

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

CONSTRUCTION PLANS FOR STATE HIGHWAY

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

PULASKI COUNTY

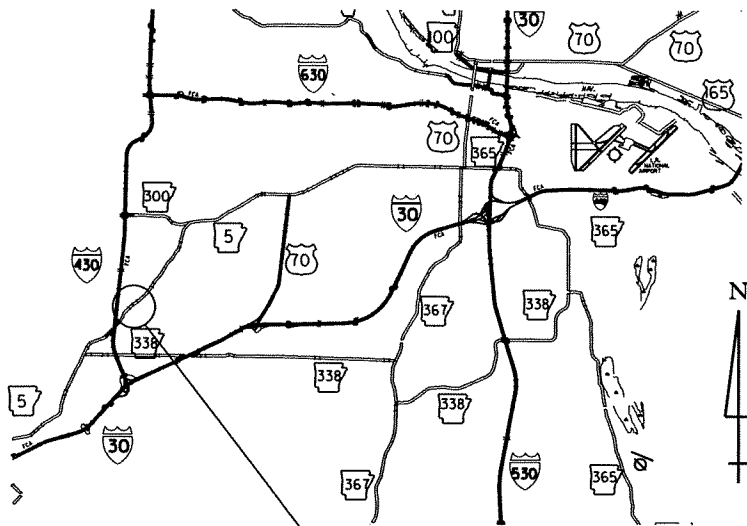
ROUTE 5 SECTION 9

F.A.P. BRN-9253(60)

JOB 060352

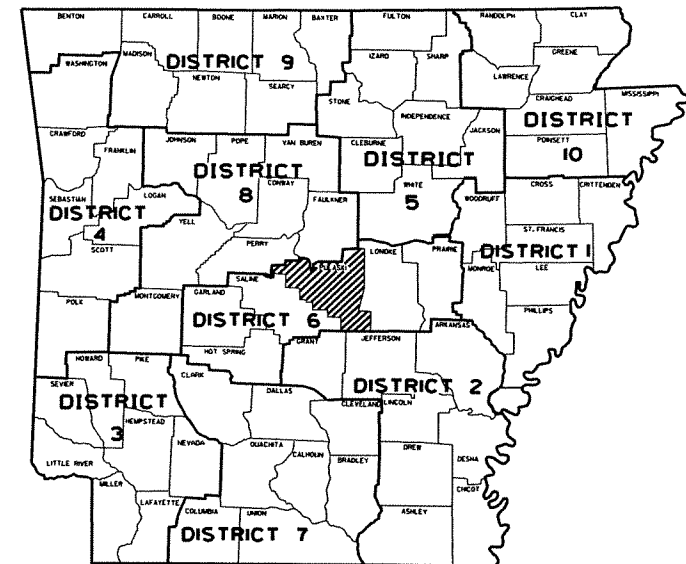
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
						JOB NO.	060352	83

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



PROJECT LOCATION

VICINITY MAP

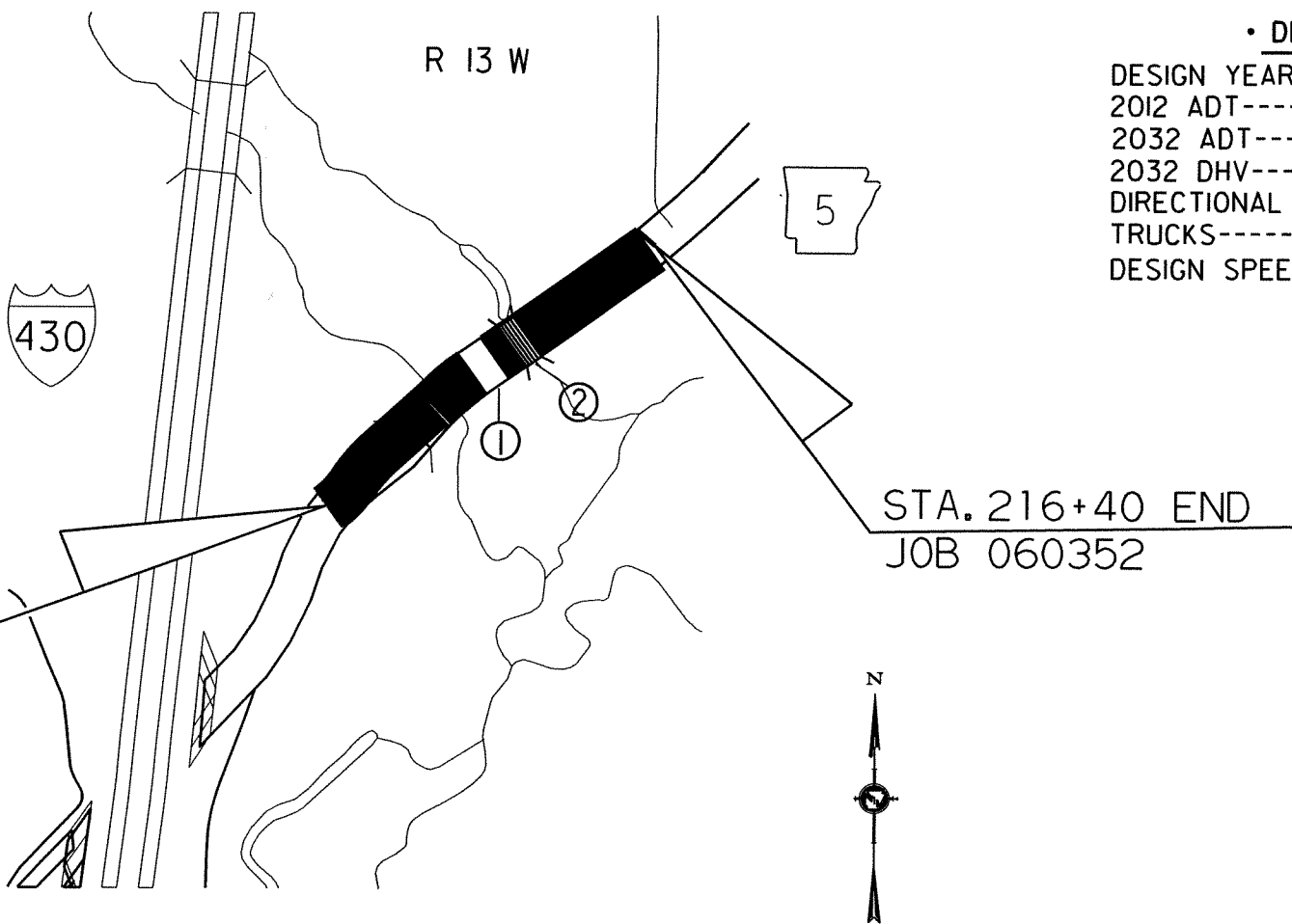


ARKANSAS HIGHWAY DISTRICT 6

DESIGN TRAFFIC DATA

DESIGN YEAR	-----2032
2012 ADT	-----9000
2032 ADT	-----11500
2032 DHV	-----1265
DIRECTIONAL DISTRIBUTION	-----60%
TRUCKS	-----3%
DESIGN SPEED	-----40 MPH

NOT TO SCALE



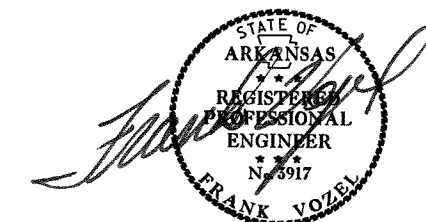
STRUCTURES OVER 20' -0" SPAN

- ① STA. 205+89.00 BRIDGE END
BRIDGE NO. 07210
150' -0" CONT. COMP. INTEGRAL W-BEAM UNITS
151' -0" BRIDGE LENGTH
STA. 207+40.00 BRIDGE END
- ② STA. 210+81 CONSTRUCT
QUINT. 12' x 10' x 116' R.C. BOX CULVERT
WITH 3:1 WINGS LT. & RT.
SPAN LENGTH = 64' -0"

STA. 200+00 BEGIN
JOB 060352
LOG MILE 3.72

STA. 216+40 END
JOB 060352

APPROVED



DEPUTY DIRECTOR AND CHIEF ENGINEER

PROJECT COORDINATES:

	BEGIN	MID-POINT	END
LAT.	N34°41'3.4"	N34° 41' 07.0"	N34°41'12.8"
LON.	W92°24'8.4"	W92° 24' 02.0"	W92°23'52.5"

GROSS LENGTH OF PROJECT	1640.00	FEET OR 0.311	MILE
NET LENGTH OF ROADWAY	1425.00	FEET OR 0.270	MILE
NET LENGTH OF BRIDGES	215.00	FEET OR 0.041	MILE
NET LENGTH OF PROJECT	1640.00	FEET OR 0.311	MILE

P.E. JOB 060352
NON-PART.

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2 INDEX OF SHEETS, GOV. SPEC. & GEN. NOTES

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

GOVERNING SPECIFICATIONS

ARKANSAS STATE HIGHWAY COMMISSION STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, EDITION OF 2003, AND THE FOLLOWING SPECIAL PROVISIONS AND SUPPLEMENTAL SPECIFICATIONS:

NUMBER	TITLE
ERRATA	ERRATA FOR THE BOOK OF STANDARD SPECIFICATIONS
FHWA-1273	FHWA-1273 REVISIONS
FHWA-1273	REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - NOTICE TO CONTRACTORS
FHWA-1273	SUPPLEMENT - SPECIFIC EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITIES (23 U.S.C. 140)
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - GOALS AND TIMETABLES
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - FEDERAL STANDARDS
FHWA-1273	SUPPLEMENT - POSTERS AND NOTICES REQUIRED FOR FEDERAL-AID PROJECTS
FHWA-1273	SUPPLEMENT - WAGE RATE DETERMINATION
100-2	MANUAL FOR ASSESSING SAFETY HARDWARE (MASH)
103-1	DETERMINATION OF DBE PARTICIPATION
105-1	CONSTRUCTION CONTROL MARKINGS
105-2	EQUIPMENT AND MATERIAL STORAGE ON BRIDGE STRUCTURES
107-1	WORKER VISIBILITY
108-1	LIQUIDATED DAMAGES
140-1	PROTECTION OF WATER QUALITY AND WETLANDS
203-1	AGGREGATE BASE COURSE
404-1	PRODUCTION VERIFICATION OF ASPHALT CONCRETE HOT MIX
409-1	MINERAL AGGREGATES
410-3	DENSITY TESTING FOR ACHM LEVELING COURSES AND BOND BREAKERS
411-1	ASPHALT CONCRETE COLD PLANT MIX
600-1	WATER FOR VEGETATION
603-1	MAINTENANCE OF TRAFFIC
604-1	RETROREFLECTIVE SHEETING FOR TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES
606-1	PIPE CULVERTS FOR SIDE DRAINS
606-2	PIPE CULVERTS
718-2	REFLECTORIZED PAINT PAVEMENT MARKINGS
719-2	THERMOPLASTIC PAVEMENT MARKING MATERIAL
804-1	INSTALLATION OF DOWEL BARS AND TIE BARS
JOB 060352	BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB 060352	BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB 060352	CONSTRUCTION IN SPECIAL FLOOD HAZARD AREAS
JOB 060352	GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
JOB 060352	HIGH PERFORMANCE PAVEMENT MARKING
JOB 060352	INTERNET BIDDING
JOB 060352	NESTING SITES OF MIGRATORY BIRDS
JOB 060352	PARTNERING REQUIREMENTS
JOB 060352	REMOVAL AND DISPOSAL OF GUARDRAIL
JOB 060352	SHORING
JOB 060352	SITE USE (A+C METHOD)
JOB 060352	SOIL STABILIZATION
JOB 060352	STORM WATER POLLUTION PREVENTION PLAN
JOB 060352	TEMPORARY IMPACT ATTENUATION BARRIER
JOB 060352	TRIANGULAR SILT DIKE
JOB 060352	SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB 060352	UTILITY ADJUSTMENTS
JOB 060352	VALUE ENGINEERING
JOB 060352	WARM MIX ASPHALT

GENERAL NOTES

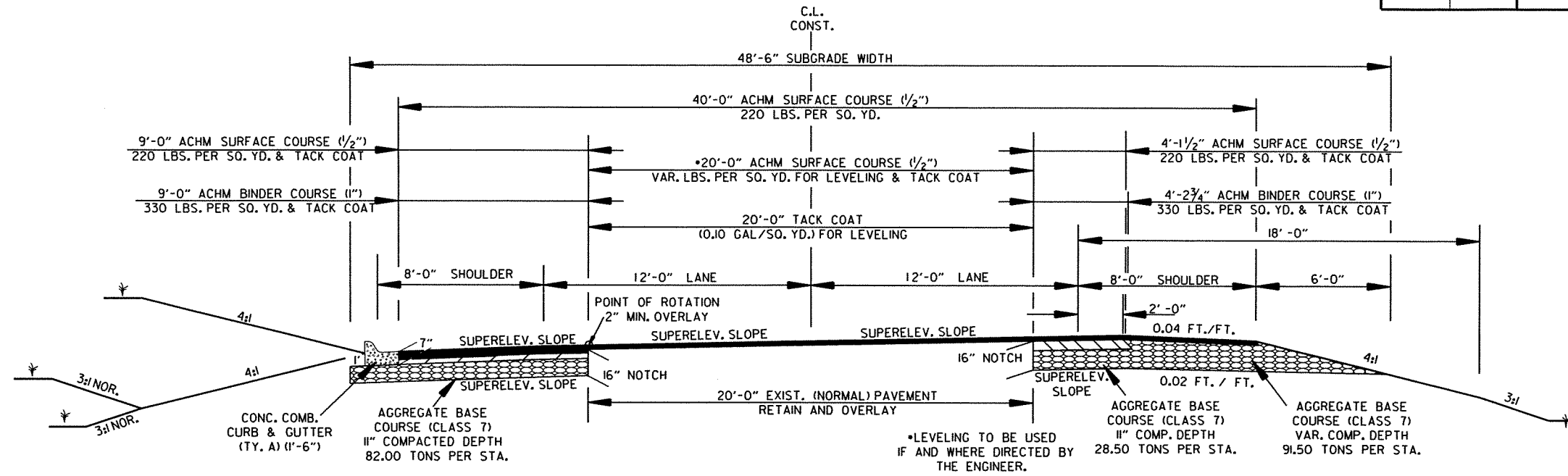
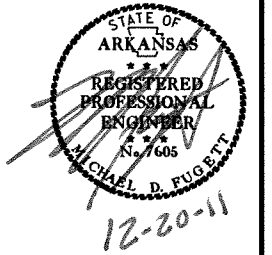
- GRADE LINE DENOTES FINISHED GRADE WHERE SHOWN ON PLANS.
- ALL PIPE LINES, POWER, TELEPHONE AND TELEGRAPH LINES TO BE MOVED OR LOWERED BY THE RESPECTIVE OWNERS AS PER AGREEMENT WITH SUCH OWNERS.
- ANY EQUIPMENT OR APPURTENANCE THAT INTERFERES WITH THE PROPOSED CONSTRUCTION AND WHICH MAY BE THE PROPERTY OF UTILITY SERVICE ORGANIZATIONS SHALL BE MOVED BY THE OWNERS UNLESS OTHERWISE PROVIDED.
- 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.
- ALL LAND MONUMENTS LOCATED WITHIN THE CONSTRUCTION AREA SHALL BE PROTECTED IN ACCORDANCE WITH SECTION 107.12 OF THE STANDARD SPECIFICATIONS.
- ALL TREES THAT DO NOT DIRECTLY INTERFERE WITH THE PROPOSED CONSTRUCTION SHALL BE SPARED IF AND WHERE DIRECTED BY THE ENGINEER. CARE AND DISCRETION SHALL BE USED TO INSURE THAT ALL TREES NOT TO BE REMOVED SHALL BE HARMED AS LITTLE AS POSSIBLE DURING THE CONSTRUCTION OPERATIONS.
- 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.
- THIS PROJECT IS COVERED UNDER A NATIONWIDE 14 SECTION 404 PERMIT. REFER TO SECTION 110 OF THE STANDARD SPECIFICATIONS, EDITION OF 2003, FOR PERMIT REQUIREMENTS.
- ALL FLEXIBLE BASE AND ASPHALTIC PAVEMENTS REMOVED SHALL BE PAID FOR UNDER THE ITEM NO. 210 - UNCLASSIFIED EXCAVATION.
- 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.



R060352.DGN 10/19/2011

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2 TYPICAL SECTIONS OF IMPROVEMENT



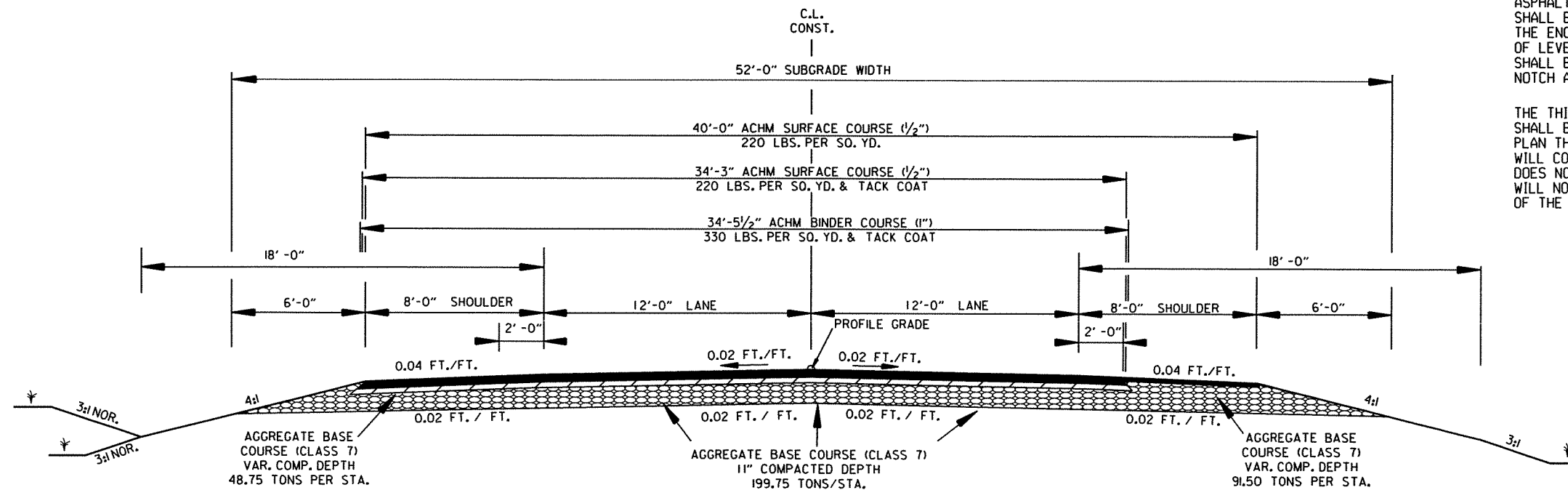
TYPICAL SECTION OF IMPROVEMENT - NOTCH & WIDENING WITH CURB & GUTTER ON SHOULDER

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

THE FINAL 2 INCHES OF SURFACE COURSE IS TO BE PLACED AFTER ALL OTHER COURSES HAVE BEEN LAID. LONGITUDINAL JOINTS SHALL BE AT THE LANE LINES.

ASPHALT FOR LEVELING OF EXISTING PAVEMENT SHALL BE PLACED ONLY IF AND WHERE DIRECTED BY THE ENGINEER. CALCULATIONS FOR THE AMOUNT OF LEVELING AND/OR LEVELING OPERATIONS SHALL BE PERFORMED BEFORE CONSTRUCTING NOTCH AND WIDENING.

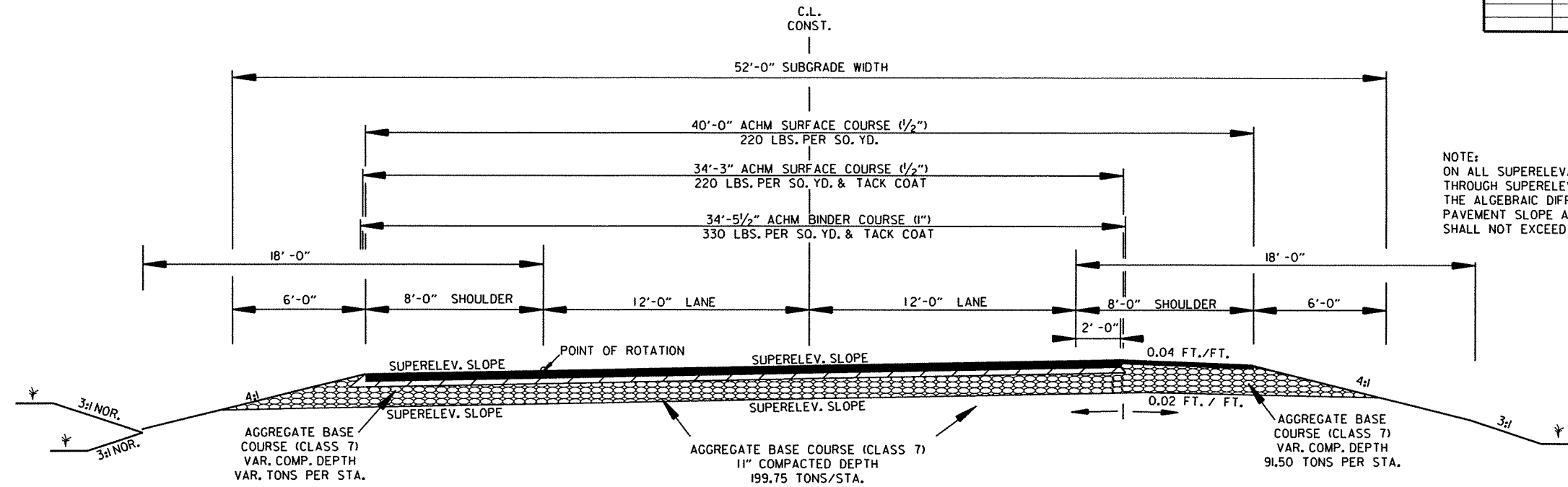
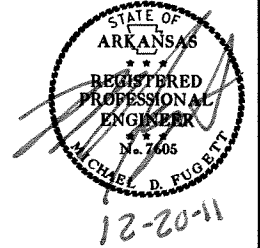
THE THICKNESS OF THE AGGREGATE BASE COURSE SHALL BE WITHIN PLUS OR MINUS 1" OF THE PLAN THICKNESS SHOWN. THE CONTRACTOR WILL CORRECT ANY DEFICIENT THICKNESS THAT DOES NOT MEET TOLERANCE INDICATED. PAYMENT WILL NOT BE MADE FOR MATERIAL PLACED IN EXCESS OF THE TOLERANCE INDICATED.



TYPICAL SECTION OF IMPROVEMENT - FULL DEPTH

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2 TYPICAL SECTIONS OF IMPROVEMENT



NOTE:
ON ALL SUPERELEVATED CURVES AND THROUGH SUPERELEVATION TRANSITIONS, THE ALGEBRAIC DIFFERENCE BETWEEN PAVEMENT SLOPE AND SHOULDER SLOPE SHALL NOT EXCEED 8%.

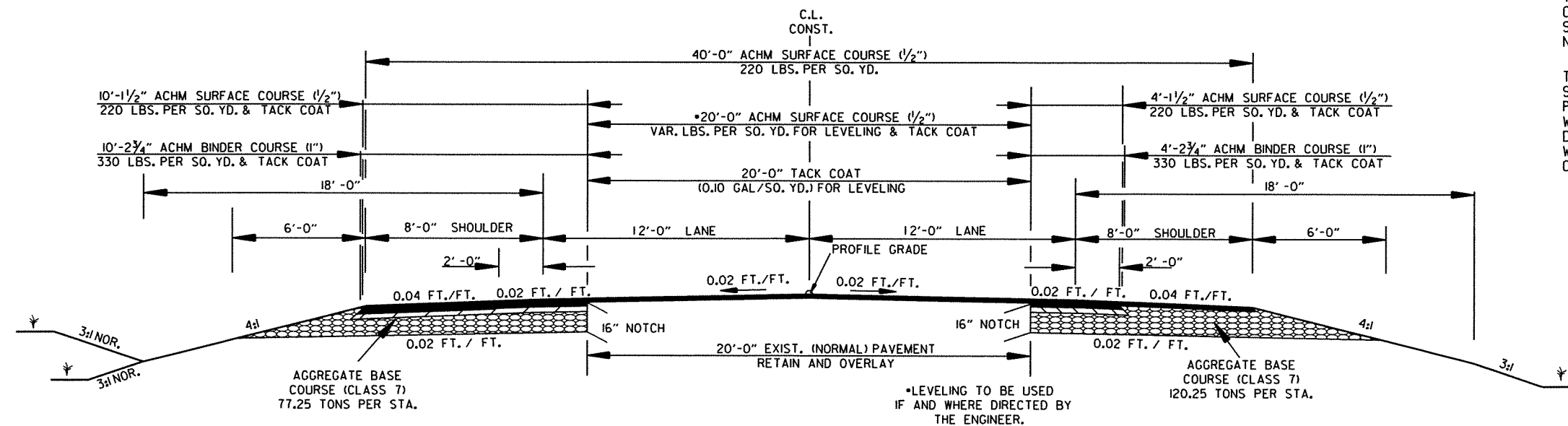
TYPICAL SECTION OF IMPROVEMENT - FULL DEPTH

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

THE FINAL 2 INCHES OF SURFACE COURSE IS TO BE PLACED AFTER ALL OTHER COURSES HAVE BEEN LAID. LONGITUDINAL JOINTS SHALL BE AT THE LANE LINES.

ASPHALT FOR LEVELING OF EXISTING PAVEMENT SHALL BE PLACED ONLY IF AND WHERE DIRECTED BY THE ENGINEER. CALCULATIONS FOR THE AMOUNT OF LEVELING AND/OR LEVELING OPERATIONS SHALL BE PERFORMED BEFORE CONSTRUCTING NOTCH AND WIDENING.

THE THICKNESS OF THE 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.

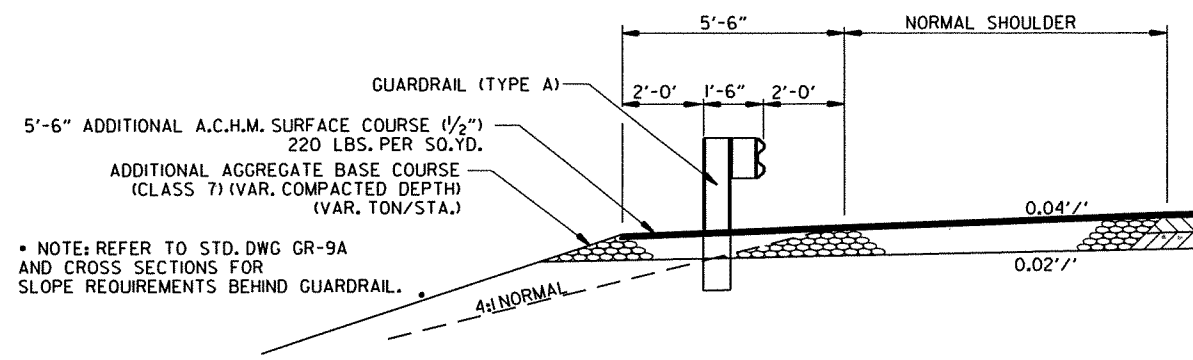


*LEVELING TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.

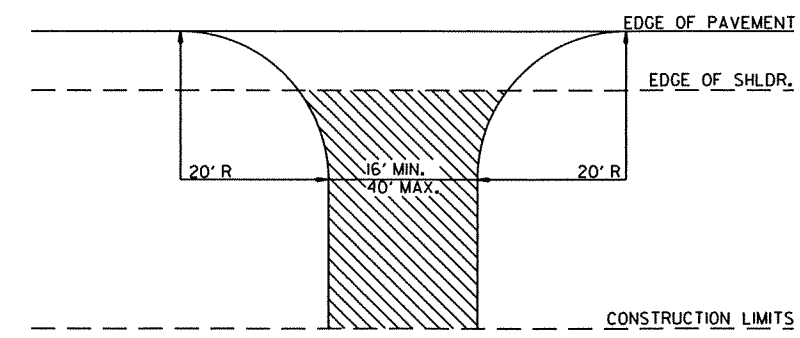
TYPICAL SECTION OF IMPROVEMENT - NOTCH & WIDENING

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2 SPECIAL DETAILS

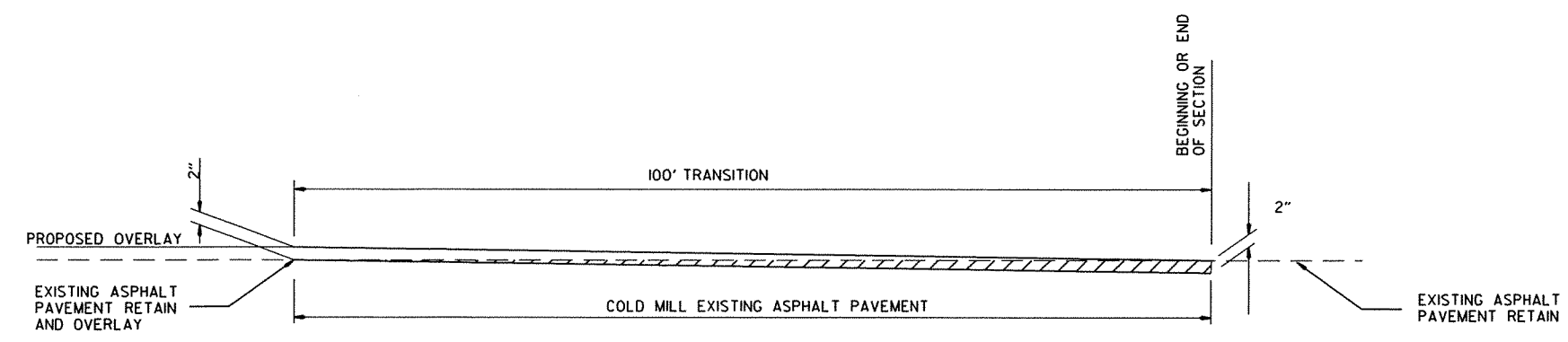


WIDENING FOR GUARDRAIL DETAIL



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.

DETAIL FOR DRIVEWAY TURNOUTS



DETAIL FOR TRANSITIONS

DATE REVISED	DATE FILED	DATE REVISED	DATE FILED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
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① SPECIAL DETAILS



2:1 Slope	20'-0"	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"	
3:1 Slope	30'-0"	15'-0"	15'-0"	15'-0"	15'-0"	15'-0"	15'-0"	
4:1 Slope	40'-0"	20'-0"	20'-0"	20'-0"	20'-0"	20'-0"	20'-0"	

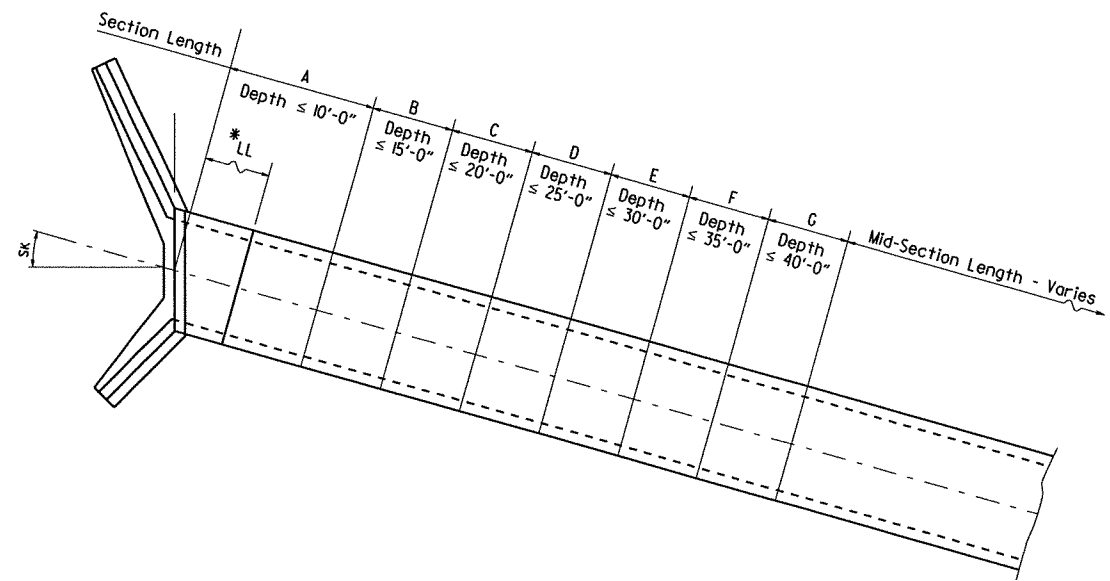
Slope Section Length @ 2:1 Slope	A=12'-0"	B=6'-0"	C=6'-0"	D=6'-0"	E=6'-0"	F=6'-0"	G=6'-0"	Mid-Section Length - Varies
Slope Section Length @ 3:1 Slope	A=22'-0"	B=11'-0"	C=11'-0"	D=11'-0"	E=11'-0"	F=11'-0"	G=11'-0"	Mid-Section Length - Varies
Slope Section Length @ 4:1 Slope	A=32'-0"	B=16'-0"	C=16'-0"	D=16'-0"	E=16'-0"	F=16'-0"	G=16'-0"	Mid-Section Length - Varies

LONGITUDINAL SECTION LENGTH SCHEDULE FOR VARYING FILL DEPTHS OVER 5'

Lengths for Non-Skewed Boxes

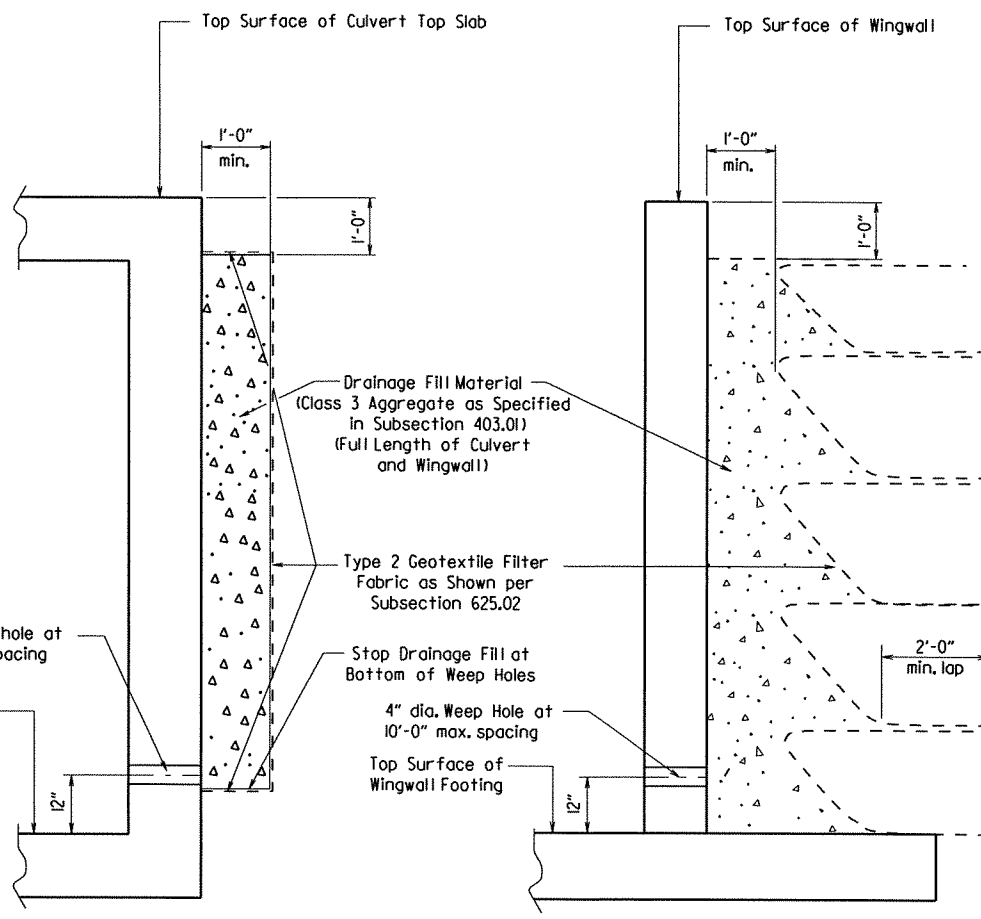
Note: For fill depths 5' and under, use Mid-Section full length of box culvert.

* LL = Skewed End Section Length - See Sheet 2 "Skewed End Section Details"



SKEW ANGLE (SK)	SLOPE 2:1		SLOPE 3:1		SLOPE 4:1	
	A	B, C, D, E, F, G	A	B, C, D, E, F, G	A	B, C, D, E, F, G
15	12'-5 1/8"	6'-2 1/2"	22'-9 3/8"	11'-4 5/8"	33'-1 1/2"	16'-6 3/4"
30	13'-10 1/4"	6'-11 1/8"	25'-4 7/8"	12'-8 3/8"	36'-11 3/8"	18'-5 3/4"
45	16'-11 5/8"	8'-5 7/8"	31'-1 3/8"	15'-6 5/8"	45'-3"	22'-7 1/2"

Lengths for Skewed Boxes



VERTICAL FABRIC ALTERNATE

(Shown for Culvert - Similar for Wingwall)

WRAPPED FABRIC ALTERNATE

(Shown for Wingwall - Similar for Culvert)

For Details of Excavation and Pay Limits, see Standard Drawing RCB-2.

WINGWALL & CULVERT DRAINAGE DETAIL

GENERAL NOTES

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2003 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 5 with a minimum 28-day compressive strength of 3,500 psi and shall be poured in the dry. All exposed corners to have 1/4" chamfers.

Reinforcing Steel shall be AASHTO M 31 or M 53, Grade 60.

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 of the Standard Specifications. 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.

Construction Joints between footings and walls shall be made only where shown on the Plans. The maximum length of culvert for which a continuous pour will be permitted is 75 ft. For longer culvert construction, joints shall be provided in slabs and walls at intervals not greater than 50 ft. Joints shall be normal to the centerline of barrel and shall be keyed. Longitudinal reinforcing shall be continuous through joints unless shown otherwise.

Membrane Waterproofing, Weep Holes, Geotextile Filter Fabric, and Drainage Fill Material will not be paid for directly but shall be considered subsidiary to Class 5 Concrete.

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 Special Provision "LRFD Precast Reinforced Concrete Box Culverts".

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

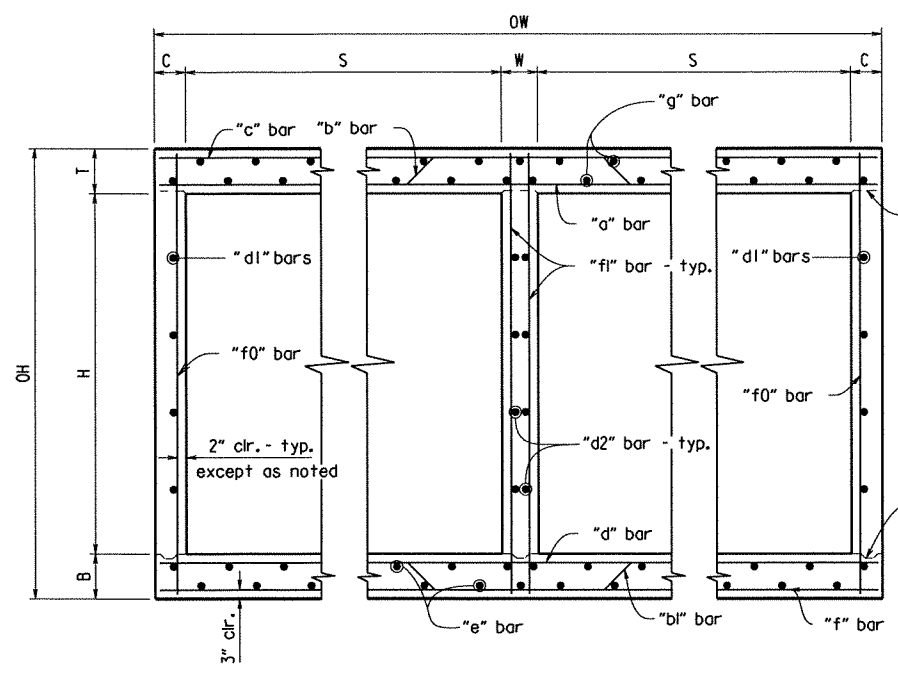
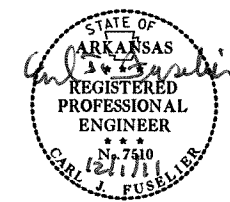
SPECIAL DETAILS



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DATE REVISION	DATE FILMED	REVISION	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		7	83

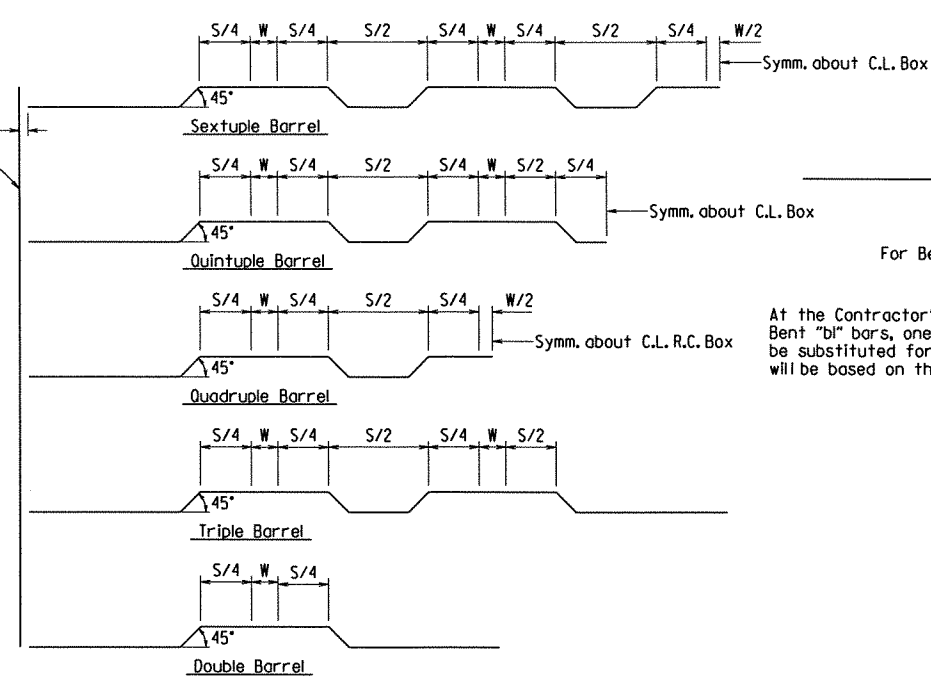
JOB NO. 060352 SPECIAL DETAILS



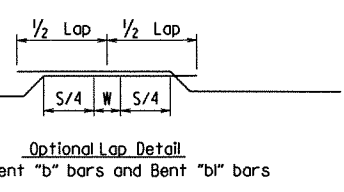
TYPICAL SECTION

Top Slab
 Straight "c" bars shall alternate with Bent "b" bars in top.
 Straight "a" bars shall alternate with Bent "b" bars in bottom.

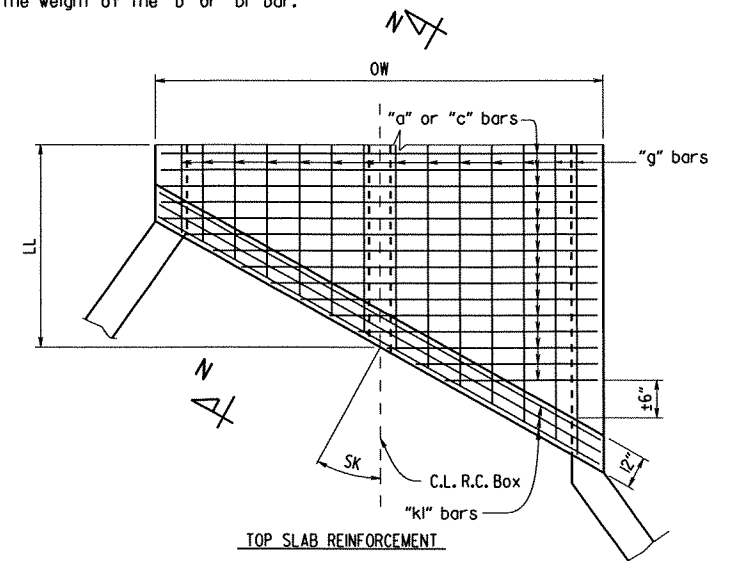
Bottom Slab
 Straight "d" bars shall alternate with Bent "bl" bars in top.
 Straight "f" bars shall alternate with Bent "bl" bars in bottom.



Bent "b" bars or Bent "bl" bars sketch

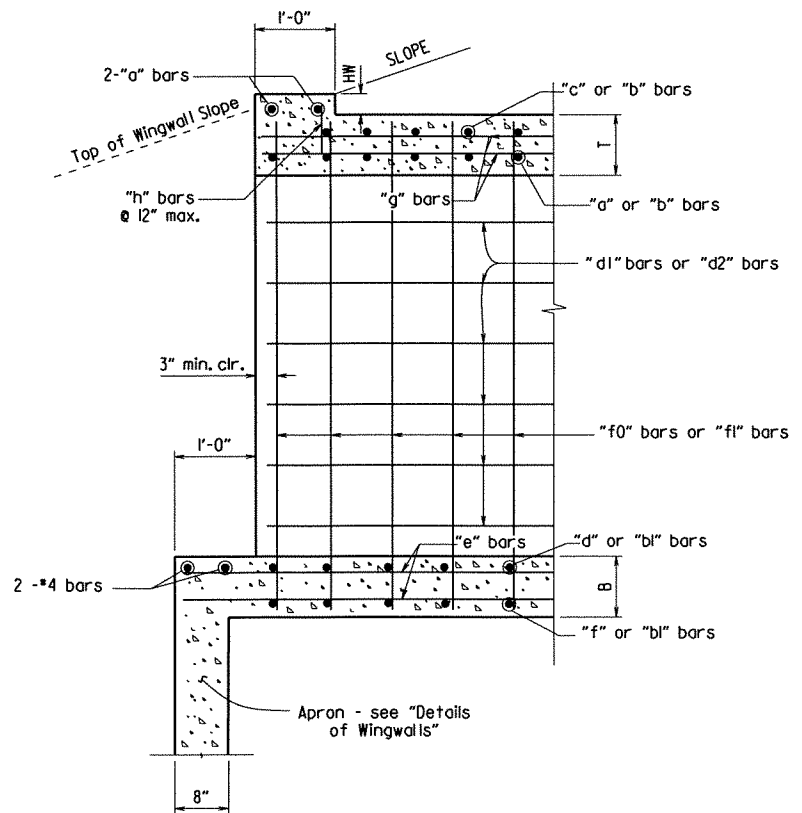


At the Contractor's option in lieu of providing Bent "b" or Bent "bl" bars, one bar top and bottom of equivalent size may be substituted for each bent bar. Payment for the reinforcing will be based on the weight of the "b" or "bl" bar.



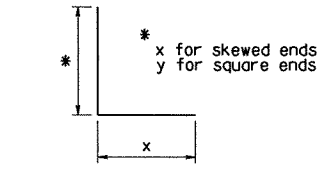
TOP SLAB REINFORCEMENT

Straight "c" bars in top.
 Straight "a" bars in bottom.

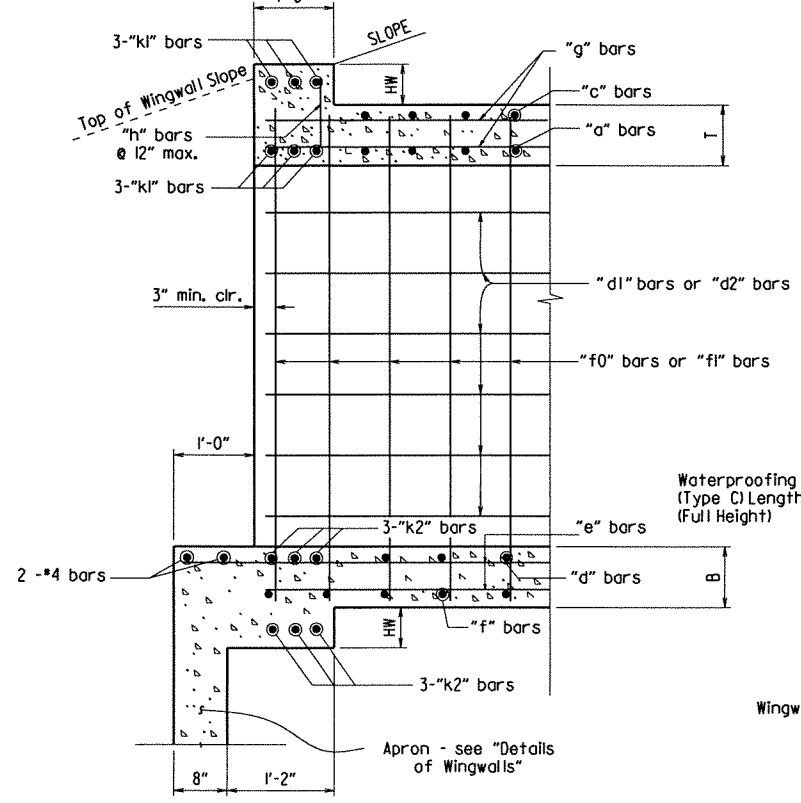


PART LONGITUDINAL SECTION

(Non-Skewed Ends)

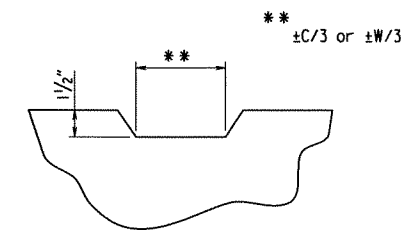


"h" bars sketch

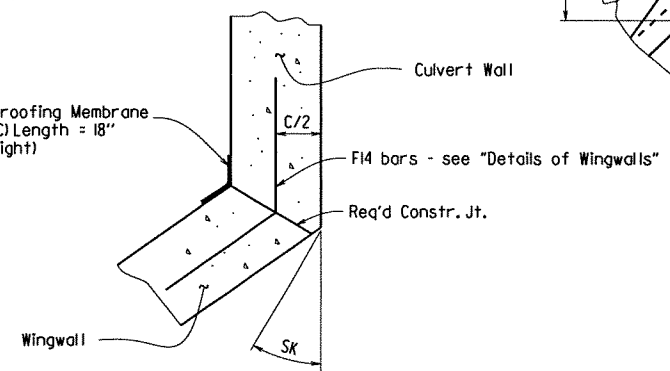


PART LONGITUDINAL SECTION N-N

(Skewed Ends)

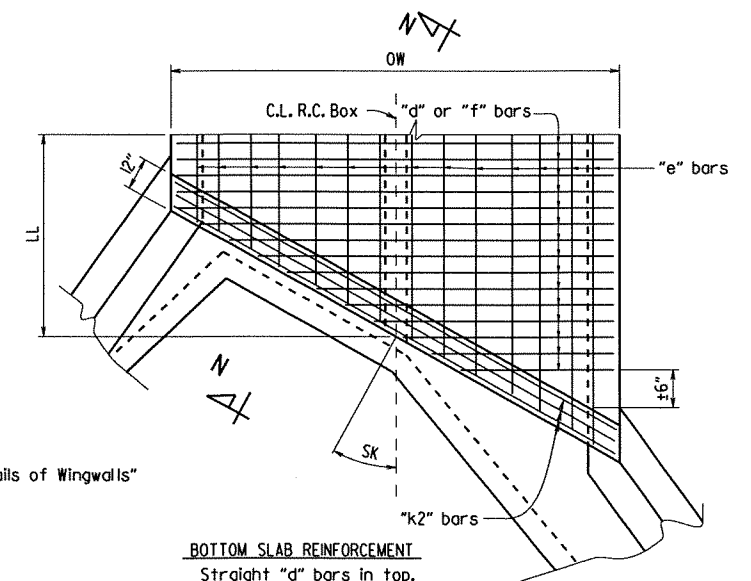


TYPICAL KEYWAY DETAIL



WINGWALL ATTACHMENT

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



BOTTOM SLAB REINFORCEMENT

Straight "d" bars in top.
 Straight "f" bars in bottom.

