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.		FA3610	1	46
				4	PANTHER CREEK STR. & APPRS. (S)			

ARKANSAS DEPARTMENT OF TRANSPORTATION
CONSTRUCTION PLANS FOR PROPOSED COUNTY ROAD

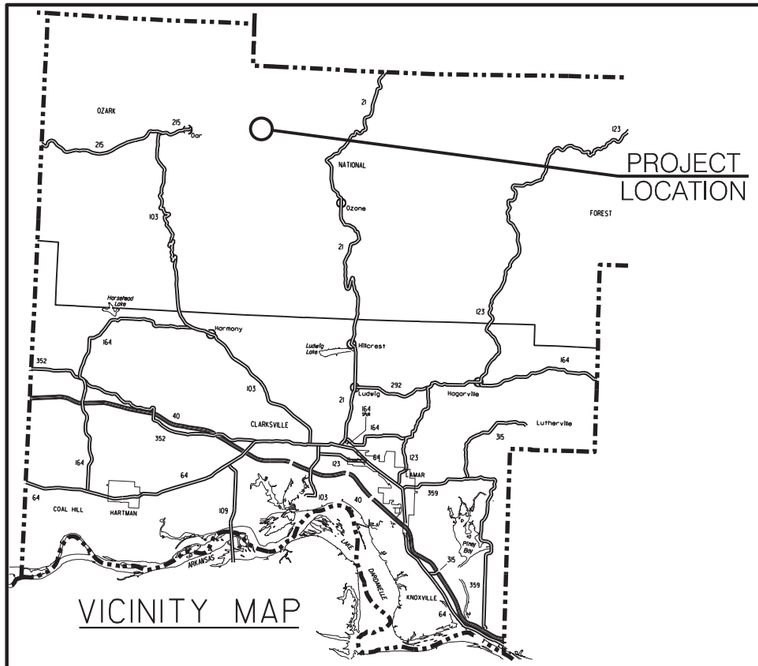
PANTHER CREEK STR. & APPRS. (S)

CO. RD. 36

JOHNSON COUNTY

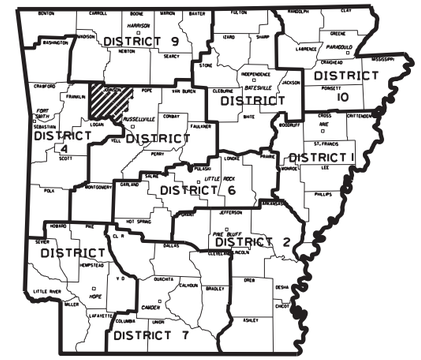
JOB FA3610

FED. AID PROJECT STPR-0036(24)



VICINITY MAP

NOT TO SCALE



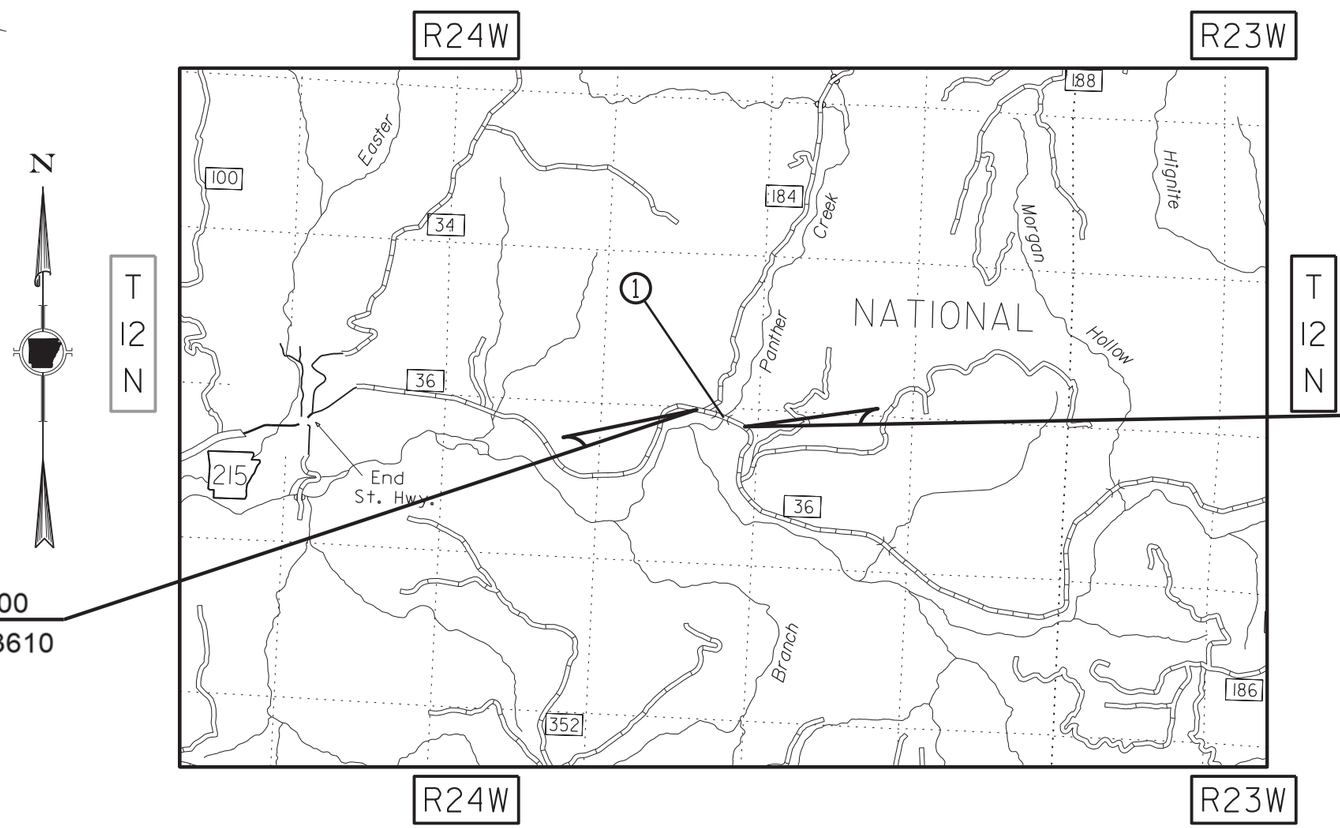
ARKANSAS HIGHWAY DISTRICT 8

STRUCTURES OVER 20'-0" SPAN

① STA. 104+98.92 BRIDGE END
BRIDGE NO. 04944
270'-0" CONT. COMP. W-BEAM UNIT
28' - 0" CLEAR ROADWAY
BRIDGE LENGTH = 272' - 2"
STA. 107+71.08 BRIDGE END

DESIGN TRAFFIC DATA

DESIGN YEAR	2040
2020 ADT	100
2040 ADT	120
2040 DHV	18
DIRECTIONAL DISTRIBUTON	0.60
TRUCKS	9%
DESIGN SPEED	30 MPH



STA. 100+00.00
BEGIN JOB FA3610

STA. 114+00.00
END JOB FA3610

APPROVED

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7836
M. E. BANKS

Banks, Emanuel
Jun 24 2020 2:01 PM
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DEPUTY DIRECTOR
AND CHIEF ENGINEER

PROJECT COORDINATES:

	BEGIN	MID-POINT	END
LAT.	N 35° 41' 28"	N 35° 41' 26"	N 35° 41' 23"
LONG.	W 93° 31' 34"	W 93° 31' 27"	W 93° 31' 19"

GROSS	LENGTH	OF	PROJECT	1400.00	FEET	OR	0.265	MILES
NET	"	"	ROADWAY	1127.84	"	"	0.214	"
NET	"	"	BRIDGE	272.16	"	"	0.052	"
NET	"	"	PROJECT	1400.00	"	"	0.265	"

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.		FA3610	2	46

4 INDEX OF SHEETS AND STANDARD DRAWINGS

INDEX OF SHEETS

SHEET NO.	TITLE	BRIDGE NO.	DRWG. NO.
1	TITLE SHEET		
2	INDEX OF SHEETS AND STANDARD DRAWINGS		
3	GOVERNING SPECIFICATIONS AND GENERAL NOTES		
4 - 6	TYPICAL SECTIONS OF IMPROVEMENT		
7 - 11	SPECIAL DETAILS		
12 - 13	TEMPORARY EROSION CONTROL DETAILS		
14 - 16	QUANTITIES		
17	SCHEDULE OF BRIDGE QUANTITIES	04944	61393
18	SUMMARY OF QUANTITIES AND REVISIONS		
19 - 21	SURVEY CONTROL DETAILS		
22 - 23	PLAN AND PROFILE SHEETS		
24	LAYOUT OF BRIDGE COUNTY ROAD 36 OVER PANTHER CREEK (SHEET 1 OF 2)	04944	61394
25	LAYOUT OF BRIDGE COUNTY ROAD 36 OVER PANTHER CREEK (SHEET 2 OF 2)	04944	61395
26	DETAILS OF END BENTS (SHEET 1 OF 4)	04944	61396
27	DETAILS OF END BENTS (SHEET 2 OF 4)	04944	61397
28	DETAILS OF END BENTS (SHEET 3 OF 4)	04944	61398
29	DETAILS OF END BENTS (SHEET 4 OF 4)	04944	61399
30	DETAILS OF INTERMEDIATE BENTS (SHEET 1 OF 2)	04944	61400
31	DETAILS OF INTERMEDIATE BENTS (SHEET 2 OF 2)	04944	61401
32	DETAILS OF ELASTOMERIC BEARINGS	04944	61402
33	DETAILS OF 270'-0" CONTINUOUS W-BEAM UNIT (SHEET 1 OF 5)	04944	61403
34	DETAILS OF 270'-0" CONTINUOUS W-BEAM UNIT (SHEET 2 OF 5)	04944	61404
35	DETAILS OF 270'-0" CONTINUOUS W-BEAM UNIT (SHEET 3 OF 5)	04944	61405
36	DETAILS OF 270'-0" CONTINUOUS W-BEAM UNIT (SHEET 4 OF 5)	04944	61406
37	DETAILS OF 270'-0" CONTINUOUS W-BEAM UNIT (SHEET 5 OF 5)	04944	61407
38 - 46	CROSS SECTIONS		

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

BRIDGE STANDARD DRAWINGS

DRWG. NO.	TITLE	DATE
55000	STANDARD DETAILS FOR EMBANKMENT CONSTRUCTION AND BACKFILL AT BRIDGE ENDS	02-27-2014
55001	STANDARD DETAILS FOR DUMPED RIPRAP AND FILTER BLANKET AND COMPUTING EXCAVATION FOR STRUCTURES	02-27-2014
55005	STANDARD DETAILS FOR PERMANENT STEEL BRIDGE DECK FORMS FOR STEEL & CONCRETE GIRDER SPANS	03-24-2016
55006	STANDARD GENERAL NOTES FOR STEEL BRIDGE STRUCTURES	09-02-2015
55007	STANDARD DETAILS FOR STEEL BRIDGE STRUCTURES	02-11-2016
55008	STANDARD DETAILS FOR POURED SILICONE JOINTS	02-11-2016
55011	STANDARD DETAILS FOR TYPE C BRIDGE NAME PLATES	02-27-2020
55020	STANDARD DETAILS FOR STEEL H-PILES AND PILE ENCASEMENTS	03-24-2016
55030A	STANDARD DETAILS FOR TYPE A APPROACH GUTTERS	09-02-2015

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11240
BRYAN FREELING

Freeling, Bryan E.
Jun 24 2020 9:56 AM

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ROADWAY STANDARD DRAWINGS

DRWG. NO.	TITLE	DATE
GR-10	GUARDRAIL DETAILS	11-07-2019
GR-12	GUARDRAIL DETAILS	05-14-2020
GRT-1	GUARDRAIL DETAILS	11-07-2019
MB-1	MAILBOX DETAILS	11-18-2004
PCM-1	METAL PIPE CULVERT FILL HEIGHTS & BEDDING	02-27-2014
PCP-1	PLASTIC PIPE CULVERT (HIGH DENSITY POLYETHYLENE)	02-27-2014
PCP-2	PLASTIC PIPE CULVERT (PVC F949)	02-27-2014
PCP-3	PLASTIC PIPE CULVERT (POLYPROPYLENE)	02-27-2020
PM-1	PAVEMENT MARKING DETAILS	02-27-2020
PU-1	DETAILS OF PIPE UNDERDRAIN	12-08-2016
SE-2	TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC	11-07-2019
SHS-1	STANDARD HIGHWAY SIGNS AND SUPPORT ASSEMBLIES	09-12-2013
SHS-2	U-CHANNEL POST ASSEMBLIES	07-25-2019
TC-1	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	11-07-2019
TC-2	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	11-07-2019
TC-3	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	02-27-2020
TEC-1	TEMPORARY EROSION CONTROL DEVICES	11-16-2017
TEC-2	TEMPORARY EROSION CONTROL DEVICES	06-02-1994
TEC-3	TEMPORARY EROSION CONTROL DEVICES	11-03-1994
TEC-4	TEMPORARY EROSION CONTROL DEVICES	07-26-2012
WF-4	WIRE FENCE TYPE C AND D	08-22-2002

INDEX OF SHEETS AND STANDARD DRAWINGS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST. NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
7-9-2020				6	ARK.			
8-26-2020				JOB NO.		FA3610	3	46

4 GOVERNING SPECIFICATIONS & GENERAL NOTES

GOVERNING SPECIFICATIONS

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

NUMBER	TITLE
ERRATA	ERRATA FOR THE BOOK OF STANDARD SPECIFICATIONS
FHWA-1273	REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - NOTICE TO CONTRACTORS
FHWA-1273	SUPPLEMENT - SPECIFIC EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITIES (23 U.S.C. 140)
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - GOALS AND TIMETABLES
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - FEDERAL STANDARDS
FHWA-1273	SUPPLEMENT - POSTERS AND NOTICES REQUIRED FOR FEDERAL-AID PROJECTS
FHWA-1273	SUPPLEMENT - WAGE RATE DETERMINATION
100-3	CONTRACTOR'S LICENSE
100-4	DEPARTMENT NAME CHANGE
102-2	ISSUANCE OF PROPOSALS
108-1	LIQUIDATED DAMAGES
108-2	WORK ALLOWED PRIOR TO ISSUANCE OF WORK ORDER
110-1	PROTECTION OF WATER QUALITY AND WETLANDS
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
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
505-1	PORTLAND CEMENT CONCRETE DRIVEWAY
600-2	INCIDENTAL CONSTRUCTION
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
620-1	MULCH COVER
723-1	GENERAL REQUIREMENTS FOR SIGNS
729-1	CHANNEL POST SIGN SUPPORT
800-1	STRUCTURES
802-3	CONCRETE FOR STRUCTURES
804-2	REINFORCING STEEL FOR STRUCTURES
807-2	STEEL STRUCTURES
808-1	INSTALLATION OF ELASTOMERIC BEARINGS
808-2	ELASTOMERIC BEARINGS
JOB FA3610	BIDDING REQUIREMENTS AND CONDITIONS
JOB FA3610	BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB FA3610	BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB FA3610	CARGO PREFERENCE ACT REQUIREMENTS
JOB FA3610	CLASS C FLY ASH IN PORTLAND CEMENT CONCRETE PAVEMENT AND CLASS S(AE) CONCRETE
JOB FA3610	DIRECT TENSION INDICATORS FOR HIGH STRENGTH BOLT ASSEMBLIES
JOB FA3610	DISADVANTAGED BUSINESS ENTERPRISE BIDDER'S RESPONSIBILITIES
JOB FA3610	ESTABLISHING CONTRACT TIME - WORKING DAY CONTRACT
JOB FA3610	FLOWABLE SELECT MATERIAL
JOB FA3610	GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
JOB FA3610	MAINTENANCE OF TRAFFIC
JOB FA3610	MANDATORY ELECTRONIC CONTRACT
JOB FA3610	MANDATORY ELECTRONIC DOCUMENT SUBMITTAL
JOB FA3610	NESTING SITES OF MIGRATORY BIRDS
JOB FA3610	OFF-SITE RESTRAINING CONDITIONS FOR INDIANA AND NORTHERN LONG-EARED BATS
JOB FA3610	PLASTIC PIPE
JOB FA3610	RECYCLED ASPHALT SHINGLES
JOB FA3610	SECTION 404 NATIONWIDE 14 PERMIT REQUIREMENTS
JOB FA3610	SHORING
JOB FA3610	SHORING FOR CULVERTS
JOB FA3610	SPECIAL CLEARING REQUIREMENTS
JOB FA3610	STORM WATER POLLUTION PREVENTION PLAN
JOB FA3610	SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB FA3610	UTILITY ADJUSTMENTS
JOB FA3610	VEGETATED BUFFER ZONE
JOB FA3610	WARM MIX ASPHALT
JOB FA3610	WATER POLLUTION CONTROL
JOB FA3610	WELLHEAD PROTECTION

GENERAL NOTES

1. GRADE LINE DENOTES FINISHED GRADE WHERE SHOWN IN PLANS
2. ALL LAND MONUMENTS LOCATED WITHIN THE CONSTRUCTION AREA SHALL BE PROTECTED IN ACCORDANCE WITH SECTION 107.12 OF THE STANDARD SPECIFICATIONS, EDITION OF 2014.
3. TEMPORARY EASEMENTS ARE PROVIDED FOR CONTRACTOR ACCESS. AREAS OUTSIDE THE CONSTRUCTION LIMITS SHALL NOT BE CLEARED OR GRUBBED UNLESS DIRECTED BY THE ENGINEER.
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 OPERATION.
5. AREAS NOT CLASSIFIED AS CLEARING AND GRUBBING AND THAT ARE WITHIN CONSTRUCTION LIMITS 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.
6. UTILITIES INTERFERING WITH CONSTRUCTION SHALL BE MOVED BY THE OWNERS.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A FENCE TO CONTROL LIVESTOCK IN AREAS WHERE PASTURES ARE SEVERED. WIRE FENCE MAY BE CONSTRUCTED INITIALLY, OR IN LIEU THEREOF, THE CONTRACTOR AT HIS OWN EXPENSE, MAY ELECT TO PROVIDE TEMPORARY FENCING SUITABLE TO CONTAIN LIVESTOCK.
8. THE ROAD SHALL BE MAINTAINED AND OPENED TO TRAFFIC THROUGHOUT THE MAJORITY OF THE PROJECT, BUT MAY BE CLOSED TO CONSTRUCT THE APPROACH TIE-INS IN ACCORDANCE WITH THE MAINTENANCE OF TRAFFIC SPECIAL PROVISION.
9. EXISTING BRIDGE NO. 18067 SHALL BE REMOVED IN ACCORDANCE WITH SECTION 205 OF THE STANDARD SPECIFICATIONS. ALL MATERIAL FROM THE EXISTING BRIDGE SHALL BECOME THE PROPERTY OF THE CONTRACTOR.
10. THE CONTRACTOR WILL BE REQUIRED TO PROTECT THE NEW BRIDGE DECK DURING PRIME AND PAVING OPERATIONS.
11. THE CONTRACTOR SHALL MAINTAIN MAILBOXES WITHIN THE PROJECT LIMITS SUCH THAT THE PUBLIC MAY RECEIVE CONTINUED MAIL SERVICE. THE CONTRACTOR SHALL REMOVE AND RESTORE TO THE PROPER HEIGHT THE EXISTING MAILBOX POSTS AND MAILBOXES AS DIRECTED BY THE ENGINEER. ITEMS DAMAGED BY THE CONTRACTOR SHALL BE REPLACED AT NO COST TO THE DEPARTMENT. THIS WORK WILL NOT BE PAID FOR SEPARATELY, BUT WILL BE CONSIDERED INCLUDED IN THE CONTRACT PRICES BID FOR OTHER ITEMS OF THE CONTRACT.
12. DRIVEWAY EXCAVATION AND DISPOSAL OF MATERIAL PRODUCED FROM DRIVEWAY EXCAVATION SHALL BE AS DIRECTED BY THE ENGINEER. THIS WORK WILL NOT BE PAID FOR SEPARATELY, BUT WILL BE CONSIDERED INCLUDED IN THE CONTRACT PRICES BID FOR OTHER ITEMS OF THE CONTRACT.
13. ASPHALT AND OTHER DEBRIS RESULTING FROM PREPARATORY WORK SHALL BE REMOVED FROM THE PROJECT. THIS WORK WILL NOT BE PAID FOR SEPARATELY, BUT WILL BE CONSIDERED INCLUDED IN THE CONTRACT PRICES BID FOR OTHER ITEMS OF THE CONTRACT.
14. 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.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11240
BRYAN FREELING

Aug 26 2020 4:34 PM

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GOVERNING SPECIFICATIONS AND GENERAL NOTES

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST. NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		FA3610	4	46

(4) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11240
BRYAN FREELING

Jun 10 2020 4:46 PM

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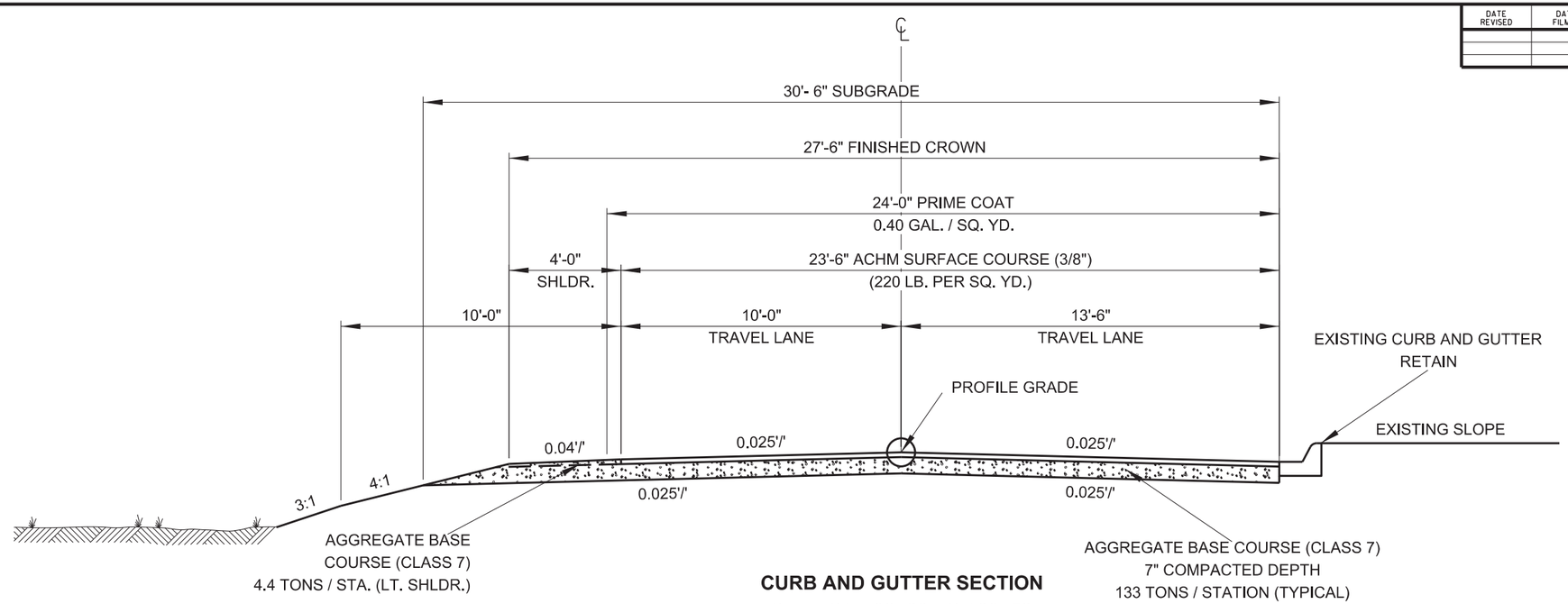
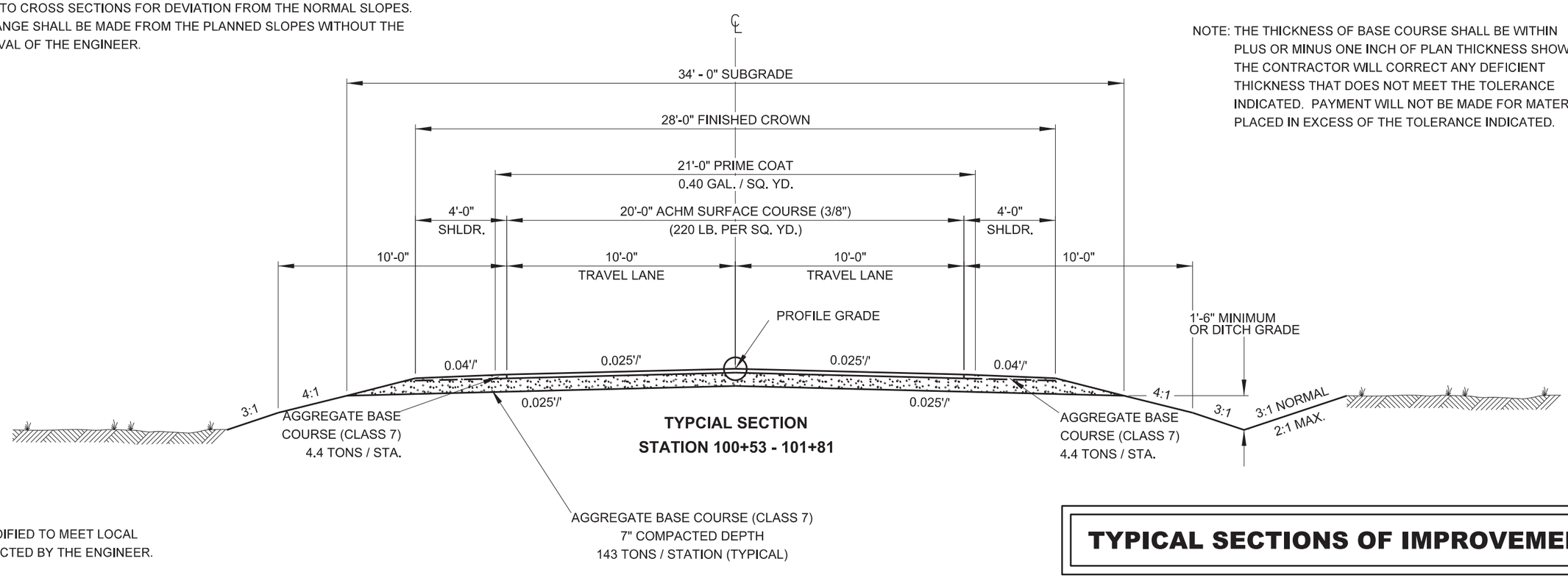


CURB AND GUTTER SECTION
STATION 100+00 TO 100+53

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.



TYPCIAL SECTION
STATION 100+53 - 101+81

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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				JOB NO.		FA3610	5	46

(4) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11240
BRYAN FREELING

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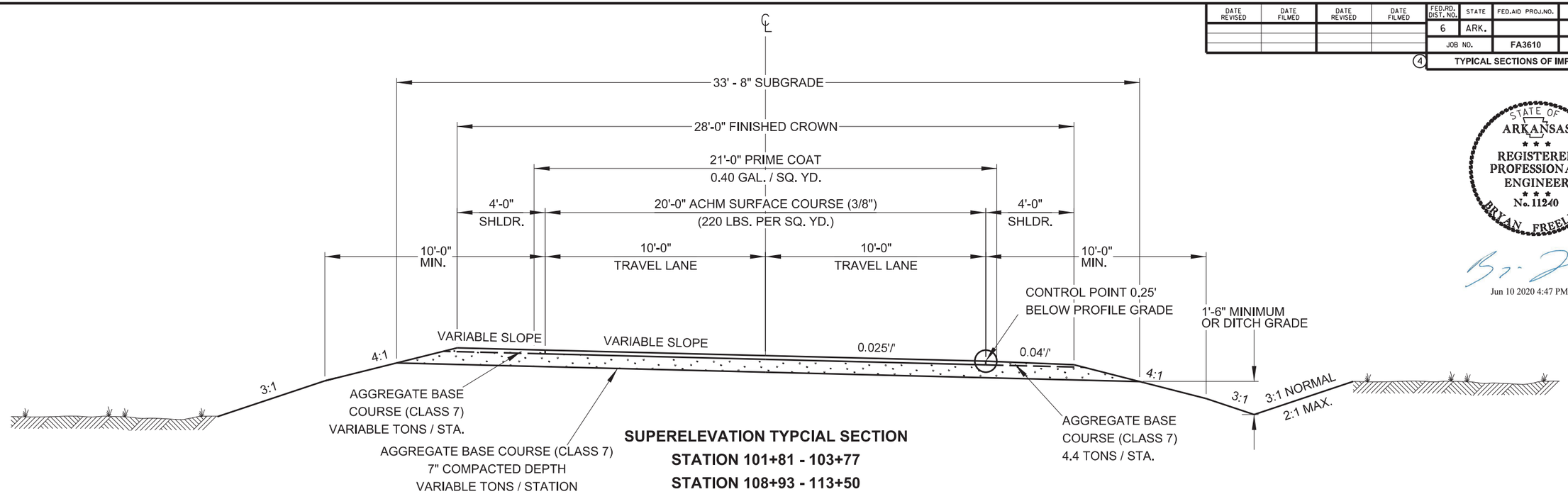
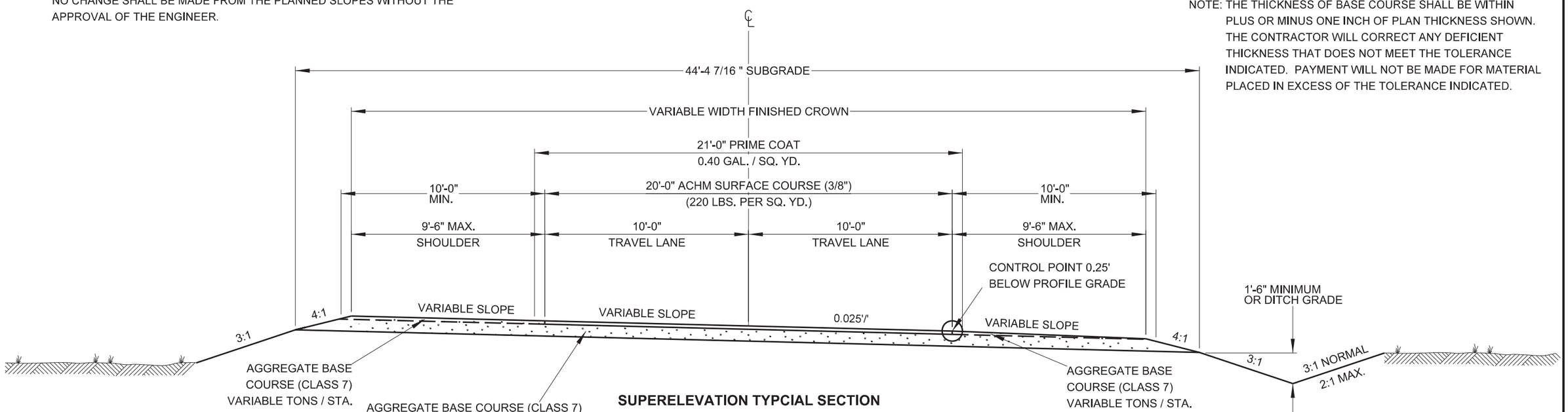


SUPERELEVATION TYPCIAL SECTION
STATION 101+81 - 103+77
STATION 108+93 - 113+50

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.



SUPERELEVATION TYPCIAL SECTION
STATION 103+77 - 104+99
STATION 107+71 - 108+93

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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				JOB NO.		FA3610	6	46

4 TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11240
BRYAN FREELING

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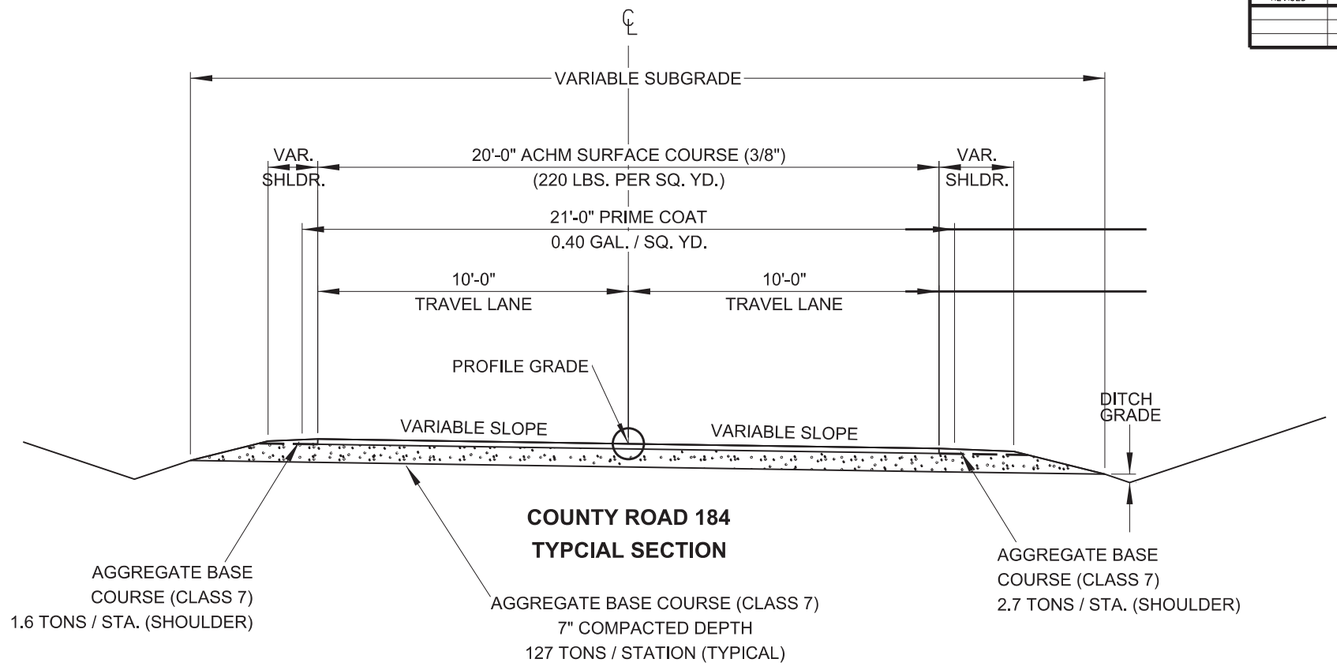
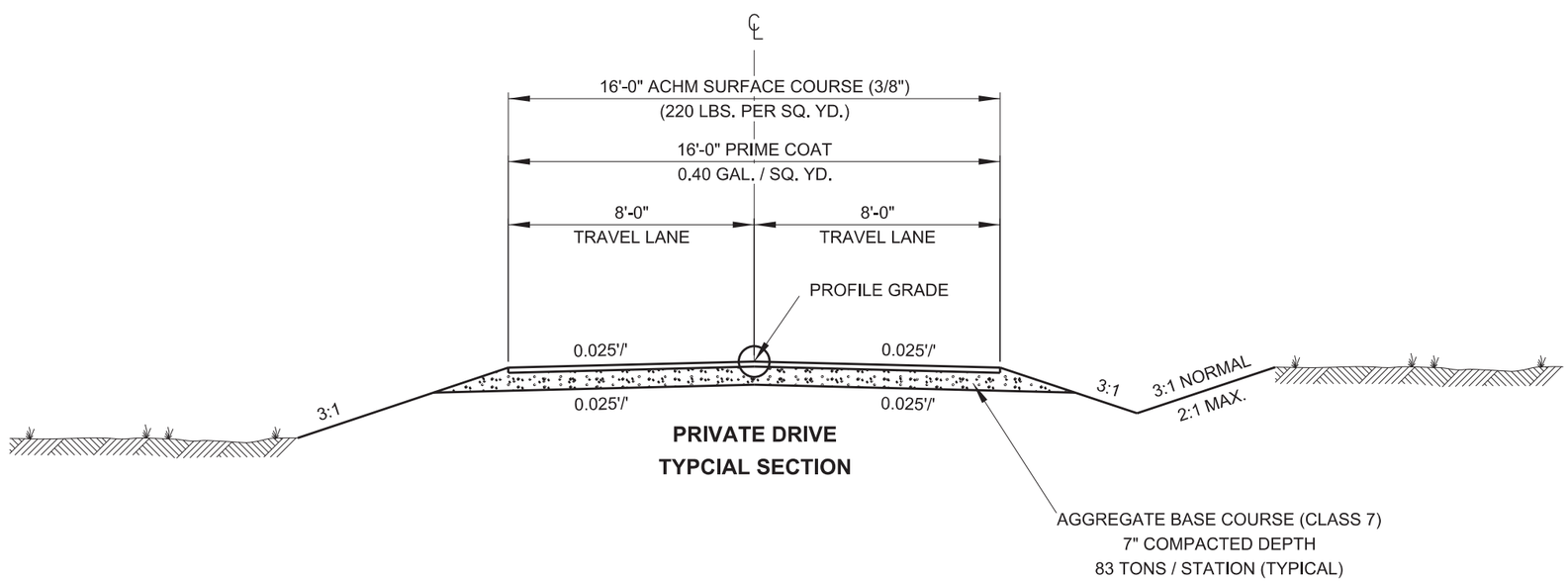


COUNTY ROAD 184
TYPCIAL SECTION



PRIVATE DRIVE
TYPCIAL SECTION

TYPICAL SECTIONS OF IMPROVEMENT

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST. NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		FA3610	7	46

4 SPECIAL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11240
BRYAN FREELING

Jun 10 2020 4:47 PM

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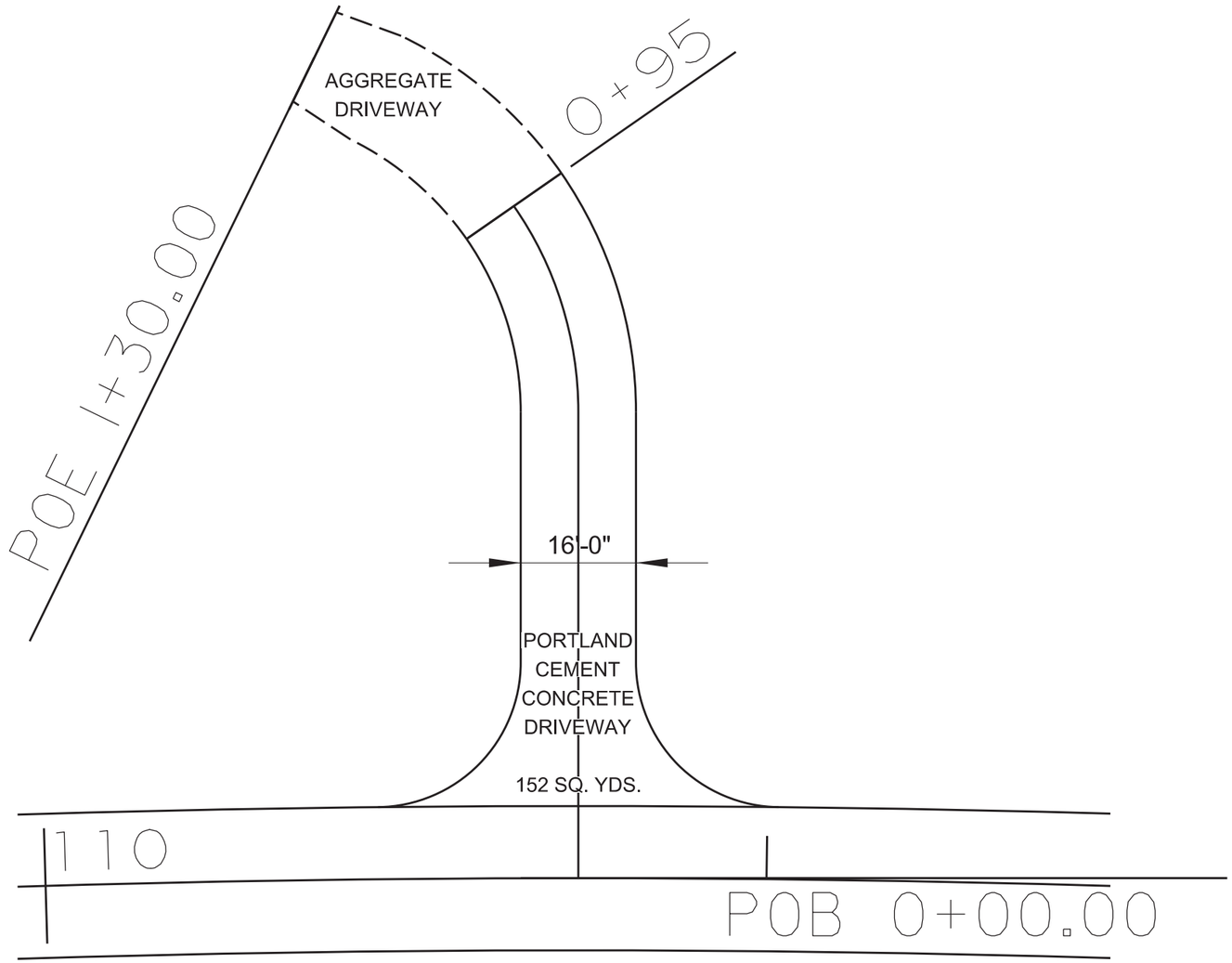

DETAILS OF STA. 110+74 DRIVEWAY ON LEFT

SPECIAL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST. NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
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4 SPECIAL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11240
BRYAN FREELING

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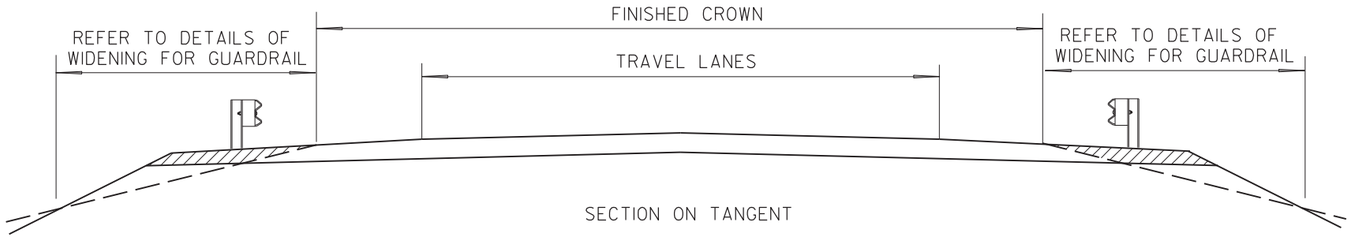
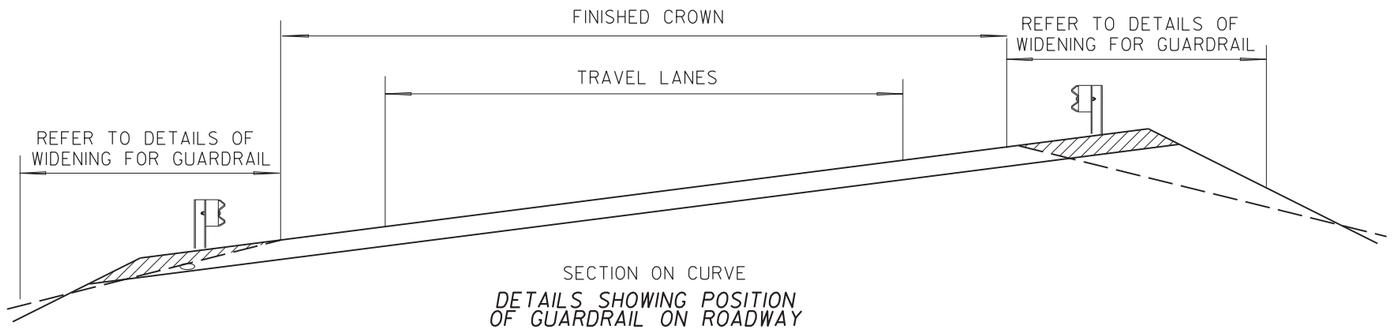
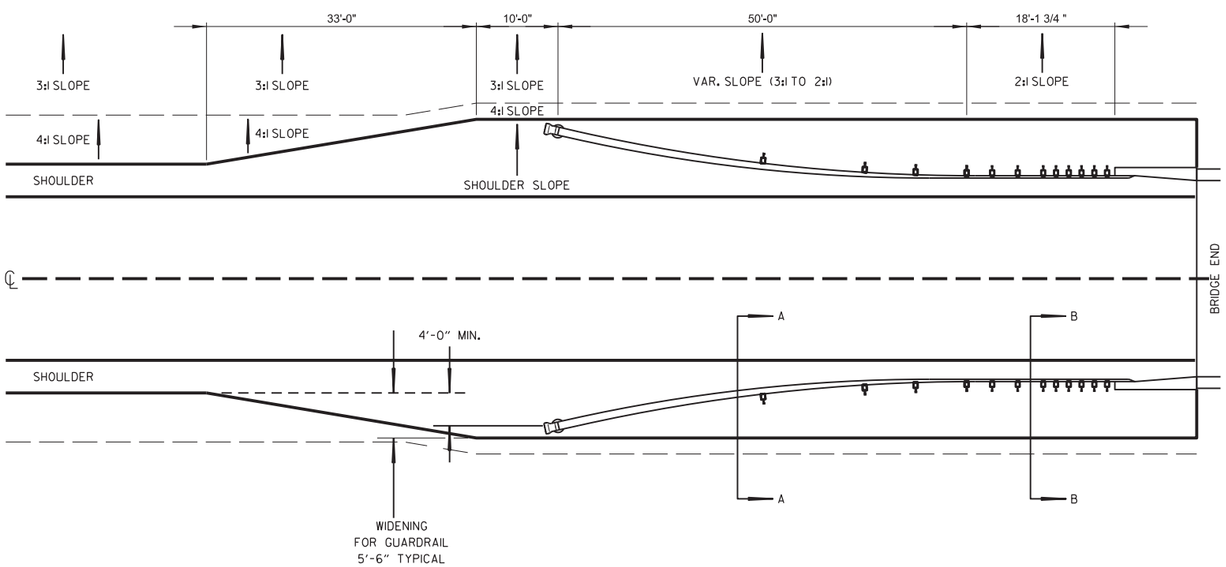


SECTION ON TANGENT



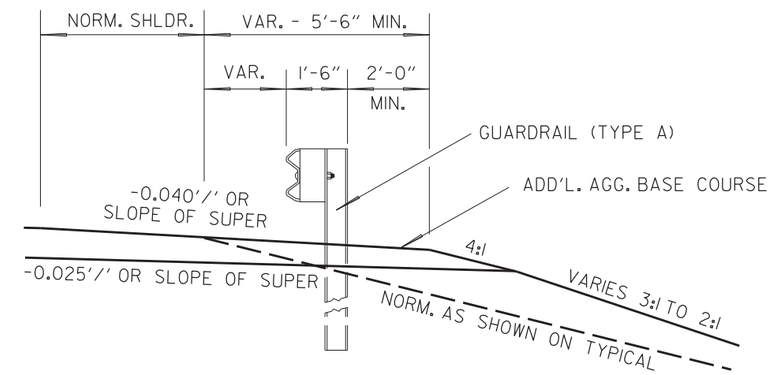
SECTION ON CURVE

DETAILS SHOWING POSITION OF GUARDRAIL ON ROADWAY

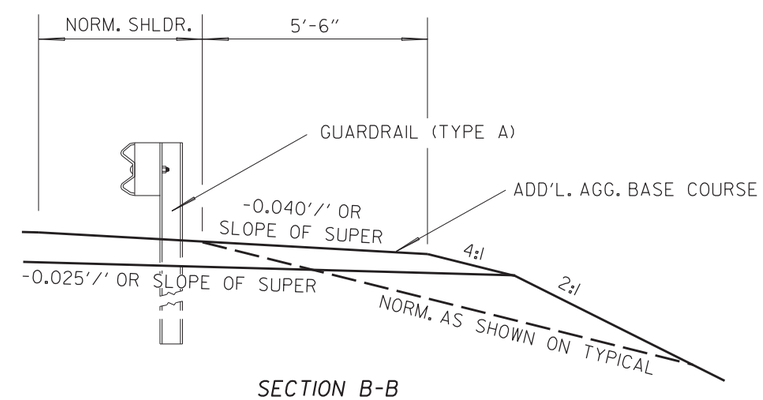


DETAILS OF ROADWAY WIDENING FOR GUARDRAIL

NOT TO SCALE



SECTION A-A



SECTION B-B

SPECIAL DETAILS

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

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11240
BRYAN FREELING

Jun 10 2020 4:47 PM

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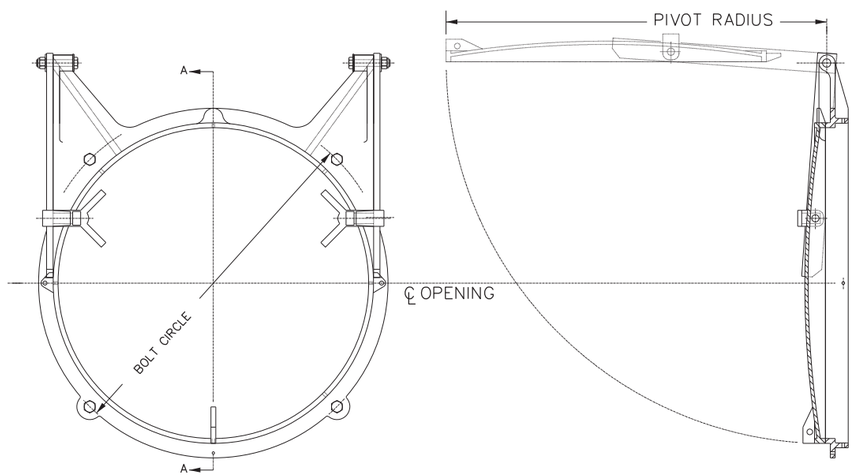
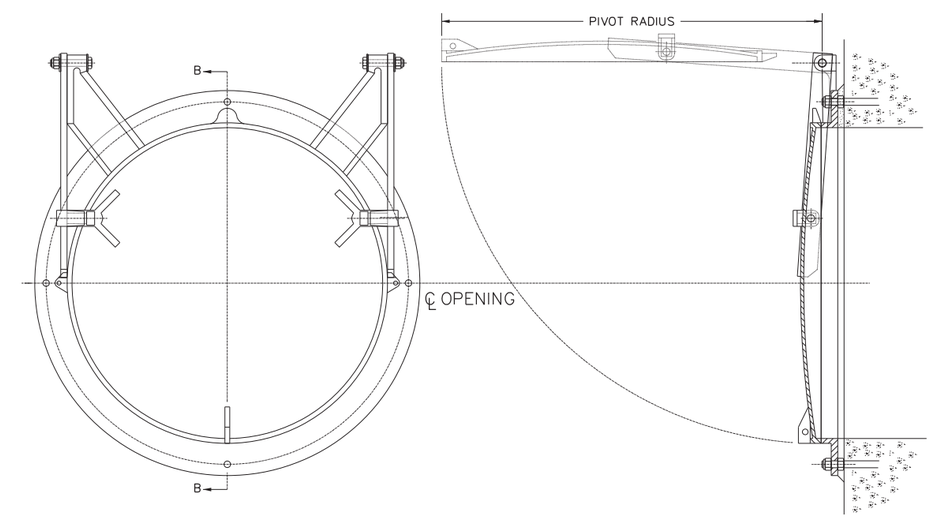


FRONT VIEW

SECTION A - A



SECTION B - B

CORRUGATED METAL PIPE INSTALLATION

CONCRETE PIPE INSTALLATION

TYPICAL AUTOMATIC FLOODGATE DETAILS

THE 48" FLOODGATE DIMENSIONS AND MOUNTING HARDWARE WILL BE AS REQUIRED BY THE MANUFACTURER'S SPECIFICATIONS.

SPECIAL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST. NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		FA3610	10	46

4 SPECIAL DETAILS

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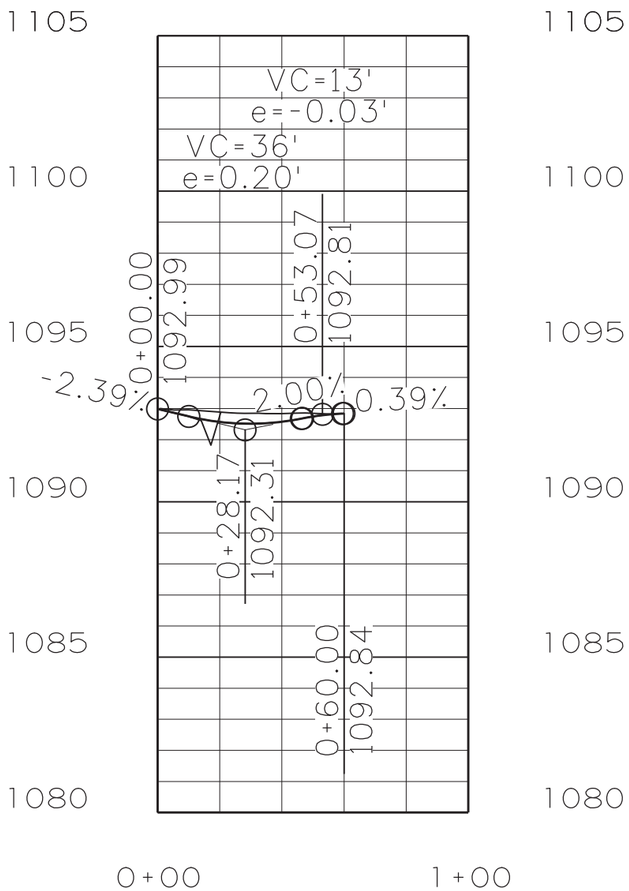
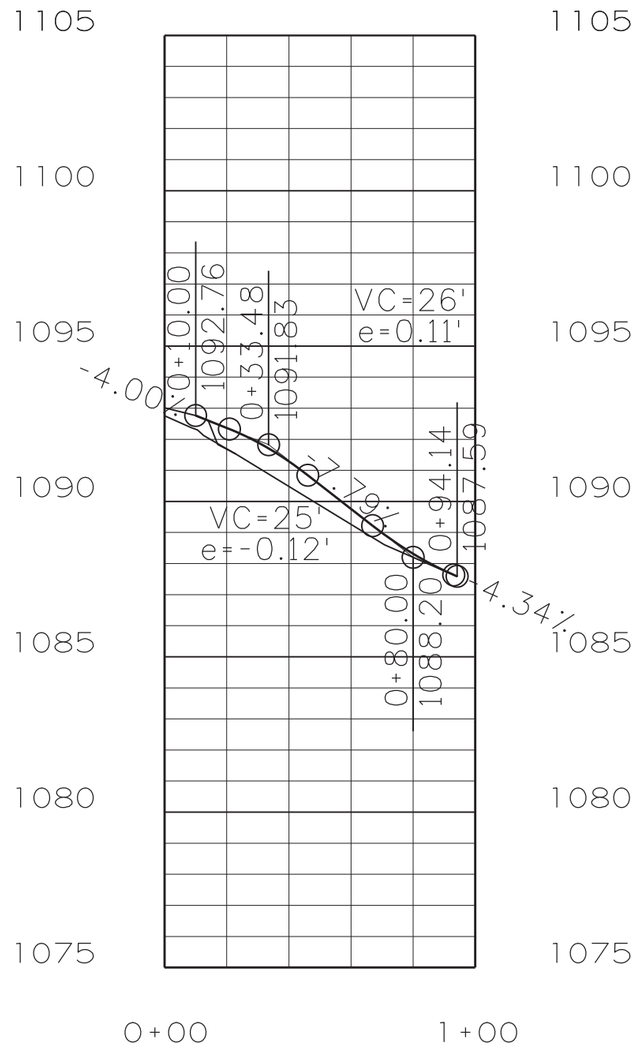
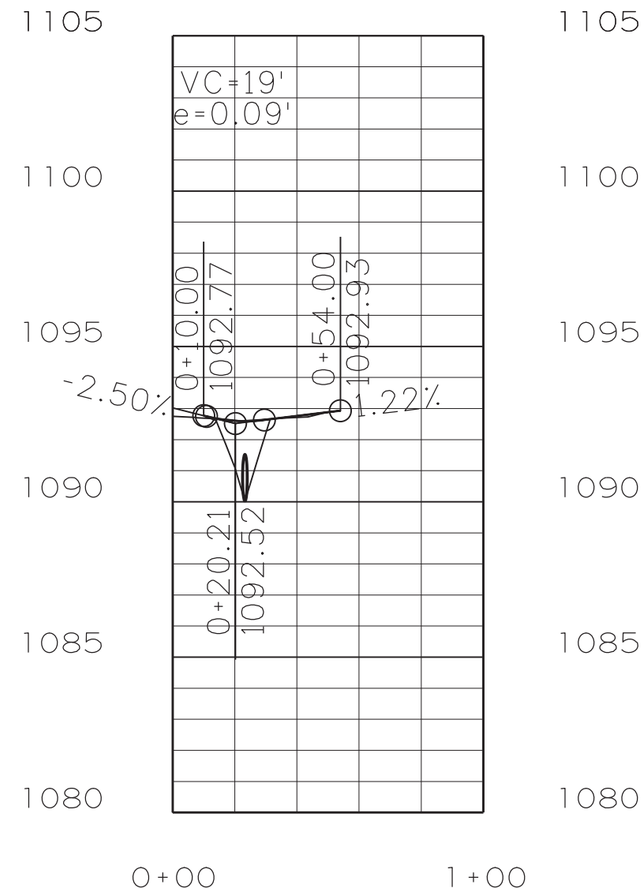


COUNTY ROAD 184



DRIVE 100+94 RT.



DRIVE 101+03 LT.

SPECIAL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST. NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		FA3610	11	46

4 SPECIAL DETAILS

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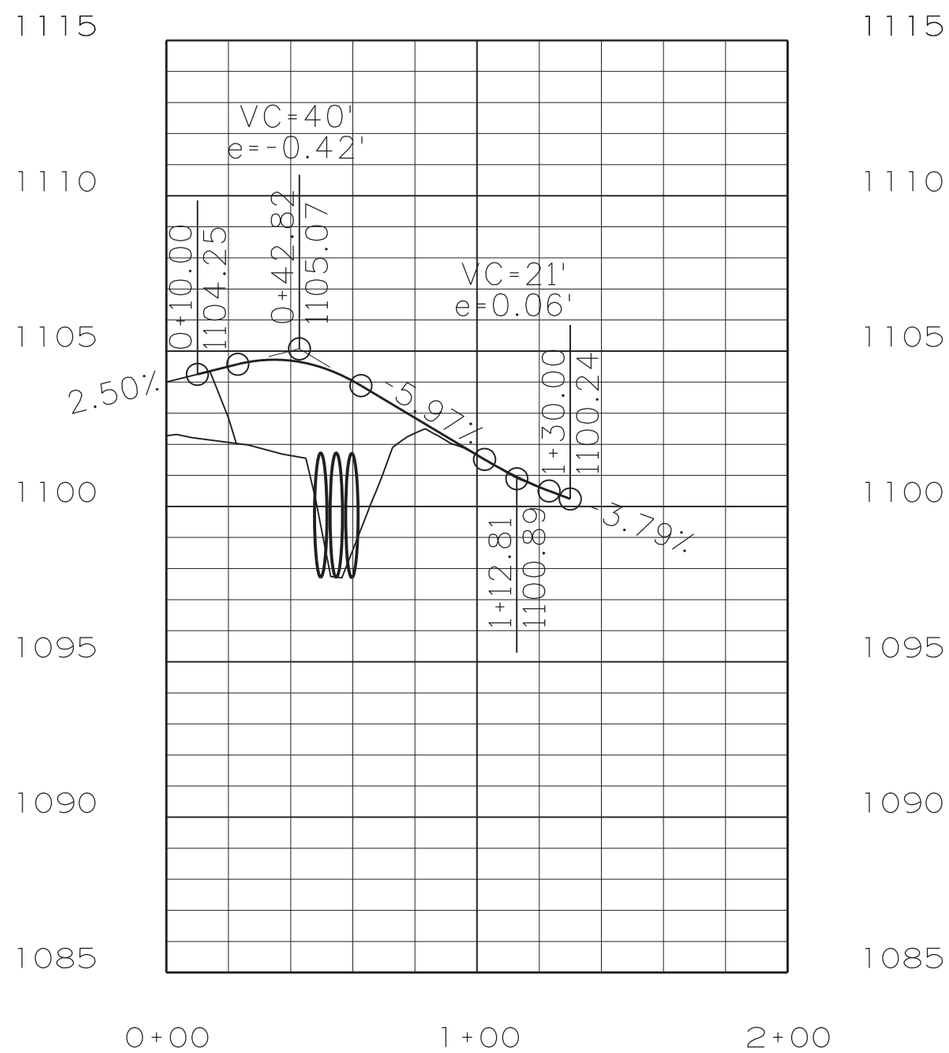
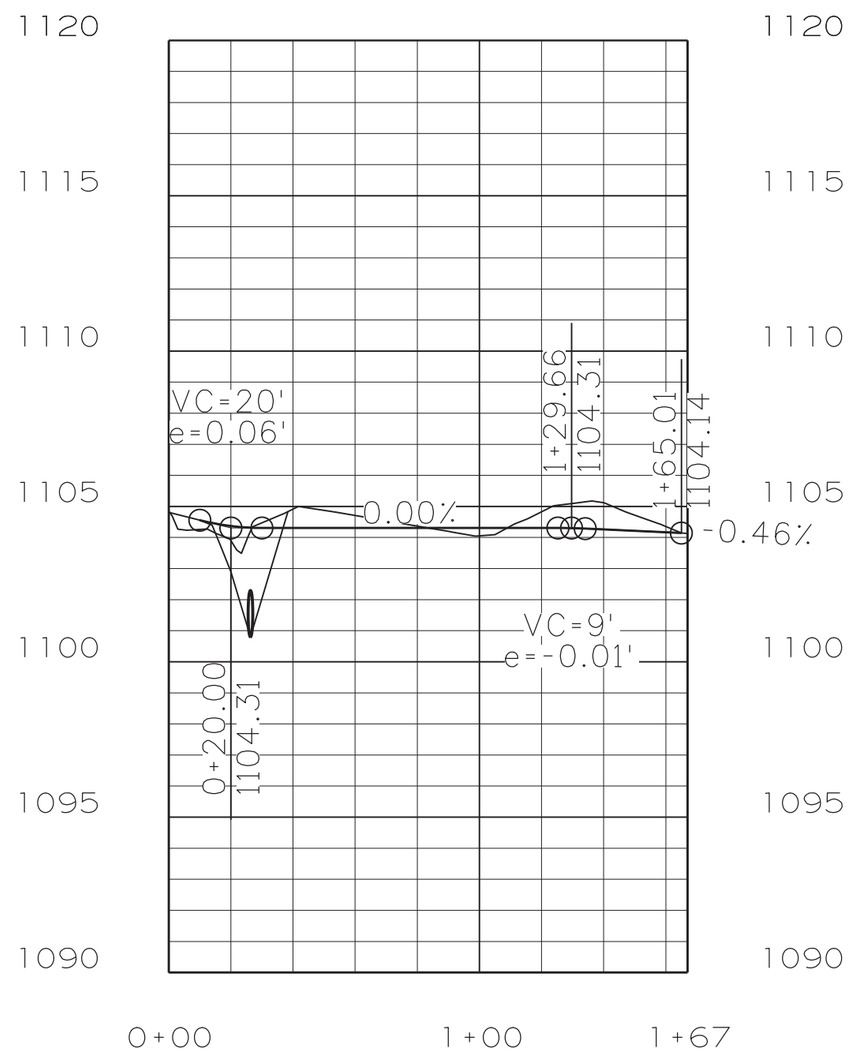


DRIVE 110+74 LT.



DRIVE 111+98 RT.

