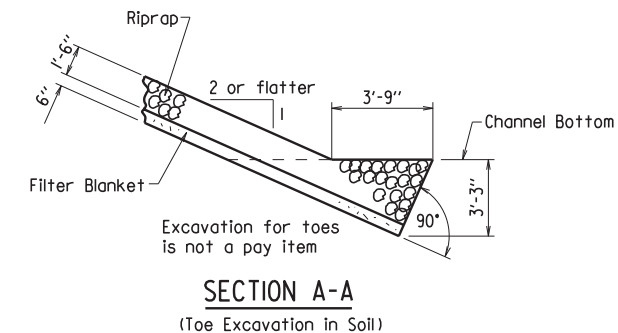
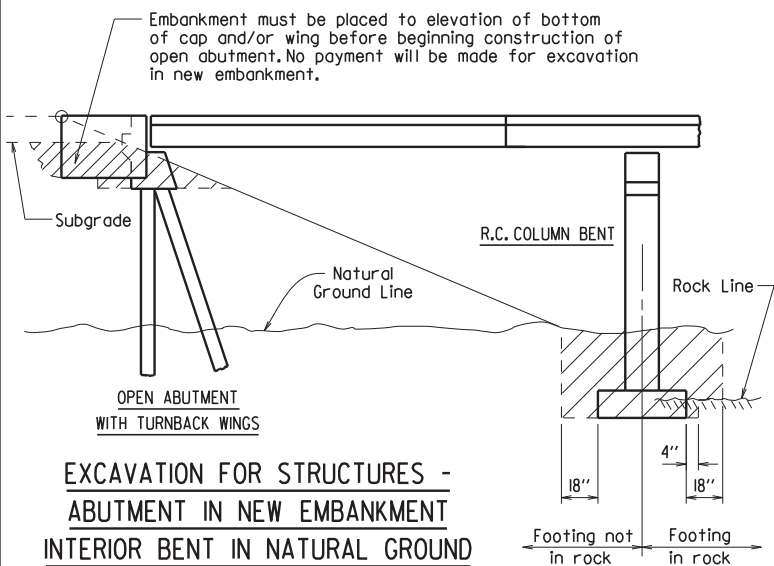
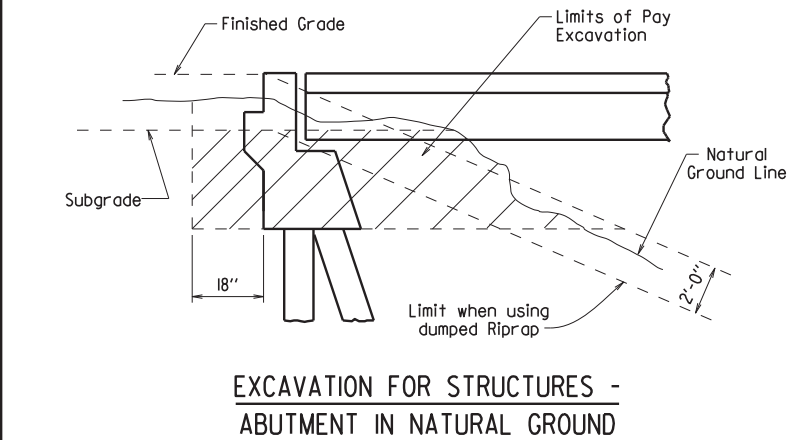
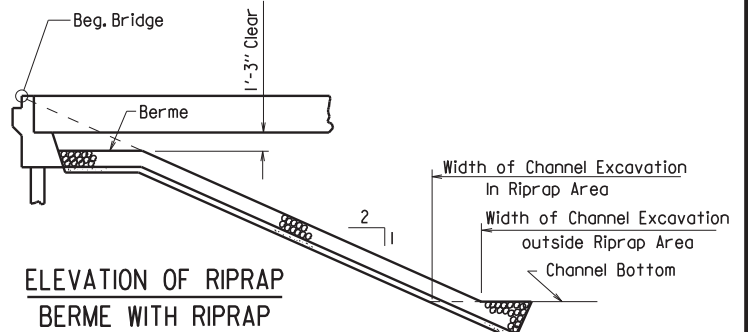
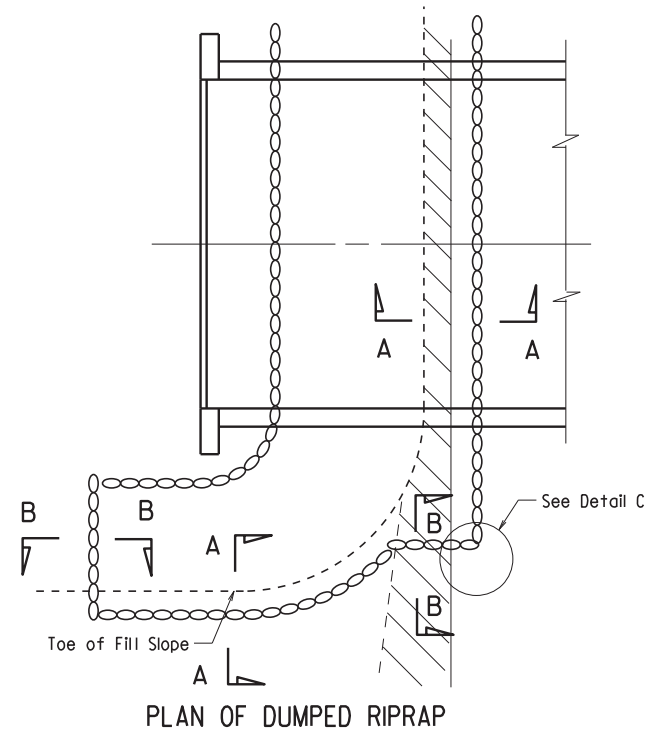
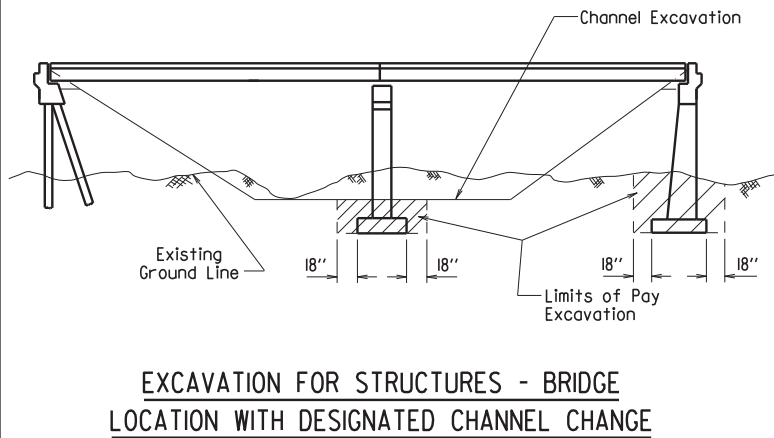
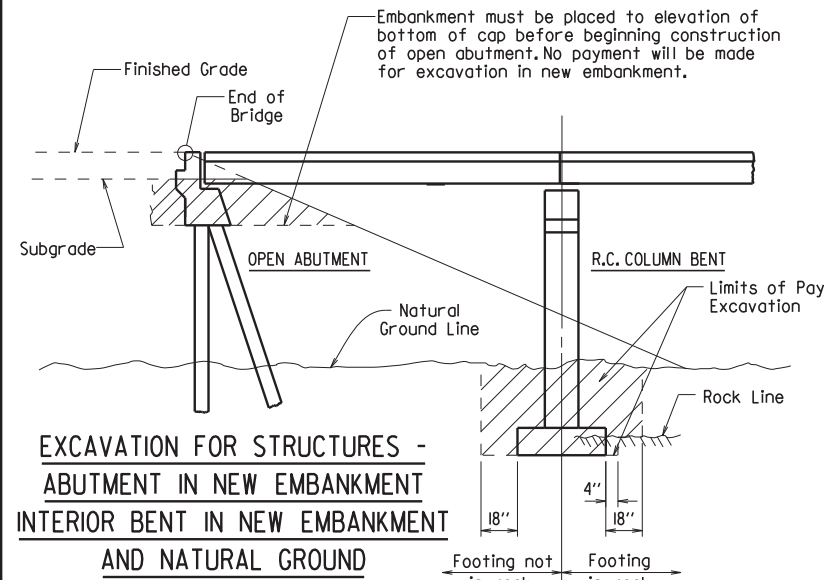
ARKANSAS STATE HIGHWAY COMMISSION

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.

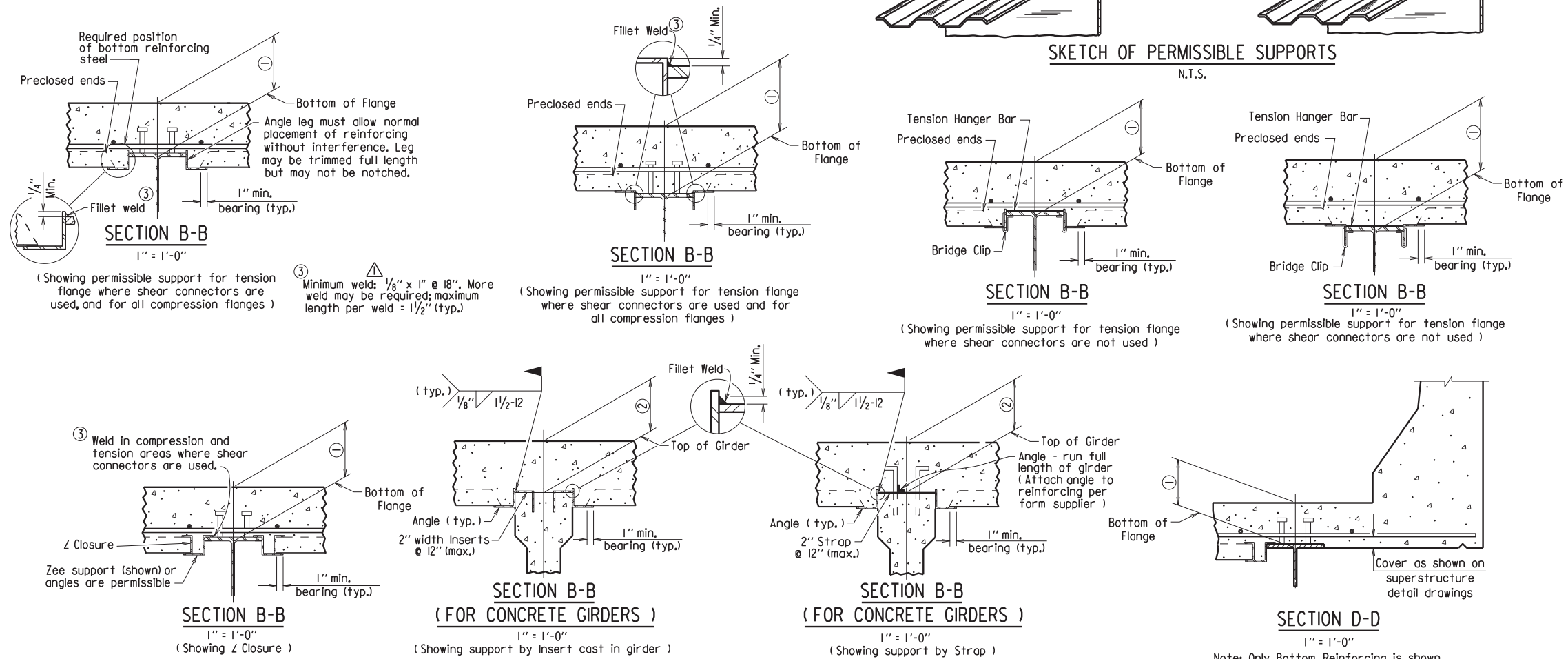
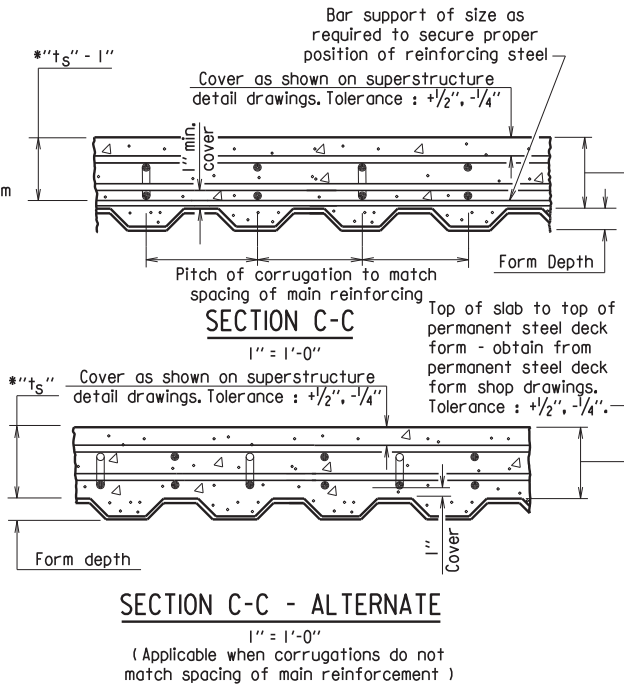
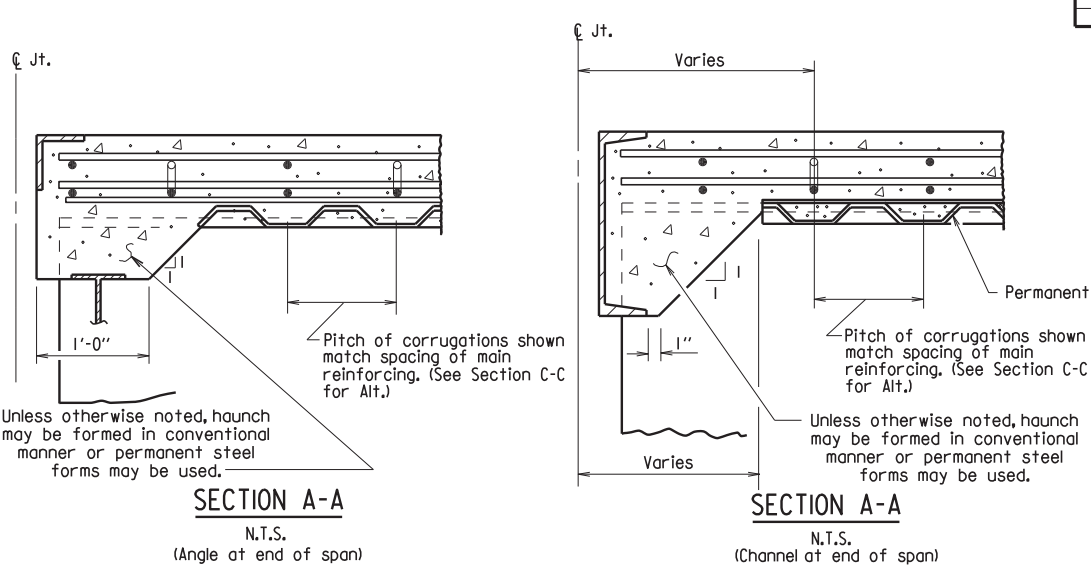
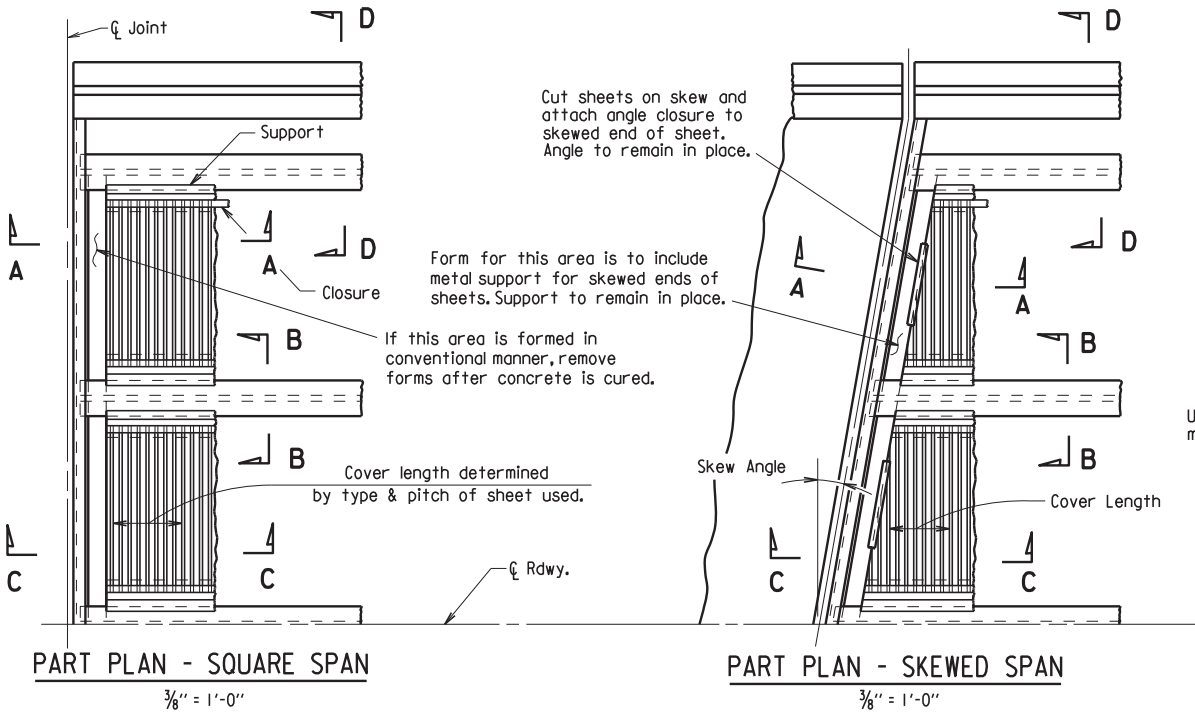
**STANDARD DETAILS FOR
DUMPED RIPRAP AND FILTER BLANKET
AND COMPUTING
EXCAVATION FOR STRUCTURES
ARKANSAS STATE HIGHWAY COMMISSION**

LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 2-27-2014 FILENAME: b5500I.dgn
 CHECKED BY: BEF DATE: 2-27-2014 SCALE: NO SCALE
 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	



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

GENERAL NOTES

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

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

Welding of form supports to the tension flange of steel girders will be permitted only in areas where shear connectors are used. When welding is not allowed, the method of fastening Z or 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 1 1/8 " ø open holes. Holes for 3/4" ø high-strength bolts may be 1 5/8 " 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.

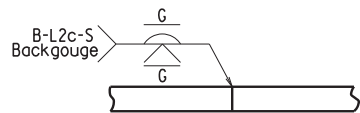
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DESIGNED BY:	STD.	DATE:			

DRAWING NO. 55006

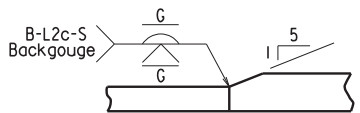


Plan-Unequal Width (Fig.)

FLANGE SPLICE

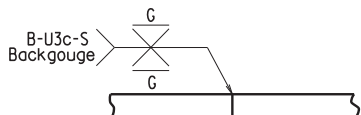


WEB & FLANGE SPLICE

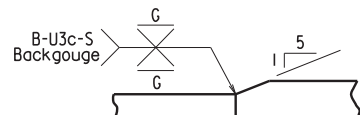


FLANGE SPLICE

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



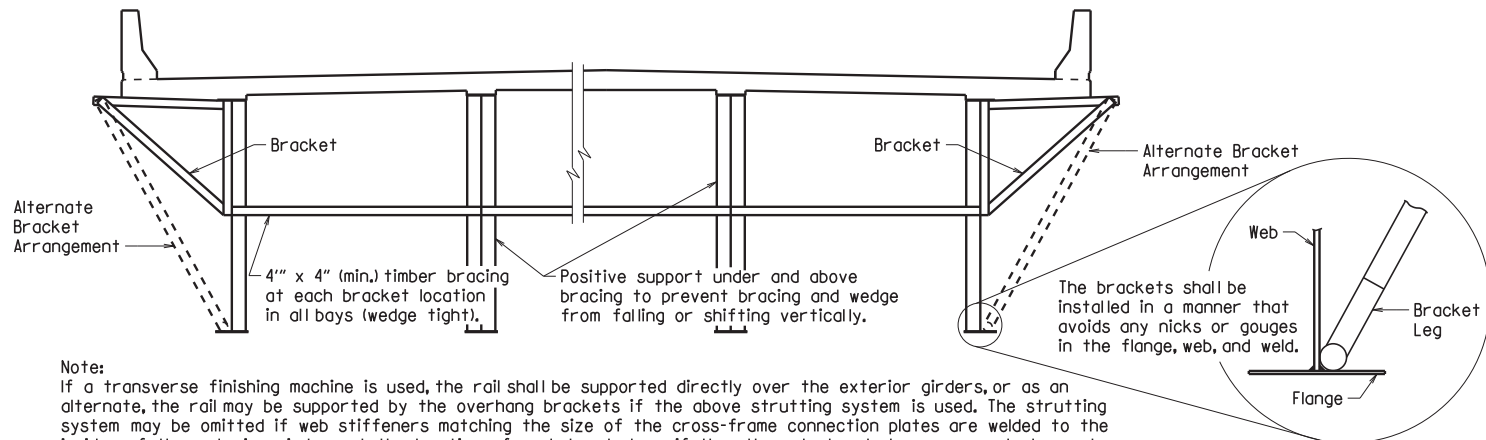
WEB & FLANGE SPLICE



FLANGE SPLICE

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

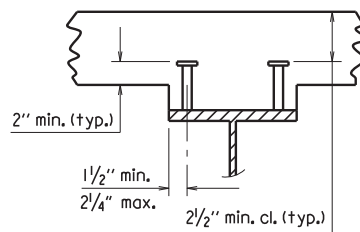
DETAILS OF WELDED SPLICES FOR PLATE GIRDERS



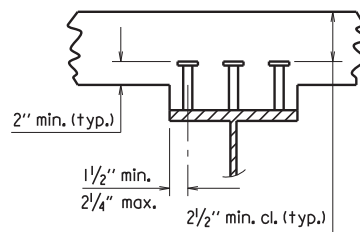
Note:
If a transverse finishing machine is used, the rail shall be supported directly over the exterior girders, or as an alternate, the rail may be supported by the overhang brackets if the above strutting system is used. The strutting system may be omitted if web stiffeners matching the size of the 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)



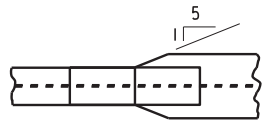
2 STUDS PER ROW



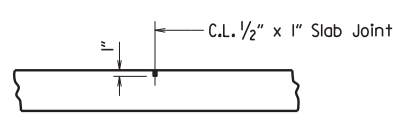
3 STUDS PER ROW

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



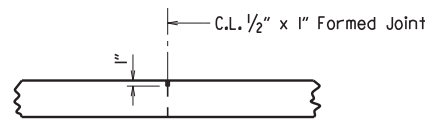
FLANGE SPLICE AT UNEQUAL BOTTOM FLANGE WIDTHS



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.