SKewed END SECTION DETAILS

SHEET 2 OF 4
 DETAILS OF R.C. BOX CULVERT

DETAILS OF MULTI-BARREL
 R.C. BOX CULVERT

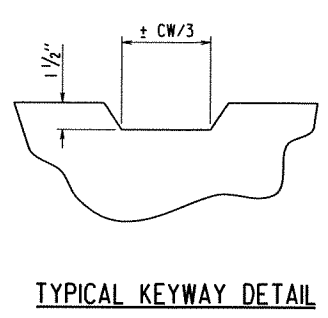
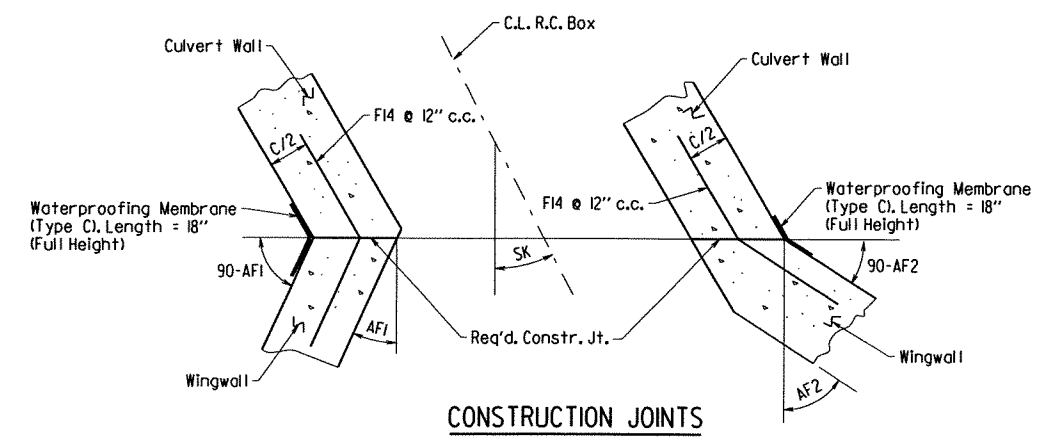
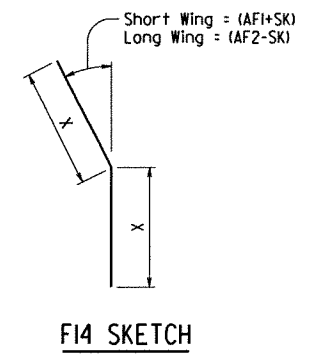
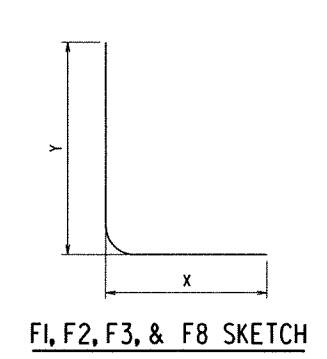
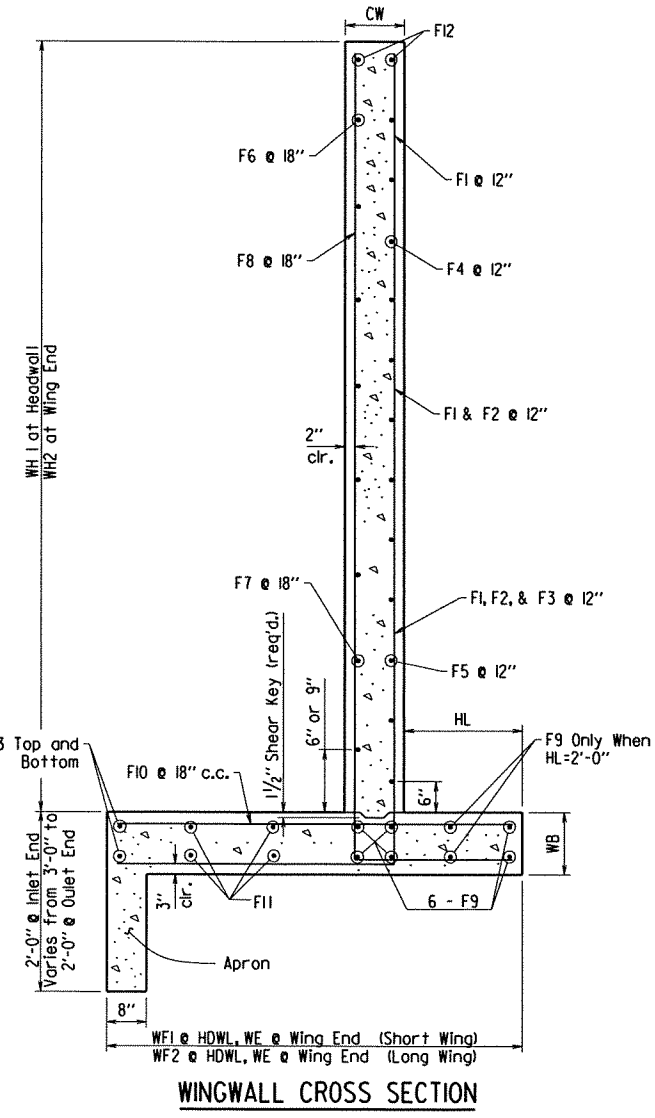
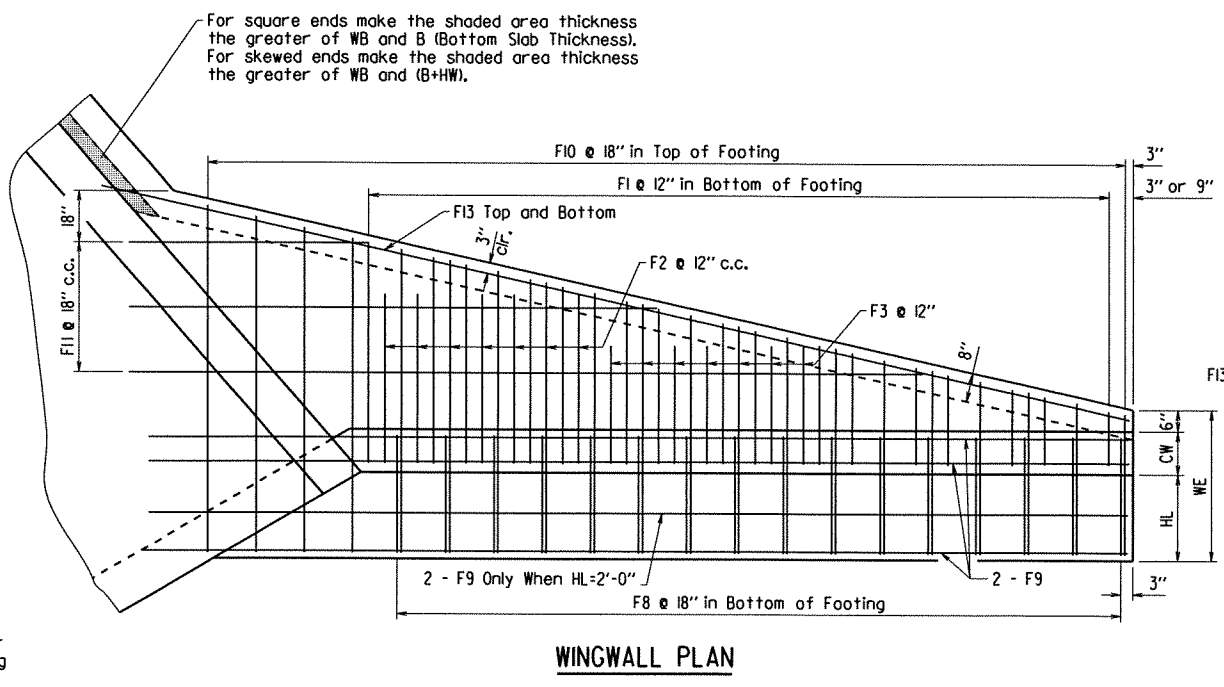
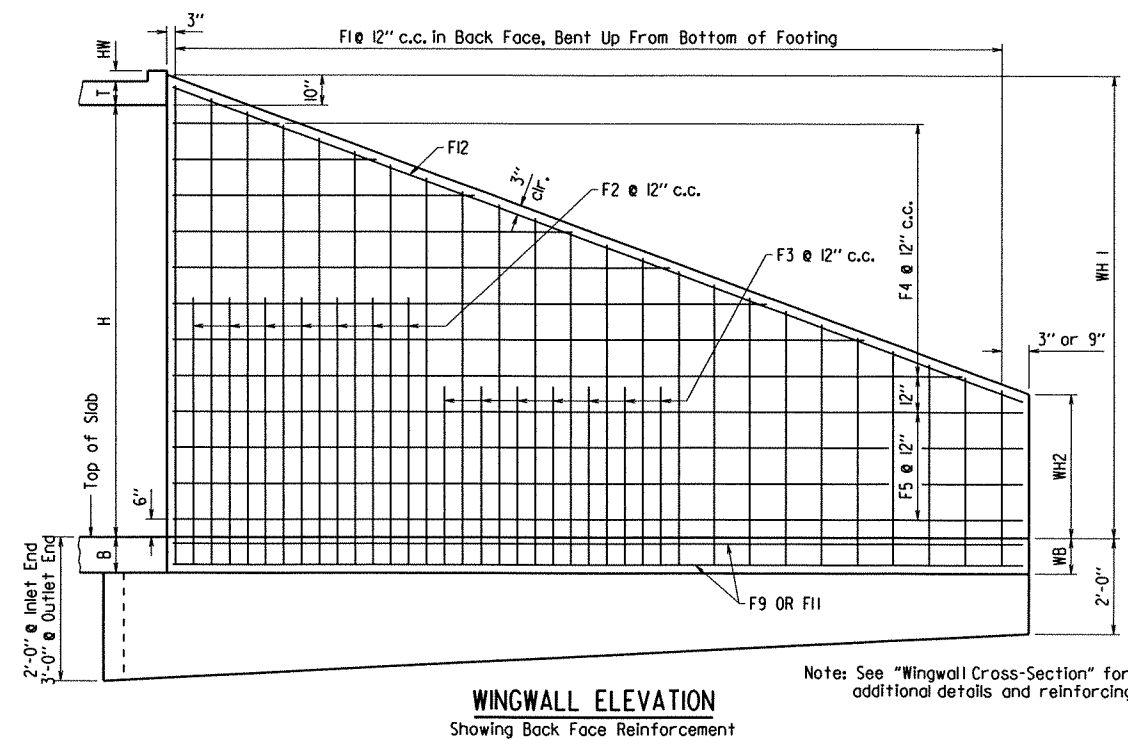
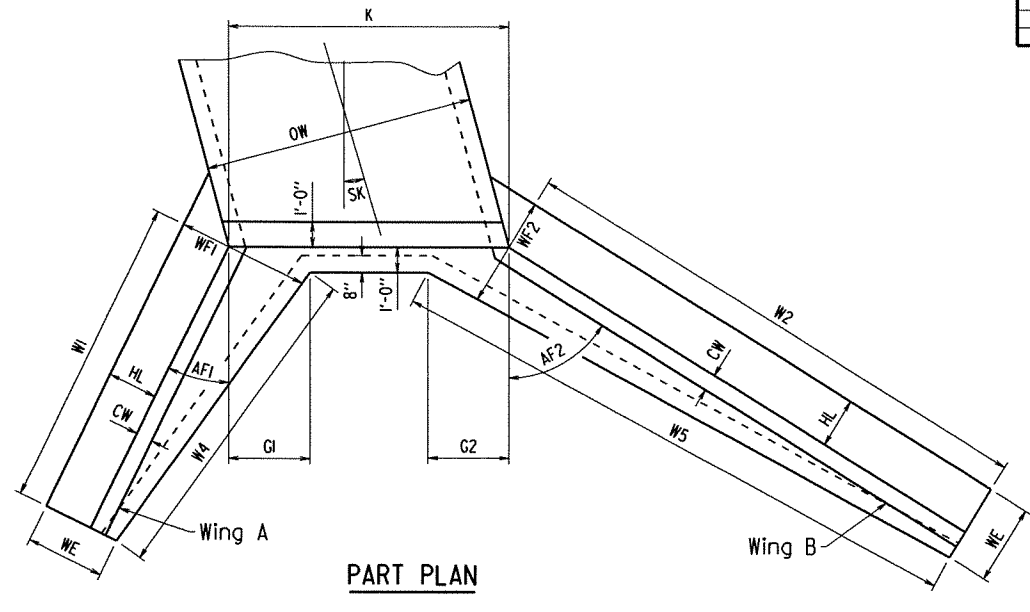
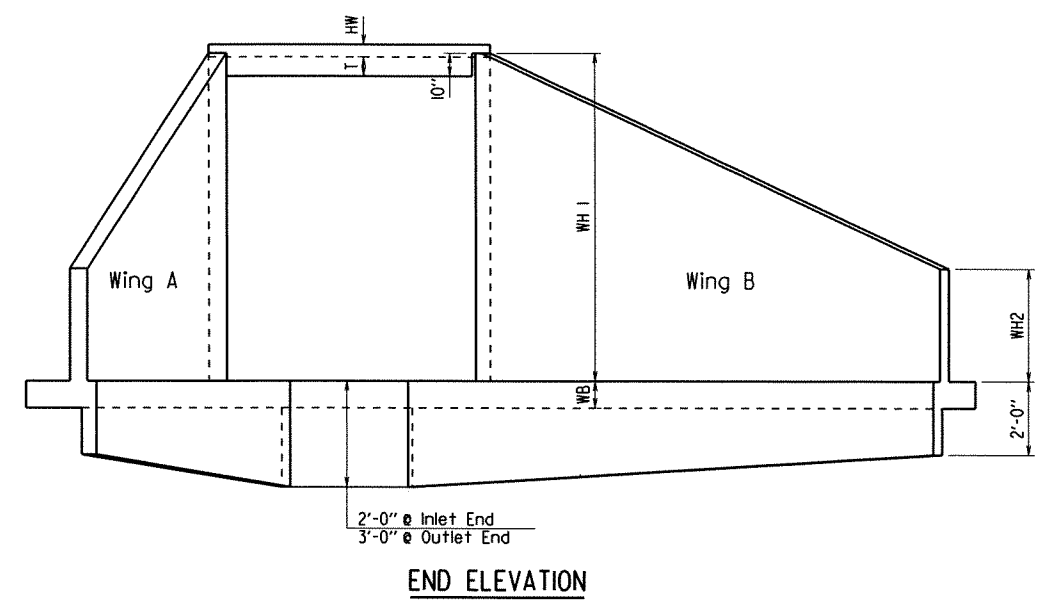
SPECIAL DETAILS



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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. 060352							8	83

① SPECIAL DETAILS



SHEET 3 OF 4
 DETAILS OF R.C. BOX CULVERT
 DETAILS OF WINGWALLS
 SPECIAL DETAILS

b060352.culvert.dgn

WINGWALL TABLE

WING		BAR SIZE		F1		F2		F3		F4		F5		F6		F7		F8		F9		F10		F11		F12		F13		F14		REF. STEEL QTY. PER WING (LBS)	
WING A	WING B	MAX. SPACING	NO. REQ'D	LENGTHS VARY	BAR SIZE	SPACING	NO. REQ'D	LENGTHS	BAR SIZE	SPACING	NO. REQ'D	LENGTHS	BAR SIZE	SPACING	NO. REQ'D	LENGTHS	BAR SIZE	SPACING	NO. REQ'D	LENGTHS	BAR SIZE	SPACING	NO. REQ'D	LENGTHS	BAR SIZE	SPACING	NO. REQ'D	LENGTHS	BAR SIZE	SPACING	NO. REQ'D		LENGTHS
4	4	12	26	L Min 4'-8" Max 14'-0" X Min 0'-11" Max 2'-11" Y Min 3'-10" Max 11'-2"	5	12	4	X L 7'-6" Y 4'-11"	4	12	7	X L 5'-8" Y 3'-8"	4	12	7	X L 5'-8" Y 3'-8"	4	12	7	X L 5'-8" Y 3'-8"	4	12	7	X L 5'-8" Y 3'-8"	4	12	7	X L 5'-8" Y 3'-8"	4	12	7	X L 5'-8" Y 3'-8"	907
4	4	12	26	L Min 4'-8" Max 14'-0" X Min 0'-11" Max 2'-11" Y Min 3'-10" Max 11'-2"	5	12	4	X L 7'-6" Y 4'-11"	4	12	7	X L 5'-8" Y 3'-8"	4	12	7	X L 5'-8" Y 3'-8"	4	12	7	X L 5'-8" Y 3'-8"	4	12	7	X L 5'-8" Y 3'-8"	4	12	7	X L 5'-8" Y 3'-8"	4	12	7	X L 5'-8" Y 3'-8"	907

SKewed END SECTION

SK	SLOPE	D	S	H	LL	T	HW	B	C	W	OW	OH	TOP SLAB REINFORCING STEEL				BOTTOM SLAB REINFORCING STEEL				SIDE WALL REINFORCING STEEL		INTERIOR WALL REINFORCING STEEL		TOP SLAB DISTRIBUTION REINFORCING STEEL		BOTTOM SLAB DISTRIBUTION REINFORCING STEEL		SIDE WALL DISTRIBUTION REINFORCING STEEL		INTERIOR WALL DISTRIBUTION REINFORCING STEEL																
													a	c	d	f	f0	f1	g	e	d1	d2	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH	
12	10	12.5	12.5	8	8	64'-0"	12'-1"	62	4	63'-8"	7	65'-2"	7	83'-8"	12	62	4	63'-8"	5	65'-1"	5	63'-8"	12	62	6	6.5	228	11'-9"	4	12	496	11'-9"	4	8.5	175	4	8.5	175	4	12	20	4	12	80	6.42	824	526

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

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

The required number of bars shown is for estimating purpose only. The actual number required shall be determined in field.

Data shown for Skewed End Section and Wingwall Table is based on the skew angle shown in the table, see PLAN AND PROFILE SHEETS for actual skew angle.

Unless otherwise noted, all dimensions are in inches.

This drawing to be used in conjunction with SHEET 1 OF 4, "R.C. BOX CULVERT", 'GENERAL NOTES & LONGITUDINAL SECTION LENGTH SCHEDULE', SHEET 2 OF 4, "R.C. BOX CULVERT", 'DETAILS OF MULTI-BARREL R.C. BOX CULVERT', SHEET 3 OF 4, "R.C. BOX CULVERT", 'DETAILS OF WINGWALLS', and STANDARD DRAWING RCB-2.

SHEET 4 OF 4
 DETAILS OF R.C. BOX CULVERT
 QUINTUPLE BARREL BOX CULVERT
 STA. 210+81
 SPECIAL DETAILS

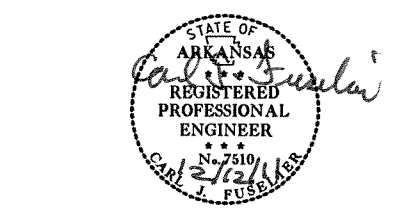


SLOPE SECTIONS

R.C. BOX SECTION	FILL DEPTH (feet)	CLEAR SPAN (feet)	CLEAR HEIGHT (feet)	TOP SLAB THK.	BOTTOM SLAB THK.	SIDE WALL THK.	INTERIOR WALL THK.	OVER ALL WIDTH	OVER ALL HEIGHT	SECTION LENGTH (feet)	TOP SLAB REINFORCING STEEL				BOTTOM SLAB REINFORCING STEEL				SIDE WALL REINFORCING STEEL		INTERIOR WALL REINFORCING STEEL		TOP SLAB DISTRIBUTION REINFORCING STEEL		BOTTOM SLAB DISTRIBUTION REINFORCING STEEL		SIDE WALL DISTRIBUTION REINFORCING STEEL		INTERIOR WALL DISTRIBUTION REINFORCING STEEL		CLASS "S" CONCRETE	REINFORCING STEEL (GR. 60)	ADTL. REINF. PER LAP LOCATION				
											a	Bent b	c	SPACING	NO. REQ'D	d	Bent b1	f	SPACING	NO. REQ'D	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING				NO. REQ'D	LENGTH	SIZE	SPACING
5	12	10																																			

TABULAR DATA BY: MCB DATE: 11/29/11
 CHECKED BY: [Signature] DATE: Dec 12, 2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. PROJ. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.	060352	9	83



TEMPORARY EROSION CONTROL GENERAL NOTES

SAND BAG DITCH CHECKS (TYPE E-6) ARE ESTIMATED AT 22 BAGS PER DITCH CHECK.

THE QUANTITIES AND LOCATIONS OF THE EROSION CONTROL DEVICES SHOWN IN THE PLANS ARE ESTIMATED, AND MAY BE ALTERED IF AND WHERE DIRECTED BY THE ENGINEER TO MAXIMIZE THEIR EFFECTIVENESS. THE DEVICES ARE TO BE INSTALLED IN AN AREA ONLY WHEN THE SOIL DISTURBING ACTIVITY IN THAT AREA BEGINS.

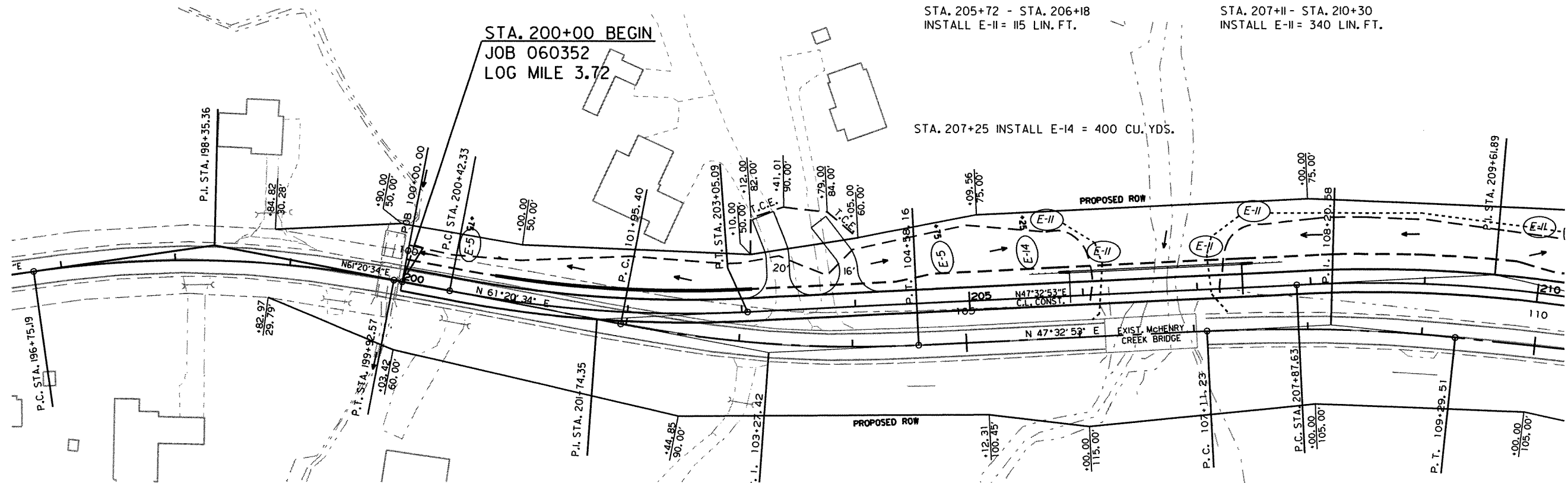
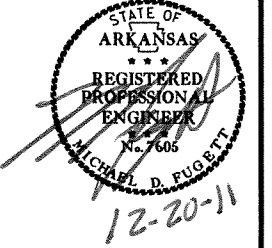
REFER TO SECTION 110 OF THE STANDARD SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

TEMPORARY EROSION CONTROL QUANTITIES STAGE I:
 SILT FENCE (E-II) = 525 LIN. FT.
 SAND BAG DITCH CHECK (E-6) = 66 BAGS
 SEDIMENT BASIN (E-14) = 400 CU. YDS.
 OBLITERATION OF SEDIMENT BASIN = 400 CU. YDS.
 SEDIMENT REMOVAL = 420 CU. YDS.

FOR STAGE CONSTRUCTION SEQUENCE REFER TO MAINTENANCE OF TRAFFIC DETAILS.

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				6	ARK.			
							JOB NO. 060352	10 83

2 TEMP. EROSION CONTROL DETAILS



DATE OF REVISION	REVISION

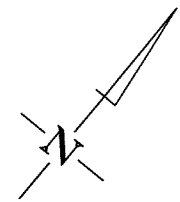
LEGEND

- (E-5) SAND BAG DITCH CHECK
- (E-II) SILT FENCE
- (E-14) SEDIMENT BASIN

STAGE I
 TEMPORARY EROSION CONTROL DETAILS

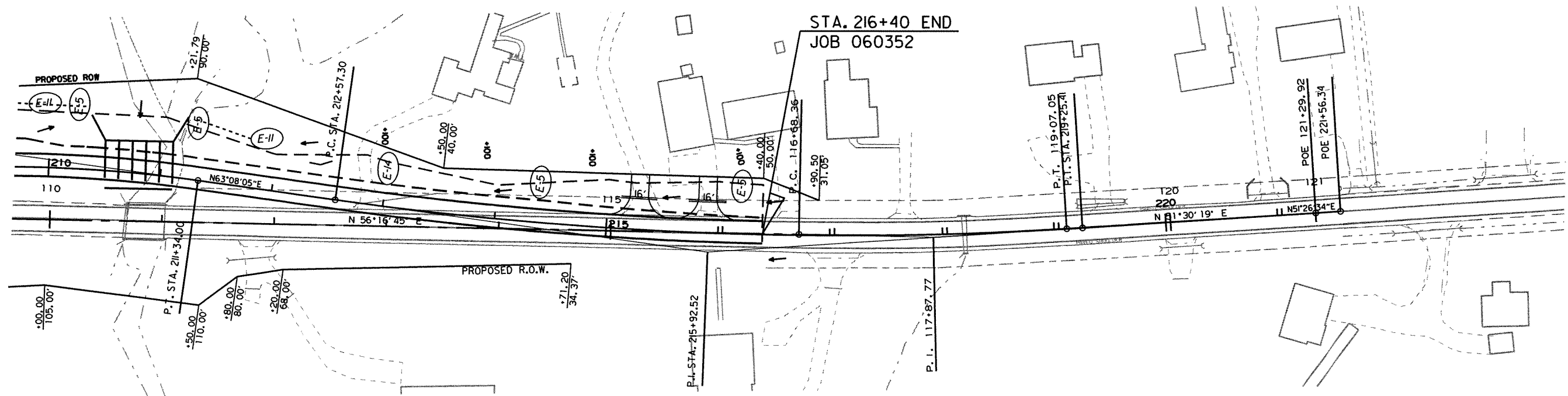
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS	
				6	ARK.				
JOB NO.							060352	II	83

② TEMP. EROSION CONTROL DETAILS



STA. 211+30 - STA. 212+00
INSTALL E-II = 70 LIN. FT.

STA. 216+40 END
JOB 060352



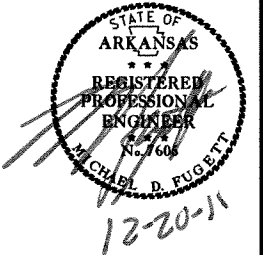
DATE OF REVISION	REVISION

- LEGEND
- SAND BAG DITCH CHECK
 - SILT FENCE
 - SEDIMENT BASIN

STAGE I
TEMPORARY EROSION CONTROL DETAILS

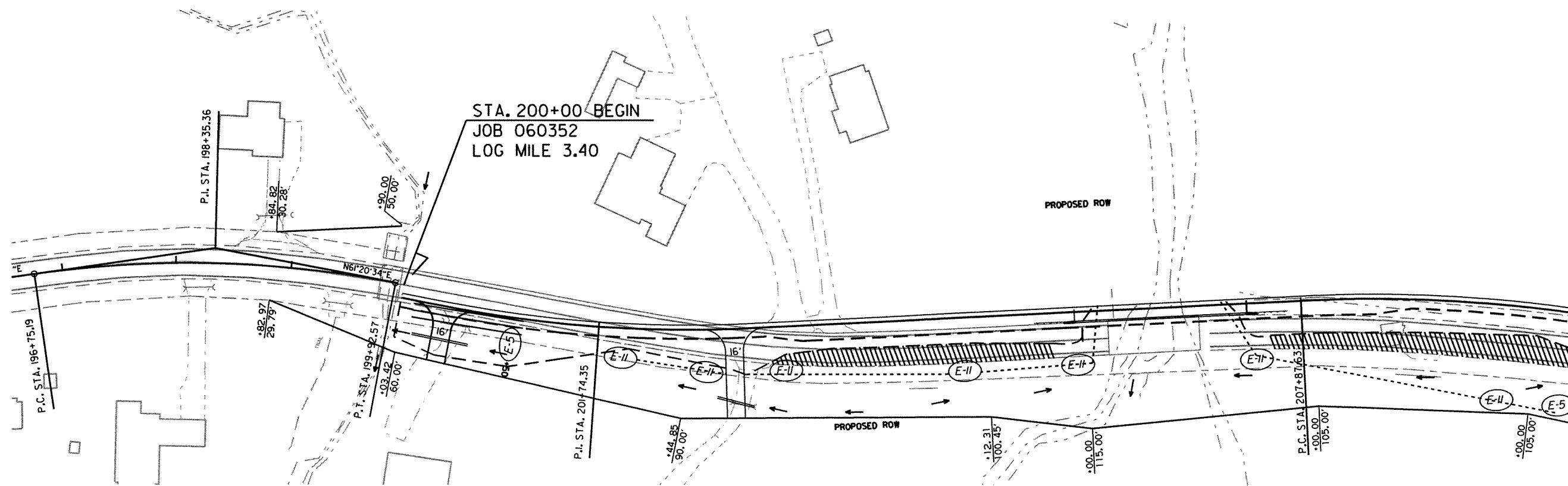
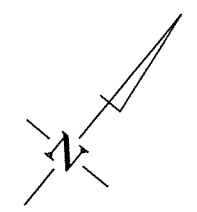
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	060352		12	83

② TEMP. EROSION CONTROL DETAILS



TEMPORARY EROSION CONTROL QUANTITIES STAGE 1:
 SILT FENCE (E-II) = 1053 LIN. FT.
 SAND BAG DITCH CHECK (E-6) = 44 CU. YDS.
 SEDIMENT BASIN (E-14) = 400 CU. YDS.
 OBLITERATION OF SEDIMENT BASIN = 400 CU. YDS.
 SEDIMENT REMOVAL = 425 CU. YDS.

FOR STAGE CONSTRUCTION SEQUENCE REFER TO MAINTENANCE OF TRAFFIC DETAILS.



STA. 201+94 - STA. 202+82
 INSTALL E-II = 93 LIN. FT.

STA. 202+99 - STA. 206+10
 INSTALL E-II = 360 LIN. FT.

STA. 207+17 - STA. 210+50
 INSTALL E-II = 335 LIN. FT.

DATE OF REVISION	REVISION

LEGEND

- (E-5) SAND BAG DITCH CHECK
- (E-II) SILT FENCE
- (E-14) SEDIMENT BASIN

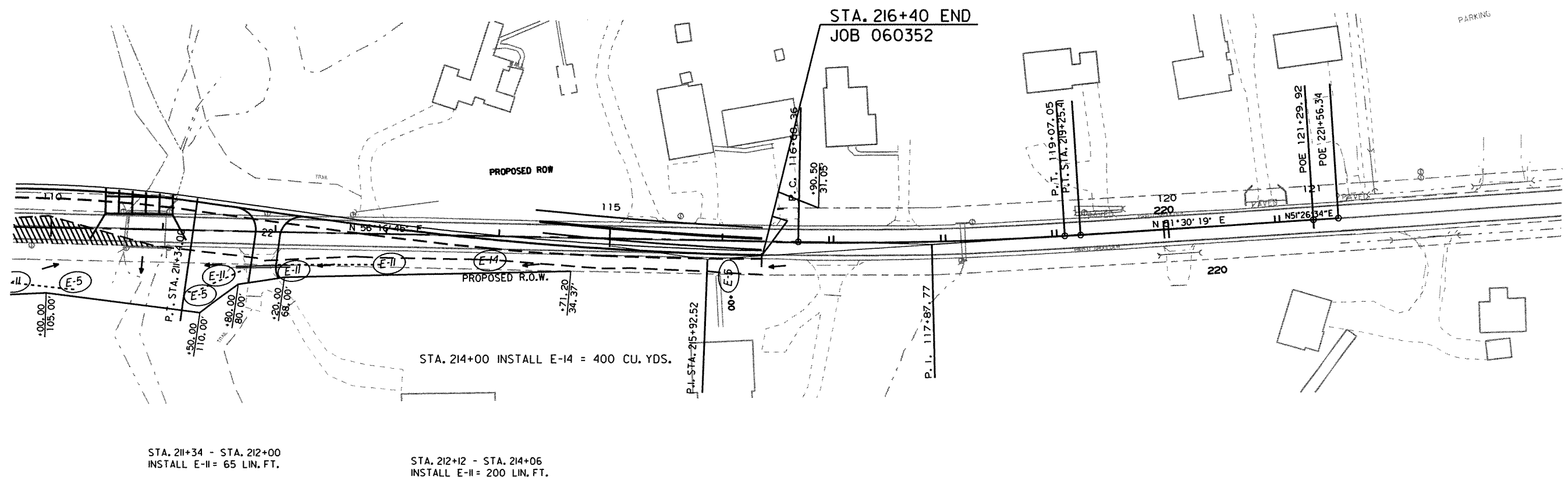
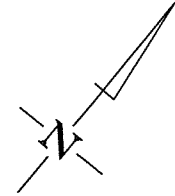
STAGE 2
 TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
JOB NO. 060352							13	83

② TEMP. EROSION CONTROL DETAILS



12-20-11



DATE OF REVISION	REVISION

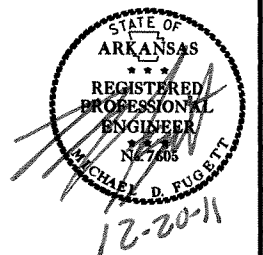
- LEGEND
- (E-5) SAND BAG DITCH CHECK
 - (E-II) SILT FENCE
 - (E-14) SEDIMENT BASIN

STAGE 2
TEMPORARY EROSION CONTROL DETAILS

R060352.DGN 10/17/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
JOB NO. 060352							14	83

② MAINTENANCE OF TRAFFIC DETAILS



SEQUENCE OF CONSTRUCTION

STAGE 1:

INSTALL THE ADVANCE WARNING SIGNS AND RESTRIPE THE EXISTING LANES AS SHOWN TO MAINTAIN TRAFFIC IN THE EXISTING LANES.

NOTCH AND WIDEN HWY. 5, DELINEATING THE WORK ZONE WITH VERTICAL PANELS AT 40' O.C. ON THE LEFT SIDE OF THE EXISTING HIGHWAY.

STA. 200+00 STA. 202+86 NOTCH AND WIDEN ON LT. SIDE OF HWY. 5.

STA. 202+86 - STA. 212+52 CONSTRUCT LEFT PORTION OF NEW, FULL DEPTH RD.

STA. 205+89 - STA. 207+40 CONSTRUCT LT. PORTION OF BRIDGE.

STA. 210+51 - STA. 211+12 CONSTRUCT PART OF RC. BOX CULVERT ON LT.

STA. 212+52 - STA. 216+40 NOTCH AND WIDEN ON LT. SIDE OF HWY. 5.

DELINEATE CITY STREETS AND DRIVEWAYS THROUGHOUT THE PROJECT USING TRAFFIC DRUMS (6 PER TURNOUT) ON THE SIDE BEING WIDENED.

CONSTRUCTION PAVEMENT MARKINGS FOR THE ENTIRE PROJECT ARE ESTIMATED AND BASED ON 2 APPLICATIONS OF CENTERLINE STRIPES (DOUBLE YELLOW) AND LT. & RT. EDGE LINES (WHITE).

TOTAL QUANTITIES FOR MAINTENANCE OF TRAFFIC:

- SIGNS = 175.5 SQ. FT.
- TRAFFIC DRUMS = 26 EACH
- VERTICAL PANELS = 28 EACH
- BARRICADES = 32 LIN. FT.
- CONSTRUCTION PAVEMENT MARKINGS = 13120 LIN. FT.
- REMOVABLE PAVEMENT MARKINGS = 602 LIN. FT.
- REMOVAL OF PERMANENT PAVEMENT MARKINGS = 2000
- REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS = 1600 LIN. FT.
- FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER = 222 LIN. FT.
- RELOCATING PRECAST CONCRETE BARRIER = 222 LIN. FT.
- TEMPORARY IMPACT ATTENUATION BARRIER = 1 EACH
- TEMPORARY IMPACT ATTENUATION BARRIER (REPAIR) = 1 EACH

STAGE 2:

SHIFT TRAFFIC TO THE LEFT ONTO STAGE 1 CONSTRUCTION AS INDICATED ON MAINTENANCE OF TRAFFIC PLAN SHEETS.

CONSTRUCT RIGHT PORTION OF NEW ROAD. DELINEATE THE WORK ZONE USING VERTICAL PANELS AT 40' O.C. TO THE RIGHT OF TRAFFIC AND TRAFFIC DRUMS 80' O.C. ON THE LEFT SIDE OF STAGE 2 CONSTRUCTION.

CONSTRUCT REMAINING PORTION OF THE R.C. BOX CULVERT ON RT.

REMOVE THE EXISTING BRIDGE AND COMPLETE CONSTRUCTION OF PROPOSED BRIDGE ON RT. SIDE.

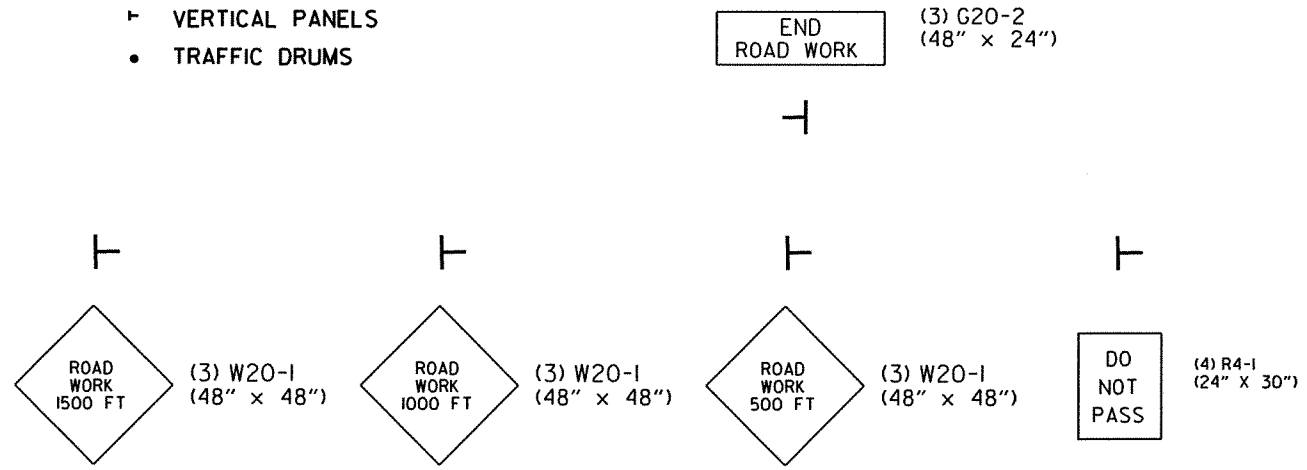
COMPLETE CONSTRUCTION OF RT. SIDE OF HWY. 5.

APPLY THE FINAL 2" LIFT OF ACHM SURFACE AFTER ALL WIDENING HAS BEEN COMPLETED.

STAGE 3:

INSTALL PERMANENT PAVEMENT MARKINGS.

- ┆ VERTICAL PANELS
- TRAFFIC DRUMS



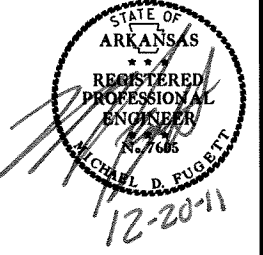
SIGN PLACEMENT AT BEGINNING AND END OF JOB

NOTE: PLACEMENT OF ADDITIONAL SIGNS, TRAFFIC DRUMS, BARRICADES, AND VERTICAL PANELS ARE SHOWN ON THE FOLLOWING MAINTENANCE OF TRAFFIC PLAN SHEETS.

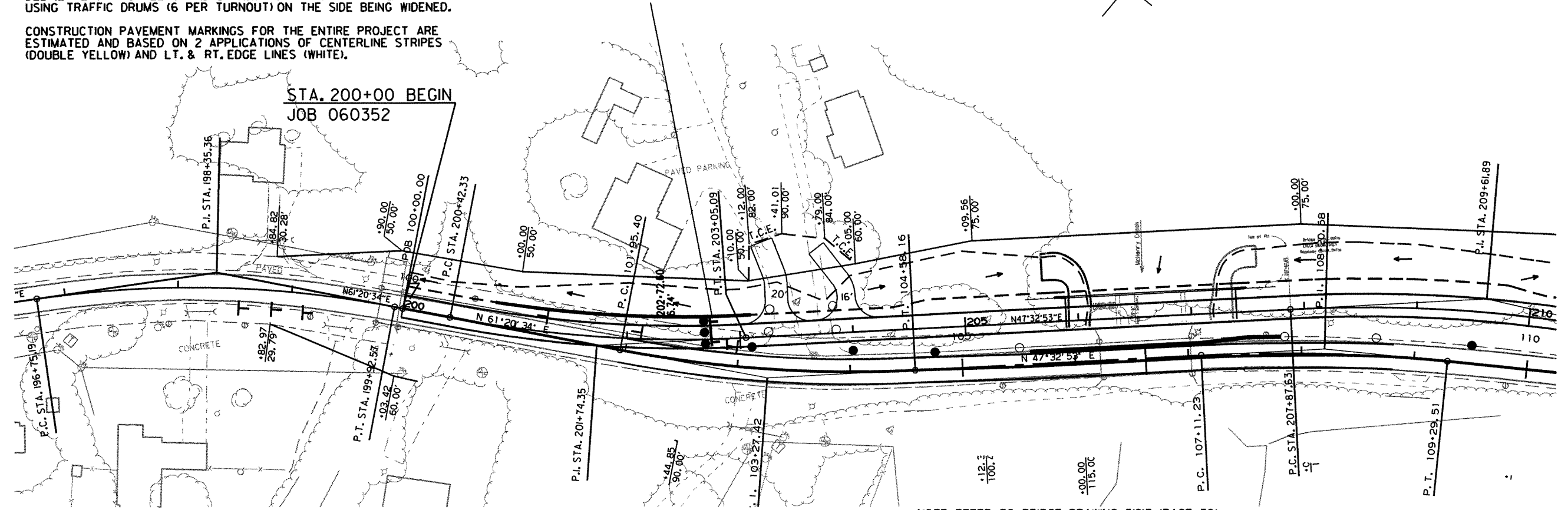
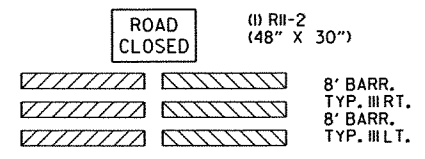
ADVANCE WARNING SIGNS: ALL STAGES
MAINTENANCE OF TRAFFIC DETAILS

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.	060352		15	83

② MAINTENANCE OF TRAFFIC DETAILS



STAGE I:
 INSTALL THE ADVANCE WARNING SIGNS AND RESTRIPE THE EXISTING LANES AS SHOWN TO MAINTAIN TRAFFIC IN THE EXISTING LANES.
 NOTCH AND WIDEN HWY. 5, DELINEATING THE WORK ZONE WITH VERTICAL PANELS AT 40' O.C. ON THE LEFT SIDE OF THE EXISTING HIGHWAY.
 STA. 200+00 STA. 202+86 NOTCH AND WIDEN ON LT. SIDE OF HWY. 5.
 STA. 202+86 - STA. 212+52 CONSTRUCT LEFT PORTION OF NEW, FULL DEPTH RD.
 STA. 205+89 - STA. 207+40 CONSTRUCT LT. PORTION OF BRIDGE.
 STA. 210+51 - STA. 211+12 CONSTRUCT PART OF RC. BOX CULVERT ON LT.
 STA. 212+52 - STA. 216+40 NOTCH AND WIDEN ON LT. SIDE OF HWY. 5.
 DELINEATE CITY STREETS AND DRIVEWAYS THROUGHOUT THE PROJECT USING TRAFFIC DRUMS (6 PER TURNOUT) ON THE SIDE BEING WIDENED.
 CONSTRUCTION PAVEMENT MARKINGS FOR THE ENTIRE PROJECT ARE ESTIMATED AND BASED ON 2 APPLICATIONS OF CENTERLINE STRIPES (DOUBLE YELLOW) AND LT. & RT. EDGE LINES (WHITE).



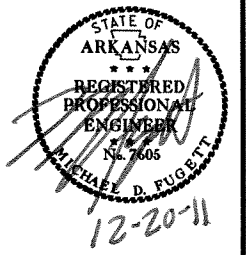
NOTE: REFER TO BRIDGE DRAWING 51917 (PAGE 30) "DETAILS OF STAGE CONSTRUCTION McHENRY CREEK" FOR MOT LANE DIMENSIONS AND PLACEMENT OF TEMPORARY BARRIER WALL.

- QUANTITIES FOR STAGE I:**
 SIGNS = 163 SO. FT.
 TRAFFIC DRUMS = 26 EACH
 VERTICAL PANELS = 14 EACH
 BARRICADES = 32 LIN. FT.
 CONSTRUCTION PAVEMENT MARKINGS = 6560 LIN. FT.
 REMOVAL OF PERMANENT PAVEMENT MARKINGS = 2000 LIN. FT.
 FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER = 222 LIN. FT.
 TEMPORARY IMPACT ATTENUATION BARRIER = 1 EACH
 TEMPORARY IMPACT ATTENUATION BARRIER (REPAIR) = 1 EACH

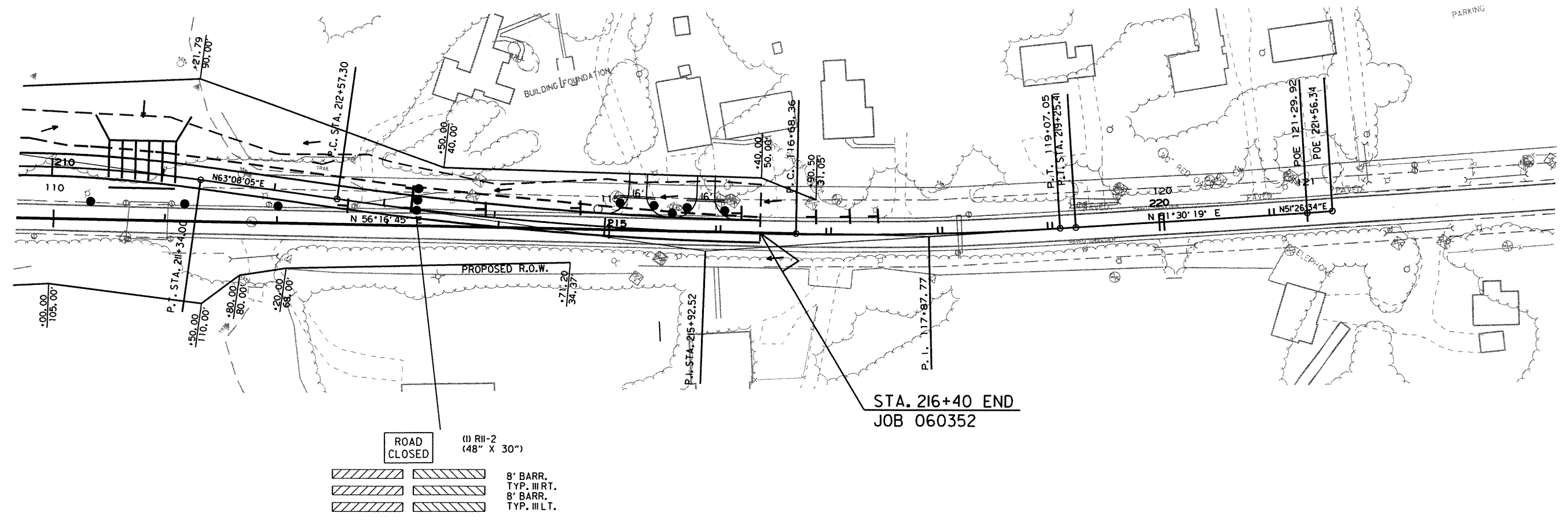
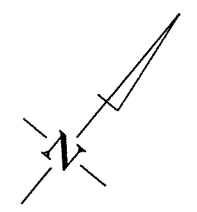
STAGE I
 MAINTENANCE OF TRAFFIC DETAILS

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. 060352							16	83

② MAINTENANCE OF TRAFFIC DETAILS



STAGE I:
 INSTALL THE ADVANCE WARNING SIGNS AND RESTRIPE THE EXISTING LANES AS SHOWN TO MAINTAIN TRAFFIC IN THE EXISTING LANES.
 NOTCH AND WIDEN HWY. 5, DELINEATING THE WORK ZONE WITH VERTICAL PANELS AT 40' O.C. ON THE LEFT SIDE OF THE EXISTING HIGHWAY.
 STA. 200+00 STA. 202+86 NOTCH AND WIDEN ON LT. SIDE OF HWY. 5.
 STA. 202+86 - STA. 212+52 CONSTRUCT LEFT PORTION OF NEW, FULL DEPTH RD.
 STA. 205+89 - STA. 207+40 CONSTRUCT LT. PORTION OF BRIDGE.
 STA. 210+51 - STA. 211+12 CONSTRUCT PART OF RC. BOX CULVERT ON LT.
 STA. 212+52 - STA. 216+40 NOTCH AND WIDEN ON LT. SIDE OF HWY. 5.
 DELINEATE CITY STREETS AND DRIVEWAYS THROUGHOUT THE PROJECT USING TRAFFIC DRUMS (6 PER TURNOUT) ON THE SIDE BEING WIDENED.
 CONSTRUCTION PAVEMENT MARKINGS FOR THE ENTIRE PROJECT ARE ESTIMATED AND BASED ON 2 APPLICATIONS OF CENTERLINE STRIPES (DOUBLE YELLOW) AND LT. & RT. EDGE LINES (WHITE).



STA. 216+40 END
 JOB 060352

ZBORDER.CEL 8/30/2010

STAGE I
 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.	060352		17	83

② MAINTENANCE OF TRAFFIC DETAILS



STAGE 2:

SHIFT TRAFFIC TO THE LEFT ONTO STAGE 1 CONSTRUCTION AS INDICATED ON MAINTENANCE OF TRAFFIC PLAN SHEETS.

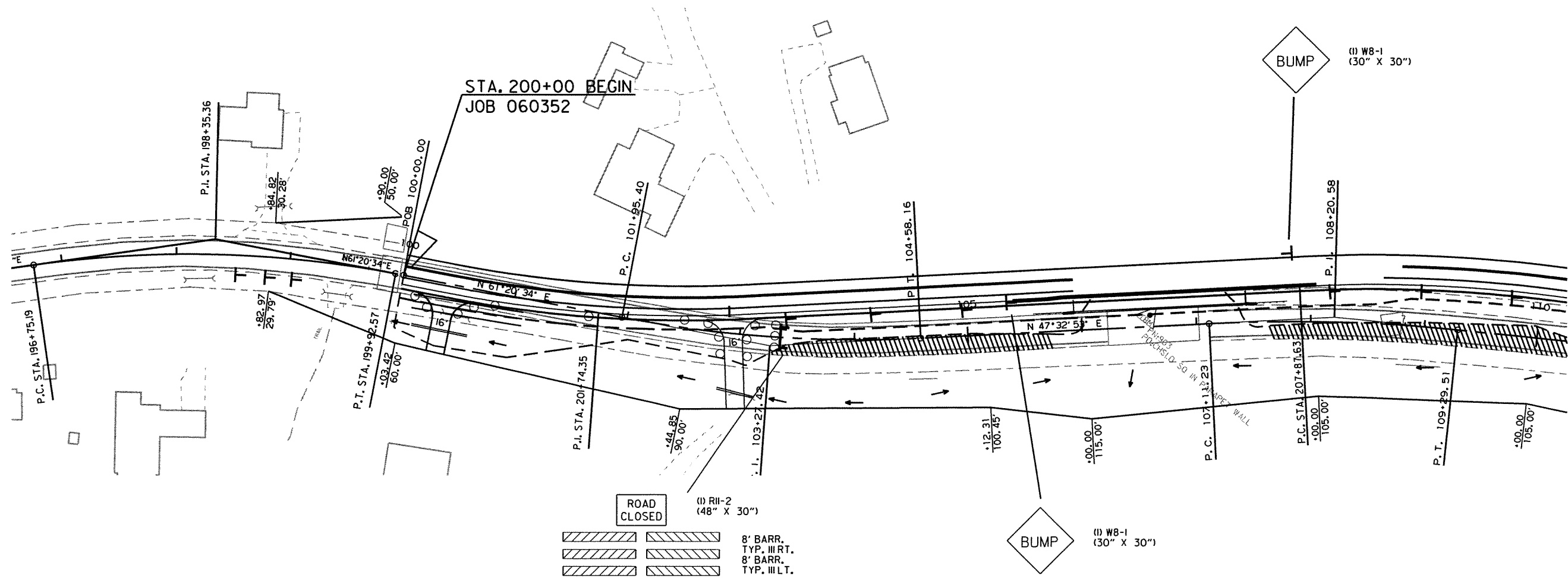
CONSTRUCT RIGHT PORTION OF NEW ROAD. DELINEATE THE WORK ZONE USING VERTICAL PANELS AT 40' O.C. TO THE RIGHT OF TRAFFIC AND TRAFFIC DRUMS 80' O.C. ON THE LEFT SIDE OF STAGE 2 CONSTRUCTION.

CONSTRUCT REMAINING PORTION OF THE R.C. BOX CULVERT ON RT.

REMOVE THE EXISTING BRIDGE AND COMPLETE CONSTRUCTION OF PROPOSED BRIDGE ON RT. SIDE.

COMPLETE CONSTRUCTION OF RT. SIDE OF HWY. 5.

APPLY THE FINAL 2" LIFT OF ACHM SURFACE AFTER ALL WIDENING HAS BEEN COMPLETED.



STAGE 2 ADDITIONAL QUANTITIES:

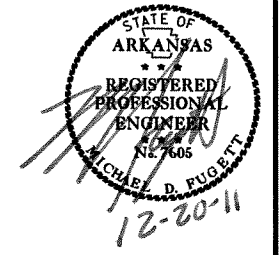
- SIGNS = 12.5 SQ. FT.
- VERTICAL PANELS = 14 EACH
- TRAFFIC DRUMS = 0 EACH
- BARRICADES = 0 LIN. FT.
- REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS = 1600 LIN. FT.
- CONSTRUCTION PAVEMENT MARKINGS = 5,950 LIN. FT.
- REMOVABLE CONSTRUCTION PAVEMENT MARKINGS = 602 LIN. FT.
- RELOCATING PRECAST CONCRETE BARRIER = 222 LIN. FT.

**STAGE 2
MAINTENANCE OF TRAFFIC DETAILS**

R060352.DGN 10/17/2011

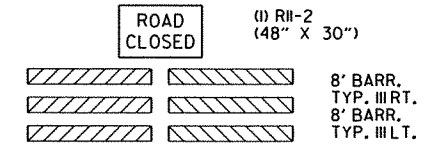
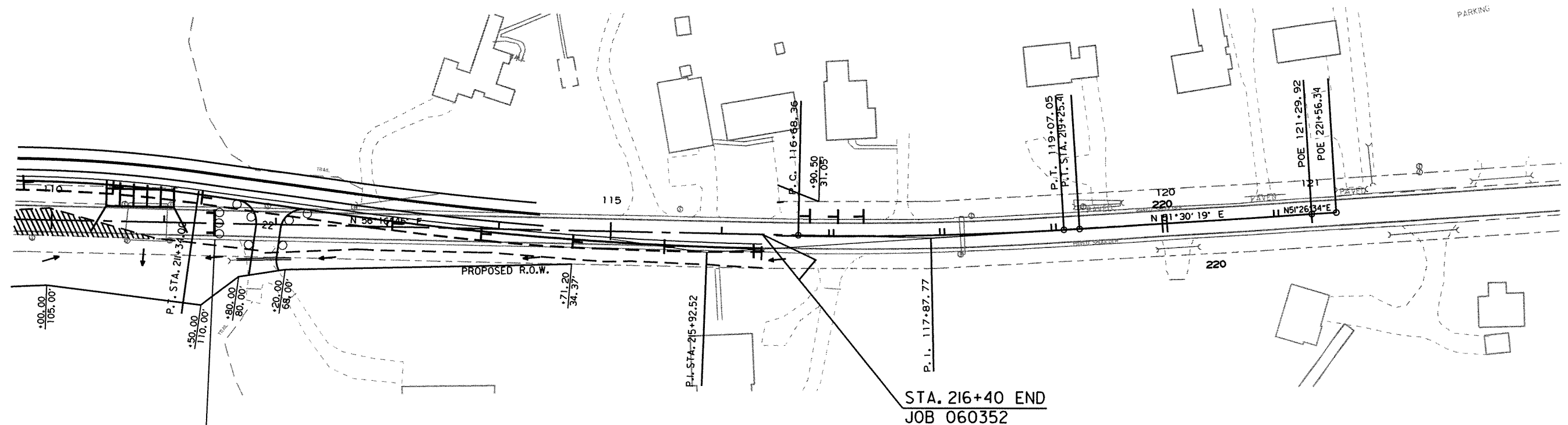
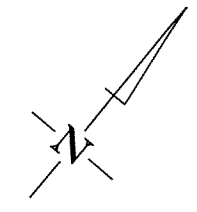
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	060352		18	83

② MAINTENANCE OF TRAFFIC DETAILS



STAGE 2:

- SHIFT TRAFFIC TO THE LEFT ONTO STAGE 1 CONSTRUCTION AS INDICATED ON MAINTENANCE OF TRAFFIC PLAN SHEETS.
- CONSTRUCT RIGHT PORTION OF NEW ROAD. DELINEATE THE WORK ZONE USING VERTICAL PANELS AT 40' O.C. TO THE RIGHT OF TRAFFIC AND TRAFFIC DRUMS 80' O.C. ON THE LEFT SIDE OF STAGE 2 CONSTRUCTION.
- CONSTRUCT REMAINING PORTION OF THE R.C. BOX CULVERT ON RT.
- REMOVE THE EXISTING BRIDGE AND COMPLETE CONSTRUCTION OF PROPOSED BRIDGE ON RT. SIDE.
- COMPLETE CONSTRUCTION OF RT. SIDE OF HWY. 5.
- APPLY THE FINAL 2" LIFT OF ACHM SURFACE AFTER ALL WIDENING HAS BEEN COMPLETED.