SPECIAL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST. NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		FA3610	12	46

(4) TEMPORARY EROSION CONTROL DETAILS

	TEMPORARY SEEDING	MULCH COVER	WATER
STA. 100+00 TO STA. 105+50 RT. =	0.37 ACRES	0.37 ACRES	7.5 M. GALS
STA. 100+00 TO STA. 105+50 LT. =	0.51 ACRES	0.51 ACRES	10.4 M. GALS

STATE OF ARKANSAS
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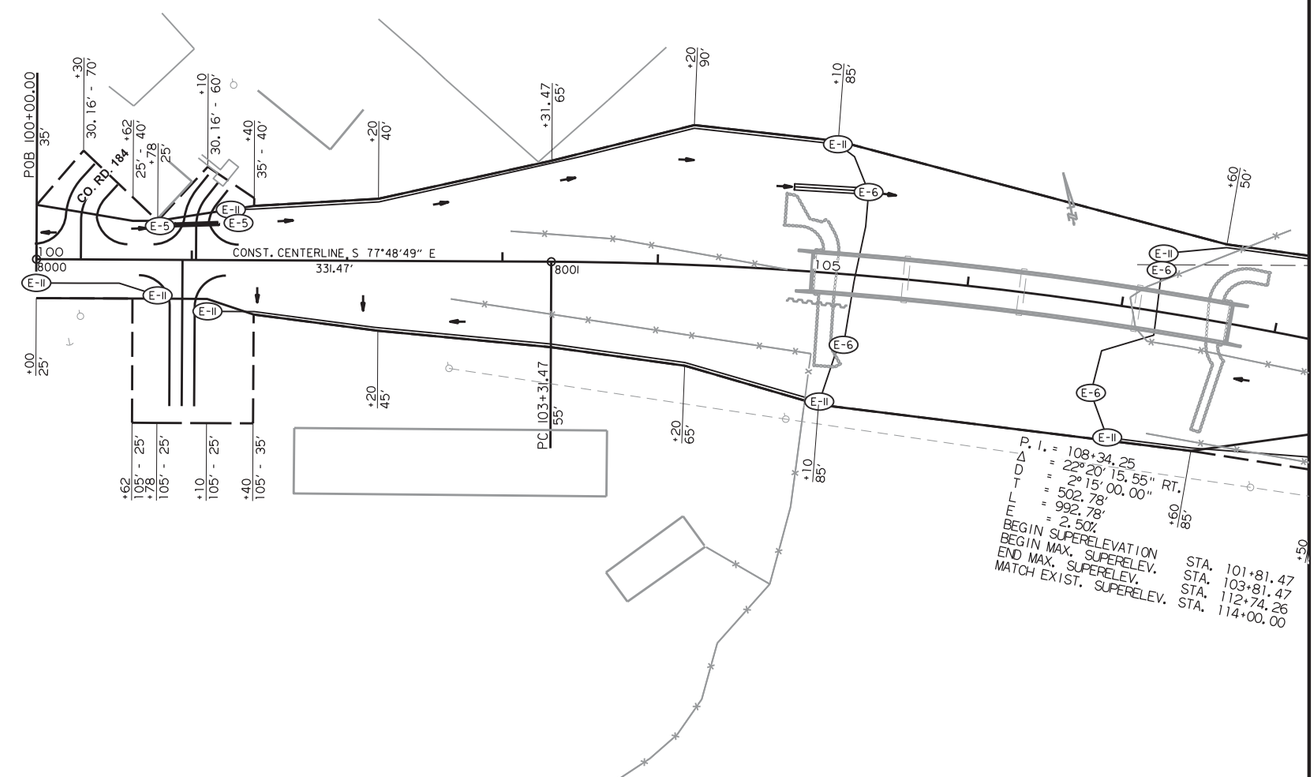
TEMPORARY EROSION CONTROL

SAND BAG DITCH CHECKS (E-5)	SEDIMENT REMOVAL AND DISPOSAL
STA. 100+79 LT. = 22 BAG	1 CU. YD.
STA. 101+30 LT. = 22 BAG	1 CU. YD.
ROCK DITCH CHECKS (E-6)	SEDIMENT REMOVAL AND DISPOSAL
STA. 105+31 LT. = 3 CU.YD.	1 CU. YD.
STA. 105+23 RT. = 3 CU.YD.	1 CU. YD.
SILT FENCE (E-11)	SEDIMENT REMOVAL AND DISPOSAL
STA. 100+00 TO STA. 100+78 RT. = 79 LIN. FT.	3 CU. YD.
STA. 101+10 TO STA. 105+28 RT. = 485 LIN. FT.	18 CU. YD.
STA. 101+25 TO STA. 105+28 LT. = 490 LIN. FT.	18 CU. YD.



(E-5)	SAND BAG DITCH CHECK
(E-6)	ROCK DITCH CHECK
(E-11)	SILT FENCE

TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST. NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		FA3610	13	46

4 TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
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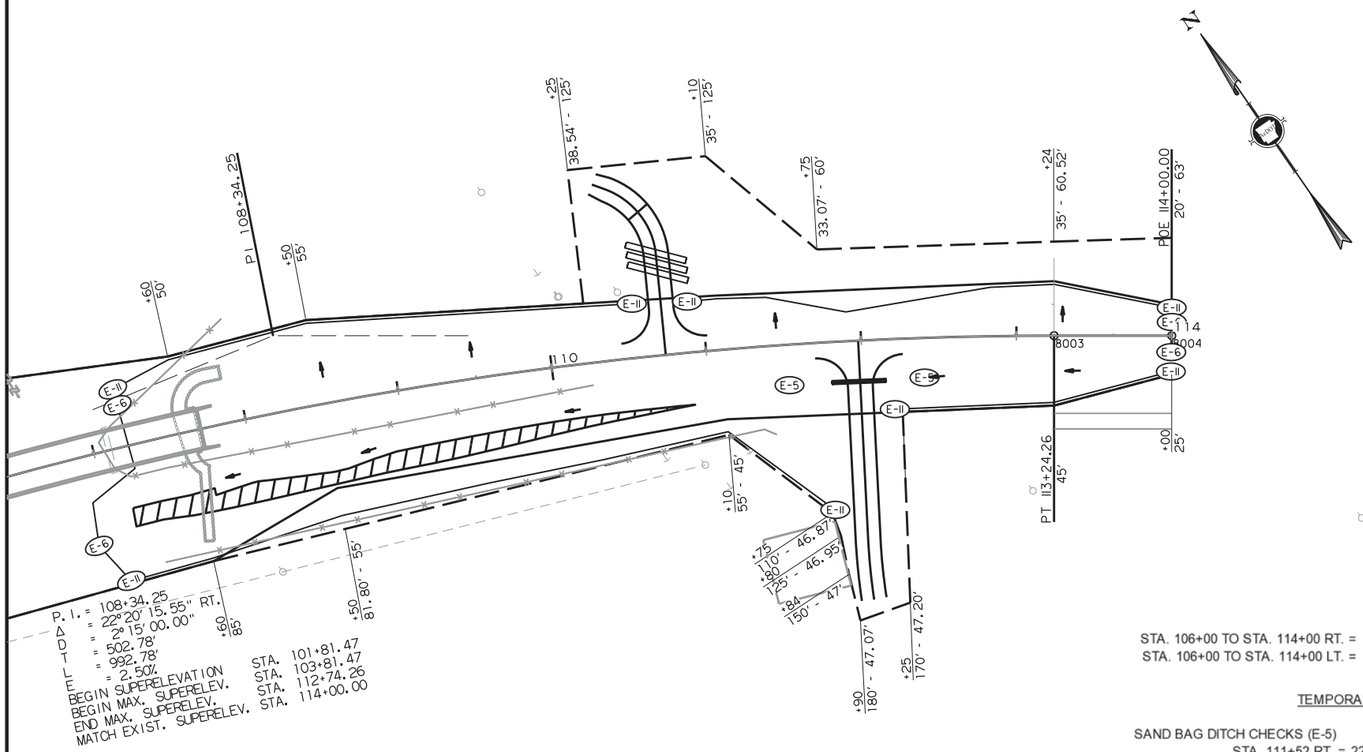

	TEMPORARY SEEDING	MULCH COVER	WATER
STA. 106+00 TO STA. 114+00 RT. =	0.80 ACRES	0.80 ACRES	16.3 M. GALS
STA. 106+00 TO STA. 114+00 LT. =	0.38 ACRES	0.38 ACRES	7.8 M. GALS

TEMPORARY EROSION CONTROL

SAND BAG DITCH CHECKS (E-5)	SEDIMENT REMOVAL AND DISPOSAL
STA. 111+52 RT. = 22 BAG	1 CU. YD.
STA. 112+40 RT. = 22 BAG	1 CU. YD.
ROCK DITCH CHECKS (E-6)	SEDIMENT REMOVAL AND DISPOSAL
STA. 107+21 LT. = 3 CU.YD.	1 CU. YD.
STA. 106+88 RT. = 3 CU.YD.	1 CU. YD.
STA. 114+00 RT. = 3 CU.YD.	1 CU. YD.
STA. 114+00 LT. = 3 CU.YD.	1 CU. YD.
SILT FENCE (E-11)	SEDIMENT REMOVAL AND DISPOSAL
STA. 107+21 TO STA. 110+56 LT. = 381 LIN. FT.	14 CU. YD.
STA. 106+88 TO STA. 111+77 RT. = 590 LIN. FT.	22 CU. YD.
STA. 110+91 TO STA. 114+00 LT. = 315 LIN. FT.	12 CU. YD.
STA. 112+20 TO STA. 114+00 RT. = 181 LIN. FT.	7 CU. YD.

E-5	SAND BAG DITCH CHECK
E-6	ROCK DITCH CHECK
E-11	SILT FENCE

TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST. NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		FA3610	14	46

4 QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11240
BRYAN FREELING

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CLEARING AND GRUBBING

STATION	STATION	CLEARING	GRUBBING
		STATION	STATION
100+00	105+00	5	5
106+00	114+00	8	8
TOTALS:		13	13

FENCING

STATION	STATION	SIDE	REMOVAL AND DISPOSAL OF FENCE	WIRE FENCE (TYPE D-1)	WIRE FENCE (TYPE C)	20' STEEL GATES	20' ALUMINUM GATES
			LIN. FT.	LIN. FT.	LIN. FT.	EACH	EACH
100+62	100+67	RT.	66		61		
100+62	100+84	RT.		23			
100+84	101+04	RT.				1	1
101+04	101+50	RT.		49			
101+48	101+50	RT.	16				
101+97	102+64	LT.	68				
102+61	105+03	RT.	270				
103+05	104+84	LT.	180				
107+04	107+73	LT.	89				
107+07	110+25	RT.	328				
107+29	108+23	RT.	92	92			
107+73	110+64	LT.		300			
111+10	111+42	RT.	32				
111+10	111+89	RT.		80			
111+78	113+76	RT.	196				
112+08	113+76	RT.		170			
TOTALS:			1337	714	61	1	1

REMOVAL AND DISPOSAL OF ROCK WALLS

STATION	STATION	DESCRIPTION	LENGTH
			LIN. FT.
107+04	107+14	LOOSE-SET STONE WALL ON RT. & LT.	33
TOTAL:			33

REMOVAL AND DISPOSAL OF PIPE CULVERTS

STATION	DESCRIPTION	PIPE CULVERT
		EACH
110+72	40" X 16' ARCH CMP LT. SIDE DRAIN	1
110+73	36" X 18' CMP LT. SIDE DRAIN	1
TOTAL:		2

NOTE: ALL SALVAGEABLE PIPE CULVERTS SHALL BECOME THE PROPERTY OF JOHNSON COUNTY.

REMOVAL AND DISPOSAL OF SIGN

STATION	SIDE	DESCRIPTION	EACH
100+58	LT.	CATALPA CABIN RENTAL / CAFÉ	1
TOTAL:			1

REMOVAL AND DISPOSAL OF CONCRETE PAD

STATION	STATION	DESCRIPTION	LENGTH
			SQ. YD.
100+50	100+58	2' X 8.5' CONCRETE PAD ON LT.	2
TOTAL:			2

FLOWABLE SELECT MATERIAL

STATION	DESCRIPTION	CU. YDS.
102+67	FILL AND ABANDON IN PLACE 2.8' X 3.1' X 30' NATIVE STONE CULVERT	10
TOTAL:		10

EARTHWORK

STATION	STATION	LOCATION / DESCRIPTION	UNCLASSIFIED EXCAVATION			COMPACTED EMBANKMENT		
			NORMAL	ADD'L	TOTAL	NORMAL	ADD'L	TOTAL
			CUBIC YARDS					
100+00	106+50	MAIN LANES	364		364	4204		4204
106+50	140+00	MAIN LANES	631		631	2948		2948
104+99	105+40	CHANNEL CHANGE		275	275			
107+06	107+69	CHANNEL CHANGE		250	250			
104+83	105+27	LEVEE CONSTRUCTION					118	118
104+45	104+93	OBLITERATION OF EXISTING ROADWAY		4	4			
107+15	110+90	OBLITERATION OF EXISTING ROADWAY		64	64			
100+29		COUNTY ROAD 184 (PANTHER CREEK ROAD)		36	36		35	35
100+94		DRIVE ON RT.		23	23		27	27
101+03		DRIVE ON LT.		11	11		10	10
110+74		DRIVE ON LT.		13	13		247	247
111+98		DRIVE ON RT.		125	125		117	117
TOTALS:			995	801	1796	7152	554	7706

NOTE: EARTHWORK QUANTITIES SHOWN ABOVE SHALL BE PAID AS PLAN QUANTITY.

QUANTITIES

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST. NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
8-26-2020				6	ARK.			
				JOB NO.		FA3610	15	46

4 QUANTITIES

BASE AND SURFACING

STARTING STATION	ENDING STATION	LOCATION	LENGTH	PRIME			AGGREGATE BASE COURSE (CLASS 7)		ACHM SURFACE COURSE (3/8")*			
				WIDTH	SQ. YD.	GAL.	TON/STATION	TON	WIDTH	SQ. YD.	LB./SQ. YD.	TON
100+00.00	100+53.00	MAIN LANES	53	23.50	138.4	55.4	137.4	72.8	23.50	138.4	220.0	15.2
100+53.00	101+81.47	MAIN LANES	128	21.00	298.7	119.5	151.8	194.3	20.00	284.4	220.0	31.3
101+81.47	103+77.42	MAIN LANES	196	21.00	457.3	182.9	153.0	299.9	20.00	435.6	220.0	47.9
103+77.42	103+81.47	MAIN LANES	4	21.00	9.3	3.7	160.3	6.4	20.00	8.9	220.0	1.0
103+81.47	104+10.42	MAIN LANES	29	21.00	67.7	27.1	193.1	56.0	20.00	64.4	220.0	7.1
104+10.42	104+98.92	MAIN LANES	89	21.00	207.7	83.1	210.8	187.6	20.00	197.8	220.0	21.8
107+71.08	108+59.58	MAIN LANES	89	21.00	207.7	83.1	210.8	187.6	20.00	197.8	220.0	21.8
108+59.58	108+92.58	MAIN LANES	33	21.00	77.0	30.8	153.0	50.5	20.00	73.3	220.0	8.1
108+92.58	112+74.26	MAIN LANES	382	21.00	891.3	356.5	153.0	584.5	20.00	848.9	220.0	93.4
112+74.26	114+00.00	MAIN LANES	126	21.00	294.0	117.6	153.0	192.8	20.00	280.0	220.0	30.8
100+29.		CO.RD. 184	50	21.00	116.7	46.7	131.3	65.7	20.00	111.1	220.0	12.2
100+94.		DRIVEWAY ON LT.	84	17.00	158.7	63.5	83.0	69.7	16.00	149.3	220.0	12.2
101+03.		DRIVEWAY ON RT.	44	17.00	83.1	33.2	83.0	36.5	16.00	78.2	220.0	8.6
111+98.		DRIVEWAY ON RT.	157	17.00	296.6	118.6	83.0	130.3	16.00	279.1	220.0	30.7
MAINTENANCE OF TRAFFIC**		ENTIRE PROJECT						1000.0**				
TOTALS:						1321.7		3134.6				342.1
USE:						1322		3135				342

BASIS OF ESTIMATE:

AGGREGATE BASE COURSE (CLASS 7) ____ 143 TONS / STA. (TYPICAL)
AGGREGATE BASE COURSE (CLASS 7) (SHOULDERS) ____ 4.4 TONS / STA. (EACH SIDE)
PRIME COAT ____ 0.40 GALS. / SQ. YD.
ACHM SURFACE COURSE (3/8") ____ 220 LBS. / SQ. YD.

***Nmax=115**

VOLUME CONTROL:

ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (3/8") ____ 6.00%
MINERAL AGGREGATE IN ACHM SURFACE COURSE (3/8") ____ 94.00%

**NOTE: TO BE PLACED IF AND WHERE DIRECTED BY THE ENGINEER.
SEE SECITON 104.03 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, 2014 EDITION.

APPROACH GUTTERS

STATION	STATION	SIDE	APPROACH GUTTERS (TYPE A)	REINFORCING STEEL - ROADWAY (GRADE 60)
			CU. YD.	LB.
104+69	104+99	LT.	4.25	360
104+69	104+99	RT.	4.25	360
107+71	108+01	LT.	4.25	360
107+71	108+01	RT.	4.25	360
TOTALS:			17.00	1440

NOTE: W = 4' - 0"

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STRUCTURES

STATION	DESCRIPTION	SIDE DRAINS		48" AUTOMATIC FLOODGATE	SELECTED PIPE BEDDING*	STANDARD DRAWING NUMBERS
		18"	48"			
		LINEAR FT.			CU. YD.	
101+03.	INSTALL SIDE DRAIN ON LT.	28			1	PCM-1, PCC-1, PCP-1, PCP-2
105+12.	INSTALL LEVEE PIPE CULVERT WITH FLOODGATE ON LT.		48	1	2	PCM-1, PCC-1
110+74.	INSTALL TRIPLE SIDE DRAIN ON LT.		120		6	PCM-1, PCC-1, PCP-1, PCP-2
111+98.	INSTALL SIDE DRAIN ON RT.	34			1	PCM-1, PCC-1, PCP-1, PCP-2
TOTALS:		62	168	1	10	

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

*QUANTITIES ARE ESTIMATED. TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER. SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE TRENCH BELOW THE STRUCTURAL BEDDING WILL BE EXCAVATED AND REPLACED WITH SELECTED PIPE BEDDING. THE MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE STRUCTURAL BEDDING WILL BE PAID AS SELECTED PIPE BEDDING.

PORTLAND CEMENT CONCRETE DRIVEWAY

STATION	DESCRIPTION	SQ. YDS.
110+74	95' OF PRIVATE ENTRANCE	152
TOTAL:		152

TRAFFIC CONTROL DEVICES

DESCRIPTION	W20-1								G20-2		R11-2*		R11-3A*		R11-4*		BARRICADES (TYPE III)*	TRAFFIC DRUMS*	VERTICAL PANELS*	STANDARD DRAWING NUMBER
	1500 FT.		1000 FT.		500 FT.		AHEAD		END ROAD WORK		ROAD CLOSED		ROAD CLOSED XX MILES AHEAD		ROAD CLOSED TO THRU TRAFFIC					
	NO.	SQ. FT.	NO.	SQ. FT.	NO.	SQ. FT.	NO.	SQ. FT.	NO.	SQ. FT.	NO.	SQ. FT.	NO.	SQ. FT.	NO.	SQ. FT.	LIN. FT.	EACH	EACH	
Sta. 85+00 RT.	1	16.00																		TC-1, TC-2, TC-3
Sta. 90+00 RT.			1	16.00																TC-1, TC-2, TC-3
Sta. 95+00 LT.									1	8.00										TC-1, TC-2, TC-3
Sta. 95+00 RT.					1	16.00														TC-1, TC-2, TC-3
Sta. 100+00 RT.							1	16.00												TC-1, TC-2, TC-3
Sta. 100+60 LT.															1*	12.50*				TC-1, TC-2, TC-3
Sta. 104+60											1*	10.00*					16*			TC-1, TC-2, TC-3
Sta. 108+00											1*	10.00*					16*			TC-1, TC-2, TC-3
Sta. 114+00 LT.							1	16.00												TC-1, TC-2, TC-3
Sta. 119+00 LT.					1	16.00														TC-1, TC-2, TC-3
Sta. 119+00 RT.									1	8.00										TC-1, TC-2, TC-3
Sta. 120+00 LT.															1*	12.50*				TC-1, TC-2, TC-3
Sta. 124+00 LT.			1	16.00																TC-1, TC-2, TC-3
Sta. 129+00 LT.	1	16.00																		TC-1, TC-2, TC-3
INTERSECTION CR 36 AND CR 70													1*	12.50*						TC-1, TC-2, TC-3
ENTIRE PROJECT AS DIRECTED																	32*	20*	20*	TC-1, TC-2, TC-3
SUBTOTALS:	2	32.00	2	32.00	2	32.00	2	32.00	2	16.00	2*	20.00*	1*	12.50*	2*	25.00*	64*	20*	20*	

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

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

4" PIPE UNDERDRAIN

LOCATION	4' PIPE UNDERDRAIN
	LIN. FT.
ENTIRE PROJECT	200
TOTAL:	200

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

QUANTITIES

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				6	ARK.			
				JOB NO.		FA3610	16	46

4 QUANTITIES

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No. 11240
BRYAN FREELING

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GUARDRAIL

STATION	STATION	SIDE	GUARDRAIL (TYPE A)	THRIE BEAM GUARDRAIL TERMINAL	TERMINAL ANCHOR POST (TYPE 1)
			LIN. FT.	EACH	EACH
104+21	104+90	LT.	50	1	1
104+21	104+90	RT.	50	1	1
107+80	108+49	LT.	50	1	1
107+80	108+49	RT.	50	1	1
TOTALS:			200	4	4

EROSION CONTROL

STATION	STATION	LOCATION	PERMANENT EROSION CONTROL			
			LIME	SEEDING	MULCH COVER	WATER
			TON	ACRE	ACRE	M. GAL.
100+00	105+50	LT. SIDE	1	0.51	0.51	52.0
100+00	105+50	RT. SIDE	1	0.37	0.37	37.7
106+00	114+00	LT. SIDE	1	0.38	0.38	38.8
106+00	114+00	RT. SIDE	2	0.80	0.80	81.6
TOTALS:			5	2.06	2.06	210.1

BASIS OF ESTIMATE:
LIME..... 2 TONS / ACRE OF SEEDING
WATER..... 102.0 M.G. / ACRE OF SEEDING, PERMANENT SEEDING

TEMPORARY EROSION CONTROL

STATION	STATION	LOCATION	TEMPORARY SEEDING	MULCH COVER	WATER	SILT FENCE (E-11)	SAND BAG DITCH CHECKS (E-5)	ROCK DITCH CHECKS (E-6)	FILTER SOCK (E-3)	SEDIMENT REMOVAL AND DISPOSAL
			ACRE	ACRE	M. GAL.	LIN. FT.	BAG	CU.YD.	LIN. FT.	CU. YD.
100+00	105+50	RT.	0.37	0.37	7.5	564		3		22
100+00	105+50	LT.	0.51	0.51	10.4	490	44	3		21
106+00	114+00	RT.	0.80	0.80	16.3	771	44	6		33
106+00	114+00	LT.	0.38	0.38	7.8	696		6		28
ENTIRE PROJECT AS DIRECTED BY ENGINEER									1000	
TOTALS:			2.06	2.06	42.0	2521	88	18	1000	104

BASIS OF ESTIMATE:
WATER..... 20.4 M.G. / ACRE OF SEEDING, TEMPORARY SEEDING

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

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

NOTE: ALL TEMPORARY EROSION CONTROL QUANTITIES ARE ESTIMATED. TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER. SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

PAVEMENT MARKING

STATION		REFLECTORIZED PAINT PAVEMENT MARKING YELLOW 4"
FROM	TO	LINEAR FEET
100+00	114+00	2300
TOTAL:		2300

NOTE: THIS IS A LOW VOLUME ROAD AS DEFINED IN SECTION 604.03 OF THE STANDARD SPECFICATIONS FOR HIGHWAY CONSTRUCTION

STANDARD HIGHWAY SIGNS AND SUPPORT ASSEMBLIES

STATION	SIDE	STANDARD SIGN NUMBER												SUPPORT ASSEMBLIES		STANDARD DRAWING NUMBER
		R1-1 (STOP)		W5-1 (ROAD NARROWS)		W8-3 (PAVEMENT ENDS)		W8-25 (SHOULDER ENDS)		OM-3L (OBJECT MARKER)		OM-3R (OBJECT MARKER)		TYPE A	TYPE C	
		NO.	SQ. FT.	NO.	SQ. FT.	NO.	SQ. FT.	NO.	SQ. FT.	NO.	SQ. FT.	NO.	SQ. FT.	EACH		
100+13	LT.	1	6.25											1		SHS 1&2
104+85	LT.									1	3.00				1	SHS 1&2
104+85	RT.											1	3.00		1	SHS 1&2
107+85	LT.											1	3.00		1	SHS 1&2
107+85	RT.									1	3.00				1	SHS 1&2
111+75	RT.			1	9.00									1		SHS 1&2
112+50	RT.							1	9.00					1		SHS 1&2
113+00	RT.					1	9.00							1		SHS 1&2
SUBTOTALS:		1	6.25	1	9.00	1	9.00	1	9.00	2	6.00	2	6.00	4	4	

NOTE: ALL STANDARD SIGN BLANKS TO BE 0.08" THICK. REFER TO STANDARD DRAWING SHS - 2 FOR CHANNEL POST SPLICING DETAILS.

FILTER BLANKET AND DUMPED RIPRAP (GROUTED)

STATION	STATION	SIDE	FILTER BLANKET	DUMPED RIPRAP (GROUTED)
			SQ. YDS.	CU. YDS.
110+50	111+00	LT.	100	50
111+50	112+50	LT.	128	64
TOTALS:			228	114

QUANTITIES

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.		FA3610	17	46
				① 04944 - QUANTITIES - 61393				

SCHEDULE OF BRIDGE QUANTITIES - JOB NO. FA3610

BRIDGE NO.	NAME PLATE TITLE	UNIT OF STRUCTURE	ITEM NO.	205	801	SS & 802	SP, SS, & 802	803	SS & 804	SS & 804	SS & 805	SP, SS, & 807	SS & 807	SS & 808	SS & 809	812	816	816
			ITEM	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO.)	② UNCLASSIFIED EXCAVATION FOR STRUCTURES - BRIDGE	CLASS S CONCRETE - BRIDGE	CLASS S(AE) CONCRETE - BRIDGE	CLASS 1 PROTECTIVE SURFACE TREATMENT	EPOXY COATED REINFORCING STEEL (GRADE 60)	REINFORCING STEEL - BRIDGE (GRADE 60)	① STEEL PILING (HP 14X73)	STRUCTURAL STEEL IN BEAM SPANS (A709, GR. 50W)	③ PAINTING STRUCTURAL STEEL	ELASTOMERIC BEARINGS	SILICONE JOINT SEALANT	BRIDGE NAME PLATE (TYPE C)	FILTER BLANKET	DUMPED RIPRAP
			UNIT	LUMP SUM	CU. YD.	CU. YD.	CU. YD.	GAL.	LB.	LB.	LIN. FT.	LB.	TON	CU. IN.	LIN. FT.	EACH	SQ. YD.	CU. YD.
04944	PANTHER CREEK	BENT 1				21.85		0.2		3,020	68	500		1,479.0	27		169	124
		BENT 2			75	41.93				6,340				1,225.0				
		BENT 3			96	41.93				6,340				1,648.0				
		BENT 4			169	41.14				6,240				1,225.0				
		BENT 5				21.85		0.2		3,020	68	500		1,479.0	27		134	106
		270'-0" CONT. W-BEAM UNIT					227.20	18.7	55,140			218,470	3.3			1		
SITE NO. 1 (BRIDGE NO. 18067)				1														
TOTALS FOR BRIDGE NO. 04944					340	168.70	227.20	19.1	55,140	24,960	136	219,470	3.3	7,056.0	54	1	303	230

① Al steel piling shall be Grade 50 and are required to have QPL approved driving points which will not be paid for directly, but will be considered subsidiary to the item "Steel Piling (HP 14x73)."

② Includes approximately 73 cubic yards of rock excation.

③ The color of paint shall be Brown equal to or close to Federal Std. 595B, Color Chip No. 30070 and as approved by the Engineer.

THOMAS GERARD
DESIGN SECTION SUPERVISOR

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
3-4-2020
CHARLES R. ELLIS

BRIDGE ENGINEER

SCHEDULE OF BRIDGE QUANTITIES
PANTHER CREEK STR. & APPRS. (S)
JOHNSON COUNTY

COUNTY ROAD 36

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: JJ DATE: 11/12/19 FILENAME: bfa3610_q1.dgn
CHECKED BY: TMG DATE: 3/3/2020 SCALE: No Scale
DESIGNED BY: — DATE: —

BRIDGE NO. 04944 DRAWING NO. 61393

PRINT DATE: 3/3/2020

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST. NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
7-9-2020				6	ARK.			
8-26-2020				JOB NO.		FA3610	18	46

4 SUMMARY OF QUANTITIES AND REVISIONS

SUMMARY OF QUANTITIES

ITEM NO.	ITEM	QUANTITY	UNIT
SP & 201	CLEARING	13	STATION
201	GRUBBING	13	STATION
202	REMOVAL AND DISPOSAL OF FENCE	1337	LIN. FT.
202	REMOVAL AND DISPOSAL OF ROCK WALLS	33	LIN. FT.
202	REMOVAL AND DISPOSAL OF PIPE CULVERTS	2	EACH
202	REMOVAL AND DISPOSAL OF SIGNS	1	EACH
202	REMOVAL AND DISPOSAL OF CONCRETE PAD	2	SQ. YD.
SP & 206	FLOWABLE SELECT MATERIAL	10	CU. YD.
SS & 210	UNCLASSIFIED EXCAVATION	1796	CU. YD.
210	COMPACTED EMBANKMENT	7706	CU. YD.
SS & 303	AGGREGATE BASE COURSE (CLASS 7)	3135	TON
SS & 401	PRIME COAT	1322	GAL.
SP, SS, & 407	MINERAL AGGREGATE IN ACHM SURFACE COURSE (3/8")	321	TON
SP, SS, & 407	ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (3/8")	21	TON
504	APPROACH GUTTERS	17.00	CU. YD.
SS & 505	PORTLAND CEMENT CONCRETE DRIVEWAY	152.00	SQ. YD.
601	MOBILIZATION	1.00	LUMP SUM
SP & 602	FURNISHING FIELD OFFICE	1	EACH
SP & 603	MAINTENANCE OF TRAFFIC	1.00	LUMP SUM
SS & 604	SIGNS	202	SQ. FT.
SS & 604	BARRICADES	64	LIN. FT.
SS & 604	TRAFFIC DRUMS	20	EACH
SS & 604	VERTICAL PANELS	20	EACH
SP, SS, & 606	18" SIDE DRAIN	62	LIN. FT.
SP, SS, & 606	48" SIDE DRAIN	168	LIN. FT.
606	SELECTED PIPE BEDDING	10	CU. YD.
SS & 611	4" PIPE UNDERDRAINS	200	LIN. FT.
616	48" AUTOMATIC FLOODGATES	1	EACH
SS & 617	GUARDRAIL (TYPE A)	200	LIN. FT.
SS & 617	TERMINAL ANCHOR POSTS (TYPE 1)	4	EACH
SS & 617	THRIE BEAM GUARDRAIL TERMINAL	4	EACH
619	WIRE FENCE (TYPE C)	61	LIN. FT.
619	WIRE FENCE (TYPE D-1)	714	LIN. FT.
* 619	20' STEEL GATES (ALTERNATE NO. 1)	1	EACH
* 619	20' ALUMINUM GATES (ALTERNATE NO. 2)	1	EACH
620	LIME	5	TON
620	SEEDING	2.06	ACRE
SS & 620	MULCH COVER	4.12	ACRE
620	WATER	252.1	M. GAL.
621	TEMPORARY SEEDING	2.06	ACRE
621	SILT FENCE	2521	LIN. FT.
621	SAND BAG DITCH CHECKS	88	BAG
621	SEDIMENT REMOVAL AND DISPOSAL	104.0	CU. YD.
621	ROCK DITCH CHECKS	18	CU. YD.
SS & 621	FILTER SOCK (18")	1000	LIN. FT.
635	ROADWAY CONSTRUCTION CONTROL	1.00	LUMP SUM
718	REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (4")	2800	LIN. FT.
SS & 726	STANDARD SIGN	45.25	SQ. FT.
SS & 729	CHANNEL POST SIGN SUPPORT (TYPE A)	4	EACH
SS & 729	CHANNEL POST SIGN SUPPORT (TYPE C)	4	EACH
SS & 804	REINFORCING STEEL-ROADWAY (GRADE 60)	1440	POUND
816	FILTER BLANKET	228	SQ. YD.
816	DUMPED RIPRAP (GROUTED)	114	CU. YD.
	STRUCTURES OVER 20'-0" SPAN		
205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 1)	1.00	LUMP SUM
636	BRIDGE CONSTRUCTION CONTROL	1.00	LUMP SUM
801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE	340	CU. YD.
SS & 802	CLASS S CONCRETE-BRIDGE	168.70	CU. YD.
SP, SS, & 802	CLASS S(AE) CONCRETE-BRIDGE	227.20	CU. YD.
803	CLASS 1 PROTECTIVE SURFACE TREATMENT	19.1	GAL.
SS & 804	REINFORCING STEEL-BRIDGE (GRADE 60)	55140	POUND
SS & 804	EPOXY COATED REINFORCING STEEL (GRADE 60)	24960	POUND
SS & 805	STEEL PILING (HP 14X73)	136	LIN. FT.
SP, SS, & 807	STRUCTURAL STEEL IN BEAM SPANS (A709, GR. 50W)	219470	POUND
SS & 807	PAINTING STRUCTURAL STEEL	3.3	TON
SS & 808	ELASTOMERIC BEARINGS	7056.0	CU. IN.
SS & 809	SILICONE JOINT SEALANT	54	LIN. FT.
812	BRIDGE NAME PLATE (TYPE C)	1	EACH
816	FILTER BLANKET	303	SQ. YD.
816	DUMPED RIPRAP	230	CU. YD.

* DENOTES ALTERNATE BID ITEMS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11240
BRYAN FREELING

Aug 27 2020 9:21 AM

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REVISIONS

DATE	REVISION	SHEET NUMBER
7/9/2020	ADDED ESTABLISHING CONTRACT TIME – WORKING DAY CONTRACT SP.	3, 18
8/26/2020	ADDED MAINTENANCE OF TRAFFIC SP, REVISED QUANTITIES FOR SIGNS AND BARRICADES, REVISED TRAFFIC CONTROL DEVICES NOTE.	3, 15, 18, 22

SUMMARY OF QUANTITIES AND REVISIONS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST. NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		FA3610	19	46

4 SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11240
BRYAN FREELING

Jun 10 2020 4:48 PM

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SURVEY CONTROL COORDINATES

Project Name: sFA3610
Date: 10/2/2017
Coordinate System: ARKANSAS STATE PLANE - NORTH ZONE BASED ON STATIC PTS 1, 8 & 9
NOTE ELEV.BASED ON STATIC GPS DERIVED ELEV. ON POINT # 9 CONSTRAINING ORTHOMETRIC HTS. ON

AHTD CORS SITES ARFY, ARHR & ARLR
Units: U.S. SURVEY FOOT

Point Name	Northing	Easting	Elev	Feature	Description
1	497747.9952	857802.33801105.529	CTL		STD AHTD MON. STAMPED PN:1
2	497915.9972	858259.84751104.760	CTL		STD AHTD MON. STAMPED PN:2
3	497749.2883	859052.95921092.073	CTL		STD AHTD MON. STAMPED PN:3
4	497597.4177	859562.17351099.977	CTL		STD AHTD MON. STAMPED PN:4
5	497358.7036	860156.40781103.652	CTL		STD AHTD MON. STAMPED PN:5
6	497046.5858	860588.23911116.377	CTL		STD AHTD MON. STAMPED PN:6
7	496690.7067	860670.48861136.240	CTL		STD AHTD MON. STAMPED PN:7
8	497129.3381	860196.90991106.700	CTL		STD AHTD MON. STAMPED PN:8
9	496930.5598	859315.37591088.860	CTL		STD AHTD MON. STAMPED PN:9

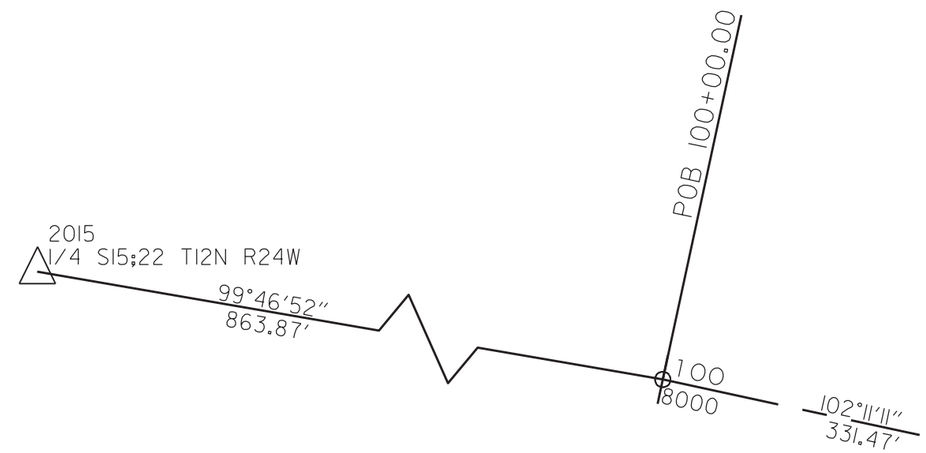
*Note - Rebar and Cap - Standard - 5/8" Rebar with 2" Aluminum Cap stamped
*(standard markings common to all caps), or as indicated
(other markings indicated in the point description of the individual point).
ALL DISTANCES ARE GROUND.
USE CAF = 1.0 FOR STAKEOUT FOR THIS PROJECT.
A PROJECT CAF OF 0.999889267367 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 sFA3610gi.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: BASED ON STATIC PTS 1, 8 & 9
CONVERGENCE ANGLE: 00 53 14.94 LEFT AT PN:4 LT:35 41 26.3087 LG:093 31 30.5342
GRID AZIMUTH = ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE.

CONSTRUCTION CONTROL COORDINATES
Project Name: FA3610
Date: 6/5/18
COORDINATE SYSTEM: ARKANSAS STATE PLANE COORDINATES
UNITS: U.S. SURVEY FOOT

POINT DESCRIPTION	NAME	STATION	NORTHING	EASTING
POB	8000	100+00.00	497728.49299	859080.86670
PC	8001	103+31.47	497658.52184	859404.86878
PI		108+34.25	497552.38942	859896.31600
PT	8002	113+24.26	497267.43972	860310.54798
POE	8003	114+00.00	497224.51164	860372.95263

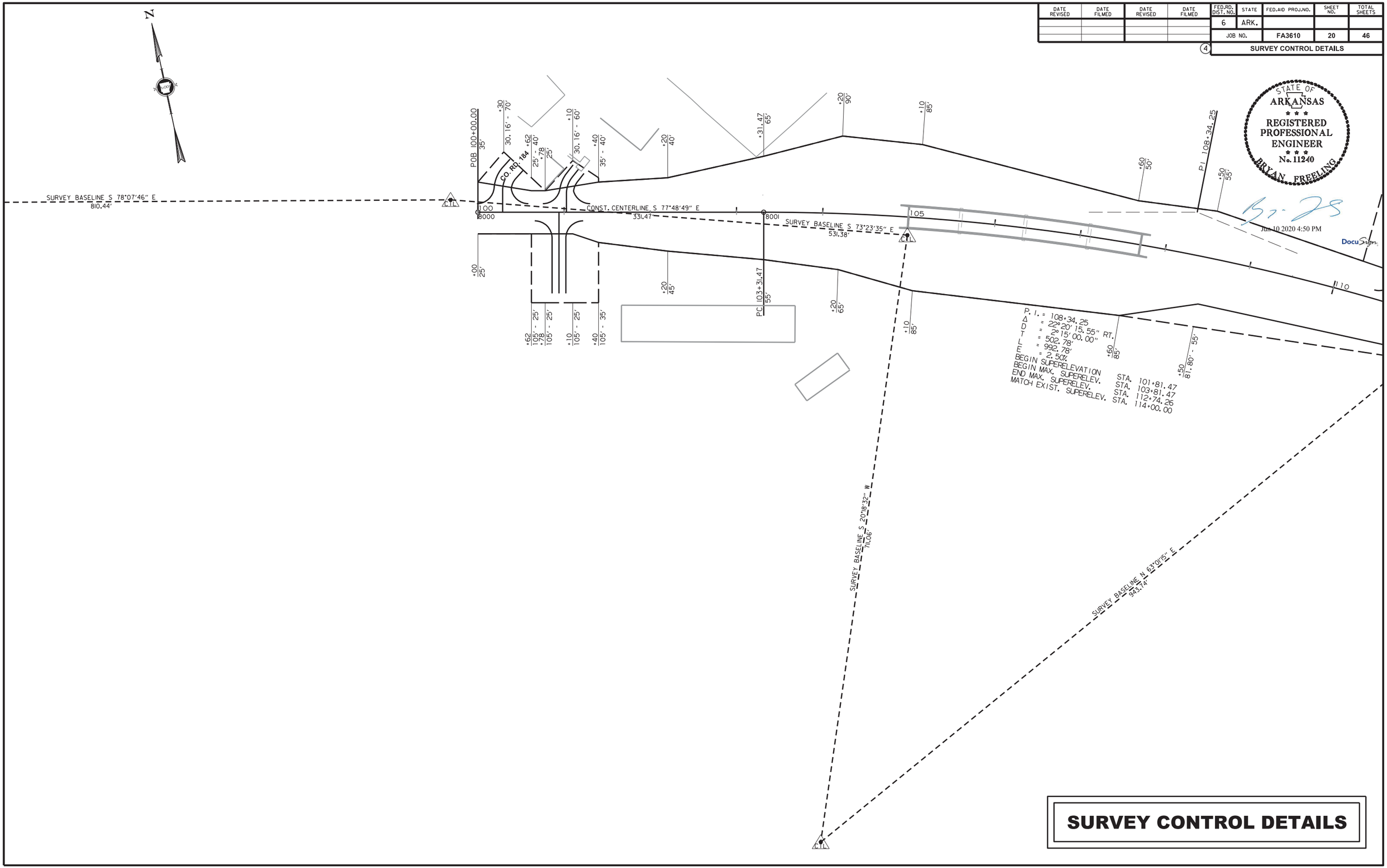


LAND TIE

SURVEY CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST. NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		FA3610	20	46

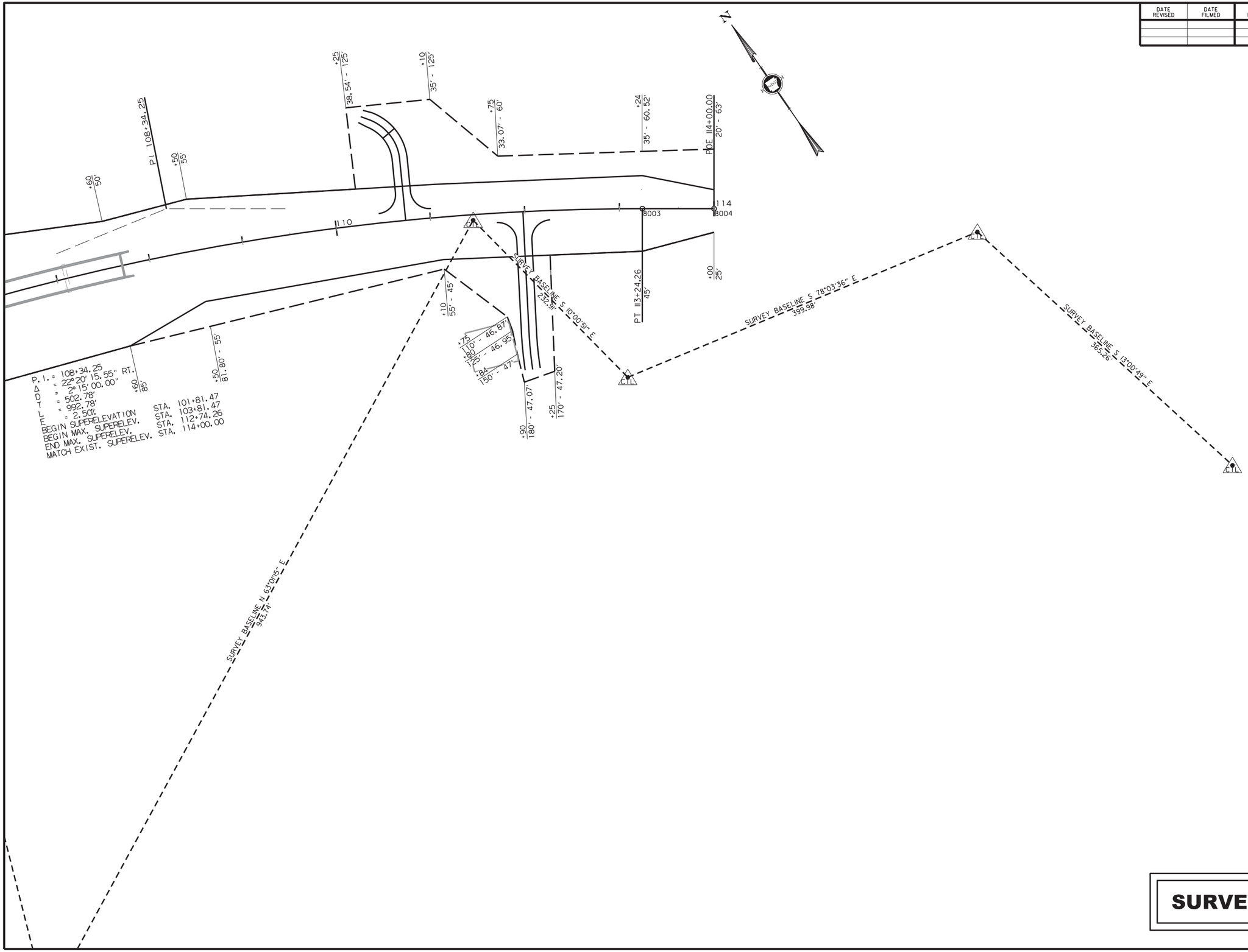
4 SURVEY CONTROL DETAILS



SURVEY CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST. NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		FA3610	21	46

4 SURVEY CONTROL DETAILS



STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11240
BRYAN FREELING

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SURVEY CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST. NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
8-26-2020				6	ARK.			
				JOB NO.		FA3610	22	46

4 PLAN AND PROFILE SHEETS

LEGEND

- POWER POLE
- COMBINATION POLE
- POLE W/GUY
- TELEPHONE RISER
- TELEPHONE POLE
- UNDERGROUND CABLE MKR.
- WATER METER
- WATER VALVE

CLEARING AND GRUBBING
STA. 100+00 TO STA. 105+00 = 5 STA.
STA. 106+00 TO STA. 114+00 = 8 STA.

REMOVAL AND DISPOSAL OF FENCE
STA. 100+62 TO STA. 100+67 ON RT. = 66 LIN. FT.
STA. 101+48 TO STA. 101+50 ON RT. = 16 LIN. FT.
STA. 101+97 TO STA. 102+64 ON LT. = 68 LIN. FT.
STA. 102+61 TO STA. 105+03 ON RT. = 270 LIN. FT.
STA. 103+05 TO STA. 104+84 ON LT. = 180 LIN. FT.

WIRE FENCE (TYPE D-1)
STA. 100+62 TO STA. 100+84 ON RT. = 23 LIN. FT.
STA. 101+04 TO STA. 101+50 ON RT. = 49 LIN. FT.

WIRE FENCE (TYPE C)
STA. 100+62 TO STA. 100+67 ON RT. = 61 LIN. FT.

20' GATE
STA. 100+84 TO STA. 101+04 ON RT. = 1 EACH

OBLITERATION OF EXISTING ROADWAY
STA. 104+45 TO STA. 104+93 RT. = UNCL. EXC. 4 CU. YDS.
STA. 107+15 TO STA. 110+90 RT. = 64 CU. YDS.

REMOVAL AND DISPOSAL OF CONCRETE PAD
STA. 100+50 TO STA. 100+58 ON LT. = 2 SQ. YD.

STA. 100+13 CONSTRUCT
STD. HWY. SIGNS
R1-1 (STOP) ON LT.
TYPE A SUPPORT ASSEMBLY

STA. 100+29 CO. RD. 184
CONSTRUCT APPROACH ON LT.
36 CU. YDS. UNCL. EXC.
35 CU. YDS. COMP. EMB.

STA. 101+03
INSTALL SIDE DRAIN ON LT.
18" X 28' PIPE CULVERT
CONSTRUCT DRIVE =
36 CU.YDS.UNCL. EXC.
35 CU.YDS.COMP.EMB.

LEVEE RECONSTRUCTION
STA. 104+83 TO STA. 105+27 LT.
NOTE: LEVEE SHALL BE CONSTRUCTED TO MINIMUM ELEVATION 1097.0.

FLOWABLE SELECT MATERIAL
STA. 102+67 = 10 CU. YDS.
FILL AND ABANDON IN PLACE
2.8' X 3.1' X 30' NATIVE STONE
CULVERT

REMOVAL AND DISPOSAL OF SIGN
STA. 100+58 LT. = 1 EACH

STA. 104+85 CONSTRUCT
STD. HWY. SIGNS
OM-3L (OBJECT MARKER) ON LT.
TYPE C SUPPORT ASSEMBLY

STA. 105+12
CONSTRUCT
PIPE CULVERT WITH FLOODGATE ON LT.
48" R.C. PIPE CULVERT (CLASS III)
(TYPE 3 BEDDING = 48 LIN. FT.
OR
48" C.M. PIPE CULVERT
(TYPE 2 BEDDING) = 48 LIN. FT.
CONSTRUCT LEVEE =
118 CU.YDS.COMP.EMB.

REMOVAL AND DISPOSAL OF ROCK WALLS
STA. 107+04 TO STA. 107+14 ON RT. & LT. = 33 LIN.FT.

STA. 106+13 IN PLACE 203' X 14' BRIDGE
REMOVE AS EXISTING BRIDGE STRUCTURE (SITE NO. 1) = 1 LUMP SUM

THE EXISTING BRIDGE SHALL BE REMOVED ACCORDING TO SECTION 205 OF THE STANDARD SPECIFICATIONS. REMOVAL OF EXISTING BRIDGE IS THE RESPONSIBILITY OF THE CONTRACTOR.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11240
BRYAN FREELING

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TRAFFIC CONTROL DEVICES
W20-1
Sta. 85+00 RT. (1500 FT.) 1 SIGN = 16 SQ. FT.
Sta. 90+00 RT. (1000 FT.) 1 SIGN = 16 SQ. FT.
Sta. 95+00 RT. (500 FT.) 1 SIGN = 16 SQ. FT.
Sta. 100+00 RT. (AHEAD) 1 SIGN = 16 SQ. FT.
Sta. 114+00 LT. (AHEAD) 1 SIGN = 16 SQ. FT.
Sta. 119+00 RT. (500 FT.) 1 SIGN = 16 SQ. FT.
Sta. 124+00 LT. (1000 FT.) 1 SIGN = 16 SQ. FT.
Sta. 129+00 LT. (1500 FT.) 1 SIGN = 16 SQ. FT.

G20-2
END ROAD WORK
Sta. 95+00 LT. 1 SIGN = 8 SQ. FT.
Sta. 119+00 RT. 1 SIGN = 8 SQ. FT.

R11-2*
ROAD CLOSED
Sta. 104+60 1* SIGN = 10* SQ. FT.
Sta. 108+00 1* SIGN = 10* SQ. FT.

R11-3A*
ROAD CLOSED XX MILES AHEAD
INTERSECTION CR 36 AND CR 70 1* SIGN = 12.5* SQ. FT.

R11-4*
ROAD CLOSED TO THRU TRAFFIC
Sta. 100+60 LT. 1* SIGN = 12.5* SQ. FT.
Sta. 120+00 LT. 1* SIGN = 12.5* SQ. FT.

BARRICADES (TYPE III)
Sta. 104+60 16* LIN. FT.
Sta. 108+00 16* LIN. FT.
ENTIRE PROJECT AS DIRECTED 32 LIN. FT.

TRAFFIC DRUMS
ENTIRE PROJECT AS DIRECTED 20 EACH

VERTICAL PANELS
ENTIRE PROJECT AS DIRECTED 20 EACH

EARTHWORK
STA. 100+00 TO STA. 106+50
UNCLASSIFIED EXCAVATION (NORMAL) = 364 CU. YDS.
CHANNEL CHANGE (ADDITIONAL) = 275 CU. YDS.
UNCLASSIFIED EXCAVATION (ADDITIONAL) = 74 CU. YDS.
COMPACTED EMBANKMENT (NORMAL) = 4204 CU. YDS.
COMPACTED EMBANKMENT (ADDITIONAL) = 190 CU. YDS.
NOTE: EARTHWORK SHALL BE PAID AS PLAN QUANTITY.

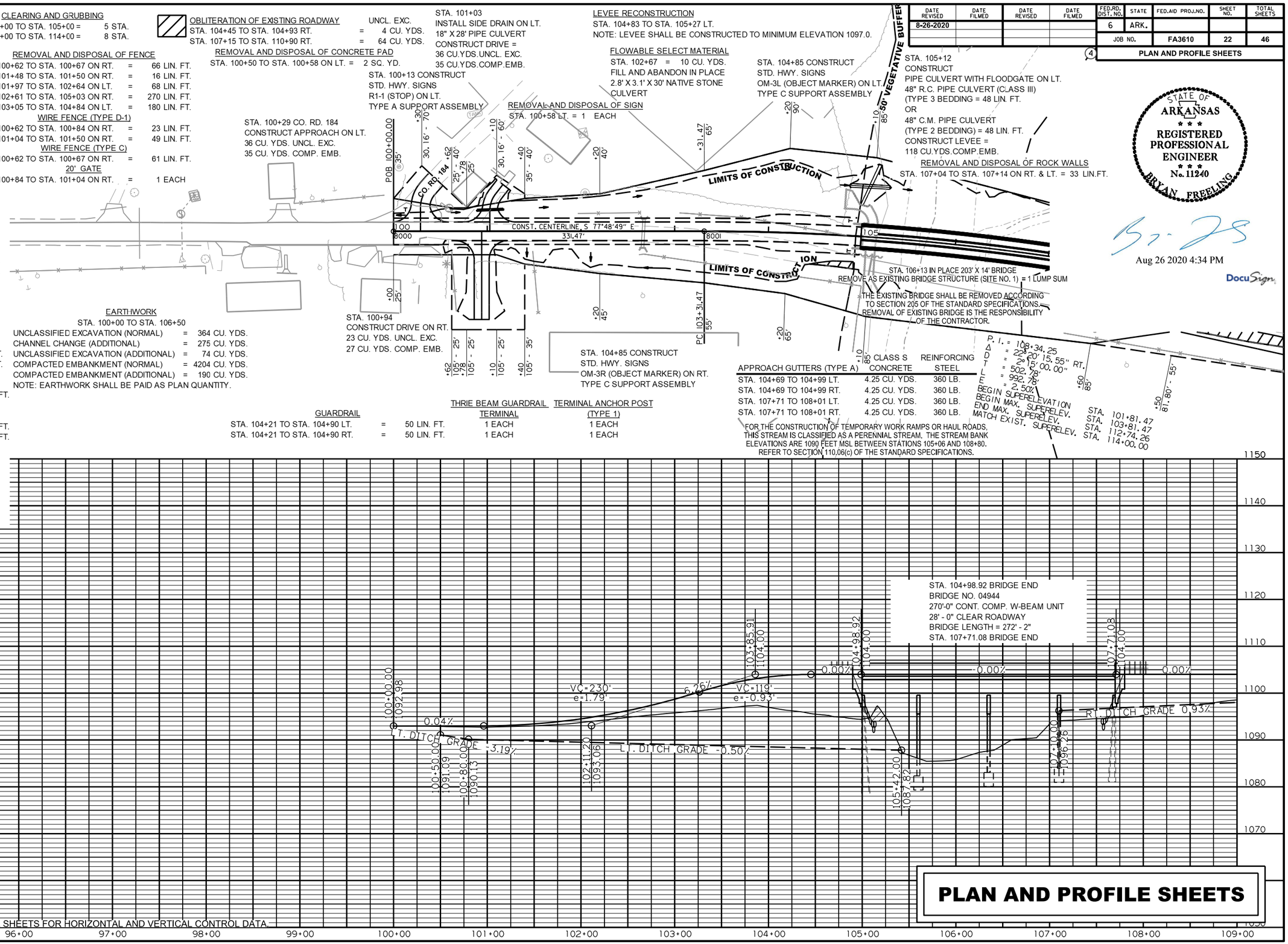
STA. 100+94
CONSTRUCT DRIVE ON RT.
23 CU. YDS. UNCL. EXC.
27 CU. YDS. COMP. EMB.

STA. 104+85 CONSTRUCT
STD. HWY. SIGNS
OM-3R (OBJECT MARKER) ON RT.
TYPE C SUPPORT ASSEMBLY

	THRIE BEAM GUARDRAIL TERMINAL	TERMINAL ANCHOR POST (TYPE 1)
GUARDRAIL		
STA. 104+21 TO STA. 104+90 LT. = 50 LIN. FT.	1 EACH	1 EACH
STA. 104+21 TO STA. 104+90 RT. = 50 LIN. FT.	1 EACH	1 EACH

APPROACH GUTTERS (TYPE A)	CLASS S CONCRETE	REINFORCING STEEL
STA. 104+69 TO 104+99 LT.	4.25 CU. YDS.	360 LB.
STA. 104+69 TO 104+99 RT.	4.25 CU. YDS.	360 LB.
STA. 107+71 TO 108+01 LT.	4.25 CU. YDS.	360 LB.
STA. 107+71 TO 108+01 RT.	4.25 CU. YDS.	360 LB.

FOR THE CONSTRUCTION OF TEMPORARY WORK RAMPS OR HAUL ROADS, THIS STREAM IS CLASSIFIED AS A PERENNIAL STREAM. THE STREAM BANK ELEVATIONS ARE 1090 FEET MSL BETWEEN STATIONS 105+06 AND 108+80. REFER TO SECTION 110.06(c) OF THE STANDARD SPECIFICATIONS.



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

PLAN AND PROFILE SHEETS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST. NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		FA3610	23	46

4 PLAN AND PROFILE SHEETS

Sta. 110+72 In Place
40" X 16' ARCH CMP
LT. SIDE DRAIN
REMOVE

Sta. 110+73 In Place
36" X 18' CMP
LT. SIDE DRAIN
REMOVE

FILTER BLANKET AND DUMPED RIPRAP (GROUTED)

	FILTER BLANKET	DUMPED RIPRAP (GROUTED)
STA. 110+50 TO STA. 111+00 ON LT. =	100 SQ. YDS.	50 CU. YDS.
STA. 111+50 TO STA. 112+50 ON LT. =	128 SQ. YDS.	64 CU. YDS.

STA. 107+85 CONSTRUCT
STD. HWY. SIGNS
OM-3R (OBJECT MARKER) ON LT.
TYPE C SUPPORT ASSEMBLY

STA. 110+74
INSTALL TRIPLE SIDE DRAIN ON LT.
48" X 40' PIPE CULVERT
CONSTRUCT DRIVE =
13 CU.YDS.UNCL. EXC.
247 CU.YDS.COMP.EMB.

REMOVAL AND DISPOSAL OF ROCK WALLS
STA. 107+04 TO STA. 107+14 ON RT. & LT. = 33 LIN.FT.

PORTLAND CEMENT CONCRETE DRIVEWAY
STA. 110+74 = 152 SQ. YDS.

WIRE FENCE (TYPE D-1)

STA. 107+29 TO STA. 108+23 ON RT.	=	92 LIN. FT.
STA. 107+73 TO STA. 110+64 ON LT.	=	300 LIN. FT.
STA. 111+10 TO STA. 111+89 ON RT.	=	80 LIN. FT.
STA. 112+08 TO STA. 113+76 ON RT.	=	170 LIN. FT.

50' VEGETATIVE BUFFER
LIMITS OF CONSTRUCTION

STA. 111+75 CONSTRUCT
STD. HWY. SIGNS
W5-1 (ROAD NARROWS) ON RT.
TYPE A SUPPORT ASSEMBLY

STA. 107+85 CONSTRUCT
STD. HWY. SIGNS
OM-3L (OBJECT MARKER) ON RT.
TYPE C SUPPORT ASSEMBLY

STA. 111+98
INSTALL SIDE DRAIN ON RT.
18" X 34' PIPE CULVERT
CONSTRUCT DRIVE =
125 CU.YDS.UNCL. EXC.
117 CU.YDS.COMP.EMB.

STA. 112+50 CONSTRUCT
STD. HWY. SIGNS
W8-25 (SHOULDER ENDS) ON RT.
TYPE A SUPPORT ASSEMBLY

STA. 113+00 CONSTRUCT
STD. HWY. SIGNS
W8-3 (PAVEMENT ENDS) ON RT.
TYPE A SUPPORT ASSEMBLY

REMOVAL AND DISPOSAL OF FENCE

STA. 107+04 TO STA. 107+73 ON LT.	=	89 LIN. FT.
STA. 107+07 TO STA. 110+25 ON RT.	=	328 LIN. FT.
STA. 107+29 TO STA. 108+23 ON RT.	=	92 LIN. FT.
STA. 111+10 TO STA. 111+42 ON RT.	=	32 LIN. FT.
STA. 111+78 TO STA. 113+76 ON RT.	=	196 LIN. FT.

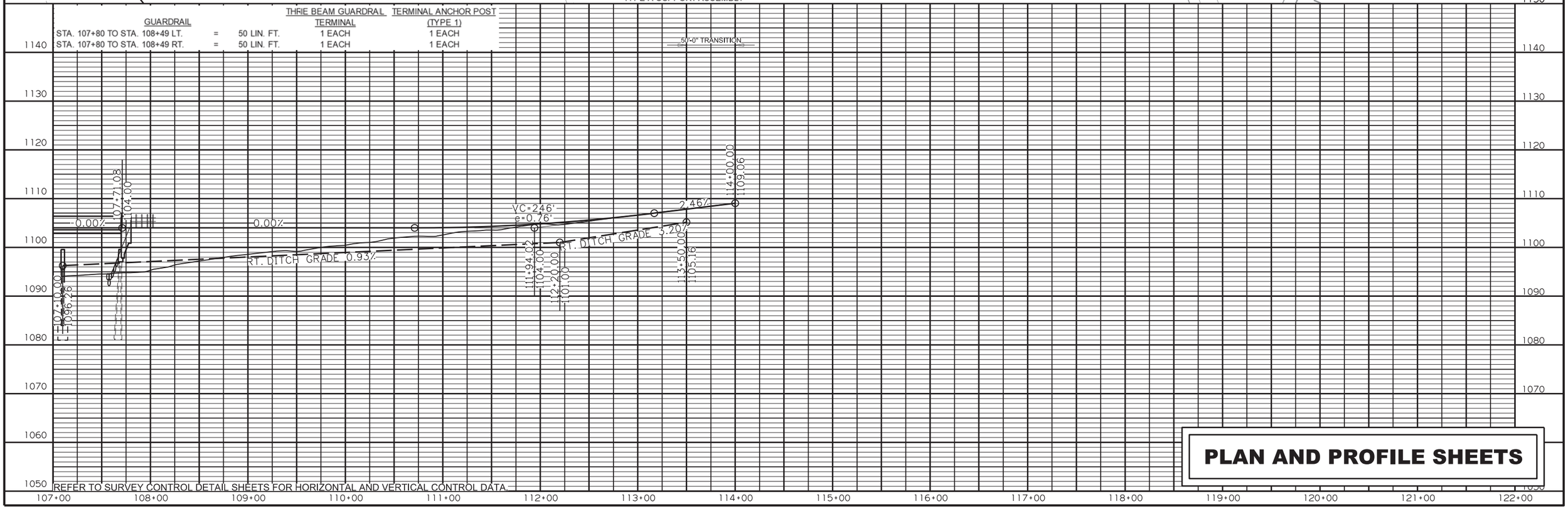
P.I. = 108+34.25
Δ = 22°20' 15.55" RT.
D = 2°15' 00.00"
T = 502.78'
L = 992.78'
E = 2.50'
BEGIN SUPERELEVATION STA. 101+81.47
BEGIN MAX. SUPERELEV. STA. 103+81.47
END MAX. SUPERELEV. STA. 112+74.26
MATCH EXIST. SUPERELEV. STA. 114+00.00

EARTHWORK
STA. 106+50 TO STA. 114+00

UNCLASSIFIED EXCAVATION (NORMAL)	=	631 CU. YDS.
CHANNEL CHANGE (ADDITONAL)	=	250 CU. YDS.
UNCLASSIFIED EXCAVATION (ADDITIONAL)	=	138 CU. YDS.
COMPACTED EMBANKMENT (NORMAL)	=	2948 CU. YDS.
COMPACTED EMBANKMENT (ADDITIONAL)	=	364 CU. YDS.

NOTE: EARTHWORK SHALL BE PAID AS PLAN QUANTITY.