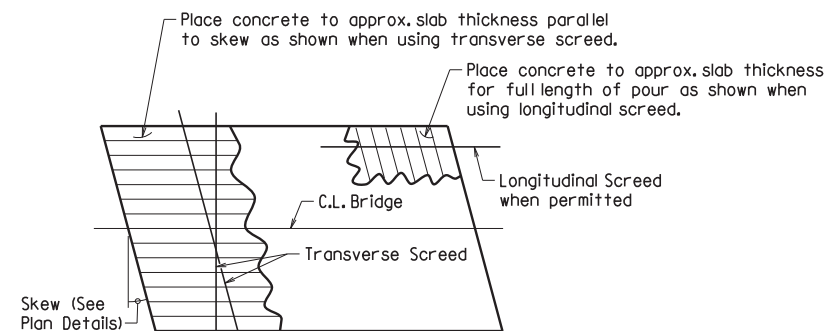
ADDITIONAL NOTES IF SIDEWALKS OR RAISED MEDIANS ARE REQUIRED:
Slab Joints shall be installed before the sidewalk or raised median is poured. After installation of the joint in the sidewalk or raised median and prior to pouring the parapet rail, the joint sealer shall be placed extending across the deck 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



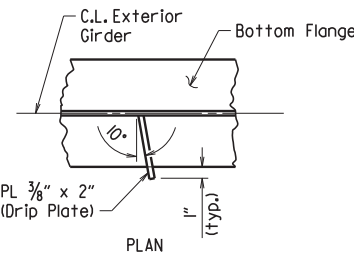
Use 1/2" x 1" Type 3 or 4 Joint Sealer. See Subsections 50L02(h) and 50L05(j). Backer Rod filler will not be required. Joint sealer shall be measured and paid for as Class S(AE) Concrete-Bridge. This joint shall be formed. Seal color shall be gray or other color similar to concrete.

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



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

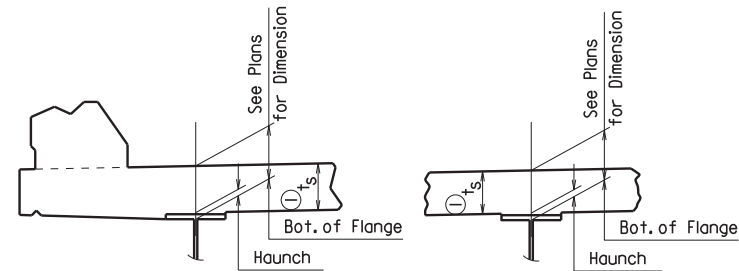
Locate drip plate 5'-0" from C.L. Bearing on high side of each Bent, unless otherwise noted in the plans.

BOTTOM FLANGE DRIP PLATE

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

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.				
STEEL BRIDGE STRUCTURES								55007

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

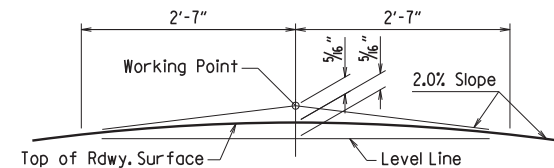


① Tolerance when removable deck forming is used is + 1/2", - 1/4". Haunch forming is required and shall be adjusted to maintain slab thickness tolerance.

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



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"	
Over 3/4"	5/16"	

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

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

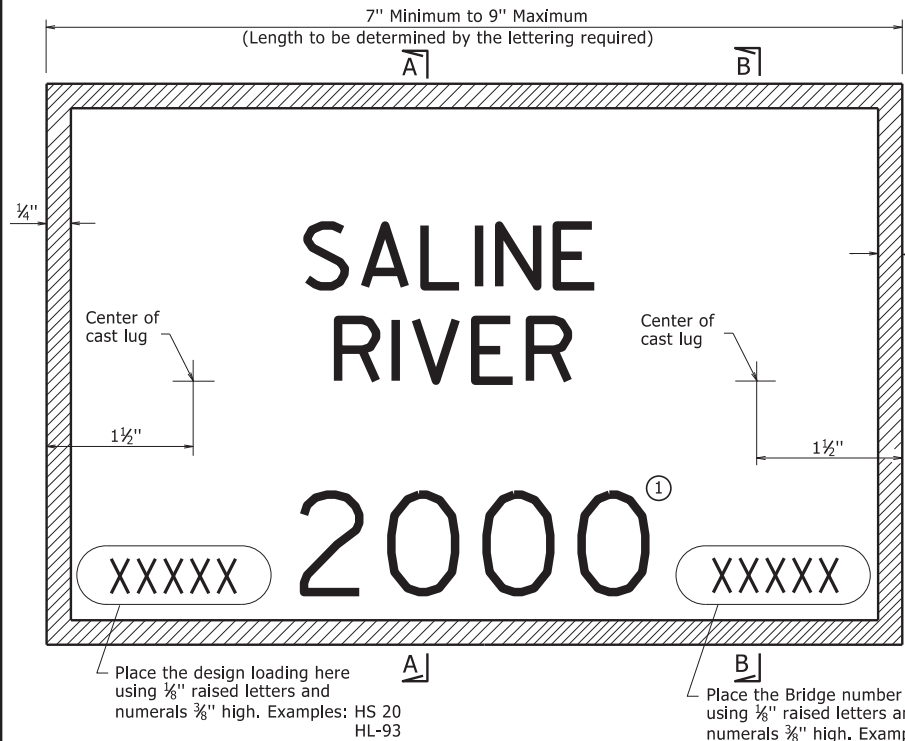
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

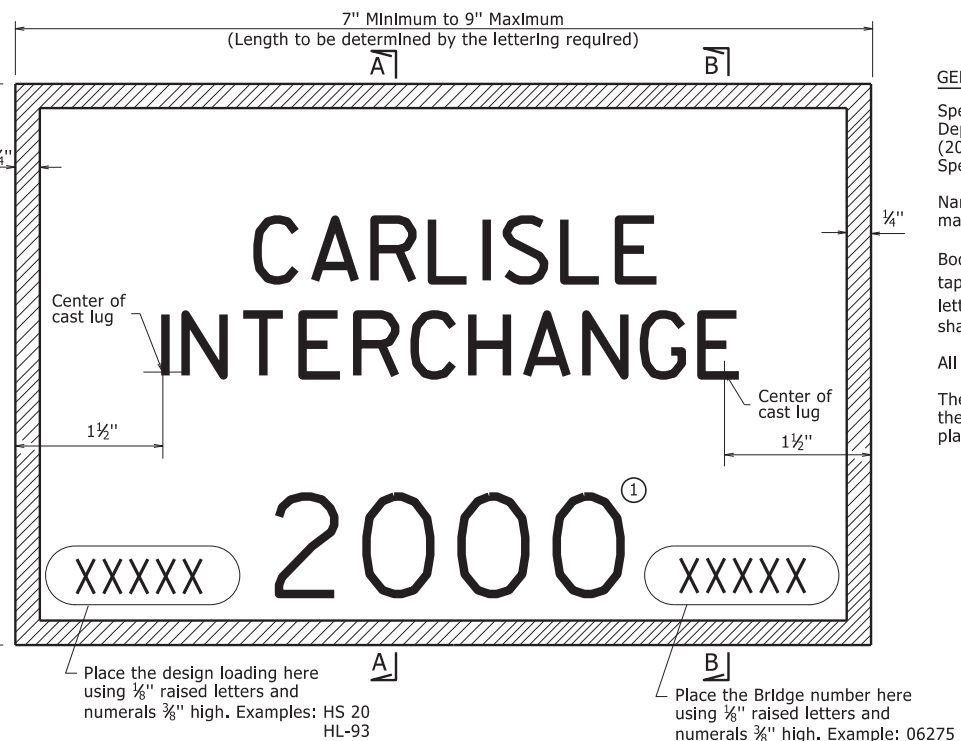
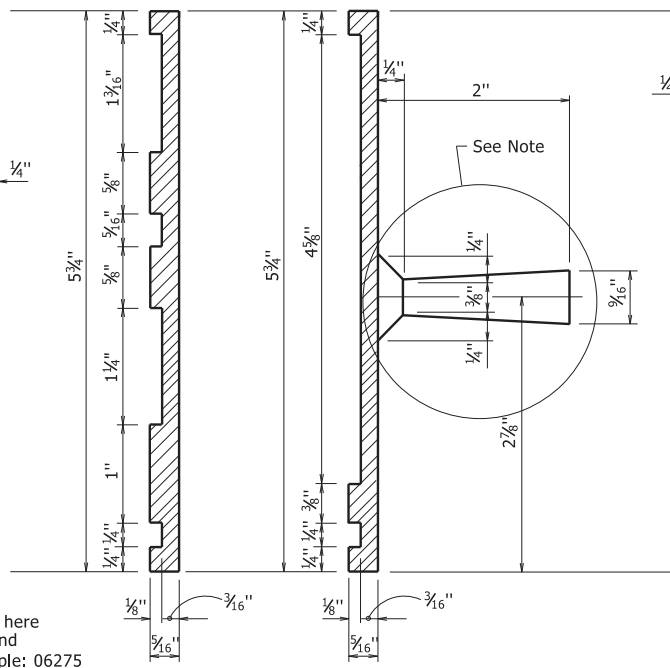
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DRAWING NO. 55007

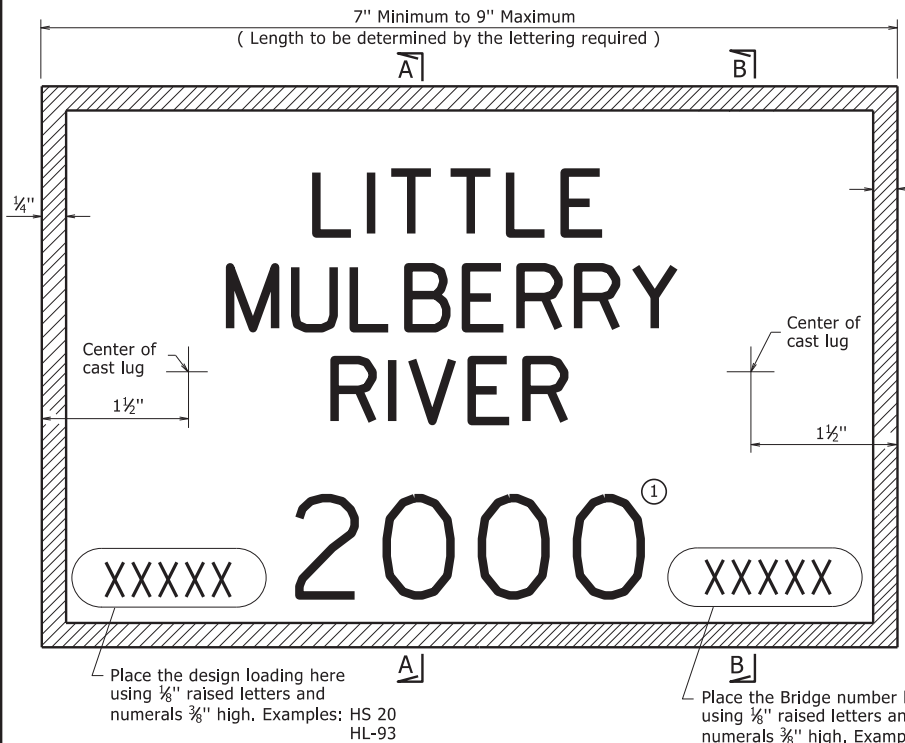
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
2/27/2020				6	ARK.			
				JOB NO.				
TYPE C NAME PLATE								55011



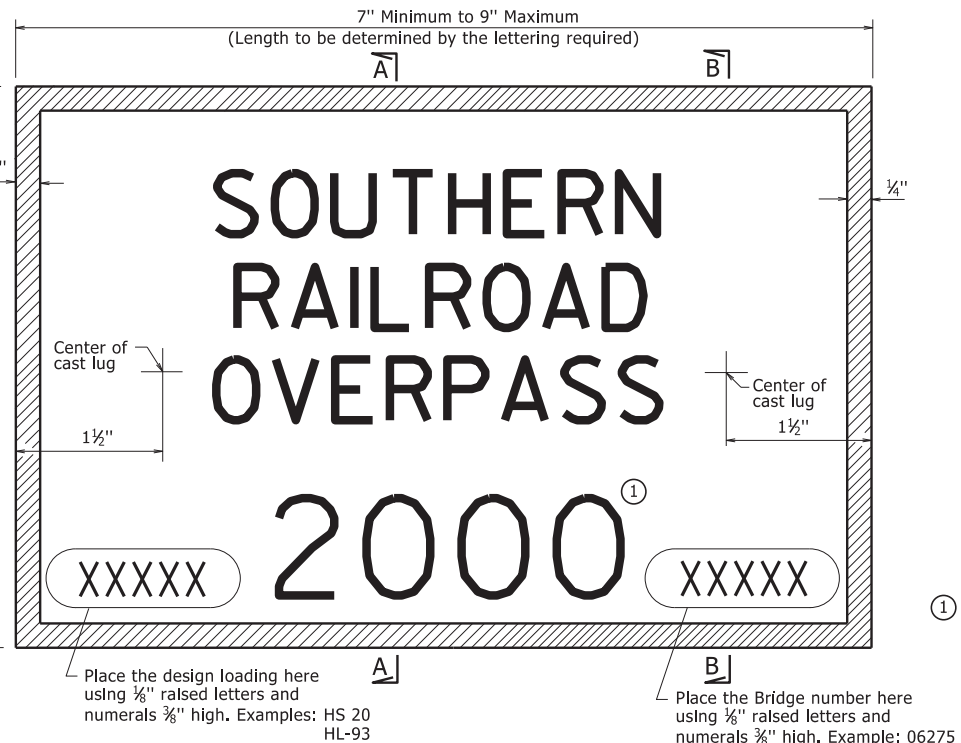
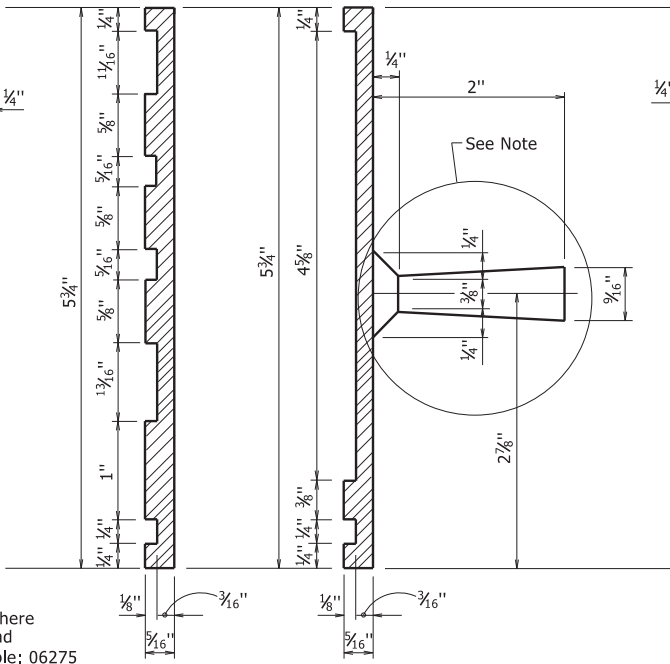
TYPICAL BRIDGE NAME PLATE-STYLE 1 - FULL SIZE
STREAM CROSSINGS



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



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



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

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

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

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

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

① 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: -----

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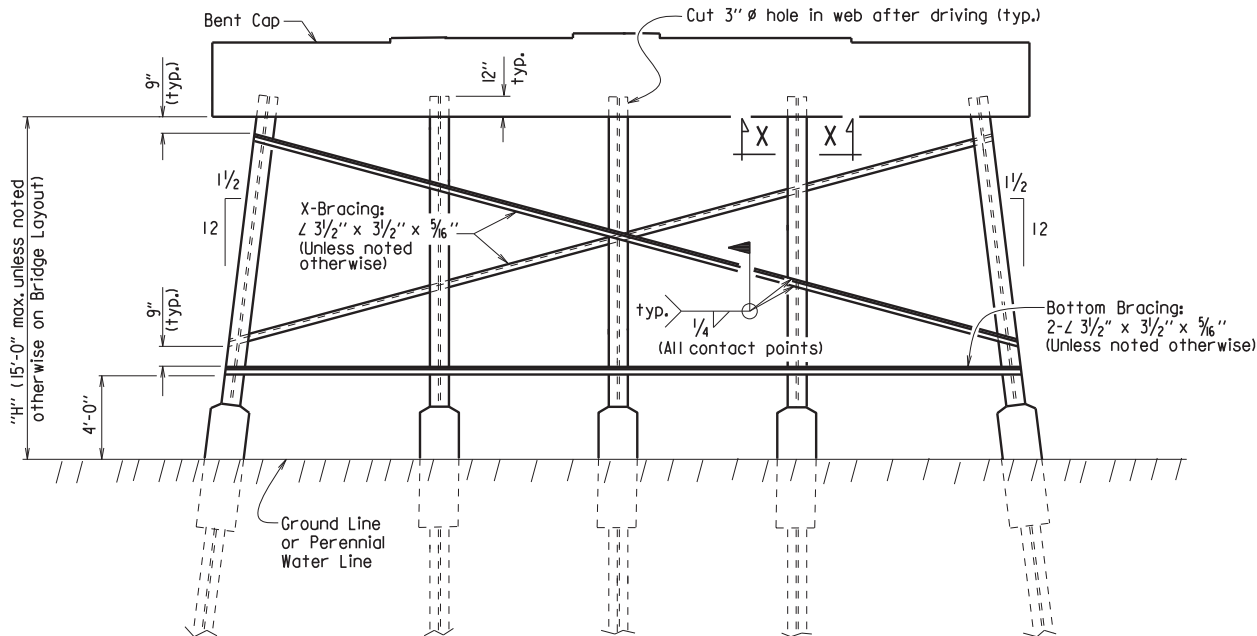
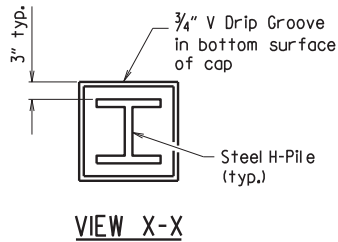
GENERAL NOTES FOR STEEL H-PILES:

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.

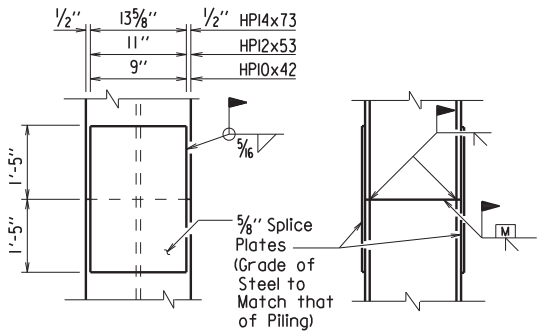
Omit X-Bracing and Bottom Bracing when "H" is 5 feet or less.

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 TREESTLE INTERMEDIATE BENT

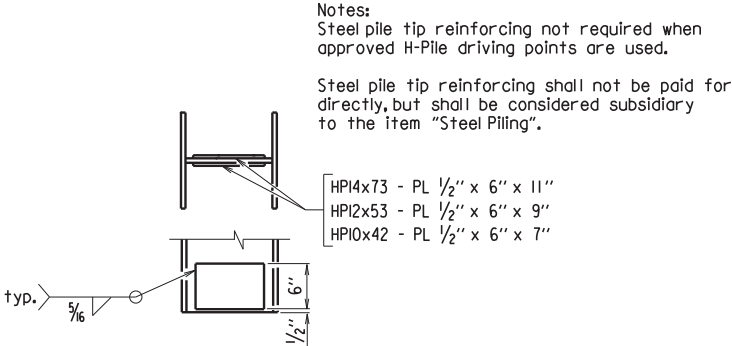
(Shown with Partial Height Encasement)



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:

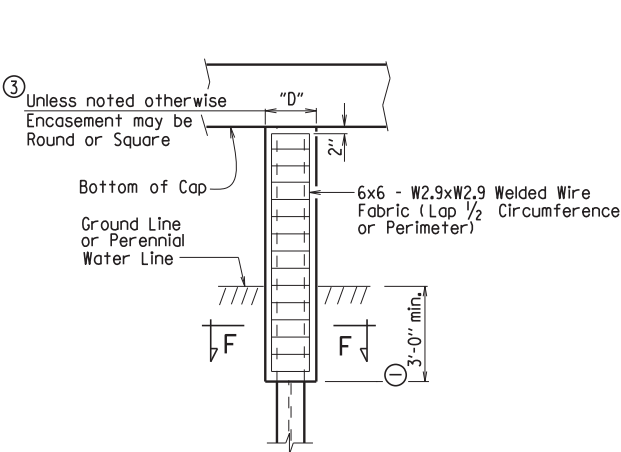
See Bridge Layout for additional notes, any pile encasement restrictions and required location of pile encasements.

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.

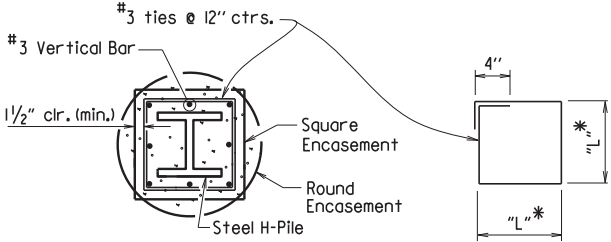
Welded Wire Fabric shall conform to AASHTO M 55 or M 221. Galvanized Corrugated Steel Pipe shall conform to AASHTO M 36 and M 218.

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

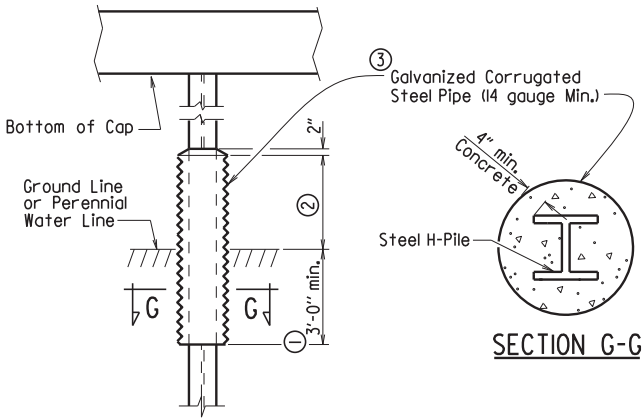
(Shown with Encasement to Bottom of Cap)



* Measured out-to-out of bar.