STA. 216+40 END
JOB 060352

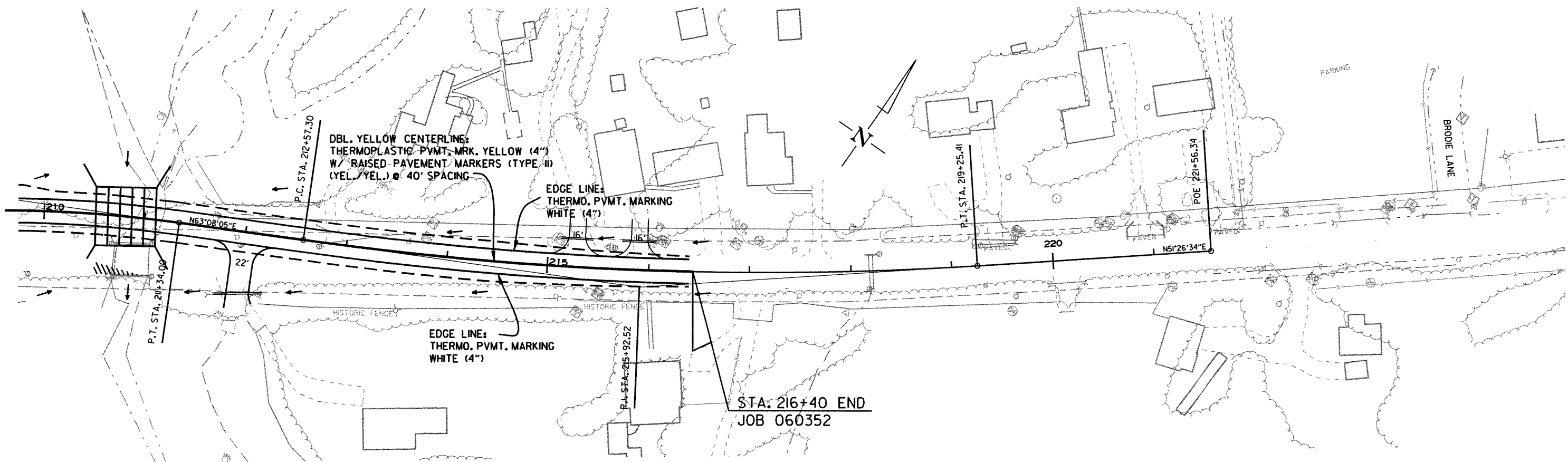
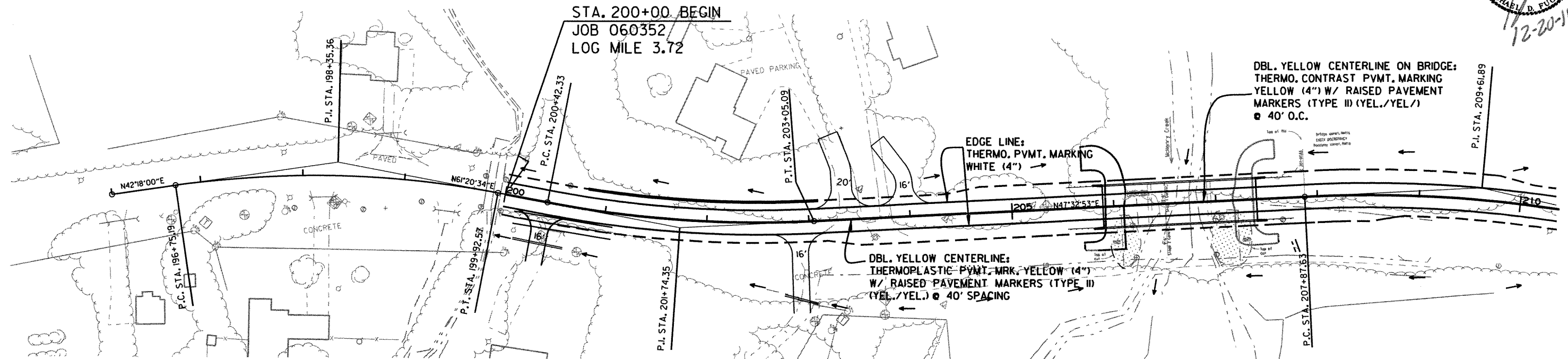
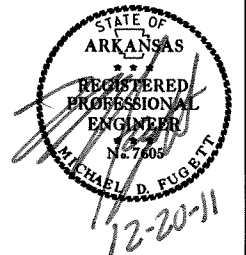
STAGE 2
MAINTENANCE OF TRAFFIC DETAILS

PERMANENT PAVEMENT MARKING QUANTITIES

THERMOPLASTIC PAVEMENT MARKING WHITE (4") = 3680 LIN. FT.
 THERMOPLASTIC PAVEMENT MARKING YELLOW (4") = 3380 LIN. FT.
 HIGH PERFORMANCE CONTRAST PAVEMENT MARKING YELLOW (4") = 300 LIN. FT.
 HIGH PERFORMANCE PAVEMENT MARKING YELLOW (4") = 300 LIN. FT.
 RAISED PAVEMENT MARKERS (TYPE II)(YELLOW/YELLOW) = 44 EACH

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. 060352							19	83

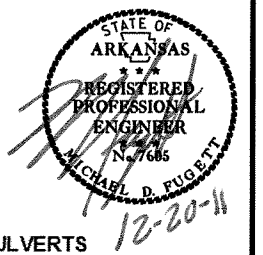
2 PERMANENT PAVEMENT MARKING DETAILS



PERMANENT PAVEMENT MARKING 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.	060352		20	83

2 QUANTITIES



ADVANCE WARNING SIGNS AND DEVICES

SIGN NUMBER	DESCRIPTION	SIGN SIZE	STAGE 1	STAGE 2	MAXIMUM NUMBER REQUIRED	TOTAL SIGNS REQUIRED		VERTICAL PANELS EACH	TRAFFIC DRUMS	BARRICADES (TYPE III)		FURNISHING & INSTALLING PRECAST CONC. BARRIER	RELOCATING PRECAST CONCRETE BARRIER	TEMPORARY IMPACT ATTENUATION BARRIER	TEMP. IMPACT ATTENUATION BARRIER (REPAIR)
			LIN.FT. - EACH			NO.	SQ. FT.			RIGHT	LEFT				
W20-1	ROAD WORK 1500 FT.	48"x48"	2	2	2	2	32.0								
W20-1	ROAD WORK 1000 FT.	48"x48"	2	2	2	2	32.0								
W20-1	ROAD WORK 500 FT.	48"x48"	2	2	2	2	32.0								
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								
OM-3L	OBJECT MARKER	12"x36"	3	3	3	3	9.0								
OM-3R	OBJECT MARKER	12"x36"	4	4	4	4	12.0								
R4-1	DO NOT PASS	24"x30"	2	2	2	2	10.0								
W8-1	BUMP	30"x30"	2	2	2	2	12.5								
	VERTICAL PANELS		7	28	28	28		28							
	TRAFFIC DRUMS		26	25	26	26			26						
	TYPE III BARRICADE-RT. (8')	2.0	2	2	2	2				16					
	TYPE III BARRICADE-LT. (8')	2.0	2	2	2	2				16					
	FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER		222		222	222					222				
	RELOCATING PRECAST CONCRETE BARRIER			222	222							222			
	TEMP. IMPACT ATTENUATION BARRIER												1		
	TEMP. IMPACT ATTENUATION BARRIER (REPAIR)														1
TOTALS:							175.5	28	26	16	16	222	222	1	1

REMOVAL AND DISPOSAL OF CULVERTS

STATION	DESCRIPTION	PIPE CULVERTS EACH
200+50	HWY 5 ON RT.	1
202+96	HWY 5 ON RT.	1
204+54	HWY 5 ON RT.	1
208+94	HWY 5 ON RT.	1
211+95	HWY 5 ON RT.	1
213+15	HWY 5 ON RT.	1
TOTAL:		5

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

CONSTRUCTION PAVEMENT MARKINGS AND PERMANENT PAVEMENT MARKINGS

DESCRIPTION	STAGE 1	STAGE 2	END OF JOB	REMOVAL OF PERMANENT PAVEMENT MARKINGS	REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS	CONSTRUCTION PAVEMENT MARKINGS	REMOVABLE CONSTRUCTION PAVEMENT MARKINGS	RAISED PAVEMENT MARKERS (TYPE II) (YEL/YEL)	THERMOPLASTIC PAVEMENT MARKINGS 4"		HIGH PERFORMANCE CONTRAST PAVT. MARKING (4")	HIGH PERFORMANCE PAVT. MARKING (4")				
	LIN.FT. - EACH								LIN.FT.	LIN.FT.			WHITE	YELLOW	YELLOW	YELLOW
									EACH							
REMOVAL OF PERMANENT PAVEMENT MARKINGS	2000			2000												
CONSTRUCTION PAVEMENT MARKINGS	6560	6560				13120										
CONSTRUCTION PAVEMENT MARKINGS (WORDS)																
CONSTRUCTION PAVEMENT MARKINGS (ARROWS)																
REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS		1600			1600											
REMOVABLE CONSTRUCTION PAVT MARKINGS		602				602										
RAISED PAVEMENT MARKERS TYPE I (YEL/YEL)			44					44								
THERMOPLASTIC PAVEMENT MARKINGS WHITE (4")			3680						3680							
THERMOPLASTIC PAVEMENT MARKINGS YELLOW (4")			3380							3380						
HIGH PERFORMANCE CONTRAST PAVEMENT MARKING YELLOW (4")			300							300						
HIGH PERFORMANCE PAVEMENT MARKING YELLOW (4")			300								300					
TOTALS:				2000	1600	13120	602	44	3680	3380	300	300				

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

REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 2)

STATION	STATION	LOCATION	LUMP SUM
210+72	211+09	HWY 5 - MAIN LANES	1.00

REMOVAL AND DISPOSAL ITEMS

STATION	STATION	LOCATION	CONCRETE DRIVEWAYS	GUARDRAIL	POSTS	LUMINAIRE POLE & FOUNDATION
			SQ. YD.	LIN.FT.	EACH	EACH
203+00		CONC. DRIVE ON RT.	88			
205+54	205+79	GUARDRAIL LT. & RT.		50		
207+50	207+76	GUARDRAIL LT. & RT.		50		
202+14		GAS LUMINAIRE ON RT.				1
202+12		POST ON RT.			1	
202+42		POST ON RT.			1	
202+63		POST ON RT.			1	
202+76		POST ON RT.			1	
203+05		POST ON LT.			1	
203+11		POST ON LT.			1	
203+14		POST ON LT.			1	
TOTALS:			88	100	7	1

REMOVAL AND DISPOSAL OF FENCE

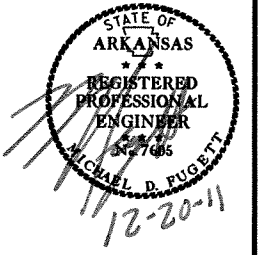
STATION	STATION	LOCATION	FENCE	GATE
			LIN. FT.	EACH
200+12	200+42	CABLE GATE ON RT.		1
203+12		WROUGHT IRON GATE ON LT.		1
206+32		FENCE ON RT.	4	
207+29		FENCE ON RT.	9	
208+37	209+83	FENCE ON RT.	137	
211+47	212+25	5' WEB WIRE ON LT.	100	
212+25	212+68	5' CHAIN LINK ON LT.	45	
212+88		STEEL FARM GATE ON LT.		1
TOTALS:			295	3

CLEARING AND GRUBBING

STATION	STATION	LOCATION	CLEARING	GRUBBING
			STATION	STATION
200+00	216+40	MAIN LANES LT. & RT.	17	17
TOTALS:			17	17

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				6	ARK.			
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② QUANTITIES



EARTHWORK

STATION	STATION	LOCATION / DESCRIPTION	UNCLASSIFIED EXCAVATION	COMPACTED EMBANKMENT	* SOIL STABILIZATION
			CU. YD.	CU. YD.	TON
ENTIRE	PROJECT	STAGE 1-MAIN LANES	3222	12424	
ENTIRE	PROJECT	STAGE 2-MAIN LANES	748	2257	
ENTIRE	PROJECT	APPROACHES	40	445	
ENTIRE	PROJECT	TEMPORARY APPROACHES		120	
203+19	205+69	OBLITERATION OF EXISTING ROAD	410		
207+59	211+02	OBLITERATION OF EXISTING ROAD	592		
205+89	207+40	EXCAVATION AT BRIDGE	300		
ENTIRE	PROJECT	TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER			100
TOTALS:			5312	15246	100

* QUANTITY ESTIMATED.
SEE SECTION 104.03 OF THE STD. SPECS.
NOTE: EARTHWORK QUANTITIES SHOWN ABOVE SHALL BE PAID AS PLAN QUANTITY.

SOIL LOG

STATION	LOCATION	DEPTH	LIQUID LIMIT	PLASTICITY INDEX	AASHTO CLASSIFICATION	COLOR
		FEET				
101+00	20' RT.	5	23	6	A-4(1)	BROWN
101+00	16' RT.	5	25	9	A-4(5)	BROWN
109+00	20' RT.	5	33	15	A-6(14)	BROWN
117+00	13' LT.	5	30	11	A-6(2)	BROWN
117+00	24' LT.	5	27	9	A-4(4)	BROWN

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.
Z- AUGER REFUSAL
NP - NON-PLASTIC
ND - NOT DETERMINABLE

EROSION CONTROL

STATION	STATION	LOCATION	PERMANENT EROSION CONTROL					TEMPORARY EROSION CONTROL								
			SEEDING	LIME	MULCH COVER	WATER	SECOND SEEDING APPLICATION	TEMPORARY SEEDING	MULCH COVER	WATER	SAND BAG DITCH CHECKS	SILT FENCE	TRIANGULAR SILT DIKE	SEDIMENT BASIN	OBLITERATION OF SEDIMENT BASIN	*SEDIMENT REMOVAL & DISPOSAL
			ACRE	TON	ACRE	M.GAL.	ACRE	ACRE	ACRE	ACRE	M.GAL.	(E-5) BAG	(E-11) LIN. FT.	LIN. FT.	(E-14) CU. YD.	CU. YD.
ENTIRE	PROJECT	STAGE 1						2.85	2.85	58.1	66	525		400	400	420
ENTIRE	PROJECT	STAGE 2						1.58	1.58	32.2	44	1053		400	400	425
ENTIRE	PROJECT		1.84	3.68	1.84	187.7	1.84									
*ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.											50	1000				
TOTALS:			1.84	3.68	1.84	187.7	1.84	4.43	4.43	90.3	160	1578	1000	800	800	845

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.
WATER 12.6 GAL. / SQ. YD. OF SOLID SODDING.
SAND BAG DITCH CHECKS 22 BAGS / LOCATION
ROCK DITCH CHECKS 3 CU.YD. / LOCATION

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

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.

BENCH MARKS

STATION	LOCATION	BENCH MARKS
		EACH
210+49	LT HEADWALL OF BOX	1

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

EROSION CONTROL MATTING

STATION	STATION	LOCATION	LENGTH	CLASS 3
			LIN. FT.	SQ. YD.
200+00	200+38	LT. SIDE	38.0	33.8
203+35	203+76	LT. SIDE	41.0	36.4
204+00	205+00	LT. SIDE	100.0	88.9
213+00	215+92	LT. SIDE	292.0	259.6
214+00	215+92	RT. SIDE	192.0	170.7
TOTAL:				589.4

NOTE: AVERAGE WIDTH = 8'-0"

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.
199+95	200+75	LT. SIDE DITCH	80.00	12	106.67	35.56	0.45
212+80	213+00	LT. SIDE DITCH	20.00	12	26.67	8.89	0.11
TOTALS:					133.34	44.45	0.56

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

DUMPED RIPRAP AND FILTER BLANKET

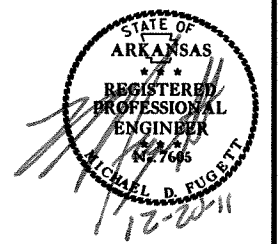
STATION	LOCATION	DUMPED RIPRAP (GROUTED)	FILTER BLANKET
		CU. YDS.	SQ. YDS.
210+81	OUTLET OF BOX CULVERT	214	428
TOTALS:		214	428

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

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

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				6	ARK.			
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2 QUANTITIES



4" PIPE UNDERDRAIN

STATION	STATION	LOCATIONS	4" PIPE UNDERDRAINS	UNDERDRAIN OUTLET PROTECTORS
			LIN. FT.	EACH
200+00	204+60	HWY. 5 - LT. SIDE	460	3
204+62	211+95	HWY. 5 - LT. SIDE	733	4
211+01	213+51	HWY. 5 - LT. SIDE	250	2
211+96	217+40	HWY. 5 - LT. SIDE	544	4
* ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER			500	4
TOTALS:			2487	17

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

CONCRETE COMBINATION CURB AND GUTTER

STATION	STATION	LOCATION	(TYPE A) (1'-6")
			LIN. FT.
200+80	203+10	HWY. 5 ON LT.	230
TOTAL:			230

FENCING

STATION	STATION	LOCATION	WIRE FENCE		* 6" CHAIN LINK FENCE
			(TYPE C)	(TYPE D)	
			LIN. FT.		
208+34	209+83	HWY. 5 - RT. SIDE		136	
211+44	212+23	HWY. 5 - LT. SIDE	99		
212+23	212+69	HWY. 5 - LT. SIDE			46
TOTALS:			99	136	46

* DENOTES ALTERNATE BID ITEM.

MAILBOXES

LOCATION	MAILBOXES	MAILBOX SUPPORTS	
		(SINGLE) EACH	(DOUBLE)
ENTIRE PROJECT	17	11	3
TOTALS:		17	3

APPROACH GUTTERS AND SLABS

STATION	STATION	LOCATION	APPROACH GUTTER (TYPE B)	APPROACH SLABS	REINFORCING STEEL RDWY. (GR 60)
			CU. YD.	CU. YD.	POUND
205+62.00	205+89.00	LT. & RT AT BRIDGE END	13.50	38.80	5440
207+40.00	204+97.00	LT. & RT AT BRIDGE END	13.50	38.80	5440
TOTALS:			27.00	77.60	10880

GUARDRAIL

STATION	STATION	LOCATION	GUARDRAIL (TYPE A)	THRIE BEAM GUARDRAIL TERMINAL	TERMINAL ANCHOR POST (TYPE 1)
			LIN. FT.	EACH	EACH
204+85.85	205+79.60	LT. SIDE	75	1	1
203+60.85	205+79.60	RT. SIDE	200	1	1
207+49.40	209+68.15	LT. SIDE	200	1	1
207+49.40	208+43.15	RT. SIDE	75	1	1
TOTALS:			550	4	4

SELECTED PIPE BEDDING & BACKFILL

LOCATION	SELECTED PIPE BEDDING	SELECTED PIPE BACKFILL
	CU. YD.	
ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER	13	26
TOTALS:		13

NOTE: QUANTITIES ARE ESTIMATED. SEE SECTION 104.03 OF THE STD. SPECS.

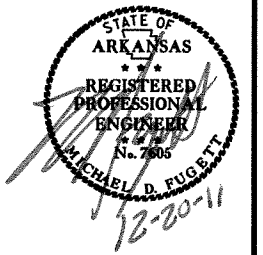
STRUCTURES OVER 20'-0" SPAN

STATION	DESCRIPTION	SPAN	HEIGHT	LENGTH	CLASS S CONCRETE ROADWAY	REINF. STEEL ROADWAY (GRADE 60)	UNCL. EXC. FOR STR. ROADWAY	SOLID SODDING	WATER	STD. DWG. NOS.
					CU. YD.	POUND	CU. YD.	SQ. YD.	M. GAL.	
210+81	QUINTUPLE R.C. BOX CULVERT W/ 3:1 WINGS	12	10	58	449.25	55548	190	56	0.71	RCB-1, RCB-2, SPECIAL DETAILS (PLAN SHEETS 5-8)
TOTALS:					449.25	55548	190	56	0.71	

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

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				6	ARK.			
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2 QUANTITIES



BASE AND SURFACING

STATION	STATION	LOCATION	LENGTH FEET	AGGREGATE BASE COURSE (CLASS 7)		TACK COAT				ACHM BINDER COURSE (1")				ACHM SURFACE COURSE (1/2")			
				TON / STATION	TON	TOTAL WID. FEET	SQ. YD.	GALLONS / SQ. YD.	GALLON	AVG. WID. FEET	SQ. YD.	POUND / SQ. YD.	PG 64-22 TON	AVG. WID. FEET	SQ. YD.	POUND / SQ. YD.	PG 64-22 TON
MAIN LANES																	
200+00	200+80	NOTCH AND WIDEN - TRANSITION	80.0	170.75	136.6	57.33	509.6	0.03	15.3	11.83	105.2	330.0	17.4	51.50	457.8	220.0	50.4
200+80	203+10	NOTCH AND WIDEN W/ CURB & GUTTER LT. AND OPEN SHLD. RT.	230.0	VAR.	634.5	VAR.	1370.0	0.03	41.1	VAR.	526.7	330.0	86.9	VAR.	1548.9	220.0	170.4
203+10	205+89	FULL DEPTH	279.0	340.00	948.6	68.42	2121.0	0.03	63.6	34.46	1068.3	330.0	176.3	74.25	2301.8	220.0	253.2
207+40	212+57	FULL DEPTH	517.0	340.00	1757.8	68.42	3930.3	0.03	117.9	34.46	1979.5	330.0	326.6	74.25	4265.3	220.0	469.2
212+57	215+40	NOTCH AND WIDEN	283.0	VAR.	978.3	VAR.	1719.4	0.03	51.6	VAR.	637.1	330.0	105.1	VAR.	1884.6	220.0	207.3
215+40	216+40	NOTCH AND WIDEN - TRANSITION	100.0	170.75	170.8	57.33	637.0	0.03	19.1	11.83	131.4	330.0	21.7	51.50	572.2	220.0	62.9
ADDITIONAL FOR LEVELING																	
200+00	202+00	MAIN LANES - LEVELING	200.0			23.0	511.1	0.10	51.1					VAR.	VAR.	220.0	114.0
212+80	216+40	MAIN LANES - LEVELING	360.0			23.0	920.0	0.10	92.0					VAR.	VAR.	220.0	181.2
ADDITIONAL FOR GUARDRAIL																	
203+89	205+89	LEFT OF MAIN LANES	200.0	VAR.	154.0									5.5	122.2	220.0	13.4
205+14	205+89	RIGHT OF MAIN LANES	75.0	VAR.	57.8									5.5	45.8	220.0	5.0
207+40	209+40	RIGHT OF MAIN LANES	200.0	VAR.	154.0									5.5	122.2	220.0	13.4
207+40	208+15	LEFT OF MAIN LANES	75.0	VAR.	57.8									5.5	45.8	220.0	5.0
TOTALS:					5050.2				451.7				734.0				1545.4

BASIS OF ESTIMATE:
 ACHM SURFACE COURSE (1/2").....95% MIN. AGGR.....5% ASPHALT BINDER
 ACHM BINDER COURSE (1").....96% MIN. AGGR.....4% ASPHALT BINDER
 MAXIMUM NUMBER OF GYRATIONS = 115 FOR PG 64-22

DRIVEWAYS & TURNOUTS

STATION	SIDE	WIDTH FEET	PORTLAND CEMENT CONCRETE DRIVEWAY SQ. YD.	ACHM SURFACE COURSE (1/2") 220 LBS. PER SQ. YD. (PG 64-22)		AGGREGATE BASE COURSE (CLASS 7) TON	SIDE DRAINS 18" LIN. FT.
				SQ. YD.	TON		
200+38	RT	16		78.0	8.6	31.9	50
202+90	RT	16	128.70				38
203+33	LT	20		159.0	17.5	64.9	
203+95	LT	16		117.1	12.9	47.8	
212+00	RT	22		141.0	15.5	57.6	44
215+28	LT	16		54.9	6.0	22.4	28
215+90	LT	16		56.3	6.2	23.0	30
* ENTIRE PROJECT FOR TEMPORARY DRIVES						105.0	56
TOTALS:			128.70		66.7	352.6	246

BASIS OF ESTIMATE:
 ACHM SURFACE COURSE (1/2").....95% MIN. AGGR.....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

* FOR INFORMATION ONLY

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.

ACHM PATCHING OF EXISTING ROADWAY

DESCRIPTION	TON
ENTIRE PROJECT - TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER	25
TOTAL:	25

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

ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC

LOCATION	TON	TACK COAT
		GALLON
ENTIRE PROJECT - TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER	10	20
TOTALS:	10	20

NOTE: QUANTITIES ARE ESTIMATED.
 SEE SECTION 104.03 OF THE STD. SPECS.

COLD MILLING ASPHALT PAVEMENT

STATION	STATION	LOCATION	AVG. WIDTH	COLD MILLING ASPHALT PAVEMENT
			FEET	SQ. YD.
200+00	201+00	MAIN LANES	23	255.56
216+40	217+40	MAIN LANES	23	255.56
TOTAL:				511.12

NOTE: AVERAGE MILLING DEPTH 1".

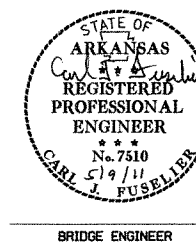
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	060352		24	83
				① 07210	QUANTITIES		51915	

SCHEDULE OF BRIDGE QUANTITIES - JOB NO. 060352

BRIDGE NO.	CODE NO.	NAME PLATE TITLE	UNIT OF STRUCTURE	ITEM NO.	205	801	802	802	803	SSf 804	SSf 804	805	805	807	812	816	816	SP JOB 060352			
				ITEM	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO.)	UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE	CLASS S CONCRETE-BRIDGE	CLASS S (AE) CONCRETE-BRIDGE	CLASS 1 PROTECTIVE SURFACE TREATMENT	REINFORCING STEEL-BRIDGE (GRADE 60)	EPOXY COATED REINFORCING STEEL (GRADE 60)	STEEL PILING (HP12X53)	PREBORING	STRUCTURAL STEEL IN BEAM SPANS (M 270, GRADE 50W)	BRIDGE NAME PLATE (TYPE D)	DUMPED RIPRAP	FILTER BLANKET	SHORING			
				UNIT	LUMP SUM	CU. YD.	CU. YD.	CU. YD.	GAL.	LB.	LB.	LIN. FT.	LIN. FT.	LB.	EACH	CU. YD.	SQ. YD.	LUMP SUM			
07210	X071	MCHENRY CREEK	BENT NO. 1				10.83				1,221	534	105	95			203	375			
			BENT NO. 2		185		47.92					7,125									
			BENT NO. 3		208		47.92					7,125									
			BENT NO. 4				10.83					1,221	534	165	155			186	340		
			150'-0" CONT. INTEGRAL W-BEAM UNIT						239.10		16.6	2,348	54,062			102,720	1				
SITE NO. 1 (BRIDGE NO. M0127)					1																
TOTALS FOR BRIDGE NO. 07210						② 393	117.50	239.10	16.6	19,040	55,130	① 270	250	102,720	1	389	715	1			

- ① All steel piling are required to have approved driving points which will not be paid for directly, but shall be considered subsidiary to the item "Steel Piling (HP12x53)".
- ② Includes 79 cu. yds. of rock excavation.

STEWART LINZ
DESIGN SECTION SUPERVISOR



SCHEDULE OF BRIDGE QUANTITIES
BRIDGE OVER MCHENRY CREEK
MCHENRY CREEK & RELIEF STRS. & APPRS. (S)
PULASKI COUNTY
ROUTE 5 SEC. 9
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: HHO DATE: 03/11/11 FILENAME: b060352.qldgn
CHECKED BY: RBR DATE: 5/6/11 SCALE: NO SCALE
DESIGNED BY: DATE: -
BRIDGE NO. 07210 DRAWING NO. 51915

SUMMARY OF QUANTITIES

ITEM NUMBER	ITEM	QUANTITY	UNIT
201	CLEARING	17	STATION
201	GRUBBING	17	STATION
202	REMOVAL AND DISPOSAL OF FENCE	295	LIN. FT.
202	REMOVAL AND DISPOSAL OF GATES	3	EACH
202	REMOVAL AND DISPOSAL OF POSTS	7	EACH
202	REMOVAL AND DISPOSAL OF CONCRETE DRIVEWAYS	88	SQ. YD.
202	REMOVAL AND DISPOSAL OF PIPE CULVERTS	5	EACH
SP & 202	REMOVAL AND DISPOSAL OF GUARDRAIL	100	LIN. FT.
202	REMOVAL AND DISPOSAL OF LUMINAIRE POLE AND FOUNDATION	1	EACH
210	UNCLASSIFIED EXCAVATION	5312	CU. YD.
SP & 210	COMPACTED EMBANKMENT	15246	CU. YD.
SS & 303	SOIL STABILIZATION	100	TON
401	AGGREGATE BASE COURSE (CLASS 7)	5403	TON
406	TACK COAT	472	GAL
SP, SS, & 406	MINERAL AGGREGATE IN ACHM BINDER COURSE (1")	705	TON
SP, SS, & 406	ASPHALT BINDER (PG 64-22) IN ACHM BINDER COURSE (1")	29	TON
SP, SS, & 407	MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2")	1531	TON
SP, SS, & 407	ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2")	81	TON
412	COLD MILLING ASPHALT PAVEMENT	511	SQ. YD.
SP, SS, & 414	ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC	10	TON
SP, SS, & 415	ACHM PATCHING OF EXISTING ROADWAY	25	TON
504	APPROACH SLABS	77.60	CU. YD.
504	APPROACH GUTTERS (TYPE B)	27.00	CU. YD.
505	PORTLAND CEMENT CONCRETE DRIVEWAY	128.70	SQ. 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	176	SQ. FT.
SS & 604	BARRICADES	32	LIN. FT.
SS & 604	TRAFFIC DRUMS	26	EACH
SS & 604	FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER	222	LIN. FT.
SS & 604	RELOCATING PRECAST CONCRETE BARRIER	222	LIN. FT.
SS & 604	CONSTRUCTION PAVEMENT MARKINGS	13120	LIN. FT.
604	REMOVABLE CONSTRUCTION PAVEMENT MARKINGS	602	LIN. FT.
604	REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS	1600	LIN. FT.
604	REMOVAL OF PERMANENT PAVEMENT MARKINGS	2000	LIN. FT.
SS & 604	VERTICAL PANELS	28	EACH
605	CONCRETE DITCH PAVING (TYPE B)	133	SQ. YD.
SS & 606	18" SIDE DRAIN	246	LIN. FT.
606	SELECTED PIPE BEDDING	13	CU. YD.
606	SELECTED PIPE BACKFILL	26	CU. YD.
611	UNDERDRAIN OUTLET PROTECTORS	17	EACH
611	4" PIPE UNDERDRAINS	2487	LIN. FT.
SS & 617	GUARDRAIL (TYPE A)	550	LIN. FT.
SS & 617	THREE BEAM GUARDRAIL TERMINAL	4	EACH
SS & 617	TERMINAL ANCHOR POSTS (TYPE 1)	4	EACH
619	WIRE FENCE (TYPE C)	99	LIN. FT.
619	WIRE FENCE (TYPE D)	136	LIN. FT.
619	6" STEEL CHAIN LINK FENCE	46	LIN. FT.
620	6" ALUMINUM CHAIN LINK FENCE	46	LIN. FT.
620	LIME	4	TON
620	SEEDING	1.84	ACRE
620	MULCH COVER	6.27	ACRE
SS & 620	WATER	279.3	M. GAL.
621	TEMPORARY SEEDING	4.43	ACRE
621	SILT FENCE	1578	LIN. FT.
SP	TRIANGULAR SILT DIKE	1000	LIN. FT.
621	SAND BAG DITCH CHECKS	160	BAG
621	SEDIMENT BASIN	800	CU. YD.
621	OBSTRUCTION OF SEDIMENT BASIN	800	CU. YD.
621	SEDIMENT REMOVAL AND DISPOSAL	845	CU. YD.
623	SECOND SEEDING APPLICATION	1.84	ACRE
624	SOLID SODDING	100	SQ. YD.
626	EROSION CONTROL MATTING (CLASS 3)	589	SQ. YD.
634	CONCRETE COMBINATION CURB AND GUTTER (TYPE A)(1' 6")	230	LIN. FT.
635	ROADWAY CONSTRUCTION CONTROL	1.00	LUMP SUM
637	MAILBOXES	17	EACH
637	MAILBOX SUPPORTS (SINGLE)	11	EACH
637	MAILBOX SUPPORTS (DOUBLE)	3	EACH
SS & 719	THERMOPLASTIC PAVEMENT MARKING WHITE (4")	3680	LIN. FT.
SS & 719	THERMOPLASTIC PAVEMENT MARKING YELLOW (4")	3380	LIN. FT.
SP & 719	INVERTED PROFILE THERMOPLASTIC PAVEMENT MARKING YELLOW (4")	300	LIN. FT.
SP	HIGH PERFORMANCE MARKING TAPE YELLOW (4")	300	LIN. FT.
SP & 719	INVERTED PROFILE THERMOPLASTIC CONTRAST PAVEMENT MARKING YELLOW (4")	300	LIN. FT.
SP	HIGH PERFORMANCE CONTRAST MARKING TAPE YELLOW (4")	300	LIN. FT.
721	RAISED PAVEMENT MARKERS (TYPE II)	44	EACH
SP	TEMPORARY IMPACT ATTENUATION BARRIER	1	EACH
SP	TEMPORARY IMPACT ATTENUATION BARRIER (REPAIR)	1	EACH
SS & 804	REINFORCING STEEL-ROADWAY (GRADE 60)	10880	POUND
816	FILTER BLANKET	428	SQ. YD.
816	DUMPED RIPRAP (GROUTED)	214	CU. YD.

STRUCTURES OVER 20' SPAN

205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 1)	1.00	LUMP SUM
205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 2)	1.00	LUMP SUM
636	BRIDGE CONSTRUCTION CONTROL	1.00	LUMP SUM
801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-ROADWAY	190	CU. YD.
801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE	393	CU. YD.
802	CLASS S CONCRETE-ROADWAY	449.25	CU. YD.
802	CLASS S CONCRETE-BRIDGE	117.50	CU. YD.
802	CLASS S(AE) CONCRETE-BRIDGE	239.10	CU. YD.
803	CLASS I PROTECTIVE SURFACE TREATMENT	16.6	GAL.
SS & 804	REINFORCING STEEL-ROADWAY (GRADE 60)	55548	POUND
SS & 804	REINFORCING STEEL-BRIDGE (GRADE 60)	19040	POUND
SS & 804	EPOXY COATED REINFORCING STEEL (GRADE 60)	55130	POUND
805	STEEL PILING (HP 12X53)	270	LIN. FT.
805	PREBORING	250	LIN. FT.
807	STRUCTURAL STEEL IN BEAM SPANS (M270-GR50W)	102720	POUND
812	BRIDGE NAME PLATE (TYPE D)	1	EACH
816	FILTER BLANKET	715	SQ. YD.
816	DUMPED RIPRAP	389	CU. YD.
SP	SHORING	1.00	LUMP SUM

* DENOTES ALTERNATE BID ITEM

REVISION BOX

DATE	REVISION	SHEET NUMBER

DATE REVISSED	DATE FILMED	DATE REVISSED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	060352		25	83

SUMMARY OF QUANTITIES & REVISIONS



DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	060352		26	83

② SURVEY CONTROL DETAILS



MIDPOINT:
LT 34-41-07
LG 092-42-02

Coordinate System: ARKANSAS STATE PLANE - SOUTH ZONE BASED ON GPS CONTROL,
PROJECTED TO GROUND.
Units: U.S. SURVEY FOOT

CENTERLINE CONSTRUCTION HWY. 5

POINT NO.	STATION	NORTHING	EASTING
8000	POB 196+12.12	2046591.1317	1191116.7042
8001	PC 196+75.19	2046637.7804	1191159.1512
8003	PT 199+92.57	2046833.0571	1191407.4946
8004	PC 200+42.33	2046856.9193	1191451.1573
8006	PT 203+05.09	2047009.3390	1191664.4122
8007	PC 207+87.63	2047335.0414	1192020.4529
8009	PT 211+34.00	2047531.4095	1192304.4819
8010	PC 212+57.30	2047587.1277	1192414.4729
8012	PT 219+25.41	2047947.5518	1192975.6467
8013	POE 221+56.34	2048091.4900	1193156.2310

Point Name	Northing	Easting	Elev	Feature	Description
1	2045725.0167	1190576.0649	279.845	CTL	5/8" REBAR W/2" CAP
2	2046393.1860	1190923.1794	277.303	CTL	5/8" REBAR W/2" CAP
3	2046825.3123	1191343.7905	276.710	CTL	5/8" REBAR W/2" CAP
4	2046968.0371	1191680.8374	281.044	CTL	5/8" REBAR W/2" CAP
5	2047452.8309	1192195.6284	276.318	CTL	5/8" REBAR W/2" CAP
6	2047780.5555	1192717.7722	289.248	CTL	5/8" REBAR W/2" CAP
7	2048127.6499	1193237.3455	299.269	CTL	5/8" REBAR W/2" CAP
8	2048583.2233	1193750.4726	303.708	CTL	5/8" REBAR W/2" CAP
101	2050500.2274	1190870.0506	319.768	GPS	AHTD GPS 600053A, RTK ELEV
102	2042569.2587	1197344.7474	334.382	GPS	ARLR CORS STATION, RTK ELEV
900	2046691.1814	1191696.2916	306.960	BM	AHTD CAP
901	2045583.7856	1190497.6369	285.246	TBM	CHSLD SQ E LIGHTPOLE BASE
902	2046864.2979	1191379.6136	275.911	TBM	CHSLD SQ NW HW IN LINE
903	2047226.0643	1191940.5783	281.388	TBM	M-127 16 N CL HWY. 5
904	2047457.2246	1192292.2384	282.497	TBM	BR M-128 16 S HWY. 5
905	2048674.5179	1193850.2724	303.942	TBM	PLATE FOR GATE POST

*Note - Rebar and Cap - Standard - 5/8" Rebar with 2" Aluminum Cap stamped
*(standard markings common to all caps), or as indicated
(other markings indicated in the point description of the individual point).
USE CAF = 1.0 FOR STAKEOUT FOR THIS PROJECT
A PROJECT CAF OF _____ 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 s060352gi.CTL
HORIZONTAL DATUM: NAD 83 (1997)
VERTICAL DATUM: NAVD 88 POSITIONAL ACCURACY THIRD ORDER, UNLESS SPECIFIED OTHERWISE
AT A SPECIFIC POINT.

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

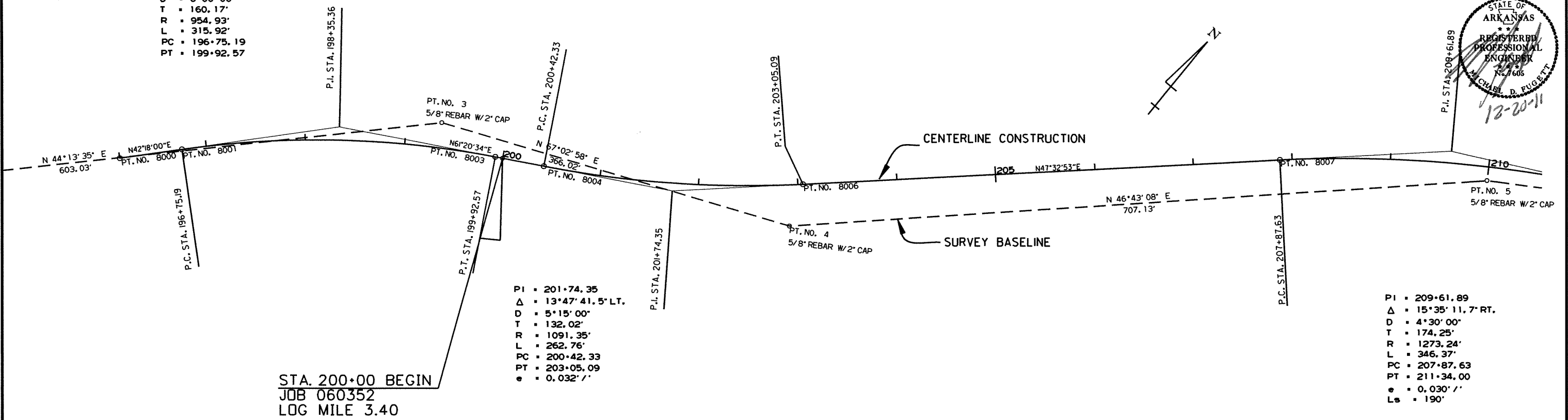
BASIS OF BEARING:
ARKANSAS STATE PLANE GRID BEARINGS - 0302-SOUTH ZONE
DETERMINED FROM GPS CONTROL POINTS: ARLR - 600053A
CONVERGENCE ANGLE: 0-13-25.43 LEFT AT LT: 34-41-09.55 LG: 092-23-59.05
GRID AZIMUTH = ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE.

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. 060352							27	83

2 SURVEY CONTROL DETAILS

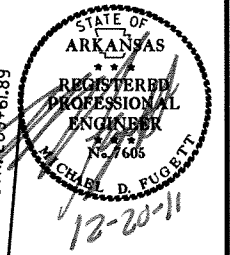
PI = 198+35.36
 Δ = 19°02' 34.5" RT.
 D = 6'00' 00"
 T = 160.17'
 R = 954.93'
 L = 315.92'
 PC = 196+75.19
 PT = 199+92.57



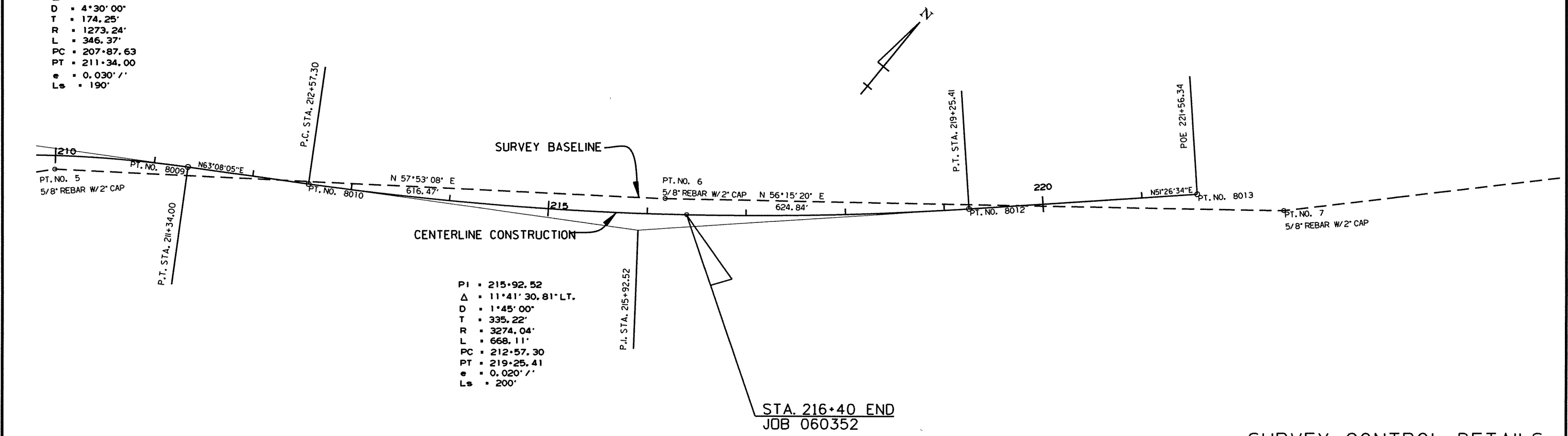
STA. 200+00 BEGIN
 JOB 060352
 LOG MILE 3.40

PI = 201+74.35
 Δ = 13°47' 41.5" LT.
 D = 5'15' 00"
 T = 132.02'
 R = 1091.35'
 L = 262.76'
 PC = 200+42.33
 PT = 203+05.09
 e = 0.032' /'

PI = 209+61.89
 Δ = 15°35' 11.7" RT.
 D = 4'30' 00"
 T = 174.25'
 R = 1273.24'
 L = 346.37'
 PC = 207+87.63
 PT = 211+34.00
 e = 0.030' /'
 Ls = 190'



PI = 209+61.89
 Δ = 15°35' 11.7" RT.
 D = 4'30' 00"
 T = 174.25'
 R = 1273.24'
 L = 346.37'
 PC = 207+87.63
 PT = 211+34.00
 e = 0.030' /'
 Ls = 190'



STA. 216+40 END
 JOB 060352

PI = 215+92.52
 Δ = 11°41' 30.81" LT.
 D = 1'45' 00"
 T = 335.22'
 R = 3274.04'
 L = 668.11'
 PC = 212+57.30
 PT = 219+25.41
 e = 0.020' /'
 Ls = 200'

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.		28	83

2 PLAN AND PROFILE SHEET

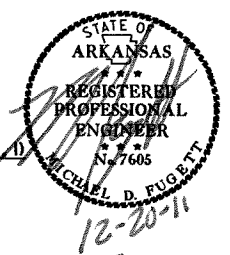
PI = 201+74.35
 Δ = 13° 47' 41.5" LT.
 D = 5° 15' 00.0"
 T = 132.02'
 L = 262.76'
 PC = 200+42.33
 PT = 203+05.09
 e = 0.0327'

STA. 203+33 CONSTRUCT APPROACH ON LT. = 25 CU. YDS
 UNCLASSIFIED EXCAVATION

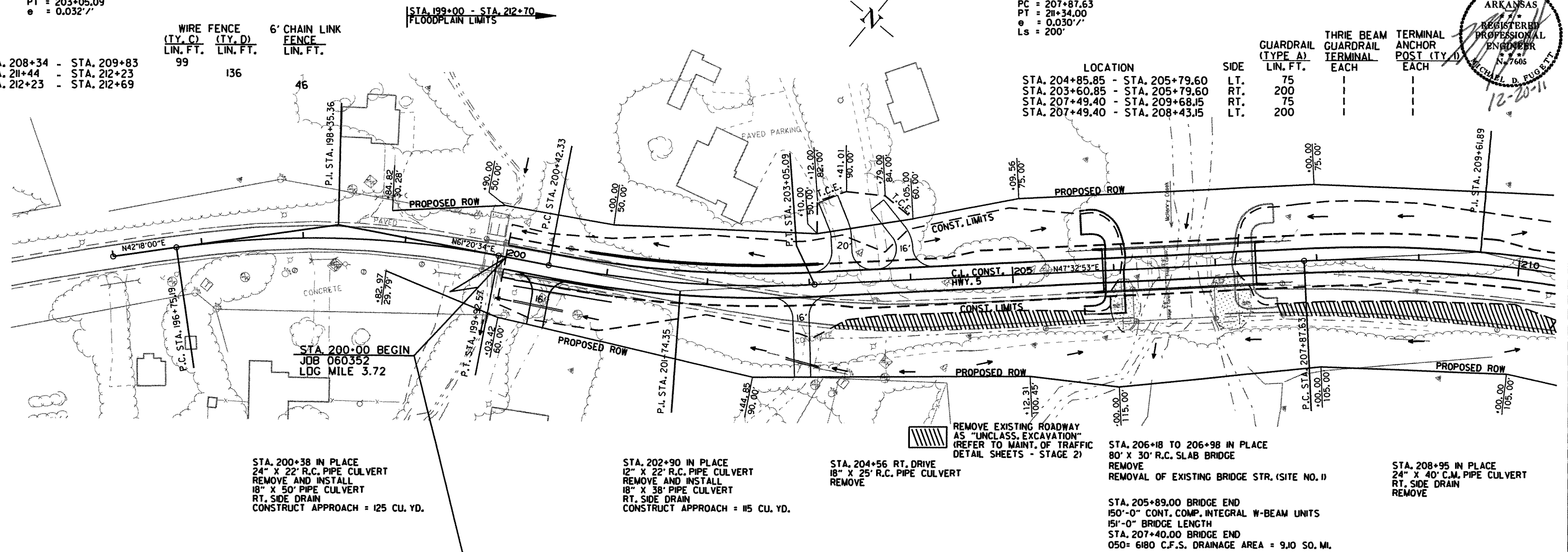
STA. 203+95 CONSTRUCT APPROACH ON LT. = 35 CU. YDS

PI = 209+61.89
 Δ = 15° 35' 11.7" RT.
 D = 4° 30' 00.0"
 T = 174.26'
 L = 346.37'
 PC = 207+87.63
 PT = 211+34.00
 e = 0.0307'

LOCATION	SIDE	GUARDRAIL (TYPE A) LIN. FT.	THREE BEAM GUARDRAIL TERMINAL EACH	TERMINAL ANCHOR POST (TY. #) EACH
STA. 204+85.85 - STA. 205+79.60	LT.	75		
STA. 203+60.85 - STA. 205+79.60	RT.	200		
STA. 207+49.40 - STA. 209+68.15	RT.	75		
STA. 207+49.40 - STA. 208+43.15	LT.	200		



STA. 208+34 - STA. 209+83	STA. 211+44 - STA. 212+23	STA. 212+23 - STA. 212+69
99	136	46



STA. 200+38 IN PLACE
 24" X 22" R.C. PIPE CULVERT
 REMOVE AND INSTALL
 18" X 50" PIPE CULVERT
 RT. SIDE DRAIN
 CONSTRUCT APPROACH = 125 CU. YD.

STA. 202+90 IN PLACE
 12" X 22" R.C. PIPE CULVERT
 REMOVE AND INSTALL
 18" X 38" PIPE CULVERT
 RT. SIDE DRAIN
 CONSTRUCT APPROACH = 115 CU. YD.

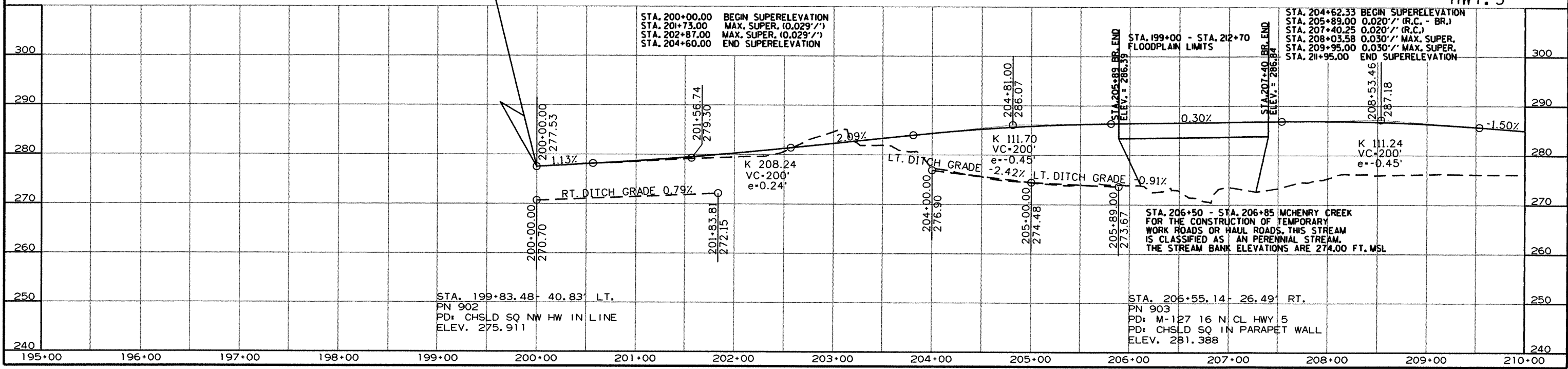
STA. 204+56 RT. DRIVE
 18" X 25" R.C. PIPE CULVERT
 REMOVE

STA. 206+18 TO 206+98 IN PLACE
 80' X 30" R.C. SLAB BRIDGE
 REMOVE
 REMOVAL OF EXISTING BRIDGE STR. (SITE NO. 1)

STA. 208+95 IN PLACE
 24" X 40" C.M. PIPE CULVERT
 RT. SIDE DRAIN
 REMOVE

STA. 205+89.00 BRIDGE END
 150'-0" CONT. COMP. INTEGRAL W-BEAM UNITS
 151'-0" BRIDGE LENGTH
 STA. 207+40.00 BRIDGE END
 050 = 6180 C.F.S. DRAINAGE AREA = 9.10 SQ. MI.

REMOVE EXISTING ROADWAY AS "UNCLASS. EXCAVATION" (REFER TO MAINT. OF TRAFFIC DETAIL SHEETS - STAGE 2)



STA. 200+00.00 BEGIN SUPERELEVATION
 STA. 201+73.00 MAX. SUPER. (0.029'/'')
 STA. 202+87.00 MAX. SUPER. (0.029'/'')
 STA. 204+60.00 END SUPERELEVATION

STA. 204+62.33 BEGIN SUPERELEVATION
 STA. 205+89.00 0.020'/' (R.C. - BR.)
 STA. 207+40.25 0.020'/' (R.C.)
 STA. 208+03.58 0.030'/' MAX. SUPER.
 STA. 209+95.00 0.030'/' MAX. SUPER.
 STA. 211+95.00 END SUPERELEVATION

STA. 199+00 - STA. 212+70
 FLOODPLAIN LIMITS

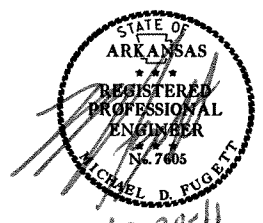
STA. 206+50 - STA. 206+85 MCHENRY CREEK
 FOR THE CONSTRUCTION OF TEMPORARY
 WORK ROADS OR HAUL ROADS, THIS STREAM
 IS CLASSIFIED AS AN PERENNIAL STREAM.
 THE STREAM BANK ELEVATIONS ARE 274.00 FT. MSL

STA. 206+55.14 - 26.49' RT.
 PN 903
 PD: M-127 16 N CL HWY 5
 PD: CHSLD SQ IN PARAPET WALL
 ELEV. 281.388

STA. 199+83.48 - 40.83' LT.
 PN 902
 PD: CHSLD SQ NW HW IN LINE
 ELEV. 275.911

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		29	83
				JOB NO.	060352			

2 PLAN AND PROFILE SHEET

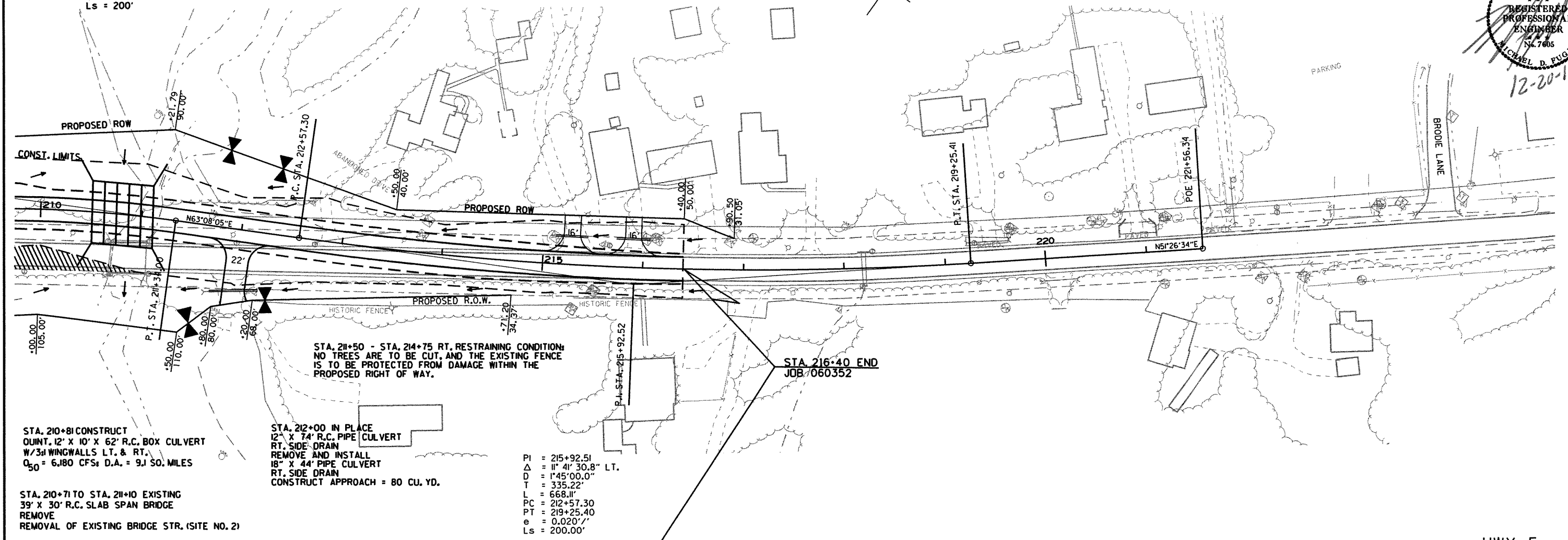


PI = 209+61.89
 Δ = 15° 35' 11.7" RT.
 D = 4° 30' 00.0"
 T = 174.26'
 L = 346.37'
 PC = 207+87.63
 PT = 211+34.00
 e = 0.030'/'
 Ls = 200'

STA. 215+28 INSTALL
 18" X 28' PIPE CULVERT
 LT. SIDE DRAIN
 CONSTRUCT APPROACH = 25 CU. YD.

STA. 215+90 INSTALL
 18" X 30' PIPE CULVERT
 LT. SIDE DRAIN
 CONSTR. APPR. = 40 CU. YD.

← STA. 199+00 - STA. 212+70
 FLOODPLAIN LIMITS



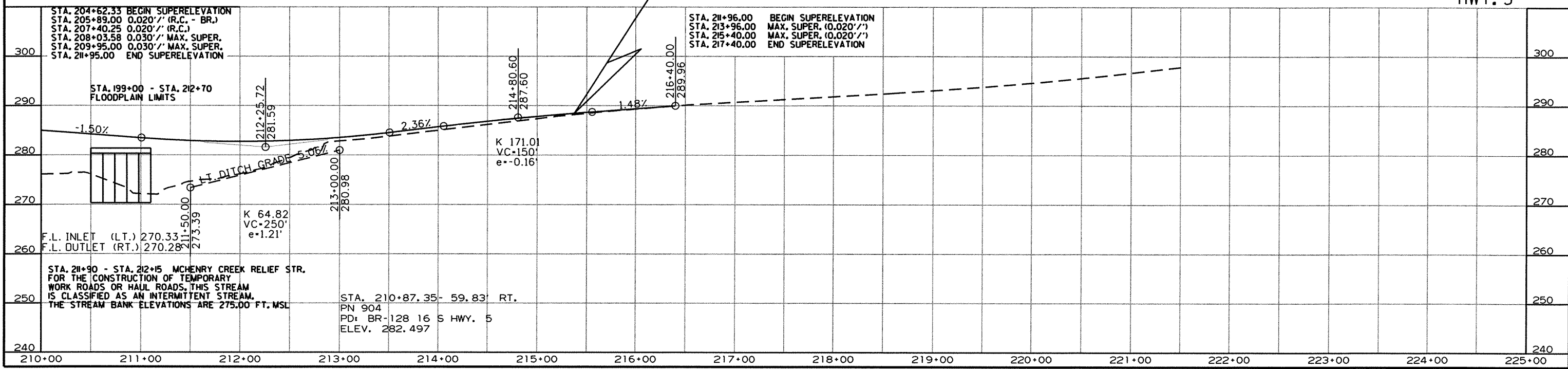
STA. 211+50 - STA. 214+75 RT. RESTRAINING CONDITION:
 NO TREES ARE TO BE CUT, AND THE EXISTING FENCE
 IS TO BE PROTECTED FROM DAMAGE WITHIN THE
 PROPOSED RIGHT OF WAY.