GUARDRAIL			THRIE BEAM GUARDRAL TERMINAL	TERMINAL ANCHOR POST (TYPE 1)
STA. 107+80 TO STA. 108+49 LT.	=	50 LIN. FT.	1 EACH	1 EACH
STA. 107+80 TO STA. 108+49 RT.	=	50 LIN. FT.	1 EACH	1 EACH



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

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11240
BRYAN FREELING

Jun 10 2020 4:51 PM

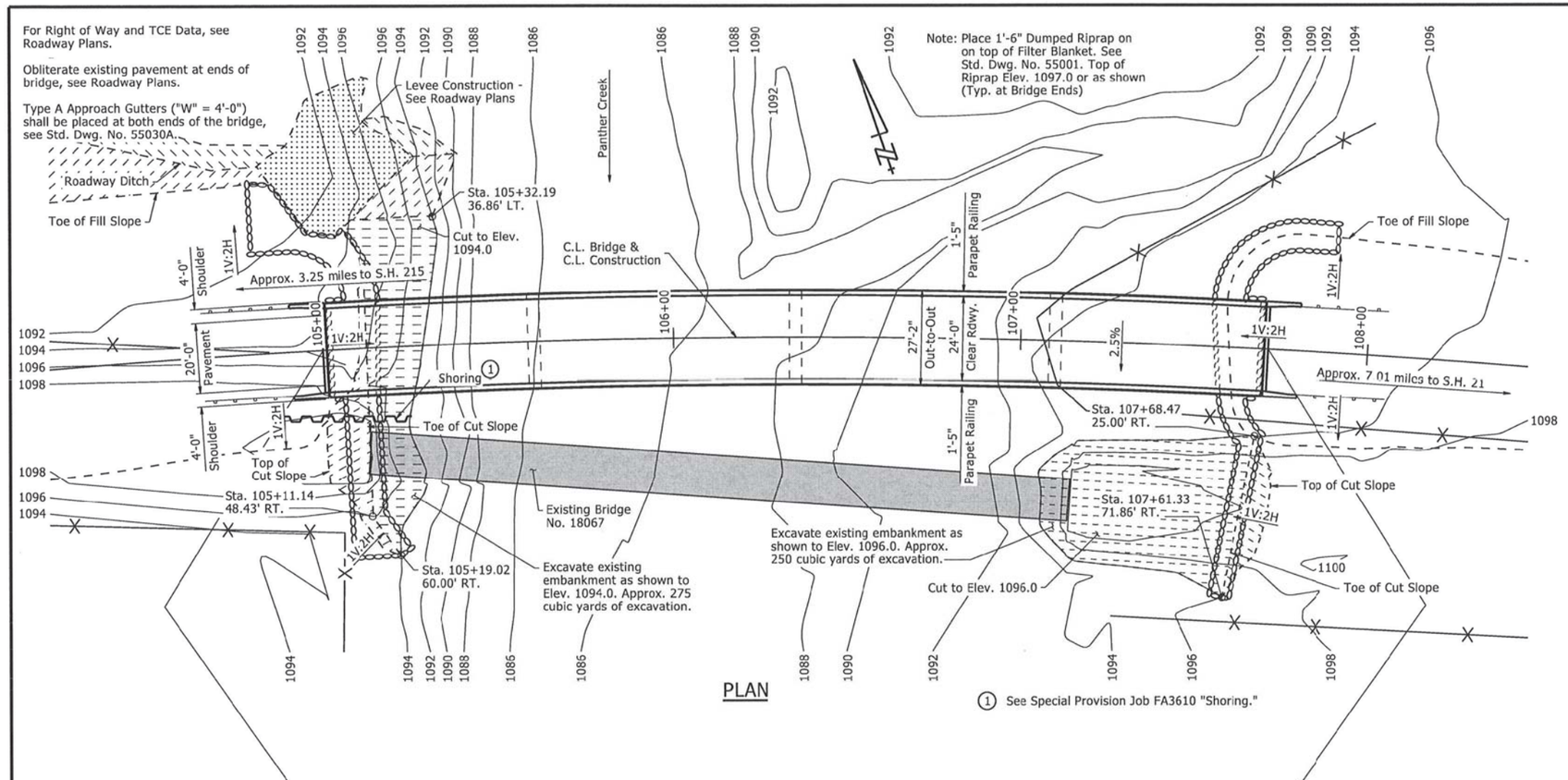
DocuSign

LEGEND

- POWER POLE
- COMBINATION POLE
- POLE W/GUY
- TELEPHONE RISER
- TELEPHONE POLE
- UNDERGROUND CABLE MKR.
- WATER METER
- WATER VALVE

PLAN AND PROFILE SHEETS

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.		FA3610	24	46
				(1)	04944 -	LAYOUT	- 61394	



PLAN

(1) See Special Provision Job FA3610 "Shoring."

C.L. Construction is on a 2°15' curve right. C.L. beams and the longitudinal lines of the bridge will be on curves concentric with C.L. Construction. C.L. Joints of end bents and C.L. Caps and C.L. Bearings of bents 2 thru 4 shall be constructed on radial lines to C.L. Construction.

Stations shown are along C.L. Construction. Elevations shown are actual top of deck elevations at C.L. Bridge. Any vertical dimensions referenced to C.L. Deck is based on actual top of deck elevation at C.L. Bridge.

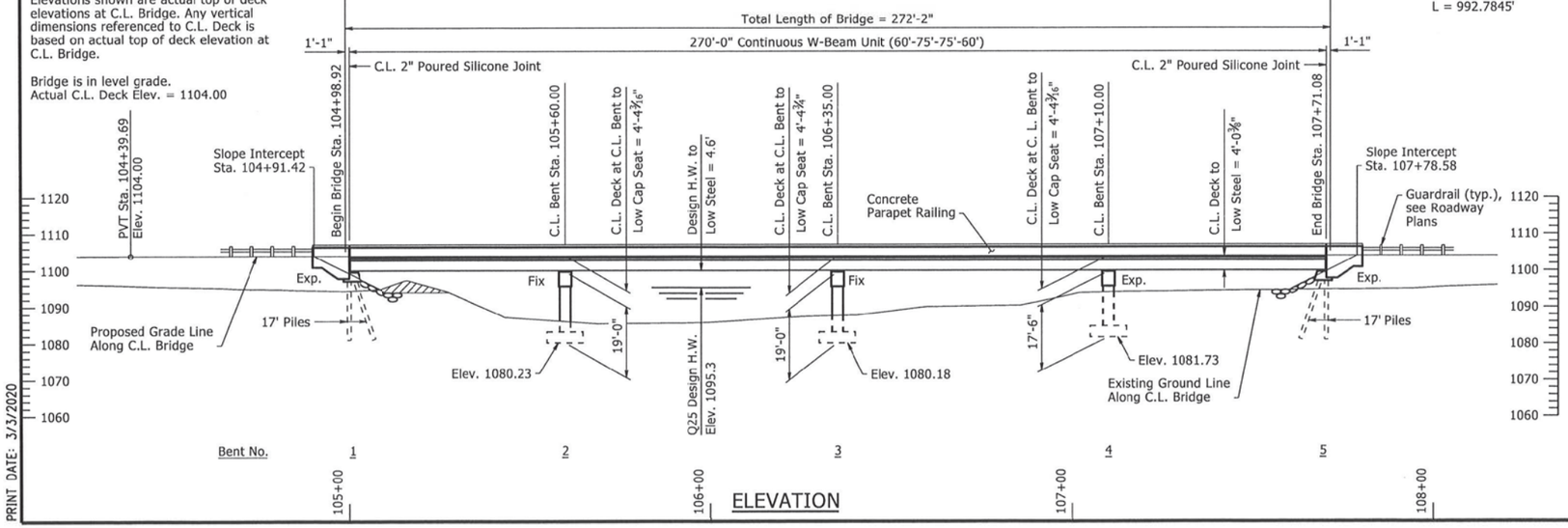
Bridge is in level grade.
Actual C.L. Deck Elev. = 1104.00

For "SUPERELEVATION SKETCH" and "HYDRAULIC DATA," see Dwg. No. 61395.

HORIZONTAL CURVE DATA

ALONG C.L. CONSTRUCTION

PI Sta. 108+34.25
Δ = 22°20'15.55" RT
D = 2°15'00"
T = 502.7768'
L = 992.7845'



ELEVATION

PRINT DATE: 3/3/2020

General Notes:

BENCH MARK: 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 Specification, Seventh Edition (2014), with 2015 Interim Revisions.

LIVE LOADING: HL-93

SEISMIC ZONE: 1 S_{D1} = 0.109 SITE CLASS: C

MATERIALS AND STRENGTHS:

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

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

STEEL PILING: All piling shall be HP 14x73 (Grade 50) and shall be driven with an approved air, steam, or diesel hammer to a minimum safe bearing capacity of 120 tons per pile and into the material designated as Sandstone with Shale on the boring legend. Piling in end bents 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.

SPREAD FOOTINGS: Footings shall be set a minimum of 2' into material designated as Sandstone with Shale on the boring legend. The top of the footings at Bents 2 thru 4 shall be set a minimum 2' below the channel bottom as determined by the lowest channel elevation within the footprint of the footing. Foundations for footings shall be prepared in accordance with Subsection 801.04. Rock excavations shall be made to neat lines of the concrete footings. Care shall be exercised to avoid shattering of rock faces by excessive blasting. Concrete footings shall be poured directly against excavated surfaces of rock. Bents 2, 3, & 4 excavations shall be backfilled and compacted to the level of the existing ground in accordance with Subsection 801.08.

PAINTING: All Grade 50W structural steel, except galvanized members, surfaces in contact with concrete, and the expansion device, within five feet of bridge deck expansion joints shall be painted as specified in Subsection 807.75. The color of paint shall be Brown equal to or close to Federal Std. 595B, Color Chip No. 30070 and as approved by the Engineer. The finish system may be applied in the shop. Any damage to the paint system occurring during transport or installation shall be corrected according to the manufacturer's recommendations at no cost to the Department.

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

PROTECTIVE SURFACE TREATMENT: Class 1 Protective Surface Treatment shall be applied to the roadway surface and to the roadway face and top of the concrete parapet rail in accordance with Section 803.

DETAIL DRAWINGS:	DRAWING NO(S).
End Bents	61396 - 61399
Intermediate Bents	61400 - 61401
Elastomeric Bearings	61402
270' Continuous W-Beam Unit	61403 - 61407
General Notes for Steel Bridge Structures	55006
Details for Steel Bridge Structures	55007
Poured Silicone Joints	55008
Type A Approach Gutters	55030A
Steel H-Piling	55020

EXISTING BRIDGE: Existing Bridge No. 18067 is 14.0' wide (12.1' clear roadway) and 203.0' long and consists of a timber deck with an asphalt overlay on steel girder spans supported by concrete columns on concrete spread footings. The existing bridge is located approximately 18.5' downstream from the proposed new bridge. Plans of the existing structure, if available, may be obtained upon request to the Construction Contract Procurement Section of the Program Management Division.

REMOVAL AND SALVAGE: After the new bridge is open to traffic, the Contractor shall remove existing Bridge No. 18067 in accordance with Section 205. All material from the existing bridge shall become the property of the Contractor.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
3-4-2020
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 1 OF 2
LAYOUT OF BRIDGE
COUNTY ROAD 36 OVER PANTHER CREEK
PANTHER CREEK STR. & APPRS. (S)
JOHNSON COUNTY

COUNTY ROAD 36
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

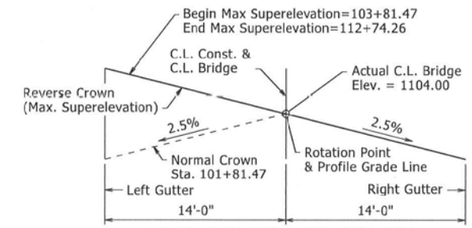
DRAWN BY: TMG	DATE: 1/15/2019	FILENAME: bfa3610_l1.dgn	
CHECKED BY: KJT	DATE: 3/3/2020	SCALE: 1" = 20'	
DESIGNED BY: TMG	DATE: 12/2018		

BRIDGE NO. 04944 DRAWING NO. 61394

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.		FA3610	25	46
				①	04944 -	LAYOUT	- 61395	

BORING LEGEND

A1-Moist, Medium Dense, Brown Gravel and Cobbles with Sand
B1-Moist, Medium Dense, Brown Sand with Gravel and Cobbles
C1-Wet, Very Dense, Brown Sand with Gravel
D1-SANDSTONE
E1-SANDSTONE WITH FREQUENT SHALE SEAMS AND LAYERS - Slightly Weathered, Cemented, Gray
F1-SANDSTONE WITH OCCASIONAL SHALE SEAMS - Slightly Weathered with Occasional Highly Weathered Layers, Cemented with Occasional Poorly Cemented Layers, Gray
G1-SANDSTONE WITH OCCASIONAL SHALE SEAMS - Slightly Weathered, Cemented, Gray
H1-SHALE WITH FREQUENT SANDSTONE SEAMS AND LAYERS - Unweathered, Medium Hard, Dark Gray
J1-SANDSTONE WITH FREQUENT SHALE SEAMS AND LAYERS - Unweathered, Cemented, Gray
K1-SANDSTONE - Unweathered, Cemented, Gray
L1-SHALE WITH OCCASIONAL SANDSTONE SEAMS - Unweathered, Medium Hard, Dark Gray
M1-Wet, Soft, Brown Sandy Clay with Some Gravel
N1-Sandy Clay with Gravel and Cobbles
P1-SANDSTONE WITH FREQUENT SHALE SEAMS - Weathered, Cemented, Gray
Q1-SANDSTONE WITH FREQUENT SHALE SEAMS - Unweathered, Cemented, Gray
R1-SHALE WITH FREQUENT SANDSTONE SEAMS - Slightly Weathered, Medium Hard, Dark Gray
S1-SHALE WITH OCCASIONAL SANDSTONE SEAMS AND LAYERS - Unweathered, Medium Hard, Dark Gray
T1-Wet, Very Stiff, Brown Sandy Clay with Gravel
U1-SANDSTONE WITH FREQUENT SHALE SEAMS AND OCCASIONAL SHALE LAYERS - Weathered, Cemented, Gray
V1-SANDSTONE WITH FREQUENT SHALE SEAMS AND OCCASIONAL SHALE LAYERS - Slightly Weathered, Cemented, Gray
W1-SANDSTONE WITH OCCASIONAL SHALE SEAMS - Unweathered, Cemented, Gray
X1-SANDSTONE WITH FREQUENT SHALE SEAMS AND LAYERS - Unweathered, Cemented, Gray



SUPERELEVATION SKETCH

Looking Ahead
No Scale

"N" VALUES

Sta. 104+88 - 19' Right of C.L. Construction
5.4- 6.4,N=27
10.5- 11.5,N=22
15.5- 16.4,N=70(11")

Sta. 107+15 - C.L. Construction
5.8- 6.8,N=4
10.1- 10.4,N=70(3")

Sta. 107+80 - 6' Left of C.L. Construction
5.4- 6.4,N=23
9.7- 9.9,N=72(3")

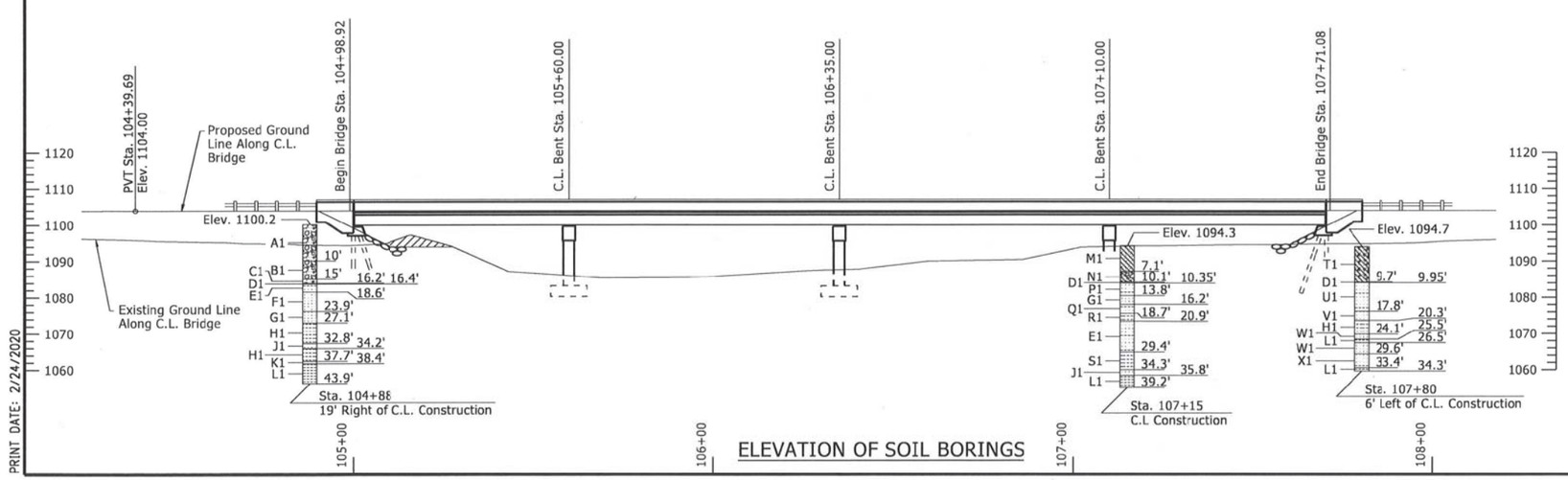
HYDRAULIC DATA

FLOOD DESCRIPTION	FREQUENCY	DISCHARGE	NATURAL WATER SURFACE ELEVATION ①	WATER SURFACE ELEVATION WITH BACKWATER	
				PLAN EMBANKMENT	FUTURE ② EMBANKMENT
	YEARS	CFS	FEET	FEET	FEET
Design	25	10,570	1096.5	1096.5	1097.2
Base	100	17,700	1098.2	1098.2	1099.0
Extreme	500	28,570	1099.9	1099.9	1100.6
Overtopping	5	4,460	1092.8	1093.7	N/A

① Unconstricted water surface elevation without structure or roadway approaches.

② Future embankment elevation is assumed to be 1097.3 and overtops at flows greater than Q25. If the embankment is raised above this assumed elevation, additional waterway opening may be required.

Q100 backwater elevation for existing structure = 1098.2 feet
Proposed Low Bridge Chord Elev. = 1099.96 feet
Drainage Area = 20.7 Acres
Historical H.W. Elev. = 1098.7 feet



ELEVATION OF SOIL BORINGS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
3-4-2020
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 2
LAYOUT OF BRIDGE
COUNTY ROAD 36 OVER PANTHER CREEK
PANTHER CREEK STR. & APPRS. (S)
JOHNSON COUNTY

COUNTY ROAD 36
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

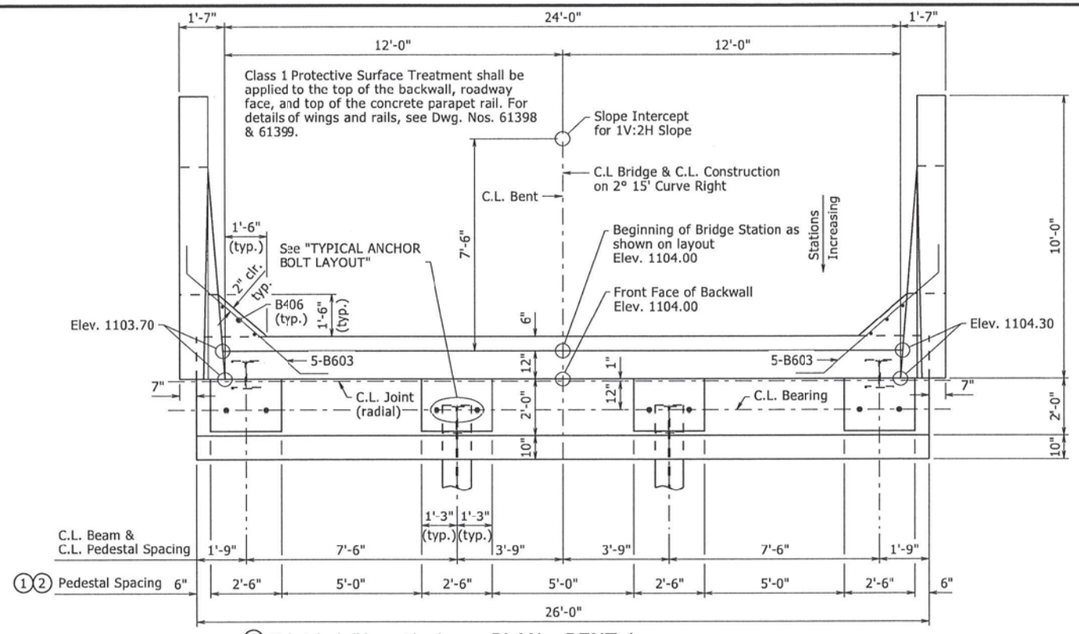
DRAWN BY: TMG DATE: 3/6/2019 FILENAME: bfa3610_l1.dgn
CHECKED BY: CRE DATE: 12/26/2020 SCALE: 1" = 20"
DESIGNED BY: TMG DATE: 12/2018

BRIDGE NO. 04944 DRAWING NO. 61395

PRINT DATE: 2/24/2020

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.		FA3610	26	46

(1) 04944 - END BENTS - 61396

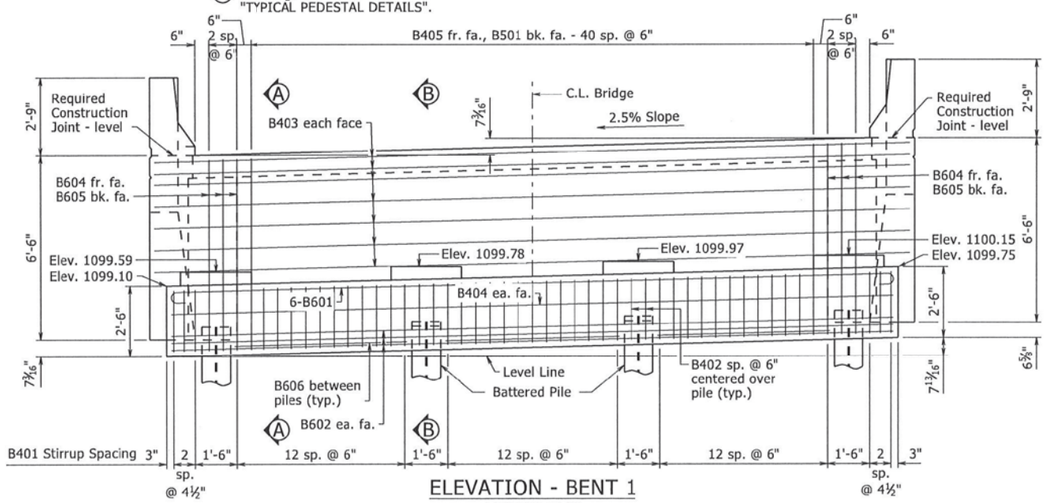


(1) Pedestals shall be cast level at the elevations shown.

(2) See Dwg. No. 61397 for "TYPICAL PEDESTAL DETAILS".

PLAN - BENT 1

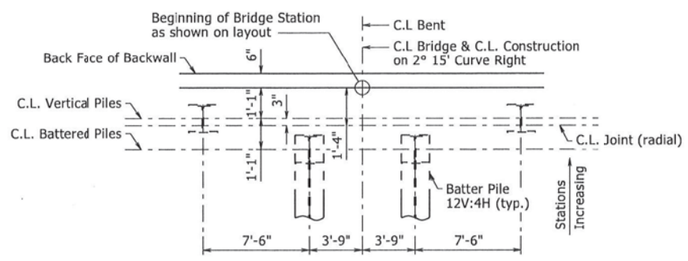
⅜"=1'-0"



ELEVATION - BENT 1

LOOKING BACK

⅜"=1'-0"



LAYOUT OF PILES - BENT 1

NO SCALE

NOTES:

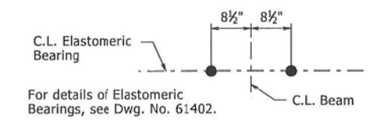
For "GENERAL NOTES", see Std. Dwg. No. 55006.

For details of Steel H-Piling, see Std. Dwg. No. 55020.

Structural steel, unless noted otherwise, in end bents shall be ASTM A709, Gr. 50W and shall be paid for as "Structural Steel in Beam Spans (A709, Gr. 50W)".

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

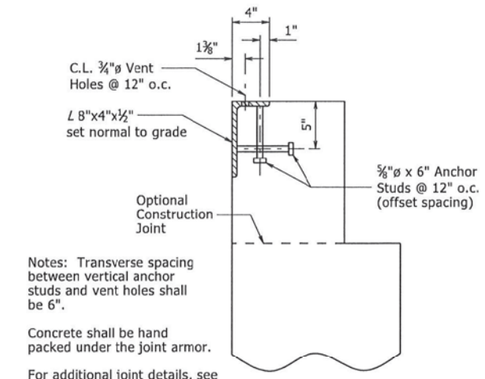
For additional information, see Layout.



For details of Elastomeric Bearings, see Dwg. No. 61402.

TYPICAL ANCHOR BOLT LAYOUT

NO SCALE



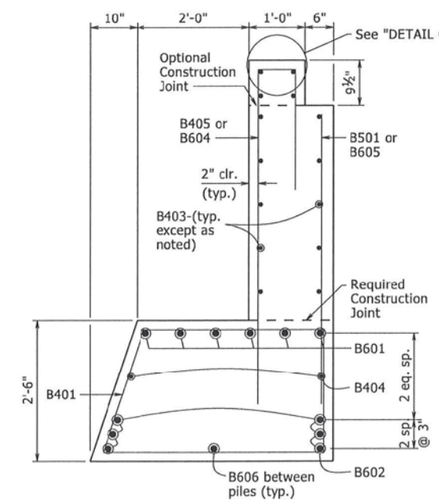
Notes: Transverse spacing between vertical anchor studs and vent holes shall be 6".

Concrete shall be hand packed under the joint armor.

For additional joint details, see Std. Dwg. No. 55008.

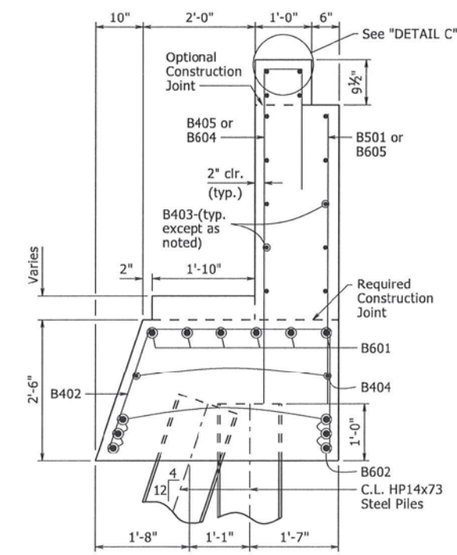
DETAIL C

NO SCALE



SECTION A-A

¾"=1'-0"



SECTION B-B

¾"=1'-0"

STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER No. 9235 3-4-2020 CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 1 OF 4

DETAILS OF END BENTS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: CGP DATE: 9/23/19 FILENAME: bfa3610_b1.dgn

CHECKED BY: DPT DATE: 3/4/2020 SCALE: AS NOTED

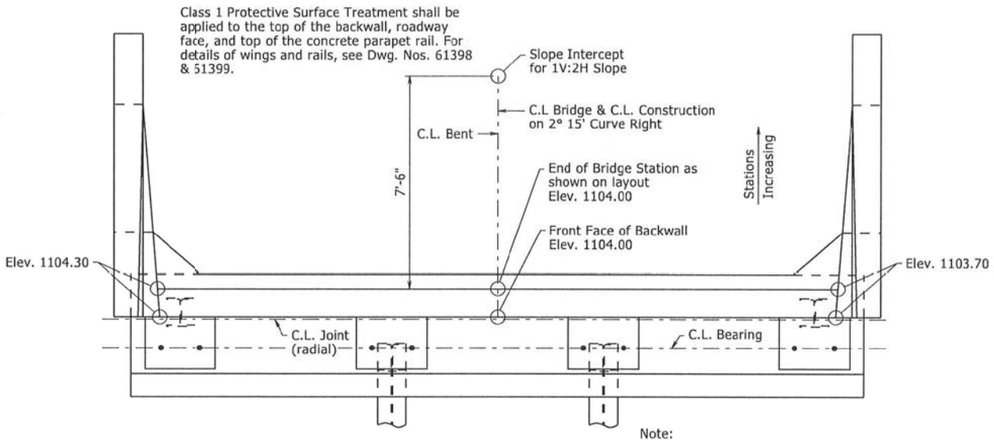
DESIGNED BY: J.J. DATE: 08/19

BRIDGE NO. 04944 DRAWING NO. 61396

PRINT DATE: 3/3/2020

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.		FA3610	27	46

(1) 04944 - END BENTS - 61397

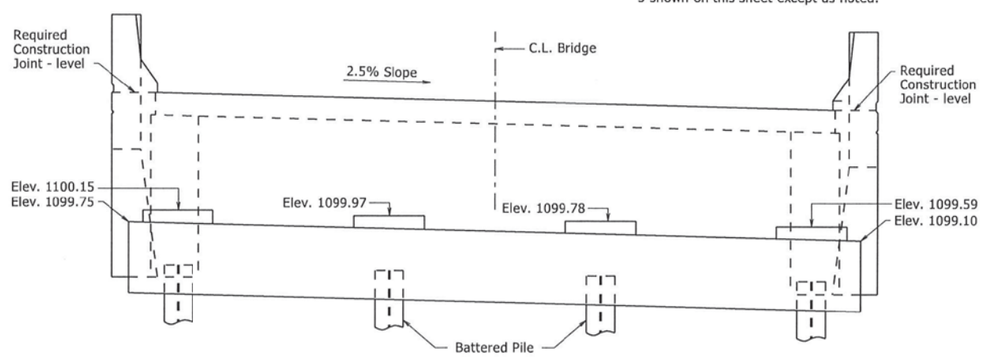


PLAN - BENT 5

⅜"=1'-0"

Note:

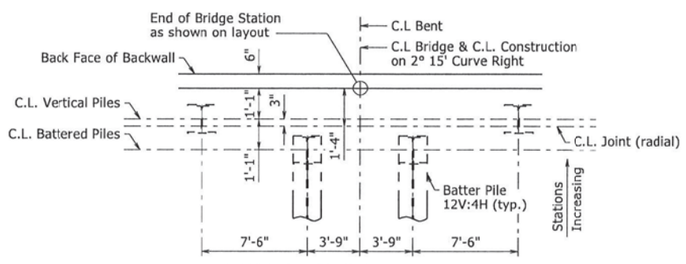
Reinforcing steel, details and dimensions shown for Bent 1, Dwg. No. 61396, are similiar for Bent 5 shown on this sheet except as noted.



ELEVATION - BENT 5

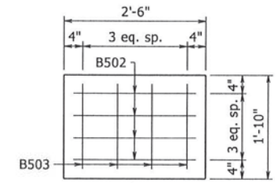
LOOKING AHEAD

⅜"=1'-0"



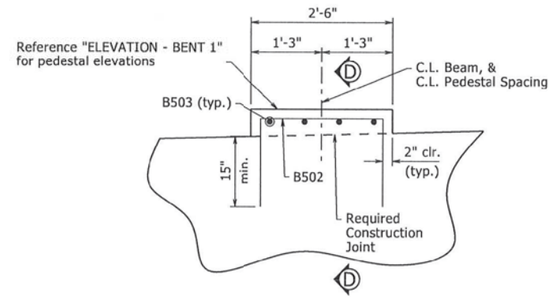
LAYOUT OF PILES - BENT 5

NO SCALE



PEDESTAL PLAN

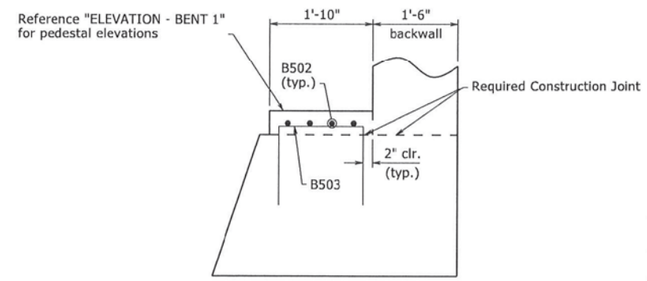
¾"=1'-0"



TYPICAL PEDESTAL DETAILS

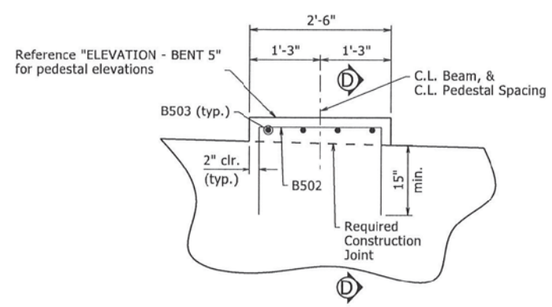
LOOKING BACK - BENT 1

¾"=1'-0"



SECTION D-D

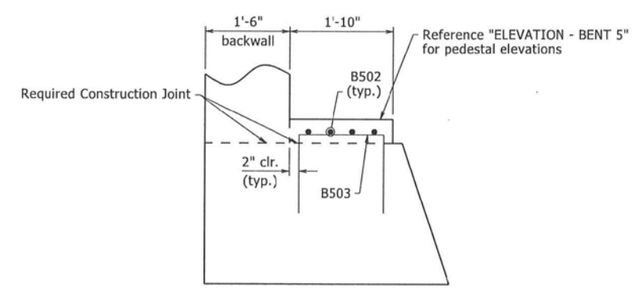
¾"=1'-0"



TYPICAL PEDESTAL DETAILS

LOOKING AHEAD - BENT 5

¾"=1'-0"



SECTION D-D

¾"=1'-0"

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
3-4-2020
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 4
DETAILS OF END BENTS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

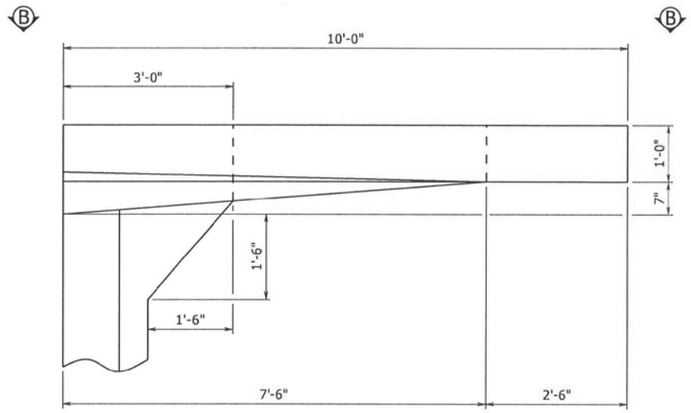
LITTLE ROCK, ARK.

DRAWN BY: CGP DATE: 9/23/19 FILENAME: bfa3610_b1.dgn
CHECKED BY: DPT DATE: 2/21/2020 SCALE: AS NOTED
DESIGNED BY: J.J. DATE: 03/19
BRIDGE NO. 04944 DRAWING NO. 61397

PRINT DATE: 2/21/2020

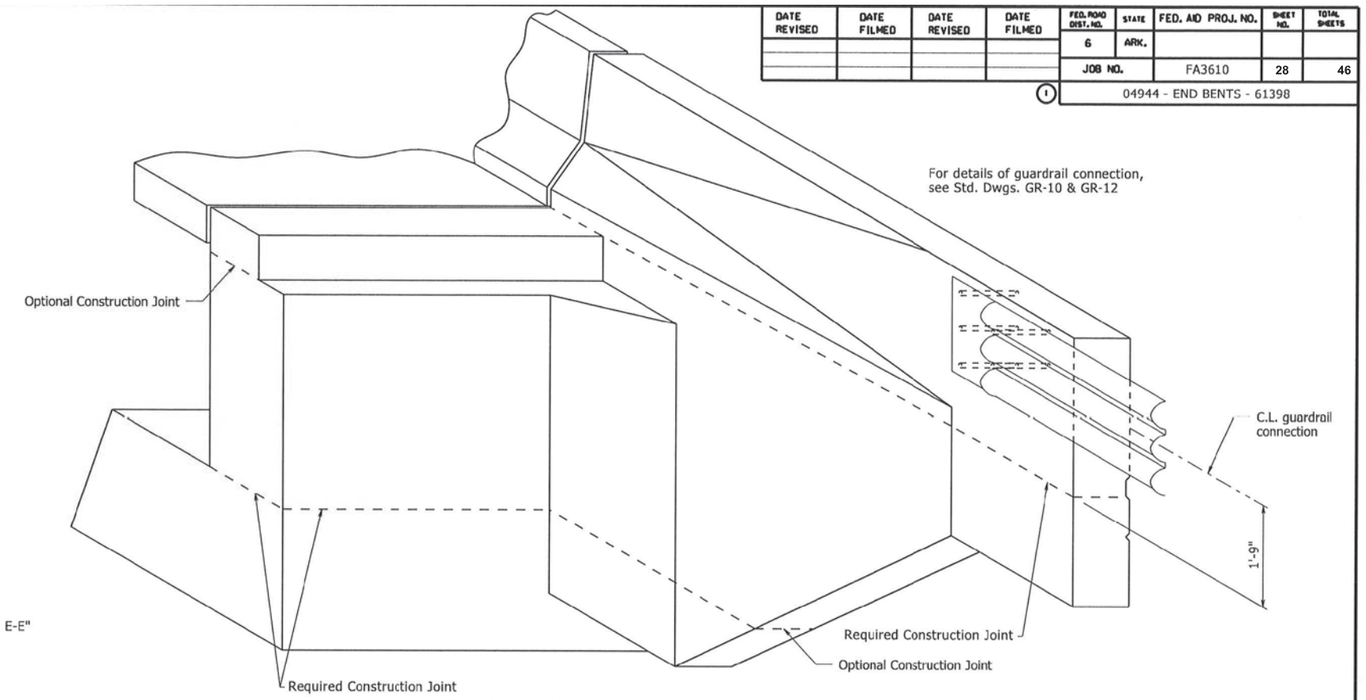
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		FA3610	28	46

1 04944 - END BENTS - 61398



PLAN OF RAIL

NO SCALE

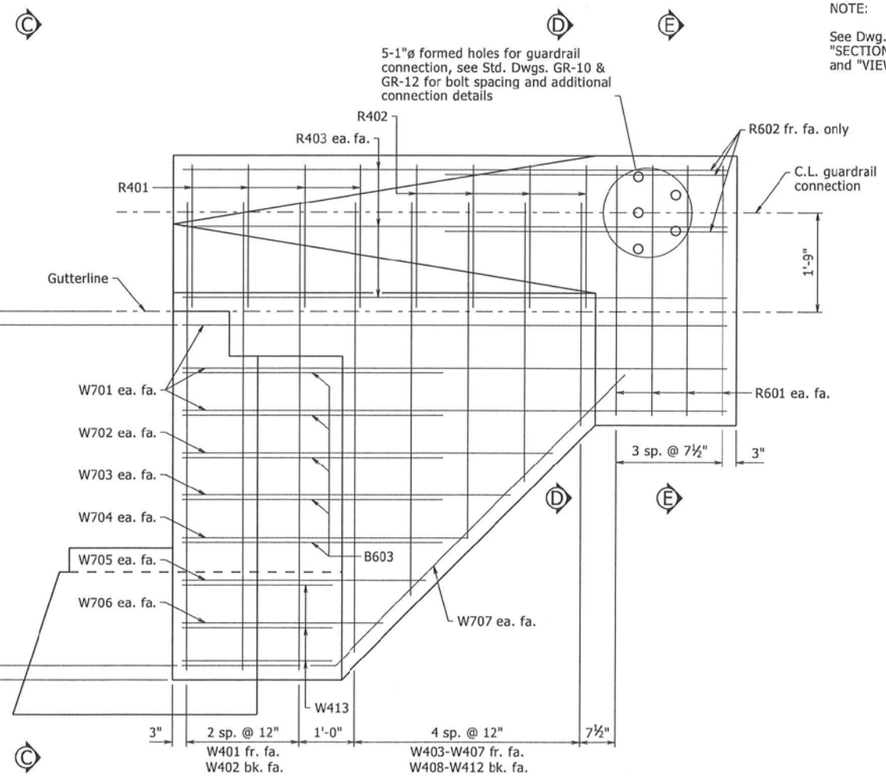


THREE DIMENSIONAL VIEW OF WING & RAIL

NO SCALE

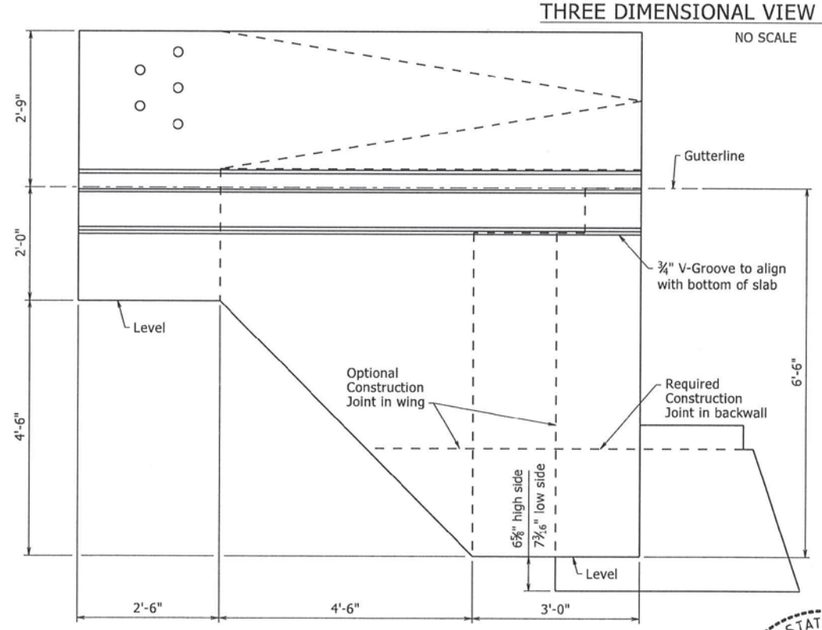
NOTE:

See Dwg. No. 61399 for "SECTION D-D, "SECTION E-E" and "VIEW C-C"



VIEW A-A

¾"=1'-0"



VIEW B-B

¾"=1'-0"

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
3-4-2020
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 3 OF 4
DETAILS OF END BENTS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

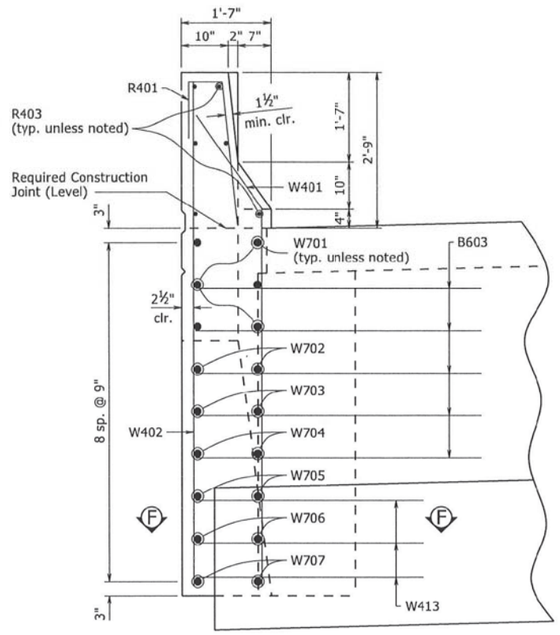
LITTLE ROCK, ARK.

DRAWN BY: CGP DATE: 9/23/19 FILENAME: bfa3610_b1.dgn
CHECKED BY: DPT DATE: 2/21/2020 SCALE: AS NOTED
DESIGNED BY: J.J. DATE: 03/19
BRIDGE NO. 04944 DRAWING NO. 61398

PRINT DATE: 2/21/2020

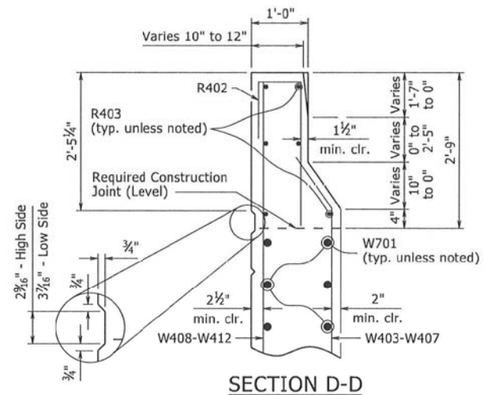
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		FA3610	29	46

(1) 04944 - END BENTS - 61399



VIEW C-C

NO SCALE



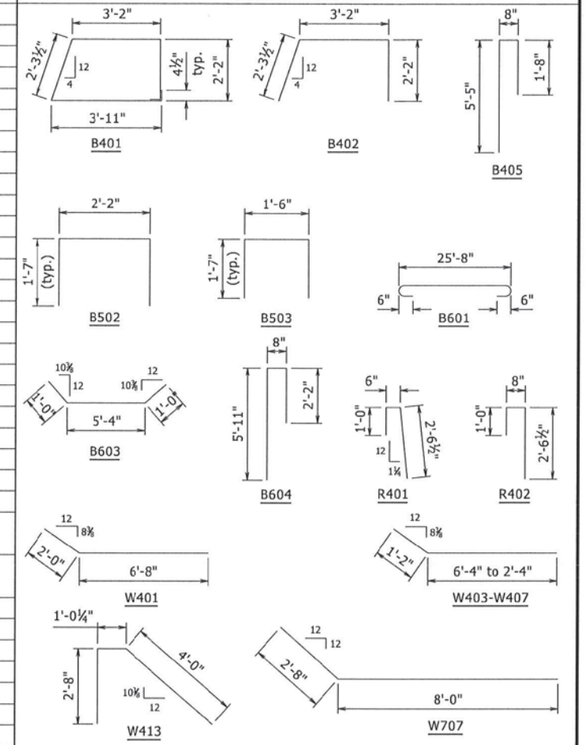
SECTION D-D

NO SCALE

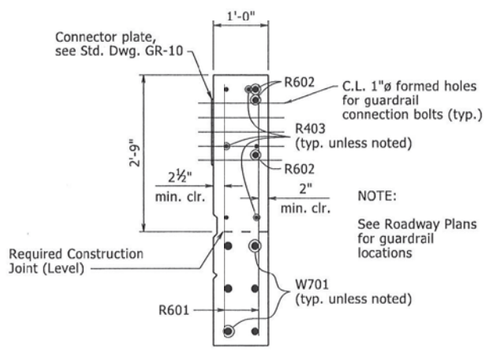
BAR LIST-PER BENT

MARK	NO. REQ'D	LENGTH	P.D.
B401	45	11'-11"	2"
B402	8	7'-6"	2"
B403	14	26'-10"	Str.
B404	2	25'-8"	Str.
B405	41	7'-7"	2"
B406	6	5'-5"	Str.
B501	41	4'-11"	Str.
B502	16	5'-2"	2½"
B503	16	4'-6"	2½"
B601	6	27'-0"	4½"
B602	6	25'-8"	Str.
B603	10	7'-4"	4½"
B604	6	8'-5"	4½"
B605	6	5'-2"	Str.
B606	3	6'-2"	Str.
R401	8	3'-11"	2"
R402	8	4'-0"	2"
R403	12	9'-8"	Str.
R601	16	4'-5"	Str.
R602	6	5'-0"	Str.
W401	6	8'-8"	2"
W402	6	8'-11"	Str.
W403-W407	2 ea.	7'-6 to 3'-6"	2"
W408-W412	2 ea.	8'-7" to 4'-7"	Str.
W413	6	7'-8"	2"
W701	12	9'-8"	Str.
W702	4	6'-7"	Str.
W703	4	5'-10"	Str.
W704	4	5'-1"	Str.
W705	4	4'-4"	Str.
W706	4	3'-7"	Str.
W707	4	10'-8"	5¼"

BENDING DIAGRAMS

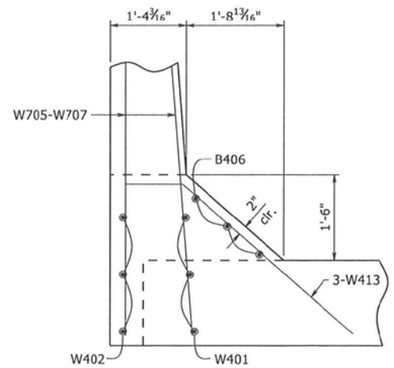


Dimensions are out to out of bars.



SECTION E-E

NO SCALE



SECTION F-F

NO SCALE

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
3-4-2020
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 4 OF 4
DETAILS OF END BENTS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: CGP DATE: 9/23/19 FILENAME: bfa3610_b1.dgn
CHECKED BY: DPT DATE: 2/21/2020 SCALE: NO SCALE
DESIGNED BY: J.J. DATE: 03/19
BRIDGE NO. 04944 DRAWING NO. 61399

PRINT DATE: 2/21/2020

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.		FA3610	30	46

(1) 04944 - INTERMEDIATE BENTS - 61400

NOTES:

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

For additional information, see Layout.

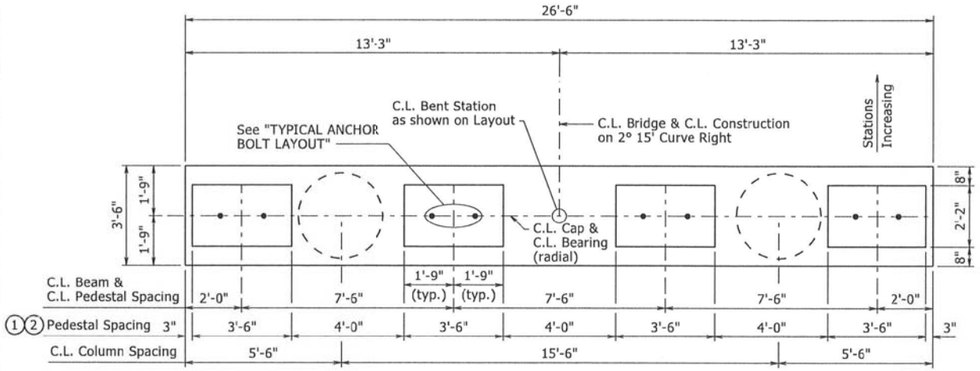
(1) Pedestals shall be cast level at the elevations shown.

(2) See Dwg. No. 61401 for "PEDESTAL PLAN" and "TYPICAL PEDESTAL DETAILS"

(3) F801 bars to rest on footing mat of reinforcing steel as shown.

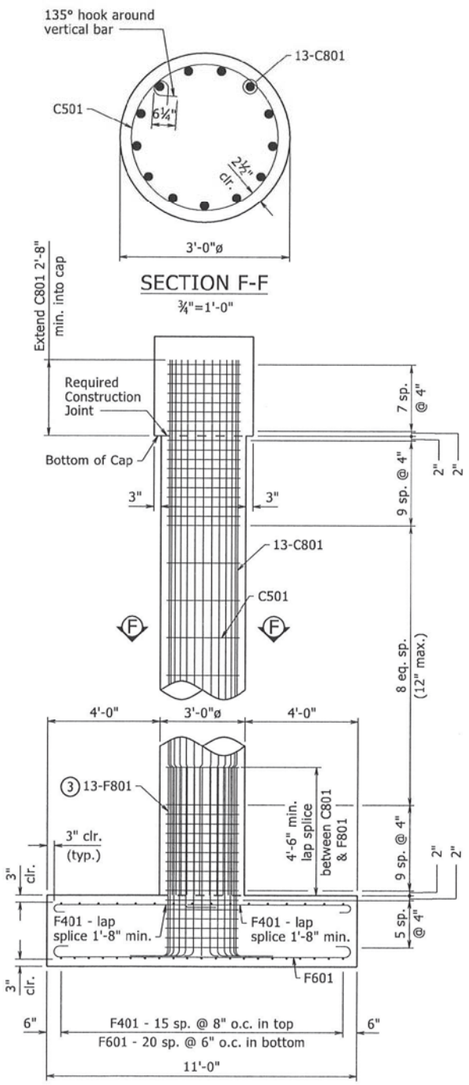
TABLE OF VARIABLES

BENT	ELEV. "A"	ELEV. "B"	ELEV. "C"	ELEV. "D"	ELEV. "E"	ELEV. "F"	ELEV. "G"	"H"	"I"	"J"	"K"
2	1100.30	1100.11	1099.92	1099.74	1099.89	1099.23	1080.23	15'-8¼"	19'-0"	13'-6 9/16"	13'-1 11/16"
3	1100.25	1100.06	1099.88	1099.69	1099.84	1099.18	1080.18	14'-10 3/16"	19'-0"	13'-6 9/16"	13'-1 11/16"
4	1100.30	1100.11	1099.92	1099.74	1099.89	1099.23	1081.73	14'-1 5/16"	17'-6"	12'-0 9/16"	11'-7 11/16"



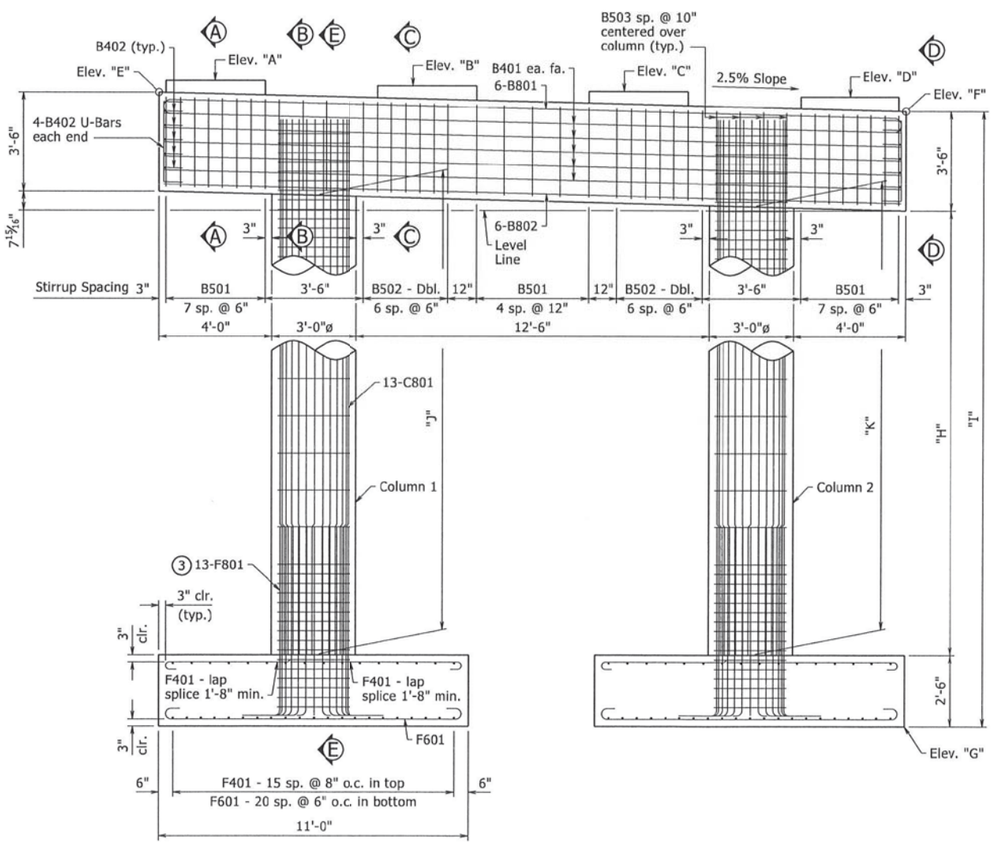
PLAN

3/8"=1'-0"



SECTION F-F

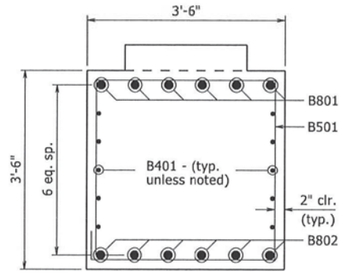
3/4"=1'-0"



ELEVATION

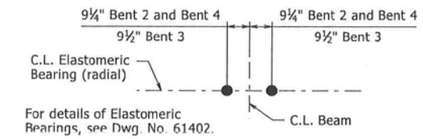
LOOKING AHEAD

3/8"=1'-0"



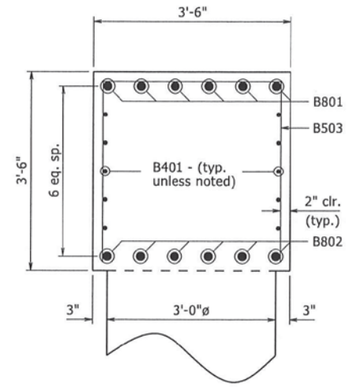
SECTION A-A

3/4"=1'-0"



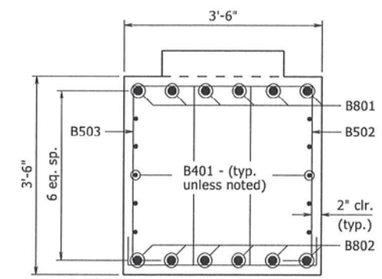
TYPICAL ANCHOR BOLT LAYOUT

NO SCALE



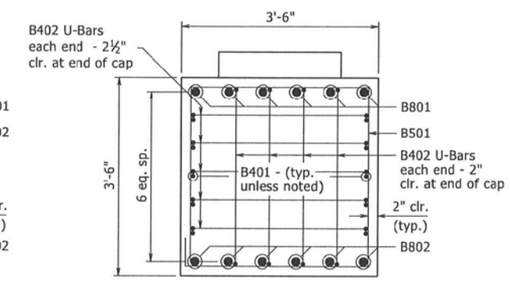
SECTION B-B

3/4"=1'-0"



SECTION C-C

3/4"=1'-0"



VIEW D-D

3/4"=1'-0"

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
3-4-2020
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 1 OF 2

DETAILS OF INTERMEDIATE BENTS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: CGP DATE: 9/27/19 FILENAME: bfa3610_b2.dgn

CHECKED BY: DPT DATE: 2/21/2020 SCALE: AS NOTED

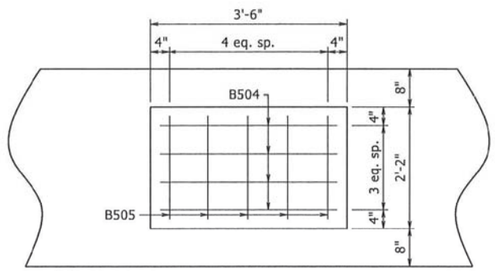
DESIGNED BY: J. J. DATE: 08/19

BRIDGE NO. 04944 DRAWING NO. 61400

PRINT DATE: 2/21/2020

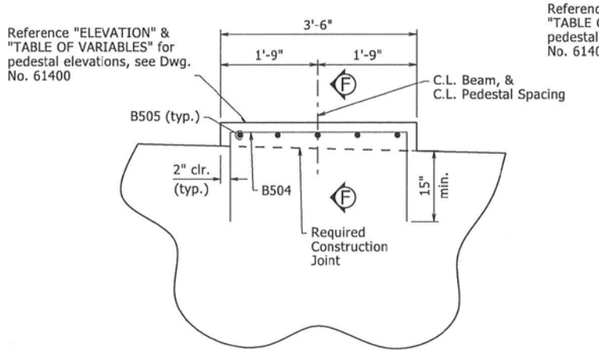
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		FA3610	31	46

(1) 04944 - INTERMEDIATE BENTS - 61401



PEDESTAL PLAN

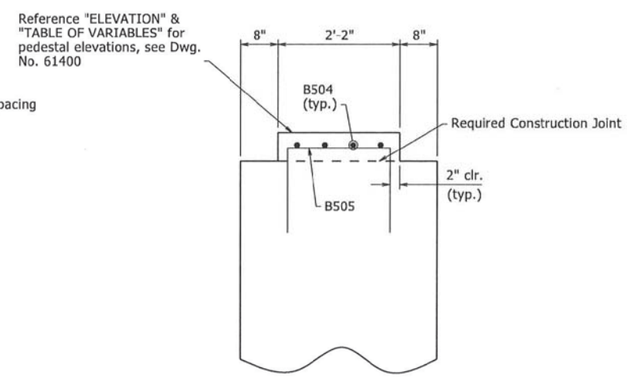
¾"=1'-0"



TYPICAL PEDESTAL DETAILS

LOOKING AHEAD

¾"=1'-0"



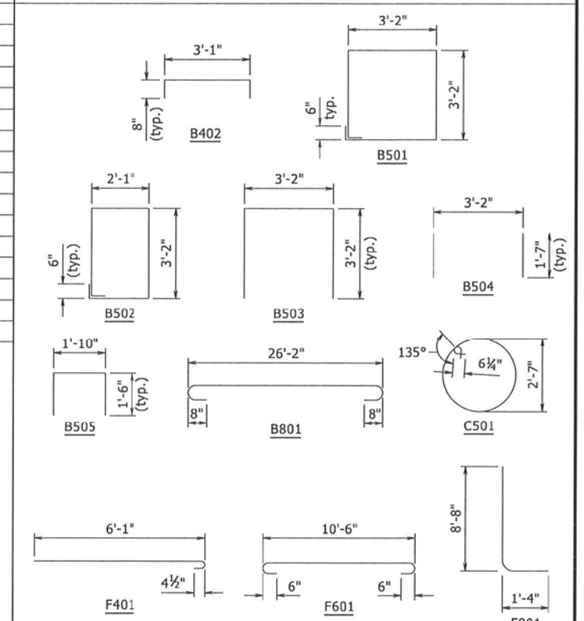
SECTION F-F

¾"=1'-0"

BAR LIST - PER BENT

	MARK	NO. REQ'D	LENGTH	P.D.
	B401	10	26'-2"	Str.
	B402	18	4'-3"	3"
	B501	21	13'-2"	2½"
	B502	28	9'-4"	2½"
	B503	8	11'-0"	2½"
	B504	16	6'-2"	2½"
	B505	20	4'-8"	2½"
	B801	6	28'-0"	6"
	B802	6	26'-2"	Str.
	C501	82	9'-6"	3¾"
(1)	C801	26	"J" + 2'-8"	Str.
	F401	64	6'-7"	3"
	F601	84	11'-10"	4½"
	F801	26	9'-10"	6"

BENDING DIAGRAMS



Dimensions are out to out of bars.

(1) See "TABLE OF VARIABLES" on Dwg. No. 61400 for "J" dimensions

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
3-4-2020
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 2

DETAILS OF INTERMEDIATE BENTS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: CGP DATE: 9/27/19 FILENAME: bfa3610_b2.dgn

CHECKED BY: DPT DATE: 3/4/2020 SCALE: ¾"=1'-0"

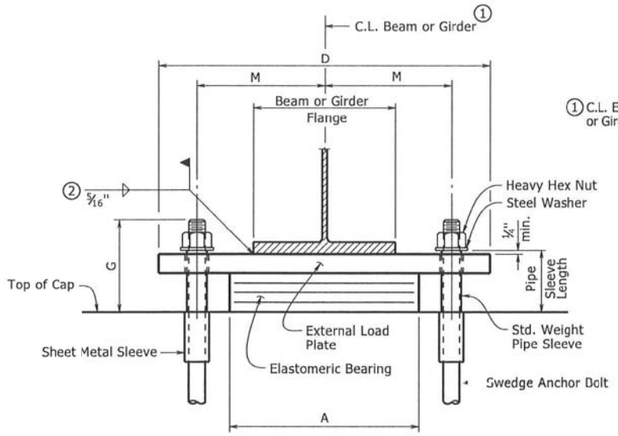
DESIGNED BY: J.J. DATE: 03/19

BRIDGE NO. 04944 DRAWING NO. 61401

PRINT DATE: 3/3/2020

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.		FA3610	32	46

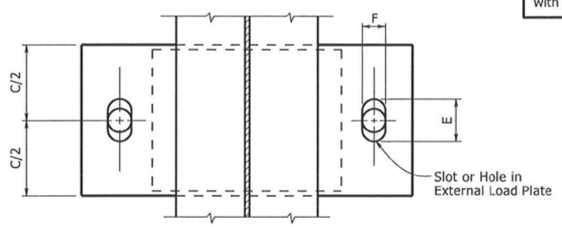
(1) 04944 - ELASTOMERIC BEARINGS - 61402



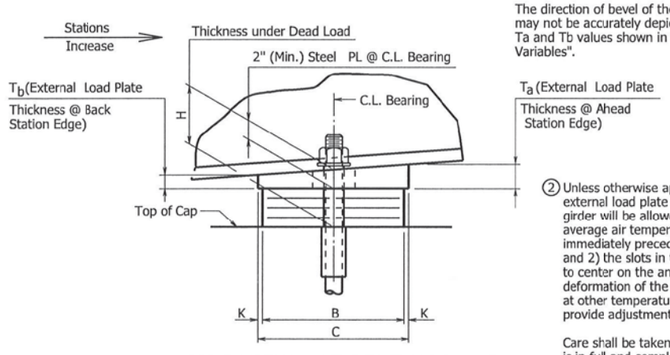
(1) C.L. Elastomeric Pad shall be aligned with C.L. Beam or Girder.

FRONT VIEW - AT BENT NOS. 1-5

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



PLAN VIEW - AT BENT NOS. 1-5

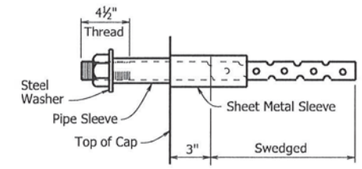


The direction of bevel of the external load plate may not be accurately depicted with respect to Ta and Tb values shown in the "Table of Fabricator Variables".

(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.