TABLE OF VARIABLES FOR PILE ENCASEMENT

Pile Size	"D"		"L"*
	Square Encsmt.	Round Encsmt.	
HP10x42	1'-7"	2'-0"	1'-4"
HP12x53	1'-8"	2'-2"	1'-5"
HP14x73	1'-11"	2'-6"	1'-8"



ALTERNATE PILE ENCASEMENT DETAIL FOR STEEL H-PILES

(Shown with Partial Height Encasement)

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



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

[illegible]

BAR LIST FOR ONE

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④ Varies with Skew and/or Wingwall Length

(For Information Only)

Quantities are based on one gutter for a square

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

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

$$\frac{1}{2}'' = 1'-0''$$
$$\frac{3}{4}'' = 1'-0''$$
$$\frac{3}{4}'' = 1'-0''$$

all be Class S(AE) with a minimum

All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi)

Approach Gutters will be measured and paid for in accordance with

All longitudinal lines within the limits of horizontal curves shall be on

Scales shown are for 22"x34" drawings. When using 11"x17"

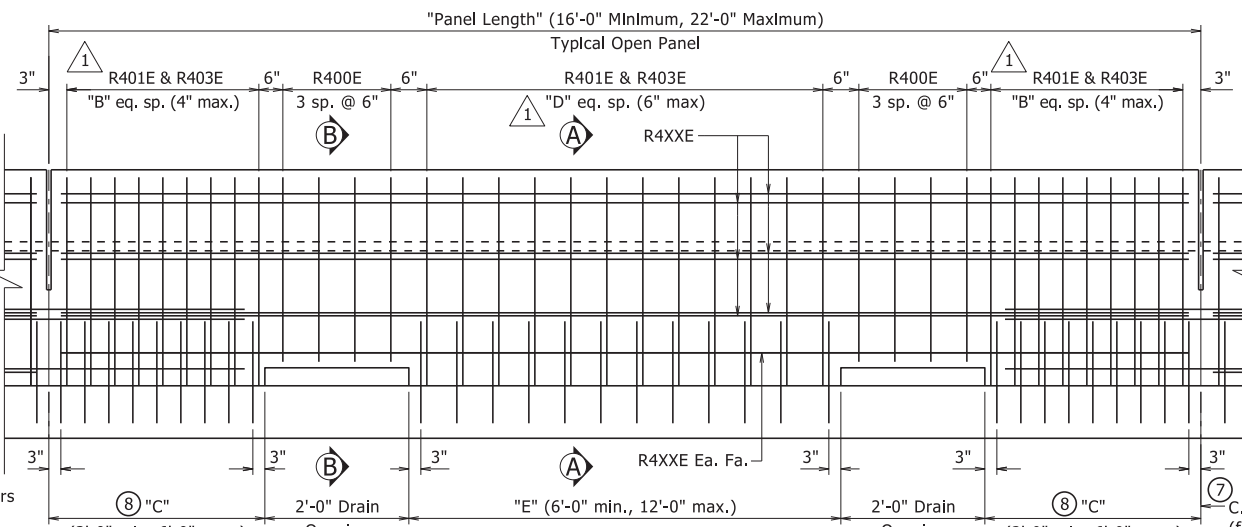
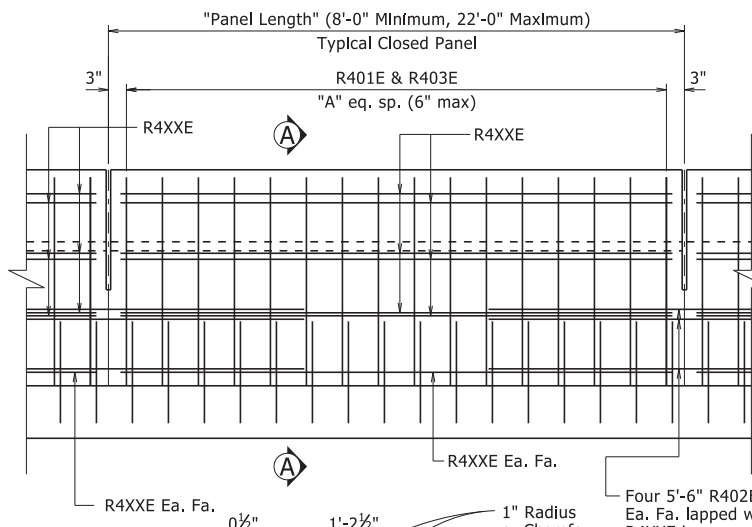
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DATE: 4-8-2021 FILE NO: 1-8-2021

DRAWING NO. 55030F

PRINT DATE: 4/9/2021

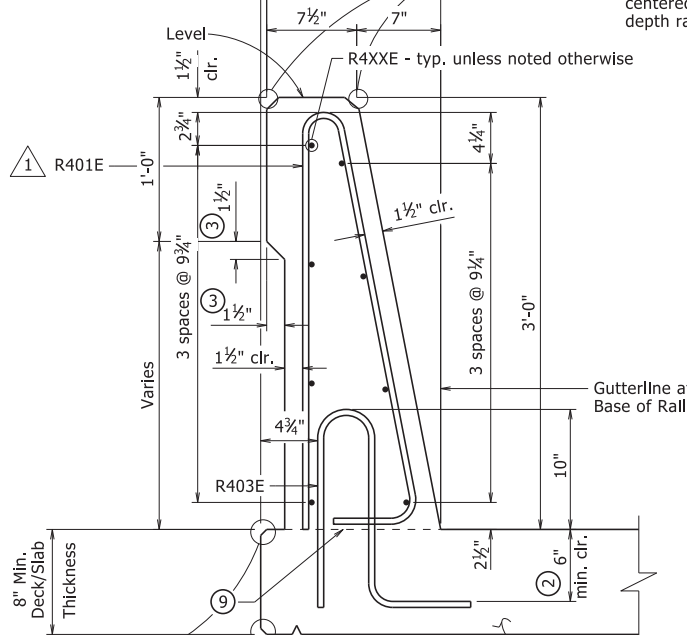
PRINT DATE: 10/6/2022



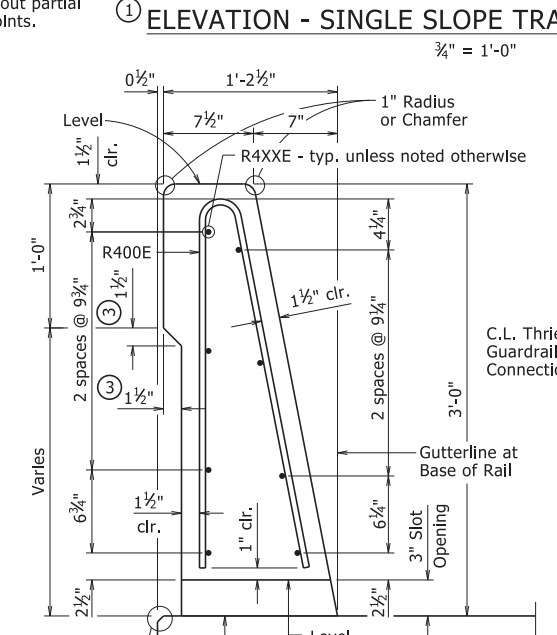
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
09/27/2022				6	ARK.			
				JOB NO.				

TYPE SSTR36 - 55070

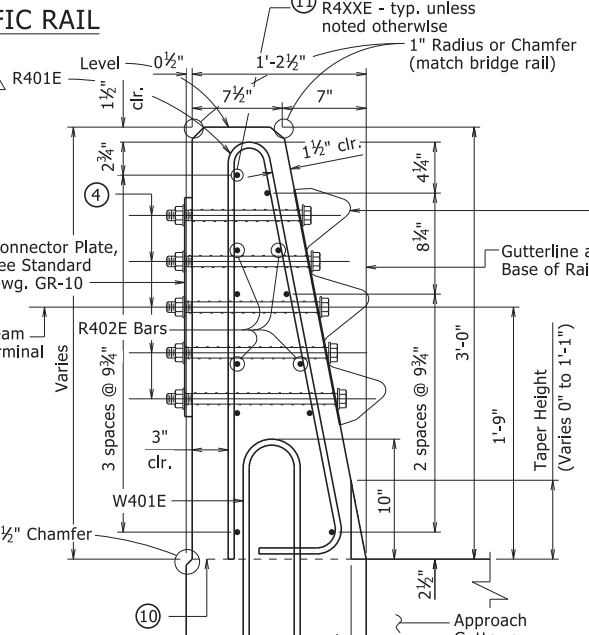
- C.L. Full-Depth Rail Joint (formed width 1/4" to 1" max). Stop 6" from top of deck/slab or sidewalk. Place at all intermediate bents locations where rail is continuous.
- All measurements shown are along gutterline at base of rail.
 - Minimum embedment into deck/slab.
 - Eliminate recess when formliner with architectural finish is used. See Plans for additional information.
 - C.L. 1" ϕ formed holes for 7/8" ϕ bolts. See Standard Drawings GR-10 and GR-12 for additional information.
 - Only applicable for bridges with rail cast directly on bridge deck/slab surface. Increase height as necessary for sidewalks, see Plans for additional information.
 - Field bend front leg of R401E bar as required to maintain minimum 1 1/2" front face clearance within limits of taper.
 - 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 1/2". Sawing of the joints shall be done as soon as practical to a width of 1/4", and must be controlled so it will follow the V-Groove.
 - End posts shall be the same length within a panel.



SECTION A-A

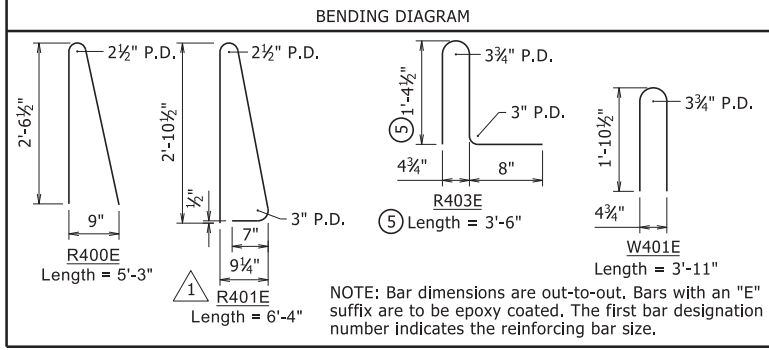


SECTION B-B

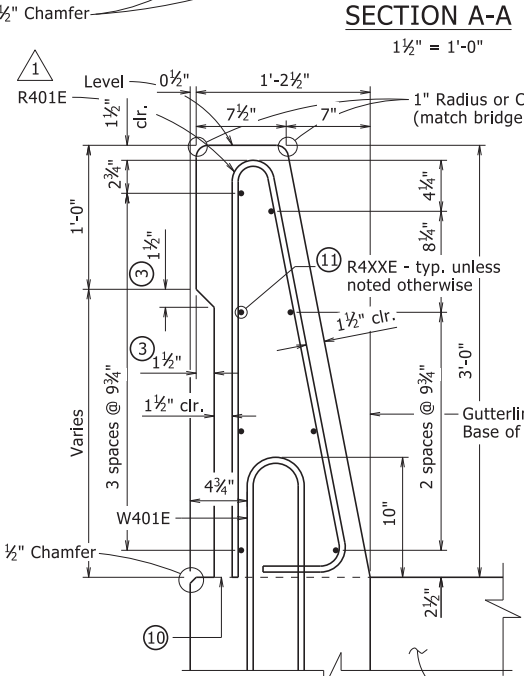
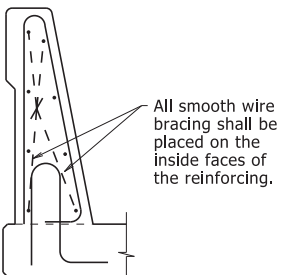
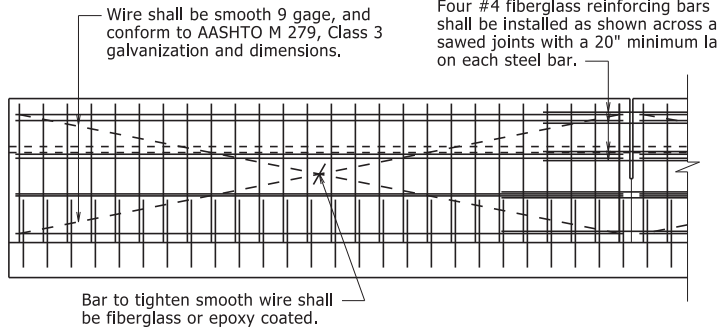


SECTION C-C

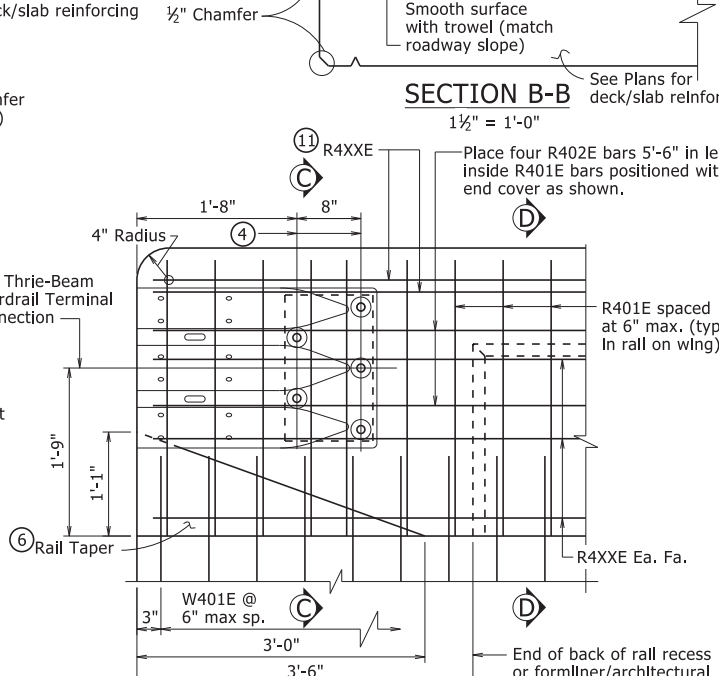
Bolt Special End Shoe to face of rail as shown. Tapered washers are not required between the head of the bolts and the sloped face of the rail. Tighten the five terminal connection bolts in a well distributed pattern to prevent damage or distortion of the thrie-beam connection. Cut bolts off after installation so as to extend no more than 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.



SECTION D-D



RAIL TERMINUS DETAILS

- Required Construction Joint. Level where water flows away from rail, match roadway slope where water flows toward rail.
- Top of Abutment Wing & Required Construction Joint (match bridge deck/slab construction joint slope). See Plans for Wing reinforcing.
- 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.

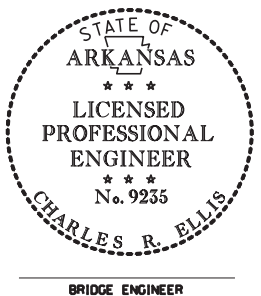
Details shown are general for bridges without sidewalks. See Plans for additional details and requirements specific to bridges with sidewalks.

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

Modified bending diagram and spacing for R401E bar. No Scale

By: CGP, Checked by: CMW 09/27/2022

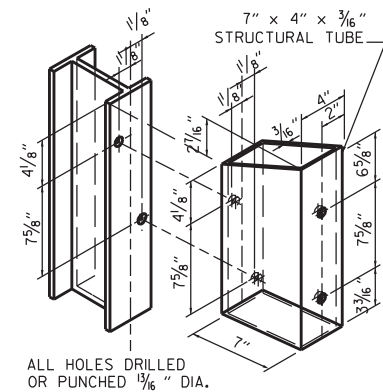
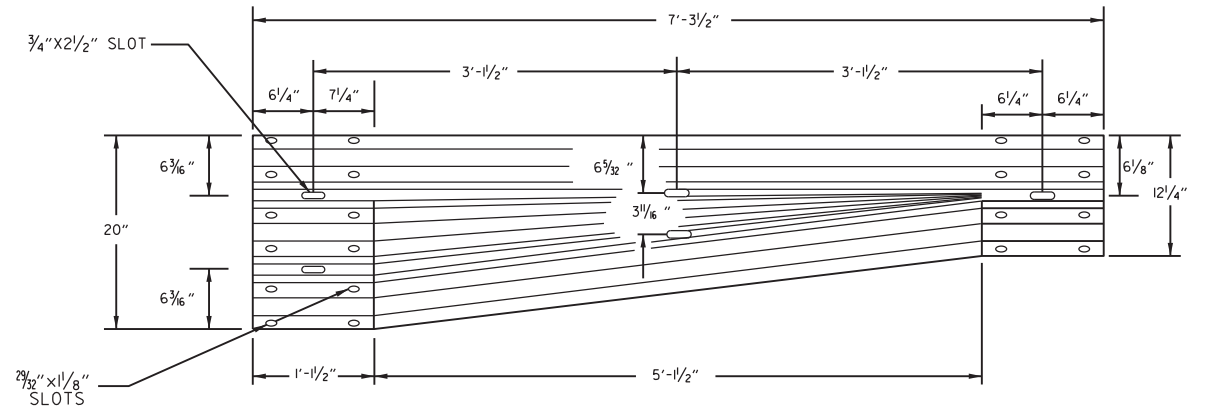
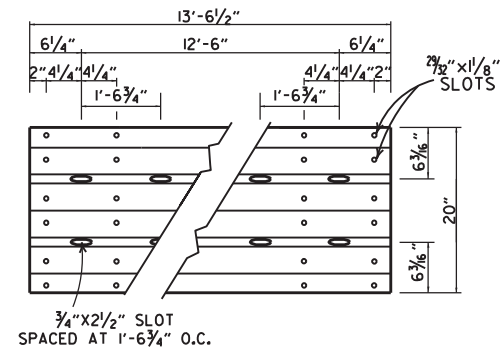
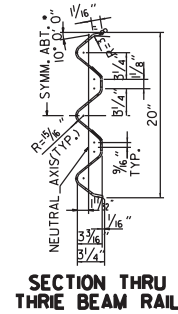
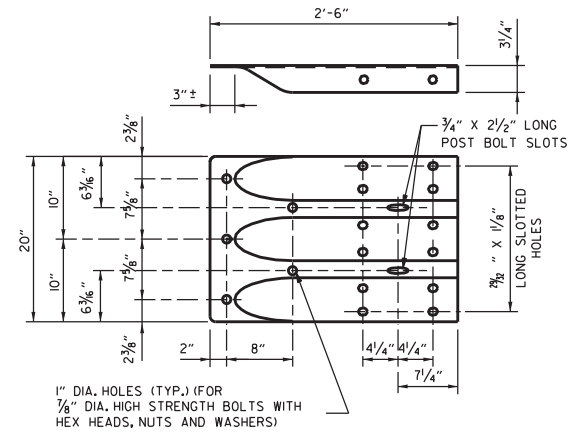
This document was originally issued and sealed by Charles R. Ellis, PE No. 9235, on November 5, 2020. This copy is not a signed and sealed document.

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

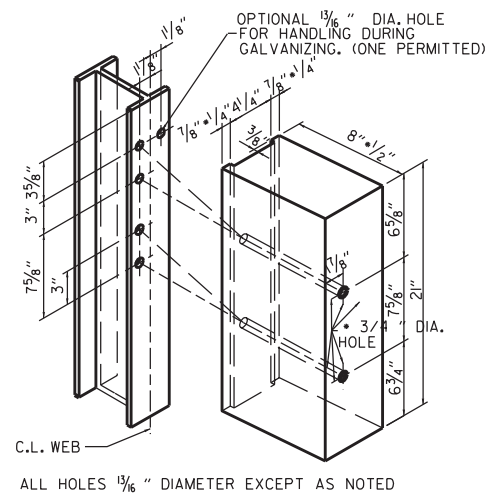
STANDARD DETAILS FOR
BRIDGE TRAFFIC RAIL
TYPE SSTR36
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

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

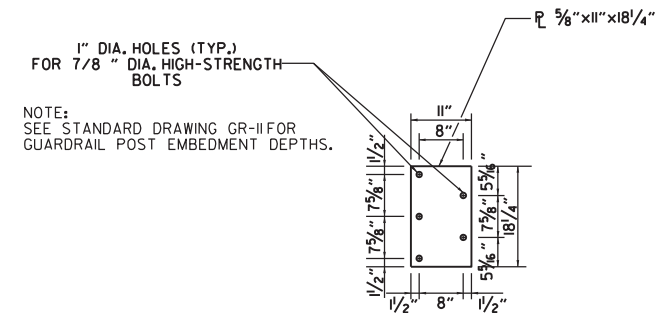
DRAWING NO. 55070



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



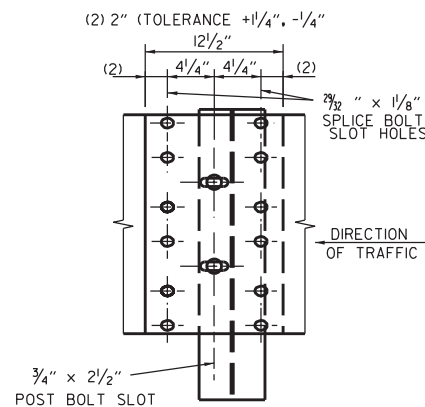
ALL HOLES $\frac{13}{16}$ " DIAMETER EXCEPT AS NOTED



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 $\frac{7}{8}$ " DIA. HIGH STRENGTH BOLTS, WITH THE HEADS PLACED ON THE TRAFFIC FACE. WASHERS SHALL BE USED UNDER THE HEAD AND NUT. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED AND SHALL CONFORM TO SUBSECTION 807.06.



GENERAL NOTES:

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

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

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

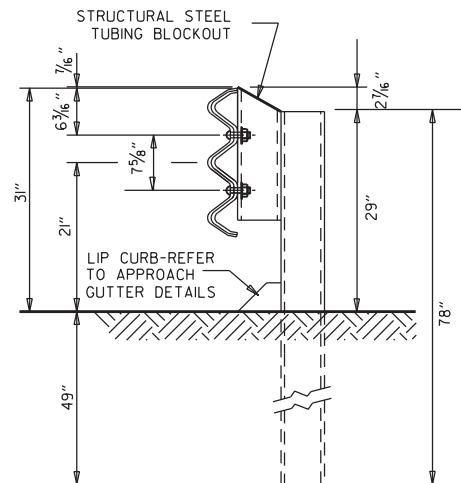
REFER TO STD. DRWG. GR-II FOR POST DETAILS.

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

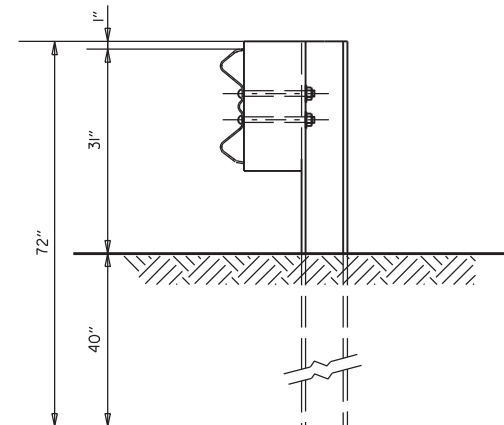
THREE BEAM POSTS SHALL BE SAME MATERIAL AS W-BEAM POSTS FOR ENTIRE JOB.