STA. 210+81 CONSTRUCT
 QUINT, 12' X 10' X 62' R.C. BOX CULVERT
 W/3/4 WINGWALLS LT. & RT.
 Q₅₀ = 6,180 CFS; D.A. = 9J SO. MILES

STA. 212+00 IN PLACE
 12" X 74' R.C. PIPE CULVERT
 RT. SIDE DRAIN
 REMOVE AND INSTALL
 18" X 44' PIPE CULVERT
 RT. SIDE DRAIN
 CONSTRUCT APPROACH = 80 CU. YD.

PI = 215+92.51
 Δ = 11° 41' 30.8" LT.
 D = 1° 45' 00.0"
 T = 335.22'
 L = 668.11'
 PC = 212+57.30
 PT = 219+25.40
 e = 0.020'/'
 Ls = 200.00'

STA. 210+71 TO STA. 211+10 EXISTING
 39' X 30' R.C. SLAB SPAN BRIDGE
 REMOVE
 REMOVAL OF EXISTING BRIDGE STR. (SITE NO. 2)



HWY. 5

STA. 204+62.33 BEGIN SUPERELEVATION
 STA. 205+89.00 0.020'/' (R.C. - BR.)
 STA. 207+40.25 0.020'/' (R.C.)
 STA. 208+03.58 0.030'/' MAX. SUPER.
 STA. 209+95.00 0.030'/' MAX. SUPER.
 STA. 211+95.00 END SUPERELEVATION

STA. 211+96.00 BEGIN SUPERELEVATION
 STA. 213+96.00 MAX. SUPER. (0.020'/')
 STA. 215+40.00 MAX. SUPER. (0.020'/')
 STA. 217+40.00 END SUPERELEVATION

STA. 199+00 - STA. 212+70
 FLOODPLAIN LIMITS

F.L. INLET (LT.) 270.33
 F.L. OUTLET (RT.) 270.28

STA. 211+90 - STA. 212+15 MCHENRY CREEK RELIEF STR.
 FOR THE CONSTRUCTION OF TEMPORARY
 WORK ROADS OR HAUL ROADS, THIS STREAM
 IS CLASSIFIED AS AN INTERMITTENT STREAM.
 THE STREAM BANK ELEVATIONS ARE 275.00 FT. MSL

STA. 210+87.35- 59.83' RT.
 PN 904
 PD: BR-128 16 S HWY. 5
 ELEV. 282.497

For R/W Data and Guard Rail
Details see Roadway Plans.

Excavate existing roadway
embankment as shown. Approx.
300 Cubic Yards of excavation.

Place 1'-6" Dumped Riprap on top
of filter blanket. See Std. Dwg.
No. 1891F. Top of Riprap Elev. 282.0

Use Type B Approach Gutters (w=8'-0") and
Approach Slabs (Type Sp.1) at both ends of
Bridge. For details, see Std. Dwg. 2016B and
Dwg. No. 51925.

DATE REVISION	DATE FILMED	DATE REVISION	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060352	30	83

GENERAL NOTES:

BENCH MARK: TBM 903 Ch. Sq. on Parapet Rail, 26.50' Lt. of C.L. Construction, Sta. 206+55.14, Elev. 281.39
CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2003 edition) with applicable supplemental specifications and special provisions. Unless otherwise noted, section and subsection refer to Standard Specifications for Highway Construction.
DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications 5th Edition (2010), with 2010 Interims.
LIVE LOADING: HL-93
SEISMIC ZONE : I S_{DI} = 0.087 SITE CLASS = B

MATERIALS AND STRENGTHS:
Class S(AE) Concrete (superstructure) f'_c = 4,000 psi
Class S Concrete (substructure) f'_c = 3,500 psi
Reinforcing Steel (AASHTO M31 or M53, GR. 60) F_y = 60,000 psi
Structural Steel (AASHTO M270, Gr. 36) F_y = 36,000 psi
Structural Steel (AASHTO M270, Gr. 50W) F_y = 50,000 psi

BORING LOGS: Boring logs may be obtained from the Programs and Contracts Division.
STEEL PILING: Piling in Bents 1 and 4 shall be HP12X53 and shall be driven with an approved air, steam or diesel hammer to a minimum safe bearing capacity of 70 tons and into material designated as Hard Shale on the boring legend. Lengths shown are for estimating quantities and for use in determining payment for cut-off and build-up in accordance with the standard specifications. On all piles the Contractor shall use approved steel H-pile driving points. Piles in end bents to be driven after embankment to bottom of cap is in place.

PREBORING: Preboring is required for all piling at Bents 1 and 4. Prebored holes shall have a diameter 6" greater than the greatest cross-sectional dimension of the pile for a depth of 3' into material designated as medium hard or hard shale in the boring legend. After completion of driving, the void space around the pile shall be backfilled with Class (S) concrete from the bottom of the prebored hole to 10' below the bottom of the cap. The remaining 10' shall be backfilled with sand or pea gravel. The Contractor shall be responsible for keeping prebored holes free of debris prior to backfilling, which may require the use of temporary casing or other approved methods. Any related cost for backfilling and temporary casing will not be paid for separately but shall be considered subsidiary to the item "Preboring". Preboring will be paid for in accordance with section 805.

FOOTINGS: Footings in intermediate bents shall be set a minimum of 2'-6" into material designated as shale on the boring legend. The top of the footings shall be set at or below the existing channel bottom. Foundations for footings shall be prepared in accordance with subsection 801.04. Rock excavations shall be made to neat lines of the concrete footings. Blasting will not be allowed. Concrete in footings shall be poured directly against excavated surfaces of rock.

SHORING: Temporary shoring will be required to construct embankment while maintaining traffic on existing roadway. See Special Provision Job No. 060352 "Shoring".

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

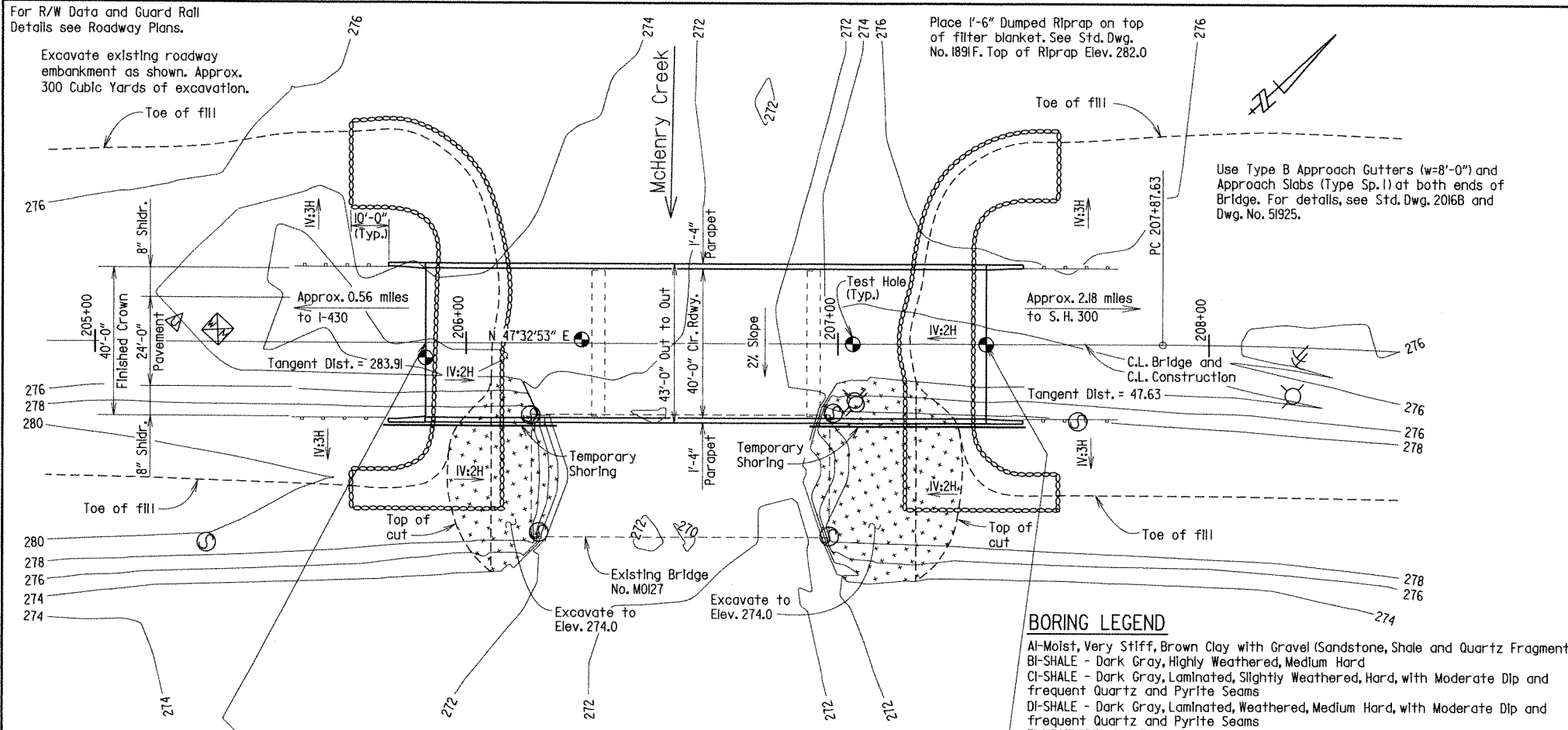
PIPE UNDER DRAIN: One Pipe Under drain with outlet protectors shall be installed behind each bridge end in accordance with Section 611. Pipe under drains will not be paid for directly but shall be considered subsidiary to "Unclassified Excavation".

DETAIL DRAWINGS:	DRAWING NO.
Stage Construction	51917
End Bents	51918
Intermediate Bents	51919
150' Integral W-Beam Unit	51920-51924
Type "B" Special Shoes	51923
Steel Piles	14995A
Type B Approach Gutters	2016B
Type Special I Approach Slabs	51925

EXISTING BRIDGE: Bridge No. M0127 (Log Mile 3.84) is 33' wide and 80' long and consists of 4 concrete slab spans supported by concrete walls on spread footings. The existing bridge is approximately 35' downstream of centerline construction.

REMOVAL AND SALVAGE: After the Stage I Construction is complete and opened to traffic, existing Bridge No. M0127 shall be removed in accordance with Section 205. All material from the existing bridge shall become the property of the Contractor.

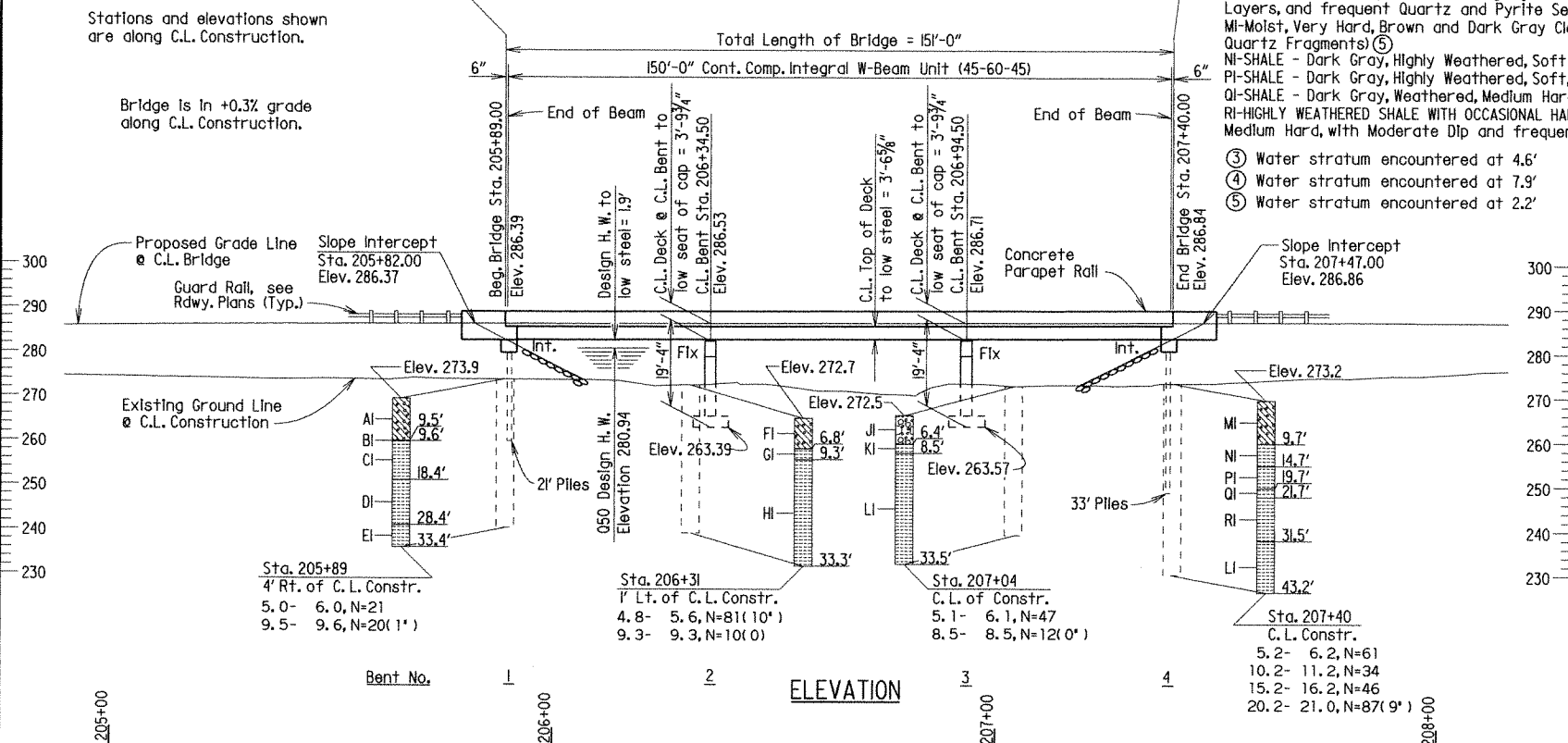
MAINTENANCE OF TRAFFIC: See Roadway Plans.



BORING LEGEND

- AI-Moist, Very Stiff, Brown Clay with Gravel (Sandstone, Shale and Quartz Fragments) ③
- BI-SHALE - Dark Gray, Highly Weathered, Medium Hard
- CI-SHALE - Dark Gray, Laminated, Slightly Weathered, Hard, with Moderate Dip and frequent Quartz and Pyrite Seams
- DI-SHALE - Dark Gray, Laminated, Weathered, Medium Hard, with Moderate Dip and frequent Quartz and Pyrite Seams
- EI-WEATHERED SHALE WITH OCCASIONAL HARD SHALE LAYERS - Dark Gray, Laminated, Medium Hard, with Moderate Dip and frequent Quartz and Pyrite Seams
- FI-Moist, Hard, Reddish Brown and Gray Clay with Gravel (Sandstone, Shale and Quartz Fragments)
- GI-SHALE - Dark Gray, Slightly Weathered, Hard
- HI-SHALE - Dark Gray, Laminated, Slightly Weathered, Hard, with Moderate Dip, Fractured Layers and frequent Quartz and Pyrite Seams
- JI-SANDSTONE WITH SHALE SEAMS - Brown and Dark Gray, Poorly-Cemented, with Quartz Gravel
- KI-SHALE - Dark Gray, Slightly Weathered, Hard ④
- LI-SHALE - Dark Gray, Laminated, Slightly Weathered, Hard, with Moderate Dip, Fractured Layers, and frequent Quartz and Pyrite Seams
- MI-Moist, Very Hard, Brown and Dark Gray Clay with Gravel (Sandstone, Shale and Quartz Fragments) ⑤
- NI-SHALE - Dark Gray, Highly Weathered, Soft
- PI-SHALE - Dark Gray, Highly Weathered, Soft, with occasional Quartz Seams
- QI-SHALE - Dark Gray, Weathered, Medium Hard, with occasional Quartz Seams
- RI-HIGHLY WEATHERED SHALE WITH OCCASIONAL HARD SHALE LAYER - Dark Gray, Laminated, Medium Hard, with Moderate Dip and frequent Quartz and Pyrite Seams

- ③ Water stratum encountered at 4.6'
- ④ Water stratum encountered at 7.9'
- ⑤ Water stratum encountered at 2.2'



HYDRAULIC DATA

FLOOD DESCRIPTION	FREQUENCY	DISCHARGE THRU BRIDGE OPENING	EXISTING WATER SURFACE ELEVATION	WATER SURFACE ELEVATION W/ BACKWATER
Design	50	6,180	281.4	281.1
Base	100	7,361	281.9	281.9
Extreme	500	9,819	283.3	283.3
Overtopping	>500	-	-	-

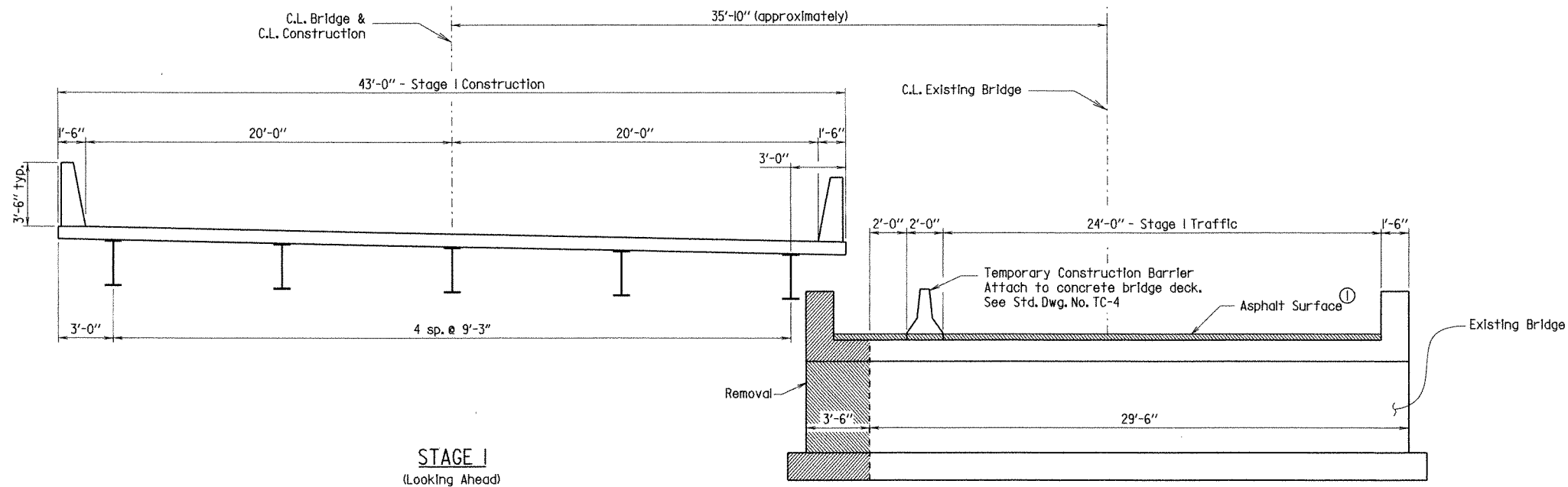
- ① Water surface at proposed bridge location with existing structures and roadway approaches.
- ② Drainage area = 9.1 sq. miles (includes McHenry Creek, Relief Structure, Quintuplet 12' x 10' R.C. Box Culvert - Sta. 210+80)
Proposed Low Bridge Member Elevation = 282.84
Historical H.W. Elev. = N/A
Estimated 100-Year backwater elevation with existing structures in place = 281.9 feet



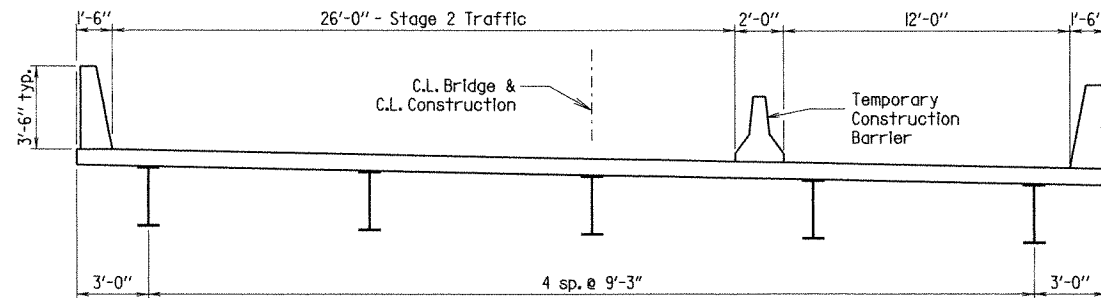
LAYOUT OF BRIDGE OVER
McHENRY CREEK
McHENRY CREEK & RELIEF STRS. & APPRS. (S)
PULASKI COUNTY
ROUTE 5 SEC. 9
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 11/04/10 FILENAME: b060352.dgn
CHECKED BY: RBR DATE: 5/6/11 SCALE: 1" = 20'-0"
DESIGNED BY: CBL DATE: Dec 2010
BRIDGE NO. 07210 DRAWING NO. 51916

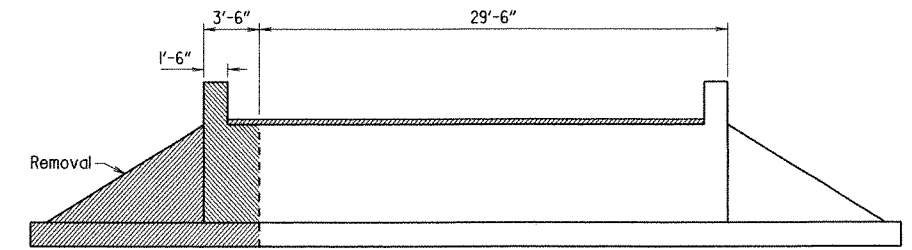
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060352	31	83
				07210	STAGE CONSTRUCTION			51917



① See Roadway Plans for asphalt removal.

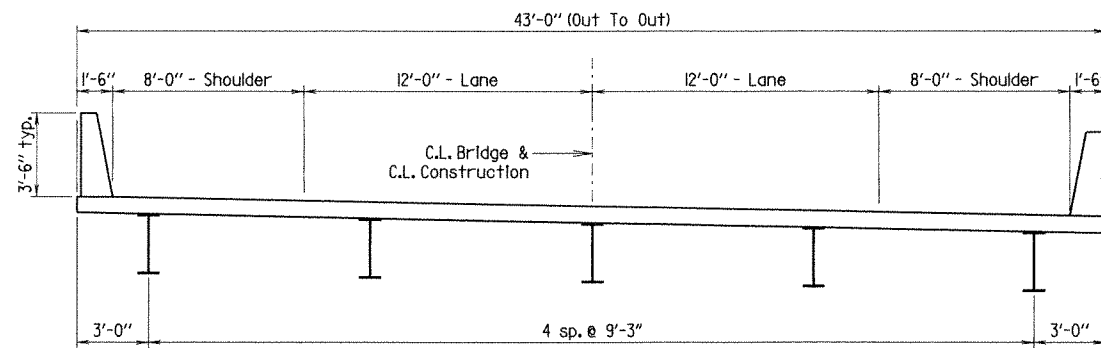


STAGE 2
(Looking Ahead)



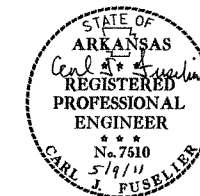
DETAILS OF END BENT AND WING WALL REMOVAL - STAGE I

(Looking Ahead)
3/8" = 1'-0"



FINAL
(Looking Ahead)

NOTES:
Details that pertain to Maintenance of Traffic shown on bridge plans are for information only. See Roadway plans for Maintenance of Traffic.
For details of temporary barrier, see Dwg. Nos. TC-4 and TC-5



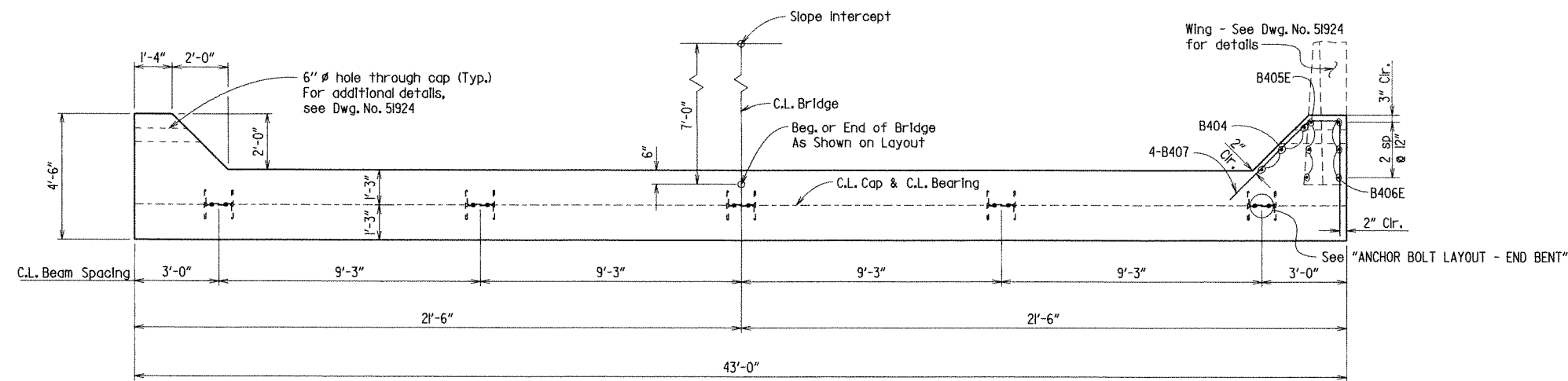
BRIDGE ENGINEER

DETAILS OF STAGE CONSTRUCTION
MCHENRY CREEK
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

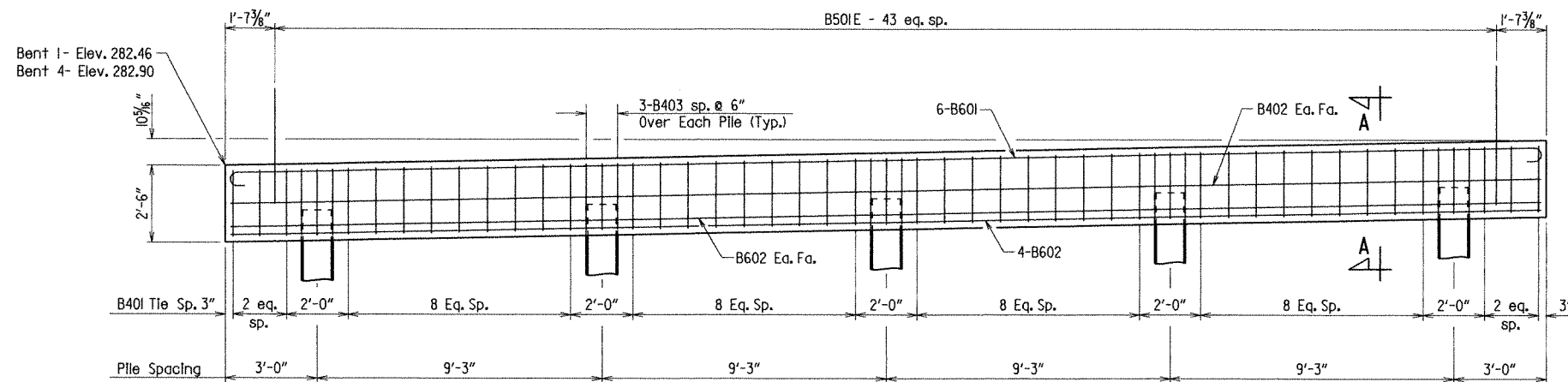
DRAWN BY: RBR DATE: 12/10/2010 FILENAME: b060352_sc.dgn
CHECKED BY: CHW DATE: 3/31/11 SCALE: 1/4" = 1'-0" or as noted
DESIGNED BY: CSL DATE: Oct 2011
BRIDGE NO. 07210 DRAWING NO. 51917

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.		060352	32	83

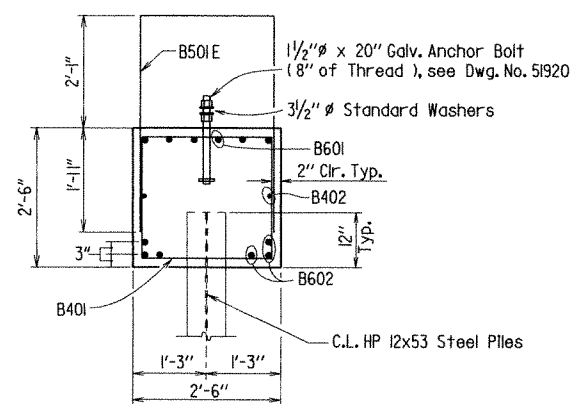
07210 DETAILS OF END BENTS 51918



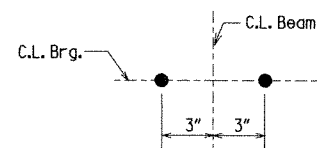
PLAN



ELEVATION
(Bent 1 & 4 - Looking Back)



SECTION A-A
No Scale



ANCHOR BOLT LAYOUT
END BENT
No Scale

BAR LIST (PER BENT)

Mark	No. Req'd.	Length	A	B	Pin Dia.	Bending Diagrams
B401	42	9'-0"	2'-2"	2'-2"	2"	
B402	2	42'-8"	-	-	Str.	
B403	15	6'-4"	2'-2"	2'-2"	2"	
B404	6	4'-5"	-	-	Str.	
B405E	6	9'-2"	5'-10"	3'-4"	2"	
B406E	6	9'-2"	-	-	Str.	
B407	8	9'-2"	-	-	2"	
B501E	44	10'-0"	4'-0"	2'-2"	2 1/2"	
B601	6	44'-0"	42'-8"	6"	4 1/2"	
B602	6	42'-8"	-	-	Str.	

Dimensions are out to out of bars

GENERAL NOTES

All concrete shall be Class "S" and have a minimum 28 day compressive strength $f'_c = 3500$ psi. All exposed corners shall be chamfered $3/4"$ unless otherwise noted.

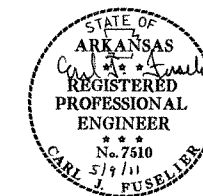
Reinforcing steel shall conform to AASHTO M 31 or M 53, Grade 60.

If anchor bolts are drilled into cap, top reinforcing bars and pile anchorage shall be properly placed to avoid damage.

For anchor bolt details, see Dwg. No. 51920.

Bars with "E" suffix are Epoxy Coated.

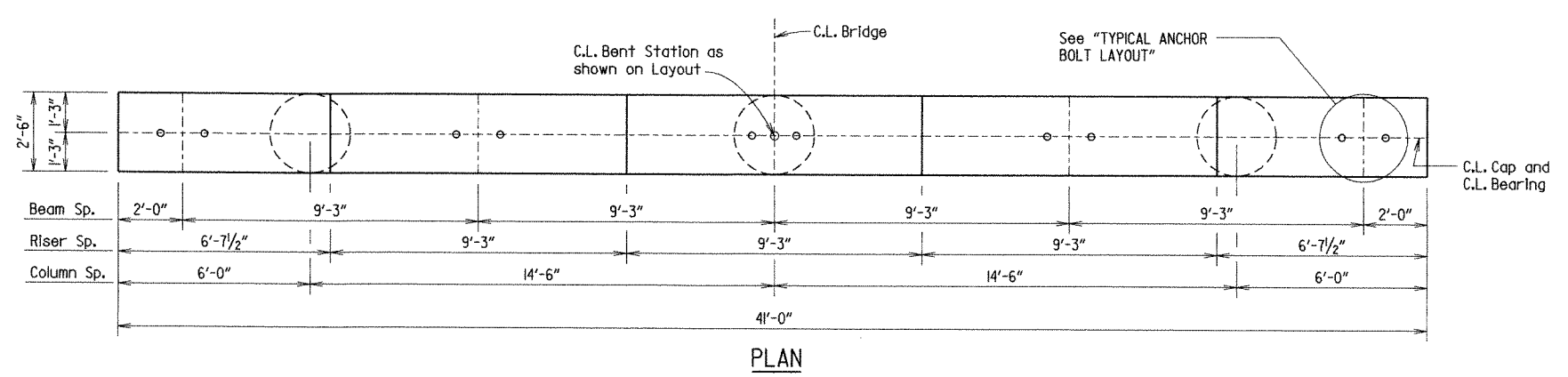
For additional information, see Layout.



BRIDGE ENGINEER

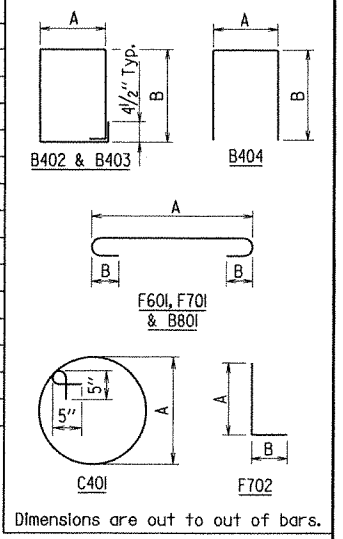
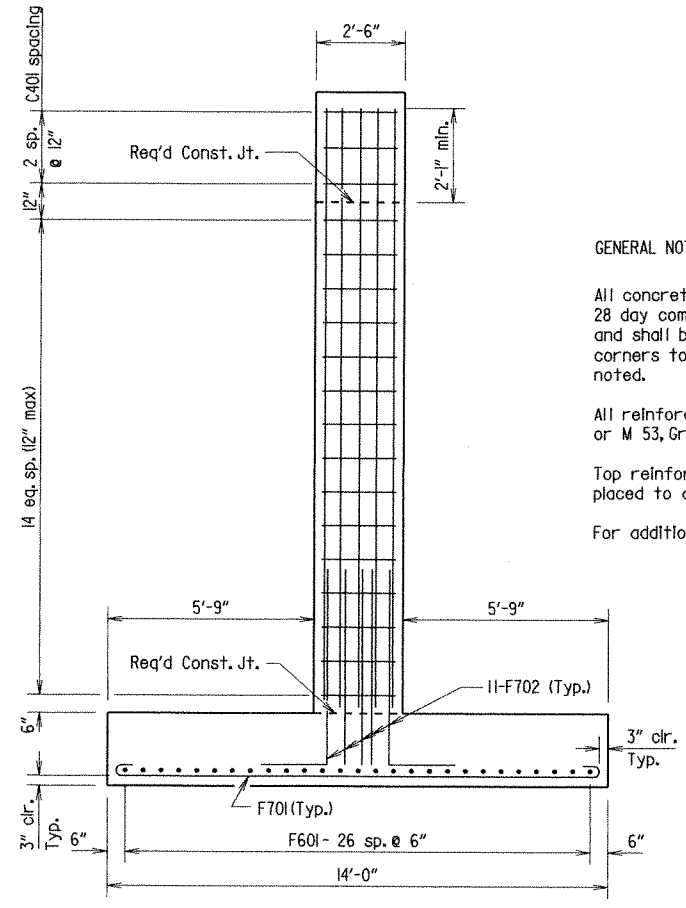
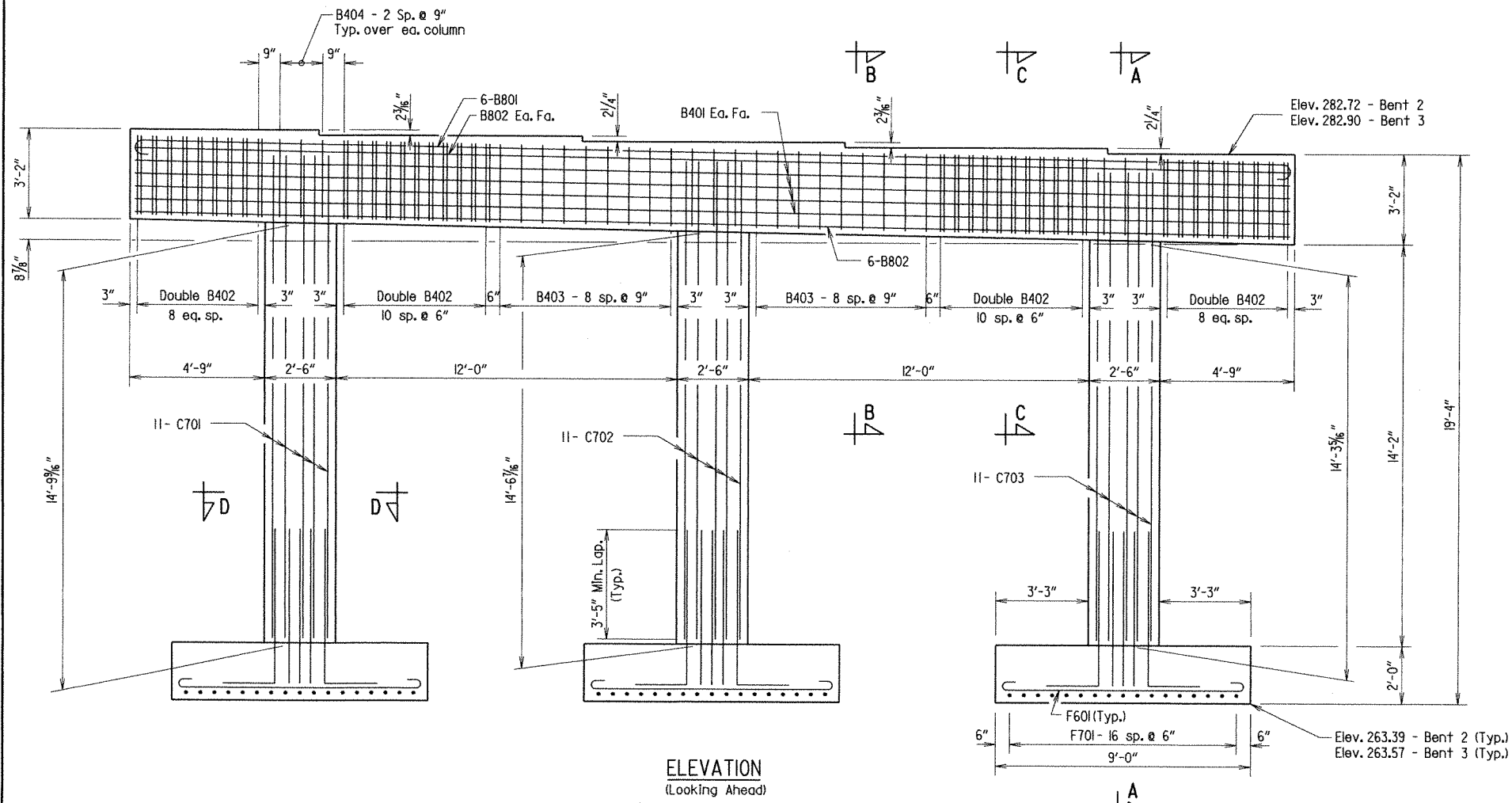
DETAILS OF END BENTS
McHENRY CREEK
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.
DRAWN BY: RBR DATE: 2/1/11 FILENAME: b060352.bl.dgn
CHECKED BY: CMW DATE: 5/4/11 SCALE: $3/8" = 1'-0"$
DESIGNED BY: RBR DATE: 2/1/11
BRIDGE NO. 07210 DRAWING NO. 51918

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.	060352	33	83
				JOB NO.	07210		DETAILS OF INT. BENTS	51919



BAR LIST-PER BENT

MARK	NO. REQ'D.	LENGTH	'A'	'B'	P.D.	BENDING DIAGRAMS
B401	8	40'-8"	-	-	Str.	
B402	80	8'-8"	1'-6"	2'-8"	2"	
B403	18	10'-0"	2'-2"	2'-8"	2"	
B404	9	7'-4"	2'-2"	2'-8"	2"	
B801	6	42'-6"	40'-8"	8"	6"	
B802	8	40'-8"	-	-	Str.	
C401	54	7'-8"	2'-1"	-	3"	
C701	11	17'-0"	-	-	Str.	
C702	11	16'-10"	-	-	Str.	
C703	11	16'-6"	-	-	Str.	
F601	81	9'-10"	8'-6"	6"	4 1/2"	
F701	51	15'-2"	13'-6"	7"	5 1/4"	
F702	33	8'-1"	7'-1"	1'-2"	5 1/4"	



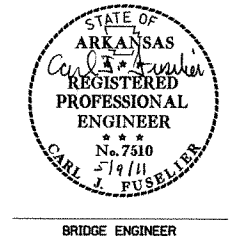
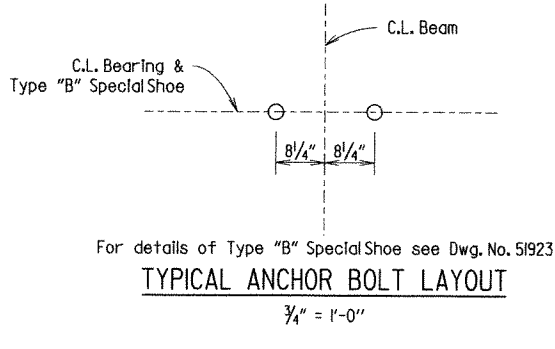
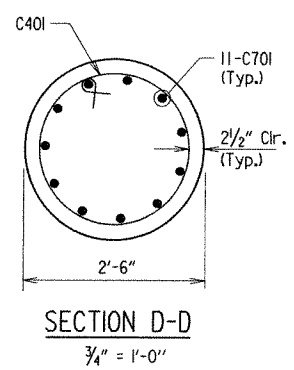
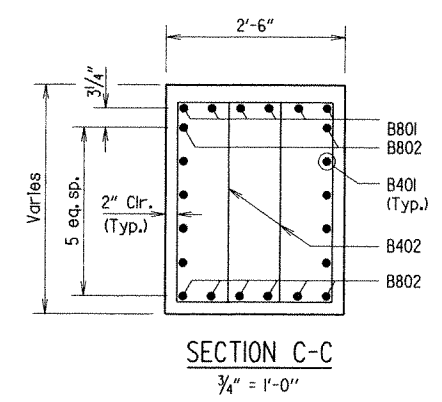
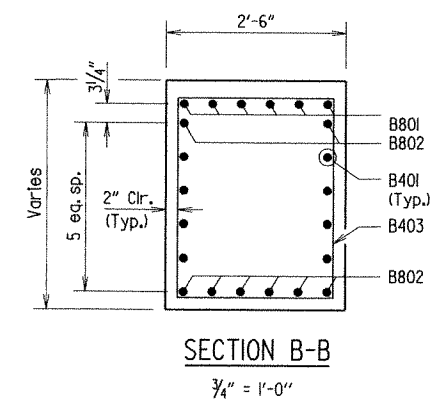
GENERAL NOTES:

All concrete shall be Class "S" with a minimum 28 day compressive strength of $f'c = 3500$ psi and shall be poured in the dry. All exposed corners to be chamfered $3/4"$ unless otherwise noted.

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

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

For additional information, see Layout, Dwg. No. 51916.



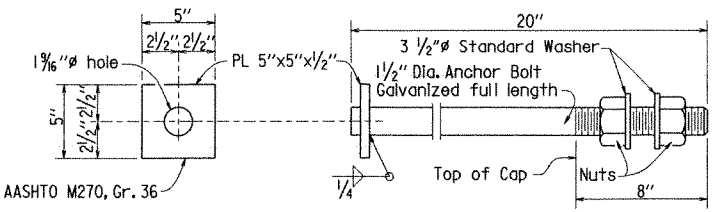
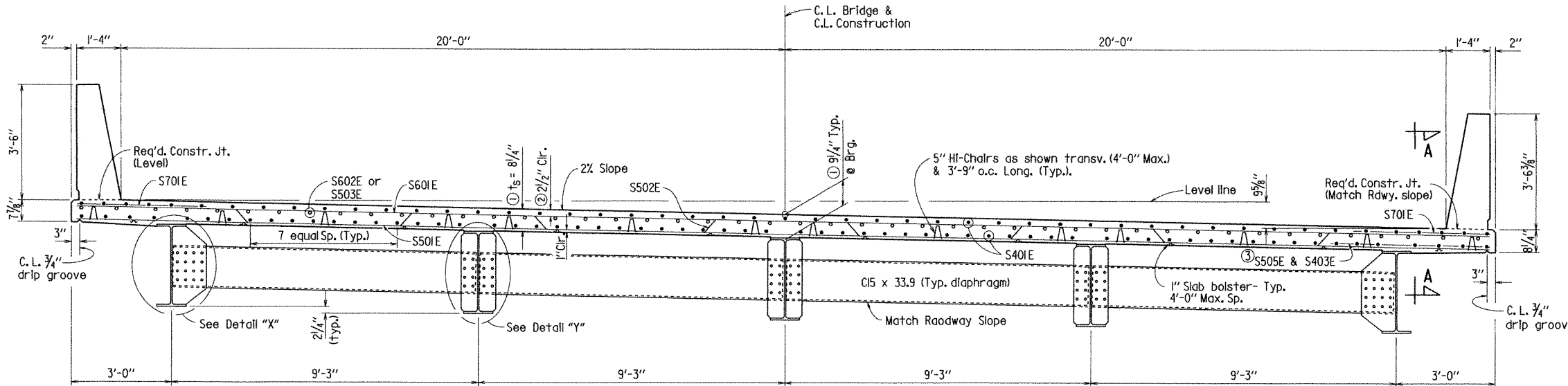
DETAILS OF INTERMEDIATE BENTS
McHENRY CREEK

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

DRAWN BY: RBR DATE: 2/2/11 FILENAME: b060352.b2.dgn
CHECKED BY: DHP DATE: 3-31-11 SCALE: $3/8" = 1'-0"$ or as shown
DESIGNED BY: RBR DATE: 2/11
BRIDGE NO. 07210 DRAWING NO. 51919

NOTE: Class I Protective Surface Treatment shall be applied to the roadway surface and roadway face and top of the concrete parapet rail.

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.	060352		34	83
				① 07210	SPAN DETAILS			51920



Anchor Bolts and Nuts to be according to subsection 807.07 of the specifications. Anchor Bolts shall be Grade 55. Washers shall be a standard washer.
Use lower nut and washer to adjust to grade. Snug tight top nut and washer after grade is adjusted.
Anchor Bolts, Nuts and Washers will not be measured and paid for separately, but will be considered subsidiary to the unit price bid for "Structural Steel in Beam Spans (M270 Gr.50W)".

ANCHOR BOLT DETAIL FOR END BENTS

No Scale

Slab Reinforcing:

- Longitudinal: S401E Top & Bottom
S503E placed as shown at ends of unit (See ReInf. Plan)
S602E placed as shown over Interior supports (See ReInf. Plan)
- Transverse: S502E @ 15" o.c. bent up over beams
S601E @ 15" o.c. in top, S501E @ 15" o.c. in bottom — Alternate
- Overhang: S701E @ 15" o.c. in top (See "Detail A" on Dwg. No. 51922)
S505E @ 15" o.c. in bottom ③
S403E @ 7 1/2" o.c. in bottom ③

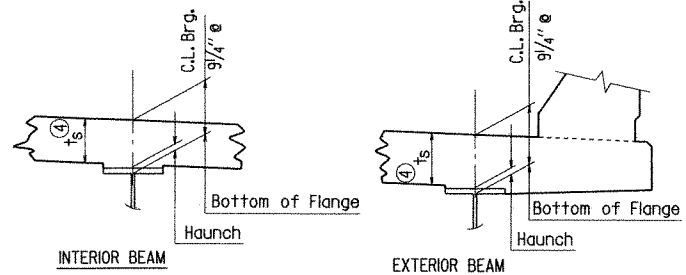
NOTE: At the Contractor's option, two straight epoxy coated #5 bars, top and bottom, may be substituted for bar S502E. Payment will be based on weight of S502E.

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

- ① Tolerance: Minus = 1/4"
Plus = Equal to amount of slab thickening used to meet slab thickness tolerance—
See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE"
- ② See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE"
- ③ S403E and S505E placed in overhang on low side only to accommodate future expansion of roadway.

TYPICAL ROADWAY SECTION

1/2" = 1'-0"



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

NOTES:

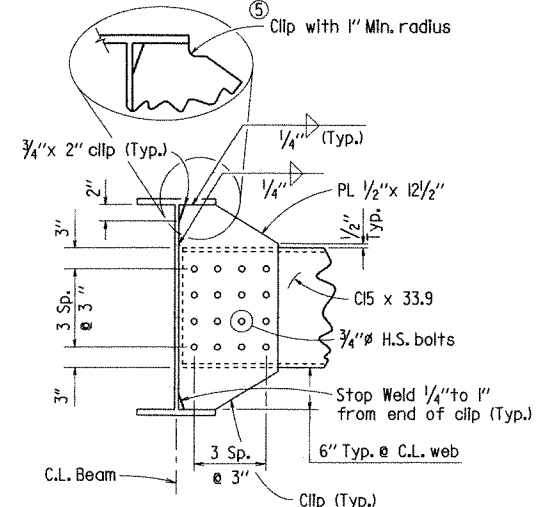
t_s = Slab thickness as shown on Typical Roadway Section.
Haunch dimension may vary within the following limits to maintain the grade and slab thickness tolerance: Minimum - occurs when top flange contacts bottom reinforcing steel; Maximum - top flange thickness plus 1 1/4". No increase in concrete and structural steel quantities will be made to maintain tolerances.

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

ADJUSTMENT FOR SLAB THICKNESS TOLERANCE

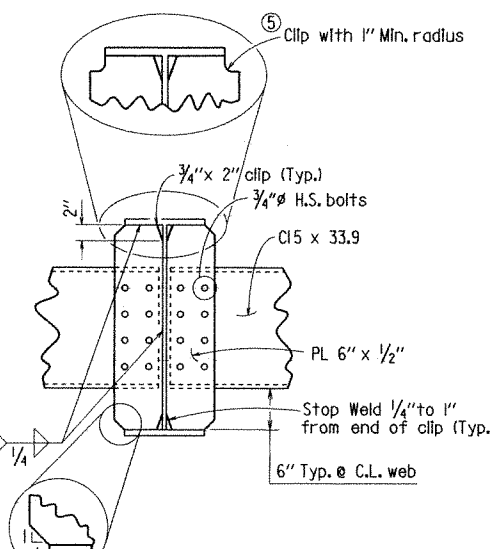
No Scale

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



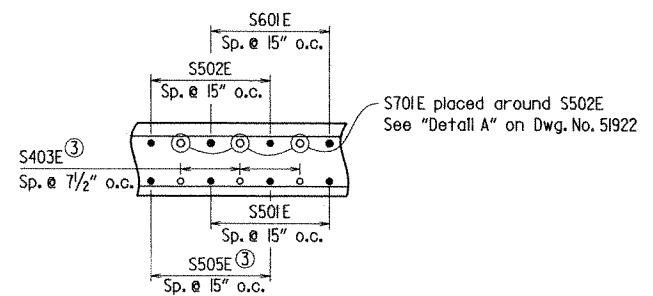
DETAIL X

1" = 1'-0"



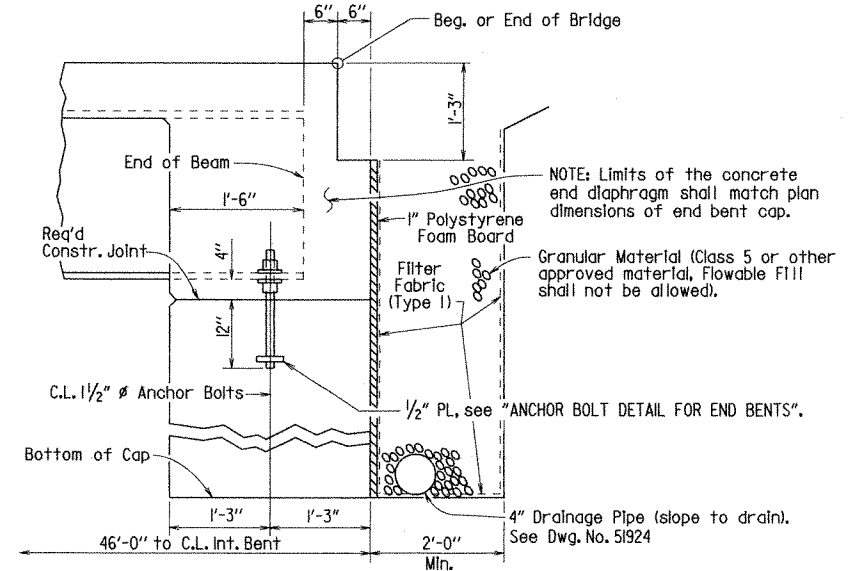
DETAIL Y

1" = 1'-0"



SECTION A-A

1" = 1'-0"



SECTION AT END BENT

No Scale

NOTE: For additional details of pipe under drain see Std. Dwg. PU-1 and Section 611 of the Standard Specifications. Pipe under drains, outlet protectors, granular materials, drain pipe, filter fabric and polystyrene foam board will not be measured or paid for separately, but will be considered subsidiary to the unit price bid for "Unclassified Excavation".



BRIDGE ENGINEER

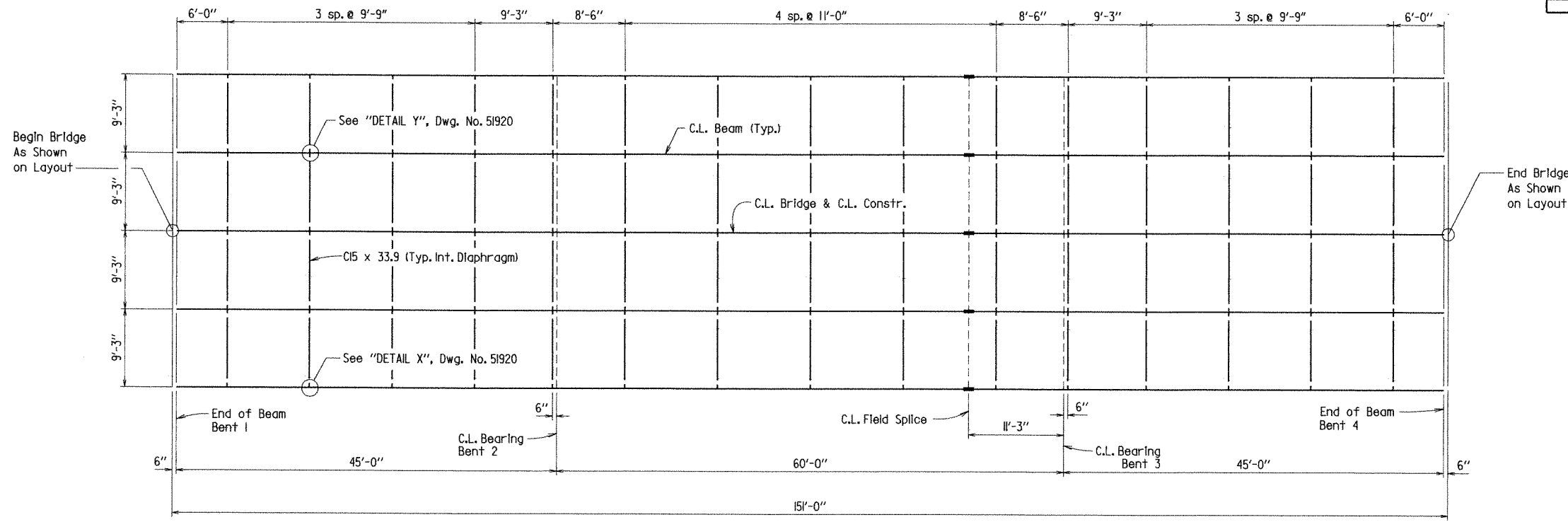
**SHEET 1 OF 5
DETAILS OF 150'-0"
INTEGRAL W-BEAM UNIT
MCHENRY CREEK
ROUTE SEC.**

ARKANSAS STATE HIGHWAY COMMISSION

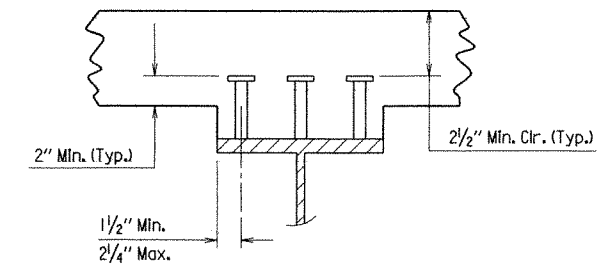
LITTLE ROCK, ARK.