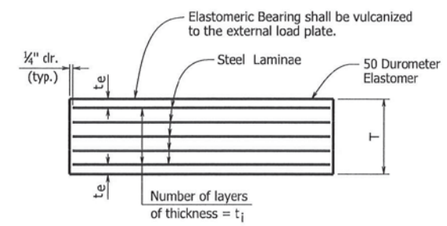
SIDE VIEW - AT BENT NOS. 1-5



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 Bots are to be drilled and grouted in place, the Galvanized Sheet Metal Sleeves shall be cast in place as shown. Sleeves shall be dry packed with styrofoam, urethane foam or approved equal prior to pouring of concrete. After pouring of the cap and prior to erection of Structural Steel, the dry pack shall be removed and holes for the anchor bolts shall be accurately drilled into the concrete. Bolts placed in drilled holes shall be accurately set and fixed using a QPL approved epoxy or non-shrink grout that completely fills the holes. Galvanized Sheet Metal Sleeves shall meet the requirements of ASTM 653, CS Type B or approved equivalent, be of minimum 16 gage thickness, and be galvanized according to ASTM B695, Class 50. Sheet Metal Sleeves will not be paid for directly, but will be considered subsidiary to the item "Structural Steel in Beam Spans (A709, Gr. 50W).



t_e = Thickness of elastomer cover on top and bottom of pad

t_i = Thickness of elastomer between steel laminae

N = Number of elastomer layers of thickness t_i

ELASTOMERIC BEARING

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, Gr. 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, bolt holes and all shop welding) 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 Gr. 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 Beam Spans (A709, Gr. 50W)". External load plates and shear blocks will not be measured or 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.	LOCATION BENT NO(S).	LOCATION BEAM OR GIRDER NO.	BEARING TYPE	NO. of BEARINGS EACH BENT	(3) MAXIMUM DESIGN LOAD (KIPS)	G	H	ELASTOMERIC PAD A	B	N	t_i	t_e	NO. & THICKESS OF STEEL LAMINAE	T
04944	1 & 5	All	Exp.	4	84	8½"	5 9/16"	12"	8½"	5	½"	¼"	6 @ 12 ga.	3⅝"
	2	All	Fix	4	188	7¼"	3 13/16"	13"	13"	2	½"	¼"	3 @ 12 ga.	1 13/16"
	3	All	Fix	4	189	8¼"	4⅜"	13"	13"	3	½"	¼"	4 @ 12 ga.	2 7/16"
	4	All	Exp.	4	188	7¼"	3 13/16"	13"	13"	2	½"	¼"	3 @ 12 ga.	1 13/16"

BRIDGE NO.	EXTERNAL LOAD PLATE C	D	E	F	J	K	M	T_a	T_b	ANCHOR BOLT (ø x L)	GRADE	PIPE SLEEVE SIZE (ø x L)	SHEET METAL SLEEVE SIZE (ø x L)	STEEL WASHER SIZE (O.D.)
04944	9½"	22½"	4⅜"	2¼"	NA	½"	8½"	2.00"	2.00"	1½"ø x 26"	55	1½"ø x 5⅞"	3"ø x 9"	3"
	14"	25"	3⅛"	3⅛"	NA	½"	9¼"	2.00"	2.00"	2"ø x 30"	55	2½"ø x 4⅛"	4"ø x 9"	3¾"
	14"	26"	3¾"	3¾"	NA	½"	9½"	2.00"	2.00"	2½"ø x 36"	55	3"ø x 4⅝"	4"ø x 9"	4½"
	14"	25"	4½"	3⅛"	NA	½"	9¼"	2.00"	2.00"	2"ø x 30"	55	2½"ø x 4⅛"	4"ø x 9"	3¾"

STATE OF ARKANSAS
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No. 9235
3-4-2020
CHARLES R. ELLIS

BRIDGE ENGINEER

DETAILS OF ELASTOMERIC BEARINGS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: CGP DATE: 9/09/19 FILENAME: bfa3610_e1.dgn

CHECKED BY: DPT DATE: 2/21/2020 SCALE: NO SCALE

DESIGNED BY: J.J. DATE: 03/19

BRIDGE NO. 04944 DRAWING NO. 61402

PRINT DATE: 2/21/2020

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.		FA3610	33	46
				(1)	04944 - SPAN DETAILS - 61403			

Class 1 Protective Surface Treatment shall be applied to the roadway surface, roadway face & top of the concrete parapet rail.

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

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

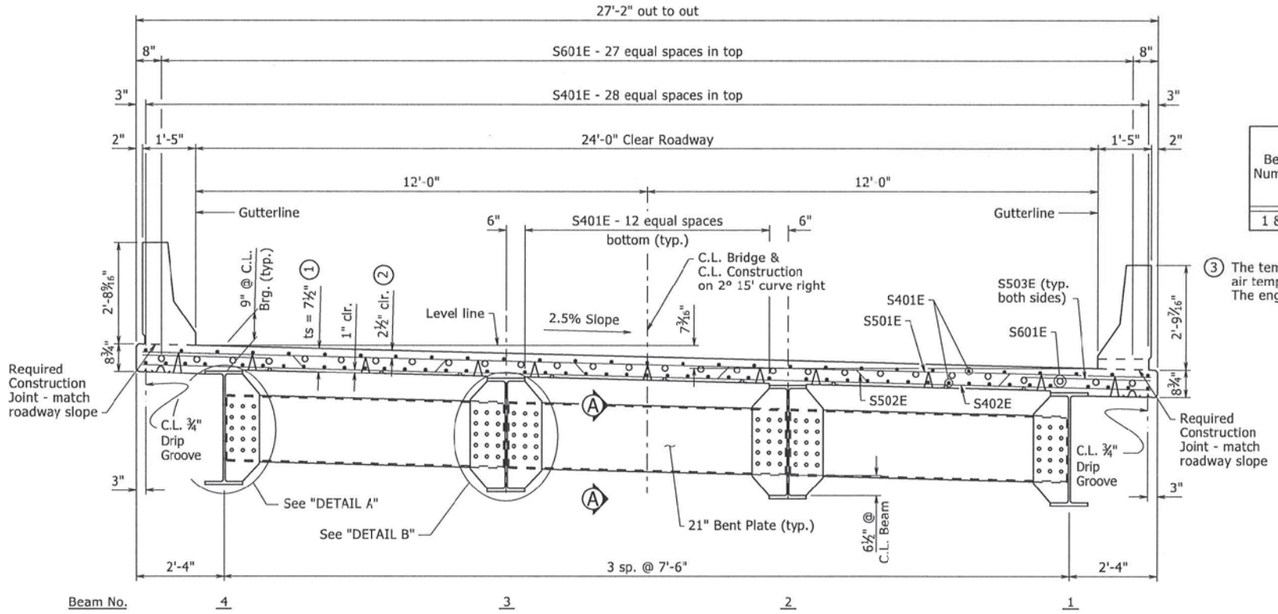
Slab Reinforcing

Longitudinal: S401E in top and bottom (place as shown)
S601E in top over intermediate supports,
see "HALF REINFORCING PLAN & DECK POURING SEQUENCE" Dwg. No. 61405.

Transverse: S501E @ 12" o.c. in top, S402E @ 12" o.c. in bottom — Alternate
S502E @ 12" o.c. bent up over beams
S503E @ 6" in top of overhangs (bundled with #5 bars) both sides

(1) See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE" on Std. Dwg. No. 55007.

(2) Tolerance Minus = ¼":
Plus equal to the amount of slab thickness used to meet slab thickness tolerance.
See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE" on Std. Dwg. No. 55007.



TYPICAL ROADWAY SECTION

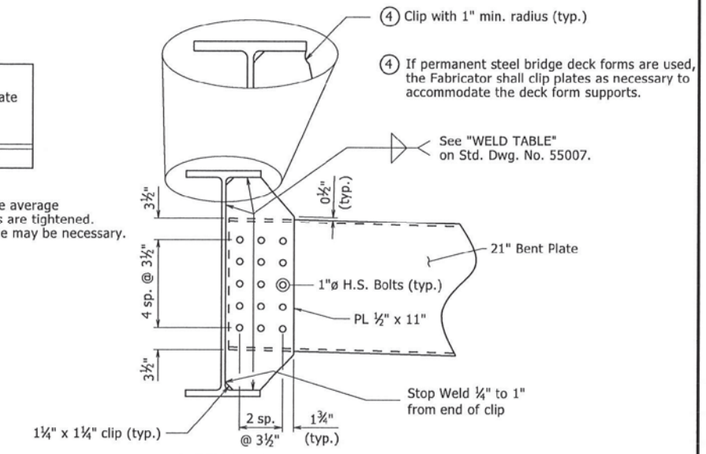
LOOKING AHEAD
½" = 1'-0"

TABLE OF SILICONE JOINT DATA

For details of poured silicone joint, see Standard Dwg. No. 55008.

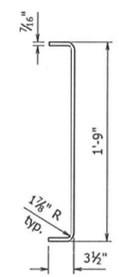
Bent Number	"A" Width Perpendicular to Joint at 24 Hour Average Temperature (3) of:			"B" Perpendicular to Joint at 60°F	Bumper Plate Size
	40°F	60°F	80°F		
1 & 5	2¼"	2"	1¾"	2¼" ±	1" x 1"

(3) 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.



DETAIL A

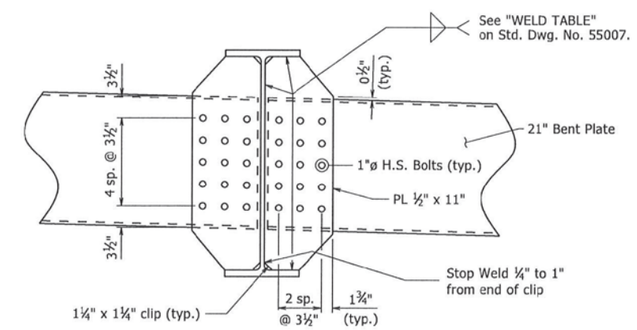
1" = 1'-0"



Typical cross-section for all 21" bent plate diaphragms.

SECTION A-A

NO SCALE

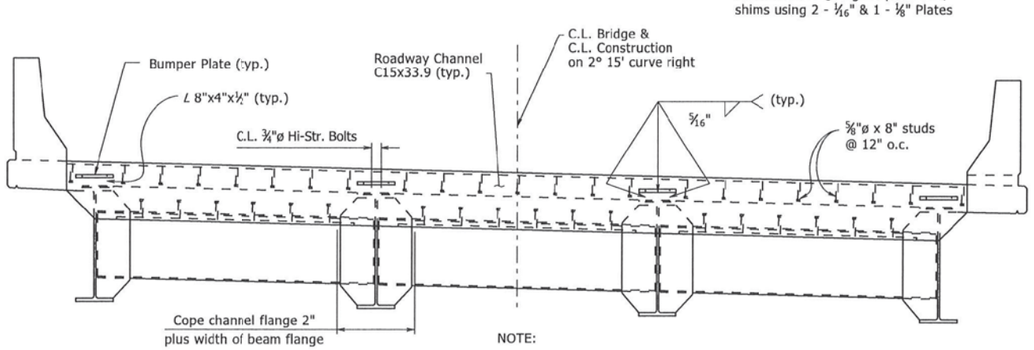


DETAIL B

1" = 1'-0"

Expansion Device:

Roadway Channel - C15x33.9
Connection ∠'s 8"x4"x½"
Detail Device ⅛" high & provide ¼" shims using 2 - 1/16" & 1 - ⅛" Plates

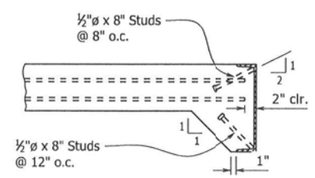


NOTE:

For additional joint details, see Std. Dwg. No. 55008.

TYPICAL ROADWAY SECTION THRU JOINT

LOOKING AHEAD - BENT 1
½" = 1'-0"



As an alternate to ⅝"ø studs, ½"ø x 8" studs spaced as shown may be used. Use weight of ⅝"ø stud as basis of measurement of structural steel in anchors.

DETAILS OF ALTERNATE ANCHORS AND PLACEMENT OF LONGITUDINAL REINFORCEMENT

NO SCALE

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
3-4-2020
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 1 OF 5
DETAILS OF 270'-0" CONTINUOUS W-BEAM UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: CGP DATE: 9/09/19 FILENAME: bfa3610_s1.dgn
CHECKED BY: DPT DATE: 2/21/2020 SCALE: AS NOTED
DESIGNED BY: J.J. DATE: 03/19
BRIDGE NO. 04944 DRAWING NO. 61403

PRINT DATE: 2/21/2020

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.		FA3610	34	46

(1) 04944 - SPAN DETAILS - 61404

NOTES:

All structural steel shall be ASTM A709, Gr. 50W unless otherwise noted and shall be paid for as "Structural Steel in Beam Spans (A709, Gr. 50W)".

Beams are concentric to C.L. Bridge. Diaphragm and field splice lines are radial.

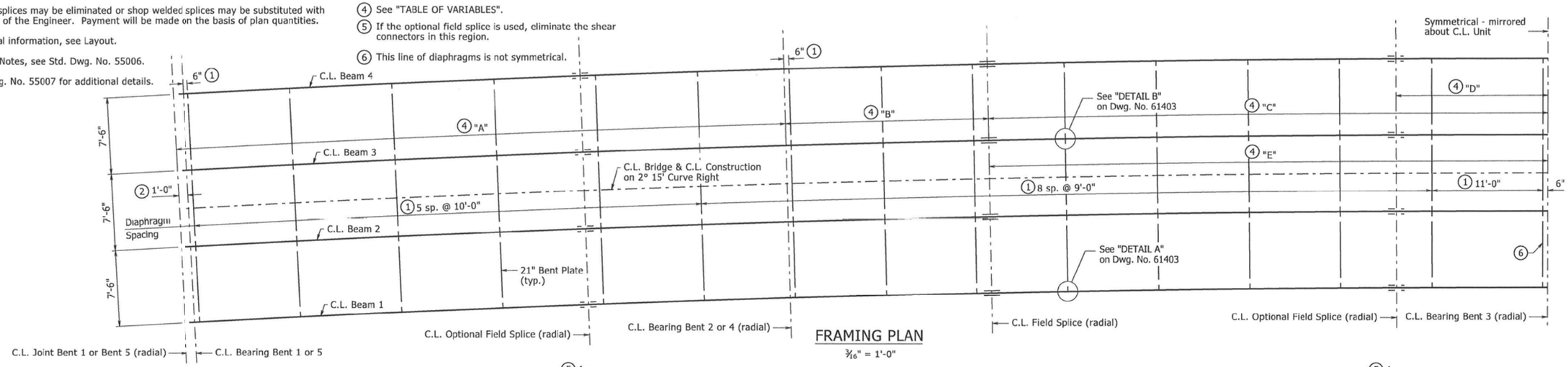
Bolted field splices may be eliminated or shop welded splices may be substituted with the approval of the Engineer. Payment will be made on the basis of plan quantities.

For additional information, see Layout.

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

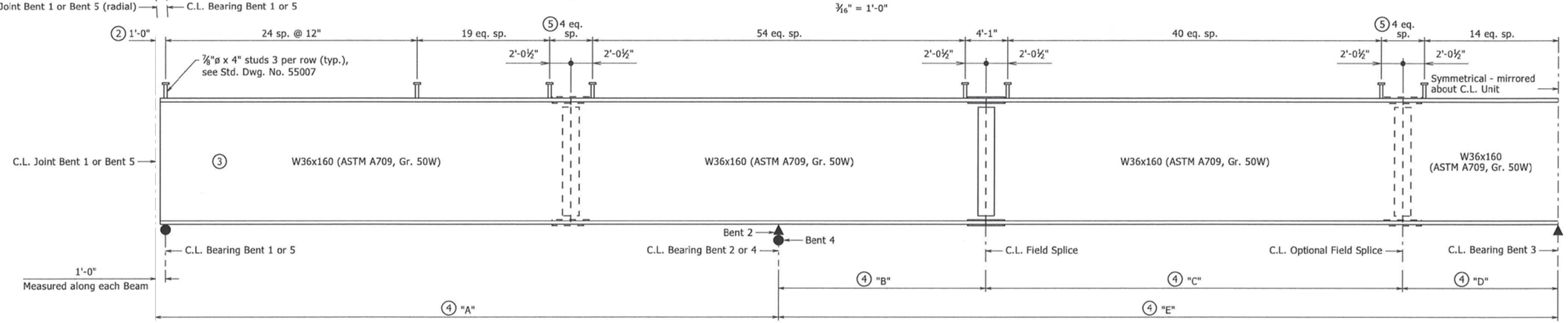
See Std. Dwg. No. 55007 for additional details.

(1) Measured along C.L. Bridge
(2) Measured along C.L. Beam
(3) For Painting of Beam Ends, see General Notes on Layout Dwg. No. 61394.
(4) See "TABLE OF VARIABLES".
(5) If the optional field splice is used, eliminate the shear connectors in this region.
(6) This line of diaphragms is not symmetrical.



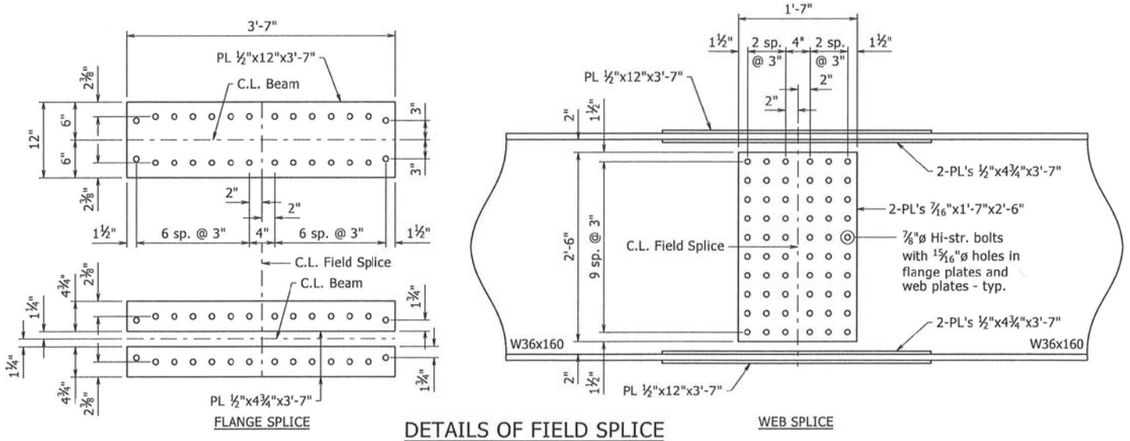
FRAMING PLAN

3/16" = 1'-0"



TYPICAL BEAM ELEVATION

NO SCALE



DETAILS OF FIELD SPLICE

TYPICAL FOR ALL FIELD SPLICES
NO SCALE

(2) TABLE OF VARIABLES

Beam No.	"A"	"B"	"C"	"D"	"E"
1	59'-8 13/16"	19'-10 15/16"	54'-9 1/16"	14'-11 3/16"	74'-8"
2	59'-10 15/16"	19'-11 5/8"	54'-11"	14'-11 3/4"	74'-10 11/16"
3	60'-1 1/16"	20'-0 3/8"	55'-1"	15'-0 1/4"	75'-1 5/16"
4	60'-3 3/16"	20'-1 1/16"	55'-2 15/16"	15'-0 13/16"	75'-4"

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
3-4-2020
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 5
DETAILS OF 270'-0" CONTINUOUS W-BEAM UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: CGP DATE: 9/09/19 FILENAME: bfa3610_s1.dgn
CHECKED BY: DPT DATE: 3/4/2020 SCALE: AS NOTED
DESIGNED BY: J.J. DATE: 08/19

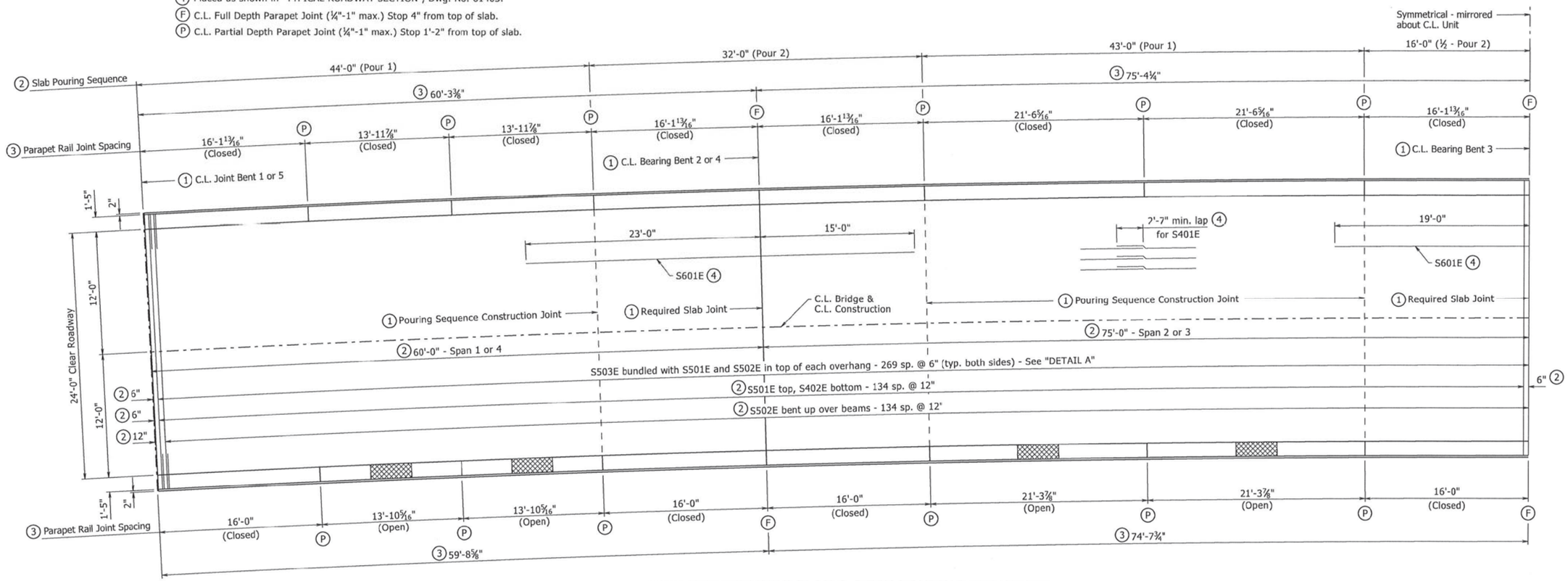
BRIDGE NO. 04944 DRAWING NO. 61404

PRINT DATE: 3/3/2020

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.		FA3610	35	46

(1) 04944 - SPAN DETAILS - 61405

(1) Radial Line
(2) Measured along C.L. Bridge
(3) Measured along Gutterline
(4) Placed as shown in "TYPICAL ROADWAY SECTION", Dwg. No. 61403.
(F) C.L. Full Depth Parapet Joint (¼"-1" max.) Stop 4" from top of slab.
(P) C.L. Partial Depth Parapet Joint (¼"-1" max.) Stop 1'-2" from top of slab.



HALF REINFORCING PLAN & DECK POURING SEQUENCE

3/16" = 1'-0"

NOTE:

C.L. Bridge is in a 2°15' 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.

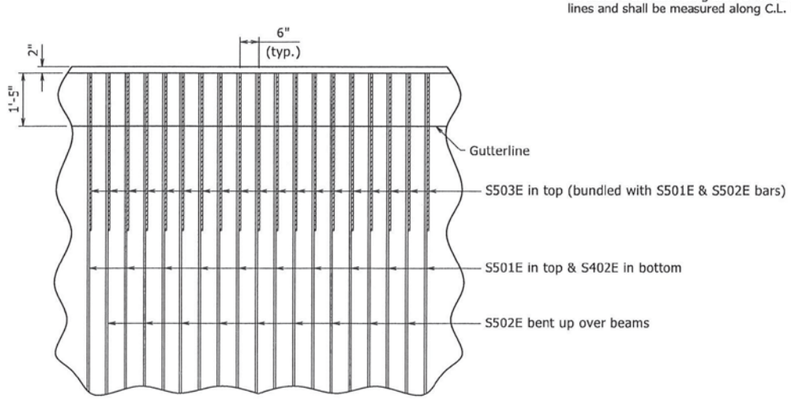
NOTES:

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

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

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

Unless otherwise noted, required slab joints and pouring sequence construction joints shall align with parapet joints at the gutterline.



DETAIL A
NO SCALE

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
3-4-2020
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 3 OF 5
DETAILS OF 270'-0" CONTINUOUS W-BEAM UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CGP DATE: 9/09/19 FILENAME: bfa3610_s1.dgn
CHECKED BY: DRT DATE: 2/21/2020 SCALE: AS NOTED
DESIGNED BY: T.J. DATE: 03/19
BRIDGE NO. 04944 DRAWING NO. 61405

PRINT DATE: 2/21/2020

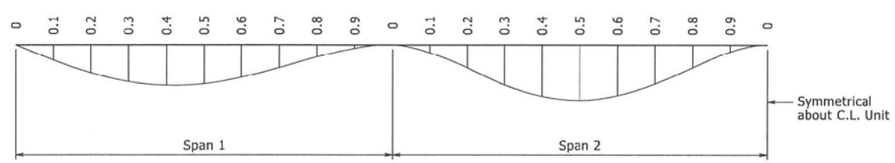
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		FA3610	36	46

(1) 04944 - SPAN DETAILS - 61406

TABLE OF DEAD LOAD DEFLECTIONS (INCHES)

Span	Point of Deflection	Structural Steel				Structural Steel + Slab				Structural Steel + Slab + Parapet			
		Beam 1	Beam 2	Beam 3	Beam 4	Beam 1	Beam 2	Beam 3	Beam 4	Beam 1	Beam 2	Beam 3	Beam 4
1	0	0	0	0	0	0	0	0	0	0	0	0	0
	0.1	0.026	0.028	0.028	0.027	0.127	0.144	0.146	0.134	0.149	0.170	0.172	0.157
	0.2	0.047	0.051	0.052	0.050	0.233	0.264	0.268	0.247	0.273	0.312	0.316	0.289
	0.3	0.061	0.067	0.068	0.065	0.304	0.345	0.350	0.321	0.356	0.407	0.413	0.376
	0.4	0.068	0.074	0.075	0.072	0.336	0.381	0.386	0.355	0.394	0.450	0.455	0.416
	0.5	0.065	0.071	0.072	0.069	0.321	0.366	0.370	0.340	0.376	0.432	0.437	0.398
	0.6	0.054	0.059	0.060	0.057	0.268	0.305	0.309	0.282	0.314	0.360	0.365	0.331
	0.7	0.038	0.041	0.042	0.040	0.188	0.214	0.218	0.198	0.221	0.253	0.258	0.232
	0.8	0.019	0.021	0.022	0.021	0.097	0.113	0.115	0.104	0.114	0.134	0.136	0.122
	0.9	0.005	0.006	0.006	0.006	0.027	0.033	0.033	0.029	0.032	0.039	0.039	0.034
2	0	0	0	0	0	0	0	0	0	0	0	0	0
	0.1	0.014	0.015	0.016	0.015	0.068	0.074	0.076	0.071	0.079	0.087	0.089	0.083
	0.2	0.041	0.044	0.045	0.044	0.197	0.218	0.221	0.209	0.230	0.256	0.259	0.243
	0.3	0.071	0.076	0.078	0.075	0.341	0.377	0.383	0.360	0.398	0.443	0.449	0.420
	0.4	0.090	0.098	0.099	0.096	0.436	0.484	0.490	0.461	0.509	0.568	0.575	0.537
	0.5	0.097	0.105	0.107	0.103	0.470	0.521	0.529	0.496	0.548	0.612	0.621	0.578
	0.6	0.089	0.096	0.098	0.094	0.430	0.477	0.484	0.454	0.502	0.560	0.568	0.529
	0.7	0.068	0.073	0.075	0.072	0.330	0.365	0.372	0.347	0.385	0.429	0.437	0.405
	0.8	0.040	0.043	0.044	0.042	0.194	0.216	0.219	0.204	0.227	0.254	0.257	0.238
	0.9	0.012	0.013	0.013	0.013	0.059	0.066	0.067	0.063	0.069	0.077	0.078	0.074
Symmetrical about C.L. Unit →	0	0	0	0	0	0	0	0	0	0	0	0	0

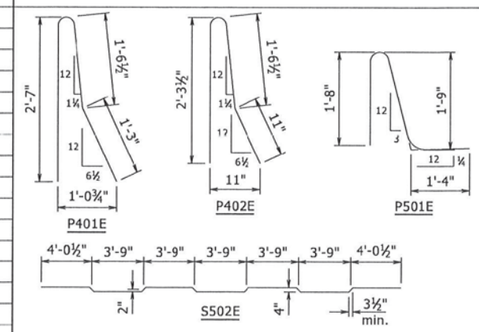
Note:
Camber for Dead Load Deflection +/- ¼" inch tolerance. Deflections shown are along centerline of beam from the plane perpendicular to the web extending from C.L. Bearing to C.L. Bearing. Negative sign (-) indicates point above plane. Vertical curve corrections not included.



DEAD LOAD DEFLECTION DIAGRAM

BAR LIST

MARK	NO. REQ'D	LENGTH	P.D.
P401E	1024	5'-6"	3"
P402E	72	4'-10"	3"
P403E	96	5'-6"	Str.
P404E	56	15'-9"	Str.
P405E	28	13'-8"	Str.
P406E	28	21'-2"	Str.
P407E	56	15'-8"	Str.
P408E	28	13'-6"	Str.
P409E	28	21'-0"	Str.
P501E	1024	4'-10"	3¾"
S401E	532	40'-9"	Str.
S402E	270	26'-10"	Str.
S501E	270	26'-10"	Str.
S502E	269	27'-6"	3"
S503E	1078	3'-5"	Str.
S601E	84	38'-0"	Str.



Dimensions are out to out of bars.
Bars with an "E" suffix are to be epoxy coated.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
3-4-2020
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 4 OF 5
DETAILS OF 270'-0" CONTINUOUS W-BEAM UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: CGP DATE: 8/07/19 FILENAME: bfa3610_s1.dgn
CHECKED BY: DPT DATE: 3/4/2020 SCALE: NO SCALE
DESIGNED BY: J.J. DATE: 08/19

BRIDGE NO. 04944 DRAWING NO. 61406

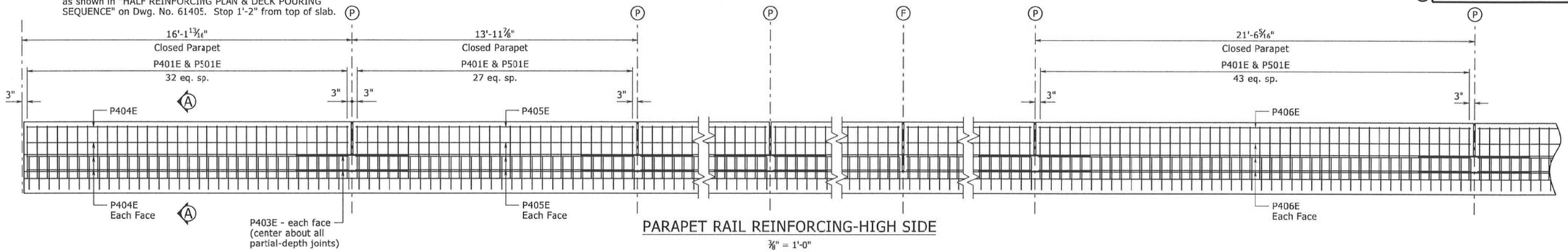
PRINT DATE: 3/4/2020

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.		FA3610	37	46

(I) 04944 - SPAN DETAILS - 61407

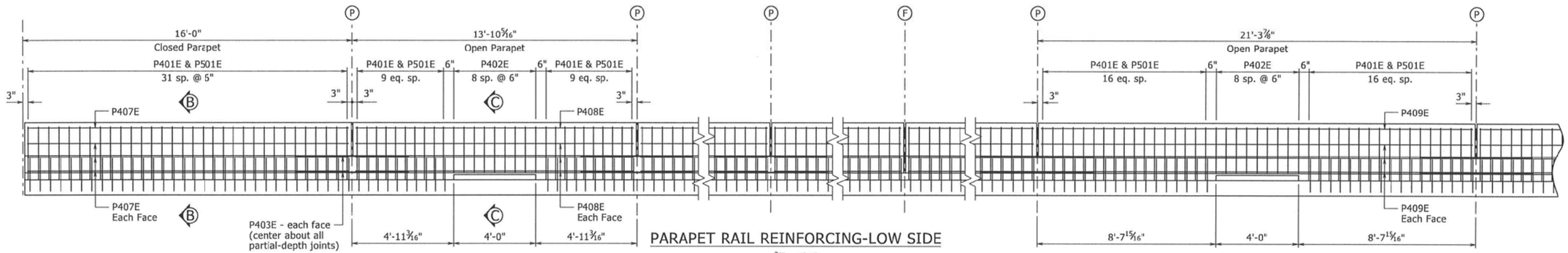
(F) C.L. Full-Depth Parapet Joint (¼" to 1" max.) as shown in "HALF REINFORCING PLAN & DECK POURING SEQUENCE" on Dwg. No. 61405. Stop 4" from top of slab.

(P) C.L. Partial-Depth Parapet Joint (¼" to 1" max.) as shown in "HALF REINFORCING PLAN & DECK POURING SEQUENCE" on Dwg. No. 61405. Stop 1'-2" from top of slab.



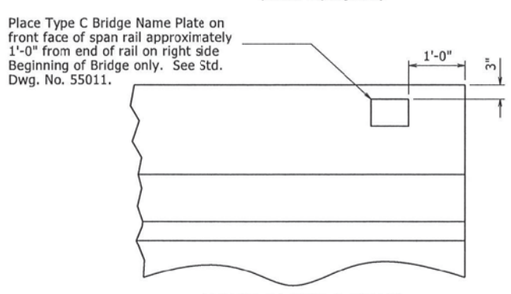
PARAPET RAIL REINFORCING-HIGH SIDE

⅜" = 1'-0"



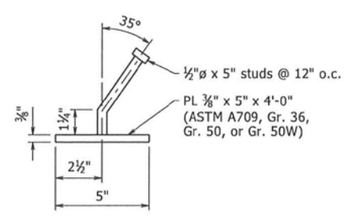
PARAPET RAIL REINFORCING-LOW SIDE

⅜" = 1'-0"



NAME PLATE DETAIL

NO SCALE



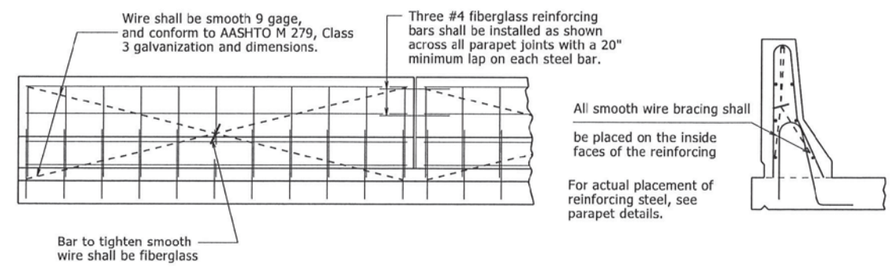
DETAIL A

NO SCALE

NOTES:

Parapet Studs shall be 5" long, granular flux, solid fluxed, or equal, and automatically end welded to the plate. Studs and plate shall meet the requirements of Section 807. Studs and plate shall be measured and paid for as "Structural Steel in Beam Spans (A709, Gr. 50W)".

The surfaces of the ⅜" plates which will not be in contact with concrete shall be painted in accordance with Section 538, or as approved by the Engineer. Only one coat is required and shall be applied in the Fabricator's shop. Painting will not be paid for directly, but will be considered subsidiary to "Structural Steel in Beam Spans (A709, Gr. 50W)".

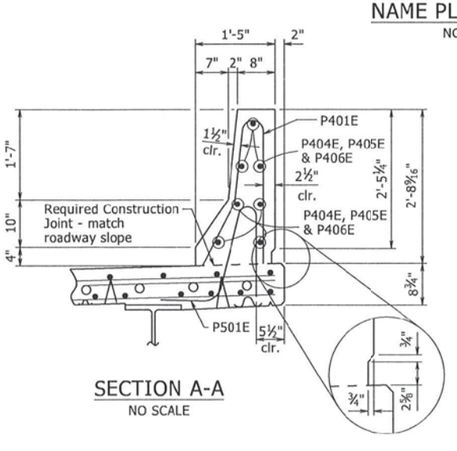


All panels shall be braced as required to prevent racking. All parapet joints shall be sawed as soon as practical to a minimum width of ¼". To control cracking before sawing, all joints must be grooved before the concrete is set. Sawing of the joints must be controlled so it will follow the grooved joint.

The extruded parapet shall conform to the horizontal and vertical lines shown on the plans or as directed by the Engineer and shall present a smooth, uniform apperance and texture. Exposed surface may be given a light brush finish or a Class 3, Textured Coating Finish, in place of the Class 2, Rubbed Finish.

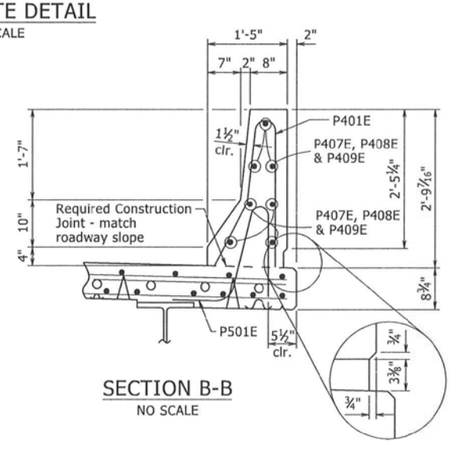
DETAILS OF OPTIONAL SLIPFORMING OF CONCRETE PARAPET RAIL

NO SCALE



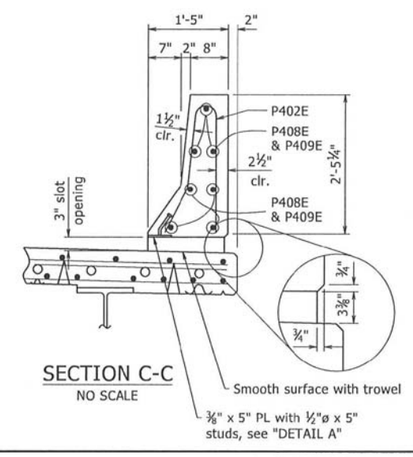
SECTION A-A

NO SCALE



SECTION B-B

NO SCALE



SECTION C-C

NO SCALE

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
3-4-2020
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 5 OF 5
DETAILS OF 270'-0" CONTINUOUS W-BEAM UNIT

ROUTE SEC.

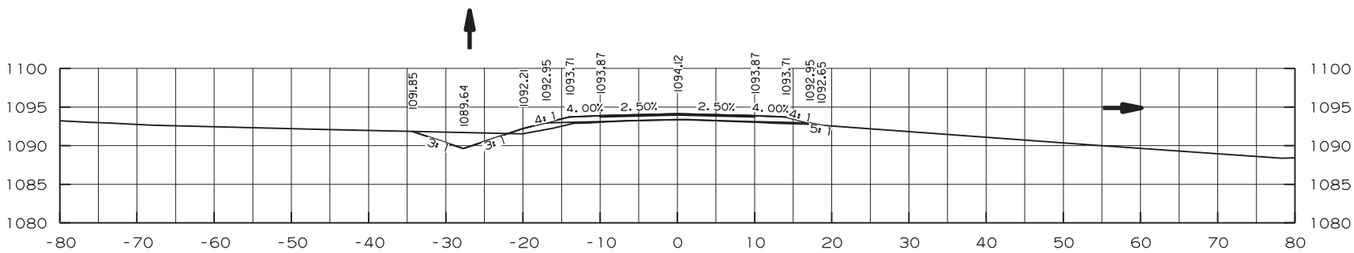
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: CGP DATE: 9/09/19 FILENAME: bfa3610_s1.dgn
CHECKED BY: DPT DATE: 2/26/2020 SCALE: AS NOTED
DESIGNED BY: J.J. DATE: 02/19

BRIDGE NO. 04944 DRAWING NO. 61407

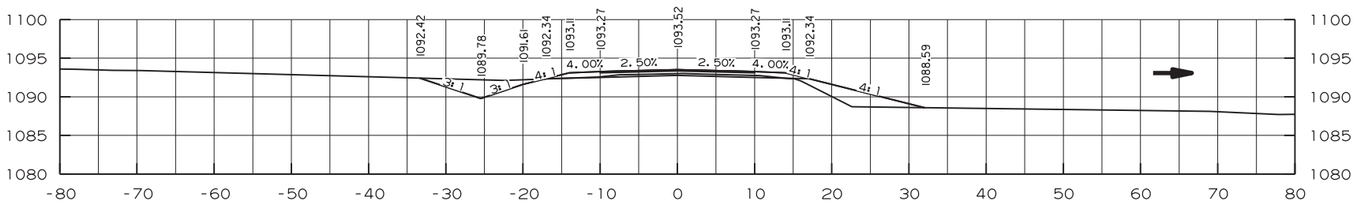
PRINT DATE: 2/26/2020



AREA CUT 12.98
AREA FILL 6.95

101+79.62

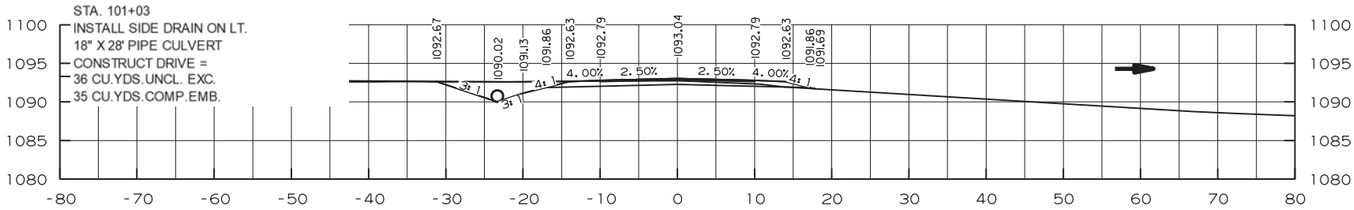
CUT VOLUME 20
FILL VOLUME 15



AREA CUT 24.02
AREA FILL 19.97

101+50.00

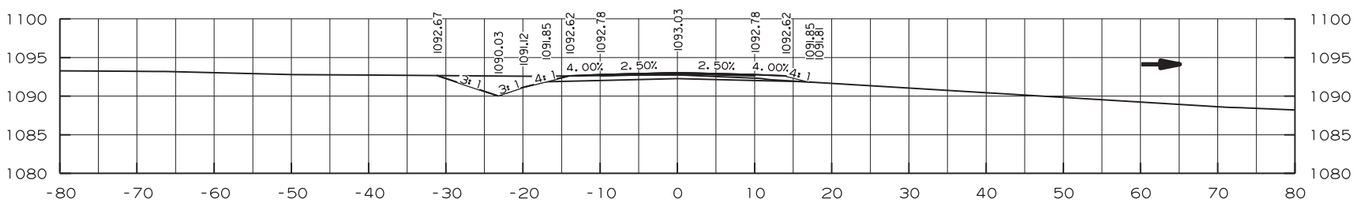
CUT VOLUME 52
FILL VOLUME 18



AREA CUT 35.66
AREA FILL 0.25

101+02.71
DRIVE ON LEFT

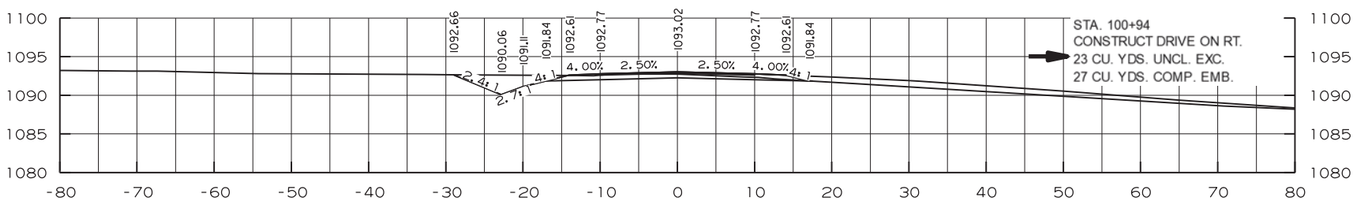
CUT VOLUME 4
FILL VOLUME 0



AREA CUT 34.96
AREA FILL 0.01

101+00.00

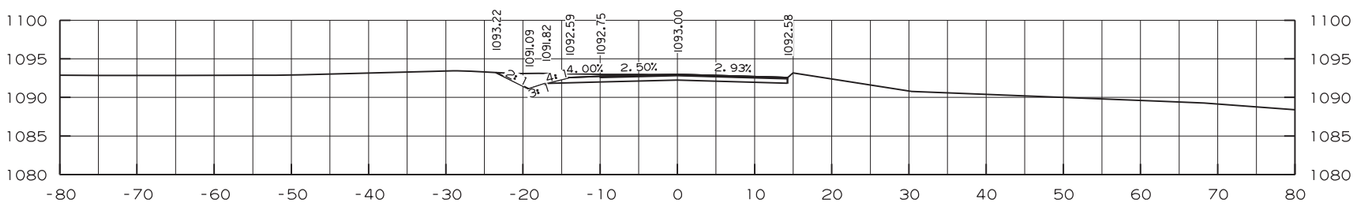
CUT VOLUME 7
FILL VOLUME 0



AREA CUT 32.29
AREA FILL 0.00

100+94.00
DRIVE ON RIGHT

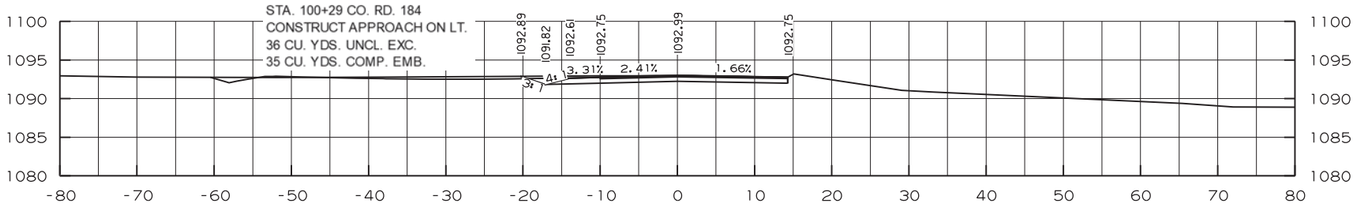
CUT VOLUME 54
FILL VOLUME 0



AREA CUT 33.83
AREA FILL 0.00

100+50.00
END TRANSITION

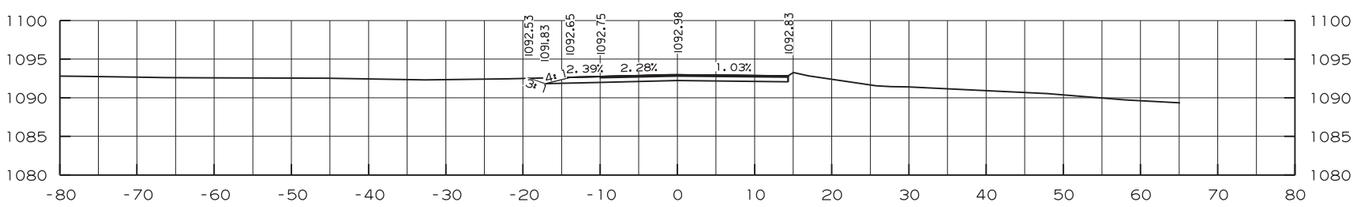
CUT VOLUME 25
FILL VOLUME 0



AREA CUT 28.65
AREA FILL 0.00

100+28.68
CO. RD. 184 ON LT.

CUT VOLUME 28
FILL VOLUME 0



AREA CUT 24.45
AREA FILL 0.00

100+00.00
MATCH EXISTING
BEGIN JOB FA3610

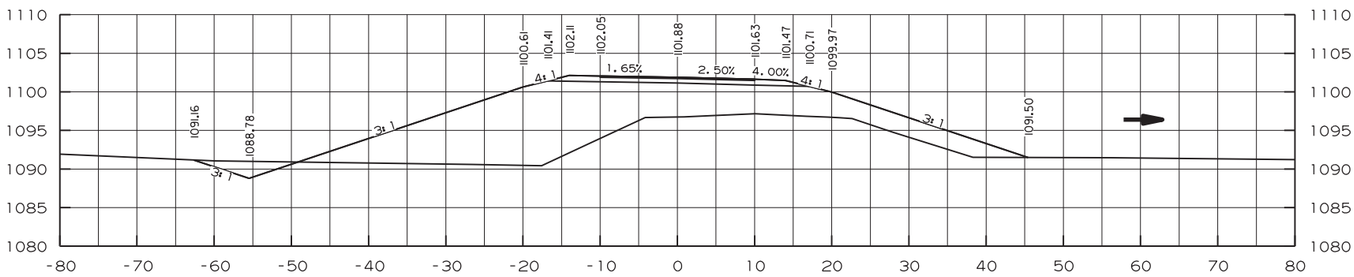
CUT VOLUME 0
FILL VOLUME 0

DATE REVISED	DATE PLANED	DATE REVISED	DATE PLANED

4 CROSS SECTIONS STA. 100+00.00 TO 101+79.62

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.	FA3610	38	46

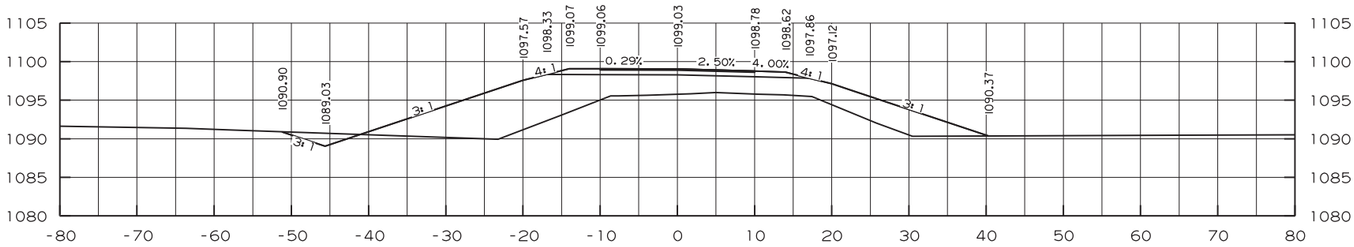
JOB NO.



AREA CUT 14.70
AREA FILL 428.64

103+50.00

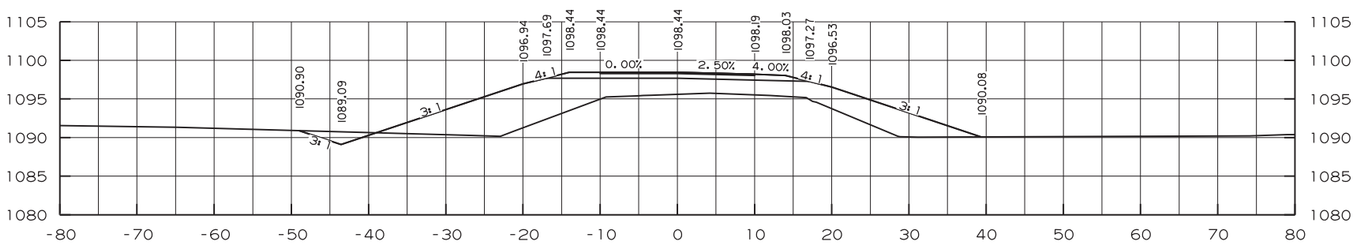
CUT VOLUME 21
FILL VOLUME 631



AREA CUT 8.48
AREA FILL 252.33

103+00.00

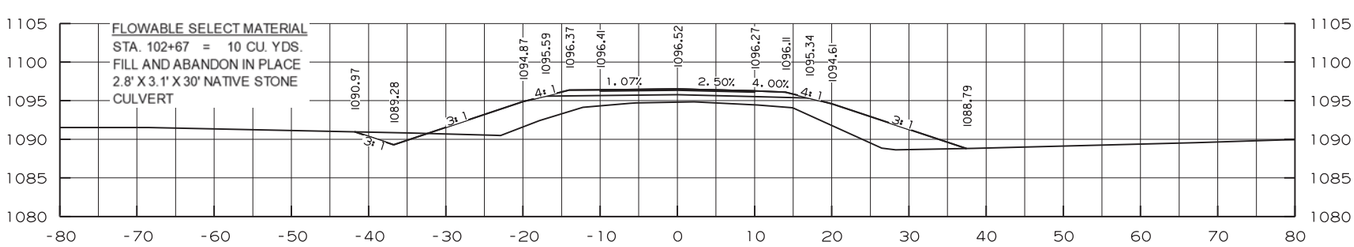
CUT VOLUME 3
FILL VOLUME 93



AREA CUT 8.38
AREA FILL 218.07

102+89.37

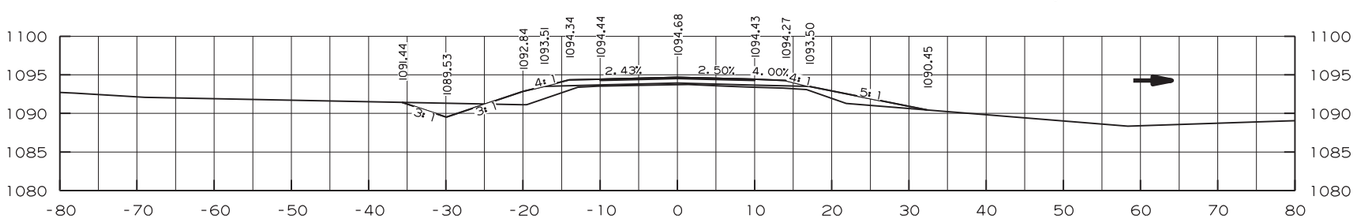
CUT VOLUME 12
FILL VOLUME 252



AREA CUT 7.55
AREA FILL 127.55

102+50.00

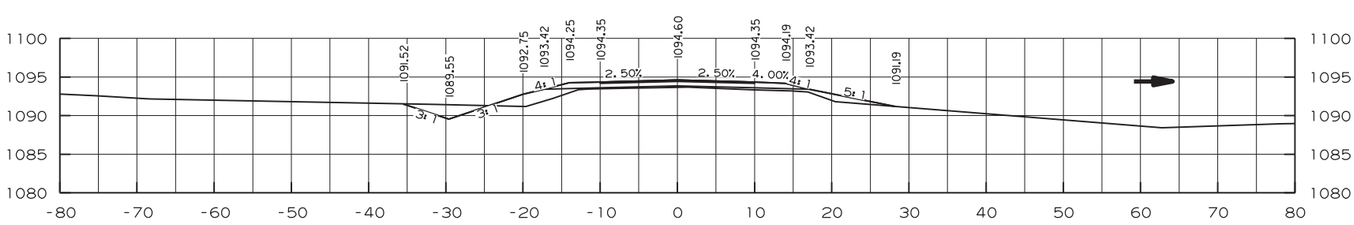
CUT VOLUME 16
FILL VOLUME 147



AREA CUT 9.72
AREA FILL 30.70

102+00.00

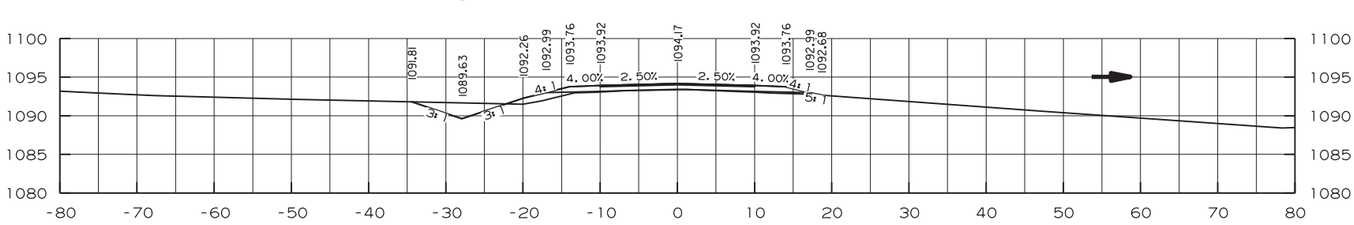
CUT VOLUME 1
FILL VOLUME 3



AREA CUT 10.29
AREA FILL 23.57

101+97.26

CUT VOLUME 7
FILL VOLUME 9



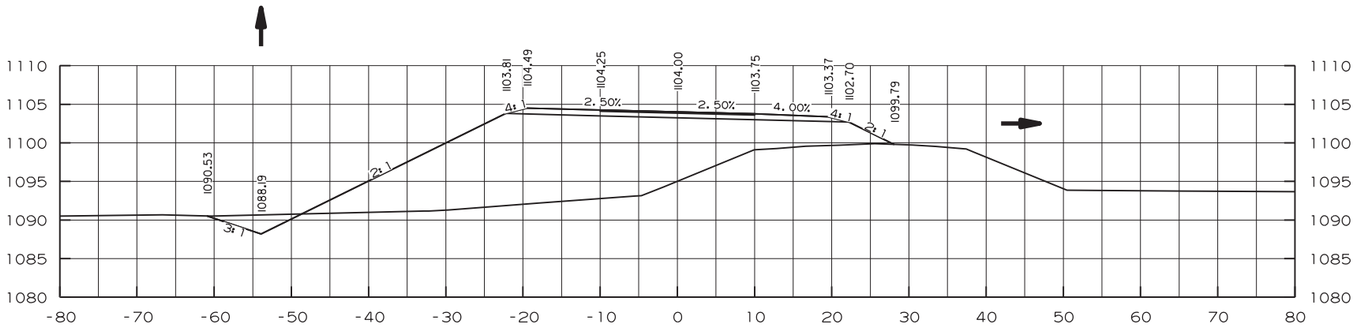
AREA CUT 12.59
AREA FILL 7.97

101+81.47
BEGIN SUPERELEVATION

CUT VOLUME 1
FILL VOLUME 1

4 CROSS SECTIONS STA. 101+81.47 TO 103+50.00

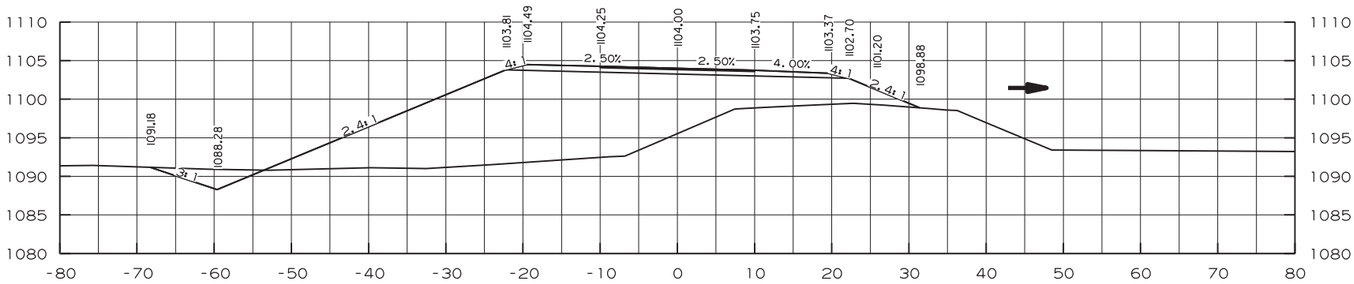
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED
FED.RD. DIST. NO.	6	STATE	ARK.
JOB NO.	FA3610	FED.AID PROJ.NO.	
SHEET NO.	39	TOTAL SHEETS	46



AREA CUT 15.17
AREA FILL 509.18

104+68.92
BEGIN RIGHT SHOULDER TRANSITION

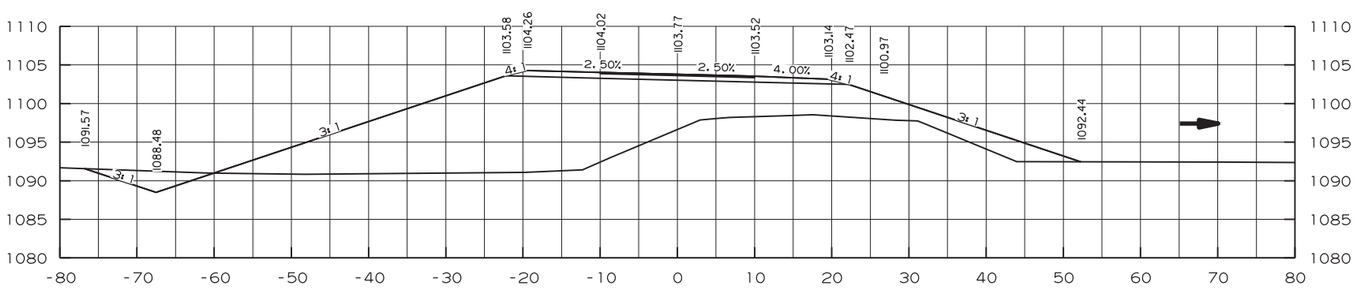
CUT VOLUME 12
FILL VOLUME 371



AREA CUT 19.38
AREA FILL 549.39

104+50.00

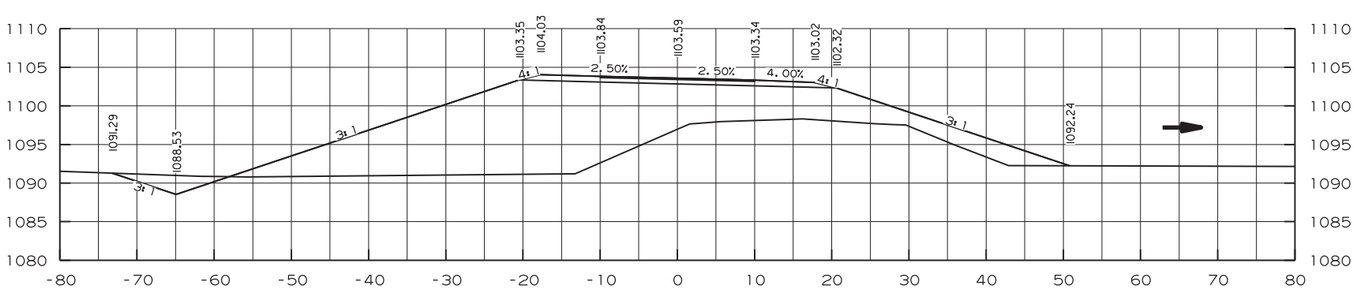
CUT VOLUME 31
FILL VOLUME 874



AREA CUT 23.07
AREA FILL 643.04

104+10.42

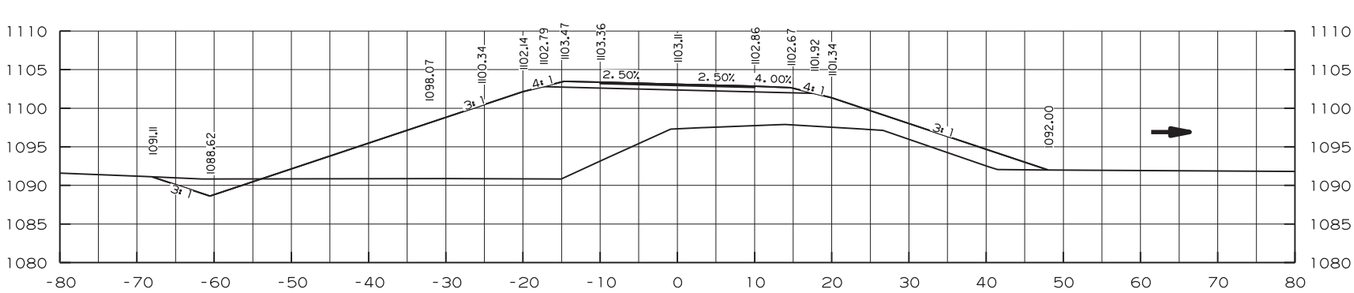
CUT VOLUME 8
FILL VOLUME 239



AREA CUT 18.53
AREA FILL 597.95

104+00.00

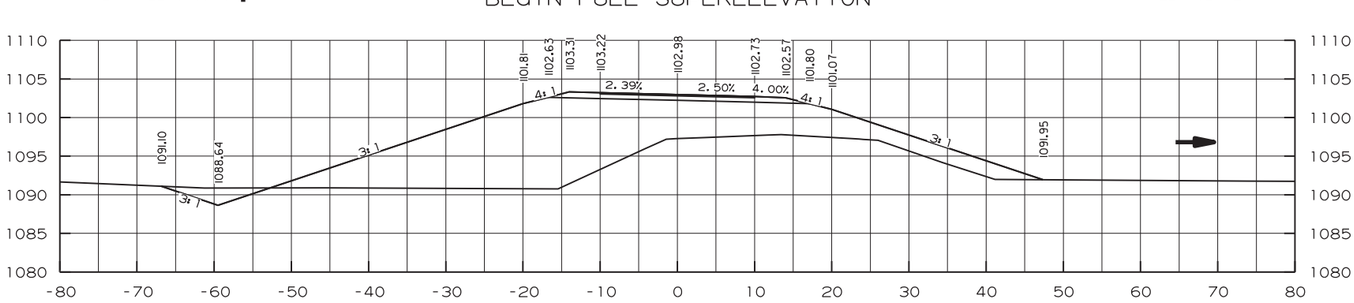
CUT VOLUME 12
FILL VOLUME 383



AREA CUT 15.46
AREA FILL 519.13

103+81.47
BEGIN FULL SUPERELEVATION

CUT VOLUME 2
FILL VOLUME 77



AREA CUT 15.31
AREA FILL 501.12

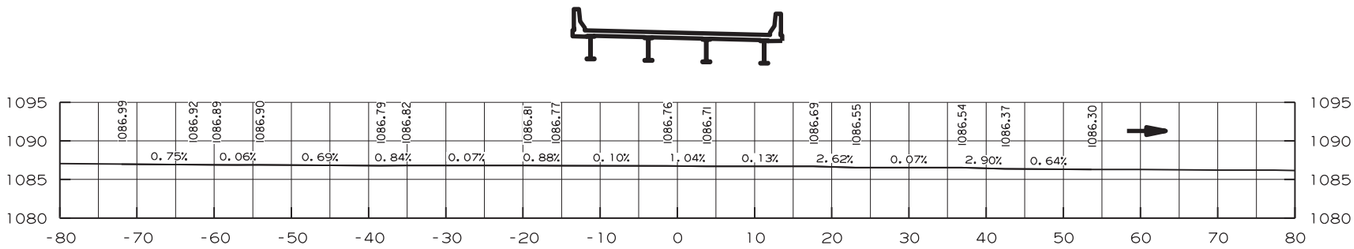
103+77.42
BEGIN GUARDRAIL WIDENING

CUT VOLUME 15
FILL VOLUME 472

DATE REVISED	DATE PLANED	DATE REVISED	DATE PLANED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.	FA3610	40	46

JOB NO.