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

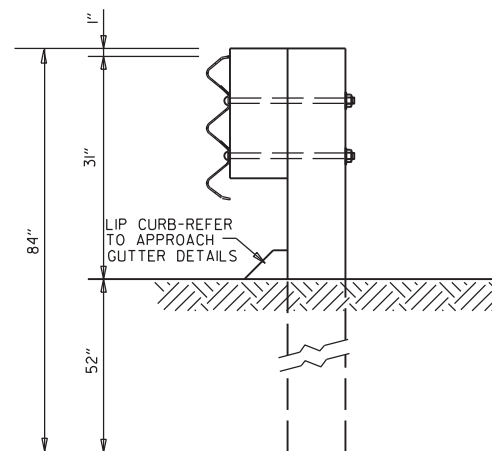
II-07-19	RENAMED AND REVISED REFERENCES		
II-16-17	REVISED TRANSITION SECTION, GUARD RAIL HEIGHT, AND GENERAL NOTES; MOVED THRIE BEAM GUARD RAIL CONNECTIONS AT BRIDGES ENDS TO STD. DRWG. GR-12		
07-14-10	RAISED HEIGHT OF W-BEAM I"		
II-29-07	ADDED PLASTIC BLOCKOUTS		
II-10-05	ADDED NOTE FOR ATTACHING STEEL BLOCKOUT		ARKANSAS STATE HIGHWAY COMMISSION
II-18-04	REVISED GENERAL NOTES		
10-9-03	REVISED GENERAL NOTES		
04-10-03	REVISED GENERAL NOTES		
08-22-02	REVISED NOTE (2)		GUARDRAIL DETAILS
06-29-00	MOVED DIMENSION LINES		
05-18-00	ADDED NOTE		
03-30-00	DRAWN & ISSUED		STANDARD DRAWING GR-10
DATE	REVISION	FILMED	



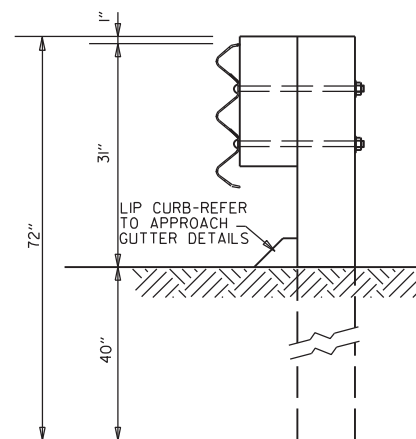
THRIE BEAM RAIL WITH STEEL TUBING BLOCKOUT
AND STEEL POST
POSTS 1-7



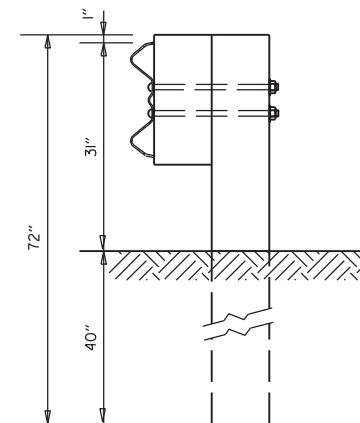
W-BEAM TO THRIE BEAM TRANSITION RAIL
WITH WOOD OR PLASTIC BLOCKOUT AND STEEL POST
POST 8



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



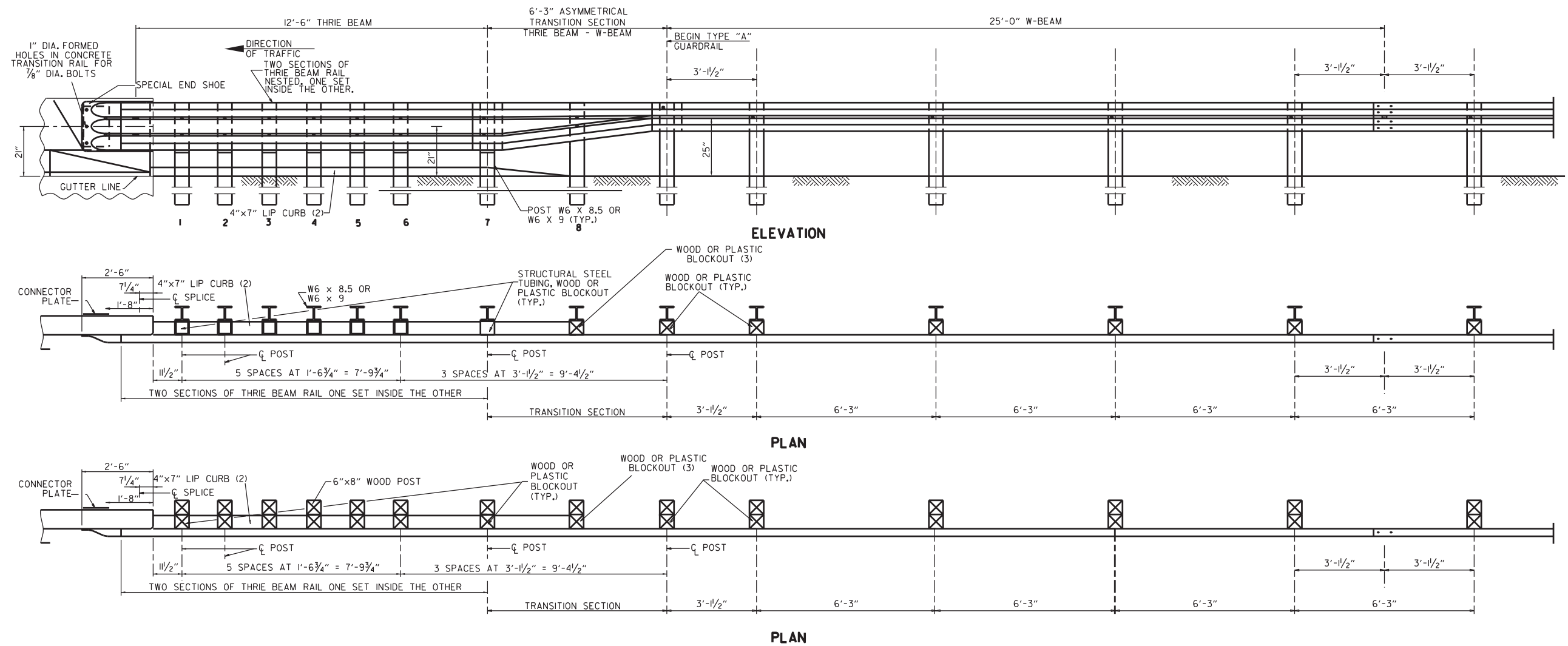
W-BEAM TO THRIE BEAM
TRANSITION RAIL WITH WOOD OR
PLASTIC BLOCKOUT & WOOD POST
POST 8

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 1350 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		
07-14-10	REVISED POST 8 DIMENSIONS		
11-29-07	ADDED PLASTIC BLOCKOUTS		
08-22-02	REVISED LIP CURB NOTE		STANDARD DRAWING GR-II
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.

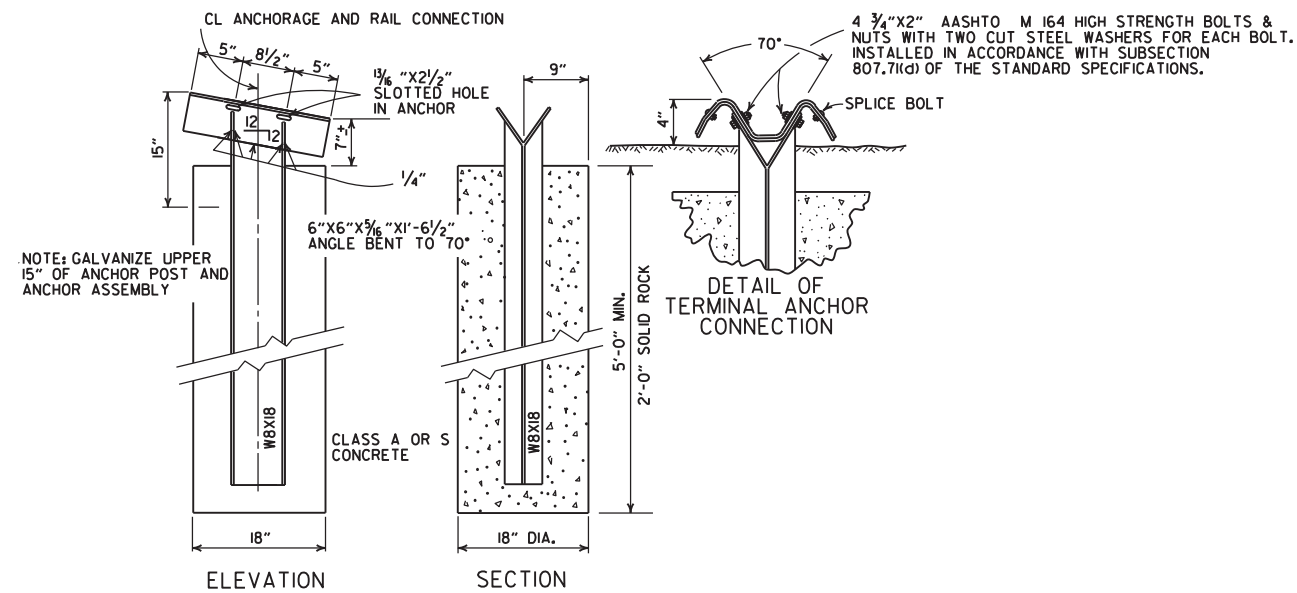
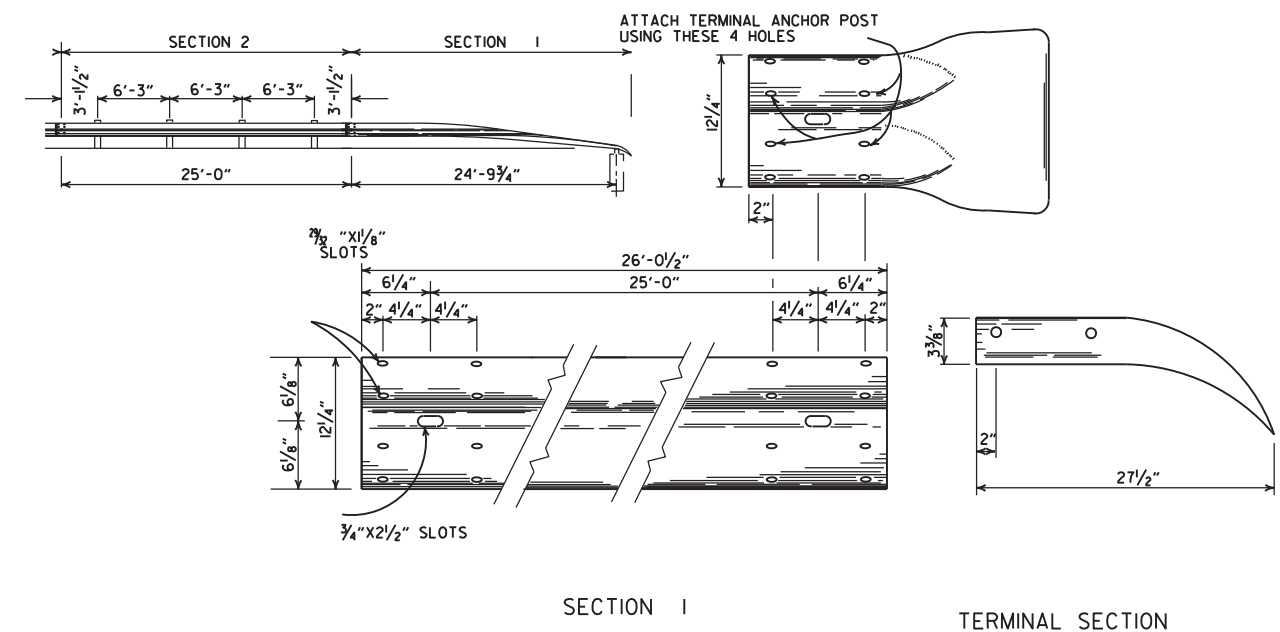
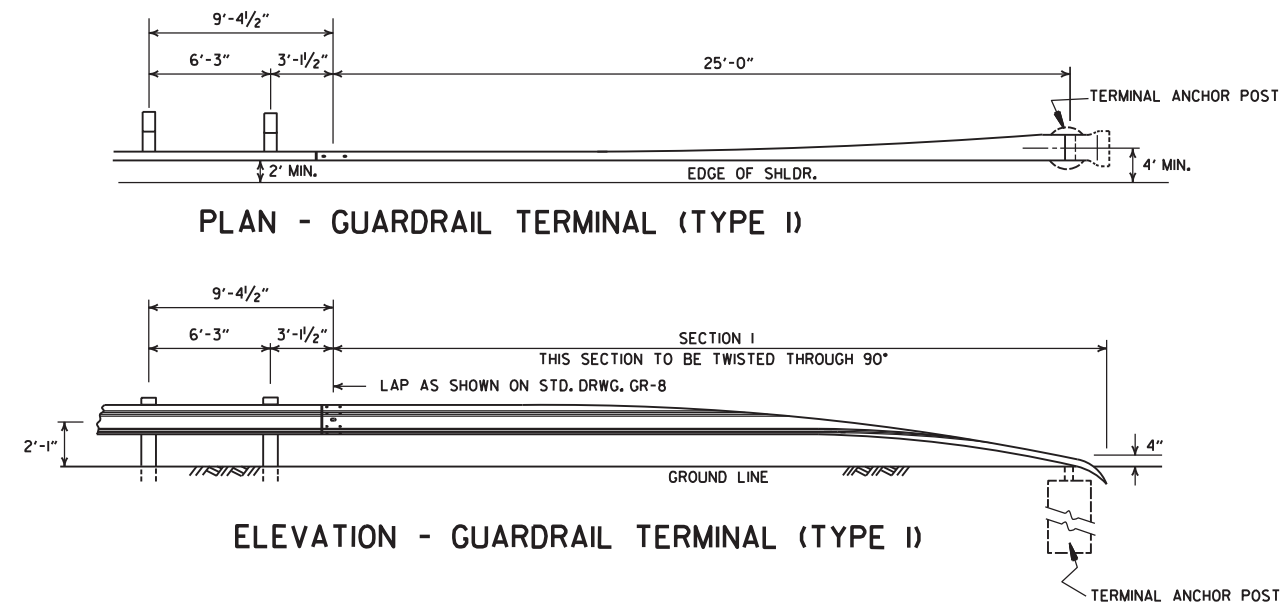
USE THRIE BEAM GUARDRAIL COMPONENTS OF SAME MATERIAL FOR ENTIRE JOB.

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. DWG. GR-10 & ISSUED		
DATE	REVISION	FILMED	



DETAIL OF TERMINAL ANCHOR POST (TYPE I)

11-07-19	RENAMED & REVISED REFERENCE.		ARKANSAS STATE HIGHWAY COMMISSION
11-16-17	REVISED GUARDRAIL HEIGHT AND LOCATION OF POSTS		GUARDRAIL DETAILS
07-14-10	RAISED HEIGHT OF GUARDRAIL 1"		
06-26-97	REVISED LAP NOTE		STANDARD DRAWING GRT-1
10-18-96	REVISED ASTM REF. TO AASHTO		
11-03-94	DIMENSION TERMINAL DETAIL		
11-11-92	ADDED NOTE FOR PAYMENT	11-11-92	
10-01-92	DRAWN & ISSUED	10-1-92	
DATE	REVISION	FILMED	

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	51⅝	51	31⅙	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	87⅝	87
120	154	154	96⅞	97
132	168¾	169	106½	107

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

REINFORCED CONCRETE
HORIZONTAL ELLIPTICAL
PIPE DIMENSIONS

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

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

CONSTRUCTION SEQUENCE

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

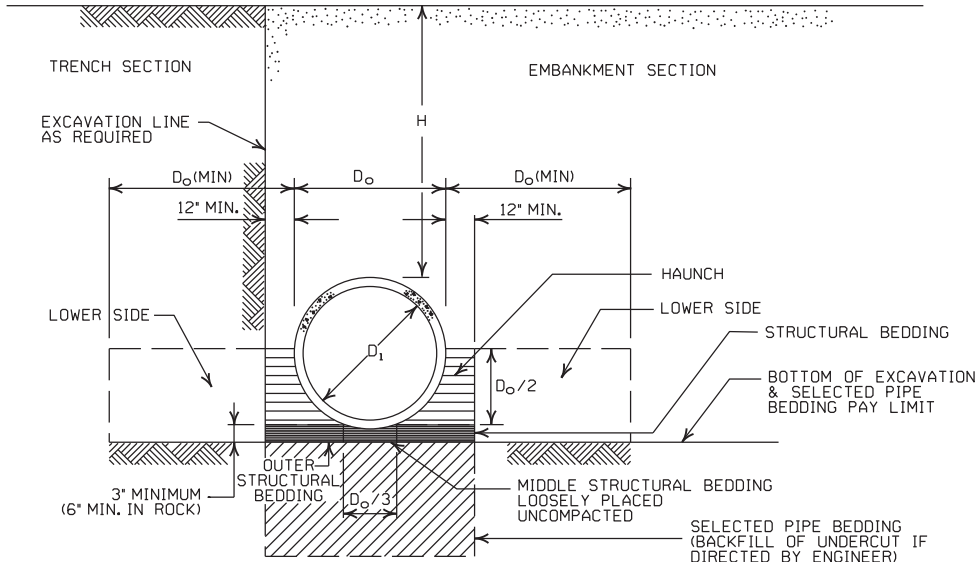
- LEGEND -

- 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 1/2 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 5/8 INCH BY 1/2 INCH CORRUGATION RIVETED OR HELICAL LOCK-SEAM						
12	1	45	45			
18	2	30	30	52		
24	2	22	22	39	41	
30	2		18	31	32	34
36	2.5		15	26	27	28
42	2			43	43	44
48	2			40	41	43
54	2			35	37	38
60	2				33	34
66	2					31
72	2					29

CORRUGATED METAL PIPE ARCHES

EQUIV. DIA. (INCHES)	PIPE DIMENSION SPAN X RISE (INCHES)	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 5/8 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.

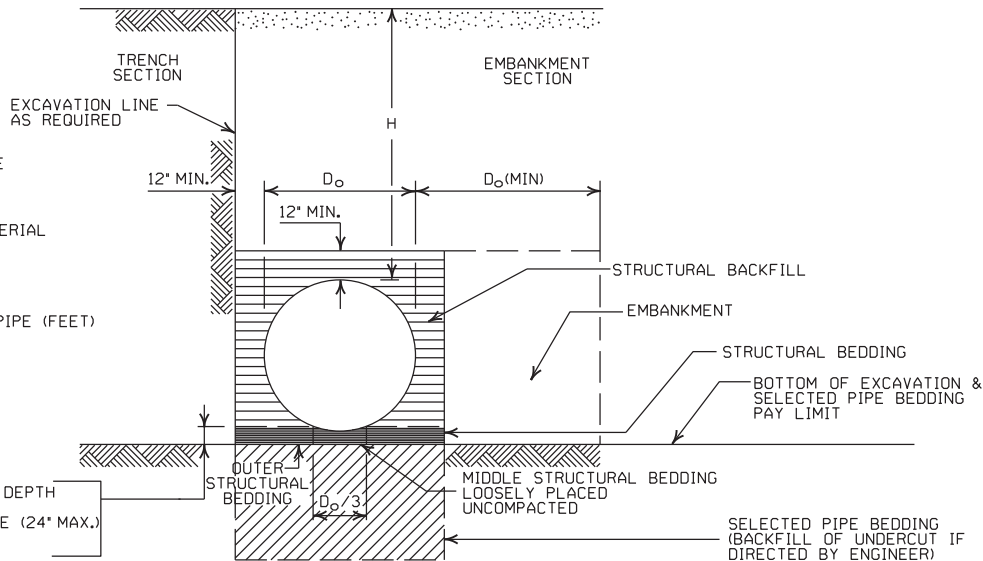
EQUIVALENT METAL THICKNESSES AND GAUGES

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 5/8" 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" >OR= 10'-0"
18"	4'-6"	4'-6"
24"	5'-0"	6'-0"
30"	5'-6"	7'-6"
36"	6'-0"	9'-0"
42"	7'-0"	10'-6"
48"	8'-0"	12'-0"

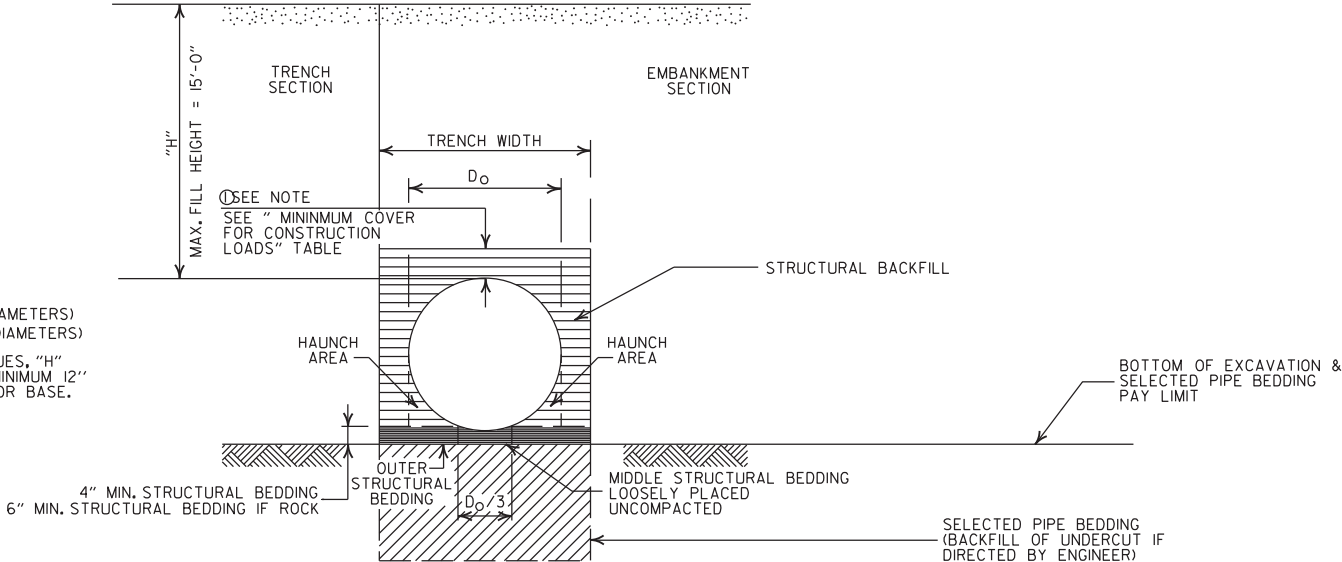
- ①NOTE:
18" MIN. (18" - 30" DIAMETERS)
24" MIN. (36" - 48" DIAMETERS)

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.

			ARKANSAS STATE HIGHWAY COMMISSION
			PLASTIC PIPE CULVERT (HIGH DENSITY POLYETHYLENE)
			STANDARD DRAWING PCP-1
2-27-14	REVISED GENERAL NOTE 1.		
12-15-11	REVISED GENERAL NOTES & MINIMUM COVER NOTE		
11-17-10	ISSUED		
DATE	REVISION	DATE FILMED	

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"

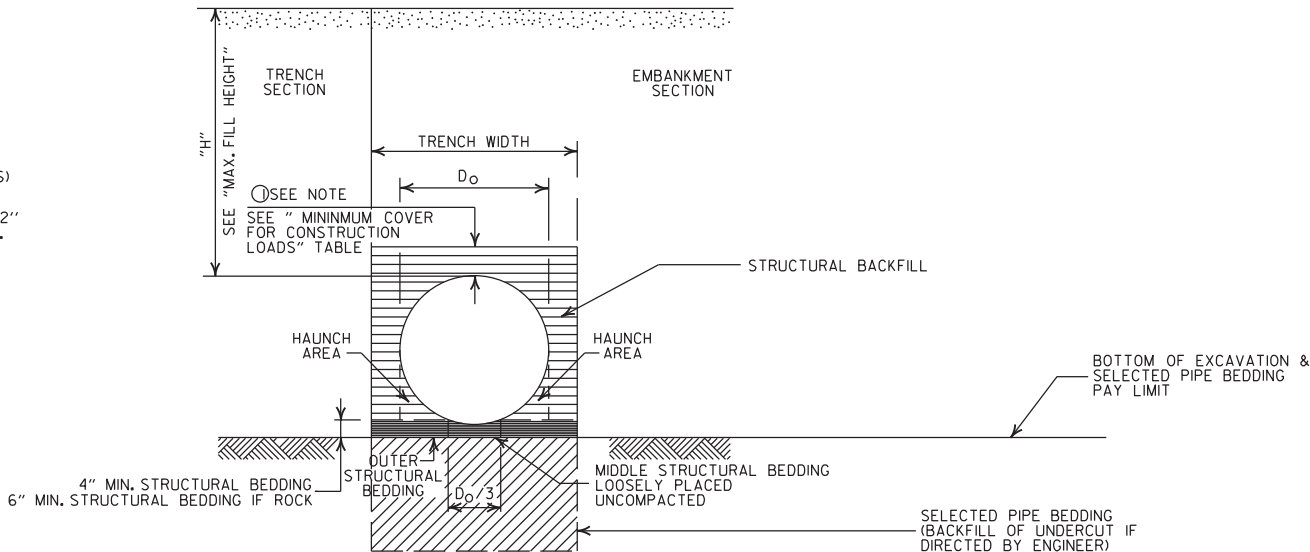
MULTIPLE INSTALLATION OF
PVC PIPES

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

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.