DRAWN BY: RBR DATE: 2-3-11 FILENAME: b060352_sl.dgn
CHECKED BY: CMW DATE: 3/31/11 SCALE: As shown
DESIGNED BY: RBR DATE: 2/11
BRIDGE NO. 07210 DRAWING NO. 51920

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.		060352	35	83
				07210	SPAN DETAILS		51921	

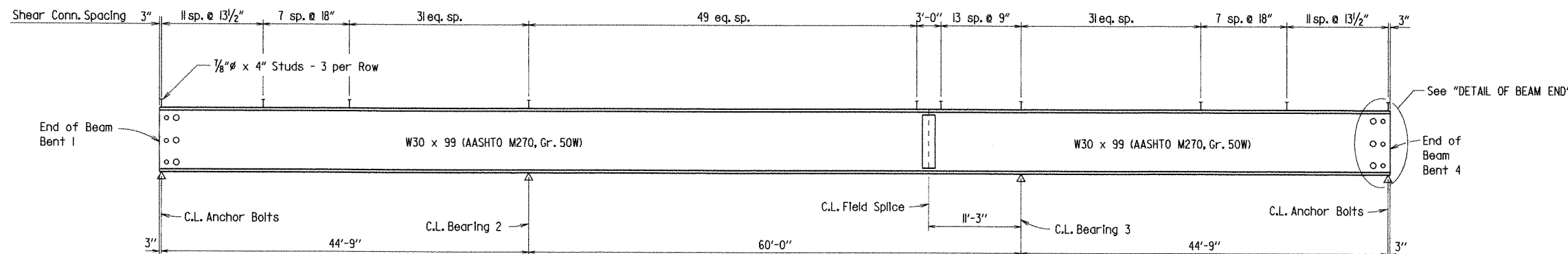


FRAMING PLAN



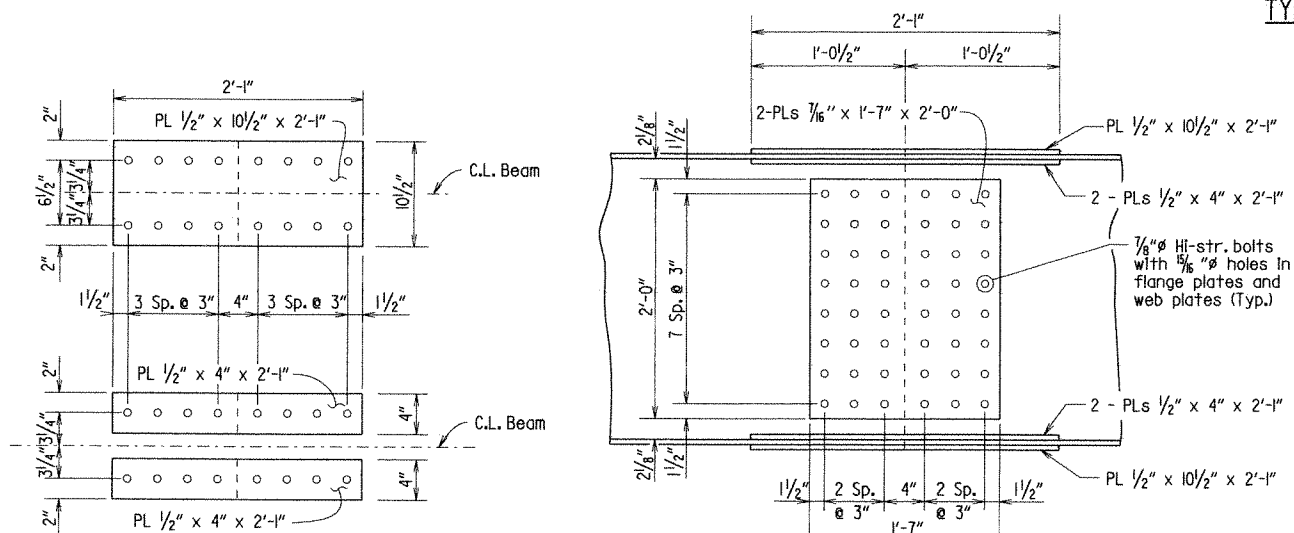
Stud Shear Connectors shown shall be 1/8" x 4" long, granular flux filled, solid fluxed or equal, and automatically end welded to the beam flange in accordance with the recommendations of the Manufacturer. 3/4" studs may be used in place of the 1/8" studs shown, at the ratio of 1.361 - 3/4" studs in place of one 1/8" stud. 1/8" studs will be used as basis for measurement of structural steel in shear connectors. Maximum stud spacing = 24"

SHEAR CONNECTOR DETAIL
No Scale



TYPICAL BEAM ELEVATION

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

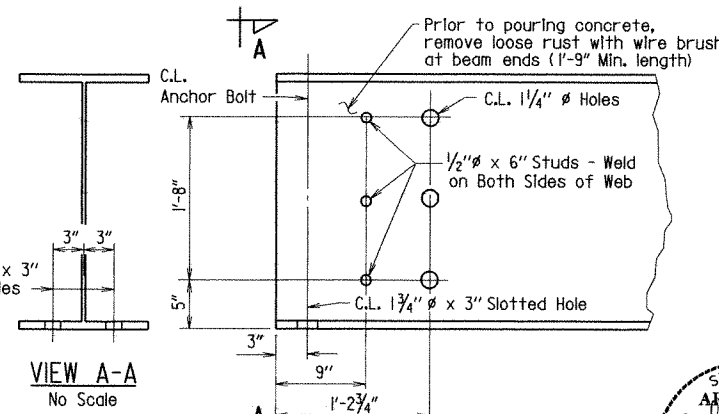


FLANGE SPLICE
TOP AND BOTTOM
No Scale

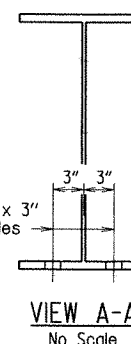
DETAILS OF FIELD SPLICE

WEB SPLICE
No Scale

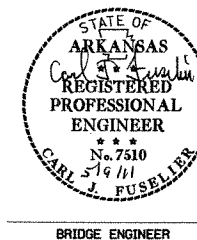
All Field Splice Plates shall be AASHTO M270, Gr. 50W
All Field Splice Bolts shall be 1/8" H.S. Bolts
All Field Splice Bolt Holes shall be 1/8" ø



DETAIL OF BEAM END
No Scale



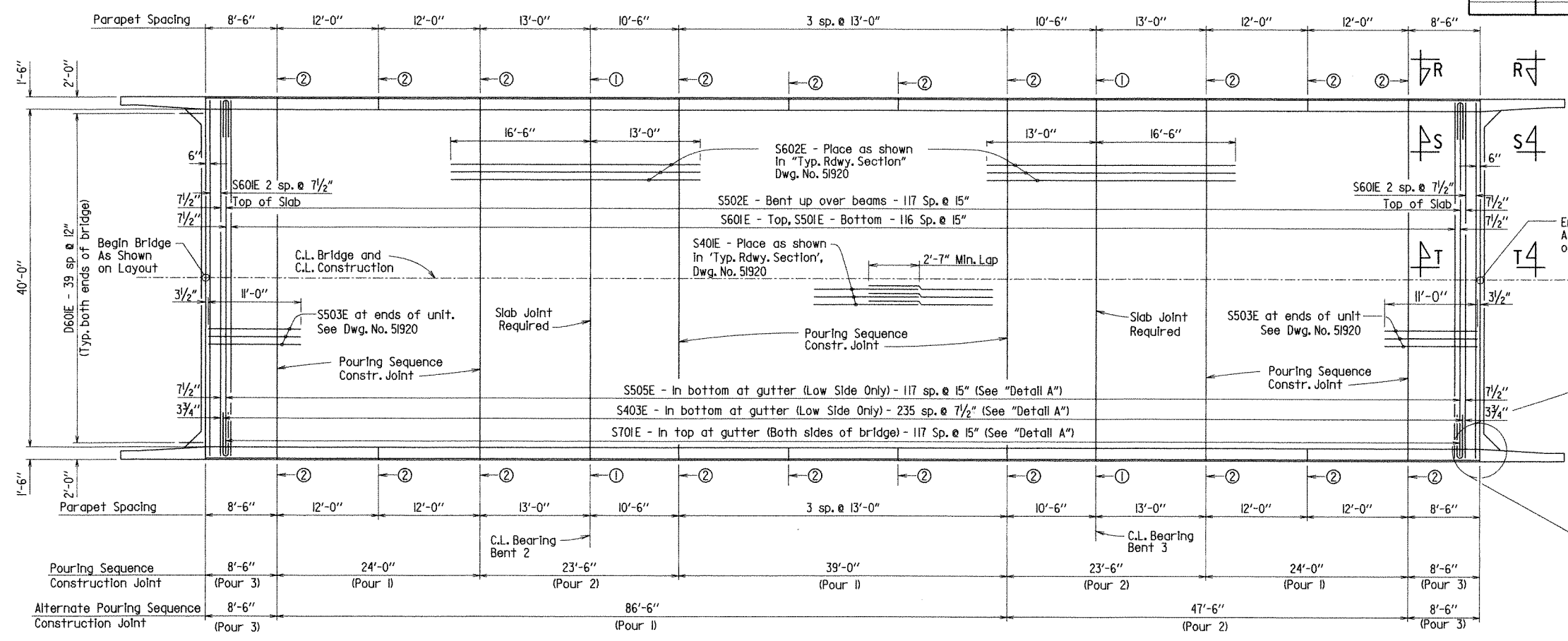
VIEW A-A
No Scale



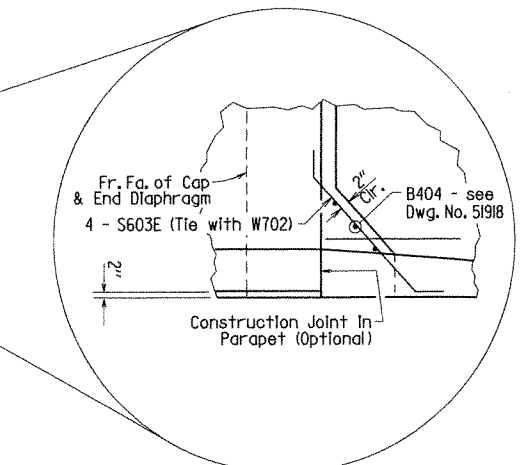
BRIDGE ENGINEER

SHEET 2 OF 5
DETAILS OF 150'-0"
INTEGRAL W-BEAM UNIT
McHENRY CREEK
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.
DRAWN BY: RBR DATE: 2-25-11 FILENAME: b060352.sl.dgn
CHECKED BY: CMW DATE: 3/21/11 SCALE: 1/8" = 1'-0" or as shown
DESIGNED BY: RBR DATE: 2/11
BRIDGE NO. 07210 DRAWING NO. 51921

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		36	83
				JOB NO.	060352		36	83
				07210	SPAN DETAILS		51922	



- ① C.L. Full Depth Parapet Joint (1/4" to 1" Max.) Stop 4" from top of slab.
- ② C.L. Partial Depth Parapet Joint (1/4" to 1" Max.) Stop 1'-6" from top of slab.



NOTE:
For "VIEW R-R", "VIEW S-S" and "SECTION T-T" see Dwg. No. 51924

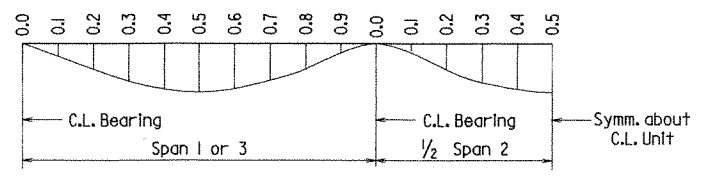
REINFORCING PLAN & DECK POURING SEQUENCE

Note: Required slab joints and pouring sequence joints shall align with parapet open joints at the gutter line.

TABLE OF DEAD LOAD DEFLECTIONS (INCHES)

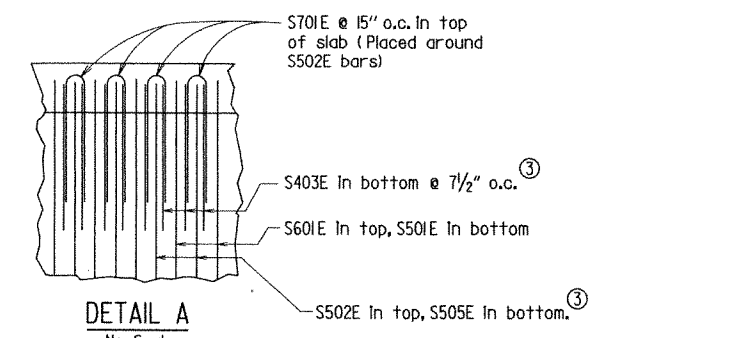
Span	Point of Deflection	Structural Steel		Structural Steel + Slab		Structural Steel + Slab + Parapet	
		Interior	Exterior	Interior	Exterior	Interior	Exterior
Span 3	0.0	0.000	0.000	0.000	0.000	0.000	0.000
	0.1	0.014	0.013	0.115	0.097	0.116	0.099
	0.2	0.026	0.023	0.210	0.117	0.213	0.182
	0.3	0.034	0.030	0.272	0.229	0.277	0.237
	0.4	0.036	0.032	0.293	0.247	0.299	0.257
	0.5	0.034	0.030	0.274	0.230	0.280	0.239
	0.6	0.027	0.024	0.219	0.184	0.223	0.190
	0.7	0.018	0.016	0.142	0.120	0.143	0.121
	0.8	0.008	0.007	0.062	0.052	0.060	0.049
	0.9	0.000	0.000	0.004	0.003	0.001	-0.002
Span 2	0.0	0.000	0.000	0.000	0.000	0.000	0.000
	0.1	0.014	0.013	0.115	0.097	0.129	0.199
	0.2	0.038	0.033	0.303	0.255	0.335	0.306
	0.3	0.061	0.054	0.490	0.413	0.538	0.490
	0.4	0.077	0.069	0.624	0.525	0.683	0.620
1/2 Span 1	0.5	0.083	0.074	0.672	0.565	0.735	0.666

Table is symmetrical about C.L. Unit



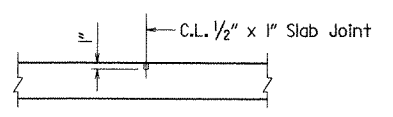
DEAD LOAD DEFLECTIONS DIAGRAM (TYP.)

NOTE:
Camber for Dead Load Deflection plus Vertical curve ± 1/4" tolerance. Deflections shown are from a chord from C.L. Bearing to C.L. Bearing. Vertical curve corrections not included. Negative sign (-) indicates point above chord.



DETAIL A
No Scale

③ S403E and S505E placed in overhang on low side only to accommodate future expansion of roadway. For additional details see "Section A-A" (Dwg. No. 51920)



SLAB JOINT DETAIL
No Scale

Use 1/2" x 1" Type 3, 4 or 6 Joint Sealer. See subsections 501.02(h) and 501.05(j). Backer rod will not be required. Joint Sealer shall be measured and paid for as Class S(AE) Concrete-Bridge. Slab joints shall extend to the outside edge of the deck slab. Slab joints shall be installed before the parapet railing is poured. If slab joints are to be sawed, they shall be sawed as soon as the slab has sufficiently set to allow sawing of the joints without damaging the slab. Slab joints shall be placed at all pouring sequence construction joints and required slab joint locations.

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

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

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

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

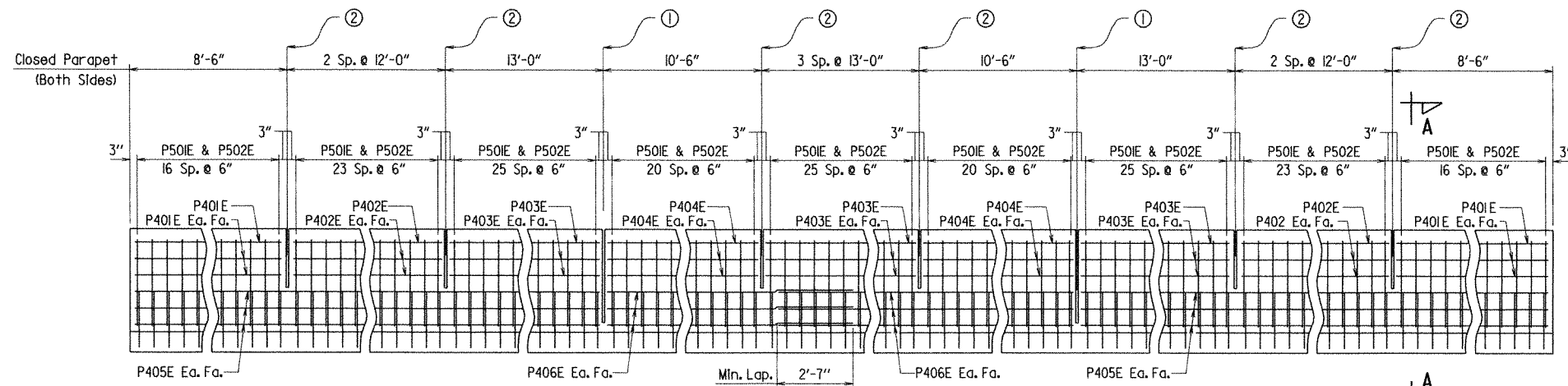


BRIDGE ENGINEER

SHEET 3 OF 5
DETAILS OF 150'-0"
INTEGRAL W-BEAM UNIT
MCHENRY CREEK
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

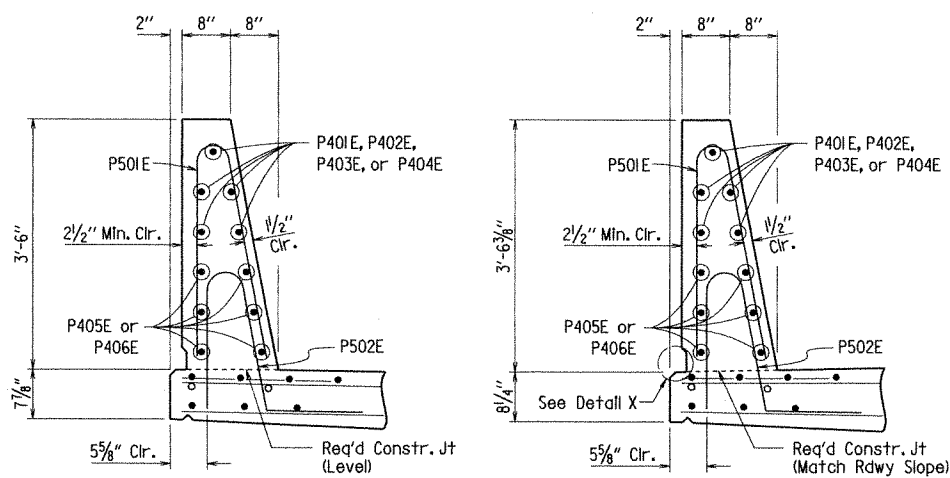
DRAWN BY: RBR DATE: 2-28-11 FILENAME: b060352_sl.dgn
CHECKED BY: CMJ DATE: 3/31/11 SCALE: 1/8" = 1'-0"
DESIGNED BY: RBR DATE: 2/11
BRIDGE NO. 07210 DRAWING NO. 51922

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		37	83
				JOB NO.	060352		37	83
				07210	SPAN DETAILS		5923	



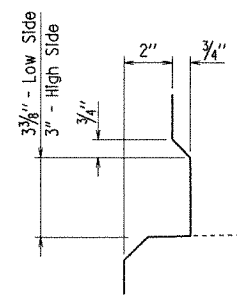
① C.L. Full-Depth Parapet Joint (1/4" to 1" Max.) as shown in "Reinforcing Plan & Deck Pouring Sequence" Dwg. No. 51762. Stop 4" from top of slab.
 ② C.L. Partial-Depth Parapet Joint (1/4" to 1" Max.) as shown in "Reinforcing Plan & Deck Pouring Sequence" Dwg. No. 51762. Stop 1'-6" from top of slab.

DETAILS OF PARAPET RAIL
 Scale: 3/8" = 1'-0"

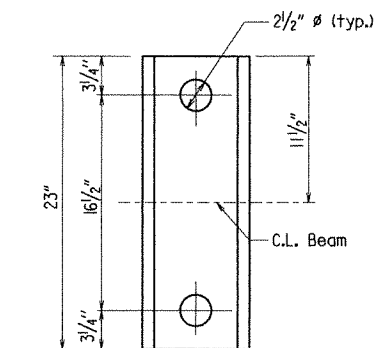


SECTION A-A
 High Side
 Scale: 3/4" = 1'-0"

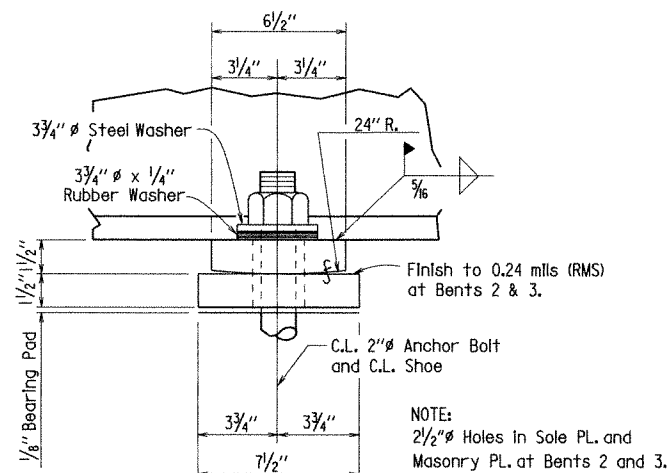
SECTION A-A
 Low Side
 Scale: 3/4" = 1'-0"



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



PLAN TYPE "B" SPECIAL SHOE
 BENTS: 2 and 3
 NO SCALE



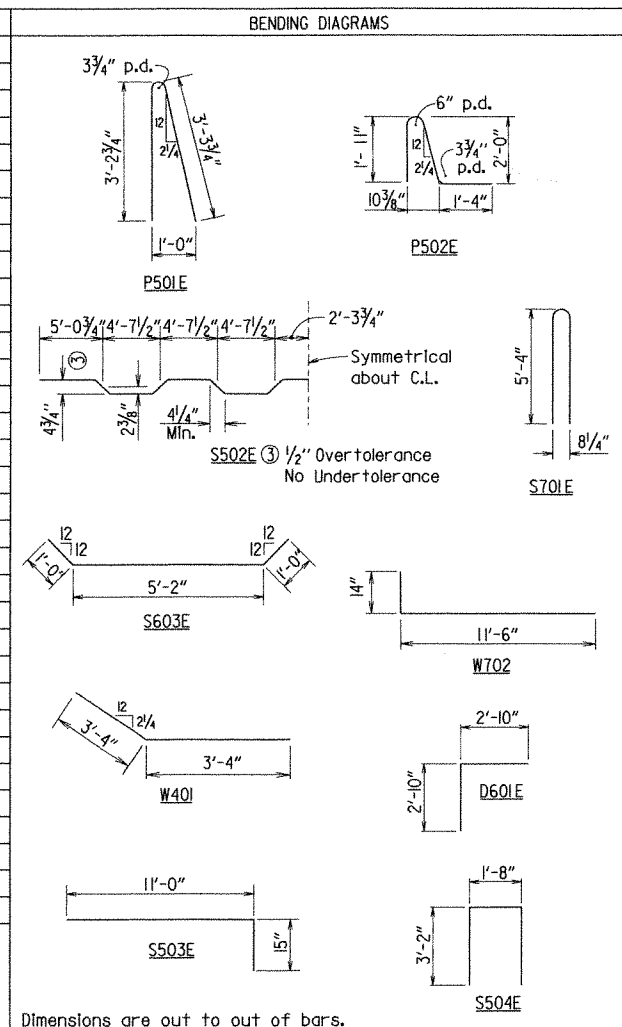
ELEVATION TYPE "B" SPECIAL SHOE
 BENTS: 2 and 3
 NO SCALE

NOTE: Plates for Type "B" Special Shoes shall be M270, GR. 50W.

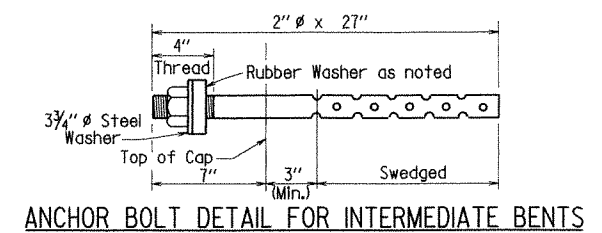
BAR LIST

MARK	NO. REQ'D	LENGTH	P.D.
P401E	20	8'-2"	Str.
P402E	40	11'-8"	Str.
P403E	50	12'-8"	Str.
P404E	20	10'-2"	Str.
P405E	24	45'-2"	Str.
P406E	24	31'-2"	Str.
P501E	604	6'-8"	3 3/4"
P502E	604	5'-4"	3 3/4"
S401E	452	39'-8"	Str.
S402E	18	42'-8"	Str.
S403E	236	4'-6"	Str.
S501E	117	42'-8"	Str.
S502E	118	43'-6"	3"
S503E	92	12'-2"	2 1/2"
S504E	88	7'-10"	2 1/2"
S505E	118	4'-6"	Str.
S601E	123	42'-8"	Str.
S602E	92	29'-6"	Str.
S603E	16	7'-2"	4 1/2"
S701E	236	11'-0"	6 1/2"
R401	32	9'-8"	Str.
R402	32	2'-0"	Str.
R601	32	6'-8"	Str.
R602	12	5'-0"	Str.
W401	20	6'-8"	2"
W402	20	6'-8"	Str.
W701	12	11'-6"	Str.
W702	48	12'-6"	5 1/4"
D601E	80	5'-6"	4 1/2"

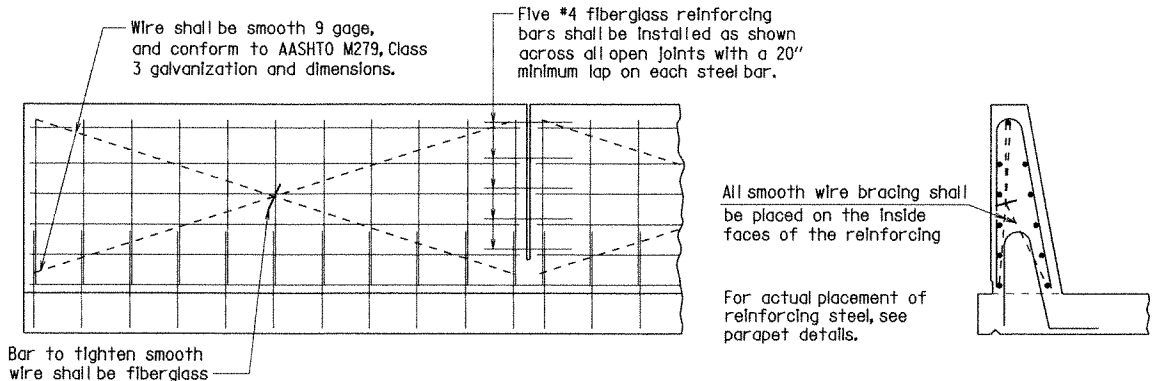
NOTE: Bars designated with an "E" suffix shall be epoxy coated.



Dimensions are out to out of bars.

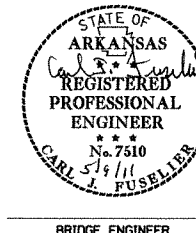


ANCHOR BOLT DETAIL FOR INTERMEDIATE BENTS
 BENTS: 2 and 3
 NO SCALE
 NOTES: Anchor Bolts, Nuts and Washers to be according to subsection 807.07. indentations shall be circular with rounded bottoms and staggered as shown above. Rubber washer shall be closed cell expanded rubber, meeting the requirements of ASTM D1056 - 85 2B2 E2, and shall be considered subsidiary to the item of "Structural Steel in Beam Spans (M270, Gr. 50W)".
 Anchor bolts shall be Grade 55.



DETAILS OF OPTIONAL SLIP FORMING OF CONCRETE PARAPET RAIL
 No Scale

All panels shall be braced as required to prevent racking. All open joints shall be sawed as soon as practical to a minimum width of 1/4". To control cracking before sawing all joints must be grooved before the concrete is set. Sawing of the joints must be controlled so it will follow the grooved joint.
 The extruded parapet shall conform to the horizontal and vertical lines shown on the plans or as directed by the Engineer and shall present a smooth, uniform appearance and texture.



SHEET 4 OF 5
DETAILS OF 150'-0" INTEGRAL W-BEAM UNIT
McHENRY CREEK
 ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
 LITTLE ROCK, ARK.
 DRAWN BY: RBR DATE: 3-2-11 FILENAME: b060352_sl.dgn
 CHECKED BY: CAU DATE: 3/31/11 SCALE: As shown
 DESIGNED BY: RBR DATE: 2/11
 BRIDGE NO. 07210 DRAWING NO. 51923

GENERAL NOTES

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

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

LIVE LOADING: HL-93

MATERIALS AND STRENGTHS:

Concrete: All concrete shall be Class S(AE) with a minimum 28 day strength $f'_c = 4000$ psi.

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

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

STRUCTURAL STEEL:

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

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

Beams including web and flange splice plates are considered main load carrying members and shall meet the Longitudinal Charpy V-Notch Test specified in subsection 807.05. This work and material will not be paid for directly, but shall be considered subsidiary to the item "Structural Steel in Beam Spans (M270, Gr.50W)".

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

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

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

All beams shall be blocked in their true position in the shop as specified in subsection 807.54 (b)(1). The camber, length of sections, distance between bearings, and opening of joints shall be measured with the beams in their true position and this information shall become part of the permanent record of this job. The component parts shall be match marked in this assembly and those marks shall be shown on the erection diagram. All beam dimensions are based on a temperature of 60 degrees F. A tolerance of $1/4"$ (plus or minus) allowed for camber.

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

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

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

Bearings shall be seated in accordance with subsection 807.66. This work and material will not be paid for directly but will be considered subsidiary to the item "Structural Steel in Beam Spans (M270, Gr. 50W)".

REINFORCING STEEL:

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

CONCRETE:

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

Concrete in bridge superstructure shall be placed, consolidated, and screeded off for the entire pour before any concrete has taken its initial set. This may require the use of a retarding agent. The concrete diaphragms at end bents shall be poured monolithic with the slab.

The concrete deck shall be given a Fine Finish in accordance with subsection 802.19 for Class 5, Tined Bridge Roadway Surface Finish. Movement of the finishing machine across new concrete shall be on planks placed on the surface and shall be prohibited for 72 hours after finishing the pour. Sufficient concrete must be placed ahead of the strike-off to fully load the beam.

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

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

Load Distribution

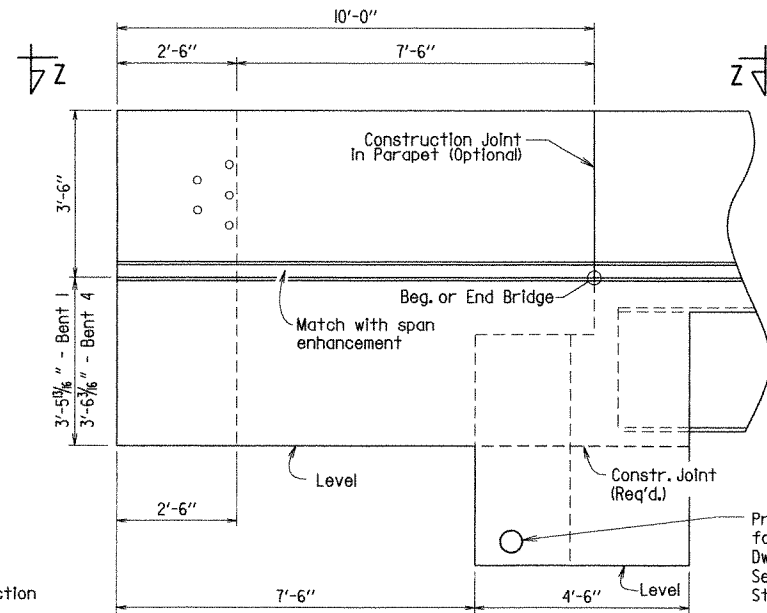
Dead Load:		
A. To W-Beam	Beam No. 1 & 5	786
	Beam 2, 3 & 4	954 plf + Wt. of Structural Steel

B. To Composite Beam	Beam No. 1, 2, 3, 4 & 5	402 plf ^②
----------------------	-------------------------	----------------------

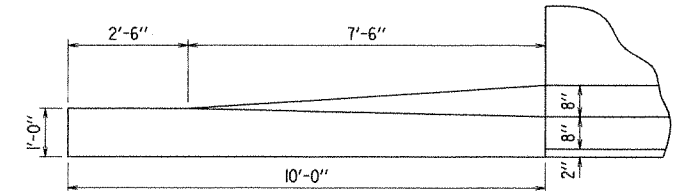
^② Includes 192 plf future wearing surface.

Place Type D Bridge Name Plate on Right Parapet Rail only (Beg. of Bridge)

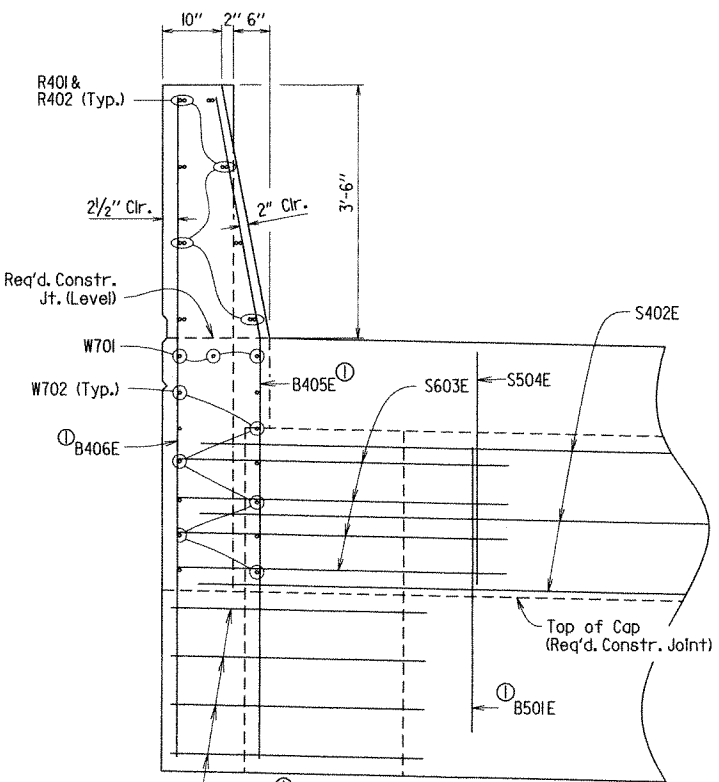
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	060352	38	83	
				07210	SPAN DETAILS		51924	



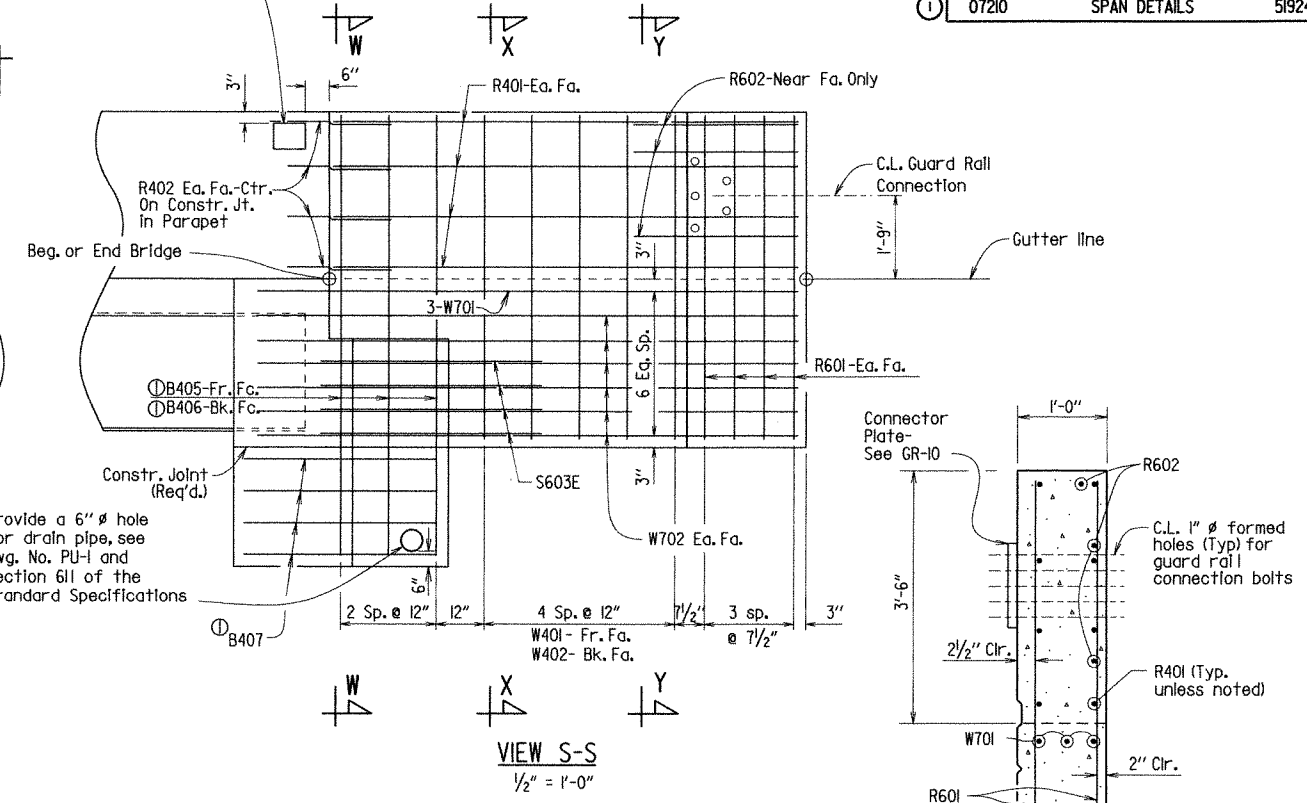
VIEW R-R
1/2" = 1'-0"



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

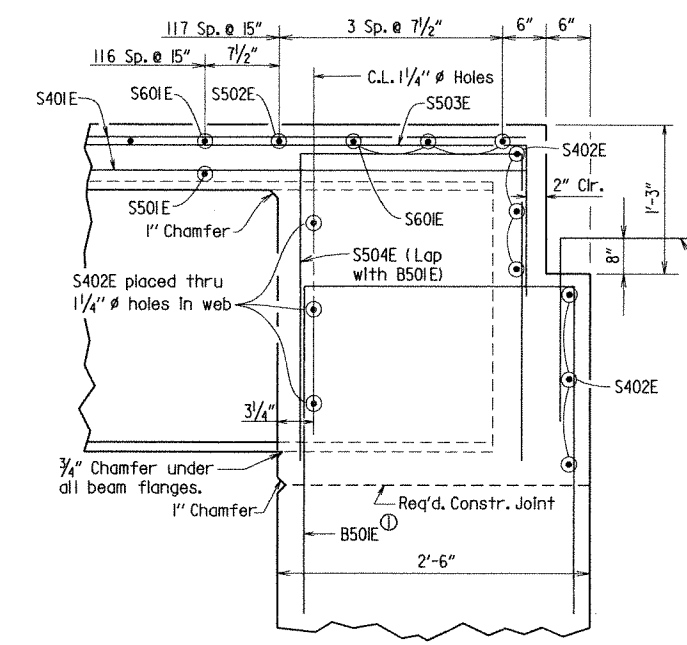


SECTION W-W
3/4" = 1'-0"

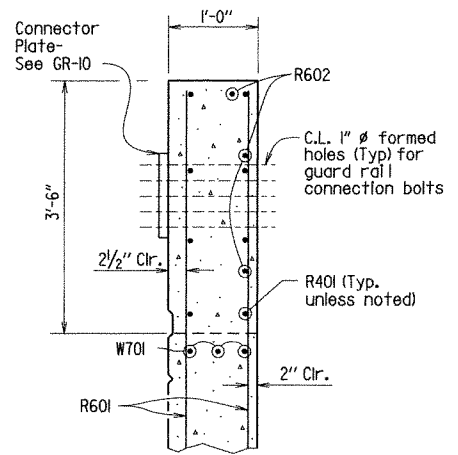


VIEW S-S
1/2" = 1'-0"

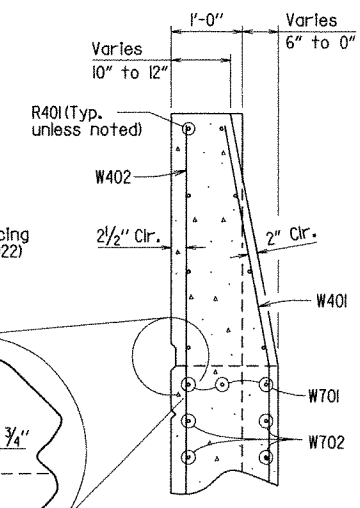
① See End Bent Details on Dwg. No. 51918 for reinforcing and additional details.



SECTION T-T
No Scale



SECTION Y-Y
No Scale



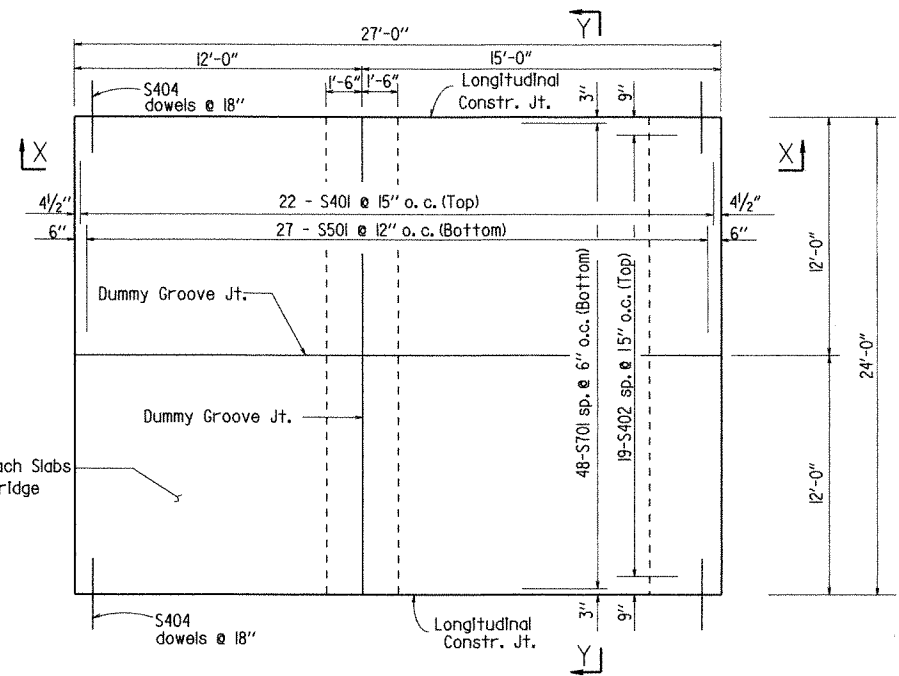
SECTION X-X
No Scale



BRIDGE ENGINEER

SHEET 5 OF 5
 DETAILS OF 150'-0"
 INTEGRAL W-BEAM UNIT
 McHENRY CREEK
 ROUTE SEC.
 ARKANSAS STATE HIGHWAY COMMISSION
 LITTLE ROCK, ARK.
 DRAWN BY: RBR DATE: 3-3-11 FILENAME: b060352.sl.dgn
 CHECKED BY: CMW DATE: 3/31/11 SCALE: As shown
 DESIGNED BY: RBR DATE: 2-11
 BRIDGE NO. 07210 DRAWING NO. 51924

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.		060352	37	83
				07210	APPROACH SLAB		51925	

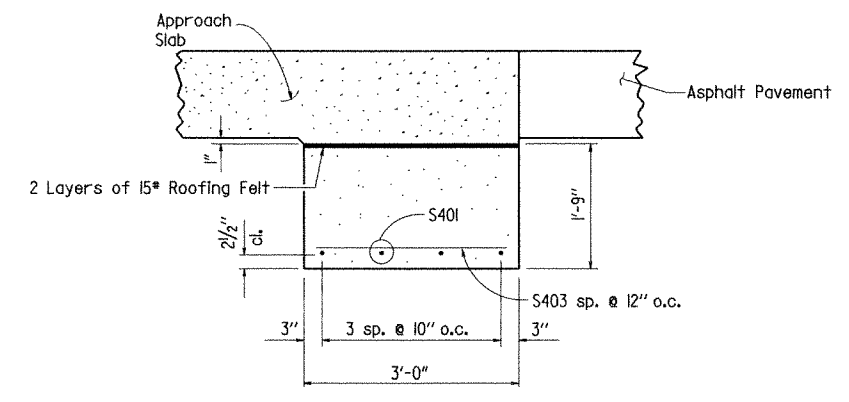


PLAN - APPROACH SLAB
N.T.S.

Note: Surface finish for Approach Slabs shall match that used on the bridge deck.

BAR LIST

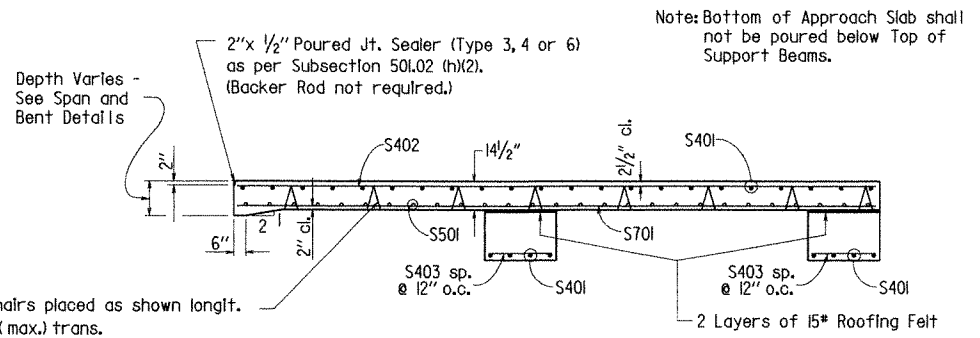
Mark	No. Req'd.	Length
S401	30	23'-8"
S402	19	26'-8"
S403	48	2'-8"
S404	36	3'-0"
S501	27	23'-8"
S701	48	26'-8"



DETAILS OF SUPPORT AT EXPANSION JOINT
3/4" = 1'-0"

TABLE OF QUANTITIES FOR ONE TYPE SPECIAL APPROACH SLAB

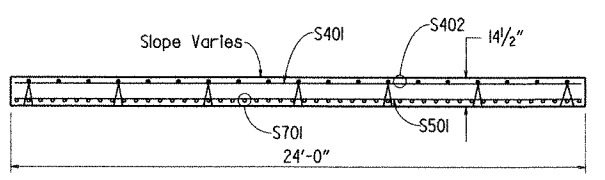
Slab Width	Reinforcing Steel (lbs.)	Concrete (Cu. Yds.)
24'-0"	4,260	38.80



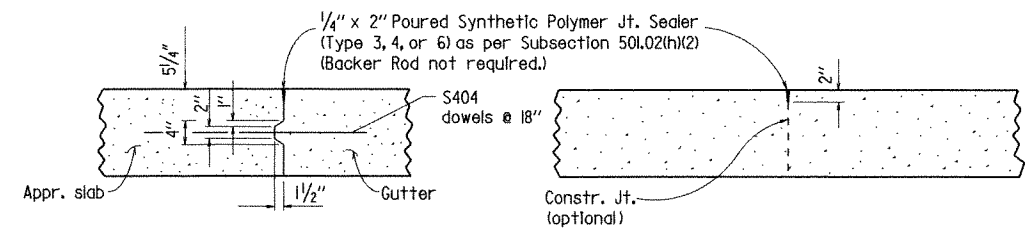
SECTION X - X
N.T.S.

1 1/2" HI-Chairs placed as shown longlt. and 3'-9" (max.) trans.

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



SECTION Y - Y
N.T.S.



DETAILS OF LONGITUDINAL CONSTRUCTION JOINT
3/4" = 1'-0"

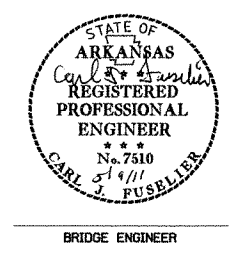
DETAILS OF DUMMY GROOVED JOINT
3/4" = 1'-0"

GENERAL NOTES

Concrete shall be Class S (AE) (f'c = 4,000 psi).
Reinforcement Steel shall conform to AASHTO M31 or M53, Grade 60 (fy = 60,000 psi).
Approach Slabs will be measured and paid for in accordance with Section 504 of the Standard Specifications.

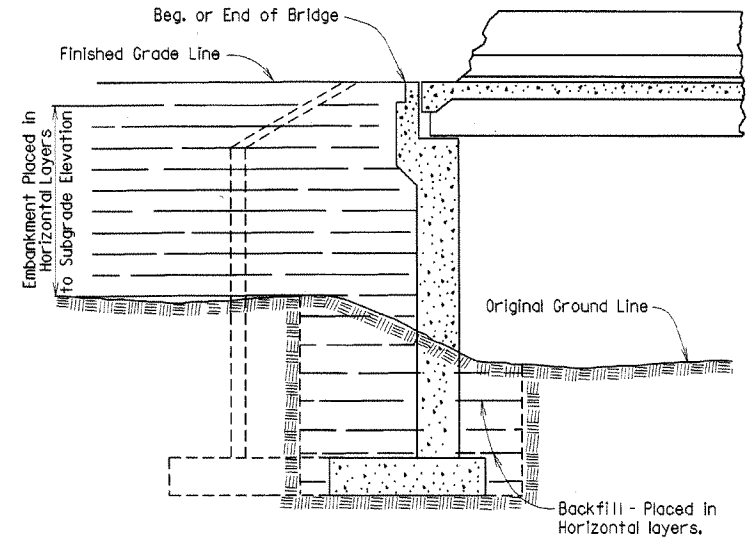
DETAILS OF APPROACH SLAB (TYPE SPECIAL I)

ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.
DRAWN BY: RBR DATE: 3-8-11 FILENAME: b060352_as.dgn
CHECKED BY: CSL DATE: 4/24/11 SCALE: As Shown
DESIGNED BY: Std. DATE:
BRIDGE NO. 07210 DRAWING NO. 51925

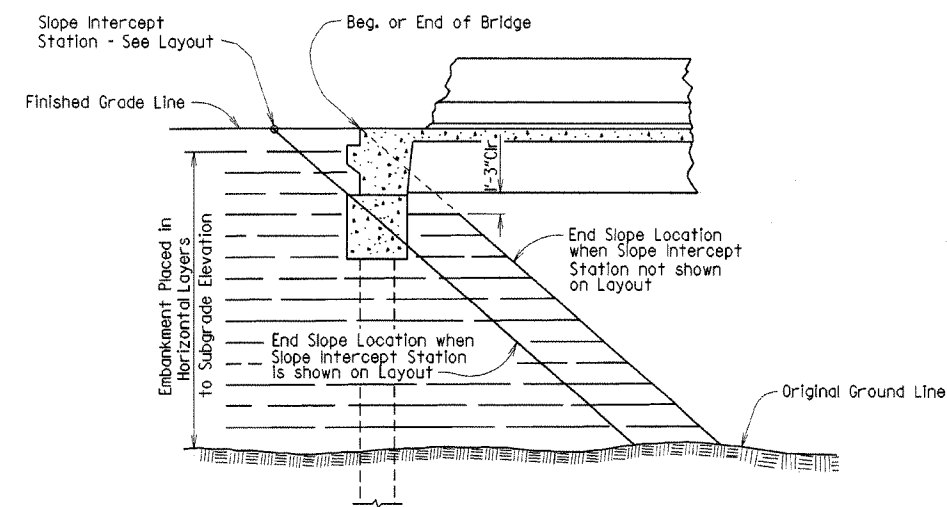


BRIDGE ENGINEER

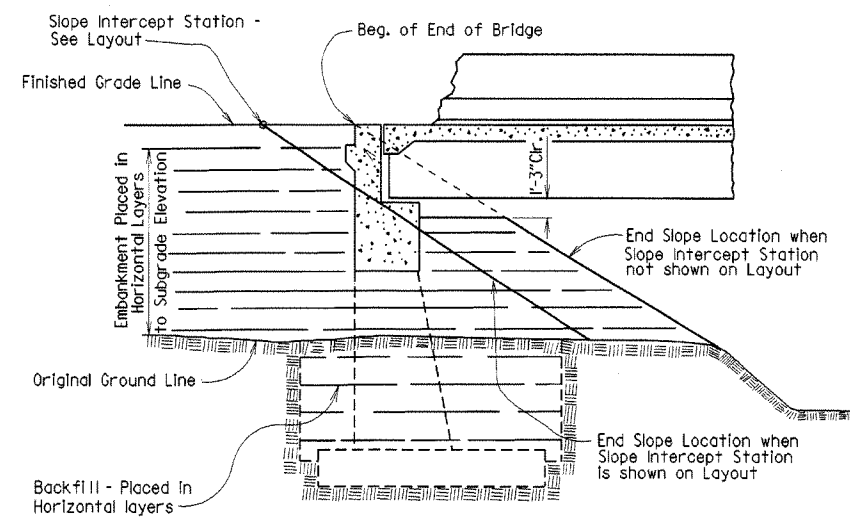
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
04-10-2003				6	ARK.		40	
							JOB NO.	
① EMBANKMENT & BACKFILL								1888A



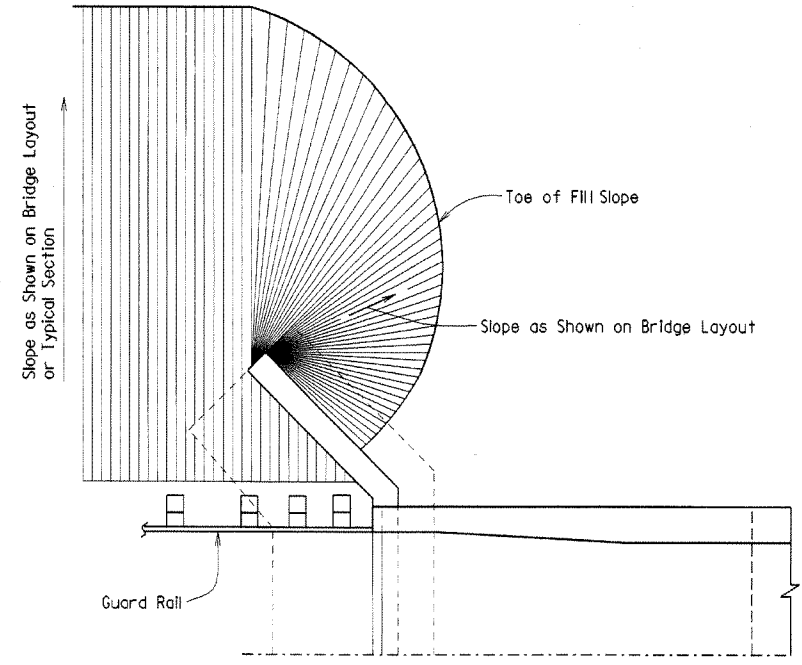
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT VERTICAL WALL ABUTMENTS



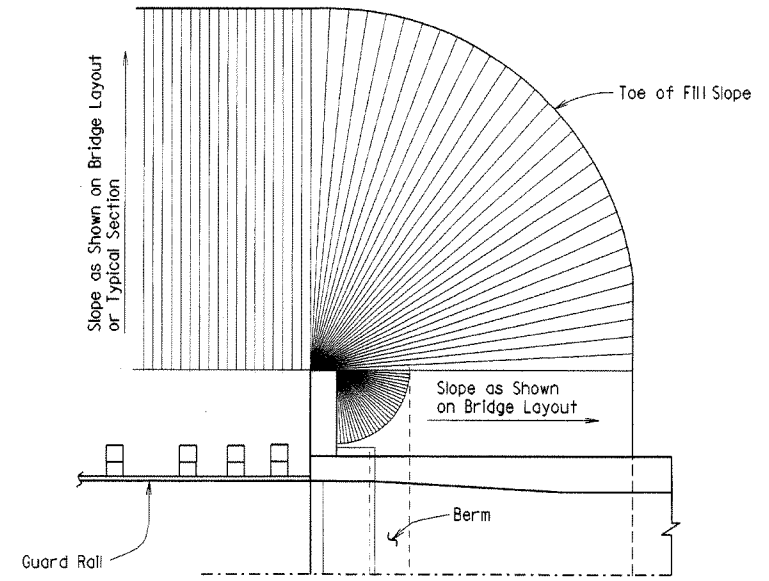
EMBANKMENT CONSTRUCTION AT SPILL-THROUGH PILE END BENTS



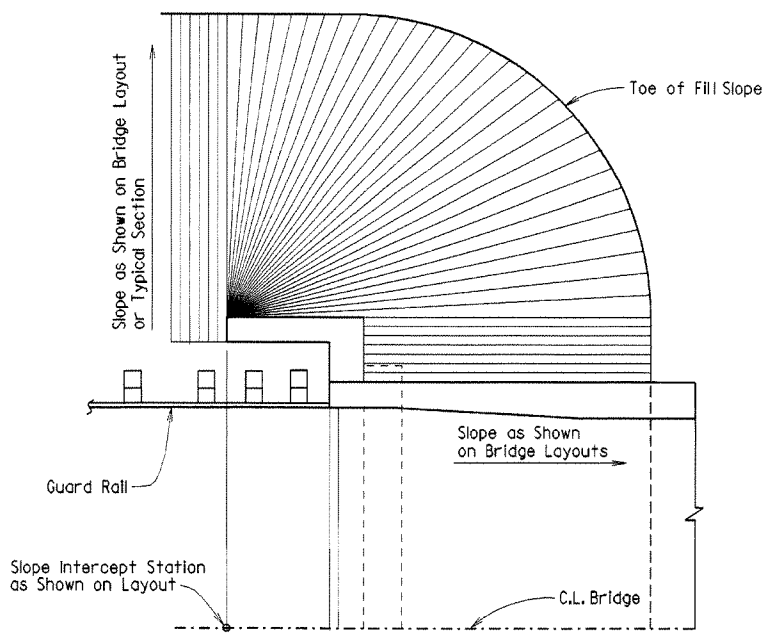
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT SPILL-THROUGH END BENTS



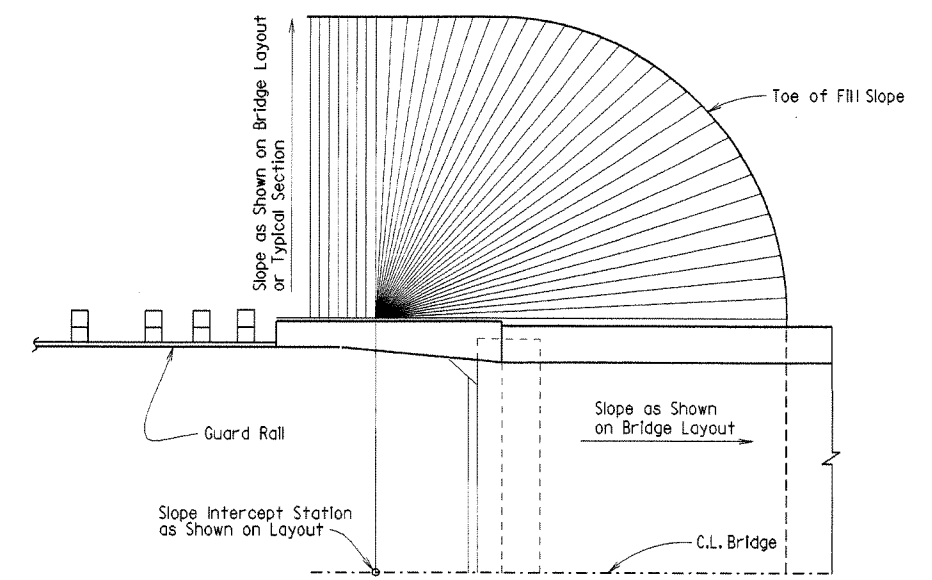
VERTICAL WALL ABUTMENTS



SPILL-THROUGH END BENTS WITH STUB WING



SPILL-THROUGH END BENTS WITH TURNBACK WING



SPILL-THROUGH END BENTS WITH TRANSITION WING

METHOD OF DETERMINING FILL SLOPE LOCATION AT BRIDGE ENDS

GENERAL NOTES

The Bridge End Embankment shall be defined as a section of embankment, not less than 20 feet long adjacent to the bridge end, together with the side slopes and slopes under the bridge end including around the end of wingwalls. Embankment adjacent to structures shall be constructed in 4 inch horizontal layers (loose measure) and compacted by the use of mechanical equipment to the satisfaction of the Engineer. Refer to subsections 210.09, 210.10 and 801.08 of the Specifications for construction requirements.

