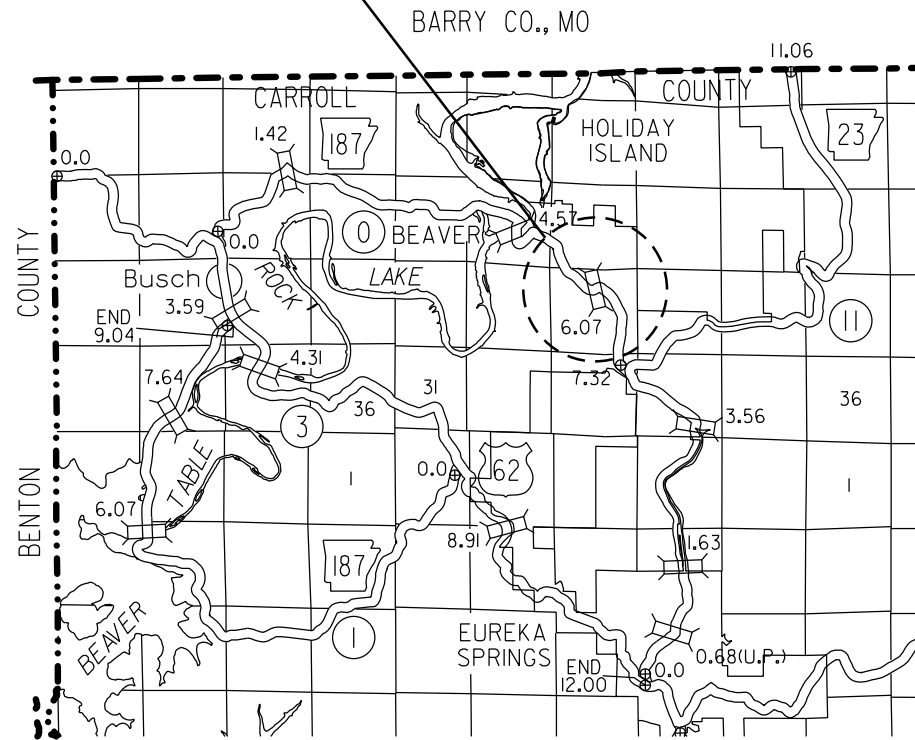


DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090549	I	72
				(2) LEATHERWOOD CREEK STR. & APPRS. (S)				

PROJECT LOCATION



VICINITY MAP

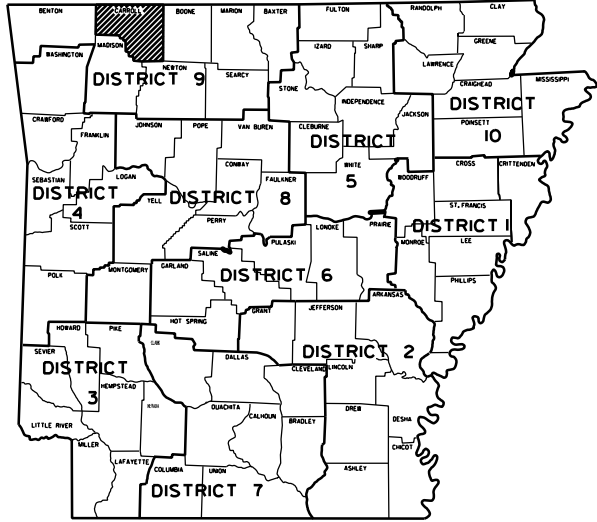
ARKANSAS DEPARTMENT OF TRANSPORTATION
CONSTRUCTION PLANS FOR STATE HIGHWAY

LEATHERWOOD CREEK
STR. & APPRS. (S)

CARROLL COUNTY
ROUTE 187 SECTION 0

JOB 090549

FED. AID PROJ. No. NHPP-0008 (43)



ARK. HWY. DIST. NO. 9

• DESIGN TRAFFIC DATA •

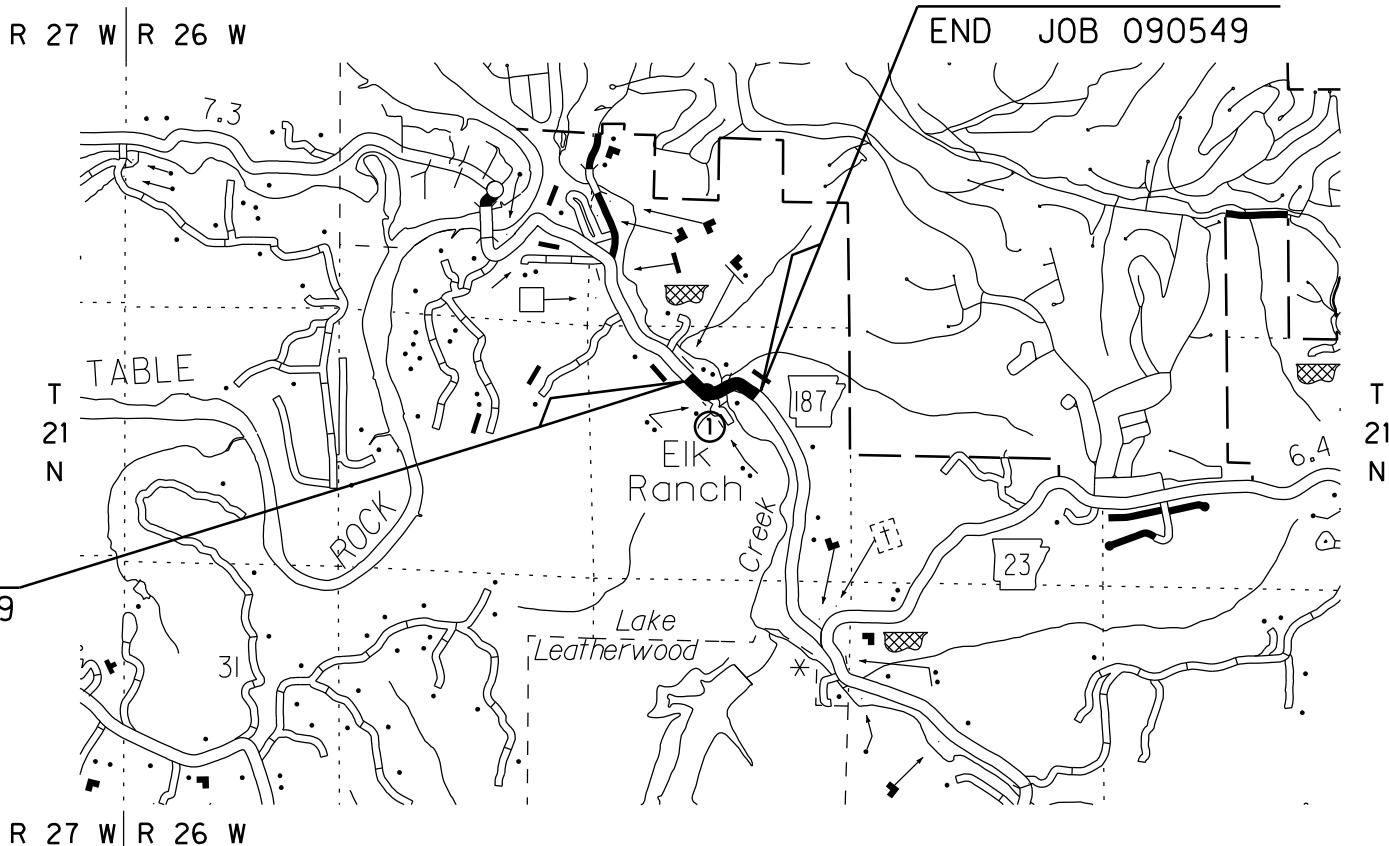
DESIGN YEAR	2043
2023 ADT	1800
2043 ADT	2200
2023 DHV	242
DIRECTIONAL DISTRIBUTION	60%
TRUCKS	4%
DESIGN SPEED	30 MPH

BRIDGE DATA

- ① STA. 19+04.00 BR. END
BRIDGE NO. 07589
180' -0" CONT. R.C. SLAB UNIT
(5 @ 36')
34' -0" CLEAR ROADWAY
180' -0" TOTAL LENGTH
STA. 20+84.00 BR. END

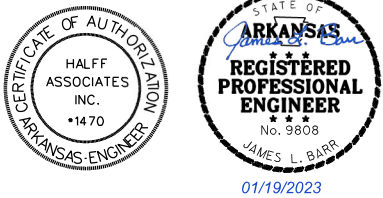
NOT TO SCALE

STA. 13+00.00
BEGIN JOB 090549
LOG MILE 5.93



GROSS LENGTH OF PROJECT	1301.55	FEET OR	0.247	MILES
NET " " ROADWAY	1121.55	" "	0.212	"
NET " " BRIDGES	180.00	" "	0.035	"
NET " " PROJECT	1301.55	" "	0.247	"

BEGINNING OF PROJECT	MID POINT OF PROJECT	END OF PROJECT
LATITUDE = N 36°27'44"	LATITUDE = N 36°27'43"	LATITUDE = N 36°27'43"
LONGITUDE = W 93°45'14"	LONGITUDE = W 93°45'07"	LONGITUDE = W 93°45'00"



DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090549	2	72

2 INDEX OF SHEETS



INDEX OF SHEETS				
SHEET NO.		TITLE	BRIDGE NO.	DRWG. NO.
	1	TITLE SHEET		
	2	INDEX OF SHEETS		
	3	STANDARD DRAWINGS		
	4	GOVERNING SPECIFICATIONS AND GENERAL NOTES		
5	- 6	TYPICAL SECTIONS OF IMPROVEMENT		
7	- 15	SPECIAL DETAILS		
16	- 18	TEMPORARY EROSION CONTROL DETAILS		
19	- 21	MAINTENANCE OF TRAFFIC DETAILS		
	22	PERMANENT PAVEMENT MARKING DETAILS		
23	- 27	QUANTITIES		
	28	SUMMARY OF BRIDGE QUANTITIES	07589	65352
	29	SUMMARY OF QUANTITIES AND REVISIONS		
30	- 31	SURVEY CONTROL DETAILS		
32	- 34	PLAN AND PROFILE SHEETS		
	35	LAYOUT OF HWY 187 BRIDGE OVER LEATHERWOOD CREEK (SHEET 1 OF 3)	07589	65353
	36	LAYOUT OF HWY 187 BRIDGE OVER LEATHERWOOD CREEK (SHEET 2 OF 3)	07589	65354
	37	LAYOUT OF HWY 187 BRIDGE OVER LEATHERWOOD CREEK (SHEET 2 OF 3)	07589	65355
	38	DETAILS OF STAGE CONSTRUCTION	07589	65356
	39	DETAILS OF BENTS 1 & 6 (SHEET 1 OF 3)	07589	65357
	40	DETAILS OF BENTS 1 & 6 (SHEET 2 OF 3)	07589	65358
	41	DETAILS OF BENTS 1 & 6 (SHEET 3 OF 3)	07589	65359
	42	DETAILS OF BENTS 2-5 (SHEET 1 OF 4)	07589	65360
	43	DETAILS OF BENTS 2-5 (SHEET 2 OF 4)	07589	65361
	44	DETAILS OF BENTS 2-5 (SHEET 3 OF 4)	07589	65362
	45	DETAILS OF BENTS 2-5 (SHEET 4 OF 4)	07589	65363
	46	DETAILS OF 180'-0" CONTINUOUS R.C. SLAB UNIT (SHEET 1 OF 4)	07589	65364
	47	DETAILS OF 180'-0" CONTINUOUS R.C. SLAB UNIT (SHEET 2 OF 4)	07589	65365
	48	DETAILS OF 180'-0" CONTINUOUS R.C. SLAB UNIT (SHEET 3 OF 4)	07589	65366
	49	DETAILS OF 180'-0" CONTINUOUS R.C. SLAB UNIT (SHEET 4 OF 4)	07589	65367
	50	DETAILS OF DECORATIVE CONCRETE BRIDGE RAIL (SHEET 1 OF 3)	07589	65368
	51	DETAILS OF DECORATIVE CONCRETE BRIDGE RAIL (SHEET 2 OF 3)	07589	65369
	52	DETAILS OF DECORATIVE CONCRETE BRIDGE RAIL (SHEET 3 OF 3)	07589	65370
	53	DETAILS FOR TYPE SPECIAL APPROACH SLAB (SHEET 1 OF 3)	07589	65371
	54	DETAILS FOR TYPE SPECIAL APPROACH SLAB (SHEET 2 OF 3)	07589	65372
	55	DETAILS FOR TYPE SPECIAL APPROACH SLAB (SHEET 3 OF 3)	07589	65373
56	- 72	CROSS SECTIONS		

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

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
02-15-23				6	ARK.			
				JOB NO.		090549	3	72

2 STANDARD DRAWINGS



BRIDGE STANDARD DRAWINGS

DRWG.NO.	TITLE	DATE
55000	STANDARD DETAILS FOR EMBANKMENT CONSTRUCTION AND BACKFILL AT BRIDGE ENDS	02-27-14
55001	STANDARD DETAILS FOR DUMPED RIPRAP AND FILTER BLANKET AND COMPUTING EXCAVATION FOR STRUCTURES	02-27-14
55010	STANDARD DETAILS FOR TYPE D BRIDGE NAME PLATE	01-11-23
55020	STANDARD DETAILS FOR STEEL H-PILES AND PILE ENCASEMENTS	03-24-16

ROADWAY STANDARD DRAWINGS

DRWG.NO.	TITLE	DATE
CDP-1	CONCRETE DITCH PAVING	12-08-16
CG-1	CURBING DETAILS	11-29-07
DR-2	DETAILS OF DRIVEWAYS & STREET TURNOUTS	05-19-22
FES-1	FLARED END SECTION	10-18-96
FES-2	FLARED END SECTION	10-18-96
FPC-9	DETAILS OF DROP INLETS & JUNCTION BOXES	11-16-01
FPC-9S	DETAILS OF DROP INLET & JUNCTION BOX (TYPE ST)	07-26-12
GR-6	GUARDRAIL DETAILS	05-19-22
GR-7	GUARDRAIL DETAILS	11-07-19
GR-8	GUARDRAIL DETAILS	11-07-19
GR-9	GUARDRAIL DETAILS	11-07-19
GR-10	GUARDRAIL DETAILS	11-07-19
GR-11	GUARDRAIL DETAILS	11-07-19
GR-12	GUARDRAIL DETAILS	05-14-20
MB-1	MAIL BOX DETAILS	11-18-04
PBC-1	PRECAST CONCRETE BOX CULVERTS	01-28-15
PCC-1	CONCRETE PIPE CULVERT FILL HEIGHTS & BEDDING	02-27-14
PCM-1	METAL PIPE CULVERT FILL HEIGHTS & BEDDING	02-27-14
PCP-1	PLASTIC PIPE CULVERT (HIGH DENSITY POLYETHYLENE)	02-27-14
PCP-2	PLASTIC PIPE CULVERT (PVC F949)	02-27-14
PCP-3	PLASTIC PIPE CULVERT (POLYPROPYLENE)	02-27-20
PM-1	PAVEMENT MARKING DETAILS	02-27-20
PU-1	DETAILS OF PIPE UNDERDRAIN	12-08-16
RCB-1	REINFORCED CONCRETE BOX CULVERT DETAILS	07-26-12
RCB-2	EXCAVATION PAY LIMITS, BACKFILL, & SOLID SODDING FOR BOX CULVERTS	11-20-03
SE-2	TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC	11-07-19
TC-1	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	11-07-19
TC-2	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	05-20-21
TC-3	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	08-12-21
TC-4	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION-TEMPORARY PRECAST BARRIER	11-07-19
TC-5	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION-TEMPORARY PRECAST BARRIER	11-07-19
TEC-1	TEMPORARY EROSION CONTROL DEVICES	11-16-17
TEC-2	TEMPORARY EROSION CONTROL DEVICES	06-02-94
TEC-3	TEMPORARY EROSION CONTROL DEVICES	11-03-94
TEC-4	TEMPORARY EROSION CONTROL DEVICES	07-26-12
WF-4	WIRE FENCE TYPE C AND D	08-22-02

r090549.spc-gen.dgn 02/02/2023

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
105-4_____	MAINTENANCE DURING CONSTRUCTION
107-2_____	RESTRAINING CONDITIONS
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
307-1_____	CEMENT
308-1_____	CEMENT
400-1_____	TACK COATS
400-4_____	DESIGN AND QUALITY CONTROL OF ASPHALT MIXTURES
400-5_____	PERCENT AIR VOIDS FOR ACHM MIX DESIGNS
400-6_____	LIQUID ANTI-STRIP ADDITIVE
400-7_____	TRACKLESS TACK
404-3_____	DESIGN OF ASPHALT MIXTURES
410-1_____	CONSTRUCTION REQUIREMENTS AND ACCEPTANCE OF ASPHALT CONCRETE PLANT MIX COURSES
410-2_____	DEVICES FOR MEASURING DENSITY FOR ROLLING PATTERNS
410-4_____	EVALUATION OF ACHM SUBLOT REPLACEMENT MATERIAL
501-2_____	CEMENT
600-2_____	INCIDENTAL CONSTRUCTION
603-1_____	LANE CLOSURE NOTIFICATION
604-1_____	RETROREFLECTIVE SHEETING FOR TRAFFIC CONTRCL DEVICES IN CONSTRUCTION ZONES
604-3_____	TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES (MASH)
605-1_____	CONCRETE DITCH PAVING
606-1_____	PIPE CULVERTS FOR SIDE DRAINS
617-1_____	GUARDRAIL TERMINAL (TYPE 2)
620-1_____	MULCH COVER
621-1_____	FILTER SOCKS
634-1_____	CURBING
734-1_____	BRIDGE END TERMINAL
800-1_____	STRUCTURES
802-3_____	CONCRETE FOR STRUCTURES
802-4_____	CEMENT
804-2_____	REINFORCING STEEL FOR STRUCTURES
JOB 090549__	ARCHITECTURAL FINISH
JOB 090549__	BIDDING REQUIREMENTS AND CONDITIONS
JOB 090549__	BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB 090549__	BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB 090549__	BUY AMERICA - CONSTRUCTION MATERIALS
JOB 090549__	CARGO PREFERENCE ACT REQUIREMENTS
JOB 090549__	CAVE DISCOVERY
JOB 090549__	CLASS C FLY ASH IN PORTLAND CEMENT CONCRETE PAVEMENT AND CLASS S(AE) CONCRETE
JOB 090549__	CLEARING
JOB 090549__	COLD MILLING – COUNTY PROPERTY
JOB 090549__	CONCRETE BRIDGE DECK CURING AND SURFACE TREATMENT RESTRICTIONS
JOB 090549__	CONSTRUCTION IN SPECIAL FLOOD HAZARD AREAS
JOB 090549__	DELAY IN RIGHT OF WAY OCCUPANCY
JOB 090549__	DISADVANTAGED BUSINESS ENTERPRISE BIDDER'S RESPONSIBILITIES
JOB 090549__	DESIGN AND QUALITY CONTROL OF ASPHALT MIXTURES
JOB 090549__	DESIGN OF ASPHALT MIXTURES - AGGREGATES
JOB 090549__	ESTABLISHING CONTRACT TIME – WORKING DAY CONTRACT
JOB 090549__	GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
JOB 090549__	LIQUIDATED DAMAGES PROCEDURE FOR BID LETTINGS
JOB 090549__	MANDATORY ELECTRONIC CONTRACT
JOB 090549__	MANDATORY ELECTRONIC DOCUMENT SUBMITTAL
JOB 090549__	NESTING SITES OF MIGRATORY BIRDS
JOB 090549__	OFF- SITE RESTRAINING CONDITIONS FOR INDIANA AND NORTHERN LONG-EARED BATS
JOB 090549__	PARTNERING REQUIREMENTS
JOB 090549__	PLASTIC PIPE
JOB 090549__	PORTABLE TRAFFIC SIGNAL SYSTEM
JOB 090549__	PRICE ADJUSTMENT FOR ASPHALT BINDER
JOB 090549__	PRICE ADJUSTMENT FOR FUEL
JOB 090549__	PROHIBITION OF CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT
JOB 090549__	REMOVAL AND RELOCATION OF HISTORIC MARKER
JOB 090549__	RESTRAINING CONDITION
JOB 090549__	SECTION 404 NATIONWIDE 14 PERMIT REQUIREMENTS
JOB 090549__	SHORING
JOB 090549__	SHORING FOR CULVERTS
JOB 090549__	SOIL STABILIZATION
JOB 090549__	SPECIAL CLEARING PUP SEASON REQUIREMENTS
JOB 090549__	STAINING CONCRETE SURFACES
JOB 090549__	STORM WATER POLLUTION PREVENTION PLAN
JOB 090549__	SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB 090549__	UTILITY ADJUSTMENTS
JOB 090549__	VALUE ENGINEERING
JOB 090549__	WARM MIX ASPHALT
JOB 090549__	WATER POLLUTION CONTROL
JOB 090549__	WELLHEAD PROTECTION
JOB 090549__	WORKING DAY WITH IMMEDIATE WORK ORDER

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02-02-23				6	ARK.			
				JOB NO.		090549	4	72

2 GOVERNING SPECS. AND GENERAL NOTES

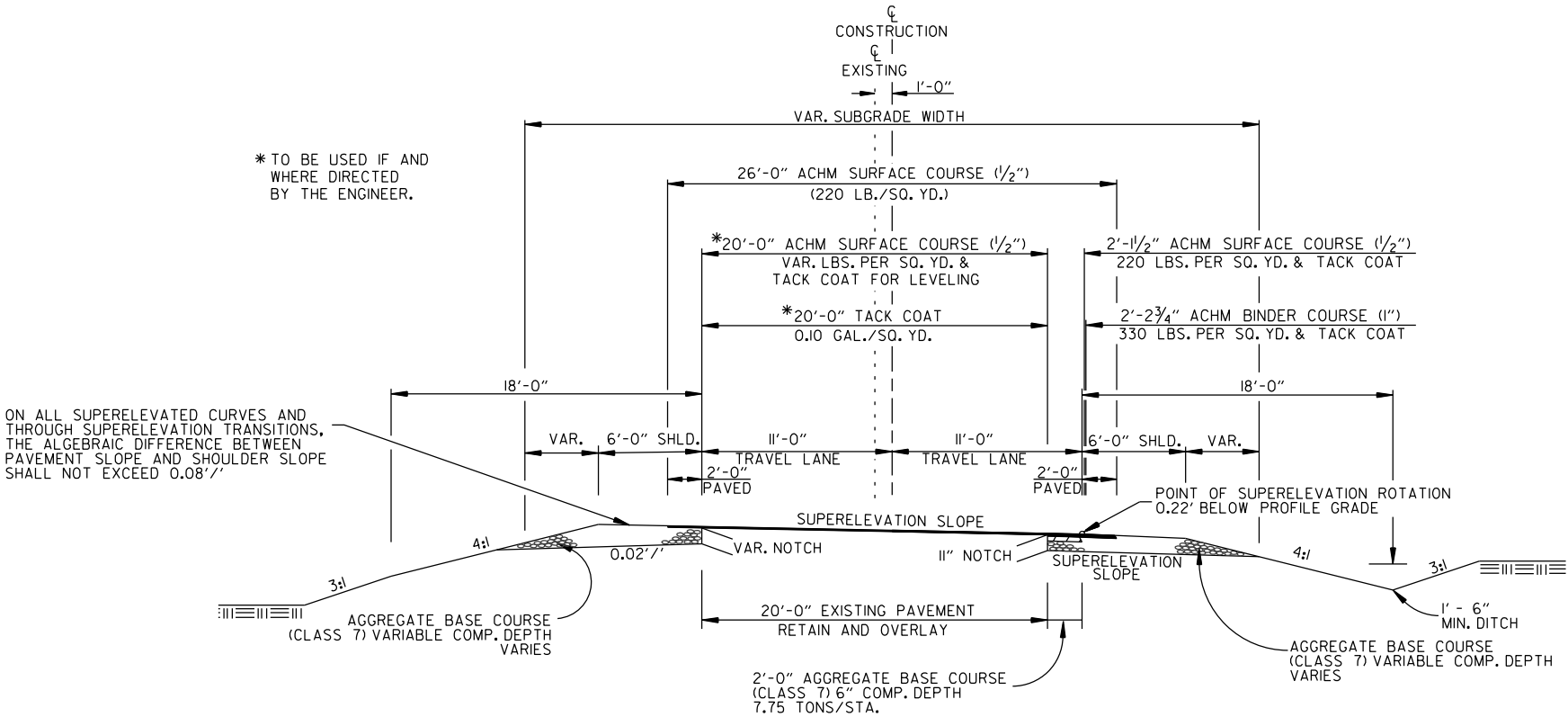


GENERAL NOTES

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

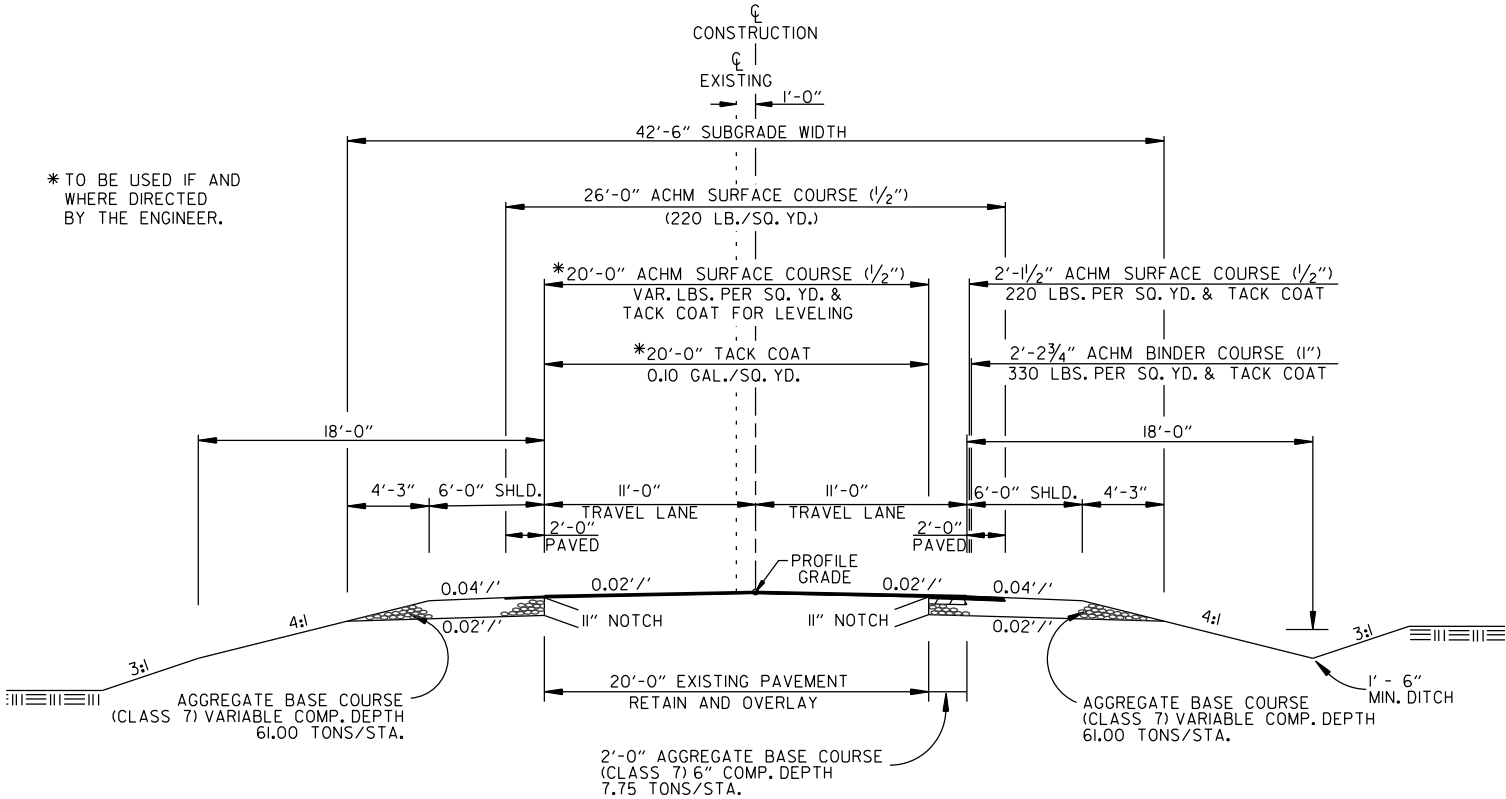
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090549	5	72

2 TYPICAL SECTIONS OF IMPROVEMENT



HWY. 187 - SUPERELEVATED SECTION
NOTCH & WIDEN

- NOTES:
- REFER TO CROSS SECTIONS FOR DEVIATION FROM THE NORMAL SLOPES. NO CHANGES SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.
 - THE THICKNESS OF AGGREGATE BASE COURSE SHALL BE WITHIN PLUS OR MINUS 1" OF THE PLAN THICKNESS SHOWN. THE CONTRACTOR WILL CORRECT ANY DEFICIENT THICKNESS THAT DOES NOT MEET TOLERANCE INDICATED. PAYMENT WILL NOT BE MADE FOR MATERIAL PLACED IN EXCESS OF THE TOLERANCE INDICATED.
 - ASPHALT FOR LEVELING OF EXISTING PAVEMENT SHALL BE PLACED ONLY IF AND WHERE DIRECTED BY THE ENGINEER. CALCULATIONS FOR THE AMOUNT OF LEVELING AND LEVELING OPERATIONS SHALL BE PERFORMED BEFORE CONSTRUCTING NOTCH AND WIDENING. CALCULATIONS WILL NOT BE PAID FOR DIRECTLY BUT WILL BE CONSIDERED INCLUDED IN THE VARIOUS PAY ITEMS.
 - THE FINAL 2" OF SURFACE COURSE IS TO BE PLACED AFTER ALL OTHER COURSES HAVE BEEN LAID. LONGITUDINAL JOINTS SHALL BE AT LANE LINES.
 - BLEEDER DITCHES - PRIOR TO AND DURING PLACEMENT OF PAVEMENT AT THE NOTCH, THE CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE AT ALL TIMES. THE METHOD(S) AND SPACING USED SHALL BE APPROVED BY THE ENGINEER. PAYMENT FOR THIS WORK SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE VARIOUS CONTRACT ITEMS.



HWY. 187 - TYPICAL SECTION
NOTCH & WIDEN

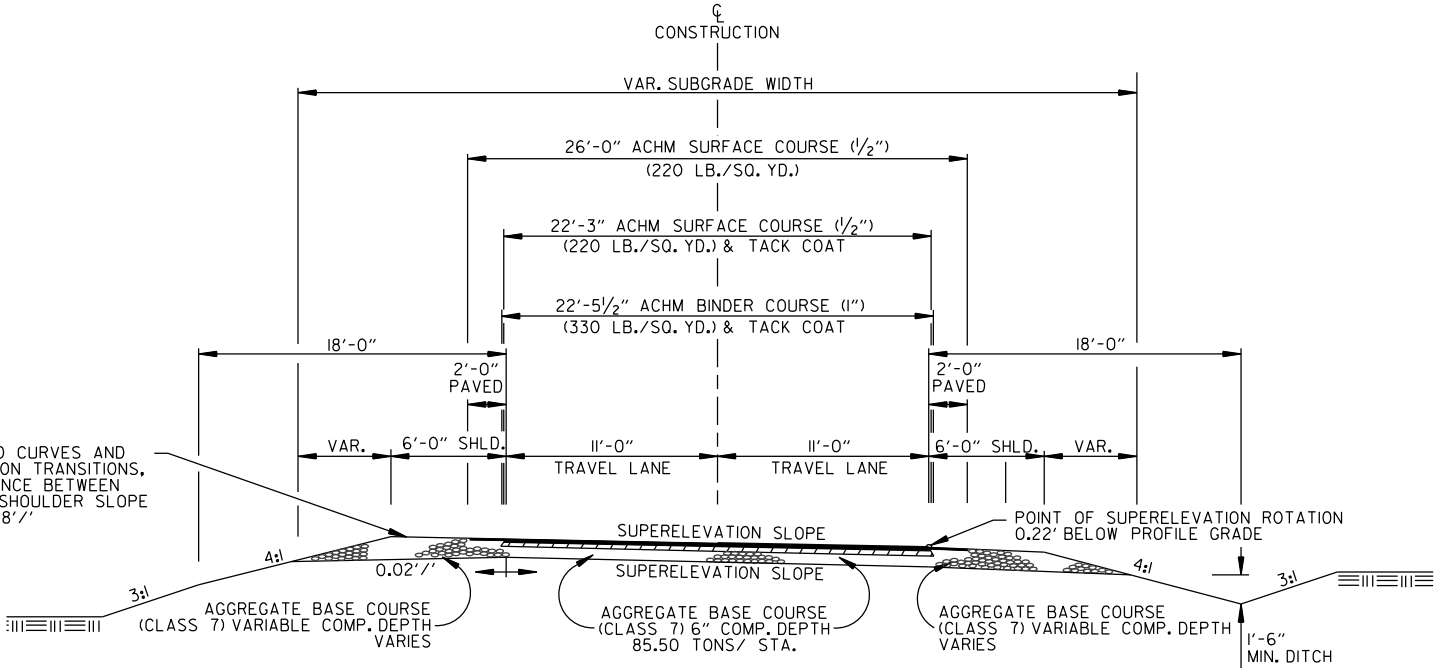
STA. 13+00.00 - STA. 15+00.00
STA. 25+50.00 - STA. 26+01.55

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
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2 TYPICAL SECTIONS OF IMPROVEMENT



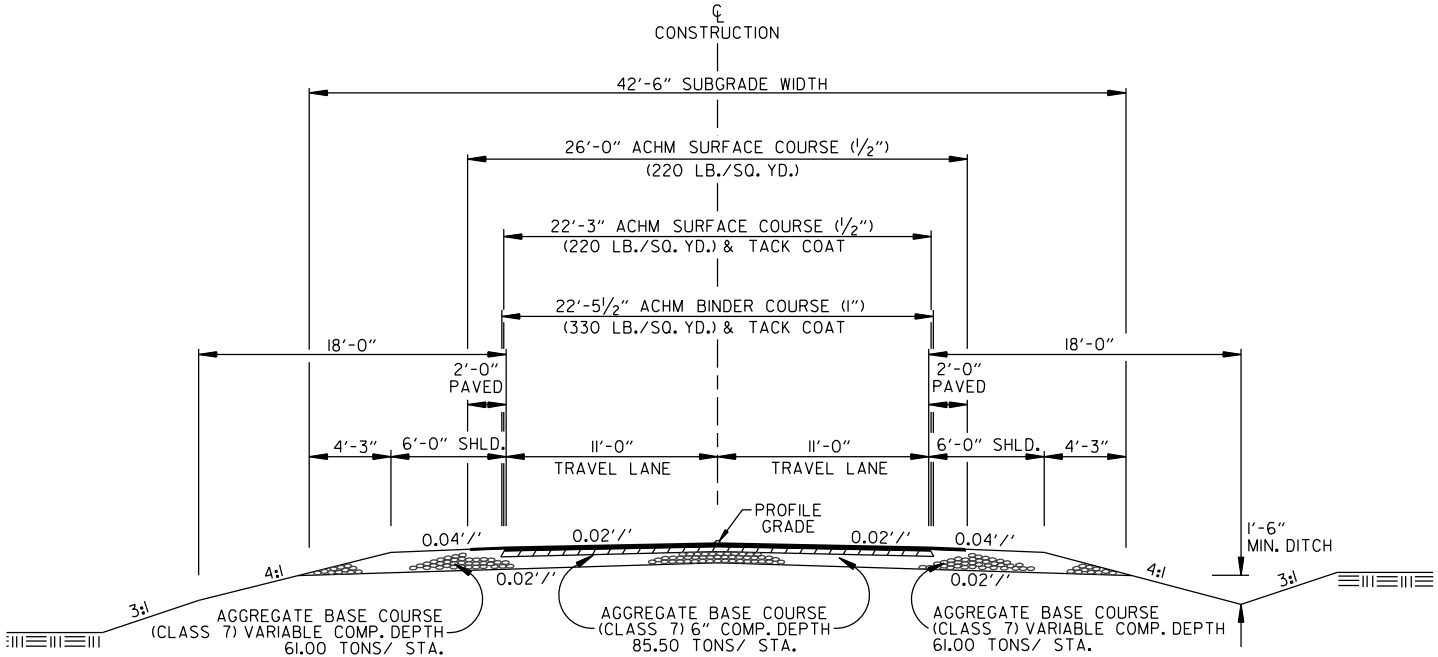
ON ALL SUPERELEVATED CURVES AND THROUGH SUPERELEVATION TRANSITIONS, THE ALGEBRAIC DIFFERENCE BETWEEN PAVEMENT SLOPE AND SHOULDER SLOPE SHALL NOT EXCEED 0.08'/'



HWY. 187 - SUPERELEVATED SECTION
FULL DEPTH

NOTES:

1. REFER TO CROSS SECTIONS FOR DEVIATION FROM THE NORMAL SLOPES. NO CHANGES SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.
2. THE THICKNESS OF AGGREGATE BASE COURSE SHALL BE WITHIN PLUS OR MINUS 1" OF THE PLAN THICKNESS SHOWN. THE CONTRACTOR WILL CORRECT ANY DEFICIENT THICKNESS THAT DOES NOT MEET TOLERANCE INDICATED. PAYMENT WILL NOT BE MADE FOR MATERIAL PLACED IN EXCESS OF THE TOLERANCE INDICATED.
3. THE FINAL 2" OF SURFACE COURSE IS TO BE PLACED AFTER ALL OTHER COURSES HAVE BEEN LAID. LONGITUDINAL JOINTS SHALL BE AT LANE LINES.

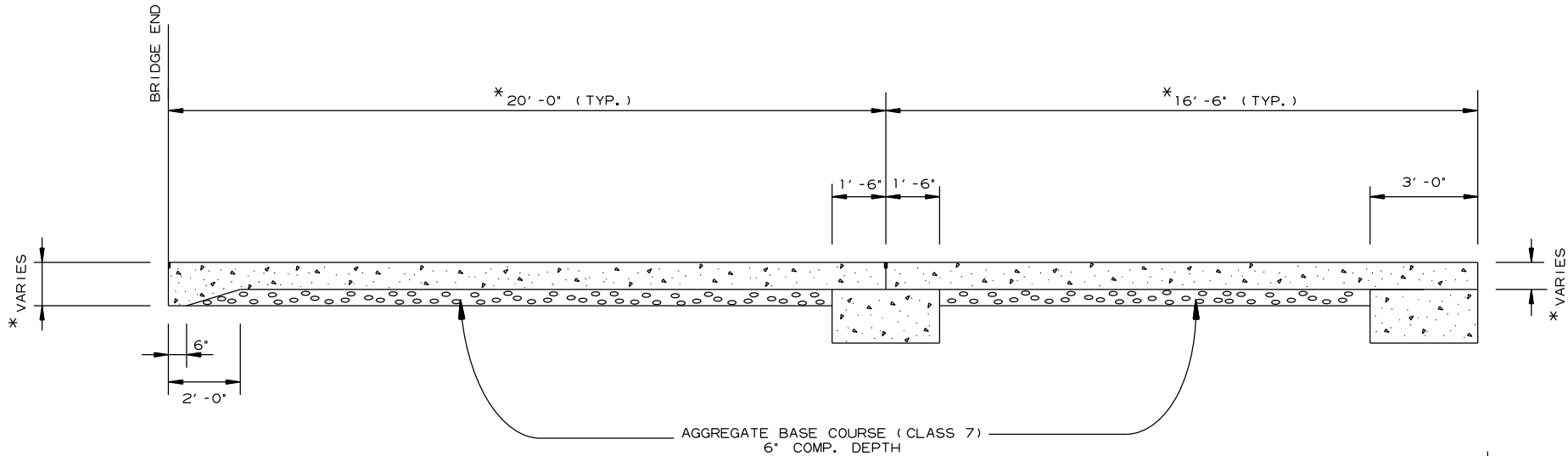


HWY. 187 - TYPICAL SECTION
FULL DEPTH

STA. 15+00.00 - STA. 19+04.00
STA. 20+84.00 - STA. 25+50.00

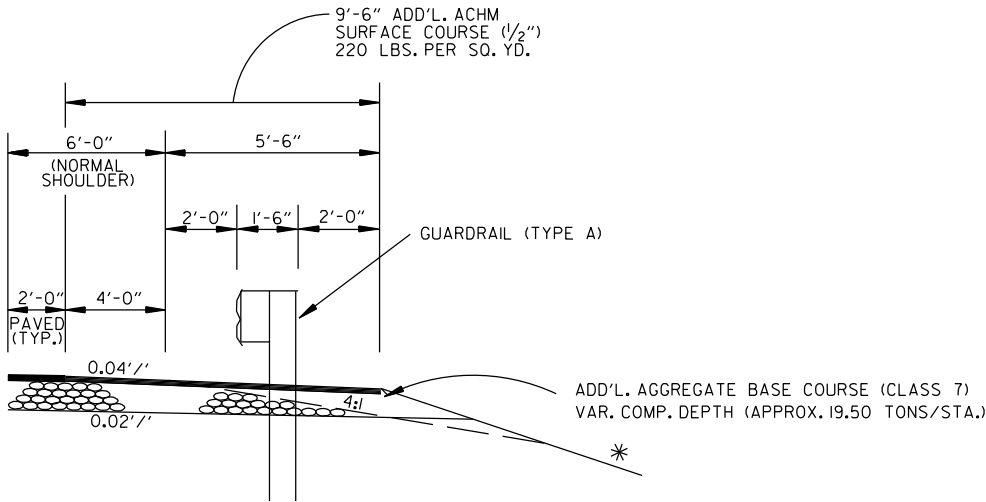
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090549	7	72

2 SPECIAL DETAILS



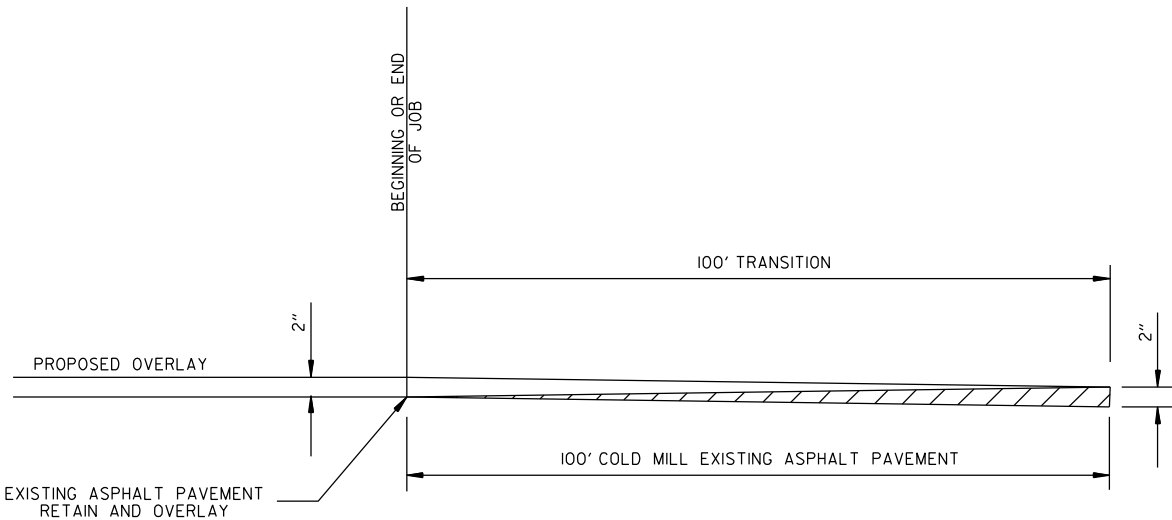
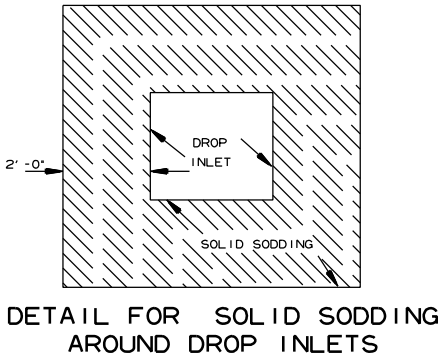
* SEE APPROACH SLAB DETAILS IN BRIDGE DRAWINGS

LONGITUDINAL SECTION OF APPROACH SLAB



WIDENING FOR GUARDRAIL

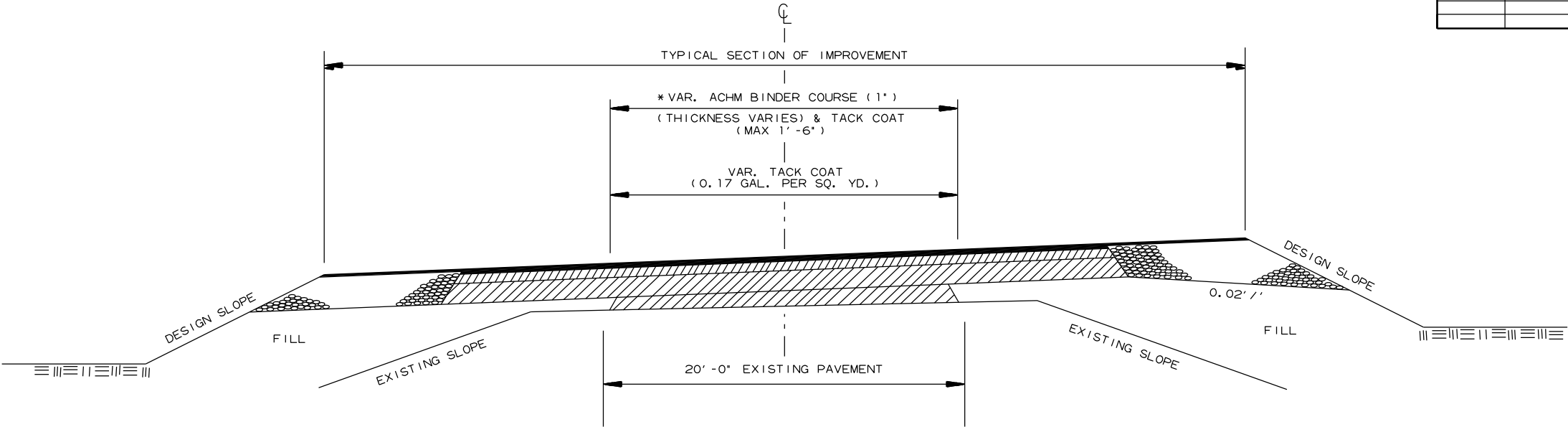
* NOTE: REFER TO STD. DWG. GR-9 AND
CROSS SECTIONS FOR SLOPE
REQUIREMENTS BEHIND GUARDRAIL



DETAIL FOR TRANSITIONS

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.		090549	8	72

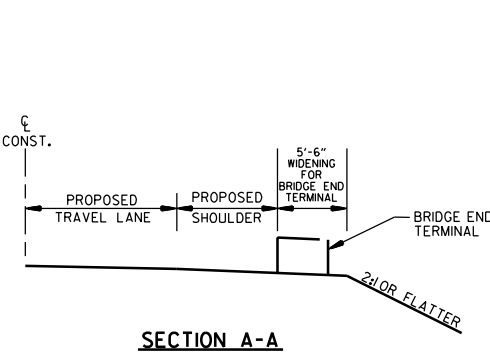
2 SPECIAL DETAILS



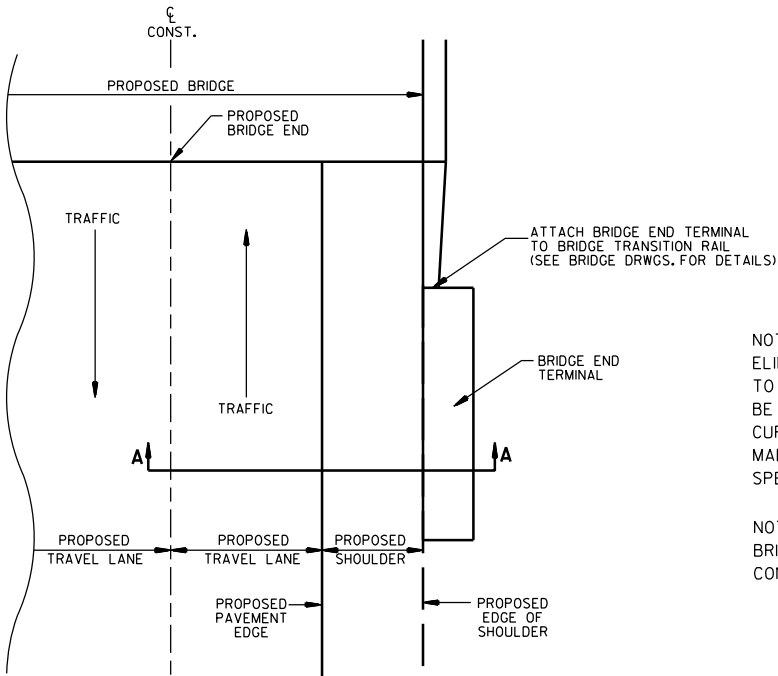
* 6" AGGREGATE BASE COURSE (CLASS 7)
TO BE REPLACED WITH ACHM BINDER COURSE (1")

METHOD OF RAISING GRADE

- NOTES:
1. THIS DETAIL TO BE USED ONLY WHERE DIRECTED BY THE ENGINEER.
 2. QUANTITIES FOR METHOD OF GRADE RAISE USING ASPHALT WERE CALCULATED ON THIS PROJECT AT LOCATIONS WHERE THE DISTANCE BETWEEN THE EXISTING ASPHALT ROADWAY AND THE PROPOSED SUBGRADE WAS ONE FOOT OR LESS.
 3. IN LOCATIONS WHERE THE DISTANCE BETWEEN THE PROPOSED SUBGRADE AND THE EXISTING ASPHALT ROADWAY IS MORE THAN ONE FOOT, SCARIFICATION OF THE EXISTING ASPHALT ROADWAY WILL BE REQUIRED AS STATED IN SECTION 210, SUBSECTION 210.09, OF THE STANDARD SPECIFICATIONS, EDITION OF 2014.



SECTION A-A



PLAN VIEW

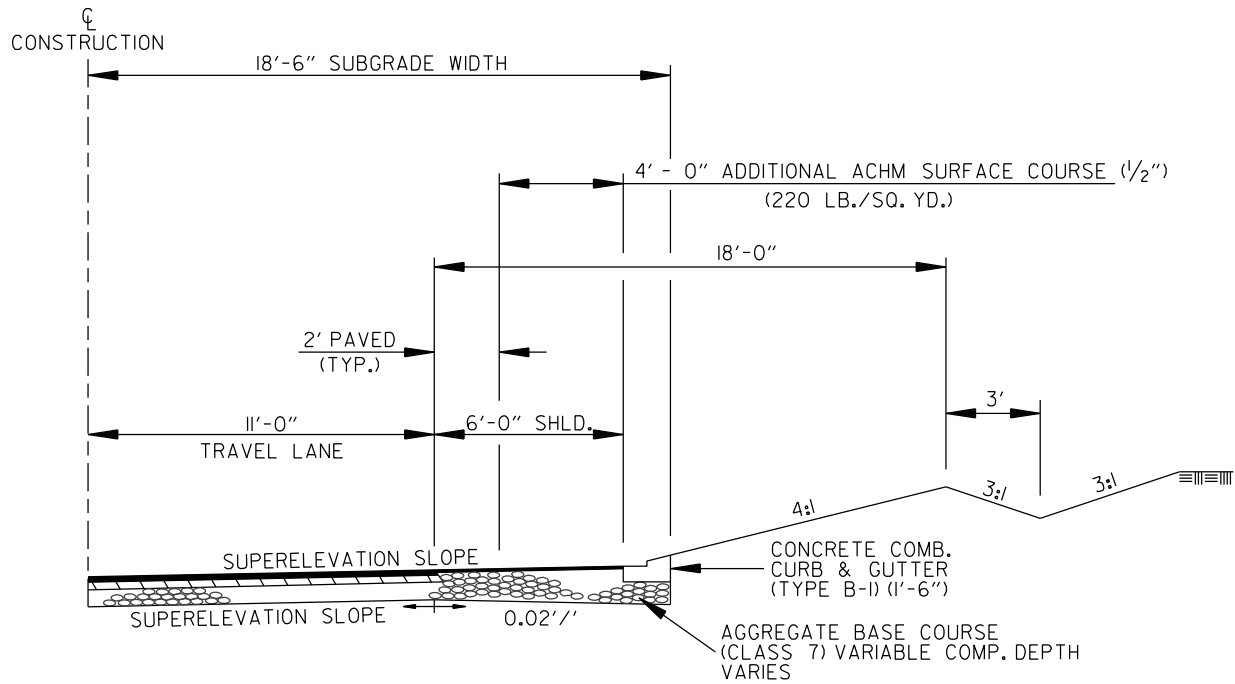
NOTE:
ELIMINATE OR MODIFY APPROACH CURB SECTION TO FIT BRIDGE END TERMINAL. NO PAYMENT SHALL BE MADE FOR ELIMINATING OR MODIFYING THIS CURB BUT SHALL BE CONSIDERED IN PAYMENT MADE FOR APPROACH GUTTERS OF THE TYPE SPECIFIED.

NOTE:
BRIDGE END TERMINAL SHALL CONFORM TO THE FOLLOWING:
-MAXIMUM LENGTH: 15'
-MAXIMUM HEIGHT: 2.75'
-DESIGN SPEED: 35 MPH

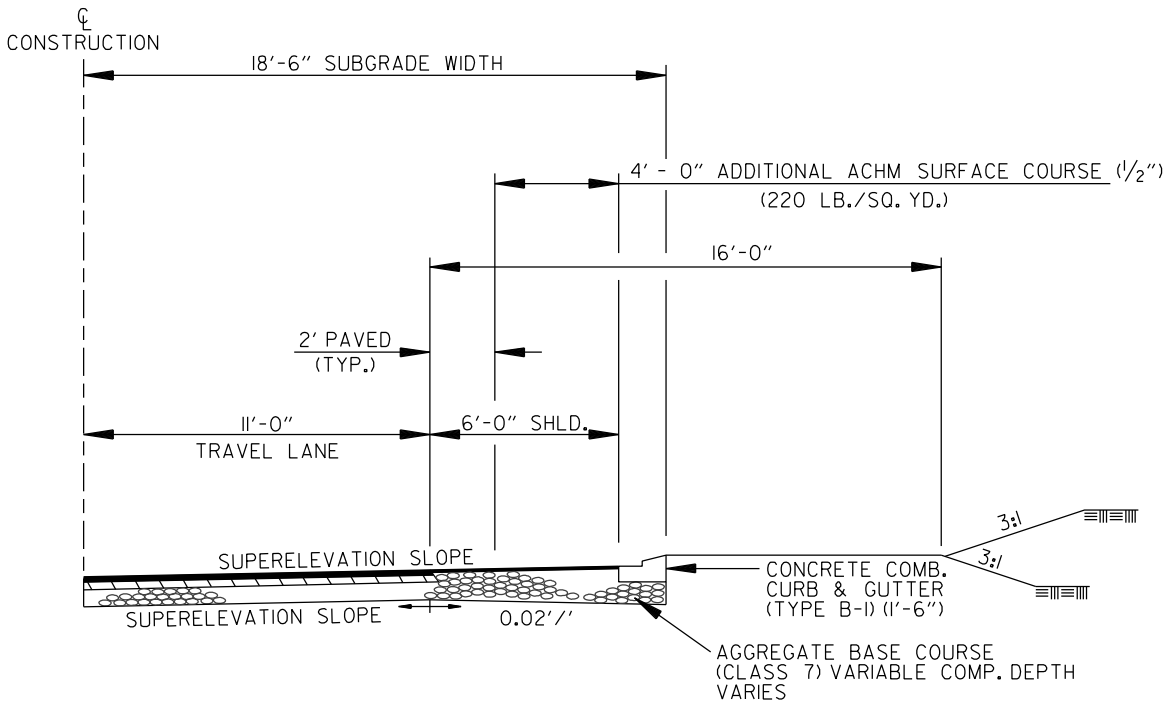
BRIDGE END TERMINAL DETAILS

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.		090549	9	72

2 SPECIAL DETAILS



HWY. 187 - SPECIAL CURB DETAIL
STA. 14+50.00 - STA. 16+00.00



HWY. 187 - SPECIAL CURB DETAIL
STA. 22+50.00 - STA. 24+75.00

MID-SECTION

A	R.C. BOX SECTION									TOP SLAB REINFORCING STEEL				BOTTOM SLAB REINFORCING STEEL				SIDE WALL REINFORCING STEEL				TOP SLAB DISTRIBUTION REINF. STEEL			BOTTOM SLAB DISTRIBUTION REINF. STEEL			SIDE WALL DISTRIBUTION REINF. STEEL											
	DESIGN FILL DEPTH (FT.)		CLEAR SPAN (FT.)		CLEAR HEIGHT (FT.)		TOP SLAB THK.		BOTTOM SLAB THK.		SIDE WALL THK.		OVER ALL WIDTH		OVER ALL HEIGHT		SECTION LENGTH (FT.)		LENGTH = OW - 4"				LENGTH = OW - 4"				LENGTH = OH - 4"				LENGTH = SL			LENGTH = SL			LENGTH = SL		
	D	S	H	S	T	B	C	OW	OH	SL	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	SIZE	SPACING	NO. REQ'D	SIZE	SPACING	NO. REQ'D	SIZE	SPACING	NO. REQ'D					
	10	8	6	8	6.5	8.5	6	9'-0"	7'-5"	42.50	5	4.5	113	8'-8"	6	6.5	78	8'-8"	4	5	204	7'-1"	4	12	9	4	12	9	4	12	9	4	12	12					

29.51	CU. YDS.	CLASS "S" CONCRETE
3898	LBS.	REINFORCING STEEL (Gr. 60)

INLET SLOPE SECTION(S)

[illegible]

							CU. YDS.	CLASS "S" CONCRETE
								REINFORCING STEEL (GR. 50)
							TOTAL	

INLET SKEWED END SECTION

[illegible]

INLET WINGWALL TABLE

[illegible]

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.		090549	10	72
①				SPECIAL DETAILS				



TABULAR DATA BY: JLV DATE: 12/13/21
CHECKED BY: JLB DATE: 12/13/21

This drawing to be used in conjunction with
SHEET 1 OF 4, "GENERAL DETAILS OF R.C. BOX CULVERT", 'GENERAL NOTES & LONGITUDINAL SECTION LENGTH SCHEDULE'
SHEET 2 OF 4, "GENERAL DETAILS OF R.C. BOX CULVERT", 'DETAILS OF SINGLE-BARREL R.C. BOX CULVERT',
SHEET 4 OF 4, "GENERAL DETAILS OF R.C. BOX CULVERT", 'DETAILS OF WINGWALLS', and
STANDARD DRAWING RCB-2.

For additional information and outlet sections, see Sheet 2 of 2.

① Any Bar Lap Required for the Skewed End Section shall be considered subsidiary to the item "Reinforcing Steel - Roadway (Grade 60)."

Min. Bar Lap Length	
#4	1'-9"
#5	2'-2"
#6	2'-7"
#7	3'-6"
#8	4'-7"

Bar Pin Dia. Table	
#4	3"
#5	3 3/4"
#6	4 1/2"
#7	5 1/4"
#8	6"

Design Fill Depth	Range of Actual Fill Depth
2	0.0 ft - 2.0 ft
5	>2.0 ft - 5.0 ft
10	>5.0 ft - 10.0 ft
15	>10.0 ft - 15.0 ft
20	>15.0 ft - 20.0 ft
25	>20.0 ft - 25.0 ft
30	>25.0 ft - 30.0 ft
35	>30.0 ft - 35.0 ft
40	>35.0 ft - 40.0 ft

Data shown for Mid-Section, Slope Section(s), and Skewed End Section is based on the design fill depth shown in the table, see PLAN AND PROFILE SHEETS for actual fill depth.

SHEET 1 OF 2
DETAILS OF R.C. BOX CULVERT
SINGLE BARREL BOX CULVERT
STA. 21+75

SPECIAL DETAILS



Bar Fin Dia. Table	
#4	3"
#5	3 3/4"
#6	4 1/2"
#7	5 1/4"
#8	6"

Unless otherwise noted, all dimensions are in inches.

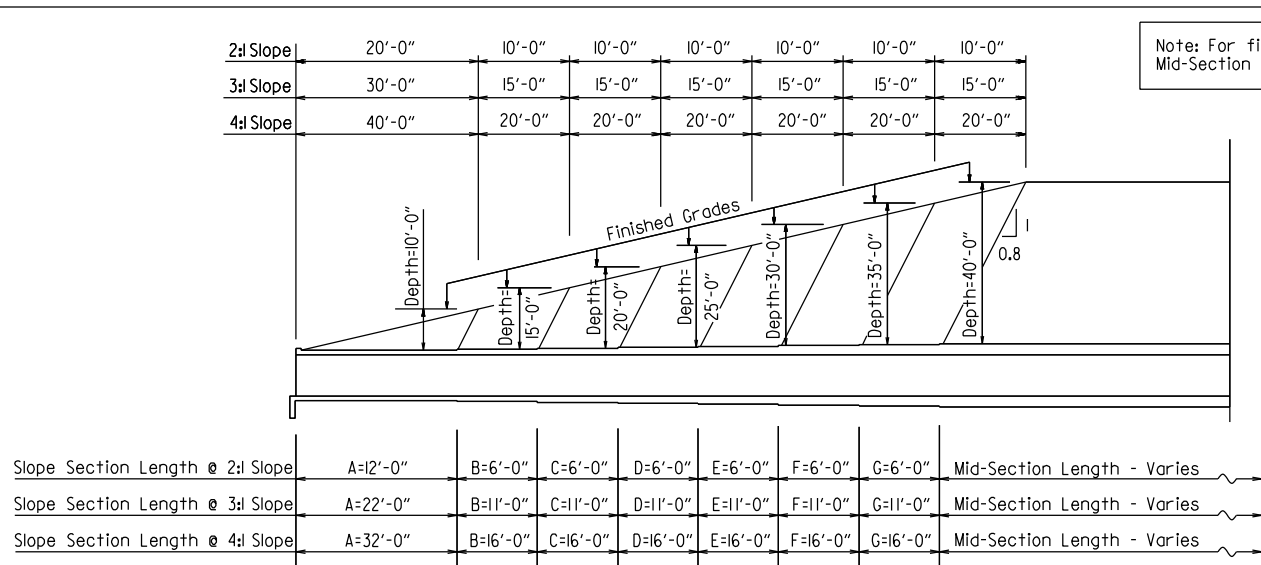
① Any Bar Lap Required for the Skewed End Section shall be considered subsidiary to the item "Reinforcing Steel - Roadway (Grade 60)."

STATE OF
ARKANSAS
James L. Barr
**REGISTERED
 PROFESSIONAL
 ENGINEER**

 No. 9808
 JAMES L. BARR
 01/19/2023

TABULAR DATA BY: JLV DATE: 12/13/21
CHECKED BY: JLB DATE: 12/13/21

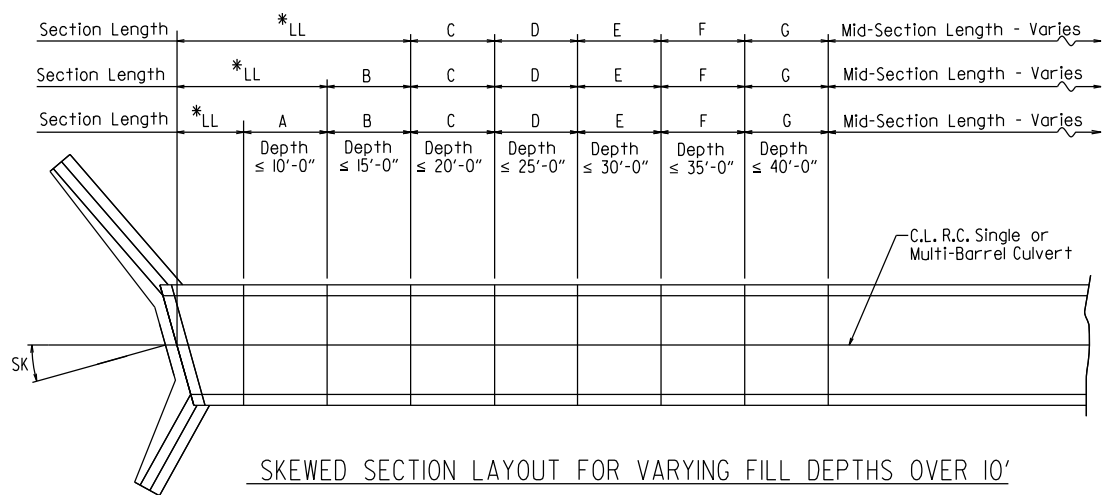
V 1117 b090549_culvert.dgn



Note: For fill depths 10' and under, use Mid-Section full length of box culvert.

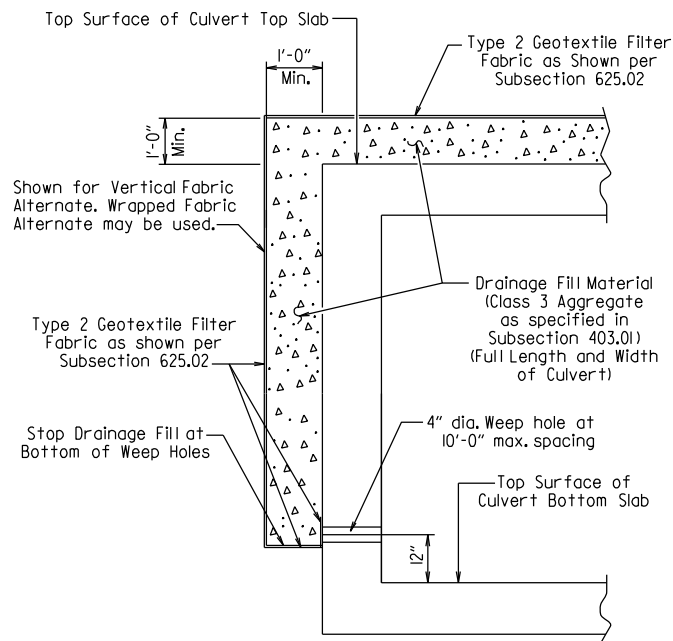
* LL = Skewed End Section Length - See "Skewed End Section Details"
Length LL varies with skew angle, overall box width and fill depth and may eliminate the need for some slope section lengths as shown.

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.		090549	12	72
SPECIAL DETAILS								



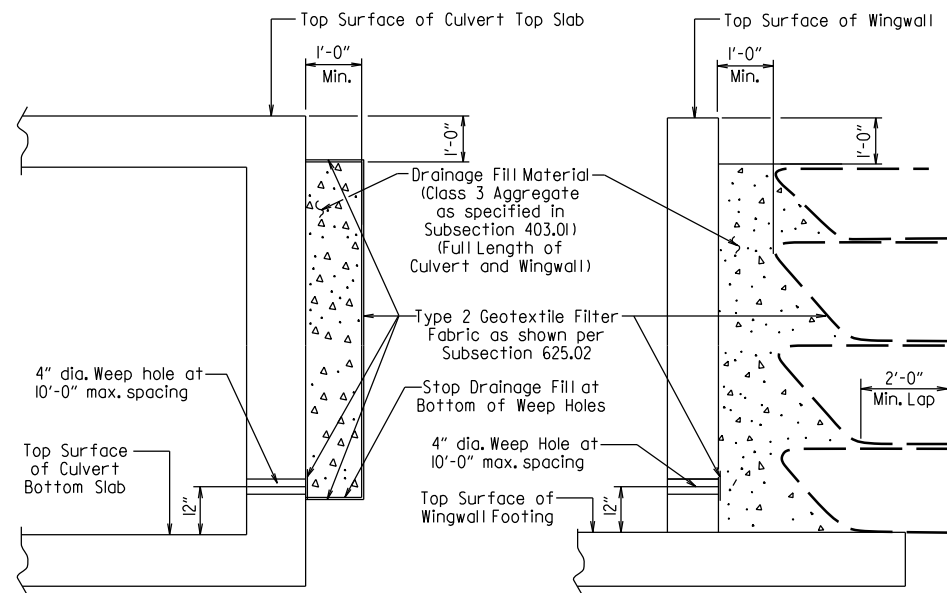
LONGITUDINAL SECTION LENGTH SCHEDULE FOR VARYING FILL DEPTHS OVER 10'

Lengths for Non-Skewed Boxes



CULVERT DRAINAGE DETAIL FOR ROCK FILL

This detail shall be used when rock fill is specified for embankment construction.



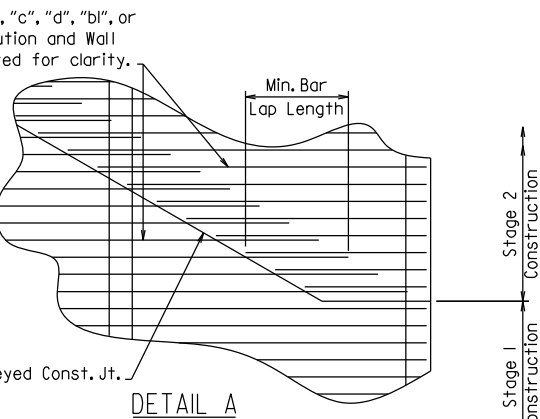
VERTICAL FABRIC ALTERNATE

(Shown for Culvert, Similar for Wingwall)

WRAPPED FABRIC ALTERNATE

(Shown for Wingwall, Similar for Culvert)

WINGWALL & CULVERT DRAINAGE DETAIL



See Tabular Data Sheets for Minimum Bar Lap Lengths.

Shown for transverse reinforcing, longitudinal reinforcing similar.

GENERAL NOTES:

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

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

LIVE LOADING: HL-93

All concrete shall be Class S with a minimum 28-day compressive strength of 3,500 psi and shall be poured in the dry. All exposed corners to have ¼" chamfers.

Reinforcing Steel shall be Grade 60 (yield strength = 60,000 psi) conforming to AASHTO M31 or M322, Type A, with mill test reports.

Reinforcing Steel Tolerances: The tolerances for reinforcing steel shall meet those listed in 'Manual of Standard Practice' published by Concrete Reinforcing Steel Institute (CRSI) except that the tolerance for truss bars such as Figure 3 on page 7-4 of the CRSI Manual shall be minus zero to plus 1/2 inch.

Excavation and backfilling shall be in accordance with the requirements of Section 801.

Membrane Waterproofing shall conform to the requirements of Section 815. Membrane Waterproofing shall be Type C and as directed by the Engineer applied to all construction joints in the top slab and the sidewalls of R.C. Box culverts and to the construction joint between wingwalls and R.C. Box culvert walls.

Weep Holes in box culvert walls shall have a maximum horizontal spacing of 10'-0" and shall be spaced to clear all reinforcing steel. The drain opening shall be 4" diameter and shall be placed 12" above the top of the bottom slab.

Weep Holes in wingwalls shall have a maximum horizontal spacing of 10'-0" and shall be spaced to clear all reinforcing steel. There shall be a minimum of two (2) weep holes in each wingwall. The drain opening shall be 4" diameter and shall be placed 12" above the top of the wingwall footing.

The barrel components of the culvert may be constructed using continuous pours. For longer culvert construction, the Contractor may use multiple pours with transverse construction joints spaced a minimum of 50 feet apart unless superseded by stage construction or site constraints as approved by the Engineer. Construction joints between footings and walls shall be made only where shown in the Plans. Joints shall be keyed and shall be normal to the centerline of barrel except as noted. Reinforcing shall be continuous through joints unless noted otherwise. Reinforcing through stage construction joints shall provide the minimum bar lap length shown on the Tabular Data Sheets. All longitudinal construction joints shall be submitted to the Engineer for approval.

Membrane Waterproofing, Weep Holes, Geotextile Filter Fabric, and Drainage Fill Material will not be paid for directly but shall be considered subsidiary to Class S Concrete.

When the top slab of the box culvert serves as finished roadway surface, curing and finishing shall be in accordance with subsections 802.17 and 802.20 for bridge roadway surface and a fine finish shall be applied in accordance with subsection 802.19 for Class 5 Tined Bridge Roadway Surface Finish. Curing and finishing shall not be paid for directly, but shall be considered incidental to the item "Class S Concrete-Roadway". Class 1 Protective Surface Treatment shall be applied to the roadway surface and this work shall be paid for under the unit price bid for "Class 1 Protective Surface Treatment".

When precast reinforced concrete box culverts are substituted for cast in place box culverts, they shall be manufactured according to ASTM C 1577 and meet the requirements of Section 607. When the top slab of the box culvert serves as the finished roadway surface, a precast reinforced concrete box culvert substitution is not allowed.

SHEET 1 OF 4
GENERAL DETAILS OF R.C. BOX CULVERT
GENERAL NOTES &
LONGITUDINAL SECTION LENGTH SCHEDULE

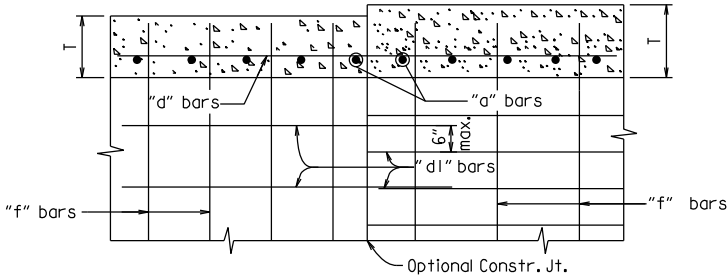
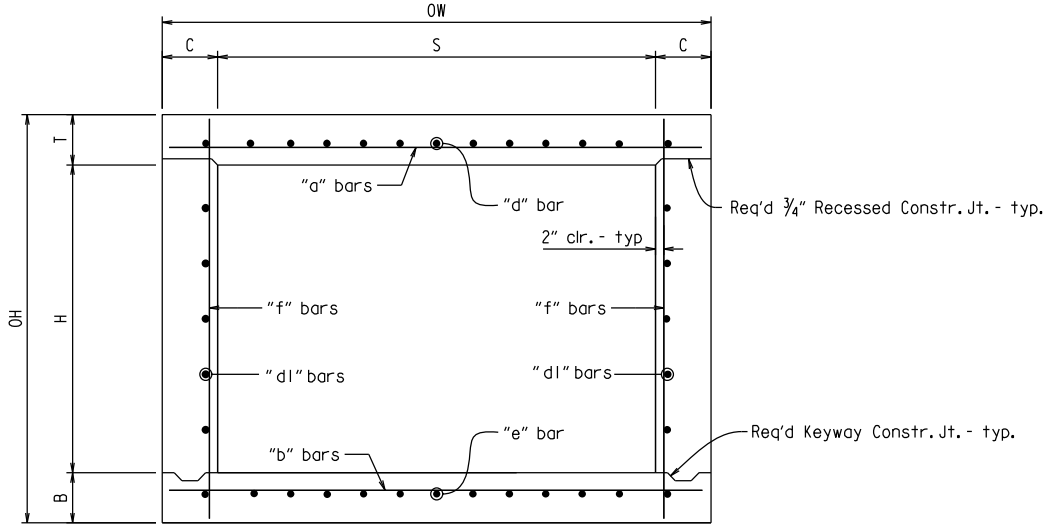
SPECIAL DETAILS



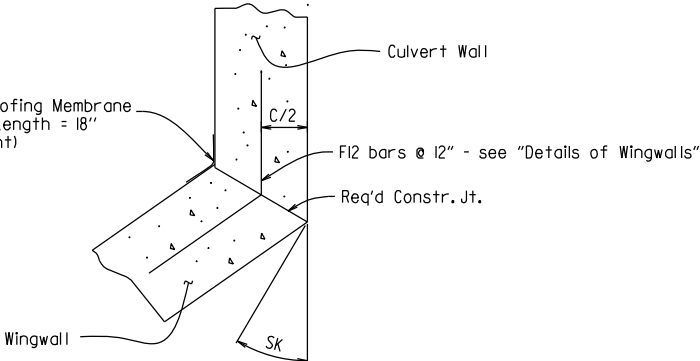
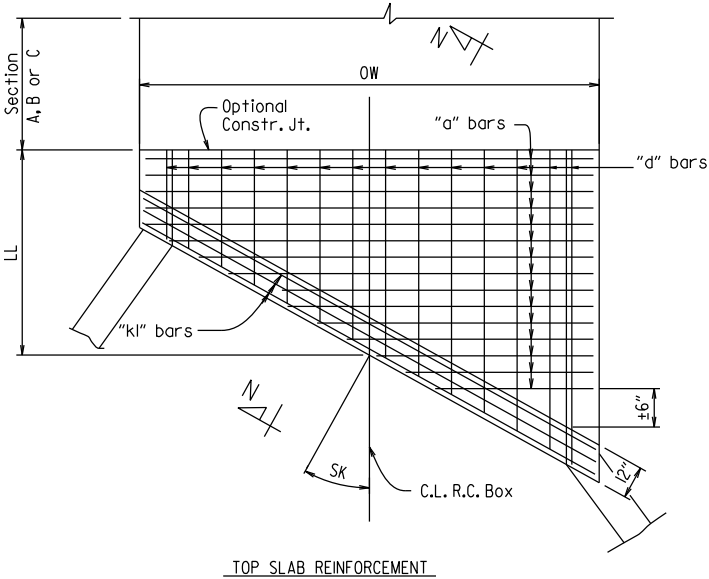
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				6	ARK.			
				JOB NO.		090549	13	72
SPECIAL DETAILS								



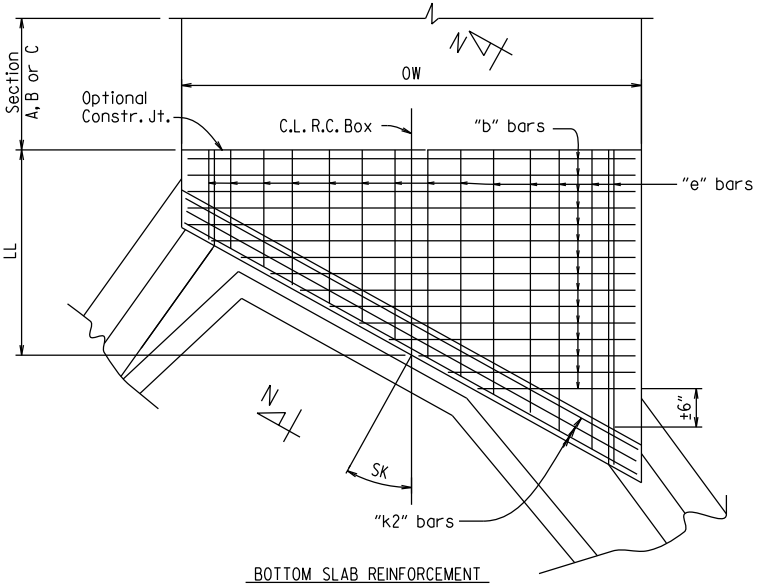
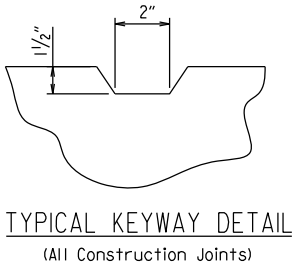
Note: When top slab of culvert serves as finished roadway surface, see General Notes on Sheet 1 of 4.



Longitudinal Bar Spacing at individual sections shall be maintained, which may result in noncontact bar laps.
LONGITUDINAL LAP DETAIL AT CHANGE IN SECTIONS
TOP SLAB SHOWN, BOTTOM SLAB SIMILAR



WINGWALL ATTACHMENT
See "Details of Wingwalls" for additional information and wingwall details.