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

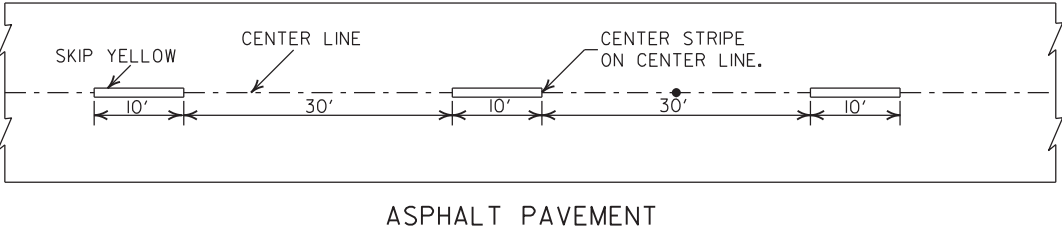
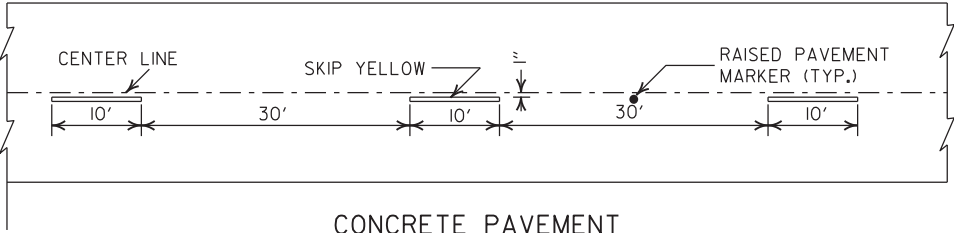
GENERAL NOTES

1. PIPE SHALL CONFORM TO 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.

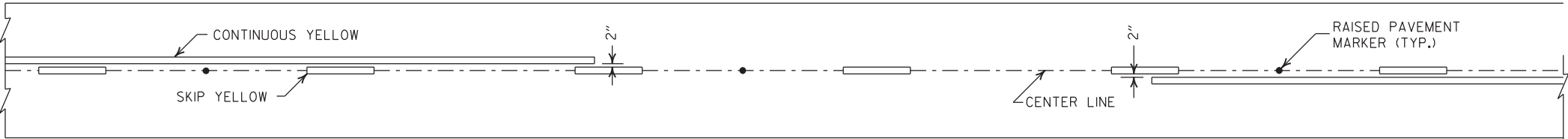
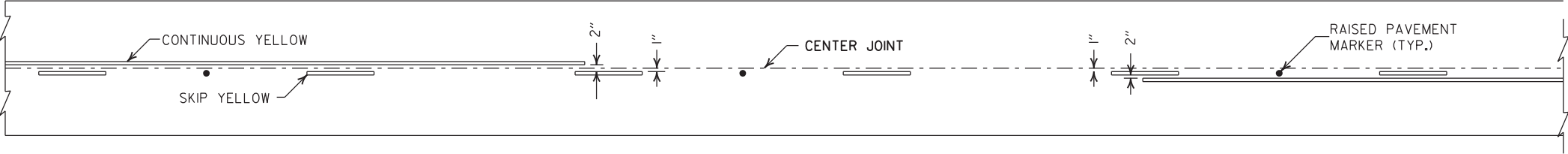
2-27-14	REVISED GENERAL NOTE 1.	
12-15-11	REV GENERAL NOTES & MINIMUM COVER NOTE; DELETED	
11-17-10	ISSUED	
DATE	REVISION	DATE FILMED

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

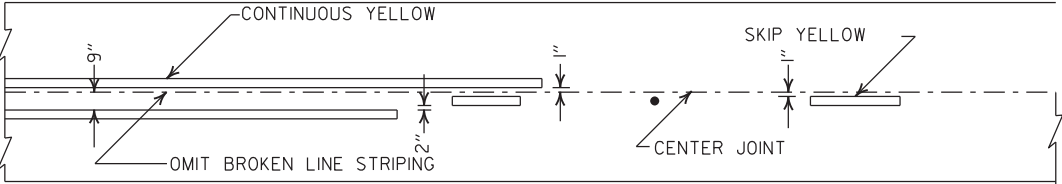
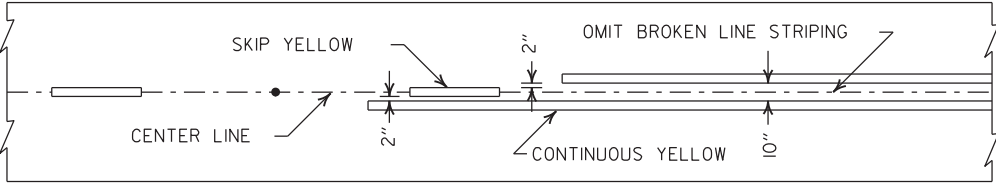
- NOTES:
1. REFER TO THE STRIPING DETAILS FOR PAVEMENT MARKING LINE WIDTHS.
 2. THIS DRAWING SHALL BE USED IN CONJUNCTION WITH THE LATEST REVISED ADDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES."
 3. RAISED PAVEMENT MARKERS SHALL BE PLACED ON AN 80 FEET SPACING UNLESS OTHERWISE SHOWN IN THE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



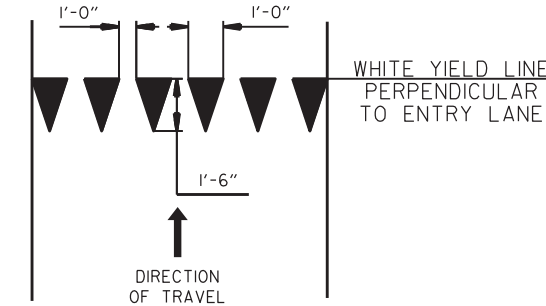
BROKEN LINE STRIPING



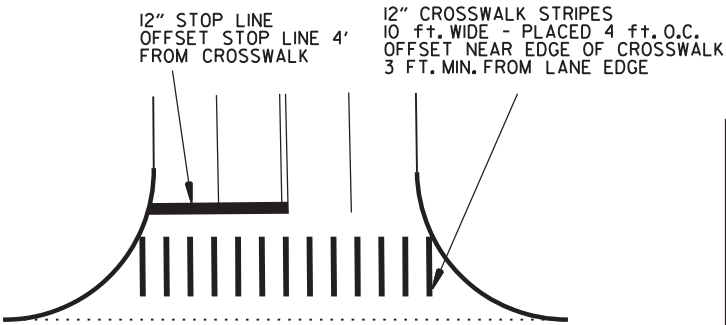
SOLID LINE STRIPING ON ASPHALT PAVEMENT



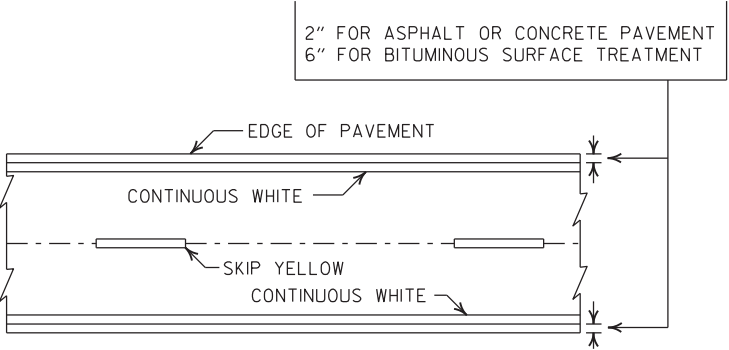
STRIPING AT ADJACENT NO PASSING LANES



YIELD LINE DETAIL



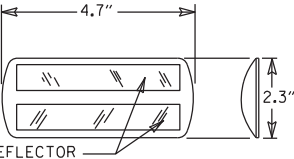
CROSSWALK AND STOP LINE DETAILS



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.



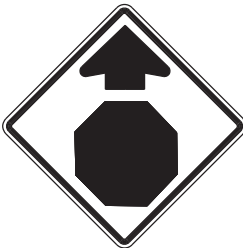
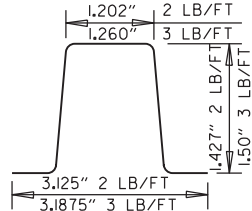
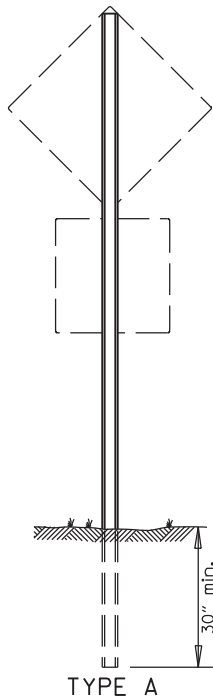
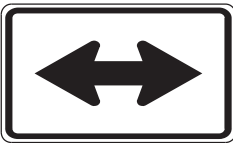
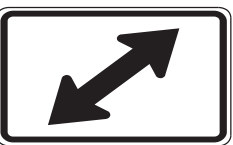
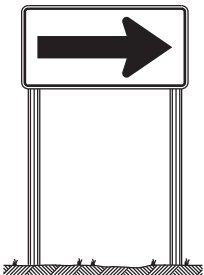
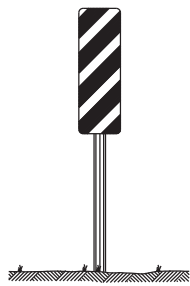
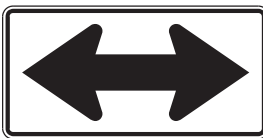
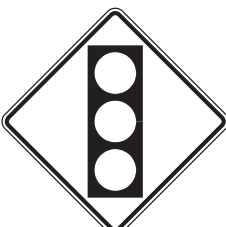
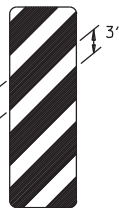
DETAIL OF STANDARD
RAISED PAVEMENT MARKERS

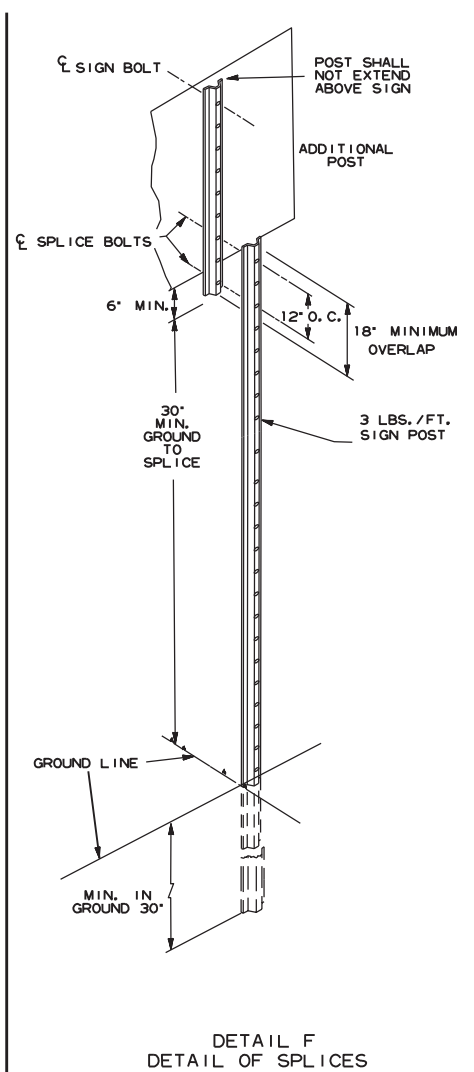
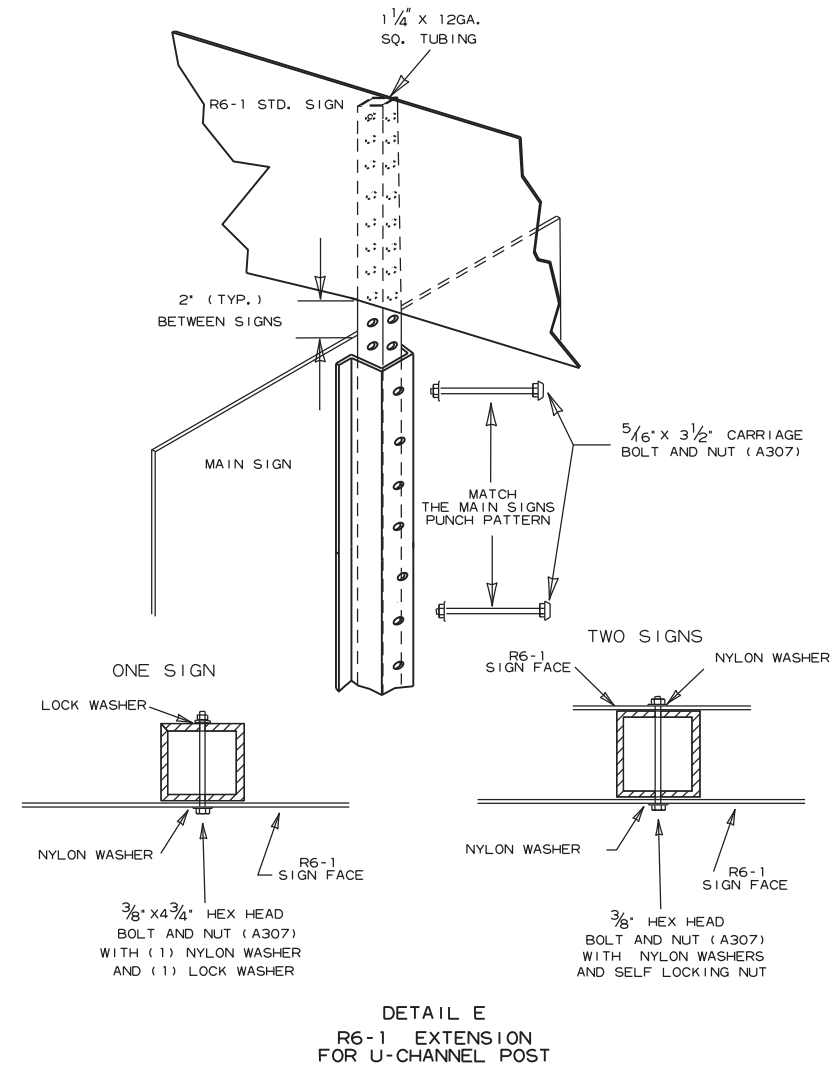
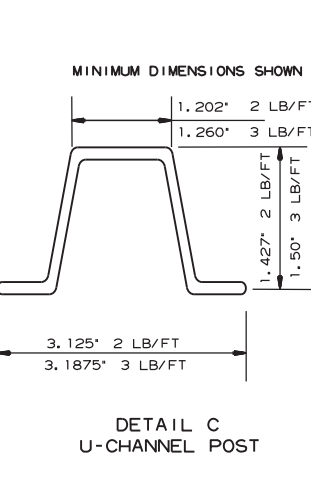
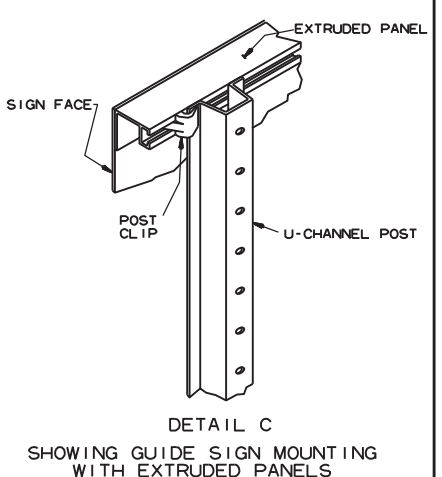
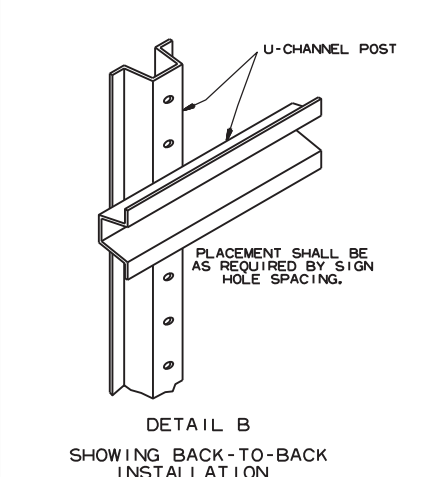
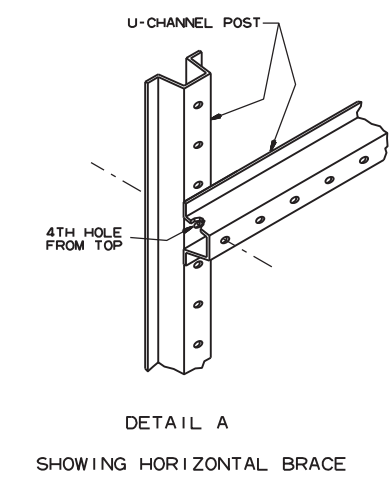
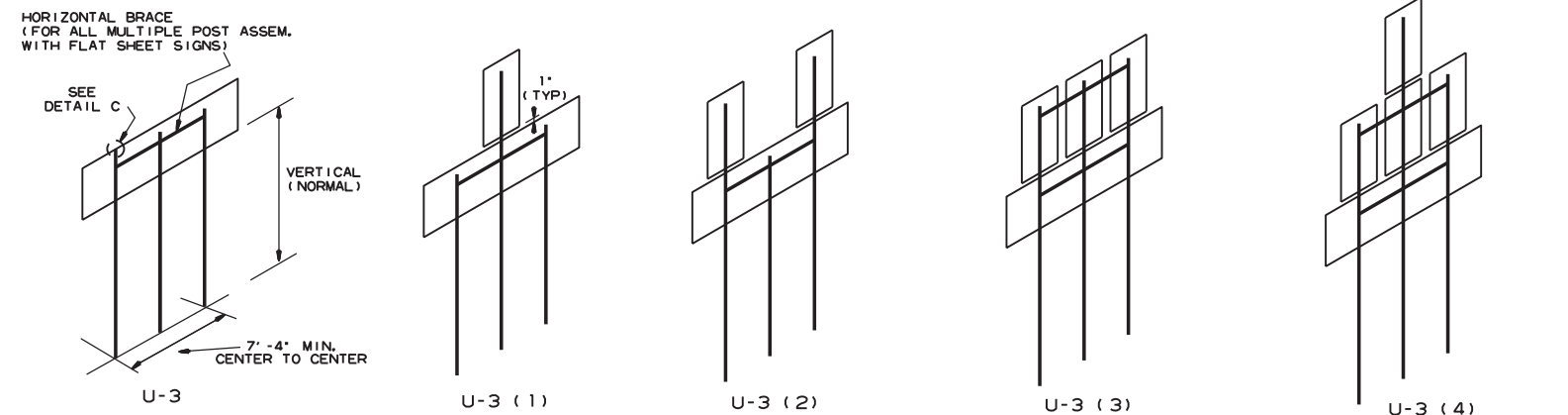
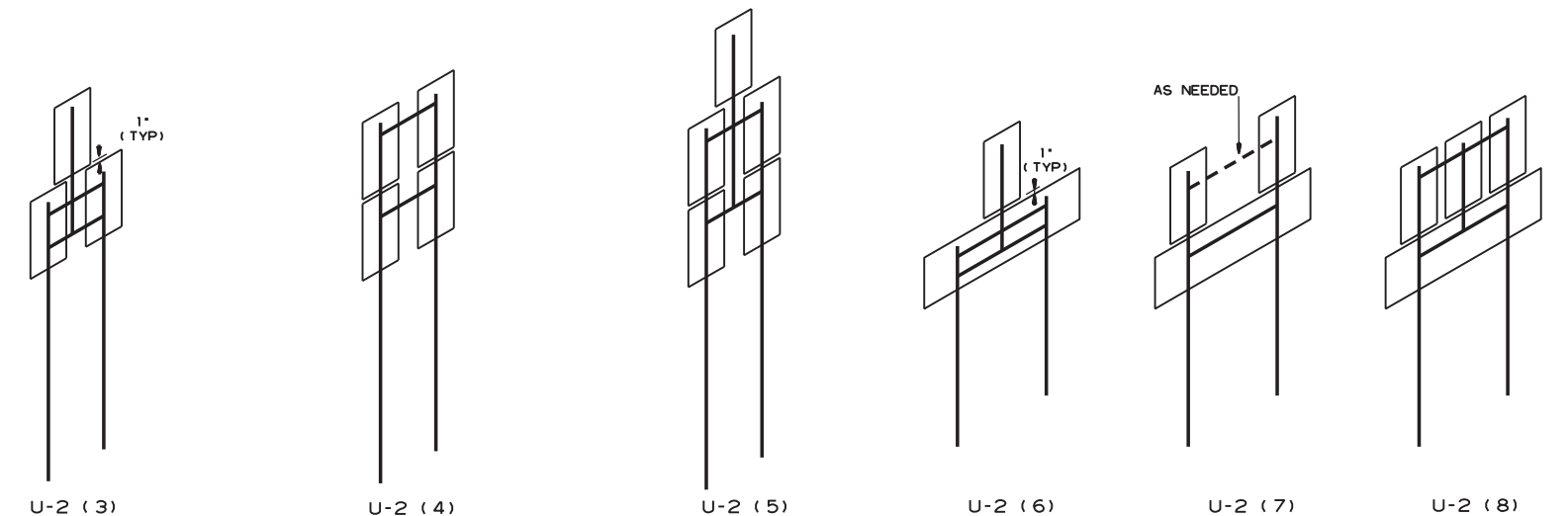
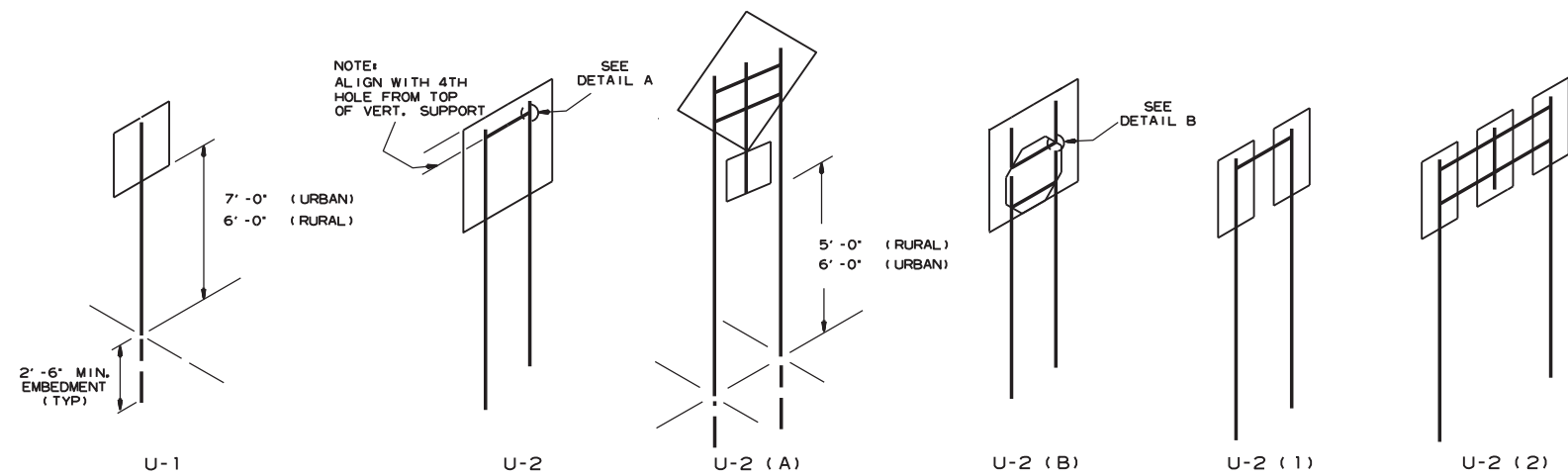
2-27-20	REVISED STOP LINE DETAILS	
6-1-17	ADDED YIELD LINE DETAIL	
5-12-16	REVISED LINE WIDTHS, SPACING, & NOTES	
9-12-13	REVISED DETAIL OF STANDARD RAISED PAVEMENT MARKERS	
11-17-10	REVISED GENERAL NOTES & REMOVED PLOWABLE PVMT MRKRS	
11-18-04	REVISED NOTE 2 & GENERAL NOTES	
8-22-02	ADDED CROSSWALK & STOPBAR DTLS.	
7-02-98	ADDED DETAILS OF STD. RAISED PAV'T. MARKERS	
4-26-96	REV. NOTES 3&4; ADDED R.P.M.	
9-30-80	DRAWN	1-9-30-80
DATE	REVISION	FILMED