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



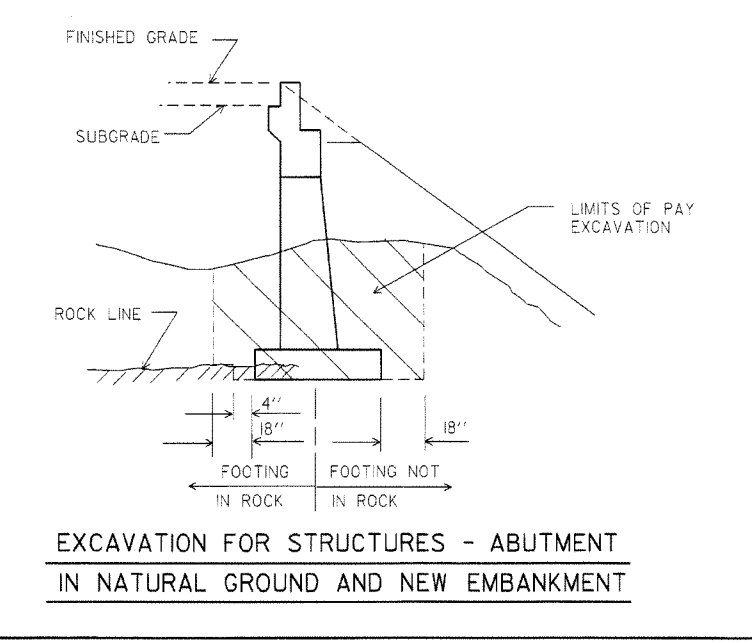
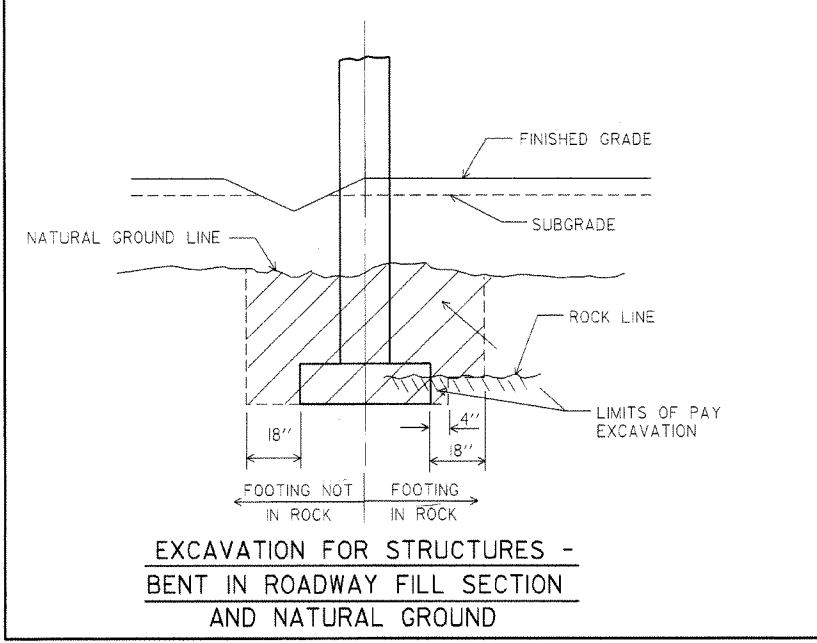
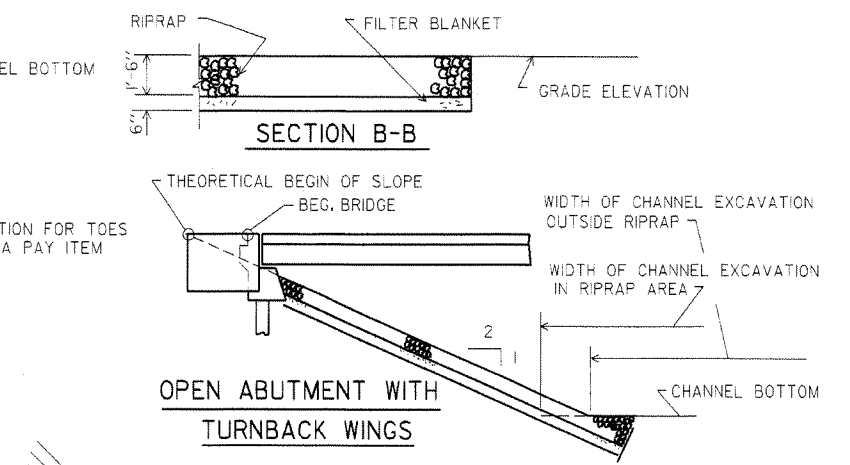
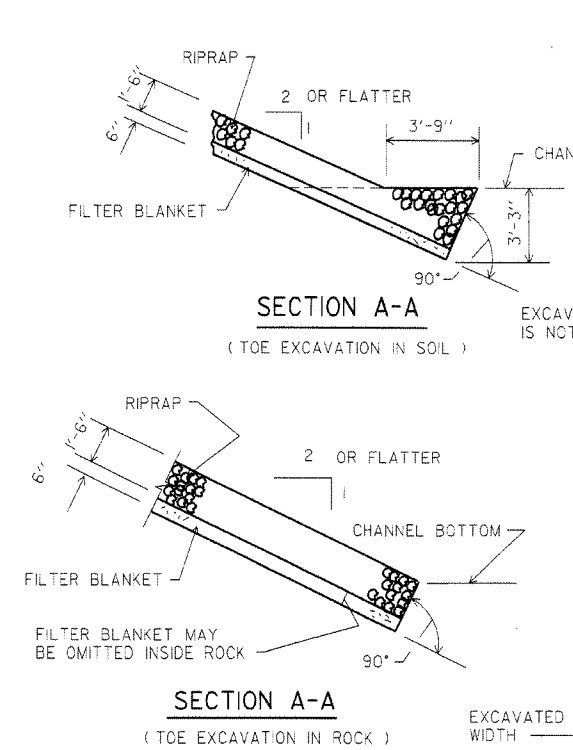
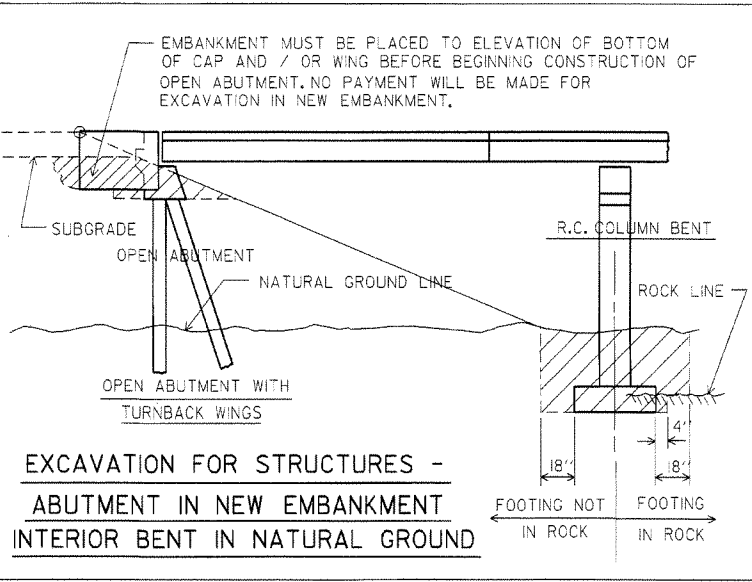
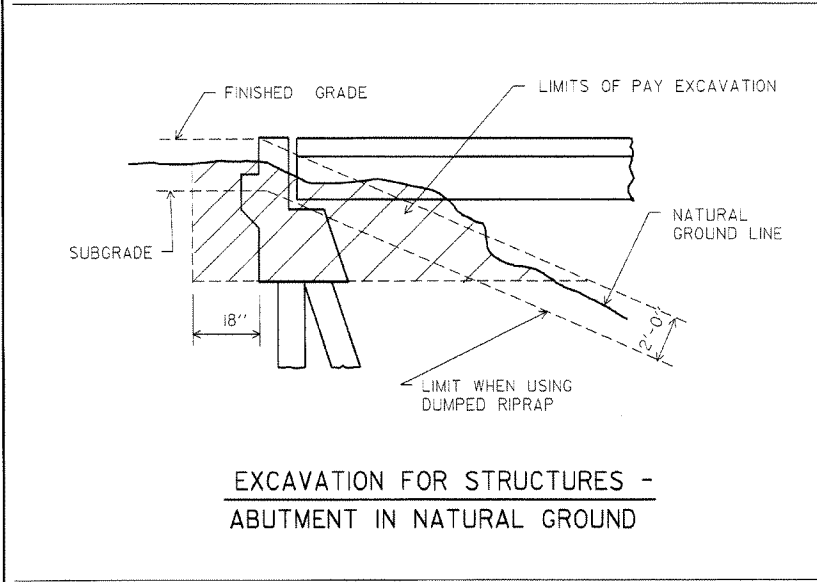
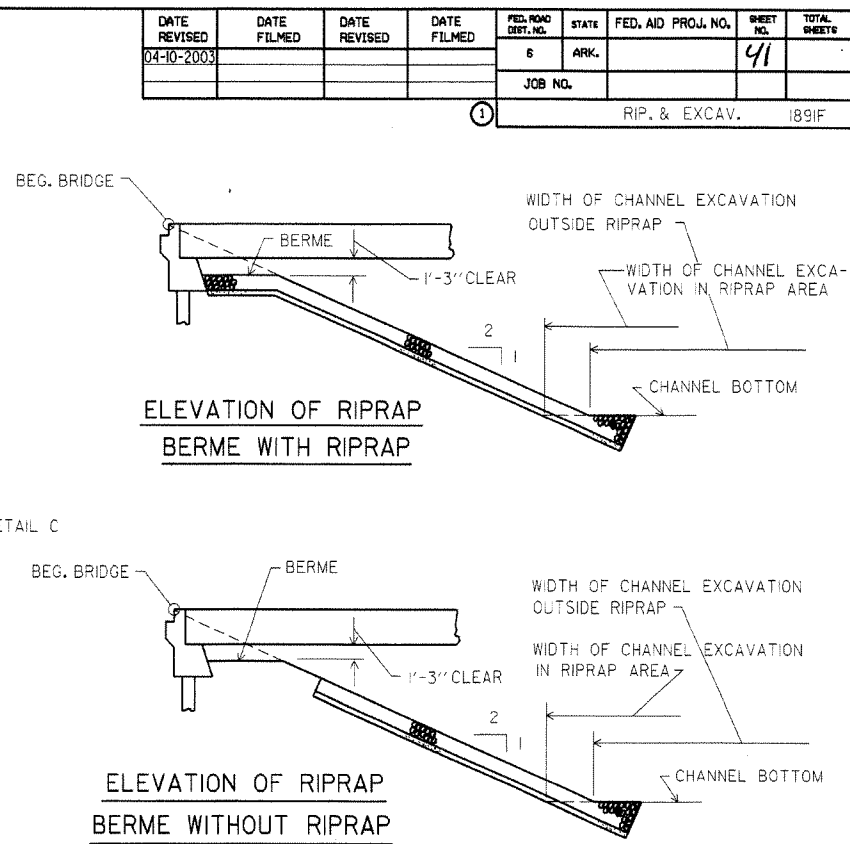
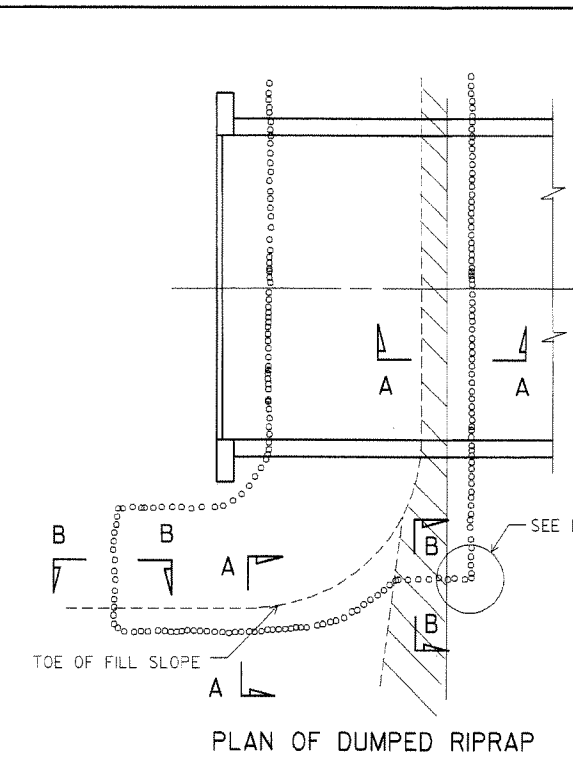
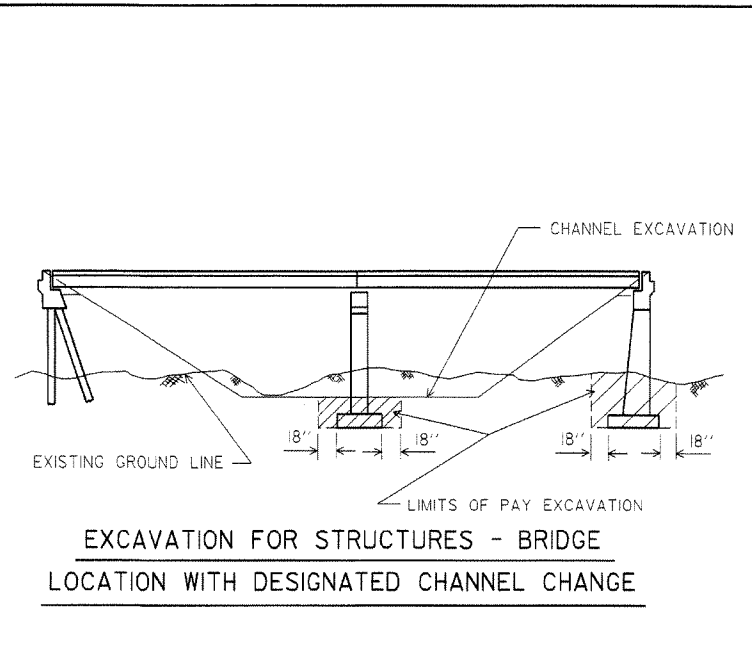
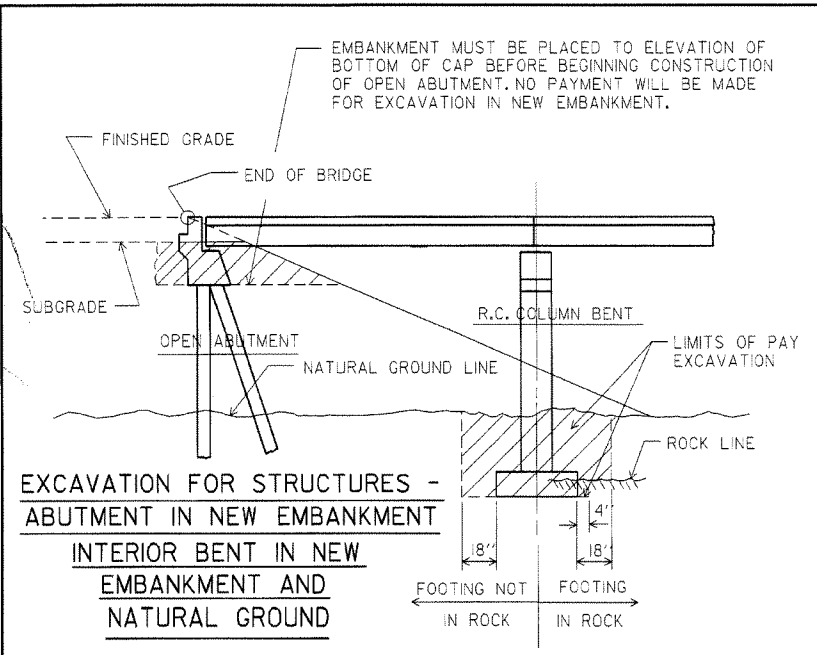
BRIDGE ENGINEER

EMBANKMENT CONSTRUCTION AND BACKFILL AT BRIDGE ENDS

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

DRAWN BY: MJT DATE: 04-10-2003 FILENAME: B1888A.STD
 CHECKED BY: CJF DATE: 04-10-2003 SCALE: NO SCALE
 DESIGNED BY: STD DATE: _____
 BRIDGE NO. _____ DRAWING NO. 1888A

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
04-10-2003				6	ARK.		41	
JOB NO.							RIP. & EXCAV. 1891F	



NOTE: USE THIS TYPE OF TOE WHEN ROCK IS ENCOUNTERED WHICH IS IN A STABLE CONDITION.

NOTE: IN LIEU OF AN AGGREGATE FILTER BLANKET, A SYNTHETIC FIBER GEOTEXTILE FABRIC COMPLYING WITH THE REQUIREMENTS OF SUBSECTION 816.02(e) MAY BE USED.

NOTE: DETAILS FOR COMPUTING EXCAVATION FOR STRUCTURES ARE INCLUDED FOR INFORMATION AS TO HOW PLAN QUANTITIES WERE CALCULATED AND FOR USE WHEN ADJUSTING QUANTITIES WHEN CHANGING FOOTING ELEVATION.

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

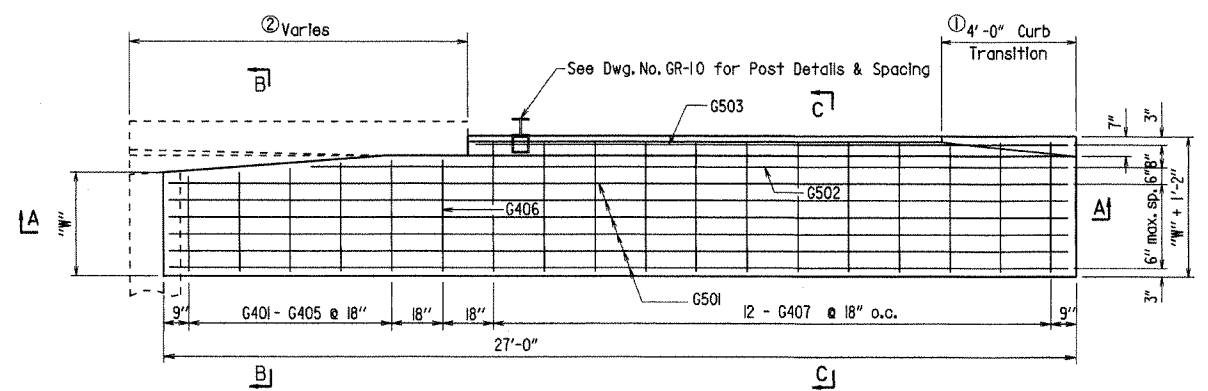
Revised and redrawn MJT 04-10-2003
Chk'd. By: CJF 04-10-2003

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

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

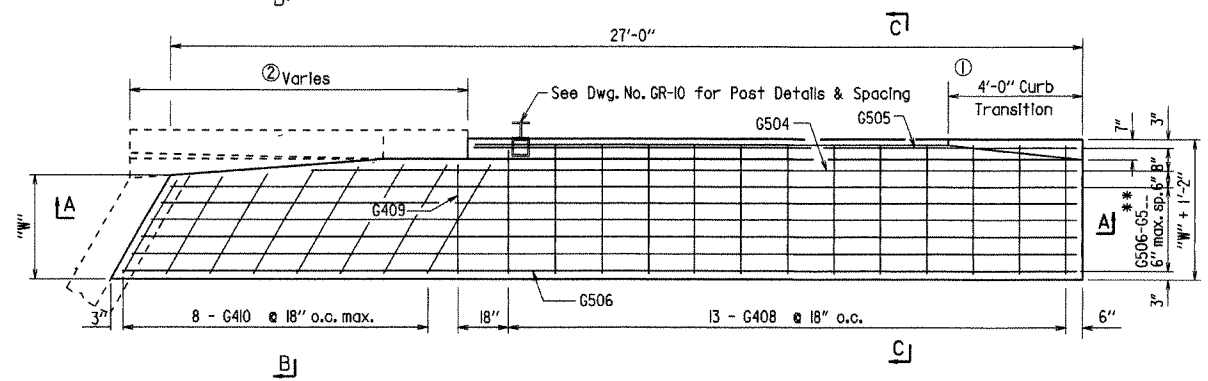
DRAWN BY: MJT DATE: 04-10-2003 FILENAME: B1891F.STD
CHECKED BY: CJF DATE: 04-10-2003 SCALE: NO SCALE
DESIGNED BY: STD. DATE: _____
BRIDGE NO. DRAWING NO. 1891F

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4-10-2003				6	ARK.		42	
07-14-2010								
JOB NO.							TYPE B GUTTERS	2016B



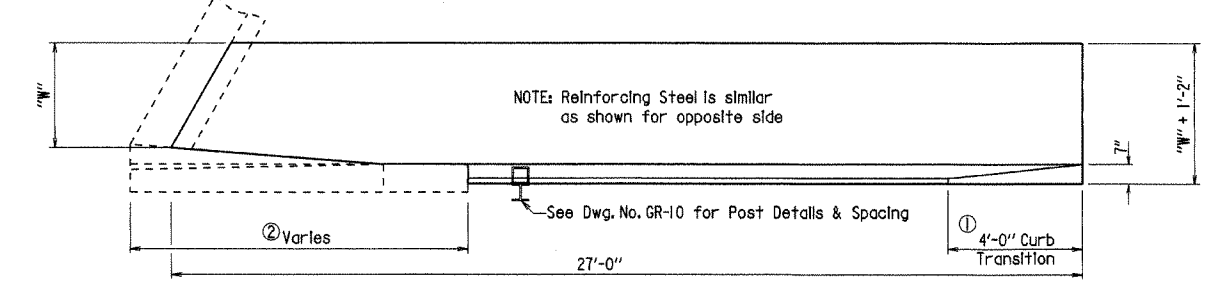
HALF PLAN OF APPROACH GUTTERS FOR SQUARE BRIDGE

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



PLAN OF APPROACH GUTTERS FOR SKEWED BRIDGE

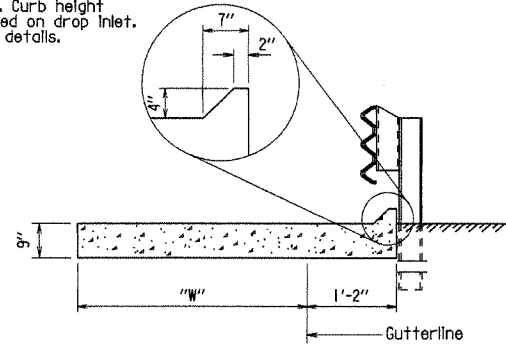
NOTE: Reinforcing Steel is similar as shown for opposite side



SECTION A - A

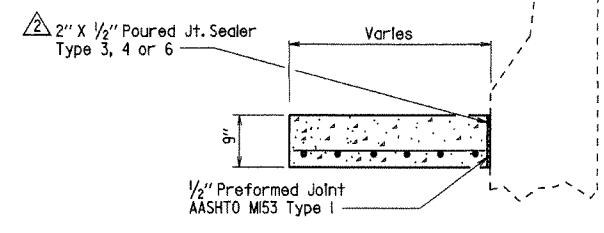
Slab Depth Varies - See Span and Bent Details

① Construct gutter curb with height-transition as shown. If drop inlet is not placed at end of gutter. Construct gutter curb full height (no height-transition) if drop inlet is placed at end of gutter. Curb height transition placed on drop inlet. See drop inlet details.



SECTION C - C

N.T.S.



SECTION B - B

N.T.S.

*** BAR LIST ②
TYPE B GUTTER

Mark	No. Required for Width "W"				Length	Square or Skewed
	3'-0"	4'-0"	6'-0"	8'-0"		
G401 - G405	1 each	1 each	1 each	1 each	"W" - 3" to "W" + 3"	Square
G406	1	1	1	1	"W" + 3"	Square
G407	12	12	12	12	"W" + 10"	Square
G408	13	13	13	13	"W" + 10"	Skewed
G409	1	1	1	1	"W" + 3"	Skewed
G410	8	8	8	8	*	Skewed
G501	6	8	12	16	26'-8"	Square
G502	1	1	1	1	22'-2"	Square
G503	1	1	1	1	17'-8"	Square
G504	1	1	1	1	*	Skewed
G505	1	1	1	1	*	Skewed
G506 - G5...*	1 each	1 each	1 each	1 each	*	Skewed

* Bar Lengths vary with Skew.
** G512 for "W" = 3'
G514 for "W" = 4'
G518 for "W" = 6'
G522 for "W" = 8'

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

QUANTITIES FOR ONE SQUARE APPROACH GUTTER

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

GENERAL NOTES

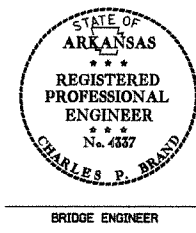
Concrete shall be Class S or Class S(AE) or mixture used for Portland Cement Concrete Pavement.
Reinforcement Steel shall conform to AASHTO M31 or M53, Grade 60 (fy = 60,000 psi).
Approach Gutters will be measured and paid for in accordance with Section 504 of the Standard Specifications.

Revised and redrawn 4-10-2003. By KDH CK. By: CJF 4-10-2003
Added joint sealer type & revised transition rail length 07-14-2010 by MJT Checked by: CJF 07-14-2010

DETAILS OF STANDARD TYPE B APPROACH GUTTERS

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

DRAWN BY: KDH DATE: 4-10-2003 FILENAME: B2016B.STD
CHECKED BY: CJF DATE: 4-10-2003 SCALE: 3/8" = 1'-0"
DESIGNED BY: STD DATE: BRIDGE NO. DRAWING NO. 2016B



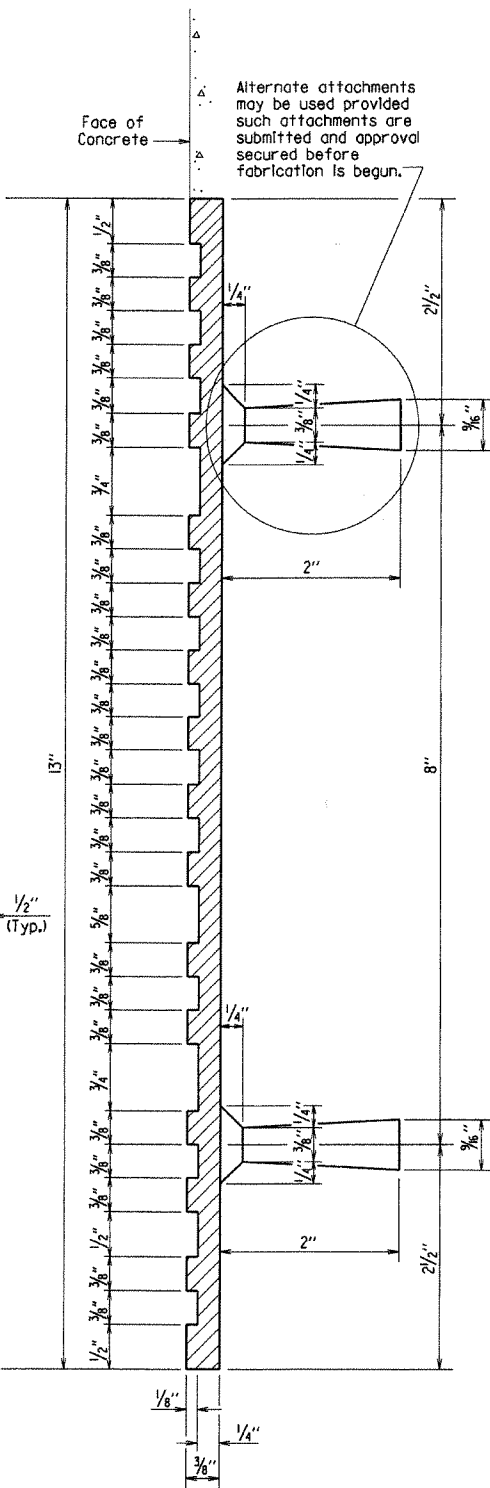
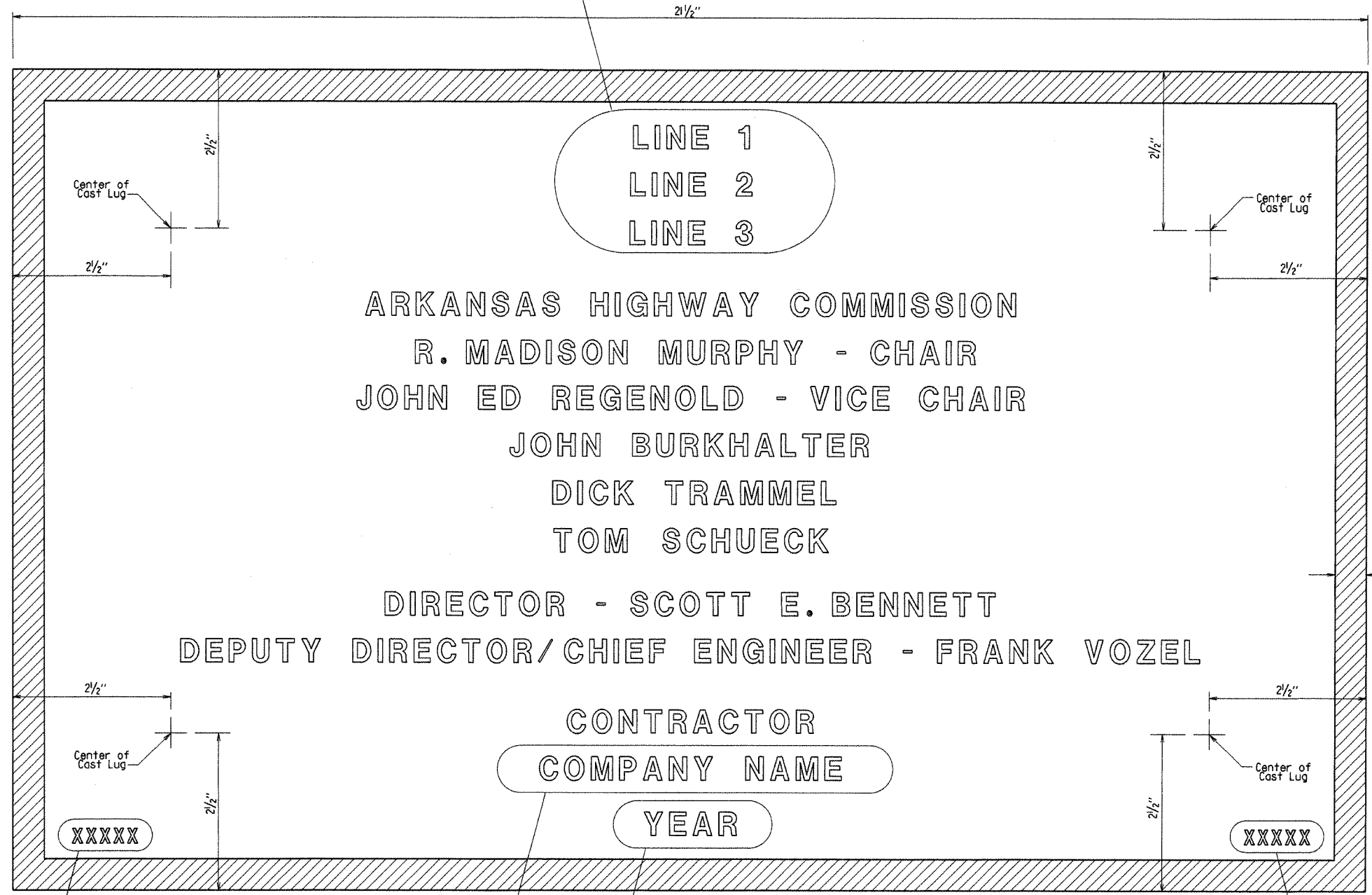
BRIDGE ENGINEER

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
9-8-11				6	ARK.		43	
							JOB NO.	
							NAME PLATE	2387

The name of the bridge as shown on the plans shall be placed on Lines 1 - 3 using 1/8" raised letters and numerals 3/8" high.

	Example 1	Example 2	Example 3	Example 4
Line 1	Red River	Southern	Saline	Highway 5
Line 2	Relief	Railroad	River	
Line 3		Overpass	Relief	

GENERAL NOTES
 Specifications: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction, (2003 Edition) with applicable Supplemental Specifications and Special Provisions.
 Name plates shall be cast bronze and shall meet the material requirements as specified in Section 812 of the Standard Specifications.
 Body of plate shall be 1/4" thick and shall include four tapering cone lugs 3/8" to 3/16" x 2" long. The border and all lettering shall be raised 1/8" above the face of plate and shall be polished.
 All lettering shall be plain gothic, square cut and not tapered. The number of plates required and the location and name on the plate for each bridge shall be as designated on the plans.



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

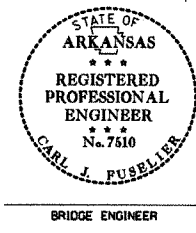
Place the Year in which Contract was awarded here using 1/8" raised numerals 3/8" high. Example: 2001

Place the name of the company awarded the construction contract here using 1/8" raised letters and numerals 3/8" high. Example: ABCD CONSTRUCTION, INC.

Place the Bridge number here using 1/8" raised letters and numerals 1/4" high. Examples: A1234 05432

Revised and Redrawn 9-8-11 KDH Checked By: CRE

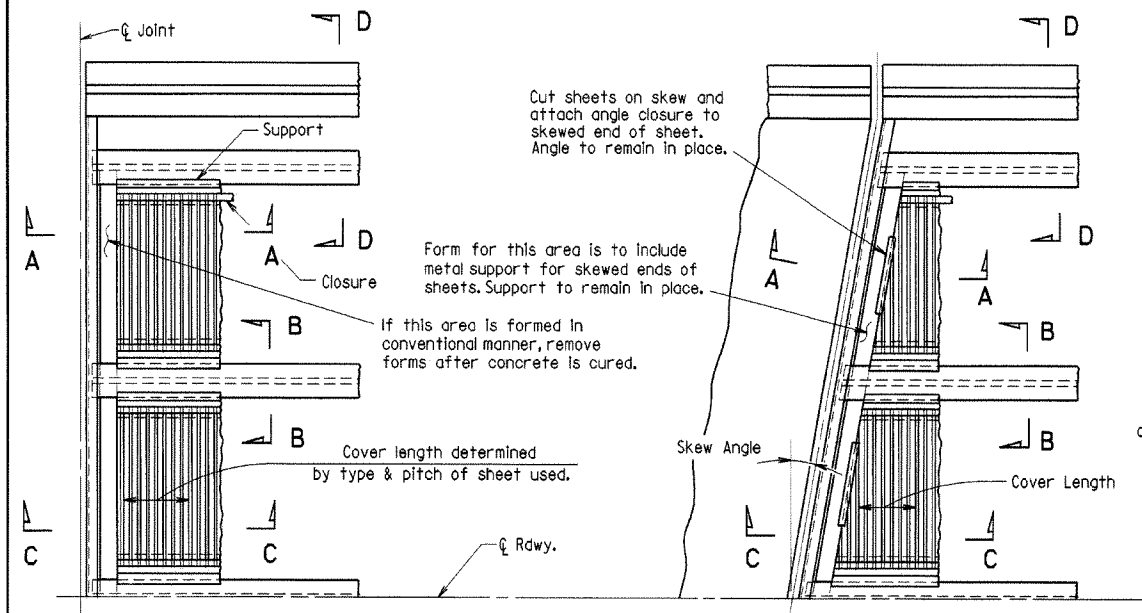
TYPICAL BRIDGE NAME PLATE



DETAILS OF STANDARD TYPE D BRIDGE NAME PLATE
 ROUTE SEC.
 ARKANSAS STATE HIGHWAY COMMISSION
 LITTLE ROCK, ARK.
 DRAWN BY: KDH DATE: 9-8-11 FILENAME: B2387.STD
 CHECKED BY: CRE DATE: 9-8-11 SCALE: 1"=0" = 1'-0" OR AS NOTED
 DESIGNED BY: STD. DATE: _____
 BRIDGE NO. DRAWING NO. 2387

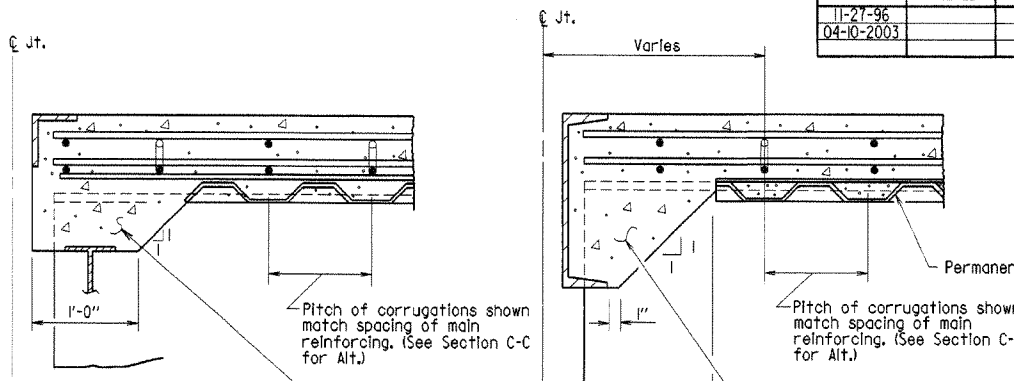
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
11-27-96						6	ARK.		44	
04-10-2003										

BR. DECK FORMS 14991



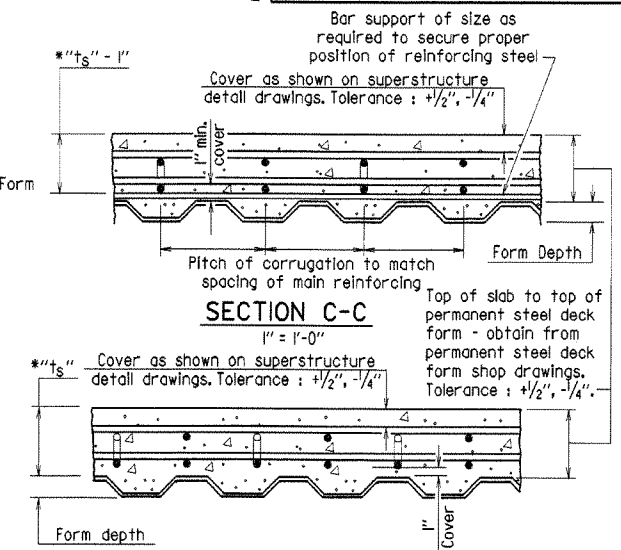
PART PLAN - SQUARE SPAN
3/8" = 1'-0"

PART PLAN - SKEWED SPAN
3/8" = 1'-0"



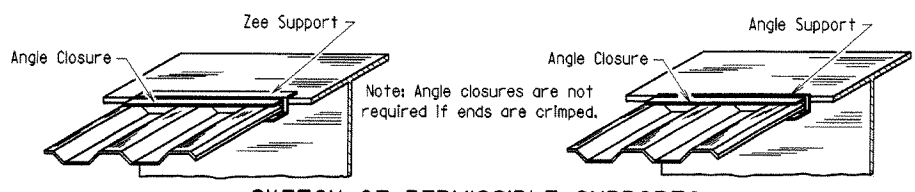
SECTION A-A
N.T.S.
(Angle at end of span)

SECTION A-A
N.T.S.
(Channel at end of span)

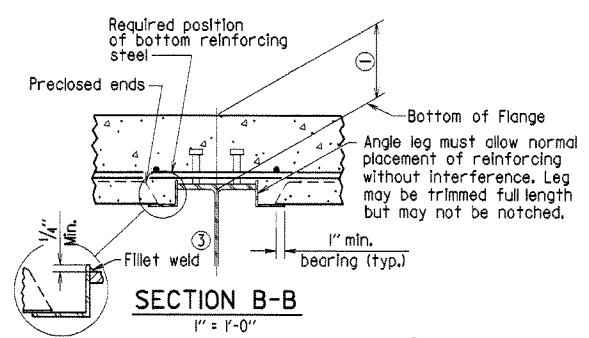


SECTION C-C
1" = 1'-0"

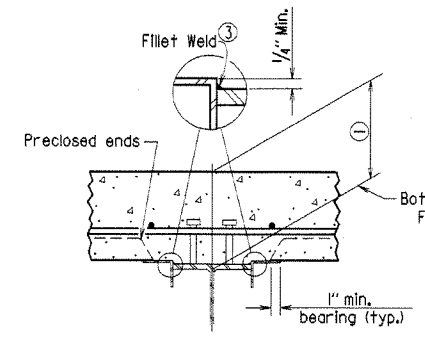
SECTION C-C - ALTERNATE
1" = 1'-0"
(Applicable when corrugations do not match spacing of main reinforcement)



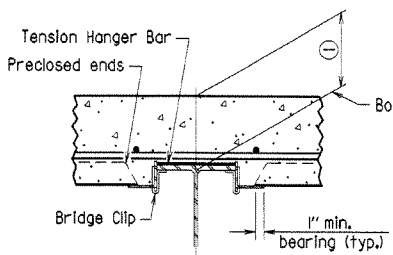
SKETCH OF PERMISSIBLE SUPPORTS
N.T.S.



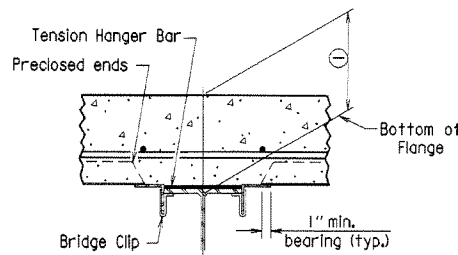
SECTION B-B
1" = 1'-0"



SECTION B-B
1" = 1'-0"



SECTION B-B
1" = 1'-0"



SECTION B-B
1" = 1'-0"

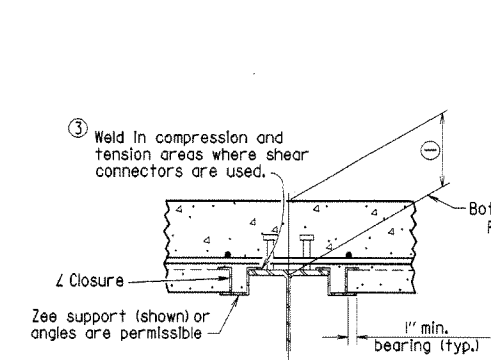
(Showing permissible support for tension flange where shear connectors are used, and for all compression flanges)

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

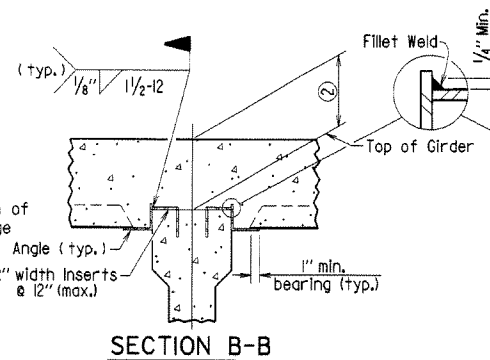
(Showing permissible support for tension flange where shear connectors are used and for all compression flanges)

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

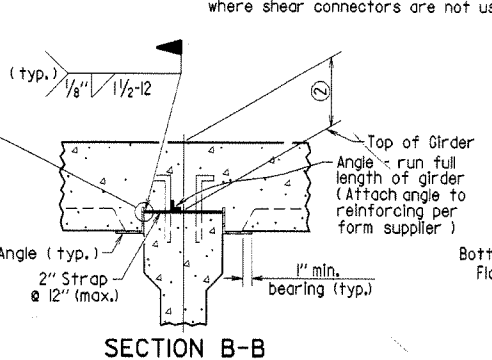
(Showing permissible support for tension flange where shear connectors are not used)



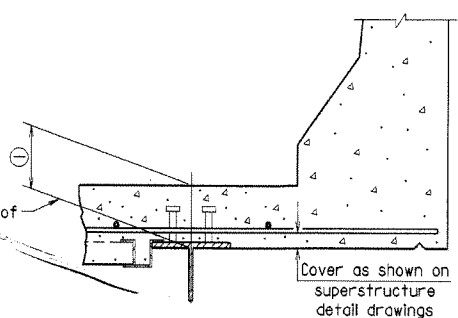
SECTION B-B
1" = 1'-0"
(Showing Z Closure)



SECTION B-B (FOR CONCRETE GIRDERS)
1" = 1'-0"
(Showing support by Insert cast in girder)



SECTION B-B (FOR CONCRETE GIRDERS)
1" = 1'-0"
(Showing support by Strap)



SECTION D-D
1" = 1'-0"

Note: Only Bottom Reinforcing is shown.

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

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

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

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

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

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

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

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

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

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

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

Revised for 2003 AHTD Construction Specifications and CPB Sed. MJT 04-10-2003
Chk'd. By: CEF 04-10-2003

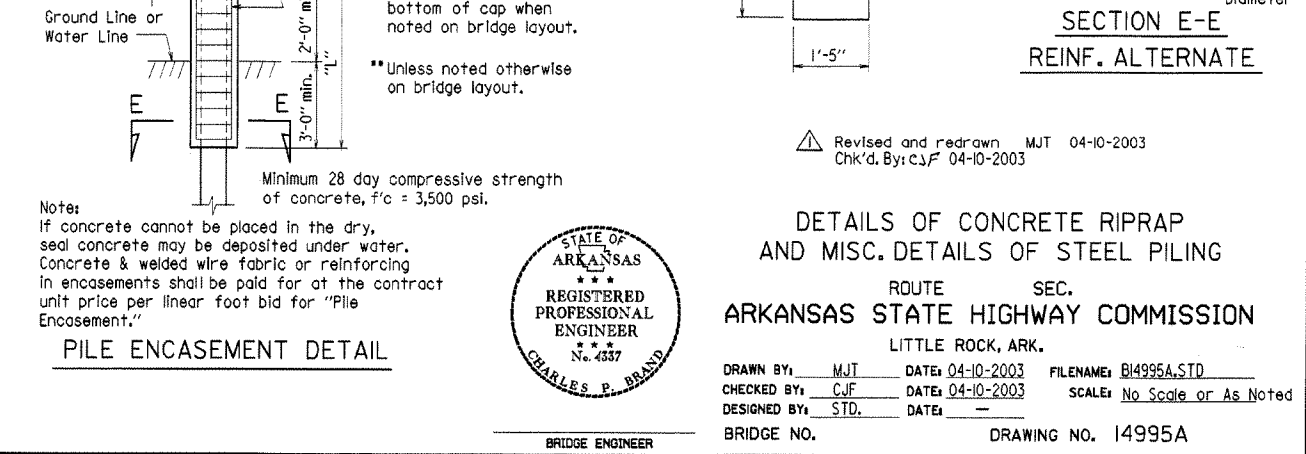
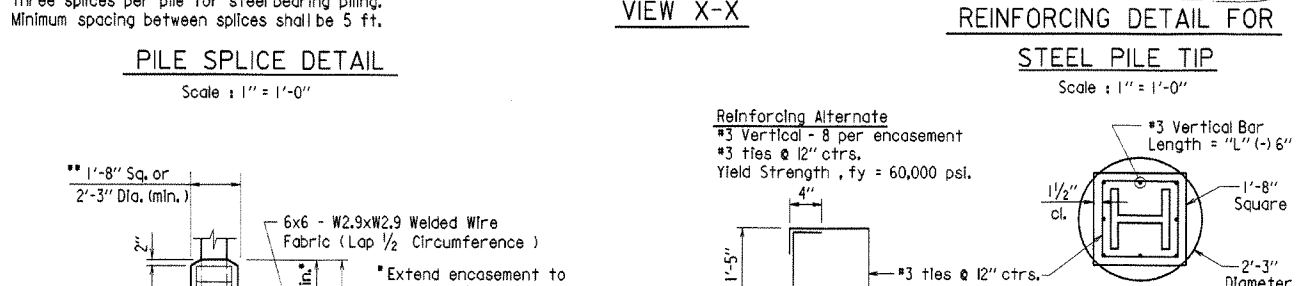
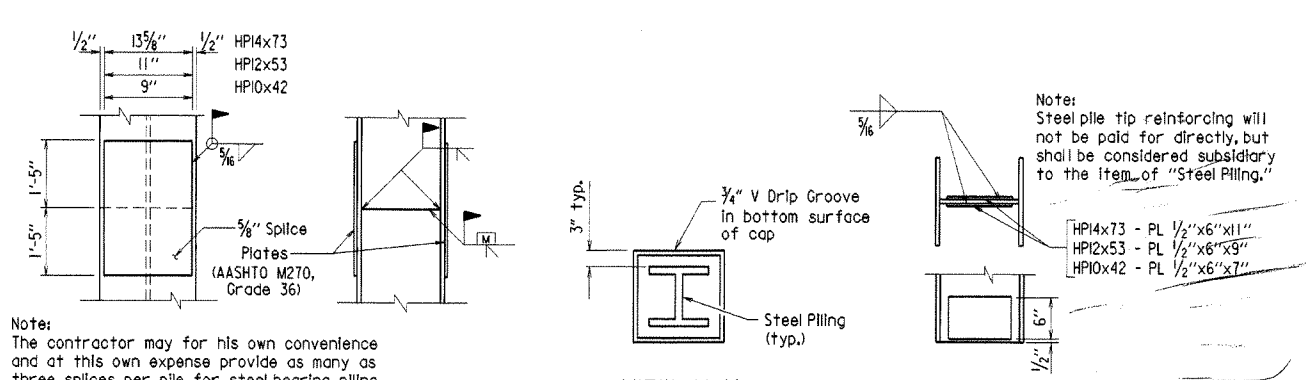
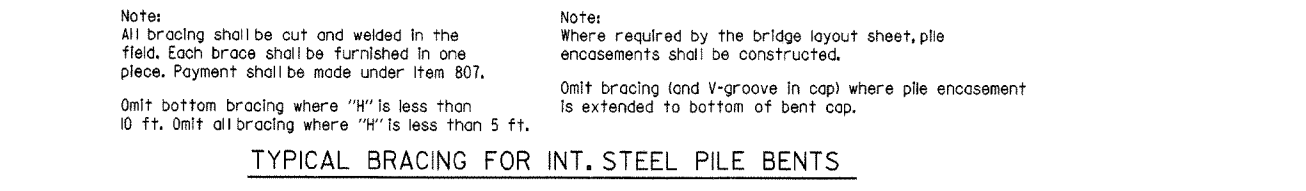
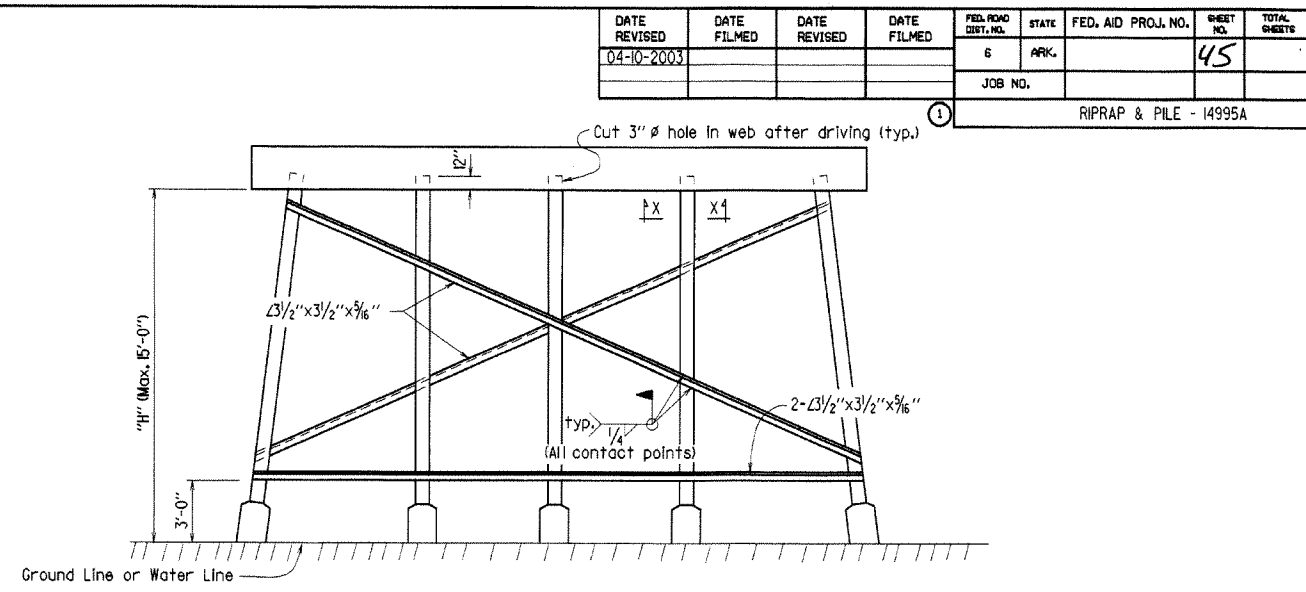
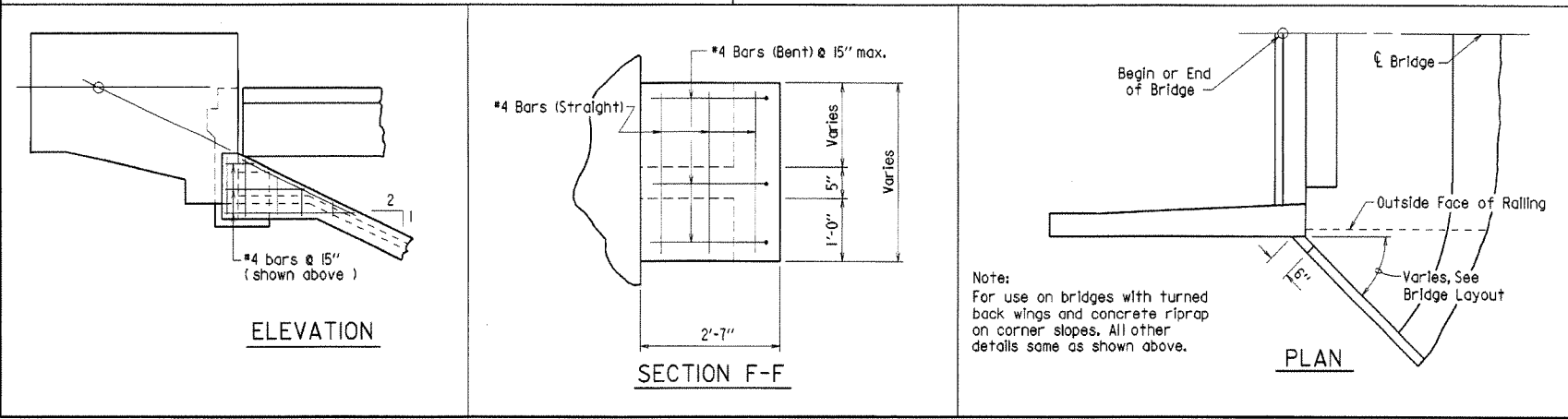
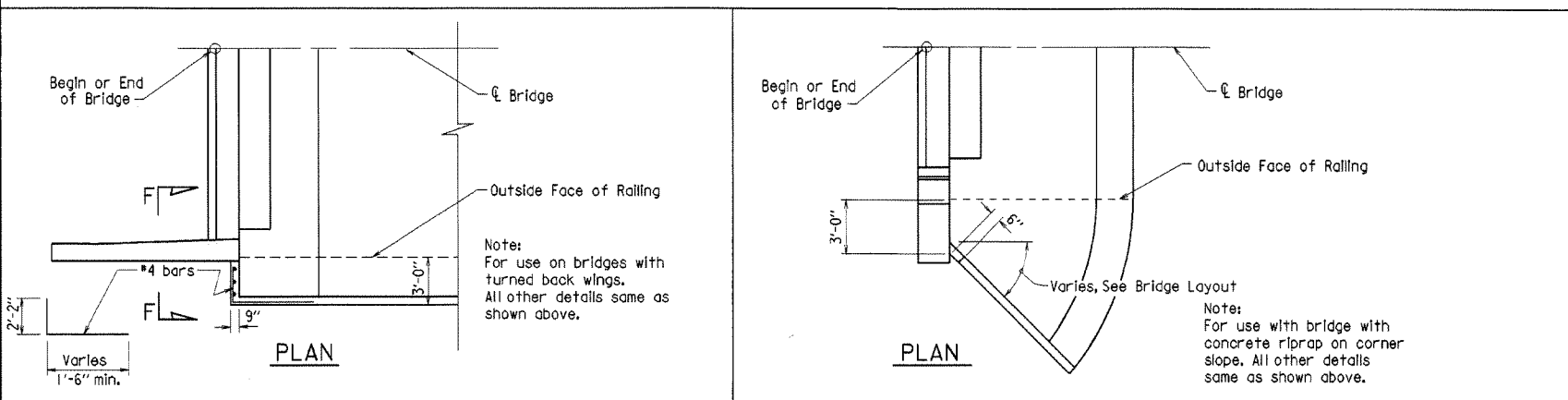
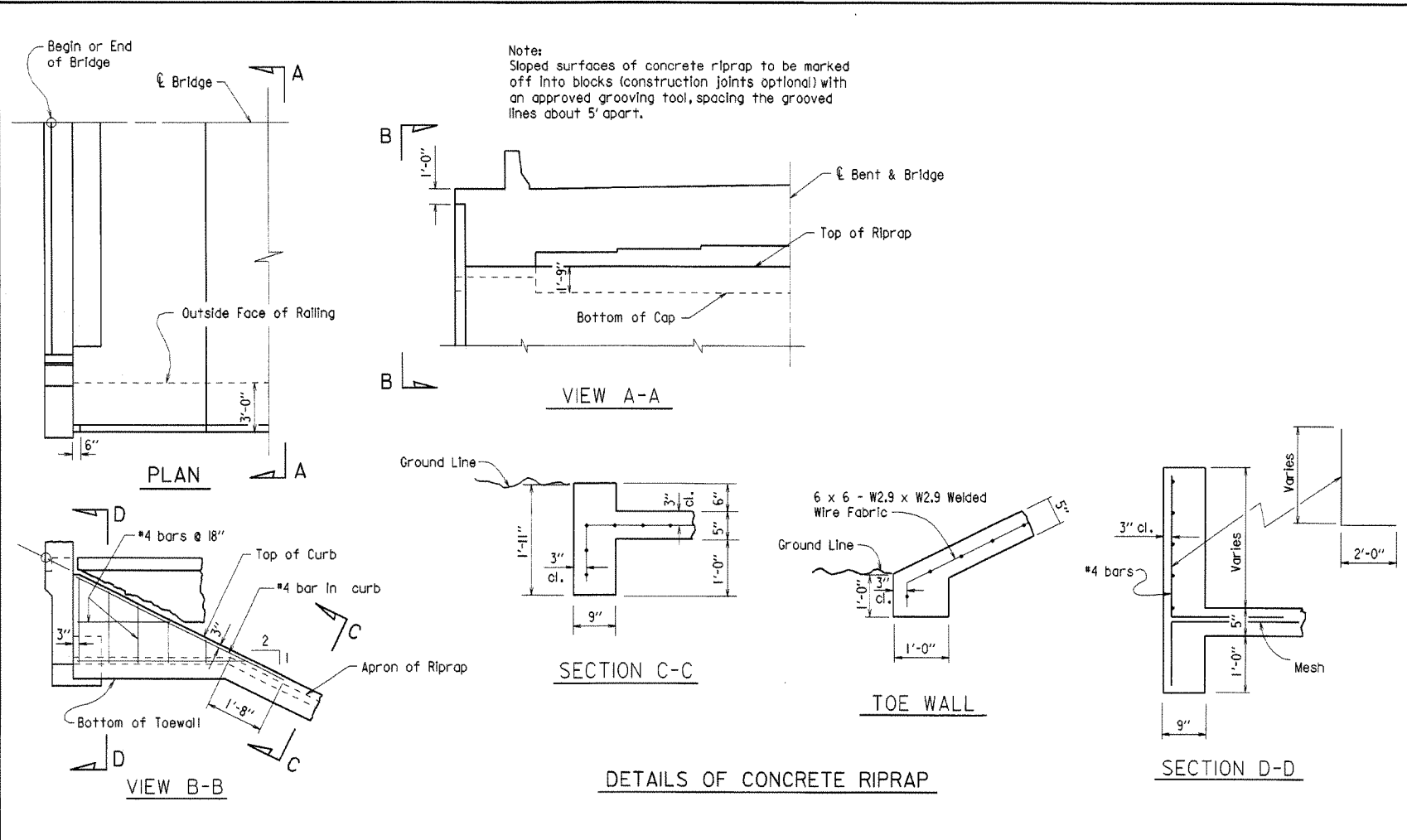
Redrawn and revised 11/27/96; MJT