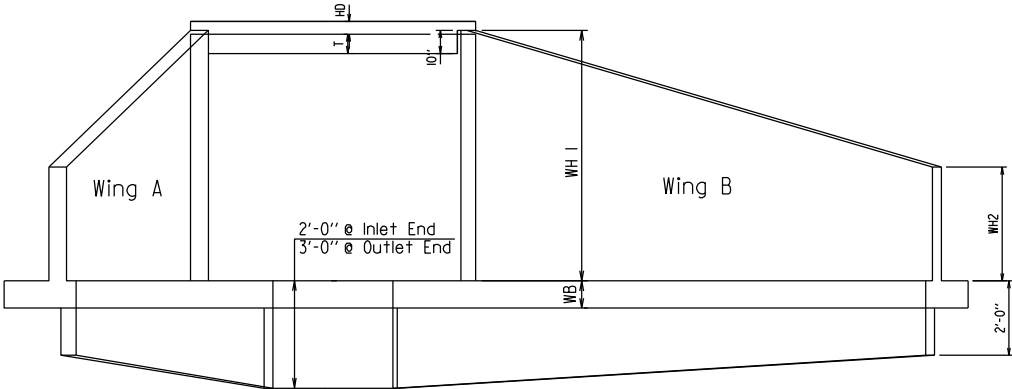
SKewed END SECTION DETAILS

SHEET 2 OF 4
GENERAL DETAILS OF R.C. BOX CULVERT
DETAILS OF SINGLE BARREL
R.C. BOX CULVERT

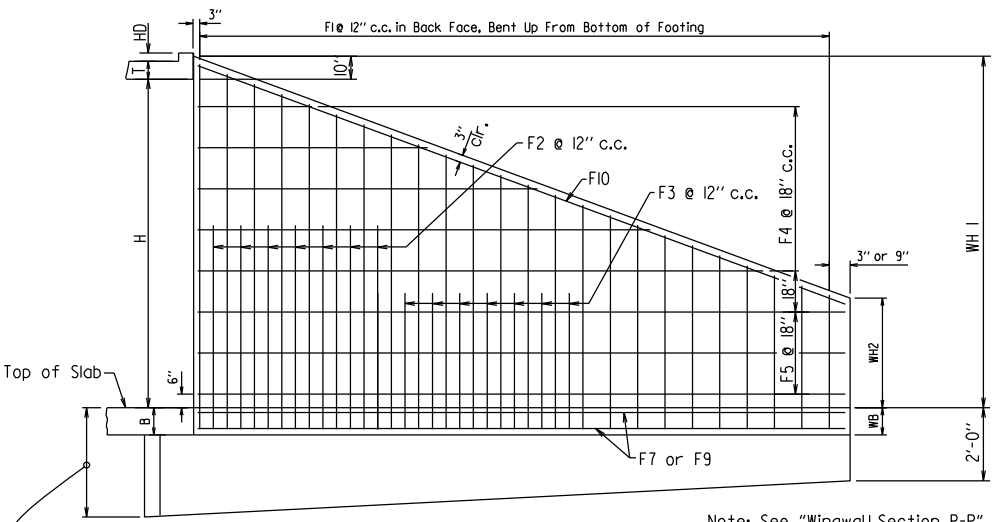
SPECIAL DETAILS



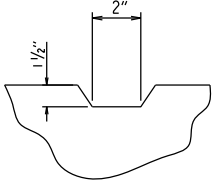
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				6	ARK.			
				JOB NO.		090549	15	72
① SPECIAL DETAILS								



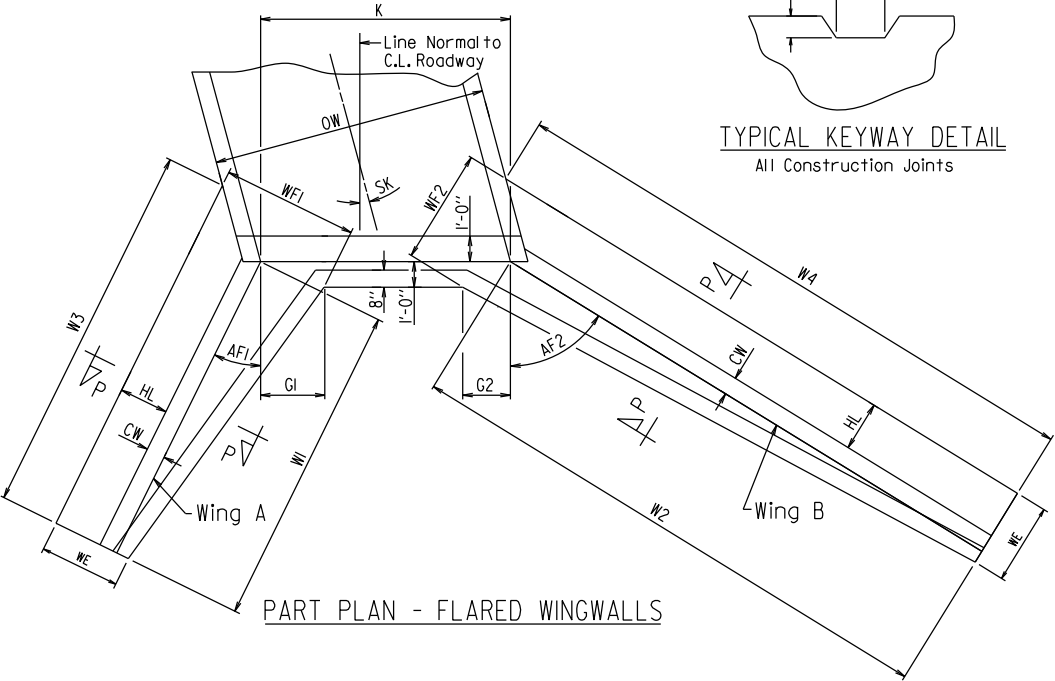
END ELEVATION
Flared Wingwalls Shown



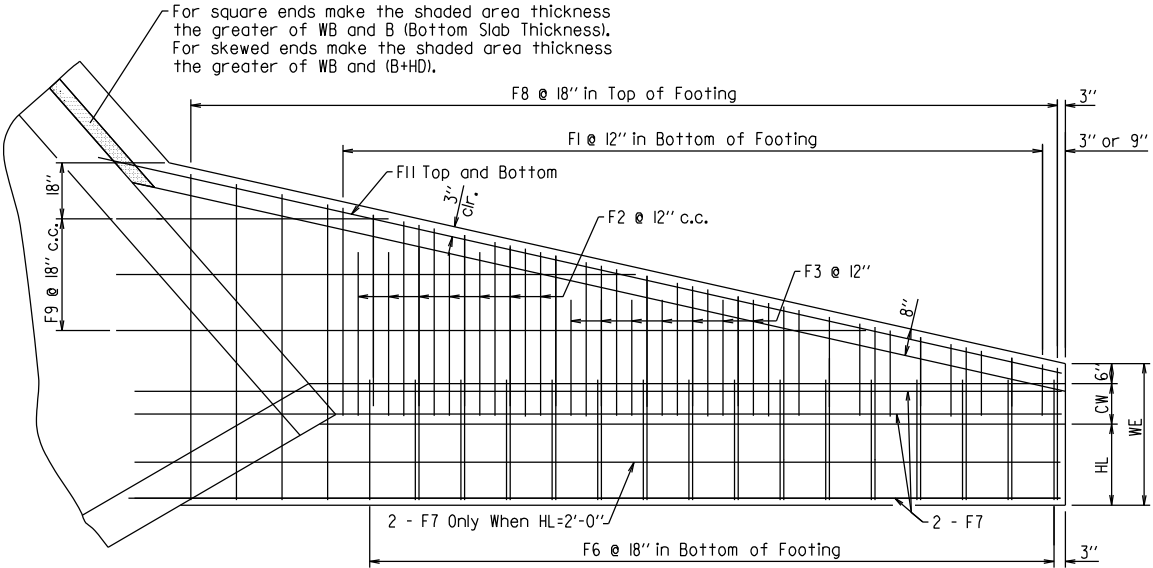
WINGWALL ELEVATION
Showing Back Face Reinforcement



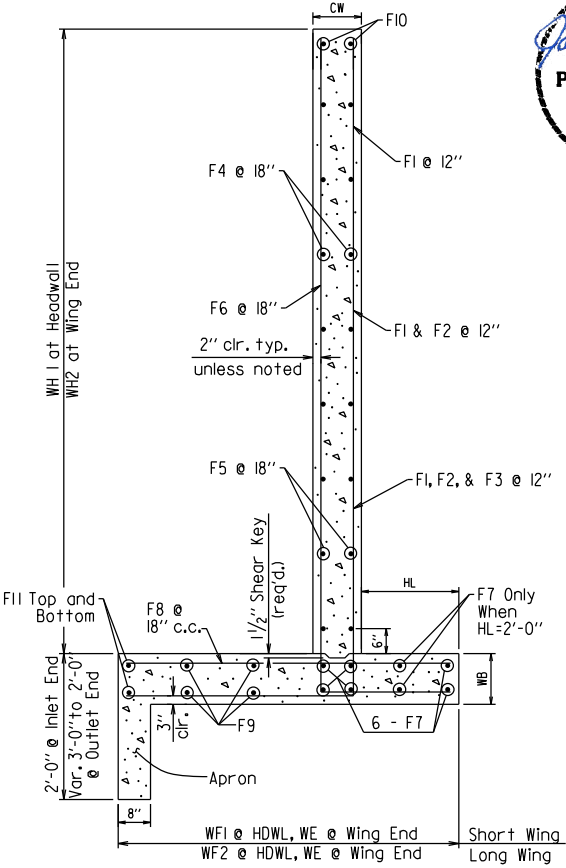
TYPICAL KEYWAY DETAIL
All Construction Joints



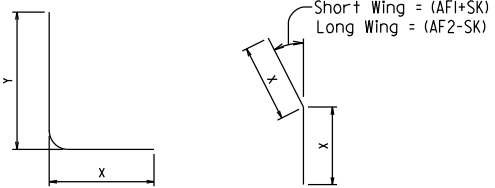
PART PLAN - FLARED WINGWALLS



PLAN - FLARED WINGWALLS
Showing Footing Reinforcement

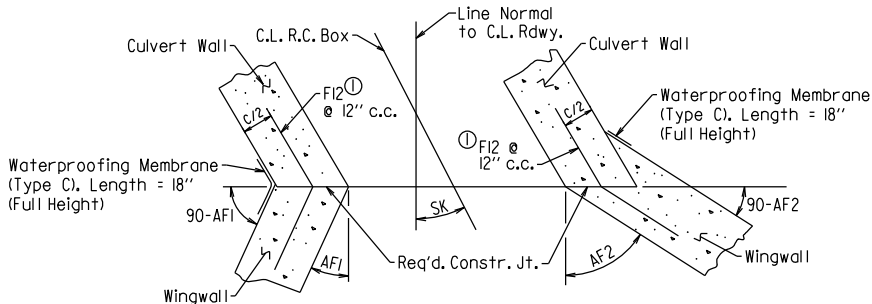


WINGWALL SECTION P-P



F1, F2, F3, & F6 BARS
① F12 BAR

① F12 is a straight bar for parallel wingwalls



CONSTRUCTION JOINTS
Flared Wingwalls Shown

SHEET 4 OF 4
GENERAL DETAILS OF R.C. BOX CULVERT
DETAILS OF WINGWALLS
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.		090549	16	72

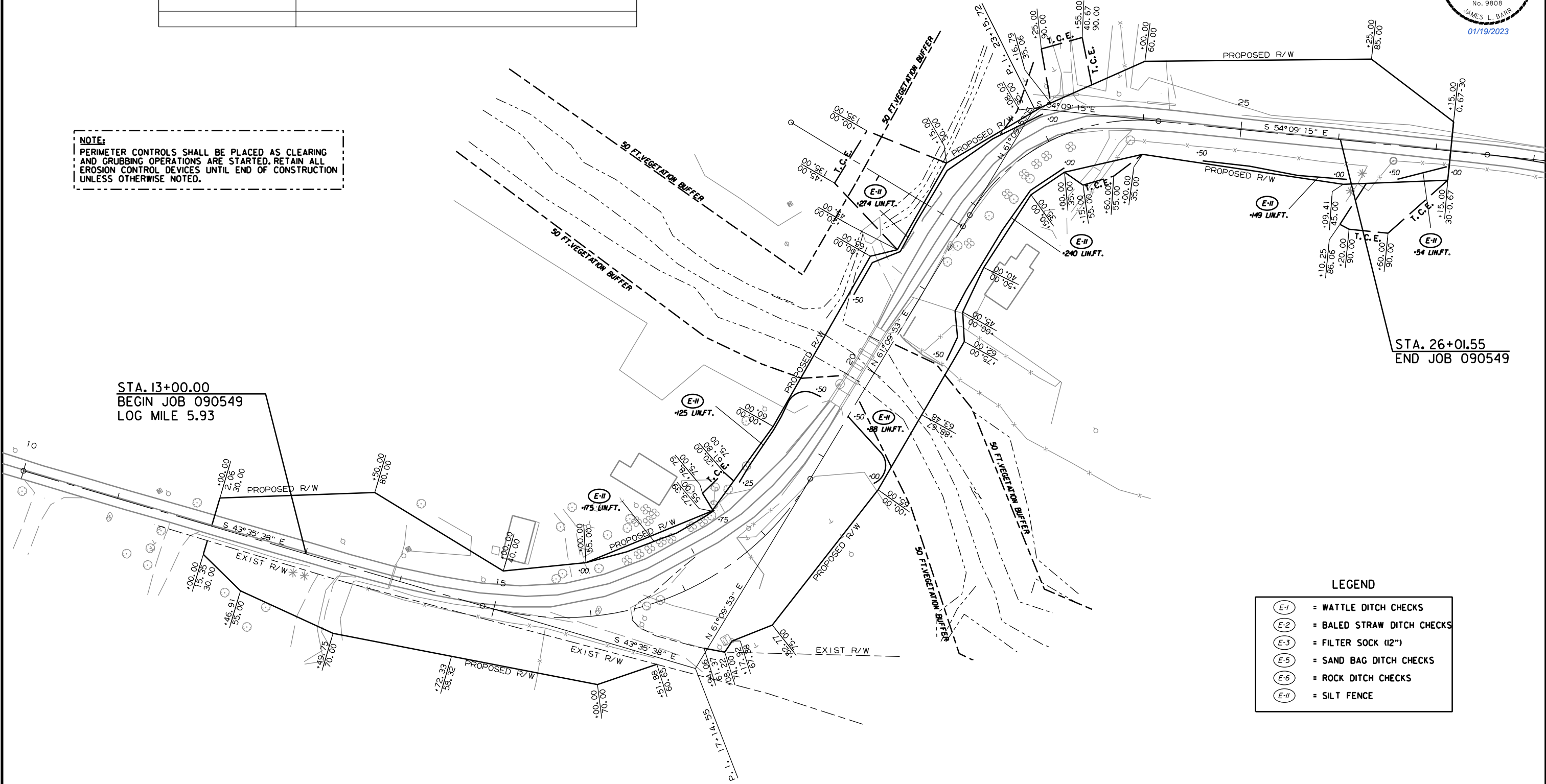
2 TEMPORARY EROSION CONTROL DETAILS



REVISIONS

DATE OF REVISION	REVISION

NOTE:
PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED. RETAIN ALL EROSION CONTROL DEVICES UNTIL END OF CONSTRUCTION UNLESS OTHERWISE NOTED.



LEGEND

- E-1 = WATTLE DITCH CHECKS
- E-2 = BALED STRAW DITCH CHECKS
- E-3 = FILTER SOCK (12")
- E-5 = SAND BAG DITCH CHECKS
- E-6 = ROCK DITCH CHECKS
- E-11 = SILT FENCE

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.		090549	17	72

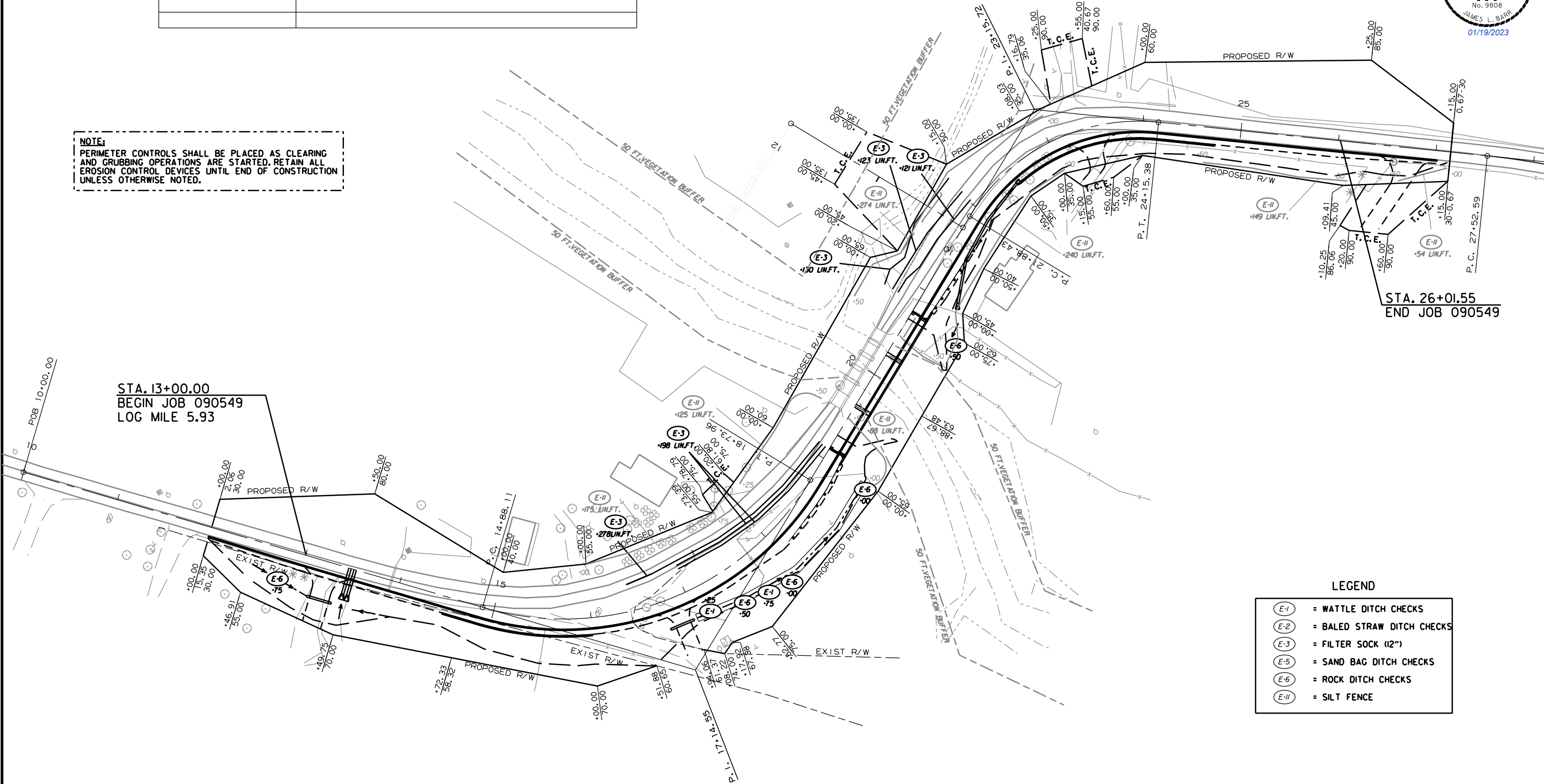
2 TEMPORARY EROSION CONTROL DETAILS



REVISIONS

DATE OF REVISION	REVISION

NOTE:
PERIMETER CONTROLS SHALL BE PLACED AS CLEARING
AND GRUBBING OPERATIONS ARE STARTED. RETAIN ALL
EROSION CONTROL DEVICES UNTIL END OF CONSTRUCTION
UNLESS OTHERWISE NOTED.



LEGEND

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090549	18	72

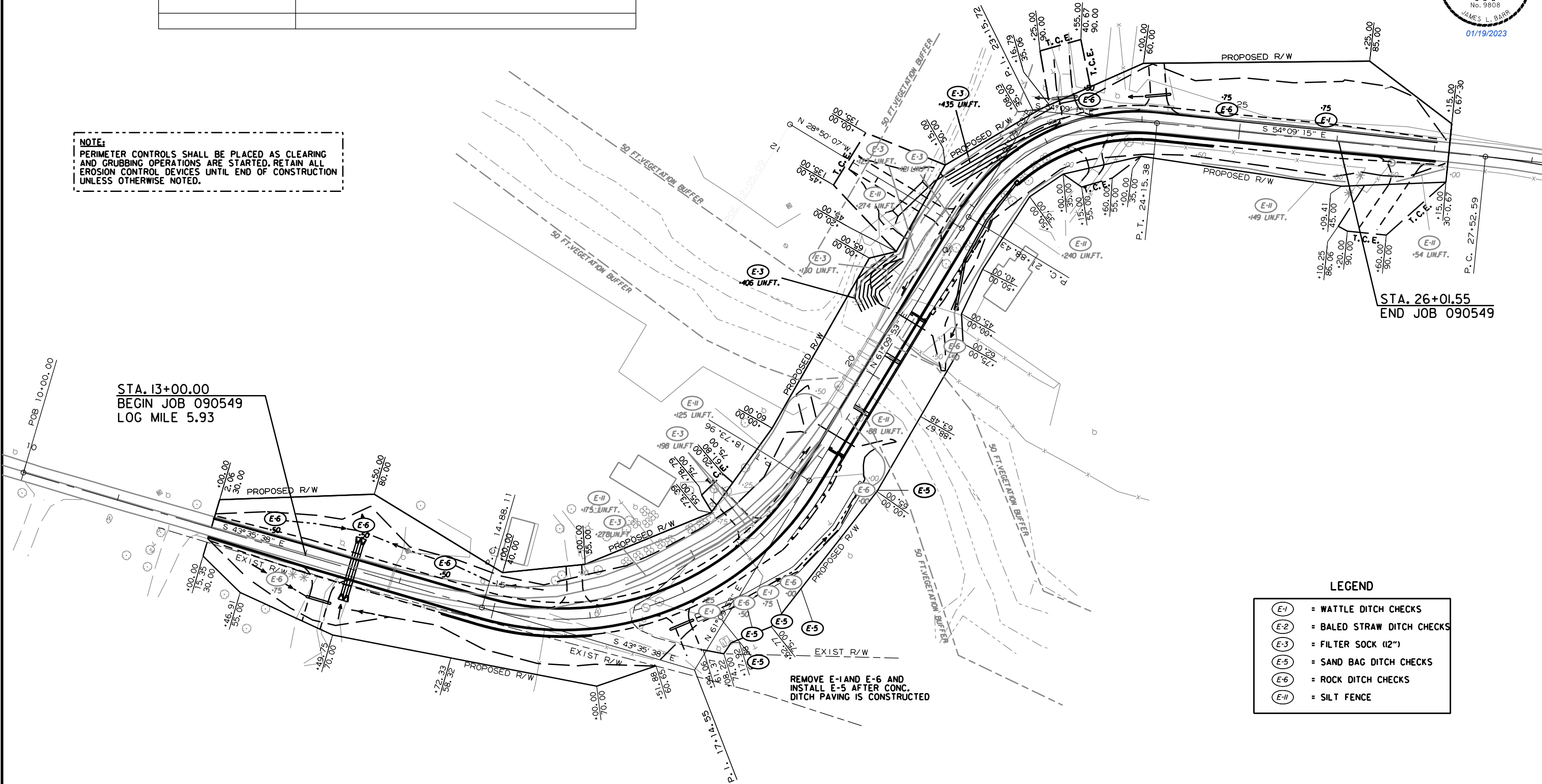
2 TEMPORARY EROSION CONTROL DETAILS



REVISIONS

DATE OF REVISION	REVISION

NOTE:
PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED. RETAIN ALL EROSION CONTROL DEVICES UNTIL END OF CONSTRUCTION UNLESS OTHERWISE NOTED.



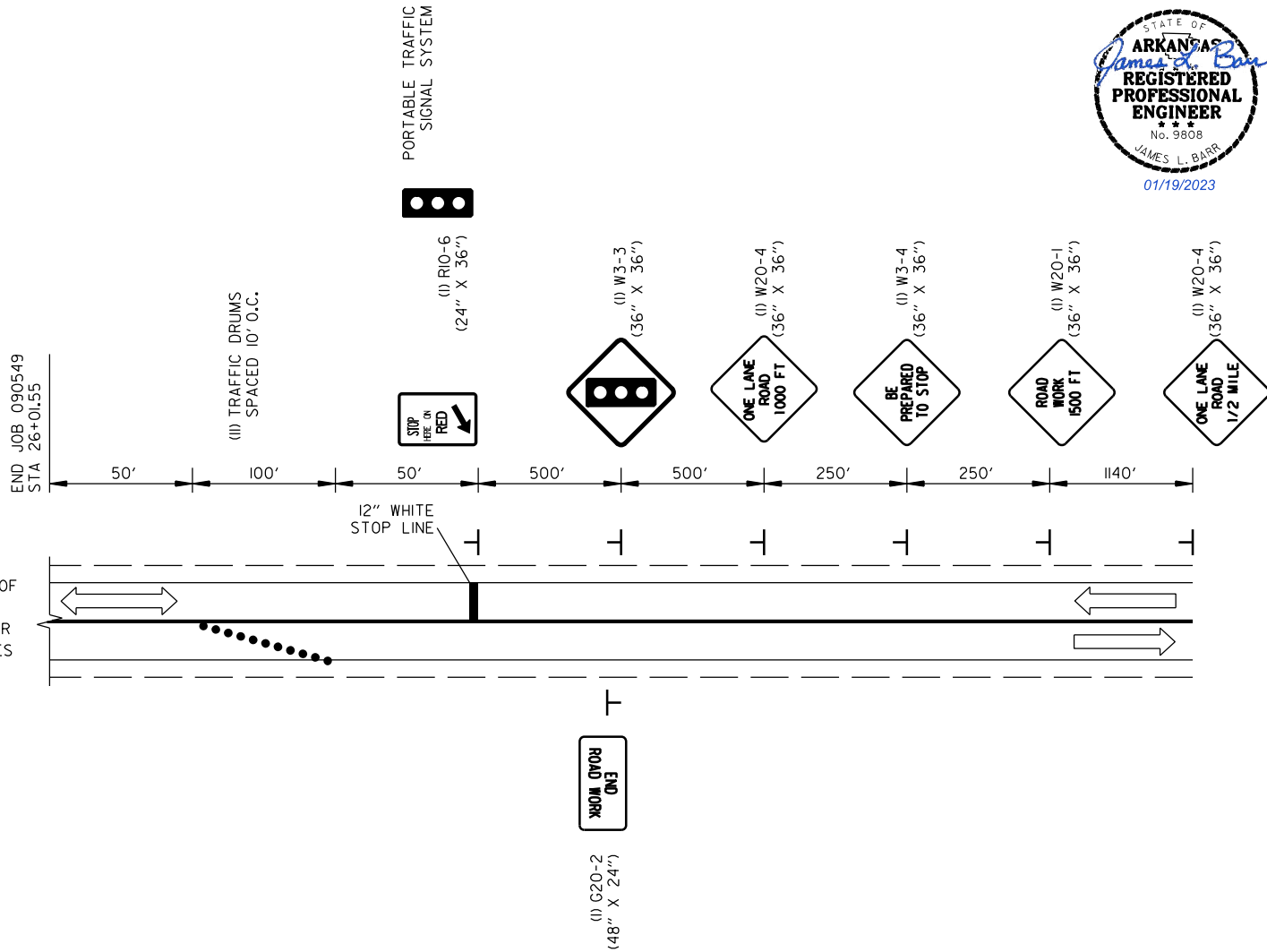
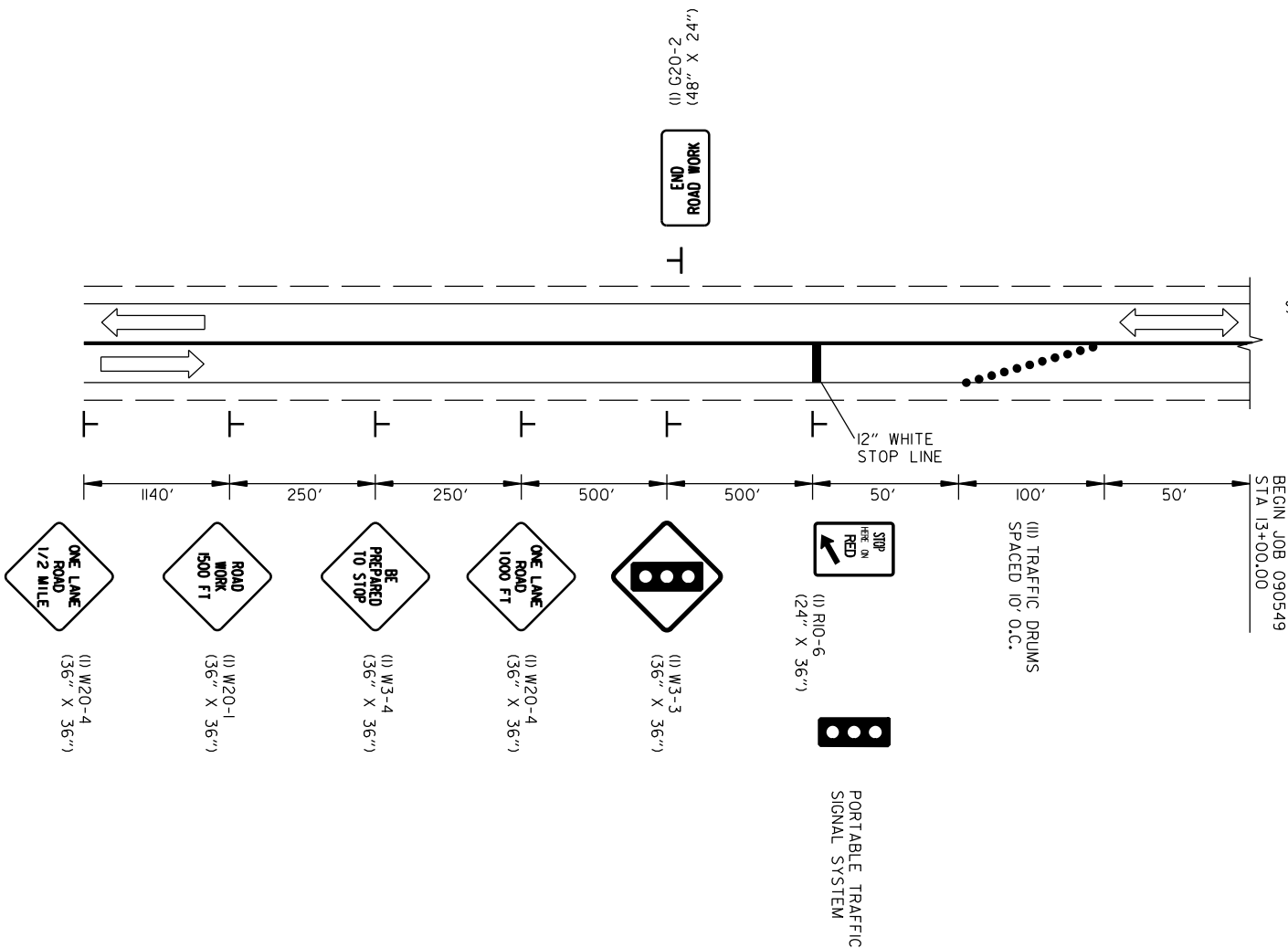
LEGEND

- E-1 = WATTLE DITCH CHECKS
- E-2 = BALED STRAW DITCH CHECKS
- E-3 = FILTER SOCK (12")
- E-5 = SAND BAG DITCH CHECKS
- E-6 = ROCK DITCH CHECKS
- E-11 = SILT FENCE

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090549	19	72

2 MAINTENANCE OF TRAFFIC DETAILS



ADVANCE WARNING (ALL STAGES)

- 

(4) W21-5a
(36" X 36")

ALL STAGES
TO BE USED IF AND WHERE
DIRECTED BY THE ENGINEER
- 

(2) R4-1
(24" X 30")

ALL STAGES
TO BE USED IF AND WHERE
DIRECTED BY THE ENGINEER
- 

(2) W8-1
(36" X 36")

ALL STAGES
TO BE USED IF AND WHERE
DIRECTED BY THE ENGINEER

ALL STAGES
MAINTENANCE OF TRAFFIC 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.		090549	20	72

2 MAINTENANCE OF TRAFFIC DETAILS



STAGE I CONSTRUCTION SEQUENCE:

INSTALL ADVANCE WARNING SIGNS AND END ROAD WORK SIGNS AT THE BEGIN AND END JOB AS SHOWN ON THE ADVANCE WARNING DETAIL.

USE TRAFFIC DRUMS/VERTICAL PANELS SPACED AT 45' O.C. TO DELINEATE THE WORK ZONE. USE TRAFFIC DRUMS TO DELINEATE DRIVEWAYS.

MAINTAIN TRAFFIC ON EXISTING ROADWAY. (SEE NOTE BELOW)

MAINTAIN ACCESS TO EXISTING FIELD ENTRANCES AND DRIVEWAYS.

INSTALL PRECAST CONCRETE BARRIER WALL (P.C.C.B.) AND TEMPORARY IMPACT ATTENUATION BARRIER (T.I.A.B.)

STAGE CONSTRUCT EMBANKMENT RT OF EXISTING HWY. 187.

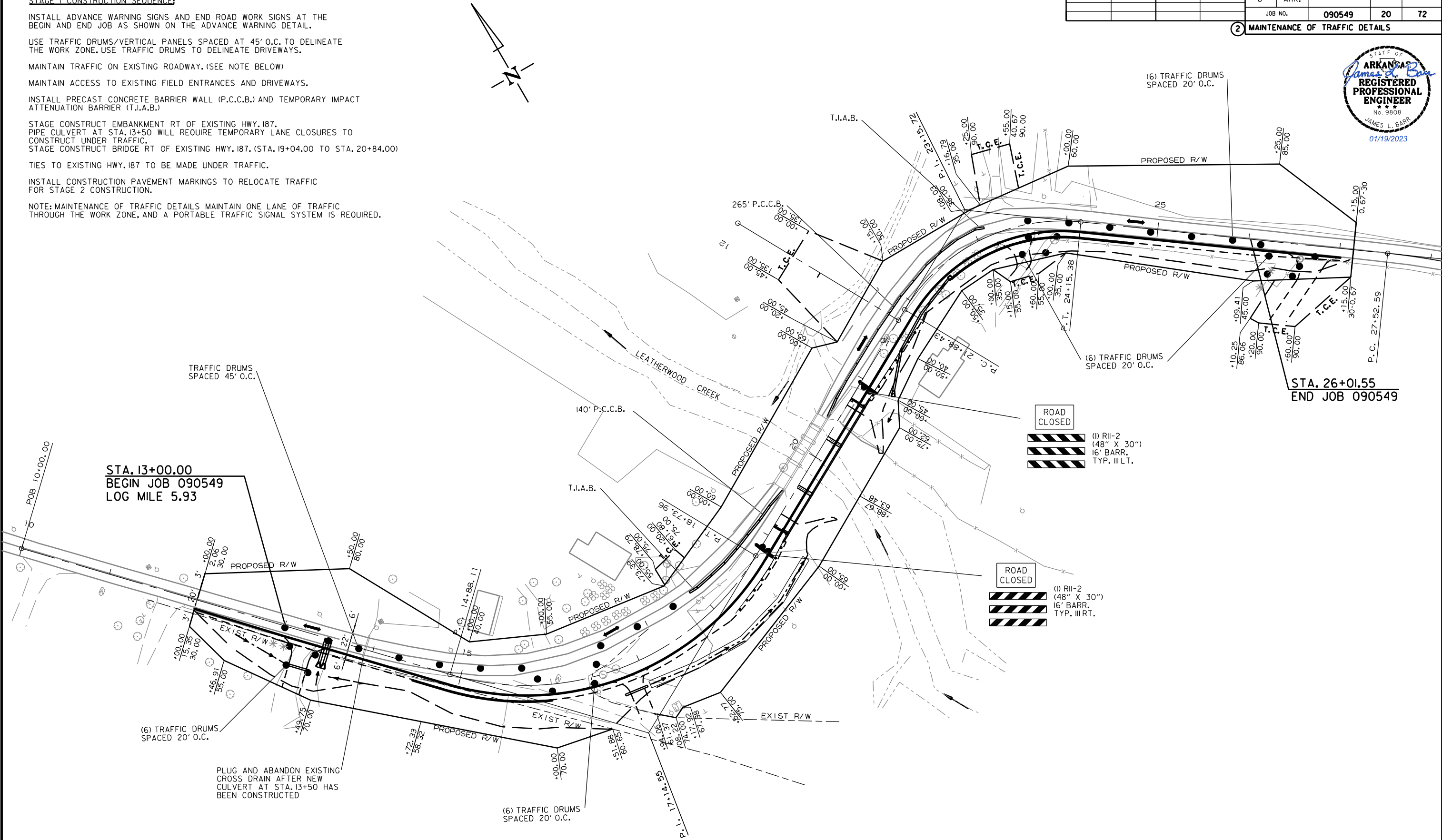
PIPE CULVERT AT STA. 13+50 WILL REQUIRE TEMPORARY LANE CLOSURES TO CONSTRUCT UNDER TRAFFIC.

STAGE CONSTRUCT BRIDGE RT OF EXISTING HWY. 187. (STA. 19+04.00 TO STA. 20+84.00)

TIES TO EXISTING HWY. 187 TO BE MADE UNDER TRAFFIC.

INSTALL CONSTRUCTION PAVEMENT MARKINGS TO RELOCATE TRAFFIC FOR STAGE 2 CONSTRUCTION.

NOTE: MAINTENANCE OF TRAFFIC DETAILS MAINTAIN ONE LANE OF TRAFFIC THROUGH THE WORK ZONE, AND A PORTABLE TRAFFIC SIGNAL SYSTEM IS REQUIRED.



STAGE 2 CONSTRUCTION SEQUENCE:

MAINTAIN ADVANCE WARNING SIGNS AND END ROAD WORK SIGNS AT THE BEGIN AND END JOB AS SHOWN ON THE ADVANCE WARNING DETAIL.

USE TRAFFIC DRUMS/VERTICAL PANELS SPACED AT 45' O.C. TO DELINEATE THE WORK ZONE. USE TRAFFIC DRUMS TO DELINEATE DRIVEWAYS.

RELOCATE PRECAST CONCRETE BARRIER WALL (P.C.C.B.) AND TEMPORARY IMPACT ATTENUATION BARRIER (T.I.A.B.) FROM STAGE I.

MOVE TRAFFIC TO NEWLY CONSTRUCTED ROADWAY AND BRIDGE. (ONE LANE TRAFFIC WITH PORTABLE TRAFFIC SIGNAL SYSTEM)

CONSTRUCT REMAINING EMBANKMENT, PIPE CULVERT AT STA 13+50, BRIDGE, AND PAVEMENT ON LT.

REMOVE EXISTING BRIDGE.

MAINTAIN ACCESS TO FIELD ENTRANCES AND DRIVEWAYS.

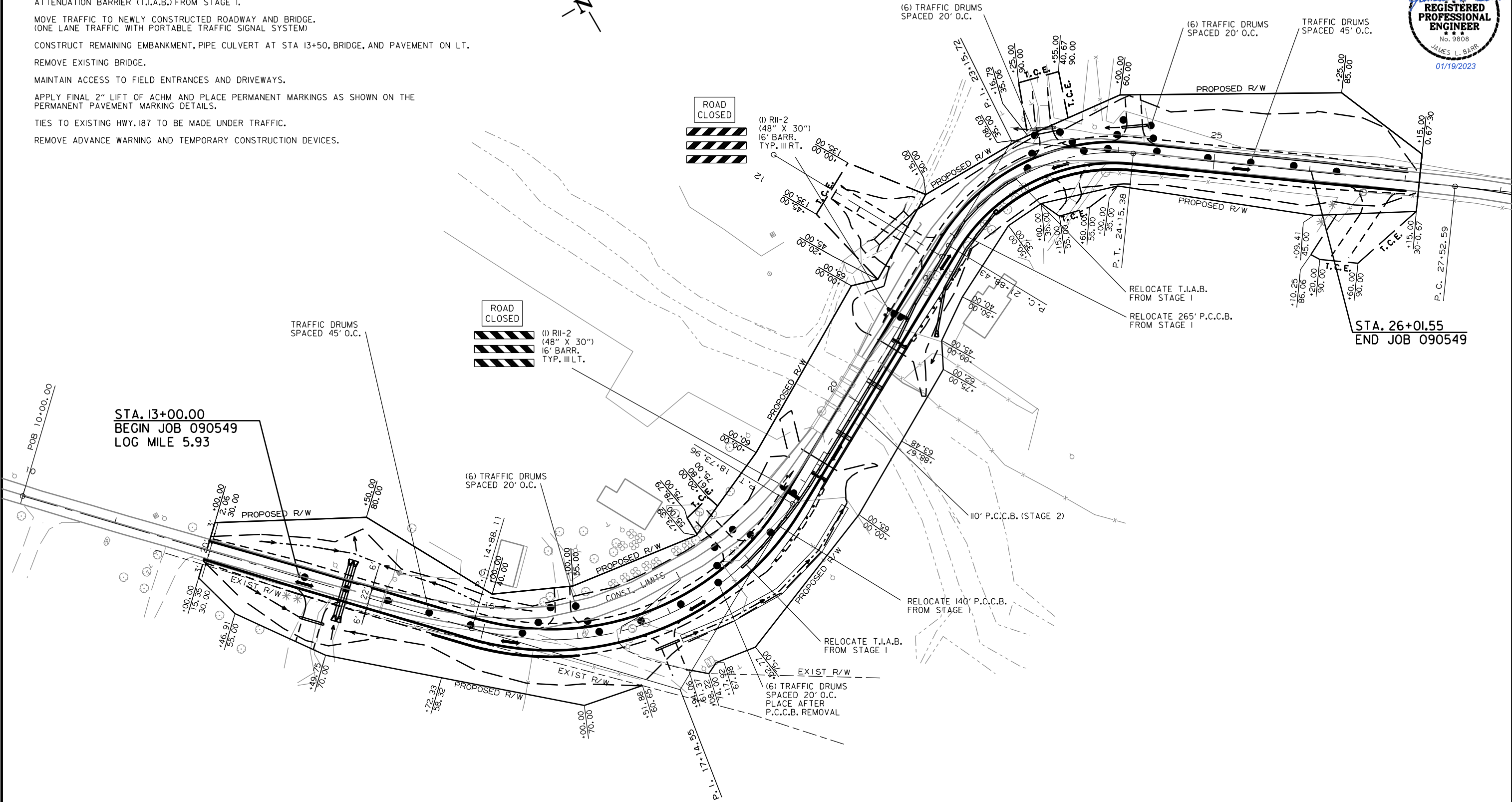
APPLY FINAL 2" LIFT OF ACHM AND PLACE PERMANENT MARKINGS AS SHOWN ON THE PERMANENT PAVEMENT MARKING DETAILS.

TIES TO EXISTING HWY. 187 TO BE MADE UNDER TRAFFIC.

REMOVE ADVANCE WARNING AND TEMPORARY CONSTRUCTION DEVICES.

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.		090549	21	72

2 MAINTENANCE OF TRAFFIC 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.		090549	22	72

2 PERMANENT PAVEMENT MARKING DETAILS



PERMANENT PAVEMENT MARKINGS
APPLY PERMANENT PAVEMENT MARKINGS ACCORDING TO STD. DWG. PM-1.
CONSULT CURRENT VERSION OF MUTCD FOR ADDITIONAL DETAILS.

PERMANENT PAVEMENT MARKINGS SHALL BE
INSTALLED THROUGH TRANSITIONS AT THE
BEGINNING AND END OF THE PROJECT.

HIGHWAY 187

THERMOPLASTIC PAVEMENT MARKINGS

6" WHITE = 2,644 LIN. FT.
6" YELLOW = 2,644 LIN. FT.

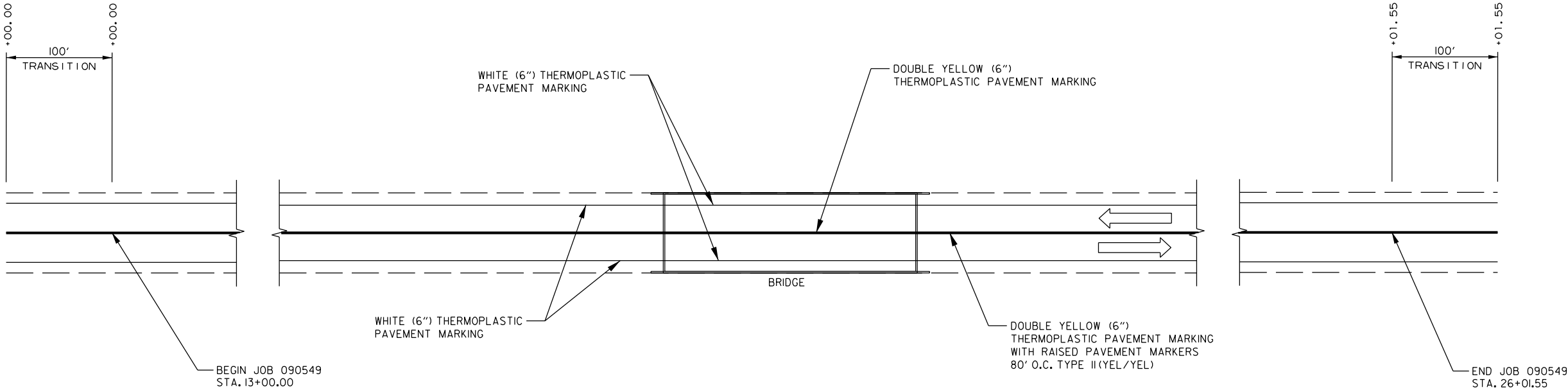
RAISED PAVEMENT MARKER

80' SPACING
TYPE II (YEL/YEL) = 17 EACH

HIGHWAY 187 BRIDGE

THERMOPLASTIC PAVEMENT MARKINGS

6" WHITE = 360 LIN. FT.
6" YELLOW = 360 LIN. FT.



PERMANENT PAVEMENT
MARKING DETAIL

NOTE: THE 6" YELLOW STRIPING QUANTITY HAS BEEN ESTIMATED ON A DOUBLE YELLOW CENTERLINE STRIPE FOR THE ENTIRE PROJECT.
THE PROJECT MUST BE MARKED FOR PASSING/NO PASSING ZONES PRIOR TO THE PLACEMENT OF ANY FINAL STRIPING.
CONTACT THE MAINTENANCE DIVISION AFTER THE FINAL LIFT OF SURFACE COURSE HAS BEEN PLACED TO SCHEDULE THE ZONING OF THE PROJECT.

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090549	23	72

2 QUANTITIES

ADVANCE WARNING SIGNS AND DEVICES

SIGN NUMBER	DE DESCRIPTION	SIGN SIZE	STAGE 1	STAGE 2	MAXIMUM NUMBER REQUIRED	TOTAL SIGNS REQUIRED		PORTABLE TRAFFIC SIGNAL SYSTEM	BARRICADES	VERTICAL PANELS	TRAFFIC DRUMS	FURNISHING & INSTALLING PRECAST CONC. BARRIER	RELOCATING PRECAST CONCRETE BARRIER	TEMPORARY IMPACT ATTENUATION BARRIER	TEMPORARY IMPACT ATTENUATION BARRIER (RELOCATION)	TEMPORARY IMPACT ATTENUATION BARRIER (REPAIR)
						NO.	SQ. FT.									
			LIN. FT. - EACH					WEEK	LIN. FT.	EACH		LIN. FT.			EACH	
W20-1	ROAD WORK 1500 FT.	36"x36"	2	2	2	2	18.0									
W20-4	ONE LANE ROAD 1/2 MILE	36"x36"	2	2	2	2	18.0									
W20-4	ONE LANE ROAD 1000 FT.	36"x36"	2	2	2	2	18.0									
W3-4	BE PREPARED TO STOP	36"x36"	2	2	2	2	18.0									
W3-3	SIGNAL AHEAD	36"x36"	2	2	2	2	18.0									
G20-2	END ROAD WORK	48"x24"	2	2	2	2	16.0									
R11-2	ROAD CLOSED	48"x30"	2	2	2	2	20.0									
R10-6	STOP HERE ON RED	24"x36"	2	2	2	2	12.0									
R4-1	DO NOT PASS	24"x30"	2	2	2	2	10.0									
W21-5a	RIGHT SHOULDER CLOSED	36"x36"	4	4	4	4	36.0									
W8-1	BUMP	36"x36"	2	2	2	2	18.0									
	PORTABLE TRAFFIC SIGNAL SYSTEM		1	1	1			50								
	VERTICAL PANELS		34	34	34					34						
	TRAFFIC DRUMS		60	61	61					61						
	TYPE III BARRICADE-RT. (16')		1	1	1				16							
	TYPE III BARRICADE-LT. (16')		1	1	1				16							
	FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER		405		405						405					
	RELOCATING PRECAST CONCRETE BARRIER			405	405							405				
	TEMPORARY IMPACT ATTENUATION BARRIER		2		2								2			
	TEMPORARY IMPACT ATTENUATION BARRIER (RELOCATION)			2	2									2		
	TEMPORARY IMPACT ATTENUATION BARRIER (REPAIR)		2	2	4											4
TOTALS:							202.0	50	32	34	61	405	405	2	2	4

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

NOTE: THE QUANTITY OF VERTICAL PANELS PROVIDED IN THE CONTRACT IS FOR ONE SIDE OF THE ROADWAY FOR THE FULL LENGTH OF THE JOB. THIS IS THE MAXIMUM QUANTITY REQUIRED TO ALLOW THE CONTRACTOR TO NOTCH ONE MILE, BACKFILL TO A POINT WHERE THE VERTICAL DIFFERENTIAL IS 4" OR LESS, AND THEN NOTCH ANOTHER ONE-MILE SECTION. THIS IS THE MAXIMUM NUMBER OF VERTICAL PANELS THAT WILL BE PAID FOR. REFER TO SECTION 603.02 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION REQUIREMENTS.

CONSTRUCTION PAVEMENT MARKINGS AND PERMANENT PAVEMENT MARKINGS

DE DESCRIPTION	STAGE 1	STAGE 2	END OF JOB	CONSTRUCTION PAVEMENT MARKINGS	RAISED PAVEMENT MARKERS	THERMOPLASTIC PAVEMENT MARKING	
					TYPE II	6"	
					(YELLOW/YELLOW)	WHITE	YELLOW
	LIN. FT. - EACH			LIN. FT.	EACH	LIN. FT.	
CONSTRUCTION PAVEMENT MARKINGS	6024			6024			
RAISED PAVEMENT MARKERS TYPE II (YELLOW/YELLOW)	17		17		34		
THERMOPLASTIC PAVEMENT MARKING WHITE (6")			3004			3004	
THERMOPLASTIC PAVEMENT MARKING YELLOW (6")			3004				3004
TOTALS:				6024	34	3004	3004

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

NOTE: THE 6" YELLOW STRIPING QUANTITY HAS BEEN ESTIMATED BASED ON A DOUBLE YELLOW CENTERLINE STRIPE FOR THE ENTIRE PROJECT. THE PROJECT MUST BE MARKED FOR PASSING/NO PASSING ZONES PRIOR TO THE PLACEMENT OF ANY FINAL STRIPING. CONTACT THE MAINTENANCE DIVISION AFTER THE FINAL LIFT OF SURFACE COURSE HAS BEEN PLACED TO SCHEDULE THE ZONING OF THE PROJECT.



QUANTITIES

CLEARING AND GRUBBING				
STATION	STATION	LOCATION	CLEARING	GRUBBING
			STATION	
12+00	19+04	HWY. 187-LT. & RT.	8	8
20+84	27+02	HWY. 187-LT. & RT.	7	7
TOTALS:			15	15

REMOVAL AND DISPOSAL OF FENCE			
STATION	STATION	LOCATION	FENCE
			LIN. FT.
13+49	16+51	HWY. 187-RT.	302
17+62	18+34	HWY. 187-LT. & RT.	117
20+42	20+87	HWY. 187-RT.	105
23+72	26+28	HWY. 187-RT.	272
23+84	23+85	HWY. 187-LT.	49
26+48	27+05	HWY. 187-RT.	75
TOTALS:			920

REMOVAL AND DISPOSAL OF CULVERTS AND DROP INLETS		
STATION	DE Scription	PIPE CULVERTS
		EACH
23+26	HWY. 187-LT.	1
24+07	HWY. 187-LT.	1
TOTAL:		2

NOTE: QUANTITIES SHOWN ABOVE SHALL INCLUDE REMOVAL & DISPOSAL OF ALL HEADWALLS AND FLARED END SECTIONS IF APPLICABLE.

SOIL LOG													
	STATION	LATITUDE			LONGITUDE			LOCATION	DEPTH	LIQUID LIMIT	PLASTICITY INDEX	USCS CLASSIFICATION	COLOR
		DEG	MIN	SEC	DEG	MIN	SEC		FEET				
B-1	19+32	36	27	42.48	-93	45	7.92	12.8 RT.	0.5-7	ND	ND	GC	RD/BR
	19+32	36	27	42.48	-93	45	7.92	12.8 RT.	7-29	ND	ND	LIMESTONE	GRAY
B-2	19+67	36	27	42.84	-93	45	7.20	4.0 RT.	0-4.8	ND	ND	GC	RD/BR
	19+67	36	27	42.84	-93	45	7.20	4.0 RT.	4.8-25.1	ND	ND	LIMESTONE	GRAY
B-3	20+16	36	27	43.20	-93	45	6.84	3.3 RT.	0-3.5	ND	ND	GP	GR/BR
	20+16	36	27	43.20	-93	45	6.84	3.3 RT.	3.5-23.5	ND	ND	LIMESTONE	GRAY
B-4	20+65	36	27	43.20	-93	45	6.12	12.3 RT.	0-3	ND	ND	GC	RD/BR
	20+65	36	27	43.20	-93	45	6.12	12.3 RT.	3-23.5	ND	ND	LIMESTONE	GRAY

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

ND - NOT DETERMINABLE

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

SOIL STABILIZATION			
STATION	STATION	LOCATION / DESCRIPTION	SOIL STABILIZATION
ENTIRE	PROJECT	TO BE USED IF AND WHERE	TON
		DIRECTED BY THE ENGINEER	500
TOTAL:			500

QUANTITY ESTIMATED.
SEE SECTION 104.03 OF THE STD. SPECS.

EARTHWORK				
STATION	STATION	LOCATION / DESCRIPTION	UNCLASSIFIED EXCAVATION	COMPACTED EMBANKMENT
			CU. YD.	
ENTIRE	PROJECT	STAGE 1-MAIN LANES	1827	2812
ENTIRE	PROJECT	STAGE 2-MAIN LANES	2871	1069
ENTIRE	PROJECT	APPROACHES	155	2120
ENTIRE	PROJECT	TEMPORARY APPROACHES	100	1000
19+04	20+84	EMBANKMENT & CHANNEL	920	
TOTALS:			5873	7001

NOTE: EARTHWORK QUANTITIES SHALL BE PAID AS PLAN QUANTITY.

GUARDRAIL						
STATION	STATION	LOCATION	GUARDRAIL (TYPE A)	THRIE BEAM GUARDRAIL TERMINAL	GUARDRAIL TERMINAL (TYPE 2)	BRIDGE END TERMINAL
			LIN. FT.	EACH	EACH	EACH
18+09.35	19+03.10	HWY. 187 - RT.	25	1	1	
	19+03.10	HWY. 187 - LT.				1
20+84.90	21+78.65	HWY. 187 - RT.	25	1	1	
	21+53.65	HWY. 187 - LT.				1
TOTALS:			50	2	2	2

FENCING			
STATION	STATION	LOCATION	WIRE FENCE
			(TYPE D) LIN. FT.
20+42	20+87	HWY. 187-RT.	105
23+72	26+28	HWY. 187-RT.	272
26+48	27+05	HWY. 187-RT.	75
TOTAL:			452

ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC		
LOCATION	TON	TACK COAT
		GALLON
ENTIRE PROJECT - TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER	7	14
TOTALS:	7	14
BASIS OF ESTIMATE: ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC... 25 TON/MILE TACK COAT FOR MAINTENANCE OF TRAFFIC..... 50 GAL./MILE		

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				JOB NO.		090549	24	72

2 QUANTITIES



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CONCRETE DITCH PAVING							
STATION	STATION	LOCATION	LENGTH	"W"	CONC. DITCH PAVING (TYPE B)	SOLID SODDING	WATER
			LIN. FT.	FEET	SQ. YD.	SQ. YD.	M. GAL.
17+00.00	19+00.00	HWY. 187-RT.	200.00	4.00	88.89	88.89	1.12
TOTALS:					88.89	88.89	1.12

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

EROSION CONTROL MATTING				
STATION	STATION	LOCATION	LENGTH	CLASS 3
			LIN. FT.	SQ. YD.
ENTIRE	PROJECT	TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER	325.03	216.67
TOTAL:				216.67

NOTE: AVERAGE WIDTH = 8'-0"

QUANTITIES ESTIMATED.
SEE SECTION 104.03 OF STD. SPECS.

STATION	LOCATION	DUMPED RIPRAP	FILTER BLANKET
		CU. YD.	SQ. YD.
13+58	OUTLET OF PIPE CULVERT (LT.)	11	21
21+00	OUTLET OF PIPE CULVERT (RT.)	2	4
21+75	EMBANKMENT PROTECTION (LT.)	157	314
*	TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER	10	20
TOTALS:		180	359

*NOTE: QUANTITY ESTIMATED.
SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS

NOTE: FILTER BLANKET SHALL BE GEOTEXTILE FABRIC (TYPE 5).

BENCH MARKS		
STATION	LOCATION	BENCH MARKS
		EACH
19+04	BRIDGE END	1
TOTAL:		1

NOTE: SHOWN FOR INFORMATION ONLY. BENCH MARKS SHALL BE FURNISHED AND PLACED BY STATE FORCES.

4" PIPE UNDERDRAIN				
STATION	STATION	LOCATIONS	4" PIPE UNDERDRAINS	UNDERDRAIN OUTLET PROTECTOR S
			LIN. FT.	EACH
* ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER			500	2
TOTALS:			500	2

* NOTE: QUANTITY ESTIMATED.
SEE SECTION 104.03 OF THE STD. SPECS.

EROSION CONTROL																
STATION	STATION	LOCATION	PERMANENT EROSION CONTROL					TEMPORARY EROSION CONTROL								
			SEEDING	LIME	MULCH COVER	WATER	SECOND SEEDING APPLICATION	TEMPORARY SEEDING	MULCH COVER	WATER	WATTLE (20") DITCH CHECKS	SAND BAG DITCH CHECKS	ROCK DITCH CHECKS	SILT FENCE	FILTER SOCK (12")	* SEDIMENT REMOVAL & DISPOSAL
			ACRE	TON	ACRE	M.GAL.	ACRE	ACRE	ACRE	M.GAL.	(E-1) LIN. FT.	(E-5) BAG	(E-6) CU.YD.	(E-11) LIN. FT.	(E-3) LIN. FT.	CU. YD.
ENTIRE	PROJECT	CLEARING AND GRUBBING						1.50	1.50	30.6				1105		41
ENTIRE	PROJECT	STAGE 1						0.75	0.75	15.3	18		15		1045	7
ENTIRE	PROJECT	STAGE 2	1.72	3.44	1.72	175.4	1.72	0.75	0.75	15.3	9	110	15		841	11
* ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER			0.43	0.86	0.43	43.9	0.43	0.75	0.75	15.3	7	28	8	276	472	10
TOTALS:			2.15	4.30	2.15	219.3	2.15	3.75	3.75	76.5	34	138	38	1381	2358	69

BASIS OF ESTIMATE:
LIME.....2 TONS / ACRE OF SEEDING
WATER.....102.0 M.G. / ACRE OF SEEDING
WATER.....20.4 M.G. / ACRE OF TEMPORARY SEEDING
WATTLE DITCH CHECKS.....9 LIN. FT. / LOCATION
SAND BAG DITCH CHECKS.....22 BAGS / LOCATION
ROCK DITCH CHECKS.....3 CU.YD./LOCATION

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

*QUANTITIES ESTIMATED.
SEE SECTION 104.03 OF THE STD. SPECS.

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				6	ARK.			
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2 QUANTITIES



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02-02-23				6	ARK.			
				JOB NO.		090549	26	72

2 QUANTITIES



COLD MILLING ASPHALT PAVEMENT				
STATION	STATION	LOCATION	AVG. WIDTH	COLD MILLING ASPHALT PAVEMENT
			FEET	SQ. YD.
12+00.00	13+00.00	MAIN LANES	21.00	233.33
26+01.55	27+01.55	MAIN LANES	21.00	233.33
TOTAL:				466.66

NOTE: COORDINATE COLD MILLING STOCKPILE LOCATIONS WITH DISTRICT ENGINEER. STOCKPILE LOCATIONS SHALL BE NO FURTHER THAN FIVE MILES FROM EACH SITE.

PAVEMENT REPAIR OVER CULVERTS (ASPHALT)				
STATION	LOCATION	WIDTH	LENGTH	TON
		FEET		
13+58	HWY. 187	15.67	20	17
TOTAL:				17
AVG. DEPTH = 9"				

STATION	STATION	LOCATION	APPROACH SLABS (TYPE SPECIAL)	REINFORCING STEEL-RDWY. (GR. 60)	AGGREGATE BASE CRS. (CLASS 7)
			CU. YD.	POUND	TON
19+04.00	19+04.00	HWY. 187	76.35	9010	75.74
20+84.00	20+84.00	HWY. 187	76.35	9010	54.99
TOTALS:			152.70	18020	130.73

STATION	SIDE	LOCATION	WIDTH	ACHM SURFACE COURSE (1/2") 220 LBS. PER SQ. YD. (PG 64-22)		AGGREGATE BASE COURSE (CLASS 7)	SIDE DRAINS	STANDARD DRAWINGS
			FEET	SQ. YD.	TON		24" LIN. FT.	
						TON		
13+26	RT.	HWY. 187	20	103.47	11.38	42.25	46	PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
15+86	LT.	HWY. 187	16	44.03	4.84	17.98		
16+86	RT.	HWY. 187	16	51.53	5.67	21.04	30	PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
17+95	LT.	HWY. 187	16	53.68	5.90	21.92		
21+75	LT.	HWY. 187	16	206.43	22.71	84.29		
23+26	LT.	HWY. 187	16	115.00	12.65	46.96	46	PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
23+43	RT.	HWY. 187	16	55.04	6.05	22.47		
24+07	LT.	HWY. 187	16	84.10	9.25	34.34	30	PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
26+75	RT.	HWY. 187	16	147.57	16.23	60.26		
* TEMPORARY DRIVES - ENTIRE PROJECT						75.00		
TOTALS:				860.85	94.68	426.51	152	

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....94.5% MIN. AGGR.....5.5% ASPHALT BINDER
MAXIMUM NUMBER OF GYRATIONS = 115 FOR PG 64-22

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

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.

FLOWABLE SELECT MATERIAL		
STATION	LOCATION	CU. YD.
13+91	C.L. HWY. 187	3
TOTAL:		3

ACHM PATCHING OF EXISTING ROADWAY	
DE DESCRIPTION	TON
ENTIRE PROJECT - TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER	25
TOTAL:	25

NOTE: QUANTITY ESTIMATED.
SEE SECTION 104.03 OF THE STD. SPECS.

LOCATION	SELECTED PIPE BEDDING
	CU. YD.
ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER	100
TOTAL:	100

NOTE: QUANTITY ESTIMATED.
SEE SECTION 104.03 OF THE STD. SPECS.

STRUCTURES															
STATION	DESCRIPTION	REINFORCED CONCRETE PIPE CULVERT		FLARED END SECTIONS FOR R.C. PIPE CULVERTS		DROP INLETS	SPAN	HEIGHT	LENGTH	CLASS S CONCRETE-ROADWAY	REINF. STEEL-ROADWAY (GRADE 60)	UNCL. EXC. FOR STR.-ROADWAY	SOLID SODDING	WATER	STD. DWG. NOS.
		(CLASS III)	(CLASS V)			TYPE									
		24"	30"	24"	30"	ST									
		LIN. FT.		EACH		EACH									
13+58	CONST. DBL R.C. PIPE CULVERT		55		4								28	0.35	FES-1, FES-2, PCC-1
21+75	CONST. R.C. BOX CULVERT						8	6	54	45.75	5766	27	63	0.79	SEE SPECIAL DETAILS, RCB-1, RCB-2
22+50	CONST. DROP INLET WITH R.C. PIPE CULVERT	146		2		1							8	0.10	FPC-9S, FES-1, FES-2, PCC-1
TOTALS:		146	55	2	4	1				45.75	5766	27	99	1.24	

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

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

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

02/02/2023

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				6	ARK.			
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2 QUANTITIES



BASE AND SURFACING																									
STATION	STATION	LOCATION	LENGTH	AGGREGATE BASE COURSE (CLASS 7)		TACK COAT						ACHM BINDER COURSE (1")				ACHM SURFACE COURSE (1/2")									
				TON / STATION	TON	(0.05 GAL. PER SQ. YD.)			(0.17 GAL. PER SQ. YD.)			TOTAL GALLONS	AVG. WID. FEET	SQ.YD.	POUND / SQ.YD.	PG 64-22 TON	AVG. WID. FEET	SQ.YD.	POUND / SQ.YD.	PG 64-22 TON	AVG. WID. FEET	SQ.YD.	POUND / SQ.YD.	PG 64-22 TON	TOTAL PG 64-22 TON
						TOTAL WID. FEET	SQ.YD.	GALLON	TOTAL WID. FEET	SQ.YD.	GALLON														
MAIN LANE S																									
12+00.00	13+00.00	HWY. 187 - TRANSITION	100.00	64.88	64.88	2.18	24.22	1.21				1.21	1.11	12.33	330.00	2.03	1.06	11.78	220.00	1.30	23.00	255.56	220.00	28.11	29.41
13+00.00	15+00.00	HWY. 187 - NOTCH AND WIDEN	200.00	129.75	259.50	4.35	96.67	4.83				4.83	2.23	49.56	330.00	8.18	2.13	47.33	220.00	5.21	26.00	577.78	220.00	63.56	68.77
15+00.00	18+67.50	HWY. 187 - FULL DEPTH	367.50	207.50	762.56	44.71	1825.66	91.28				91.28	22.46	917.12	330.00	151.32	22.25	908.54	220.00	99.94	26.00	1061.67	220.00	116.78	216.72
21+20.50	25+50.00	HWY. 187 - FULL DEPTH	429.50	207.50	891.21	44.71	2133.66	106.68				106.68	22.46	1071.84	330.00	176.85	22.25	1061.82	220.00	116.80	26.00	1240.78	220.00	136.49	253.29
25+50.00	26+01.55	HWY. 187 - NOTCH AND WIDEN	51.55	129.75	66.89	4.35	24.92	1.25				1.25	2.23	12.77	330.00	2.11	2.13	12.20	220.00	1.34	26.00	148.92	220.00	16.38	17.72
26+01.55	27+01.55	HWY. 187 - TRANSITION	100.00	64.88	64.88	2.18	24.22	1.21				1.21	1.11	12.33	330.00	2.03	1.06	11.78	220.00	1.30	23.00	255.56	220.00	28.11	29.41
ADDITIONAL FOR LEVELING																									
13+00.00	15+00.00	LEVELING	200.00			20.00	444.44	22.22	20.00	444.44	75.55	97.77					20.00	444.44	VAR	48.89					48.89
25+50.00	26+01.55	LEVELING	51.55			20.00	114.56	5.73	20.00	114.56	19.48	25.21					20.00	114.56	VAR	12.60					12.60
ADDITIONAL FOR SUPERELEVATION																									
13+00.61	15+50.61	SUPERELEVATION TRANSITION	250.00	25.75	64.38																				
15+50.61	16+81.04	MAXIMUM SUPERELEVATION	130.43	51.50	67.17																				
16+81.04	18+67.50	SUPERELEVATION TRANSITION	186.46	25.75	48.01																				
21+20.50	23+01.91	SUPERELEVATION TRANSITION	181.41	25.50	46.26																				
23+01.91	23+51.55	MAXIMUM SUPERELEVATION	49.64	51.00	25.32																				
23+51.55	26+01.55	SUPERELEVATION TRANSITION	250.00	25.50	63.75																				
ADDITIONAL FOR GUARDRAIL																									
18+09.35	19+03.10	HWY. 187 - RT.	93.75	19.50	18.28												5.50	57.29	220.00	6.30					6.30
20+84.90	21+78.65	HWY. 187 - RT.	93.75	19.50	18.28												5.50	57.29	220.00	6.30					6.30
ADDITIONAL FOR METHOD OF RAISING GRADE																									
14+00.00	15+00.00	HWY. 187	100.00										20.00	VAR.	VAR.	28.53									
25+50.00	26+75.00	HWY. 187	125.00										20.00	VAR.	VAR.	36.49									
ADDITIONAL FOR CURB AND GUTTER																									
14+50.00	16+00.00	HWY. 187 - RT.	150.00														4.00	66.67	220.00	7.33					7.33
22+50.00	24+75.00	HWY. 187 - RT.	225.00														4.00	100.00	220.00	11.00					11.00
TOTALS:					2461.37		4688.35	234.41		559.00	95.03	329.44		2075.95		407.54		2893.70		318.31		3540.27		389.43	707.74

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....94.5% MIN. ACCR.....5.5% ASPHALT BINDER
ACHM BINDER COURSE (1").....95.6% MIN. AGGR.....4.4% ASPHALT BINDER
MAXIMUM NUMBER OF GYRATIONS = 115 FOR PG 64-22
TACK COAT QUANTITIES WERE CALCULATED USING THE EMULSIFIED ASPHALT RATES. REFER TO SS-400-1 FOR THE RESIDUAL ASPHALT APPLICATION RATES.

DONT FORGET TO DELETE THE TOTALS OUT OF THE COLUMNS YOU ARE NOT USING OR YOU WILL END UP WITH 3 TIMES MORE ASPHALT THAN NEEDED
FOR TACK COAT QUANTITIES, USE 0.05 INSTEAD OF 0.03 AND USE 0.17 INSTEAD OF 0.10. SEE TACK COAT BASIS OF ESTIMATE ABOVE FOR REASON.

CONCRETE COMBINATION CURB AND GUTTER

STATION	STATION	LOCATION	TYPE B-1 (1' 6")
			LIN. FT.
14+50	16+00	HWY. 187-RT.	150
22+50	24+75	HWY. 187-RT.	225
TOTAL:			375

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090549	28	72
				07589	QUANTITIES		65352	

SCHEDULE OF BRIDGE QUANTITIES - JOB NO. 090549

BRIDGE NO.	NAME PLATE TITLE	UNIT OF STRUCTURE	ITEM NO.	205	801	SP, SS, & 802	SP, SS, & 802	SP & 803	SS & 804	SS & 804	SS & 805	SS & 805	812	SS & 816	SS & 816	SP JOE 090549	SP JOB 090549
			ITEM	③ REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO.)	UNCLASSIFIED EXCAVATION FOR STRUCTURES - BRIDGE	CLASS S CONCRETE - BRIDGE	CLASS S (AE) CONCRETE - BRIDGE	CLASS 2 PROTECTIVE SURFACE TREATMENT	EPOXY COATED REINFORCING STEEL (GRADE 60)	REINFORCING STEEL - BRIDGE (GRADE 60)	① STEEL PILING (HP 12x53)	PREBORING	BRIDGE NAME PLATE (TYPE D)	DUMPED RIPRAP	FILTER BLANKET	ARCHITECTURAL FINISH	STAINING CONCRETE SURFACES
			UNIT	LUMP SUM	CU. YD.	CU. YD.	CU. YD.	SQ. YD.	LB.	LB.	LIN. FT.	LIN. FT.	EACH	CU. YD.	SQ. YD.	SQ. FT.	SQ. FT.
07589	HIGHWAY 187 OVER LEATHERWOOD CREEK	BENT 1				19.36				3,115	66	60		250	465		50
		BENT 2			177	79.36			533	13,647				48			
		BENT 3			142	82.58			533	14,174				48			
		BENT 4			138	82.58			533	14,174				48			
		BENT 5			199	78.36			533	13,445				48			
		BENT 6			7	19.36				3,115	66	60		170	315		50
		180'-0" CONTINUOUS R.C. SLABUNIT					518.90	680.0	155,409				L			3240	4180
		SITE NO. 1 (EX. BRIDGE NO. M3714)		1													
		TOTALS FOR JOB NO. 090549			② 663	362.20	④ 518.9	680.0	157,540	61,670	132	120	L	612	780	3240	4280

- ① All steel piling shall be Grade 50 and are required to have approved driving points which will not be paid for directly, but will be considered subsidiary to the item "Steel Piling (HP 12x53)". All pile shall conform to Std. Dwg. No. 55020.
- ② Includes Approx. 325 Cu. Yd. Of Rock Excavation.
- ③ Excavation during the construction of bents 2-5 is expected to expose a portion of the foundation of the existing bridge. Removal, in whole or in part, as necessary, will be required to facilitate the construction. This work shall be considered subsidiary to the item "Removal of Existing Bridge Structure (Site No.)".
- ④ Based upon neat lines of Decorative Concrete Railing. Payment will be based upon plan quantities shown.

SCHEDULE OF BRIDGE QUANTITIES
HIGHWAY 187 OVER LEATHERWOOD CREEK
LEATHERWOOD CREEK STR. & APPRS. (S)
CARROLL COUNTY

ROUTE 187 SEC. 0
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: FAN, MJB

CHECKED BY: ESC

DESIGNED BY: WKB

BRIDGE NO. 07589

DATE: JUNE 2022

DATE: JUNE 2022

DATE: JUNE 2022

DRAWING NO. 65352

FILENAME: b090549_q1.dgn

SCALE: NO SCALE



DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
02-02-23				6	ARK.			
02-15-23				JOB NO.		090549	29	72

2 SUMMARY OF QUANTITIES AND REVISIONS



REVISIONS

DATE	REVISION	SHEET NUMBER
02-02-23	ADDED "CLEARING" AND "WORKING DAY WITH IMMEDIATE WORK ORDER" SPECIAL PROVISIONS. ADDED STOCKPILE LOCATION NOTE ON THE COLD MILLING ASPHALT PAVEMENT QUANTITY BOX. REVISED ITEM NAME IN SUMMARY OF QUANTITIES.	4, 26, & 29
02-15-23	REVISED STANDARD DRAWING 55010.	3 & 29

ITEM NUMBER	ITEM	QUANTITY	UNIT
201	CLEARING	15	STATION
201	GRUBBING	15	STATION
202	REMOVAL AND DISPOSAL OF FENCE	920	LIN. FT.
202	REMOVAL AND DISPOSAL OF PIPE CULVERTS	2	EACH
SS & 206	FLOWABLE SELECT MATERIAL	3	CU. YD.
SP, SS, & 210	UNCLASSIFIED EXCAVATION	5873	CU. YD.
SP & 210	COMPACTED EMBANKMENT	7001	CU. YD.
SP & 210	SOIL STABILIZATION	500	TON
SP, SS, & 303	AGGREGATE BASE COURSE (CLASS 7)	3019	TON
SS & 401	TACK COAT	343	GAL.
SP, SS, & 406	MINERAL AGGREGATE IN ACHM BINDER COURSE (1")	390	TON
SP, SS, & 406	ASPHALT BINDER (PG 64-22) IN ACHM BINDER COURSE (1")	18	TON
SP, SS, & 407	MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2")	758	TON
SP, SS, & 407	ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2")	44	TON
SP & 412	COLD MILLING ASPHALT PAVEMENT	467	SQ. YD.
SP, SS, & 414	ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC	7	TON
SP, SS, & 415	ACHM PATCHING OF EXISTING ROADWAY	25	TON
SP, SS, & 504	APPROACH SLABS	152.70	CU. YD.
601	MOBILIZATION	1.00	LUMP SUM
SP & 602	FURNISHING FIELD OFFICE	1	EACH
SS & 603	MAINTENANCE OF TRAFFIC	1.00	LUMP SUM
SS & 604	SIGNS	202	SQ. FT.
SS & 604	BARRICADES	32	LIN. FT.
SS & 604	TRAFFIC DRUMS	61	EACH
SS & 604	FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER	405	LIN. FT.
SS & 604	RELOCATING PRECAST CONCRETE BARRIER	405	LIN. FT.
604	CONSTRUCTION PAVEMENT MARKINGS	6024	LIN. FT.
SS & 604	VERTICAL PANELS	34	EACH
SP, SS, & 605	CONCRETE DITCH PAVING (TYPE B)	89	SQ. YD.
SS & 606	24" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	146	LIN. FT.
SS & 606	30" REINFORCED CONCRETE PIPE CULVERTS (CLASS V)	55	LIN. FT.
SP, SS, & 606	24" SIDE DRAIN	152	LIN. FT.
SS & 606	24" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS	2	EACH
SS & 606	30" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS	4	EACH
SS & 606	SELECTED PIPE BEDDING	100	CU. YD.
SS & 609	DROP INLETS (TYPE ST)	1	EACH
SS & 611	4" PIPE UNDERDRAINS	500	LIN. FT.
SS & 611	UNDERDRAIN OUTLET PROTECTORS	2	EACH
SS & 615	PAVEMENT REPAIR OVER CULVERTS (ASPHALT)	17	TON
SS & 617	GUARDRAIL (TYPE A)	50	LIN. FT.
SS & 617	GUARDRAIL TERMINAL (TYPE 2)	2	EACH
SS & 617	THREE BEAM GUARDRAIL TERMINAL	2	EACH
SS & 619	WIRE FENCE (TYPE D)	452	LIN. FT.
620	LIME	4	TON
620	SEEDING	2.15	ACRE
SS & 620	MULCH COVER	5.90	ACRE
620	WATER	298.2	M. GAL.
621	TEMPORARY SEEDING	3.75	ACRE
621	SILT FENCE	1381	LIN. FT.
621	SAND BAG DITCH CHECKS	138	BAG
621	SEDIMENT REMOVAL AND DISPOSAL	69	CU. YD.
621	ROCK DITCH CHECKS	38	CU. YD.
SS & 621	FILTER SOCK (12")	2358	LIN. FT.
621	WATTLE (20")	34	LIN. FT.
623	SECOND SEEDING APPLICATION	2.15	ACRE
624	SOLID SODDING	188	SQ. YD.
626	EROSION CONTROL MATTING (CLASS 3)	217	SQ. YD.
SS & 634	CONCRETE COMBINATION CURB AND GUTTER (TYPE B-1) (1' 6")	375	LIN. FT.
635	ROADWAY CONSTRUCTION CONTROL	1.00	LUMP SUM
637	MAIL BOXES	2	EACH
637	MAIL BOX SUPPORTS (SINGLE)	2	EACH
719	THERMOPLASTIC PAVEMENT MARKING WHITE (6")	3004	LIN. FT.
719	THERMOPLASTIC PAVEMENT MARKING YELLOW (6")	3004	LIN. FT.
721	RAISED PAVEMENT MARKERS (TYPE II)	34	EACH
SS & 731	TEMPORARY IMPACT ATTENUATION BARRIER	2	EACH
SS & 731	TEMPORARY IMPACT ATTENUATION BARRIER (REPAIR)	4	EACH
SS & 731	TEMPORARY IMPACT ATTENUATION BARRIER (RELOCATION)	2	EACH
SS & 734	BRIDGE END TERMINAL	2	EACH
801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-ROADWAY	27	CU. YD.
SP, SS, & 802	CLASS S CONCRETE-ROADWAY	45.75	CU. YD.
SS & 804	REINFORCING STEEL-ROADWAY (GRADE 60)	23786	POUND
SS & 816	FILTER BLANKET	359	SQ. YD.
SS & 816	DUMPED RIPRAP	180	CU. YD.
SP	PORTABLE TRAFFIC SIGNAL SYSTEM ACTUATED	50	WEEK
STRUCTURE S OVER 20' 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	663	CU. YD.
SP, SS, & 802	CLASS S CONCRETE-BRIDGE	362.20	CU. YD.
SP, SS, & 802	CLASS S(AE) CONCRETE-BRIDGE	518.90	CU. YD.
SP	STAINING CONCRETE SURFACES	4280	SQ. FT.
SP & 803	CLASS 2 PROTECTIVE SURFACE TREATMENT	680.0	SQ. YD.
SS & 804	REINFORCING STEEL-BRIDGE (GRADE 60)	61670	POUND
SS & 804	EPOXY COATED REINFORCING STEEL (GRADE 60)	157540	POUND
SS & 805	STEEL PILING (HP 12X53)	132	LIN. FT.
SS & 805	PREFORING	120	LIN. FT.
812	BRIDGE NAME PLATE (TYPE D)	1	EACH
SS & 816	FILTER BLANKET	780	SQ. YD.
SS & 816	DUMPED RIPRAP	612	CU. YD.
SP	ARCHITECTURAL FINISH	3240	SQ. FT.

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PN:900
PD:SQUARE CUT ON N END CU

PN:1
PD:STD. ARDOT CAP STAMPED PN 1

SURVEY BASELINE S 57°35'24" E
522.96

PN:2
PD:STD. ARDOT CAP
STAMPED PN 2

SURVEY BASELINE S 38°25'15" E
550.20

PN:3
PD:STD. ARDOT CAP
STAMPED PN 3

PROPOSED CL

PN:4
PD:STD. ARDOT CAP
STAMPED PN 4

HWY. 187
P.L. 17+14.55
Δ = 75°14'29"LT.
D = 19°30'00"
T = 226.44'
L = 385.85'
P.C. 14+88.11
P.T. 18+73.96
e = 0.100'//
Ls = 250'

PN:901
PD:SQUARE CUT
IN CONC

S 43°35'38" E
226.44'

N 61°09'53" E
226.44'

P.L. 17+14.55

SURVEY CONTROL COORDINATES

Project Name: s090549

Date: 11/14/2019

Coordinate System: ARKANSAS STATE PLANE – NORTH ZONE BASED ON GPS CONTROL, VT AND HZ BASED ON
STATIC GPS CONSTRAINING TBM 998 PROJECTED TO GROUND.

Units: U.S. SURVEY FOOT

Point Name	Northing	Easting	Elev	Feature	Description
1	780369.8041	795591.1753	943.13	CTL	STD. ARDOT CAP STAMPED PN 1
2	780089.5010	796032.6920	949.07	CTL	STD. ARDOT CAP STAMPED PN 2
3	779658.4408	796374.6025	958.97	CTL	STD. ARDOT CAP STAMPED PN 3
4	779289.7885	796785.4561	963.00	CTL	STD. ARDOT CAP STAMPED PN 4
5	779528.8610	797415.4532	966.80	CTL	STD. ARDOT CAP STAMPED PN 5
6	779189.1656	797886.3805	993.95	CTL	STD. ARDOT CAP STAMPED PN 6
7	778642.3881	798268.6143	990.83	CTL	STD. ARDOT CAP STAMPED PN 7
8	777837.8745	798673.2985	987.75	CTL	STD. ARDOT CAP STAMPED PN 8
900	780366.7673	795677.7997	943.01	TBM	SQUARE CUT ON N END CU
901	779297.4066	796800.3742	960.34	TBM	SQUARE CUT IN CONC BASE CIVIL WAR MON
902	778471.4574	798340.6808	986.68	TBM	SQUARE CUT ON S END CU
998	761805.6259	802036.4208	1131.73	TBM	RBR W/ALUM CAP
999	761804.1869	802118.1488	1128.38	BM	BM DISK STMPD F 52 1934

*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 1.000011314 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 s090549gi.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; STATIC GPS

CONVERGENCE ANGLE: 01–01–08 LEFT AT PN:5 LT:N 36–27–44 LG:W 093–45–37

GRID AZIMUTH = ASTRONOMICAL AZIMUTH – CONVERGENCE ANGLE.

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.		090549	30	72

2 SURVEY CONTROL DETAILS

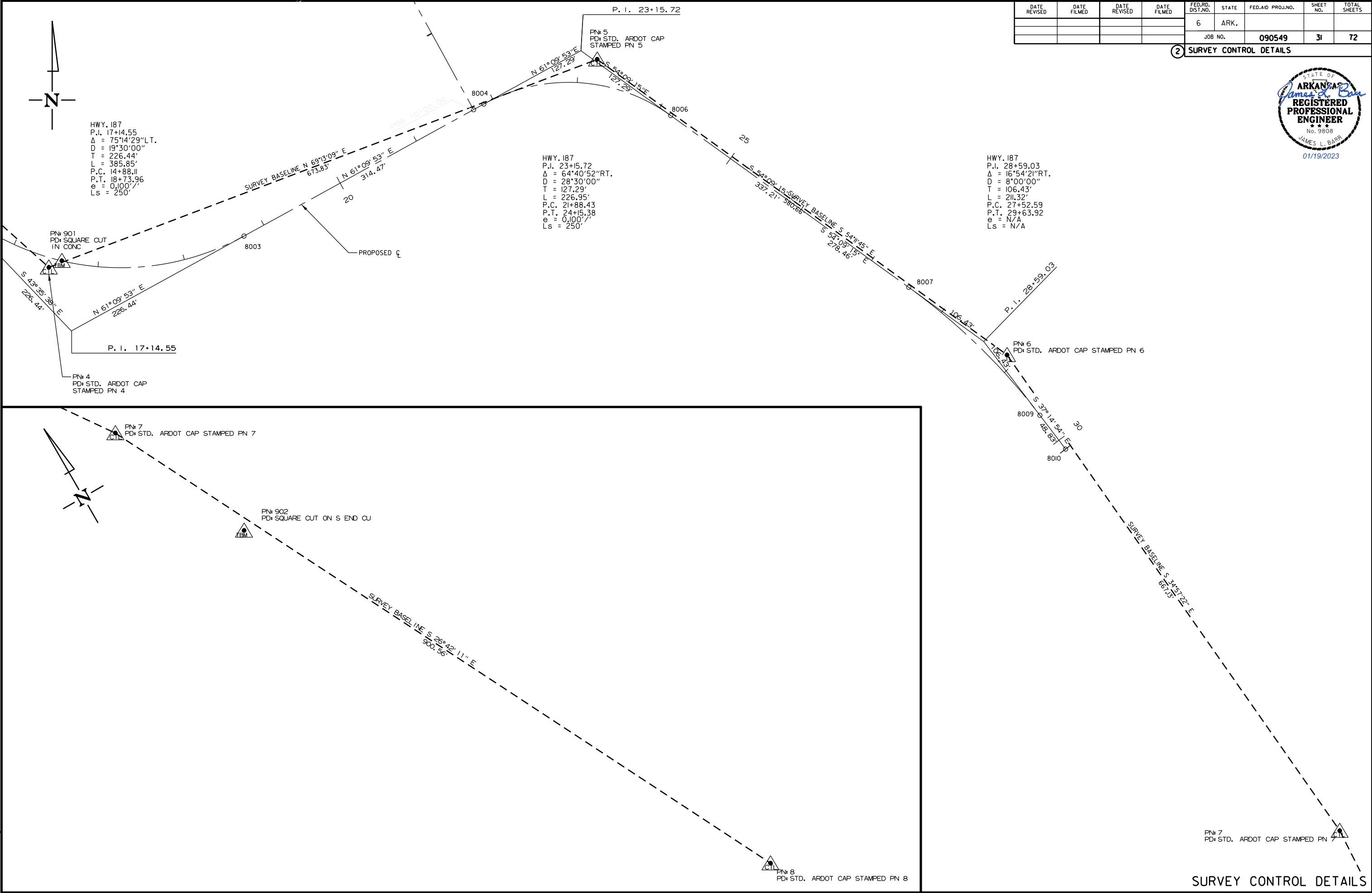


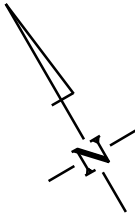
HWY. 187				
DESCRIPTION	POINT	STATION	NORTHING	EASTING
P. O. B.	8000	10+00.00	779733.8695	796318.9792
P. C.	8001	14+88.11	779380.3590	796655.5508
P. T.	8003	18+73.96	779325.5702	797010.0614
P. C.	8004	21+88.43	779477.2343	797285.5354
P. T.	8006	24+15.38	779464.0836	797500.2236
P. C.	8007	27+52.59	779266.6077	797773.5694
P. T.	8009	29+63.92	779119.5547	797924.2668
P. O. E.	8010	30+00.00	779080.6809	797953.8254

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.		090549	31	72

2 SURVEY CONTROL DETAILS





STA. 13+58 - CONSTRUCT
DBL. 30"X55' R.C. PIPE CULVERT
WITH FES LT. AND RT.
(CLASS V)(TYPE 3 BEDDING)
Q25 = 70.7 CFS, D.A. = 18.85 ACRES

HWY. 187
P.I. 17+14.55
 $\Delta = 75^{\circ}14'29''$ LT.
D = 19'30'00"
T = 226.44'
L = 385.85'
P.C. 14+88.11
P.T. 18+73.96
e = 0.100' /'
Ls = 250'

STA. 13+00.00
BEGIN JOB 090549
LOG MILE 5.93

STA. 15+86 CONSTRUCT
APPROACH ON LT. = 20 CU. YDS.

STA. 17+95 CONSTRUCT
APPROACH ON LT. = 220 CU. YDS.

STA. 19+04.00
BRIDGE NO. 07589
180'-0" CONT. R.C. SLAB UNIT
34'-0" CLEAR ROADWAY
180'-0" BRIDGE LENGTH
STA. 20+84.00

HWY. 187
P.I. 23+15.72
 $\Delta = 64^{\circ}40'52''$ RT.
D = 28'30'00"
T = 127.29'
L = 226.95'
P.C. 21+88.43
P.T. 24+15.38
e = 0.100' /'
Ls = 250'

STA. 19+52.01-STA. 20+42.01 IN PLACE
90.0' x 12.1' BRIDGE NO. M3714
REMOVE AS EXISTING BRIDGE STRUCTURE (SITE NO. 1)
=1.00 LUMPS SUM

STA. 17+00.00 TO STA. 19+00.00 RT OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 88.89 SQ. YD.

STA. 16+86 INSTALL
24" X 30' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 60 CU. YDS.

STA. 13+26 INSTALL
24" X 46' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 90 CU. YDS.