ARKANSAS STATE HIGHWAY COMMISSION

PAVEMENT MARKING DETAILS

STANDARD DRAWING PM-1

 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.  RI-3P 18"x6"	 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"	 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"	 WI3-IP 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"	SCHOOL S4-3P 24"x8" WHEN CHILDREN ARE PRESENT S4-2P 24"x10"  OM-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, OM-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 WI-4-3</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, OM-3; ADDED WI-8		1-5-81	REDRAWN	960-1-15-81	9-15-78	ADDED WI-4-3	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	DATE FILMED
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DATE	REVISION	DATE FILMED																																					
						SUPPORT ASSEMBLIES																																	
						ARKANSAS STATE HIGHWAY COMMISSION STANDARD HIGHWAY SIGNS AND SUPPORT ASSEMBLIES STANDARD DRAWING SHS-1																																	



NOTES:

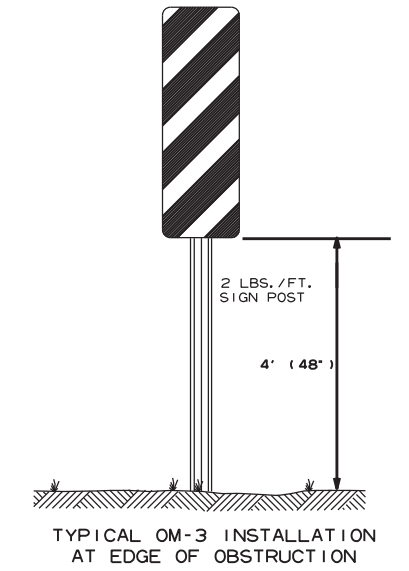
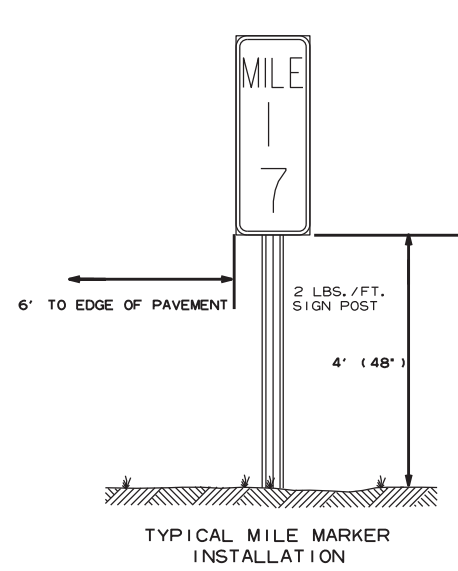
SIGNS AT LEAST 8' IN LENGTH MAY BE INSTALLED ON THREE 3 LB. POST. IN NO CASE SHALL THERE BE MORE THAN TWO 3 LB. POSTS WITHIN A 7' PATH.

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

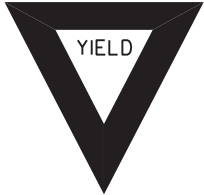
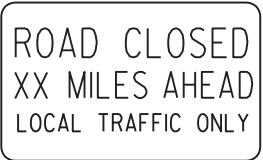
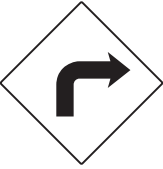
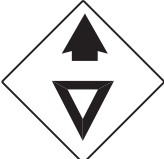
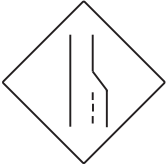
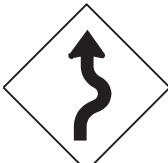
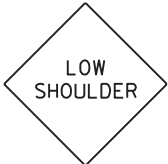
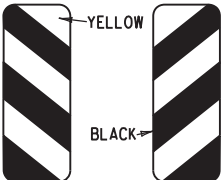
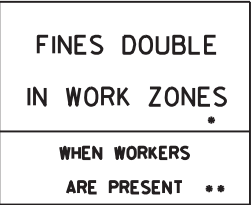
NORMAL INSTALLATIONS WILL REQUIRE 5/16" DIA. CARRIAGE BOLTS TO MOUNT SIGNS TO POST AND TO ASSEMBLE THE VARIOUS POST SUPPORTS.

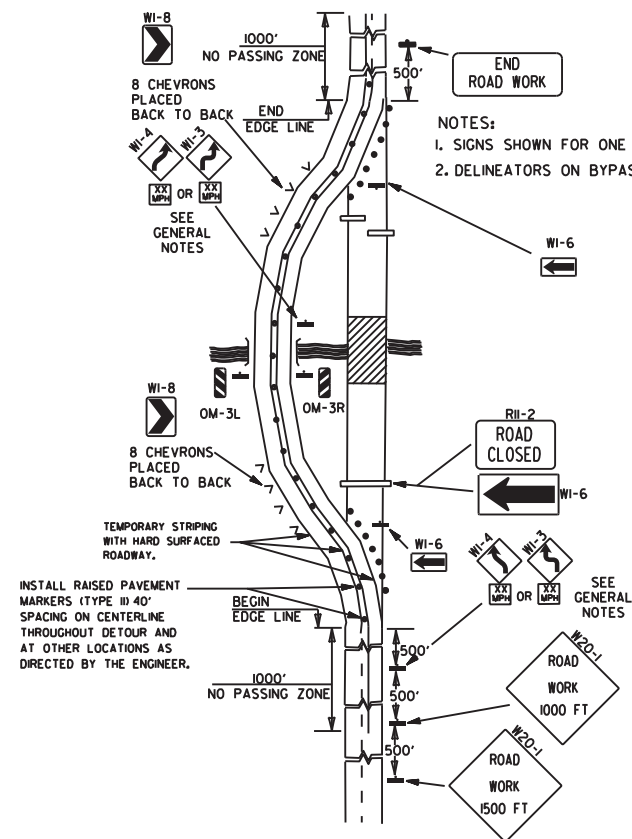
ALL SIGN POSTS SHALL BE PLUMB.

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

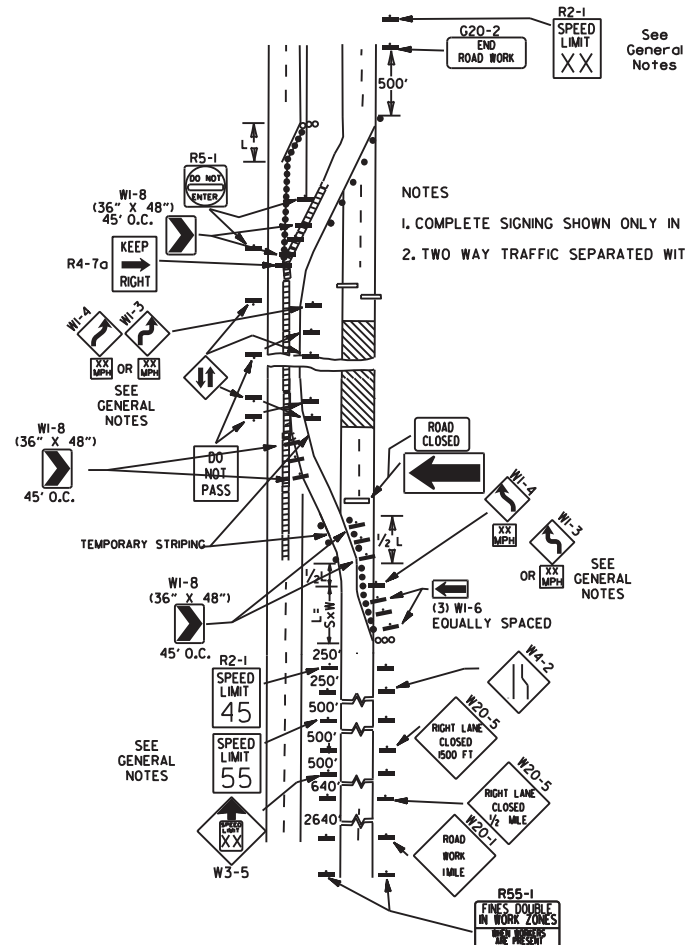


7-25-19	REVISED CARRIAGE BOLT WITH MATERIAL REQUIREMENT		ARKANSAS STATE HIGHWAY COMMISSION
2-27-14	REVISED NOTES.		
9-12-13	REVISED U-2(3), U-2(6), U-3(1), DETAIL D; ADDED DETAILS E & F; ADDED TYPICAL MARKERS		U-CHANNEL POST ASSEMBLIES
10-9-03	REMOVED ROUND POST & REVISED SPACING		
10-12-95	MOVED UPPER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

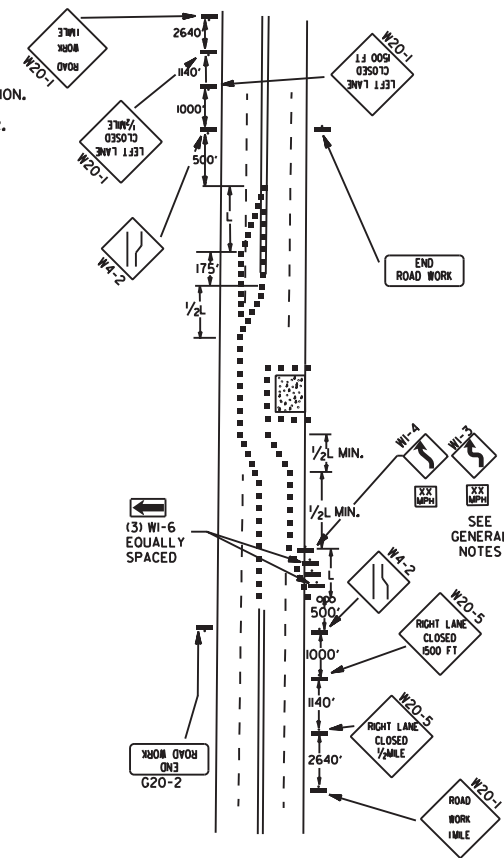
RI-1  STANDARD 30"X30" EXPRESSWAY 36"X36" SPECIAL 48"X48"	RI-2  STD. 36"X36"X36" EXPWY. 48"X48"X48" FWY. 60"X60"X60"	R2-1  STD. 24"X30" EXPWY. 36"X48" FWY. 48"X60"	W3-5  STD. 36"X36" EXPWY. 48"X48" FWY. 48"X48"	W3-5a  STD. 36"X36" EXPWY. 48"X48" FWY. 48"X48"	R4-1  STD. 24"X30" EXPWY. 36"X48" FWY. 48"X60"	R4-2  STD. 24"X30" EXPWY. 36"X48" FWY. 48"X60"	ADVANCE DISTANCES (XXXX) 500 FT 1/2 MILE 1000 FT 3/4 MILE 1500 FT 1 MILE AHEAD GENERAL NOTES: 1. ALL TRAFFIC CONTROL DEVICES USED ON ROAD CONSTRUCTION SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION, AND TO THE STANDARD HIGHWAY SIGNS, LATEST EDITION, OR AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION. 2. TRAFFIC CONTROL DEVICES SHALL BE SET UP JUST BEFORE THE START OF CONSTRUCTION OPERATIONS AND SHALL BE PROPERLY MAINTAINED DURING THE TIME SUCH CONDITIONS EXIST. THEY SHALL REMAIN IN PLACE ONLY AS LONG AS NEEDED AND REMOVED THEREAFTER. 3. EXISTING SIGNS AND CONSTRUCTION SIGNS SHALL BE KEPT IN PROPER POSITION, AND BE CLEAN AND LEGIBLE AT ALL TIMES. SIGNS THAT DO NOT APPLY TO EXISTING CONDITIONS SHALL BE REMOVED. SIGNS THAT ARE DAMAGED, DEFACED, OR THAT ACCUMULATE DIRT DURING CONSTRUCTION SHALL BE CLEANED, REPAIRED, OR REPLACED. 4. SIGNS ARE USUALLY MOUNTED ON A SINGLE POST, ALTHOUGH THOSE WIDER THAN 36" OR LARGER THAN 10 SQ. FT. SHALL BE MOUNTED ON TWO POSTS OR ABOVE A TYPE III BARRICADE. 5. SIGN POSTS DIRECT BURIED IN SOIL SHALL BE 2 LB. MINIMUM CHANNEL POST OR 4"x4" WOOD POSTS. CHANNEL POSTS SHALL BE PAINTED GREEN. WOOD POSTS SHALL BE PAINTED WHITE. ALL POSTS SHALL BE NEATLY CONSTRUCTED, AND SHALL BE REPLUMBED, CLEANED, OR REPAIRED AS NEEDED FOR THE DURATION OF THE JOB. THERE SHALL NOT BE MORE THAN 2 POSTS IN A 7' PATH FOR WOOD OR CHANNEL POSTS. ANY CHANNEL POST SPLICE SHALL BE IN ACCORDANCE WITH STANDARD DRAWING TC-3. 6. POST MOUNTED SIGNS IN RURAL AREAS SHALL BE CONSTRUCTED WITH THE NEAR EDGE OF THE SIGN FROM 6 TO 12 FEET FROM THE PAVEMENT EDGE. SIGNS IN URBAN AREAS AND BARRICADE MOUNTED SIGNS SHALL BE MOUNTED A MINIMUM OF 2 FEET FROM THE PAVEMENT EDGE. 7. ALL POST AND BARRICADE MOUNTED SIGNS MOUNTED IN URBAN AREAS SHALL BE MOUNTED A MINIMUM DISTANCE OF 7' FROM THE BOTTOM OF THE SIGN TO THE ROADWAY SURFACE. ALL POST AND BARRICADE MOUNTED SIGNS MOUNTED IN RURAL AREAS SHALL BE MOUNTED A MINIMUM DISTANCE OF 7' FROM THE BOTTOM OF THE SIGN TO THE ROADWAY SURFACE. EXCEPT A MINIMUM OF 6' SHALL BE USED WHEN MOUNTING AN ADVISORY SIGN BELOW A WARNING SIGN. TEMPORARY SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS FOR INTERMEDIATE TERM STATIONARY WORK CONDITIONS. THE SIGNS MINIMUM MOUNTING HEIGHT SHALL BE 5'. RETROREFLECTIVE DEVICES SHALL BE USED. TEMPORARY SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS FOR SHORT-TERM, SHORT DURATION, AND MOBILE CONDITIONS. THEY SHALL BE NO LESS THAN ONE (1) FOOT ABOVE THE TRAVELED WAY. LONG-TERM STATIONARY SIGNS SHALL BE DIRECT BURIED IN SOIL, UNLESS CONDITIONS NECESSITATE THE USE OF PORTABLE SIGNS, OR AS APPROVED BY THE ENGINEER. CONCRETE PADS, CONCRETE OR ROCK BALLAST, OR OTHER SOLID MATERIALS SHALL NOT BE UTILIZED WITH PORTABLE SIGN SUPPORTS. 8. FLAGGERS SHALL USE REFLECTORIZED STOP-SLOW PADDLES. FLAGS MAY BE USED ONLY FOR EMERGENCY SITUATIONS. 9. MOST OF THE SIGNS SHOWN ARE ORIENTED TO THE RIGHT. HOWEVER, THIS DOES NOT PRECLUDE THE USE OF MIRROR IMAGES OF THESE SIGNS WHERE THE REVERSE ORIENTATION MIGHT BETTER CONVEY TO MOTORISTS THE PROPER DIRECTION OF MOVEMENT. 10. R55-1 SIGNS SHALL BE PLACED AT LEAST 1500' BUT NOT MORE THAN 1 MILE IN ADVANCE OF THE WORK ZONE. IF A SPEED LIMIT REDUCTION IS IN EFFECT, THE SIGN SHALL BE PLACED A MINIMUM OF 500' IN ADVANCE OF THE "REDUCED SPEED AHEAD" SIGN. • NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE REQUIREMENTS SHOWN IN NOTES 4 & 5, BUT MEET THE REQUIREMENTS OF 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.
R5-1  STD. 30"X30" EXPWY. 36"X36" SPECIAL 48"X48"	R11-2  48"X30"	R11-3A  60"X30"	R11-4  60"X30"	W21-5a  STD. 36"X36" FWY. 48"X48"	W1-1  STD. 36"X36" FWY. 48"X48"	W1-2  STD. 36"X36" FWY. 48"X48"	
W1-3  STD. 48"X48"	W1-4  STD. 48"X48"	W1-6  STD. 48"X24" SPECIAL 60"X30"	W1-8  STD. 18"X24" SPECIAL 24"X30" EXPWY. 30"X36" FWY. 36"X48"	W3-1  STD. 36"X36" SPECIAL 48"X48"	W3-2  STD. 36"X36" SPECIAL 48"X48"	W4-2  STD. 36"X36" FWY. 48"X48"	
W5-1  STD. 36"X36" SPECIAL 48"X48"	W6-3  EXPWY. 36"X36" SPECIAL 48"X48"	W8-7  EXPWY. 36"X36" FWY. 48"X48"	W9-2  STD. 36"X36" FWY. 48"X48"	W13-1  STD. 24"X24"	W20-1  STD. 48"X48"	W20-2  STD. 48"X48"	W20-3  STD. 48"X48"
W20-4  STD. 48"X48"	W20-5  STD. 48"X48"	W20-7a  18" 500 FEET 24" W16-2 STD. 36"X36" FWY. 48"X48"	W21-2  STD. 30"X30" SPECIAL 36"X36"	W21-5  STD. 30"X30" SPECIAL 36"X36"	W24-1  STD. 36"X36"	W1-4b  STD. 48"X48"	R56-1  STD. 18"X18"
W8-11  STD. 36"X36" FWY. 48"X48"	W8-9  STD. 36"X36" FWY. 48"X48"	G20-1  60"X24"	G20-2  48"X24"	OM-3L OM-3R  12"X36"	M4-9  STD. 30"X24" SPECIAL 48"X36" SPECIAL 60"X48"	M4-10  48"X18"	R55-1  36"X60" • USE 6" C LETTERS •• USE 4" D LETTERS



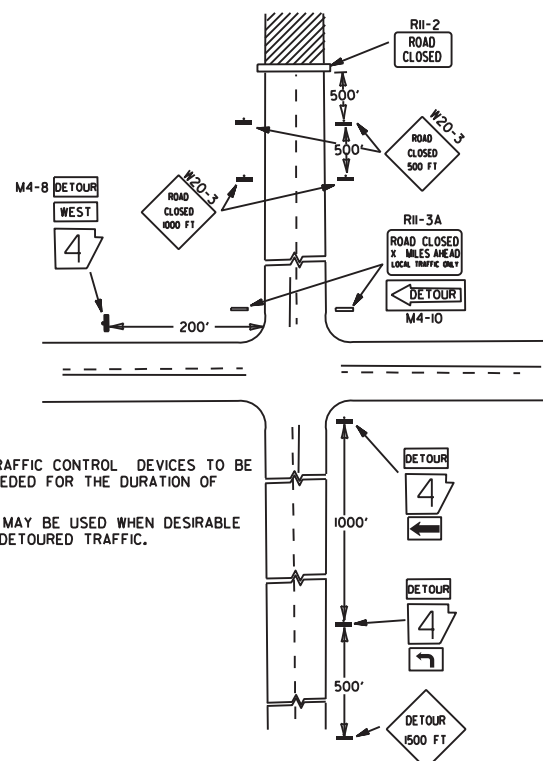
(A) TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES ON A 2-LANE HIGHWAY WHERE THE ENTIRE ROADWAY IS CLOSED AND A BYPASS DETOUR IS PROVIDED.



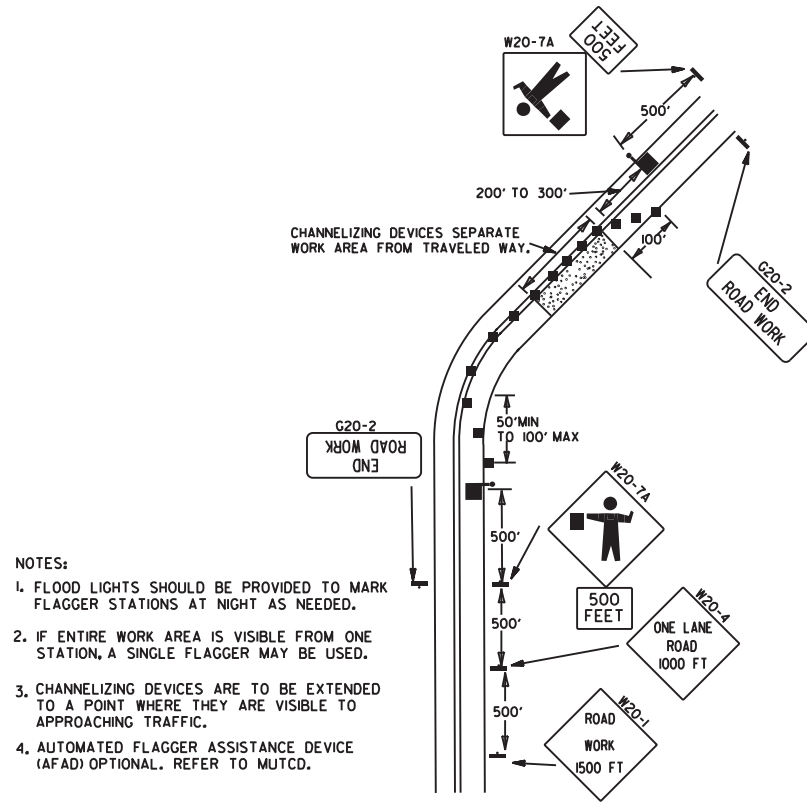
(B) TYPICAL APPLICATION - 4-LANE DIVIDED ROADWAY WHERE ONE ROADWAY IS CLOSED.