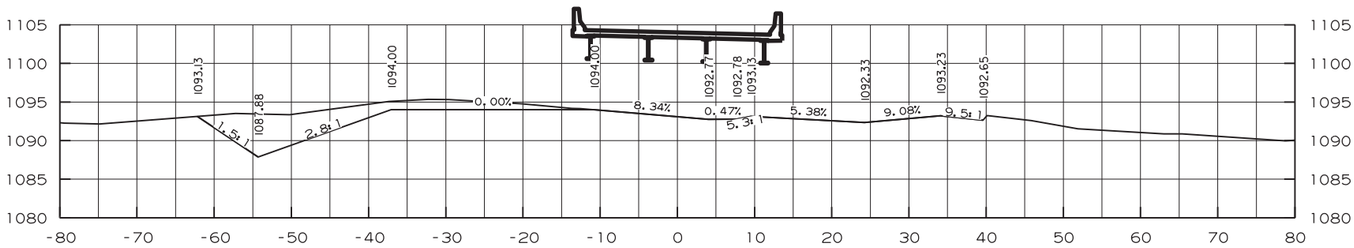
4 CROSS SECTIONS STA. 103+77.42 TO 104+68.92



AREA CUT 0.00
AREA FILL 0.06

105+50.00

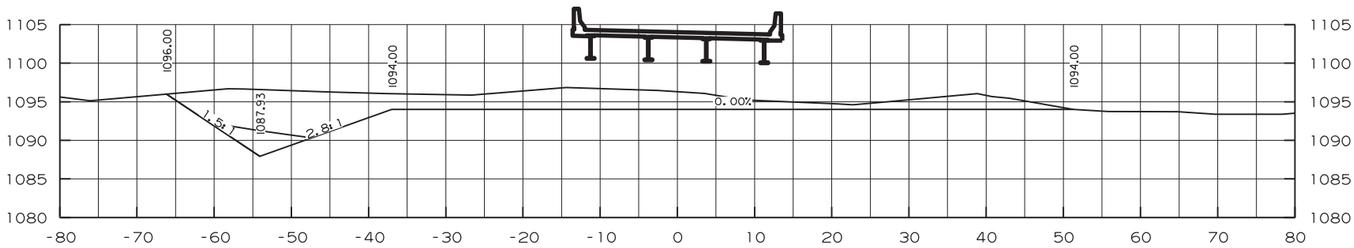
CUT VOLUME 37
FILL VOLUME 0



AREA CUT 98.72
AREA FILL 0.01

105+30.00

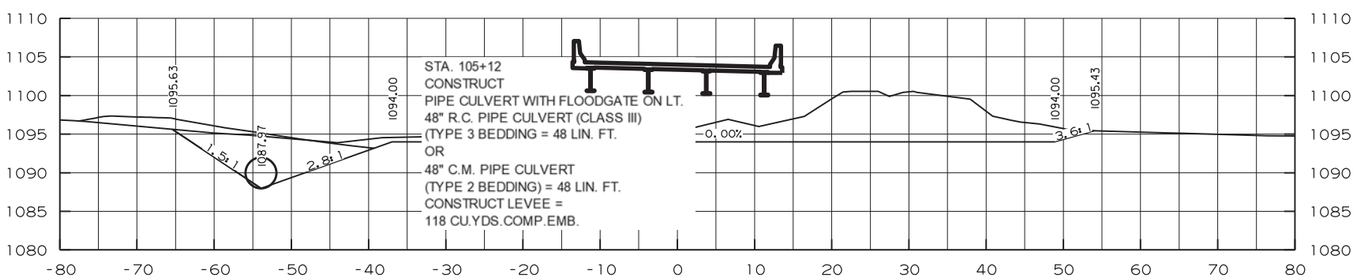
CUT VOLUME 73
FILL VOLUME 0



AREA CUT 295.87
AREA FILL 0.00

105+20.00

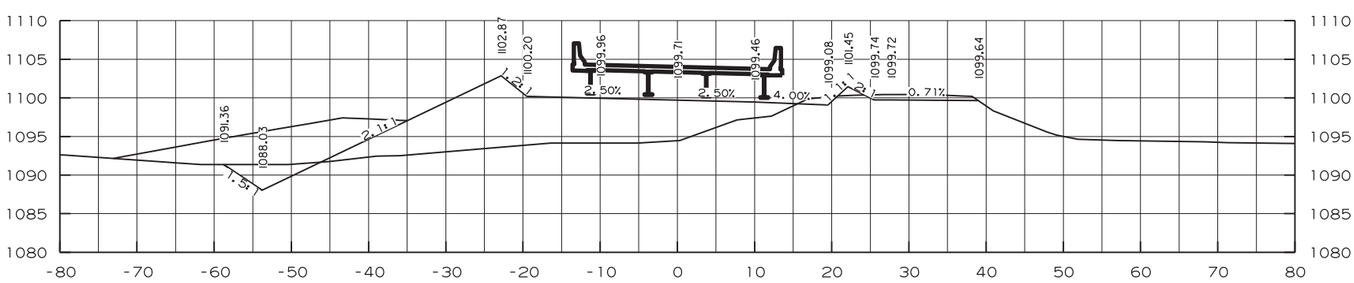
CUT VOLUME 101
FILL VOLUME 0



AREA CUT 337.72
AREA FILL 0.00

105+11.42

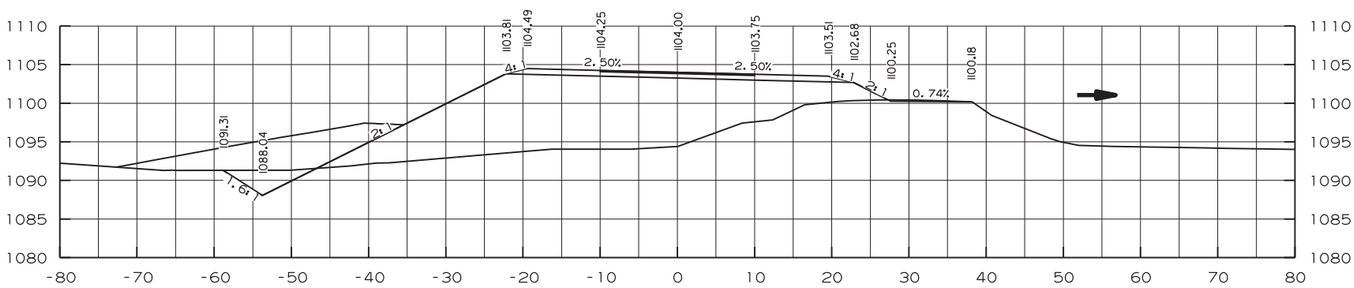
CUT VOLUME 78
FILL VOLUME 61



AREA CUT 33.14
AREA FILL 290.39

105+00.00

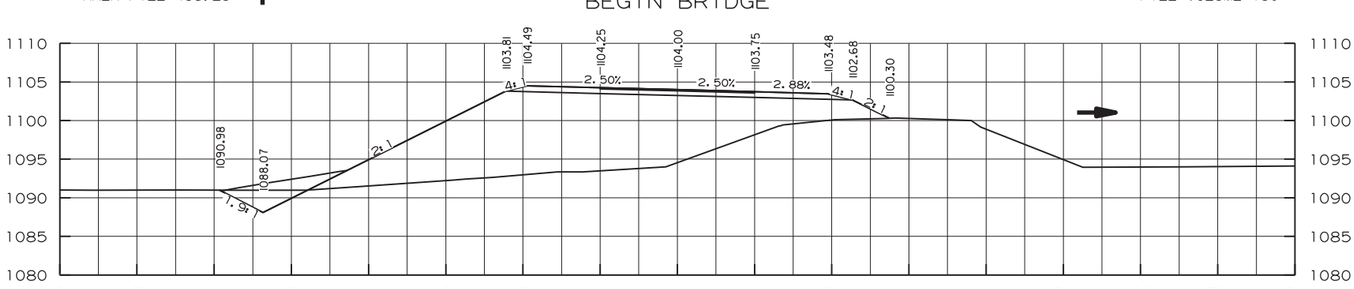
CUT VOLUME 1
FILL VOLUME 15



AREA CUT 20.84
AREA FILL 458.25

104+98.92
BEGIN BRIDGE

CUT VOLUME 5
FILL VOLUME 130



AREA CUT 16.50
AREA FILL 480.05

104+91.42
BRIDGE SLOPE INTERCEPT

CUT VOLUME 13
FILL VOLUME 412

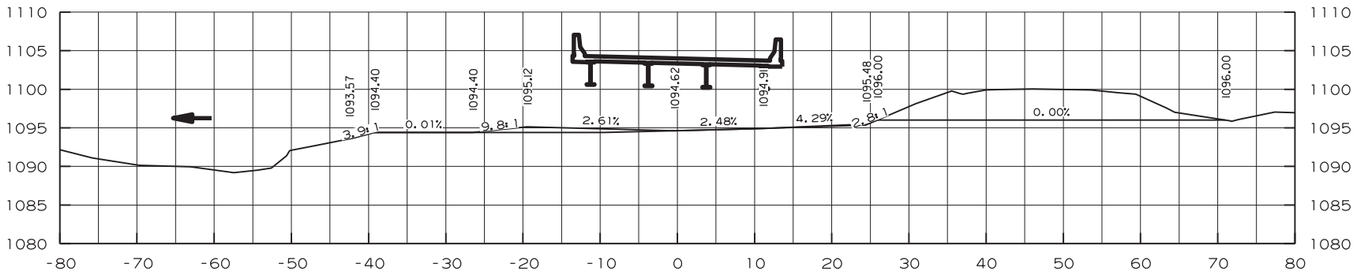
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.
				6	ARK.	FA3610

4 CROSS SECTIONS STA. 104+91.42 TO 105+50.00

JOB NO.

SHEET NO. 41

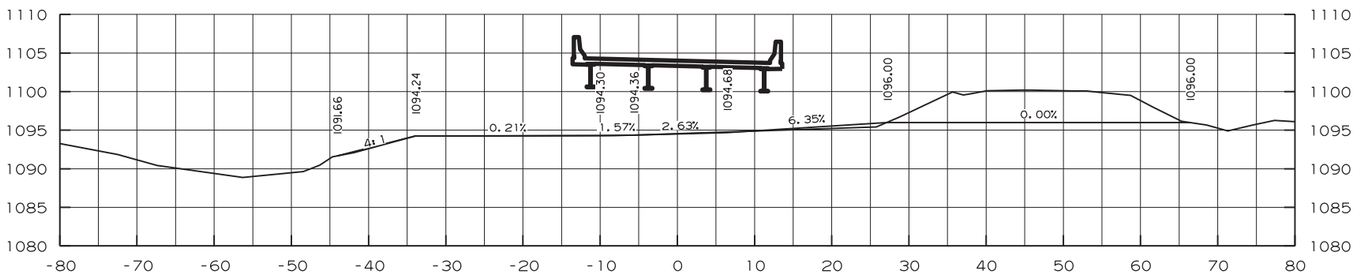
TOTAL SHEETS 46



AREA CUT 124.79
AREA FILL 11.42

107+59.85

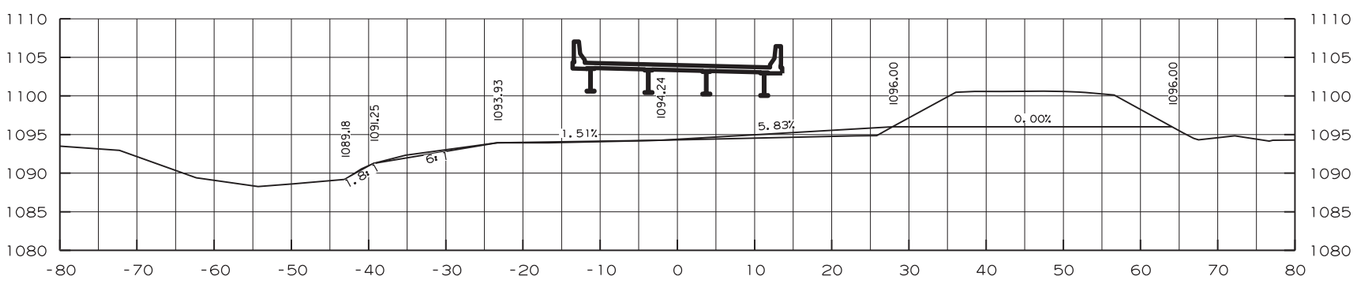
CUT VOLUME 45
FILL VOLUME 3



AREA CUT 121.25
AREA FILL 5.43

107+50.00

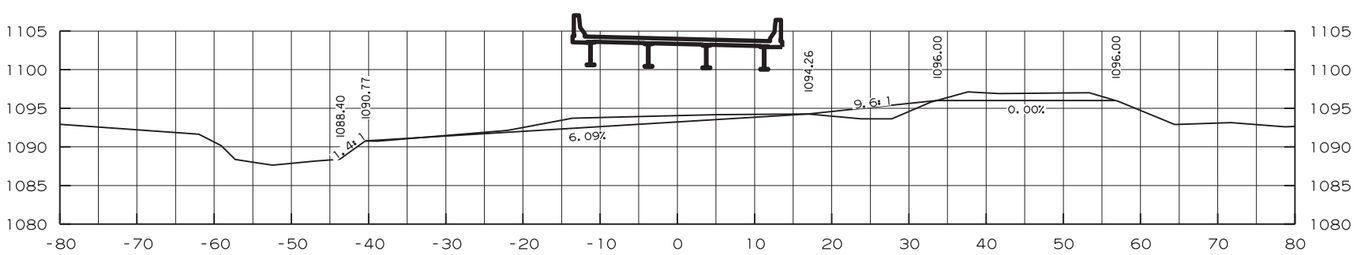
CUT VOLUME 93
FILL VOLUME 8



AREA CUT 129.68
AREA FILL 15.70

107+30.00

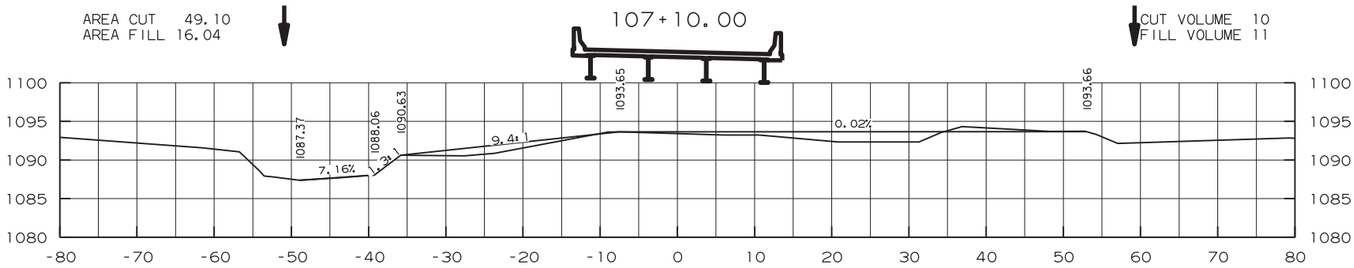
CUT VOLUME 66
FILL VOLUME 12



AREA CUT 49.10
AREA FILL 16.04

107+10.00

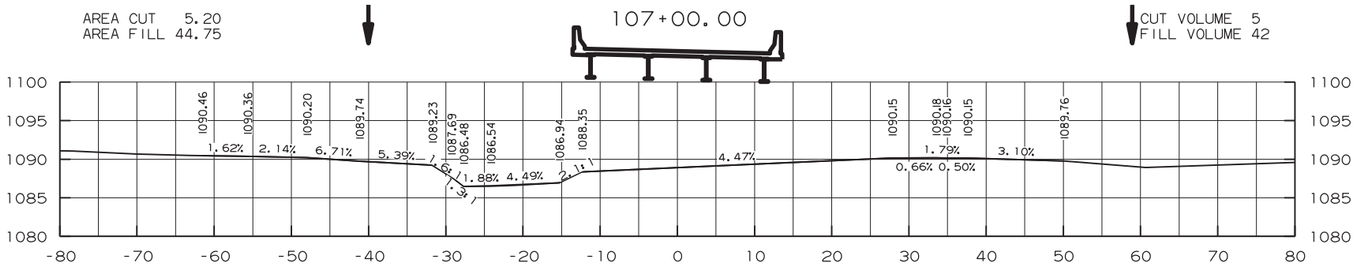
CUT VOLUME 10
FILL VOLUME 11



AREA CUT 5.20
AREA FILL 44.75

107+00.00

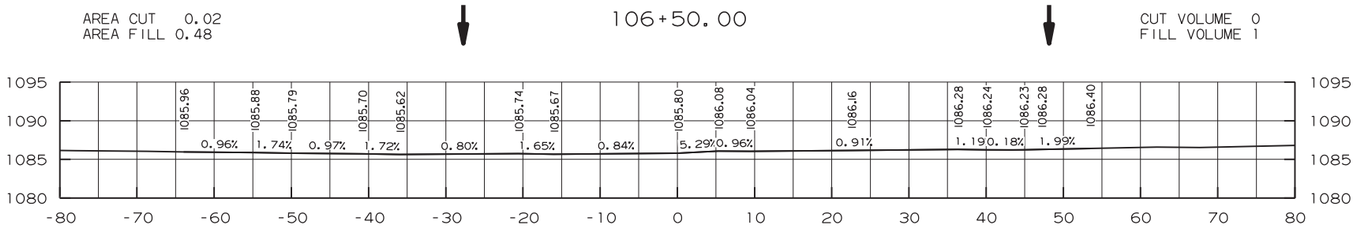
CUT VOLUME 5
FILL VOLUME 42



AREA CUT 0.02
AREA FILL 0.48

106+50.00

CUT VOLUME 0
FILL VOLUME 1



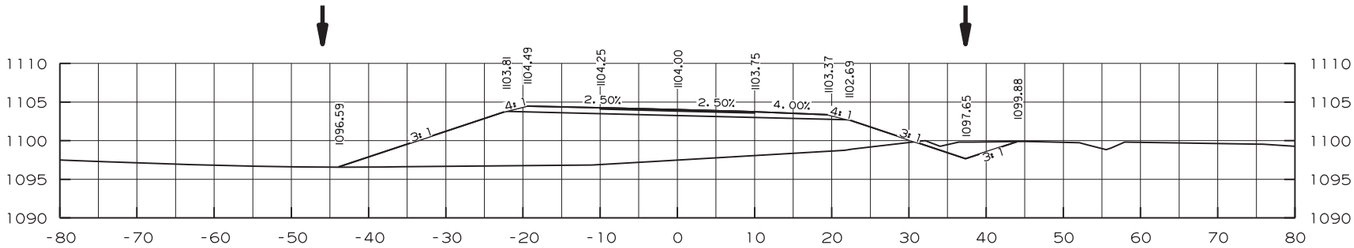
AREA CUT 0.00
AREA FILL 0.08

106+00.00

CUT VOLUME 0
FILL VOLUME 0

4 CROSS SECTIONS STA. 106+00.00 TO 107+59.85

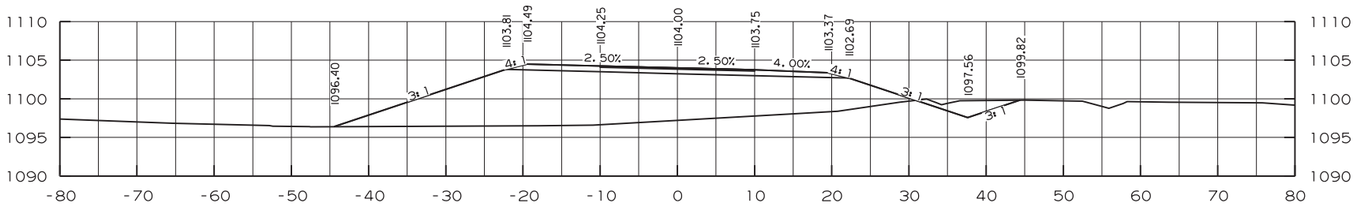
DATE REVISED	DATE PLANED	DATE REVISED	DATE PLANED
FEDERAL DIST. NO.	6	STATE	ARK.
FED.AID PROJ.NO.	FA3610	JOB NO.	
SHEET NO.	42	TOTAL SHEETS	46



AREA CUT 13.44
AREA FILL 346.20

108+59.58
END FULL GUARDRAIL WIDENING

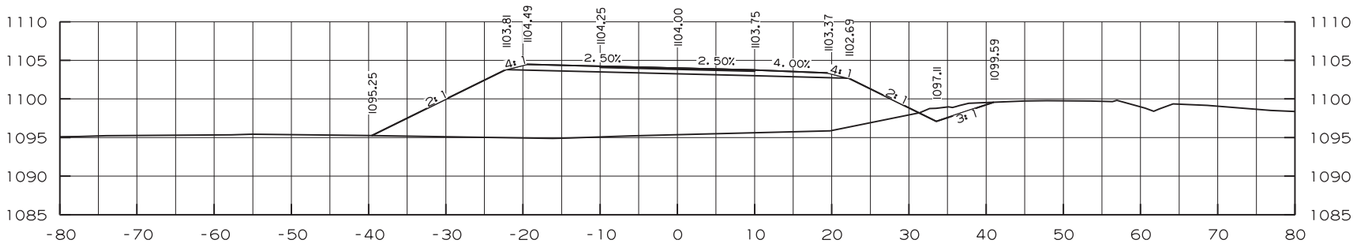
CUT VOLUME 5
FILL VOLUME 126



AREA CUT 13.95
AREA FILL 364.49

108+50.00

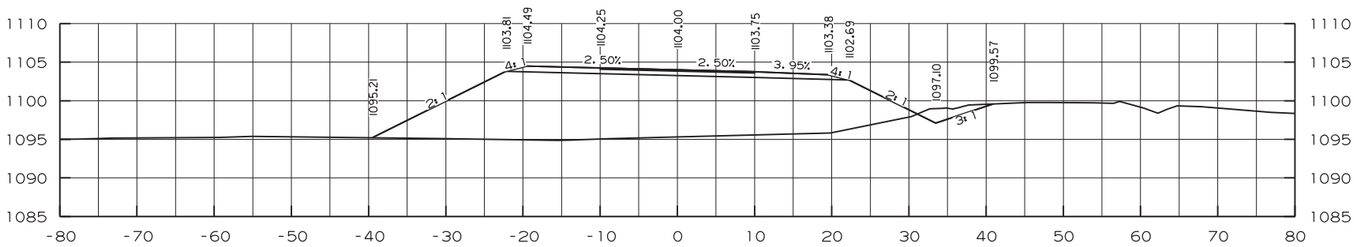
CUT VOLUME 21
FILL VOLUME 743



AREA CUT 8.82
AREA FILL 455.23

108+01.08
END RIGHT SHOULDER TRANSITION

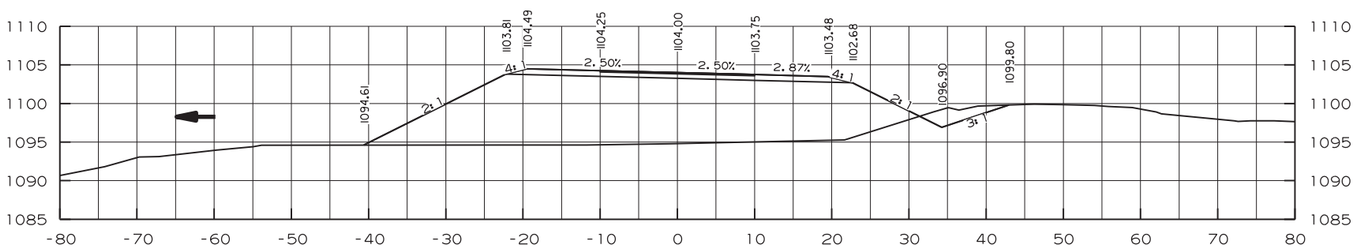
CUT VOLUME 0
FILL VOLUME 18



AREA CUT 9.38
AREA FILL 457.49

108+00.00

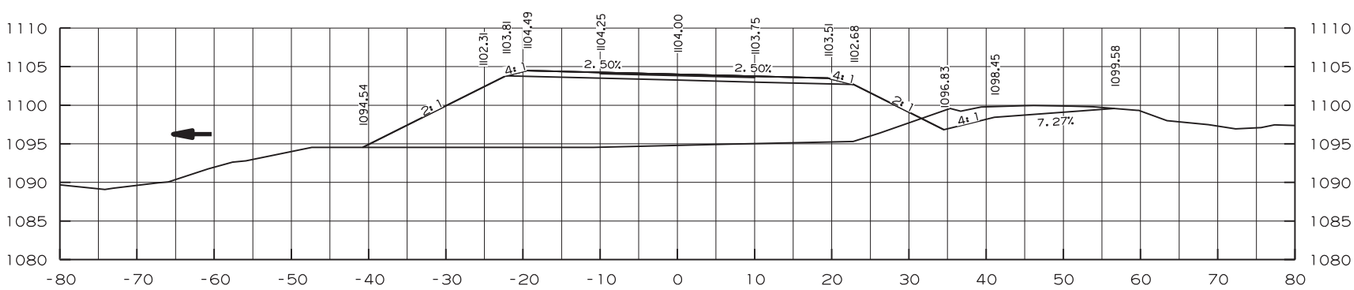
CUT VOLUME 9
FILL VOLUME 377



AREA CUT 13.66
AREA FILL 492.17

107+78.58
BRIDGE SLOPE INTERCEPT

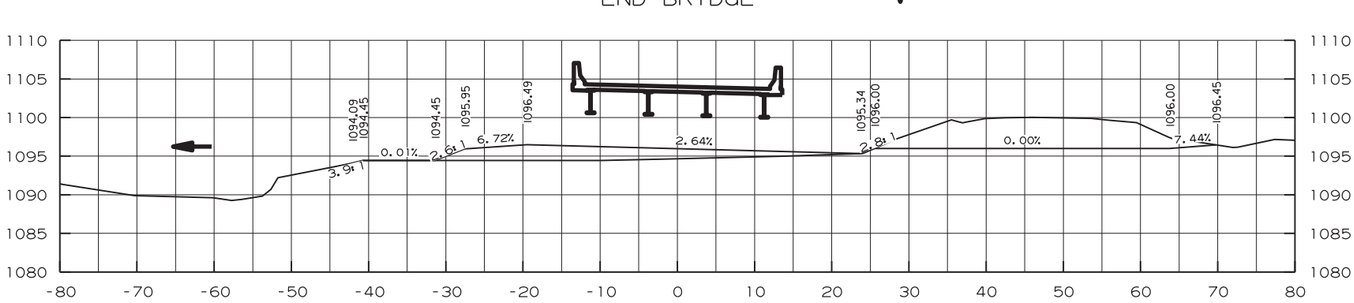
CUT VOLUME 6
FILL VOLUME 137



AREA CUT 29.18
AREA FILL 497.72

107+71.08
END BRIDGE

CUT VOLUME 24
FILL VOLUME 89



AREA CUT 124.86
AREA FILL 67.17

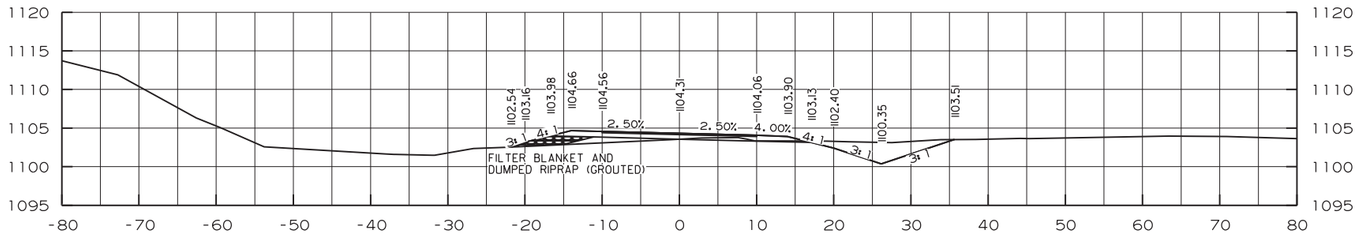
107+62.58

CUT VOLUME 13
FILL VOLUME 4

DATE REVISED	DATE PLANED	DATE REVISED	DATE PLANED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.	FA3610	43	46

4 CROSS SECTIONS STA. 107+62.58 TO 108+59.58

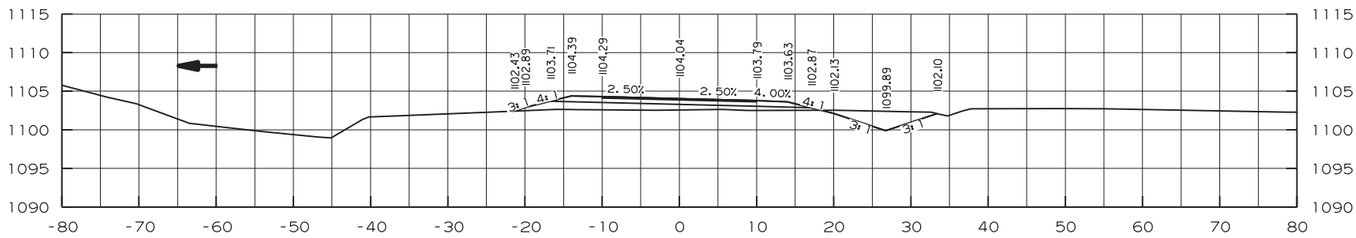
JOB NO.



AREA CUT 28.91
AREA FILL 13.50

111+50.00

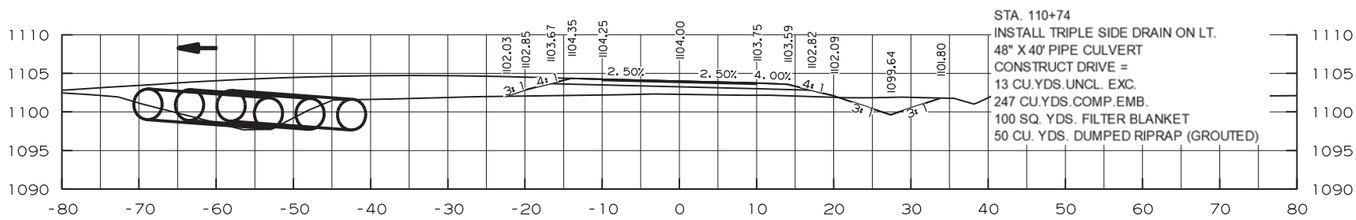
CUT VOLUME 44
FILL VOLUME 38



AREA CUT 19.05
AREA FILL 27.32

111+00.00

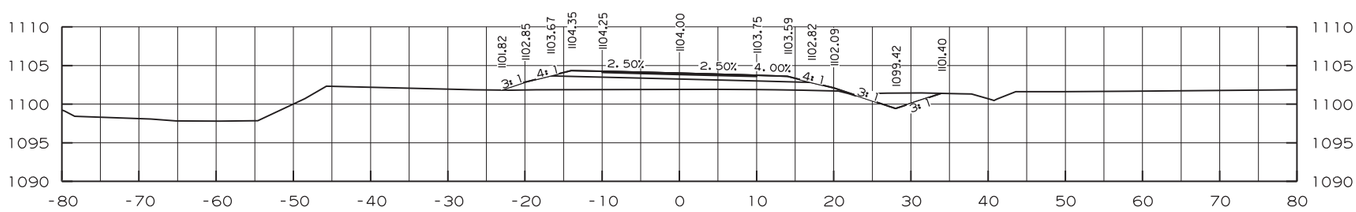
CUT VOLUME 16
FILL VOLUME 34



AREA CUT 14.70
AREA FILL 41.98

110+73.89
DRIVE ON LEFT

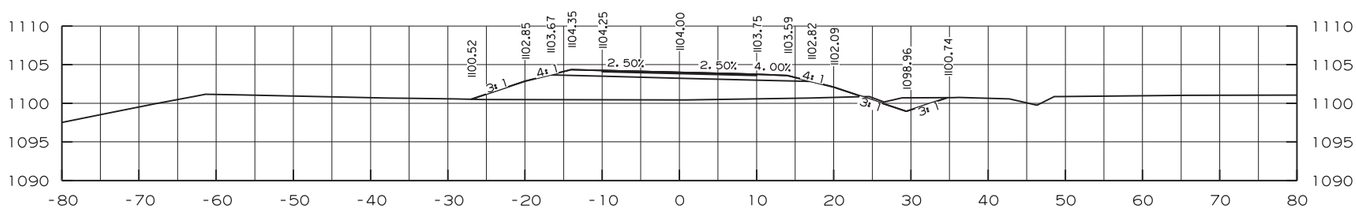
CUT VOLUME 12
FILL VOLUME 43



AREA CUT 11.52
AREA FILL 54.74

110+50.00

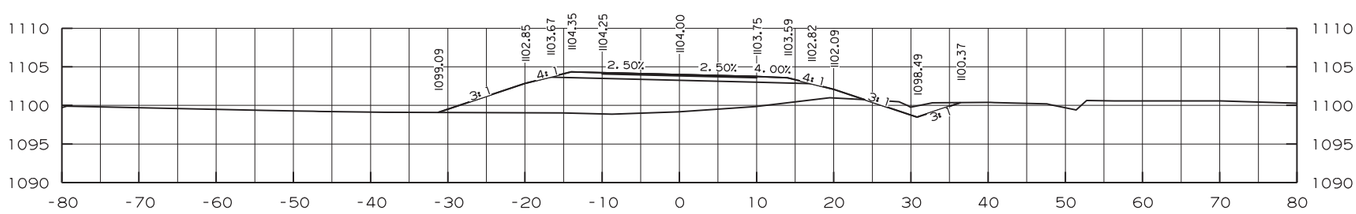
CUT VOLUME 18
FILL VOLUME 160



AREA CUT 8.36
AREA FILL 117.82

110+00.00

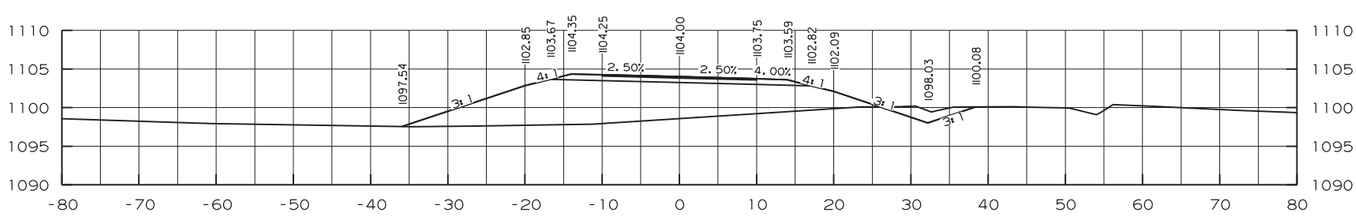
CUT VOLUME 17
FILL VOLUME 268



AREA CUT 10.18
AREA FILL 171.71

109+50.00

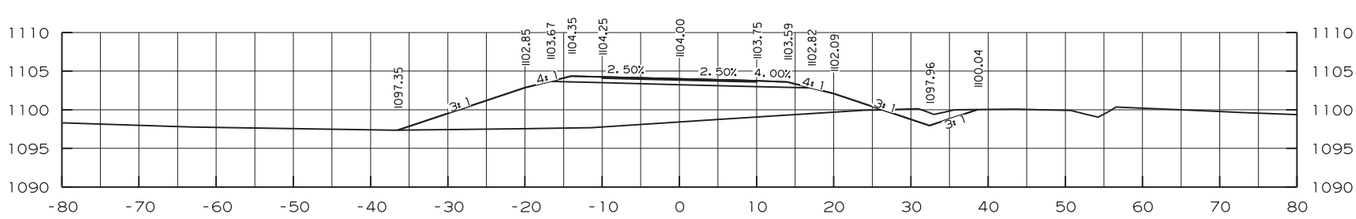
CUT VOLUME 20
FILL VOLUME 372



AREA CUT 11.31
AREA FILL 230.36

109+00.00

CUT VOLUME 3
FILL VOLUME 65



AREA CUT 11.56
AREA FILL 240.41

108+92.58
END GUARDRAIL WIDENING

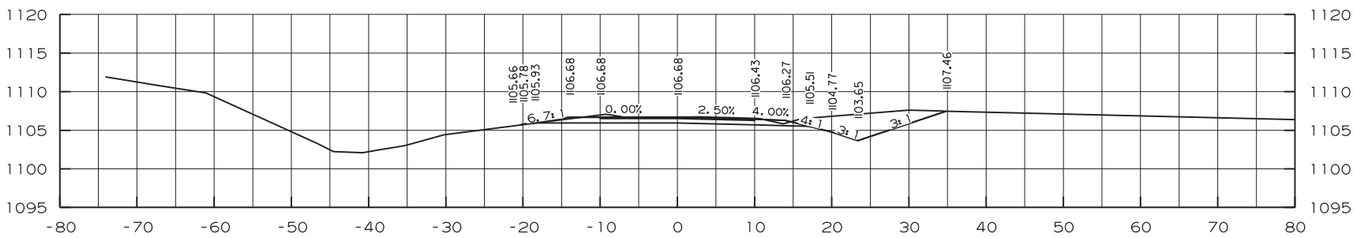
CUT VOLUME 15
FILL VOLUME 358

DATE REVISED	DATE PLANED	DATE REVISED	DATE PLANED

4 CROSS SECTIONS STA. 108+92.58 TO 111+50.00

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.	FA3610	44	46

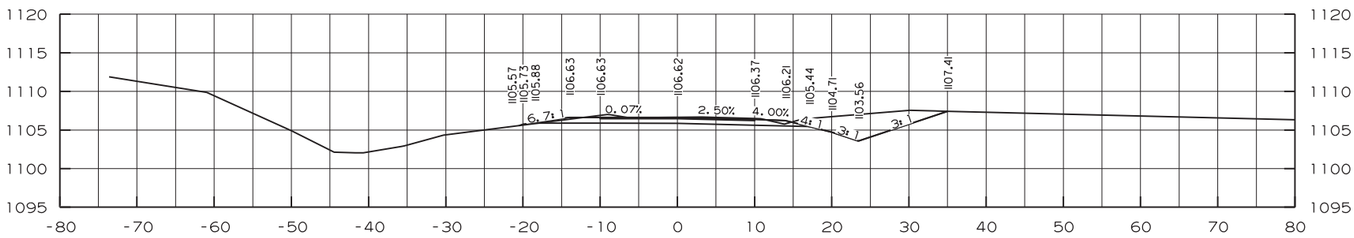
JOB NO.



AREA CUT 60.88
AREA FILL 0.15

113+02.73

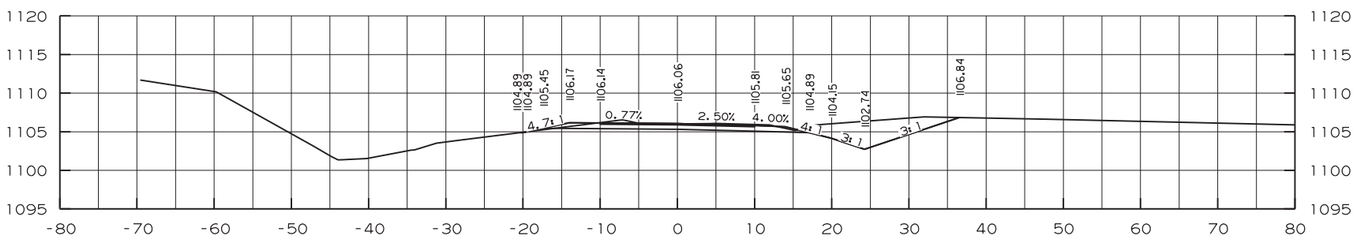
CUT VOLUME 6
FILL VOLUME 0



AREA CUT 61.35
AREA FILL 0.20

113+00.00

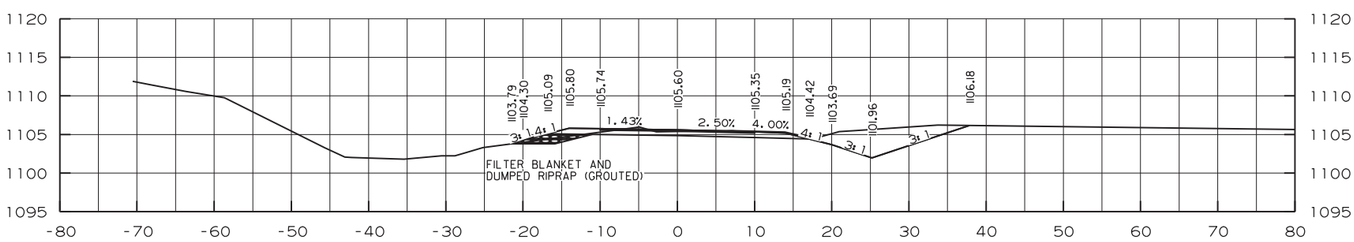
CUT VOLUME 59
FILL VOLUME 0



AREA CUT 62.87
AREA FILL 0.34

112+74.26
END FULL SUPERELEVATION

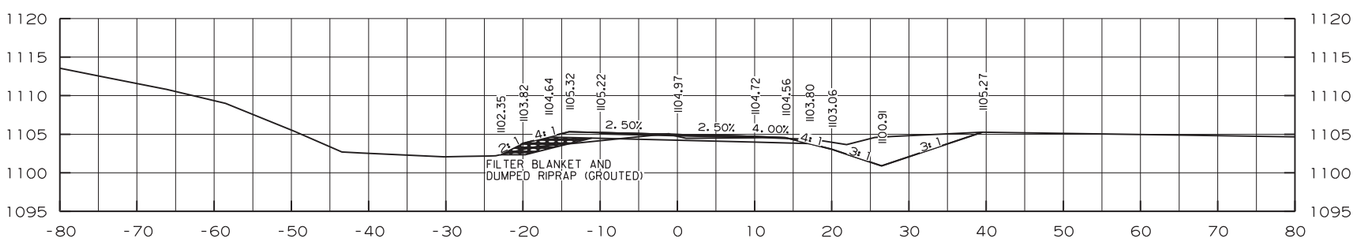
CUT VOLUME 55
FILL VOLUME 2



AREA CUT 59.20
AREA FILL 3.45

112+50.00

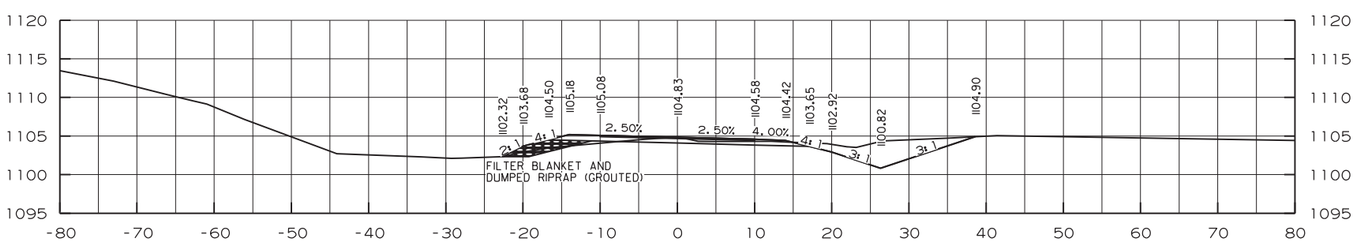
CUT VOLUME 81
FILL VOLUME 9



AREA CUT 51.87
AREA FILL 9.34

112+10.63

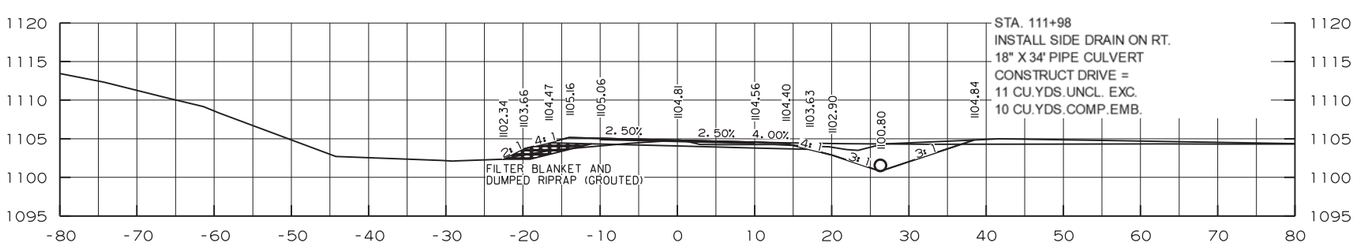
CUT VOLUME 19
FILL VOLUME 4



AREA CUT 46.80
AREA FILL 8.58

112+00.00

CUT VOLUME 3
FILL VOLUME 1



AREA CUT 45.90
AREA FILL 8.45

111+98.09
DRIVE ON RIGHT

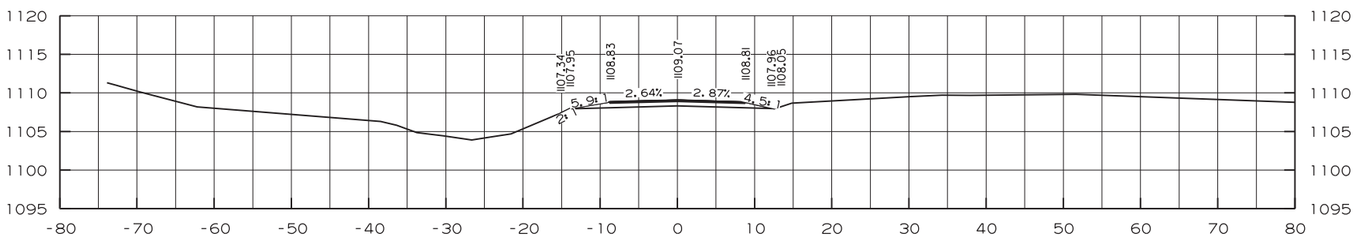
CUT VOLUME 67
FILL VOLUME 20

4 CROSS SECTIONS STA. 111+98.09 TO 113+02.73

DATE REVISED	DATE PLANED	DATE REVISED	DATE PLANED

FEDERAL DIST. NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.	FA3610	45	46

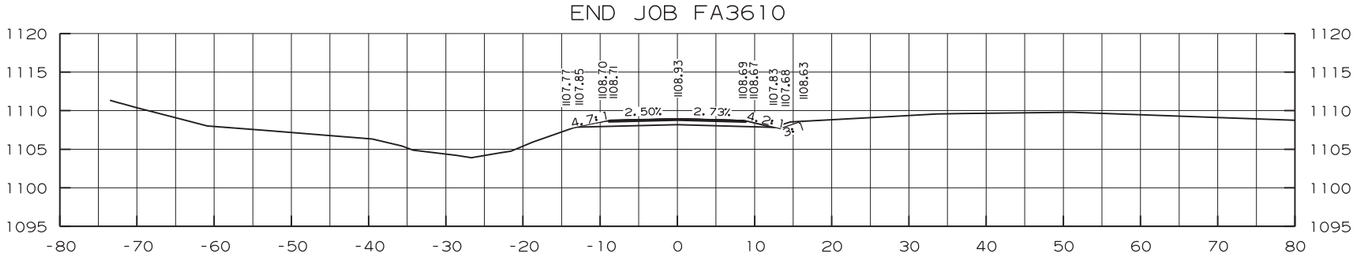
JOB NO.



AREA CUT 16.77
AREA FILL 0.17

114+00.00
MATCH EXISTING
END JOB FA3610

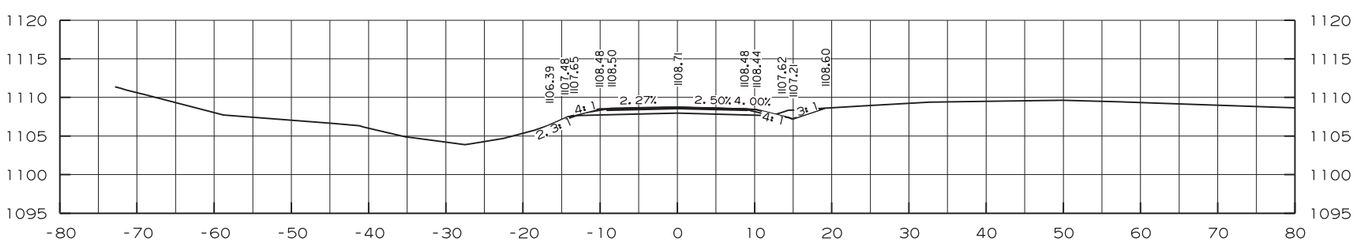
CUT VOLUME 3
FILL VOLUME 0



AREA CUT 18.04
AREA FILL 0.00

113+94.84

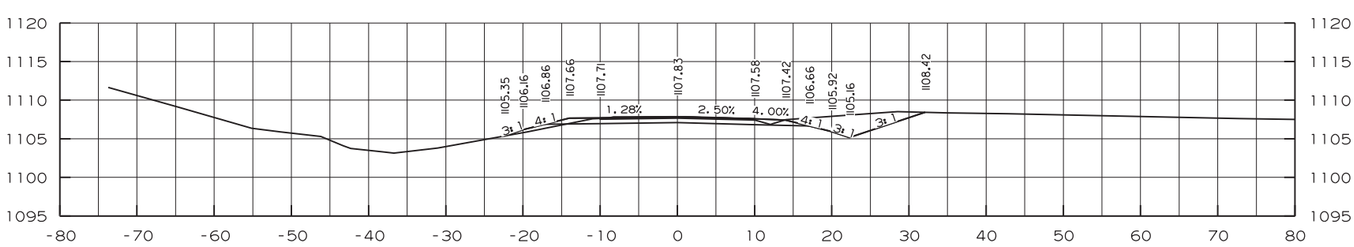
CUT VOLUME 6
FILL VOLUME 0



AREA CUT 21.12
AREA FILL 0.44

113+86.37

CUT VOLUME 46
FILL VOLUME 2



AREA CUT 46.97
AREA FILL 2.48

113+50.00
BEGIN TRANSITION

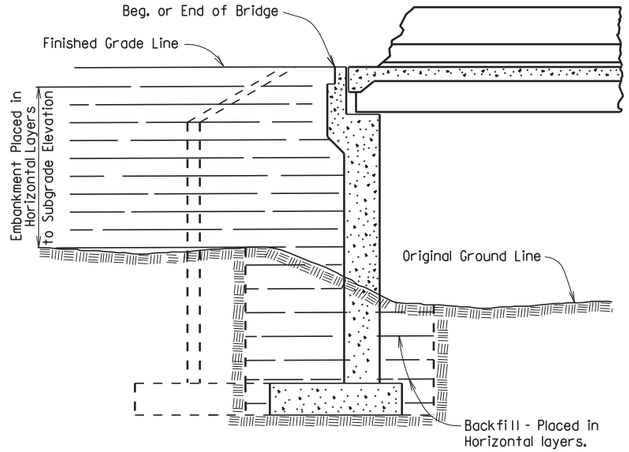
CUT VOLUME 94
FILL VOLUME 2

4 CROSS SECTIONS STA. 113+50.00 TO 114+00.00

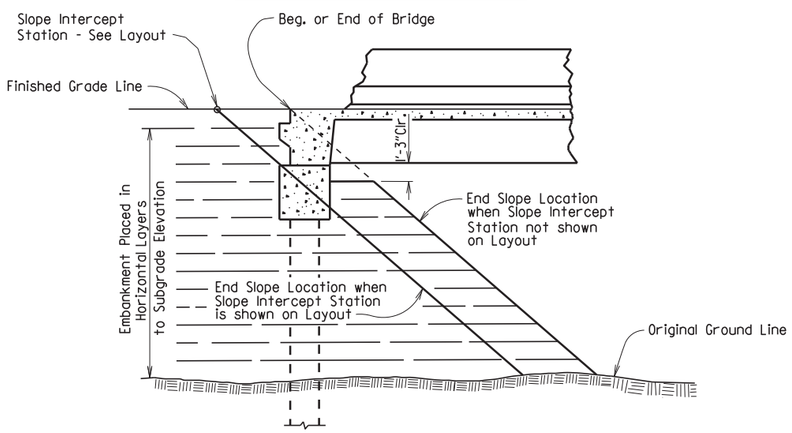
DATE REVISED	DATE PLANED	DATE REVISED	DATE PLANED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.	FA3610	46	46

JOB NO.

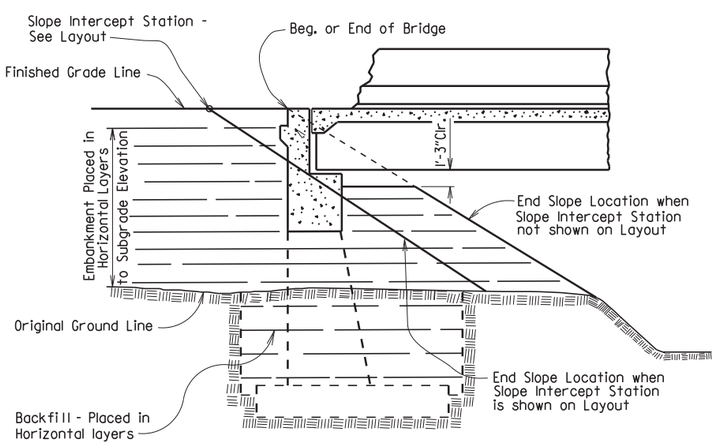
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.				
				1	EMBANKMENT & BACKFILL	55000		



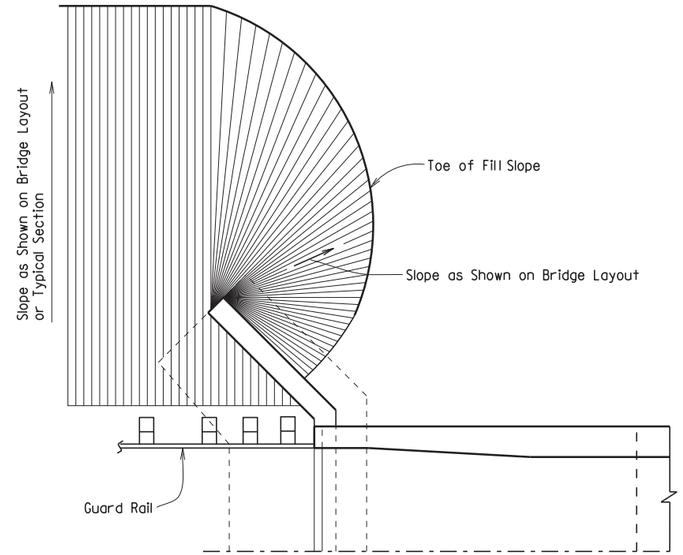
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT VERTICAL WALL ABUTMENTS



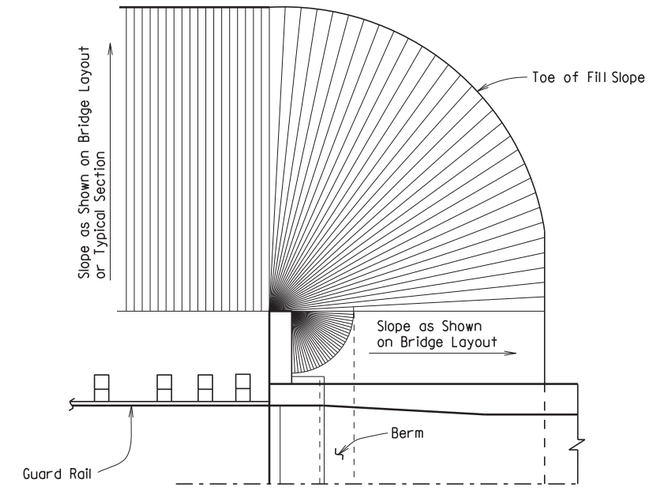
EMBANKMENT CONSTRUCTION AT SPILL-THROUGH PILE END BENTS



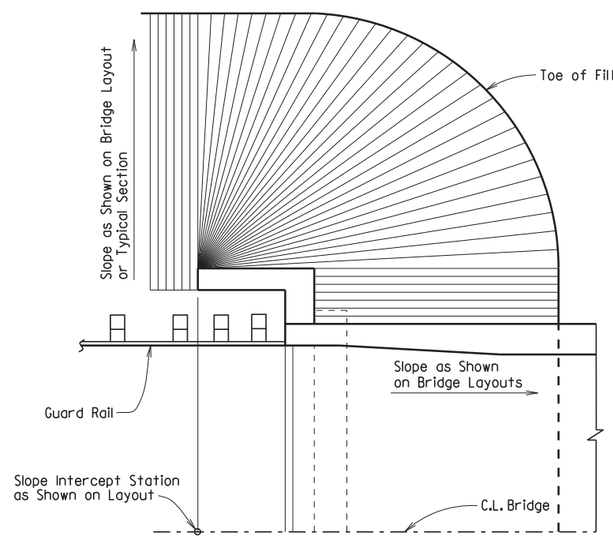
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT SPILL-THROUGH END BENTS



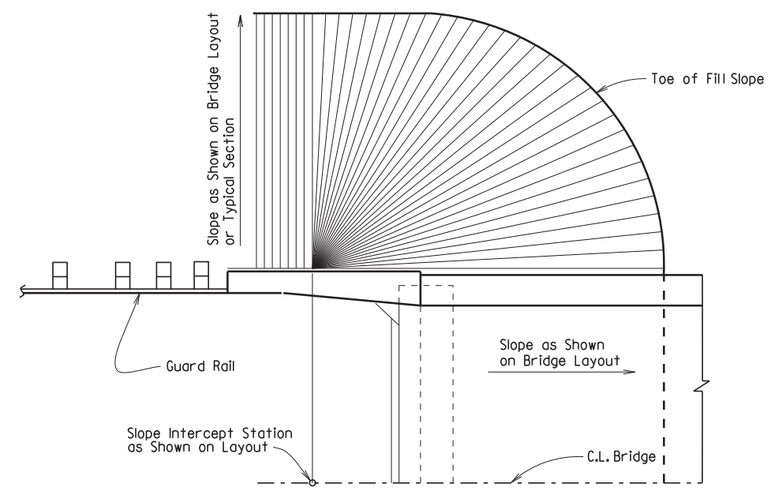
VERTICAL WALL ABUTMENTS



SPILL-THROUGH END BENTS WITH STUB WING



SPILL-THROUGH END BENTS WITH TURNBACK WING



SPILL-THROUGH END BENTS WITH TRANSITION WING

METHOD OF DETERMINING FILL SLOPE LOCATION AT BRIDGE ENDS

GENERAL NOTES

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

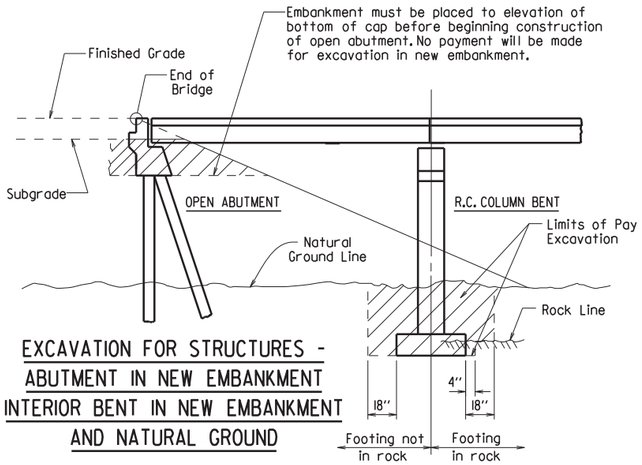
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

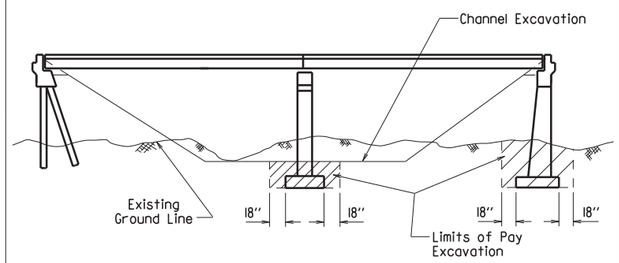
DRAWN BY:	KDH	DATE:	2-27-2014	FILENAME:	b55000.dgn
CHECKED BY:	BEF	DATE:	2-27-2014	SCALE:	NO SCALE
DESIGNED BY:	STD.	DATE:	-		

DRAWING NO. 55000

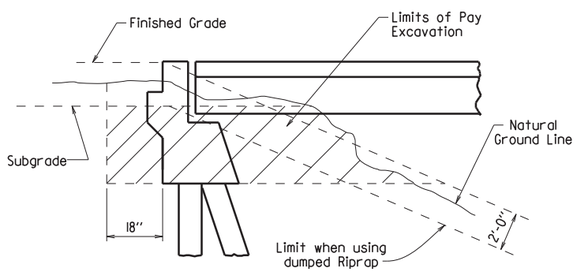
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.				
				1	RIPRAP & EXCAV. 55001			



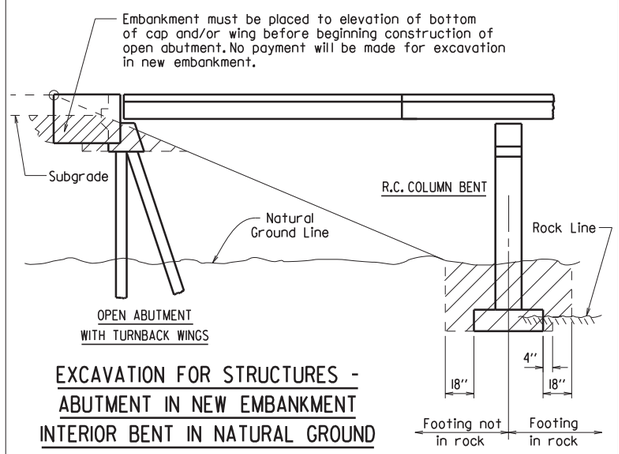
EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NEW EMBANKMENT AND NATURAL GROUND



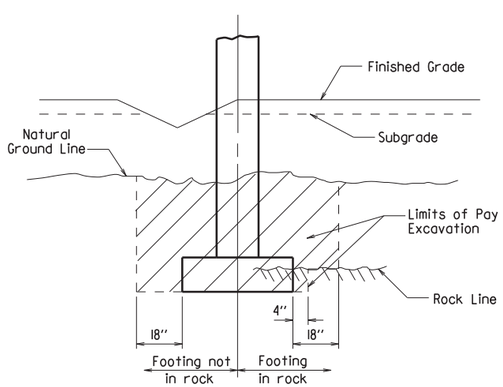
EXCAVATION FOR STRUCTURES - BRIDGE LOCATION WITH DESIGNATED CHANNEL CHANGE



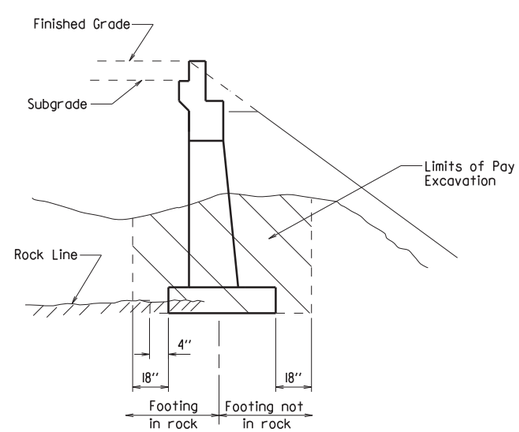
EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND



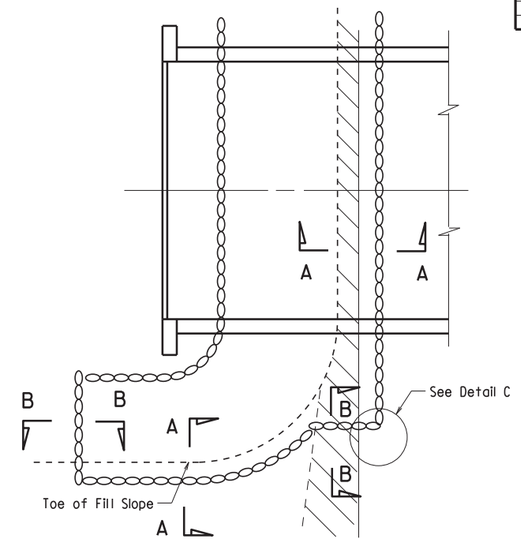
EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NATURAL GROUND



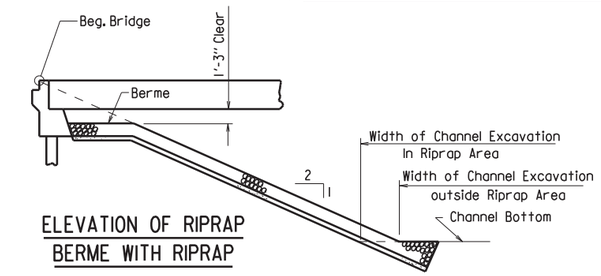
EXCAVATION FOR STRUCTURES - BENT IN ROADWAY FILL SECTION AND NATURAL GROUND



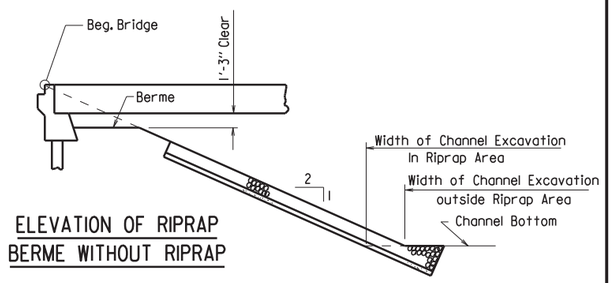
EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND AND NEW EMBANKMENT



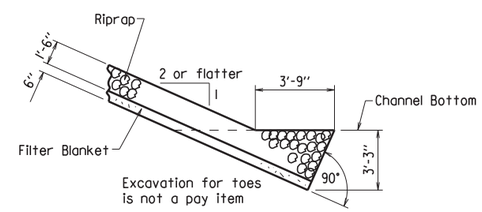
PLAN OF DUMPED RIPRAP



ELEVATION OF RIPRAP BERME WITH RIPRAP

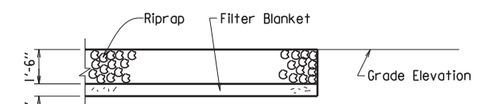


ELEVATION OF RIPRAP BERME WITHOUT RIPRAP

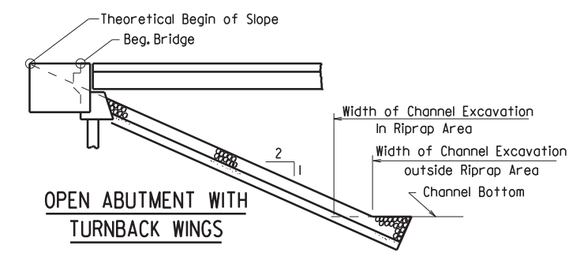


SECTION A-A

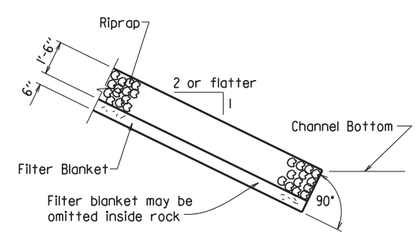
(Toe Excavation in Soil)



SECTION B-B



OPEN ABUTMENT WITH TURNBACK WINGS



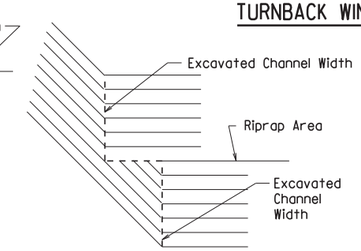
SECTION A-A

(Toe Excavation in Rock)

Note : Use this type of toe when rock is encountered which is in a stable condition.