GUARDRAIL (TYPE A)	GUARDRAIL TERMINAL (TYPE 2)	THREE BEAM GUARDRAIL TERMINAL
= 25 LIN. FT.	= 1 EACH	= 1 EACH
= BRIDGE END TERMINAL		
= 25 LIN. FT.	= 1 EACH	
= BRIDGE END TERMINAL		

HWY. 187

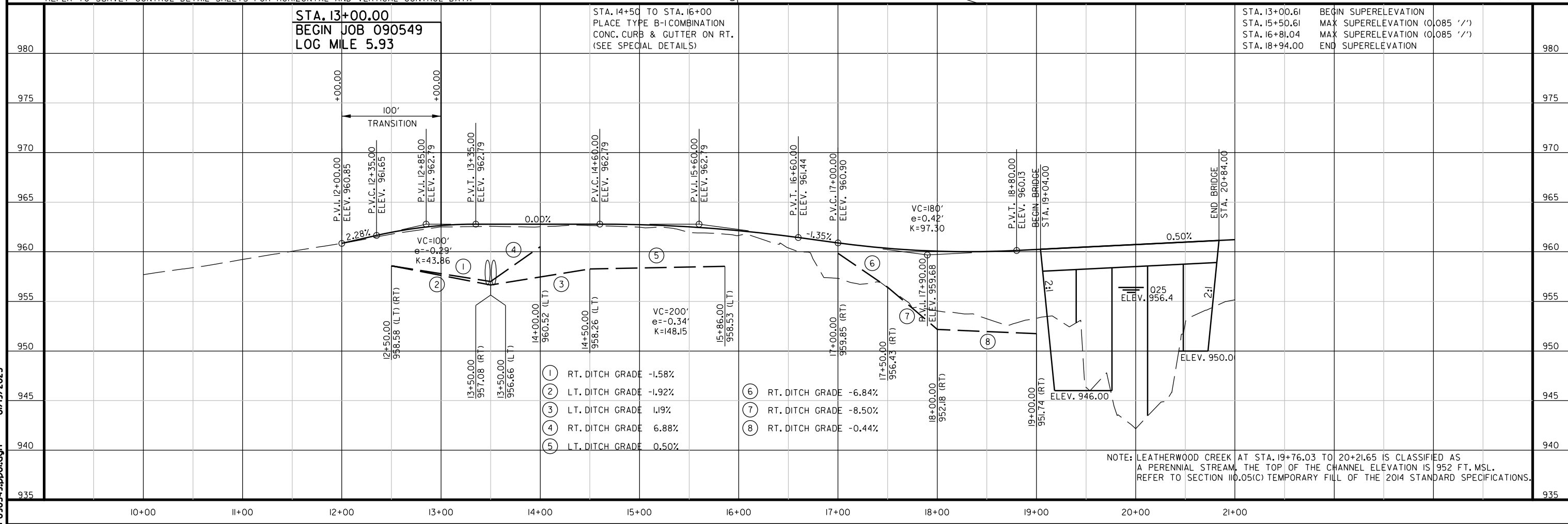
REFER TO SURVEY CONTROL DETAIL SHEETS FOR HORIZONTAL AND VERTICAL CONTROL DATA

STA. 13+00.00
BEGIN JOB 090549
LOG MILE 5.93

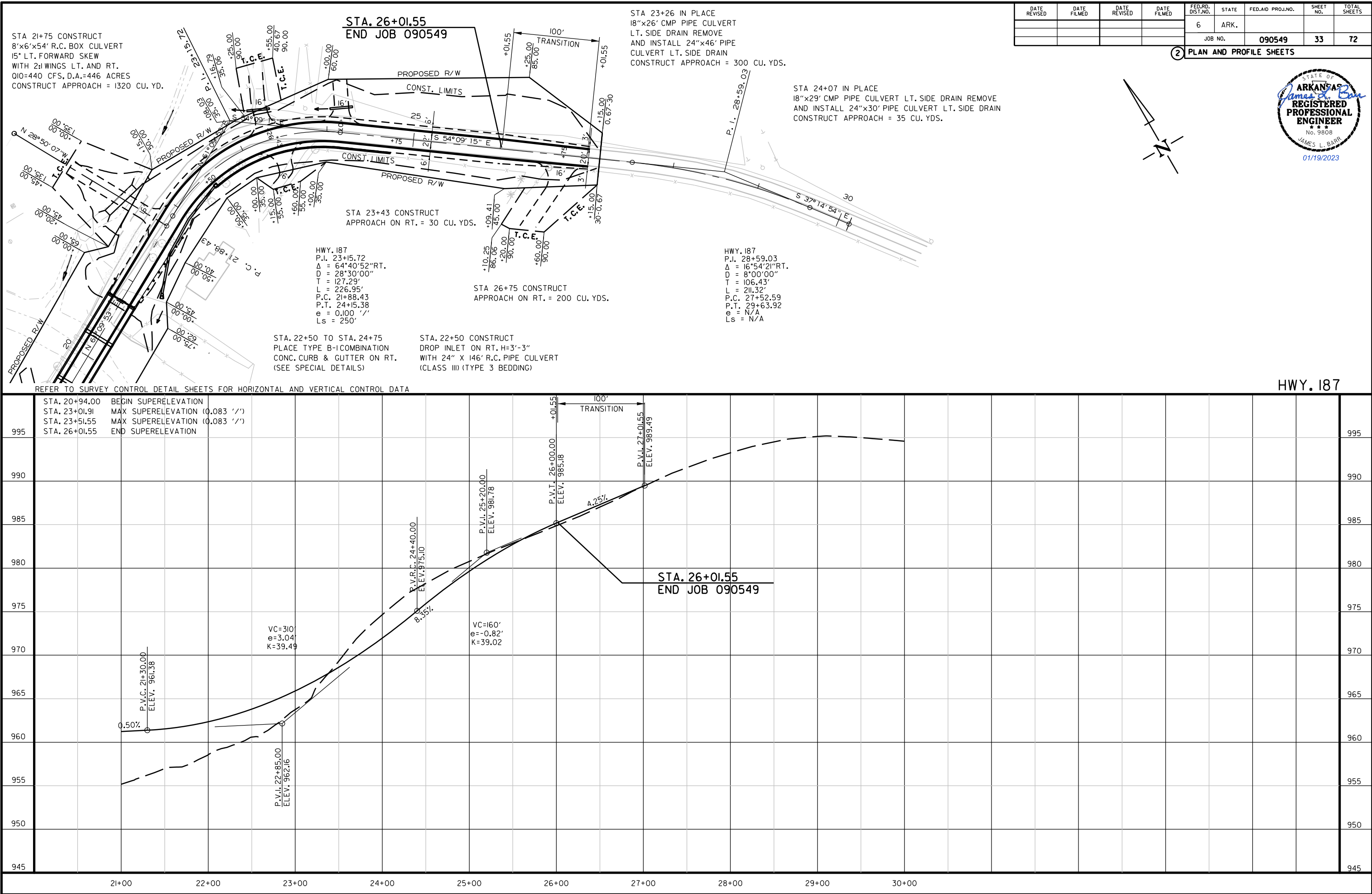
STA. 14+50 TO STA. 16+00
PLACE TYPE B-I COMBINATION
CONC. CURB & GUTTER ON RT.
(SEE SPECIAL DETAILS)

STA. 13+00.61	BEGIN SUPERELEVATION
STA. 15+50.61	MAX SUPERELEVATION (0.085' /')
STA. 16+81.04	MAX SUPERELEVATION (0.085' /')
STA. 18+94.00	END SUPERELEVATION

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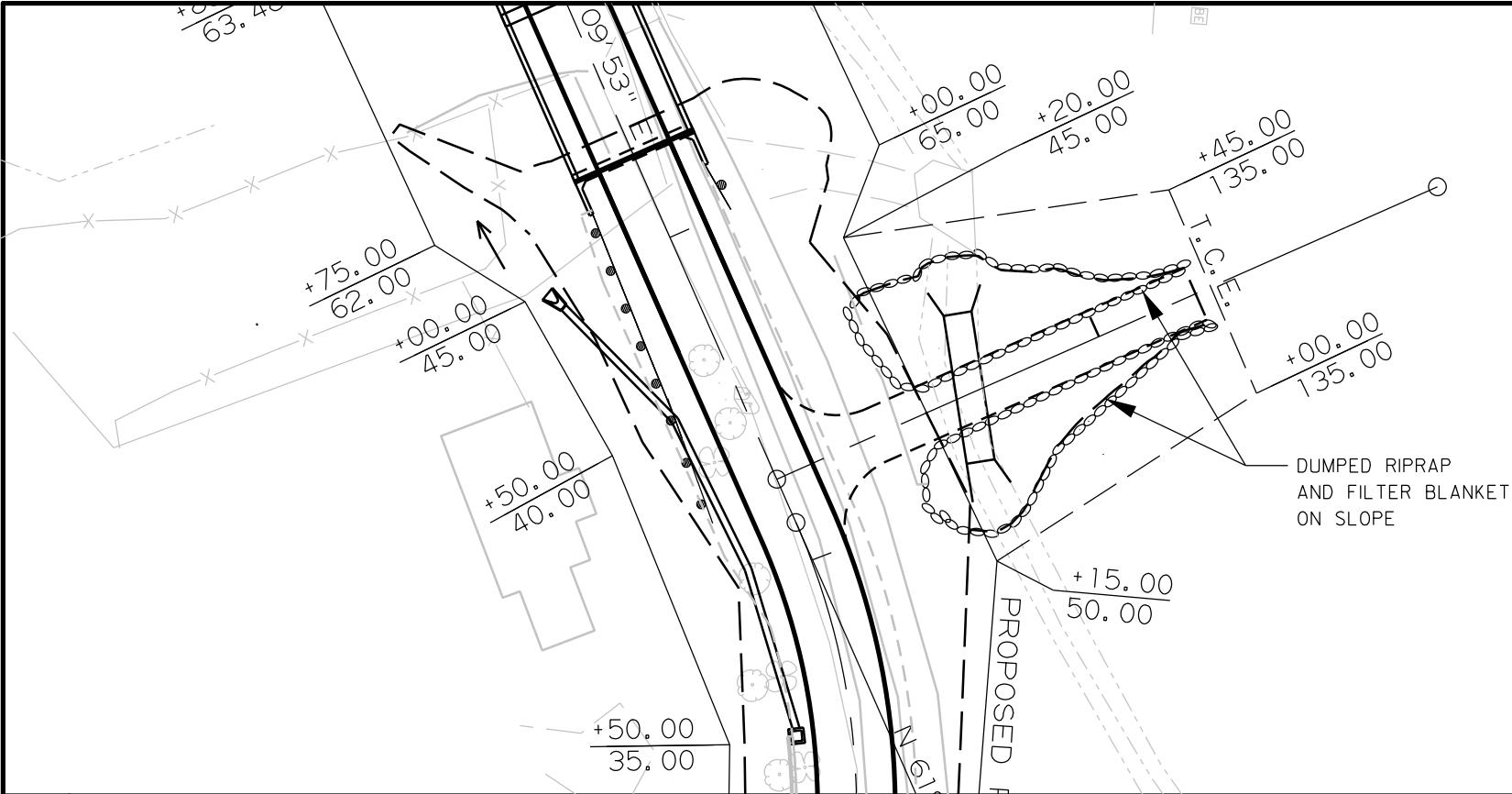


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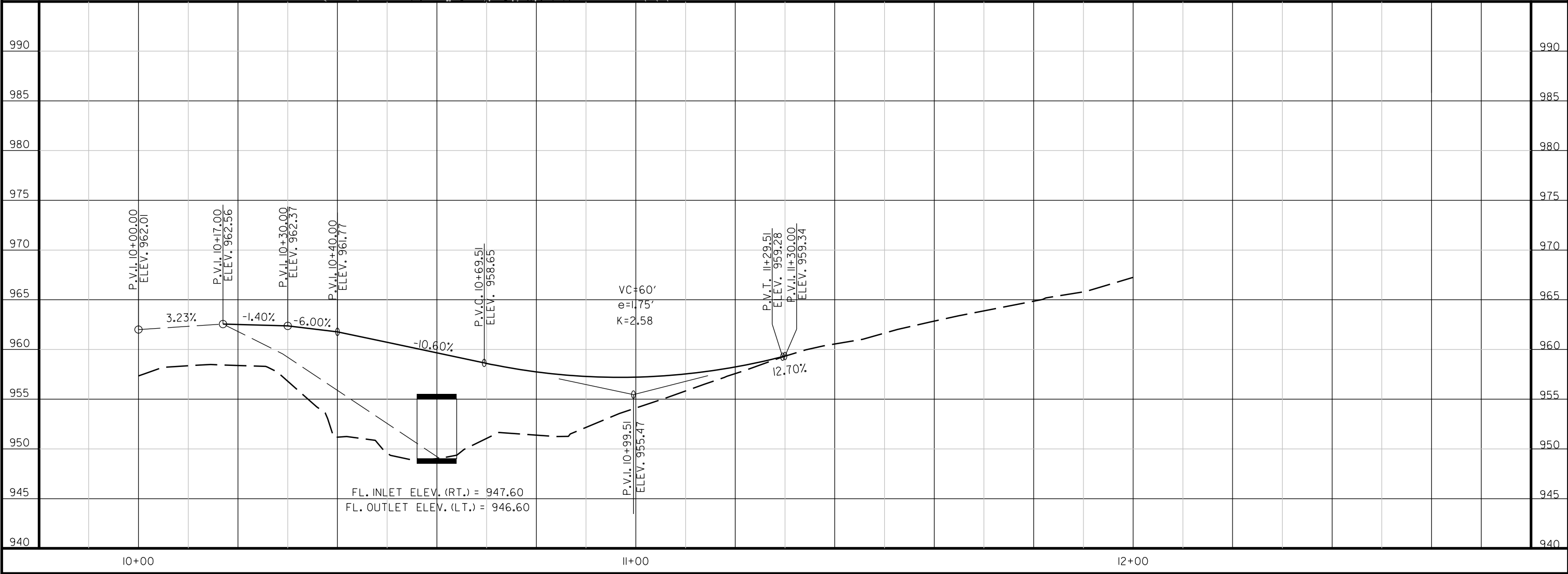
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090549	34	72

2 PLAN AND PROFILE SHEETS



STA. 10+55 = STA. 21+75 HWY. 187
CONSTRUCT
8'x6'x54' R.C. BOX CULVERT
15' LT. FORWARD SKEW
WITH 2:1 WINGS LT. AND RT.
Q10=440 CFS, D.A.=446 ACRES
CONSTRUCT APPROACH = 1320 CU. YD.

DR 21+75.00



r090549.pp03.dgn 01/19/2023

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.		090549	35	72

Stations shown are along C.L. Construction. Elevations shown are actual top of slab elevations at C.L. Bridge.

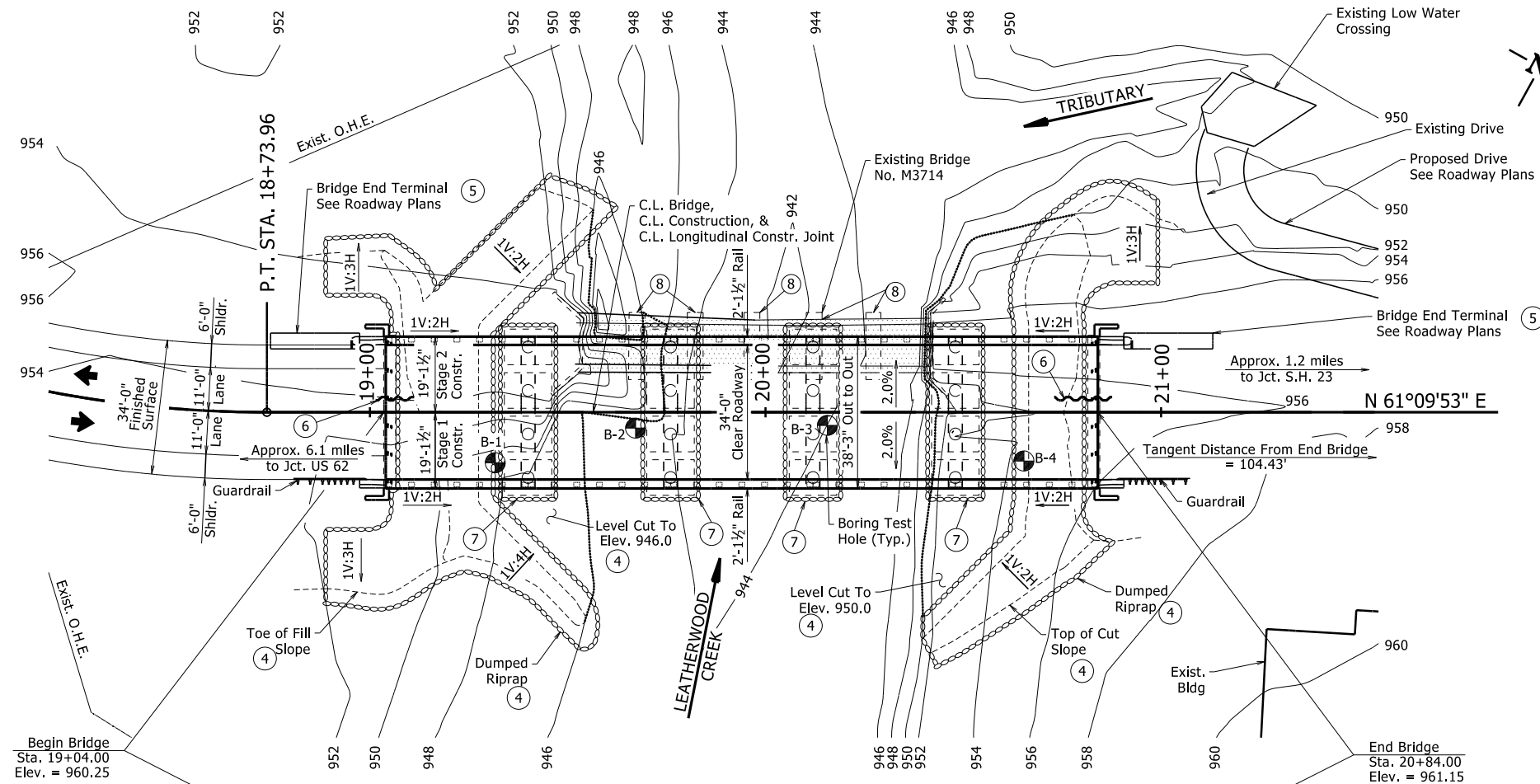
For R/W Data, Guardrail Details, and Bridge End Terminal Details, See Roadway Plans.

Provide Approach Slab At Both Ends of Bridge. For Approach Slab Details, See Type Special Approach Slab Details shown on Dwg. No. 65371-65373.

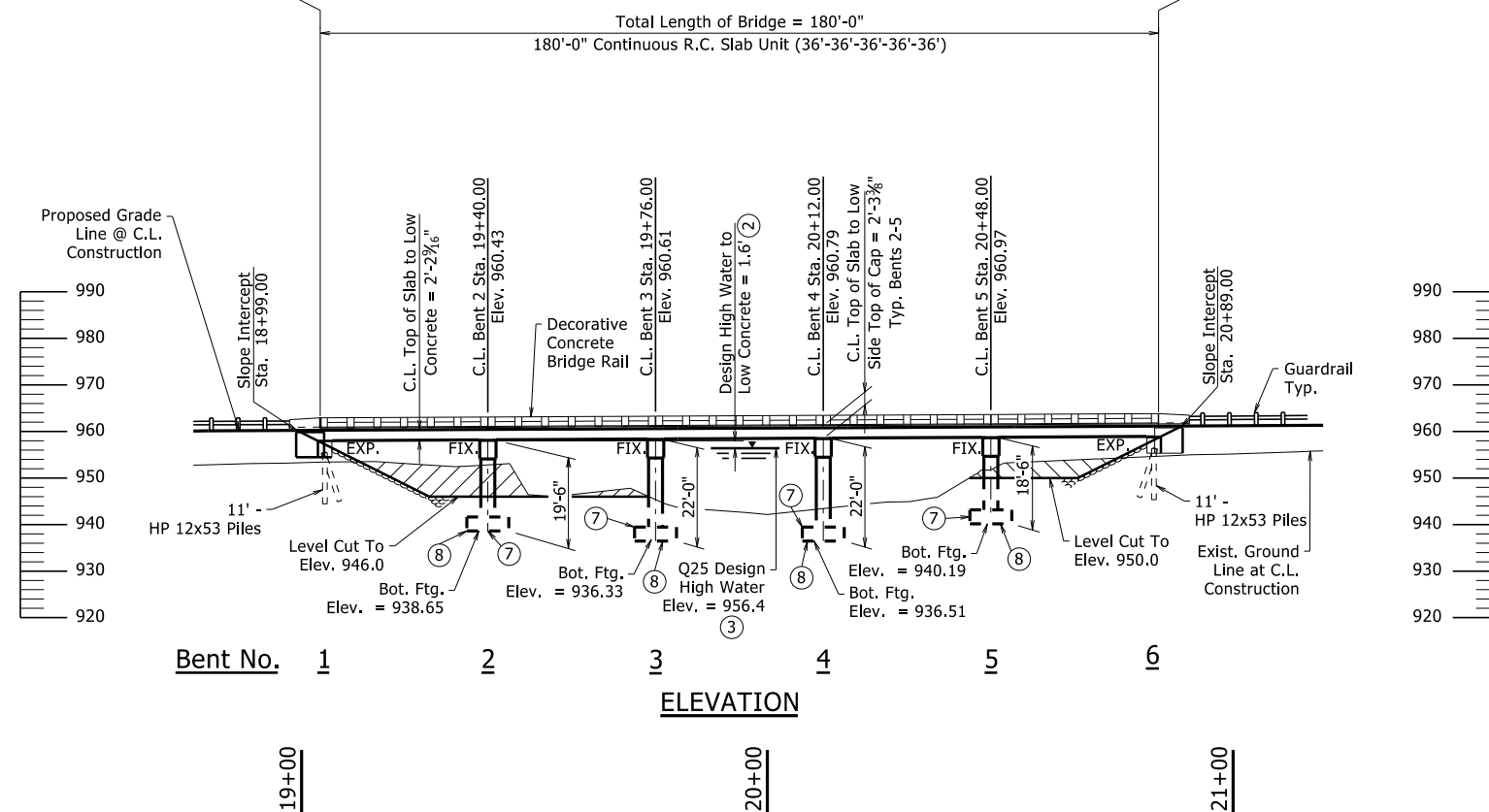
⑤ Eliminate or modify Type Special Approach Slab Curb Section to fit Bridge End Terminal. No additional payment will be made for this work.

⑦ Dumped RipRap for Footing (no Filter Blanket) as shown in plan. Riprap not shown in elevation view for clarity. See Spread Footing Backfill Detail on Dwg. No. 65354.

8) Prior to placement of new construction, Contractor shall verify that the bottom elevation of proposed footings is a minimum of 2'-0" below the bottom footing elevation of the intermediate and helper bents of the existing bridge structure. Contractor shall contact the Engineer if Intermediate Bent Column lengths need to be lowered more than 2'-0" the bottom of footing elevations shown in the plans. Proposed footings constructed in accordance with "SPREAD FOOTINGS" as outlined on Dwg. No. 65355.



PLAN



HYDRAULIC DATA

FLOOD DESCRIPTION	FREQUENCY	DISCHARGE	NATURAL WATER SURFACE ELEVATION ^①	WATER SURFACE ELEV. WITH BACKWATER
	YEARS	CFS	FEET	FEET
Design	25	12900	956.9	956.9
Base	100	20760	959.7	961.2
Extreme	500	31860	962.8	964.6
Overtopping	55	17080	958.5	960.4

Q100 backwater elevation for existing structure
=961.6 feet.

Drainage area = 28.2 square miles.

③ Q50 High Water Elevation at Upstream Face of Bridge
=957.2

SHEET 1 OF 3
LAYOUT OF BRIDGE
HIGHWAY 187 OVER LEATHERWOOD CREEK
LEATHERWOOD CREEK STR. & APPRS. (S)
CARROLL COUNTY

ARKANSAS STATE HIGHWAY COMMISSION

DRAWN BY: FAN, MJB DATE: JUNE 2022 FILENAME: b090549_I11.dgn

CHECKED BY: ESC DATE: JUNE 2022 SCALE: 1" = 20'-0"
DESIGNED BY: WKB DATE: JUNE 2022

DRAWING NO. 65353



PRINT DATE: 07/18/2022

GENERAL NOTES

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

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

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

LIVE LOADING: HL-93

SEISMIC PERFORMANCE ZONE: 1 SD1: 0.10 SITE CLASS: C

SEISMIC OPERATIONAL CLASSIFICATION: OTHER

MATERIALS AND STRENGTHS:
Class S(AE) Concrete (superstructure) f'c = 4,000 psi
Class S Concrete (substructure) f'c = 3,500 psi
Reinforcing Steel (AASHTO M 31 or M 322, Type A) fy = 60,000 psi

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

STEEL PILING:
All piling shall be HP 12x53 (Grade 50) and shall be driven with an approved air, steam, or diesel hammer to a minimum safe bearing capacity of 95 tons per pile and into the material designated as limestone on the boring legend. Minimum penetration shall be 10' below bottom of cap for all piles in Bents 1 and 6. 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 QPL-approved steel H-Pile driving points on all piles.

PREBORING:
Preboring is required for all piles in Bents 1 and 6. The depth of preboring shall be to a depth sufficient to provide the specified minimum penetration and to a minimum 3' depth into material designated as limestone on the boring legend, whichever is lower. Prebored holes shall have a minimum diameter of 18". The Contractor shall be responsible for keeping prebored holes free of debris prior to driving piles and backfilling which may require the use of temporary casings or other approved methods. After driving is completed, the prebored hole shall be backfilled with Class S Concrete to the top of the rock and the remaining length backfilled in accordance with Subsection 805.08(a). Any related cost for backfilling and temporary casing will not be paid for directly, but shall be considered subsidiary to the Item "Preboring".

SPREAD FOOTINGS:
Footings shall be set a minimum of 2.0' into material designated as limestone on the boring legend. The top of the footings at Bents 2 thru 5 shall be set a minimum 2.0' 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 in footings shall be poured directly against excavated surfaces of rock. Excavations shall be backfilled and compacted to the level of the existing ground in accordance with Subsection 801.08. See Spread Footing Backfill Detail on Dwg. No. 65354 for additional details on backfilling with dumped riprap.

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

PROTECTIVE SURFACE TREATMENT:
Class 2 Protective Surface Treatment shall be applied to the roadway surface.

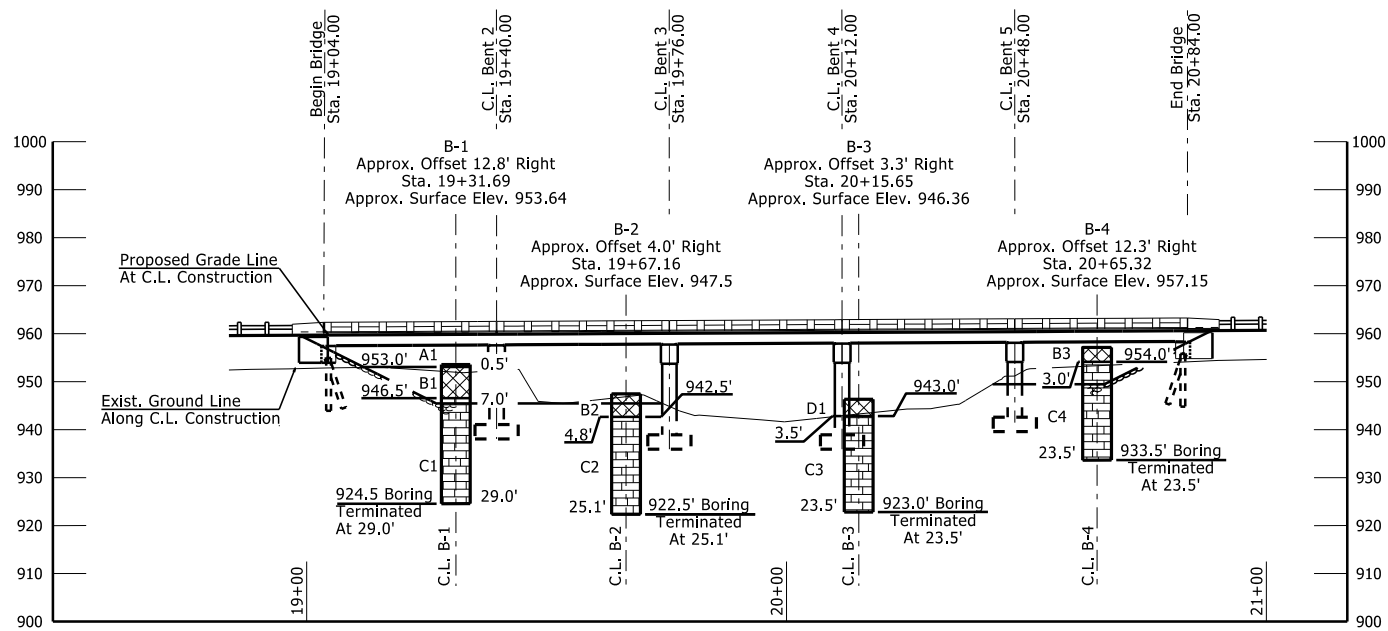
STAINING CONCRETE SURFACES:
A concrete penetrating stain shall be applied to bridge surfaces as specified in Special Provision "Staining Concrete Surfaces". The concrete penetrating stain shall not be applied on surfaces where Class 2 Protective Surface Treatment is applied. The color of the stain shall be as specified in Special Provision "Staining Concrete Surfaces".

DETAIL DRAWINGS:
Stage Construction 65356
End Bents 65357-65359
Intermediate Bents 65360-65363
180' Continuous R.C. Slab Unit 65364-65370
Type Special Approach Slabs 65371-65373
Steel H-Piling 55020

EXISTING BRIDGE:
Existing Bridge No. M3714 is 12.2' wide (10.5' clear roadway) and 90.0' long and consists of steel beam spans. Total number of spans is 6, and the superstructure is supported by steel helper bents and concrete bents, bearing on concrete spread footings. The existing bridge is approximately 17 feet downstream of the proposed new bridge. Existing plans of the bridge are not available.

REMOVAL AND SALVAGE:
After Stage 1 construction is complete and open to traffic, the Contractor shall remove existing Bridge No. M3714 in accordance with Section 205. All material from the existing bridge shall become the property of the Contractor.

MAINTENANCE OF TRAFFIC:
See Roadway Plans.



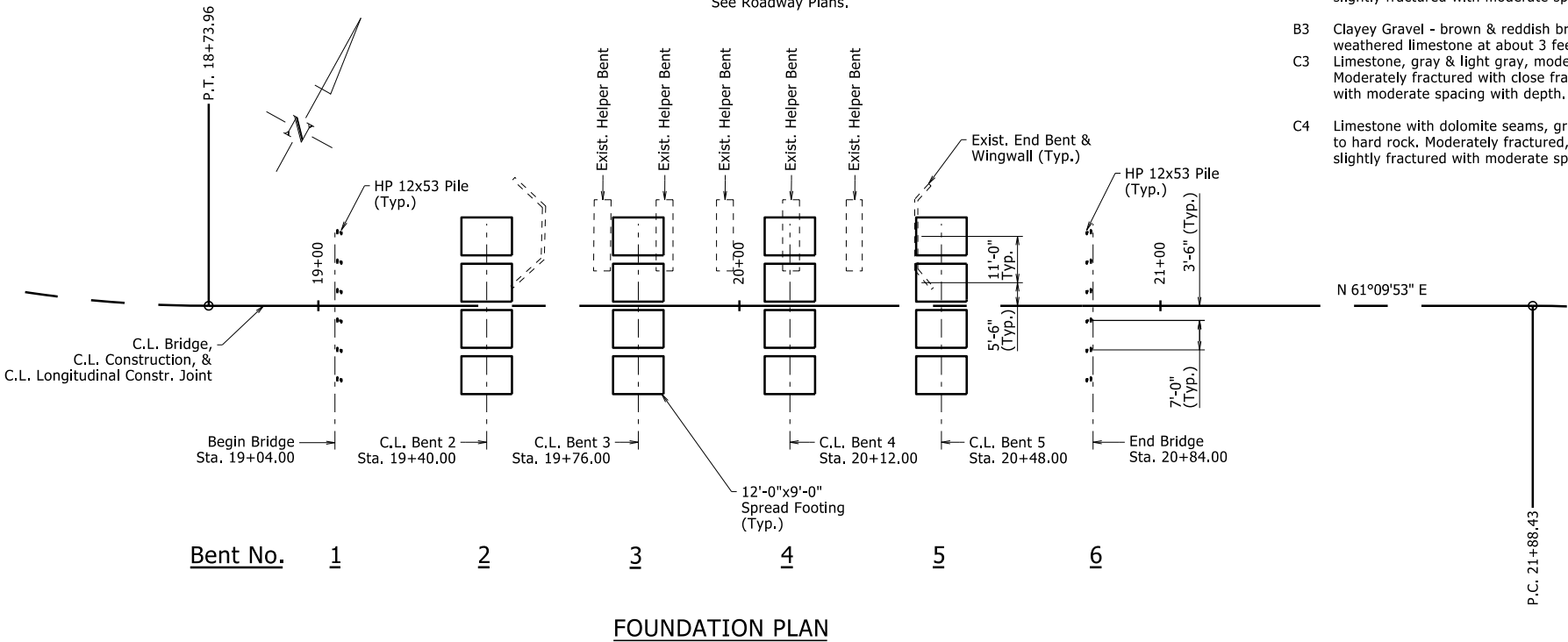
BORING LEGEND

- A1 Topsoil
B1 Clayey Gravel with limestone fragments, brown & reddish brown, medium dense to very dense, clay content decreasing with depth
C1 Limestone with dolomite seams, gray & light gray, moderately hard to hard rock. Moderately fractured with close fracture spacing to slightly fractured with moderate spacing with depth.
D1 Poorly Graded Gravel (GP), light gray and brown, medium dense to dense
B2 Clayey Gravel - brown & reddish brown, medium dense to very dense
C2 Limestone with dolomite veins, gray & light gray, moderately hard to hard rock. Moderately fractured with close fracture spacing to slightly fractured with moderate spacing with depth.
B3 Clayey Gravel - brown & reddish brown, medium dense to very dense, weathered limestone at about 3 feet.
C3 Limestone, gray & light gray, moderately hard to hard rock. Moderately fractured with close fracture spacing to slightly fractured with moderate spacing with depth.
C4 Limestone with dolomite seams, gray & light gray, moderately hard to hard rock. Moderately fractured, extremely close fracture spacing, slightly fractured with moderate spacing with depth.

ELEVATION OF SOIL BORINGS

"N" VALUES			
Sta. 19+31.69 12.8' Rt. of C.L. Const.	Sta. 19+67.16 4.0' Rt. of C.L. Const.	Sta. 20+15.65 3.3' Rt. of C.L. Const.	Sta. 20+65.32 12.3' Rt. of C.L. Const.
0.5' - 2.0' N = 11 2.0' - 3.5' N = 10 3.5' - 5.0' N = 12 5.0' - 6.25' N = 77/9"	0.5' - 2.0' N = 13 2.0' - 3.5' N = 18 3.5' - 4.83' N = 57/10"	0.5' - 2.0' N = 12 2.0' - 3.5' N = 32 3.5' - 3.75' N = 50/3"	0.5' - 2.0' N = 10 2.0' - 2.5' N = 50/6"

NOTE: Location of existing bridge spread footings are based on survey and limited information. Contractor shall locate existing foundation elements to determine if conflicts exist with proposed footings. Excavate and remove portion of existing foundation elements when in conflict with proposed footings, and backfill with an approved material. Labor and material for excavation, removal and disposal of material, and backfill will not be paid for directly but will be considered subsidiary to the Item "Removal of Existing Bridge Structure (Site No.)"

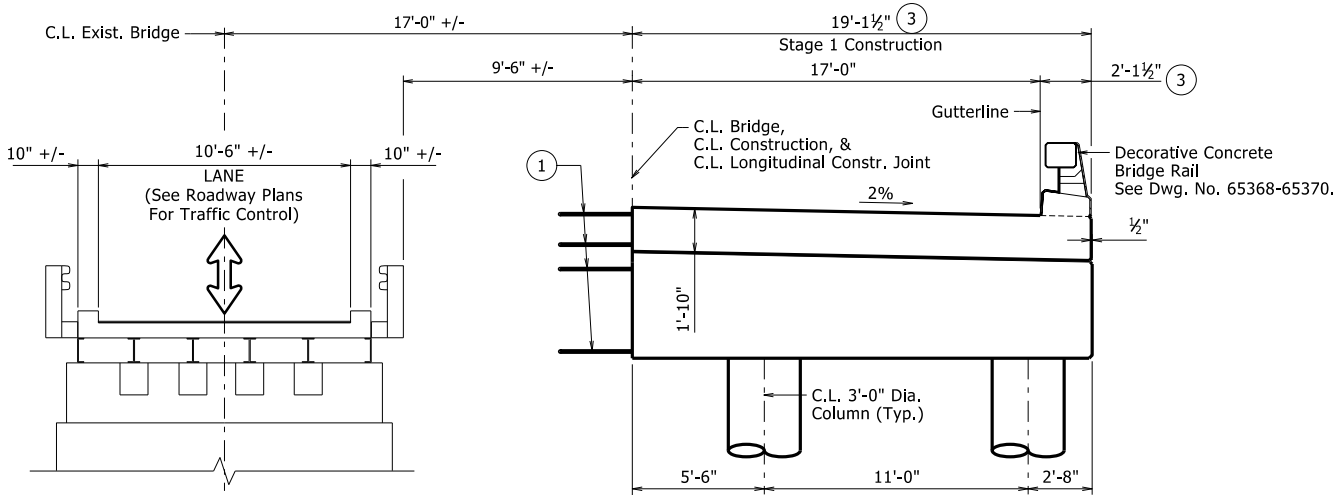


SHEET 3 OF 3
LAYOUT OF BRIDGE
HIGHWAY 187 OVER LEATHERWOOD CREEK
LEATHERWOOD CREEK STR. & APPRS. (S)
CARROLL COUNTY

ROUTE: 187 SEC. 0
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.
DRAWN BY: FAN, MJB DATE: JUNE 2022 FILENAME: b090549_113.dgn
CHECKED BY: ESC DATE: JUNE 2022 SCALE: 1" = 20'
DESIGNED BY: WKB DATE: JUNE 2022
BRIDGE NO. 07589 DRAWING NO. 65355

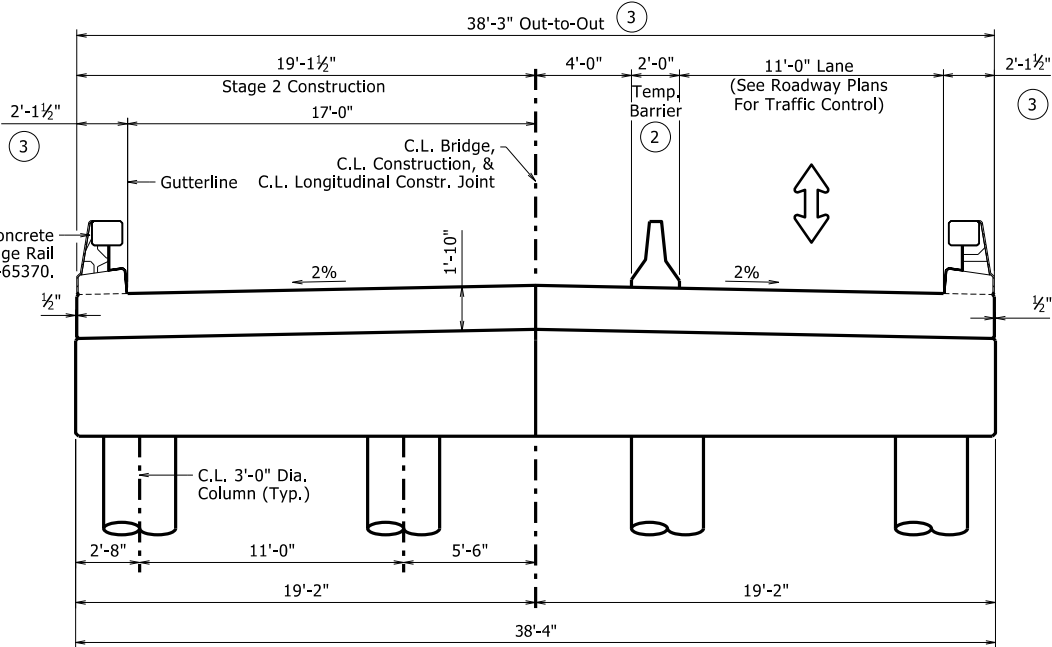
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				6	ARK.			
				JOB NO.	090549		38	72
				07589	STAGE CONSTRUCTION		65356	



STAGE 1 CONSTRUCTION BENTS 2-5

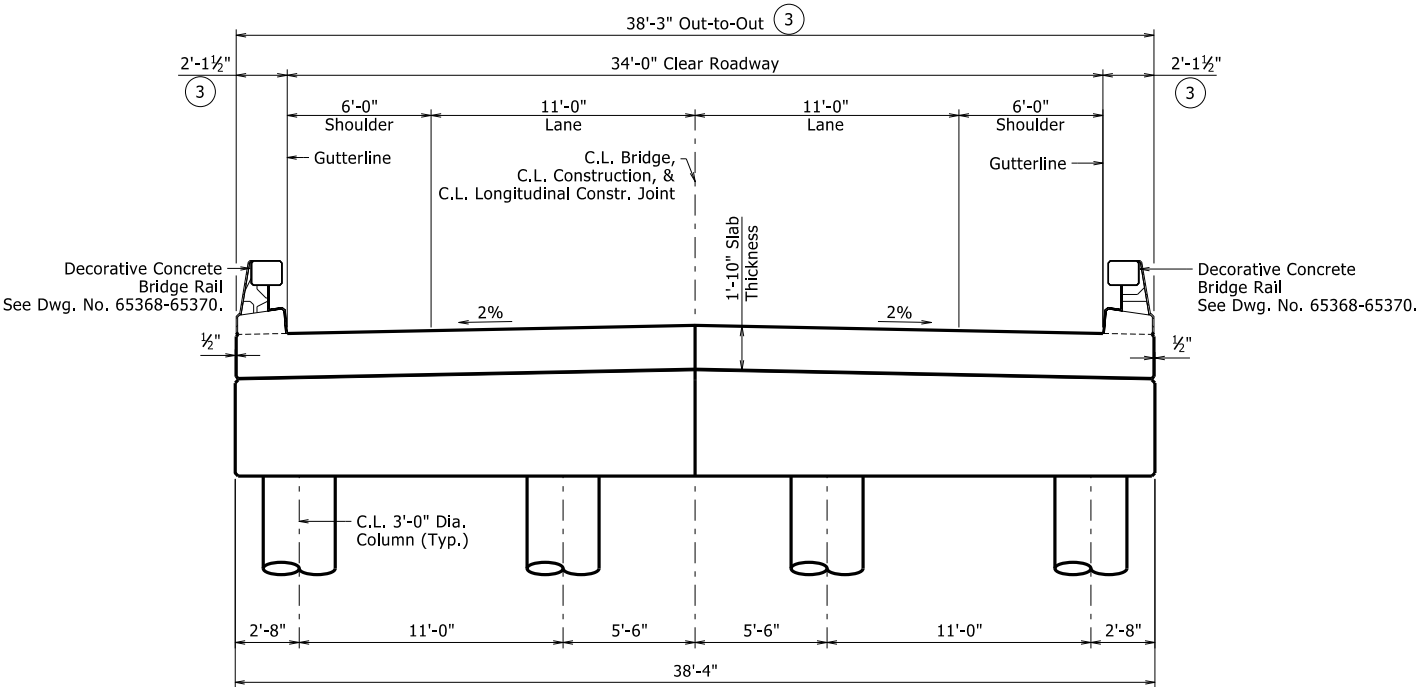
Looking Ahead
Scale: 1" = 4'-0"

- 1 Do not bend reinforcement bars extending from stage 1 construction concrete.
- 2 Do not connect temporary construction barrier to new slab. For additional information, see Std. Dwg. No. TC-4.
- 3 Dimension includes 3/4" allowance for Fieldstone Finish.



STAGE 2 CONSTRUCTION

Looking Ahead
Scale: 1" = 4'-0"



CONSTRUCTION COMPLETE BENTS 2-5

Looking Ahead
Scale: 1" = 4'-0"



DETAILS OF STAGE CONSTRUCTION

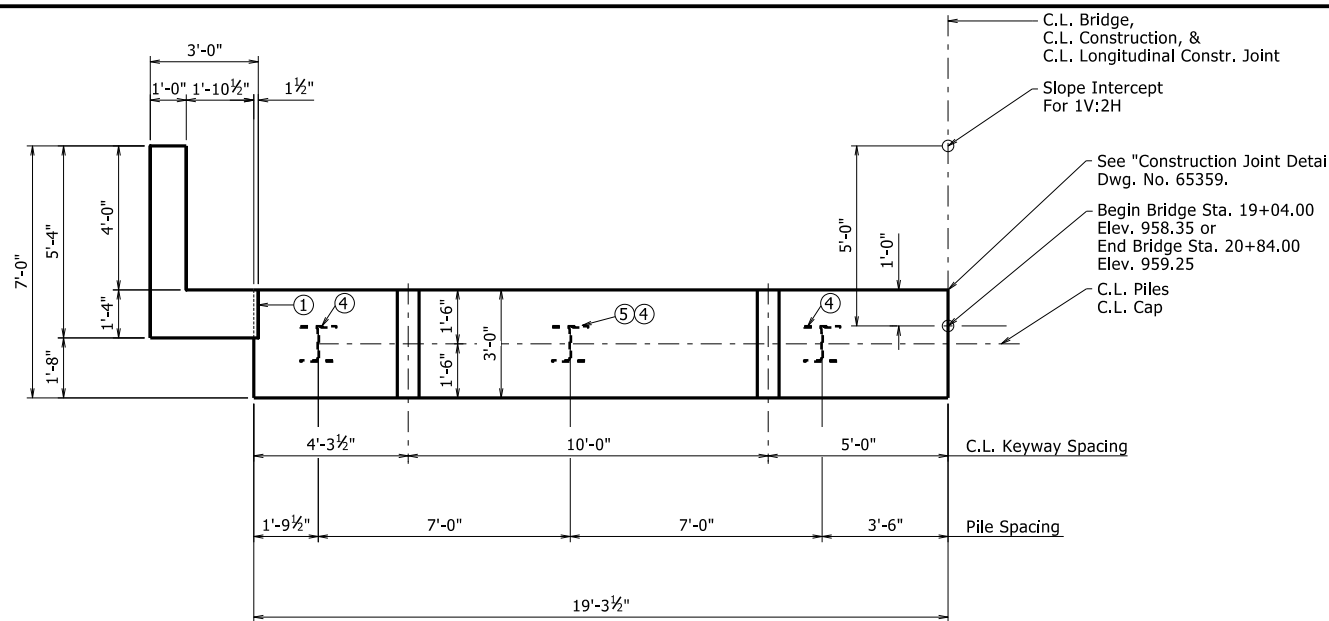
ROUTE 187 SEC. 0

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

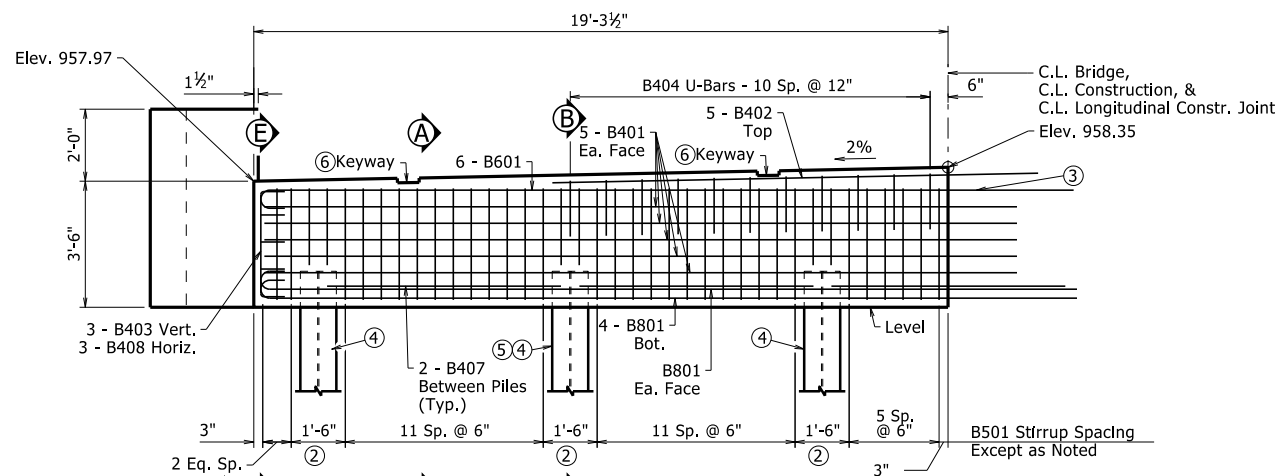
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CHECKED BY: ESC DATE: JUNE 2022 SCALE: AS SHOWN
DESIGNED BY: WKB DATE: JUNE 2022
BRIDGE NO. 07589 DRAWING NO. 65356

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.		090549	39	72
				07589		BENTS 1 & 6		65357



PLAN VIEW - STAGE 1 CONSTRUCTION

Scale: 3/8" = 1'-0"
Looking Back
(Bent 1 Shown Bent 6 Similar)



ELEVATION VIEW BENT 1
STAGE 1 CONSTRUCTION

Scale: 3/8" = 1'-0"
Looking Back
(See Dwg. No. 65359 for Bent 6 Elevation)

- ① 1/2" Preformed Joint AASHTO M 153 Type 1 per Subsection 501.02 (h)(1) and 1/2" x 1" Poured Joint Sealer (Type 3 or 4) per Subsection 501.02(h)(2).
- ② B502 U-Bars - 3 Sp. @ 6" centered over each pile where noted.
- ③ #4 Bars Extend 2'-6" From Construction Jt. #6 Bars Extend 3'-7" From Construction Jt. #8 Bars Extend 3'-7" From Construction Jt.
- ④ HP 12x53 Piles. Refer to "Foundation Plan" on Dwg. No. 65355 for more information.
- ⑤ Battered piles at location indicated. Batter 12V:4H.
- ⑥ See "KEYWAY DETAIL" this sheet.

GENERAL NOTES:

All concrete shall be Class "S" with a minimum 28 day compressive strength $f'_c = 3,500$ psi. Concrete shall be poured in the dry and all exposed corners to be chamfered 3/4" unless otherwise noted.

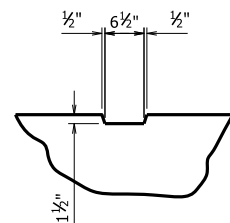
All reinforcing steel shall be grade 60 (yield strength = 60,000 psi) conforming to AASHTO M 31 or M 322, Type A, with mill test reports.

Preformed joint filler and joint sealer shall be subsidiary to the item "Class S Concrete - Bridge."

All Piling shall conform to ASTM A709, Grade 50. See Std. Dwg. No. 55020 for additional details.

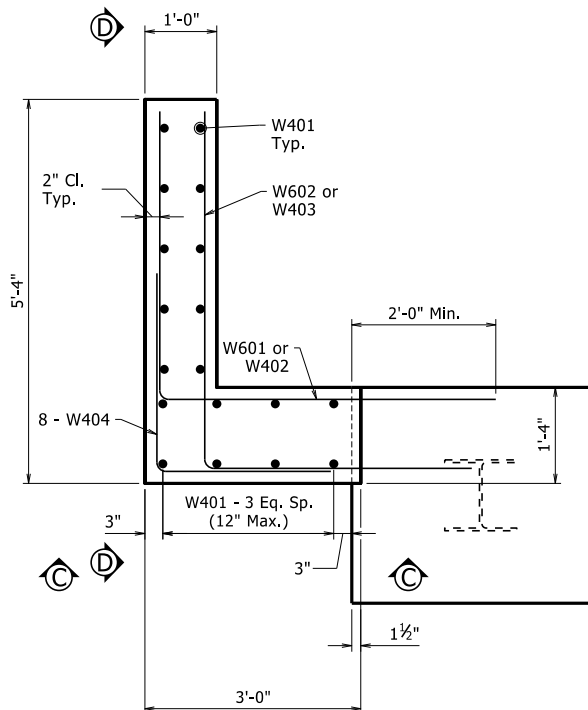
See Dwg. No. 65358 for Sec A-A and B-B.

For additional information, See Layout.



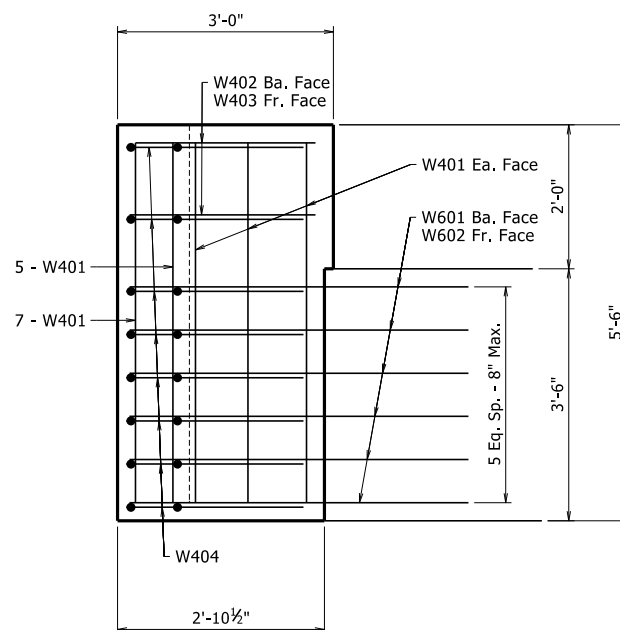
KEYWAY DETAIL

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



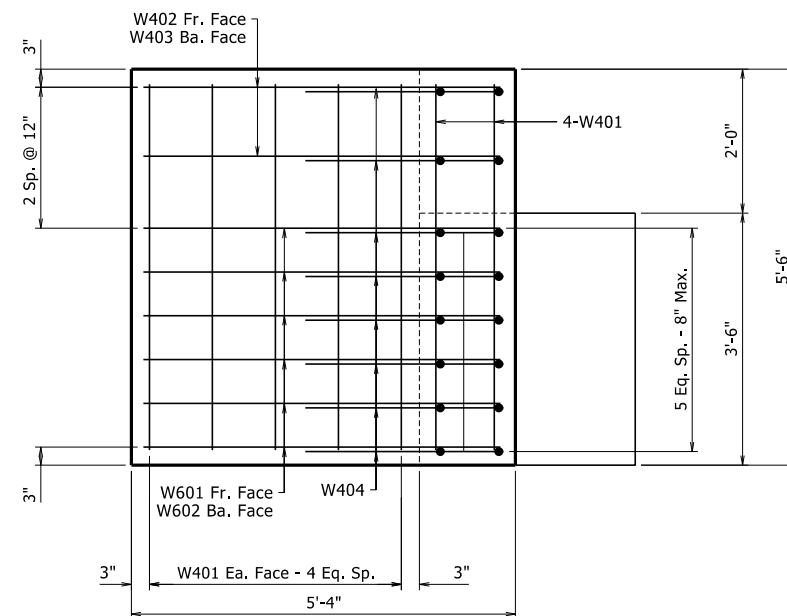
PLAN OF WING

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



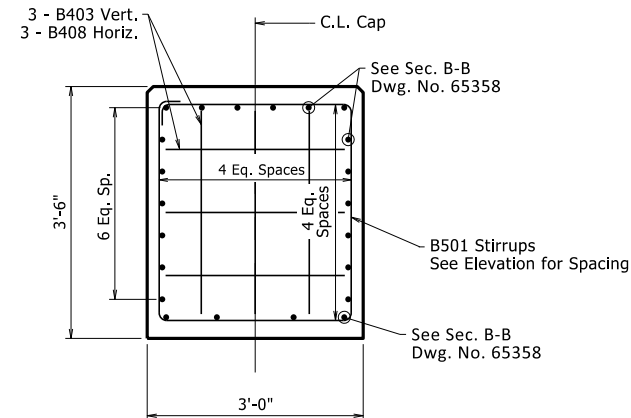
VIEW C-C

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



VIEW D-D

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



VIEW E-E

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



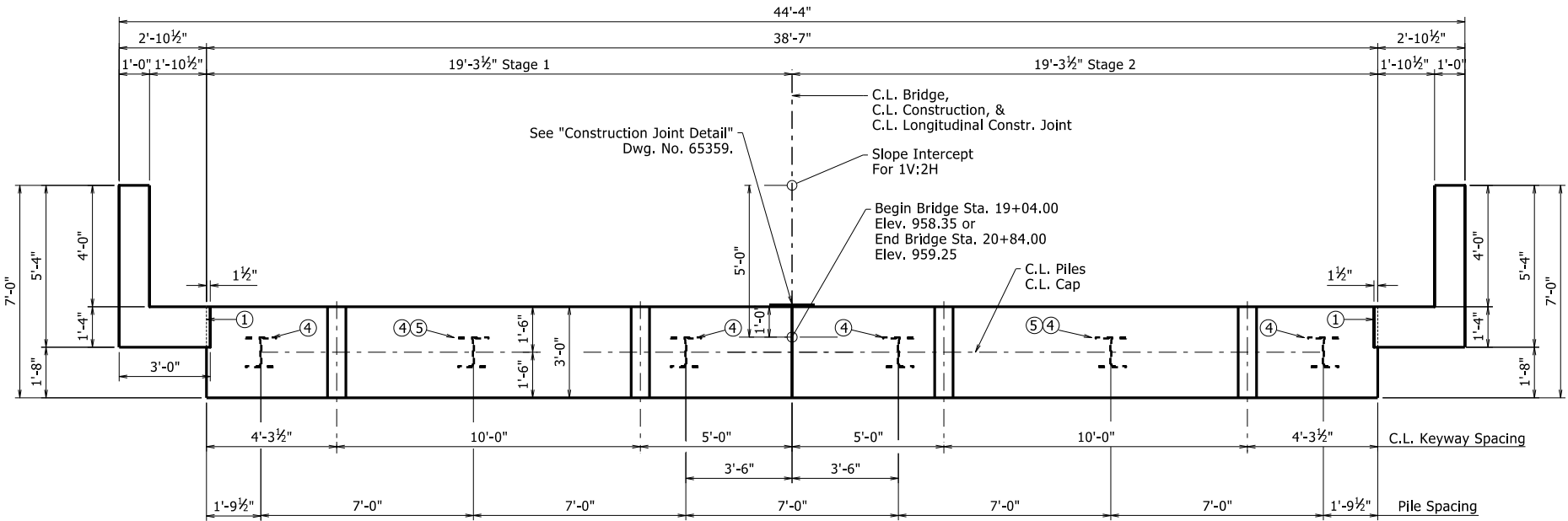
SHEET 1 OF 3 DETAILS OF BENTS 1 & 6

ROUTE 187 SEC. 0
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

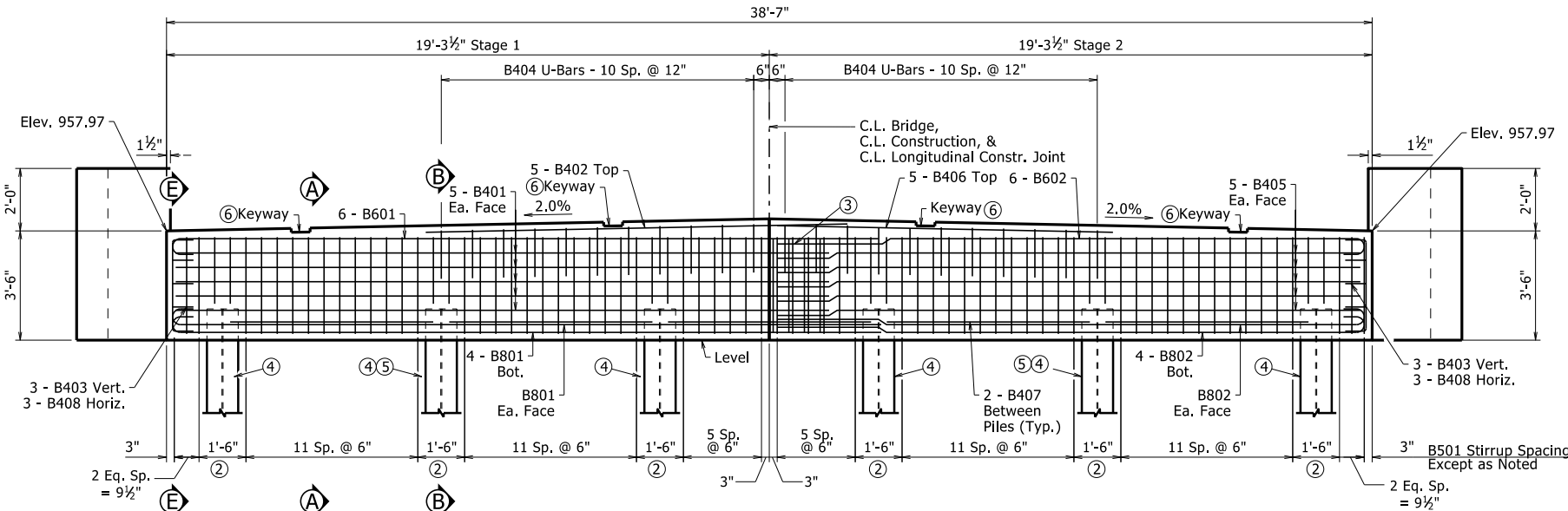
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CHECKED BY: ESC DATE: JUNE 2022 SCALE: AS SHOWN
DESIGNED BY: WKB DATE: JUNE 2022
BRIDGE NO. 07589 DRAWING NO. 65357

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.	090549		40	72
				07589	BENTS 1 & 6		65358	



PLAN VIEW - STAGE 2 CONSTRUCTION

Scale: 3/8" = 1'-0"
Looking Back
(Bent 1 Shown Bent 6 Similar)



ELEVATION VIEW BENT 1
CONSTRUCTION COMPLETE

Scale: 3/8" = 1'-0"
Looking Back
(See Dwg. No. 65359 for Bent 6 Elevation)

GENERAL NOTES:

All concrete shall be Class "S" with a minimum 28 day compressive strength $f'_c = 3,500$ psi. Concrete shall be poured in the dry and all exposed corners to be chamfered 3/4" unless otherwise noted.

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.

Preformed joint filler and joint sealer shall be subsidiary to the item "Class S Concrete - Bridge."

All Piling shall conform to ASTM A709, Grade 50. See Std. Dwg. No. 55020 for additional details.

For additional information, See Layout.

- 1/2" Preformed Joint AASHTO M 153 Type 1 per Subsection 501.02 (h)(1) and 1/2" x 1" Poured Joint Sealer (Type 3 or 4) per Subsection 501.02(h)(2).
- B502 U-Bars - 3 Sp. @ 6" Centered over Piles where noted.
- #4 Bars Extend 2'-6" From Construction Jt. #6 Bars Extend 3'-7" From Construction Jt. #8 Bars Extend 3'-7" From Construction Jt.
- HP 12x53 Piles. Refer to "Foundation Plan" on Dwg. No. 65355 for more information.
- Battered piles at location indicated. Batter 12V:4H.
- See "KEYWAY DETAIL" Dwg. No. 65357.

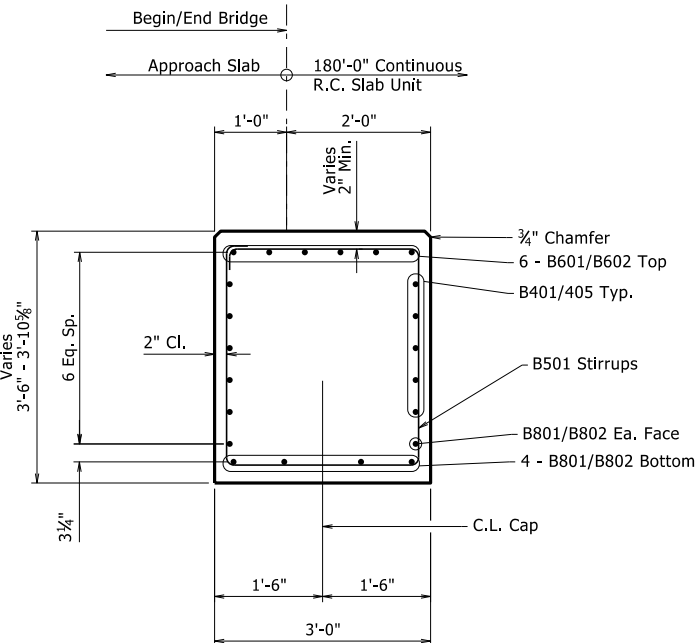


SHEET 2 OF 3
DETAILS OF BENTS 1 & 6

ROUTE 187 SEC. 0
ARKANSAS STATE HIGHWAY COMMISSION

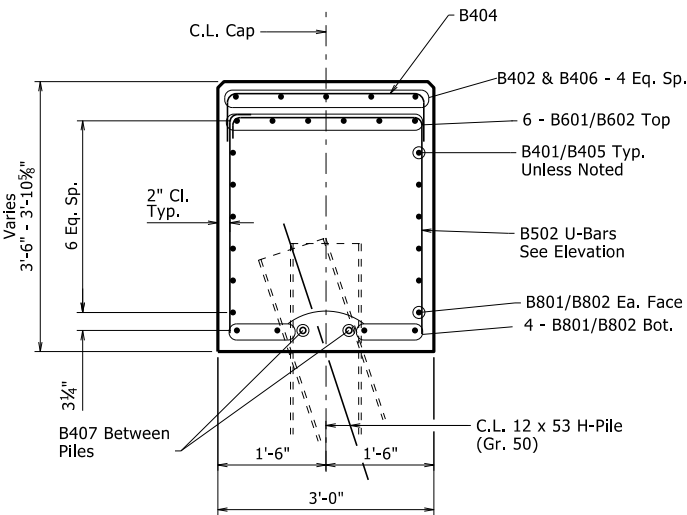
LITTLE ROCK, ARK.

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CHECKED BY: ESC DATE: JUNE 2022 SCALE: AS SHOWN
DESIGNED BY: WKB DATE: JUNE 2022
BRIDGE NO. 07589 DRAWING NO. 65358



SECTION A-A

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



SECTION B-B

Scale: 3/4" = 1'-0"
(Bent 1 Shown, Bent 6 Similar)

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.		090549	41	72
				07589		BENTS 1 & 6		65359

BAR LIST PER END BENT

STAGE 1				
	Mark	No. Req'd.	Length	P.D.
BENT	B401	10	21'-10"	STR.
	B402	5	13'-6"	STR.
	B403	3	4'-3"	2"
	B404	11	5'-11"	2"
	B407	6	6'-6"	STR
	B408	3	3'-9"	2"
	B501	33	12'-2"	2 1/2"
	B502	6	8'-10"	2 1/2"
WING	B601	6	23'-7"	4 1/2"
	B801	6	23'-10"	6"
	W401	18	5'-2"	STR
	W402	2	6'-7"	3"
	W403	2	6'-11"	3"
	W404	8	5'-3"	3"
	W601	6	8'-8"	4 1/2"
	W602	6	9'-0"	4 1/2"
STAGE 2				
	Mark	No. Req'd.	Length	P.D.
BENT	B403	3	4'-3"	2"
	B404	11	5'-11"	2"
	B405	10	19'-0"	STR
	B406	5	10'-10"	STR
	B407	4	6'-6"	STR.
	B408	3	3'-9"	2"
	B501	33	12'-2"	2 1/2"
	B502	6	8'-10"	2 1/2"
WING	B602	6	19'-8"	4 1/2"
	B802	6	19'-11"	6"
	W401	18	5'-2"	STR
	W402	2	6'-7"	3"
	W403	2	6'-11"	3"
	W404	8	5'-3"	3"
	W601	6	8'-8"	4 1/2"
	W602	6	9'-0"	4 1/2"

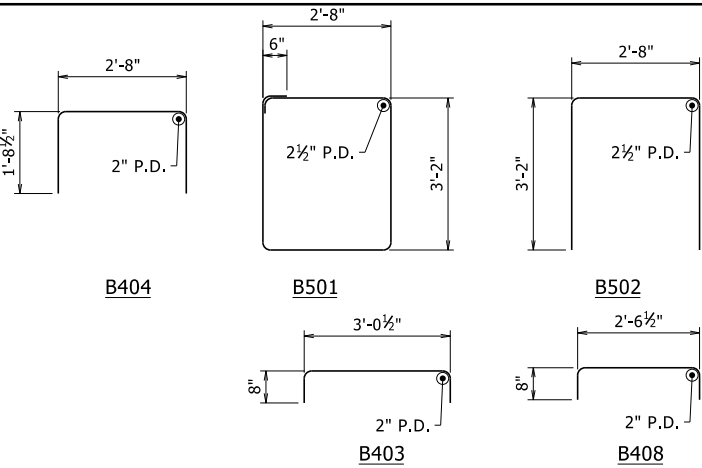
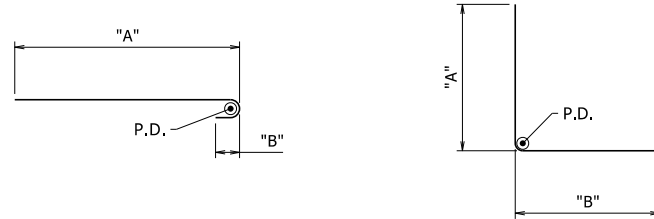
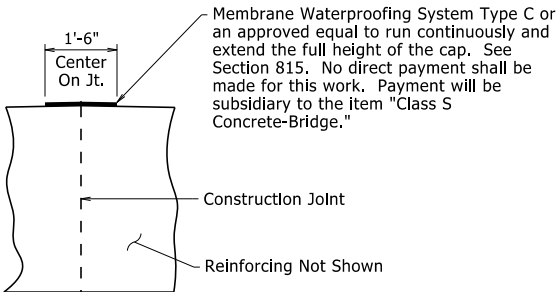


TABLE OF VARIABLES BENT BARS			
BAR MARK	A	B	P.D.
B601	22'-11"	6"	4 1/2"
B602	18'-11 1/2"	6"	4 1/2"
B801	22'-11"	8"	6"
B802	18'-11 1/2"	8"	6"

TABLE OF VARIABLES WING BARS			
BAR MARK	A	B	P.D.
W402	4'-0"	2'-8"	3"
W403	5'-0"	2'-0"	3"
W404	2'-8"	2'-8"	3"
W601	4'-0"	4'-9"	4 1/2"
W602	5'-0"	4'-1"	4 1/2"

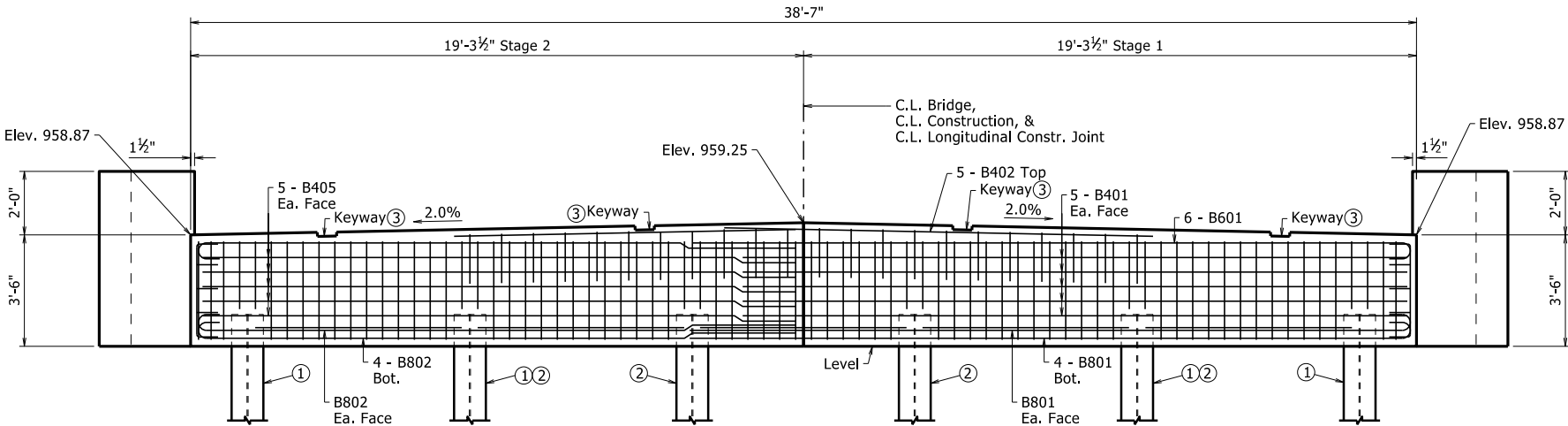


Note: All Dimensions Are Out-To-Out of Bars.
The first bar designation number indicates the reinforcing bar size.



CONSTRUCTION JOINT DETAIL

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



ELEVATION VIEW BENT 6
CONSTRUCTION COMPLETE

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

Notes:
See "Elevation View Bent 1 Construction Complete" Dwg. No. 65358 for additional detail.

All Section Detailing for Bent 6 is the same as that used for Bent 1.



SHEET 3 OF 3
DETAILS OF BENTS 1 & 6

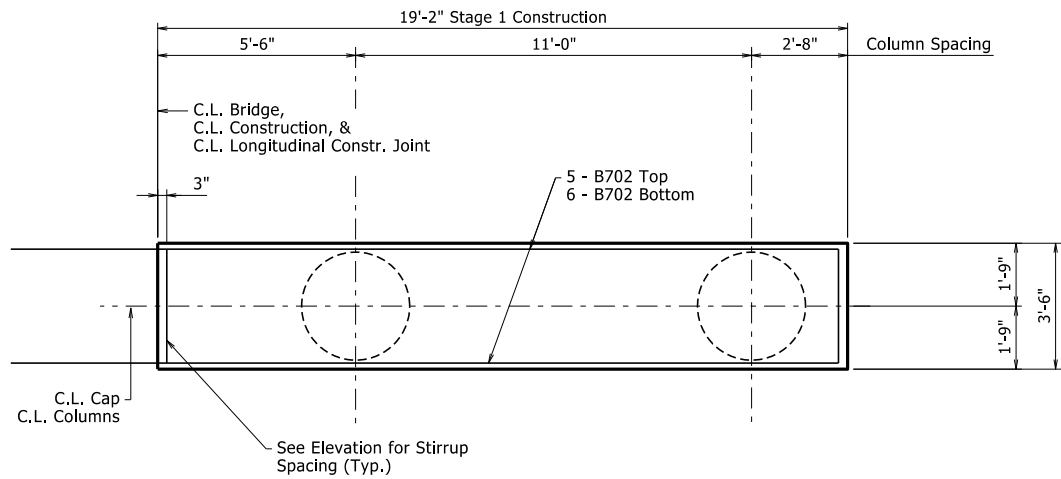
ROUTE 187 SEC. 0

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

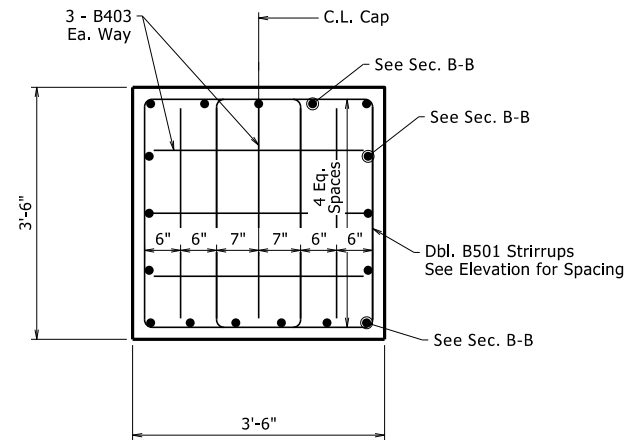
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DESIGNED BY: WKB DATE: JUNE 2022
BRIDGE NO. 07589 DRAWING NO. 65359

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.		090549	42	72
				07589		BENTS 2-5		65360



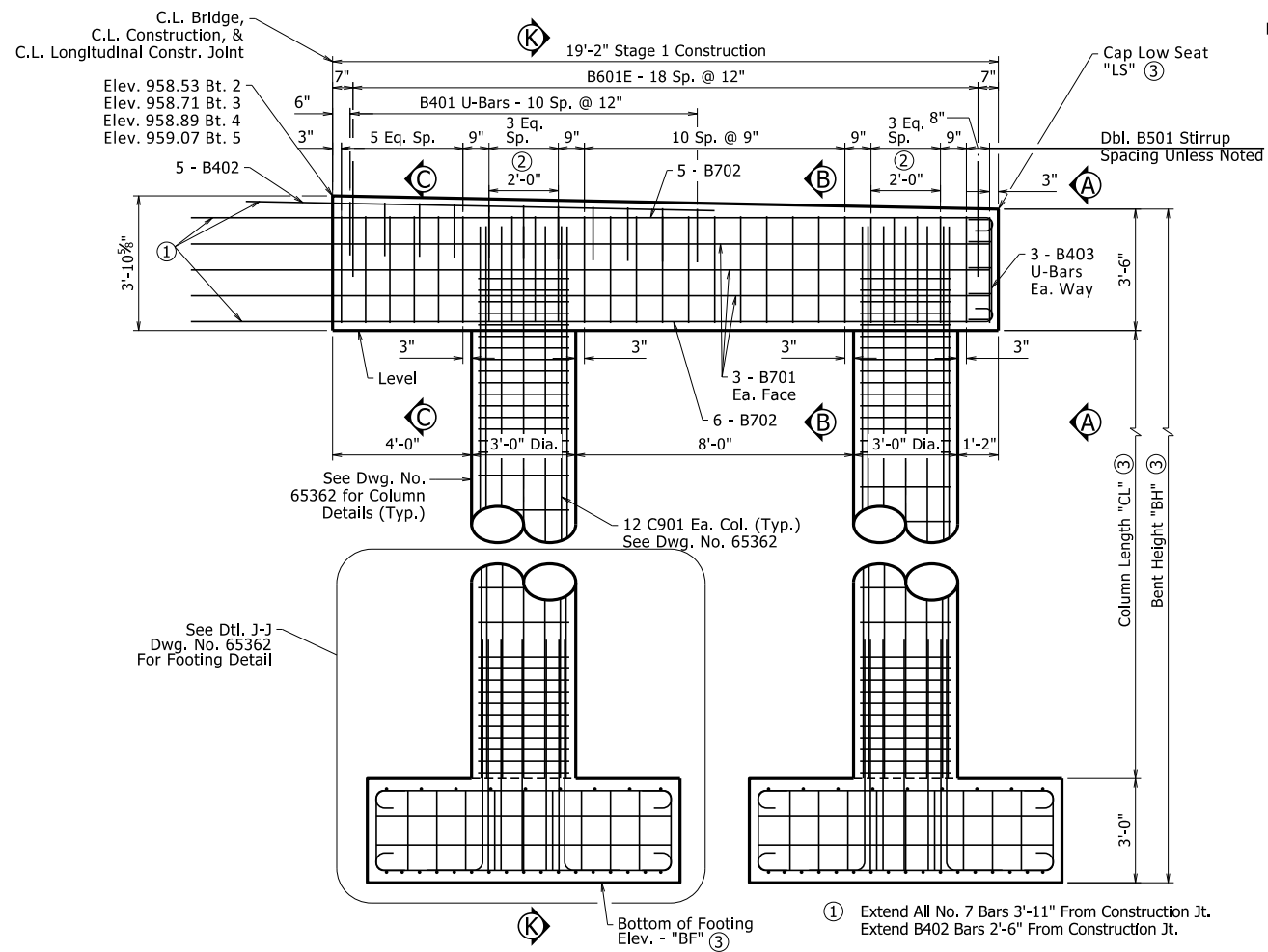
PLAN - STAGE 1 CONSTRUCTION

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



VIEW A-A

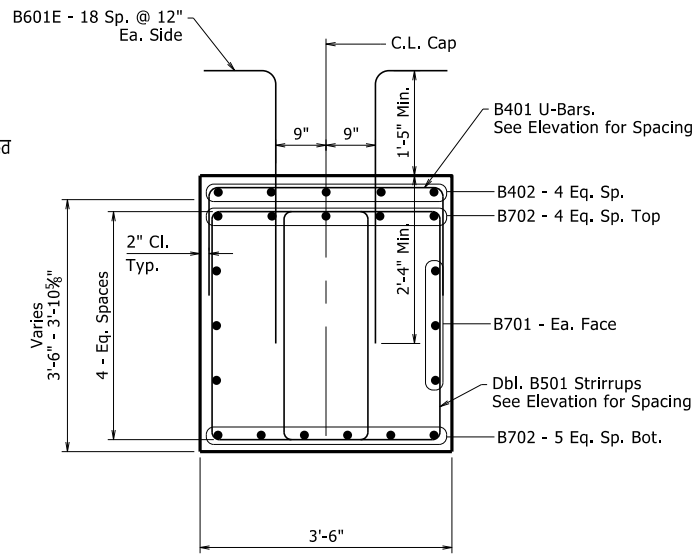
Scale: 3/4" = 1'-0"



ELEVATION - STAGE 1 CONSTRUCTION

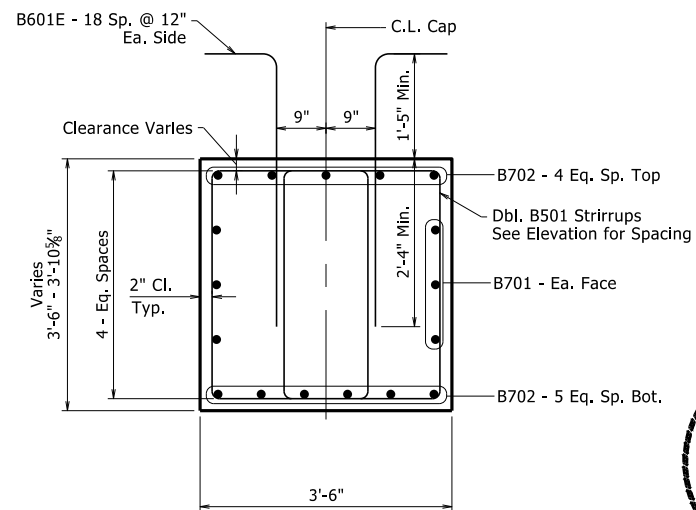
Scale: 3/8" = 1'-0"
Looking Ahead

- Extend All No. 7 Bars 3'-11" From Construction Jt. Extend B402 Bars 2'-6" From Construction Jt.
- B502 U-bars where Indicated.
- See "Table of Variables For Intermediate Bents" Dwg. No. 65362.



SECTION C-C

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



SECTION B-B

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

GENERAL NOTES:

All concrete shall be Class "S" with a minimum 28 day compressive strength $f'_c = 3,500$ psi. Concrete shall be poured in the dry and all exposed corners to be chamfered 3/4" unless otherwise noted.

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.

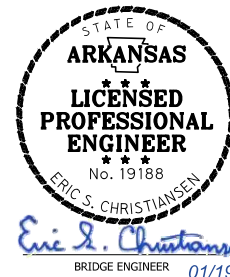
For additional information, See Layout.