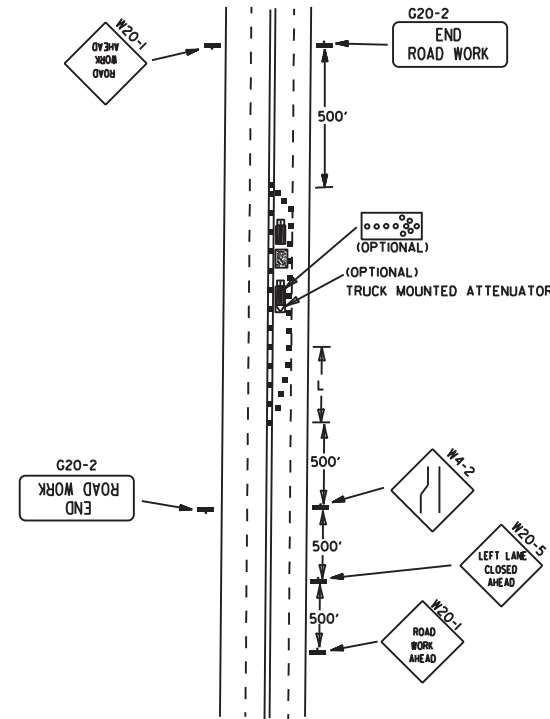
(C) TYPICAL APPLICATION - 4-LANE UNDIVIDED ROADWAY WHERE HALF OF THE ROADWAY IS CLOSED.



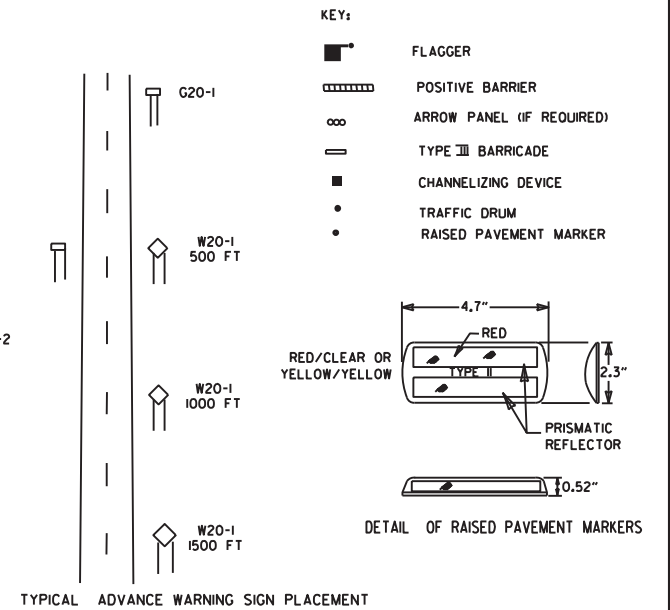
(D) TYPICAL APPLICATION - ROADWAY CLOSED BEYOND DETOUR POINT.



(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.



TYPICAL ADVANCE WARNING SIGN PLACEMENT

TAPER FORMULAE:

$L = SXW$ FOR SPEEDS OF 45MPH OR MORE.

$L = \frac{WS^2}{60}$ FOR SPEEDS OF 40MPH OR LESS.

WHERE:

L = MINIMUM LENGTH OF TAPER.

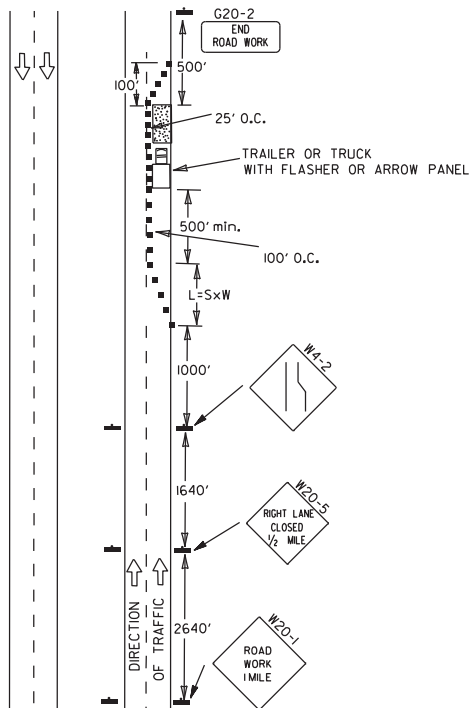
S = NUMERICAL VALUE OF POSTED SPEED LIMIT PRIOR TO WORK OR 85TH PERCENTILE SPEED.

W = WIDTH OF OFFSET.

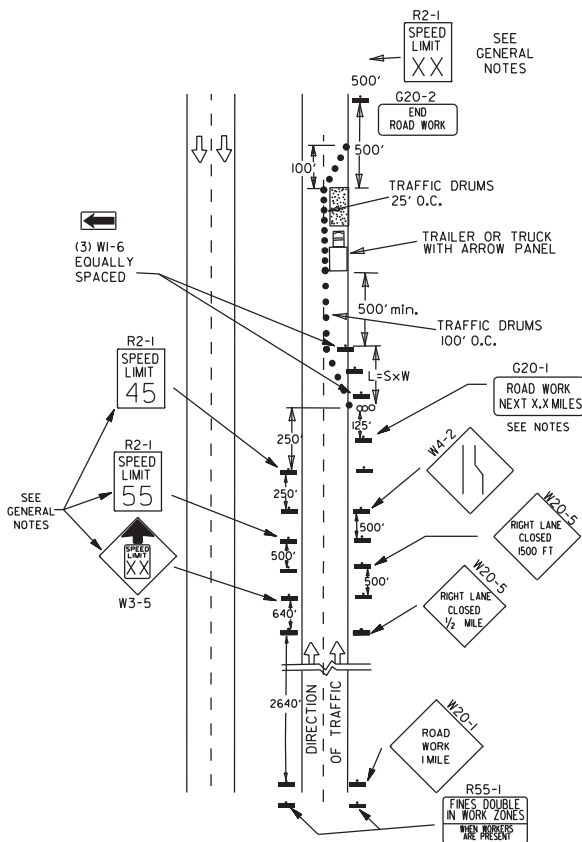
GENERAL NOTES:

1. 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 R2-1(45) 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 1MILE INTERVALS. AT THE END OF THE WORK AREA A R2-1(XX) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
3. WHEN THE EXISTING SPEED LIMIT IS 65MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 55MPH, THE R2-1(45) SHALL BE OMITTED. ADDITIONAL R2-155MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1MILE INTERVALS. AT THE END OF THE WORK AREA A R2-1(XX) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
4. THE MAXIMUM SPACING BETWEEN CHANNELIZING DEVICES IN A TAPER SHOULD BE APPROXIMATELY EQUAL IN FEET TO THE SPEED LIMIT. BEYOND THE TAPER, MAXIMUM SPACING SHALL BE TWO TIMES THE SPEED LIMIT, OR AS DIRECTED BY THE ENGINEER.
5. WARNING LIGHTS AND/OR FLAGS MAY BE MOUNTED TO SIGNS OR CHANNELIZING DEVICES AT NIGHT AS NEEDED.
6. PAVEMENT MARKINGS NO LONGER APPLICABLE WHICH MIGHT CREATE CONFUSION IN THE MINDS OF VEHICLE OPERATORS SHALL BE REMOVED OR OBLITERATED AS SOON AS PRACTICABLE.
7. TRAILER MOUNTED DEVICES SUCH AS ARROW PANELS AND PORTABLE CHANGEABLE MESSAGE SIGNS SHALL BE DELINEATED BY AFFIXING CONSPICUITY MATERIAL IN A CONTINUOUS LINE ON THE FACE OF THE TRAILER, WHEN PLACED ON OR ADJACENT TO THE SHOULDER AND NOT BEHIND A POSITIVE BARRIER, THESE DEVICES SHALL BE DELINEATED BY PLACING FIVE (5) TRAFFIC DRUMS, EQUALLY SPACED ALONG THE TRAFFIC SIDE OF THE DEVICE. 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 ARDOT 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).

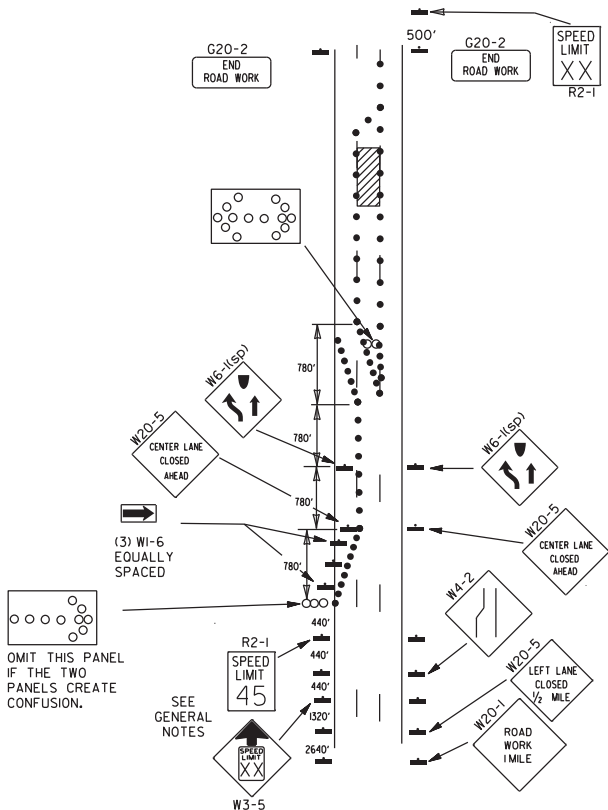
05-20-21	REVISED NOTE 7	
11-07-19	REVISED NOTE 1, ADDED NOTE 9	
9-2-15	REVISED NOTE 2, ADDED NOTE 8, REVISED DRAWING (A) & REPLACED R2-5A WITH W3-5	
9-12-13	REVISED DETAIL OF RAISED PAVEMENT MARKERS	
3-11-10	ADDED (AFAD)	
11-20-08	REVISED SIGN DESIGNATIONS	
11-18-04	ADDED GENERAL NOTE	
10-18-96	ADDED R55-1	
4-26-96	CORRECTED (a) BEHIND G20-2	
6-8-95	CORRECTED SIGN IDENT. ON W1-4A	6-8-95
2-2-95	REVISED PER PART VI, MUTCD, SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	
DATE	REVISION	FILMED



(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.

KEY:

- ARROW PANEL (IF REQUIRED)
- CHANNELIZING DEVICE
- TRAFFIC DRUM

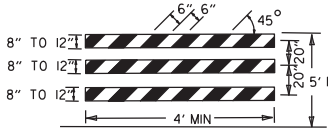
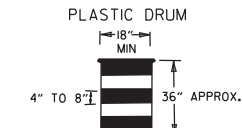
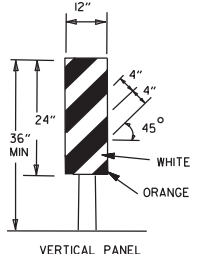
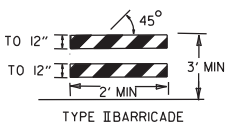
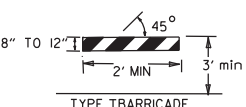
GENERAL NOTES:

1. A SPEED LIMIT REDUCTION MAY BE IMPLEMENTED ONLY WHEN DESIGNATED IN THE PLAN OR WHEN RECOMMENDED BY THE ROADWAY DESIGN DIVISION.
2. WHEN THE EXISTING SPEED LIMIT IS 55MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 45MPH, THE R2-1(45) SHALL BE OMITTED AND THE W3-5 SHALL BE INSTALLED AT THAT LOCATION. ADDITIONAL R2-1(45)MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1 MILE INTERVALS. AT THE END OF THE WORK AREA A R2-1(XX) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
3. WHEN THE EXISTING SPEED LIMIT IS 65MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 55MPH, THE R2-1(45) SHALL BE OMITTED. ADDITIONAL R2-1(55)MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1 MILE INTERVALS. AT THE END OF THE WORK AREA A R2-1(XX) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
4. THE MAXIMUM SPACING BETWEEN CHANNELIZING DEVICES IN A TAPER SHOULD BE APPROXIMATELY EQUAL IN FEET TO THE SPEED LIMIT. BEYOND THE TAPER, MAXIMUM SPACING SHALL BE TWO TIMES THE SPEED LIMIT OR AS DIRECTED BY THE ENGINEER.
5. WARNING LIGHTS AND/OR FLAGS MAY BE MOUNTED TO SIGNS OR CHANNELIZING DEVICES AT NIGHT AS NEEDED.
6. PAVEMENT MARKINGS NO LONGER APPLICABLE WHICH MIGHT CREATE CONFUSION IN THE MINDS OF VEHICLE OPERATORS SHALL BE REMOVED OR OBLITERATED AS SOON AS PRACTICABLE.
7. THE G20-1 SIGN WILL BE REQUIRED ON JOBS OF OVER TWO MILES IN LENGTH. WHEN THE LANE CLOSURE IS NOT AT THE BEGINNING OF THE PROJECT, THE G20-1 SIGN SHALL BE ERRECTED 125' IN ADVANCE OF THE JOB LIMIT. ADDITIONAL W20-1(1 MILE) SIGNS ARE NOT REQUIRED IN ADVANCE OF LANE CLOSURES THAT BEGIN INSIDE THE PROJECT LIMITS.
8. FLAGGERS SHALL USE STOP/SLOW PADDLES FOR CONTROLLING TRAFFIC THROUGH WORK ZONES. FLAGS MAY BE USED ONLY FOR EMERGENCY SITUATIONS.
9. ALL PLASTIC DRUMS AND CONES SHALL MEET THE REQUIREMENTS OF MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).
10. TRAILER MOUNTED DEVICES SUCH AS ARROW PANELS AND PORTABLE CHANGEABLE MESSAGE SIGNS SHALL BE DELINEATED BY AFFIXING CONSPICUITY MATERIAL IN A CONTINUOUS LINE ON THE FACE OF THE TRAILER. WHEN PLACED ON OR ADJACENT TO THE SHOULDER AND NOT BEHIND A POSITIVE BARRIER, THESE DEVICES SHALL BE DELINEATED BY PLACING FIVE (5) TRAFFIC DRUMS, EQUALLY SPACED ALONG THE TRAFFIC SIDE OF THE DEVICE. PAYMENT FOR TRAFFIC DRUMS SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR VARIOUS TRAILER MOUNTED DEVICES.
11. 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).

CHANNELIZING DEVICES

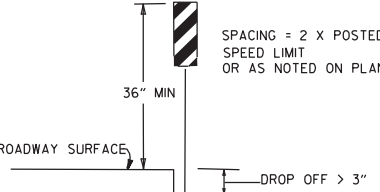
* WHEN CONES ARE USED ON FREEWAYS AND MULTI-LANE HIGHWAYS, THEY SHALL BE 28" MIN. DURING HOURS OF DARKNESS, 28" CONES SHALL BE USED ON ALL ROADWAYS, AND SHALL BE REFLECTORIZED IN ACCORDANCE WITH THE M.U.T.C.D.

CONES

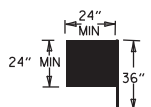


NOTE: FOR ALL ROAD CLOSURES, THE TYPE III BARRICADES SHALL BE OF SUFFICIENT LENGTH TO EXTEND ACROSS ENTIRE ROADWAY.

VERTICAL PANEL PLACEMENT



FLAG



FLAG SHALL BE OF GOOD GRADE RED MATERIAL

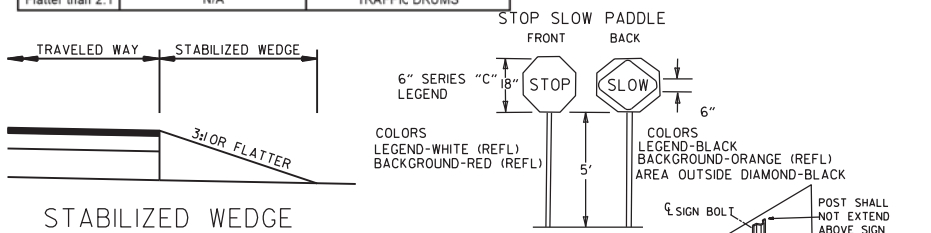
TRAFFIC CONTROL DEVICES			
NON-INTERSTATE			
VERTICAL DIFFERENTIAL	LOCATION	TRAFFIC CONTROL	
		≤ 45 MPH	> 45 MPH
≤ 1"	CENTERLINE	W8-11	W8-11
> 1"	CENTERLINE	W8-11 AND CENTERLINE LANE STRIPING	W8-11 AND CENTERLINE LANE STRIPING
≤ 3"	CENTERLINE	STANDARD LANE CLOSURE ⁽⁶⁾	STANDARD LANE CLOSURE ⁽⁶⁾
> 3"	CENTERLINE	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 ⁽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⁾	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 ⁽¹⁾
≤ 24"	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 ⁽¹⁾
> 24"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	PRECAST CONCRETE BARRIER ⁽⁴⁾ & EDGE LINES	PRECAST CONCRETE BARRIER ⁽⁴⁾ & EDGE LINES

INTERSTATE		
VERTICAL DIFFERENTIAL	LOCATION	TRAFFIC CONTROL
≤ 3"	CENTERLINE	W8-11 AND LANE STRIPING
≤ 3"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-9, 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⁾
≤ 6"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS ⁽²⁾
> 6"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	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

GENERAL NOTES:

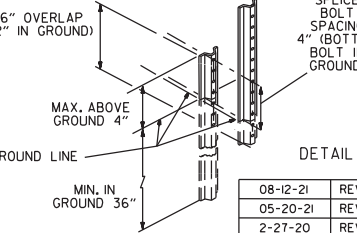
1. WHEN THE SHOULDER AREA IS USED AS PART OF THE TRAVELED LANE AND THERE IS INSUFFICIENT WIDTH TO PLACE TRAFFIC DRUMS ON THE REMAINING SHOULDER WIDTH, THEN VERTICAL PANELS SHALL BE USED.
2. WHEN THERE IS INSUFFICIENT WIDTH TO PLACE TRAFFIC DRUMS ON THE REMAINING SHOULDER WIDTH, A STABILIZED WEDGE SHALL BE USED. PRECAST CONCRETE BARRIER WALL CAN BE USED IN LIEU OF A STABILIZED WEDGE, W8-17 SIGN, EDGE LINE STRIPING, AND TRAFFIC DRUMS, IF AND WHERE DIRECTED BY THE ENGINEER.
3. A STABILIZED WEDGE, W8-17 SIGN, EDGE LINE STRIPING, AND TRAFFIC DRUMS CAN BE USED IN LIEU OF PRECAST CONCRETE BARRIER WALL, IF AND WHERE DIRECTED BY THE ENGINEER.
4. W21-5, W21-5a, AND/OR W21-5b SIGNS SHALL BE USED WHERE THE ROADWAY IS UNOBSTRUCTED IF AND WHERE DIRECTED BY THE ENGINEER.
5. TIME LIMITATIONS MUST CONFORM TO SECTION 603 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION).
- 6.



STABILIZED WEDGE

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

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



DETAIL OF SPLICES

DATE	REVISION	FILMED
08-12-21	REVISED TRAFFIC CONTROL DEVICES AND NOTES	
05-20-21	REVISED NOTE 10	
2-27-20	REVISED TRAFFIC CONTROL DEVICES DETAILS	
11-07-19	REVISED NOTE 9, ADDED NOTE 11	
7-25-19	REVISED TRAFFIC CONTROL DEVICES DETAILS	
9-2-15	REVISED NOTE 2 & REPLACED R2-5A WITH W3-5	
10-15-09	ADDED REFERENCE TO MASH	
11-20-08	REVISED SIGN DESIGNATIONS	
11-18-04	ADDED NOTE	
10-1-98	ADDED NOTE	
4-03-97	ADDED (SP) TO W6-1 & REVISED TRAFFIC CONTROL DEVICES NOTE	
10-18-96	ADDED R55-1	
10-12-95	MOVED UPPER SPLICE	
6-8-95	REVISED SPLICE DETAIL, TEXT	6-8-95
2-2-95	REVISED PER PART VI, MUTCD, SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	

ARKANSAS STATE HIGHWAY COMMISSION
STANDARD TRAFFIC CONTROLS
FOR HIGHWAY CONSTRUCTION

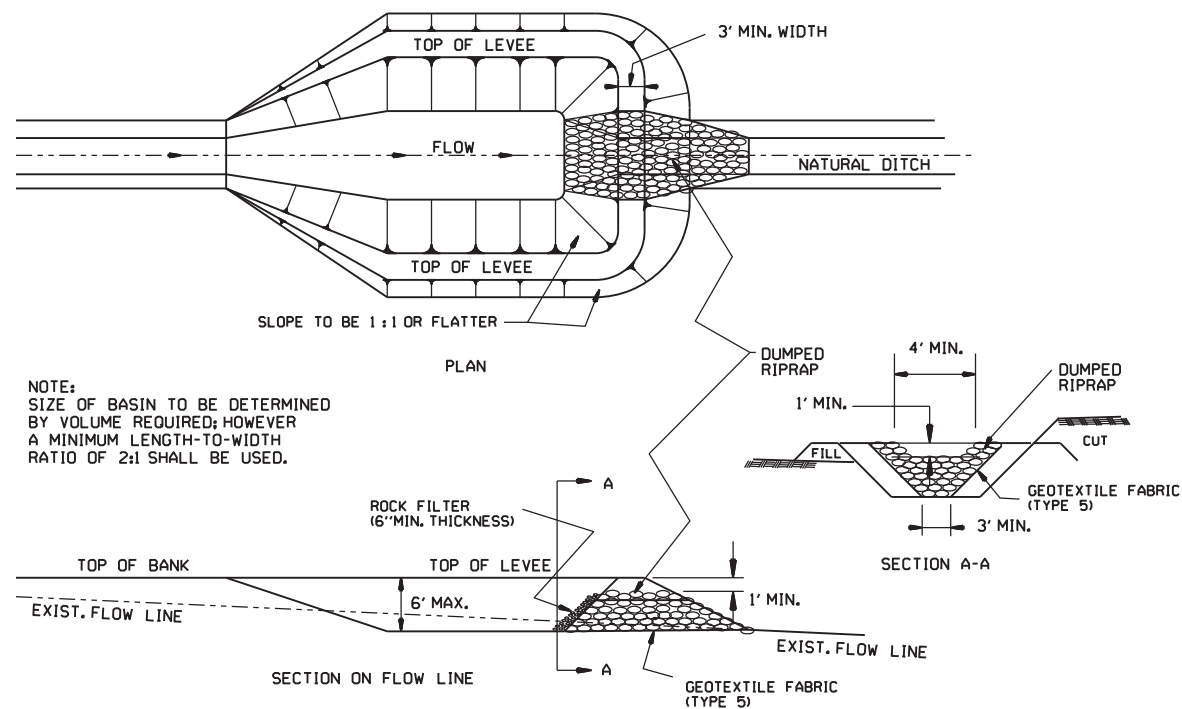
STANDARD DRAWING TC-3

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

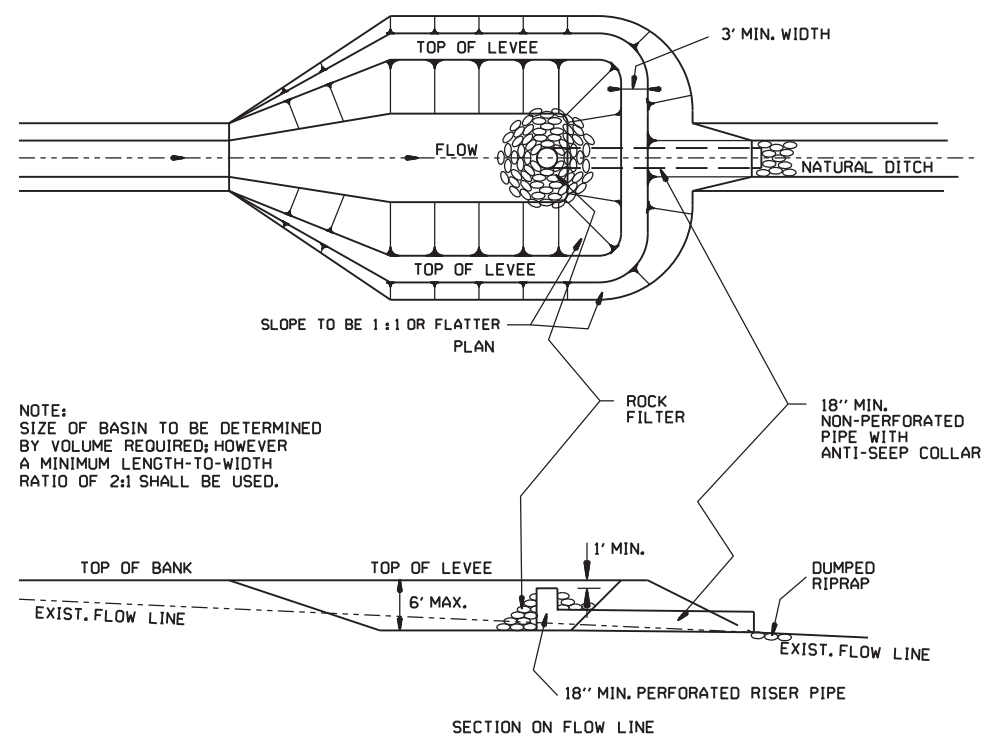
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES
AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.