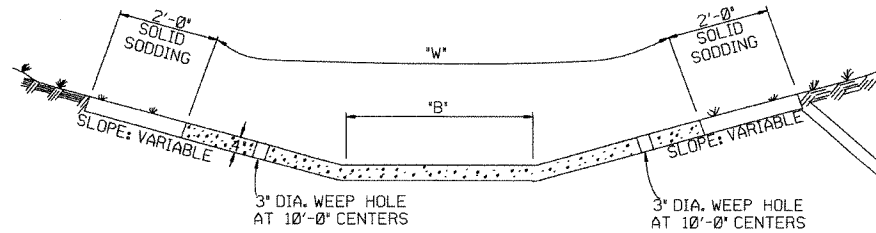
DETAILS OF PERMISSIBLE TYPE PERMANENT STEEL BRIDGE DECK FORMS FOR STEEL & CONCRETE GIRDER SPANS
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MJT DATE: 10-17-96
CHECKED BY: CPB DATE: 10-17-96 SCALE: as noted
DESIGNED BY: STD. DATE: —
BRIDGE NO. DRAWING NO. 14991

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
04-10-2003				6	ARK.		45	
JOB NO.							RIPRAP & PILE - 14995A	

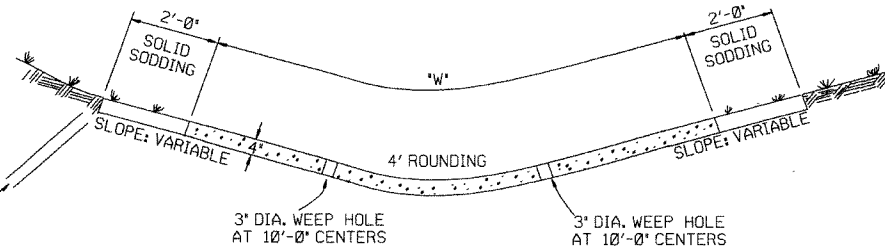


REFER TO TABULATION OF QUANTITIES FOR 'W' & 'B' DIMENSIONS



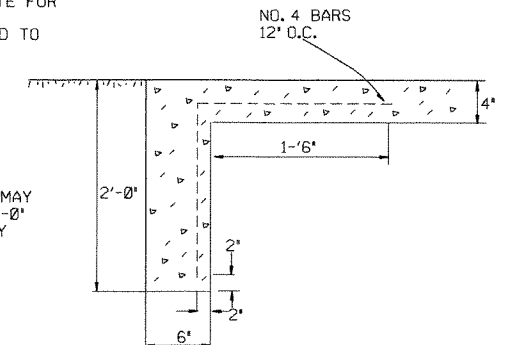
TYPE A

REFER TO TABULATION OF QUANTITIES FOR 'W' DIMENSIONS



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

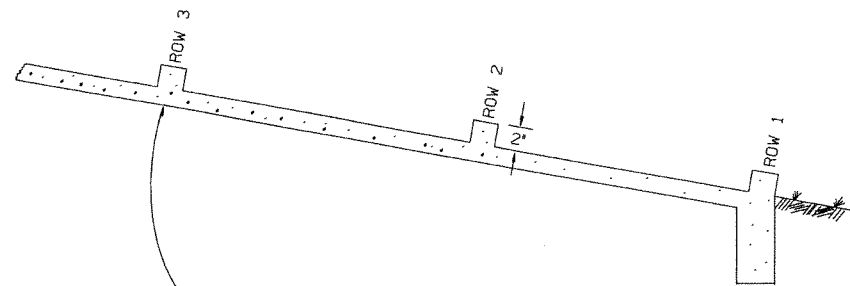
GENERAL NOTES:

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.

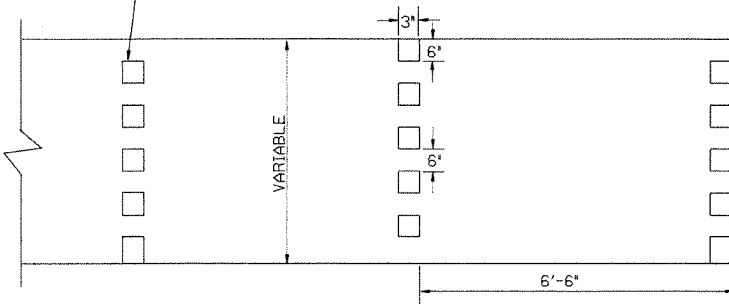
SOLID SOD ALONG DITCH PAVING TO BE PLACED WITHIN 14 DAYS OF DITCH PAVING CONSTRUCTION.

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.



NUMBER OF ELEMENTS PER ROW VARIES WITH WIDTH OF PAVING SPECIFIED

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



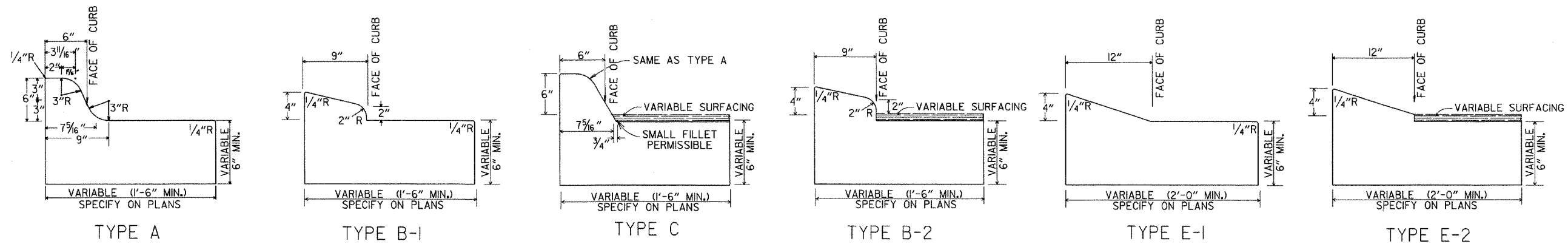
ENERGY DISSIPATORS
(NO SCALE)

DATE	REVISION	DATE FILM'D
11-17-10	ADDED GENERAL NOTE	
6-2-94	ADDED GENERAL NOTE ABOUT SOLID SODDING	
11-30-8	ELIMINATED MIN. ROWS OF ELEMENTS	111-30-89
7-15-88	REVISED DISSIPATOR NOTE	653-7-15-88
4-3-87	REVISED ENERGY DISSIPATOR	671-4-3-87
1-9-87	MODIFIED NOTE ON ENERGY DISS.	532-1-9-87
11-3-86	ADDED NOTE TO ENERGY DISS.	599-12-1-86
11-1-84	ENERGY DISSIPATOR DETAILS	508-11-1-84
11-1-84	ADDED EXCAVATION DETAILS	
10-2-72	REVISED AND REDRAWN	508-10-2-72

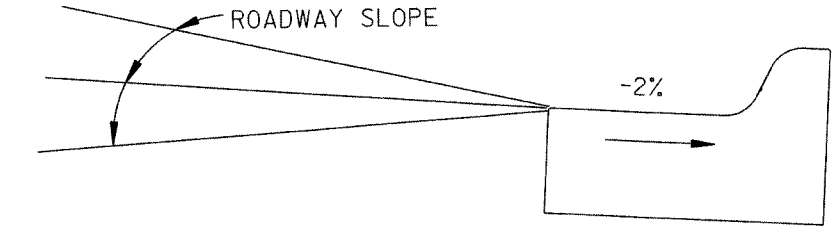
ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE DITCH PAVING

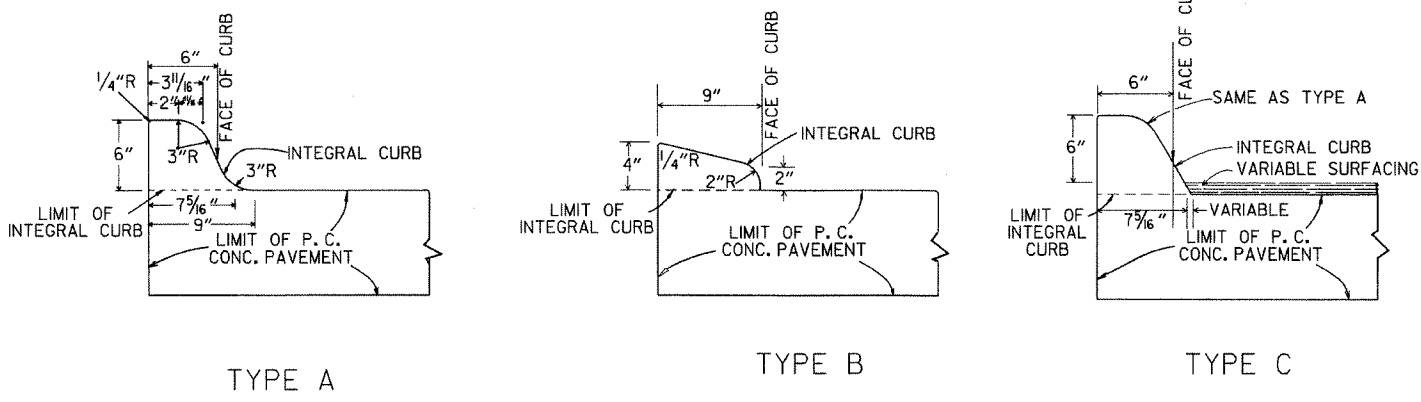
STANDARD DRAWING CDP-1



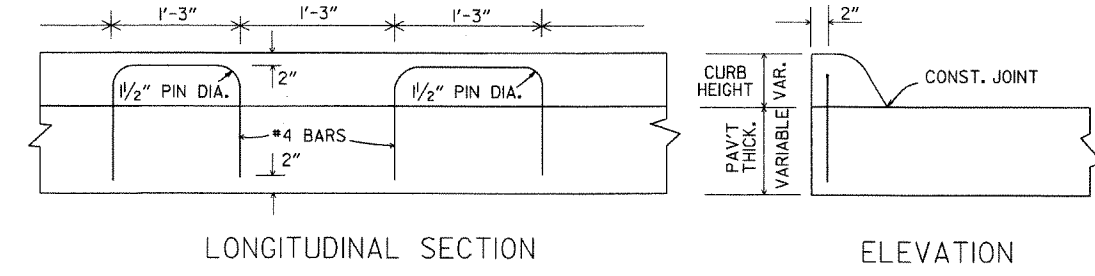
CONCRETE COMBINATION CURB AND GUTTER



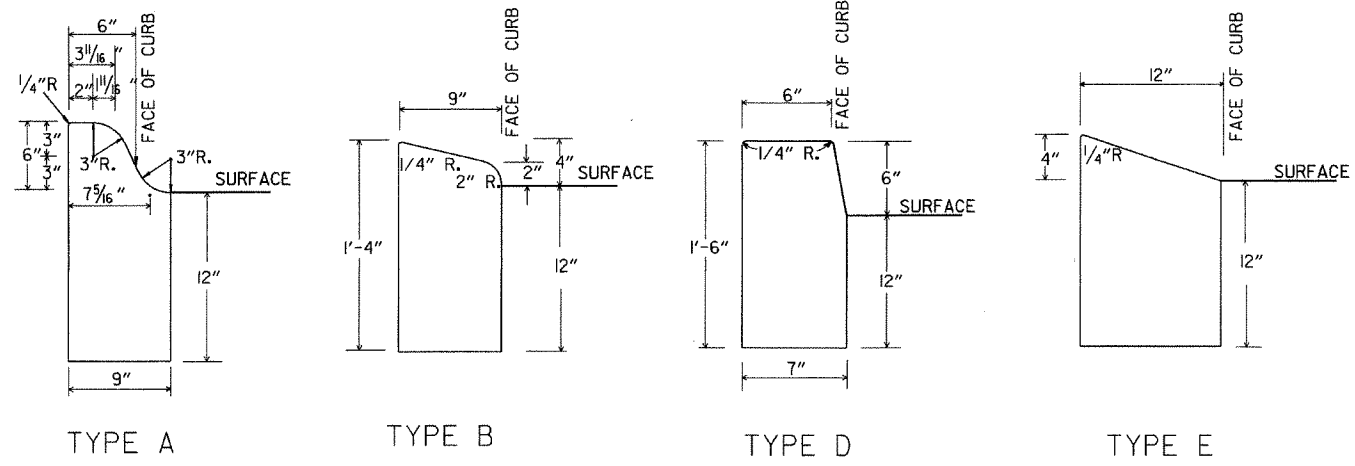
DETAIL OF GUTTER SLOPE
GUTTER SHALL BE CONSTRUCTED ON 2% SLOPE AWAY FROM ROADWAY, REGARDLESS OF ROADWAY SLOPE.



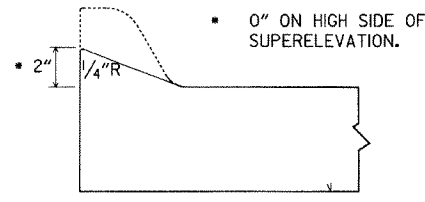
INTEGRAL CURB



ALTERNATE CONSTRUCTION METHOD FOR INTEGRAL CURB



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.

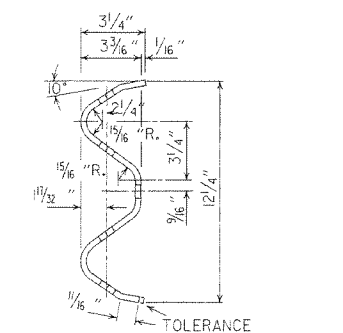
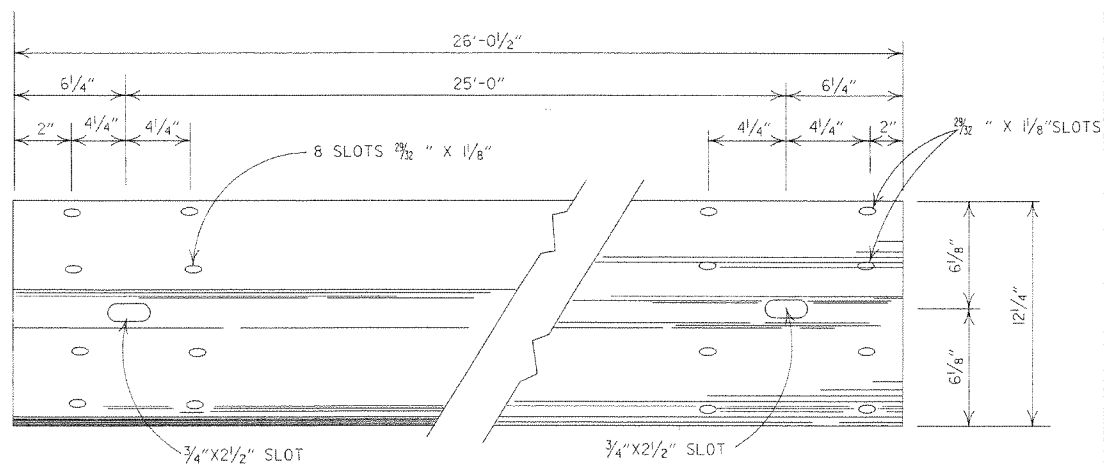
DETAILS OF MODIFIED CURB

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

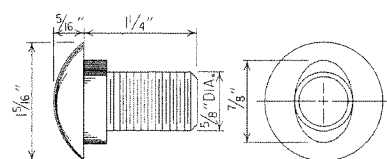
CURBING DETAILS

STANDARD DRAWING CG-1

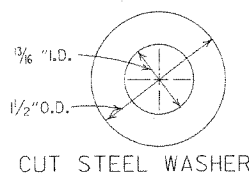


DETAILS OF W-BEAM GUARD RAIL

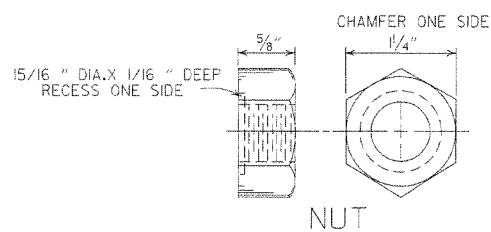
RAIL SECTION OF CLOSELY SIMILAR DIMENSIONS AND COMPARABLE STRENGTH MAY BE SUBSTITUTED IF APPROVED BY THE ENGINEER.



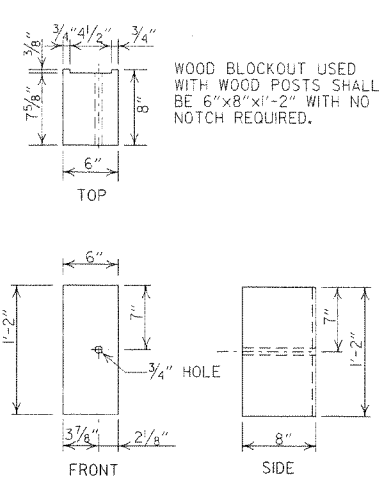
SPLICE BOLT
POST BOLT - SAME EXCEPT LENGTH



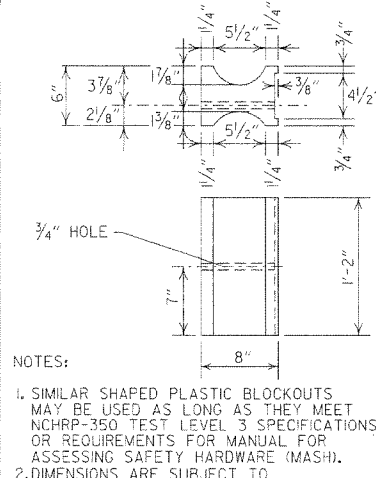
CUT STEEL WASHER



NUT

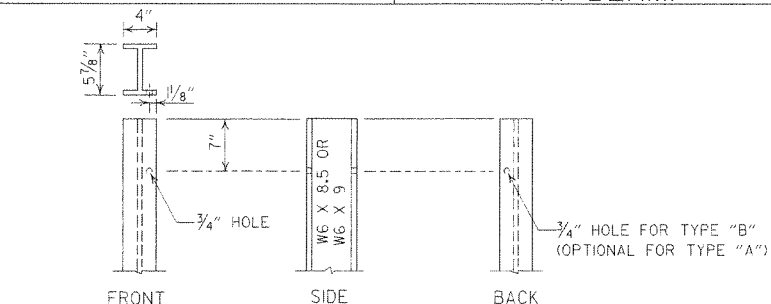


WOOD BLOCKOUT (W-BEAM)

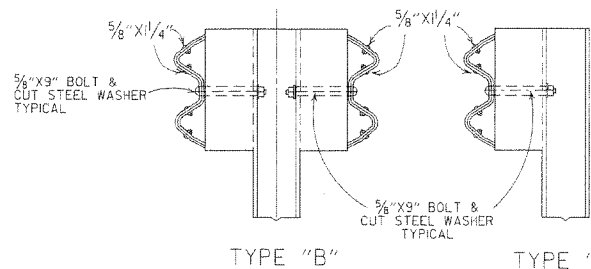


PLASTIC BLOCKOUT (W-BEAM)

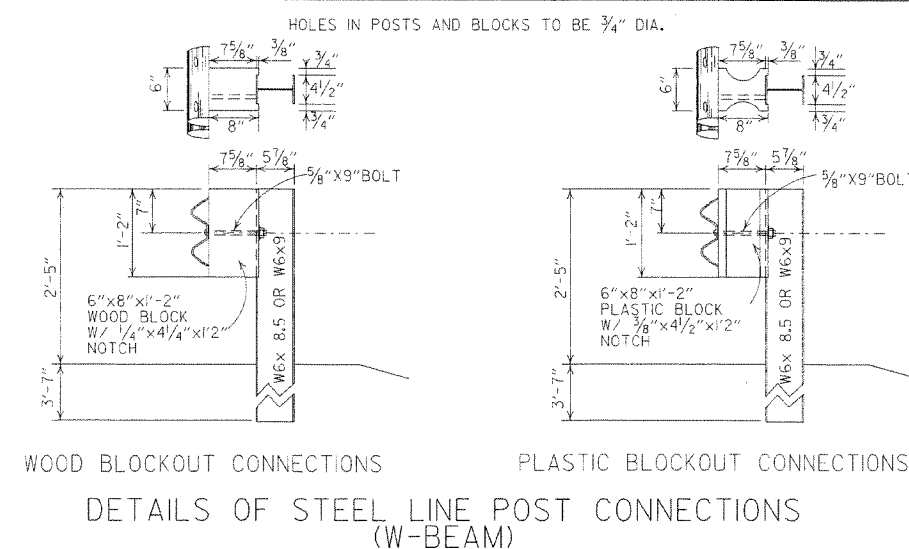
NOTES:
1. SIMILAR SHAPED PLASTIC BLOCKOUTS MAY BE USED AS LONG AS THEY MEET NCHRP-350 TEST LEVEL 3 SPECIFICATIONS OR REQUIREMENTS FOR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).
2. DIMENSIONS ARE SUBJECT TO MANUFACTURERS TOLERANCES.



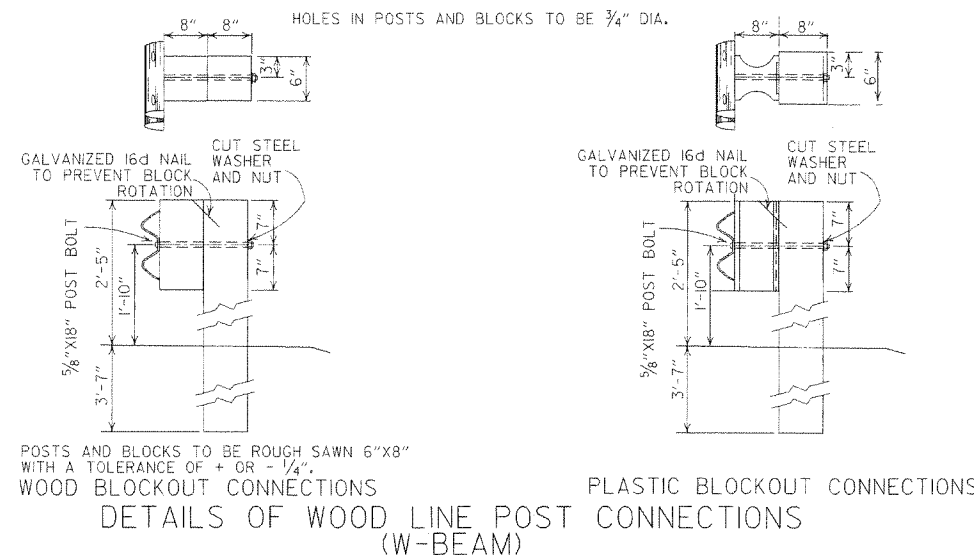
STEEL POST



DETAILS OF STEEL LINE POST CONNECTIONS (W-BEAM)



WOOD BLOCKOUT CONNECTIONS
PLASTIC BLOCKOUT CONNECTIONS
DETAILS OF STEEL LINE POST CONNECTIONS (W-BEAM)



WOOD BLOCKOUT CONNECTIONS
PLASTIC BLOCKOUT CONNECTIONS
DETAILS OF WOOD LINE POST CONNECTIONS (W-BEAM)

-GENERAL NOTES-

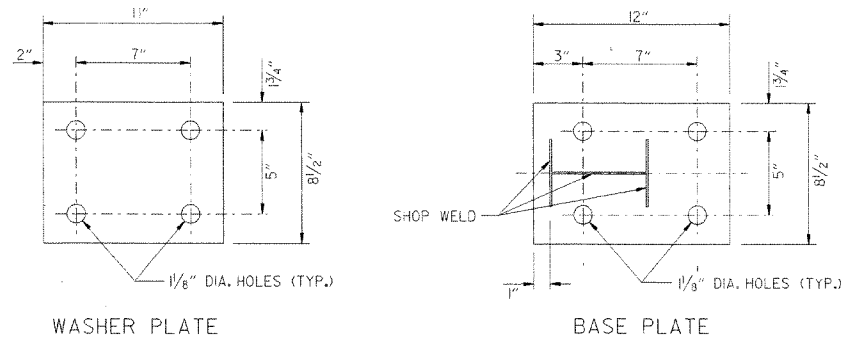
ALL BOLTS SHALL BE SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND NO MORE THAN 3/4" BEYOND IT.
WHERE W-BEAM GUARD RAIL CONTINUES, THE INTERMEDIATE SECTIONS SHALL HAVE A POST SPACING OF 6'-3" UNLESS OTHERWISE NOTED.
W-BEAM GUARD RAIL REPRESENTING INTERMEDIATE SECTIONS WILL BE MEASURED ALONG THE ROADWAY FACE FROM CENTERLINE OF POST TO CENTERLINE OF POST.
USE W-BEAM GUARD RAIL COMPONENTS OF SAME MATERIAL FOR ENTIRE JOB. FOR EXTENSIONS OR MODIFICATION OF EXISTING GUARD RAIL, W-BEAM GUARD RAIL COMPONENTS OF THE SAME TYPE AS THOSE EXISTING SHALL BE USED.
ANY BACKFILLING UNDER OR AROUND POST SHALL BE DAMP SAND THOROUGHLY TAMPED IN PLACE.
WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7F (1400 F) OR NO. 1 1350 F SOUTHERN PINE.
CONTRACTOR SHALL HAVE THE OPTION OF USING WOOD BLOCKOUTS FOR W-BEAM GUARD RAIL OR PLASTIC BLOCKOUTS, AS LONG AS BLOCKOUT USED MEETS NCHRP-350 TEST LEVEL 3 SPECIFICATIONS OR REQUIREMENTS FOR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) FOR W-BEAM GUARD RAIL.

DATE	REVISION	DATE	FILE
7-14-10	RAISED HEIGHT OF GUARD RAIL 1"		
10-15-09	ADDED REFERENCE TO MASH		
4-10-03	REVISED GENERAL NOTES		
8-22-02	REVISED DIMENSION ON WOOD & PLASTIC BLOCKOUT CONNECTIONS & ON STEEL POST		
11-16-01	REVISED WOOD BLOCKOUT & DETAILS OF WOOD LINE POST CONNECTIONS		
3-30-00	REMOVED GUARD RAIL AT BRIDGE ENDS		
1-12-00	ADDED PLASTIC BLOCKOUT		
8-12-98	REV. BLOCKOUTS TO WOOD, DELETED CONC. POST & REV. GENERAL NOTE, DELETED DET. OF GUARD RAIL REPLACE. BEHIND CURB & DET. OF POST PLACE IN SOLID ROCK, & ADDED DETAILS OF STEEL LINE POST CONN. REMOVED BACK-UP PLATE, REVISED HOLES IN STEEL POLES		
4-3-97	REMOVED "LAP IN DIRECTION OF TRAFFIC" NOTE & PLACED ARROWS ON WASHERS		
10-18-96	REVISED WOOD POST NOTE		
6-2-94	ADDED ALT. STEEL POST SIZE		
8-5-93	REVISED STEEL POST SIZE	8-5-93	
10-1-92	REDRAWN & REVISED	10-1-92	
8-15-91	REVISED WASHER NOTE	8-15-91	
8-2-90	REV. GEN. NOTE & DEPTH OF ANG. POST IN ROCK	8-2-90	
7-15-88	REVISED SECTION 3 & GENERAL NOTES		
3-4-88	REV. ANCHOR POST, ELEV. NOTES & POST IN ROCK	780-3-4-88	
10-30-87	REVISED WOOD LINE POST DETAIL	546-10-30-87	
10-9-87	REDRAWN & REVISED	802-10-9-87	

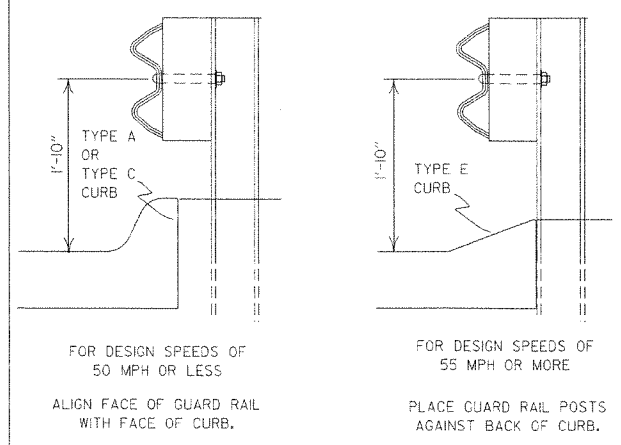
ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR-8

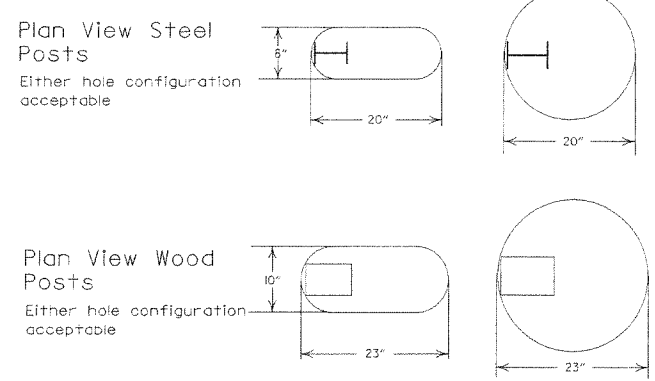
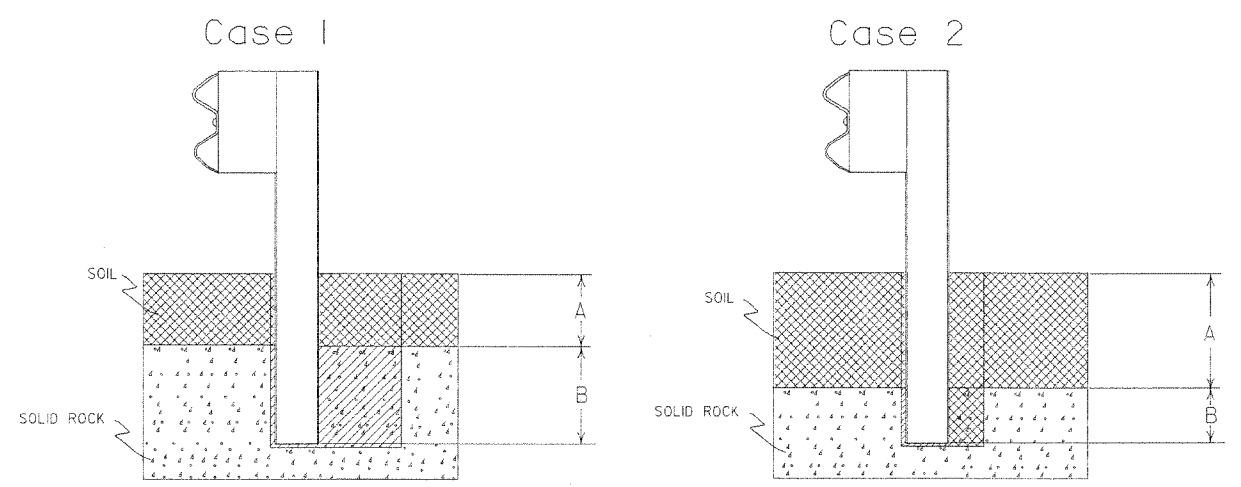


Note: Bolts, nuts, washers and plates shall be galvanized in accordance with Section 807 of the Standard Specifications.



DETAIL OF GUARD RAIL PLACEMENT BEHIND CURB (W-BEAM)

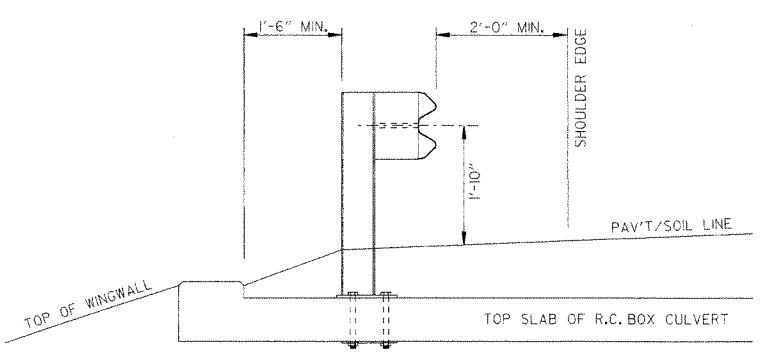
FOR DESIGN SPEEDS OF 50 MPH OR LESS ALL CURB FACES, AS SHOWN ON STD. DRWG. CG-1, MAY BE USED. FOR DESIGN SPEEDS OF 55 MPH OR MORE TYPE "E" CURB FACE SHALL BE USED.



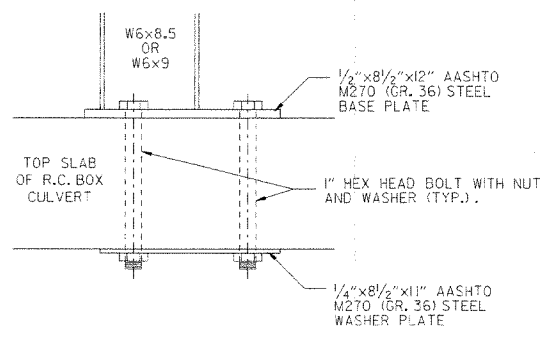
Notes: For overlying soil depths (A) ranging from 0 to 18", the depth of required drilling (B) is equal to 24".
 Zone A: Backfill according to Section 617.03(a).
 Zone B: Backfill hole in 6" lifts with material meeting the requirements of Section 802.02(c) - Alternate gradation, Compact to 95% maximum dry density per ASTM D-698.

Notes: For overlying soil depths (A) ranging from 18" to 44", the depth of required drilling (B) is equal to either 12" or 44" minus the depth of soil whichever is less.
 Zone A & B: Backfill according to Section 617.03(a).

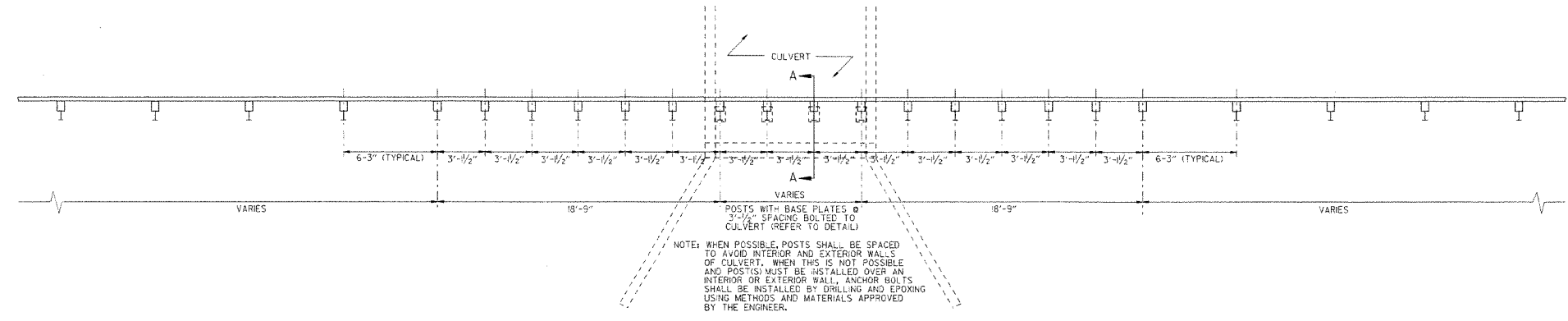
DETAIL OF POST PLACEMENT IN SOLID ROCK (W-BEAM)



SECTION A-A



DETAIL OF CONNECTION



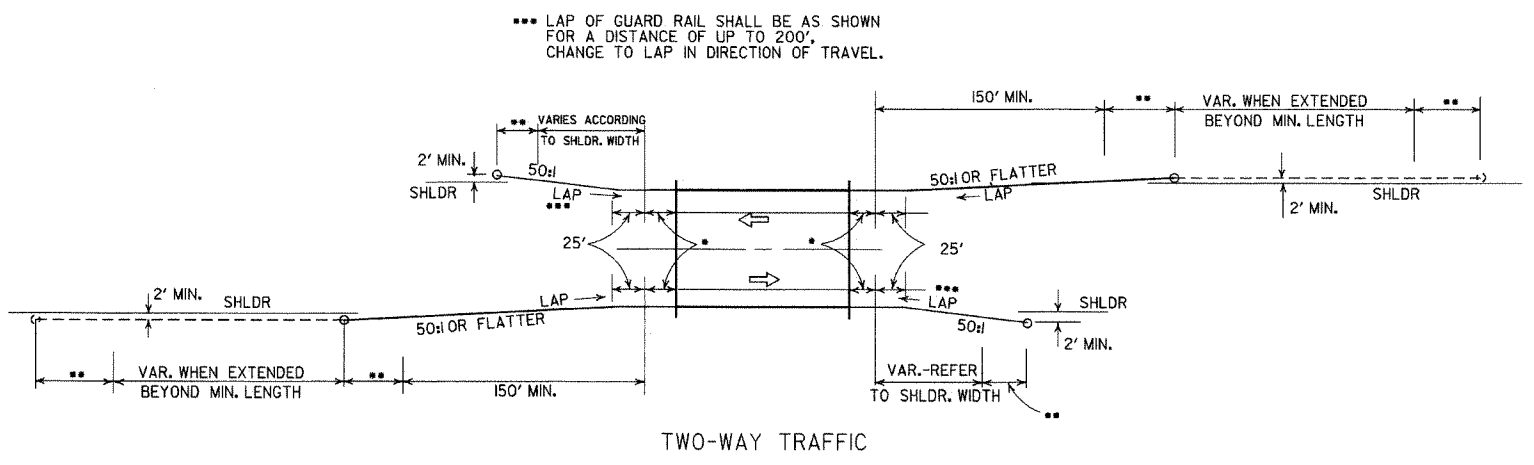
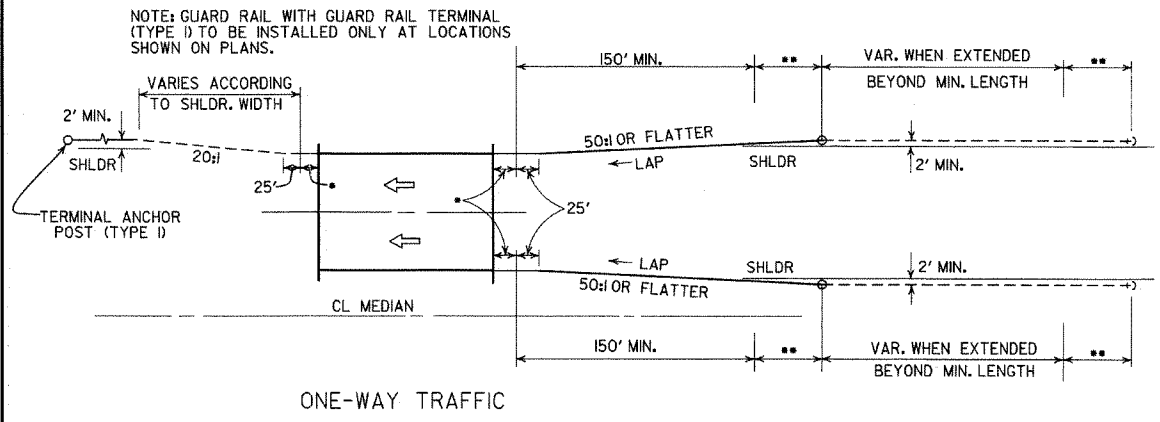
PLAN LAYOUT OF TYPE A GUARD RAIL AT LOW-FILL CULVERTS
 NOTE: THIS DETAIL IS TO BE USED ONLY WHEN THE COVER OVER THE CULVERT DOES NOT PERMIT FULL EMBEDMENT OF GUARD RAIL POSTS AS SHOWN ON STD. DRWG. GR-8.

7-14-10	RAISED HEIGHT OF GUARD RAIL 1"	
4-12-07	REVISED DETAIL OF GUARD RAIL PLACEMENT BEHIND CURB	
11-10-05	ADDED GUARD RAIL PLACEMENT BEHIND CURB; REVISED DETAIL OF CONNECTION	
11-18-04	REVISED POST PLACEMENT IN ROCK & CULVERT CONNECTION DETAILS, ADDED DETAIL FOR GUARD RAIL PLACEMENT AT LOW-FILL CULVERTS	
3-30-00	REMOVED CONCRETE INSERT ANCHOR	
8-12-98	CHANGED STEEL SPACER BLOCK TO WOOD BLOCKOUT, ADD. DET. OF GUARD RAIL CONNECTION TO R.C. BOX CULV'T. DELETED DET. OF STEEL LINE POST CONN. & ADDED DET. OF GUARD RAIL PLACE. BEHIND CURB & DET. OF POST PLACE. IN SOLID ROCK	
4-3-96	PLACED ARROWS AT CUT STEEL WASHERS	4-3-96
10-18-96	REV. ASTM REF. TO AASHTO	
1-22-95	ADDED OPTIONAL HOLES	
6-2-94	REVISED ALTERNATE POST SIZE	
8-5-93	REVISED STEEL POST SIZE	
10-1-92	REDRAWN & REVISED	10-1-92
8-2-90	DEL. WASHER ON ANCHOR ASSEMBLY	8-2-90
7-15-88	CONFORMED TO 1988 SPECS	
3-4-88	REVISED ANCHOR NOTE	
10-30-87	REVISED ANCHOR ASSEMBLY	10-30-87
10-30-87	REVISED PLACEMENT BEHIND CURB	547-10-30-87
10-9-87	REDRAWN & REVISED	803-10-9-87
DATE	REVISION	DATE FILM

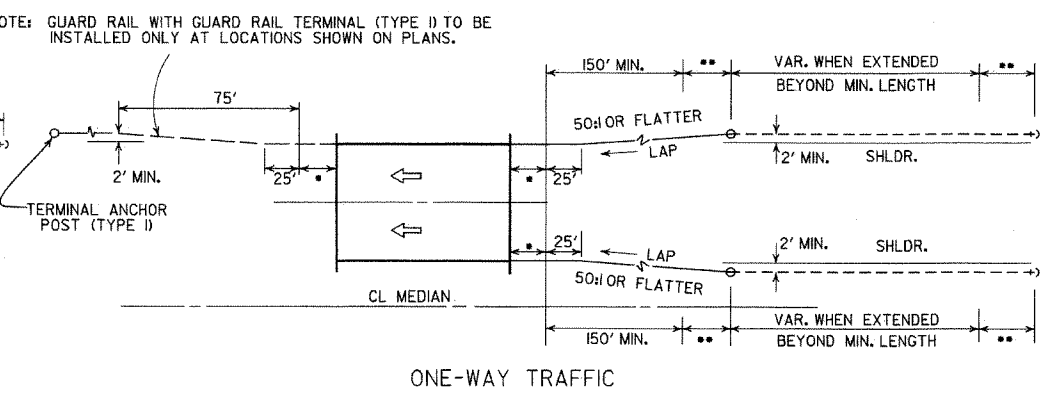
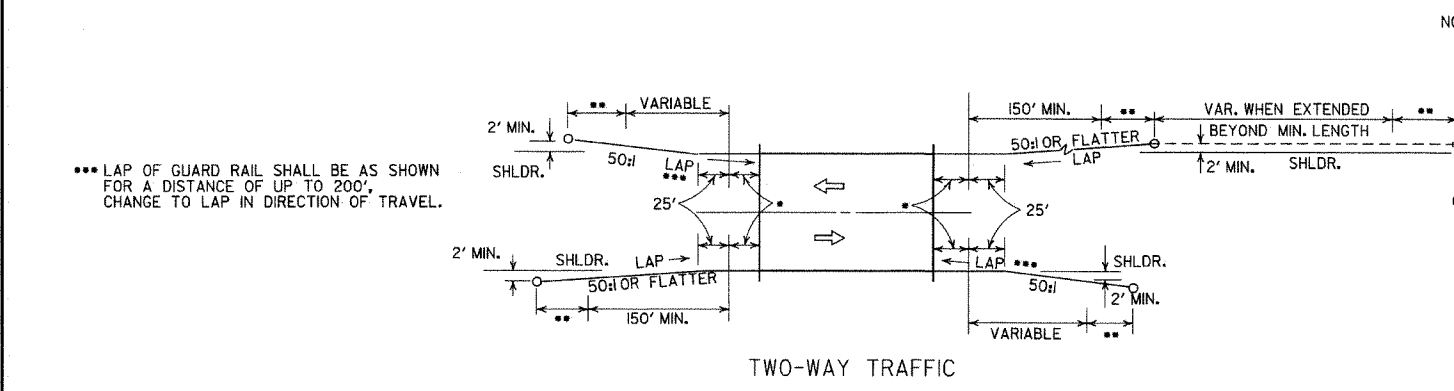
ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

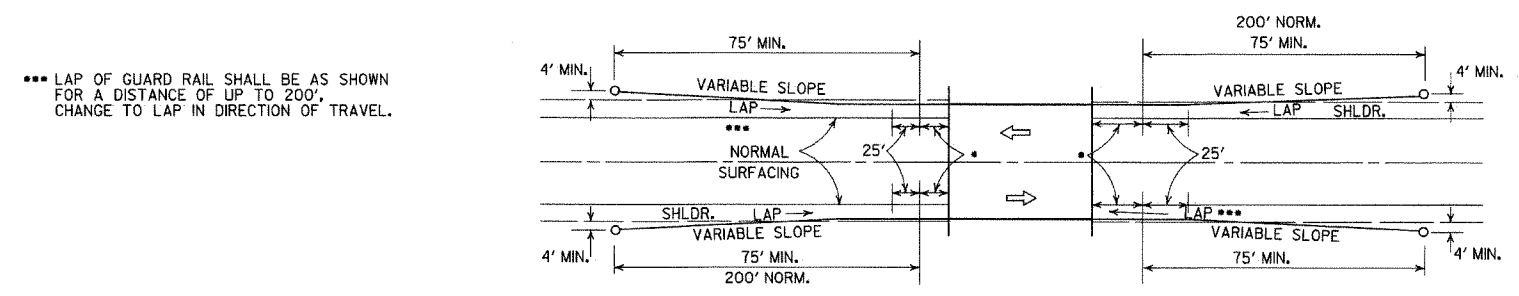
STANDARD DRAWING GR-8A



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



METHOD OF INSTALLATION OF GUARD RAIL AT FULL SHOULDER WIDTH BRIDGES USING GUARD RAIL TERMINAL (TYPE 2)

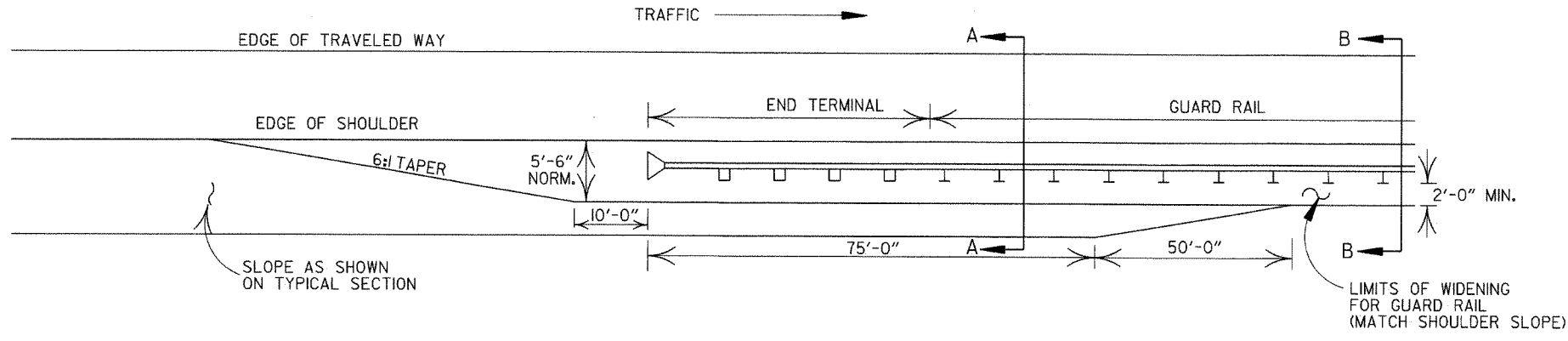


LEGEND

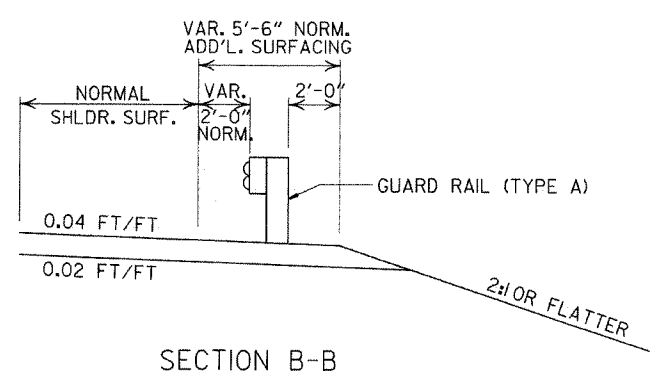
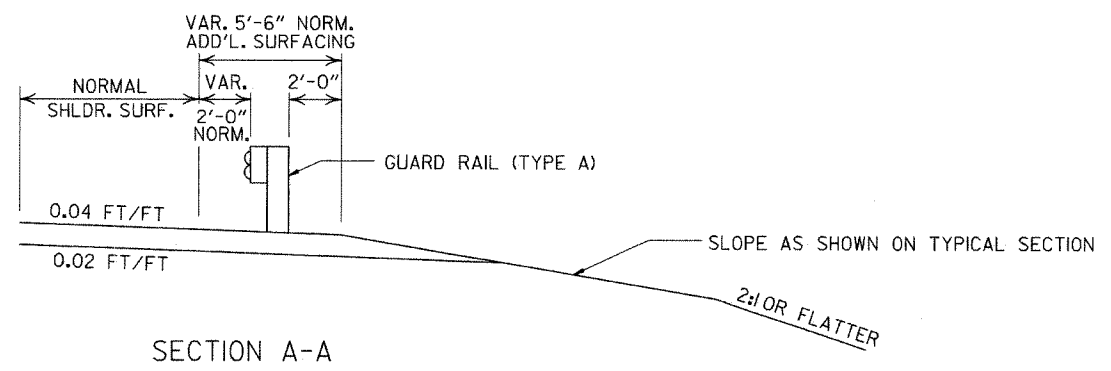
- THRE BEAM GUARD RAIL TERMINAL
- GUARD RAIL TERMINAL (TYPE 2)

METHOD OF INSTALLATION OF GUARD RAIL USING GUARD RAIL TERMINAL (TYPE 1) (FULL SHOULDER WIDTH OR LESS BRIDGES)

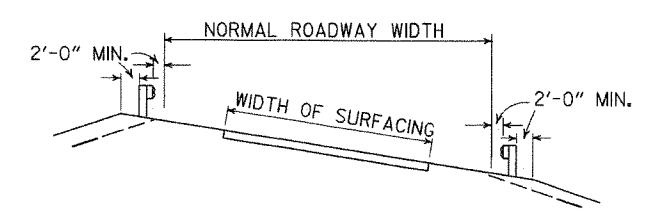
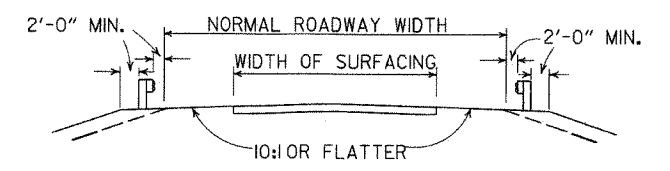
ARKANSAS STATE HIGHWAY COMMISSION			
GUARD RAIL DETAILS			
4-17-08	REVISED LAYOUTS		
11-10-05	REMOVED GUARD RAIL NOTES AND DETAILS		
11-16-01	DELETED NOTE-METHOD OF INSTALLATION OF GUARD RAIL USING GUARD RAIL TERM. (TY. 1)		
1-12-00	ADDED CONSTRUCTION NOTE	1-12-00	
6-26-97	REVISED LAYOUT		
10-1-92	REDRAWN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



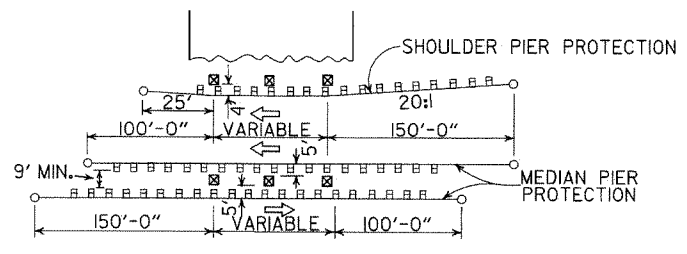
NOTE: NORMAL SECTION TO BE WIDENED APPROX. 5'-6" EACH SIDE TO SUPPORT GUARD RAIL.