SHEET 1 OF 4
DETAILS OF BENTS 2-5

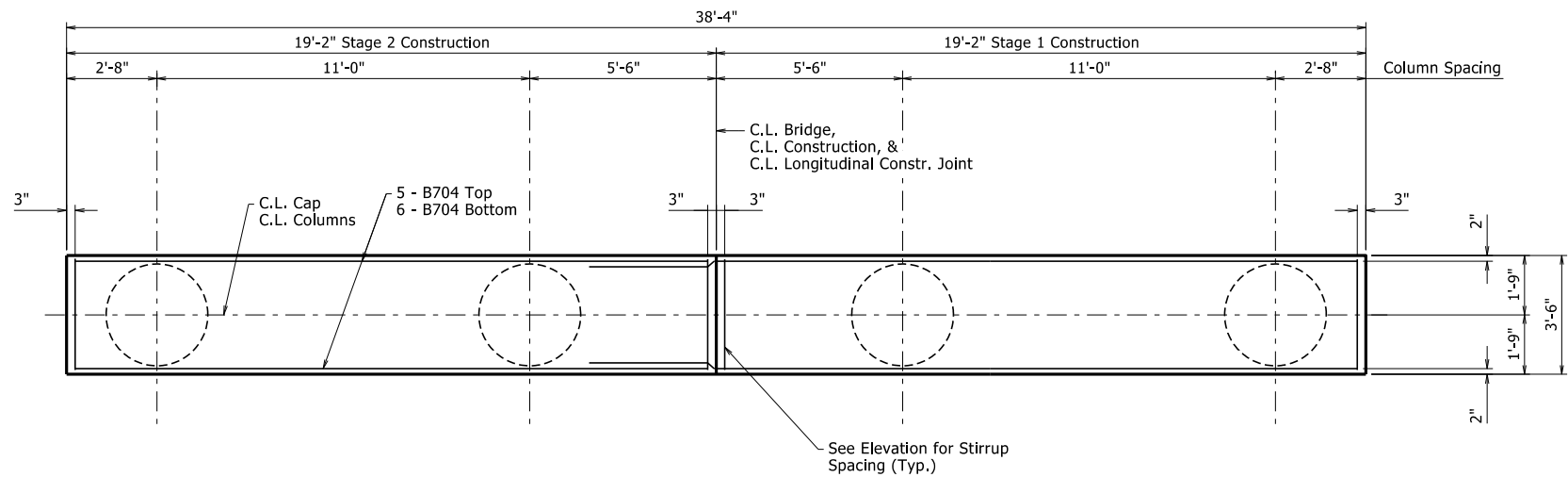
ROUTE 187 SEC. 0
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: FAN, MJB DATE: JUNE 2022 FILENAME: b090549_b21.dgn
CHECKED BY: ESC DATE: JUNE 2022 SCALE: AS SHOWN
DESIGNED BY: WKB DATE: JUNE 2022
BRIDGE NO. 07589 DRAWING NO. 65360

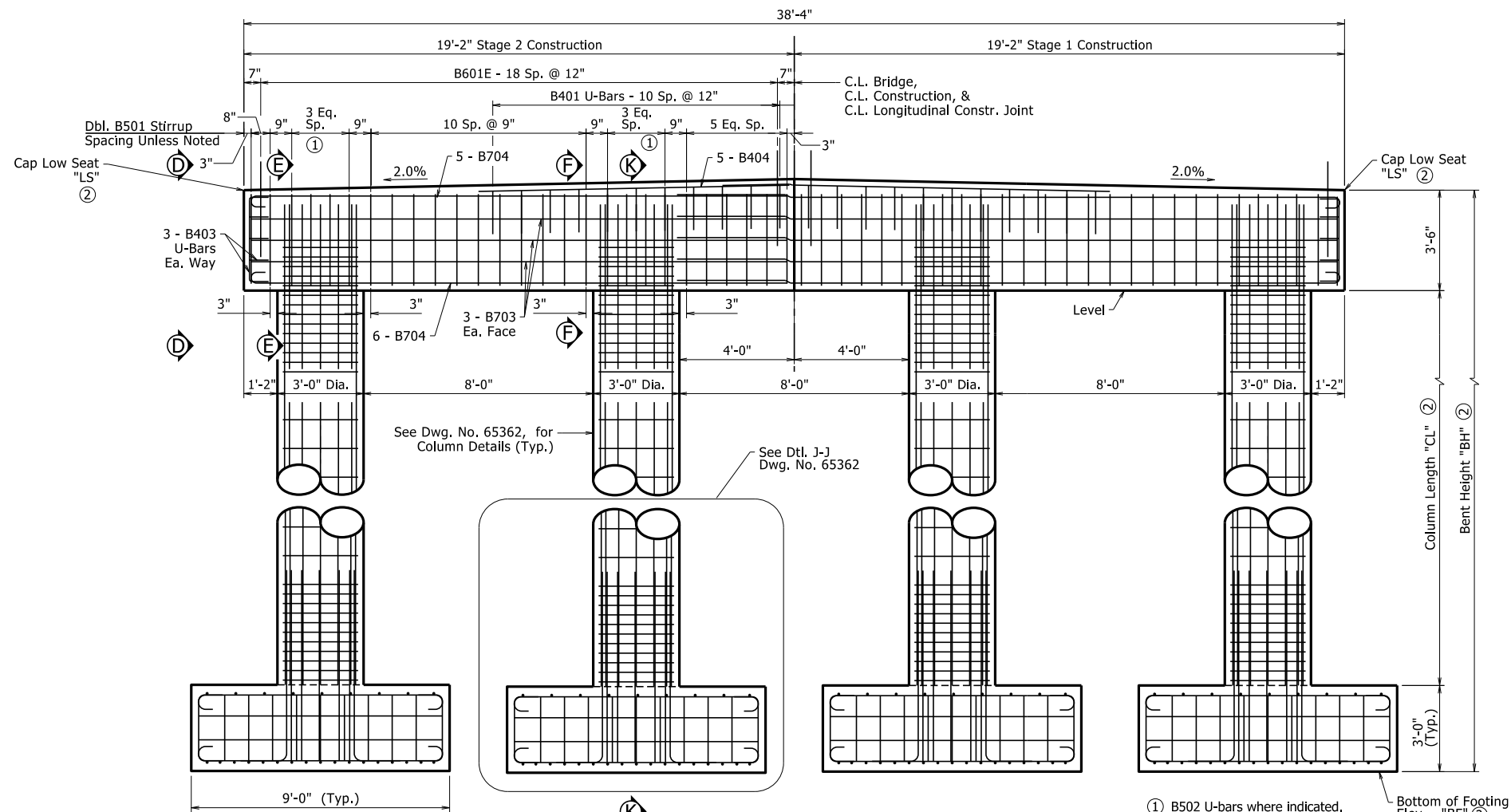


DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090549	43	72
				07589		BENTS 2-5		65361



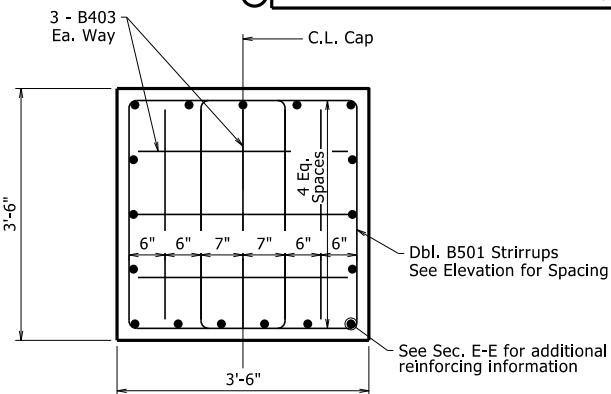
PLAN - FINAL CONSTRUCTION

Scale: $\frac{3}{8}" = 1'-0"$
Looking Ahead



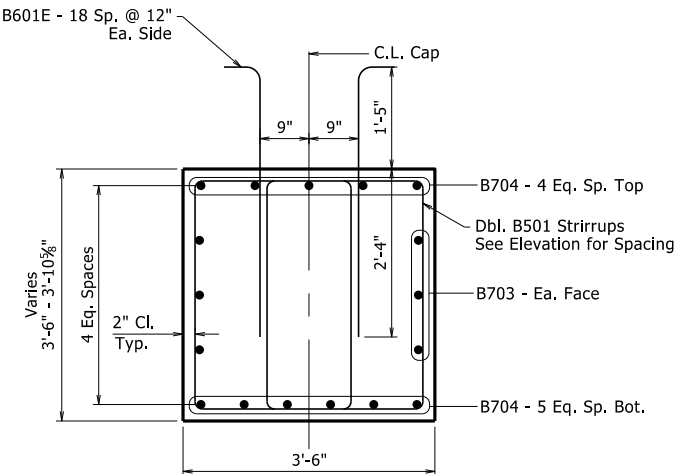
ELEVATION - FINAL CONSTRUCTION

Scale: $\frac{3}{8}" = 1'-0"$
Looking Ahead



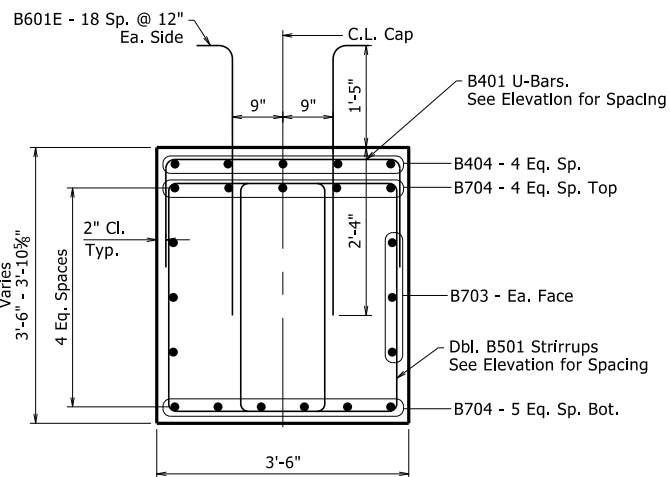
VIEW D-D

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



SECTION E-E

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



SECTION F-F

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

SHEET 2 OF 4
DETAILS OF BENTS 2-5

ROUTE 187 SEC. 0

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

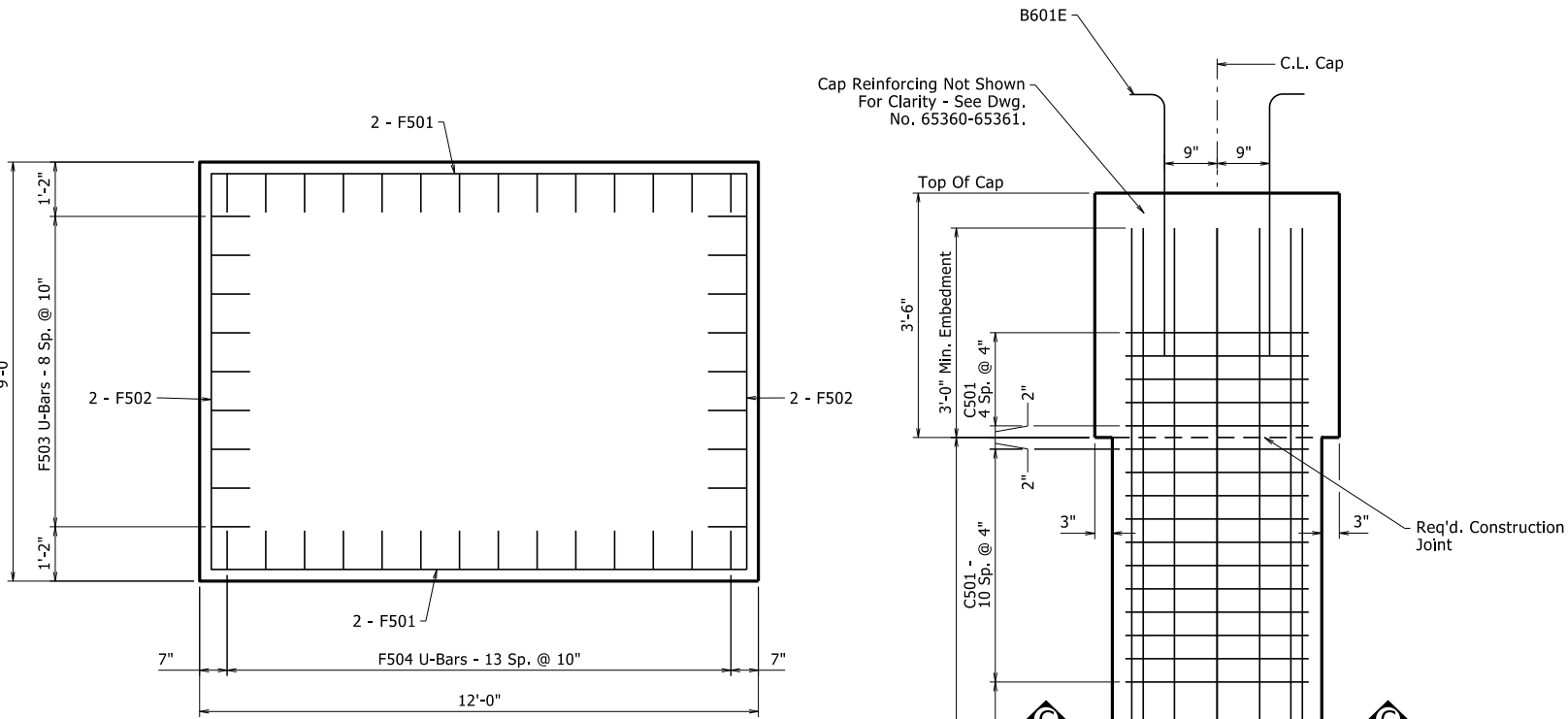
DRAWN BY: FAN, MJB
CHECKED BY: ESC
DESIGNED BY: WKB
BRIDGE NO. 07589

DATE: JUNE 2022
DATE: JUNE 2022
DATE: JUNE 2022

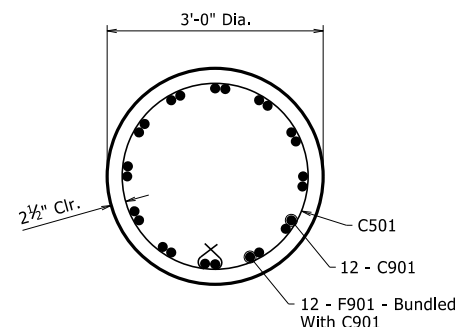
FILENAME: b090549_b22.dgn
SCALE: AS SHOWN
DRAWING NO. 65361



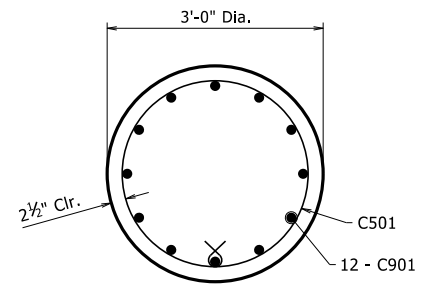
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090549	44	72
				07589		BENTS 2-5		65362



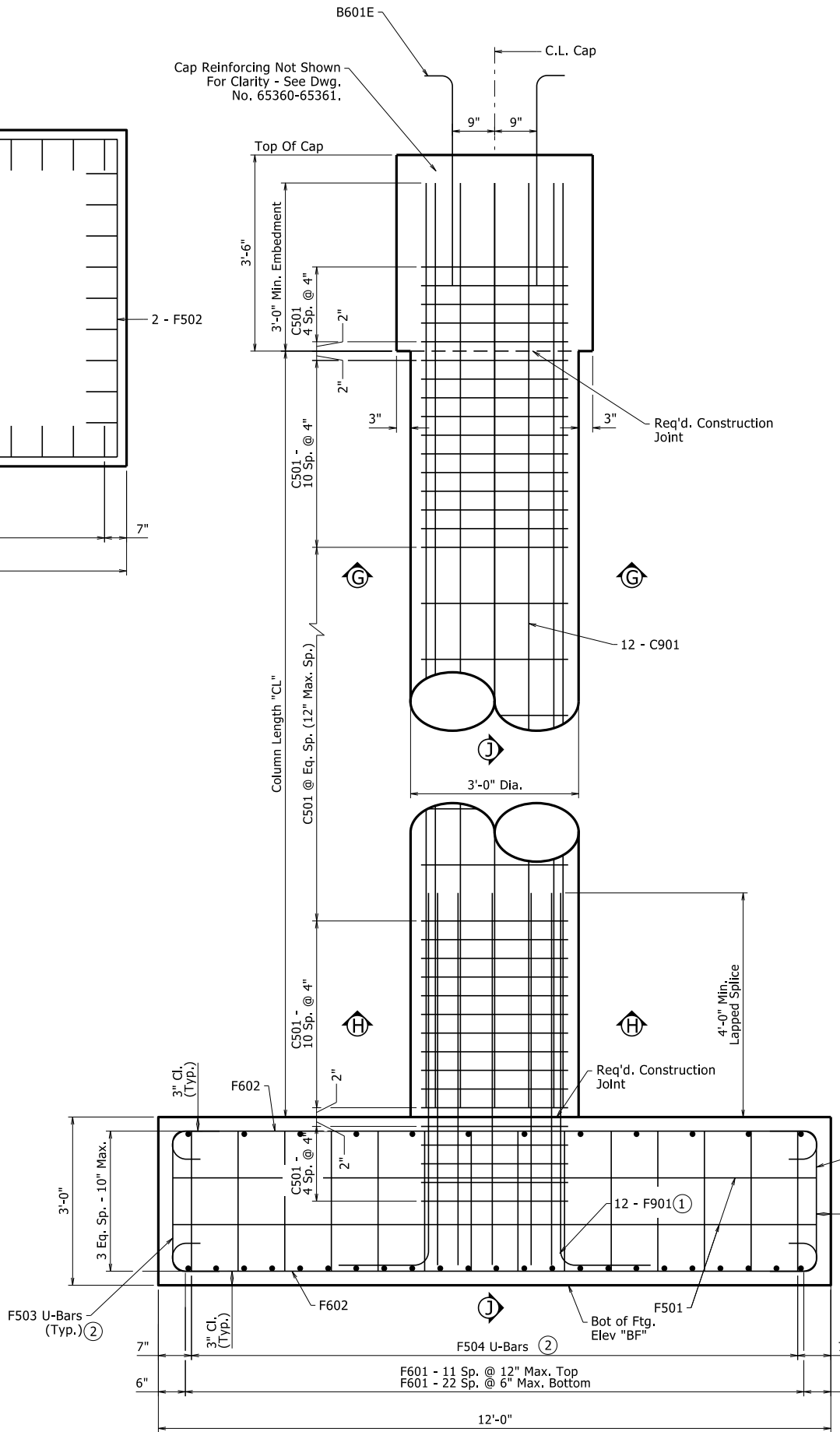
FOOTING PLAN
Scale: 1/2" = 1'-0"



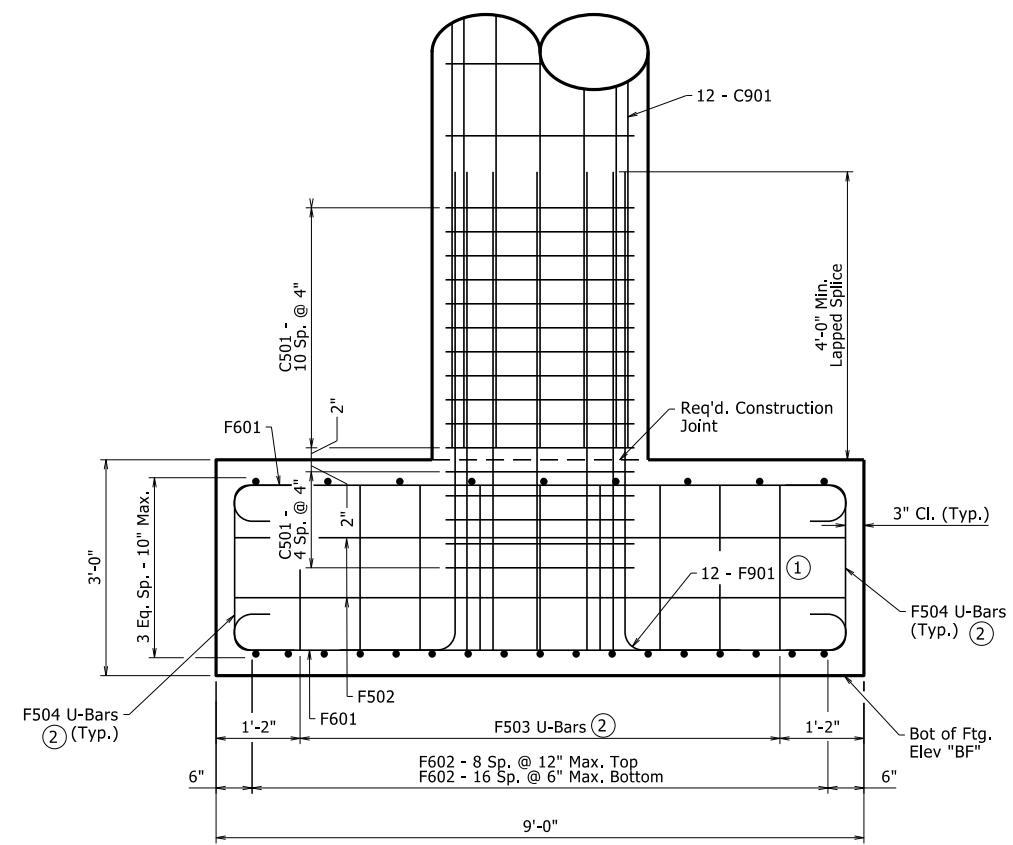
SECTION H-H
Scale: 3/4" = 1'-0"



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



DETAIL K-K - INTERMEDIATE BENT
Scale: 3/4" = 1'-0"



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

TABLE OF VARIABLES FOR INTERMEDIATE BENTS				
BENT NUMBER	CAP LOW SEAT "LS"	COL. LENGTH "CL"	BOT OF FTG. "BF"	BENT HEIGHT "BH"
2	958.15	13'-0"	938.65	19'-6"
3	958.33	15'-6"	936.33	22'-0"
4	958.51	15'-6"	936.51	22'-0"
5	958.69	12'-0"	940.19	18'-6"



SHEET 3 OF 4
DETAILS OF BENTS 2-5
ROUTE 187 SEC. 0
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.
DRAWN BY: FAN, MJB DATE: JUNE 2022 FILENAME: b090549_b23.dgn
CHECKED BY: ESC DATE: JUNE 2022 SCALE: AS SHOWN
DESIGNED BY: WKB DATE: JUNE 2022
BRIDGE NO. 07589 DRAWING NO. 65362

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.		090549	45	72
				07589		BENTS 2-5		65363

BAR LISTS FOR INTERMEDIATE BENT

INTERMEDIATE BENT - CAP				PER BENT - STAGE 2			
PER BENT - STAGE 1				Mark	No. Req'd.	Length	P.D.
B401	11	6'-5"	2"	B401	11	6'-5"	2"
B402	5	13'-6"	STR.	B403	6	4'-3"	2"
B403	6	4'-3"	2"	B404	5	10'-10"	STR.
B501	38	11'-2"	2 ½"	B501	38	11'-2"	2 ½"
B502	8	9'-4"	2 ½"	B502	8	9'-4"	2 ½"
B601E	38	4'-8"	4 ½"	B601E	38	4'-8"	4 ½"
B701	6	23'-1"	STR.	B703	6	18'-10"	STR.
B702	11	23'-11"	5 ¼"	B704	11	19'-8"	5 1/4"

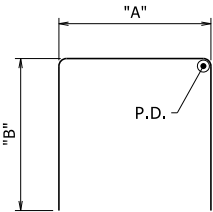
INTERMEDIATE BENT - COLUMNS & FOOTINGS				BENT 2 STAGE 2			
BENT 2 STAGE 1				Mark	No. Req'd.	Length	P.D.
C501	74	9'-6"	29 ¾" R	C501	74	9'-6"	29 ¾" R
C901	24	16'-0"	STR.	C901	24	16'-0"	STR.
F501	8	11'-6"	STR.	F501	8	11'-6"	STR.
F502	8	8'-6"	STR.	F502	8	8'-6"	STR.
F503	36	3'-11"	3 ¾"	F503	36	3'-11"	3 ¾"
F504	56	3'-10"	3 ¾"	F504	56	3'-10"	3 ¾"
F601	70	9'-10"	4 ½"	F601	70	9'-10"	4 ½"
F602	52	12'-10"	4 ½"	F602	52	12'-10"	4 ½"
F901	24	10'-1"	9"	F901	24	10'-1"	9"

BENTS 3 & 4 STAGE 1 ①				BENTS 3 & 4 STAGE 2 ①			
Mark	No. Req'd.	Length	P.D.	Mark	No. Req'd.	Length	P.D.
C501	80	9'-6"	29 ¾" R	C501	80	9'-6"	29 ¾" R
C901	24	18'-6"	STR.	C901	24	18'-6"	STR.
F501	8	11'-6"	STR.	F501	8	11'-6"	STR.
F502	8	8'-6"	STR.	F502	8	8'-6"	STR.
F503	36	3'-11"	3 ¾"	F503	36	3'-11"	3 ¾"
F504	56	3'-10"	3 ¾"	F504	56	3'-10"	3 ¾"
F601	70	9'-10"	4 ½"	F601	70	9'-10"	4 ½"
F602	52	12'-10"	4 ½"	F602	52	12'-10"	4 ½"
F901	24	10'-1"	9"	F901	24	10'-1"	9"

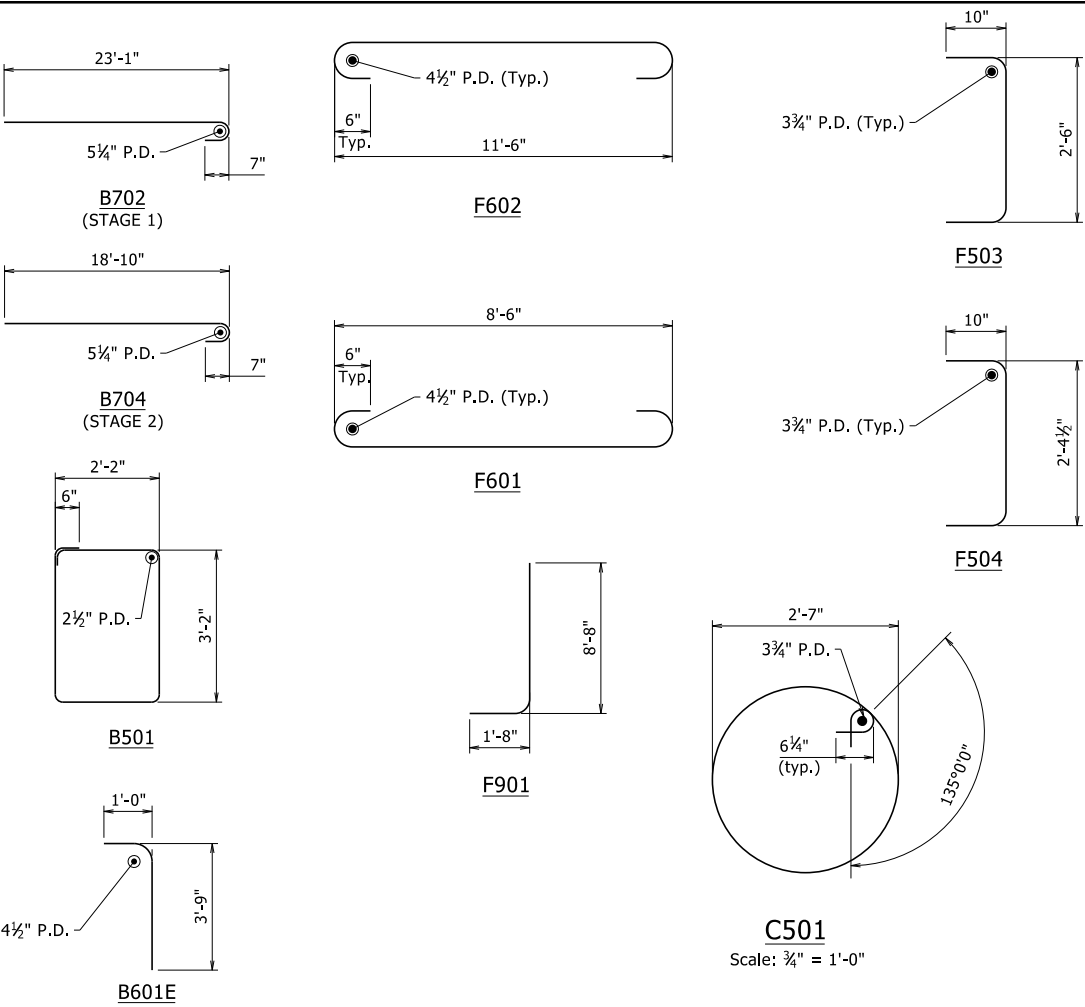
BENT 5 STAGE 1				BENT 5 STAGE 2			
Mark	No. Req'd.	Length	P.D.	Mark	No. Req'd.	Length	P.D.
C501	73	9'-6"	29 ¾" R	C501	73	9'-6"	29 ¾" R
C901	24	15'-0"	STR.	C901	24	15'-0"	STR.
F501	8	11'-6"	STR.	F501	8	11'-6"	STR.
F502	8	8'-6"	STR.	F502	8	8'-6"	STR.
F503	36	3'-11"	3 ¾"	F503	36	3'-11"	3 ¾"
F504	56	3'-10"	3 ¾"	F504	56	3'-10"	3 ¾"
F601	70	9'-10"	4 ½"	F601	70	9'-10"	4 ½"
F602	52	12'-10"	4 ½"	F602	52	12'-10"	4 ½"
F901	24	10'-1"	9"	F901	24	10'-1"	9"

TABLE OF U - BAR VARIABLES

BAR MARK	A	B	P.D.
B401	3'-2"	1'-8 ½"	2"
B403	3'-0 ½"	0'-8"	2"
B502	3'-2"	3'-2"	2 ½"



U-BAR



Note: Bar dimensions are out-to-out.

The first bar designation number indicates the reinforcing bar size.

Bars with an "E" suffix are to be epoxy coated.

① The design of Bents 3 and 4 is the same. Quantities indicated in the Bar List are for a single bent and must be counted on a per bent basis.



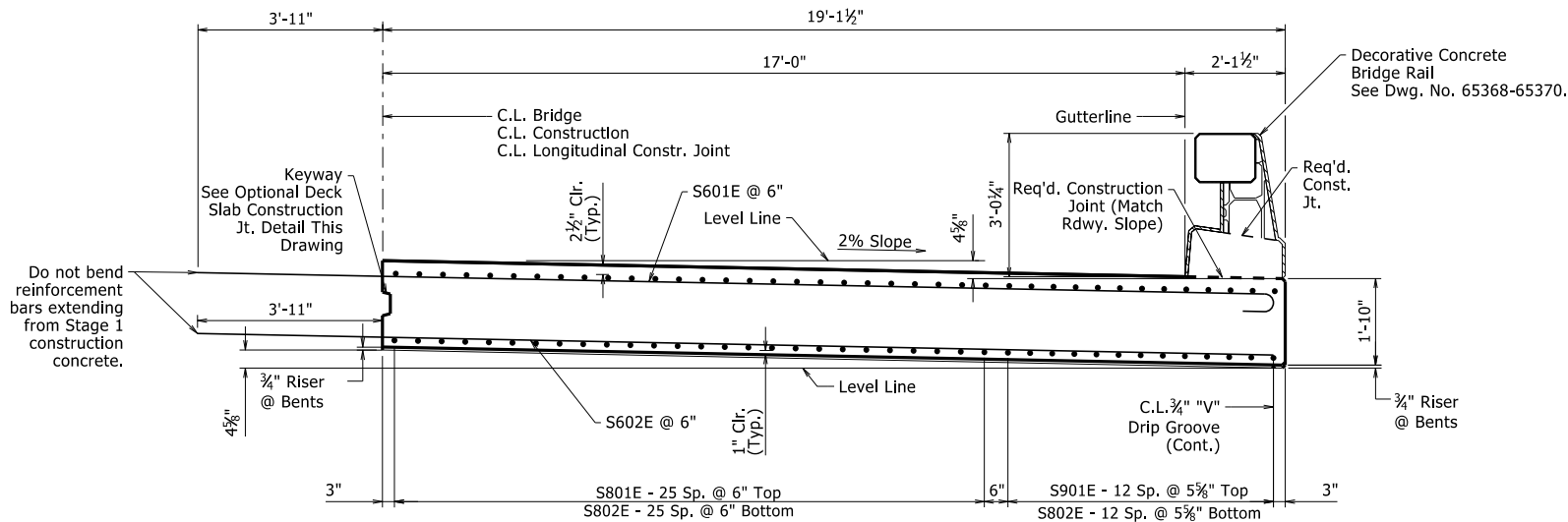
SHEET 4 OF 4
DETAILS OF BENTS 2-5

ROUTE 187 SEC. 0
ARKANSAS STATE HIGHWAY COMMISSION

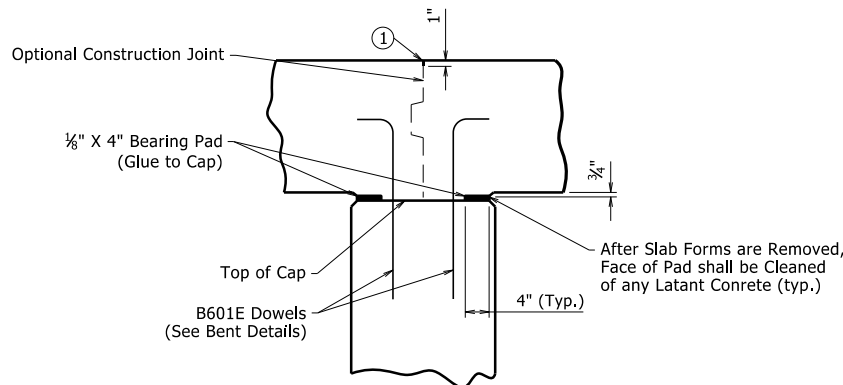
LITTLE ROCK, ARK.

DRAWN BY: FAN, MJB DATE: JUNE 2022 FILENAME: b090549_b24.dgn
CHECKED BY: ESC DATE: JUNE 2022 SCALE: AS SHOWN
DESIGNED BY: WKB DATE: JUNE 2022
BRIDGE NO. 07589 DRAWING NO. 65363

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.		090549	46	72
				1	07589	180'-0" UNIT		65364



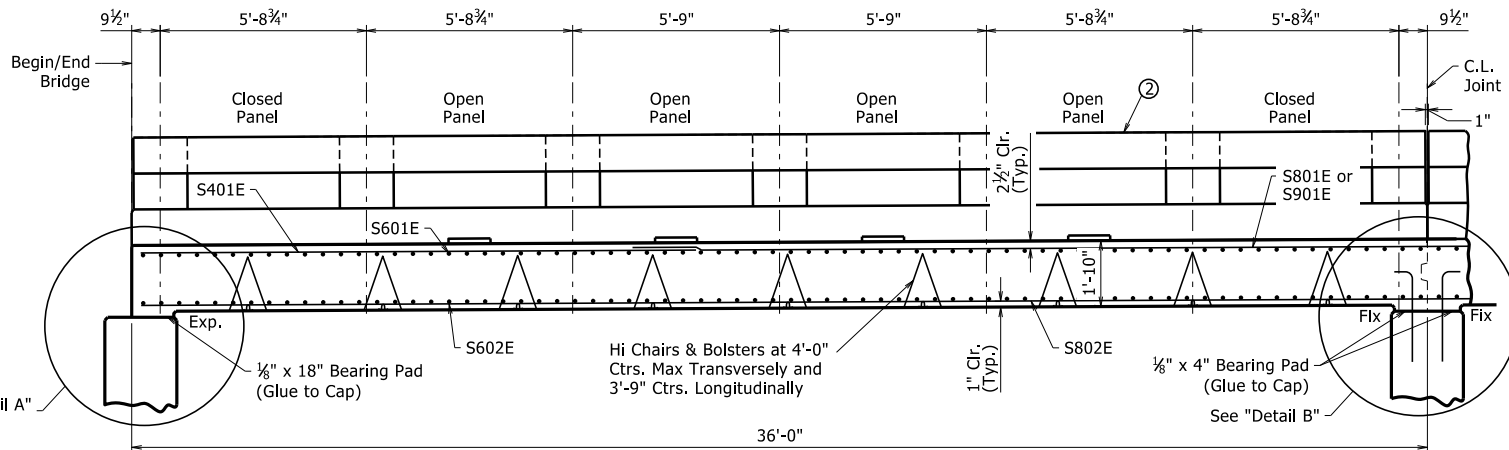
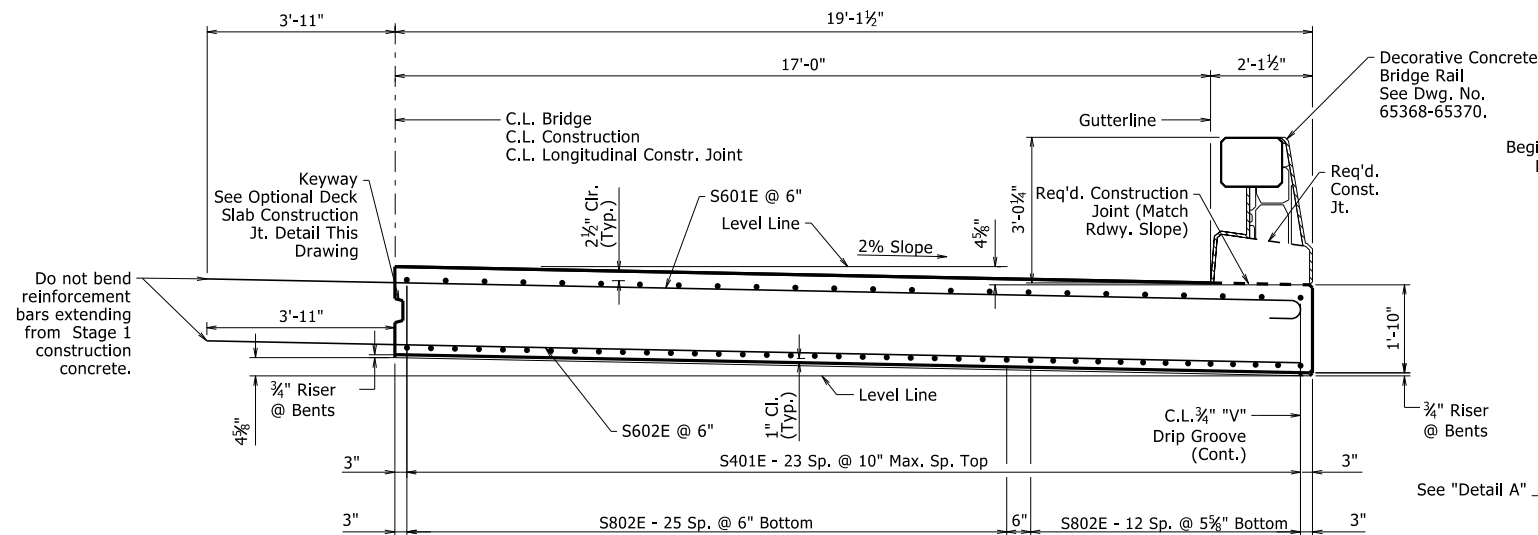
① 1/2" x 1" Type 3 or 4 Joint Sealer. See Subsections 501.02(h) and 501.05(j). Backer Rod filler will not be required. Joint Sealer shall be measured and paid for as "Class S(AE) Concrete-Bridge." Transverse slab joints shall extend to the outside edge of the slab. Transverse slab joints shall be installed before the falsework is removed and before the bridge 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 joint and required slab joint locations. Seal Color shall be gray or other similar to concrete.



NOTE
BEARING PAD: The 1/8" bearing pad shall be an unreinforced pad meeting the requirements of section 808, or shall be nylon reinforced neoprene meeting the requirements of Subsection 807.20. The pad shall be furnished in one piece for the required width and full length of the bearing and glued to the bent cap with an adhesive approved by the Engineer. Pads and adhesive will not be paid for directly, but will be considered subsidiary to the item "Class S(AE) Concrete-Bridge".

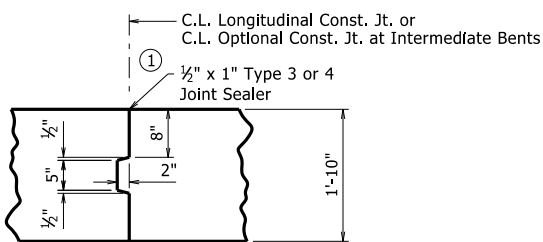
Joint to be Cleaned by Sandblasting or Other Approved Method Before Pouring Joint Sealer.

See Optional Deck Slab Construction Joint Detail

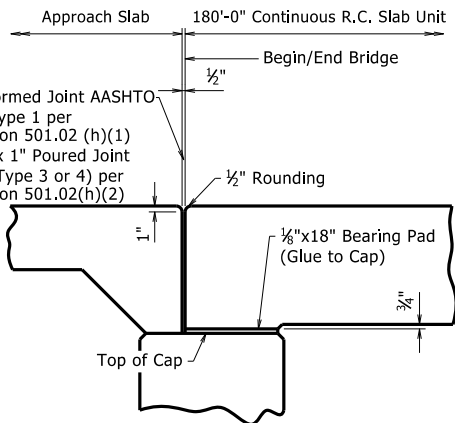


STAGE 1 CONSTRUCTION
NEAR BRIDGE ENDS

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



Unit can be built with partial pours terminating at ends of spans only.



LONGITUDINAL SECTION ALONG C.L. BRIDGE

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

② See Dwg. No. 65368 for Aesthetic Treatment @ Bridge Traffic Rail

SHEET 1 OF 4
DETAILS OF 180'-0" CONTINUOUS R.C. SLAB UNIT

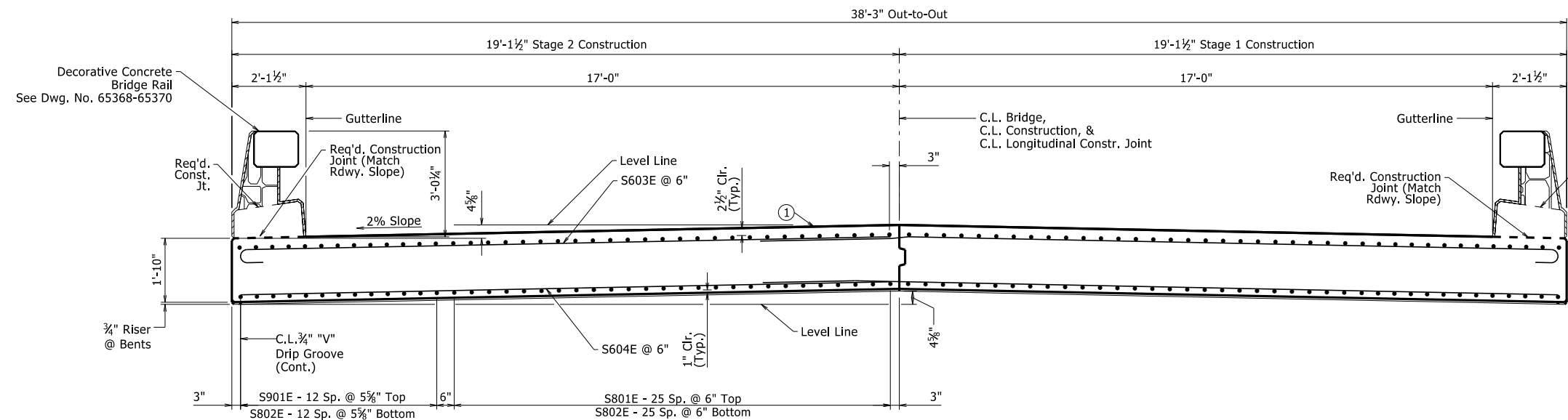
ROUTE 187 SEC. 0
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: FAN, MJB
CHECKED BY: ESC
DESIGNED BY: WKB
DATE: JUNE 2022
DATE: JUNE 2022
DATE: JUNE 2022
FILENAME: b090549_s2.dgn
SCALE: AS SHOWN
BRIDGE NO. 07589
DRAWING NO. 65364

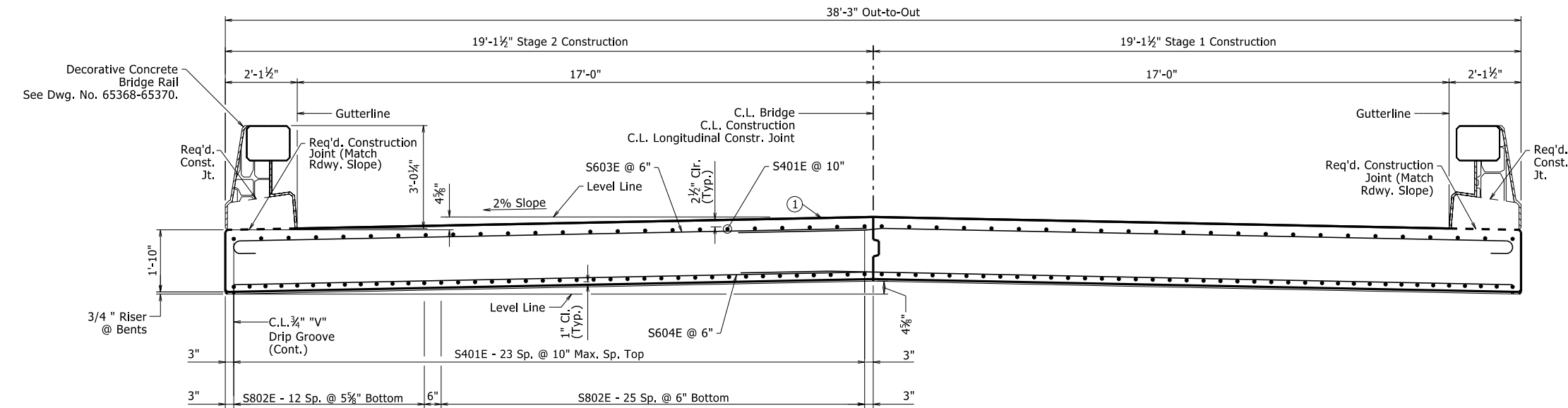


DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090549	47	72
				07589		180'-0" UNIT		65365



STAGE 2 CONSTRUCTION

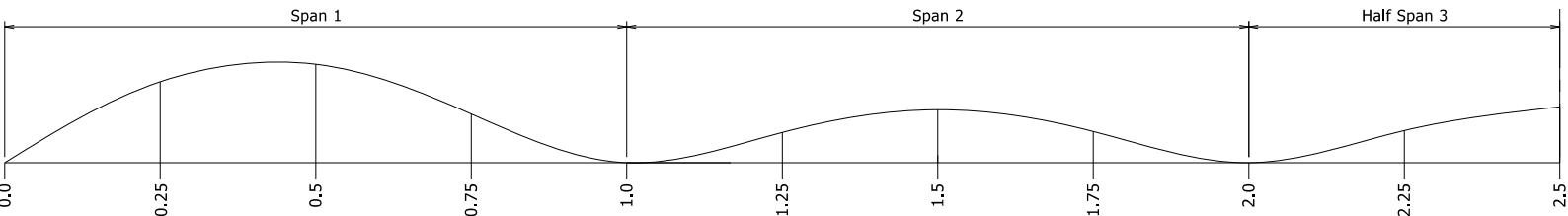
Looking Ahead
Scale: 1/2" = 1'-0"



STAGE 2 CONSTRUCTION NEAR BRIDGE ENDS

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

Deflections shown are from a chord from C.L. Bent to C.L. Bent. Vertical curve corrections are not included.
Tolerance + 1/4" for camber and vertical alignment.



DEAD LOAD CAMBER DIAGRAM

No Scale

DEAD LOAD DEFLECTIONS

Point	Total Deflection
0.00	0.000
0.25	0.248
0.50	0.312
0.75	0.162
1.00	0.000
1.25	0.093
1.50	0.159
1.75	0.099
2.00	0.000
2.25	0.110
2.50	0.177



SHEET 2 OF 4
DETAILS OF 180'-0" CONTINUOUS R.C. SLAB UNIT

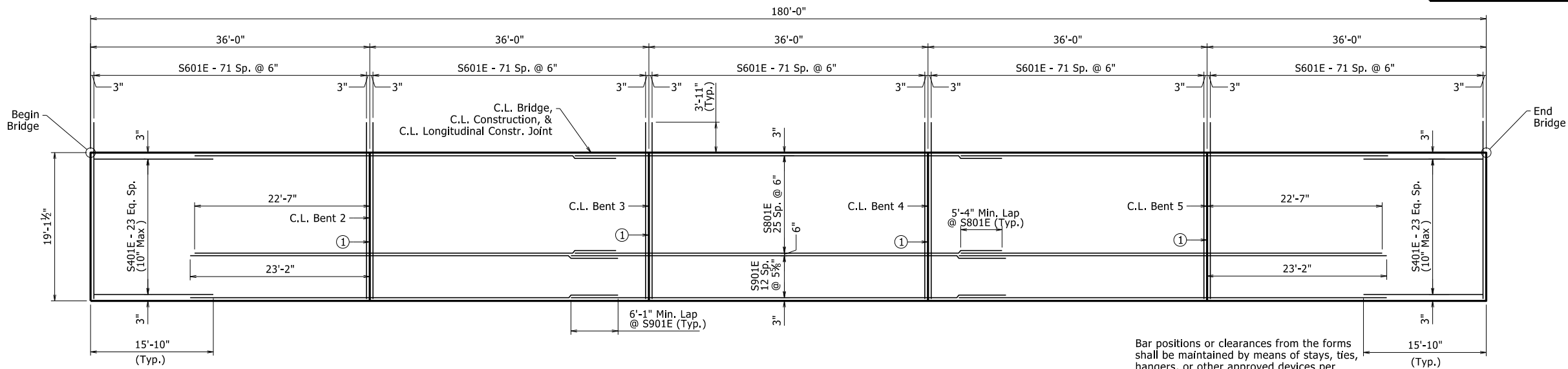
ROUTE 187 SEC. 0
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: FAN, MJB
CHECKED BY: ESC
DESIGNED BY: WKB
DATE: JUNE 2022
DATE: JUNE 2022
DATE: JUNE 2022
FILENAME: b090549_s3.dgn
SCALE: AS SHOWN
BRIDGE NO. 07589
DRAWING NO. 65365

PRINT DATE: 11/10/2022

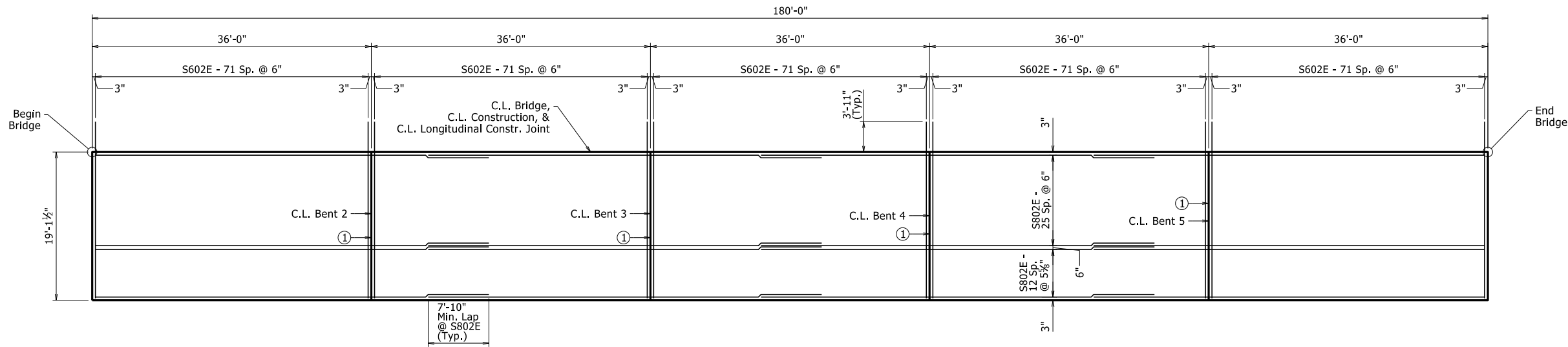
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090549	48	72
				07589		180'-0" UNIT	65366	



STAGE 1 REINFORCING PLAN

TOP OF SLAB

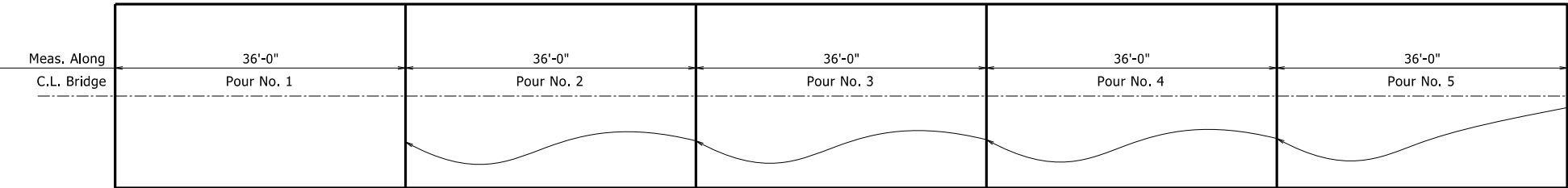
Scale: 1/8" = 1'-0"



STAGE 1 REINFORCING PLAN

BOTTOM OF SLAB

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



The contractor may pour the entire bridge slab unit at once or may elect to form and pour the slab in five separate pours according to the pouring sequence shown. No part of the falsework for the entire unit shall be removed until all of the concrete in the slab has been placed and cured. Before removal of the falsework begins, both the time and strength requirements of Subsection 802.15 must be met. 72 hours shall elapse between the end of a pour and the start of the next pour.

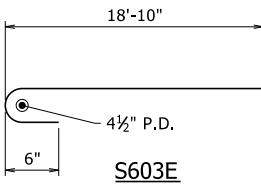
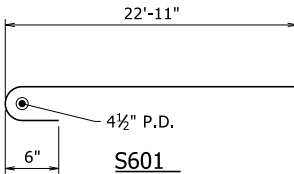
Concrete in the bridge superstructure shall be placed and consolidated for the entire pour before any concrete has taken its initial set. This may require the use of a retarding agent. The Contractor must obtain approval from the Engineer for any deviation from the pouring sequence shown and for any railing pours made before the entire bridge slab has been poured.

POURING SEQUENCE FOR CONTINUOUS R.C. SLAB UNITS

No Scale

BAR LIST				
STAGE 1 SLAB				
	MARK	NO. REQ'D.	LENGTH	P.D.
T O P	S401E	48	15'-8"	STR.
	S601E	360	23'-7"	4 1/2"
	S801E	78	54'-4"	STR.
	S901E	39	55'-2"	STR.
B O T	S602E	360	22'-11"	STR.
	S802E	156	50'-10"	STR.

STAGE 2 SLAB				
	MARK	NO. REQ'D.	LENGTH	P.D.
T O P	S401E	48	15'-8"	STR.
	S603E	360	19'-6"	4 1/2"
	S801E	78	54'-4"	STR.
	S901E	39	55'-2"	STR.
B O T	S604E	360	18'-10"	STR.
	S802E	156	50'-10"	STR.



Stage 1 & 2 Slab Embed Bridge Rail Bars R601E, R701E, and R410E Not Shown. See Dwg. No. 65370.

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

SHEET 3 OF 4
DETAILS OF 180'-0" CONTINUOUS R.C. SLAB UNIT

ROUTE 187 SEC. 0
ARKANSAS STATE HIGHWAY COMMISSION

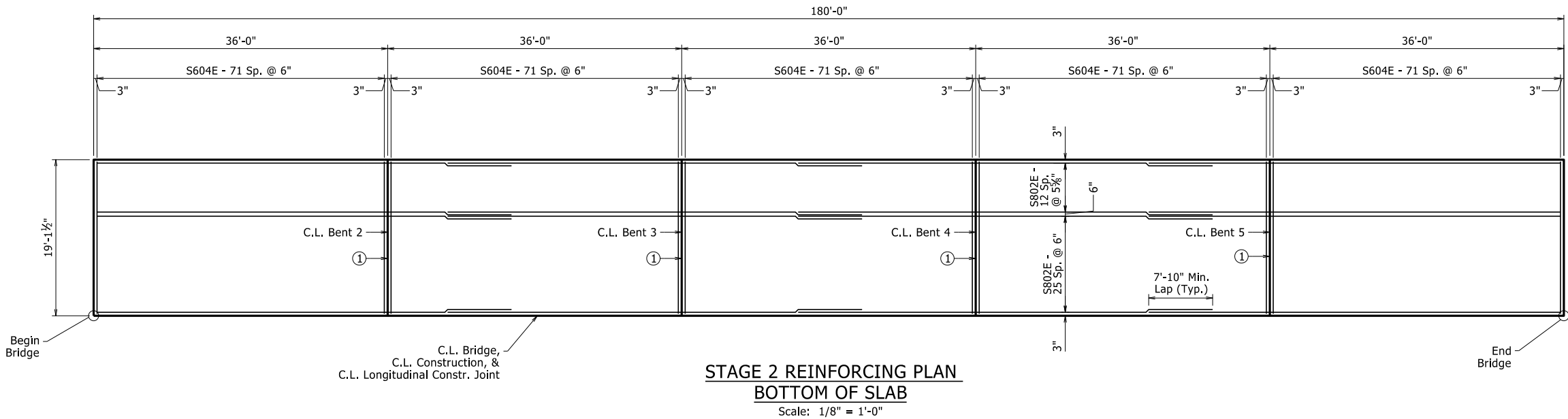
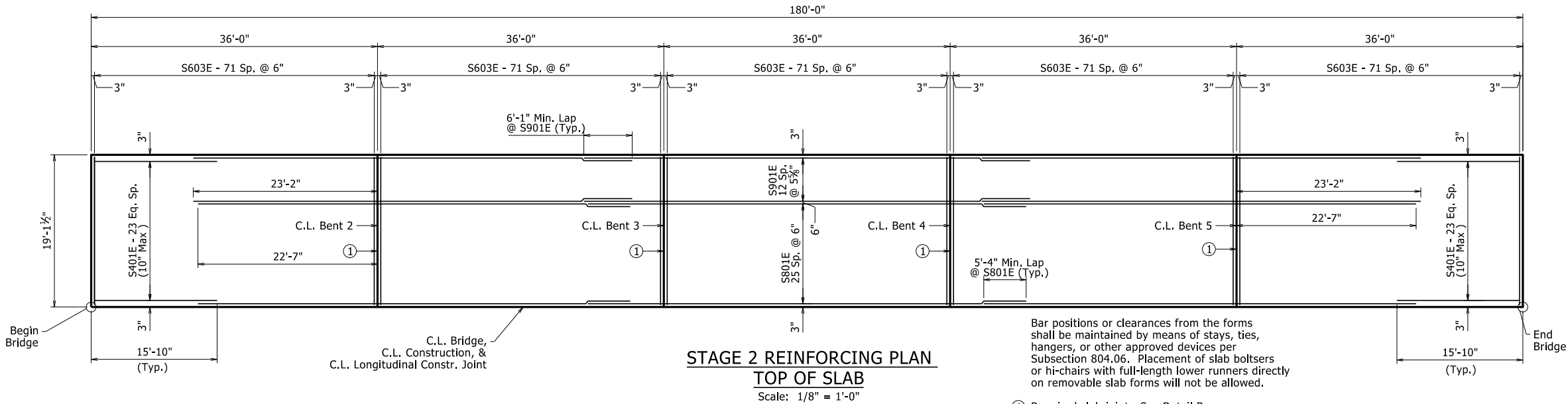
LITTLE ROCK, ARK.

DRAWN BY: FAN, MJB DATE: JUNE 2022 FILENAME: b090549_s4.dgn
CHECKED BY: ESC DATE: JUNE 2022 SCALE: AS SHOWN
DESIGNED BY: WKB DATE: JUNE 2022
BRIDGE NO. 07589 DRAWING NO. 65366



PRINT DATE: 11/10/2022

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090549	49	72
				07589		180'-0" UNIT	65367	



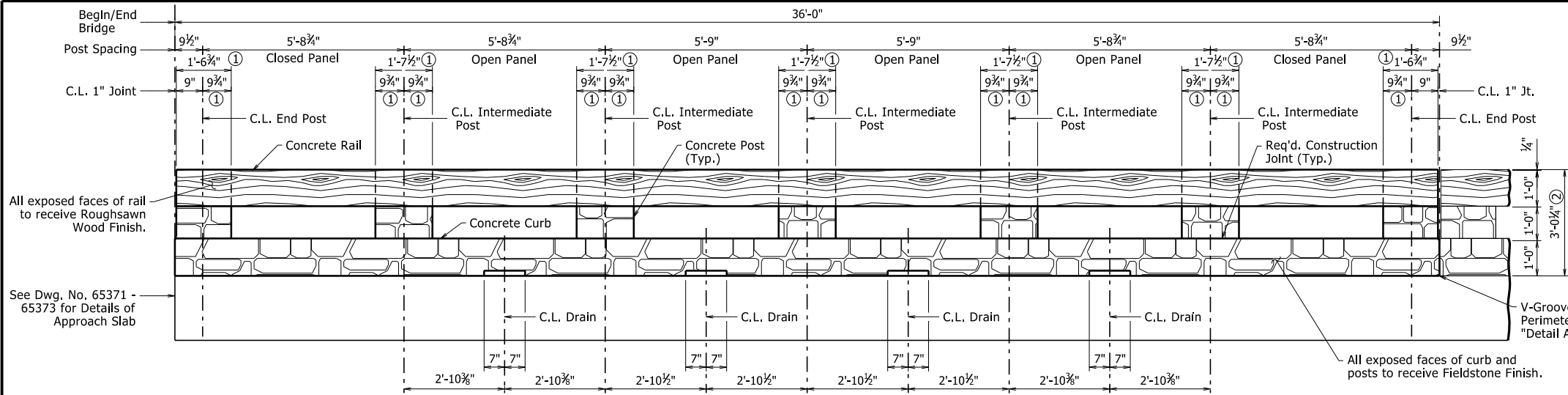
SHEET 4 OF 4
DETAILS OF 180'-0" CONTINUOUS R.C. SLAB UNIT

ROUTE 187 SEC. 0
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: FAN, MJB DATE: JUNE 2022 FILENAME: b090549_s5.dgn
CHECKED BY: ESC DATE: JUNE 2022 SCALE: AS SHOWN
DESIGNED BY: WKB DATE: JUNE 2022
BRIDGE NO. 07589 DRAWING NO. 65367

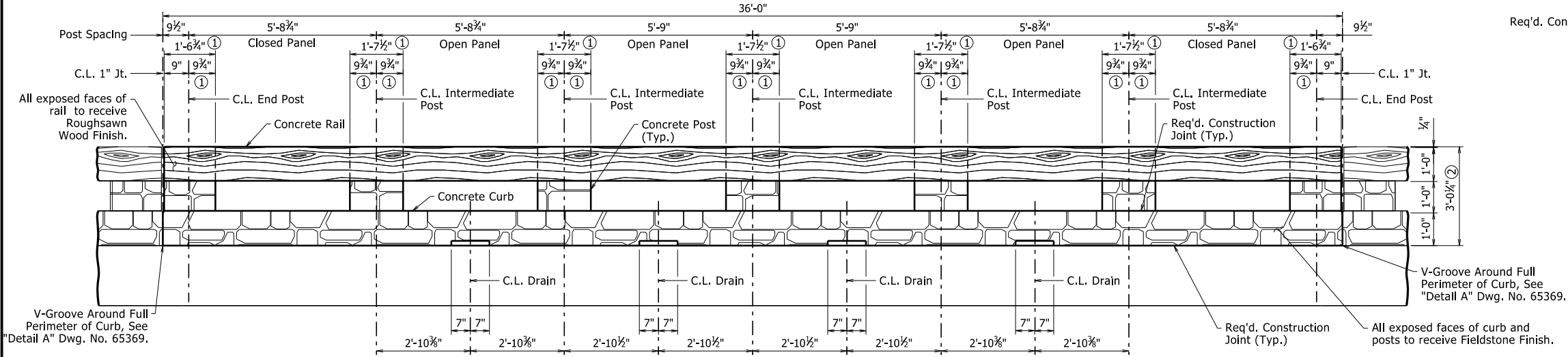


DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090549	50	72
				07589	DETAILS OF BRIDGE RAIL			65368



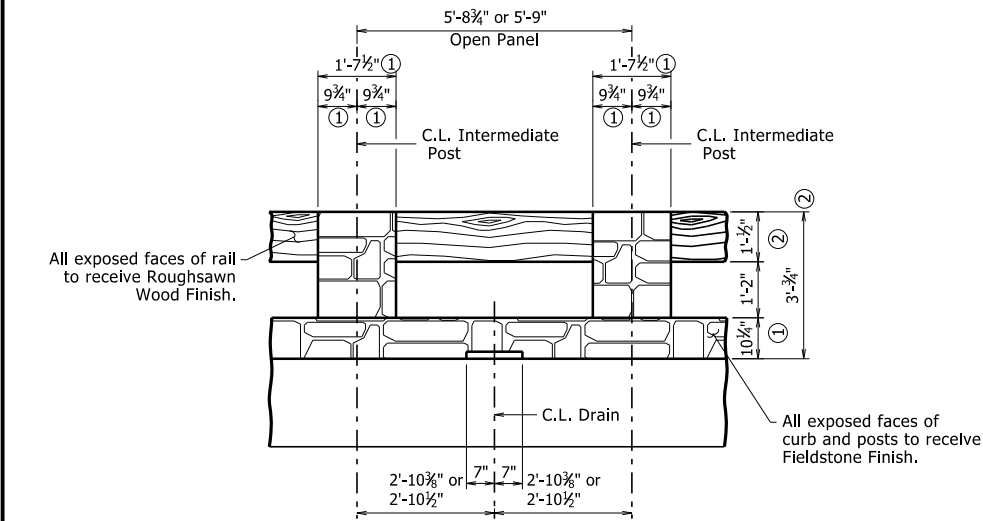
**ELEVATION OF DECORATIVE CONCRETE BRIDGE RAIL
AT END BENTS (FROM TRAFFIC SIDE)**

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



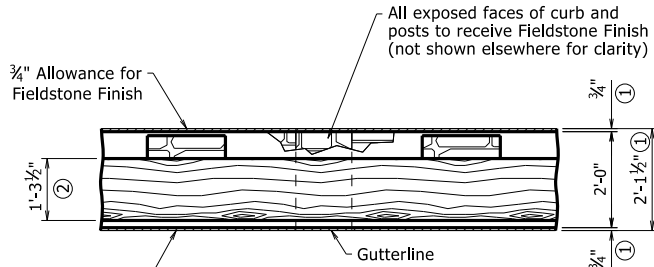
**ELEVATION OF DECORATIVE CONCRETE BRIDGE RAIL
BETWEEN INTERMEDIATE BENTS (FROM TRAFFIC SIDE)**

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



**ELEVATION OF DECORATIVE CONCRETE BRIDGE RAIL
(FROM BACK SIDE)**

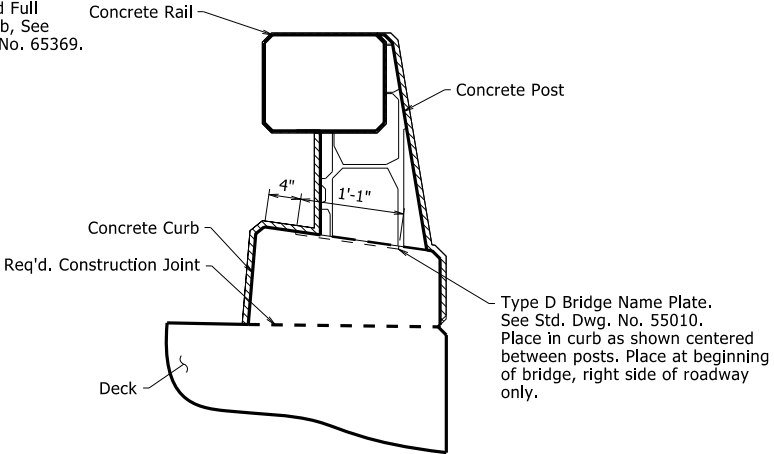
Scale: 1/2" = 1'-0"
(Open Rail shown; Closed Rail Similar)



PLAN OF DECORATIVE CONCRETE BRIDGE RAIL

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

- ① Dimension includes 3/4" allowance for Fieldstone Finish.
- ② Dimension includes 1/4" allowance for Roughsawn Wood Finish.



**BRIDGE NAME PLATE
LOCATION DETAIL**

Scale: 1" = 1'-0"

Concrete in Decorative Railing on Spans and Wings shall be Class "S(AE)" except that the coarse aggregate size shall meet AASHTO M 43, Size 67 (3/4" Max.).



**SHEET 1 OF 3
DETAILS OF DECORATIVE
CONCRETE BRIDGE RAIL**

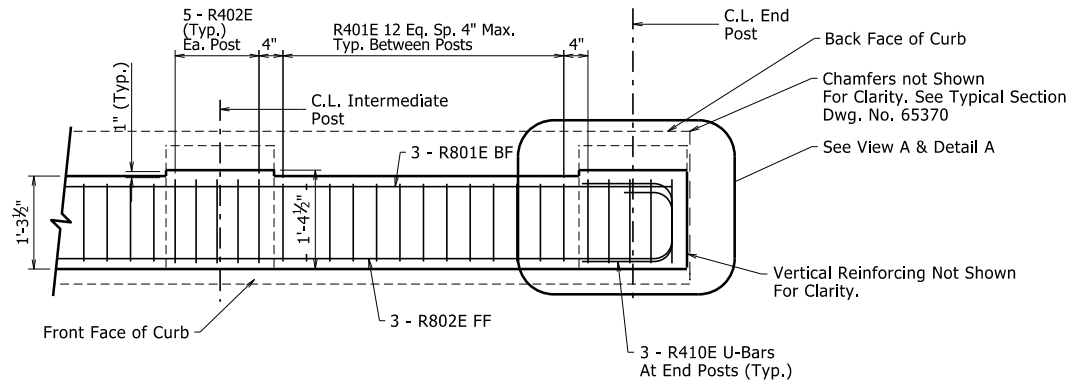
ROUTE 187 SEC. 0
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: FAN, MJB DATE: JUNE 2022 FILENAME: b090549_r1.dgn
CHECKED BY: ESC DATE: JUNE 2022 SCALE: AS SHOWN
DESIGNED BY: WKB DATE: JUNE 2022
BRIDGE NO. 07589 DRAWING NO. 65368

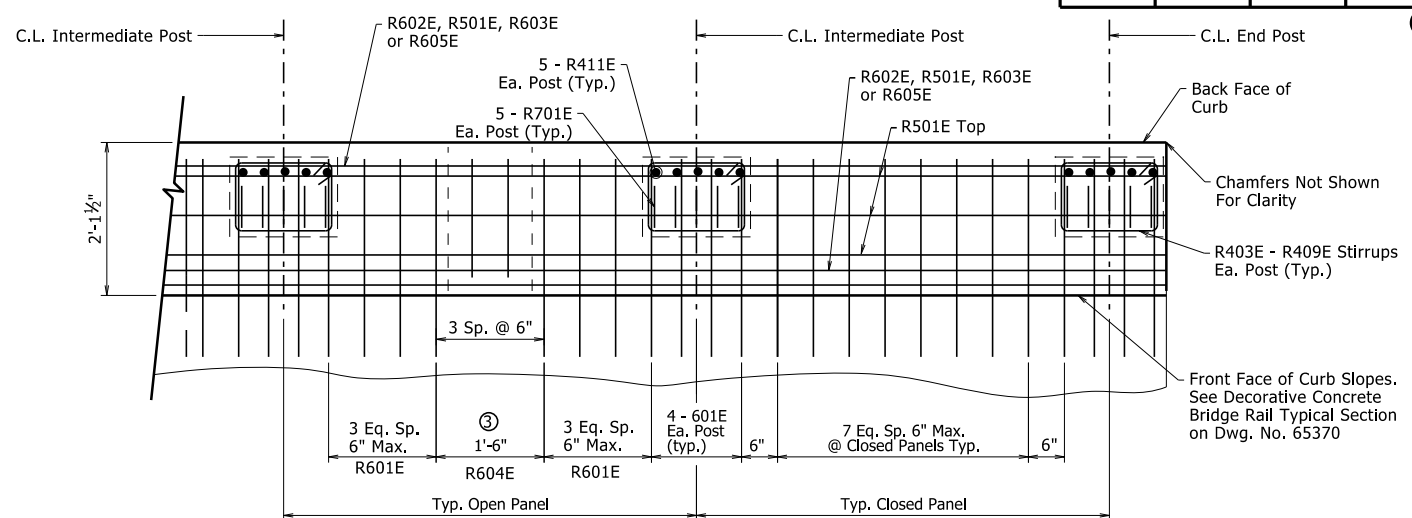
PRINT DATE: 11/10/2022

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	090549		51	72
				07589	DETAILS OF BRIDGE RAIL		65369	



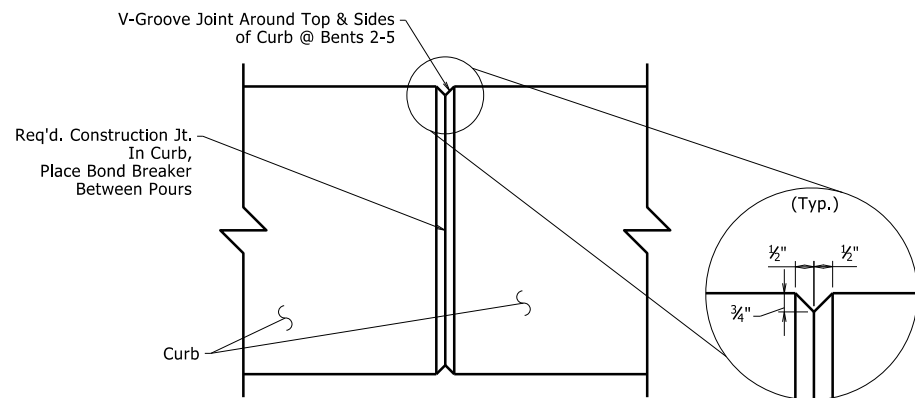
PLAN AT BRIDGE RAIL

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



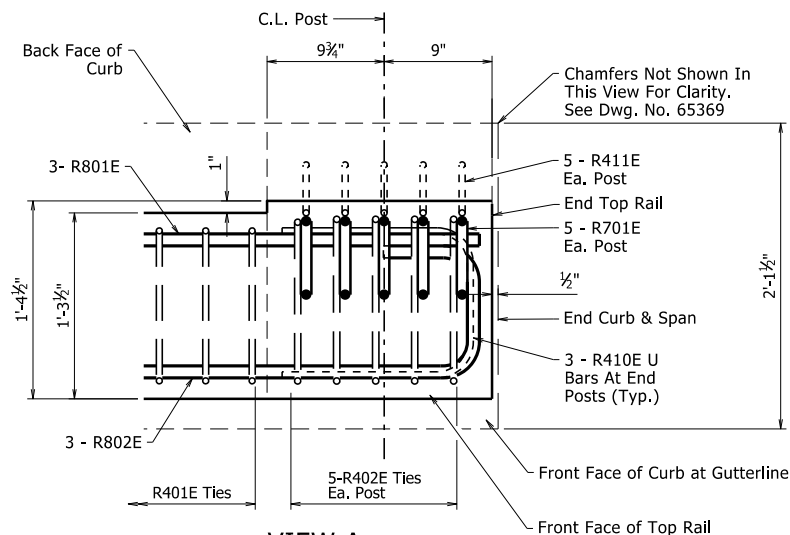
PLAN AT BRIDGE CURB

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



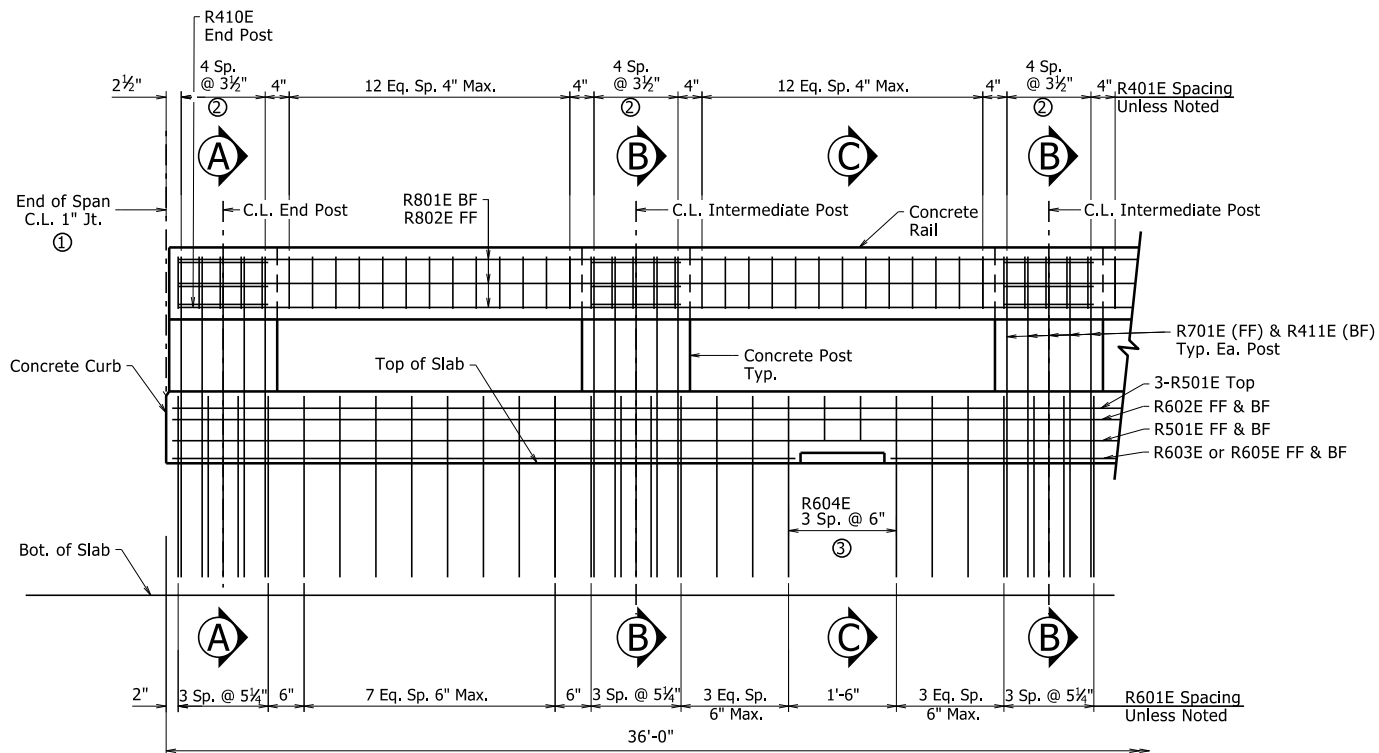
DETAIL A

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



VIEW A
PLAN - RAIL AT END POST

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



ELEVATION LONGITUDINAL SECTION OF DECORATIVE
CONCRETE BRIDGE RAIL (FROM TRAFFIC SIDE)

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

Notes:

DECORATIVE CONCRETE BRIDGE RAIL REINFORCING: 1" cl. typ. except for 2" cl. at front and back face of curb. See Section D-D Dwg. No. 65370

SEC A-A, B-B, C-C on Dwg. No. 65370

Provide 1" Chamfer (Typ) at all exposed corners for railing components.

① End Span has 1" joint in rail. One end only.

② R402E, R411E, & R701E at posts. Spacing as noted.

③ R604E at drains. Spacing as noted



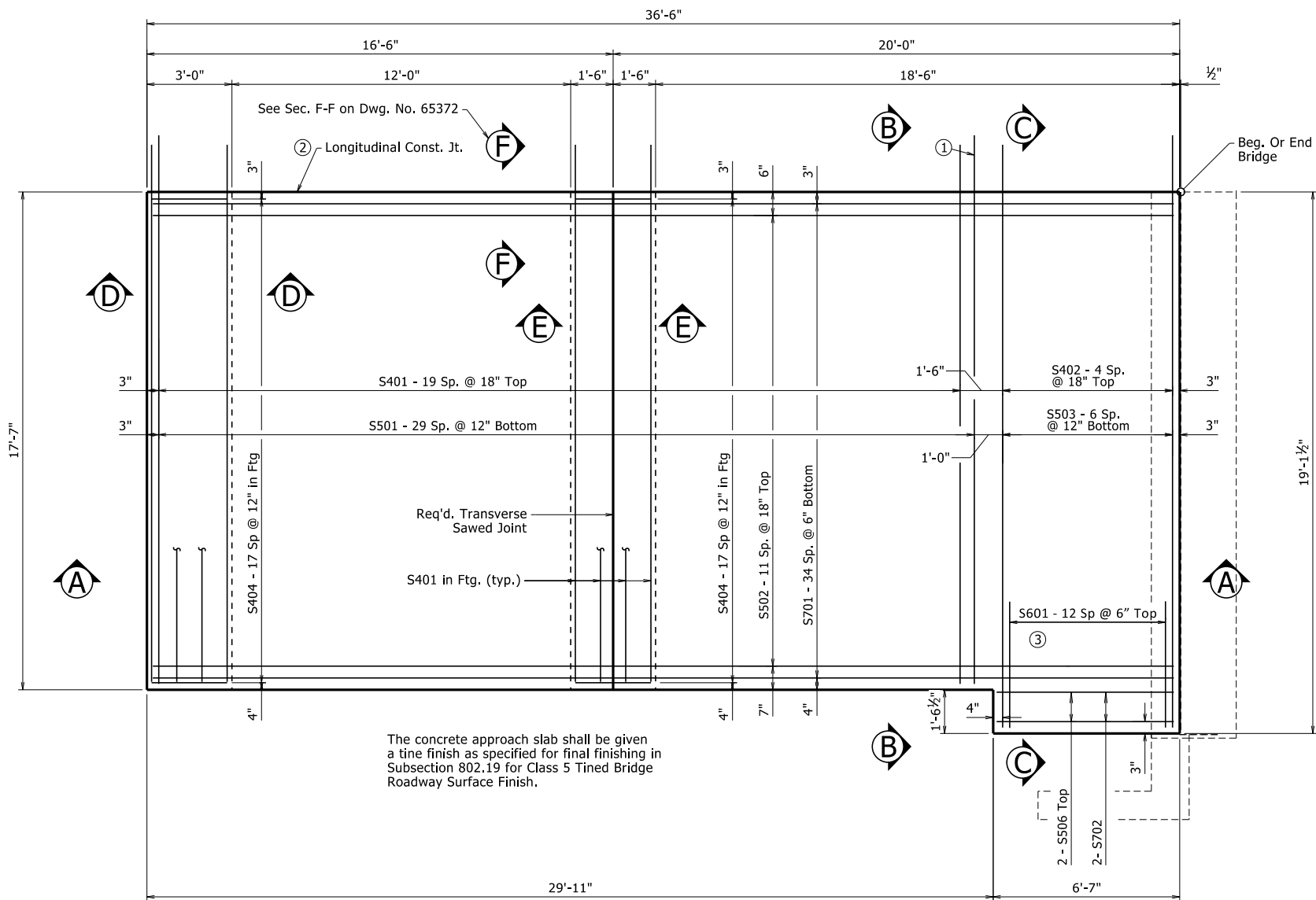
SHEET 2 OF 3
DETAILS OF DECORATIVE
CONCRETE BRIDGE RAIL

ROUTE 187 SEC. 0
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

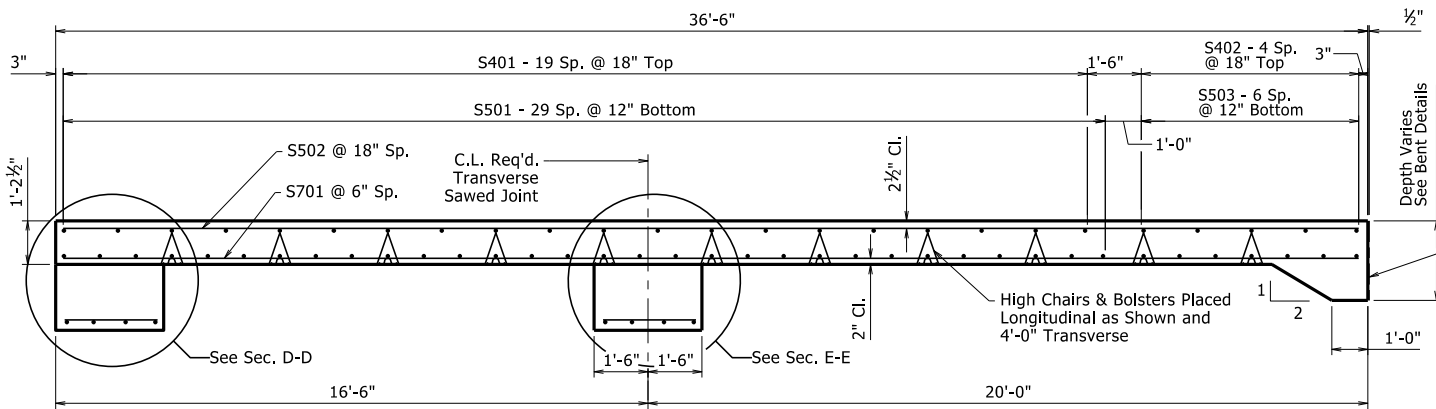
DRAWN BY: FAN, MJB DATE: JUNE 2022 FILENAME: b090549_r2.dgn
CHECKED BY: ESC DATE: JUNE 2022 SCALE: AS SHOWN
DESIGNED BY: WKB DATE: JUNE 2022
BRIDGE NO. 07589 DRAWING NO. 65369

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.		090549	53	72
				07589		APPROACH SLAB		65371

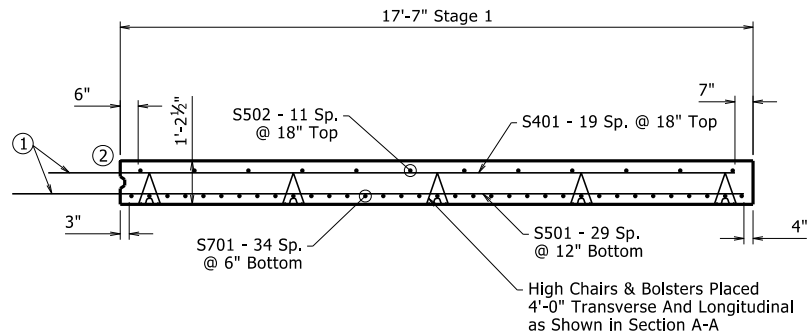


PLAN VIEW - STAGE 1 CONSTRUCTION
Scale: 3/8" = 1'-0"

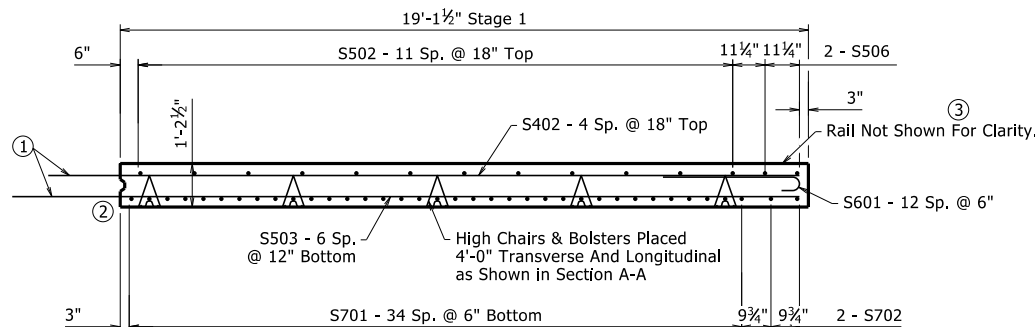
- ① 20" Non-contact Lapped Splice For #4 Transverse Bars Top.
24" Non-contact Lapped Splice For #5 Transverse Bars Bottom.
- ② See Detail of Longitudinal Constr. Joint Dwg. No. 65372
- ③ See Sec. J-J & K-K on Dwg. No. 65373



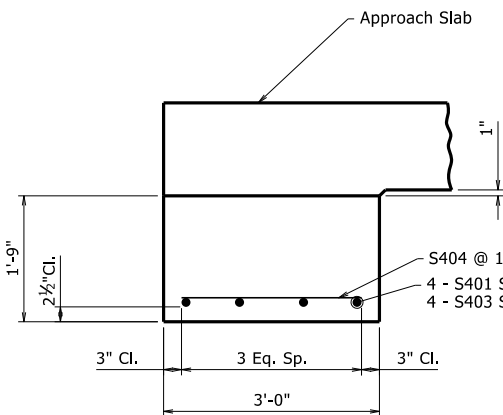
SECTION A-A
Scale: 3/8" = 1'-0"



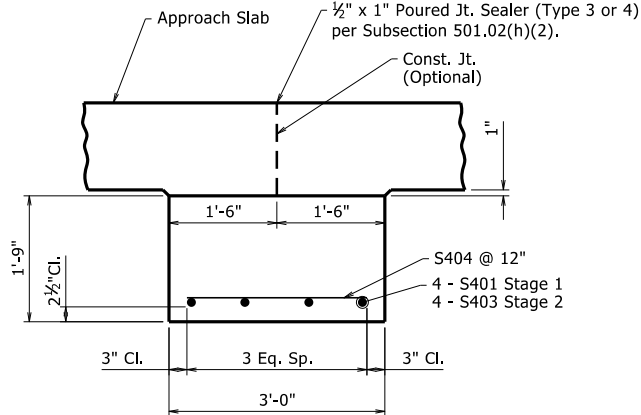
SECTION B-B
Scale: 3/8" = 1'-0"



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



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



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

1/2" Preformed Joint (AASHTO M 153 Type I) per Subsection 501.02 (h)(1) and 1/2" x 1" Poured Jt. Sealer (Type 3 or 4) per Subsection 501.02(h)(2).



SHEET 1 OF 3
DETAILS FOR TYPE SPECIAL APPROACH SLAB
ROUTE 187 SEC. 0
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.
DRAWN BY: FAN, MJB
CHECKED BY: ESC
DESIGNED BY: WKB
DATE: JUNE 2022
DATE: JUNE 2022
DATE: JUNE 2022
FILENAME: b090549_g1.dgn
SCALE: AS SHOWN
BRIDGE NO. 07589
DRAWING NO. 65371

PRINT DATE: 11/10/2022

TABLE OF QUANTITIES FOR
ONE APPROACH SLAB
FOR INFORMATION ONLY

SLAB WIDTH	REINFORCING STEEL (Lbs.)	CONCRETE (Cu. Yds.)
38'-3"	9,170	76.50

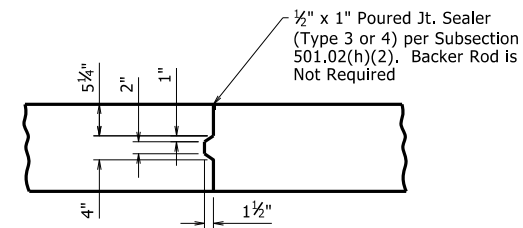
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				6	ARK.			
				JOB NO.		090549	54	72
				07589		APPROACH SLAB		65372

REBAR LIST

APPROACH SLAB STAGE 1				APPROACH SLAB STAGE 2			
Mark	No. Req'd.	Length	P.D.	Mark	No. Req'd.	Length	P.D.
S401	28	19'-3"	STR	S403	28	17'-3"	STR
S402	5	20'-10"	STR	S404	36	2'-6"	STR
S404	36	2'-6"	STR	S405	5	18'-10"	STR
S501	30	19'-7"	STR	S502	12	36'-2"	STR
S502	12	36'-2"	STR	S504	30	17'-3"	STR
S503	7	21'-2"	STR	S505	7	18'-10"	STR
S506	2	6'-3"	STR	S506	2	6'-3"	STR
S601	13	4'-6"	4 1/2"	S601	13	4'-6"	4 1/2"
S701	35	36'-2"	STR	S701	35	36'-2"	STR
S702	2	6'-3"	STR	S702	2	6'-3"	STR

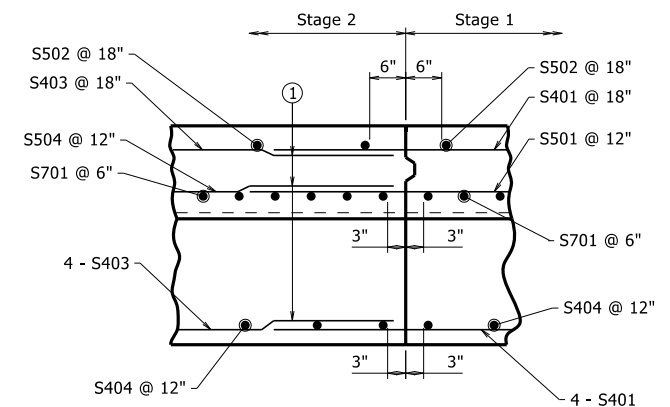
For Stage 1 & 2 Slab Embed Rail Bar R601 See Dwg. No. 65373

Note: Bar dimensions are out-to-out.