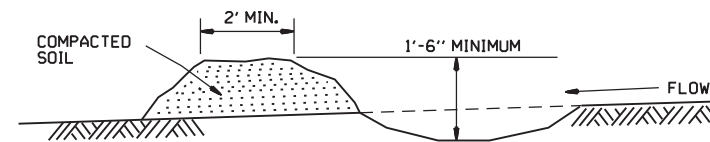
11-16-17	ADDED FILTER SOCK E-3 AND E-13		ARKANSAS STATE HIGHWAY COMMISSION TEMPORARY EROSION CONTROL DEVICES STANDARD DRAWING TEC-1
12-15-11	DELETED BALED STRAW DITCH CHECK & ADDED WATTLE DITCH CHECK		
11-18-98	ADDED NOTES		
07-02-98	ADDED BALED STRAW FILTER BARRIER (E-2)		
07-20-95	REVISED SILT FENCE 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	



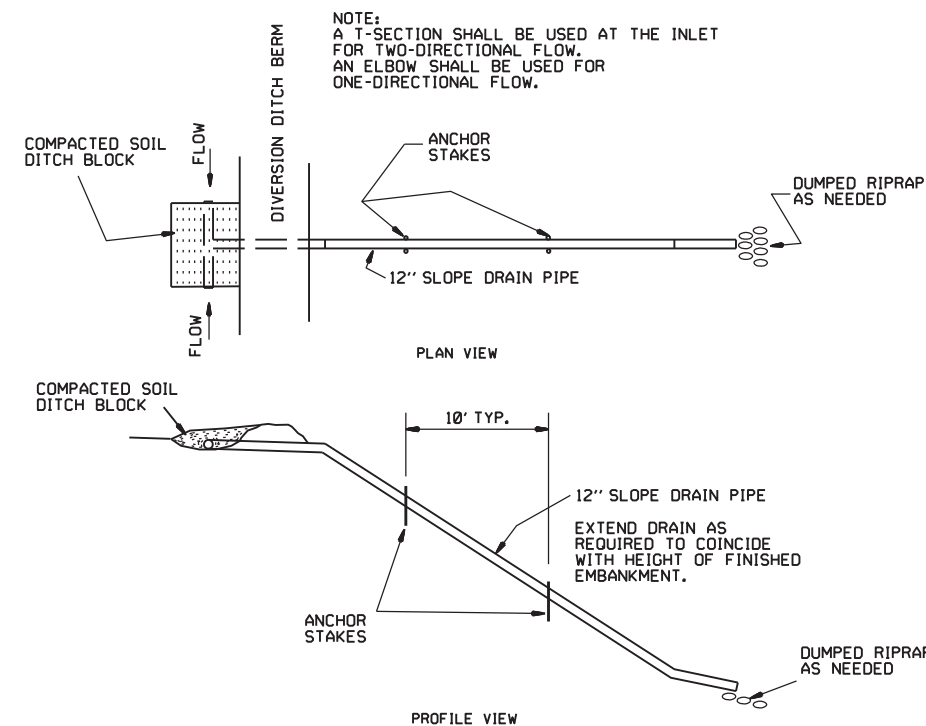
SEDIMENT BASIN WITH RIPRAP OUTLET (E-9)



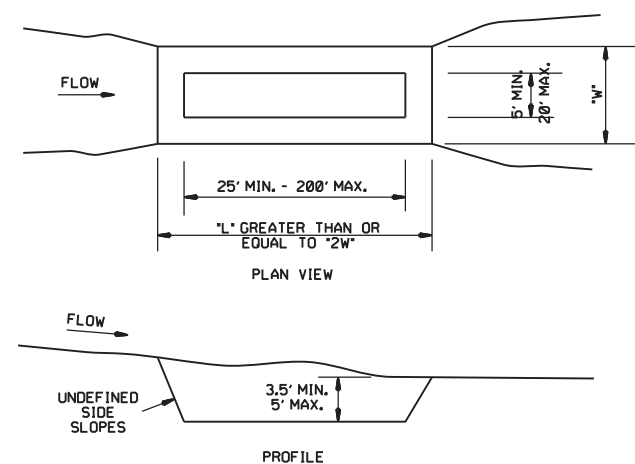
SEDIMENT BASIN WITH PIPE OUTLET (E-10)



DIVERSION DITCH (E-8)



SLOPE DRAIN (E-12)



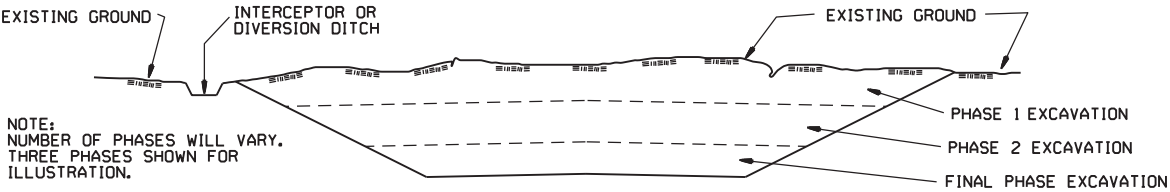
SEDIMENT BASIN (E-14)

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

CLEARING AND GRUBBING

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

EXCAVATION

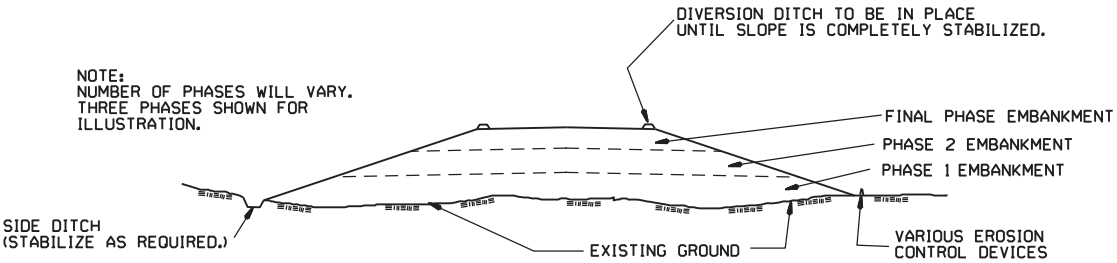


GENERAL NOTE

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

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

EMBANKMENT

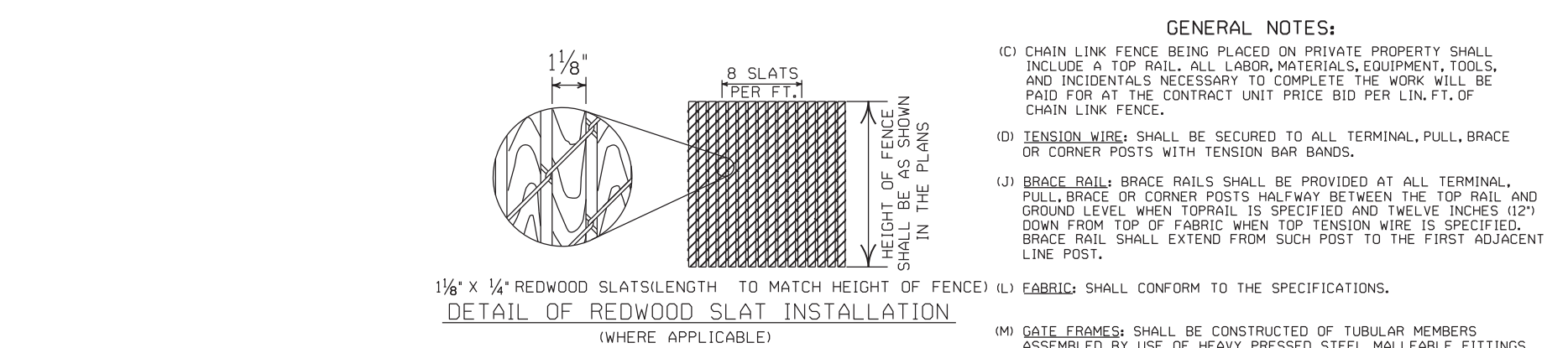


GENERAL NOTE

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

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

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



NOTE: POST SIZES SHOWN ARE FOR STEEL. WHERE ALUMINUM IS PROVIDED, LINE POSTS SHALL HAVE AN OUTSIDE DIAMETER OF 2½" FOR FENCE HEIGHT OF 6' AND LESS, AN OUTSIDE DIAMETER OF 3" FOR FENCE HEIGHT OF 6' TO 12'. END, PULL, CORNER OR BRACE POSTS SHALL HAVE AN OUTSIDE DIAMETER OF 3" FOR FENCE HEIGHT OF 6' AND LESS; AN OUTSIDE DIAMETER OF 3½" FOR FENCE HEIGHTS OF 6' TO 12'. GATE POSTS WHERE GATE WIDTH IS 12' AND LESS SHALL HAVE AN OUTSIDE DIAMETER OF 3½" FOR FENCE HEIGHT OF 6' AND LESS. ALUMINUM TENSION WIRE SHALL BE 0.192" IN DIAMETER, MINIMUM THICKNESS OF MATERIAL FROM WHICH EXPANSION SLEEVES SHALL BE MADE WILL BE 0.078". POSTS AND RAILS MAY HAVE ANY CROSS-SECTIONAL SHAPE THAT WILL MEET THE SPECIFICATIONS.

OTHER DETAILS APPLY TO BOTH STEEL AND ALUMINUM FENCE.

ALL MISCELLANEOUS FITTINGS AND HARDWARE SHALL MEET THE REQUIREMENTS AND PRODUCTION TOLERANCES AS SET FORTH IN THE SPECIFICATIONS. 9 GAUGE ALUMINUM WIRE SHALL BE ACCEPTABLE FOR TIEING FABRIC TO TUBULAR AND ROLL FORMED MEMBERS OF STEEL FENCE.

TOLERANCES ON DIMENSIONS AND WEIGHTS ACCORDING TO AASHTO M 181

11-17-10	REVISED TRUSS ROD	
12-10-09	REVISED POSTS & RAILS TABLE	
5-21-09	ADDED TABLE & GEN. NOTE (C)	
8-22-02	REVISED NOTES, REMOVED TABLE, & REMOVED FENCE ALTERNATE	
4-3-97	REVISED BRACE RAIL NOTE	
10-18-96	REVISED AASHTO & ASTM REF.	
11-3-94	REVISED NOTE (L)	
10-1-92	DELETED ALTERNATE POST	10-1-92
8-15-91	DELETED ROLL FORMED POST DELETED & ADDED NOTE	8-15-91 8-15-91
11-30-89	DELETED CLASS CONCRETE	11-30-89
11-17-88	REVISED O.D. SIZES	668-11-17-88
10-30-87	GENERAL REVISIONS	548-10-30-87
4-20-79	REVISED TOP RAIL & TENSION WIRE	695-4-20-79
10-2-72	REVISED AND REDRAWN	530-10-2-72
DATE	REVISION	FILMED

GENERAL NOTES:

(C) CHAIN LINK FENCE BEING PLACED ON PRIVATE PROPERTY SHALL INCLUDE A TOP RAIL. ALL LABOR, MATERIALS, EQUIPMENT, TOOLS, AND INCIDENTALS NECESSARY TO COMPLETE THE WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE BID PER LIN. FT. OF CHAIN LINK FENCE.

(D) TENSION WIRE: SHALL BE SECURED TO ALL TERMINAL, PULL, BRACE OR CORNER POSTS WITH TENSION BAR BANDS.

(J) BRACE RAIL: BRACE RAILS SHALL BE PROVIDED AT ALL TERMINAL, PULL, BRACE OR CORNER POSTS HALFWAY BETWEEN THE TOP RAIL AND GROUND LEVEL WHEN TOPRAIL IS SPECIFIED AND TWELVE INCHES (12") DOWN FROM TOP OF FABRIC WHEN TOP TENSION WIRE IS SPECIFIED. BRACE RAIL SHALL EXTEND FROM SUCH POST TO THE FIRST ADJACENT LINE POST.

(L) FABRIC: SHALL CONFORM TO THE SPECIFICATIONS.

(M) GATE FRAMES: SHALL BE CONSTRUCTED OF TUBULAR MEMBERS ASSEMBLED BY USE OF HEAVY PRESSED STEEL, MALLEABLE FITTINGS OR BY WELDING. ALL GATES SHALL HAVE ONE HORIZONTAL SUPPORT EXTENDING THE WIDTH OF THE GATE AT THE MIDPOINTS OF VERTICAL FRAME MEMBERS. THE COMPLETE FRAME SHALL BE RIGID AND HAVE AMPLE STRENGTH TO BE FREE FROM SAG AND TWIST.

(O) HINGES: SHALL BE OF HEAVY PATTERN, OF ADEQUATE STRENGTH FOR GATE, AND WITH LARGE BEARING SURFACES FOR CLAMPING IN POSITION. THE HINGE SHALL BE OF THE PROPER TYPE TO ALLOW FOR THE DESIGNATED DEGREE OF SWING. THE HINGE SHALL NOT TWIST OR TURN UNDER THE ACTION OF THE GATE. THE GATES SHALL BE CAPABLE OF BEING OPENED AND CLOSED EASILY BY ONE PERSON.

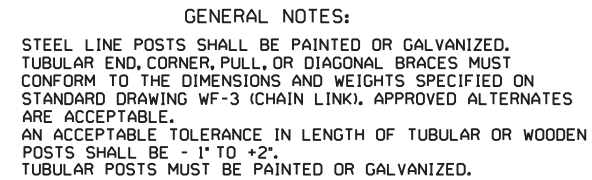
(P) LATCHES AND STOPS: SHALL BE PROVIDED FOR ALL GATES. GATES SHALL HAVE A DROP BAR LATCH. LATCHES SHALL BE ARRANGED FOR LOCKING. THE STOP FOR DROP BAR LATCHES SHALL BE SET IN CONCRETE AND ENGAGE THE PLUNGER OF THE BAR LATCH.

(S) CAPS: ALL POSTS, EXCEPT ROLL FORMED POSTS AND "T" POSTS SHALL BE CAPPED OVER THE EXTERIOR OF THE POST, AND SHALL CONFORM TO ASTM F626.

CONCRETE REQUIRED FOR THE EMBEDMENT OF ALL POSTS SHALL NOT BE PAID FOR DIRECTLY BUT SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID FOR CHAIN LINK FENCE.

POSTS SHALL BE SPACED EQUIDISTANT ON A MAXIMUM OF 10' CENTERS.

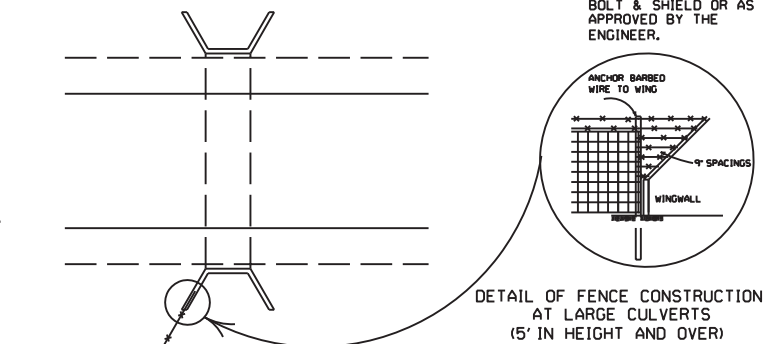
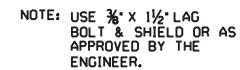
EXCAVATION FOR POSTS: IN OTHER THAN ROCK SHALL BE OF THE DIMENSIONS INDICATED. IF ROCK IS ENCOUNTERED BEFORE REACHING THE REQUIRED DEPTH, THE EXCAVATION SHALL BE CONTINUED TO THE DEPTH INDICATED OR 1'-6" INTO THE ROCK, WHICHEVER IS LESS, AND SHALL BE A MINIMUM OF 8 INCHES IN DIAMETER.



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

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

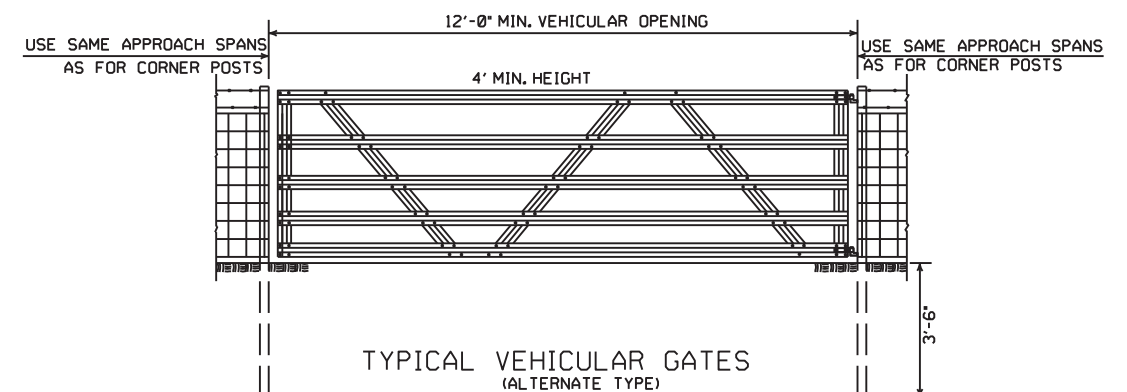
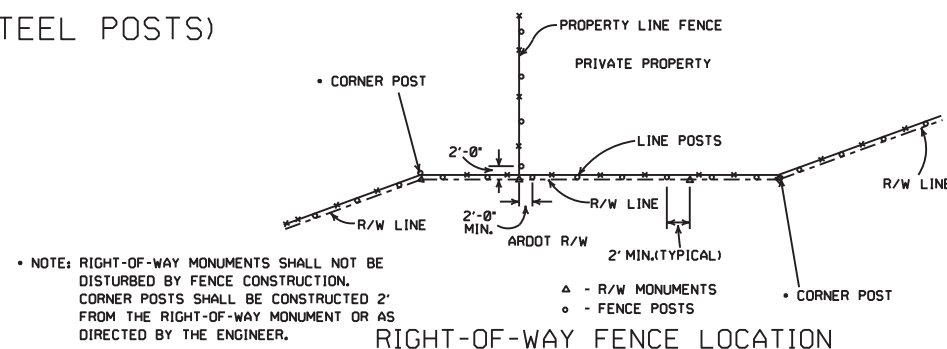
AT STREAM CROSSINGS, THE FENCE SHALL NOT BE CONSTRUCTED ACROSS LARGE STREAMS, WHERE CLEARANCE IS SUFFICIENT FROM THE TOP OF THE BANK TO THE BRIDGE STRUCTURE A CROSS CONNECTION SHALL BE CONSTRUCTED BETWEEN THE FENCE ON EACH SIDE OF THE ROAD, WHERE THE CLEARANCE IS NOT SUFFICIENT, THE FENCE SHALL BE TERMINATED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



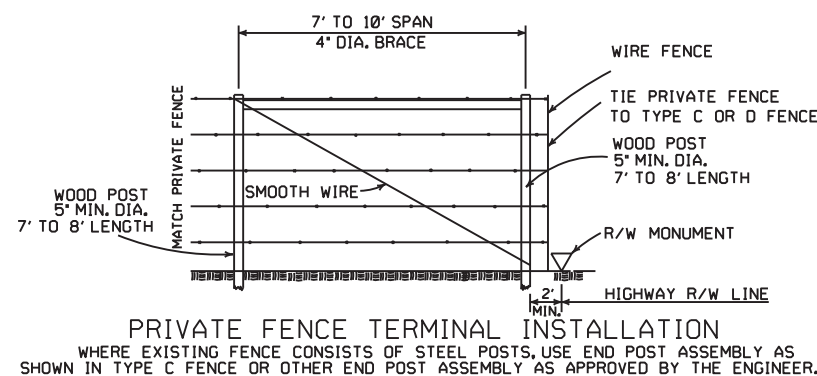
SPlice for BARBED WIRE BETWEEN PULL
PUSH ASSEMBLY SHALL BE BY THE "EYE
METHOD" AS DESCRIBED AS FOLLOWS:
THE ENDS OF THE BARBED WIRE SHALL BE
BENT TO FORM A LOOP. THE LOOPS SHALL
BE CONNECTED. AFTER THE LOOPS ARE
CONNECTED THE ENDS OF THE WIRE SHALL
BE WRAPPED AROUND THE PROJECTING WIRES
A MINIMUM OF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



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	700?-7-15-88
10-30-87	GENERAL REVISIONS	549-10-30-87
11-1-84	MAX. POST SPACING MIN. WIRE GAUGE	507?-11-1-84
1-4-83	MIN. DIA. LINE POST	648-1-4-83
3-2-81	TOLERANCE FOR POST LENGTH	722-3-2-81
12-1-72	ADDED D-1 & FENCE INSTALLATION	564-12-1-72
10-2-72	REVISED AND REDRAWN	540-10-2-72
DATE	REVISION	FILED

ARKANSAS STATE HIGHWAY COMMISSION

WIRE FENCE
TYPE C AND D

STANDARD DRAWING WF-4