Note : In lieu of an aggregate filter blanket, a synthetic fiber geotextile fabric complying with the requirements of Subsection 816.02(e) may be used.

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



DETAIL C

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

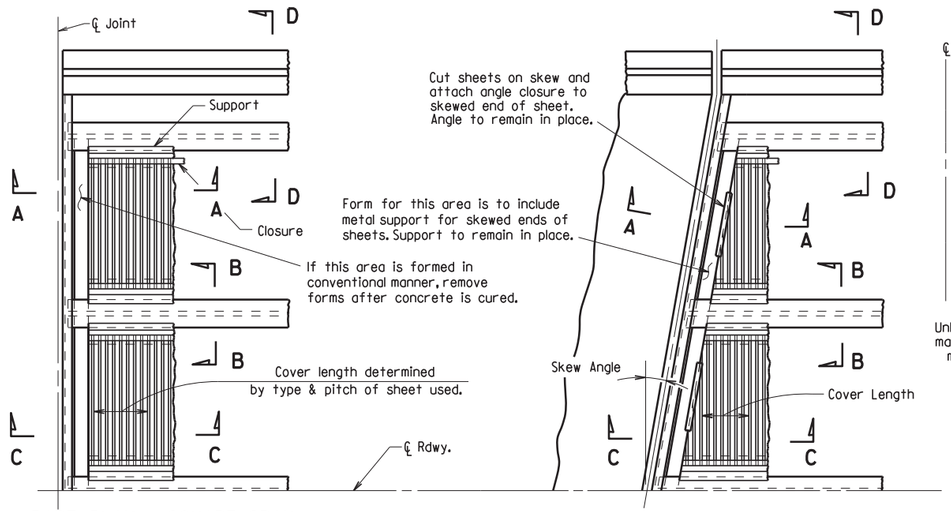
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY:	KDH	DATE:	2-27-2014	FILENAME:	b55001.dgn
CHECKED BY:	BEF	DATE:	2-27-2014	SCALE:	NO SCALE
DESIGNED BY:	STD.	DATE:			

DRAWING NO. 55001

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.				
				① BRIDGE DECK FORMS			55005	

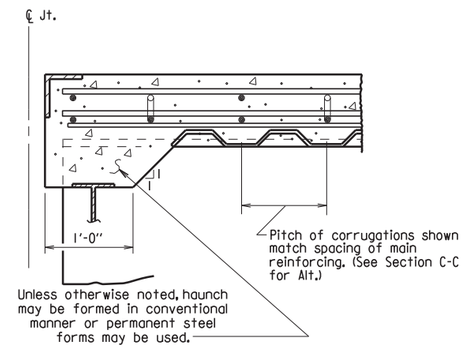


PART PLAN - SQUARE SPAN

3/8" = 1'-0"

PART PLAN - SKEWED SPAN

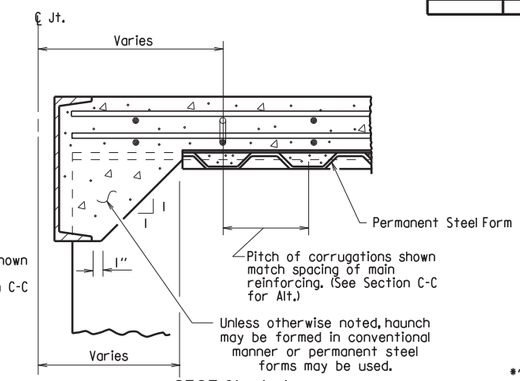
3/8" = 1'-0"



SECTION A-A

N.T.S.

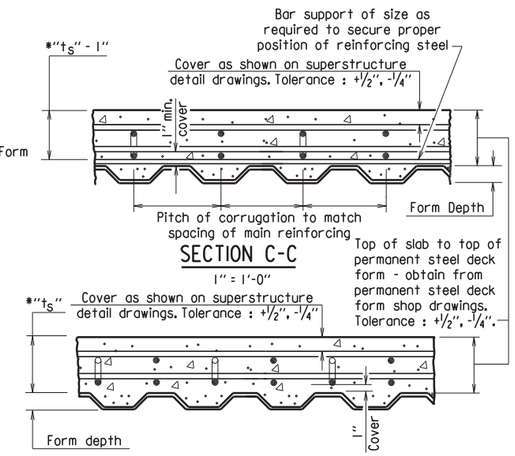
(Angle at end of span)



SECTION A-A

N.T.S.

(Channel at end of span)



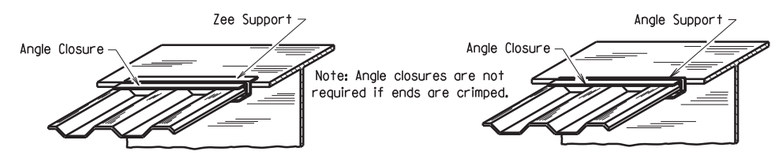
SECTION C-C

1" = 1'-0"

SECTION C-C - ALTERNATE

1" = 1'-0"

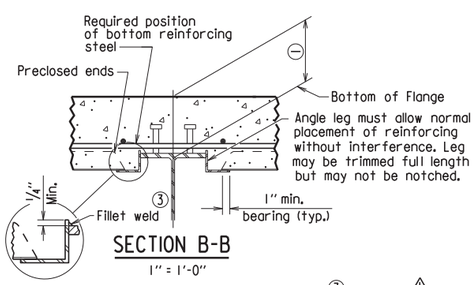
(Applicable when corrugations do not match spacing of main reinforcement)



SKETCH OF PERMISSIBLE SUPPORTS

N.T.S.

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

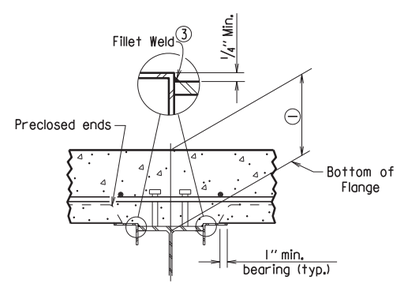


SECTION B-B

1" = 1'-0"

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

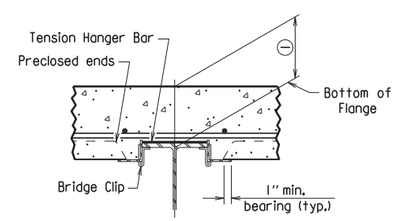
③ Minimum weld: 1/8" x 1" @ 18". More weld may be required; maximum length per weld = 1 1/2" (typ.)



SECTION B-B

1" = 1'-0"

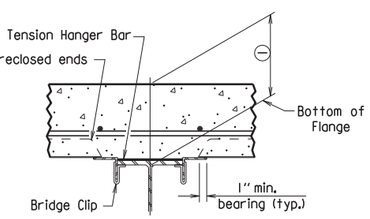
(Showing permissible support for tension flange where shear connectors are used and for all compression flanges)



SECTION B-B

1" = 1'-0"

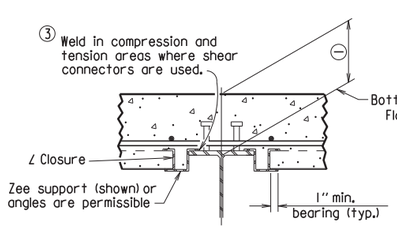
(Showing permissible support for tension flange where shear connectors are not used)



SECTION B-B

1" = 1'-0"

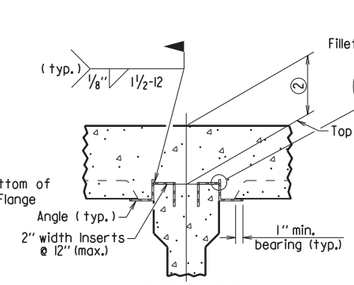
(Showing permissible support for tension flange where shear connectors are not used)



SECTION B-B

1" = 1'-0"

(Showing ∠ Closure)

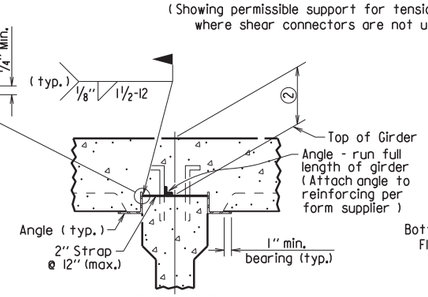


SECTION B-B

(FOR CONCRETE GIRDERS)

1" = 1'-0"

(Showing support by Insert cast in girder)

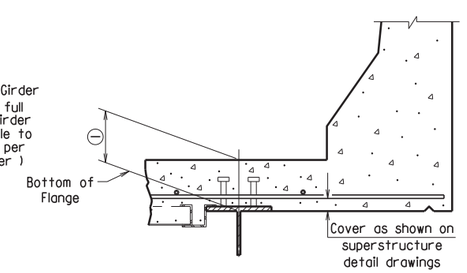


SECTION B-B

(FOR CONCRETE GIRDERS)

1" = 1'-0"

(Showing support by Strap)



SECTION D-D

1" = 1'-0"

Note: Only Bottom Reinforcing is shown.

① Distance from top of slab to bottom of top flange as measured at centerline girder and as shown on superstructure detail drawings. This dimension may vary within the following limits to maintain the grade and slab thickness tolerances : Minimum - occurs when either the top flange or the support angle leg contacts the bottom reinforcing steel; Maximum = t_s + 1 3/4" + flange thickness. See Section C-C for slab thickness tolerance between adjacent girder flanges.

② Distance from top of slab to top of girder as measured at centerline girder and as shown on superstructure detail drawings. This dimension may vary within the following limits to maintain the grade and slab thickness tolerances : Minimum - occurs when either the top of girder or the support angle leg contacts the bottom reinforcing steel; Maximum - value shown on the superstructure detail drawings when removable forms are used. See Section C-C for slab thickness tolerance between adjacent girder flanges.

⚠ Revised weld dimension by KWY, Ck'd. by BEF, 3/24/16.

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 ∠ 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

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.				
				1	GENERAL NOTES		55006	

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 Grade(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 ¾" 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 ¾" ø high-strength bolts using 13/16" ø open holes. Holes for ¾" ø high-strength bolts may be 15/16" ø if a washer is supplied for use under both the nut and head of the bolt. The use of oversized holes will not be allowed on main members unless otherwise noted. Bolts shall be placed with heads on the outside face of the exterior beam or girder webs and on the bottom of the beam or girder flanges.

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

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

STRUCTURAL STEEL (W-BEAMS):

All beams and field splice plates, and all diaphragms and connection plates attached to horizontally curved beams are considered main load carrying members and shall meet the Longitudinal Charpy V-Notch Test specified in Subsection 807.05. This work and material will not be paid for directly, but shall be considered subsidiary to the item "Structural Steel in Beam Spans (M 270, Gr. ___)".

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

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

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

All beam dimensions are based on a temperature of 60 degrees F. A tolerance of ¼" +/- 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 ¼" +/- 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 ¾" 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

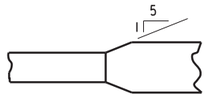
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY:	A.M.S.	DATE:	9-2-2015	FILENAME:	b55006.dgn
CHECKED BY:	B.E.F.	DATE:	9-2-2015	SCALE:	NO SCALE
DESIGNED BY:	STD.	DATE:			

DRAWING NO. 55006

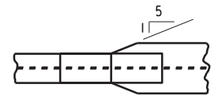
PRINT DATE: 2/11/2020

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.				
				① STEEL BRIDGE STRUCTURES 55007				

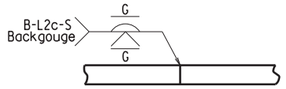


Plan-Unequal Width (Flg.)

FLANGE SPLICE

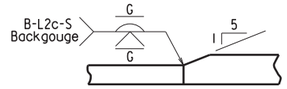


FLANGE SPLICE AT UNEQUAL BOTTOM FLANGE WIDTHS



Equal Thickness

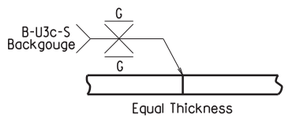
WEB & FLANGE SPLICE



Unequal Thickness

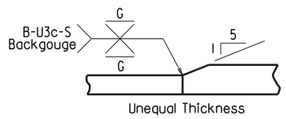
FLANGE SPLICE

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



Equal Thickness

WEB & FLANGE SPLICE

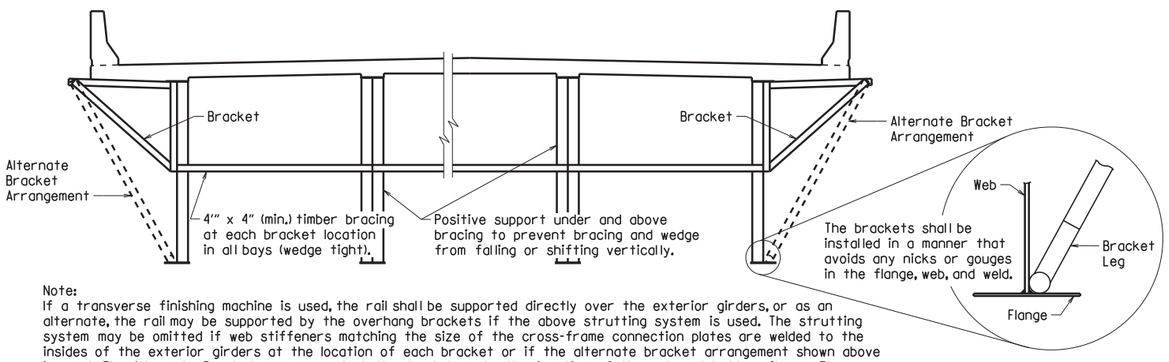


Unequal Thickness

FLANGE SPLICE

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

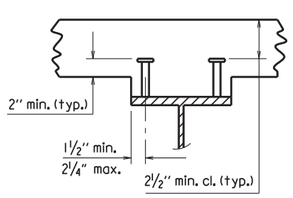
DETAILS OF WELDED SPLICES FOR PLATE GIRDERS



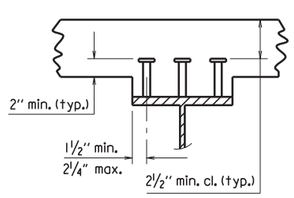
Note:
If a transverse finishing machine is used, the rail shall be supported directly over the exterior girders, or as an alternate, the rail may be supported by the overhang brackets if the above strutting system is used. The strutting system may be omitted if web stiffeners matching the size of the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

SCREED RAIL SUPPORT FOR PLATE GIRDERS

(USE WHEN WEB DEPTHS ARE 48" OR GREATER)



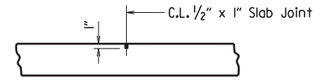
2 STUDS PER ROW



3 STUDS PER ROW

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

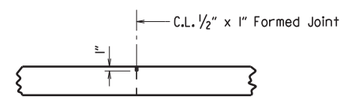
SHEAR CONNECTOR DETAIL



Use Type 3 or 4 Joint Sealer. See Subsections 501.02(h) and 501.05(j). Backer Rod filler will not be required. Joint Sealer shall be measured and paid for as Class S(AE) Concrete-Bridge. Slab Joints shall extend to the outside edge of the deck slab and shall align with open joints at the front face of the parapet. Slab joints shall be installed before the parapet railing is poured. If slab joints are to be sawed, they shall be sawed as soon as the concrete has sufficiently set to allow sawing of the joint without 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.

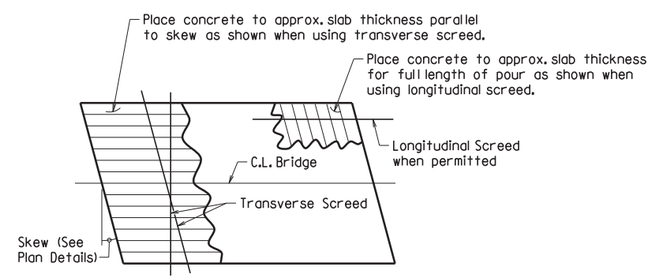
ADDITIONAL NOTES IF SIDEWALKS OR RAISED MEDIANS ARE REQUIRED:
Slab Joints shall be installed before the sidewalk or raised median is poured. After installation of the joint in the sidewalk or raised median and prior to pouring the parapet rail, the joint sealer shall be placed extending across the deck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



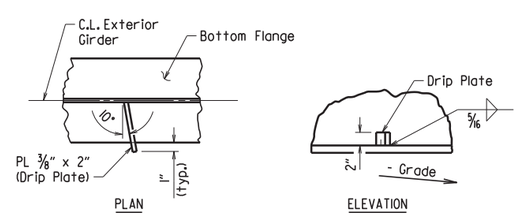
Use ½" x 1" Type 3 or 4 Joint Sealer. See Subsections 501.02(h) and 501.05(j). Backer Rod filler will not be required. Joint sealer shall be measured and paid for as Class S(AE) Concrete-Bridge. This joint shall be formed. Seal color shall be gray or other color similar to concrete.

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



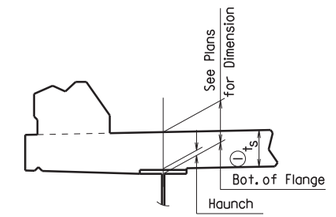
Drip Plate to be welded to the outer side of the bottom flange of the exterior girders.

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

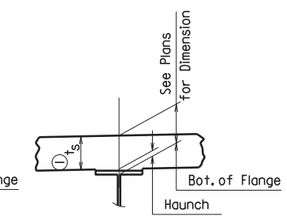
BOTTOM FLANGE DRIP PLATE

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

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



EXTERIOR BEAM OR GIRDER



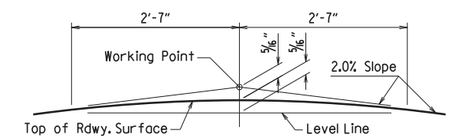
INTERIOR BEAM OR GIRDER

① Tolerance when removable deck forming is used is + ½", - ¼". 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 1¾" 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 ¾" Inclusive	¼"	
Over ¾"	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

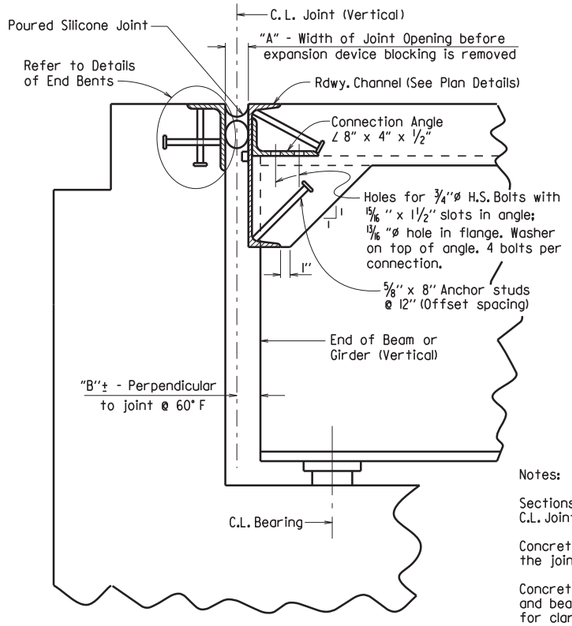
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

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

DRAWING NO. 55007

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.				
				1	POURED SILICONE JOINT			55008



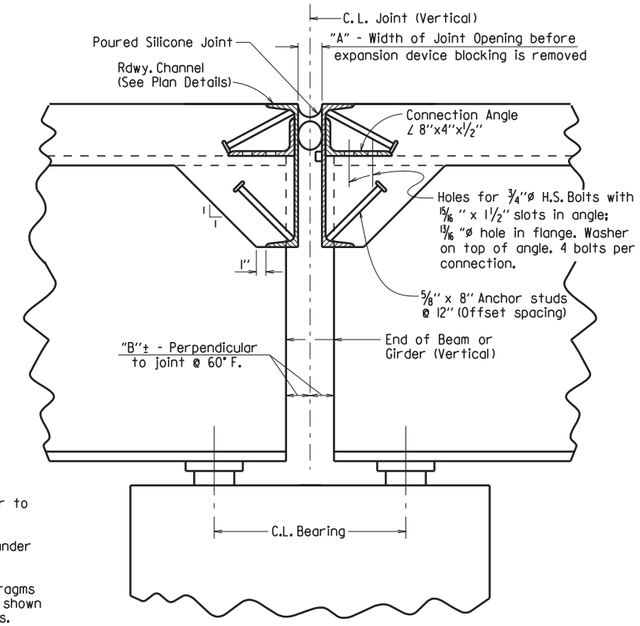
SECTION THRU JOINT AT END BENT

Notes:

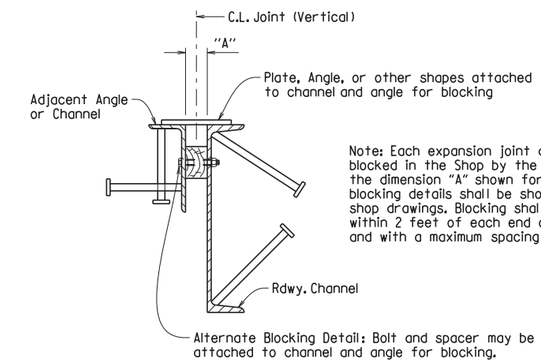
Sections are taken perpendicular to C.L. Joint.

Concrete shall be hand packed under the joint armor.

Concrete diaphragms, steel diaphragms and bearing stiffeners are not shown for clarity. See plans for details.



SECTION THRU JOINT AT INTERMEDIATE BENT



Note: Each expansion joint device shall be blocked in the Shop by the Fabricator to the dimension "A" shown for 60° F and the blocking details shall be shown on the shop drawings. Blocking shall be placed within 2 feet of each end of the device and with a maximum spacing of 8 feet.

DETAILS FOR BLOCKING EXPANSION JOINT DEVICE

EXPANSION DEVICE INSTALLATION AT END BENTS:

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

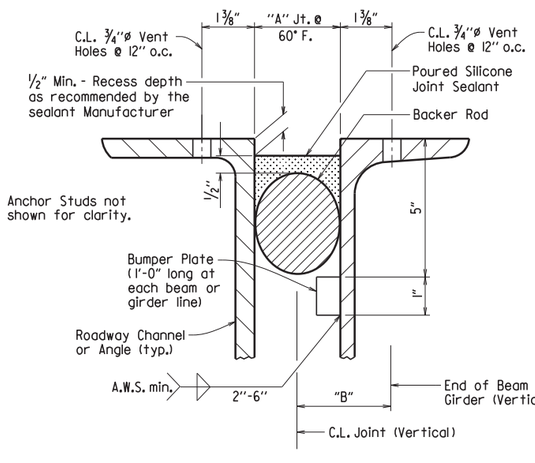
1) The concrete span pour adjacent to joint shall be placed before the end bent backwall is placed. After the end bent backwall forms are in place and the beams or girders erected, the blocked expansion device shall be installed and adjusted for grade. All connection bolts shall be fully tightened prior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

2) The backwall shall be poured to the optional construction joint after beams or girders are erected. The blocked expansion device shall be installed and adjusted for grade. All connection bolts shall be fully tightened prior to placing the deck concrete adjacent to the bent. Immediately prior to pouring the remainder of the backwall concrete, the blocking shall be removed and the opening adjusted for temperature and grade.

EXPANSION DEVICE INSTALLATION AT INTERMEDIATE BENTS:

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

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



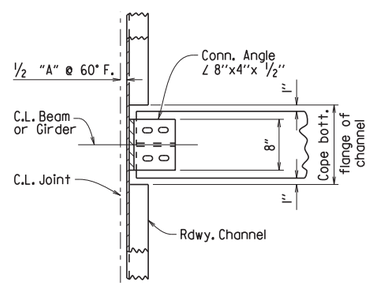
DETAIL OF POURED SILICONE JOINT

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

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

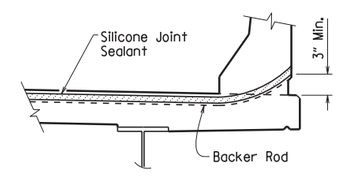
The Contractor shall verify separation of the backer rod from the joint material after the joint material has set.

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

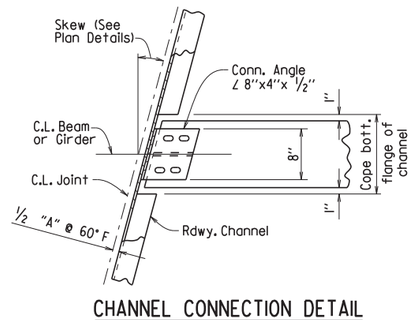


CHANNEL CONNECTION DETAIL

BENTS WITHOUT SKEW

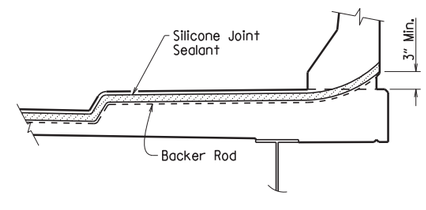


JOINT SEAL PLACEMENT AT RAIL



CHANNEL CONNECTION DETAIL

BENTS WITH SKEW



JOINT SEAL PLACEMENT AT SIDEWALK

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

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

STANDARD DETAILS FOR POURED SILICONE JOINTS

ARKANSAS STATE HIGHWAY COMMISSION

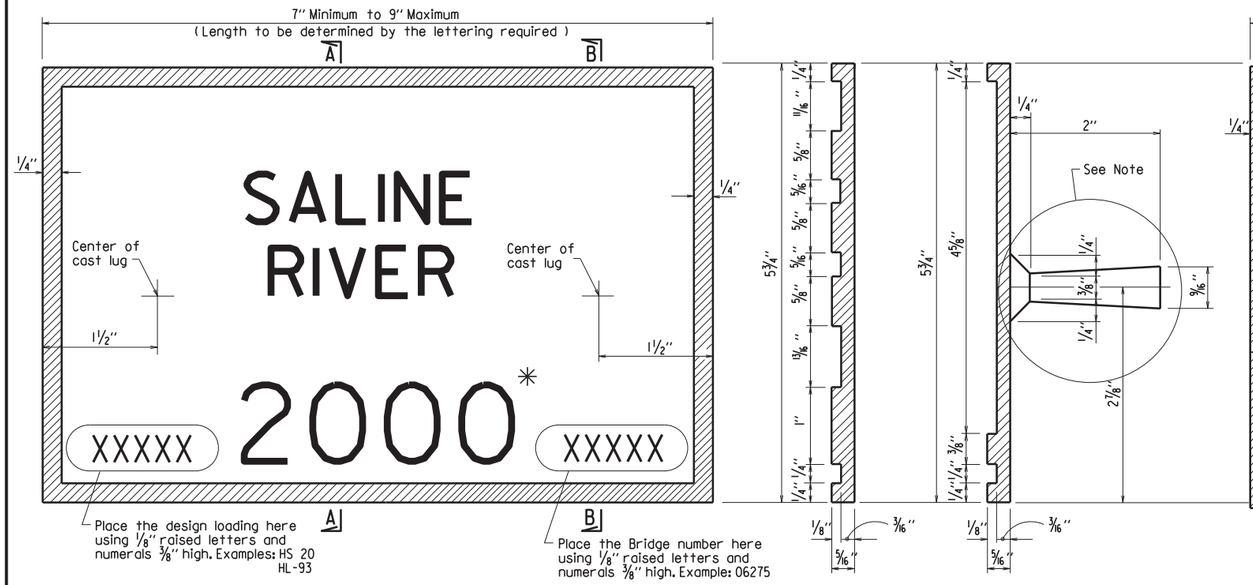
LITTLE ROCK, ARK.

DRAWN BY:	A.C.P.	DATE:	2/11/2016	FILENAME:	b55008.dgn
CHECKED BY:	A.M.S.	DATE:	2/11/2016	SCALE:	No Scale
DESIGNED BY:	STD.	DATE:	—		

DRAWING NO. 55008

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

1 TYPE C NAME PLATE 55011

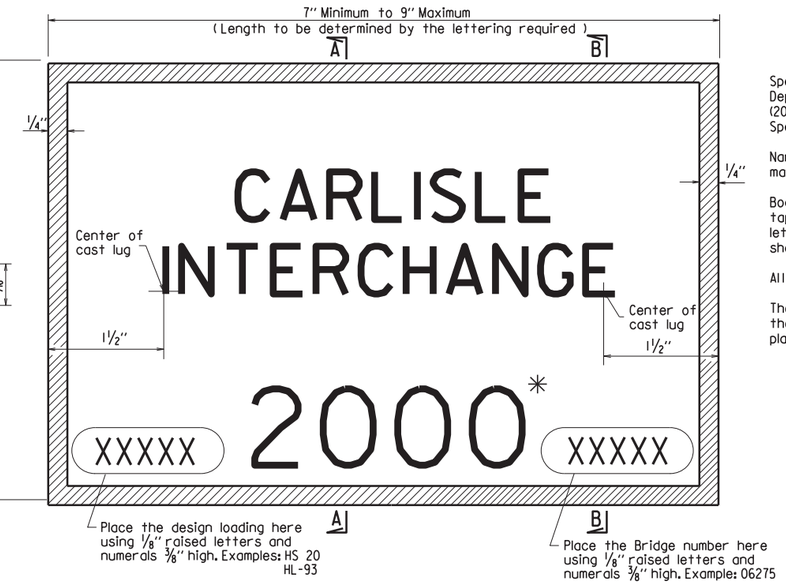


TYPICAL BRIDGE NAME PLATE-STYLE 1 - FULL SIZE
STREAM CROSSINGS

SECTION A-A

SECTION B-B

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



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

GENERAL NOTES

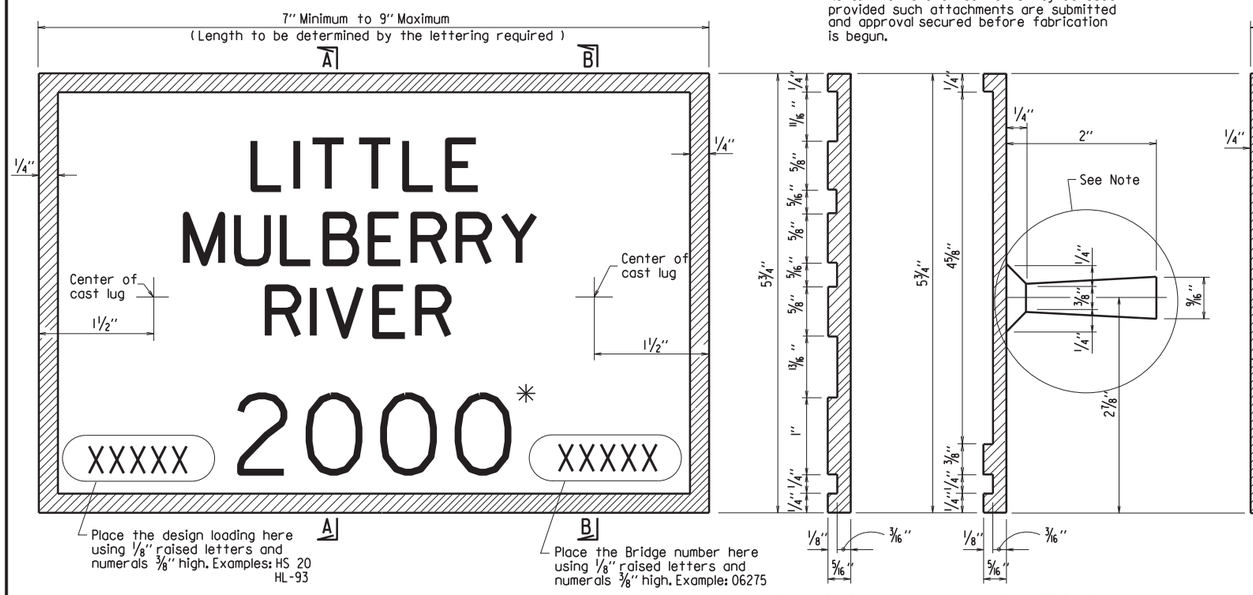
Specifications: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction, (2014 Edition) with applicable Supplemental Specifications and Special Provisions.

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

Body of plate shall be 3/16" thick and shall include two tapering cone lugs 3/8" to 9/16" 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.

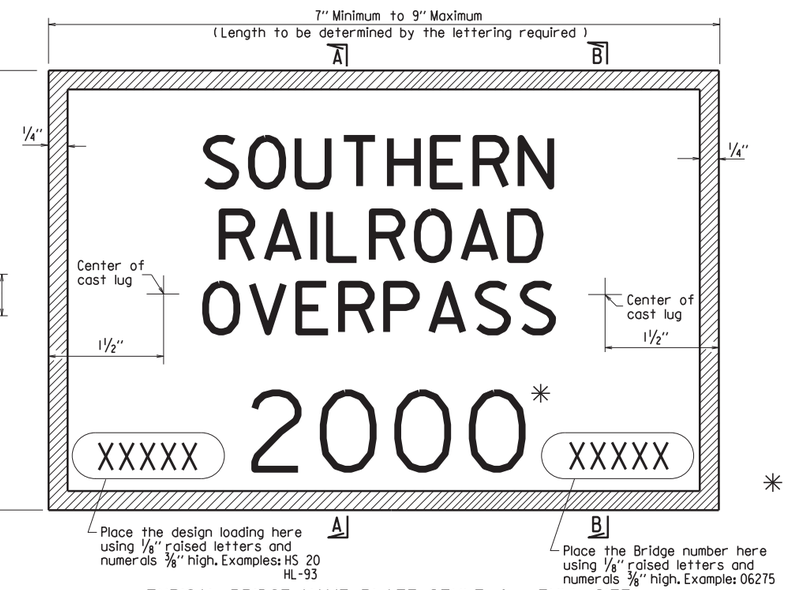
The number of plates required and the location and name on the plate for each bridge shall be as designated on the plans.



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

SECTION A-A

SECTION B-B



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

* Year in which contract is awarded.

STANDARD DETAILS FOR
TYPE C BRIDGE NAME PLATES

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

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

DRAWING NO. 55011

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.				
						STEEL H-PILES		55020

1

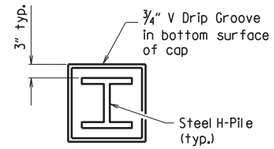
GENERAL NOTES FOR STEEL H-PILES:

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

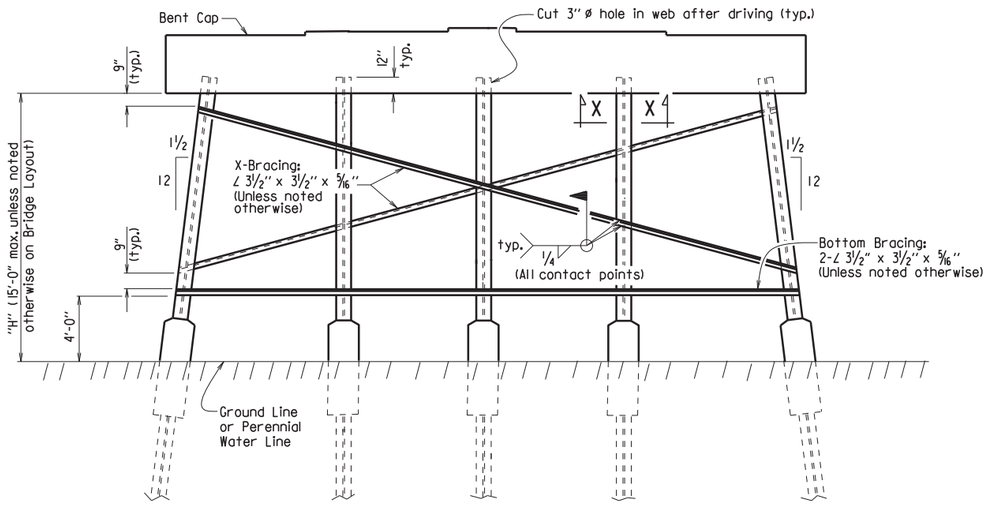
See Bridge Layout and Bent Details for pile size, estimated length, spacing, pile anchorage (if required) and for driving information.

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".



VIEW X-X



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

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

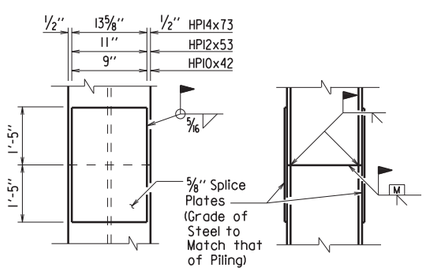
Omit X-Bracing and Bottom Bracing when "H" is 5 feet or less.

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

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

TYPICAL DETAILS OF H-PILE TRESTLE INTERMEDIATE BENT

(Shown with Partial Height Encasement)



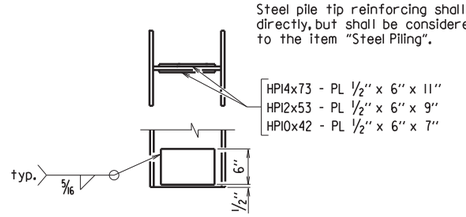
The Contractor may for his own convenience and at his own expense provide as many as three splices per pile. Minimum spacing between splices shall be 5 feet.

TYPICAL SPLICE DETAILS

⚠ H-pile splicers manufactured by Associated Pile and Fitting Corporation, LB Foster Piling, Skyline Steel or equivalent may be used in lieu of the "Typical Splice Details" shown. H-pile splicers shall match the same grade of steel specified for the piling and shall be welded to the pile with a 5/16" 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 Specifcations for Highway Construction (2014 Edition).

Notes:
Steel pile tip reinforcing not required when approved H-Pile driving points are used.

Steel pile tip reinforcing shall not be paid for directly, but shall be considered subsidiary to the item "Steel Piling".



REINFORCING DETAIL FOR STEEL H-PILE TIP

GENERAL NOTES FOR H-PILE ENCASEMENTS:

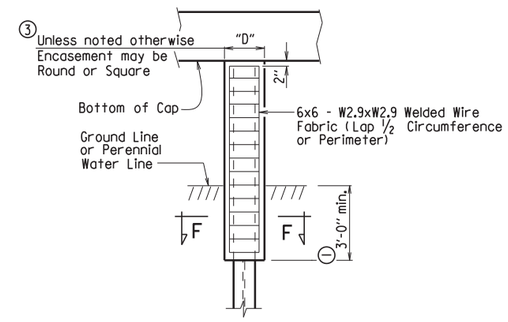
⚠ See Bridge Layout for additional notes, any pile encasement restrictions and required location of pile encasements.

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.

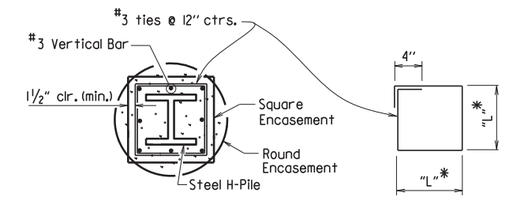
Welded Wire Fabric shall conform to AASHTO M 55 or M 221. Galvanized Corrugated Steel Pipe shall conform to AASHTO M 36 and M 218.

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

4 (Shown with Encasement to Bottom of Cap)

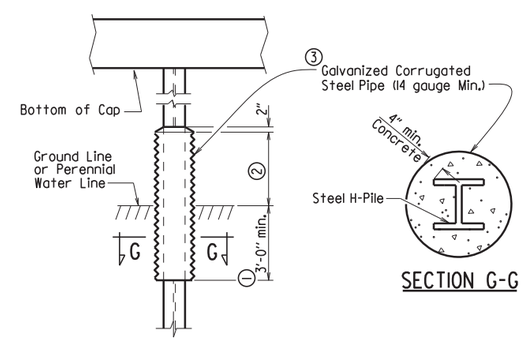


SECTION F-F

*Measured out-to-out of bar.

TABLE OF VARIABLES FOR PILE ENCASEMENT

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



SECTION G-G

ALTERNATE PILE ENCASEMENT DETAIL FOR STEEL H-PILES

(Shown with Partial Height Encasement)

1 Unless otherwise noted on Bridge Layout.

2 3'-0" minimum or as shown on Bridge Layout.

3 Encasement dimensions shall be sized to maintain a minimum concrete cover of 4" from the H-Pile. Reinforcement shall be sized to provide a minimum concrete cover of 1 1/2" and a minimum clearance of 1 1/4" from the pile.

4 Alternate pile encasement, when not extended to bottom of cap, shall have 2" concrete taper for water runoff as shown in the Partial Height Encasement detail.

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

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

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9235
CHARLES R. ELLIS

BRIDGE ENGINEER

STANDARD DETAILS FOR STEEL H-PILES AND PILE ENCASEMENTS

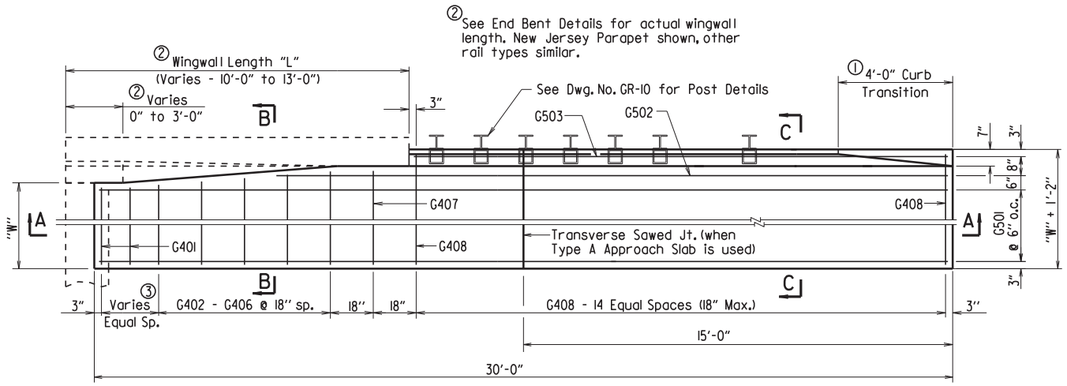
ARKANSAS STATE HIGHWAY COMMISSION

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:	—		

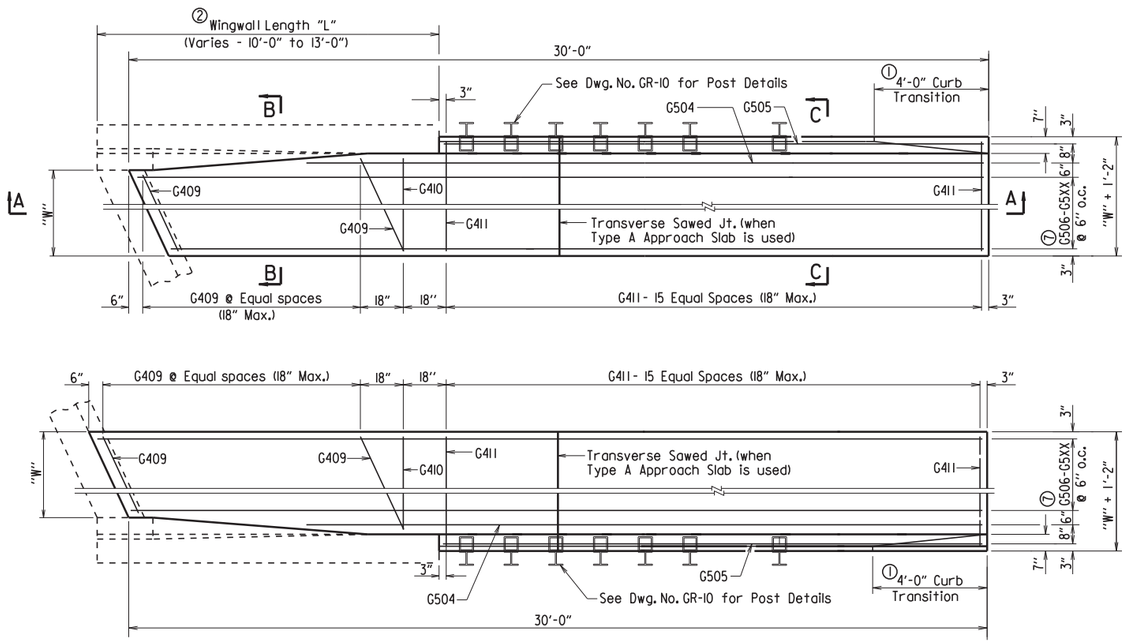
DRAWING NO. 55020

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
9/2/15				6	ARK.			
				JOB NO.				
				①	TYPE A GUTTERS		55030A	

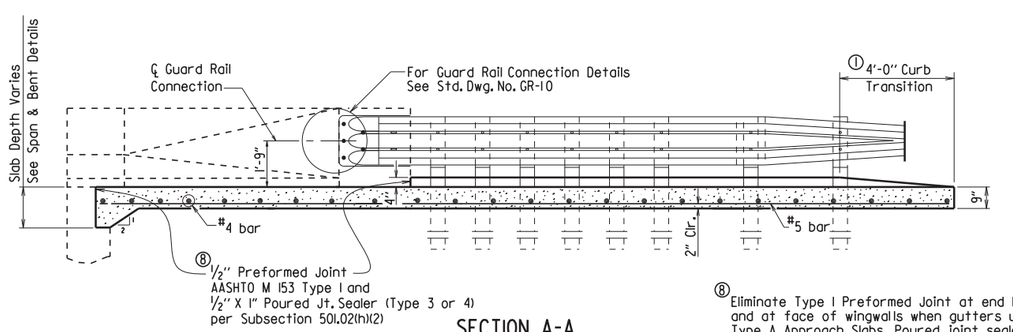


③ Number of G401 bars vary with wingwall length - See Bar List

HALF PLAN OF APPROACH GUTTERS FOR SQUARE BRIDGE



PLAN OF APPROACH GUTTERS FOR SKEWED BRIDGE

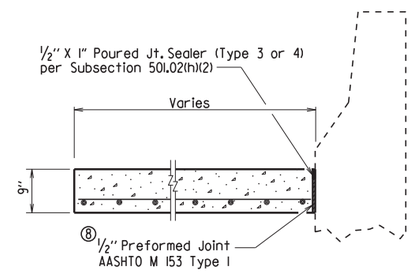


SECTION A-A

⑧ Eliminate Type I Preformed Joint at end bent backwall and at face of wingwalls when gutters used with Type A Approach Slabs. Poured joint sealer is required, however backer rod shall be eliminated.

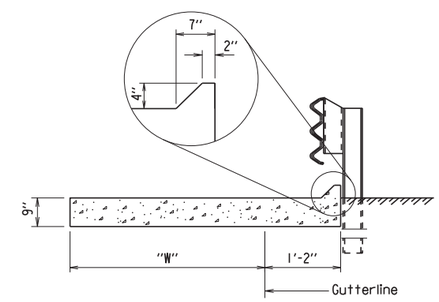
① Construct gutter curb with height-transition as shown if drop inlet is not placed at end of gutter.

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



SECTION B-B

N.T.S.



SECTION C-C

N.T.S.

BAR LIST FOR ONE TYPE A GUTTER

	Mark	No. Req'd. for Width "W" △ 2'-0"	3'-0"	4'-0"	6'-0"	8'-0"	Length
Square Bridge	G401	④	④	④	④	④	"W"- 4"
	G402-G406	1 each	1 each	1 each	1 each	1 each	"W"-3" to "W"+2"
	G407	1	1	1	1	1	"W"+3"
	G408	15	15	15	15	15	"W"+ 10"
	G501	4	6	8	12	16	29'-8"
	G502	1	1	1	1	1	(35'-5") - "L"
	G503	1	1	1	1	1	30'-8"-"L"
Skewed Bridge	G409	⑥	⑥	⑥	⑥	⑥	⑤
	G410	1	1	1	1	1	"W"+3"
	G411	16	16	16	16	16	"W"+ 10"
	G504	1	1	1	1	1	⑤
	G505	1	1	1	1	1	⑤
	G506 - G5XX ⑦	1 each	1 each	1 each	1 each	1 each	⑤

④ 0 for "L" = 10'
1 for "L" = 11'
2 for "L" = 12'
2 for "L" = 13'

⑦ G509 for "W" = 2' △
G511 for "W" = 3'
G513 for "W" = 4'
G517 for "W" = 6'
G521 for "W" = 8'

⑤ Bar Lengths vary with Skew and Wingwall Length.

⑥ No. Req'd. varies with Skew and Wingwall length.

QUANTITIES FOR ONE SQUARE APPROACH GUTTER

(FOR INFORMATION ONLY)

"W" Width (ft.)	Reinforcing Steel (Lbs.)	Concrete (Cu. Yds.)
△ 2	210	2.55
3	285	3.40
4	360	4.25
6	515	5.90
8	665	7.55

Quantities are based on "L" = 10'-0".

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

△ Revised to add "W" = 2'-0"; By LJB
Checked By: KWY 9/2/15

GENERAL NOTES

All concrete shall be Class S or Class S(AE) or mixture used for Portland Cement Concrete Pavement and shall be poured in the dry.

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

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

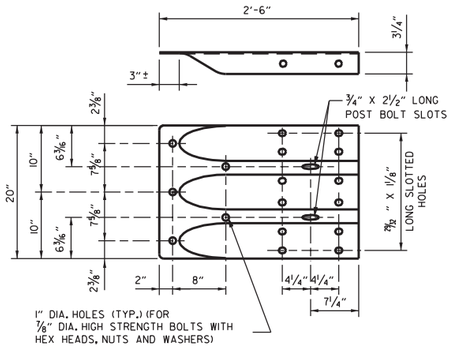
STANDARD DETAILS FOR TYPE A APPROACH GUTTERS

ARKANSAS STATE HIGHWAY COMMISSION

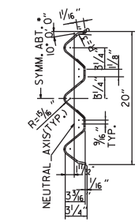
LITTLE ROCK, ARK.

DRAWN BY:	A.M.S.	DATE:	2/27/2014	FILENAME:	b55030a.dgn
CHECKED BY:	K.W.Y.	DATE:	2/27/2014	SCALE:	3/8" = 1'-0" or As Shown
DESIGNED BY:	STD.	DATE:			

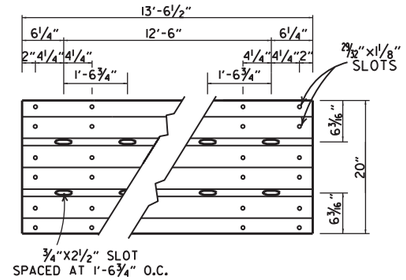
DRAWING NO. 55030A



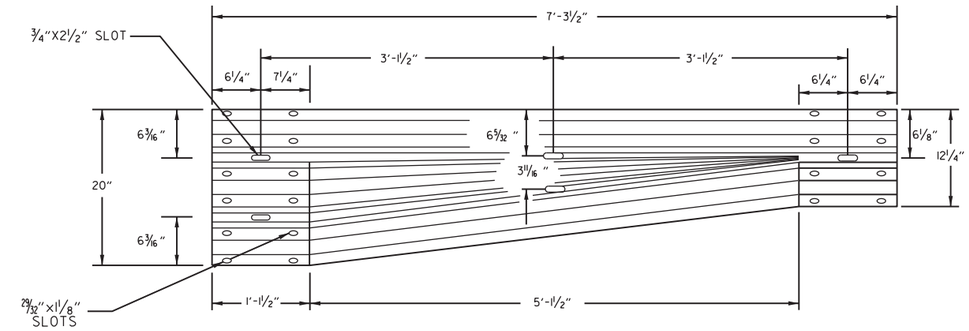
SPECIAL END SHOE



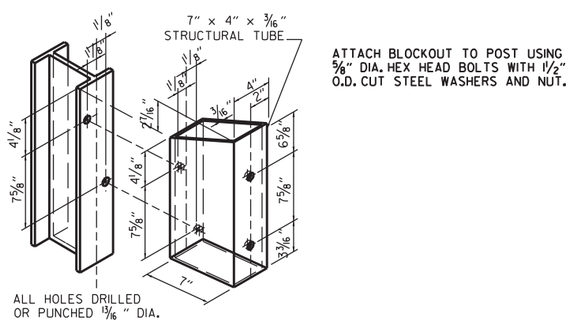
SECTION THRU THRIE BEAM RAIL



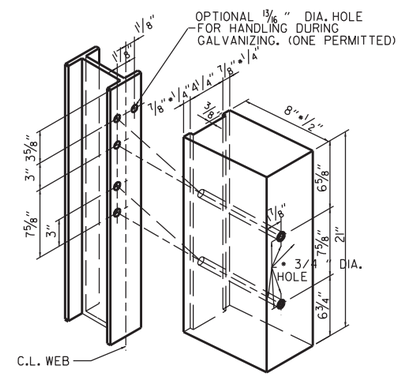
THRIE BEAM RAIL



TRANSITION SECTION



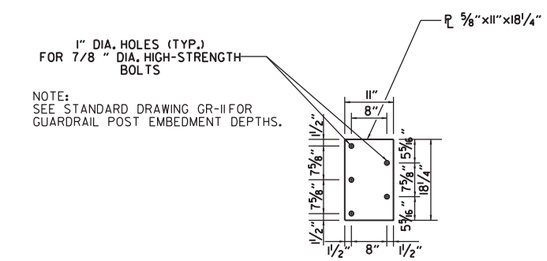
STRUCTURAL STEEL TUBING BLOCKOUT DETAIL



ALL HOLES 13/16" DIAMETER EXCEPT AS NOTED

HOLE PUNCHING DETAIL FOR STEEL POST & WOOD OR PLASTIC BLOCKOUTS

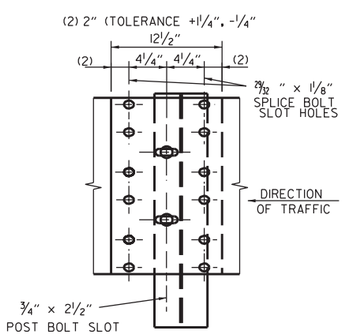
NOTE: BLOCKS SHALL BE THE SAME TYPE THROUGHOUT THE PROJECT LIMITS.



NOTE:
SEE STANDARD DRAWING GR-11 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 7/8" DIA. HIGH STRENGTH BOLTS, WITH THE HEADS PLACED ON THE TRAFFIC FACE. WASHERS SHALL BE USED UNDER THE HEAD AND NUT. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED AND SHALL CONFORM TO SUBSECTION 807.06.



THRIE BEAM RAIL SPLICE AT POST

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.

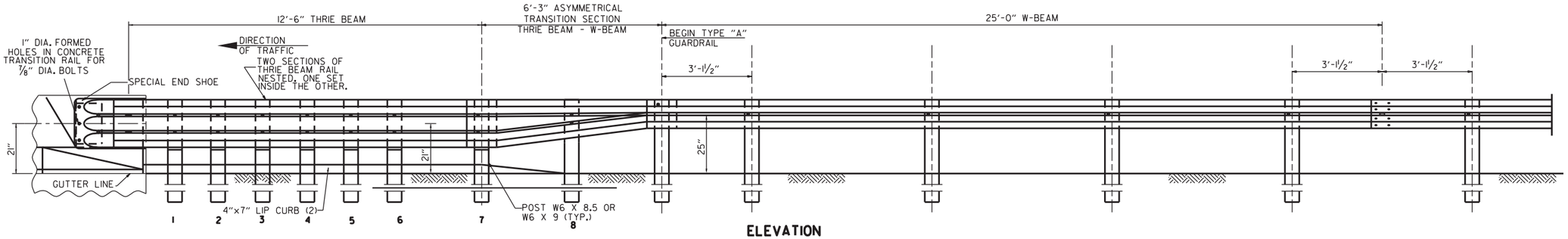
WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7f (1400 f) OR NO. 1 1350 f SOUTHERN PINE.

DATE	REVISION	FILMED
11-07-19	RENAMED AND REVISED REFERENCES	
11-16-17	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 1"	
11-29-07	ADDED PLASTIC BLOCKOUTS	
11-10-05	ADDED NOTE FOR ATTACHING STEEL BLOCKOUT	
11-18-04	REVISED GENERAL NOTES	
10-9-03	REVISED GENERAL NOTES	
04-10-03	REVISED GENERAL NOTES	
08-22-02	REVISED NOTE (2)	
06-29-00	MOVED DIMENSION LINES	
05-18-00	ADDED NOTE	
03-30-00	DRAWN & ISSUED	

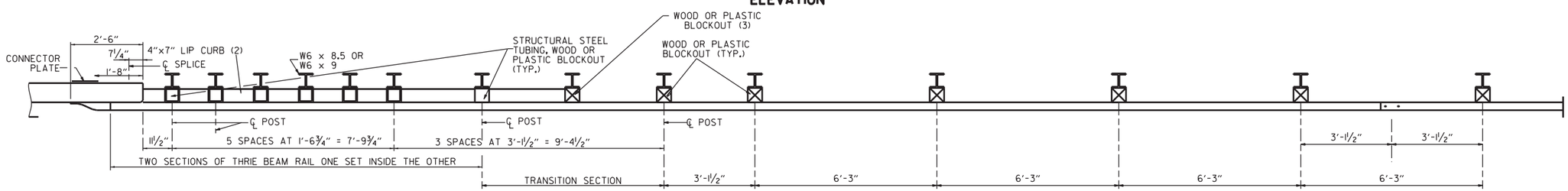
ARKANSAS STATE HIGHWAY COMMISSION

GUARDRAIL DETAILS

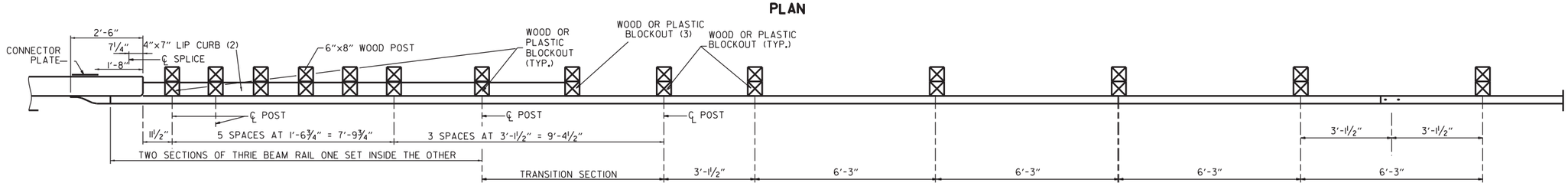
STANDARD DRAWING GR-10



ELEVATION



PLAN



PLAN

(1) VERIFY BOLT SPACING FROM RAIL TRANSITION PRODUCER.
(2) REFER TO APPROACH GUTTER DETAILS.
(3) LENGTH OF BLOCKOUT ON POST 8 TO BE MODIFIED TO FIT RAIL WIDTH.

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.

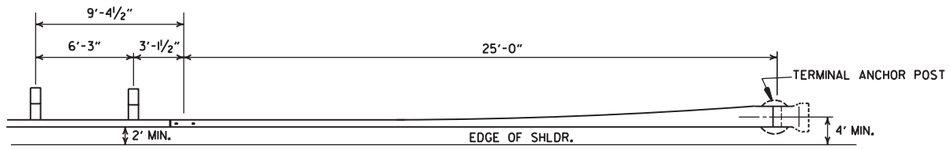
WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7f (1400 f) OR NO. 1 1350 f SOUTHERN PINE.

DATE	REVISION	FILMED
05-14-20	REVISED NOTES	
11-07-19	RENAMED & REVISED REFERENCES	
11-16-17	RE-DRAWN FROM STD. DWG. GR-10 & ISSUED	

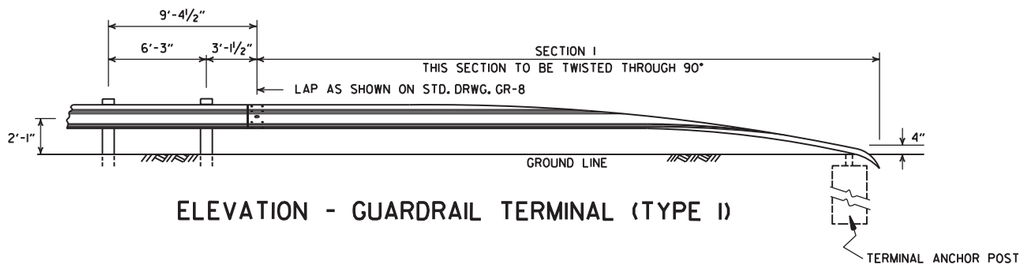
ARKANSAS STATE HIGHWAY COMMISSION

GUARDRAIL DETAILS

STANDARD DRAWING GR-12

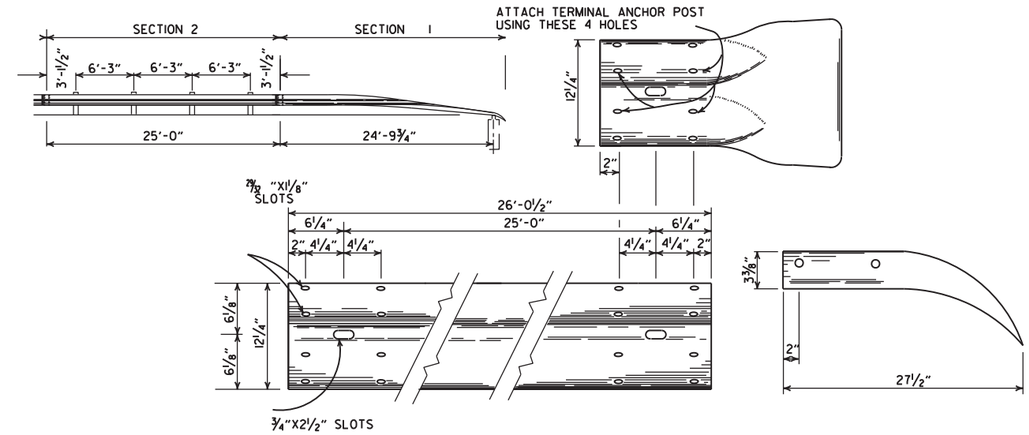


PLAN - GUARDRAIL TERMINAL (TYPE I)



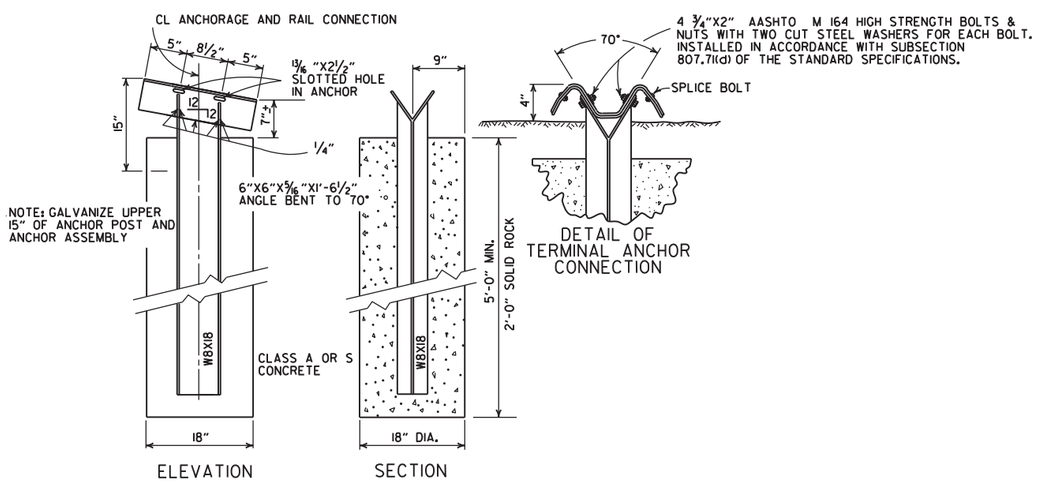
ELEVATION - GUARDRAIL TERMINAL (TYPE I)

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



SECTION 1

TERMINAL SECTION



ELEVATION

SECTION

NOTE: RAIL MEMBERS MAY BE BOLTED TO ANGLE AT TERMINAL ANCHOR AND THE TWO ASSEMBLIES POSITIONED TO PROPER ALIGNMENT PRIOR TO PLACING CONCRETE AROUND 8 WF 17 POST IF CONTRACTOR SO DESIRES.