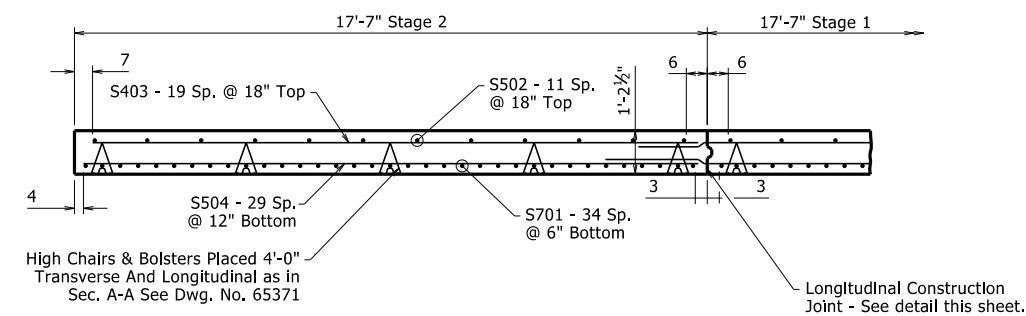
DETAIL OF LONGITUDINAL
CONSTRUCTION JOINT

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



SECTION F-F

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



SECTION G-G

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

- ① 20" Non-contact Lapped Splice For #4 Transverse Bars Top.
24" Non-contact Lapped Splice For #5 Transverse Bars Bottom.
- ② See Sec. J-J & K-K on Dwg. No. 65373



SHEET 2 OF 3
DETAILS FOR TYPE SPECIAL APPROACH SLAB

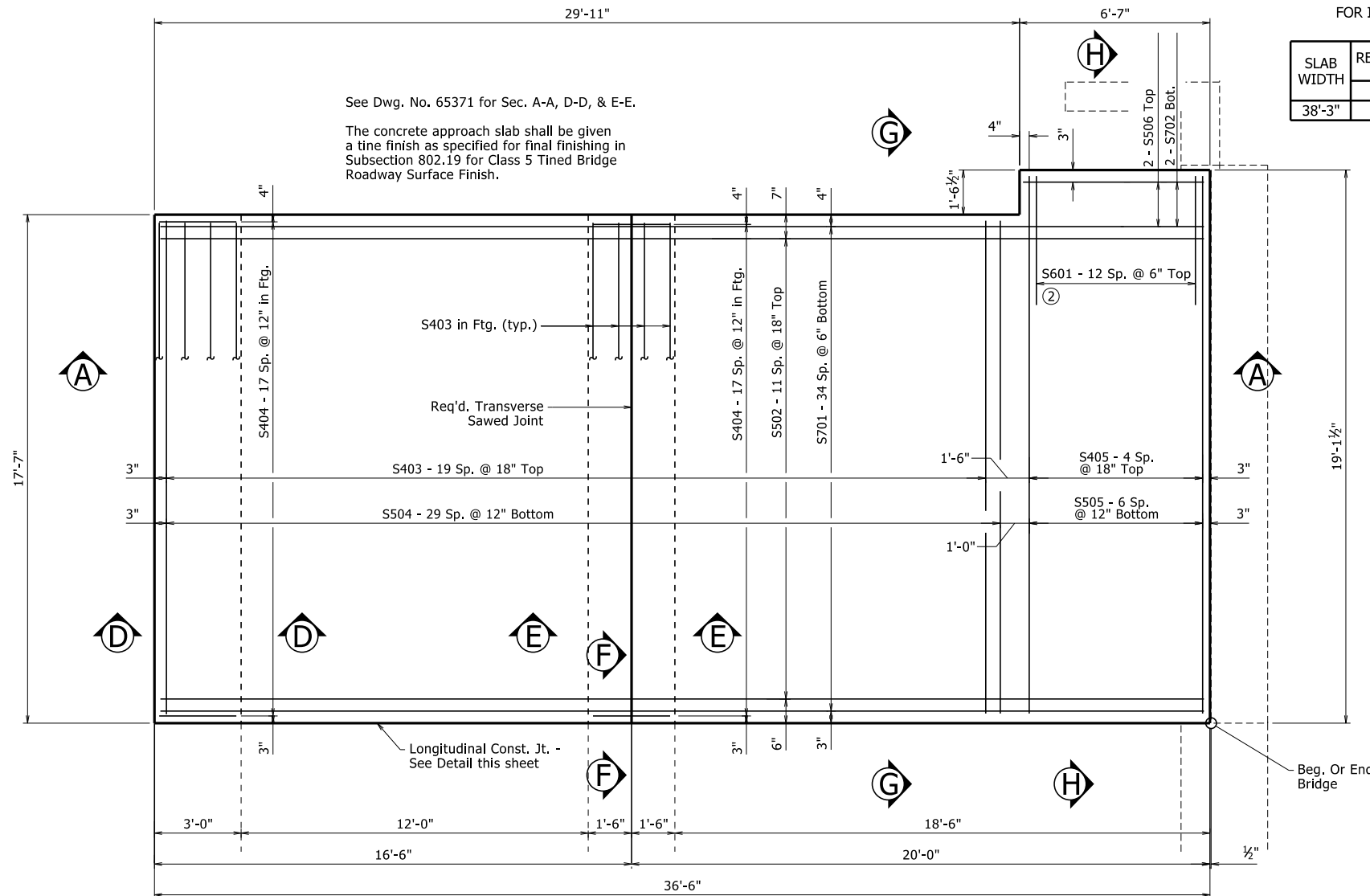
ROUTE 187 SEC. 0
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: FAN, MJB DATE: JUNE 2022 FILENAME: b090549_g2.dgn
CHECKED BY: ESC DATE: JUNE 2022 SCALE: AS SHOWN
DESIGNED BY: WKB DATE: JUNE 2022
BRIDGE NO. 07589 DRAWING NO. 65372

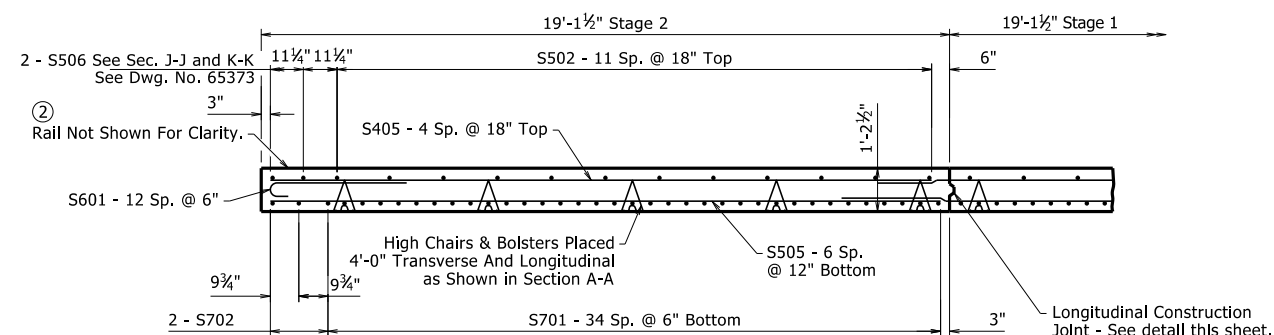
See Dwg. No. 65371 for Sec. A-A, D-D, & E-E.

The concrete approach slab shall be given a fine finish as specified for final finishing in Subsection 802.19 for Class 5 Tined Bridge Roadway Surface Finish.



PLAN VIEW - STAGE 2 CONSTRUCTION

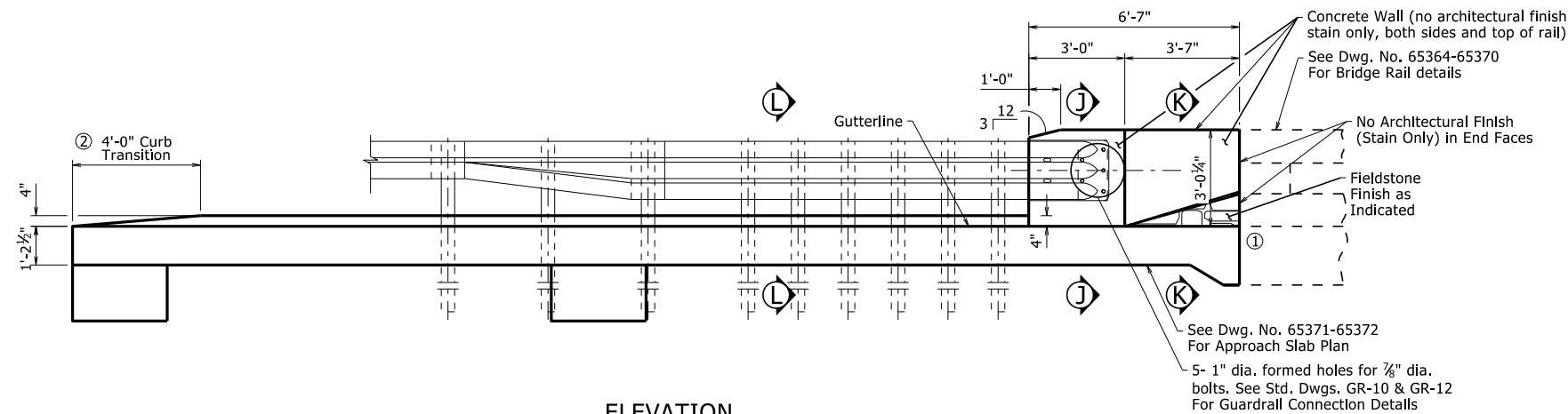
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SECTION H-H

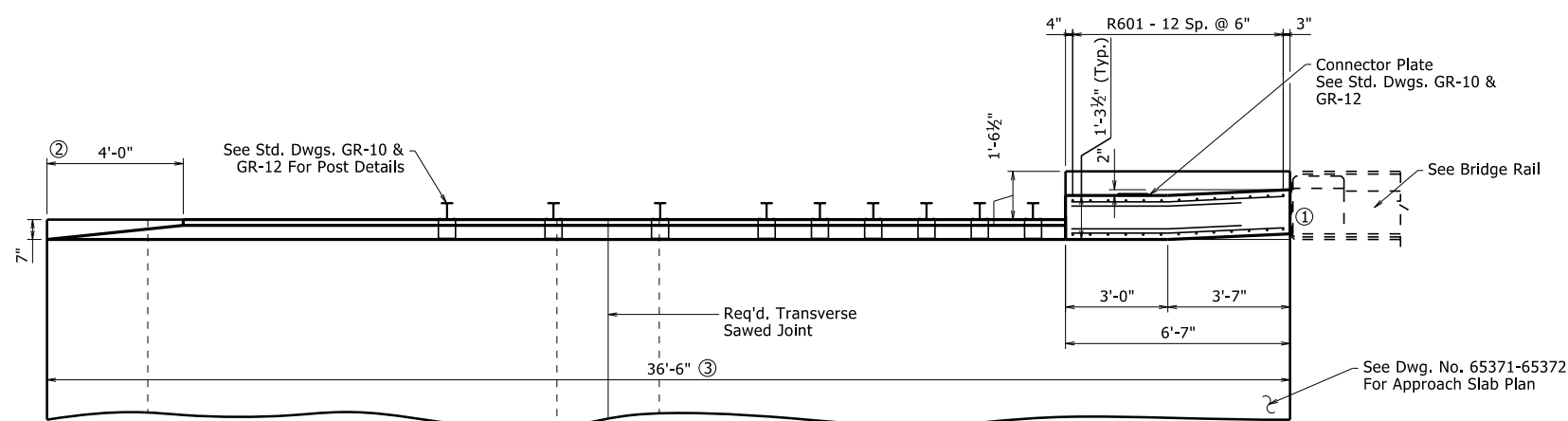
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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090549	55	72
				07589		APPROACH SLAB		65373

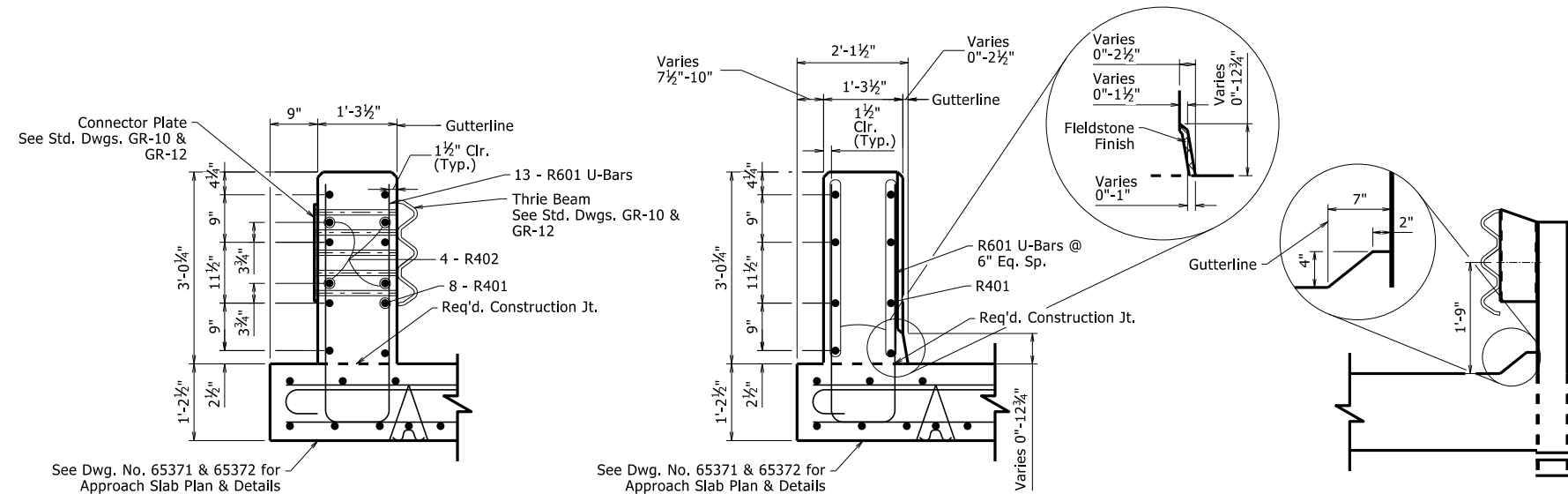


ELEVATION
Scale: 3/8" = 1'-0"

- Construct gutter curb full height (no height transition) if drop inlet is placed at end of gutter. Curb height transition placed on drop inlet.
- Aesthetics shall be applied to the railing as shown in the plans and as specified in SP Job No. 090549 "Architectural Finish" and SP Job No. 090549 "Staining Concrete Surfaces". Payment for this work shall be included in the superstructure quantities for Architectural Finish and Staining Concrete Surfaces.
- 1/2" Preformed Joint (AASHTO M 153 Type 1) per Subsection 501.02 (h)(1) and 1/2" x 1" Poured Jt. Sealer (Type 3 or 4) per Subsection 501.02(h)(2).
 - Construct gutter curb with height transition as shown if drop inlet is not placed at end of gutter.
 - Adjust gutter length as necessary to avoid outlet pipe interference with guardrail post if drop inlet is placed at end of gutter.



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

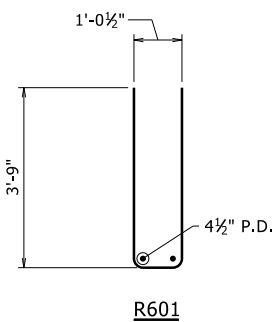
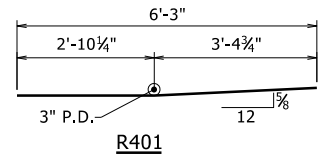
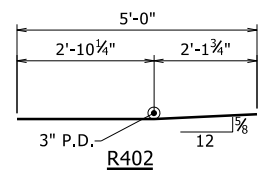


BAR LIST
BRIDGE RAIL TERMINATOR
STAGE 1

Mark	No. Req'd.	Length	P.D.
R401	8	6'-3"	3"
R402	4	5'-0"	STR.
R601	13	8'-3"	4 1/2"

BRIDGE RAIL TERMINATOR
STAGE 2

Mark	No. Req'd.	Length	P.D.
R401	8	6'-3"	3"
R402	4	5'-0"	STR.
R601	13	8'-3"	4 1/2"



Note: Bar dimensions are out-to-out.



SHEET 3 OF 3
DETAILS FOR TYPE SPECIAL APPROACH SLAB

ROUTE 187 SEC. 0
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: FAN, MJB
CHECKED BY: ESC
DESIGNED BY: WKB
BRIDGE NO. 07589

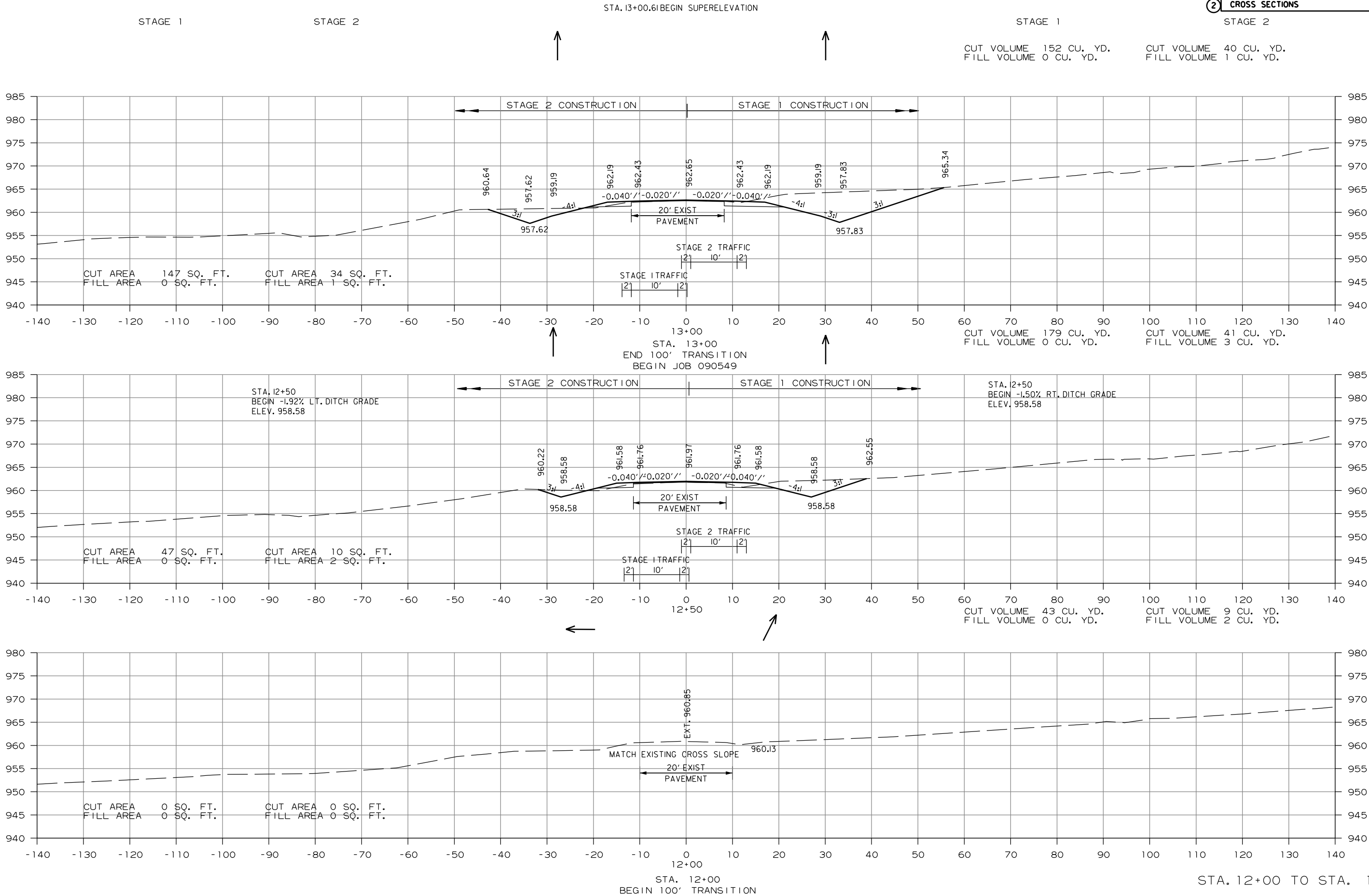
DATE: JUNE 2022
DATE: JUNE 2022
DATE: JUNE 2022

FILENAME: b090549_g3.dgn
SCALE: AS SHOWN

DRAWING NO. 65373

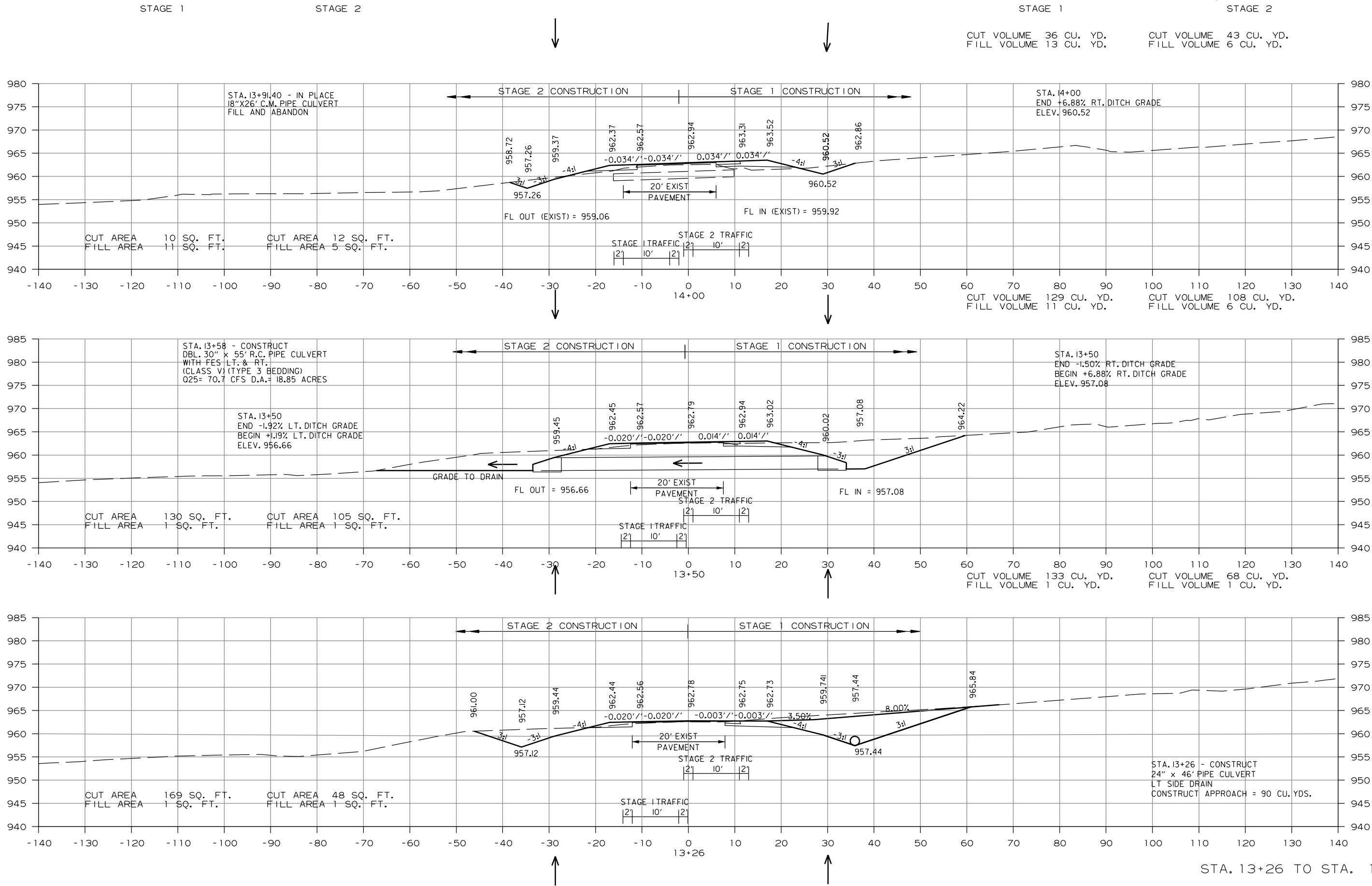
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				JOB NO.		090549	56	72

2 CROSS SECTIONS



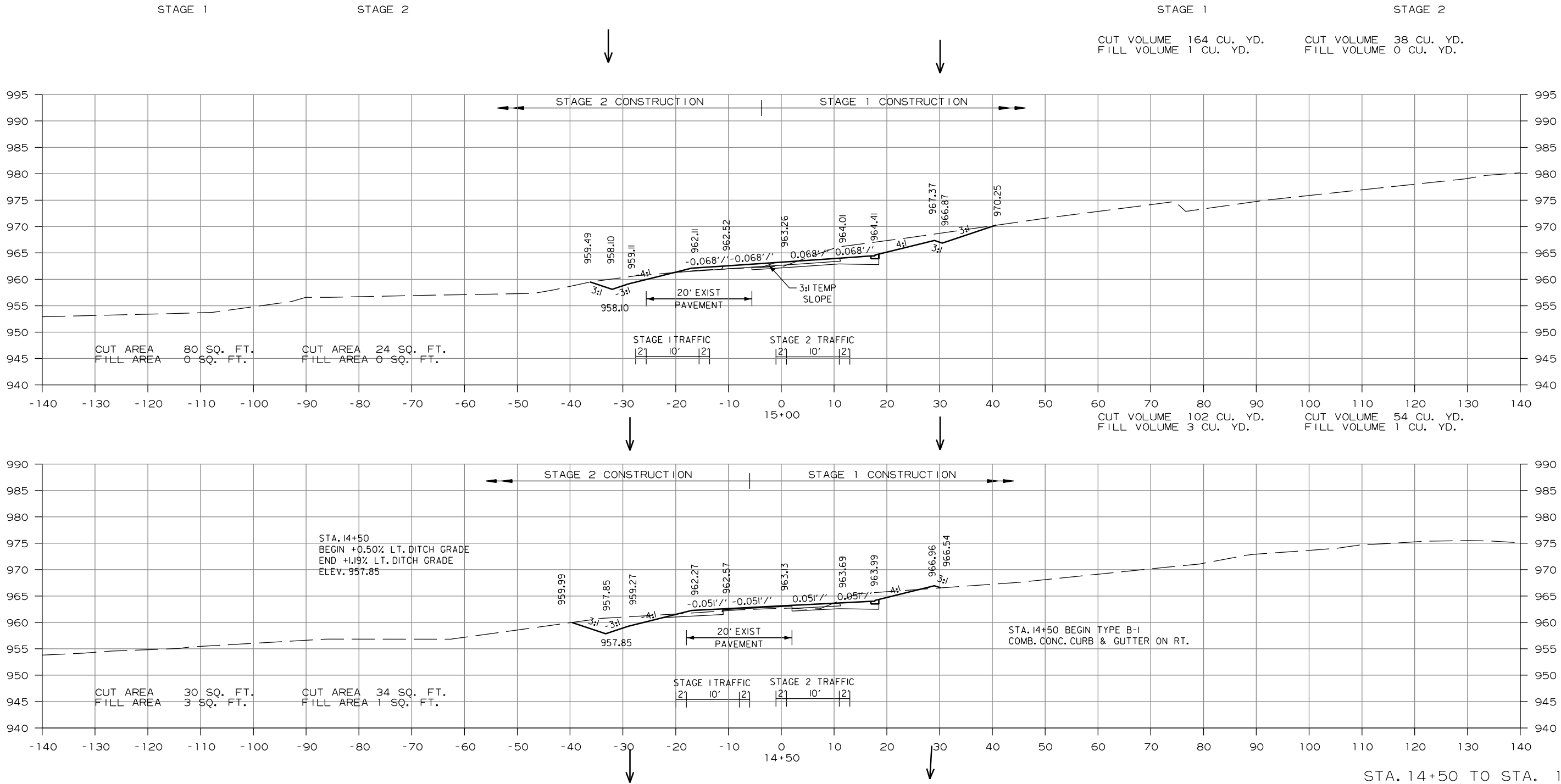
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				6	ARK.			
				JOB NO.		090549	57	72

2 CROSS SECTIONS



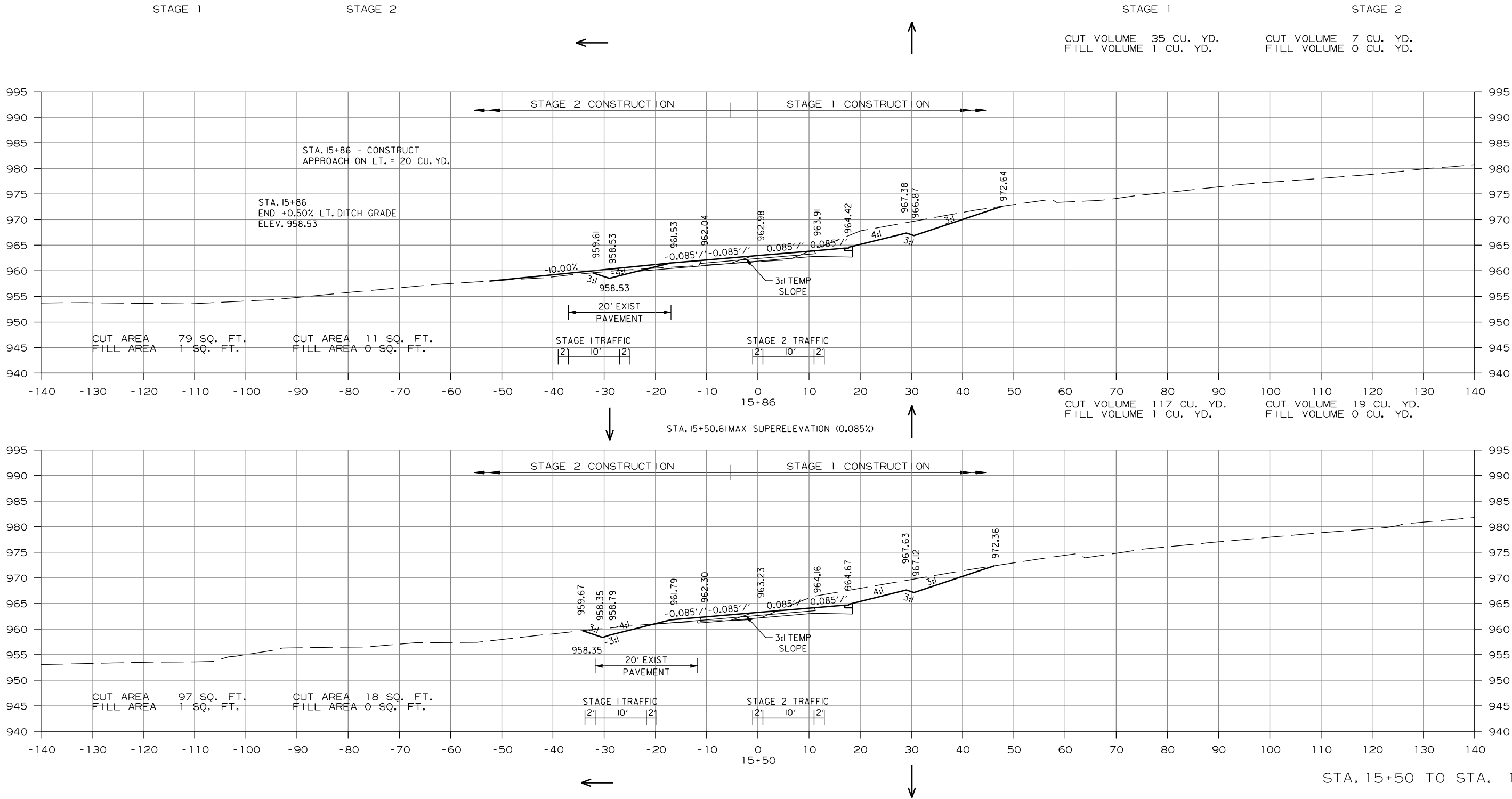
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				JOB NO.		090549	58	72

2 CROSS SECTIONS



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.		090549	59	72

2 CROSS SECTIONS



STAGE 1

STAGE 2

STAGE 1

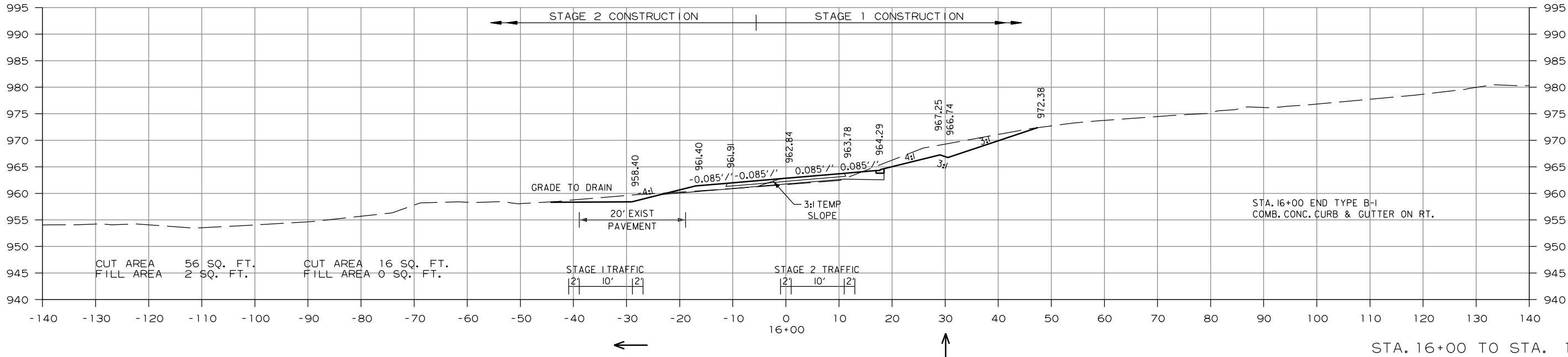
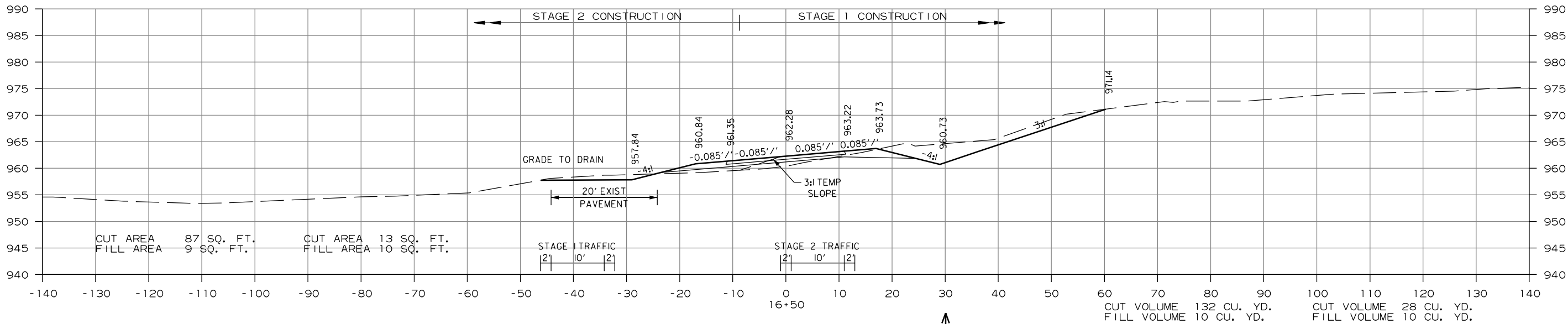
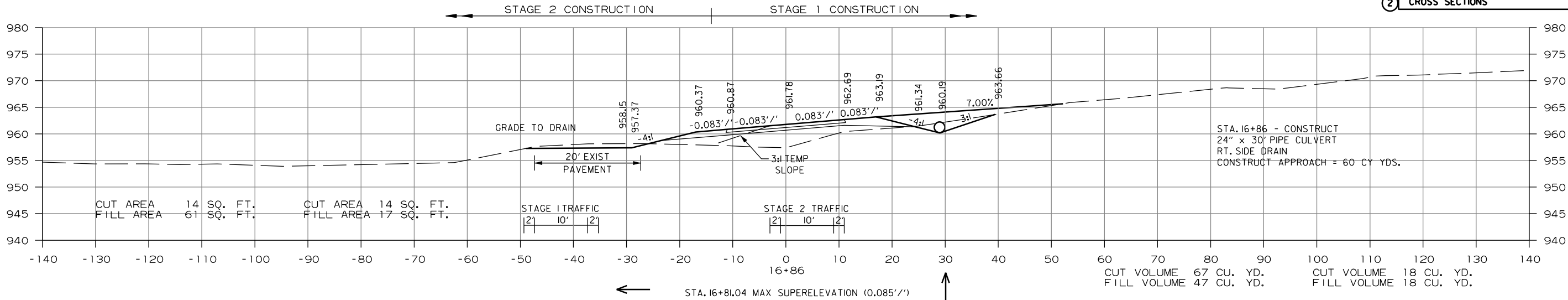
STAGE 2

CUT VOLUME 6 CU. YD.
FILL VOLUME 38 CU. YD.

CUT VOLUME 7 CU. YD.
FILL VOLUME 10 CU. YD.

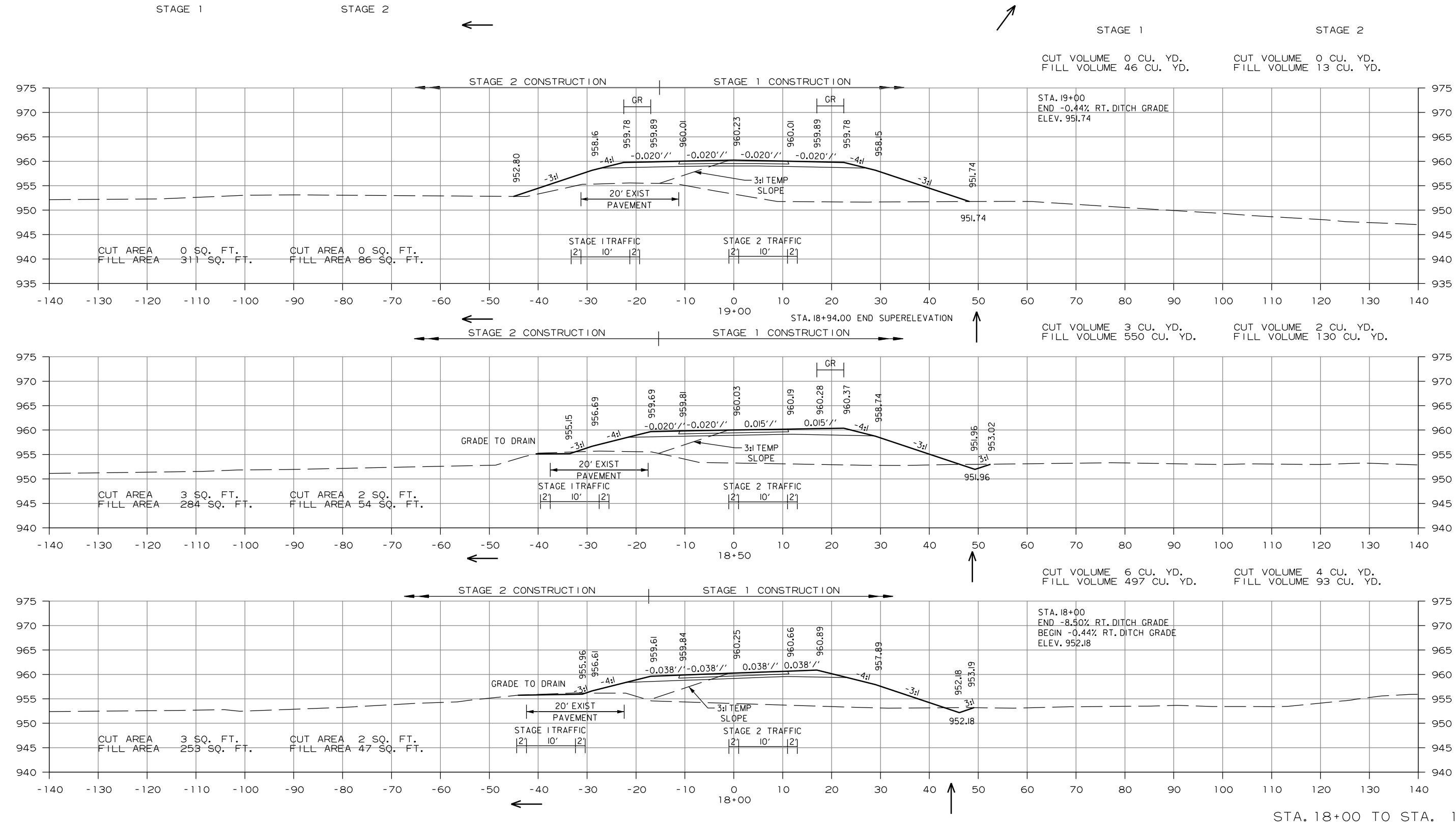
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JOB NO.						090549	60	72

2 CROSS SECTIONS



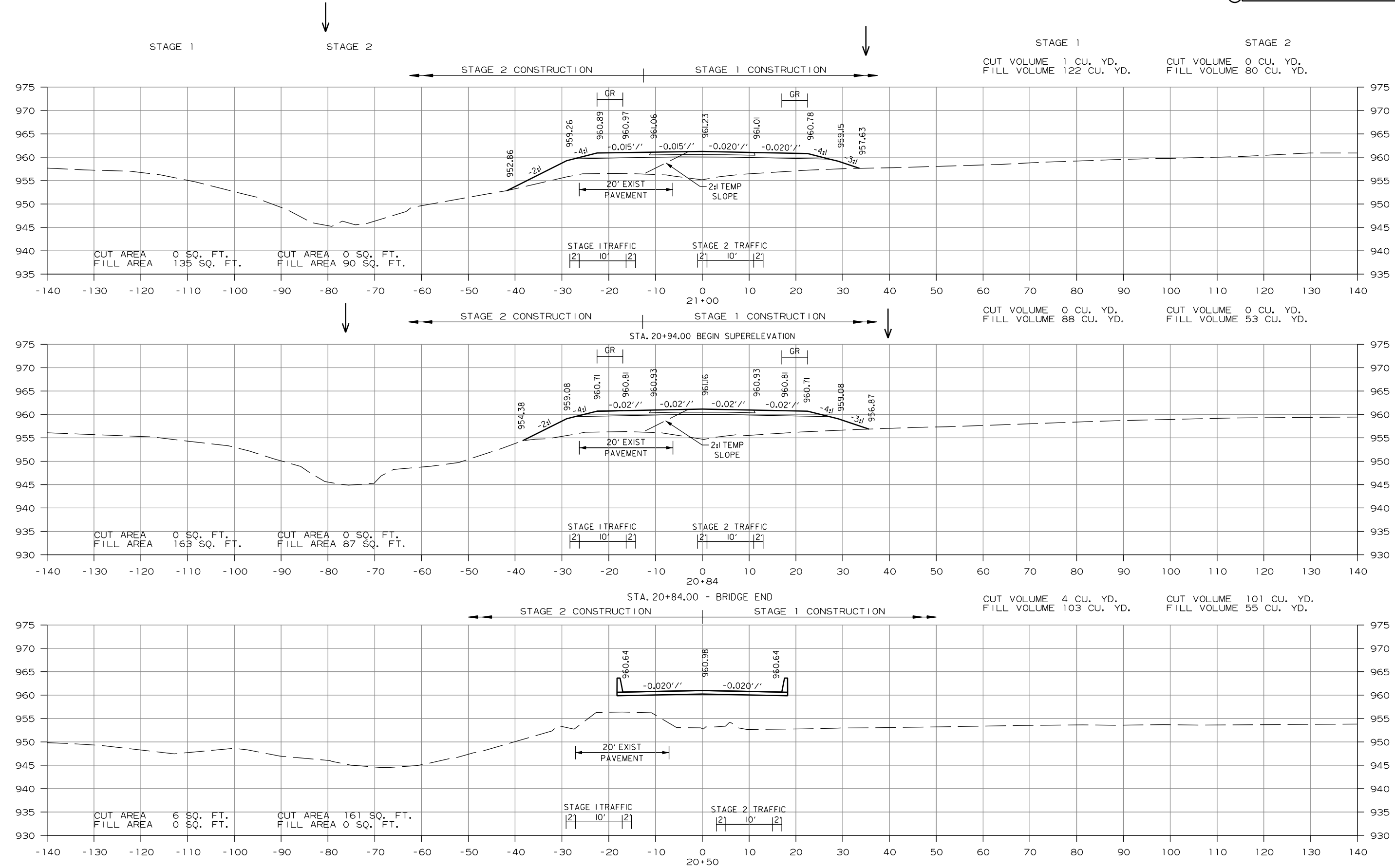
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2 CROSS SECTIONS



DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
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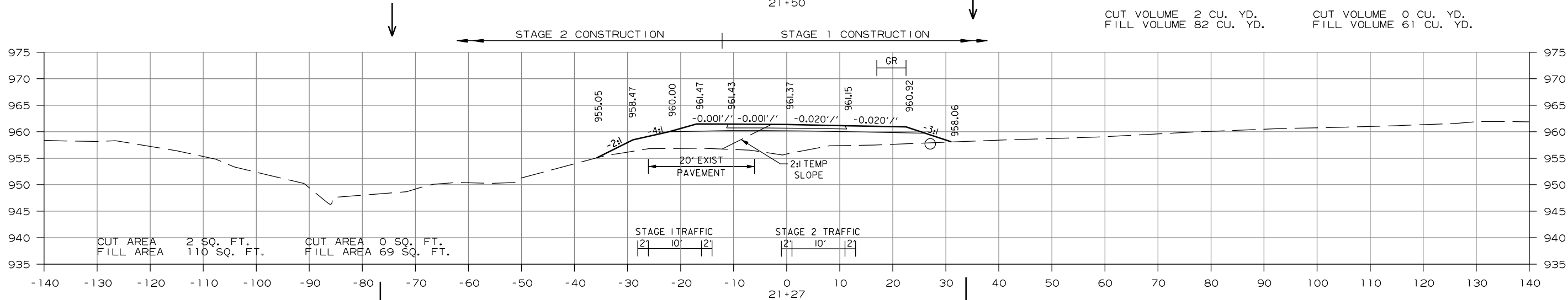
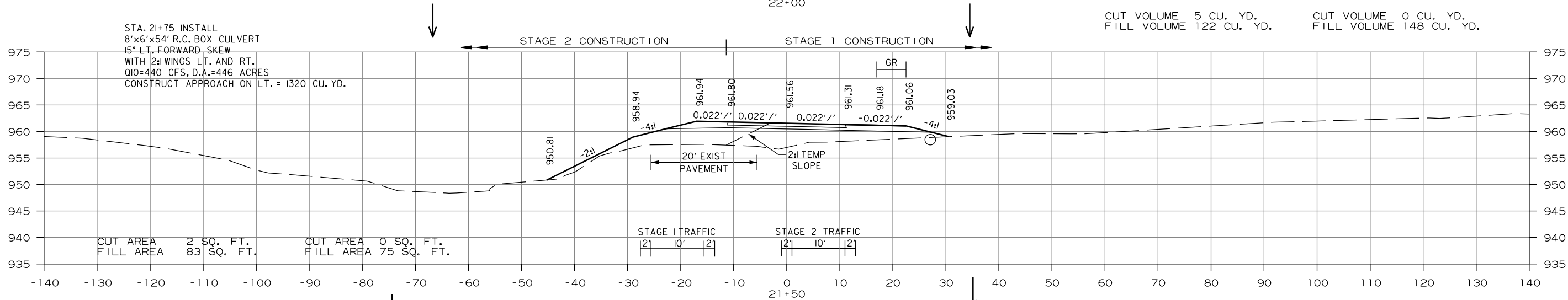
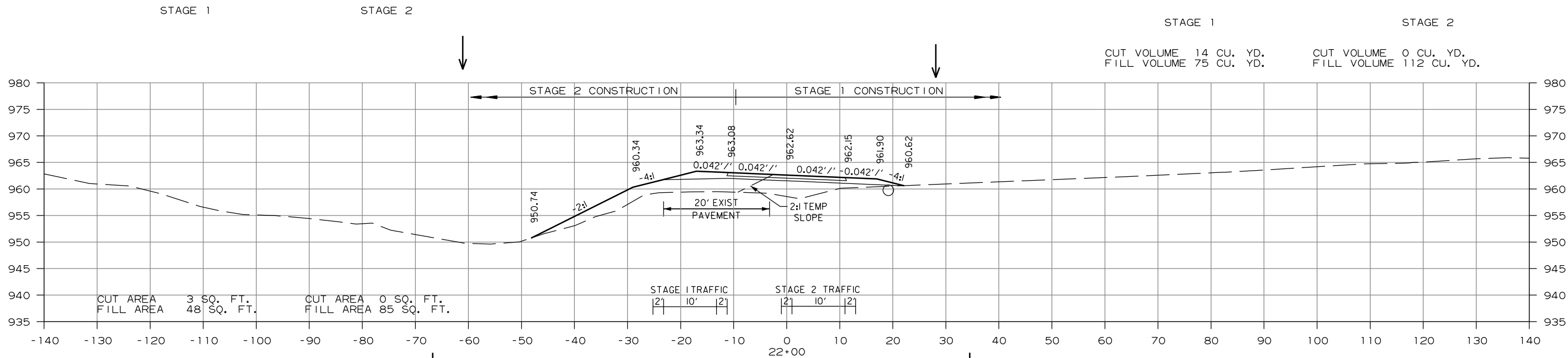
2 CROSS SECTIONS



STA. 20+50 TO STA. 21+00

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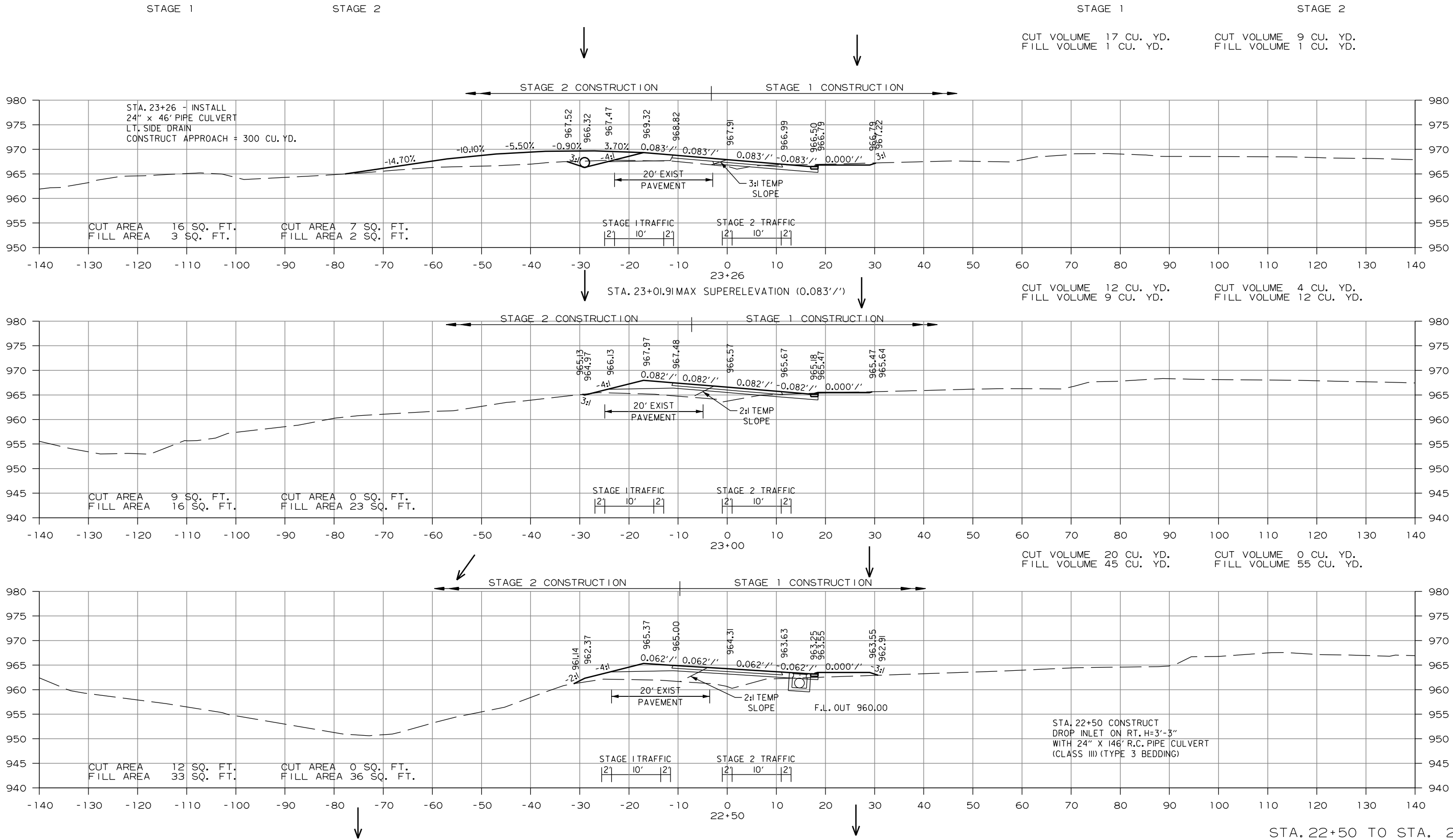
2 CROSS SECTIONS



STA. 21+27 TO STA. 22+00

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
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				JOB NO.		090549	66	72

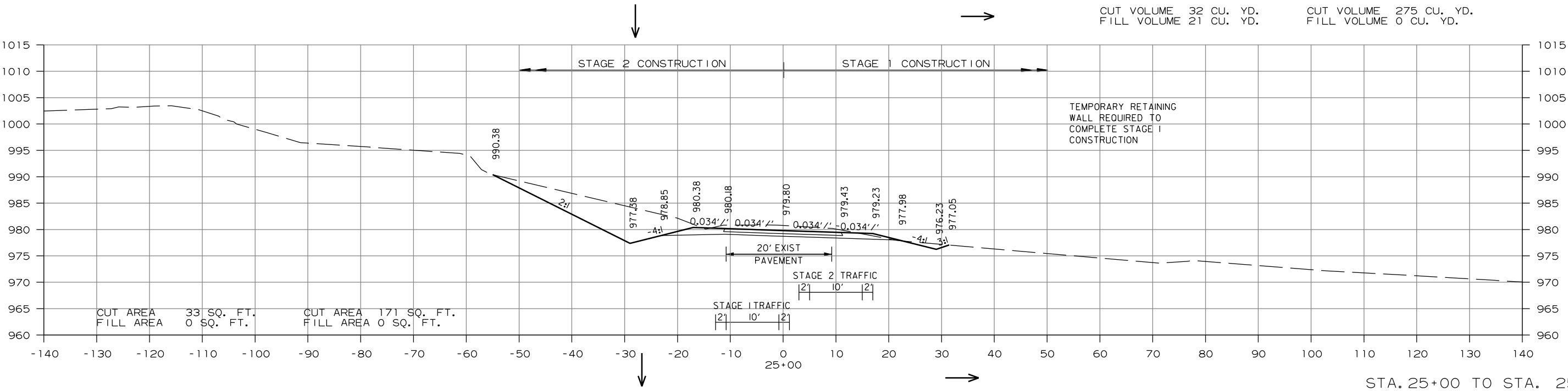
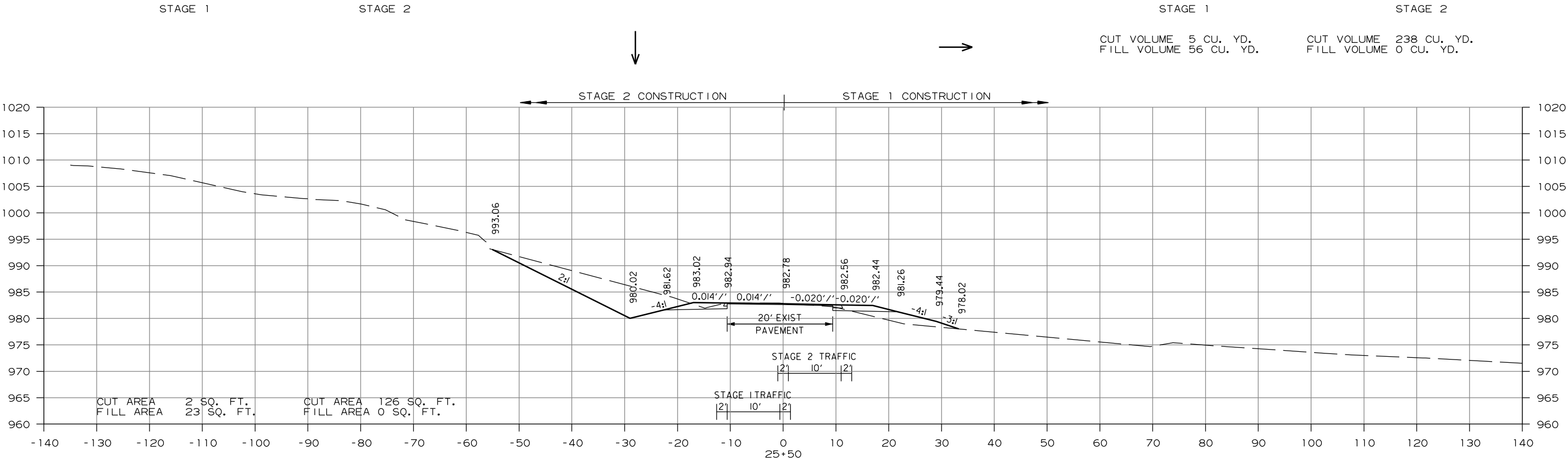
2 CROSS SECTIONS



STA. 22+50 TO STA. 23+26

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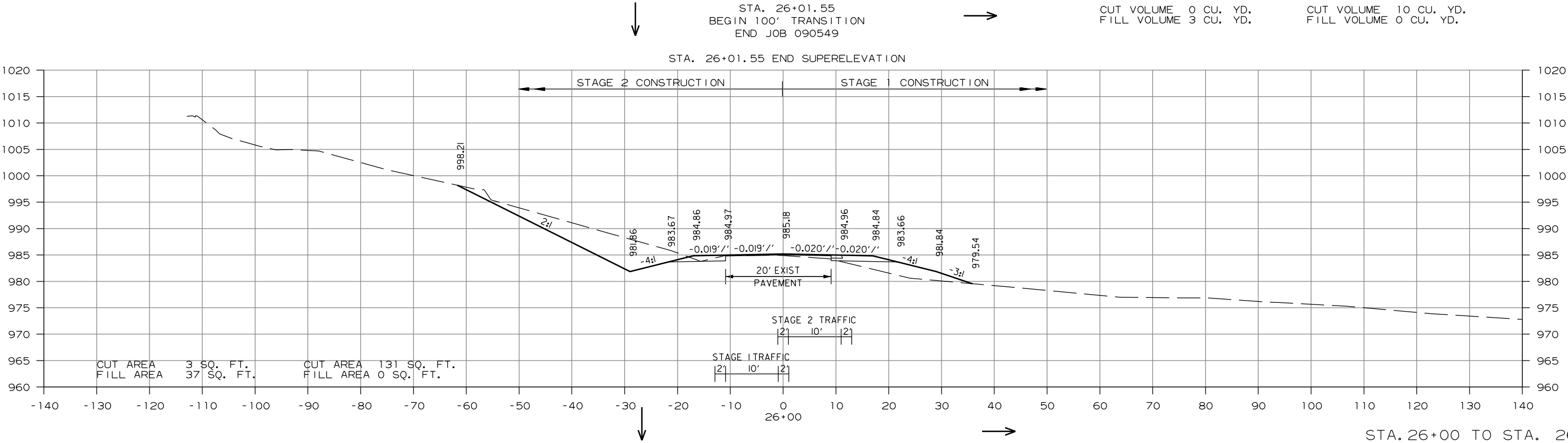
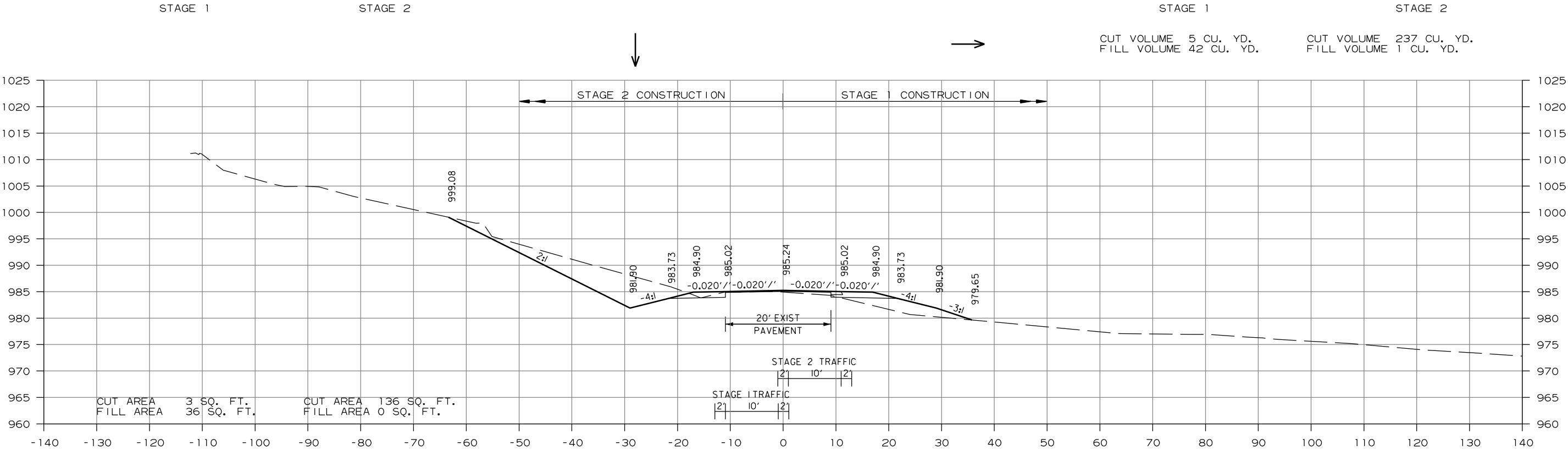
2 CROSS SECTIONS



STA. 25+00 TO STA. 25+50

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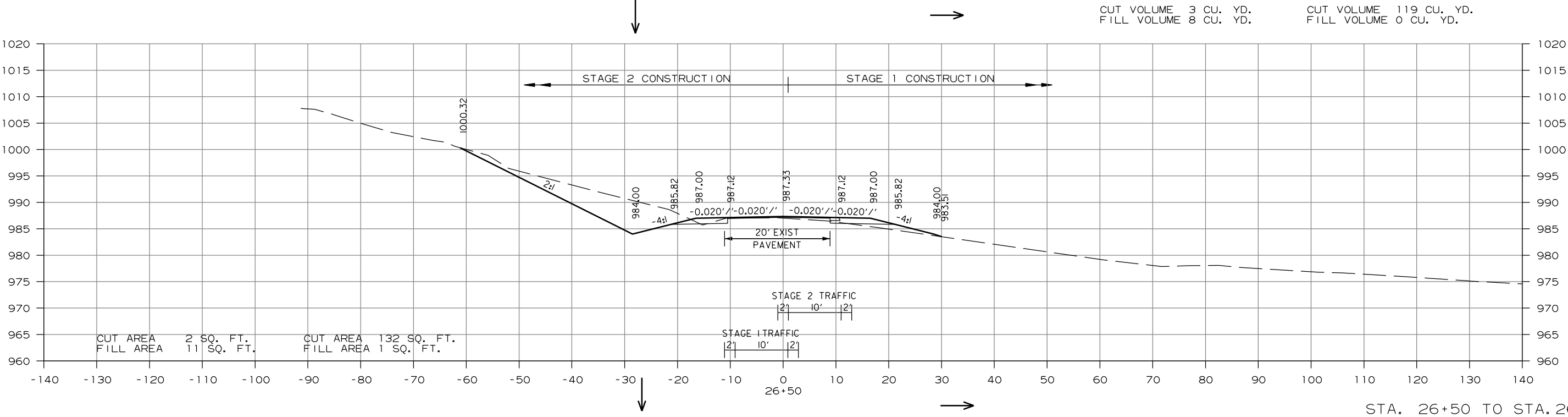
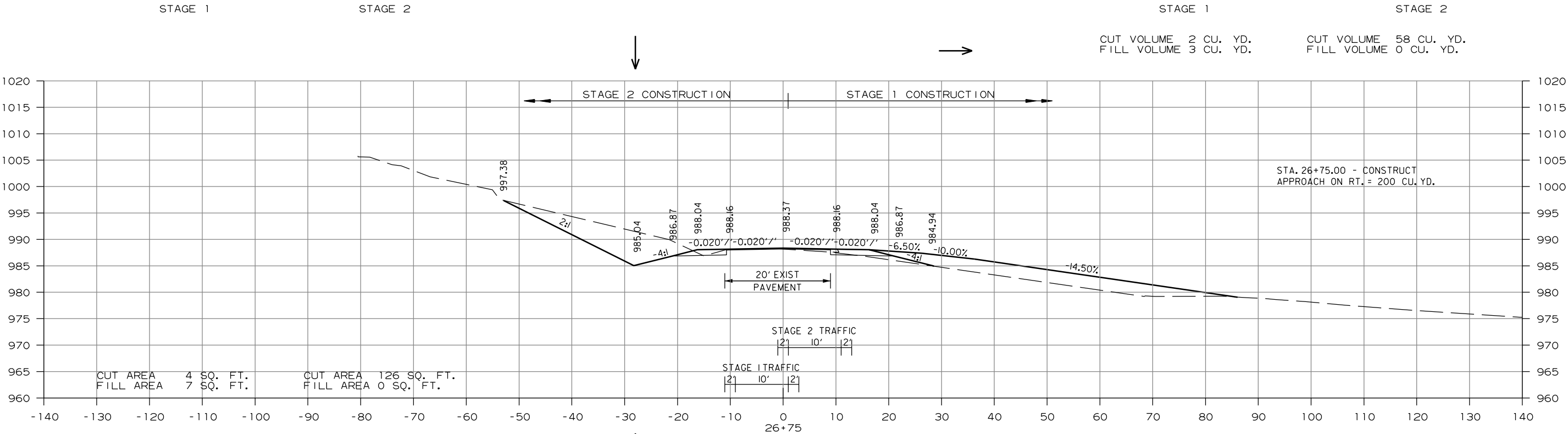
2 CROSS SECTIONS



STA. 26+00 TO STA. 26+02

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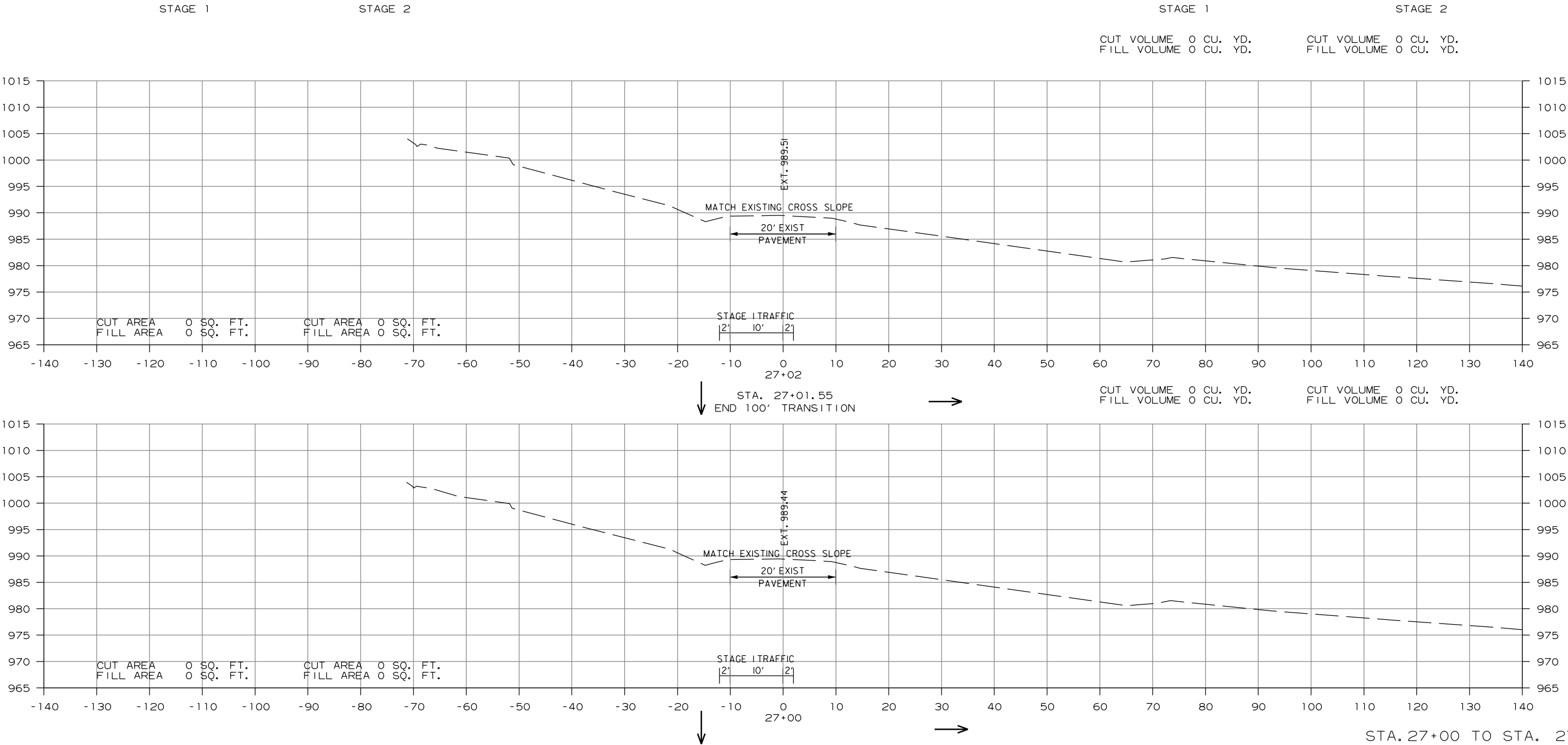
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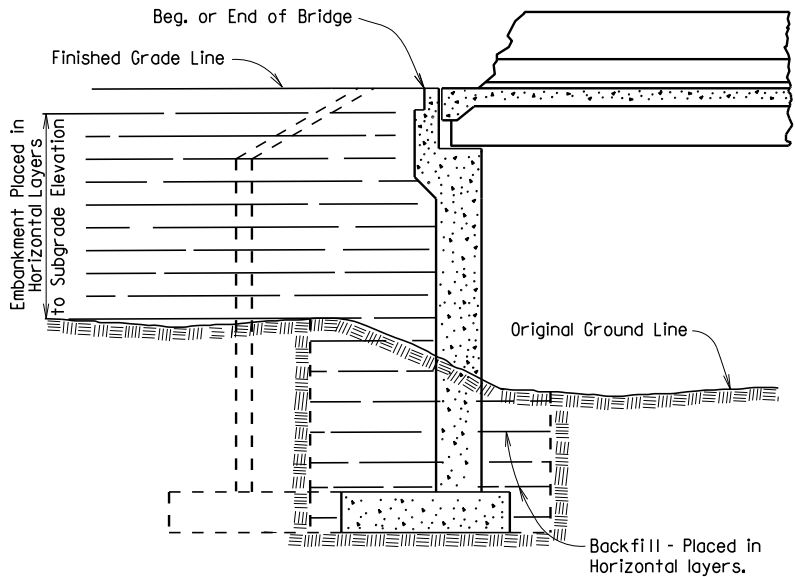
STA. 26+50 TO STA. 26+75

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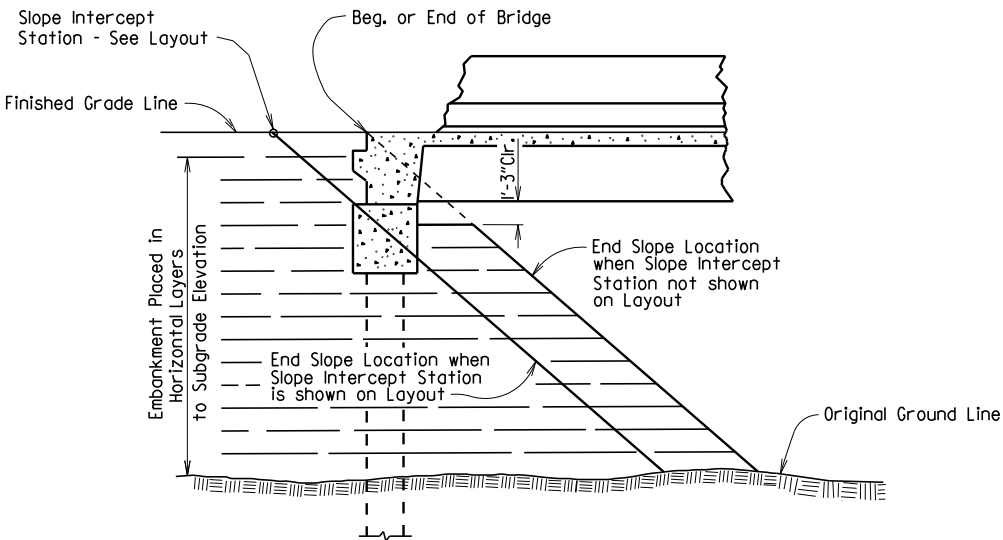
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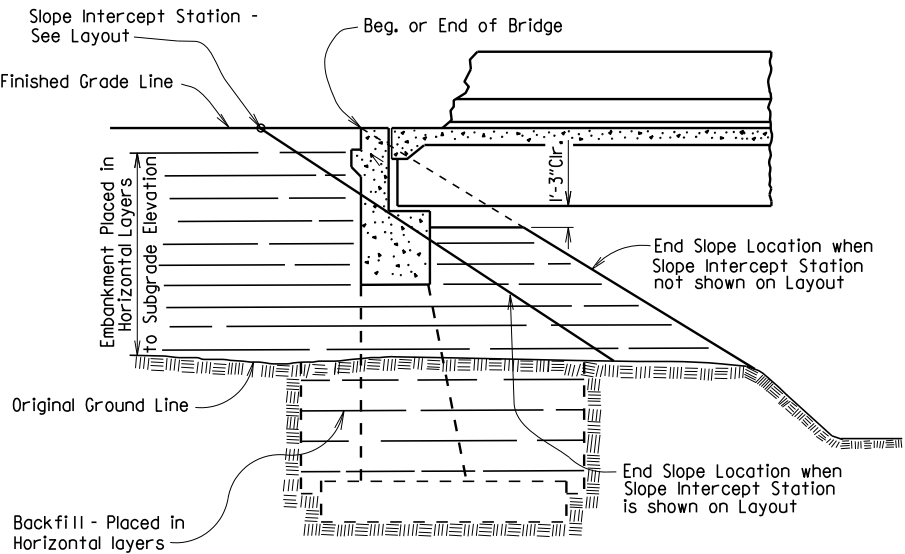
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				JOB NO.				
				1 EMBANKMENT & BACKFILL 55000				



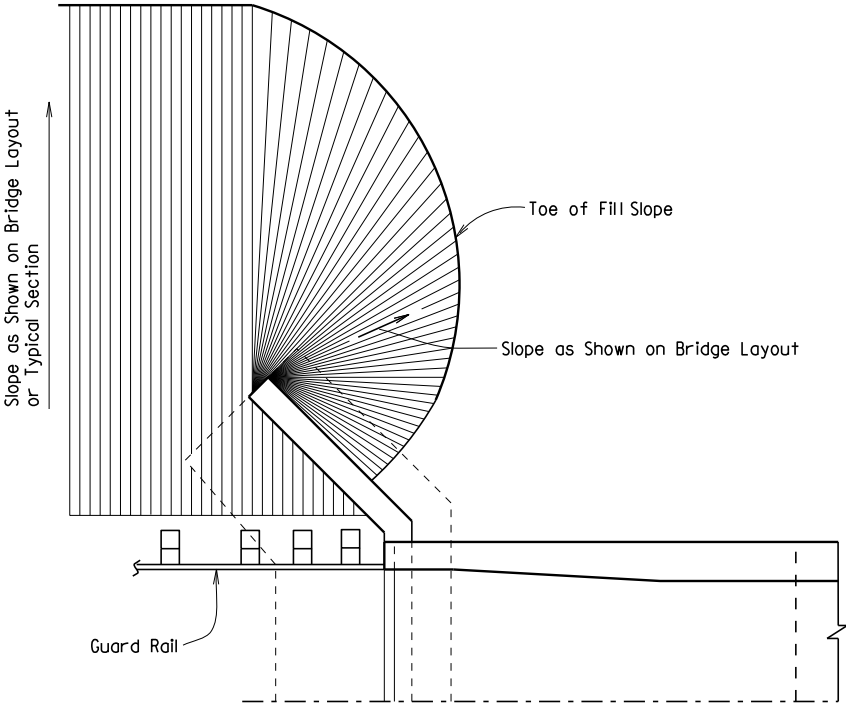
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL
AT VERTICAL WALL ABUTMENTS



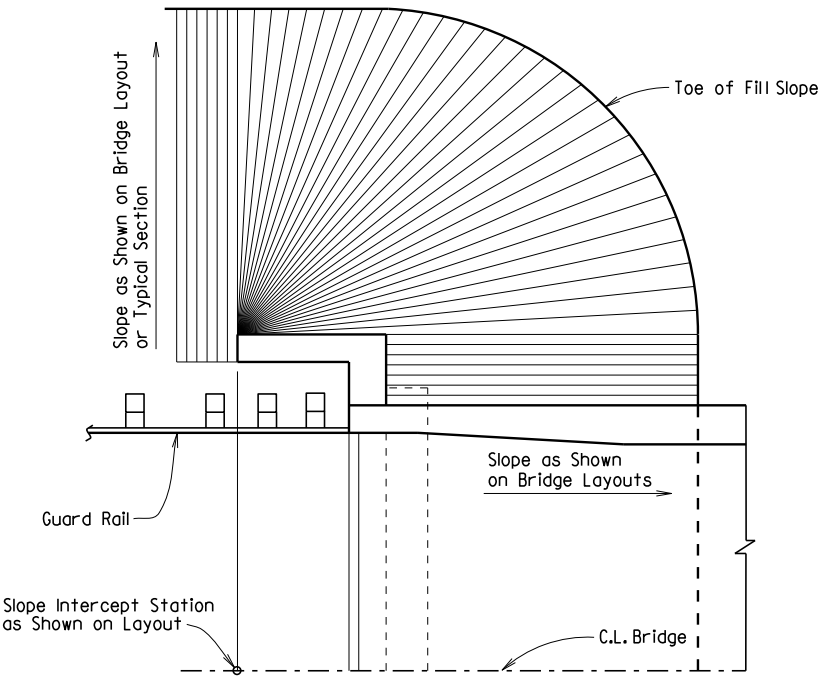
EMBANKMENT CONSTRUCTION AT SPILL-THROUGH
PILE END BENTS



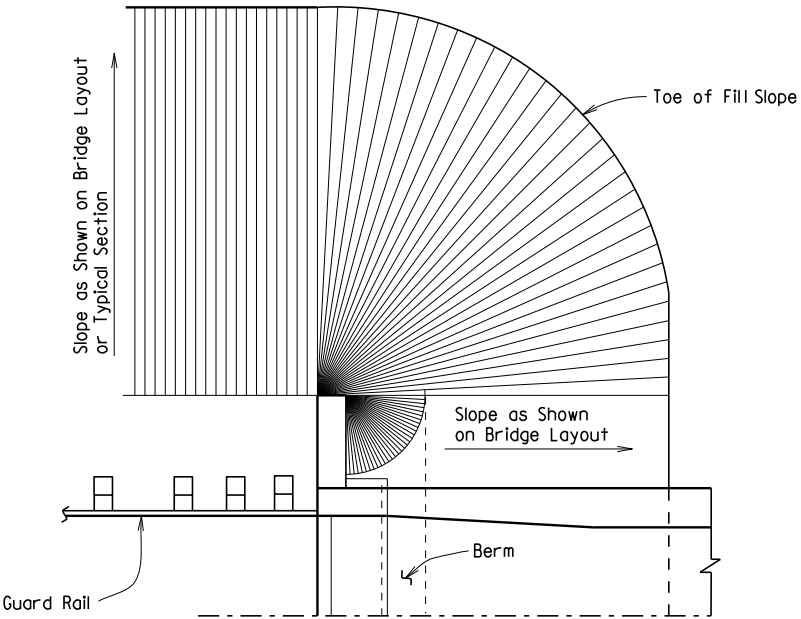
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL
AT SPILL-THROUGH END BENTS



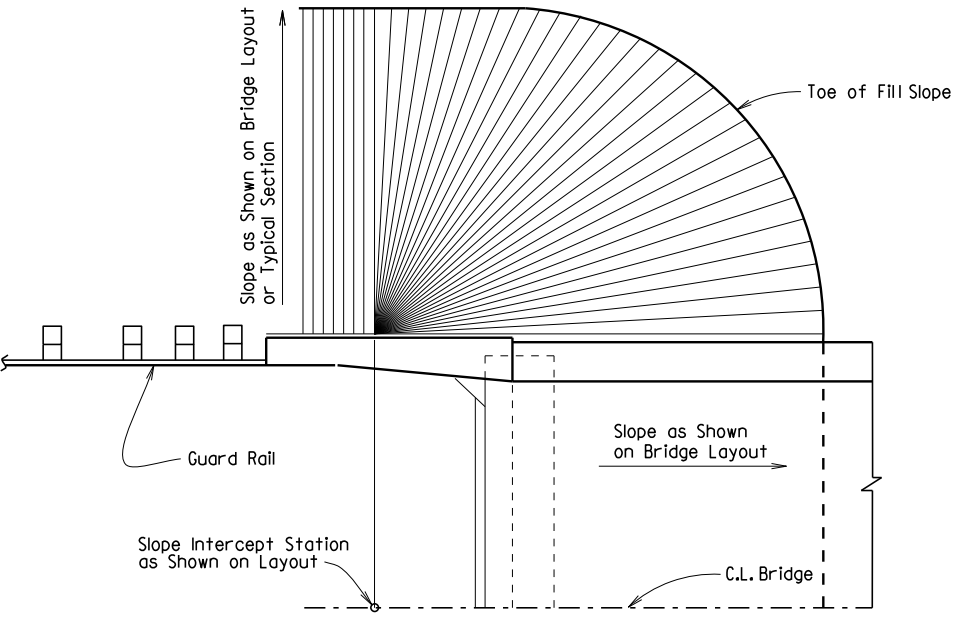
VERTICAL WALL ABUTMENTS



SPILL-THROUGH END BENTS WITH TURNBACK WING



SPILL-THROUGH END BENTS WITH STUB WING



SPILL-THROUGH END BENTS WITH TRANSITION WING

METHOD OF DETERMINING FILL SLOPE LOCATION AT BRIDGE ENDS

GENERAL NOTES

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

STANDARD DETAILS FOR EMBANKMENT CONSTRUCTION AND BACKFILL AT BRIDGE ENDS

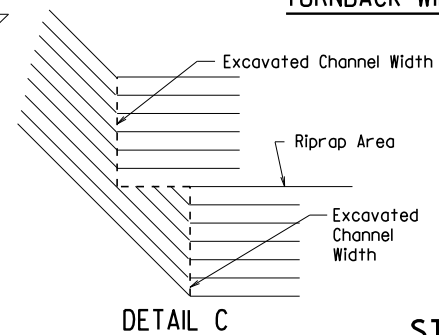
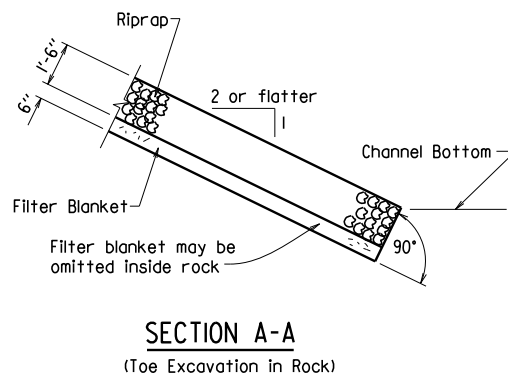
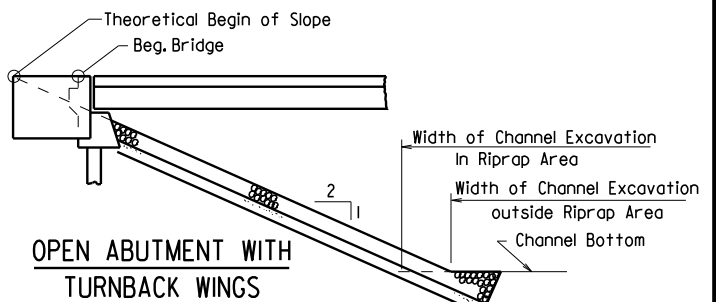
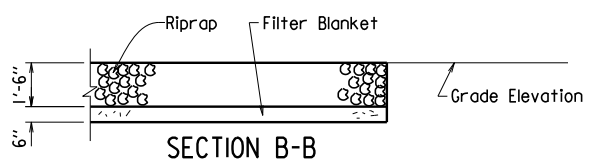
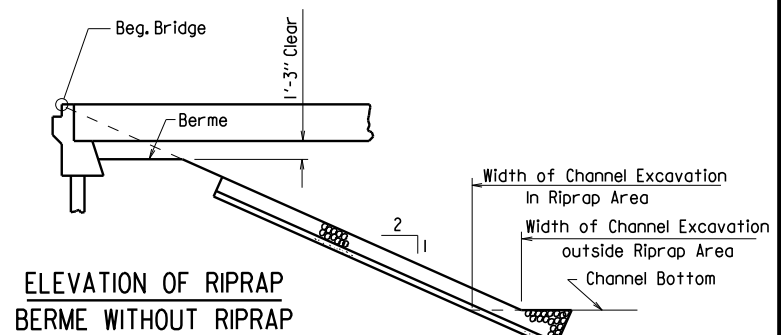
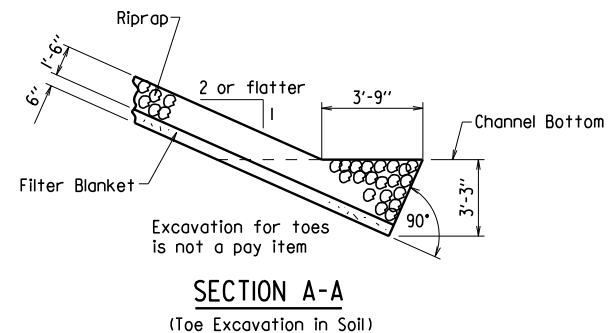
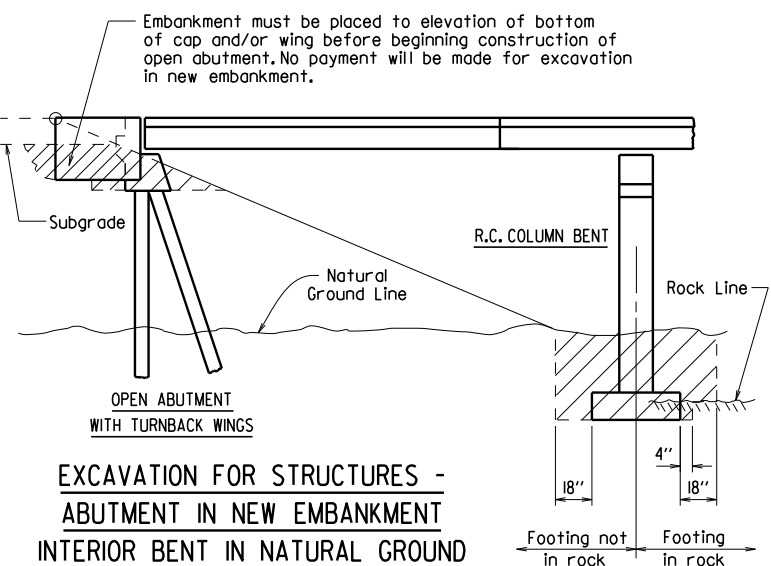
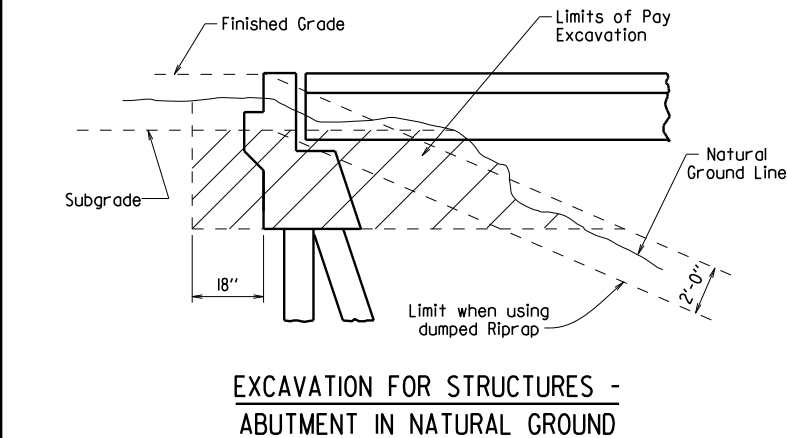
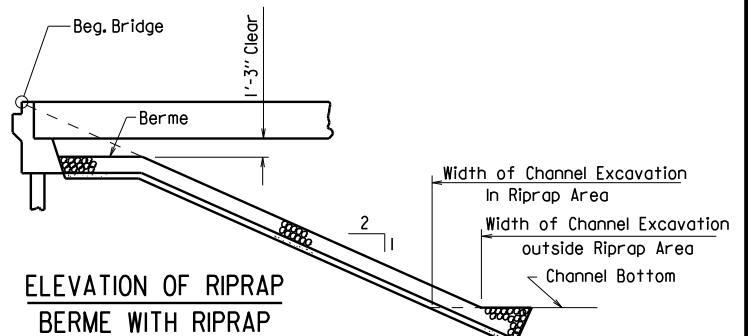
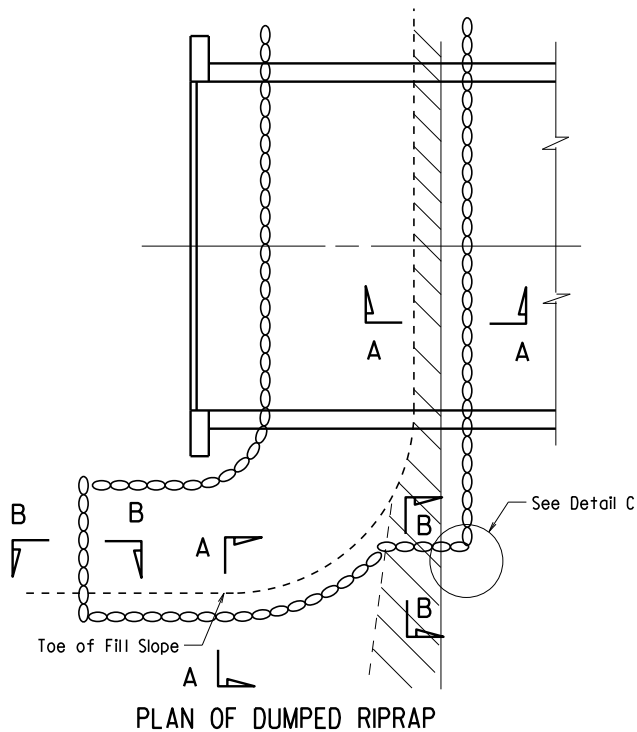
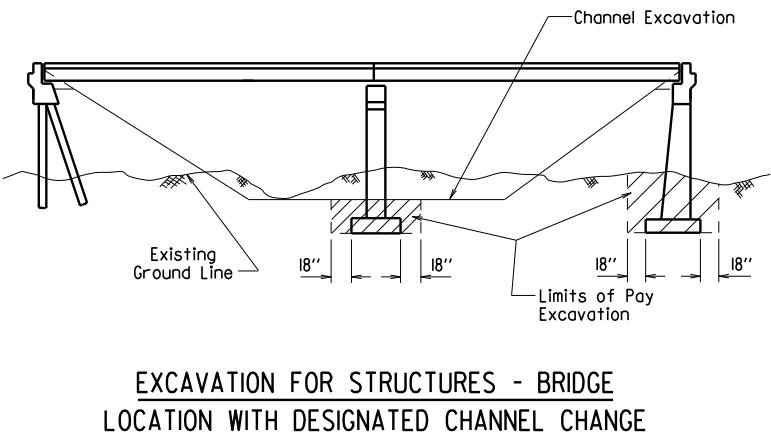
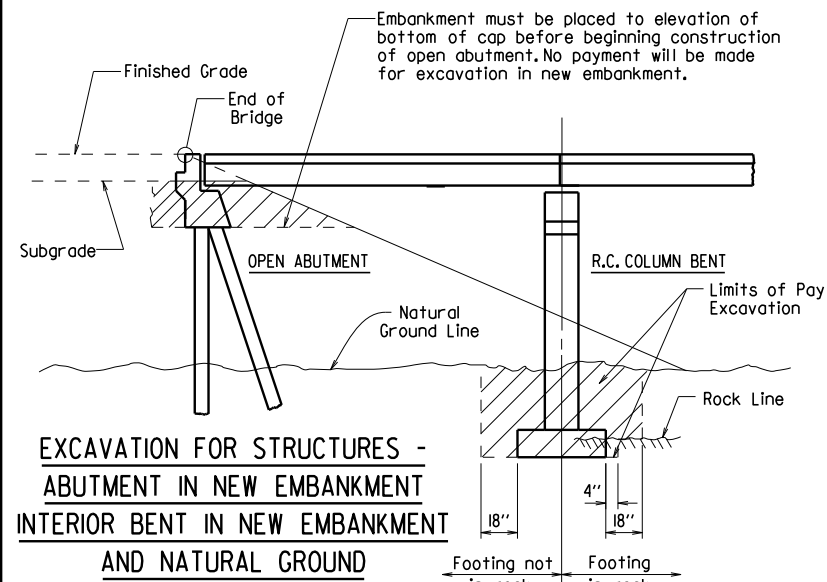
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

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

DRAWING NO. 55000

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



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

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

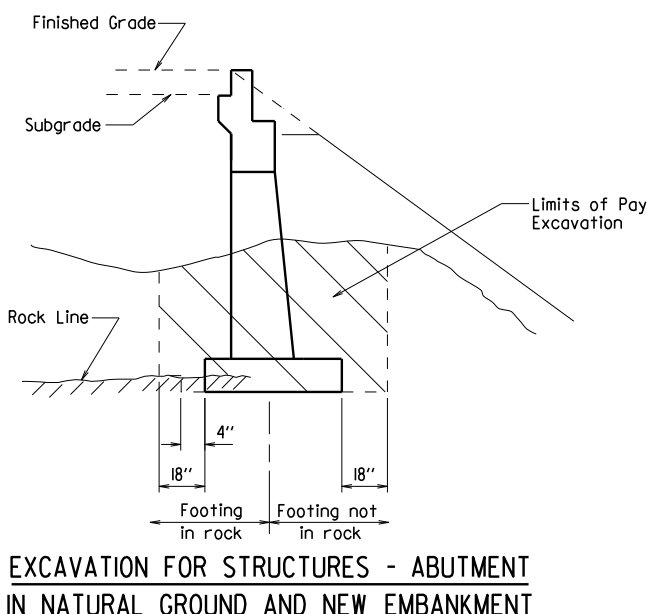
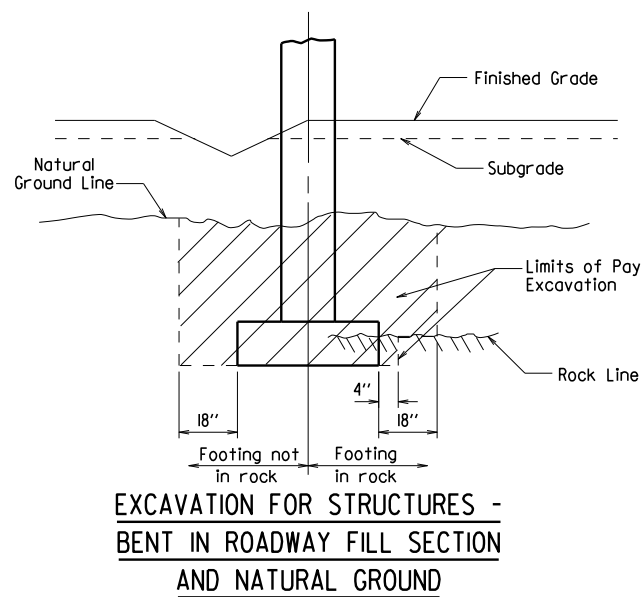
Note: Details for computing excavation for structures are included for information as to how plan quantities were calculated and for use when adjusting quantities when changing footing elevation.

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

LITTLE ROCK, ARK.

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

DRAWING NO. 5500I



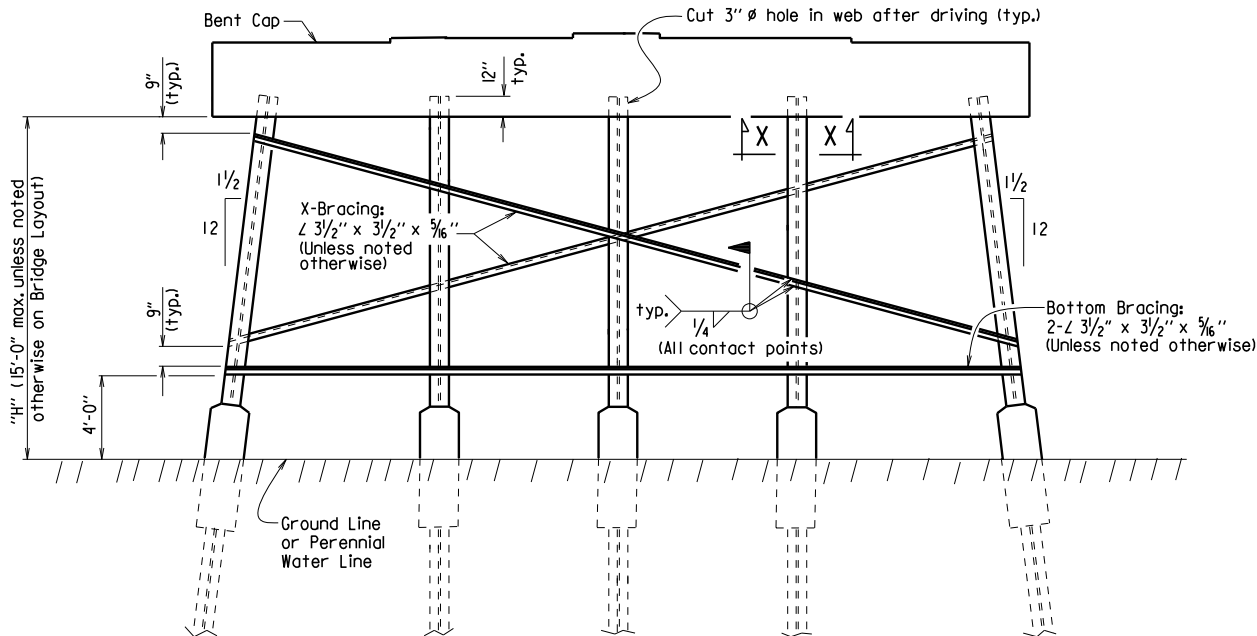
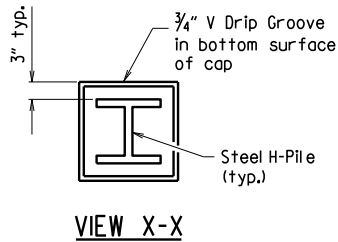
GENERAL NOTES FOR STEEL H-PILES:

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

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

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

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



Notes:

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

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

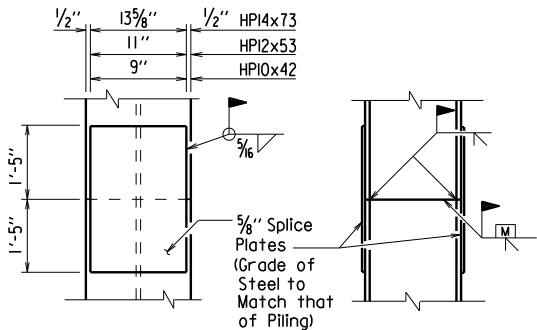
Omit X-Bracing and Bottom Bracing when "H" is 5 feet or less.

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

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

TYPICAL DETAILS OF H-PILE TRESTLE INTERMEDIATE BENT

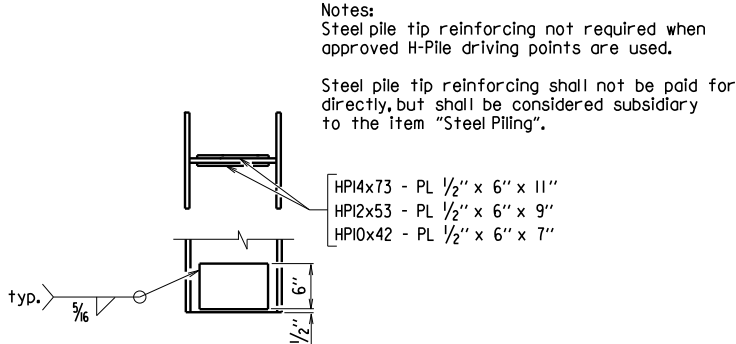
(Shown with Partial Height Encasement)



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

TYPICAL SPLICE DETAILS

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



REINFORCING DETAIL FOR STEEL H-PILE TIP

GENERAL NOTES FOR H-PILE ENCASEMENTS:

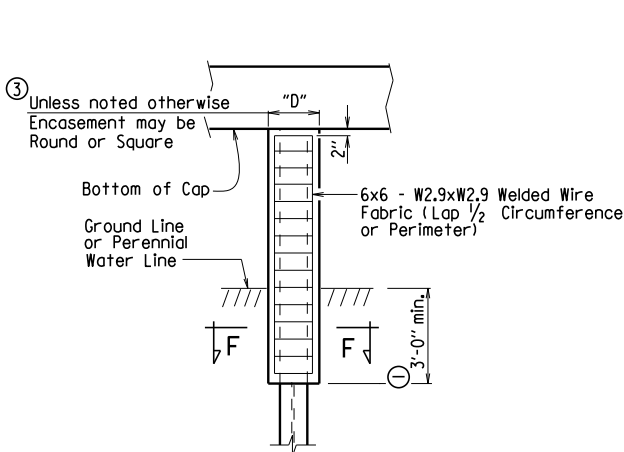
See Bridge Layout for additional notes, any pile encasement restrictions and required location of pile encasements.

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

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

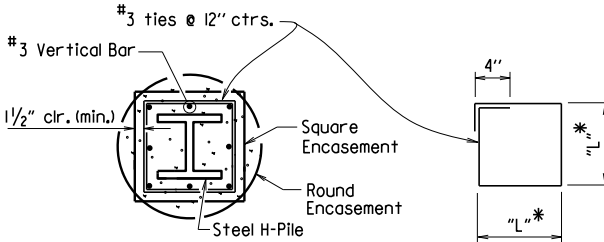
Welded Wire Fabric shall conform to AASHTO M 55 or M 221. Galvanized Corrugated Steel Pipe shall conform to AASHTO M 36 and M 218.

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



PILE ENCASEMENT DETAIL FOR STEEL H-PILES

(Shown with Encasement to Bottom of Cap)

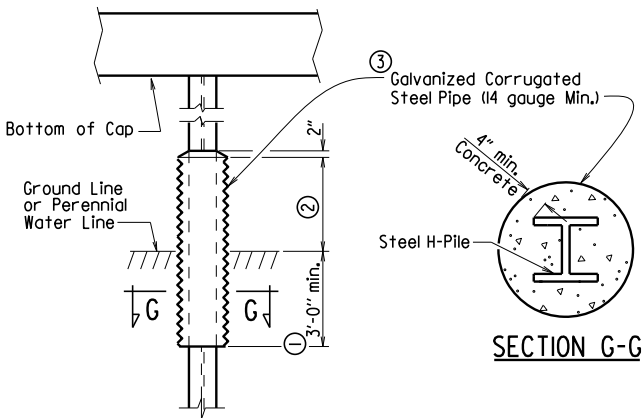


SECTION F-F

* Measured out-to-out of bar.

TABLE OF VARIABLES FOR PILE ENCASEMENT

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

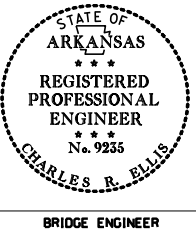


ALTERNATE PILE ENCASEMENT DETAIL FOR STEEL H-PILES

(Shown with Partial Height Encasement)

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

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



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

STANDARD DETAILS FOR STEEL H-PILES AND PILE ENCASEMENTS

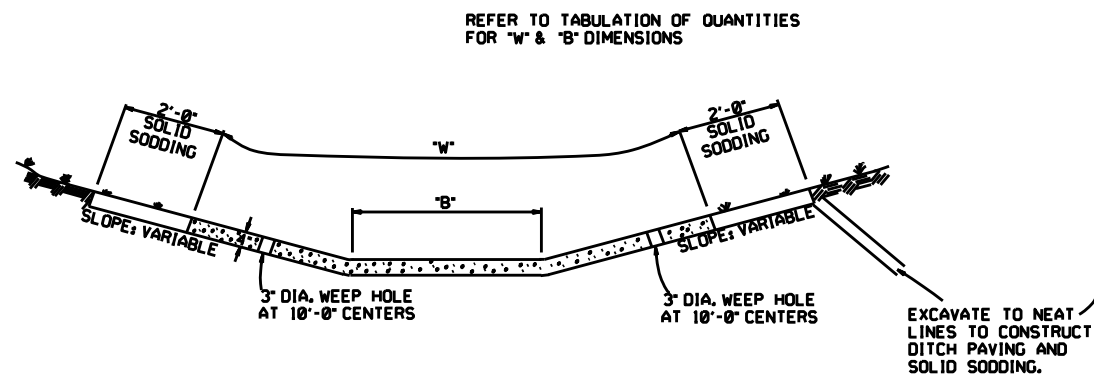
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

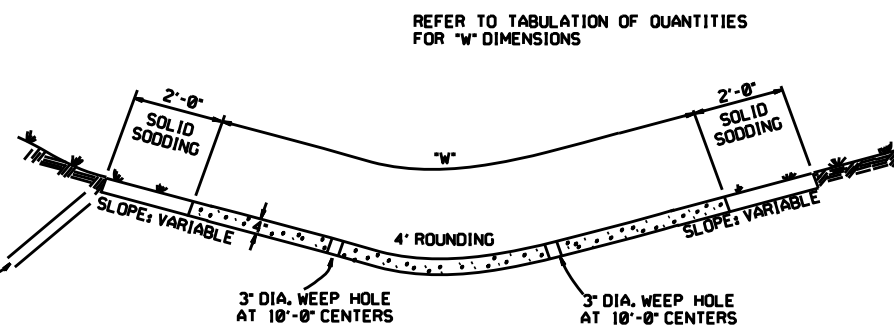
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CHECKED BY: B.E.F. DATE: 2/27/2014 SCALE: NO SCALE
DESIGNED BY: STD. DATE: —

DRAWING NO. 55020

BRIDGE ENGINEER

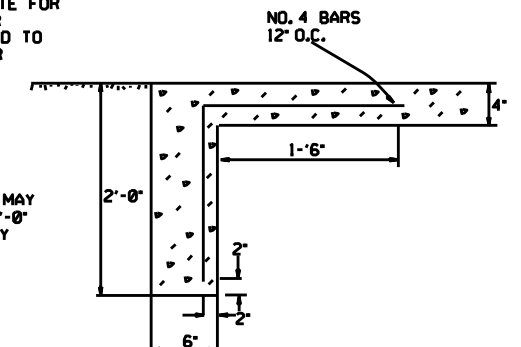


TYPE A

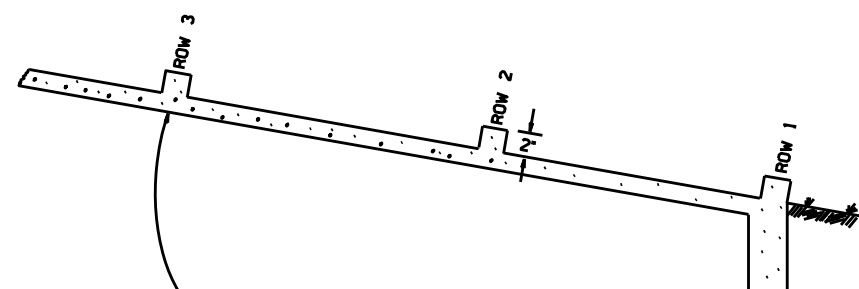


TYPE B

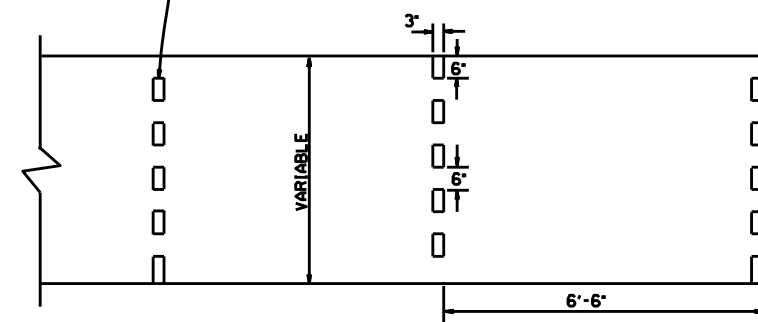
THE STEEL AND ADDITIONAL CONCRETE FOR THE WALLS SHALL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID FOR "CONCRETE DITCH PAVING."



TOE WALL DETAIL FOR CONCRETE DITCH PAVING



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



ENERGY DISSIPATORS
(NO SCALE)

GENERAL NOTES:

THE FULL WIDTH OF EACH SECTION SHALL BE POURED MONOLITHICALLY.

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

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

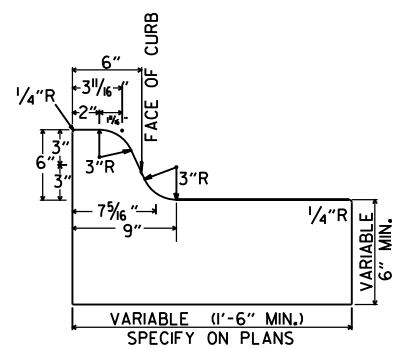
1' WIDE TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE DITCH PAVING AT 45' INTERVALS. THE SPACE SHALL BE FILLED WITH APPROVED JOINT FILLER COMPLYING WITH AASHTO M213.

12-8-16	CORRECTED ENERGY DISSIPATOR DRAWING AND NOTE	
11-17-10	ADDED GENERAL NOTE	
6-2-94	ADDED GENERAL NOTE ABOUT SOLID SODDING	
11-30-8	ELIMINATED MIN. ROWS OF ELEMENTS	111-30-89
7-15-88	REVISED DISSIPATOR NOTE	653-7-15-88
4-3-87	REVISED ENERGY DISSIPATOR	671-4-3-87
1-3-87	MODIFIED NOTE ON ENERGY DISS.	532-1-3-87
11-3-86	ADDED NOTE TO ENERGY DISS.	586-12-1-86
11-1-84	ENERGY DISSIPATOR DETAILS	508-11-1-84
	ADDED	
11-1-84	EXCAVATION DETAILS ADDED	
	TYPED A & B	
10-2-72	REVISED AND REDRAWN	508-10-2-72
	DATE	REVISION
		DATE FILM'D

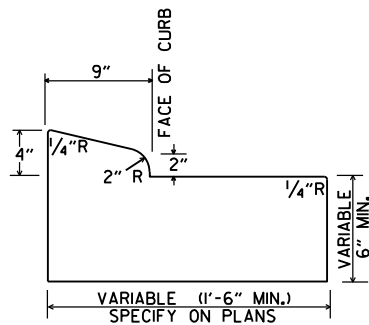
ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE DITCH PAVING

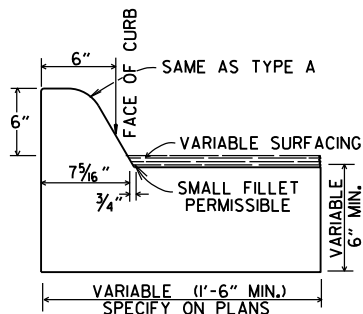
STANDARD DRAWING CDP-1



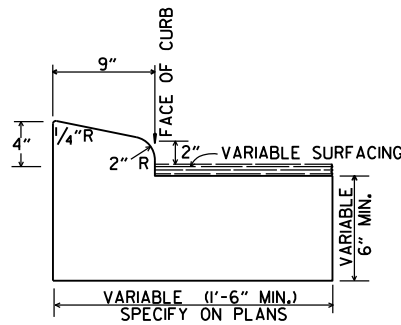
TYPE A



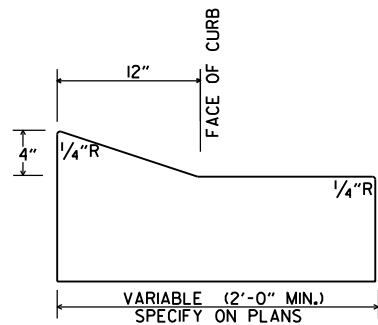
TYPE B-1



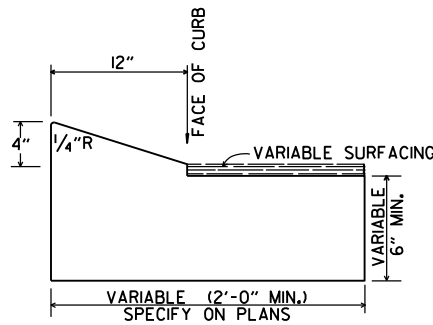
TYPE C



TYPE B-2

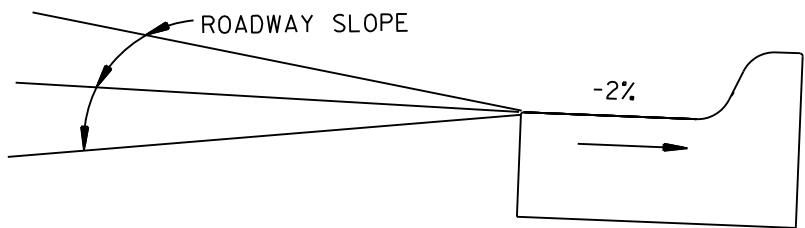


TYPE E-1



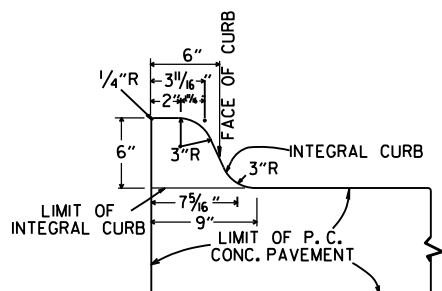
TYPE E-2

CONCRETE COMBINATION CURB AND GUTTER

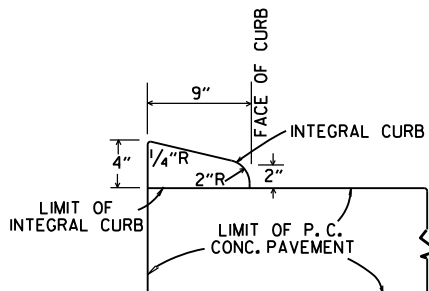


DETAIL OF GUTTER SLOPE

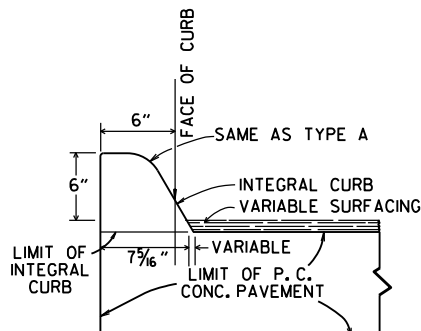
GUTTER SHALL BE CONSTRUCTED ON 2% SLOPE AWAY FROM ROADWAY, REGARDLESS OF ROADWAY SLOPE.



TYPE A

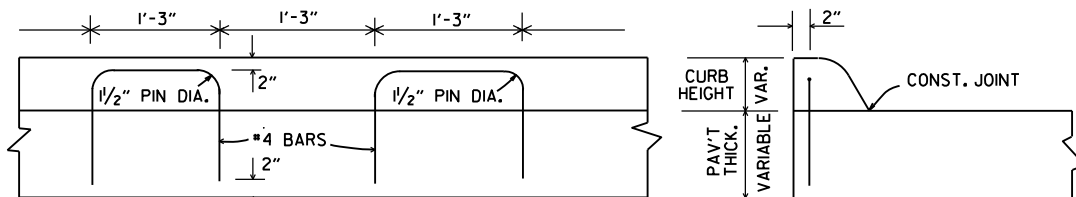


TYPE B



TYPE C

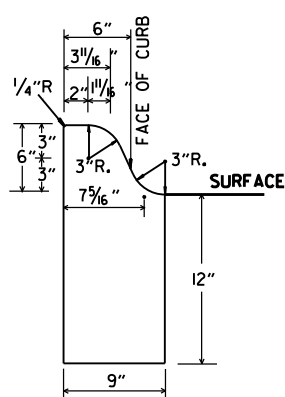
INTEGRAL CURB



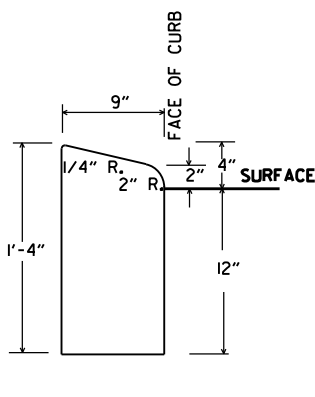
LONGITUDINAL SECTION

ELEVATION

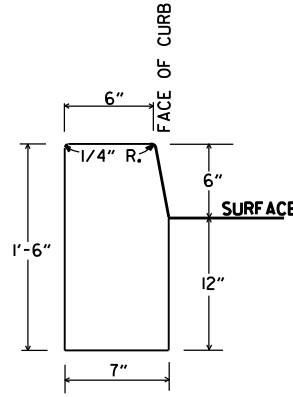
ALTERNATE CONSTRUCTION METHOD FOR INTEGRAL CURB



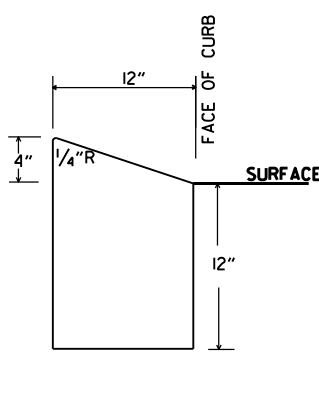
TYPE A



TYPE B

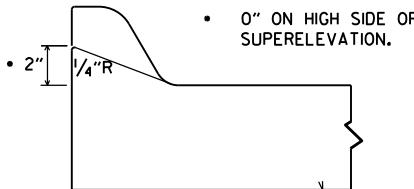


TYPE D



TYPE E

CONCRETE CURB



NOTE: USE MODIFIED CURB AS SPECIFIED ON STD. DR-1. COMPENSATION FOR MODIFIED CURB WILL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE TYPE OF CURB OR CURB AND GUTTER SPECIFIED.

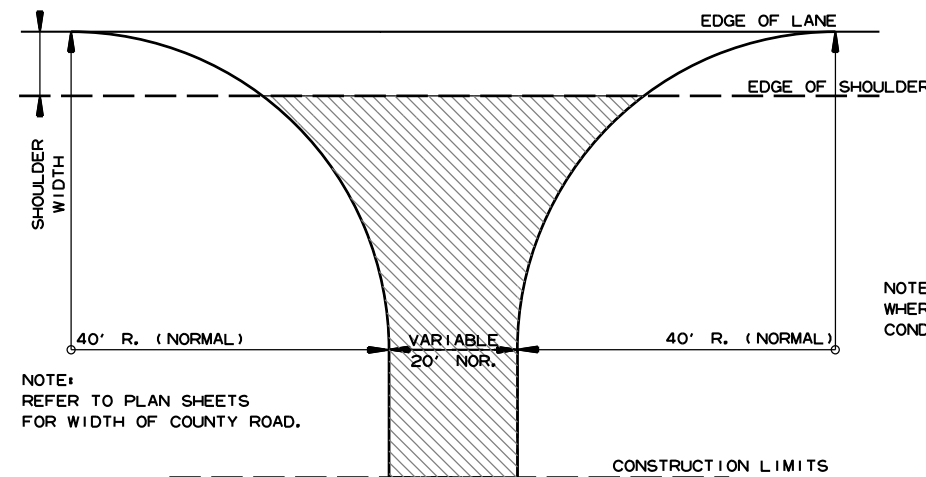
DETAILS OF MODIFIED CURB

DATE	REVISION	DATE FILMED
11-29-07	REVISED GUTTER SLOPE & MODIFIED CURB DETAILS	
11-10-05	ADDED DETAILS OF TYPE E CURBS	
11-16-01	REVISED CONCRETE CURB TYPE B	
11-18-98	REVISED MODIFIED CURB	
6-2-94	ADDED NOTE TO SPECIAL MODIFIED CURB	
8-5-93	CORRECTED GUTTER SLOPE	8-5-93
10-1-92	ADDED DETAILS OF GUTTER SLOPE	10-1-92
5-24-90	ADDED DETAILS OF MODIFIED CURB	5-24-90
11-30-89	VARIABLE DEPTH TYPE A & B 1	11-30-89
7-15-88	REVISED MODIFIED CURB	630-7-15-88
11-1-73	REVISED MODIFIED CURB	500-11-1-73
10-2-72	REVISED AND REDRAWN	512-10-2-72

ARKANSAS STATE HIGHWAY COMMISSION

CURBING DETAILS

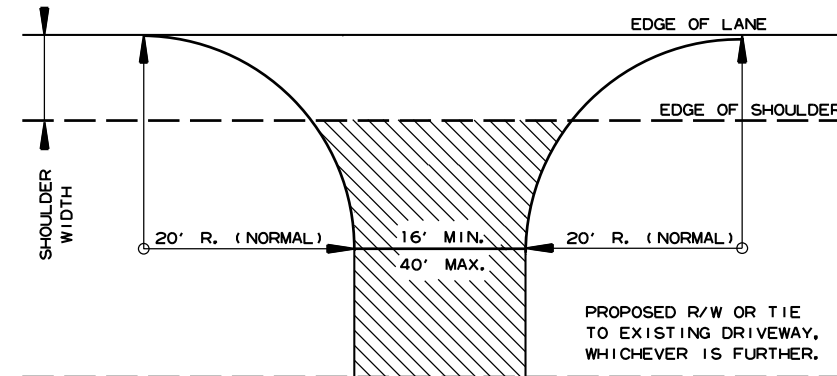
STANDARD DRAWING CG-1



DETAIL FOR COUNTY ROAD TURNOUTS
OPEN SHOULDER SECTION

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

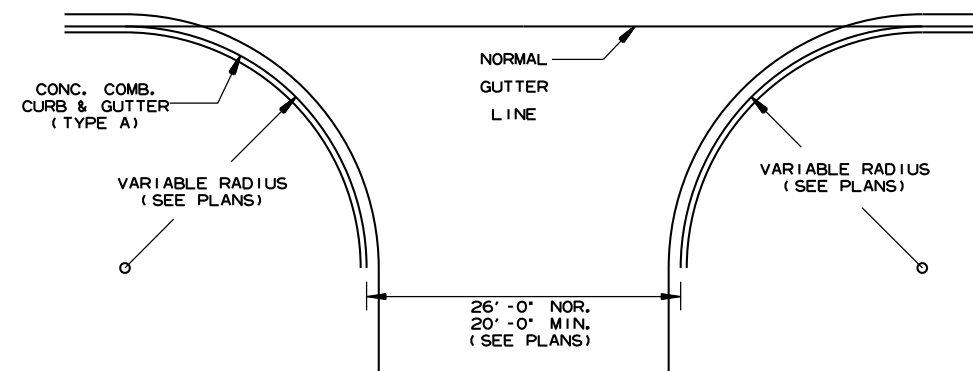
ACHM SURFACE COURSE (1/2") (220 LBS. PER SQ. YD.) AND AGGREGATE BASE COURSE (CLASS 7) 7" COMP. DEPTH, UNLESS OTHERWISE SPECIFIED IN PLANS.



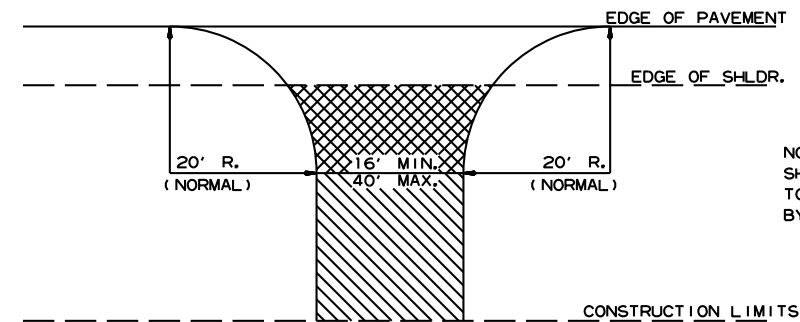
DETAIL FOR DRIVEWAY TURNOUTS
OPEN SHOULDER SECTION
(ARTERIALS)

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

ACHM SURFACE COURSE (1/2") (220 LBS. PER SQ. YD.) AND AGGREGATE BASE COURSE (CLASS 7) 7" COMP. DEPTH IF ASPHALT OR GRAVEL DRIVE EXISTING, OR 6" CONCRETE IF CONCRETE DRIVE EXISTING.



DETAIL OF TURNOUTS, ASPHALT STREETS,
COUNTY ROADS & STATE HIGHWAYS
CURB & GUTTER SECTION



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

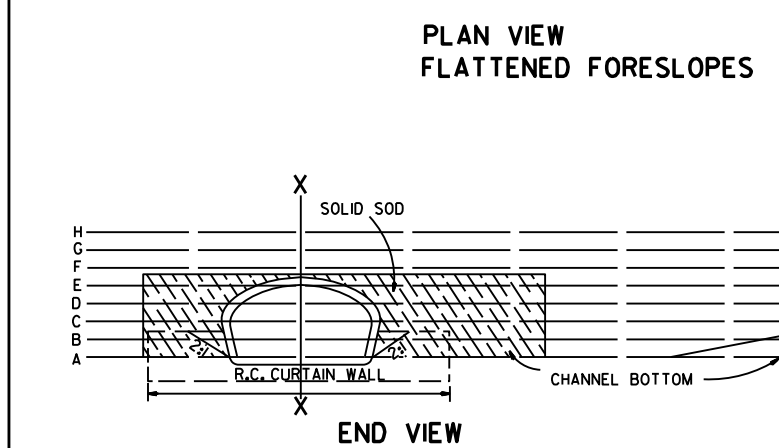
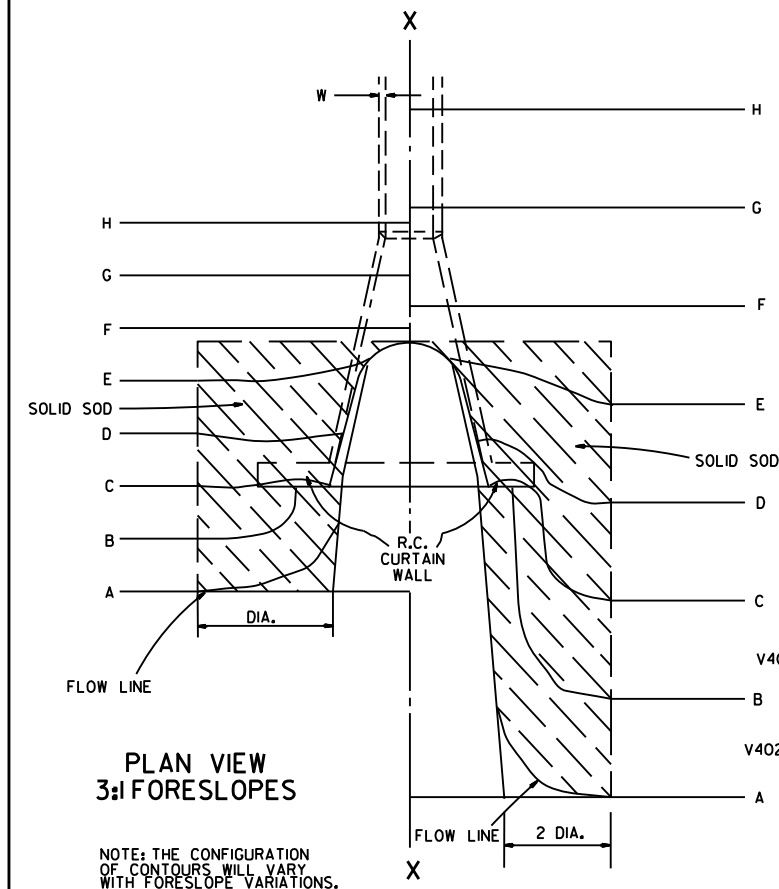
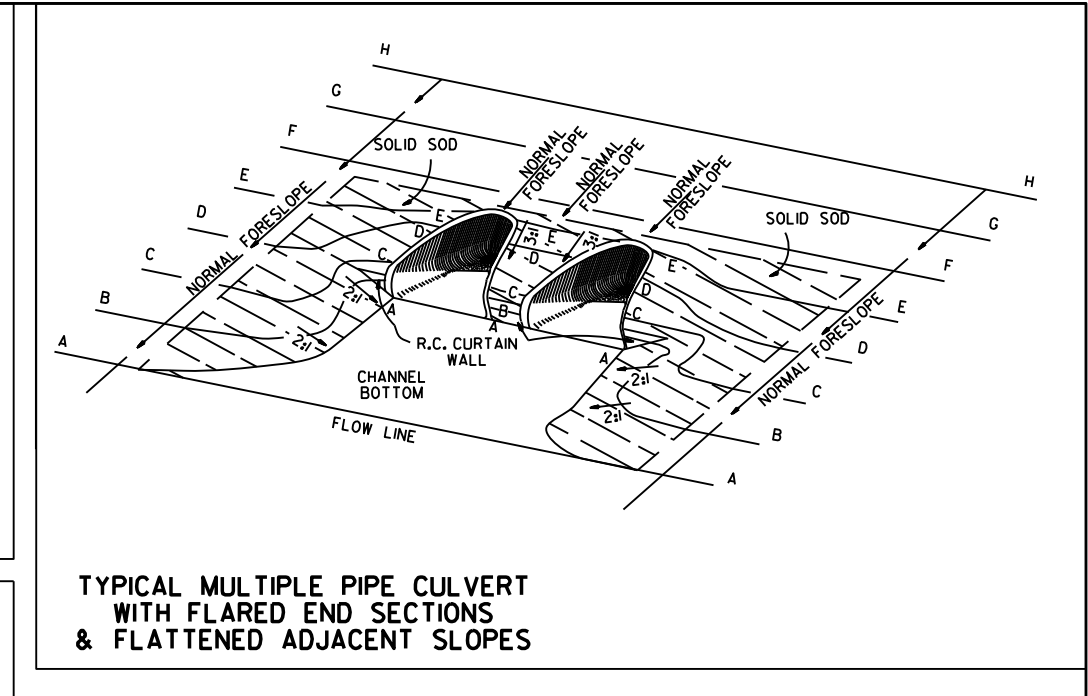
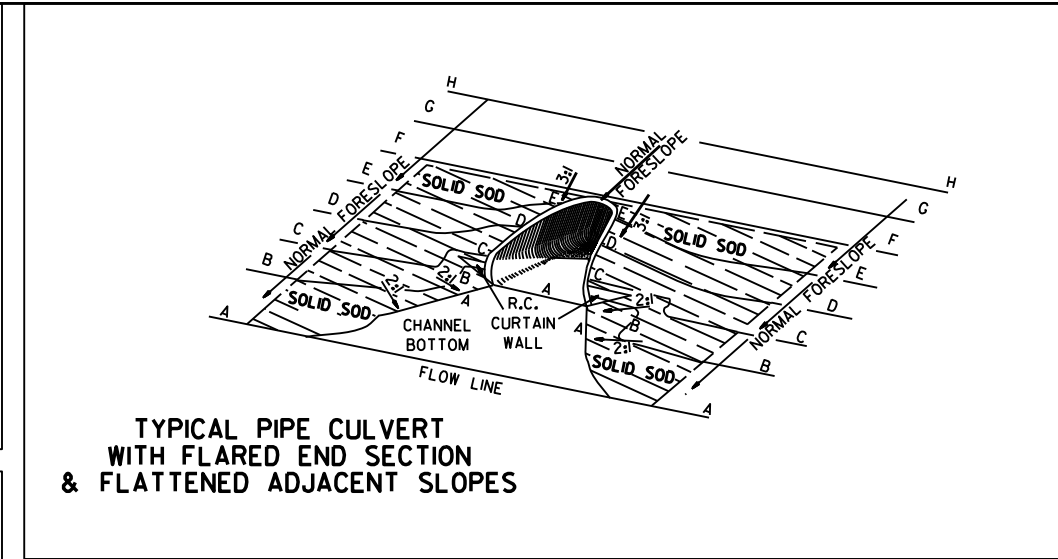
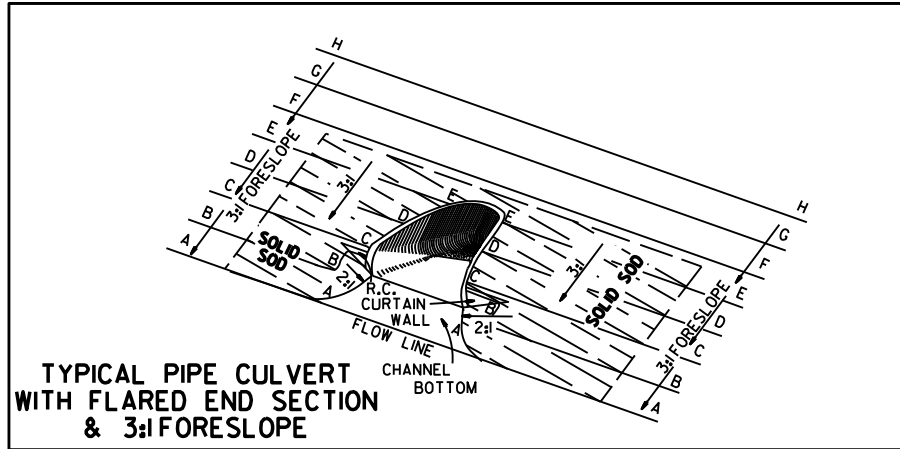
ASPHALT CONCRETE HOT MIX SURFACE COURSE (220 LBS. PER SQ. YD.) AGGREGATE BASE COURSE (CLASS 7) 7" COMP. DEPTH IF ASPHALT DRIVE EXIST OR 6" CONCRETE IF CONCRETE DRIVE EXIST.

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

DETAIL FOR DRIVEWAY TURNOUTS
(COLLECTORS)

5-19-22	ISSUED	
DATE REV	DATE FILMED	DESCRIPTION

ARKANSAS STATE HIGHWAY COMMISSION
DETAILS OF DRIVEWAYS & STREET
TURNOUTS
STANDARD DRAWING DR-2



R.C. CURTAIN WALL DIMENSIONS & QUANTITIES

PIPE DIA.	H ₁	L ₁	L	L (DBL.) 2	SINGLE R.C.P.C.		DOUBLE R.C.P.C.	
					CONC.	REINF. STEEL	CONC.	REINF. STEEL
					CU. YDS.	LBS.	CU. YDS.	LBS.
18"	11 1/2"	3'-5"	8'-0"	6'-3"	0.31	27.7	0.45	39.5
24"	1'-0 1/2"	4'-6"	9'-6"	7'-6"	0.37	33.4	0.53	48.0
30"	1'-3 1/2"	5'-7"	11'-0"	9'-0"	0.45	39.0	0.67	59.0
36"	1'-7"	6'-8"	13'-0"	10'-6"	0.58	52.6	0.83	73.9
42"	2'-1 1/2"	7'-3"	15'-6"	12'-0"	0.82	77.1	1.10	100.7
48"	2'-5"	7'-10"	17'-0"	13'-0"	0.98	94.9	1.27	120.4
54"	2'-9 1/2"	8'-5"	18'-6"	14'-0"	1.16	115.8	1.47	143.7
60"	3'-4"	9'-0"	20'-6"	15'-6"	1.47	149.7	1.84	180.3
72"	4'-5"	10'-2"	25'-6"	18'-6"	2.31	232.6	2.73	271.0

NOTE: QUANTITIES SHOWN ARE FOR ONE (1) CURTAIN WALL.

CAST-IN-PLACE

NOTE: THE PORTION OF THE R.C. CURTAIN WALL BENEATH THE FLARED END SECTION (LOWER 1'-0") SHALL BE PLACED MONOLITHICALLY. THE FLARED END SECTION SHALL THEN BE SET IN PLACE & THE REMAINING PORTIONS OF THE R.C. CURTAIN WALL PLACED.

TYPICAL MULTIPLE PIPE CULVERT WITH FLARED END SECTIONS & FLATTENED ADJACENT SLOPES

REINFORCING STEEL SCHEDULE

PIPE DIA.	SINGLE R.C. PIPE CULVERT								DOUBLE R.C. PIPE CULVERT									
	H401		H402		V401		V402		H401		H402		H403		V401		V402	
	L	NO.	L	NO.	L	NO.	L	NO.	L	NO.	L	NO.	L	NO.	L	NO.	L	NO.
18"	7'-8"	2	1'-11 1/2"	4	1'-7 1/2"	8	8"	8	12'-2"	2	1'-11 1/2"	4	8"	2	1'-7 1/2"	10	8"	14
24"	9'-2"	2	2'-2"	4	1'-8 1/2"	10	8"	9	14'-8"	2	2'-2"	4	8"	2	1'-8 1/2"	12	8"	18
30"	10'-8"	2	2'-4 1/2"	4	1'-11 1/2"	10	8"	12	17'-8"	2	2'-4 1/2"	4	8"	2	1'-11 1/2"	14	8"	22
36"	12'-8"	2	2'-10"	6	2'-3"	12	8"	14	20'-8"	2	2'-10"	6	8"	3	2'-3"	14	8"	28
42"	15'-2"	2	3'-9 1/2"	8	2'-9 1/2"	16	8"	15	23'-8"	2	3'-9 1/2"	8	8"	4	2'-9 1/2"	18	8"	30
48"	16'-8"	2	4'-3"	10	3'-1"	18	8"	16	25'-8"	2	4'-3"	10	8"	5	3'-1"	20	8"	32
54"	18'-2"	2	4'-8 1/2"	12	3'-5 1/2"	20	8"	17	27'-8"	2	4'-9"	12	8"	6	3'-5 1/2"	22	8"	34
60"	20'-2"	2	5'-5"	14	4'-0"	24	8"	18	30'-8"	2	5'-5"	14	8"	7	4'-0"	26	8"	36
72"	25'-2"	2	7'-4"	18	5'-1"	30	8"	20	36'-8"	2	7'-4"	18	8"	9	5'-1"	33	8"	40

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

PRECAST

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

SOLID SODDING

PIPE DIA.	SINGLE R.C.P.C.			DOUBLE R.C.P.C.		
	3:1	4:1	6:1	3:1	4:1	6:1
	SO. YDS.			SO. YDS.		
18"	5	7	12	6	8	13
24"	8	12	19	9	13	20
30"	13	18	29	14	19	30
36"	17	26	41	18	28	43
42"	23	35	55	25	37	57
48"	29	46	68	31	48	70
54"	35	57	85	37	59	87
60"	45	62	104	48	72	107
72"	64	92	156	67	95	159

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

GENERAL NOTES

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

R.C. CURTAIN WALL DETAILS

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

END VIEW

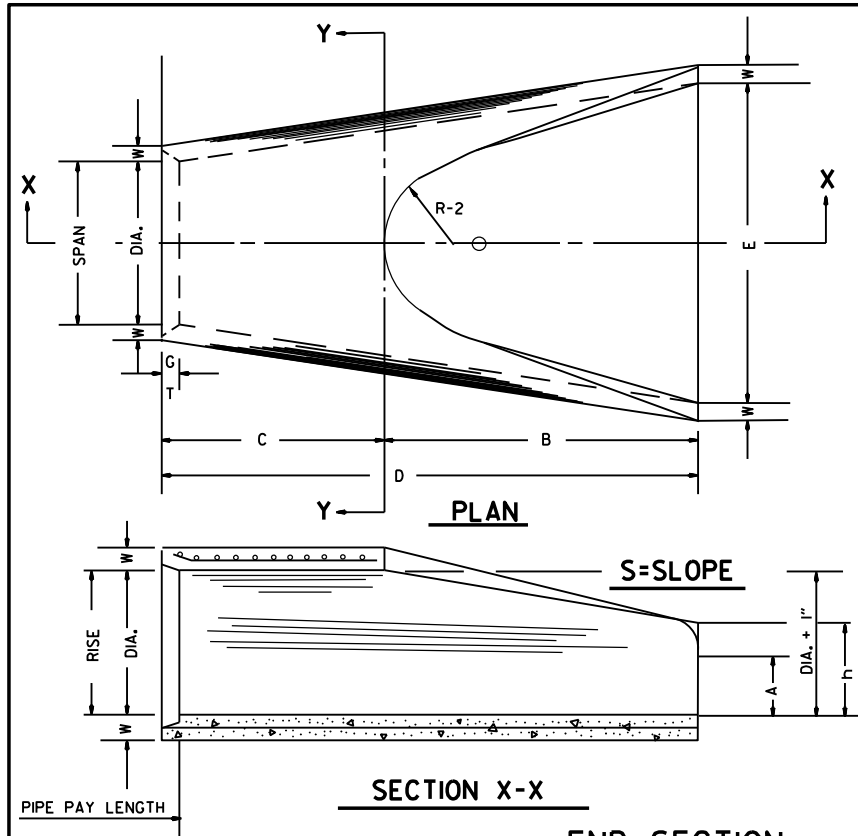
SECTIONAL VIEW "X-X"

DATE	REVISION	FILMED
10-18-96	ADDED NOTE TO SOLID SODDING	
10-12-95	CORRECTED SPELLING	
11-3-94	ADDED GENERAL NOTE NO. 4	
8-15-91	REV. CURTAIN WALL QUANT. STEEL SCH. & SOLID SOD QUANT.	
3-2-81	ALLOW PRECAST IN 2 OR MORE PIECES CHAMFER EDGES	
5-15-80	ADDED PRECAST WALL & GENERAL NOTES	
10-2-72	REVISED AND REDRAWN	

ARKANSAS STATE HIGHWAY COMMISSION

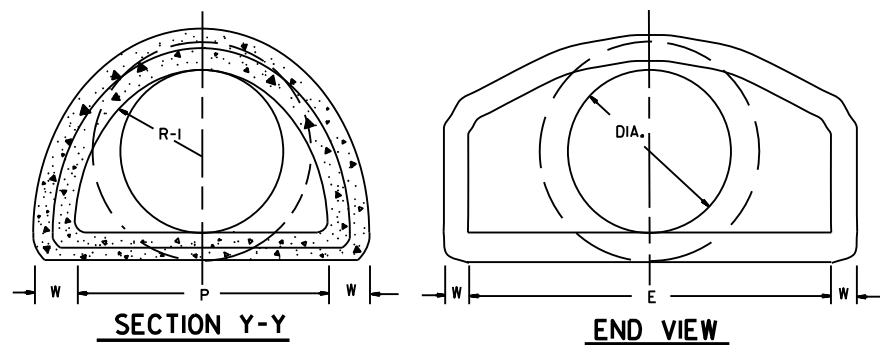
FLARED END SECTION

STANDARD DRAWING FES-1



END SECTION
FOR REINFORCED CONCRETE PIPE CULVERTS

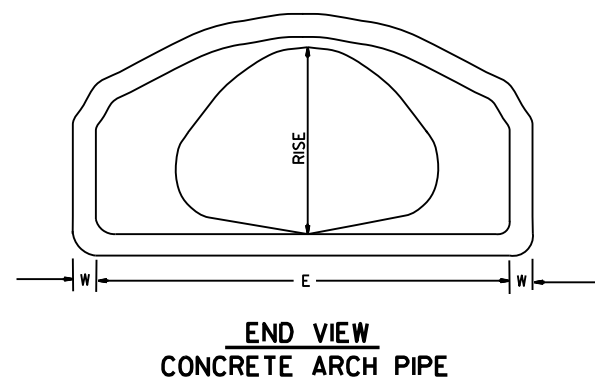
TABLE OF DIMENSIONS															
DIA.	WALL	A	B	C	D	E	S	DIA. + 1"	P	R-1	R-2	G-T	WT.	h	
18"	2 1/2"	9"	2'-3"	3'-10"	6'-1"	3'-0"	3:1	19"	29"	15 1/2"	12"	2"	1000	1'-0 1/2"	
24"	3"	9 1/2"	3'-7 1/2"	2'-6"	6'-1 1/2"	4'-0"	3:1	25"	33 3/8"	16 13/16"	14"	2 1/2"	1600	1'-1 1/2"	
30"	3 1/2"	1'-0"	4'-6"	1'-7 3/4"	6'-1 3/4"	5'-0"	3:1	31"	37"	18 1/2"	15"	3 1/4"	1940	1'-4 5/8"	
36"	4"	1'-3"	5'-3"	2'-10 3/4"	8'-1 3/4"	6'-0"	3:1	37"	47 1/8"	24 3/8"	20"	3 1/2"	4100	1'-8"	
42"	4 1/2"	1'-9"	5'-3"	2'-11"	8'-2"	6'-6"	3:1	43"	53 1/8"	27 1/2"	22"	3 3/4"	5380	2'-2 1/2"	
48"	5"	2'-0"	6'-0"	2'-2"	8'-2"	7'-0"	3:1	49"	56 1/2"	28 1/2"	22"	3 1/2"	6550	2'-6"	
54"	5 1/2"	2'-4"	6'-6"	1'-10"	8'-4"	7'-6"	3:1	55"	65 1/2"	33 3/8"	24"	4"	8750	2'-10 1/2"	
60"	6"	2'-10"	6'-6"	1'-10"	8'-4"	8'-0"	3:1	61"	72 1/2"	36 1/8"	24"	4"	9270	3'-5"	
72"	7"	3'-10"	6'-6"	1'-10"	8'-4"	9'-0"	3:1	73"	77 1/8"	38 5/8"	24"	5"	13250	4'-6"	



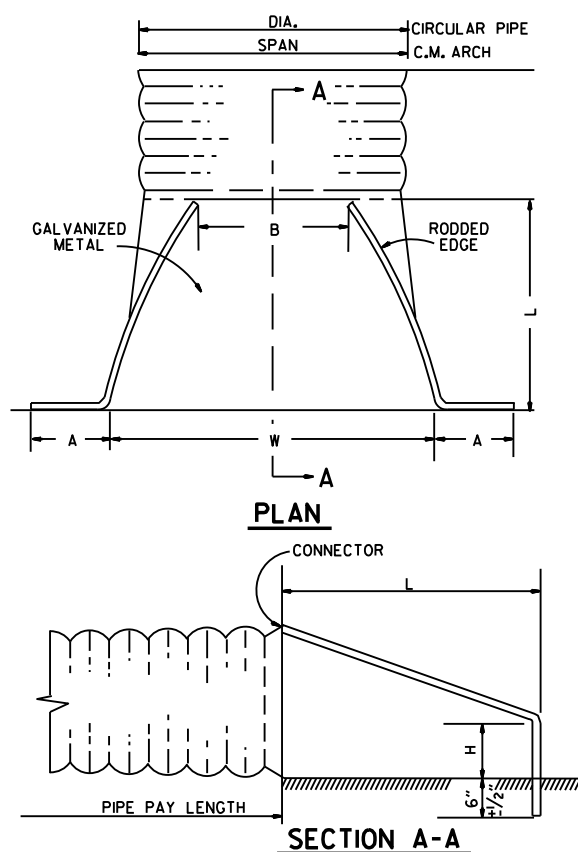
NOTE: TONGUE END ON UPSTREAM SECTION
GROOVE END ON DOWNSTREAM SECTION

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

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



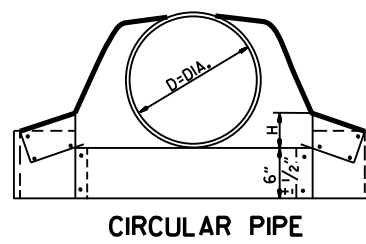
END VIEW
CONCRETE ARCH PIPE



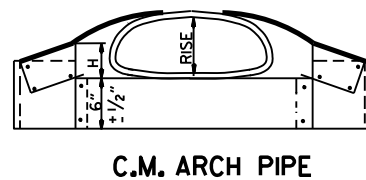
SECTION A-A

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

END SECTIONS FOR CORRUGATED METAL PIPE CULVERTS



CIRCULAR PIPE



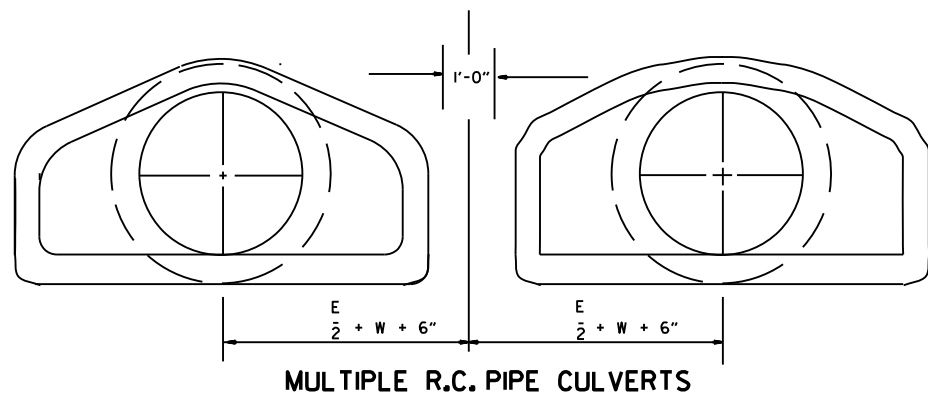
C.M. ARCH PIPE

CIRCULAR PIPE

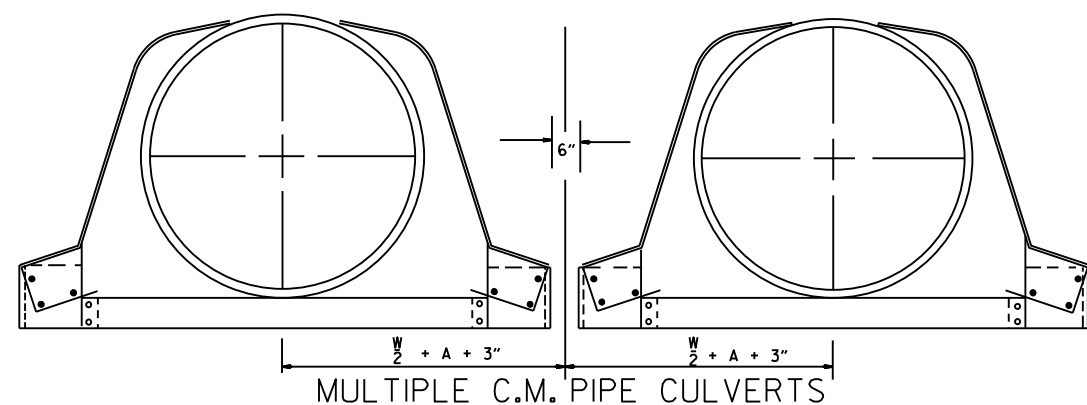
D. DIA.	GAUGE	A 1" $\pm$	B. MAX.	H 1" $\pm$	L 1 1/2" $\pm$	W 2" $\pm$	S
12	16	6	6	6	21	24	2 1/2"
15	16	7	8	6	26	30	2 1/2"
18	16	8	10	6	31	36	2 1/2"
21	16	9	12	6	36	42	2 1/2"
24	16	10	13	6	41	48	2 1/2"
30	14	12	16	8	51	60	2 1/2"
36	14	14	19	9	60	72	2 1/2"
42	12	16	22	11	69	84	2 1/2"
48	12	18	27	12	78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

C.M. ARCH PIPE

EQUIV. DIA.	SPAN	RISE	A 1" $\pm$	B. MAX.	H 1" $\pm$	L 1 1/2" $\pm$	W 2" $\pm$	S	GAUGE
15"	17	13	7	9	6	19	30	2 1/2"	16
18"	21	15	7	10	6	23	36	2 1/2"	16
21"	24	18	8	12	6	28	42	2 1/2"	16
24"	28	20	9	14	6	32	48	2 1/2"	16
30"	35	24	10	16	6	39	60	2 1/2"	14
36"	42	29	12	18	8	46	75	2 1/2"	14
42"	49	33	13	21	9	53	85	2 1/2"	12
48"	57	38	18	26	12	63	90	2 1/2"	12
54"	64	43	18	30	12	70	102	2 1/4"	12
60"	71	47	18	33	12	77	114	2 1/4"	12



MULTIPLE R.C. PIPE CULVERTS



MULTIPLE C.M. PIPE CULVERTS

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

FLARED END SECTION

STANDARD DRAWING FES-2

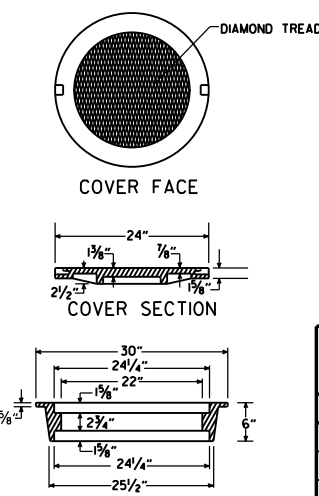
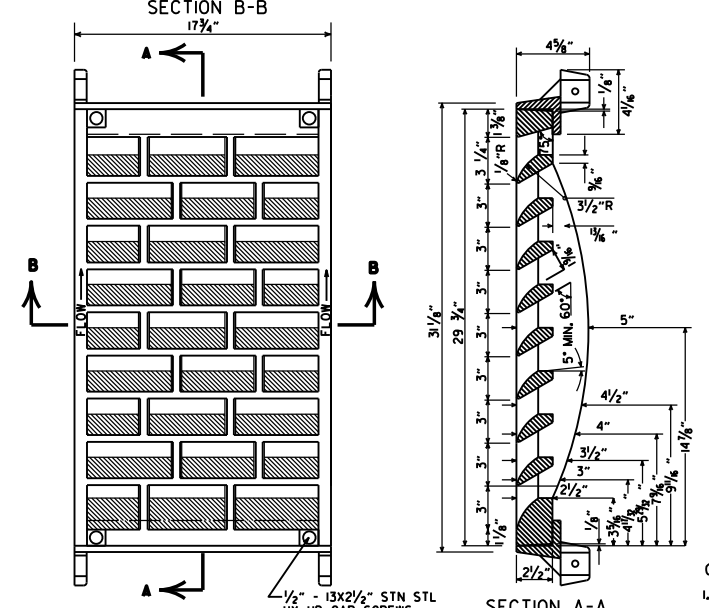
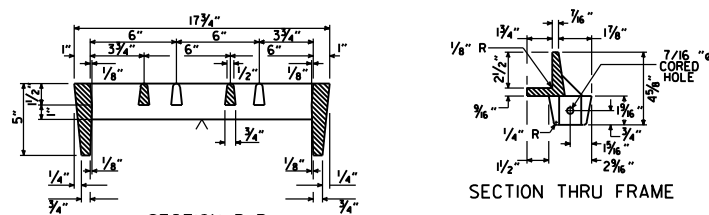
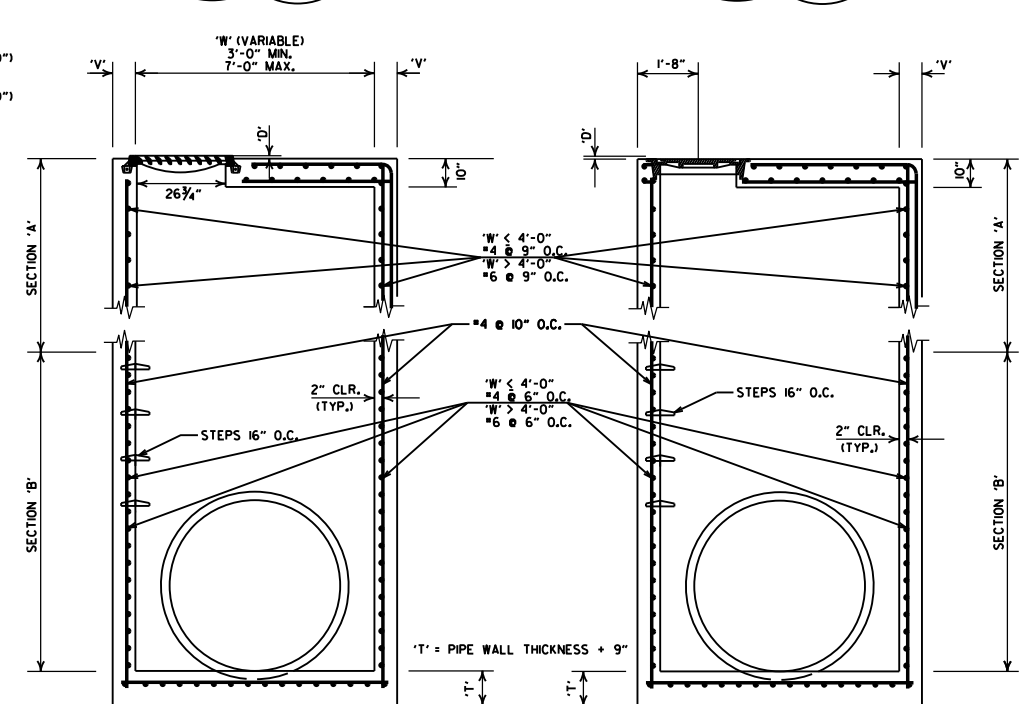
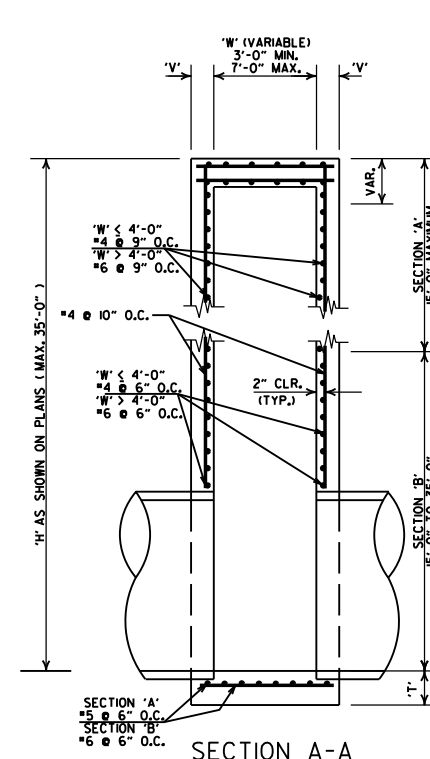
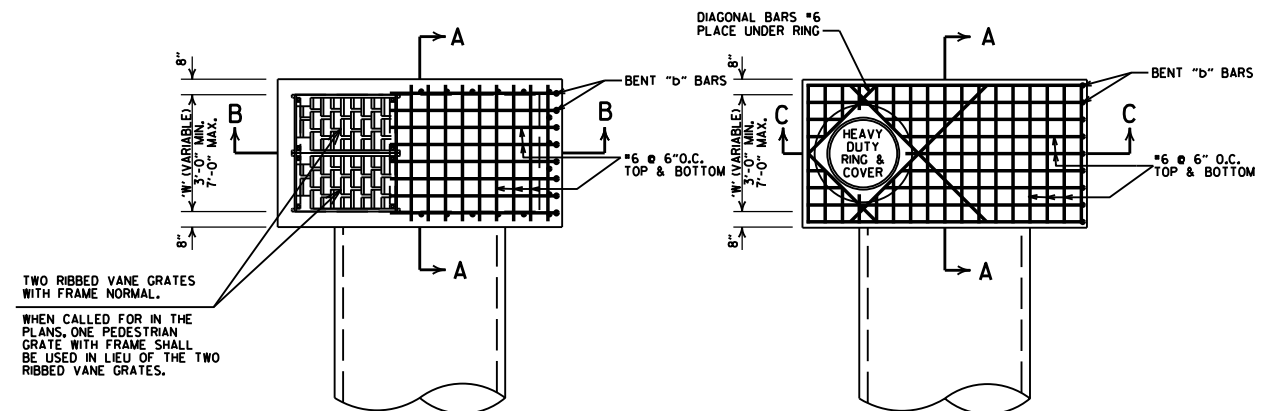
STANDARD DRAWING FPC-9

SECTION B-B

6. THE MINIMUM W

DETAILS OF PEDESTRIAN GRATE AND FRAME

DETAIL OF BENT "b" BAR



7-26-12		REMOVED NOTE 4, REVISED 'T', REVISED BOTTOM SLAB REBAR FOR SECTION 'A', SHOWED REBAR CLEARANCE IN SECTIONS
11-16-01		ADDED NOTE 4
1-12-00		REVISED HEAVY DUTY RING & COVER
5-13-99		ADDED PEDESTRIAN FRAME & GRATE
7-02-98		REMOVED NOTE 5, REV. DIMENSIONS, ADDED HEAVY DUTY RING & COVER ADDED AASHTO REF. REVISED GRATE
10-18-96		REVISED ASTM REF. TO AASHTO
10-1-92		REVISED & REISSUED
8-15-91	8-15-91	REVISED & REISSUED
DATE REVISED	DATE FILMED	DESCRIPTION

GENERAL NOTES (TYPE ST DROP INLET & JUNCTION BOX)

1. THE 'D' DIMENSION SHALL MATCH THE FINAL LIFT OF ACHM SURFACE COURSE SHOWN IN THE PLANS WHEN ASPHALT PAVING SURROUNDS THE GRATE OR RING COVER, AND SHALL BE 0" AT OTHER INSTALLATIONS.
2. THE STEPS SHALL BE OMITTED WHERE 'H' IS LESS THAN 4'-0".
3. ALL EXPOSED CORNERS ARE TO HAVE A 3/4" CHAMFER.

GENERAL NOTES (HEAVY DUTY RING & COVER):

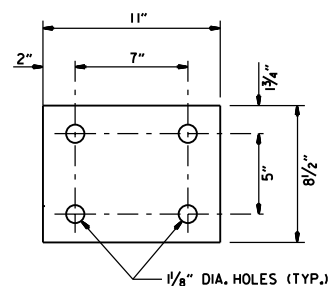
1. HEAVY DUTY RING AND COVER SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS AASHTO M 105, CLASS 35B, & AASHTO M 306.
2. HEAVY DUTY RING AND COVER SHALL NOT BE PAINTED.
3. HEAVY DUTY RING SHALL ALWAYS BE INSTALLED WITH FLANGE ON TOP.
4. DIMENSIONS SHOWN FOR RING AND COVER ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR CASTINGS WITH THE APPROVAL OF THE ENGINEER, REQUESTING APPROVAL FOR CASTING DESIGNS MAY BE MADE BY REFERRING TO PREVIOUSLY APPROVED DRAWINGS.

GENERAL NOTES (RIBBED VANE GRATE & FRAME)

1. RIBBED VANE GRATE AND FRAME SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS AASHTO M 105, CLASS 35B, & AASHTO M 306.
2. GRATE AND FRAME SHALL NOT BE PAINTED.
3. GRATE AND FRAME SHALL BE INSTALLED IN DROP INLET IN ASSEMBLED POSITION.
4. APPROXIMATE WEIGHT OF GRATE SHALL BE 170 LBS.

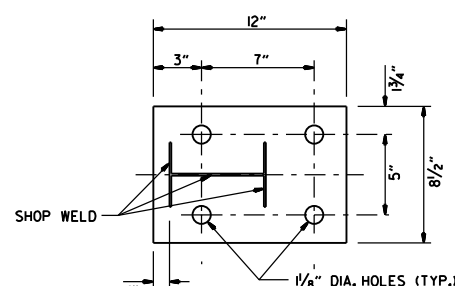
ARKANSAS STATE HIGHWAY COMMISSION
**DETAILS OF DROP INLET &
 JUNCTION BOX (TYPE ST)**
 STANDARD DRAWING FPC-9S

STANDARD DRAWING GR-6

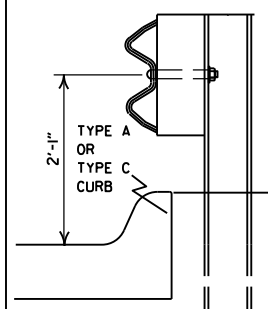


WASHER PLATE

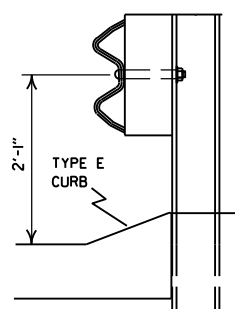
Note: Bolts, nuts, washers and plates shall be galvanized in accordance with Section 807 of the Standard Specifications.



BASE PLATE



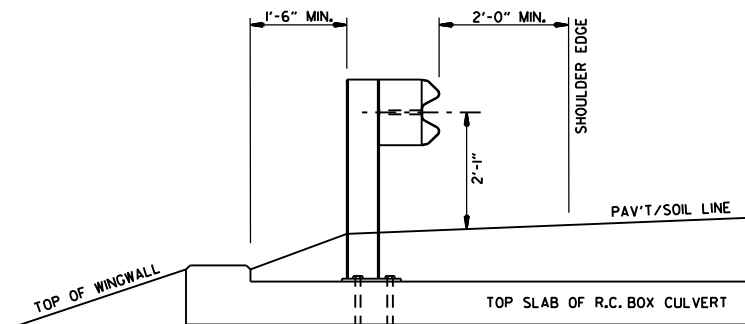
FOR DESIGN SPEEDS OF 50 MPH OR LESS
ALIGN FACE OF GUARDRAIL WITH FACE OF CURB.



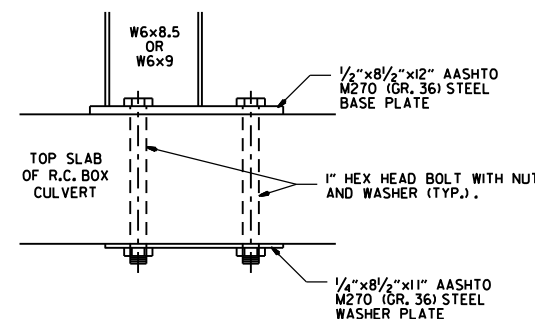
FOR DESIGN SPEEDS OF 55 MPH OR MORE
PLACE GUARDRAIL POSTS AGAINST BACK OF CURB.

DETAIL OF GUARDRAIL PLACEMENT BEHIND CURB (W-BEAM)

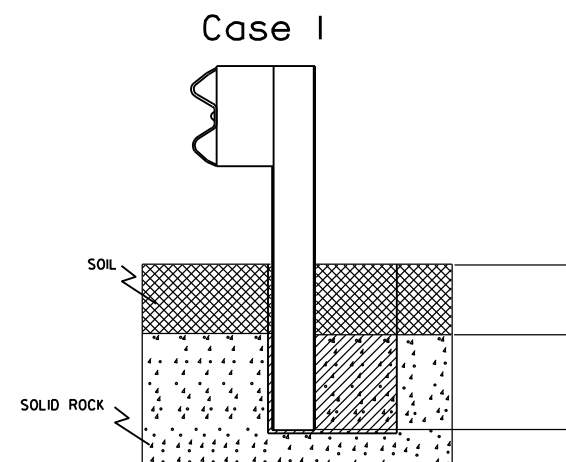
FOR DESIGN SPEEDS OF 50 MPH OR LESS ALL CURB FACES, AS SHOWN ON STD. DRWG. CG-1, MAY BE USED. FOR DESIGN SPEEDS OF 55 MPH OR MORE TYPE "E" CURB FACE SHALL BE USED.



SECTION A-A

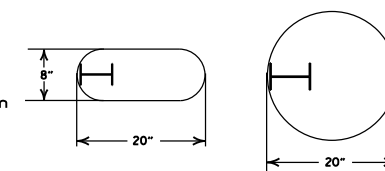


DETAIL OF CONNECTION



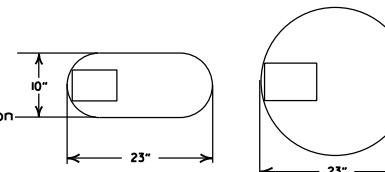
Plan View Steel Posts

Either hole configuration acceptable



Plan View Wood Posts

Either hole configuration acceptable

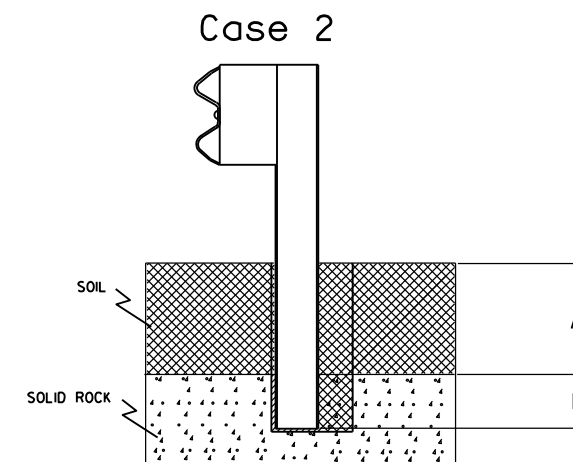


Notes: For overlying soil depths (A) ranging from 0 to 18", the depth of required drilling (B) is equal to 24".

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

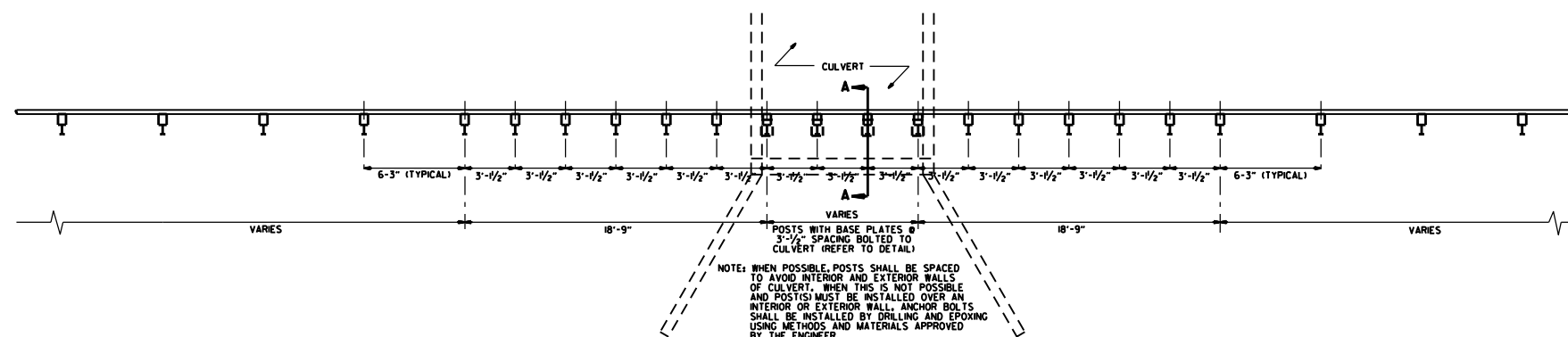
Zone B:
Backfill hole in 6" lifts with material meeting the requirements of Section 802.02(c) - Alternate gradation. Compact to 95% maximum dry density per ASTM D-698.

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



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

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



PLAN LAYOUT OF TYPE A GUARDRAIL AT LOW-FILL CULVERTS

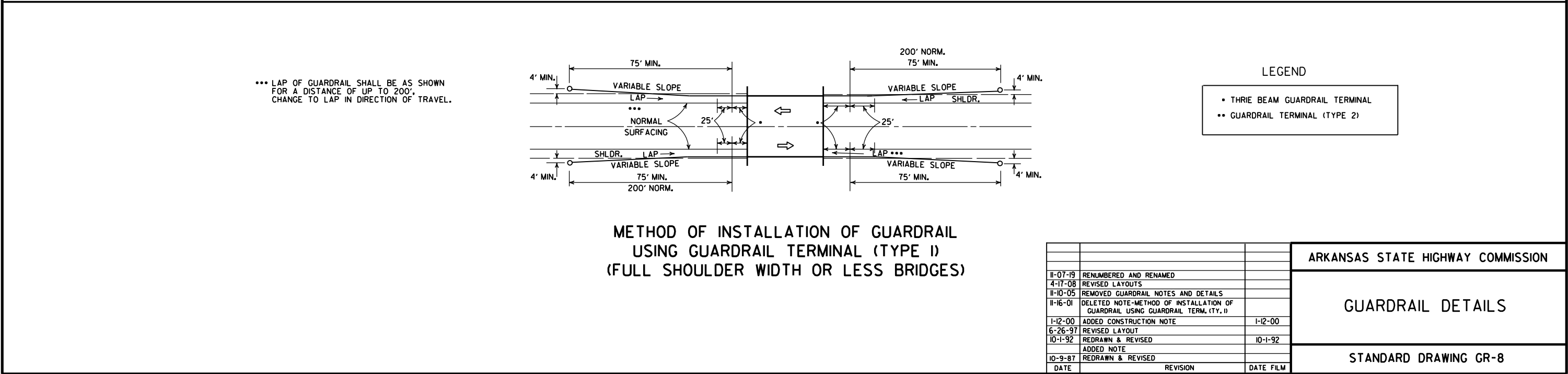
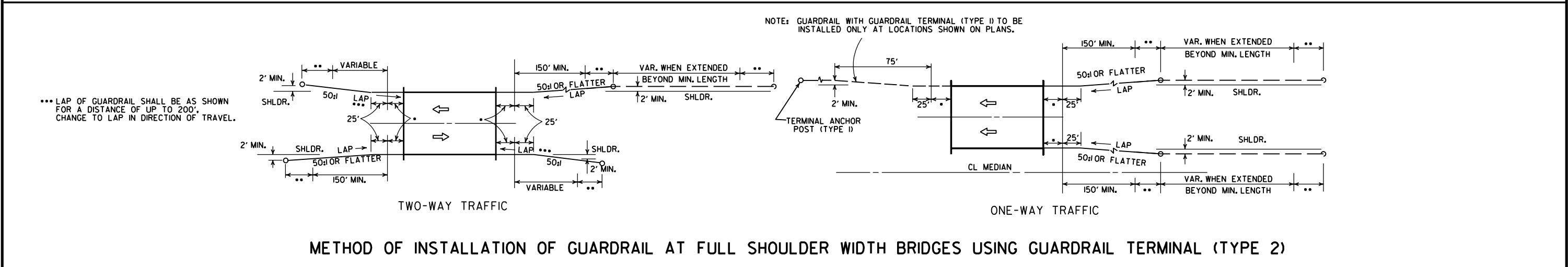
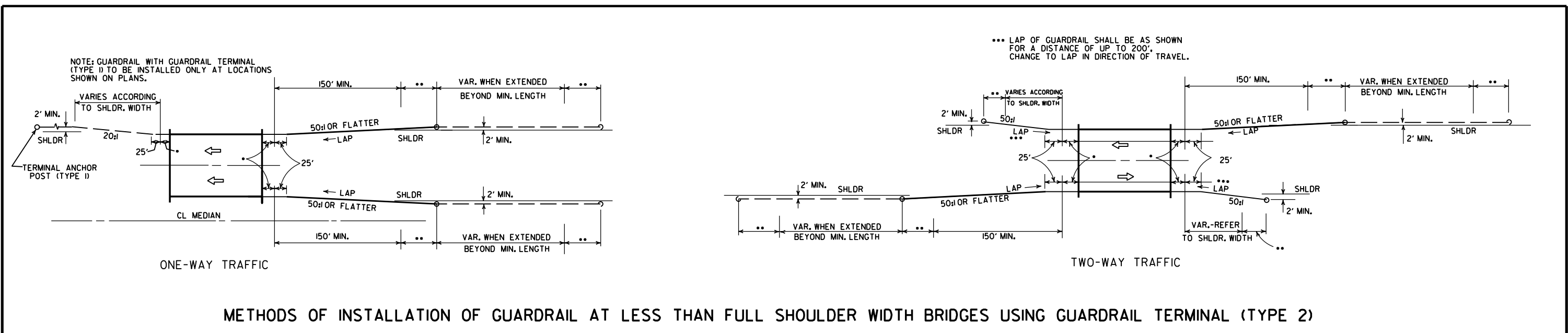
NOTE: THIS DETAIL IS TO BE USED ONLY WHEN THE COVER OVER THE CULVERT DOES NOT PERMIT FULL EMBEDMENT OF GUARDRAIL POSTS AS SHOWN ON STD. DRWG. GR-6.