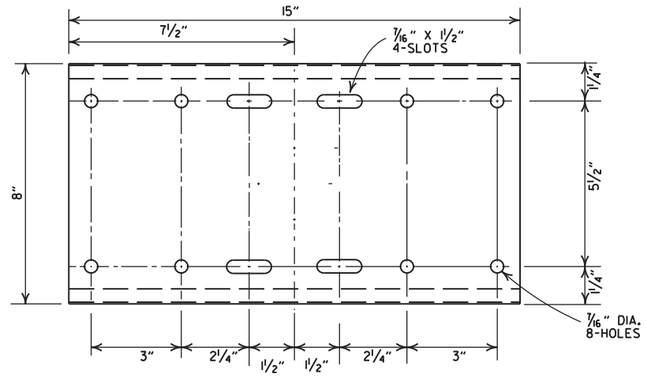
DETAIL OF TERMINAL ANCHOR POST (TYPE I)

DATE	REVISION	FILMED
11-07-19	RENAMED & REVISED REFERENCE.	
11-16-17	REVISED GUARDRAIL HEIGHT AND LOCATION OF POSTS	
07-14-10	RAISED HEIGHT OF GUARDRAIL 1"	
06-26-97	REVISED LAP NOTE	
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

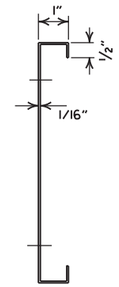
ARKANSAS STATE HIGHWAY COMMISSION

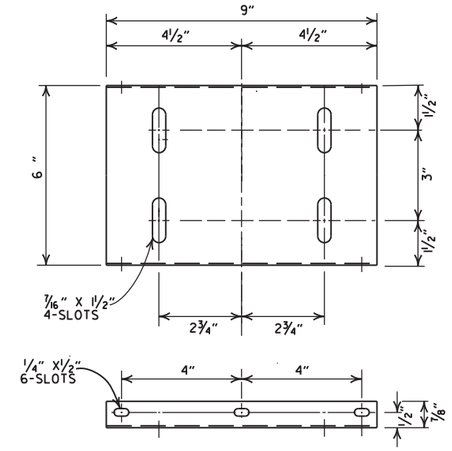
GUARDRAIL DETAILS

STANDARD DRAWING GRT-1

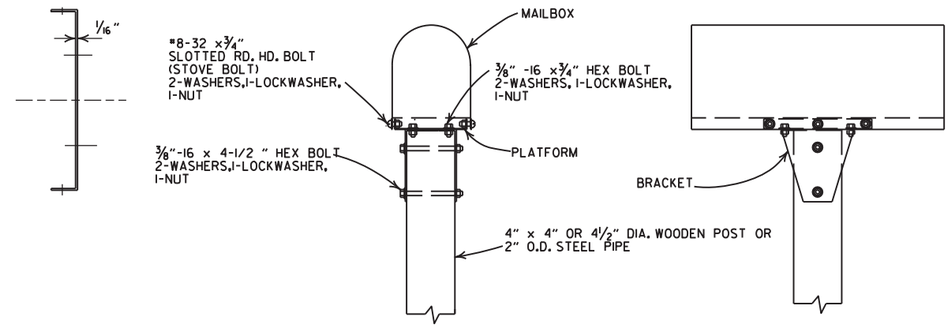


SHELF

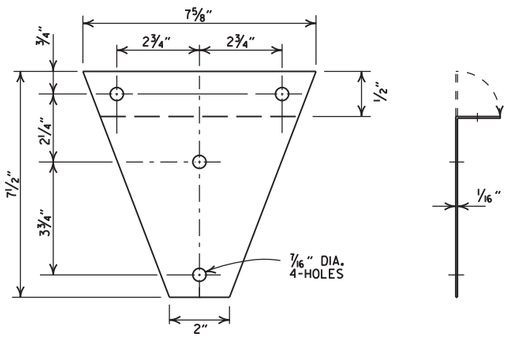




PLATFORM



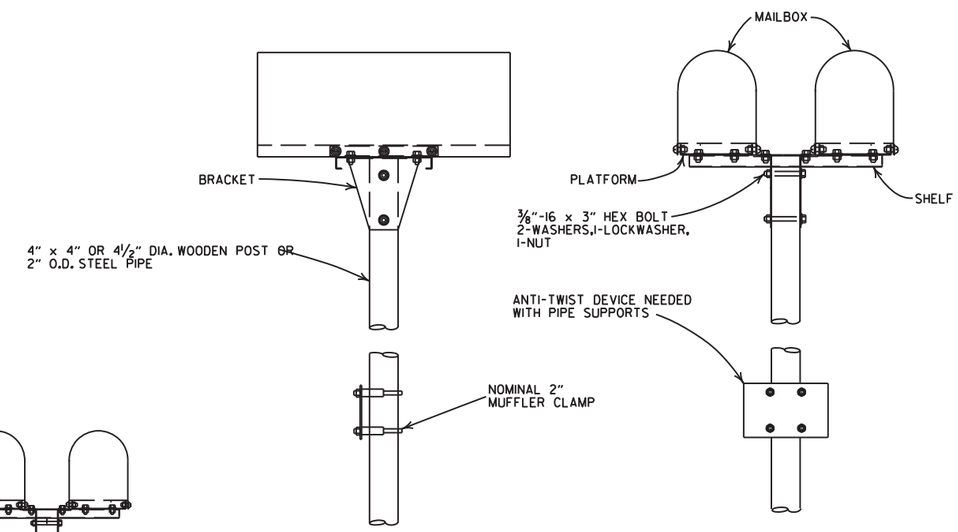
SINGLE INSTALLATION



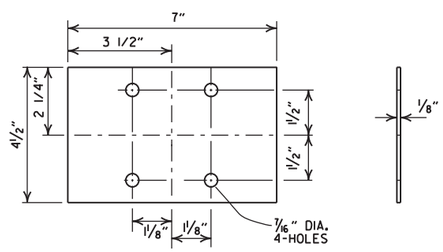
BRACKET

GENERAL NOTES

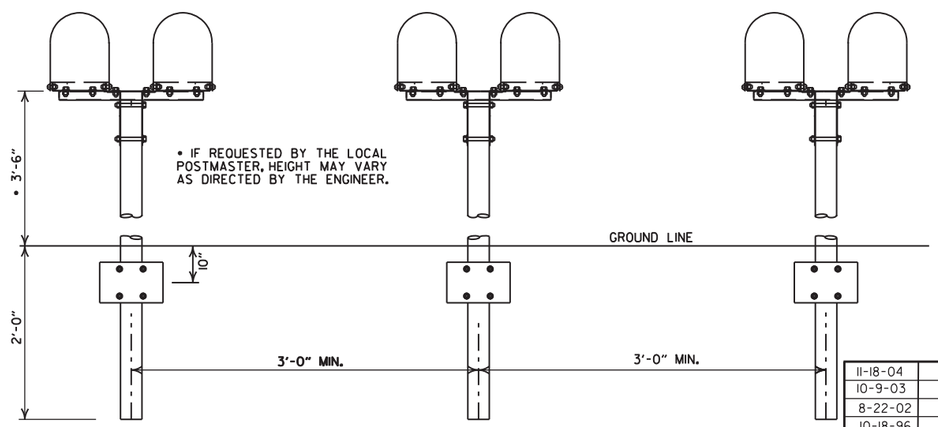
1. MAILBOX POSTS MAY BE WOOD OR METAL. WOOD POSTS SHALL BE PRESSURE TREATED FOR GROUND CONTACT IN ACCORDANCE WITH SECTION 637.02 OF THE STANDARD SPECIFICATIONS.
2. ANTI-TWIST PLATES SHALL BE USED ONLY ON METAL POSTS.
3. MAILBOX SHELF, BRACKET & PLATFORM SHALL BE GALVANIZED OR PAINTED STEEL, HOWEVER TREATED WOOD MAY BE USED WITH WOODEN POSTS. THE WOODEN SHELF, BRACKET & PLATFORM SHALL BE A MINIMUM OF ¾" THICK AND SHALL BE ASSEMBLED WITH BOLTS OF THE APPROPRIATE LENGTH WITH SIX 8 X ¾" FLATHEAD WOOD SCREWS USED TO ATTACH THE MAILBOX TO THE PLATFORM.
4. THE MAILBOX SHELF AND PLATFORM THAT IS SHOWN IS FOR STANDARD SIZE MAILBOXES. THE SHELF AND PLATFORM SIZE SHALL BE MODIFIED TO FIT MAILBOXES OF A DIFFERENT SIZE.
5. METAL PIPE FOR MAILBOX SUPPORT SHALL BE 2" OUTSIDE DIAMETER STEEL WITH A WALL THICKNESS OF 0.145" AND A WEIGHT OF 2.72 LBS PER FT. OUTSIDE DIAMETER AND WEIGHT SHALL HAVE A TOLERANCE OF +/- 5% ACCORDING TO AASHTO M 181.
6. MAILBOX SUPPORT SYSTEM DIFFERING FROM THOSE SHOWN MAY BE USED, PROVIDED THEY ARE ON THE ARDOT QUALIFIED PRODUCTS LIST FOR MAILBOX SUPPORTS.



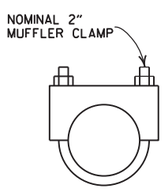
DOUBLE INSTALLATION



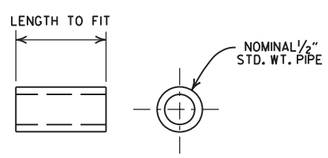
ANTI-TWIST PLATE



SPACING FOR MULTIPLE POST INSTALLATION



CLAMP



SPACER

DATE	FILMED	REVISION
11-18-04		REVISED NOTES
10-9-03		REVISED NOTE 6
8-22-02		REVISED NOTE 6
10-18-96		CORRECTED AASHTO
10-1-92		CORRECTED SPELLING
9-26-91		NEW PHONE NUMBER
8-15-91		ADDED NOTE
11-30-89		ADJUSTED HEIGHT & ADDED NOTE
2-16-89		DELETED SLOTS FROM SHELF & PLTF
11-17-88	10-1-92	ADJUSTED DIMENSIONS OF STEEL POSTS
7-15-88	20-7-15-88	ISSUED

ARKANSAS STATE HIGHWAY COMMISSION

MAILBOX DETAILS

STANDARD DRAWING MB-1

CORRUGATED STEEL PIPE (ROUND)

PIPE DIAMETER (INCHES)	① MINUMUM 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
2⅔ INCH BY ½ 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 MINUMUM 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 ⅔ INCH BY ½ 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)	MINUMUM CORNER RADIUS (INCHES)	STEEL				ALUMINUM		
			MIN. THICKNESS REQUIRED INCHES	① MIN. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 1		MAX. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 1	MIN. THICKNESS REQUIRED INCHES	① MIN. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 1	MAX. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 1
			2 ⅔ INCH BY ½ INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM				2 ⅔ INCH BY ½ INCH CORRUGATION RIVETED OR HELICAL LOCK-SEAM		
15	17x13	3	0.064	2		15	0.060	2	15
18	21x15	3	0.064	2		15	0.060	2	15
21	24x18	3	0.064	2.25		15	0.060	2.25	15
24	28x20	3	0.064	2.5		15	0.075	2.5	15
30	35x24	3	0.079	3		12	0.075	3	12
36	42x29	3½	0.079	3		12	0.105	3	12
42	49x33	4	0.079	3		12	0.105	3	12
48	57x38	5	0.109	3		13	0.135	3	13
54	64x43	6	0.109	3		14	0.135	3	14
60	71x47	7	0.138	3		15	0.164	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 TYPE 2	INSTALLATION TYPE 1	INSTALLATION 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

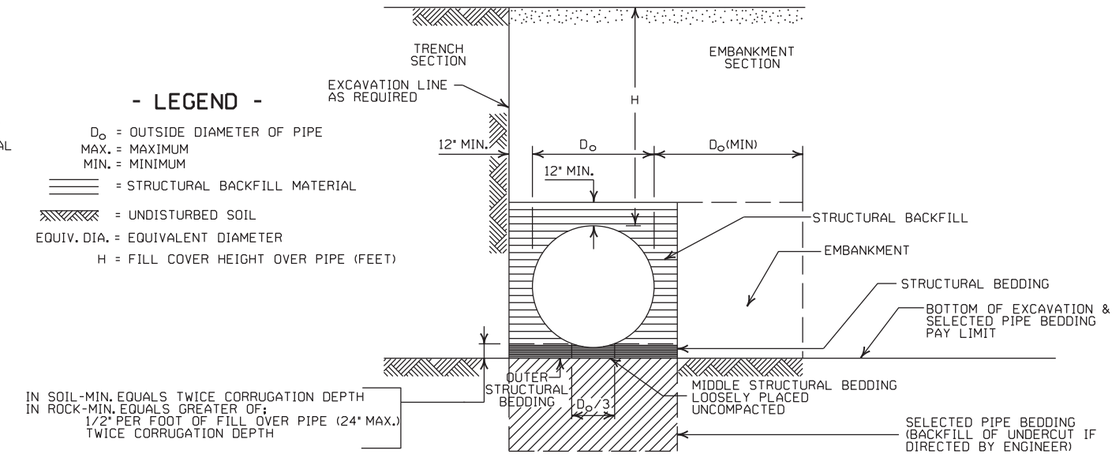
METAL THICKNESS IN INCHES			GAUGE NUMBER
STEEL			
ZINC COATED	UNCOATED	ALUMINUM	
0.064	0.0598	0.060	16
0.079	0.0747	0.075	14
0.109	0.1046	0.105	12
0.138	0.1345	0.135	10
0.168	0.1644	0.164	8

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

② WHERE THE STANDARD 2 2/3" x ½" 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.

- 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)



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. INSTALALTION TYPE 1 SHALL BE USED FOR CORRUGATED STEEL OR ALUMINUM PIPE ARCHES WITH 2⅔" X ½" 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."

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

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 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"

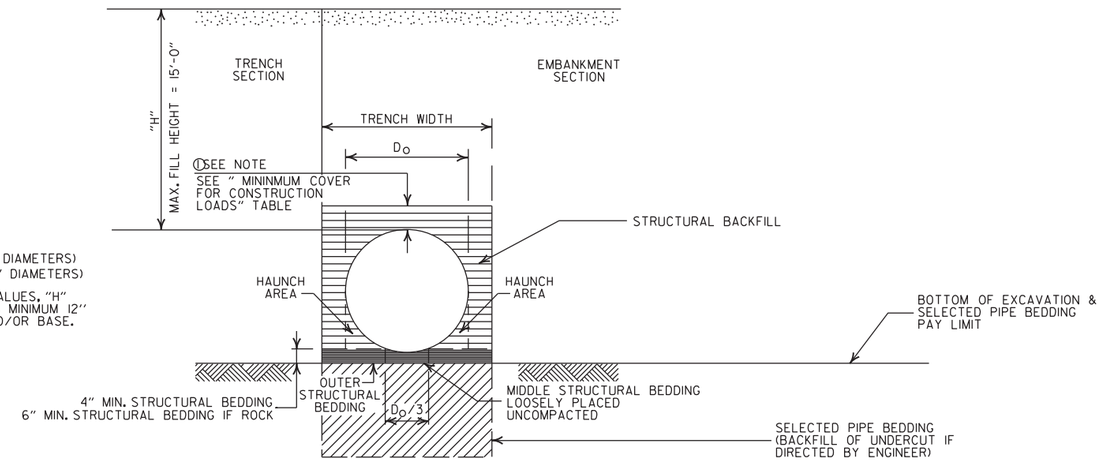
①NOTE:
18" MIN. (18" - 30" DIAMETERS)
24" MIN. (36" - 48" DIAMETERS)

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.

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 SPECIFICIATIONS 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.

- LEGEND -

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

= STRUCTURAL BACKFILL MATERIAL

= UNDISTURBED SOIL

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

ARKANSAS STATE HIGHWAY COMMISSION

PLASTIC PIPE CULVERT (HIGH DENSITY POLYETHYLENE)

STANDARD DRAWING PCP-1

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

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

SM3 WILL NOT BE ALLOWED.

•• STRUCTURAL BEDDING MATERIAL SHALL HAVE A MAXIMUM PARTICLE SIZE OF 1INCH. 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"	TRENCH WIDTH (FEET) "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

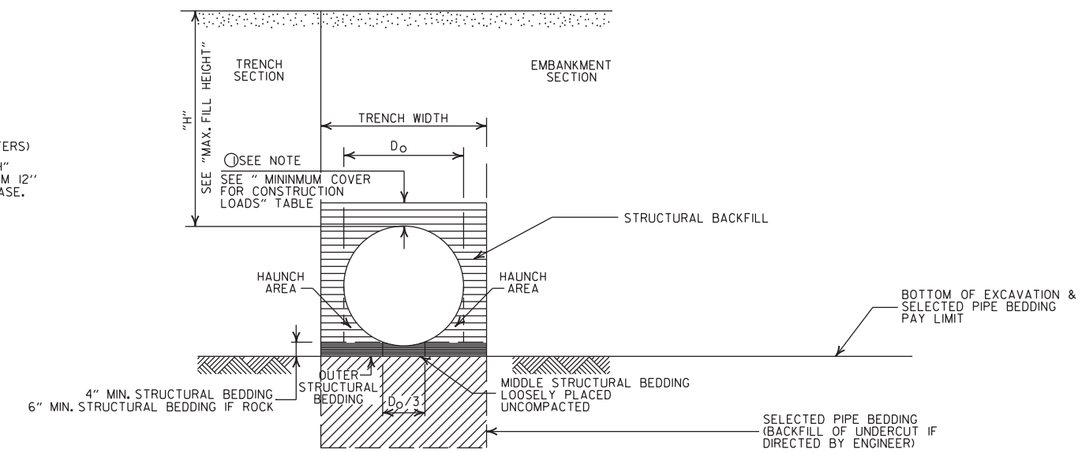
PIPE DIAMETER	"H"
18"	45'-0"
24"	45'-0"
30"	40'-0"
36"	40'-0"

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

MINIMUM COVER FOR CONSTRUCTION LOADS

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

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.

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.

- LEGEND -

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

= STRUCTURAL BACKFILL MATERIAL
= UNDISTURBED SOIL

DATE	REVISION	DATE FILMED
2-27-14	REVISED GENERAL NOTE 1.	
12-15-11	REV GENERAL NOTES & MINIMUM COVER NOTE; DELETED SM3 MATERIAL	
11-17-10	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

PLASTIC PIPE CULVERT (PVC F949)

STANDARD DRAWING PCP-2

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

*SM3 WILL NOT BE ALLOWED.

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

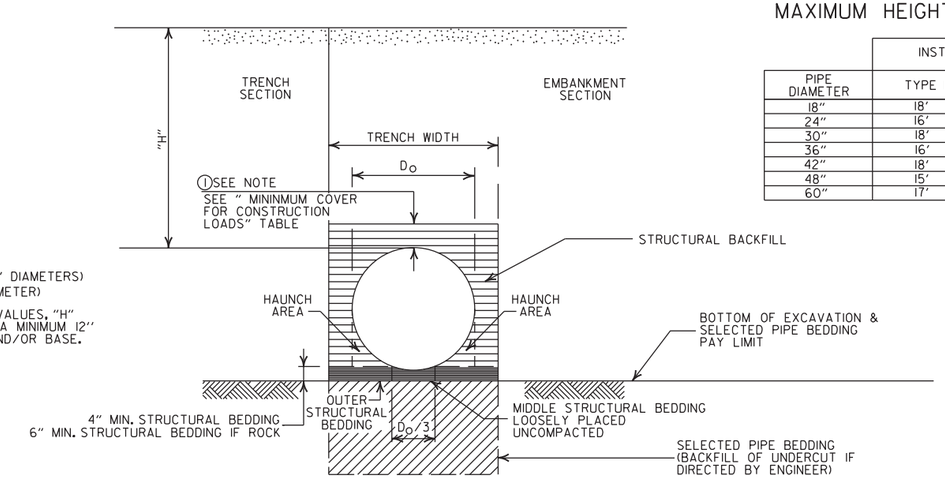
STRUCTURAL BACKFILL AND STRUCTURAL BEDDING MATERIAL WILL NOT BE PAID FOR SEPARATELY, BUT COMPENSATION WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID PER LINEAR FOOT OF POLYPROPYLENE PIPE.

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

PIPE DIAMETER	TRENCH WIDTH (FEET) "H" < 10'-0"	"H" >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"
60"	10'-0"	15'-0"

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

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



MAXIMUM HEIGHT OF FILL "H"

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

MULTIPLE INSTALLATION OF POLYPROPYLENE PIPES

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

MINIMUM COVER FOR CONSTRUCTION LOADS

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

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

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.

GENERAL NOTES

1. PIPE SHALL CONFORM TO AASHTO M330, TYPE S. INSTALLATION SHALL CONFORM TO JOB SPECIAL PROVISION "PLASTIC PIPE" AND SECTION 606 OF THE STANDARD SPECIFICIATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION).
2. PLASTIC PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SIXTH EDITION (2012) WITH 2013 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. POLYPROPYLENE PIPES OF DIAMETERS OTHER THAN SHOWN WILL NOT BE ALLOWED.
9. JOINTS FOR POLYPROPYLENE PIPE SHALL MEET THE REQUIREMENTS FOR SOIL TIGHTNESS AS SPECIFIED IN SECTION 26.4.2.4 AND 30.4.2 OF THE AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS 3RD EDITION (2010) WITH 2012 INTERIMS. JOINTS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

- LEGEND -

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

= STRUCTURAL BACKFILL MATERIAL
= UNDISTURBED SOIL

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

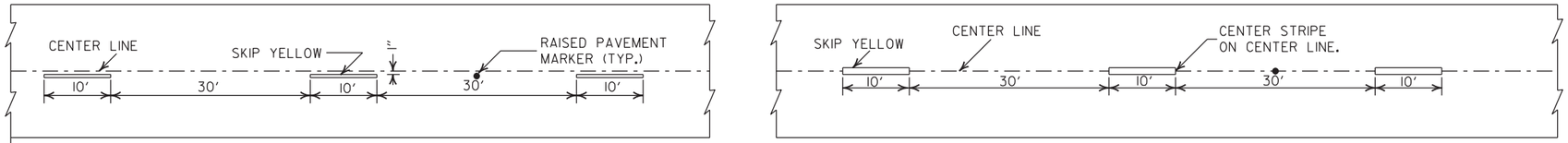
ARKANSAS STATE HIGHWAY COMMISSION

PLASTIC PIPE CULVERT (POLYPROPYLENE)

STANDARD DRAWING PCP-3

NOTES:

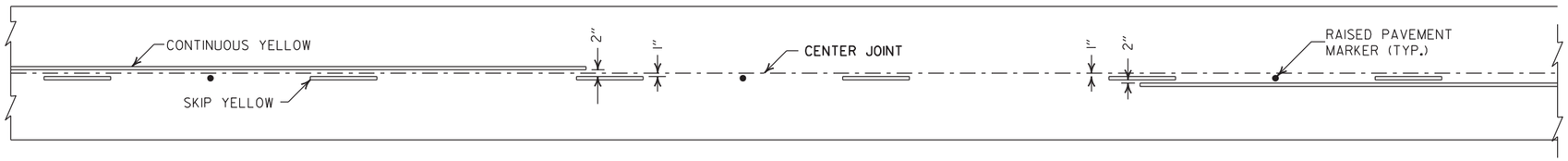
1. REFER TO THE STRIPING DETAILS FOR PAVEMENT MARKING LINE WIDTHS.
2. THIS DRAWING SHALL BE USED IN CONJUNCTION WITH THE LATEST REVISED ADDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES."
3. RAISED PAVEMENT MARKERS SHALL BE PLACED ON AN 80 FEET SPACING UNLESS OTHERWISE SHOWN IN THE PLANS.



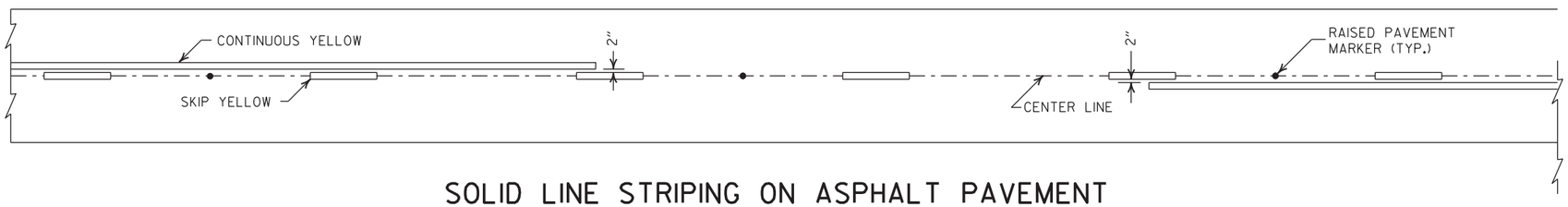
CONCRETE PAVEMENT

ASPHALT PAVEMENT

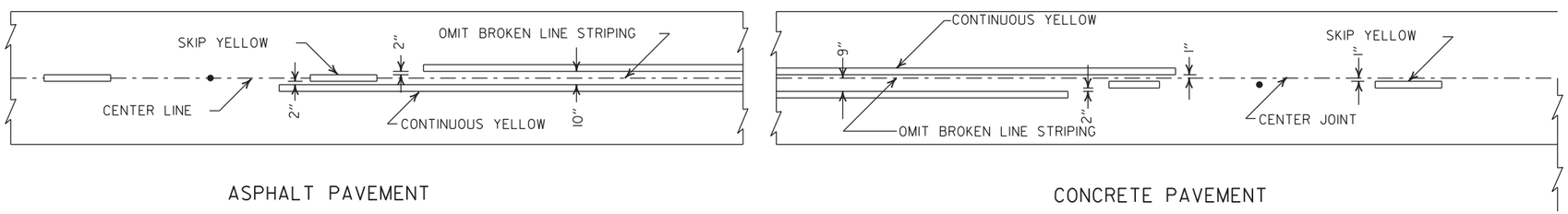
BROKEN LINE STRIPING



SOLID LINE STRIPING ON CONCRETE PAVEMENT



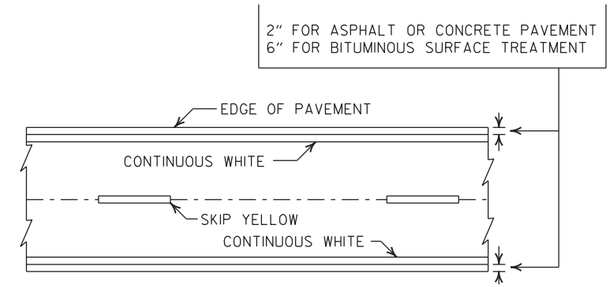
SOLID LINE STRIPING ON ASPHALT PAVEMENT



ASPHALT PAVEMENT

CONCRETE PAVEMENT

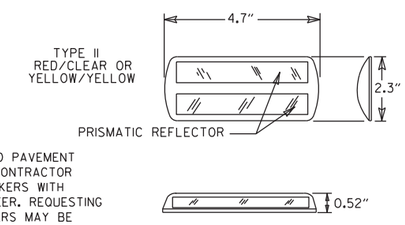
STRIPING AT ADJACENT NO PASSING LANES



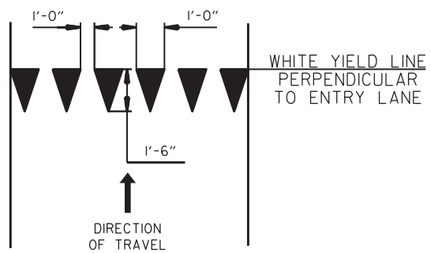
PAVEMENT EDGE LINE MARKING

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

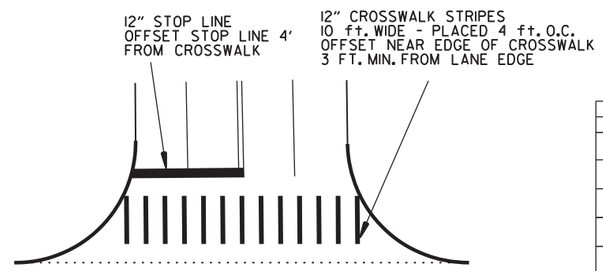
NOTE:
DIMENSIONS SHOWN FOR RAISED PAVEMENT MARKERS ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR MARKERS WITH THE APPROVAL OF THE ENGINEER. REQUESTING APPROVAL FOR SIMILAR MARKERS MAY BE MADE BY REFERRING TO THE ARDOT QUALIFIED PRODUCTS LIST.



DETAIL OF STANDARD RAISED PAVEMENT MARKERS



YIELD LINE DETAIL



CROSSWALK AND STOP LINE DETAILS

DATE	REVISION	FILMED
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

ARKANSAS STATE HIGHWAY COMMISSION

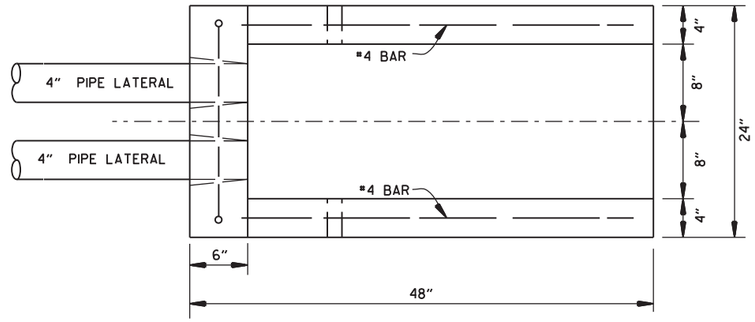
PAVEMENT MARKING DETAILS

STANDARD DRAWING PM-1

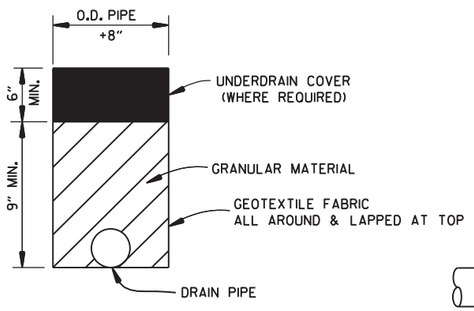
NOTE:

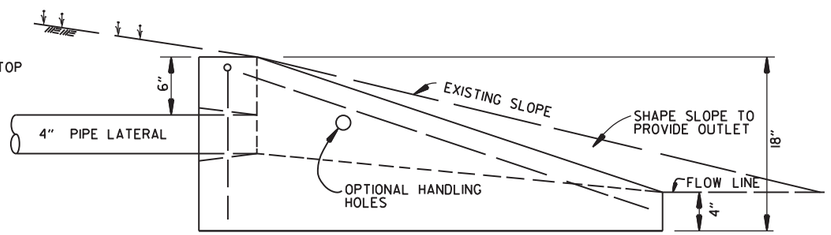
1. UNLESS OTHERWISE SPECIFIED ON THE PLANS, THE UNDERDRAIN COVER SHALL BE THOROUGHLY COMPACTED EARTH AND SHALL BE SUBSIDIARY TO PIPE UNDERDRAIN.

2. GRANULAR MATERIAL SHALL BE WRAPPED WITH GEOTEXTILE FABRIC. LAP FABRIC 12" OR THE WIDTH OF THE TRENCH AT THE TOP.

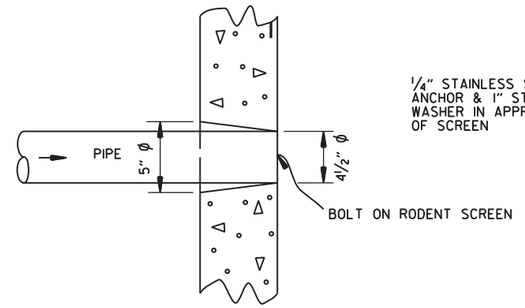


PLAN VIEW

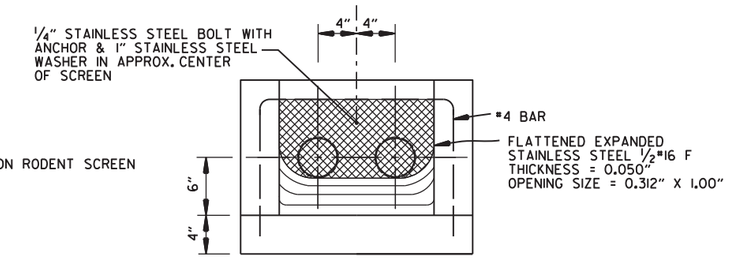




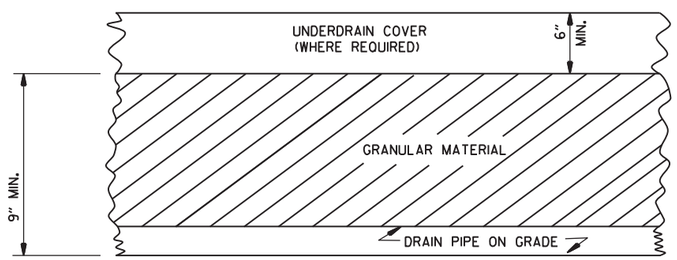
SIDE VIEW



DETAIL OF HOLE
FOR 4" PIPE

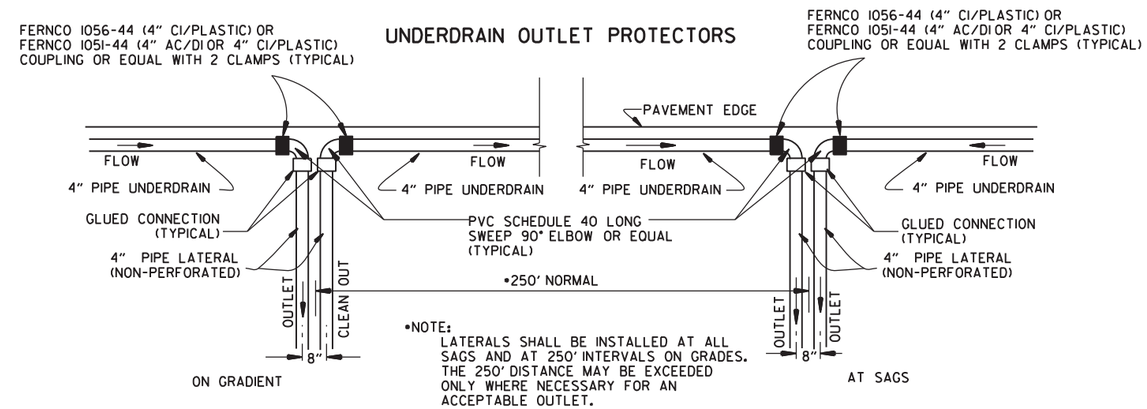


FRONT VIEW
(DETAIL OF RODENT SCREEN)



DETAILS OF PIPE UNDERDRAIN

UNDERDRAIN OUTLET PROTECTORS



DETAIL OF PIPE UNDERDRAIN LATERALS WHEN PLACED ALONG PAVEMENT EDGE

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

NOTES FOR PIPE UNDERDRAINS

1. GEOTEXTILE FABRIC SHALL MEET THE REQUIREMENTS OF SECTION 625 FOR TYPE 1. PAYMENT FOR GEOTEXTILE FABRIC AND GRANULAR FILTER MATERIAL SHALL BE INCLUDED IN THE PRICE BID PER LIN. FT. FOR "4" PIPE UNDERDRAINS" IN ACCORDANCE WITH SECTION 611 OF THE STANDARD SPECIFICATIONS.

2. 4" NON-PERFORATED SCHEDULE 40 PVC PIPE LATERALS WITH OUTLET PROTECTORS SHALL BE INSTALLED AS SHOWN HEREON. LATERALS WILL BE MEASURED AND PAID FOR AS "4" PIPE UNDERDRAINS." UNDERDRAIN OUTLET PROTECTORS WILL BE MEASURED AND PAID FOR BY THE UNIT IN ACCORDANCE WITH SECTION 611 OF THE STANDARD SPECIFICATIONS.

3. EXISTING 4" PIPE UNDERDRAINS MAY BE CONNECTED TO PROPOSED DROP INLETS OR EXTENDED WHERE DIRECTED BY THE ENGINEER. PAYMENT FOR CONNECTING TO DROP INLETS SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR "4" PIPE UNDERDRAINS."

4. THE LOCATION OF ALL LATERALS SHALL BE MARKED WITH 4" X 12" PERMANENT PAVEMENT MARKING TAPE (TYPE III WHITE) AT THE OUTSIDE EDGE OF THE SHOULDER, PLACED TRANSVERSE TO TRAFFIC. PAYMENT FOR THIS WORK SHALL BE INCLUDED IN THE PRICE BID FOR THE VARIOUS CONTRACT ITEMS.

5. PAYMENT FOR THE RODENT SCREEN SHALL BE INCLUDED IN THE PRICE BID PER EACH FOR "UNDERDRAIN OUTLET PROTECTORS."

6. ANY EXISTING UNDERDRAINS THAT INTERFERE WITH INSTALLATION OF THE NEW UNDERDRAIN SYSTEM SHALL BE REMOVED AND DISPOSED OF AS DIRECTED BY THE ENGINEER. PAYMENT WILL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE VARIOUS CONTRACT ITEMS. EXISTING UNDERDRAIN OUTLET PROTECTORS SHALL BE REMOVED UNDER THE ITEM "REMOVAL AND DISPOSAL OF UNDERDRAIN OUTLET PROTECTORS."

7. AT LOCATIONS WHERE A SINGLE LATERAL IS USED THE CONTRACTOR SHALL HAVE THE FOLLOWING OPTIONS: 1. INSTALL OUTLET PROTECTOR AS SHOWN ON STANDARD DRAWING PU-1 AND GROUT THE UNUSED HOLE OR 2. INSTALL AN OUTLET PROTECTOR WITH A SINGLE HOLE.

DATE	REVISION	DATE FILMED
12-8-16	ADDED NOTES FOR PIPE UNDERDRAINS, REVISED RODENT SCREEN DETAIL AND NOTES, REMOVED NOTE 1 FOR GRANULAR MATERIAL, ADDED NOTE FOR GEOTEXTILE FABRIC	
4-10-03	REVISED NOTE 3	
1-12-00	REVISED DETAIL OF UNDERDRAIN LATERALS	
11-18-98	REVISED NOTE	
10-18-96	REVISED MIN. DEPTH & GEOTEXTILE FABRIC	
4-26-96	ADDED LATERAL NOTE; 5 1/2" TO 5"	
11-22-95	REVISED LATERALS	
7-20-95	REVISED LATERALS & ADDED NOTE	
11- 3-94	REVISED FOR DUAL LATERALS	11- 3-94
10- 1-92	SUBSTITUTED GEOTEXTILE	10- 1-92
8-15-91	ADDED POLYEDTHYLENE PIPE	8-15-91
11- 8-90	DELETED ALTERNATE NOTE	11- 8-90
1-25-90	ADDED 4" SNAP ADAPTER	1-25-90
11-30-89	DEL. (SUBGRADE); ADDED (WHERE REQUIRED)	11-30-89
7-15-88	ISSUED P.L.M.	647-7-15-88

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF PIPE UNDERDRAIN

STANDARD DRAWING PU-1

SUPERELEVATION TABLE FOR TWO - WAY TRAFFIC

DEGREE OF CURVE	30 MPH			35 MPH			40 MPH			45 MPH			50 MPH			55 MPH			60 MPH			65 MPH			70 MPH			75 MPH		
	e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)	
		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE
0° 15'	NC			NC			NC			NC			NC			NC			NC			NC			NC			NC		
0° 30'	NC			NC			NC			NC			NC			NC			RC	96		RC	96		RC	96		0.022	101	
0° 45'	NC			NC			NC			NC			RC	96		RC	96		0.024	106		0.026	110		0.030	120		0.032	125	
1° 00'	NC			NC			NC			RC	90		0.022	101		0.026	110		0.030	120		0.034	130		0.038	139		0.042	149	300
1° 15'	NC			NC			RC	84		0.022	95		0.028	115		0.032	125		0.038	139		0.042	149		0.046	158	300	0.052	173	
1° 30'	NC			RC	78		0.022	88		0.028	108		0.032	125		0.038	139		0.044	154		0.050	168		0.056	182		0.062	197	
1° 45'	RC	72		RC	78		0.026	97		0.030	113		0.036	134		0.044	154		0.050	168		0.056	182		0.064	202		0.070	216	
2° 00'	RC	72		0.024	86		0.028	101		0.034	122		0.042	149		0.048	163		0.056	182		0.064	202		0.070	216		0.080	240	
2° 15'	RC	72		0.026	90		0.032	109		0.038	131		0.046	158		0.054	178		0.062	197		0.070	216		0.078	235		0.088	259	350
2° 30'	0.022	75		0.028	94		0.034	113		0.042	140		0.050	168		0.058	187		0.068	211		0.076	230		0.086	254	350	0.096	278	
2° 45'	0.024	79		0.030	98		0.038	122		0.046	149	200	0.054	178		0.064	202		0.072	221		0.082	245		0.092	269		0.100	288	400
3° 00'	0.026	83		0.034	105		0.040	126		0.050	158		0.058	187		0.068	211		0.078	235		0.088	259		0.098	283				
3° 15'	0.028	86		0.036	109		0.044	134	200	0.052	162		0.062	197		0.072	221		0.082	245		0.092	269		0.100	288				
3° 30'	0.030	90		0.038	113		0.046	139		0.056	171		0.066	206		0.076	230		0.086	254		0.096	278	350						
3° 45'	0.032	93		0.040	117		0.050	147		0.058	176		0.070	216		0.080	240		0.090	264		0.098	283							
4° 00'	0.034	97		0.042	121	200	0.052	151		0.062	185		0.072	221		0.084	250		0.094	274		0.100	288							
4° 15'	0.036	100		0.044	125		0.054	155		0.064	189		0.076	230		0.086	254		0.096	278	350									
4° 30'	0.036	100		0.046	129		0.056	160		0.068	198		0.078	235		0.090	264		0.098	283										
4° 45'	0.038	104	200	0.048	133		0.060	168		0.070	203		0.082	245		0.092	269	350	0.100	288										
5° 00'	0.040	108		0.050	137		0.062	172		0.072	207	250	0.084	250		0.094	274													
5° 30'	0.044	115		0.054	144		0.066	181		0.078	221		0.088	259		0.098	283													
6° 00'	0.046	119		0.058	152		0.070	189		0.082	230		0.092	269		0.100	288													
6° 30'	0.050	126		0.062	160		0.074	198		0.086	239		0.096	278	300															
7° 00'	0.052	130		0.064	164		0.078	206		0.090	248		0.098	283																
7° 30'	0.054	133		0.068	172		0.080	210		0.092	252		0.100	288																
8° 00'	0.058	140		0.070	176		0.084	219		0.094	257	300																		
8° 30'	0.060	144		0.072	179		0.086	223	250	0.096	261																			
9° 00'	0.062	148		0.076	187		0.088	227		0.098	266																			
9° 30'	0.064	151		0.078	191		0.092	235		0.100	270																			
10° 00'	0.066	155		0.080	195		0.094	240																						
11° 00'	0.070	162		0.084	203		0.096	244																						
12° 00'	0.074	169		0.088	211	250	0.098	248																						
13° 00'	0.076	173		0.090	215		0.100	252	300																					
14° 00'	0.080	180		0.094	222																									
15° 00'	0.082	184		0.096	226																									
16° 00'	0.086	191		0.098	230																									
17° 00'	0.088	194		0.100	234																									
18° 00'	0.090	198	250																											
19° 00'	0.092	202																												
20° 00'	0.094	205																												
21° 00'	0.096	209																												
22° 00'	0.096	209																												
23° 00'	0.098	212																												
24° 00'	0.098	212																												
25° 00'	0.100	216																												
	D MAX = 28° 30'			D MAX = 19° 30'			D MAX = 13° 45'			D MAX = 10° 30'			D MAX = 8° 25'			D MAX = 6° 30'			D MAX = 5° 15'			D MAX = 4° 15'			D MAX = 3° 30'			D MAX = 2° 45'		

ABBREVIATIONS

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

GENERAL NOTES

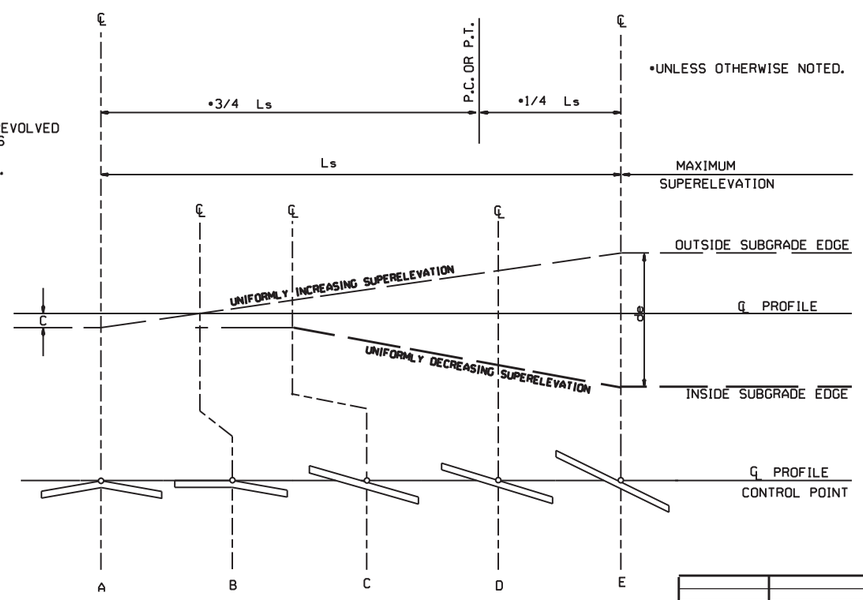
1. ON PAVEMENT WITH TWO-WAY TRAFFIC, THE SUPERELEVATION SHALL BE REVOLVED ON THE INSIDE PAVEMENT EDGE UNLESS OTHERWISE NOTED ON THE PLANS
2. SUPERELEVATION VALUES SHOWN ON THE CROSS SECTIONS ARE VALUES (+) OR (-) TO BE ADDED TO OR SUBTRACTED FROM THE POINT OF CONTROL.
3. LENGTHS FOR L MAY BE ROUNDED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

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

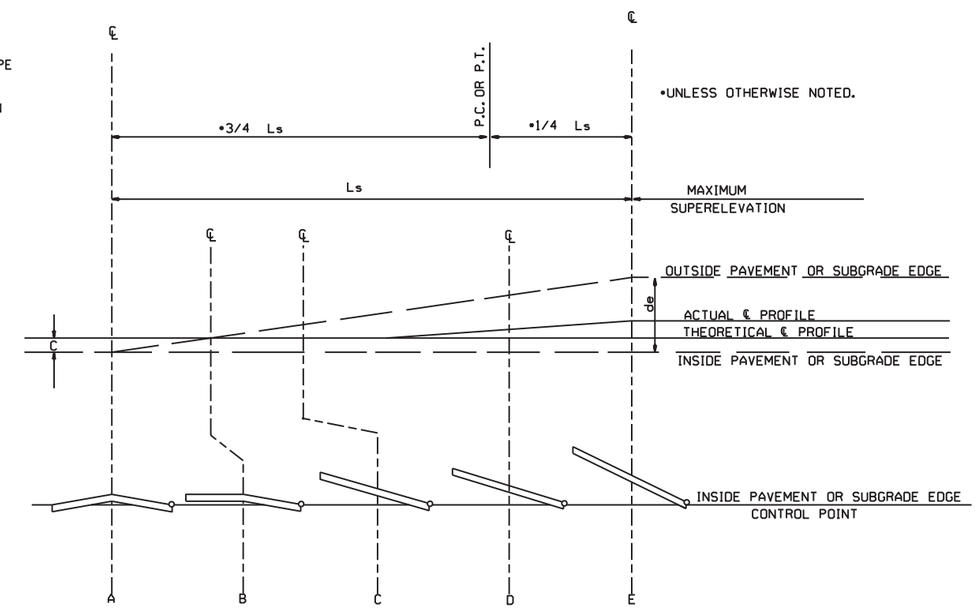
NOTE: MAINTAIN NORMAL CROWN ON INSIDE UNTIL SUPERELEVATION EXCEEDS 2C.

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

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



STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND CENTER LINE



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

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

DATE	REVISION	DATE FILMED
11-07-19	REVISED SUPERELEVATION TABLE	
10-18-96	ADDED FORMULA	
01-09-87	ISSUED	534-1-9-87

ARKANSAS STATE HIGHWAY COMMISSION

TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC

STANDARD DRAWING SE-2

R1-1
30"X30"

W1-3
30"X30"
(LT. OR RT.)

W1-8
18"X24"

W2-5
30"X30"

W3-1
36"X36"

W5-1
36"X36"

M6-3
21"X15"

R1-2
36"X36"X36"

W1-4
30"X30"
(LT. or RT.)

W2-1
30"X30"

S1-1
36"X36"

W3-2
36"X36"

County
Route Marker
M1-6
24"X24"

NOTE: REFLECTORIZED YELLOW LEGEND (COUNTY NAME, ROUTE LETTER & NUMBER) & BORDER ON A BLUE BACKGROUND.

M6-4
21"X15"

R2-1
24"X30"

W1-5
30"X30"
(LT. or RT.)

W2-2
30"X30"

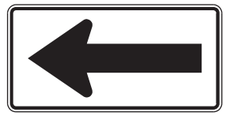
W5-2
36"X36"

W8-3
36"X36"

R1-3P
18"X6"

M6-5
21"X15"

W1-1
30"X30"
(LT. or RT.)



W1-6
48"X24"

W2-3
30"X30"
(LT. or RT.)

W5-3
36"X36"

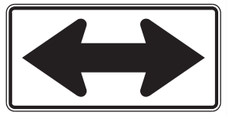
W13-1P
18"X18"

M6-1
21"X15"

NOTE: ALL M6 SIGNS TO BE MADE WITH REFLECTORIZED YELLOW ARROW & BORDER WITH BLUE BACKGROUND.

M6-6
21"X15"

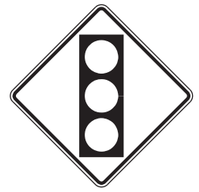
W1-2
30"X30"
(LT. or RT.)



W1-7
48"X24"

W2-4
30"X30"

W10-1
36" DIAMETER

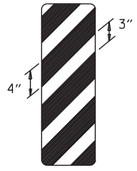


W3-3
36"X36"

M6-2
21"X15"

S4-3P
24"X8"

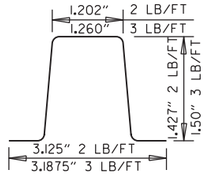
S4-2P
24"X10"



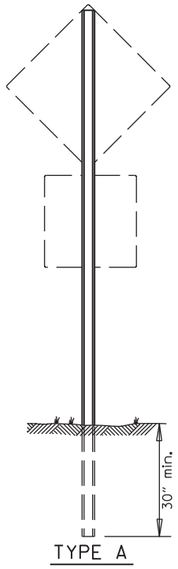
OM-3
12"X36"
(LT. or RT.)

MINIMUM DIMENSIONS SHOWN

SUPPORT SECTION

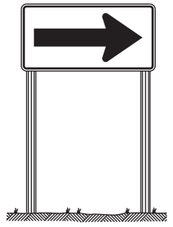


(U-CHANNEL)
STANDARD SUPPORT
ASSEMBLIES

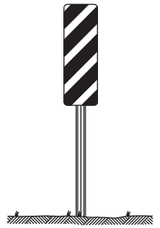


TYPE A

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.



TYPE B



TYPE C

MINIMUM WEIGHT

TYPE A & B = 3 LBS./FT.
TYPE C = 2 LBS./FT.

STANDARD HIGHWAY SIGNS

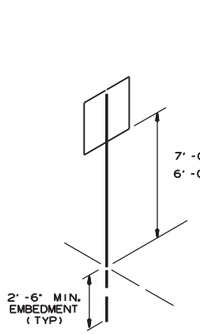
DATE	REVISION	DATE FILMED
9-12-13	DELETED JOB NO. BLOCK; REVISED R1-3 TO R1-3P	
4-17-08	REVISED SIGN DESIGNATION - W3-1 & W3-2	
4-10-03	REVISED W5-2, W8-3, OM-3; ADDED W1-8	
1-5-81	REDRAWN	960-1-15-81
9-15-78	ADDED W14-3	877-9-15-78
9-2-76	POST WT.	623-9-3-76
5-3-76	STEEL POST WT. FROM 2#-3#; ADDED S4-2 & 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

SUPPORT ASSEMBLIES

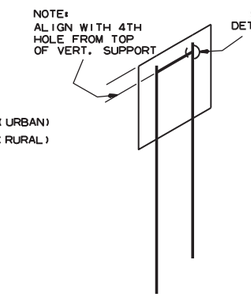
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD HIGHWAY SIGNS
AND SUPPORT ASSEMBLIES

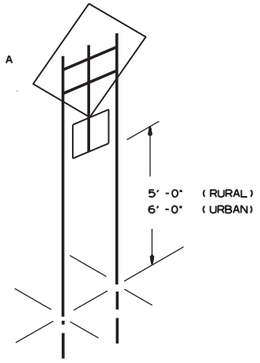
STANDARD DRAWING SHS-1



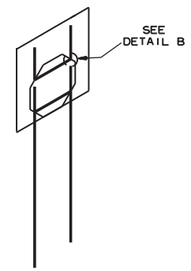
U-1



U-2



U-2 (A)



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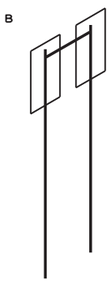
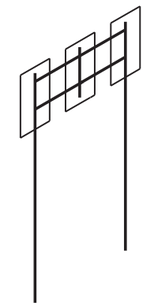


U-2 (1)



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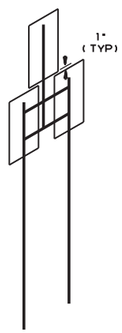

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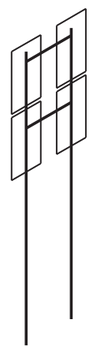
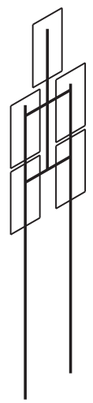
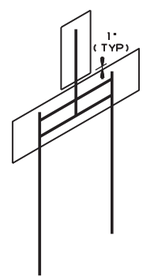


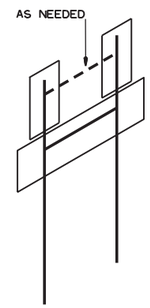
U-2 (4)



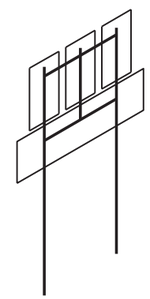
U-2 (5)



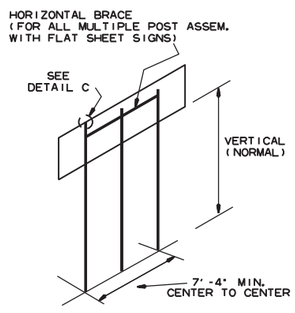
U-2 (6)



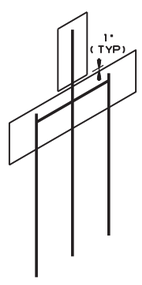
U-2 (7)



U-2 (8)



U-3



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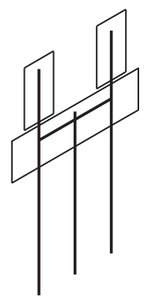

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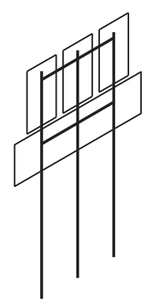
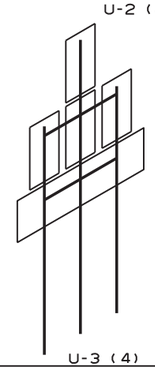


U-3 (3)



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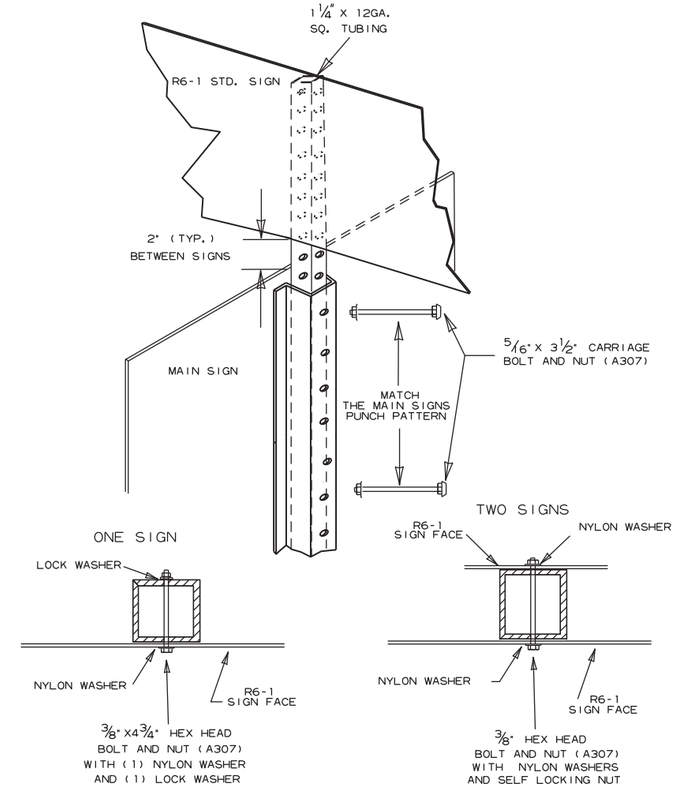
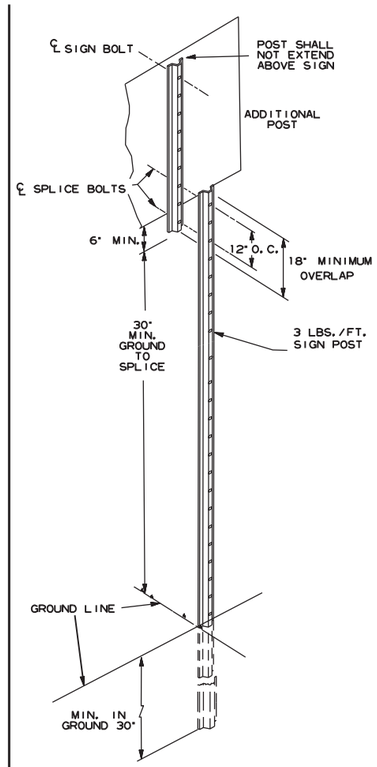


DETAIL E
R6-1 EXTENSION
FOR U-CHANNEL POST



DETAIL F
DETAIL OF SPLICES

NOTES:

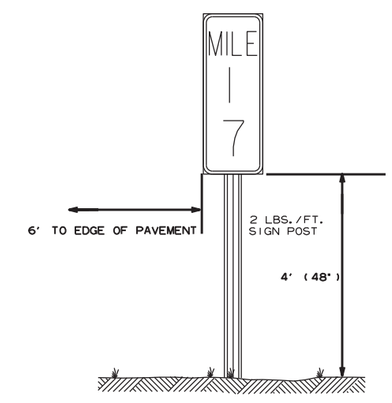
SIGNS AT LEAST 8' IN LENGTH MAY BE INSTALLED ON THREE 3 LB. POST. IN NO CASE SHALL THERE BE MORE THAN TWO 3 LB. POSTS WITHIN A 7' PATH.

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

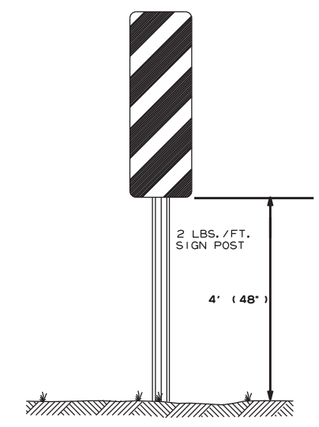
NORMAL INSTALLATIONS WILL REQUIRE 5/16" DIA. CARRIAGE BOLTS TO MOUNT SIGNS TO POST AND TO ASSEMBLE THE VARIOUS POST SUPPORTS.

ALL SIGN POSTS SHALL BE PLUMB.

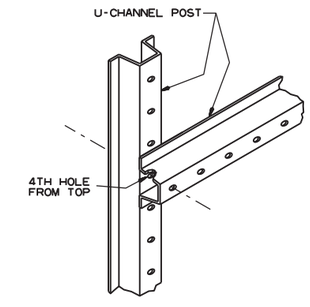
THE POST FOR "TYPE U" SUPPORTS SHALL BE HOT DIP GALVANIZED.



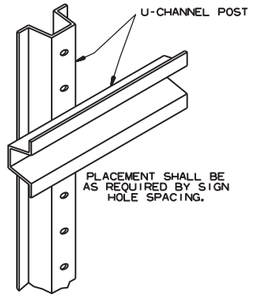
TYPICAL MILE MARKER
INSTALLATION



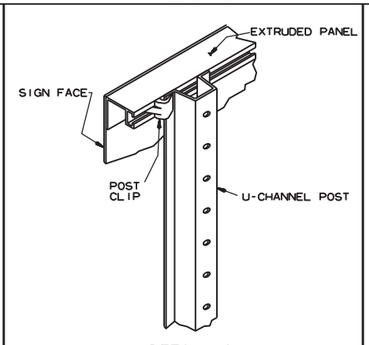
TYPICAL OM-3 INSTALLATION
AT EDGE OF OBSTRUCTION



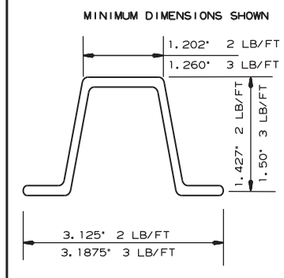
DETAIL A
SHOWING HORIZONTAL BRACE



DETAIL B
SHOWING BACK-TO-BACK
INSTALLATION



DETAIL C
SHOWING GUIDE SIGN MOUNTING
WITH EXTRUDED PANELS



DETAIL C
U-CHANNEL POST

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

ARKANSAS STATE HIGHWAY COMMISSION

U-CHANNEL POST ASSEMBLIES

STANDARD DRAWING SHS-2

R1-1

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

R1-2

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

R2-1

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

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"

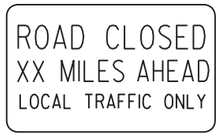
R5-1

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"

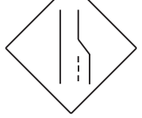
W3-1

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

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

W21-2

STD. 30"X30"
SPECIAL 36"X36"

W21-5

STD. 30"X30"
SPECIAL 36"X36"

W24-1

STD. 36"X36"

W1-4b

STD. 48"X48"

R56-1

STD. 18"X18"

W8-11

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

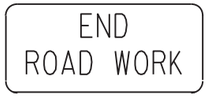
W8-9

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

G20-1

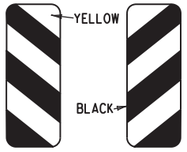
60"X24"

G20-2



48"X24"

OM-3L OM-3R



12"X36"

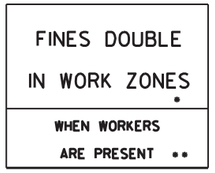
M4-9

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

M4-10

48"X18"

R55-1



36"X60"

• USE 6" C LETTERS
•• USE 4" D LETTERS

ADVANCE DISTANCES
(XXXX)

500 FT	½ MILE
1000 FT	¾ MILE
1500 FT	1 MILE
	AHEAD

GENERAL NOTES:

1. ALL TRAFFIC CONTROL DEVICES USED ON ROAD CONSTRUCTION SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION, AND TO THE STANDARD HIGHWAY SIGNS, LATEST EDITION, OR AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION.

2. TRAFFIC CONTROL DEVICES SHALL BE SET UP JUST BEFORE THE START OF CONSTRUCTION OPERATIONS AND SHALL BE PROPERLY MAINTAINED DURING THE TIME SUCH CONDITIONS EXIST. THEY SHALL REMAIN IN PLACE ONLY AS LONG AS NEEDED AND REMOVED THEREAFTER.

3. EXISTING SIGNS AND CONSTRUCTION SIGNS SHALL BE KEPT IN PROPER POSITION, AND BE CLEAN AND LEGIBLE AT ALL TIMES. SIGNS THAT DO NOT APPLY TO EXISTING CONDITIONS SHALL BE REMOVED. SIGNS THAT ARE DAMAGED, DEFACED, OR THAT ACCUMULATE DIRT DURING CONSTRUCTION SHALL BE CLEANED, REPAIRED, OR REPLACED.

• 4. SIGNS ARE USUALLY MOUNTED ON A SINGLE POST, ALTHOUGH THOSE WIDER THAN 36" OR LARGER THAN 10 SQ. FT. SHALL BE MOUNTED ON TWO POSTS OR ABOVE A TYPE III BARRICADE.

• 5. SIGN POSTS DIRECT BURIED IN SOIL SHALL BE 2 LB. MINIMUM CHANNEL POST OR 4"x4" WOOD POSTS. CHANNEL POSTS SHALL BE PAINTED GREEN. WOOD POSTS SHALL BE PAINTED WHITE. ALL POSTS SHALL BE NEATLY CONSTRUCTED, AND SHALL BE REPLUMBED, CLEANED, OR REPAIRED AS NEEDED FOR THE DURATION OF THE JOB. THERE SHALL NOT BE MORE THAN 2 POSTS IN A 7' PATH FOR WOOD OR CHANNEL POSTS. ANY CHANNEL POST SPLICE SHALL BE IN ACCORDANCE WITH STANDARD DRAWING TC-3.

6. POST MOUNTED SIGNS IN RURAL AREAS SHALL BE CONSTRUCTED WITH THE NEAR EDGE OF THE SIGN FROM 6 TO 12 FEET FROM THE PAVEMENT EDGE. SIGNS IN URBAN AREAS AND BARRICADE MOUNTED SIGNS SHALL BE MOUNTED A MINIMUM OF 2 FEET FROM THE PAVEMENT EDGE.