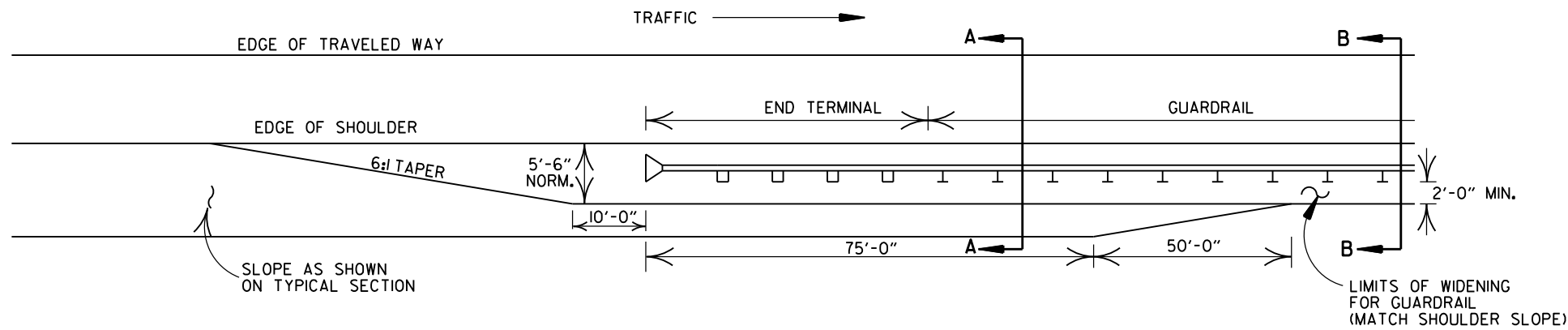
11-07-19	RENUMBERED, RENAMED, REVISED REFERENCE	
11-16-17	REVISED GUARDRAIL HEIGHT	
07-14-10	RAISED HEIGHT OF GUARDRAIL 1"	
04-12-07	REVISED DETAIL OF GUARDRAIL PLACEMENT BEHIND CURB	
11-10-05	ADDED GUARDRAIL PLACEMENT BEHIND CURB; REVISED DETAIL OF CONNECTION	
11-18-04	REVISED POST PLACEMENT IN ROCK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

ARKANSAS STATE HIGHWAY COMMISSION

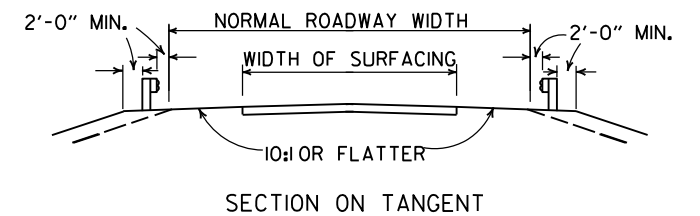
GUARDRAIL DETAILS

STANDARD DRAWING GR-7

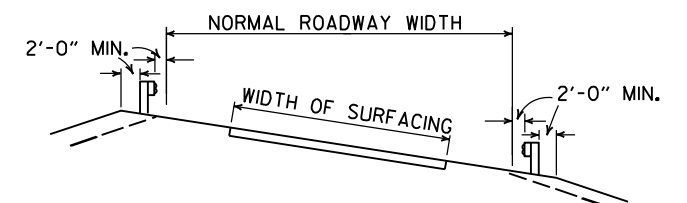




NOTE: NORMAL SECTION TO BE WIDENED APPROX. 5'-6" EACH SIDE TO SUPPORT GUARDRAIL.

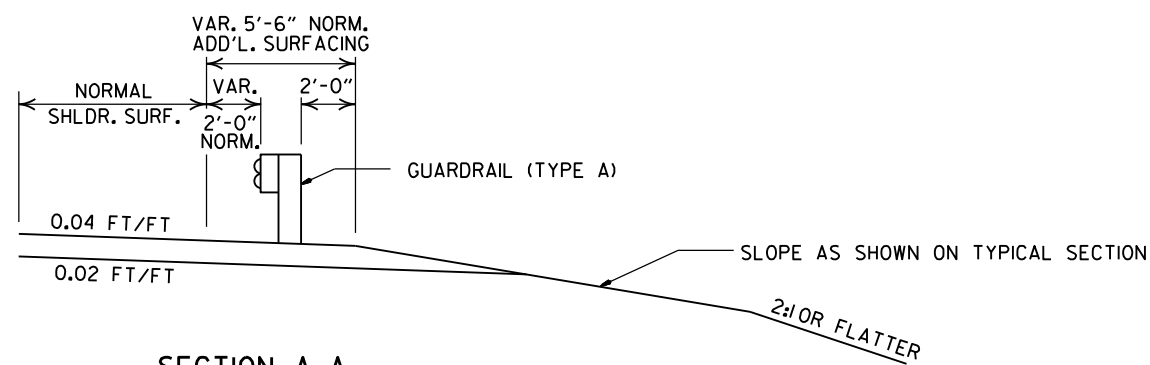


SECTION ON TANGENT

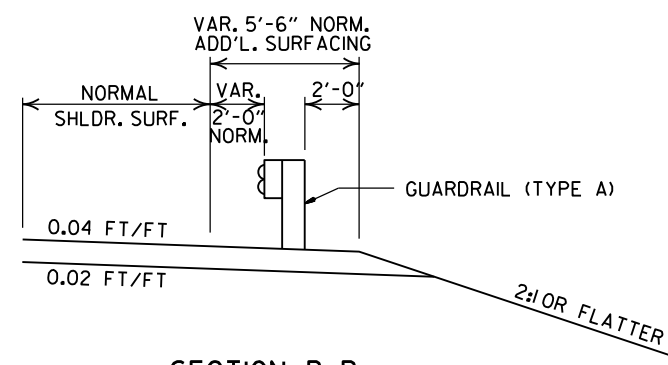


SECTION ON CURVE

DETAILS SHOWING POSITION OF GUARDRAIL ON HIGHWAY

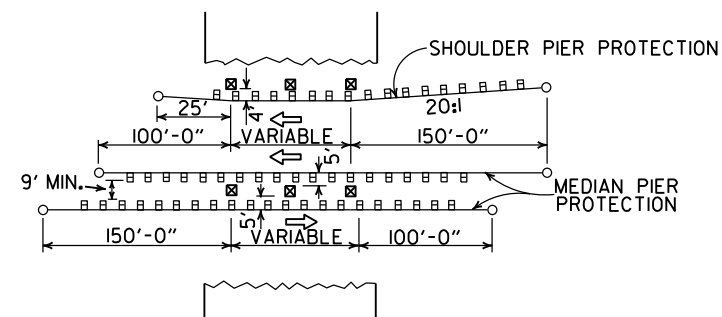


SECTION A-A



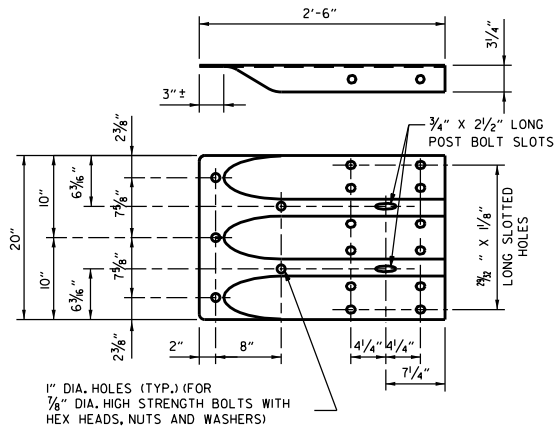
SECTION B-B

DETAILS OF WIDENING FOR GUARDRAIL

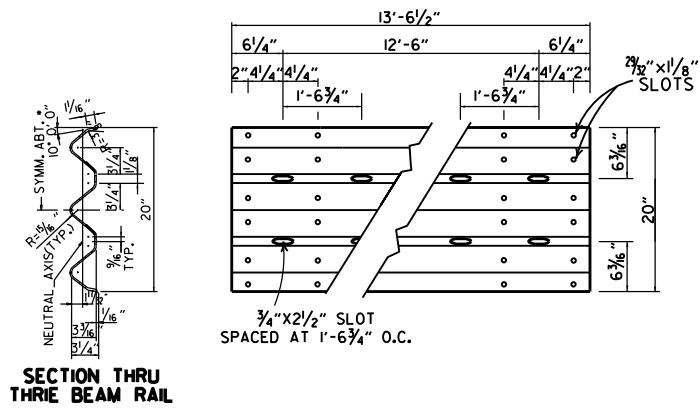


METHOD OF INSTALLATION OF GUARDRAIL AT FIXED OBSTACLE

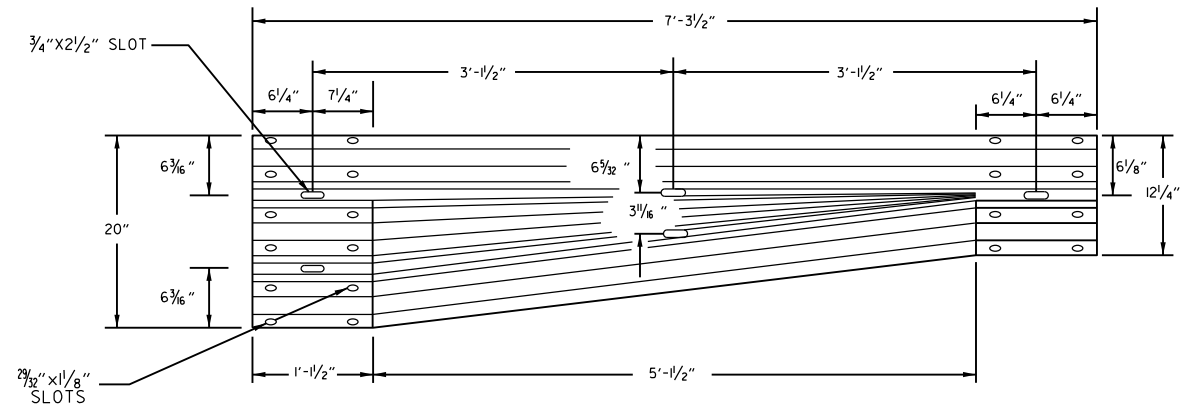
ARKANSAS STATE HIGHWAY COMMISSION		
GUARDRAIL DETAILS		
STANDARD DRAWING GR-9		
11-07-19	RENUMBERED AND RENAMED	
4-17-08	MINOR REVISION	
11-10-05	DRAWN	
DATE	REVISION	DATE FILED



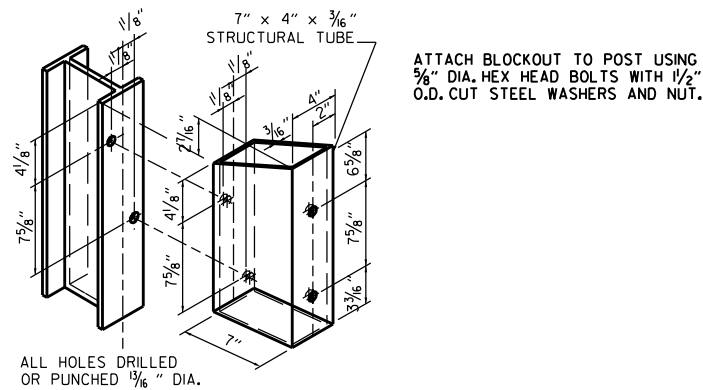
SPECIAL END SHOE



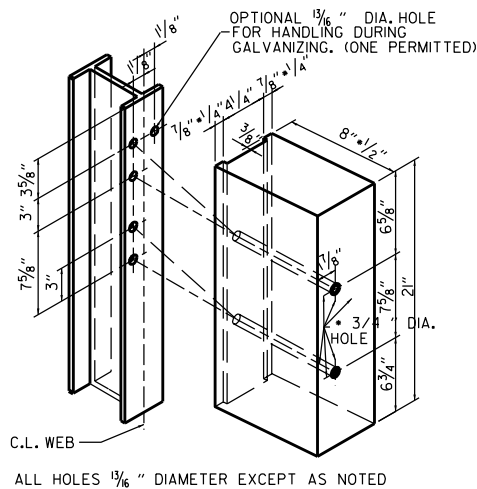
THRIE BEAM RAIL



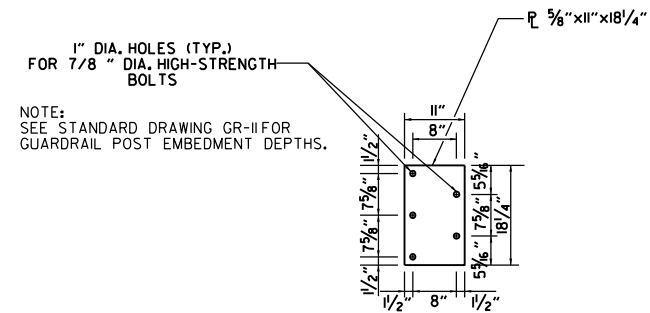
TRANSITION SECTION



STRUCTURAL STEEL TUBING
BLOCKOUT DETAIL

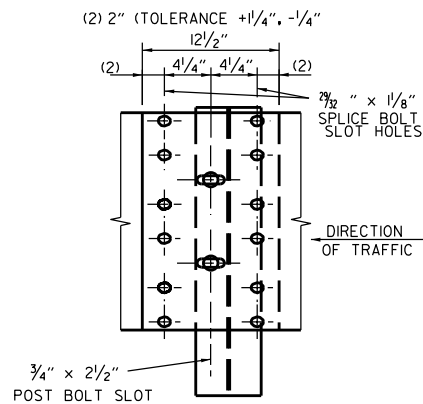


HOLE PUNCHING DETAIL
FOR STEEL POST & WOOD
OR PLASTIC BLOCKOUTS



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 1/8" 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-II 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.

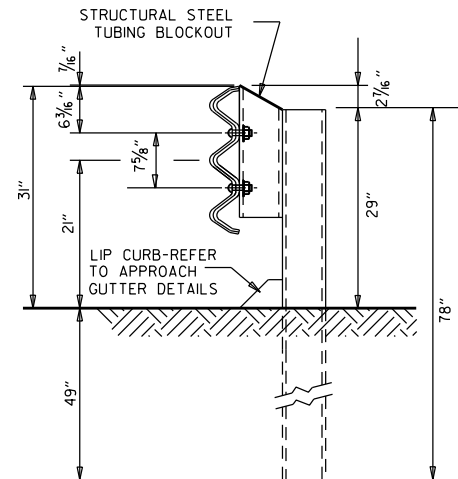
WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7f (1400 f) OR NO. 1 1350 f SOUTHERN PINE.

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 BRIDGE 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	
DATE	REVISION	FILMED

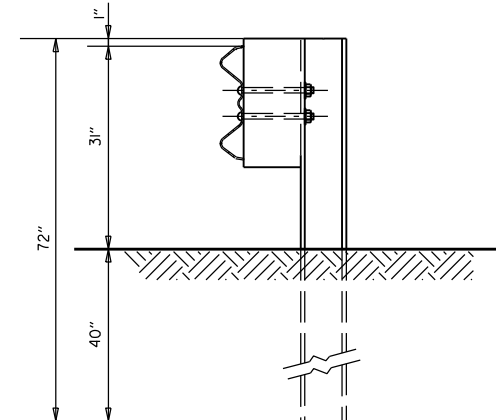
ARKANSAS STATE HIGHWAY COMMISSION

GUARDRAIL DETAILS

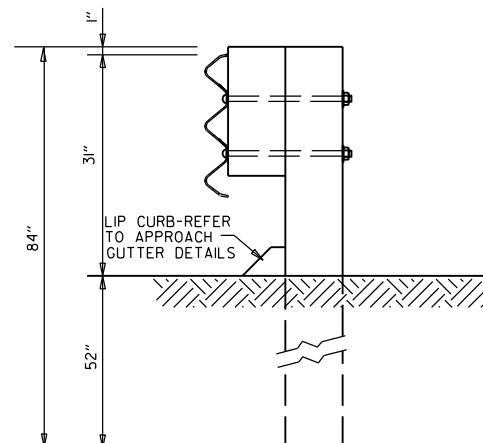
STANDARD DRAWING GR-10



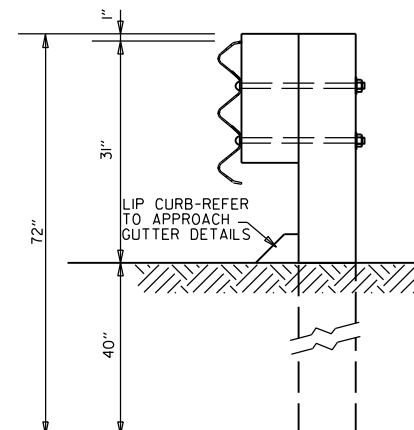
THRIE BEAM RAIL WITH STEEL TUBING BLOCKOUT
AND STEEL POST
POSTS 1-7



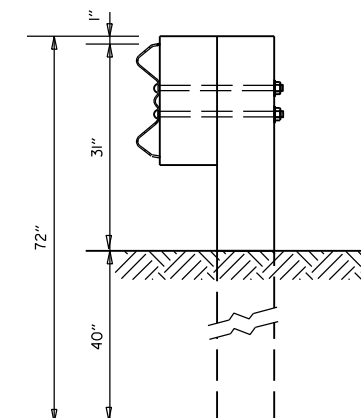
W-BEAM TO THRIE BEAM TRANSITION RAIL
WITH WOOD OR PLASTIC BLOCKOUT AND STEEL POST
POST 8



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



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



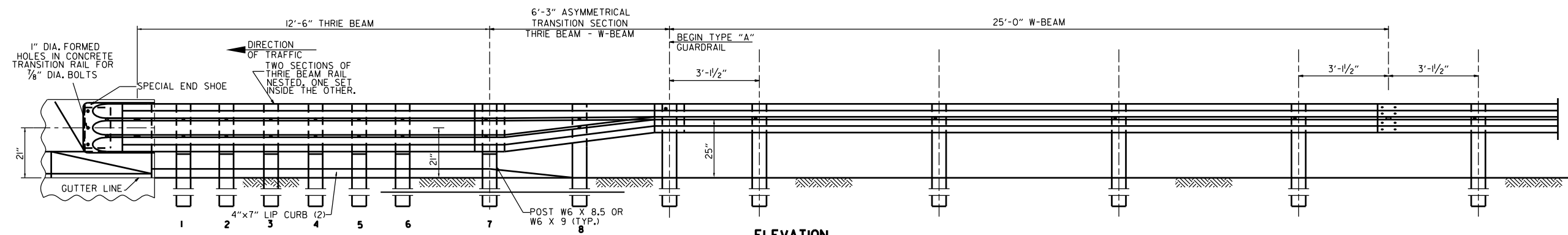
W-BEAM TO THRIE BEAM
TRANSITION RAIL WITH WOOD OR
PLASTIC BLOCKOUT & WOOD POST
POST 8

GENERAL NOTES:

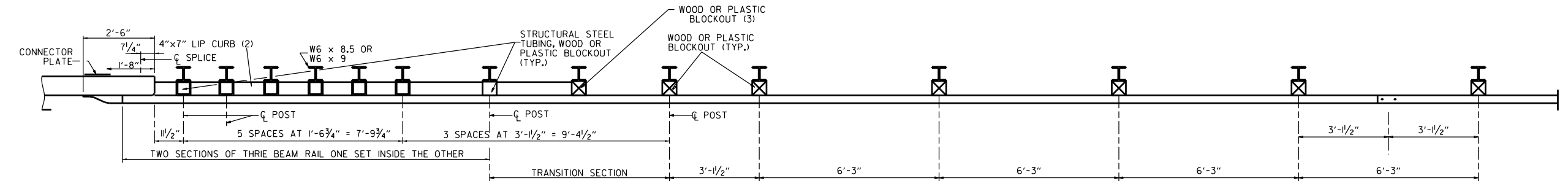
RAIL POSTS SHALL BE SET PERPENDICULAR TO THE ROADWAY PROFILE GRADE AND VERTICALLY IN CROSS SECTION.

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

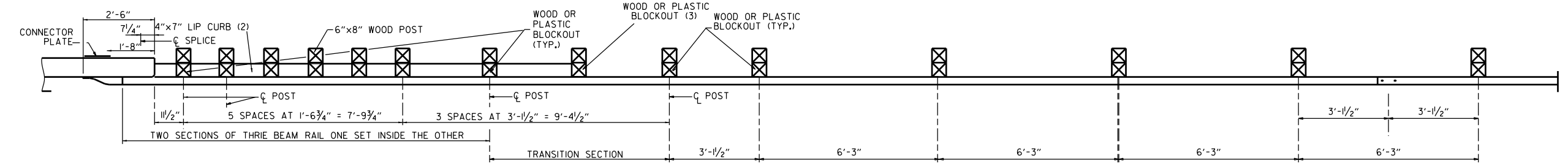
			ARKANSAS STATE HIGHWAY COMMISSION
			GUARDRAIL DETAILS
11-07-19	RENAMED		
11-16-17	REVISED GUARDRAIL HEIGHT, CHANGED STD. DWG. NUMBER FROM GR-10A TO GR-II		STANDARD DRAWING GR-II
07-14-10	REVISED POST 8 DIMENSIONS		
11-29-07	ADDED PLASTIC BLOCKOUTS		
08-22-02	REVISED LIP CURB NOTE		
03-30-00	DRAWN &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



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-II FOR POST DETAILS.

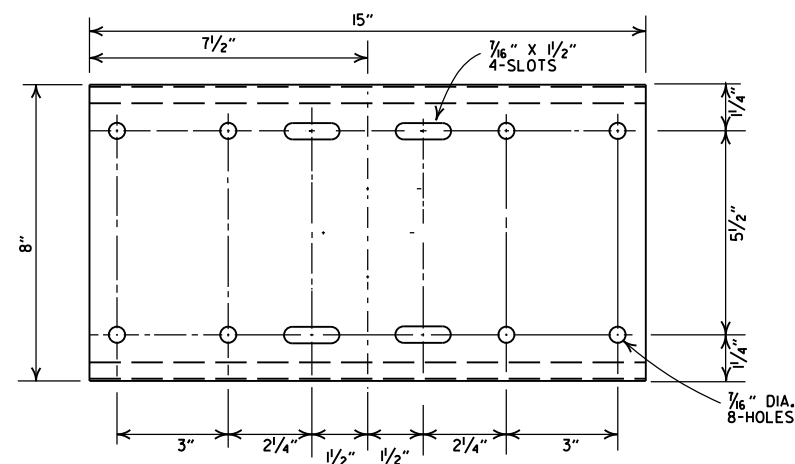
USE THRIE BEAM GUARDRAIL COMPONENTS OF SAME MATERIAL FOR ENTIRE JOB.

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

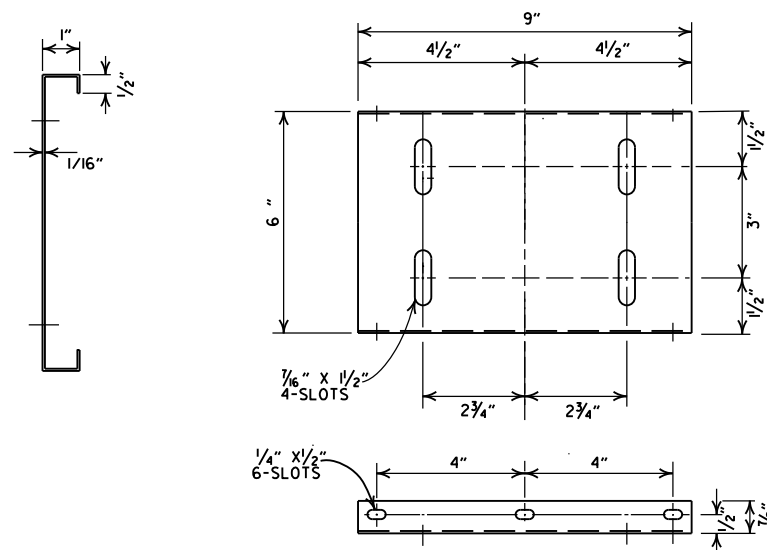
POSTS SHALL NOT BE PLACED AT SPLICE LOCATIONS ALONG W-BEAM RAILS.

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

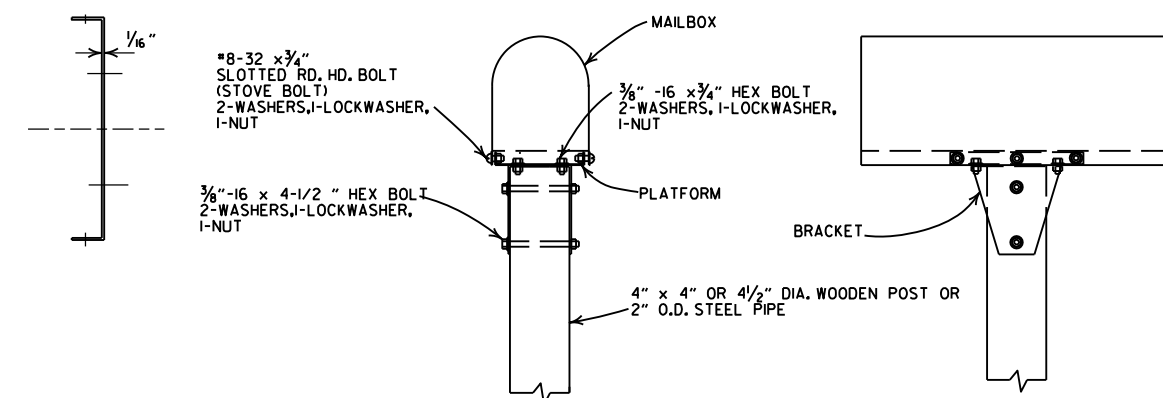
ARKANSAS STATE HIGHWAY COMMISSION		
GUARDRAIL DETAILS		
STANDARD DRAWING GR-12		
05-14-20	REVISED NOTES	
11-07-19	RENAMED & REVISED REFERENCES	
11-16-17	RE-DRAWN FROM STD. DRWG. GR-10 & ISSUED	
DATE	REVISION	FILMED



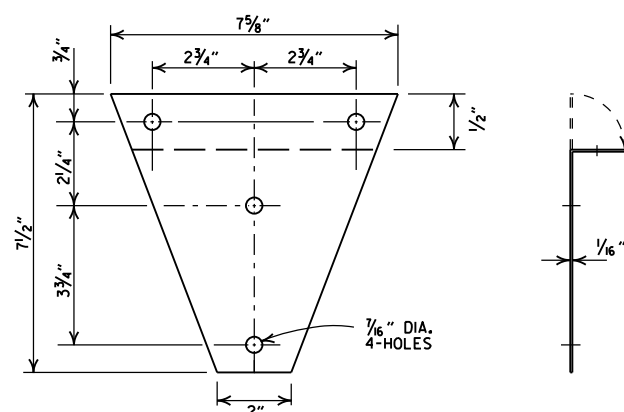
SHELF



PLATFORM



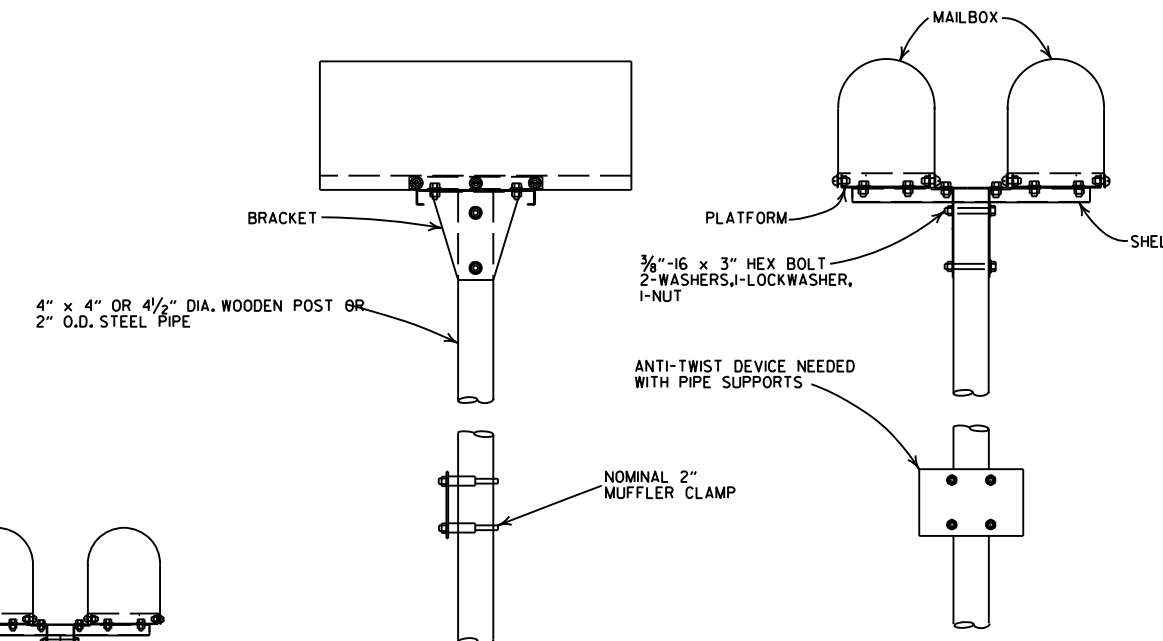
SINGLE INSTALLATION



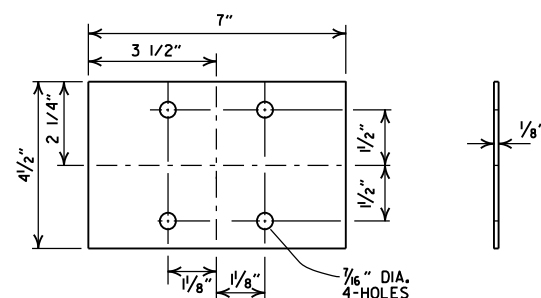
BRACKET

GENERAL NOTES

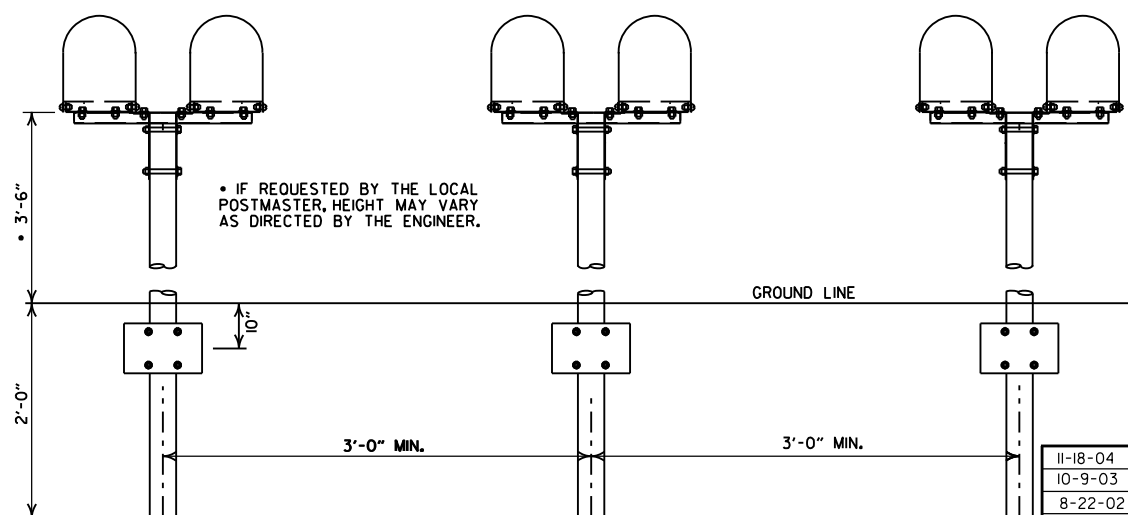
1. MAILBOX POSTS MAY BE WOOD OR METAL. WOOD POSTS SHALL BE PRESSURE TREATED FOR GROUND CONTACT IN ACCORDANCE WITH SECTION 637.02 OF THE STANDARD SPECIFICATIONS.
2. ANTI-TWIST PLATES SHALL BE USED ONLY ON METAL POSTS.
3. MAILBOX SHELF, BRACKET & PLATFORM SHALL BE GALVANIZED OR PAINTED STEEL, HOWEVER TREATED WOOD MAY BE USED WITH WOODEN POSTS. THE WOODEN SHELF, BRACKET & PLATFORM SHALL BE A MINIMUM OF 3/4" THICK AND SHALL BE ASSEMBLED WITH BOLTS OF THE APPROPRIATE LENGTH WITH SIX 8 X 7/4" 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.



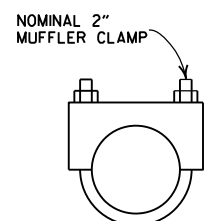
DOUBLE INSTALLATION



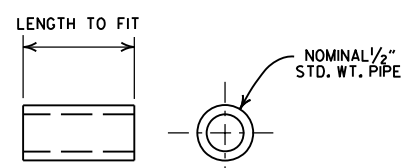
ANTI-TWIST PLATE



SPACING FOR MULTIPLE POST INSTALLATION



CLAMP



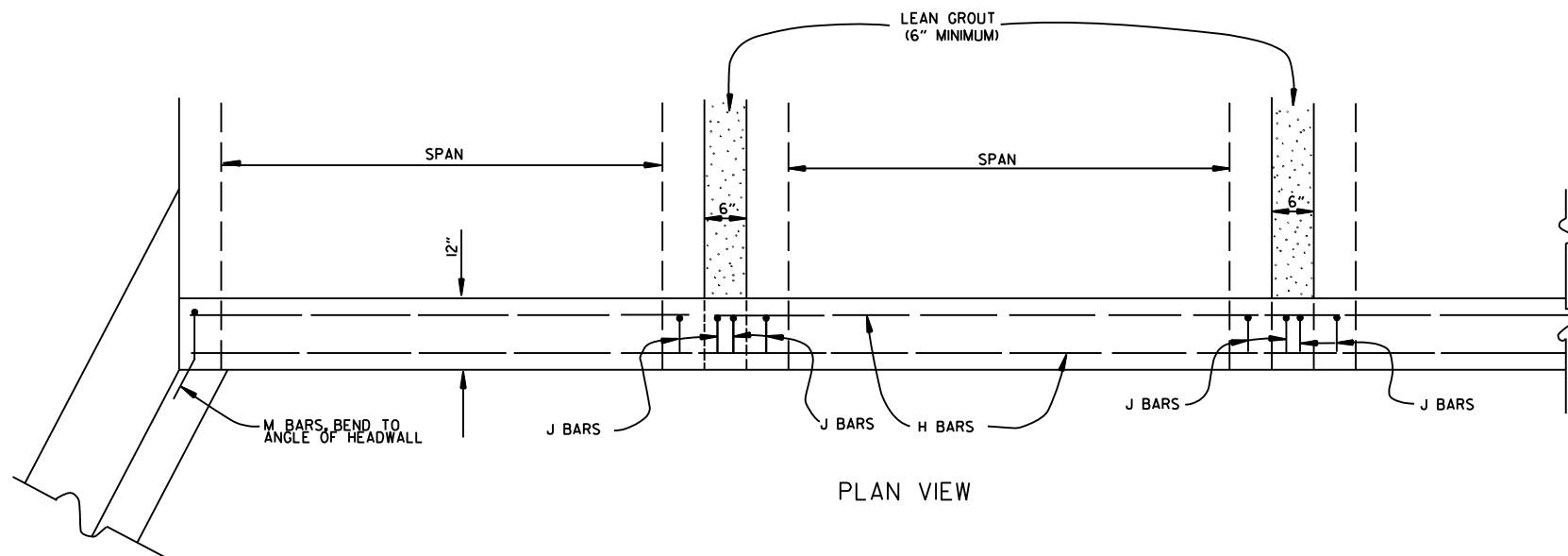
SPACER

11-18-04		REVISED NOTES
10-9-03		REVISED NOTE 6
8-22-02		REVISED NOTE 6
10-18-96		CORRECTED AASHTO
10-1-92		CORRECTED SPELLING
9-26-91		NEW PHONE NUMBER
8-15-91		ADDED NOTE
11-30-89		ADJUSTED HEIGHT & ADDED NOTE
2-16-89		DELETED SLOTS FROM SHELF & PLTF
11-17-88	10-1-92	ADJUSTED DIMENSIONS OF STEEL POSTS
7-15-88	120-7-15-88	ISSUED
DATE	FILMED	REVISION

ARKANSAS STATE HIGHWAY COMMISSION

MAILBOX DETAILS

STANDARD DRAWING MB-1



BAR LIST				
BAR	NO.	SIZE	LENGTH	BAR BENDING DIAGRAM
H	2	#4	•	
I	•	#4	•	
J	•	#4	1'-5"	
L	•	#4	3'-2"	
M	•	#4	1'-8"	

• NOTE: LENGTH AND NUMBER OF BARS VARIES WITH SIZE OF CULVERT

GENERAL NOTES

WINGS, CURTAIN WALLS AND APRONS SHALL BE TIED TO THE PRECAST CULVERT SECTION BY CASTING BARS IN CULVERT END SECTIONS AS SHOWN OR BY DOWELING AND GROUTING. J BARS AND M BARS SHALL BE EMBEDDED A MINIMUM OF 10" IN PRECAST BOX.

WINGS, FOOTINGS, APRONS AND CURTAIN WALLS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE APPLICABLE WING DRAWING. STEEL AND CONCRETE QUANTITIES WILL BE ADJUSTED TO FIT THE IN-PLACE WIDTH & HEIGHT OF THE PRECAST CONCRETE BOX CULVERTS.

ALL EXPOSED CORNERS TO HAVE $\frac{3}{4}$ " CHAMFERS.

WINGWALLS AND FOOTINGS MAY BE ADJUSTED IN THE FIELD AS DIRECTED BY THE ENGINEER.

ALL CONCRETE, REINFORCING STEEL, LEAN GROUT, MEMBRANE WATERPROOFING, DRAINAGE FILL MATERIAL, GEOTEXTILE FILTER FABRIC, LABOR, MATERIALS AND EQUIPMENT REQUIRED FOR INSTALLING PRECAST BOX CULVERTS WILL NOT BE PAID FOR DIRECTLY BUT WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID FOR THE ITEMS AS SPECIFIED IN SECTION 607 OF THE STANDARD SPECIFICATIONS.

LEAN GROUT SHALL CONSIST OF A SAND CEMENT MIXTURE MEETING THE FOLLOWING REQUIREMENTS:
 PORTLAND CEMENT SHALL BE TYPE I AND SHALL MEET THE REQUIREMENTS OF AASHTO M 85.
 SAND SHALL MEET THE REQUIREMENTS OF FINE AGGREGATE AS SPECIFIED IN SECTION 802.02 OF THE STANDARD SPECIFICATIONS. THE SAND CEMENT MIXTURE SHALL CONSIST OF NOT LESS THAN 1.5 SACKS OF PORTLAND CEMENT PER TON OF MATERIAL MIXTURE. THE MIXTURE SHALL CONTAIN SUFFICIENT WATER TO HYDRATE THE CEMENTS. THE SAND CEMENT MIXTURE SHALL BE PLACED IN MAXIMUM 8 INCH THICK LIFTS, LOOSE MEASURE, AND THOROUGHLY RODDED AND TAMPED AROUND BOX TO THOROUGHLY FILL ALL VOIDS.

MEMBRANE WATERPROOFING CONFORMING TO THE REQUIREMENTS OF SECTION 815 OF THE STANDARD SPECIFICATIONS SHALL BE APPLIED TO ALL BOX CULVERT JOINTS.

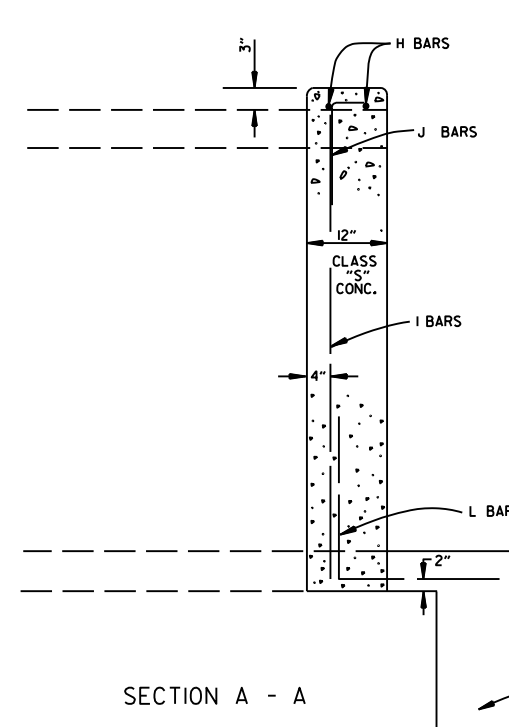
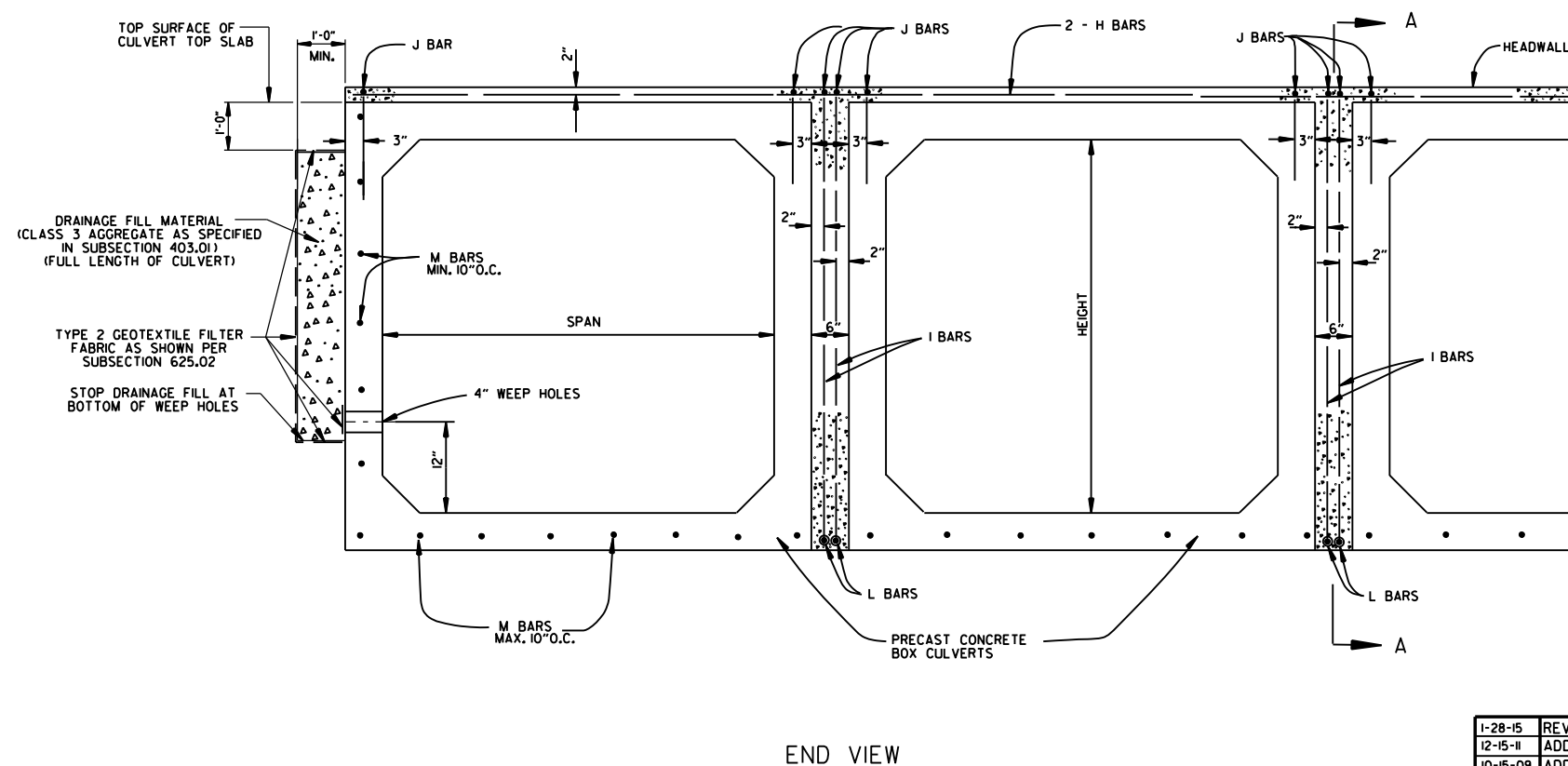
THE MEMBRANE WATERPROOFING WILL BE REQUIRED ON THE TOP EXTERNAL JOINT AND SHALL EXTEND 1 FOOT DOWN THE SIDES OF THE CULVERT.

IN OUTER BARRELS, ONE WEEP HOLE IS REQUIRED IN EXTERIOR WALLS OF EACH PRECAST CULVERT SECTION. WEEP HOLES SHALL HAVE A MAXIMUM HORIZONTAL SPACING OF 10'-0" IN THE ASSEMBLED CULVERT AND SHALL BE SPACED TO CLEAR ALL REINFORCING STEEL. THE DRAIN OPENING SHALL BE 4" DIAMETER AND SHALL BE PLACED 12" ABOVE THE TOP OF THE BOTTOM SLAB.

DRAINAGE FILL MATERIAL WITH GEOTEXTILE FABRIC IS REQUIRED AT THE EXTERIOR WALLS OF THE ASSEMBLED CULVERT, SEE DETAILS ON THIS DRAWING.

MINIMUM WIDTH SHALL BE 12" (6" ON EACH SIDE OF JOINT). ON MULTIPLE BARREL CULVERTS, MEMBRANE WATERPROOFING SHALL BE APPLIED TO EACH BARREL AS DESCRIBED ABOVE.

WITH THE APPROVAL OF THE ENGINEER, THE CONTRACTOR WILL BE ALLOWED TO SUBSTITUTE, AT NO ADDITIONAL COST TO THE DEPARTMENT, FLOWABLE SELECT MATERIAL CONFORMING TO SECTION 206 OF THE STANDARD SPECIFICATIONS IN LIEU OF LEAN GROUT.



1-28-15	REVISED GEOTEXTILE FABRIC PLACEMENT	
12-15-11	ADDED NOTE & DTLS FOR WEEP HOLE AND DRAINAGE FILL	
10-15-09	ADDED GENERAL NOTE	
11-10-05	REVISED SPACING OF "M" BARS	
4-10-03	REVISED GENERAL NOTES	
10-18-96	CORRECTED AASHTO REF.	
10-1-92	ADDED NOTE FOR MEMBRANE WATERPROOFING	
8-15-91	ADDED NOTE FOR LEAN GROUT	
11-8-90	REVISED FOR 1991 SPECS	
11-30-89	ISSUED; JABE	
DATE	REVISION	DATE FILMED

ARKANSAS STATE HIGHWAY COMMISSION

PRECAST CONCRETE BOX CULVERTS

STANDARD DRAWING PBC-1

REINFORCED CONCRETE
ARCH PIPE DIMENSIONS

EQUIV. DIA.	SPAN		RISE	
	AASHTO M 206	ARDOT NOMINAL	AASHTO M 206	ARDOT NOMINAL
INCHES	INCHES			
15	18	18	11	11
18	22	22	13½	14
21	26	26	15½	16
24	28½	29	18	18
30	36¼	36	22½	23
36	43¾	44	26¾	27
42	51½	51	31¾	31
48	58½	59	36	36
54	65	65	40	40
60	73	73	45	45
72	88	88	54	54
84	102	102	62	62
90	115	115	72	72
96	122	122	77½	77
108	138	138	87½	87
120	154	154	96¾	97
132	168¾	169	106½	107

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

REINFORCED CONCRETE
HORIZONTAL ELLIPTICAL
PIPE DIMENSIONS

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

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

CONSTRUCTION SEQUENCE

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

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

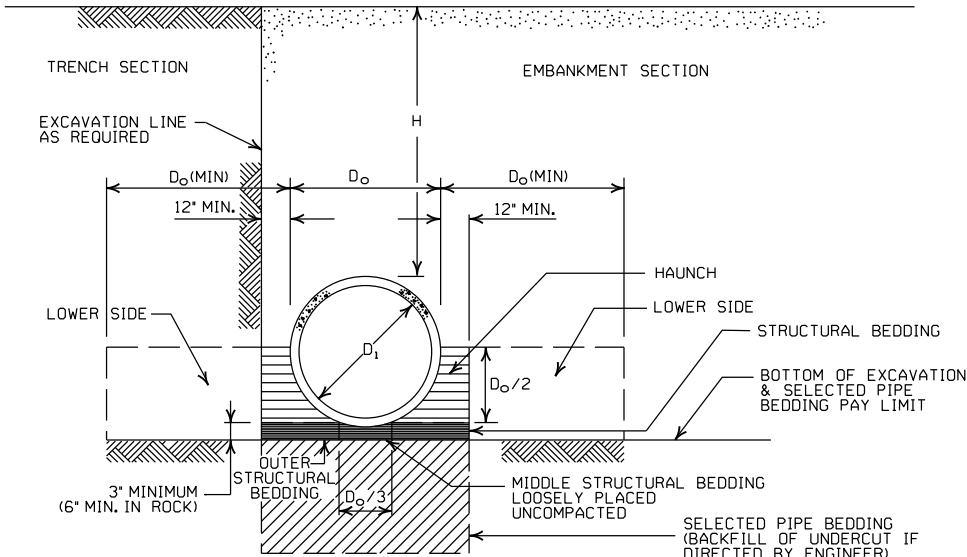
- LEGEND -

D₁ = NORMAL INSIDE DIAMETER OF PIPE
D_o = OUTSIDE DIAMETER OF PIPE
H = FILL COVER HEIGHT OVER PIPE (FEET)
MIN. = MINIMUM
= UNDISTURBED SOIL

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

* SM-3 WILL NOT BE ALLOWED.

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



EMBANKMENT AND TRENCH INSTALLATIONS

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

GENERAL NOTES

1. CONCRETE PIPE CULVERT CONSTRUCTION SHALL CONFORM TO ARKANSAS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION), WITH APPLICABLE SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS. UNLESS OTHERWISE NOTED IN THE PLANS, SECTION AND SUBSECTION REFER TO THE STANDARD CONSTRUCTION SPECIFICATIONS.
2. CONCRETE PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) WITH 2010 INTERIMS.
3. ALL PIPE SHALL CONFORM TO SECTION 606. CIRCULAR R.C. PIPE CULVERTS SHALL CONFORM TO AASHTO M170, R.C. ARCH PIPE CULVERTS SHALL CONFORM TO AASHTO M206 AND HORIZONTAL ELLIPTICAL PIPE CULVERTS SHALL CONFORM TO AASHTO M207.
4. ALL PIPE SHALL BE PROTECTED DURING CONSTRUCTION BY A COVER SUFFICIENT TO PREVENT DAMAGE FROM PASSAGE OF EQUIPMENT.
5. THE MINIMUM TRENCH WIDTH SHALL BE THE OUTSIDE DIAMETER OF THE PIPE PLUS 24 INCHES. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PRACTICABLE FOR WORKING CONDITIONS.
6. MULTIPLE PIPE CULVERTS SHALL BE INSTALLED WITH A MINIMUM CLEARANCE OF 24 INCHES BETWEEN STRINGS OF PIPE. REFER TO STD. DWG. FES-2 FOR MINIMUM CLEARANCE WHERE FLARED END SECTIONS ARE USED.
7. IMPERVIOUS MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
8. NOT MORE THAN ONE LIFTING HOLE MAY BE PROVIDED IN CONCRETE PIPE TO FACILITATE HANDLING. HOLE MAY BE CAST IN PLACE, CUT INTO THE FRESH CONCRETE AFTER FORMS ARE REMOVED, OR DRILLED. THE HOLE SHALL NOT BE MORE THAN TWO INCHES IN DIAMETER OR TWO INCHES SQUARE. CUTTING OR DISPLACEMENT OF REINFORCEMENT WILL NOT BE PERMITTED. SPALLED AREAS AROUND THE HOLE SHALL BE REPAIRED IN A WORKMANLIKE MANNER. LIFTING HOLE SHALL BE FILLED WITH MORTAR, CONCRETE, OR OTHER METHOD AS APPROVED BY THE ENGINEER.
9. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH (BELOW THE AREA IDENTIFIED AS "STRUCTURAL BEDDING" ABOVE) WILL BE EXCAVATED AND REPLACED WITH SELECTED PIPE BEDDING. THE QUANTITY OF MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE SELECTED PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS "SELECTED PIPE BEDDING."
10. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED ABOVE AS THE HAUNCH), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."

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

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

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

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

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

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

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

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

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

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

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

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

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

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

ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE PIPE CULVERT
FILL HEIGHTS & BEDDING

STANDARD DRAWING PCC-1



CORRUGATED STEEL PIPE (ROUND)

PIPE DIAMETER (INCHES)	① MINIMUM COVER TOP OF PIPE TO TOP OF GROUND "H" (FEET)	MAX. FILL HEIGHT "H" ABOVE TOP OF PIPE (FEET)				
		METAL THICKNESS (INCHES)				
		0.064	0.079	0.109	0.138	0.168
2 3/8 INCH BY 1/2 INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM						
12	1	84	91			
15	1	67	73			
18	1	56	61			
24	1	42	46	59		
30	2	36	36	47		
36	2	34	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

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.

CORRUGATED ALUMINUM PIPE (ROUND)

PIPE DIAMETER (INCHES)	① MINIMUM COVER TOP OF PIPE TO TOP OF GROUND "H" (FEET)	MAX. FILL HEIGHT "H" ABOVE TOP OF PIPE (FEET)				
		METAL THICKNESS IN INCHES				
		0.060	0.075	0.105	0.135	0.164
2 3/8 INCH BY 1/2 INCH CORRUGATION RIVETED OR HELICAL LOCK-SEAM						
12	1	45	45			
18	2	30	30	52		
24	2	22	22	39	41	
30	2		18	31	32	34
36	2.5			26	27	28
42	2		15	43	43	44
48	2			40	41	43
54	2			35	37	38
60	2				33	34
66	2					31
72	2					29

EQUIVALENT METAL THICKNESSES AND GAUGES

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

CORRUGATED METAL PIPE ARCHES

EQUIV. DIA. (INCHES)	PIPE DIMENSION SPAN X RISE (INCHES)	MINIMUM CORNER RADIUS (INCHES)	STEEL			ALUMINUM		
			MIN. THICKNESS REQUIRED INCHES	① MIN. HEIGHT OF FILL, "H" (FT.)	MAX. HEIGHT OF FILL, "H" (FT.)	MIN. THICKNESS REQUIRED INCHES	① MIN. HEIGHT OF FILL, "H" (FT.)	MAX. HEIGHT OF FILL, "H" (FT.)
				INSTALLATION	INSTALLATION		INSTALLATION	INSTALLATION
				TYPE 1	TYPE 1		TYPE 1	TYPE 1
			2 ½ INCH BY ½ INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM			2 ½ 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			① FOR MINIMUM COVER VALUES, "H" SHALL ② WHERE THE STANDARD 2 2/3" ½" COR WITH A 3' x 1' OR 5' x 1' CORRUGATION OR GREATER THAN THE MAXIMUM FILL		
		INSTALLATION		INSTALLATION				
		TYPE 2	TYPE 1	TYPE 2	TYPE 1			
36	40x31	5	0.079	3	2	12	15	
42	46x36	6	0.079	3	2	13	15	
48	53x41	7	0.079	3	2	13	15	
54	60x46	8	0.079	3	2	13	15	
60	66x51	9	0.079	3	2	13	15	
66	73x55	12	0.079	3	2	15	15	
72	81x59	14	0.079	3	2	15	15	
78	87x63	14	0.079	3	2	15	15	
84	95x67	16	0.109	3	2	15	15	
90	103x71	16	0.109	3	2	15	15	
96	112x75	18	0.109	3	2	15	15	
102	117x79	18	0.109	3	2	15	15	
108	128x83	18	0.138	3	2	15	15	

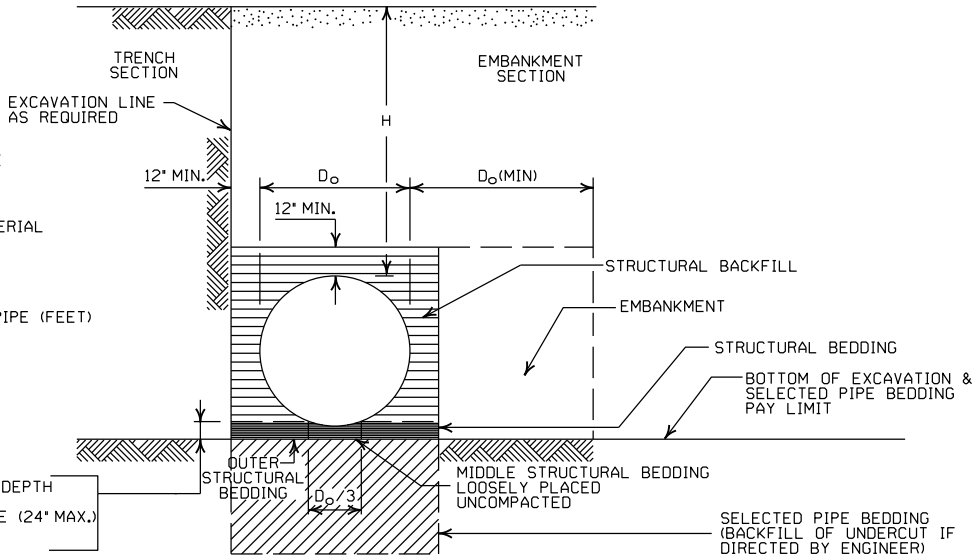
① FOR MINIMUM COVER VALUES, "H" SHALL INCLUDE A MINIMUM 12" OF PAVEMENT AND/OR BASE.

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

- LEGEND -

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

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



EMBANKMENT AND TRENCH INSTALLATIONS

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

GENERAL NOTES

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

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

ARKANSAS STATE HIGHWAY COMMISSION

METAL PIPE CULVERT
FILL HEIGHTS & BEDDING

STANDARD DRAWING PCM-1



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

- AGGREGATE BASE COURSE (CLASS 4, 5, 6, OR 7) MAY BE USED IN LIEU OF SELECTED MATERIAL.
SM3 WILL NOT BE ALLOWED.
- STRUCTURAL BEDDING MATERIAL SHALL HAVE A MAXIMUM PARTICLE SIZE OF 1 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.

MINIMUM TRENCH WIDTH
BASED ON FILL HEIGHT "H"

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

①NOTE:
18" MIN. (18" - 30" DIAMETERS)
24" MIN. (36" - 48" DIAMETERS)
MINIMUM COVER VALUES, "H"
SHALL INCLUDE A MINIMUM 12"
OF PAVEMENT AND/OR BASE.

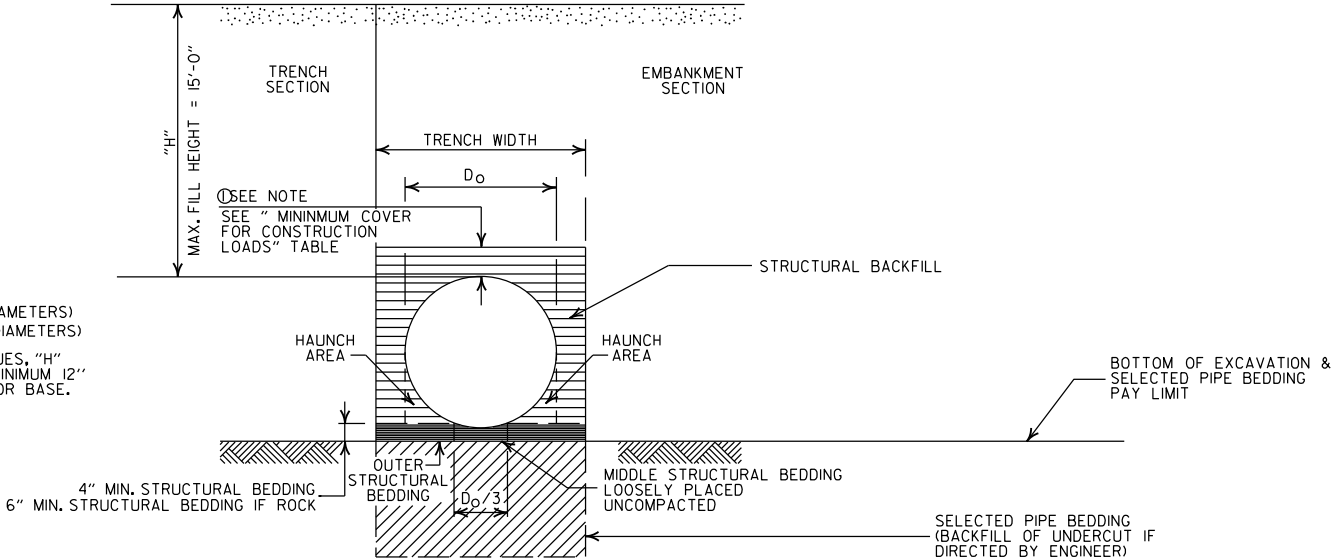
MULTIPLE INSTALLATION OF
HIGH DENSITY POLYETHYLENE PIPES

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 COVER FOR
CONSTRUCTION LOADS

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

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



TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

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

CONSTRUCTION SEQUENCE

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

- LEGEND -

- H = FILL HEIGHT (FT.)
D_o = OUTSIDE DIAMETER OF PIPE
MAX. = MAXIMUM
MIN. = MINIMUM
- ===== = STRUCTURAL BACKFILL MATERIAL
||||||| = UNDISTURBED SOIL

GENERAL NOTES

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

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

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

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

•• STRUCTURAL BEDDING MATERIAL SHALL HAVE A MAXIMUM PARTICLE SIZE OF 1/2 INCH. STRUCTURAL BACKFILL MATERIAL SHALL BE FREE OF ORGANIC MATERIAL, STONES LARGER THAN 1.50 INCH IN GREATEST DIMENSION, OR FROZEN LUMPS.

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

MINIMUM TRENCH WIDTH
BASED ON FILL HEIGHT "H"

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

MULTIPLE INSTALLATION OF
PVC PIPES

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

MAXIMUM FILL HEIGHT
BASED ON STRUCTURAL BACKFILL

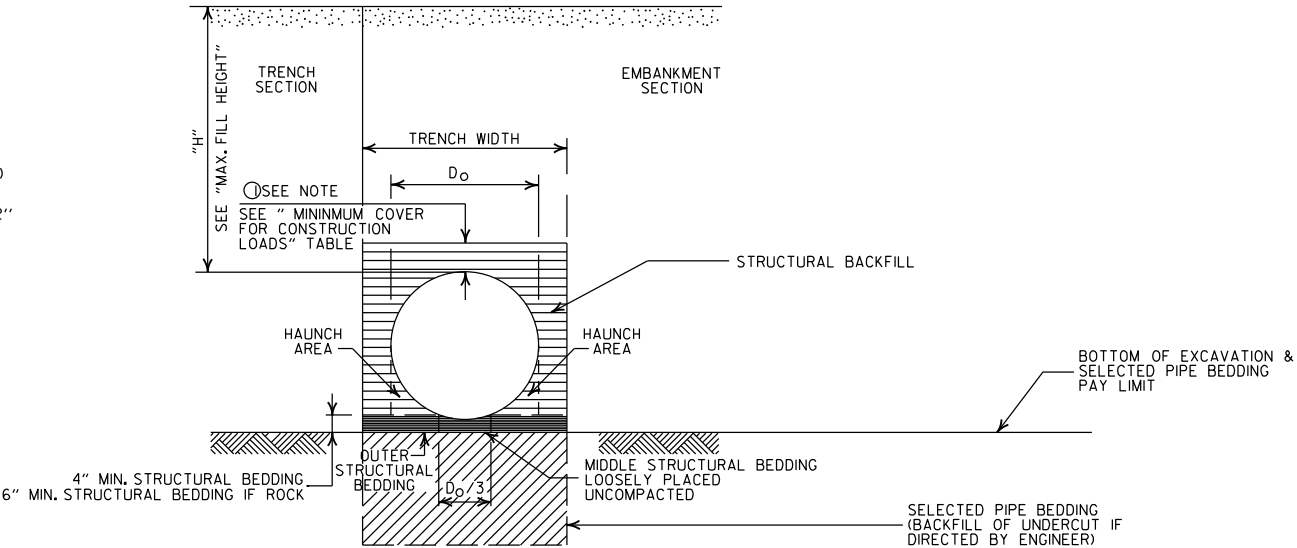
PIPE DIAMETER	"H"
18"	45'-0"
24"	45'-0"
30"	40'-0"
36"	40'-0"

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

MINIMUM COVER FOR
CONSTRUCTION LOADS

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

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



TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

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

CONSTRUCTION SEQUENCE

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

- LEGEND -

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

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

GENERAL NOTES

1. PIPE SHALL CONFORM TO ASTM F949, CELL CLASS 12454. INSTALLATION SHALL CONFORM TO JOB SPECIAL PROVISION "PLASTIC PIPE" AND SECTION 606 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION).
2. PLASTIC PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) WITH 2010 INTERIMS.
3. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PLUS A SUFFICIENT WIDTH TO ENSURE WORKING ROOM TO PROPERLY 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.

			ARKANSAS STATE HIGHWAY COMMISSION
			PLASTIC PIPE CULVERT (PVC F949)
			STANDARD DRAWING PCP-2
2-27-14	REVISED GENERAL NOTE 1.		
12-15-11	REV GENERAL NOTES & MINIMUM COVER NOTE; DELETED SM3 MATERIAL		
11-17-10	ISSUED		
DATE	REVISION	DATE FILMED	

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

* SM3 WILL NOT BE ALLOWED.

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

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

MINIMUM TRENCH WIDTH
BASED ON FILL HEIGHT "H"

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

MINIMUM COVER FOR
CONSTRUCTION LOADS

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

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

MULTIPLE INSTALLATION OF
POLYPROPYLENE PIPES

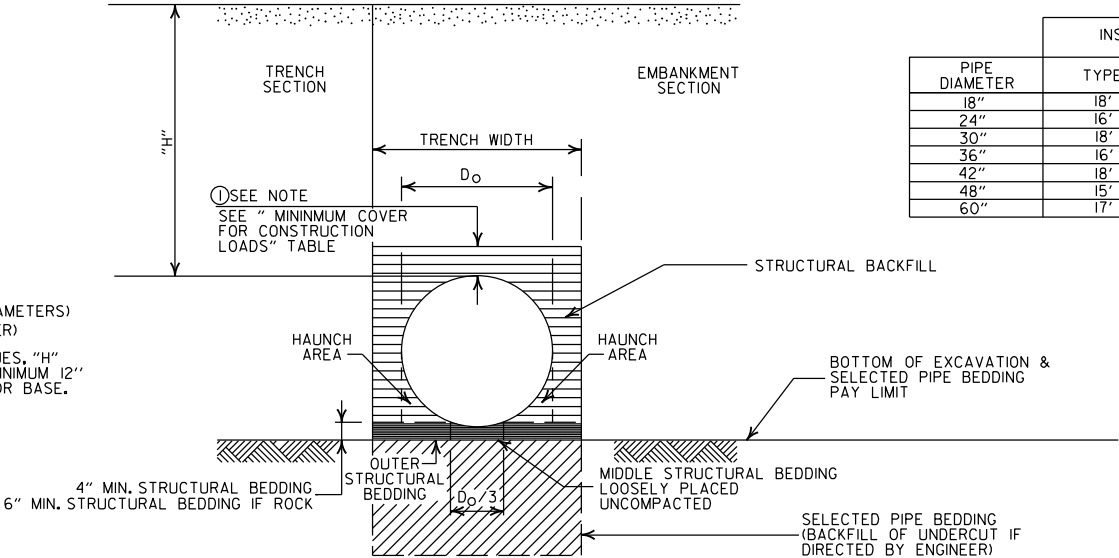
PIPE DIAMETER	CLEAR DISTANCE BETWEEN PIPES
18"	1'-6"
24"	2'-0"
30"	2'-6"
36"	3'-0"
42"	3'-6"
48"	4'-0"
60"	5'-0"

GENERAL NOTES

- PIPE SHALL CONFORM TO AASHTO M330, TYPE S. INSTALLATION SHALL CONFORM TO JOB SPECIAL PROVISION "PLASTIC PIPE" AND SECTION 606 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION).
- PLASTIC PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SIXTH EDITION (2012) WITH 2013 INTERIMS.
- THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PLUS A SUFFICIENT WIDTH TO ENSURE WORKING ROOM TO PROPERLY AND SAFELY PLACE AND COMPACT HAUNCHING AND OTHER BACKFILL MATERIAL.
- IMPERVIOUS MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
- WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH (BELOW THE AREA IDENTIFIED AS "STRUCTURAL BEDDING" ABOVE) WILL BE EXCAVATED AND REPLACED WITH SELECTED PIPE BEDDING. THE QUANTITY OF MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE SELECTED PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS "SELECTED PIPE BEDDING."
- WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED ABOVE AS STRUCTURAL BACKFILL), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."
- FOR PIPE TYPES THAT ARE NOT SMOOTH ON THE OUTSIDE (CORRUGATED OR PROFILE WALLS), BACKFILL GRADATIONS SHOULD BE SELECTED THAT WILL PERMIT THE FILLING OF THE CORRUGATION OR PROFILE VALLEY.
- POLYPROPYLENE PIPES OF DIAMETERS OTHER THAN SHOWN WILL NOT BE ALLOWED.
- JOINTS FOR POLYPROPYLENE PIPE SHALL MEET THE REQUIREMENTS FOR SOIL TIGHTNESS AS SPECIFIED IN SECTION 26.4.2.4 AND 30.4.2 OF THE AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS 3RD EDITION (2010) WITH 2012 INTERIMS. JOINTS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

MAXIMUM HEIGHT OF FILL "H"

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



EMBANKMENT AND TRENCH INSTALLATIONS

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

CONSTRUCTION SEQUENCE

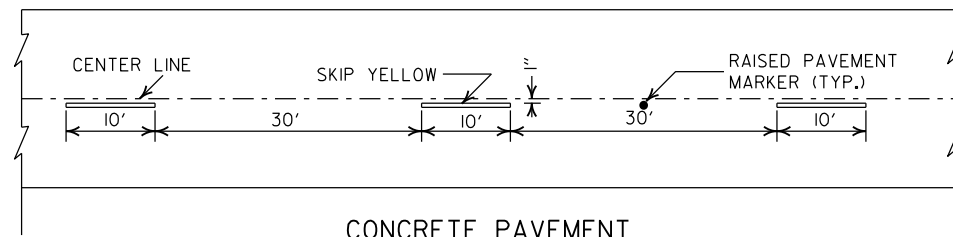
- PLACE STRUCTURAL BEDDING MATERIAL TO GRADE. DO NOT COMPACT.
- INSTALL PIPE TO GRADE.
- COMPACT STRUCTURAL BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE.
- THE STRUCTURAL BACKFILL SHALL BE PLACED AND COMPACTED IN LAYERS NOT EXCEEDING 8". THE LAYERS SHALL BE BROUGHT UP EVENLY AND SIMULTANEOUSLY TO THE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

- LEGEND -

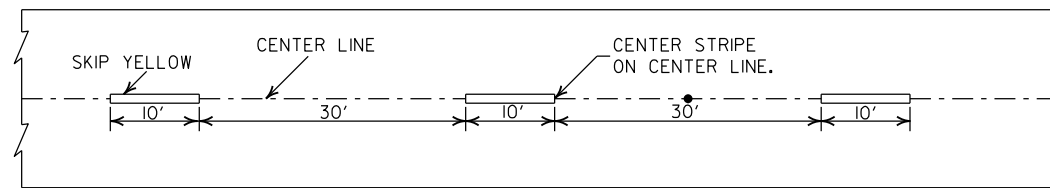
H = FILL HEIGHT (FT.)
D_o = OUTSIDE DIAMETER OF PIPE
MAX. = MAXIMUM
MIN. = MINIMUM

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

ARKANSAS STATE HIGHWAY COMMISSION		
PLASTIC PIPE CULVERT (POLYPROPYLENE)		
STANDARD DRAWING PCP-3		
02-27-20 11-07-19 DATE	REVISED ISSUED REVISION	DATE FILMED

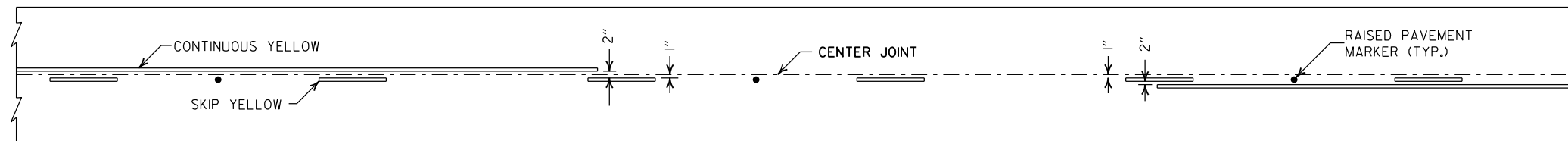


CONCRETE PAVEMENT

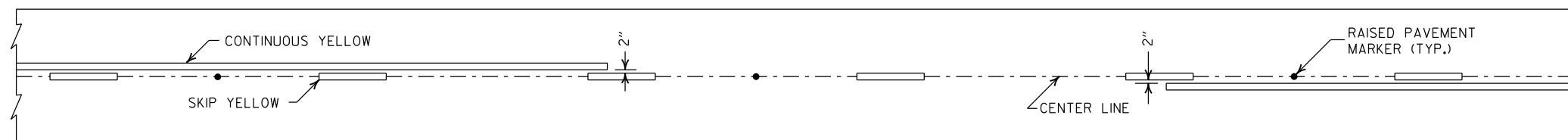


ASPHALT PAVEMENT

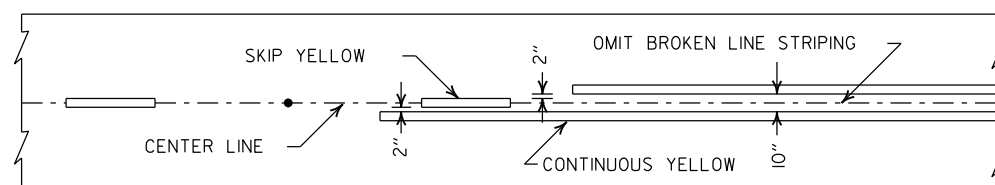
BROKEN LINE STRIPING



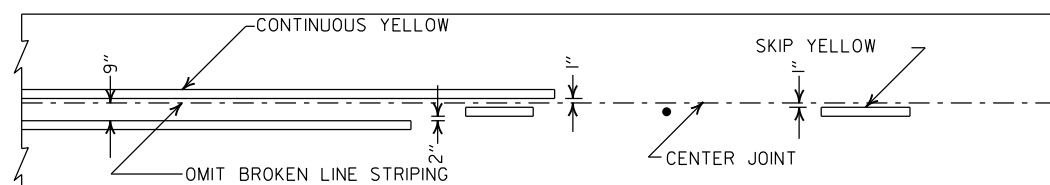
SOLID LINE STRIPING ON CONCRETE PAVEMENT



SOLID LINE STRIPING ON ASPHALT PAVEMENT

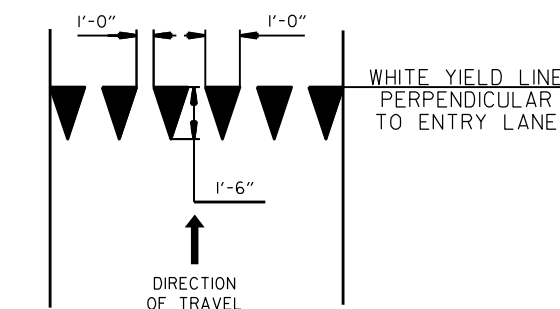


ASPHALT PAVEMENT

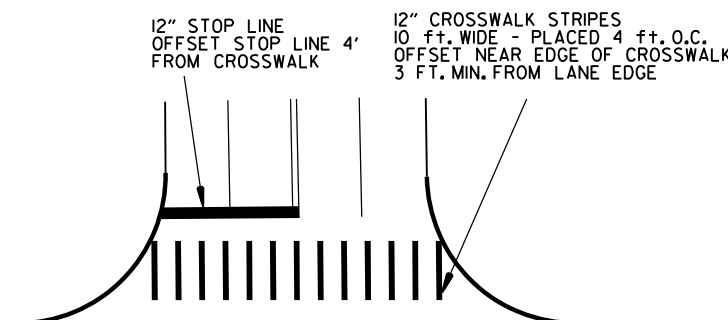


CONCRETE PAVEMENT

STRIPING AT ADJACENT NO PASSING LANES

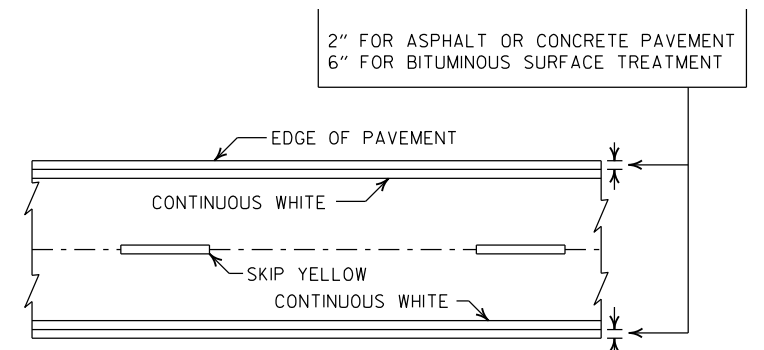


YIELD LINE DETAIL



CROSSWALK AND STOP LINE DETAILS

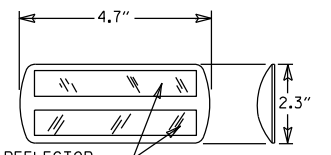
- NOTES:
1. REFER TO THE STRIPING DETAILS FOR PAVEMENT MARKING LINE WIDTHS.
 2. THIS DRAWING SHALL BE USED IN CONJUNCTION WITH THE LATEST REVISED ADDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES."
 3. RAISED PAVEMENT MARKERS SHALL BE PLACED ON AN 80 FEET SPACING UNLESS OTHERWISE SHOWN IN THE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



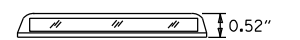
PAVEMENT EDGE LINE MARKING

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

TYPE II
RED/CLEAR OR
YELLOW/YELLOW



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



DETAIL OF STANDARD RAISED PAVEMENT MARKERS

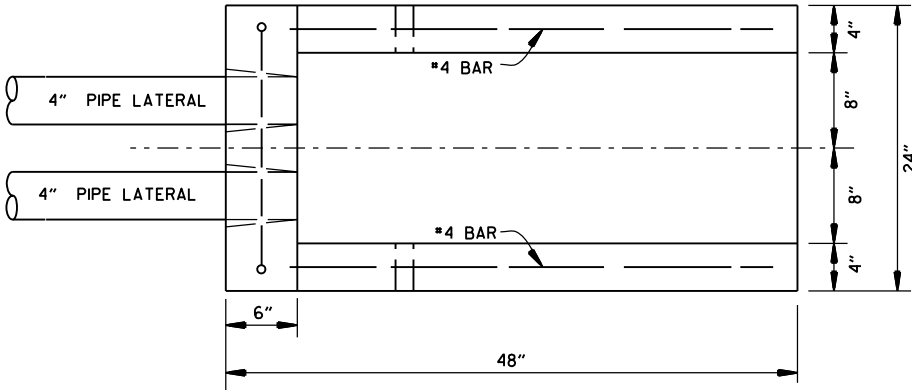
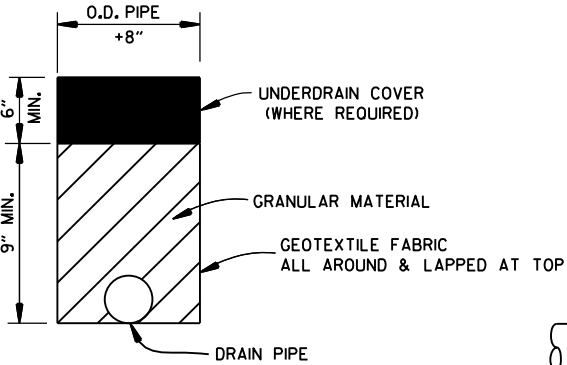
2-27-20	REVISED STOP LINE DETAILS	
6-1-17	ADDED YIELD LINE DETAIL	
5-12-16	REVISED LINE WIDTHS, SPACING, & NOTES	
9-12-13	REVISED DETAIL OF STANDARD RAISED PAVEMENT MARKERS	
11-17-10	REVISED GENERAL NOTES & REMOVED PLOWABLE PAVT MRKRS	
11-18-04	REVISED NOTE 2 & GENERAL NOTES	
8-22-02	ADDED CROSSWALK & STOPBAR DTLS.	
7-02-98	ADDED DETAILS OF STD. RAISED PAVT. MARKERS	
4-26-96	REV. NOTES 3&4; ADDED R.P.M.	
9-30-80	DRAWN	1-9-30-80
DATE	REVISION	FILMED

ARKANSAS STATE HIGHWAY COMMISSION

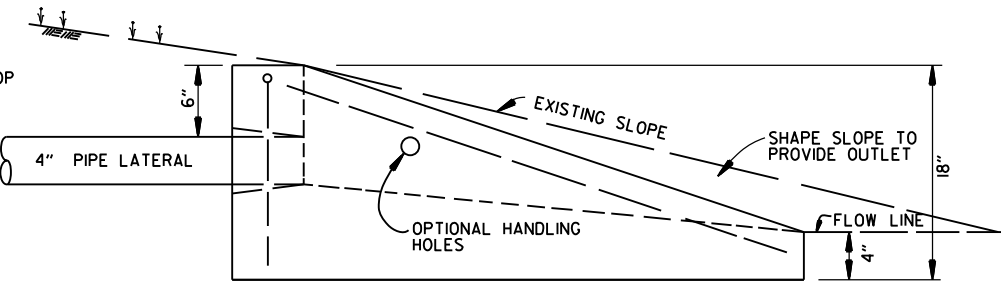
PAVEMENT MARKING DETAILS

STANDARD DRAWING PM-1

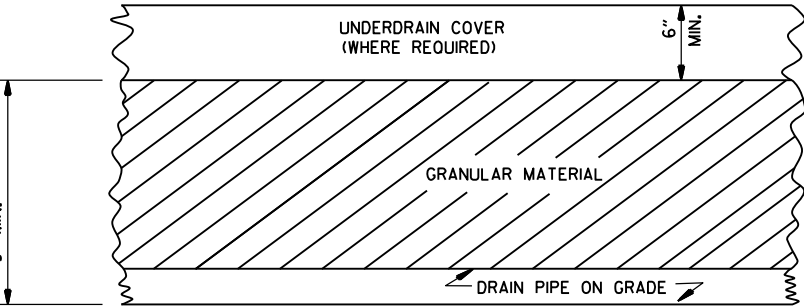
NOTE:
1. UNLESS OTHERWISE SPECIFIED ON THE PLANS, THE UNDERDRAIN COVER SHALL BE THOROUGHLY COMPACTED EARTH AND SHALL BE SUBSIDIARY TO PIPE UNDERDRAIN.
2. GRANULAR MATERIAL SHALL BE WRAPPED WITH GEOTEXTILE FABRIC, LAP FABRIC 12" OR THE WIDTH OF THE TRENCH AT THE TOP.



PLAN VIEW



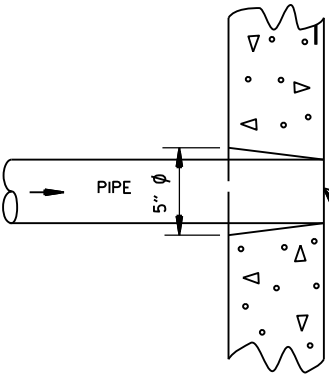
SIDE VIEW



DETAILS OF PIPE UNDERDRAIN

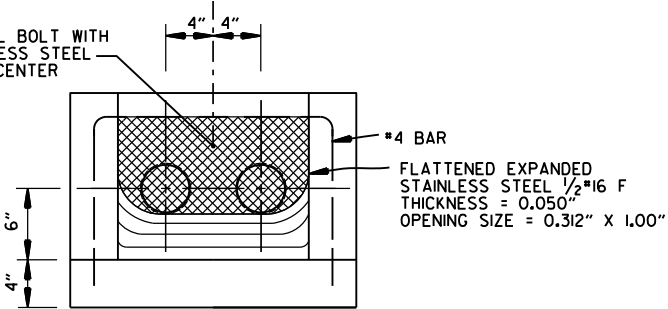
NOTES FOR PIPE UNDERDRAINS

1. GEOTEXTILE FABRIC SHALL MEET THE REQUIREMENTS OF SECTION 625 FOR TYPE I. 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.



DETAIL OF HOLE FOR 4" PIPE

1/4" STAINLESS STEEL BOLT WITH ANCHOR & 1" STAINLESS STEEL WASHER IN APPROX. CENTER OF SCREEN

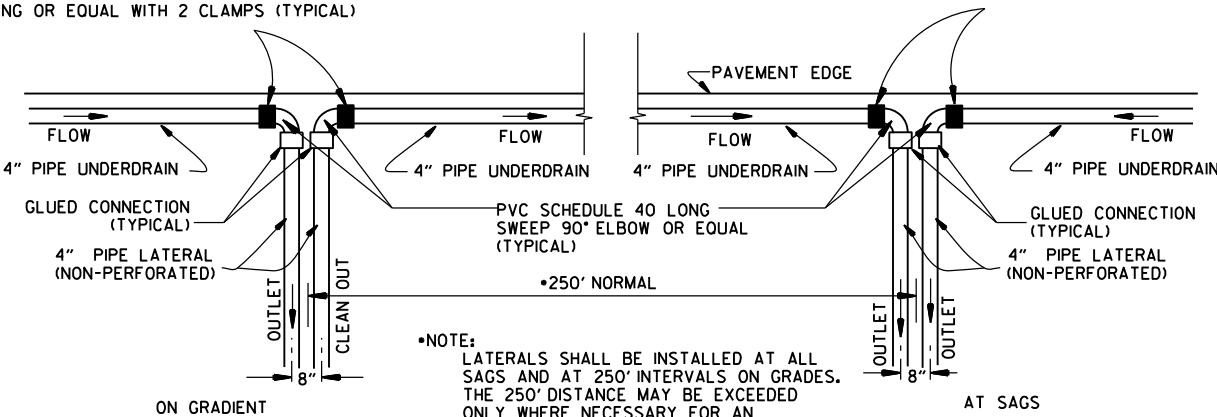


FRONT VIEW (DETAIL OF RODENT SCREEN)

FERNCO 1056-44 (4" CI/PLASTIC) OR FERNCO 1051-44 (4" AC/DI OR 4" CI/PLASTIC) COUPLING OR EQUAL WITH 2 CLAMPS (TYPICAL)

UNDERDRAIN OUTLET PROTECTORS

FERNCO 1056-44 (4" CI/PLASTIC) OR FERNCO 1051-44 (4" AC/DI OR 4" CI/PLASTIC) COUPLING OR EQUAL WITH 2 CLAMPS (TYPICAL)



NOTE:
LATERALS SHALL BE INSTALLED AT ALL SAGS AND AT 250' INTERVALS ON GRADES. THE 250' DISTANCE MAY BE EXCEEDED ONLY WHERE NECESSARY FOR AN ACCEPTABLE OUTLET.

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.

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 POLYETHYLENE 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
DATE	REVISION	DATE FILMED

ARKANSAS STATE HIGHWAY COMMISSION

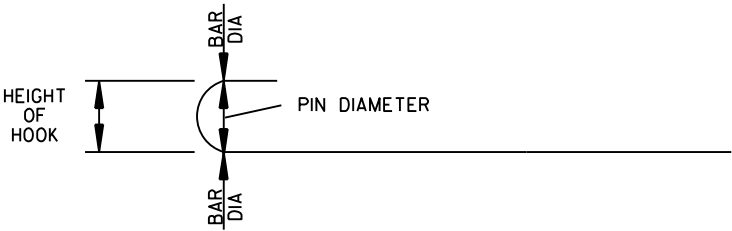
DETAILS OF PIPE UNDERDRAIN

STANDARD DRAWING PU-1

STEEL FABRICATION: REINFORCING STEEL FABRICATION SHALL CONFORM TO THE DIMENSIONS LISTED IN THE TABLE BELOW:

BAR SIZE	PIN DIAMETER	HOOK EXTENSION "K"
3	2 1/4"	4"
4	3 "	4 1/2"
5	3 3/4"	5"
6	4 1/2"	6"
7	5 1/4"	7"
8	6"	8"

IF THE OVERALL HEIGHT OF THE HOOK (SEE DIAGRAM BELOW) FOR A "b", "bi", "b2" or "b3" BENT BAR IS GREATER THAN THE CORRESPONDING TOP OR BOTTOM SLAB THICKNESS, LESS 2 3/4 INCHES, EACH BENT BAR SHALL BE REPLACED WITH ONE HOOKED BAR AND ONE STRAIGHT BAR, USING LENGTHS AS SHOWN IN THE TABLE BELOW. THE TWO BARS SHALL BE THE SAME DIAMETER AS, AND PLACED AT THE SAME SPACING AS, THE "b", "bi", "b2" OR "b3" BENT BARS THEY REPLACE.



NOTE: DIMENSIONS OF BARS ARE MEASURED OUT TO OUT OF BARS.

OVERALL HEIGHT OF HOOKED BAR DIAGRAM

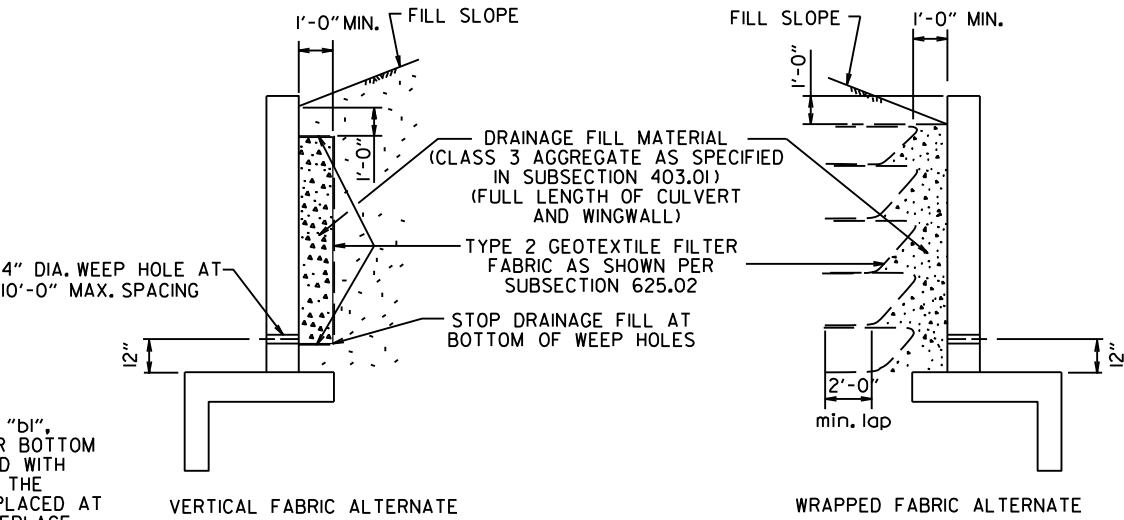
THE HOOKED BARS SHALL BE PLACED IN THE BOTTOM OF THE TOP SLAB AND THE TOP OF THE BOTTOM SLAB. THE STRAIGHT BARS SHALL BE PLACED IN THE TOP OF THE TOP SLAB AND THE BOTTOM OF THE BOTTOM SLAB. SEE TABLE BELOW FOR LENGTHS OF REPLACEMENT HOOKED AND STRAIGHT BARS.

FOR SKEWED CULVERTS, THE REPLACEMENT STRAIGHT BAR MAY HAVE TO BE CUT IN FIELD TO FIT.

REPLACEMENT BAR LENGTHS TABLE

BAR SIZE: "b", "bi", "b2" OR "b3"	LENGTH OF HOOKED BAR	LENGTH OF STRAIGHT BAR
*4	L + 1' - 0"	SEE "c" BAR LENGTH
*5	L + 1' - 2"	SEE "c" BAR LENGTH
*6	L + 1' - 4"	SEE "c" BAR LENGTH
*7	L + 1' - 8"	SEE "c" BAR LENGTH
*8	L + 1' - 10"	SEE "c" BAR LENGTH
*9	L + 2' - 6"	SEE "c" BAR LENGTH

L = "OW" - 3 INCHES



WINGWALL & CULVERT DRAINAGE DETAIL

REINFORCED CONCRETE BOX CULVERT GENERAL NOTES

CONCRETE SHALL BE CLASS S WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3500 PSI.

REINFORCING STEEL SHALL BE AASHTO M 31 OR M 53, GRADE 60.

CONSTRUCTION AND MATERIALS FOR WINGWALL & CULVERT DRAINAGE, INCLUDING WEEP HOLES AND GRANULAR MATERIAL, SHALL BE SUBSIDIARY TO THE BID ITEM, "CLASS S CONCRETE".

MEMBRANE WATERPROOFING SHALL CONFORM TO THE REQUIREMENTS OF SECTION 815 OF THE STANDARD SPECIFICATIONS.

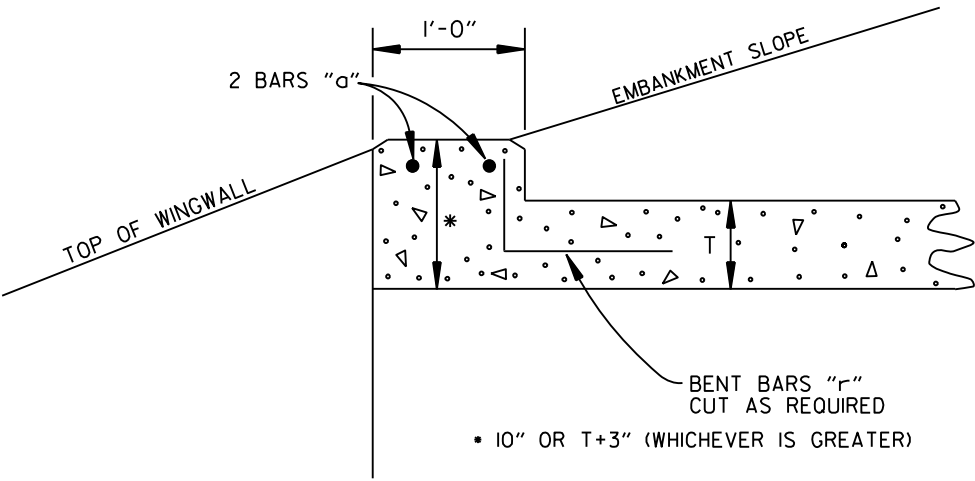
MEMBRANE WATERPROOFING SHALL BE APPLIED TO ALL CONSTRUCTION JOINTS IN THE TOP SLAB AND THE SIDEWALLS OF R.C. BOX CULVERTS AS DIRECTED BY THE ENGINEER. NO PAYMENT SHALL BE MADE FOR THIS ITEM, BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS BID FOR THE R.C. BOX CULVERT.

REINFORCING STEEL TOLERANCES: THE TOLERANCES FOR REINFORCING STEEL SHALL MEET THOSE LISTED IN "MANUAL OF STANDARD PRACTICE" PUBLISHED BY CONCRETE REINFORCING STEEL INSTITUTE (CRSI) EXCEPT THAT THE TOLERANCE FOR TRUSS BARS SUCH AS FIGURE 3 ON PAGE 7-4 OF THE CRSI MANUAL SHALL BE MINUS ZERO TO PLUS 1/2 INCH.

WEEP HOLES IN BOX CULVERT WALLS SHALL HAVE A MAXIMUM HORIZONTAL SPACING OF 10'-0" AND SHALL BE SPACED TO CLEAR ALL REINFORCING STEEL. THE DRAIN OPENING SHALL BE 4" DIAMETER AND SHALL BE PLACED 12" ABOVE THE TOP OF THE BOTTOM SLAB.

WEEP HOLES IN WINGWALLS SHALL HAVE A MAXIMUM HORIZONTAL SPACING OF 10'-0" AND SHALL BE SPACED TO CLEAR ALL REINFORCING STEEL. THERE SHALL BE A MINIMUM OF TWO (2) WEEP HOLES IN EACH WINGWALL. THE DRAIN OPENING SHALL BE 4" DIAMETER AND SHALL BE PLACED 12" ABOVE THE TOP OF THE WINGWALL FOOTING.

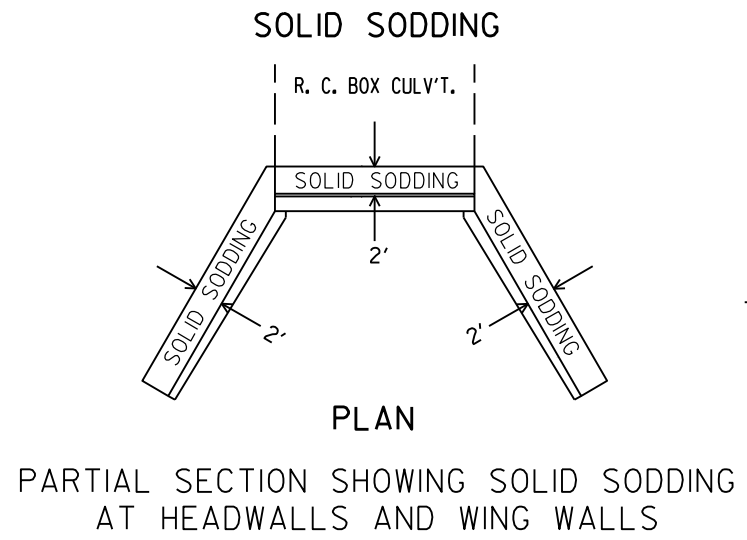
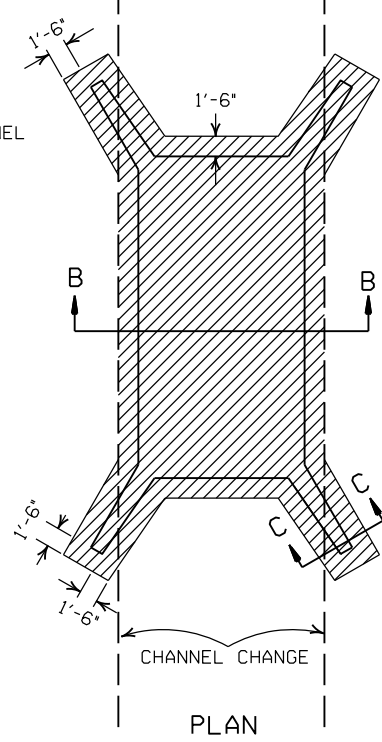
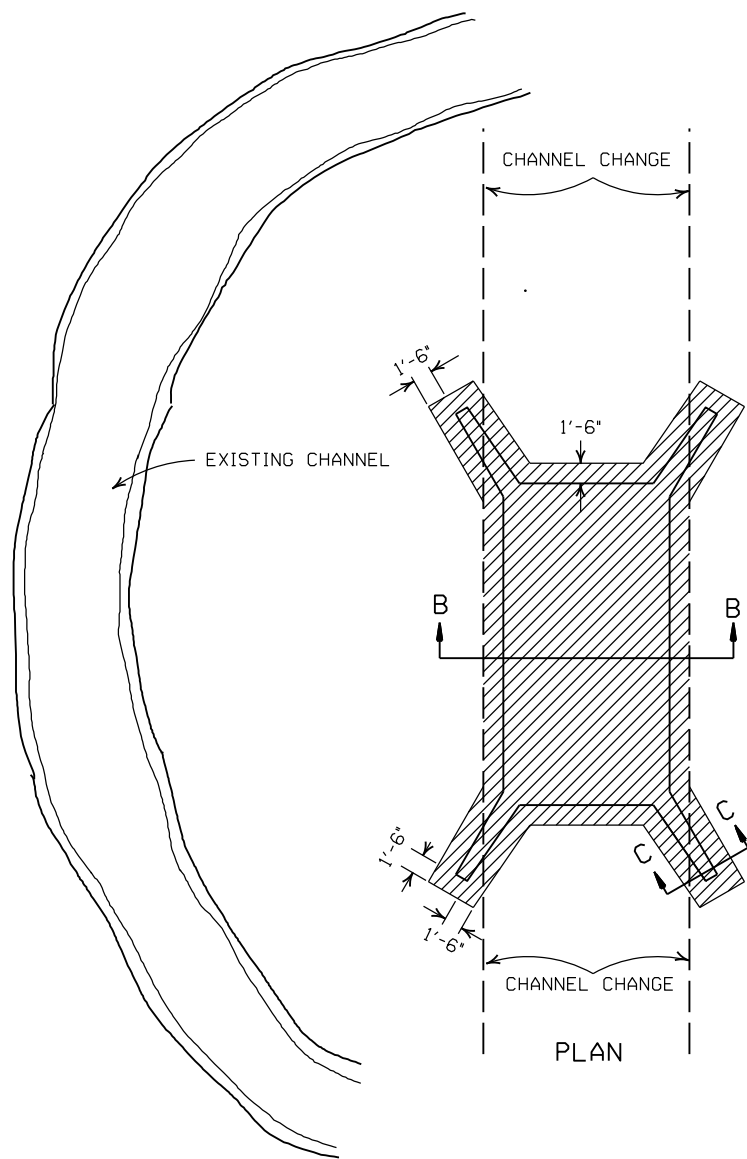
THE REQUIREMENTS SHOWN ON THIS DRAWING SHALL SUPERCEDE THE CORRESPONDING REQUIREMENTS ON ALL REINFORCED CONCRETE BOX CULVERT STANDARD DRAWINGS.



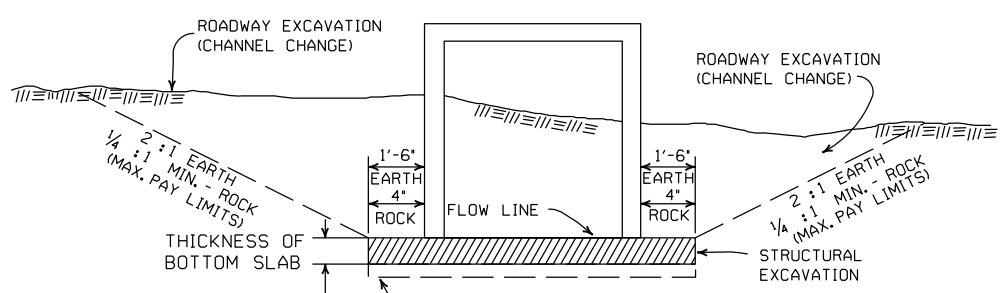
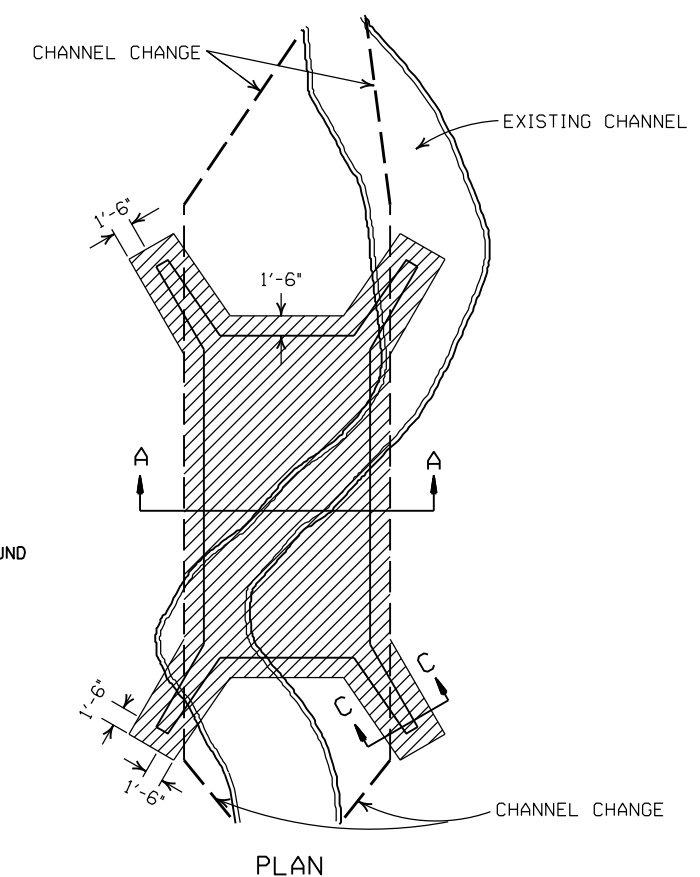
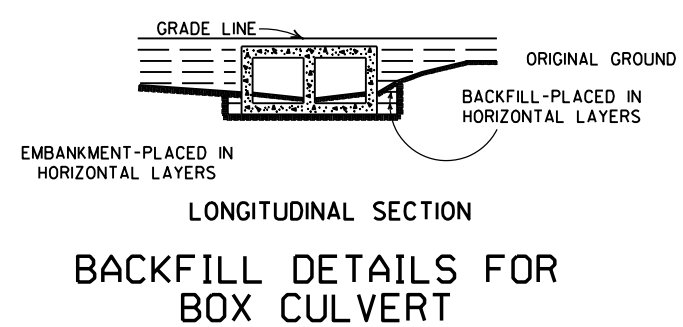
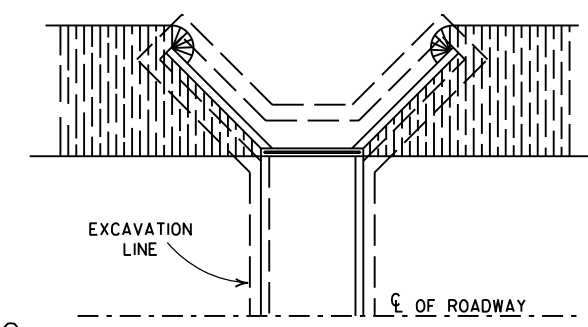
NOTE: FOR ALL SKEWED R.C. BOX CULVERTS THE LENGTH "K" OF THE MODIFIED HEADWALL SHALL BE EQUAL TO THE ROADWAY LENGTH "RL". THE ENDS OF THE HEADWALL SHALL BE CONSTRUCTED PARALLEL TO THE SKEW ANGLE OF THE BOX CULVERT.

R.C. BOX CULVERT HEADWALL MODIFICATIONS

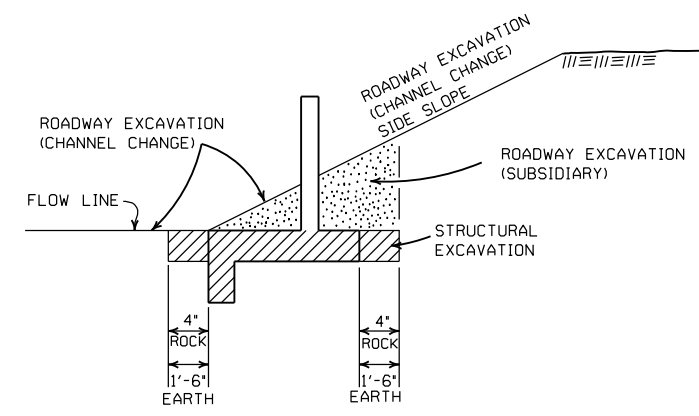
7/26/12	REV. DRAINAGE FILL MATERIAL & DETAIL		ARKANSAS STATE HIGHWAY COMMISSION
12/15/11	REQUIRE WEEP HOLES IN BOX CULVERT WALLS		
5-25-06	REV. GEN. NOTES AND DETAILS FOR WEEP HOLES; BAR DIAGRAM		
11-16-01	ADDED WINGWALL DRAINAGE DETAIL/EDITED GEN. NOTES		
10-18-96	REV. ASTM REF. TO AASHTO & ADDED BAR DIAGRAM		
10-12-95	MOVED SOLID SODDING DETAIL TO RCB-2		REINFORCED CONCRETE BOX CULVERT DETAILS
6-2-94	ADDED SOLID SODDING PLAN DETAIL		
8-5-93	REVISED PIN DIAMETER TO SPECS.		
8-15-91	DRAWN AND ISSUED		STANDARD DRAWING RCB-1
DATE	REVISION	DATE FILMED	



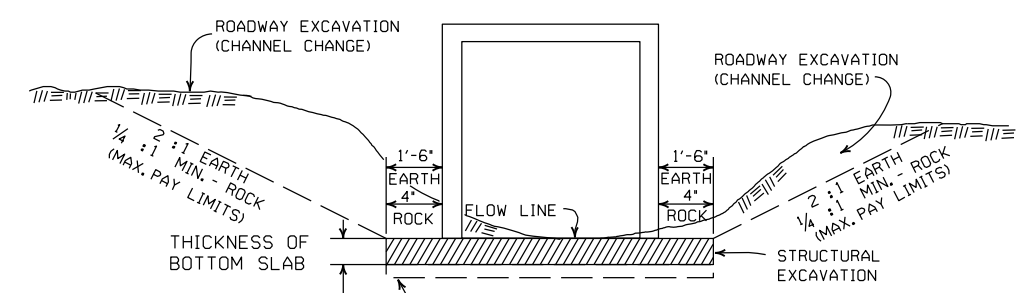
NOTE: LENGTH MEASURED ALONG THE CENTER OF 2' STRIP OF SOLID SODDING.



SECTION B-B
DETAILS FOR NEW CHANNELS



SECTION C-C



SECTION A-A
DETAILS THROUGH EXISTING CHANNELS

GENERAL NOTES:
ROADWAY EXCAVATION (CHANNEL CHANGE) WILL BE PAID FOR AT R.C. BOX CULVERT LOCATIONS. IT WILL BE PAID TO THE LIMITS ACTUALLY CUT AND WILL BE CONFINED TO THAT PORTION OF THE INDICATED AREA THAT IS ABOVE THE FLOW LINE. ROADWAY EXCAVATION (CHANNEL CHANGE) SHALL BE MEASURED BY CROSS SECTIONS AND VOLUMES COMPUTED BY AVERAGE END AREA METHOD. ALL CHANNEL CHANGES SHALL BE BROUGHT TO GRADE PRIOR TO MAKING ANY EXCAVATION FOR STRUCTURES.
EXCAVATION FOR STRUCTURES WILL BE PAID FOR AT ALL R.C. BOX CULVERT LOCATIONS. IT WILL BE PAID TO THE LIMITS SHOWN AND SHALL BE CONFINED TO THAT PORTION OF THE INDICATED AREA THAT IS BELOW THE CHANNEL FLOW LINE.
ROADWAY EXCAVATION SHOWN IN SECTION C-C ABOVE AS SUBSIDIARY WILL NOT BE MEASURED OR PAID FOR DIRECTLY, BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS OF EXCAVATION.

DATE	REVISION	FILMED
11-20-03	REVISED SECTION A-A NOTE	
8-22-02	REVISED SECTION B-B NOTE	
10-12-95	COMBINED 1891B AND 1888A	
1-4-83	REVISED GENERAL NOTES AND ADDED MAXIMUM PAY LIMIT NOTES.	674-1-4-83
2-2-76	EXCAV. PAY LIMITS	917-2-2-76
10-2-72	REVISED AND REDRAWN	564-10-16-72

ARKANSAS STATE HIGHWAY COMMISSION	
EXCAVATION PAY LIMITS, BACKFILL, & SOLID SODDING FOR BOX CULVERTS	
STANDARD DRAWING RCB-2	

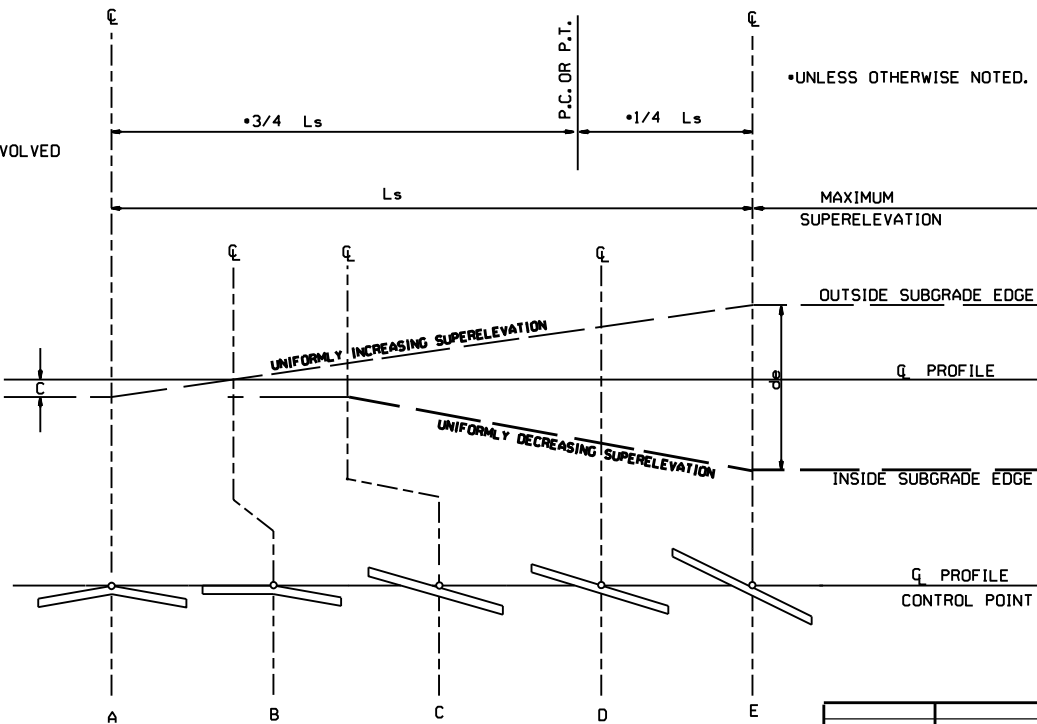
SUPERELEVATION TABLE FOR TWO - WAY TRAFFIC

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

- GENERAL NOTES
- ON PAVEMENT WITH TWO-WAY TRAFFIC, THE SUPERELEVATION SHALL BE REVOLVED ON THE INSIDE PAVEMENT EDGE UNLESS OTHERWISE NOTED ON THE PLANS
 - SUPERELEVATION VALUES SHOWN ON THE CROSS SECTIONS ARE VALUES (+) OR (-) TO BE ADDED TO OR SUBTRACTED FROM THE POINT OF CONTROL.
 - LENGTHS FOR L MAY BE ROUNDED IN MULTIPLES OF 25 FT. OR 50 FT. TO PERMIT SIMPLER CALCULATIONS.
 - 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.

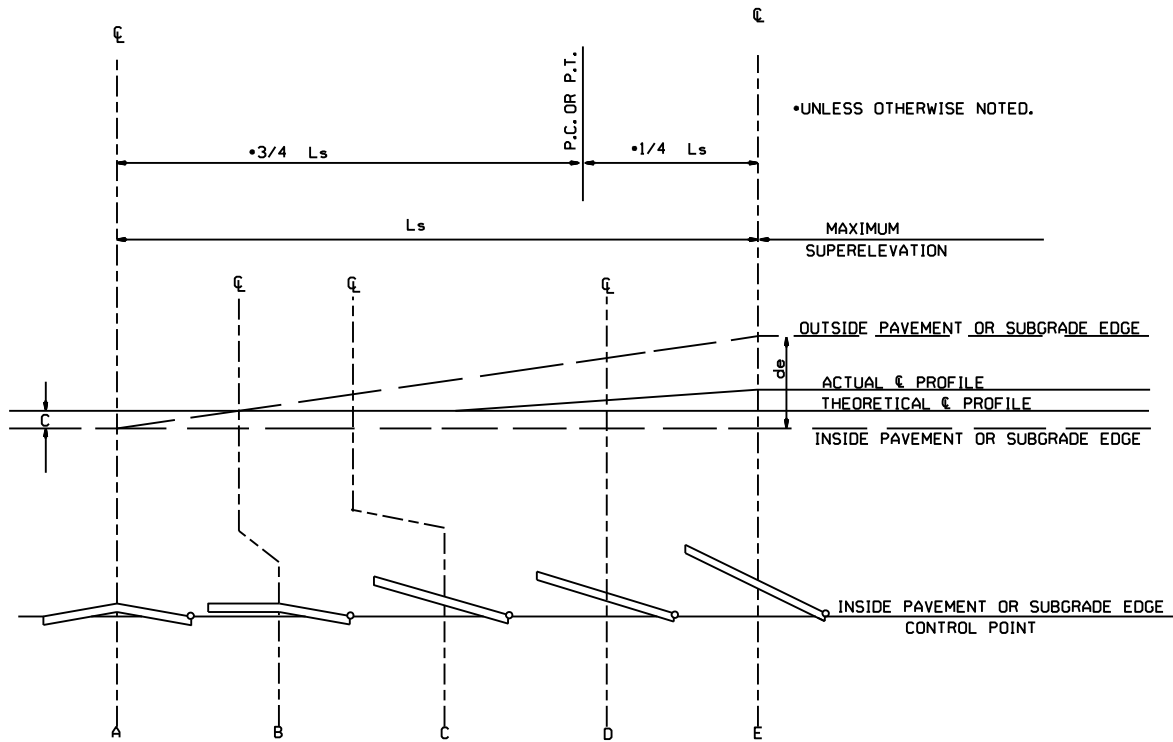
SUPERELEVATION FORMULA = $\frac{Lde}{Ls}$



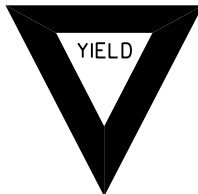
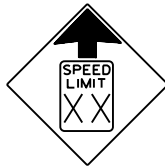
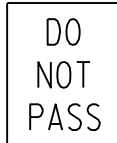
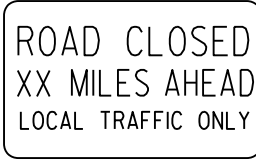
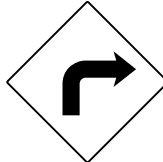
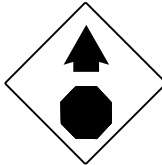
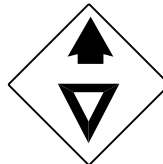
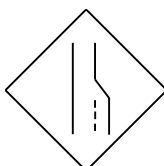
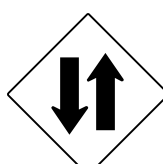
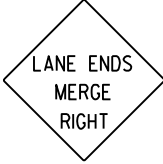
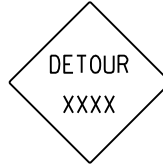
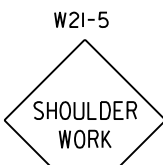
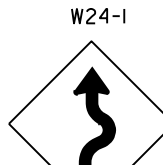
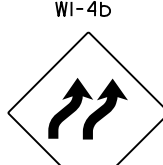
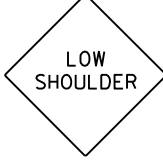
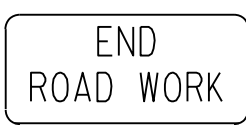
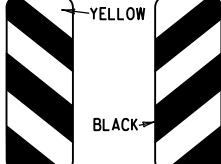
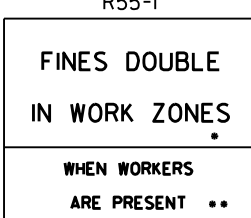
STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND CENTER LINE

ABBREVIATIONS

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



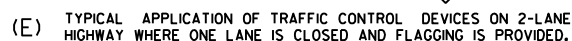
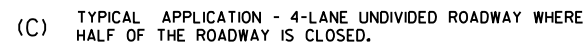
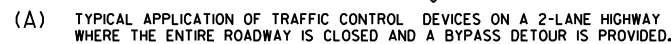
STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND INNER SUBGRADE

RI-1  STANDARD 30"x30" EXPRESSWAY 36"x36" SPECIAL 48"x48"	RI-2  STD. 36"x36"x36" EXPWY. 48"x48"x48" FWY. 60"x60"x60"	R2-1  STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"	W3-5  STD. 36"x36" EXPWY. 48"x48" FWY. 48"x48"	W3-5a  STD. 36"x36" EXPWY. 48"x48" FWY. 48"x48"	R4-1  STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"	R4-2  STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"	ADVANCE DISTANCES (XXXX) 500 FT 1/2 MILE 1000 FT 3/4 MILE 1500 FT 1 MILE AHEAD GENERAL NOTES: 1. ALL TRAFFIC CONTROL DEVICES USED ON ROAD CONSTRUCTION SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION, AND TO THE STANDARD HIGHWAY SIGNS, LATEST EDITION, OR AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION. 2. TRAFFIC CONTROL DEVICES SHALL BE SET UP JUST BEFORE THE START OF CONSTRUCTION OPERATIONS AND SHALL BE PROPERLY MAINTAINED DURING THE TIME SUCH CONDITIONS EXIST. THEY SHALL REMAIN IN PLACE ONLY AS LONG AS NEEDED AND REMOVED THEREAFTER. 3. EXISTING SIGNS AND CONSTRUCTION SIGNS SHALL BE KEPT IN PROPER POSITION, AND BE CLEAN AND LEGIBLE AT ALL TIMES. SIGNS THAT DO NOT APPLY TO EXISTING CONDITIONS SHALL BE REMOVED. SIGNS THAT ARE DAMAGED, DEFACED, OR THAT ACCUMULATE DIRT DURING CONSTRUCTION SHALL BE CLEANED, REPAIRED, OR REPLACED. 4. SIGNS ARE USUALLY MOUNTED ON A SINGLE POST, ALTHOUGH THOSE WIDER THAN 36" OR LARGER THAN 10 SQ. FT. SHALL BE MOUNTED ON TWO POSTS OR ABOVE A TYPE III BARRICADE. 5. SIGN POSTS DIRECT BURIED IN SOIL SHALL BE 2 LB. MINIMUM CHANNEL POST OR 4"x4" WOOD POSTS. CHANNEL POSTS SHALL BE PAINTED GREEN. WOOD POSTS SHALL BE PAINTED WHITE. ALL POSTS SHALL BE NEATLY CONSTRUCTED, AND SHALL BE REPLUMBED, CLEANED, OR REPAIRED AS NEEDED FOR THE DURATION OF THE JOB. THERE SHALL NOT BE MORE THAN 2 POSTS IN A 7' PATH FOR WOOD OR CHANNEL POSTS. ANY CHANNEL POST SPLICE SHALL BE IN ACCORDANCE WITH STANDARD DRAWING TC-3. 6. POST MOUNTED SIGNS IN RURAL AREAS SHALL BE CONSTRUCTED WITH THE NEAR EDGE OF THE SIGN FROM 6 TO 12 FEET FROM THE PAVEMENT EDGE. SIGNS IN URBAN AREAS AND BARRICADE MOUNTED SIGNS SHALL BE MOUNTED A MINIMUM OF 2 FEET FROM THE PAVEMENT EDGE. 7. ALL POST AND BARRICADE MOUNTED SIGNS MOUNTED IN URBAN AREAS SHALL BE MOUNTED A MINIMUM DISTANCE OF 7' FROM THE BOTTOM OF THE SIGN TO THE ROADWAY SURFACE. ALL POST AND BARRICADE MOUNTED SIGNS MOUNTED IN RURAL AREAS SHALL BE MOUNTED A MINIMUM DISTANCE OF 7' FROM THE BOTTOM OF THE SIGN TO THE ROADWAY SURFACE. EXCEPT A MINIMUM OF 6' SHALL BE USED WHEN MOUNTING AN ADVISORY SIGN BELOW A WARNING SIGN. TEMPORARY SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS FOR INTERMEDIATE TERM STATIONARY WORK CONDITIONS. THE SIGNS MINIMUM MOUNTING HEIGHT SHALL BE 5'. RETROREFLECTIVE DEVICES SHALL BE USED. TEMPORARY SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS FOR SHORT-TERM, SHORT DURATION, AND MOBILE CONDITIONS. THEY SHALL BE NO LESS THAN ONE (1) FOOT ABOVE THE TRAVELED WAY. LONG-TERM STATIONARY SIGNS SHALL BE DIRECT BURIED IN SOIL, UNLESS CONDITIONS NECESSITATE THE USE OF PORTABLE SIGNS, OR AS APPROVED BY THE ENGINEER. CONCRETE PADS, CONCRETE OR ROCK BALLAST, OR OTHER SOLID MATERIALS SHALL NOT BE UTILIZED WITH PORTABLE SIGN SUPPORTS. 8. FLAGGERS SHALL USE REFLECTORIZED STOP-SLOW PADDLES. FLAGS MAY BE USED ONLY FOR EMERGENCY SITUATIONS. 9. MOST OF THE SIGNS SHOWN ARE ORIENTED TO THE RIGHT. HOWEVER, THIS DOES NOT PRECLUDE THE USE OF MIRROR IMAGES OF THESE SIGNS WHERE THE REVERSE ORIENTATION MIGHT BETTER CONVEY TO MOTORISTS THE PROPER DIRECTION OF MOVEMENT. 10. R55-1 SIGNS SHALL BE PLACED AT LEAST 1500' BUT NOT MORE THAN 1 MILE IN ADVANCE OF THE WORK ZONE. IF A SPEED LIMIT REDUCTION IS IN EFFECT, THE SIGN SHALL BE PLACED A MINIMUM OF 500' IN ADVANCE OF THE "REDUCED SPEED AHEAD" SIGN. • NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE REQUIREMENTS SHOWN IN NOTES 4 & 5, BUT MEET THE REQUIREMENTS OF MANUAL FOR ASSESSING SAFETY HARDWARE (MASH), WILL BE ACCEPTED. COMPLIANCE WITH THE REQUIREMENTS OF MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) IS REQUIRED FOR ALL PROJECTS.
R5-1  STD. 30"x30" EXPWY. 36"x36" SPECIAL 48"x48"	R11-2  48"x30"	R11-3A  60"x30"	R11-4  60"x30"	W21-5a  STD. 36"x36" FWY. 48"x48"	W1-1  STD. 36"x36" FWY. 48"x48"	W1-2  STD. 36"x36" FWY. 48"x48"	
W1-3  STD. 48"x48"	W1-4  STD. 48"x48"	W1-6  STD. 48"x24" SPECIAL 60"x30"	W1-8  STD. 18"x24" SPECIAL 24"x30" EXPWY. 30"x36" FWY. 36"x48"	W3-1  STD. 36"x36" SPECIAL 48"x48"	W3-2  STD. 36"x36" SPECIAL 48"x48"	W4-2  STD. 36"x36" FWY. 48"x48"	
W5-1  STD. 36"x36" SPECIAL 48"x48"	W6-3  EXPWY. 36"x36" SPECIAL 48"x48"	W8-7  EXPWY. 36"x36" FWY. 48"x48"	W9-2  STD. 36"x36" FWY. 48"x48"	W13-1  STD. 24"x24"	W20-1  STD. 48"x48"	W20-2  STD. 48"x48"	
W20-3  STD. 48"x48"	W20-4  STD. 48"x48"	W20-5  STD. 48"x48"	W20-7a  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-II  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					

II-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	
DATE	REVISION	FILMED
ARKANSAS STATE HIGHWAY COMMISSION STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION STANDARD DRAWING TC-1		

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6-8-95	REVISED TO CORRECT SIGN ILLUSTRATIONS	6-8-95
2-2-95	REVISED PER PART VI, MUTCD SEPT. 3, 1993	
8-16-91	DRAWN AND PLACED IN USE	
DATE	REVISION	FILMED

ARKANSAS STATE HIGHWAY COMMISSION
STANDARD TRAFFIC CONTROLS
FOR HIGHWAY CONSTRUCTION
STANDARD DRAWING TC-1



TAPER FORMULAE:

L=SW FOR SPEEDS OF 45MPH OR MORE.

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

WHERE:
L = MINIMUM LENGTH OF TAPER.

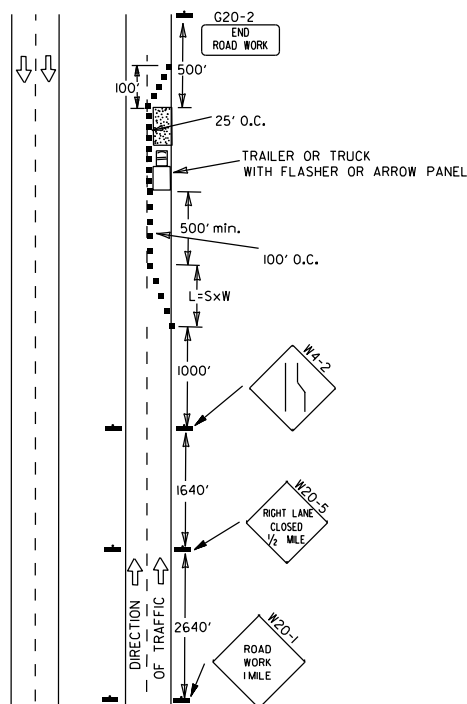
S= NUMERICAL VALUE OF POSTED SPEED LIMIT PRIOR TO WORK
OR 85TH PERCENTILE SPEED.

W= WIDTH OF OFFSET.

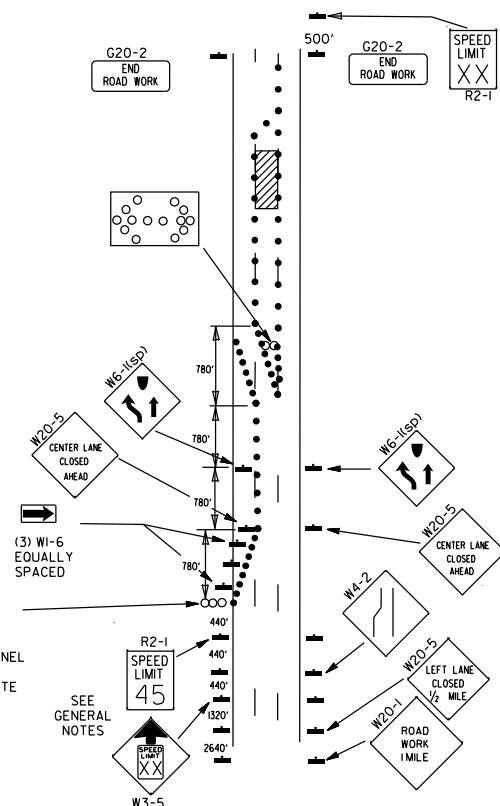
GENERAL NOTES:

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 WHEN SPEED IS GREATER THAN 30MPH AND W1-3 WHEN 30MPH OR LESS.
2. WHEN THE EXISTING SPEED LIMIT IS 55MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 45MPH, THE R2-(155) SHALL BE OMITTED AND THE W3-5 SHALL BE INSTALLED AT THAT LOCATION. ADDITIONAL R2-145MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1MILE INTERVALS. AT THE END OF THE WORK AREA A R2-(XXX) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
3. WHEN THE EXISTING SPEED LIMIT IS 65MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 55MPH, THE R2-(145) SHALL BE OMITTED. ADDITIONAL R2-155MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1MILE INTERVALS. AT THE END OF THE WORK AREA A R2-(XXX) 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. PAYMENT MARKINGS NO LONGER APPLICABLE WHICH MIGHT CREATE CONFUSION IN THE MINDS OF VEHICLE OPERATORS SHALL BE REMOVED OR OBLITERATED AS SOON AS PRACTICABLE.
7. TRAILER MOUNTED DEVICES SUCH AS ARROW PANELS AND PORTABLE CHANGEABLE MESSAGE SIGNS SHALL BE DELINEATED BY AFFIXING CONSPICUITY MATERIAL IN A CONTINUOUS LINE ON THE FACE OF THE TRAILER. WHEN PLACED ON OR ADJACENT TO THE SHOULDER AND NOT BEHIND A POSITIVE BARRIER, THESE DEVICES SHALL BE DELINEATED BY PLACING FIVE (5) TRAFFIC DRUMS, EQUALLY SPACED ALONG THE TRAFFIC SIDE OF THE DEVICE. PAYMENT FOR TRAFFIC DRUMS SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR VARIOUS TRAILER MOUNTED DEVICES.
8. DIMENSIONS SHOWN FOR RAISED PAVEMENT MARKERS ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR MARKERS WITH THE APPROVAL OF THE ENGINEER. REQUESTING APPROVAL FOR SIMILAR MARKERS MAY BE MADE BY REFERRING TO THE ADROT 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).

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.



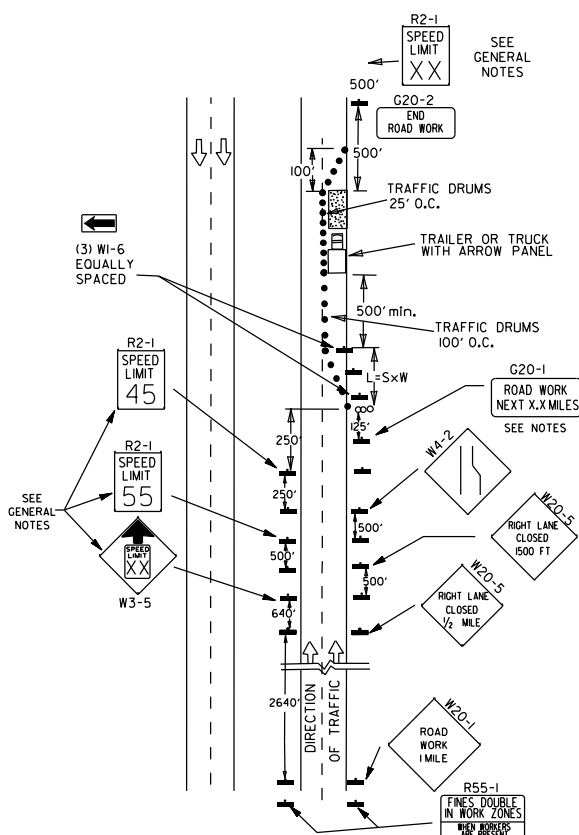
(B) TYPICAL APPLICATION - 3-LANE ONEWAY ROADWAY WHERE CENTER LANE IS CLOSED.

KEY:

- ○ ○ 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-(K55) SHALL BE OMITTED AND THE W3-5 SHALL BE INSTALLED AT THAT LOCATION. ADDITIONAL R2-145MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1/2 MILE INTERVALS. AT THE END OF THE WORK AREA A R2-(KXX) 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-(K45) SHALL BE OMITTED. ADDITIONAL R2-155MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1/2 MILE INTERVALS. AT THE END OF THE WORK AREA A R2-(KXX) 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 (1/2 MILE) SIGNS ARE NOT REQUIRED IN ADVANCE OF LANE CLOSURES THAT BEGIN INSIDE THE PROJECT LIMITS.
8. FLAGGERS SHALL USE STOP/SLOW PADDLES FOR CONTROLLING TRAFFIC THROUGH WORK ZONES. FLAGS MAY BE USED ONLY FOR EMERGENCY SITUATIONS.
9. ALL PLASTIC DRUMS AND CONES SHALL MEET THE REQUIREMENTS OF MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).
10. TRAILER MOUNTED DEVICES SUCH AS ARROW PANELS AND PORTABLE CHANGEABLE MESSAGE SIGNS SHALL BE DELINEATED BY AFFIXING CONSPICUITY MATERIAL IN A CONTINUOUS LINE ON THE FACE OF THE TRAILER, WHEN PLACED ON OR ADJACENT TO THE SHOULDER AND NOT BEHIND A POSITIVE BARRIER, THESE DEVICES SHALL BE DELINEATED BY PLACING FIVE (5) TRAFFIC DRUMS, EQUALLY SPACED ALONG THE TRAFFIC SIDE OF THE DEVICE. PAYMENT FOR TRAFFIC DRUMS SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR VARIOUS TRAILER MOUNTED DEVICES.
11. ALL TRAILER MOUNTED DEVICES SUCH AS ARROW PANELS AND PORTABLE CHANGEABLE MESSAGE SIGNS SHALL MEET THE REQUIREMENTS OF THE MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).

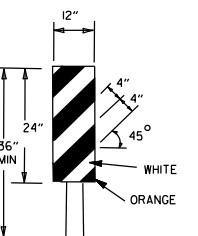
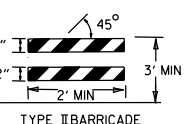
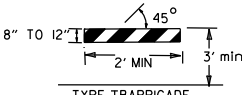


(C) TYPICAL APPLICATION - CONSTRUCTION OPERATIONS OF INTERMEDIATE TO LONG TERM DURATION ON A 4-LANE DIVIDED ROADWAY WHERE HALF OF THE ROADWAY IS CLOSED.

CHANNELIZING DEVICES

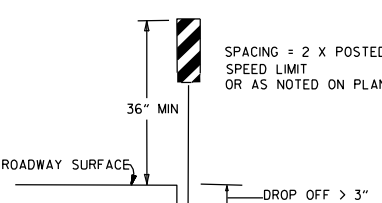
* WHEN CONES ARE USED ON FREEWAYS AND MULTI-LANE HIGHWAYS, THEY SHALL BE 28" MIN. DURING HOURS OF DARKNESS, 28" CONES SHALL BE USED ON ALL ROADWAYS, AND SHALL BE REFLECTORIZED IN ACCORDANCE WITH THE M.U.T.C.D.

CONES

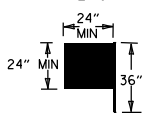


NOTE:
FOR ALL ROAD CLOSURES, THE TYPE III BARRICADES SHALL BE OF SUFFICIENT LENGTH TO EXTEND ACROSS ENTIRE ROADWAY.

VERTICAL PANEL PLACEMENT



FLAG



FLAG SHALL BE OF GOOD GRADE RED MATERIAL

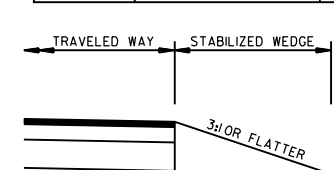
(D) TYPICAL APPLICATION - CLOSING MULTIPLE LANES OF A MULTILANE HIGHWAY.

TRAFFIC CONTROL DEVICES

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

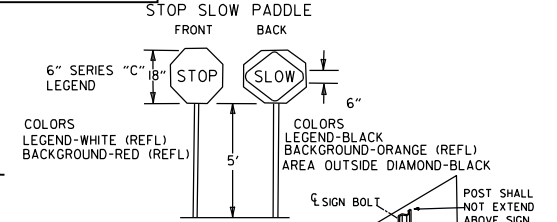
VERTICAL DIFFERENTIAL	LOCATION	TRAFFIC CONTROL	
		INTERSTATE	
		≤ 45MPH	> 45 MPH
≤ 3"	CENTERLINE	W8-11 AND LANE STRIPING	W8-11 AND LANE STRIPING
≤ 3"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-9, EDGE LINE STRIPING, AND TRAFFIC DRUMS ⁽²⁾	W8-9, EDGE LINE STRIPING, AND TRAFFIC DRUMS ⁽²⁾
> 3"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS ⁽²⁾	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS ⁽²⁾
≤ 6"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS ⁽²⁾	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS ⁽²⁾
> 6"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	PRECAST CONCRETE BARRIER & EDGE LINES	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

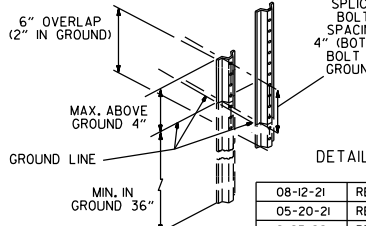


STABILIZED WEDGE

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



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

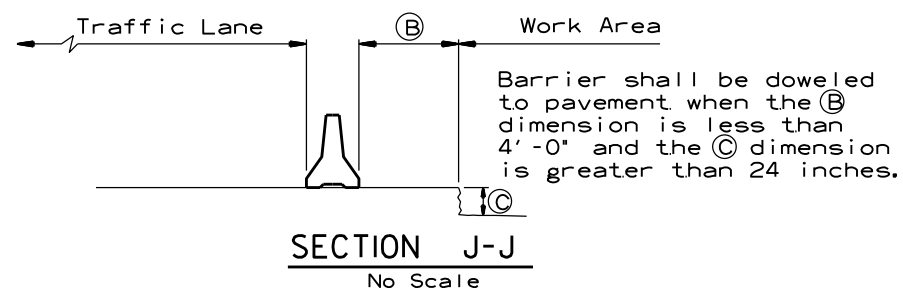
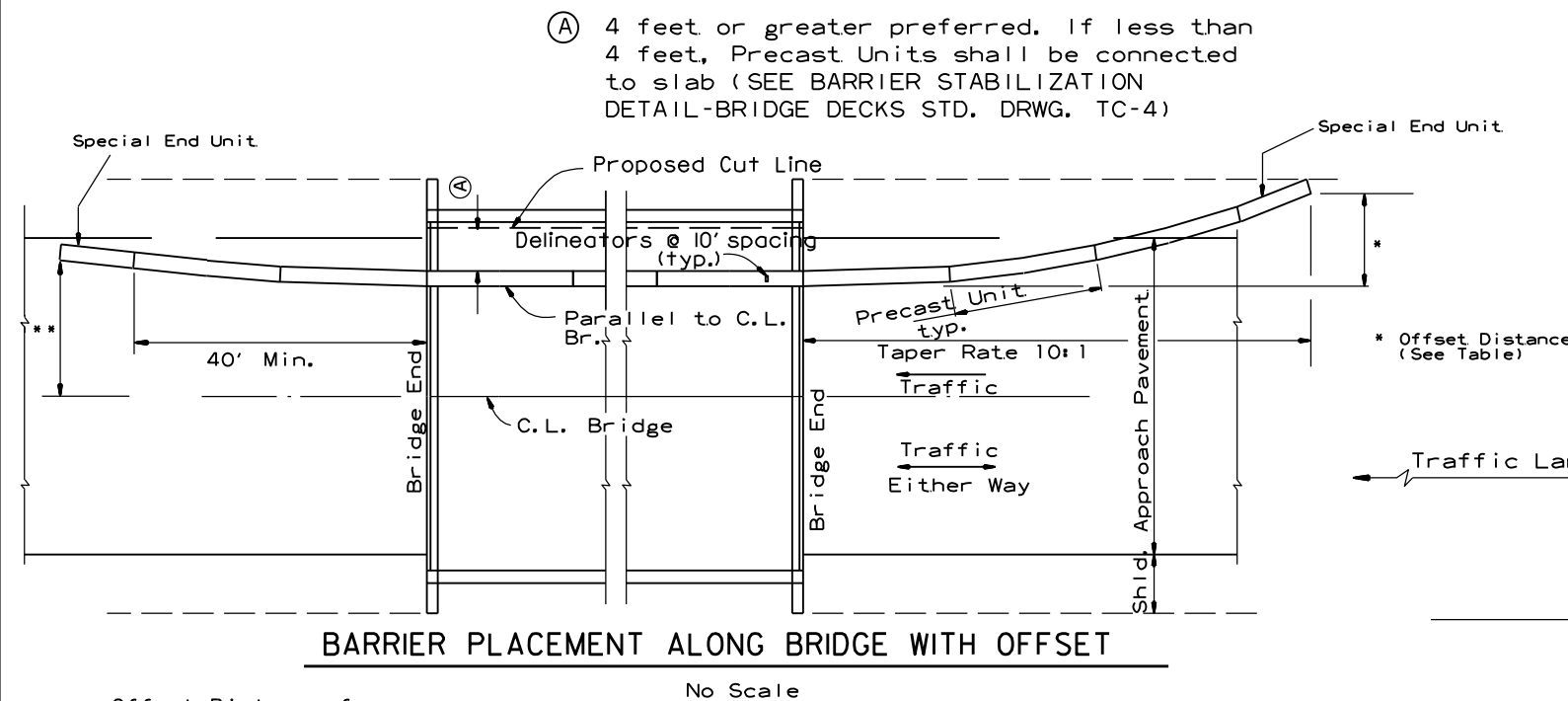


DETAIL OF SPLICES

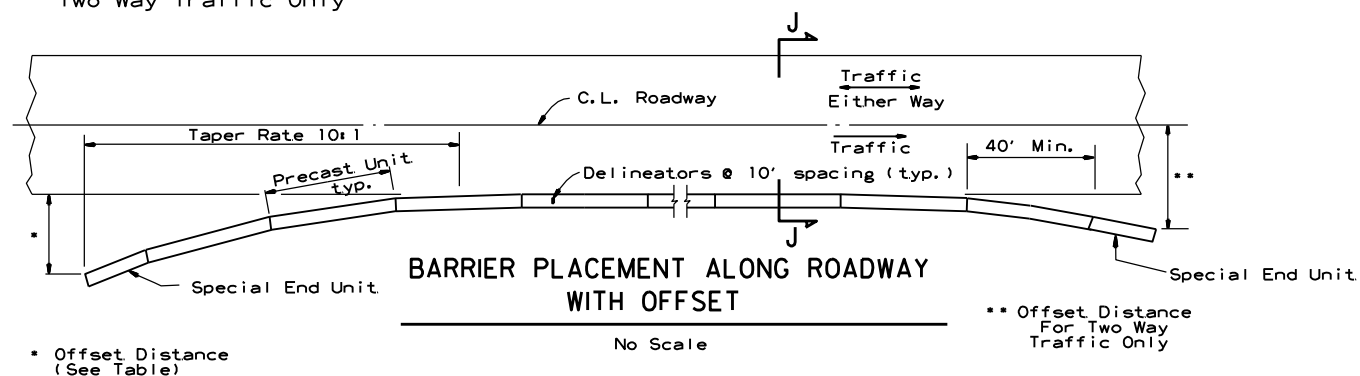
DATE	REVISION	FILED
08-12-21	REVISED TRAFFIC CONTROL DEVICES AND NOTES	
05-20-21	REVISED NOTE 10	
2-27-20	REVISED TRAFFIC CONTROL DEVICES DETAILS	
11-07-19	REVISED NOTE 9, ADDED NOTE 11	
7-25-19	REVISED TRAFFIC CONTROL DEVICES DETAILS	
9-2-15	REVISED NOTE 2 & REPLACED R2-5A WITH W3-5	
10-15-09	ADDED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

ARKANSAS STATE HIGHWAY COMMISSION
STANDARD TRAFFIC CONTROLS
FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-3



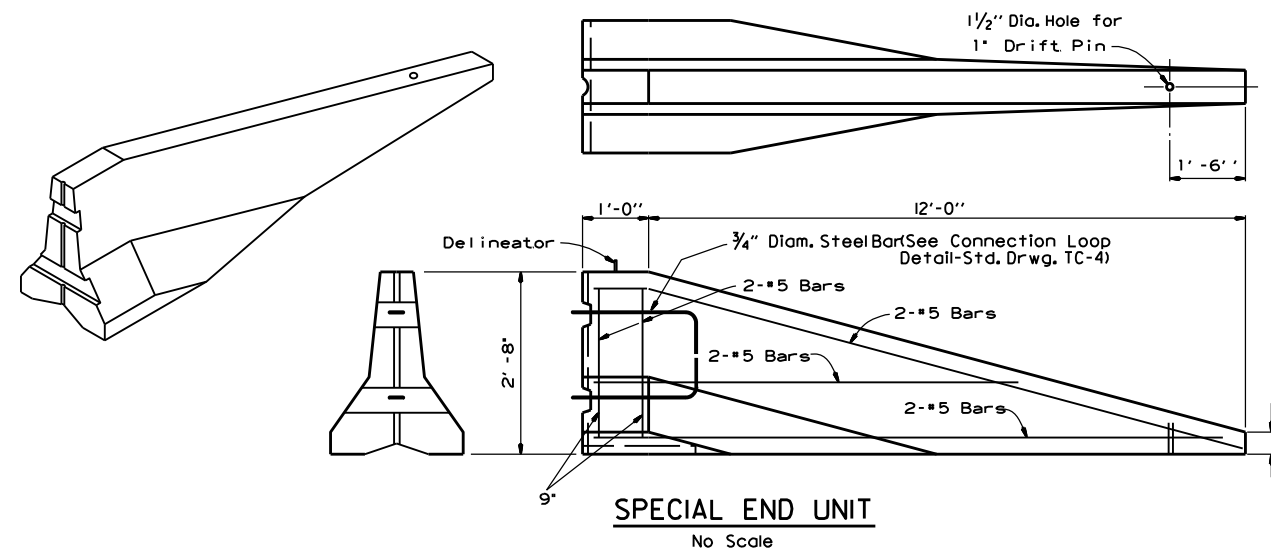
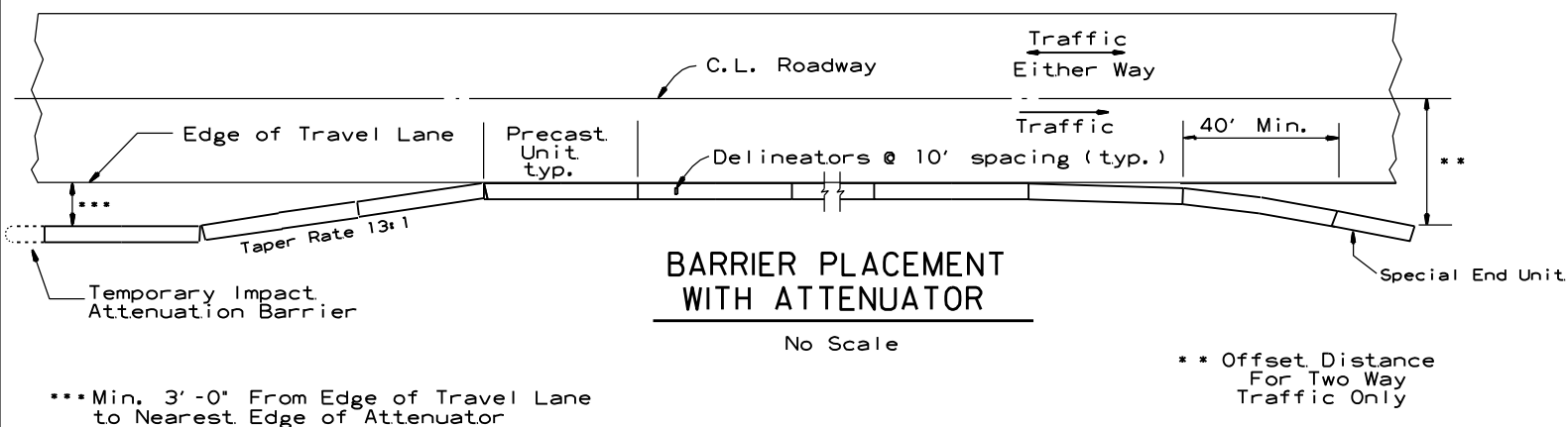
** Offset Distance for Two Way Traffic Only



* Offset Distance (See Table)

Offset Distance Table	
Speed (MPH)	Offset Distance (FT.)
≤ 45	12
> 45	18

If offset distance is not attainable, then see "Barrier Placement With Attenuator" Detail shown below.



General Notes

When shown on the Plans, the ends of the Temporary Precast Concrete Barrier shall be protected with a Manual For Assessing Safety Hardware (MASH) approved Crash Cushion. Payment for Crash Cushions shall be made under the item of "Temporary Impact Attenuation Barrier."

ARIZONA STATE HIGHWAY COMMISSION		
STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION - TEMPORARY PRECAST BARRIER		
STANDARD DRAWING TC-5		
DATE	REVISION	FILMED
11-07-19	REVISED NOTE	
10-15-09	ADDED REFERENCE TO MASH	
5-25-06	REVISED BARRIER PLACEMENT	
8-22-02	ISSUED NEW DRAWING	

GENERAL NOTES

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

SECTION A-A
ROADSIDE DITCHES (V-TYPE)

SECTION B-B
ROADSIDE DITCHES (FLAT-BOTTOM TYPE)

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.

SILTS FENCE (E-11)

DROP INLET SILTS FENCE (E-7)

SILTS 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.

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 SUBSIDIARY 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.

DROP INLET PLAN VIEW
N.T.S.

DROP INLET PERSPECTIVE VIEW
N.T.S.

COMPOST FILTER SOCK DROP INLET PROTECTION (E-13)

NOTES:

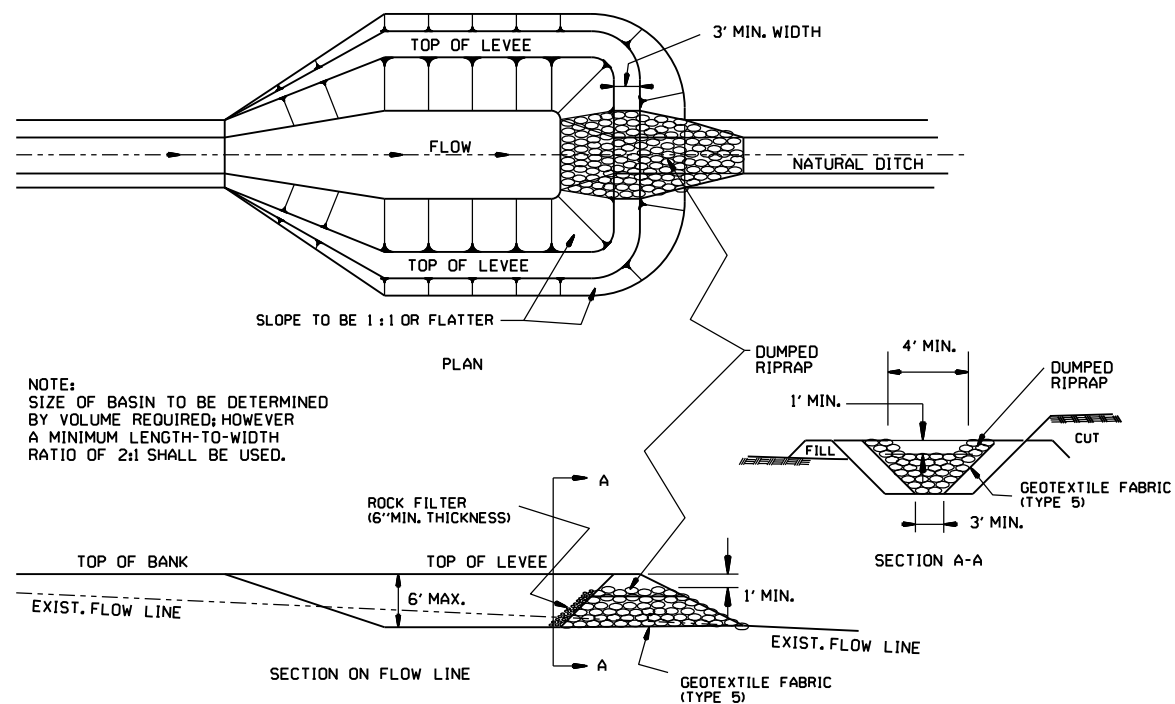
1. OVERLAP ENDS OF SOCK (1' MIN, 3' MAX.).
2. USE 18" DIA. SOCK IN NON-TRAFFIC AREAS OR AREAS WHERE SAFETY IS NOT A CONCERN.

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

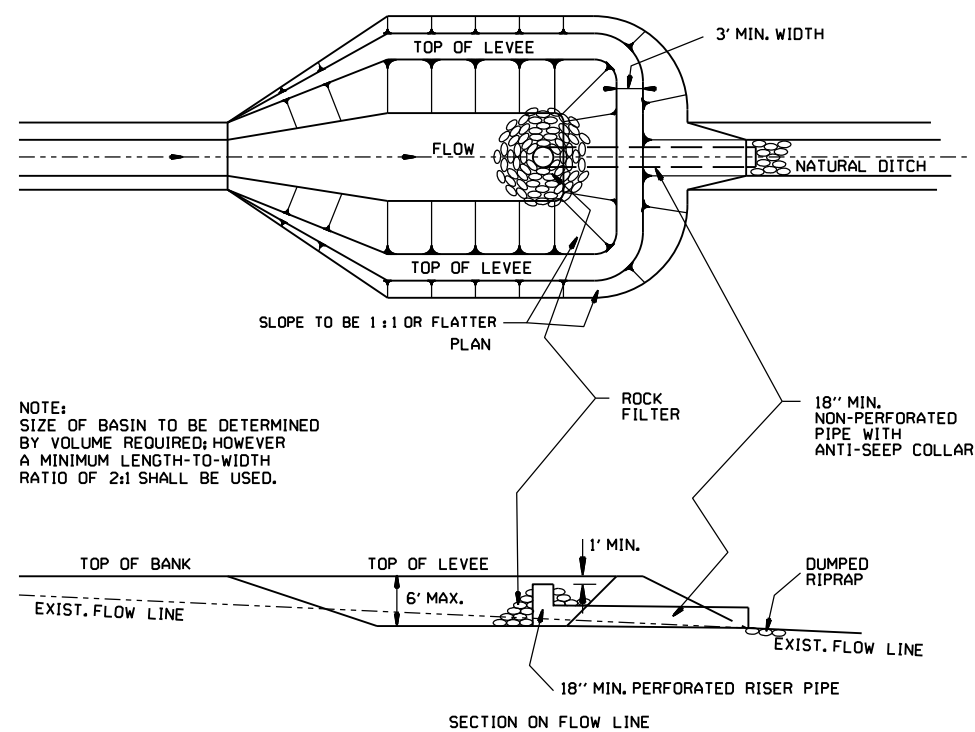
ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

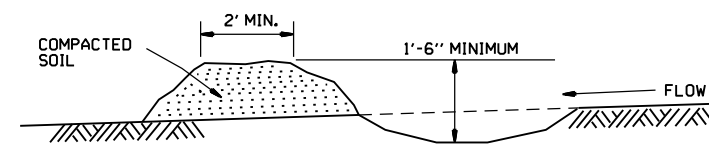
STANDARD DRAWING TEC-1



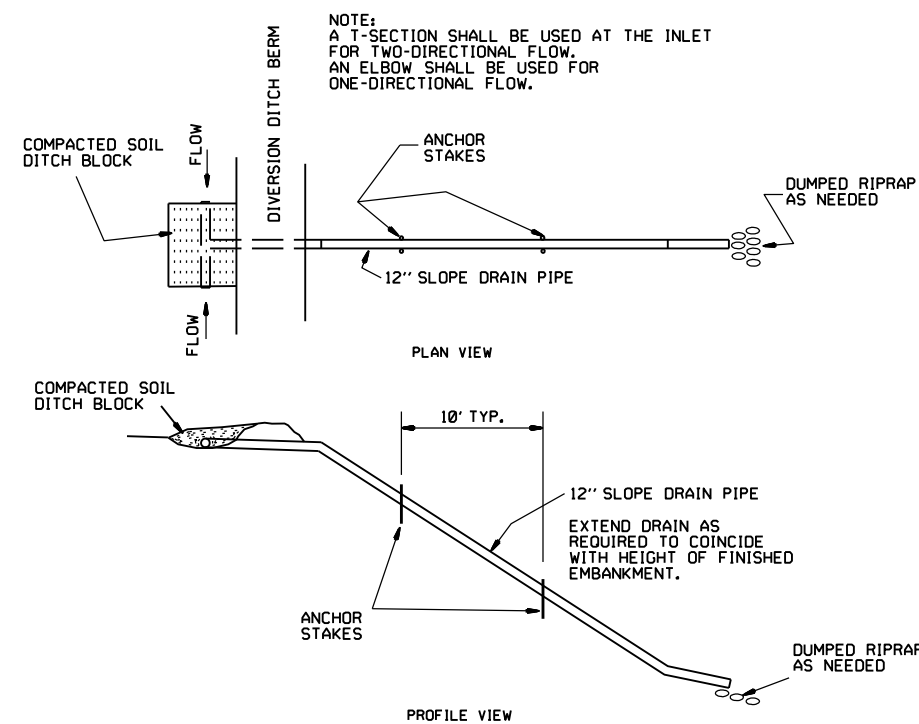
SEDIMENT BASIN WITH RIPRAP OUTLET (E-9)



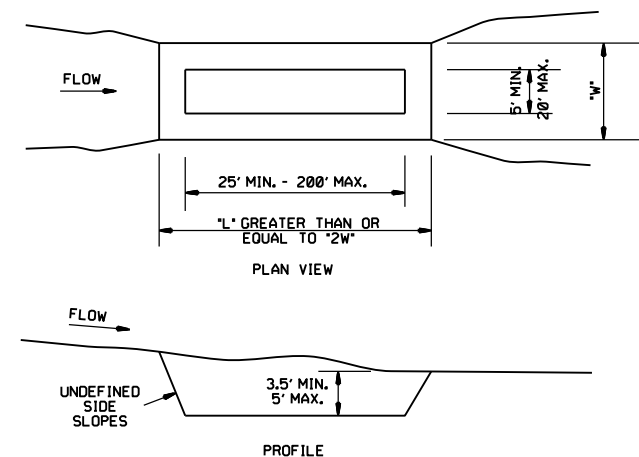
SEDIMENT BASIN WITH PIPE OUTLET (E-10)



DIVERSION DITCH (E-8)



SLOPE DRAIN (E-12)



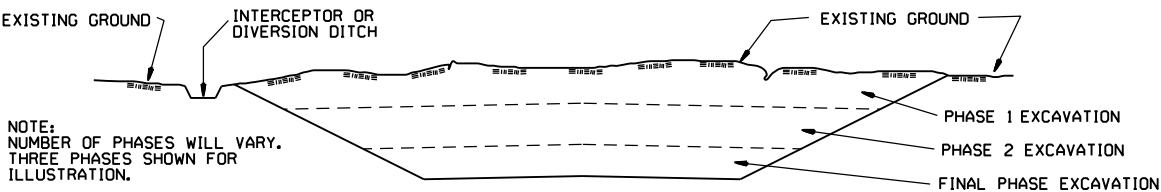
SEDIMENT BASIN (E-14)

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

CLEARING AND GRUBBING

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

EXCAVATION



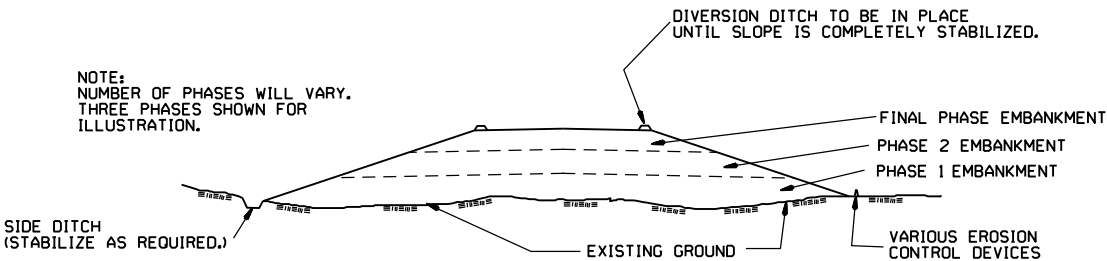
NOTE:
NUMBER OF PHASES WILL VARY.
THREE PHASES SHOWN FOR
ILLUSTRATION.

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



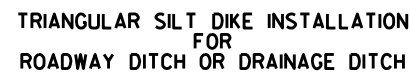
NOTE:
NUMBER OF PHASES WILL VARY.
THREE PHASES SHOWN FOR
ILLUSTRATION.

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.

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



- 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.



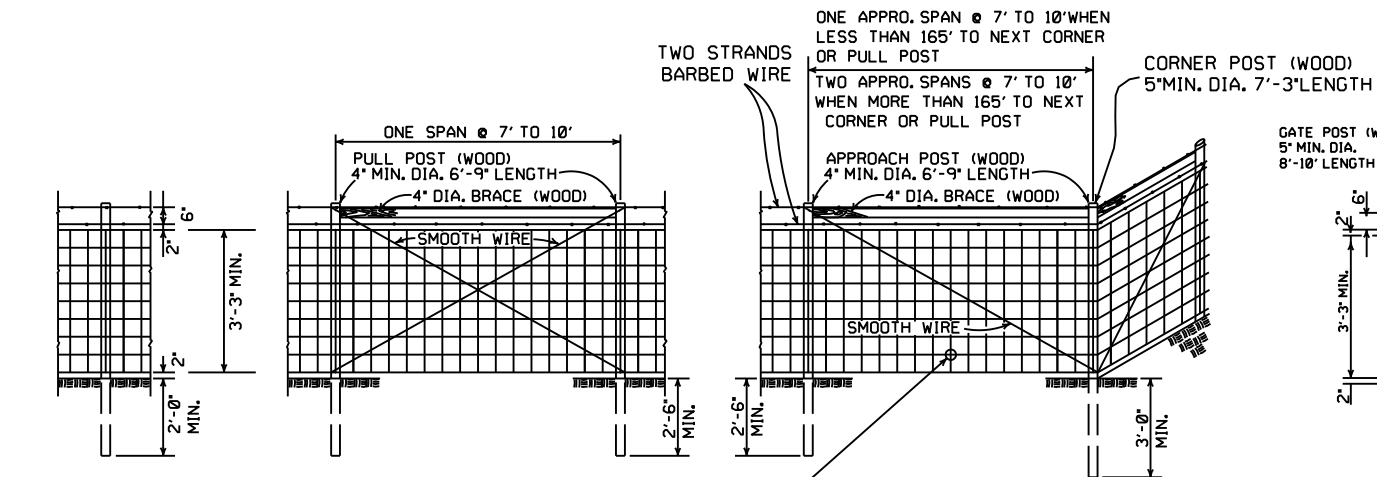
1. THIS WORK SHALL CONSIST OF FURNISHING, INSTALLING, AND MAINTAINING THE TRIANGULAR SILT DIKE. THE DIKES SHALL BE USED AS A CONTINUOUS LINE BARRIER AT THE TOE OF SLOPE OR ACROSS THE ROADWAY DITCH TO CONTAIN SEDIMENT AND MINIMIZE EROSION, OR AS DIRECTED BY THE ENGINEER. THESE DIKES SHALL BE INSTALLED 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. 10 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.



				ARKANSAS STATE HIGHWAY COMMISSION
				TEMPORARY EROSION CONTROL DEVICES
7-26-12	REVISED GENERAL NOTE 2.			STANDARD DRAWING TEC-4
12-15-11	ISSUED			
DATE	REVISION		FILMED	

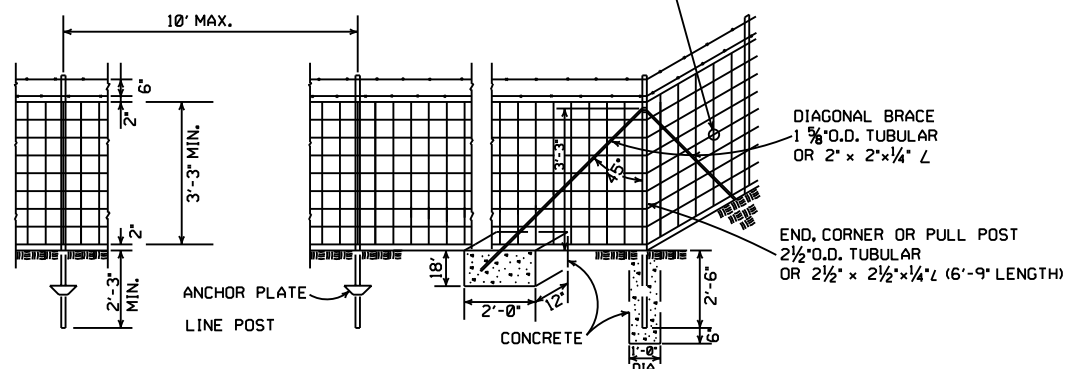


LINE POST
3" MIN. DIA. 6'-3" LENGTH
MAX. SPACING TO BE 10'-0"

LINE BRACE ASSEMBLY
MAX. SPACING TO BE 330'

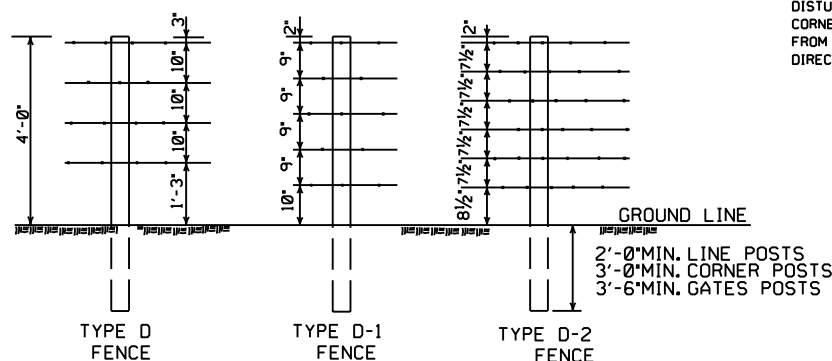
TYPE C FENCE (WOOD POSTS)

OTHER APPROVED TIES
WILL BE PERMITTED

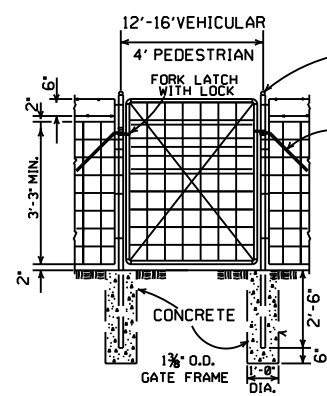


TYPE C FENCE (STEEL POSTS)

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

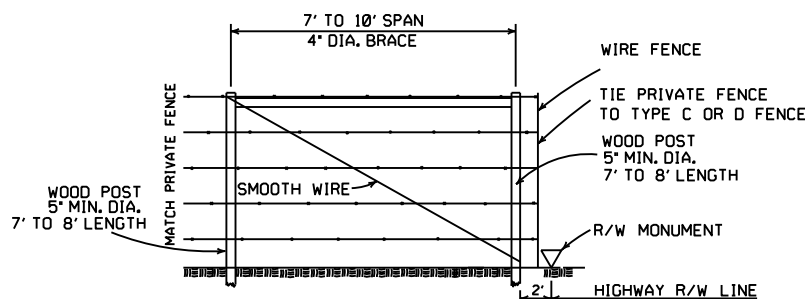


NOTE: SPACING AND SIZE (EXCEPT LENGTH) OF POSTS, APPROACH SPANS, PULL POST ASSEMBLIES, AND CORNER BRACING FOR TYPE D FENCE SHALL CONFORM TO TYPE C FENCE. USE GALVANIZED STAPLES ON WOOD POSTS AND APPROVED FASTENERS ON STEEL POSTS.



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

RIGHT-OF-WAY FENCE LOCATION



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

GENERAL NOTES:

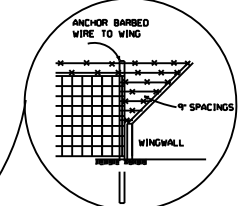
STEEL LINE POSTS SHALL BE PAINTED OR GALVANIZED. TUBULAR END, CORNER, PULL, OR DIAGONAL BRACES MUST CONFORM TO THE DIMENSIONS AND WEIGHTS SPECIFIED ON STANDARD DRAWING WF-3 (CHAIN LINK). APPROVED ALTERNATES ARE ACCEPTABLE.
AN ACCEPTABLE TOLERANCE IN LENGTH OF TUBULAR OR WOODEN POSTS SHALL BE -1" TO +2".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

NOTE: USE 3/4" x 1 1/2" LAG BOLT & SHIELD OR AS APPROVED BY THE ENGINEER.

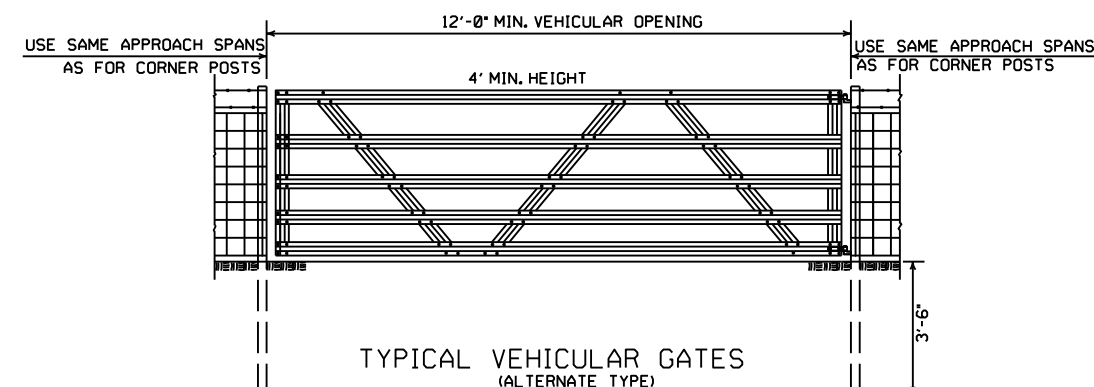


DETAIL OF FENCE CONSTRUCTION AT LARGE CULVERTS (5' IN HEIGHT AND OVER)

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.



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

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

ARKANSAS STATE HIGHWAY COMMISSION

WIRE FENCE TYPE C AND D

STANDARD DRAWING WF-4