7. ALL POST AND BARRICADE MOUNTED SIGNS MOUNTED IN URBAN AREAS SHALL BE MOUNTED A MINIMUM DISTANCE OF 7' FROM THE BOTTOM OF THE SIGN TO THE ROADWAY SURFACE. ALL POST AND BARRICADE MOUNTED SIGNS MOUNTED IN RURAL AREAS SHALL BE MOUNTED A MINIMUM DISTANCE OF 7' FROM THE BOTTOM OF THE SIGN TO THE ROADWAY SURFACE, EXCEPT A MINIMUM OF 6' SHALL BE USED WHEN MOUNTING AN ADVISORY SIGN BELOW A WARNING SIGN. TEMPORARY SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS FOR INTERMEDIATE TERM STATIONARY WORK CONDITIONS. THE SIGNS MINIMUM MOUNTING HEIGHT SHALL BE 5'. RETROREFLECTIVE DEVICES SHALL BE USED. TEMPORARY SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS FOR SHORT-TERM, SHORT DURATION, AND MOBILE CONDITIONS. THEY SHALL BE NO LESS THAN ONE (1) FOOT ABOVE THE TRAVELED WAY. LONG-TERM STATIONARY SIGNS SHALL BE DIRECT BURIED IN SOIL, UNLESS CONDITIONS NECESSITATE THE USE OF PORTABLE SIGNS, OR AS APPROVED BY THE ENGINEER. CONCRETE PADS, CONCRETE OR ROCK BALLAST, OR OTHER SOLID MATERIALS SHALL NOT BE UTILIZED WITH PORTABLE SIGN SUPPORTS.

8. FLAGGERS SHALL USE REFLECTORIZED STOP-SLOW PADDLES. FLAGS MAY BE USED ONLY FOR EMERGENCY SITUATIONS.

9. MOST OF THE SIGNS SHOWN ARE ORIENTED TO THE RIGHT. HOWEVER, THIS DOES NOT PRECLUDE THE USE OF MIRROR IMAGES OF THESE SIGNS WHERE THE REVERSE ORIENTATION MIGHT BETTER CONVEY TO MOTORISTS THE PROPER DIRECTION OF MOVEMENT.

10. R55-1 SIGNS SHALL BE PLACED AT LEAST 1500' BUT NOT MORE THAN 1 MILE IN ADVANCE OF THE WORK ZONE. IF A SPEED LIMIT REDUCTION IS IN EFFECT, THE SIGN SHALL BE PLACED A MINIMUM OF 500' IN ADVANCE OF THE "REDUCED SPEED AHEAD" SIGN.

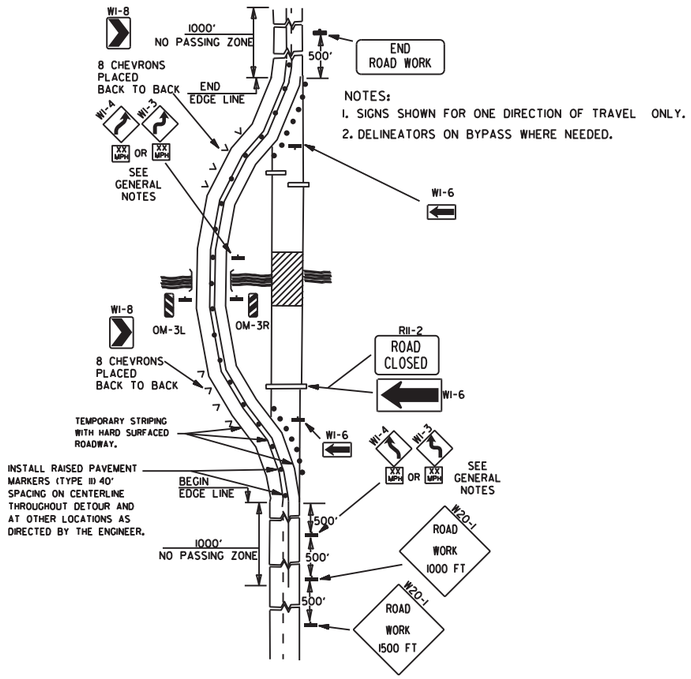
• NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE REQUIREMENTS SHOWN IN NOTES 4 & 5, BUT MEET THE REQUIREMENTS OF MANUAL FOR ASSESSING SAFETY HARDWARE (MASH), WILL BE ACCEPTED. COMPLIANCE WITH THE REQUIREMENTS OF MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) IS REQUIRED FOR ALL PROJECTS.

DATE	REVISION	FILMED
11-07-19	REVISED FOR MASH	
4-13-17	DELETED RSP-1 & ADDED W21-5a	
9-2-15	REVISED REDUCED SPEED LIMIT AHEAD SIGNS REVISED ROAD WORK NEXT XX MILES	
12-15-11	REVISED W24-1	
11-17-10	DELETED W8-9a & ADDED W8-9	
10-15-09	ADDED REFERENCE TO MASH & ADDED SIGN W24-1	
4-17-08	REVISED SIGN DESIGNATIONS	
11-18-04	REVISED NOTES	
10-9-03	REVISED NOTE 1	
11-16-01	REVISED NOTE 7	
9-28-00	REVISED NOTE	
11-18-98	ADDED NOTE	
6-26-97	REVISED NOTE 5	
4-03-97	REVISED NOTE 5	
10-18-96	ADDED CONTROLLED ACCESS HWY. SIGN & TO NOTE 7	
10-12-95	ADDED R55-1	
6-8-95	REVISED TO CORRECT SIGN ILLUSTRATIONS	6-8-95
2-2-95	REVISED PER PART VI, MUTCD SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	

ARKANSAS STATE HIGHWAY COMMISSION

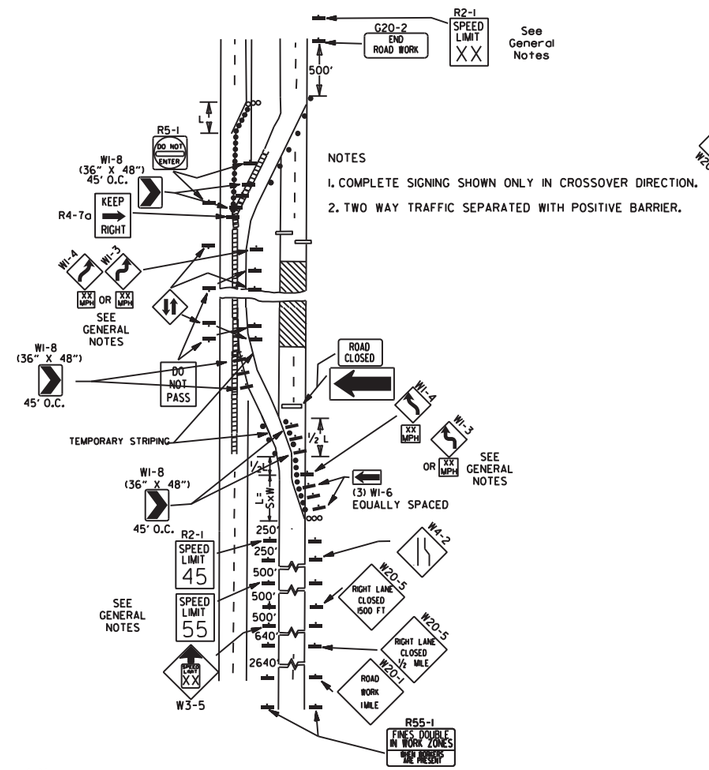
STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-1



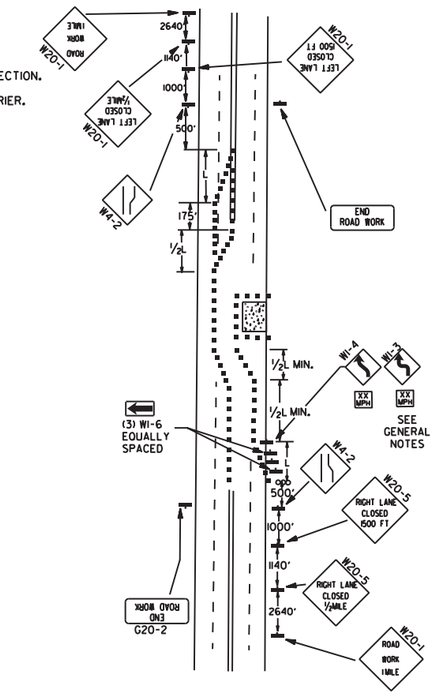
NOTES:
1. SIGNS SHOWN FOR ONE DIRECTION OF TRAVEL ONLY.
2. DELINEATORS ON BYPASS WHERE NEEDED.

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

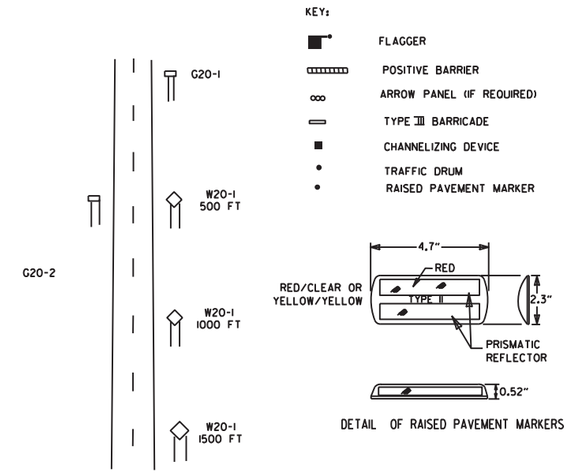


NOTES
1. COMPLETE SIGNING SHOWN ONLY IN CROSSOVER DIRECTION.
2. TWO WAY TRAFFIC SEPARATED WITH POSITIVE BARRIER.

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



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



TYPICAL ADVANCE WARNING SIGN PLACEMENT

TAPER FORMULAE:

L=SXW FOR SPEEDS OF 45MPH OR MORE.

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

WHERE:

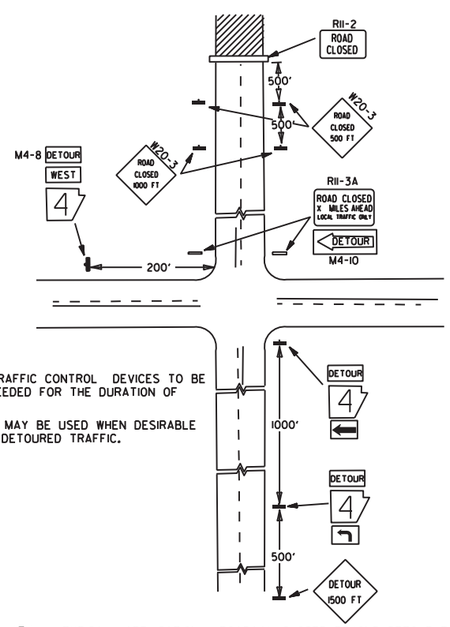
L= MINIMUM LENGTH OF TAPER.

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

W= WIDTH OF OFFSET.

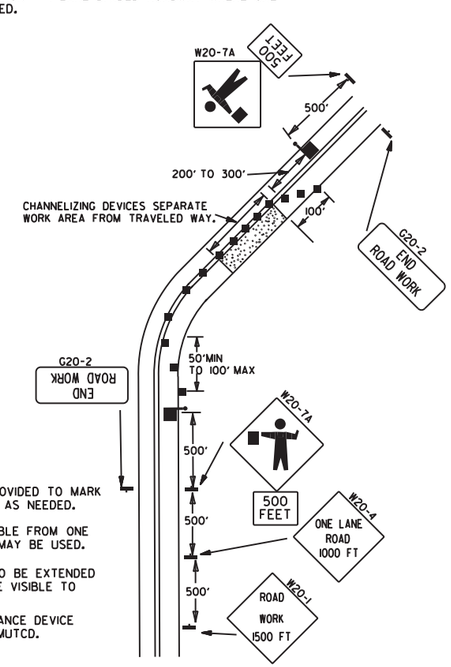
GENERAL NOTES:

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(55) SHALL BE OMITTED AND THE W3-5 SHALL BE INSTALLED AT THAT LOCATION. ADDITIONAL R2-1 45MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1MILE INTERVALS. AT THE END OF THE WORK AREA A R2-1(XX) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
3. WHEN THE EXISTING SPEED LIMIT IS 65MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 55MPH, THE R2-1(45) SHALL BE OMITTED. ADDITIONAL R2-1 55MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1MILE INTERVALS. AT THE END OF THE WORK AREA A R2-1(XX) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
4. THE MAXIMUM SPACING BETWEEN CHANNELIZING DEVICES IN A TAPER SHOULD BE APPROXIMATELY EQUAL IN FEET TO THE SPEED LIMIT. BEYOND THE TAPER, MAXIMUM SPACING SHALL BE TWO TIMES THE SPEED LIMIT, OR AS DIRECTED BY THE ENGINEER.
5. WARNING LIGHTS AND/OR FLAGS MAY BE MOUNTED TO SIGNS OR CHANNELIZING DEVICES AT NIGHT AS NEEDED.
6. PAVEMENT MARKINGS NO LONGER APPLICABLE WHICH MIGHT CREATE CONFUSION IN THE MINDS OF VEHICLE OPERATORS SHALL BE REMOVED OR OBLITERATED AS SOON AS PRACTICABLE.
7. TRAILER MOUNTED DEVICES SUCH AS ARROW PANELS AND PORTABLE CHANGEABLE MESSAGE SIGNS SHALL BE DELINEATED BY AFFIXING CONSPICUITY MATERIAL IN A CONTINUOUS LINE ON THE FACE OF THE TRAILER. WHEN PLACED ON OR ADJACENT TO THE SHOULDER AND NOT BEHIND A POSITIVE BARRIER, THESE DEVICES SHALL BE DELINEATED BY PLACING FIVE (5) TRAFFIC DRUMS, EQUALLY SPACED ALONG THE TRAFFIC SIDE OF THE DEVICE.
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).



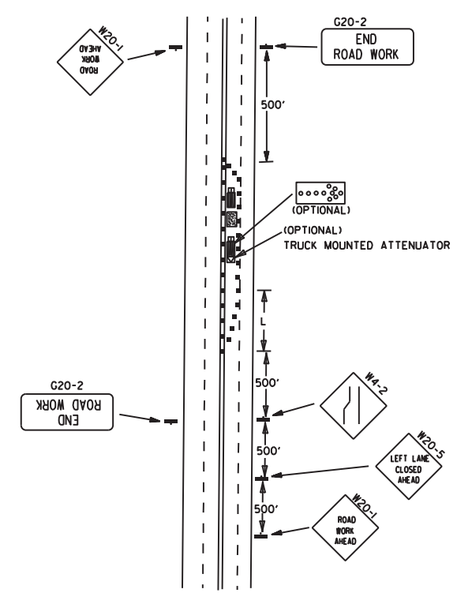
NOTES:
1. REGULATORY TRAFFIC CONTROL DEVICES TO BE MODIFIED AS NEEDED FOR THE DURATION OF THE DETOUR.
2. STREET NAMES MAY BE USED WHEN DESIRABLE FOR DIRECTING DETOURED TRAFFIC.

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



NOTES:
1. FLOOD LIGHTS SHOULD BE PROVIDED TO MARK FLAGGER STATIONS AT NIGHT AS NEEDED.
2. IF ENTIRE WORK AREA IS VISIBLE FROM ONE STATION, A SINGLE FLAGGER MAY BE USED.
3. CHANNELIZING DEVICES ARE TO BE EXTENDED TO A POINT WHERE THEY ARE VISIBLE TO APPROACHING TRAFFIC.
4. AUTOMATED FLAGGER ASSISTANCE DEVICE (AFAD) OPTIONAL. REFER TO MUTCD.

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



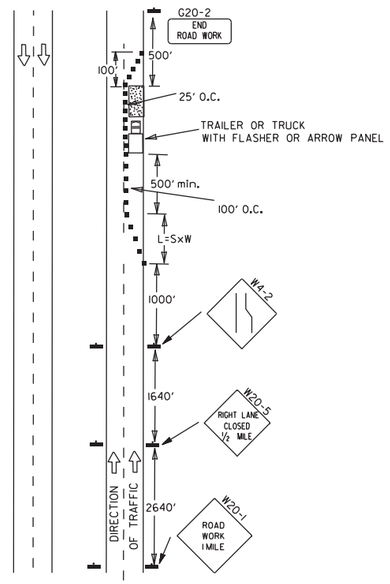
(F) TYPICAL APPLICATION - 4-LANE UNDIVIDED ROADWAY WITH INSIDE LANE CLOSED.

DATE	REVISION	FILMED
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	

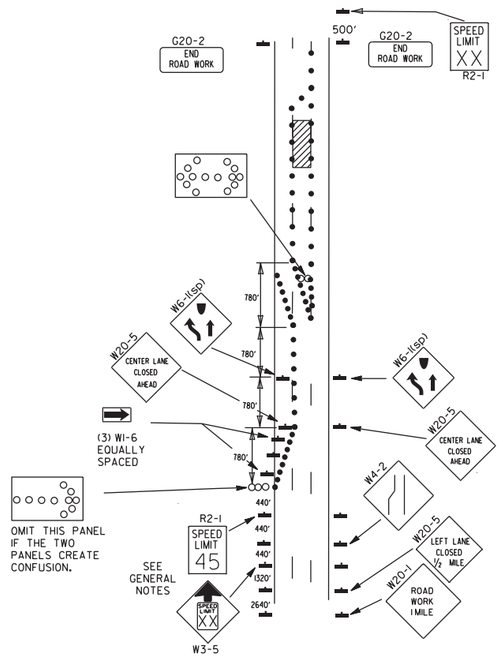
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-2



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



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

KEY:

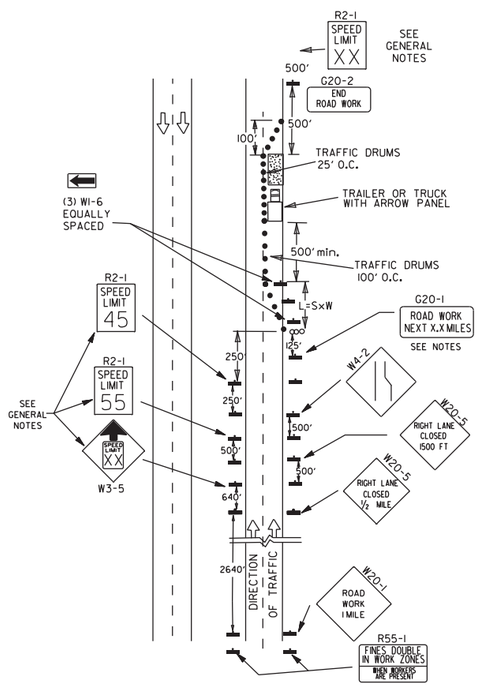
ooo ARROW PANEL (IF REQUIRED)

■ CHANNELIZING DEVICE

● TRAFFIC DRUM

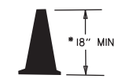
GENERAL NOTES:

1. A SPEED LIMIT REDUCTION MAY BE IMPLEMENTED ONLY WHEN DESIGNATED IN THE PLAN OR WHEN RECOMMENDED BY THE ROADWAY DESIGN DIVISION.
2. WHEN THE EXISTING SPEED LIMIT IS 55MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 45MPH, THE R2-1(55) SHALL BE OMITTED AND THE W3-5 SHALL BE INSTALLED AT THAT LOCATION. ADDITIONAL R2-1 45MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1MILE INTERVALS. AT THE END OF THE WORK AREA A R2-1(XX) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
3. WHEN THE EXISTING SPEED LIMIT IS 65MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 55MPH, THE R2-1(45) SHALL BE OMITTED. ADDITIONAL R2-1 55MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1MILE INTERVALS. AT THE END OF THE WORK AREA A R2-1(XX) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
4. THE MAXIMUM SPACING BETWEEN CHANNELIZING DEVICES IN A TAPER SHOULD BE APPROXIMATELY EQUAL IN FEET TO THE SPEED LIMIT. BEYOND THE TAPER, MAXIMUM SPACING SHALL BE TWO TIMES THE SPEED LIMIT OR AS DIRECTED BY THE ENGINEER.
5. WARNING LIGHTS AND/OR FLAGS MAY BE MOUNTED TO SIGNS OR CHANNELIZING DEVICES AT NIGHT AS NEEDED.
6. PAVEMENT MARKINGS NO LONGER APPLICABLE WHICH MIGHT CREATE CONFUSION IN THE MINDS OF VEHICLE OPERATORS SHALL BE REMOVED OR OBLITERATED AS SOON AS PRACTICABLE.
7. THE G20-1 SIGN WILL BE REQUIRED ON JOBS OF OVER TWO MILES IN LENGTH. WHEN THE LANE CLOSURE IS NOT AT THE BEGINNING OF THE PROJECT, THE G20-1 SIGN SHALL BE ERECTED 125' IN ADVANCE OF THE JOB LIMIT. ADDITIONAL W20-1 (1 MILE) SIGNS ARE NOT REQUIRED IN ADVANCE OF LANE CLOSURES THAT BEGIN INSIDE THE PROJECT LIMITS.
8. FLAGGERS SHALL USE STOP/SLOW PADDLES FOR CONTROLLING TRAFFIC THROUGH WORK ZONES. FLAGS MAY BE USED ONLY FOR EMERGENCY SITUATIONS.
9. ALL PLASTIC DRUMS AND CONES SHALL MEET THE REQUIREMENTS OF 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.
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).



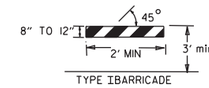
(C) TYPICAL APPLICATION - CONSTRUCTION OPERATIONS OF INTERMEDIATE TO LONG TERM DURATION ON A 4-LANE DIVIDED ROADWAY WHERE HALF OF THE ROADWAY IS CLOSED.

CHANNELIZING DEVICES



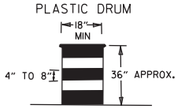
* WHEN CONES ARE USED ON FREEWAYS AND MULTI-LANE HIGHWAYS, THEY SHALL BE 28" MIN. DURING HOURS OF DARKNESS, 28" CONES SHALL BE USED ON ALL ROADWAYS, AND SHALL BE REFLECTORIZED IN ACCORDANCE WITH THE M.U.T.C.D.

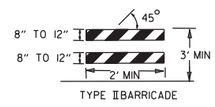
CONES



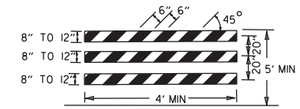
TYPE I BARRICADE

PLASTIC DRUM



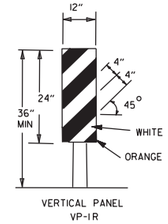


TYPE II BARRICADE



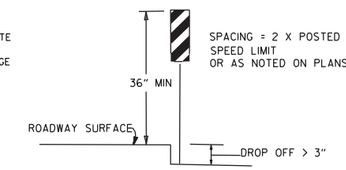
TYPE III BARRICADE

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

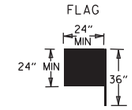


VERTICAL PANEL
VP-1R

VERTICAL PANEL PLACEMENT



FLAG



FLAG SHALL BE OF GOOD GRADE RED MATERIAL

TRAFFIC CONTROL DEVICES

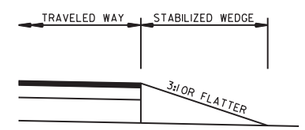
NON-INTERSTATE			
VERTICAL DIFFERENTIAL	LOCATION	TRAFFIC CONTROL	
		≤ 45 MPH	> 45 MPH
≤ 2"	CENTERLINE	W8-11 AND LANE STRIPING	W8-11 AND LANE STRIPING
> 2"	CENTERLINE	STANDARD LANE CLOSURE	STANDARD LANE CLOSURE
≤ 3"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-9, EDGE LINE STRIPING, AND VERTICAL PANELS	W8-9, EDGE LINE STRIPING, AND VERTICAL PANELS
> 3" ≤ 6"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-17, EDGE LINE STRIPING, AND VERTICAL PANELS	W8-17, EDGE LINE STRIPING, AND VERTICAL PANELS
> 6" ≤ 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" ≤ 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(3)
> 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
≤ 2"	CENTERLINE	W8-11 AND LANE STRIPING
≤ 2"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-9, EDGE LINE STRIPING, AND TRAFFIC DRUMS(2)
> 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:

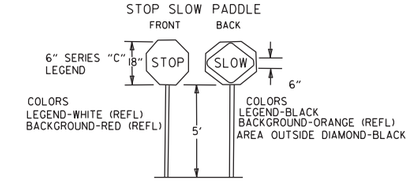
1. WHEN THE SHOULDER AREA IS USED AS PART OF THE TRAVELED LANE AND THERE IS INSUFFICIENT WIDTH TO PLACE TRAFFIC DRUMS ON THE REMAINING SHOULDER WIDTH, THEN VERTICAL PANELS SHALL BE USED.
2. WHEN THERE IS INSUFFICIENT WIDTH TO PLACE TRAFFIC DRUMS ON THE REMAINING SHOULDER WIDTH, A STABILIZED WEDGE SHALL BE USED.
3. 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.
4. 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.
5. W21-5, W21-5a, AND/OR W21-5b SIGNS SHALL BE USED WHERE THE ROADWAY IS UNOBSTRUCTED IF AND WHERE DIRECTED BY THE ENGINEER.



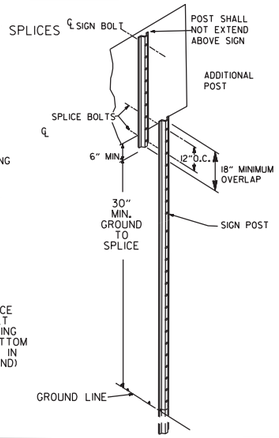
STABILIZED WEDGE

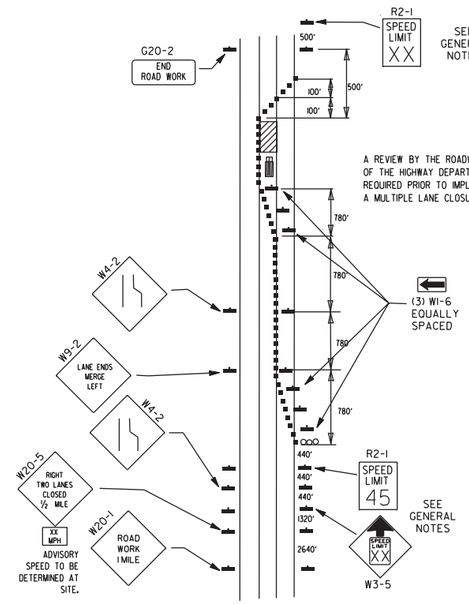
NOTE:
MATERIALS FOR THE STABILIZED WEDGE SHALL MEET THE REQUIREMENTS PROVIDED IN SECTION 603.02 OF THE STANDARD SPECIFICATIONS.

STOP SLOW PADDLE



DETAIL OF SPLICES





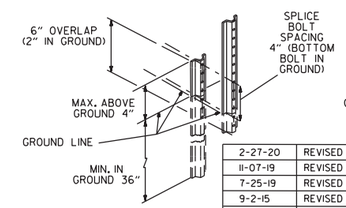
A REVIEW BY THE ROADWAY DESIGN DIVISION OF THE HIGHWAY DEPARTMENT WILL BE REQUIRED PRIOR TO IMPLEMENTING A MULTIPLE LANE CLOSURE.

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

NOTES: USE SPLICES ONLY WHEN NECESSARY FOR INSTALLATION. TYPICAL INSTALLATION SHOULD HAVE NO SPLICES (SEE STD. DRAWING NO. SHS-2)

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

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



DATE	REVISION	FILMED
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	

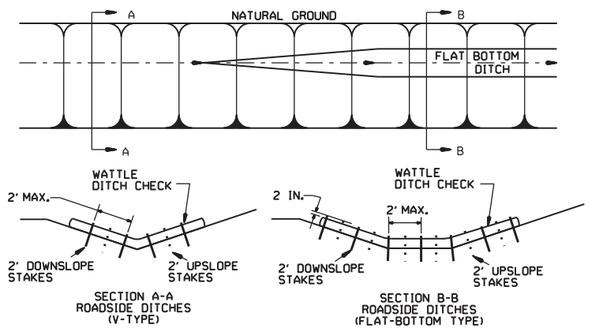
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

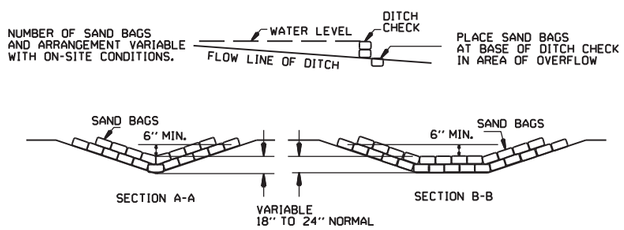
STANDARD DRAWING TC-3

GENERAL NOTES

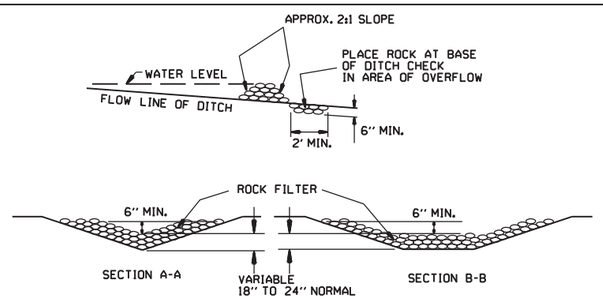
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.



WATTLE DITCH CHECK (E-1)



SAND BAG DITCH CHECK (E-5)

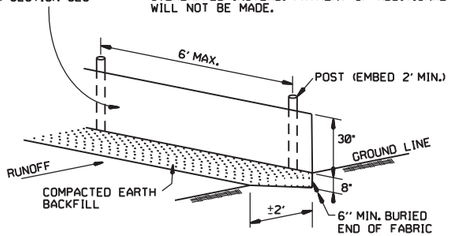


ROCK DITCH CHECK (E-6)

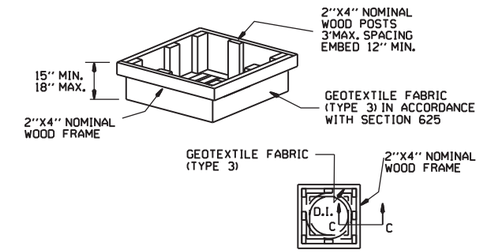
GENERAL NOTES

GEOTEXTILE FABRIC (TYPE 4) IN ACCORDANCE WITH SECTION 625

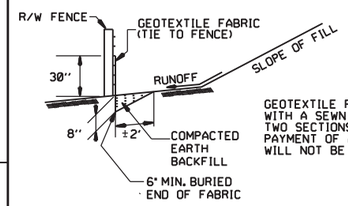
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.



SILT FENCE (E-11)

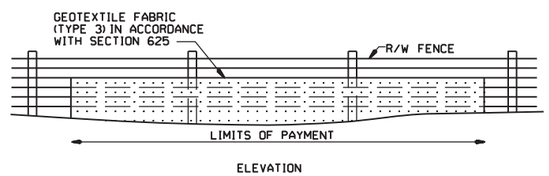


DROP INLET SILT FENCE (E-7)



GENERAL NOTES

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



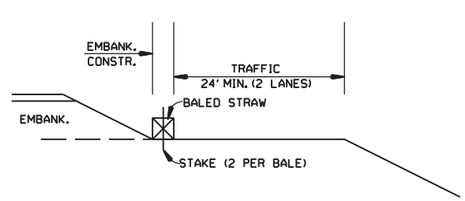
SILT FENCE ON R/W FENCE (E-4)

GENERAL NOTES

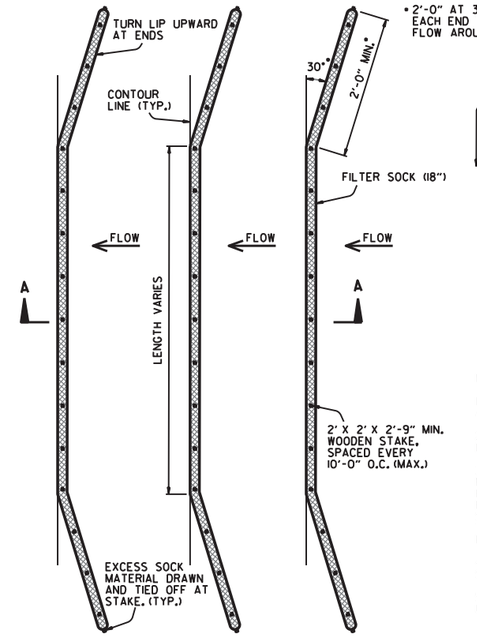
1. STRAW BALES SHALL BE INSTALLED SO THAT THE BINDINGS ARE ORIENTED AROUND THE SIDES RATHER THAN ALONG THE TOPS AND BOTTOMS OF THE BALES. THE BALES SHALL BE A MINIMUM OF 30 INCHES IN LENGTH.

2. NO GAPS SHALL BE LEFT BETWEEN BALES.

3. BALED STRAW FILTER BARRIERS COMPLETED AND ACCEPTED WILL BE MEASURED BY THE BALE IN PLACE AS AUTHORIZED BY THE ENGINEER AND WILL BE PAID FOR AT THE CONTRACT UNIT PRICE BID PER BALE FOR BALED STRAW DITCH CHECKS.

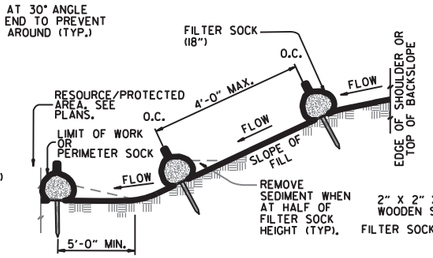


BALED STRAW FILTER BARRIER (E-2)

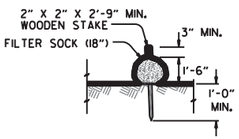


PLAN VIEW
N.T.S.

* 2'-0" AT 30° ANGLE EACH END TO PREVENT FLOW AROUND (TYP.)



SECTION A-A
N.T.S.



STAKING DETAIL
N.T.S.

NOTES:

1. FILTER SOCKS CAN BE PLACED AT THE TOP, ON THE FACE, AND AT THE TOE OF SLOPES AS SEDIMENT-TRAPPING DEVICES FOR SHEET FLOW RUNOFF.

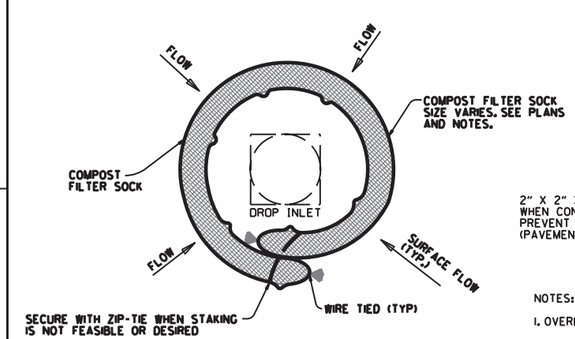
2. FILTER SOCKS ARE TYPICALLY SUPPLIED AND INSTALLED WITH 18 INCH DIAMETERS. DIAMETER TOLERANCE IS 2 INCHES. AS FILTER SOCKS TEND TO FLATTEN OUT WHEN PLACED.

3. STEEL POSTS MAY BE USED AND SHALL BE ROLLED FROM HIGH CARBON STEEL AND HAVE A MINIMUM OF 1.25 LB./FT. POSTS SHALL BE HOT-DIPPED GALVANIZED OR PAINTED WITH HIGH-GRADE WEATHER RESISTANT BROWN OR BLACK STEEL PAINT. STEEL POSTS SHALL BE EQUIPPED WITH ANCHOR PLATE HAVING A MINIMUM AREA OF 14 SQUARE INCHES. POSTS SHALL BE STUDDED, EMBOSSED, OR PUNCHED. POSTS AND ANCHOR PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A702. NO ADDITIONAL PAYMENT WILL BE PROVIDED FOR STEEL POSTS, BUT PRICE WILL BE CONSIDERED SUBIDIARY TO "FILTER SOCK (18")."

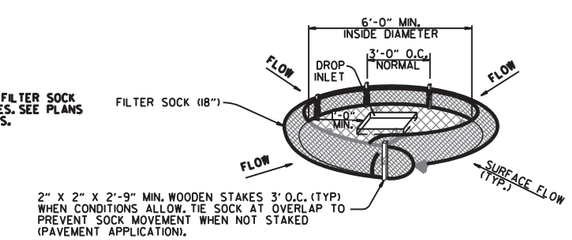
4. FILTER SOCKS MAY BE UP TO 250 FEET LONG. WHEN USED ON LONG SLOPES, FILTER SOCKS MAY BE JOINTED OR STAGGERED AS SHOWN IN DETAILS.

5. INSPECT FILTER SOCKS AFTER EACH RUNOFF EVENT. REMOVE AND REPLACE IF SIGNS OF UNDERCUTTING OR DOWNSTREAM RILLS ARE OBSERVED.

FILTER SOCK ALONG SLOPE (E-3)



DROP INLET PLAN VIEW
N.T.S.



DROP INLET PERSPECTIVE VIEW
N.T.S.

NOTES:

1. OVERLAP ENDS OF SOCK (1' MIN. 3' MAX.).

2. USE 18" DIA. SOCK IN NON-TRAFFIC AREAS OR AREAS WHERE SAFETY IS NOT A CONCERN.

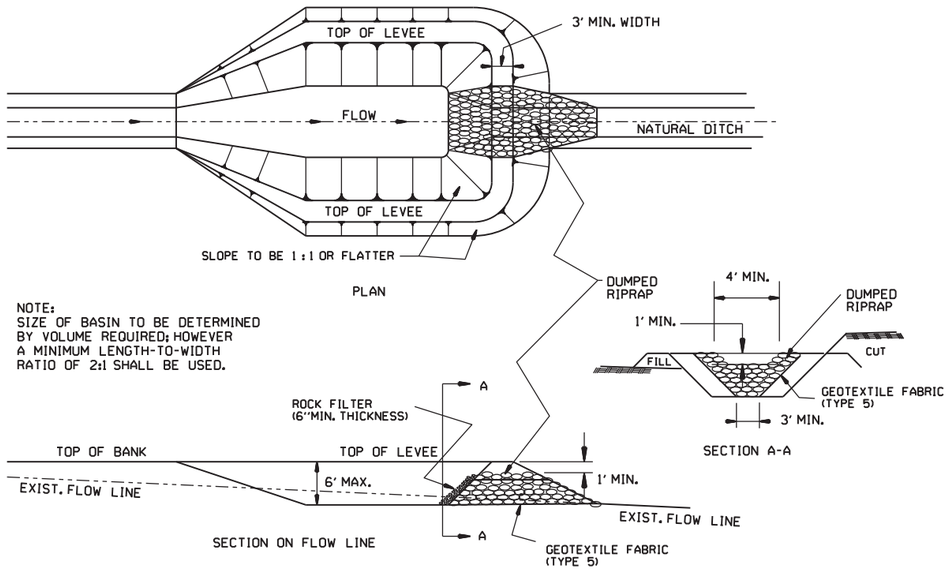
COMPOST FILTER SOCK DROP INLET PROTECTION (E-13)

DATE	REVISION	FILMED
11-16-17	ADDED FILTER SOCK E-3 AND E-13	
12-15-11	DELETED BALED STRAW DITCH CHECK & ADDED WATTLE DITCH CHECK	
11-18-98	ADDED NOTES	
07-02-98	ADDED BALED STRAW FILTER BARRIER (E-2)	
07-20-95	REVISED 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

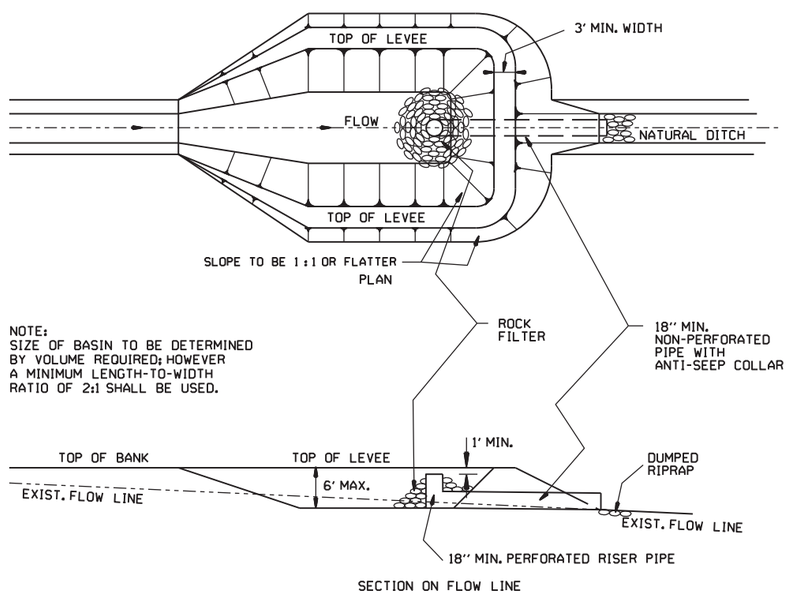
ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

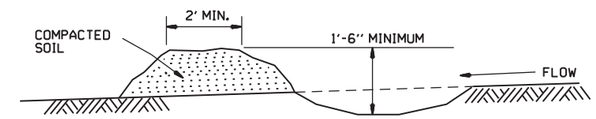
STANDARD DRAWING TEC-1



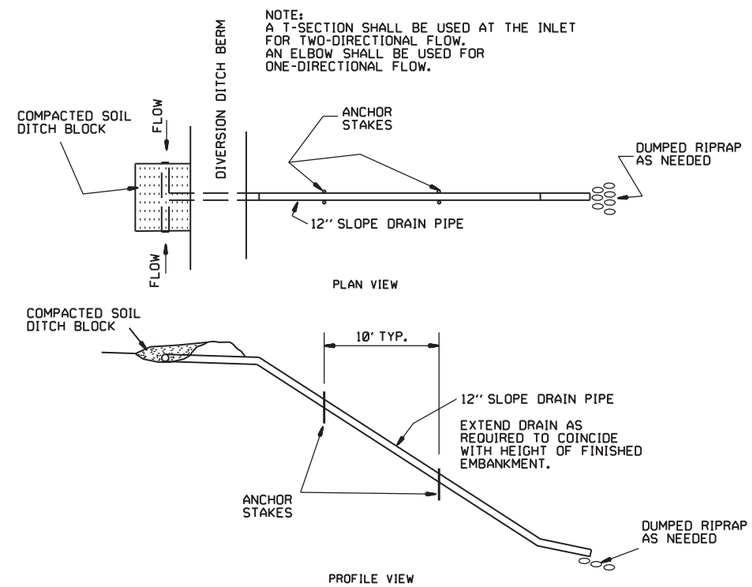
SEDIMENT BASIN WITH RIPRAP OUTLET (E-9)



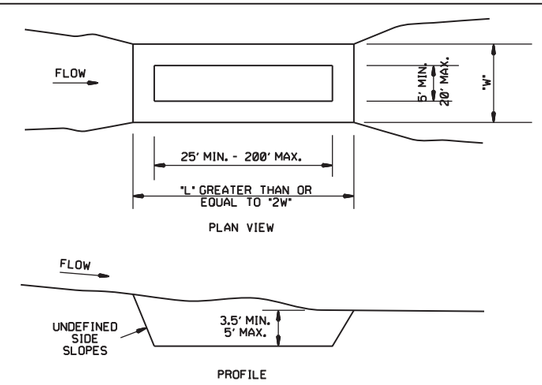
SEDIMENT BASIN WITH PIPE OUTLET (E-10)



DIVERSION DITCH (E-8)



SLOPE DRAIN (E-12)



SEDIMENT BASIN (E-14)

DATE	REVISION	FILMED
6-2-94	Revised E-8 & E-12; Added E-14 & Deleted E-13	
4-1-93	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

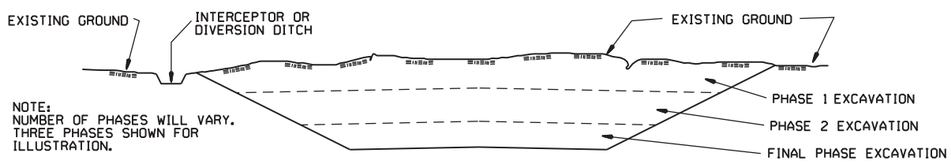
STANDARD DRAWING TEC-2

CLEARING AND GRUBBING

CONSTRUCTION SEQUENCE

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

EXCAVATION



NOTE:
NUMBER OF PHASES WILL VARY.
THREE PHASES SHOWN FOR ILLUSTRATION.

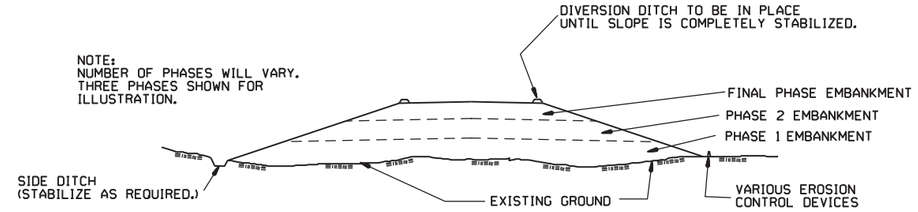
GENERAL NOTE

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



NOTE:
NUMBER OF PHASES WILL VARY.
THREE PHASES SHOWN FOR ILLUSTRATION.

GENERAL NOTE

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

CONSTRUCTION SEQUENCE

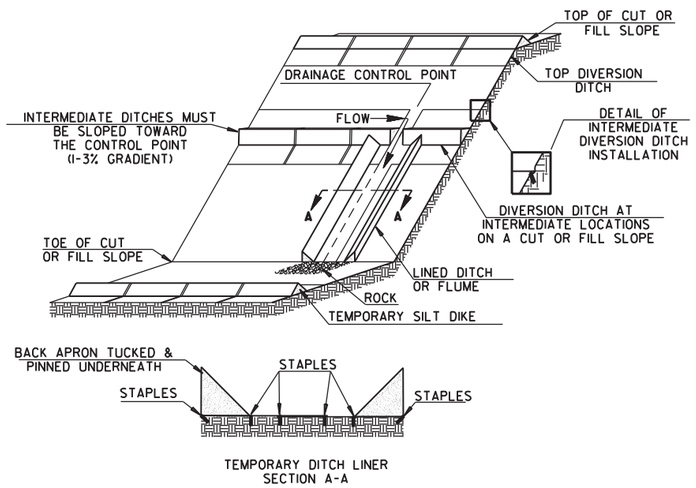
1. CONSTRUCT DIVERSION DITCHES, DITCH CHECKS, SEDIMENT BASINS, SILT FENCES, OR OTHER EROSION CONTROL DEVICES AS SPECIFIED.
2. PLACE PHASE 1 EMBANKMENT WITH PERMANENT OR TEMPORARY SEEDING. PROVIDE DIVERSION DITCHES AND SLOPE DRAINS IF EMBANKMENT CONSTRUCTION IS TO BE TEMPORARILY ABANDONED FOR A PERIOD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

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

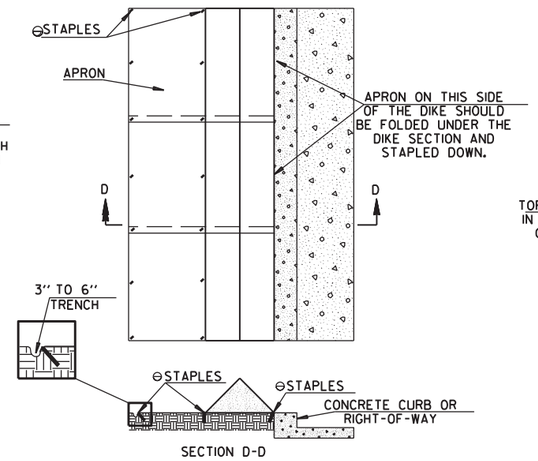
ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

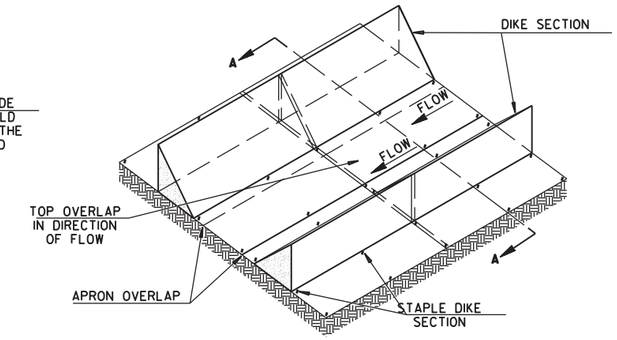
STANDARD DRAWING TEC-3



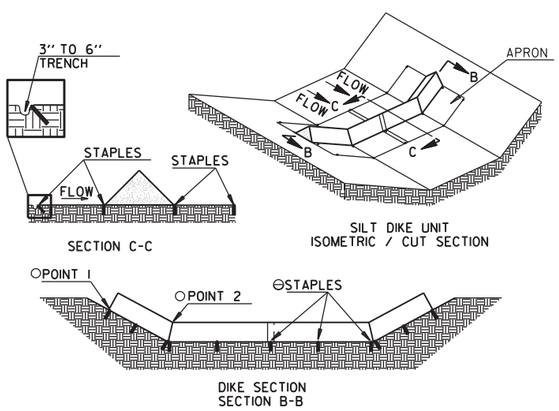
TRIANGULAR SILT DIKE INSTALLATION
FOR
DIVERSION DITCH AND/OR DITCH LINER



TRIANGULAR SILT DIKE INSTALLATION
FOR
CONTINUOUS BARRIER



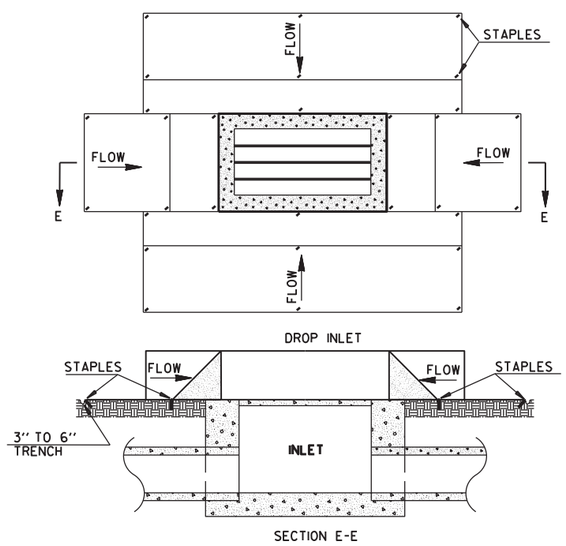
TRIANGULAR SILT DIKE INSTALLATION
FOR
TEMPORARY DITCH LINER



TRIANGULAR SILT DIKE INSTALLATION
FOR
ROADWAY DITCH OR DRAINAGE DITCH

○ POINT "1" MUST BE HIGHER THAN POINT "2" TO ENSURE THAT WATER FLOWS OVER THE DIKE AND NOT AROUND THE ENDS.

⊖ STAPLES SHALL BE PLACED WHERE THE UNITS OVERLAP AND IN THE CENTER OF THE UNIT AS SHOWN ON THE DIAGRAM.



TRIANGULAR SILT DIKE INSTALLATION
FOR
DROP INLETS

SYMBOLOGY

SYMBOL TO BE USED TO DENOTE DEVICE ON PLANS

NOTE: SILT DIKE SHOULD ONLY BE USED FOR DROP INLETS IN SUMP LOCATIONS.

GENERAL NOTES

1. THIS WORK SHALL CONSIST OF FURNISHING, INSTALLING, AND MAINTAINING THE TRIANGULAR SILT DIKE. THE DIKES SHALL BE USED AS A CONTINUOUS LINE BARRIER AT THE TOE OF SLOPE OR ACROSS THE ROADWAY DITCH TO CONTAIN SEDIMENT AND MINIMIZE EROSION, OR AS DIRECTED BY THE ENGINEER. THESE DIKES SHALL BE INSTALLED AND LOCATED AS SOON AS CONSTRUCTION WILL ALLOW OR AS DIRECTED BY THE ENGINEER.

2. TRIANGULAR SILT DIKE SHALL BE TRIANGULAR SHAPED HAVING A HEIGHT OF AT LEAST 8" TO 10" IN THE CENTER WITH EQUAL SIDES AND A 16" TO 20" BASE. THE TRIANGULAR SHAPED INNER MATERIAL SHALL BE URETHANE FOAM. THE OUTER COVER SHALL BE A WOVEN GEOTEXTILE FABRIC PLACED AROUND THE INNER MATERIAL & ALLOWED TO EXTEND BEYOND BOTH SIDES OF THE TRIANGLE 24" TO 36". THIS FABRIC SHOULD BE MILDEW RESISTANT, ROT-PROOF AND RESISTANT TO HEAT AND ULTRAVIOLET RADIATION MEETING REQUIREMENTS FOR SEDIMENT CONTROL IN AASHTO M288. THE DIKES SHALL BE ATTACHED TO THE GROUND WITH WIRE STAPLES. THE STAPLES SHALL BE NO. 11 GAUGE WIRE AND BE AT LEAST 6" TO 8" LONG. STAPLES SHALL BE PLACED AS SHOWN ON THESE DETAILS.

   THE CONTRACTOR SHALL INSPECT ALL DIKES AFTER EACH RAINFALL EVENT OF AT LEAST 0.5" OR GREATER. ANY DEFICIENCIES OR DAMAGE SHALL BE REPAIRED BY THE CONTRACTOR. ACCUMULATED SILT OR DEBRIS SHALL BE REMOVED AND RELOCATED AS DIRECTED BY THE ENGINEER. IF THE DIKES ARE DAMAGED OR INADVERTENTLY MOVED DURING THE SILT REMOVAL PROCESS, THE CONTRACTOR SHALL IMMEDIATELY REPLACE AFTER DAMAGE OCCURS.

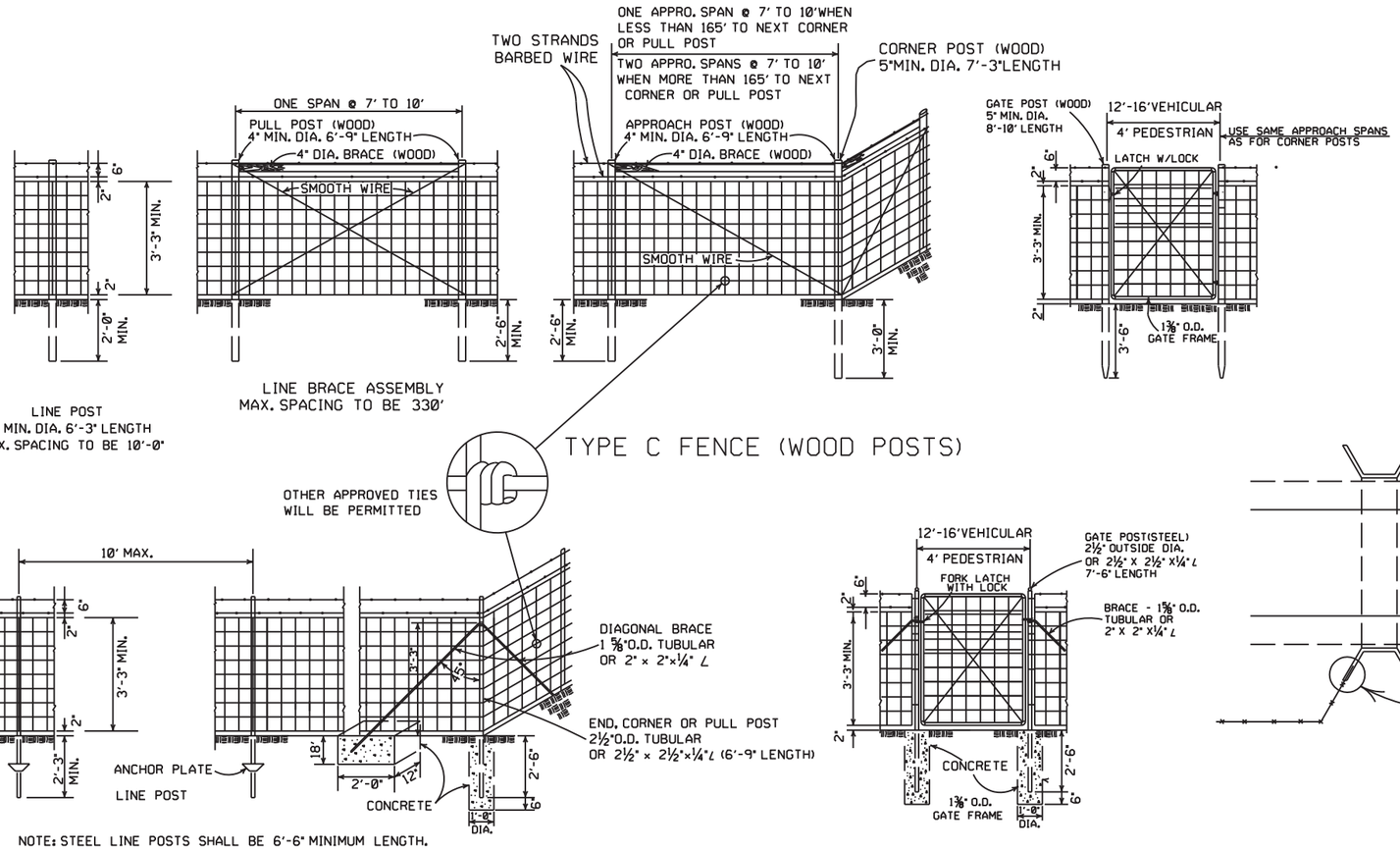
3. ACCEPTED TRIANGULAR SILT DIKE, MEASURED AS PROVIDED ABOVE, WILL BE PAID FOR AT THE CONTRACT UNIT PRICE BID FOR TRIANGULAR SILT DIKE. PRICE BID WILL INCLUDE THE COST OF FURNISHING THE DIKES, INSTALLING, MAINTAINING AND REMOVAL WHEN DIRECTED BY THE ENGINEER.

DATE	REVISION	FILMED
7-26-12	REVISED GENERAL NOTE 2.	
12-15-11	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

STANDARD DRAWING TEC-4



GENERAL NOTES:

STEEL LINE POSTS SHALL BE PAINTED OR GALVANIZED.
TUBULAR END, CORNER, PULL, OR DIAGONAL BRACES MUST CONFORM TO THE DIMENSIONS AND WEIGHTS SPECIFIED ON STANDARD DRAWING WF-3 (CHAIN LINK). APPROVED ALTERNATES ARE ACCEPTABLE.
AN ACCEPTABLE TOLERANCE IN LENGTH OF TUBULAR OR WOODEN POSTS SHALL BE - 1" TO +2".
TUBULAR POSTS MUST BE PAINTED OR GALVANIZED.

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

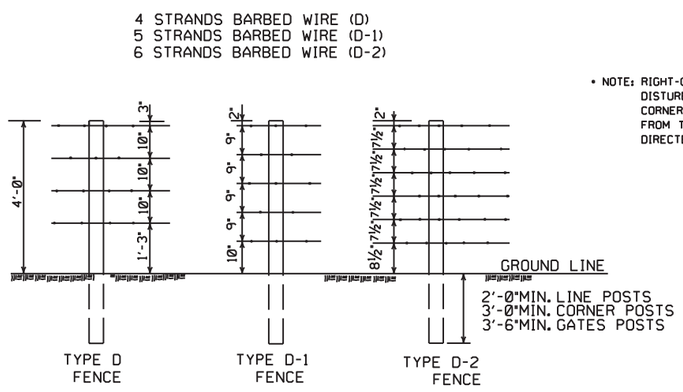
DRIVEWAY GATES, EITHER SINGLE 12' TO 16' OR DOUBLE 6' TO 8' OPENING OF THE SAME TYPE AS THE PEDESTRIAN GATE, SHALL BE INSTALLED ON THE RIGHT SIDE OF EACH THROUGH LANE ROAD AT LARGE CULVERTS OR BRIDGE CROSS FENCE, FOR USE OF MAINTENANCE EQUIPMENT. LOCATION OF GATES TO BE SHOWN ON PLANS OR AS DESIGNATED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

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

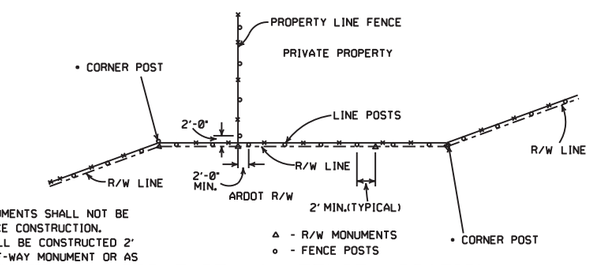
SPLICE FOR BARBED WIRE BETWEEN PULL POST ASSEMBLY SHALL BE BY THE "EYE METHOD" AS DESCRIBED AS FOLLOWS:
THE ENDS OF THE BARBED WIRE SHALL BE BENT TO FORM A LOOP. THE LOOPS SHALL BE CONNECTED. AFTER THE LOOPS ARE CONNECTED THE ENDS OF THE WIRE SHALL BE WRAPPED AROUND THE PROJECTING WIRES A MINIMUM OF 4 TIMES FOR EACH WIRE LOOP.

SPLICE FOR WOVEN WIRE BETWEEN PULL POST SHALL BE BY THE "WESTERN UNION METHOD" AS DESCRIBED AS FOLLOWS: THE VERTICAL WIRES FOR EACH END OF THE FENCE FABRIC SHALL BE PLACED SIDE BY SIDE AND THE PROJECTING HORIZONTAL WIRES SHALL BE WRAPPED A MINIMUM OF 4 TIMES AROUND THE HORIZONTAL WIRES OF THE FIRST WEB.

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

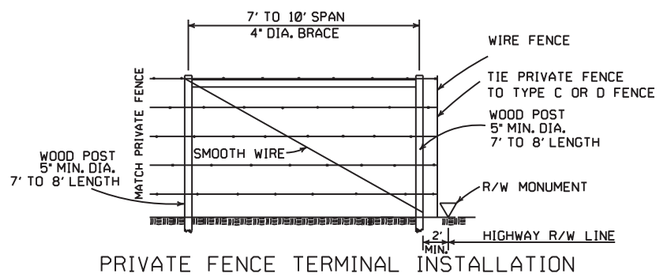


NOTE: SPACING AND SIZE (EXCEPT LENGTH) OF POSTS, APPROACH SPANS, PULL POST ASSEMBLIES, AND CORNER BRACING FOR TYPE D FENCE SHALL CONFORM TO TYPE C FENCE. USE GALVANIZED STAPLES ON WOOD POSTS AND APPROVED FASTENERS ON STEEL POSTS.

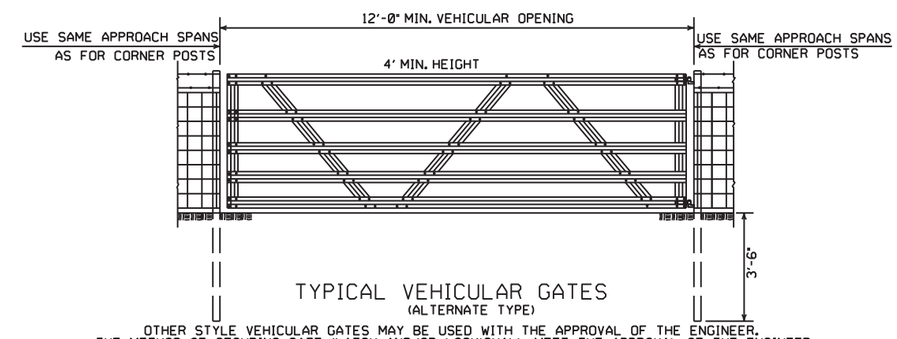


• NOTE: RIGHT-OF-WAY MONUMENTS SHALL NOT BE DISTURBED BY FENCE CONSTRUCTION. CORNER POSTS SHALL BE CONSTRUCTED 2' FROM THE RIGHT-OF-WAY MONUMENT OR AS DIRECTED BY THE ENGINEER.

RIGHT-OF-WAY FENCE LOCATION



PRIVATE FENCE TERMINAL INSTALLATION
WHERE EXISTING FENCE CONSISTS OF STEEL POSTS, USE END POST ASSEMBLY AS SHOWN IN TYPE C FENCE OR OTHER END POST ASSEMBLY AS APPROVED BY THE ENGINEER.



TYPICAL VEHICULAR GATES
(ALTERNATE TYPE)
OTHER STYLE VEHICULAR GATES MAY BE USED WITH THE APPROVAL OF THE ENGINEER.
THE METHOD OF SECURING GATE (LATCH AND/OR LOCK) SHALL MEET THE APPROVAL OF THE ENGINEER.

DATE	REVISION	FILMED
8-22-02	REVISED GENERAL NOTES	
10-18-96	REVISED AASHTO	
11-22-95	REVISED R-O-W LOCATION DETAIL	
6-2-94	REVISED BARB WIRE AND	6-2-94
	ADDED CORNER POST NOTES	
8-5-93	REVISED R/W INSTALLATION FENCE	8-5-93
10-1-92	ADDED STAPLE NOTE	10-1-92
8-15-91	ADDED TYPE D-2 FENCE	8-15-91
11-30-89	DELETED CLASS CONCRETE	11-30-89
7-15-88	ADDED SPLICE NOTE	700-7-15-88
10-30-87	GENERAL REVISIONS	549-10-30-87
11-1-84	MAX. POST SPACING MIN. WIRE GAUGE	507-11-1-84
1-4-83	MIN. DIA. LINE POST	648-1-4-83
3-2-81	TOLERANCE FOR POST LENGTH	722-3-2-81
12-1-72	ADDED D-1 & FENCE INSTALLATION	564-12-1-72
10-2-72	REVISED AND REDRAWN	540-10-2-72

ARKANSAS STATE HIGHWAY COMMISSION

WIRE FENCE TYPE C AND D

STANDARD DRAWING WF-4