DETAILS OF WIDENING FOR GUARD RAIL

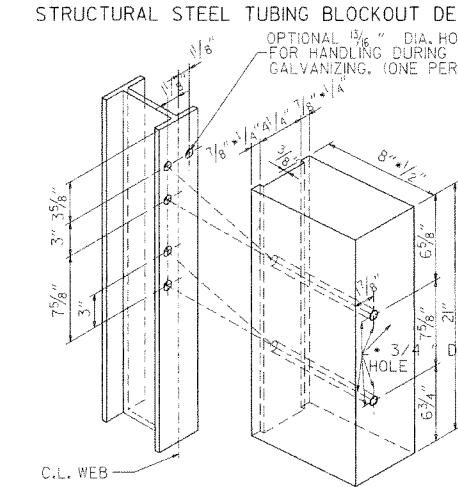
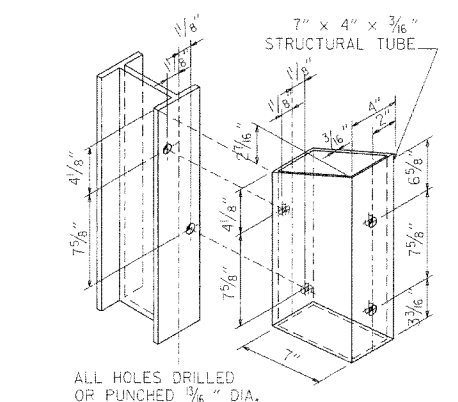
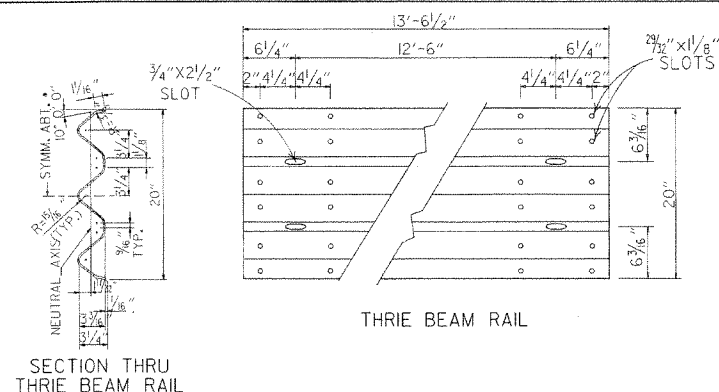


DETAILS SHOWING POSITION OF GUARD RAIL ON HIGHWAY

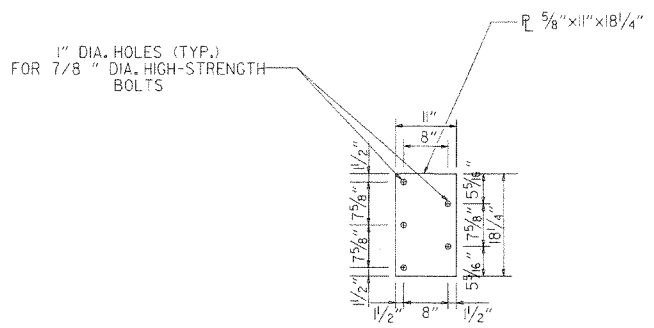
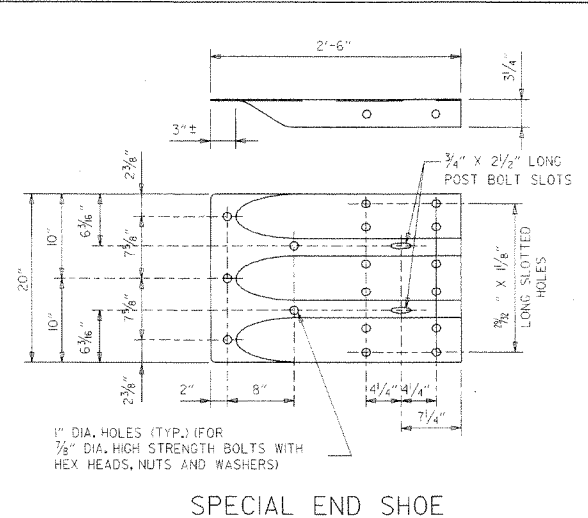


METHOD OF INSTALLATION OF GUARD RAIL AT FIXED OBSTACLE

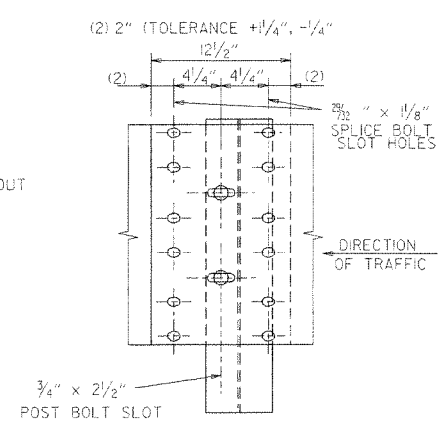
ARKANSAS STATE HIGHWAY COMMISSION			
GUARD RAIL DETAILS			
STANDARD DRAWING GR-9A			
4-17-08	MINOR REVISION		
11-10-05	DRAWN		
DATE	REVISION	DATE	FILM



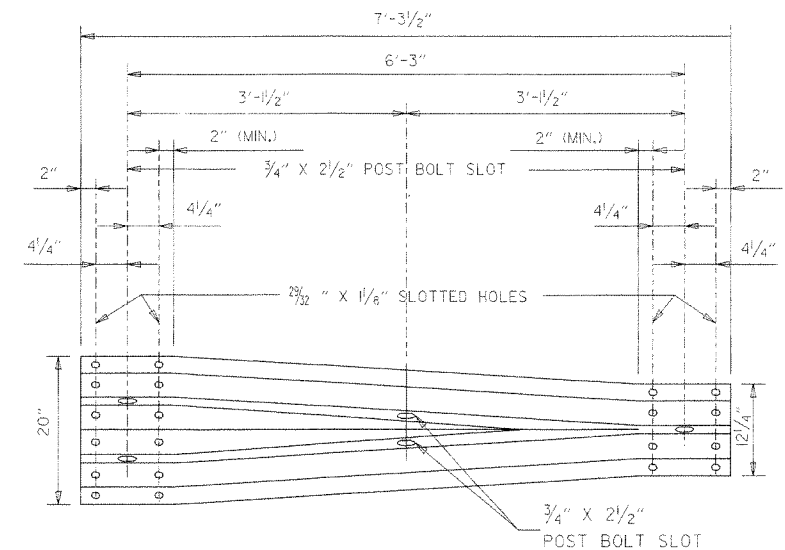
NOTE: BLOCKS SHALL BE THE SAME TYPE THROUGHOUT THE PROJECT LIMITS.



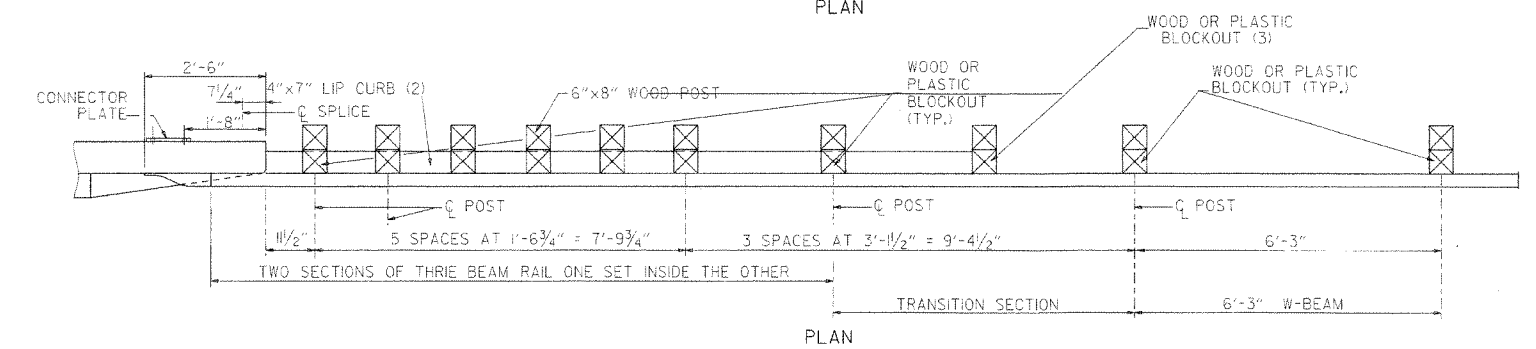
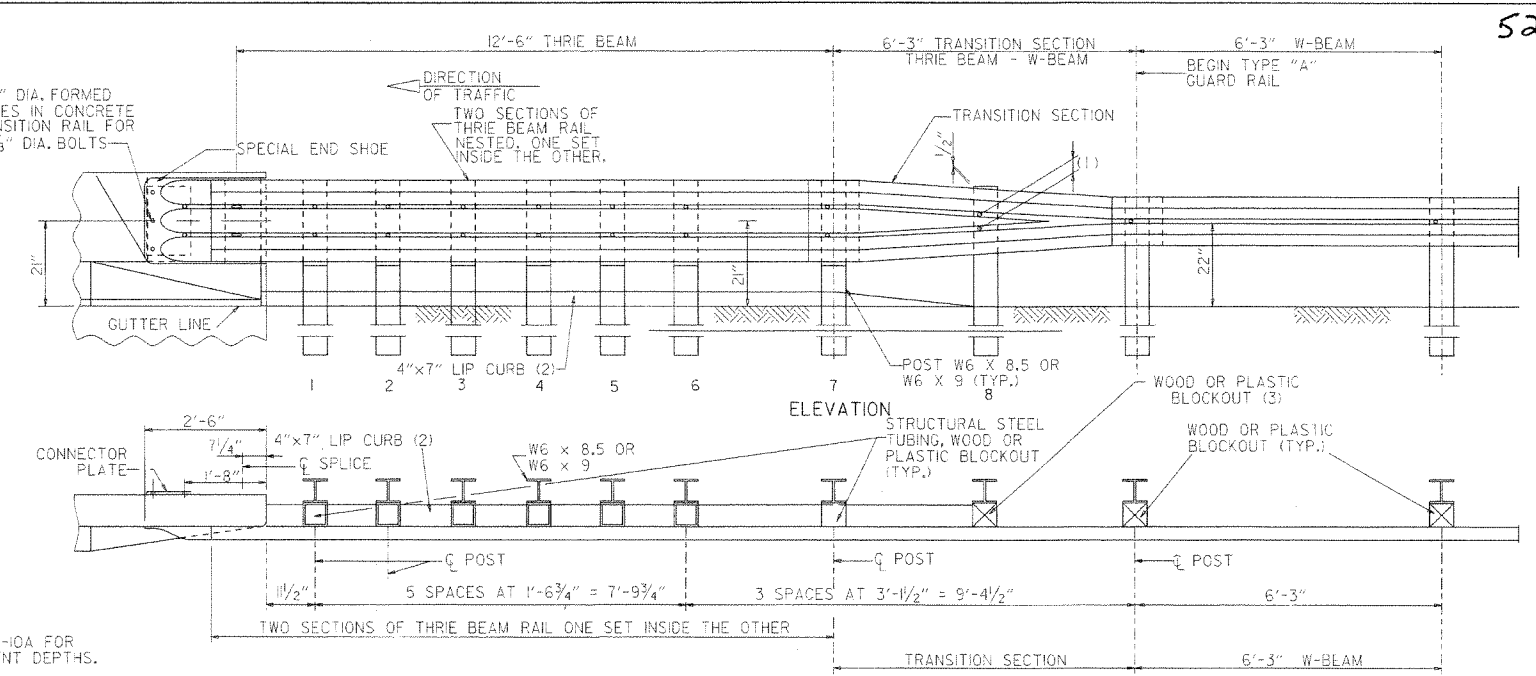
CONNECTOR PLATE SHALL BE AASHTO M270, GR. 36 AND SHALL BE GALVANIZED AFTER FABRICATION. GALVANIZING SHALL CONFORM TO SUBSECTION 807.19 OF THE STANDARD SPECIFICATIONS. CONNECTOR PLATE TO BE BOLTED TO SPECIAL END SHOE USING 7/8\"/>



THRIE BEAM RAIL SPLICE AT POST



TRANSITION SECTION



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

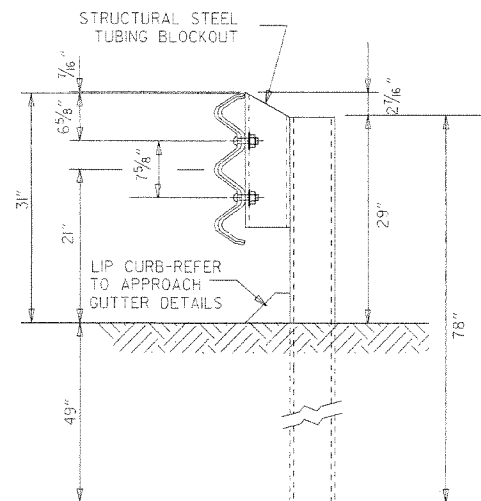
THRIE BEAM GUARD RAIL CONNECTION AT BRIDGE ENDS

GENERAL NOTES:

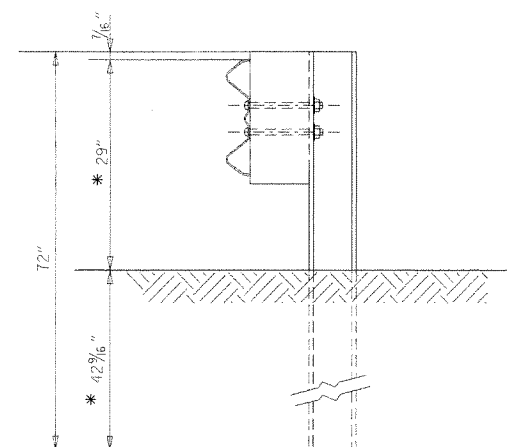
THE THRIE BEAM RAIL, SPECIAL END SHOE, AND THE TRANSITION SECTION SHALL BE MADE OF STEEL AND SHALL BE 12 GAGE. ZINC COATING SHALL BE TYPE I.
 RAIL POSTS SHALL BE SET PERPENDICULAR TO THE ROADWAY PROFILE GRADE AND VERTICALLY IN CROSS SECTION.
 ALL BOLTS SHALL BE SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND NO MORE THAN 3/4\"/>

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

ARKANSAS STATE HIGHWAY COMMISSION
 GUARD RAIL DETAILS
 STANDARD DRAWING GR-10

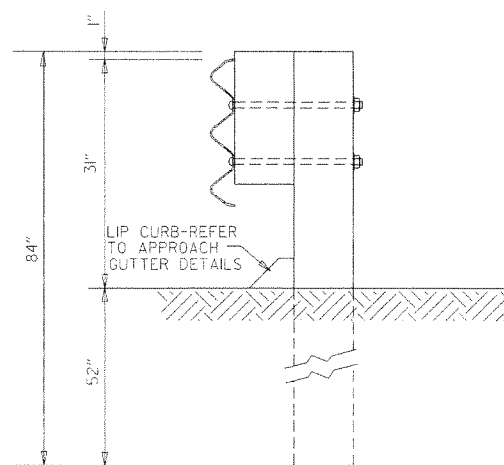


THRIE BEAM RAIL WITH STEEL TUBING BLOCKOUT AND STEEL POST
POSTS 1-7

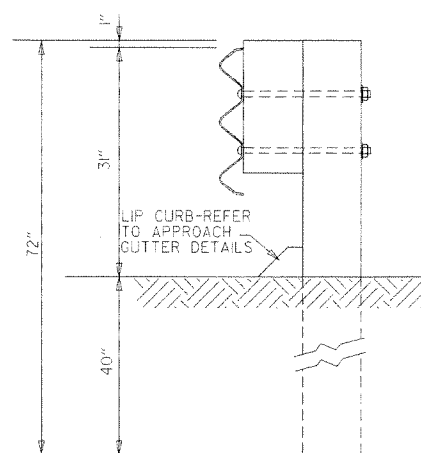


W-BEAM TO THRIE BEAM TRANSITION RAIL WITH WOOD OR PLASTIC BLOCKOUT AND STEEL POST
POST 8

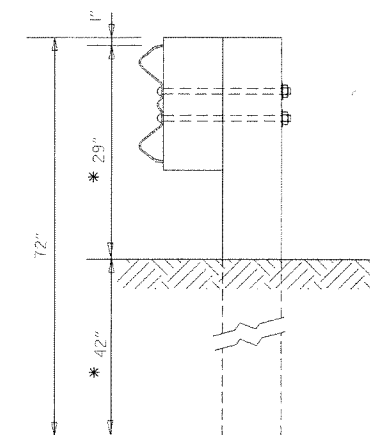
* NOTE:
THESE DIMENSIONS WILL NEED TO BE ADJUSTED IN THE FIELD TO MAKE THE TRANSITION FROM 21" MID POINT OF THRIE BEAM TO 22" MID POINT OF W-BEAM.



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



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



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

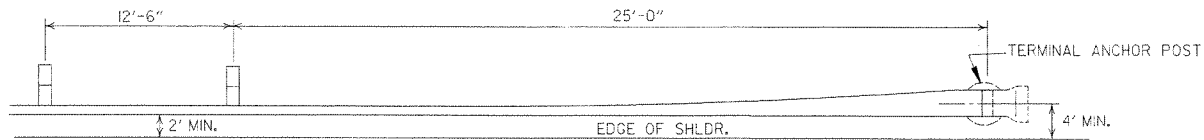
GENERAL NOTES:
RAIL POSTS SHALL BE SET PERPENDICULAR TO THE ROADWAY PROFILE GRADE AND VERTICALLY IN CROSS SECTION.
WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7f (1400 f) OR NO. 1 (350 f) SOUTHERN PINE.

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

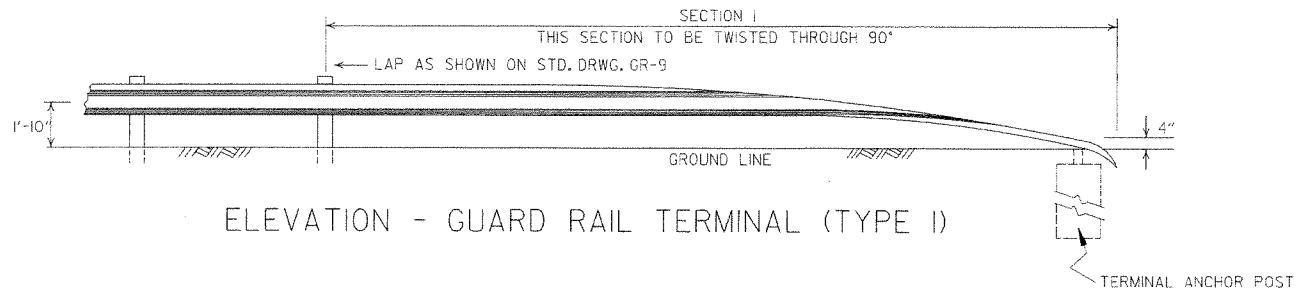
ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR-10A

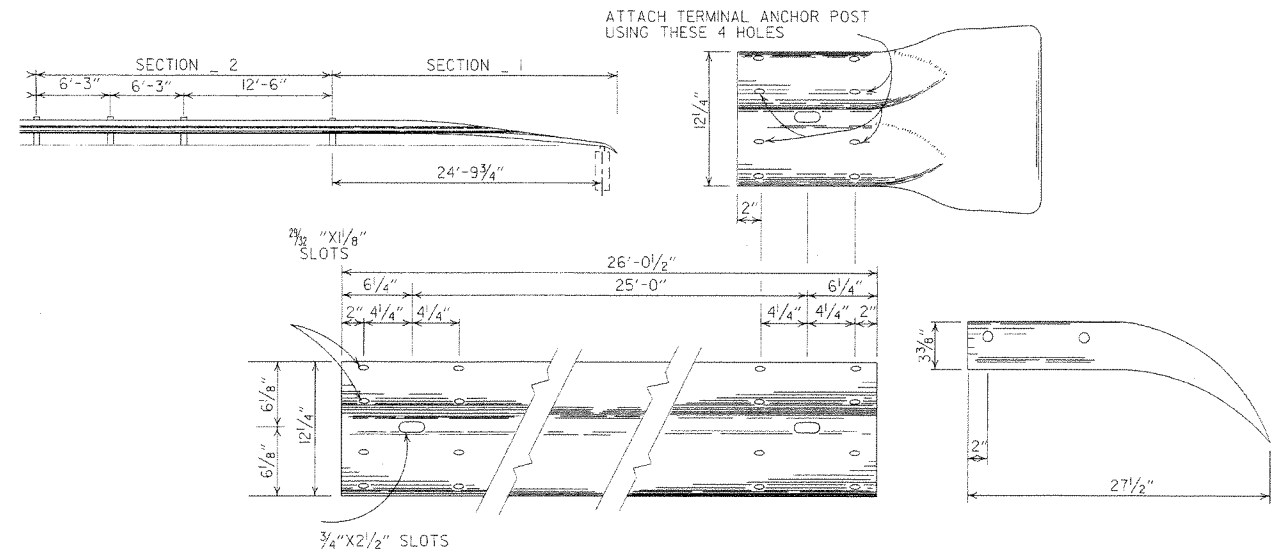


PLAN - GUARD RAIL TERMINAL (TYPE I)



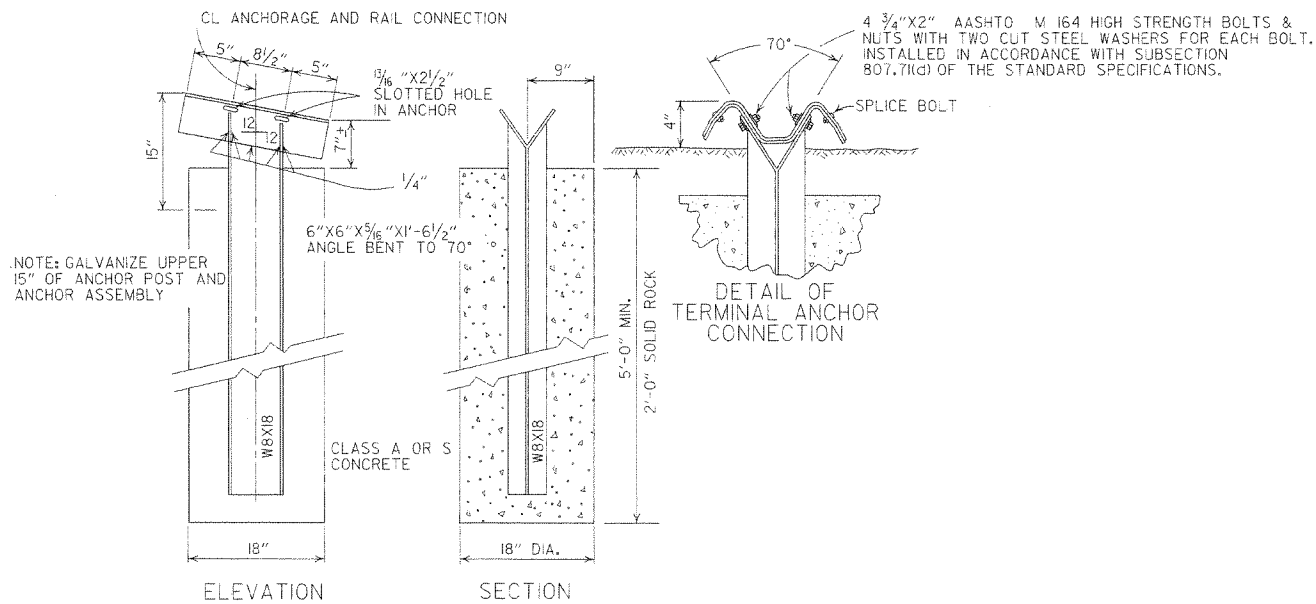
ELEVATION - GUARD RAIL TERMINAL (TYPE I)

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



SECTION 1

TERMINAL SECTION



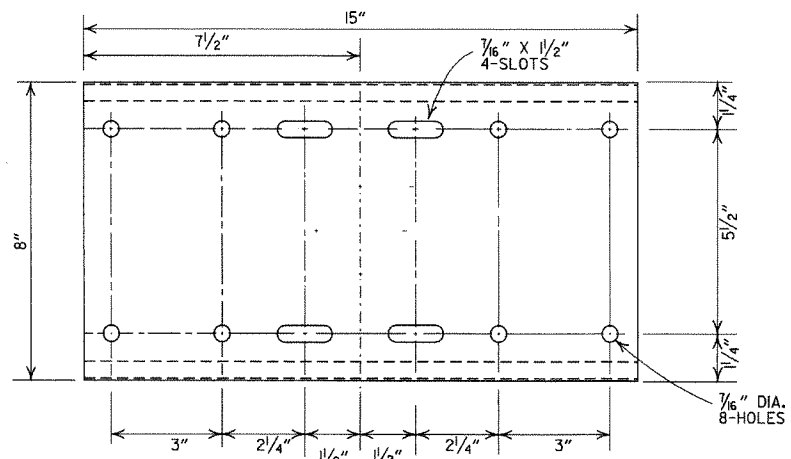
ELEVATION

SECTION

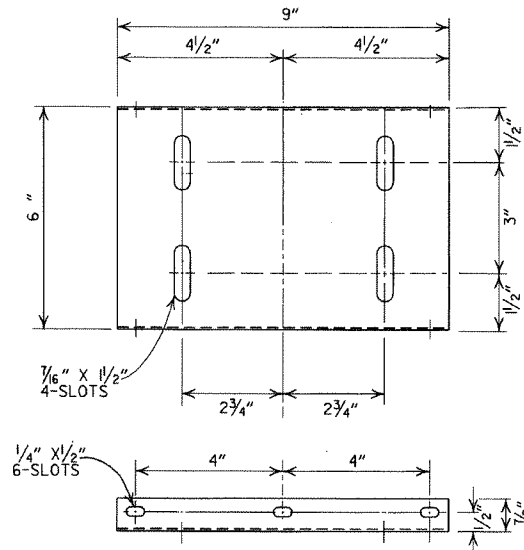
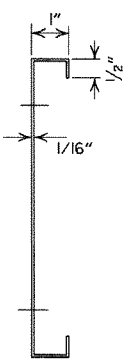
DETAIL OF TERMINAL ANCHOR POST (TYPE I)

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

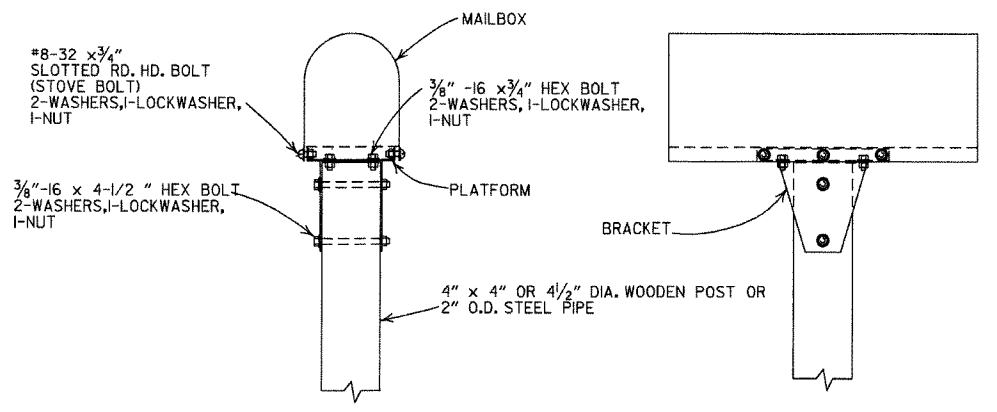
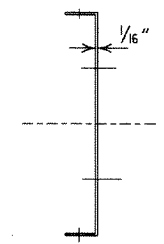
			ARKANSAS STATE HIGHWAY COMMISSION
			GUARD RAIL DETAILS
			STANDARD DRAWING GRT-I
7-14-10	RAISED HEIGHT OF GUARD RAIL 1"		
6-26-97	REVISED LAP NOTE		
10-18-96	REVISED ASTM REF. TO AASHTO		
11-3-94	DIMENSION TERMINAL DETAIL		
11-11-92	ADDED NOTE FOR PAYMENT	11-11-92	
10-1-92	DRAWN & ISSUED	10-1-92	
DATE	REVISION	DATE	FIRM



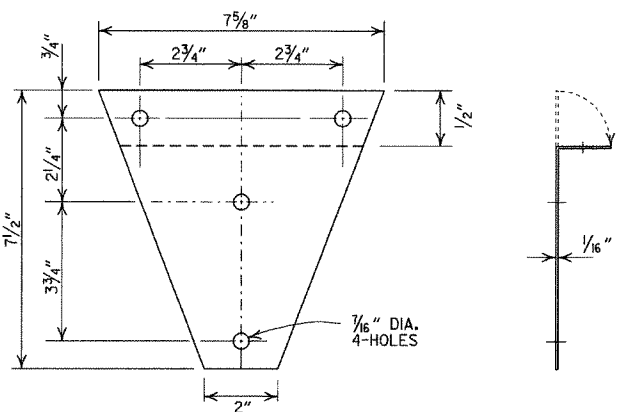
SHELF



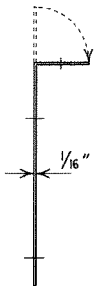
PLATFORM



SINGLE INSTALLATION

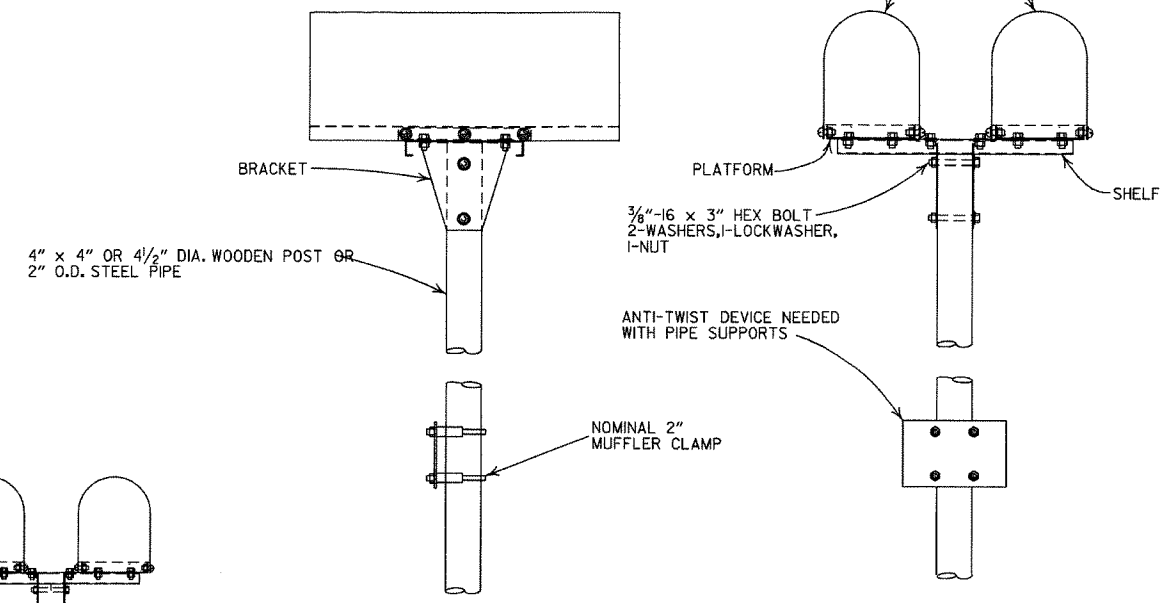


BRACKET

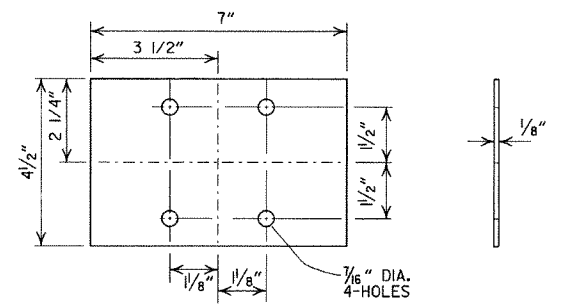


GENERAL NOTES

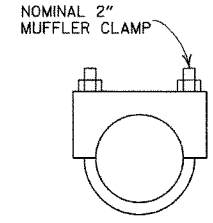
1. MAILBOX POSTS MAY BE WOOD OR METAL. WOOD POSTS SHALL BE PRESSURE TREATED FOR GROUND CONTACT IN ACCORDANCE WITH SECTION 637.02 OF THE STANDARD SPECIFICATIONS.
2. ANTI-TWIST PLATES SHALL BE USED ONLY ON METAL POSTS.
3. MAILBOX SHELF, BRACKET & PLATFORM SHALL BE GALVANIZED OR PAINTED STEEL, HOWEVER TREATED 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 3/4" 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 AHTD QUALIFIED PRODUCTS LIST FOR MAILBOX SUPPORTS.



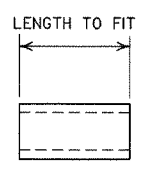
DOUBLE INSTALLATION



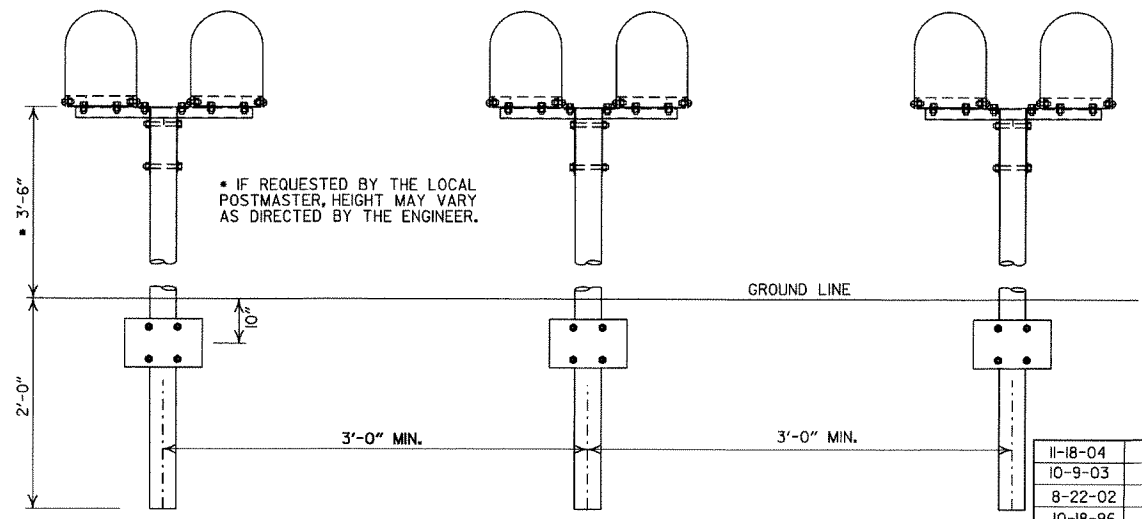
ANTI-TWIST PLATE



CLAMP



SPACER



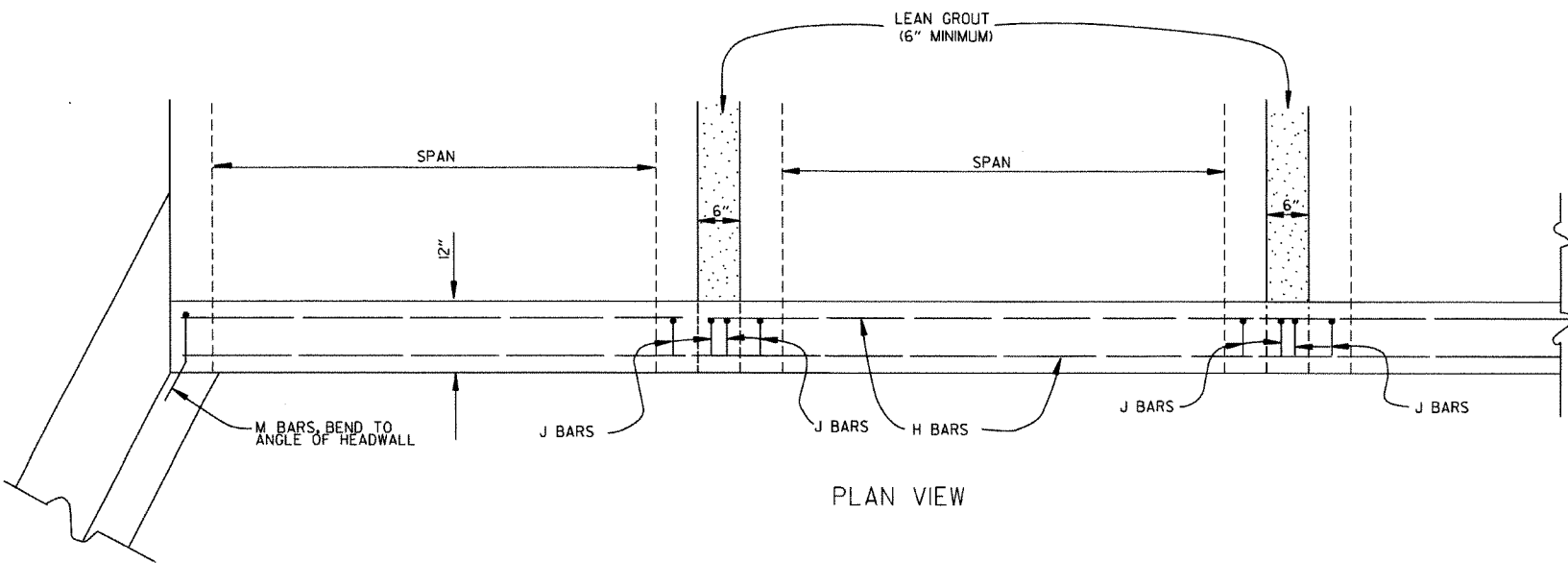
SPACING FOR MULTIPLE POST INSTALLATION

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.

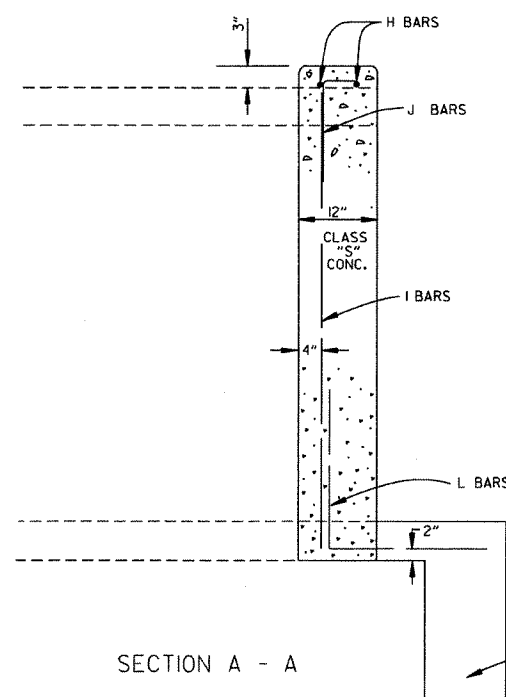
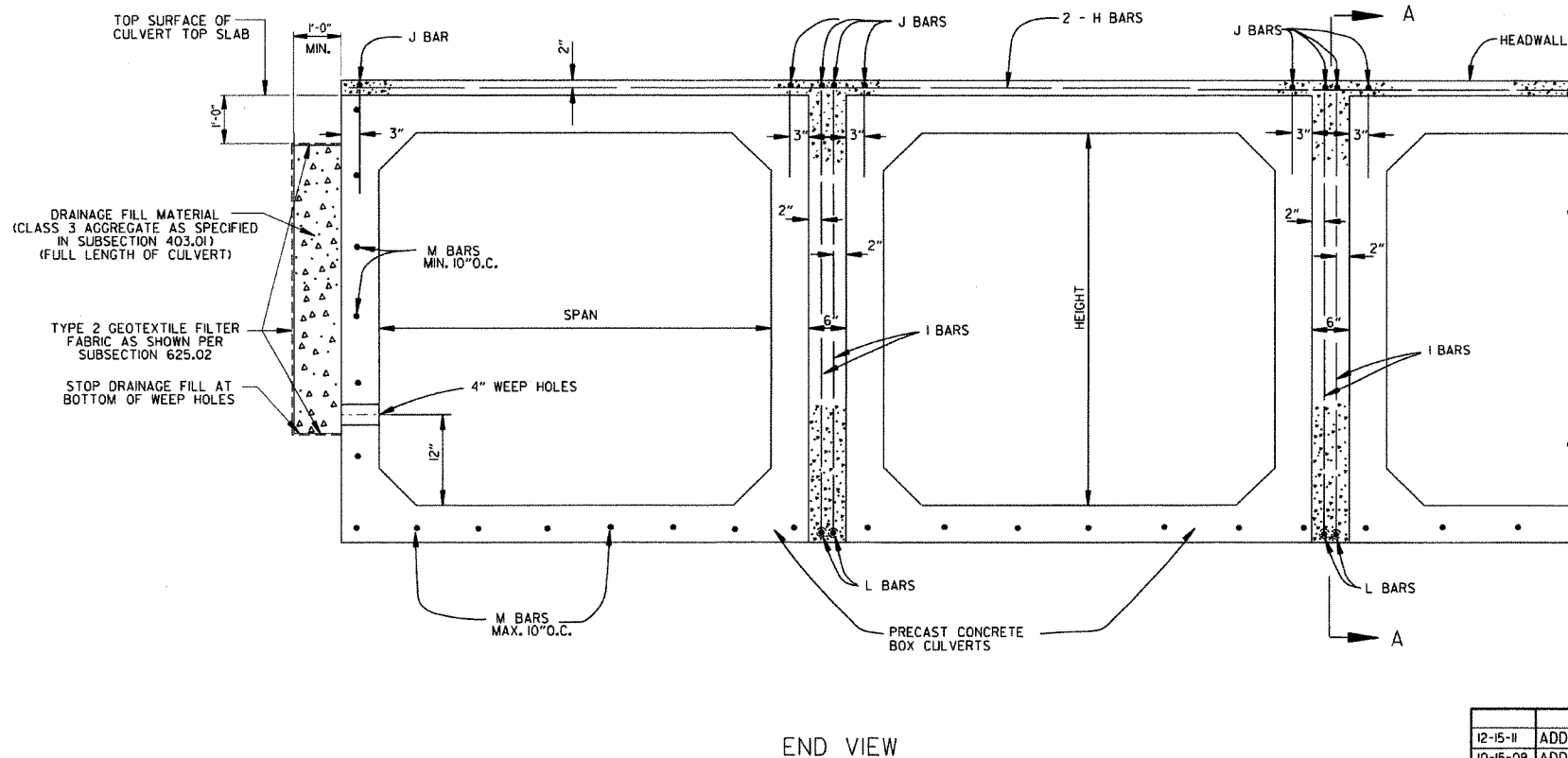
ALL EXPOSED CORNERS TO HAVE 3/4" CHAMFERS.

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 B15 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.



DATE	REVISION	DATE FILMED
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	

ARKANSAS STATE HIGHWAY COMMISSION

PRECAST CONCRETE BOX CULVERTS

STANDARD DRAWING PBC-1

REINFORCED CONCRETE ARCH PIPE DIMENSIONS

EQUIV. DIA.	SPAN		RISE	
	AASHTO M 206	AHTD NOMINAL	AASHTO M 206	AHTD NOMINAL
INCHES	INCHES			
15	18	18	11	11
18	22	22	13 1/2	14
21	26	26	15 1/2	16
24	28 1/2	29	18	18
30	36 1/4	36	22 1/2	23
36	43 3/8	44	26 3/8	27
42	51 1/8	51	31 1/8	31
48	58 1/2	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	77 1/2	77
108	138	138	87 1/8	87
120	154	154	96 3/8	97
132	168 3/4	169	106 1/2	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)(1).

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.

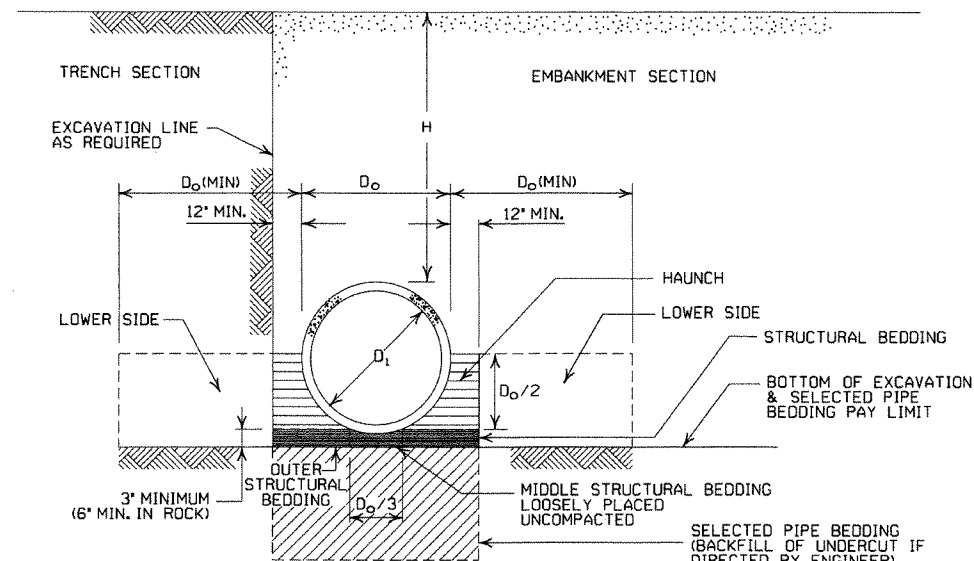
- LEGEND -

- 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 STATE HIGHWAY AND TRANSPORTATION DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (2003 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

INSTALLATION TYPE	CLASS OF PIPE			
	CLASS III	CLASS IV	CLASS V	CLASS V
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.

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

INSTALLATION TYPE	CLASS OF PIPE		
	CLASS III	CLASS IV	CLASS V
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.

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

INSTALLATION TYPE	CLASS OF PIPE	
	CLASS III	CLASS IV
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 R.C. ARCH & HORIZONTAL ELLIPTICAL PIPE CULVERTS

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

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

DATE	REVISION	DATE FILMED
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	

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 3/4 INCH BY 1/2 INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM						
12	1	84	91			
15	1	67	73			
18	1	56	61			
24	1	42	46	59		
30	2	34	36	47		
36	2		30	39	41	
42	2		43	67	70	73
48	2		37	58	61	64
② 3 INCH BY 1 INCH OR 5 INCH BY 1 INCH CORRUGATION RIVETED, WELDED, BOLTED, OR HELICAL LOCK-SEAM						
36	1	48	60	88	111	118
42	1	41	51	72	90	102
48	1	36	45	64	77	85
54	2	32	40	59	71	79
60	2	29	36	53	64	71
66	2	26	33	47	58	64
72	2	24	30	44	53	59
78	2		28	41	49	54
84	2		26	38	45	51
90	2		24	35	43	45
96	2		22	33	40	44
102	2			31	38	42
108	2			30	35	39
114	2			28	34	37
120	2			27	32	35

CONSTRUCTION SEQUENCE

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

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

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

③ SM-3 WILL NOT BE ALLOWED.

EQUIVALENT METAL THICKNESSES AND GAUGES

METAL THICKNESS IN INCHES			GAUGE NUMBER	
STEEL				
ZINC COATED	UNCOATED	ALUMINUM		
0.064	0.0598	0.060		16
0.079	0.0747	0.075		28
0.109	0.1046	0.105		14
0.138	0.1345	0.135		10
0.168	0.1644	0.164	8	

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 3/4 INCH BY 1/2 INCH CORRUGATION RIVETED OR HELICAL LOCK-SEAM						
12	1	45	45			
18	2	30	30	52		
24	2	22	22	39	41	
30	2		18	31	32	34
36	2.5		15	26	27	28
42	2			43	43	44
48	2			40	41	43
54	2			35	37	38
60	2				33	34
66	2					31
72	2					29

CORRUGATED METAL PIPE ARCHES

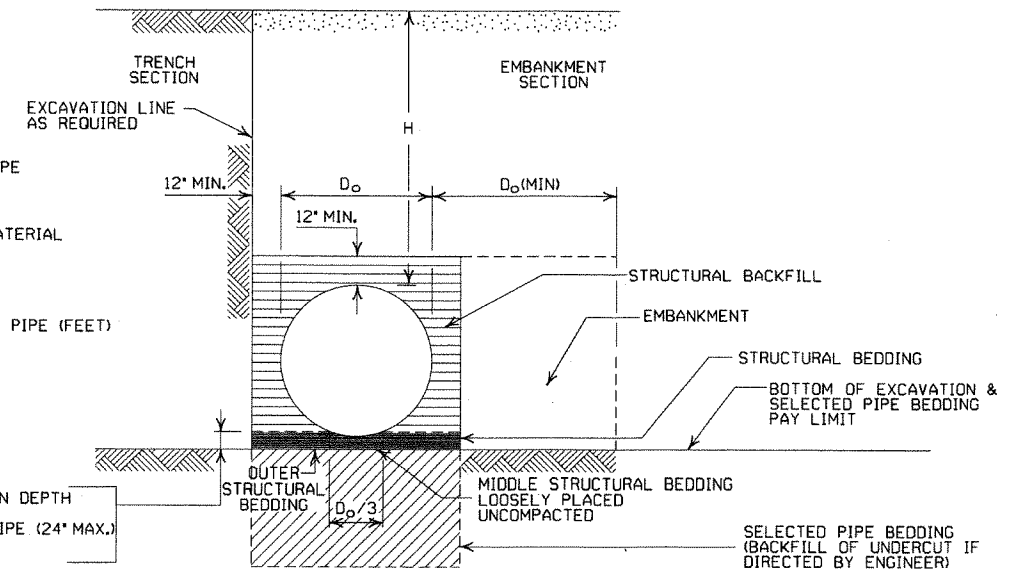
EQUIV. DIA. (INCHES)	PIPE DIMENSION SPAN X RISE (INCHES)	MINIMUM CORNER RADIUS (INCHES)	STEEL				ALUMINUM			
			MIN. THICKNESS REQUIRED INCHES	① MIN. HEIGHT OF FILL, "H" (FT.)		MIN. THICKNESS REQUIRED INCHES	① MIN. HEIGHT OF FILL, "H" (FT.)			
				INSTALLATION TYPE 1	INSTALLATION TYPE 1		INSTALLATION TYPE 1	INSTALLATION TYPE 1		
			2 3/4 INCH BY 1/2 INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM				2 3/4 INCH BY 1/2 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	3 1/2	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	0.135	3	14		
66	77x52	8	0.168	3	15	0.164	3	15		
72	83x57	9	0.168	3	15					
② 3 INCH BY 1 INCH OR 5 INCH BY 1 INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM										
			INSTALLATION TYPE 2		INSTALLATION TYPE 1		INSTALLATION TYPE 2		INSTALLATION 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
- [Symbol] = STRUCTURAL BACKFILL MATERIAL
- [Symbol] = UNDISTURBED SOIL
- EQUIV. DIA. = EQUIVALENT DIAMETER
- H = FILL COVER HEIGHT OVER PIPE (FEET)



EMBANKMENT AND TRENCH INSTALLATIONS

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

GENERAL NOTES

1. METAL PIPE CULVERT CONSTRUCTION SHALL CONFORM TO ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (2003 EDITION), WITH APPLICABLE SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS, UNLESS OTHERWISE NOTED IN THE PLANS, SECTION AND SUBSECTION REFER TO THE STANDARD CONSTRUCTION SPECIFICATIONS.
2. METAL PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) WITH 2010 INTERIMS.
3. METAL PIPE CULVERT MATERIALS AND INSTALLATIONS SHALL CONFORM TO SECTION 606 AND JOB SPECIAL PROVISION "METAL PIPE".
4. ALL PIPE SHALL BE PROTECTED DURING CONSTRUCTION BY A COVER SUFFICIENT TO PREVENT DAMAGE FROM PASSAGE OF EQUIPMENT.
5. THE MINIMUM TRENCH WIDTH SHALL BE THE OUTSIDE DIAMETER OF THE PIPE PLUS 24 INCHES. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PRACTICABLE FOR WORKING CONDITIONS.
6. MULTIPLE PIPE CULVERTS SHALL BE INSTALLED WITH A MINIMUM CLEARANCE OF 24 INCHES BETWEEN STRINGS OF PIPE. REFER TO STD. DWG. FES-2 FOR MINIMUM CLEARANCE WHERE FLARED END SECTIONS ARE USED.
7. IMPERVIOUS MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
8. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH (BELOW THE AREA IDENTIFIED AS "STRUCTURAL BEDDING" ABOVE) WILL BE EXCAVATED AND REPLACED WITH SELECTED PIPE BEDDING. THE QUANTITY OF MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE SELECTED PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS "SELECTED PIPE BEDDING."
9. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED AS STRUCTURAL BACKFILL), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."

DATE	REVISION	DATE FILMED
12-15-11	REVISED FOR LRFD DESIGN SPECS	
3-30-00	REVISED INSTALLATIONS	
11-06-97	ISSUED	

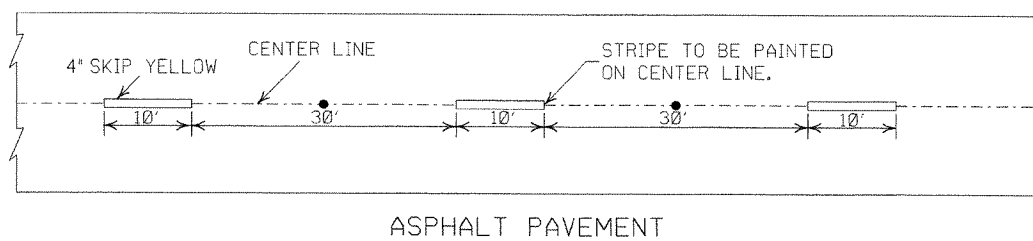
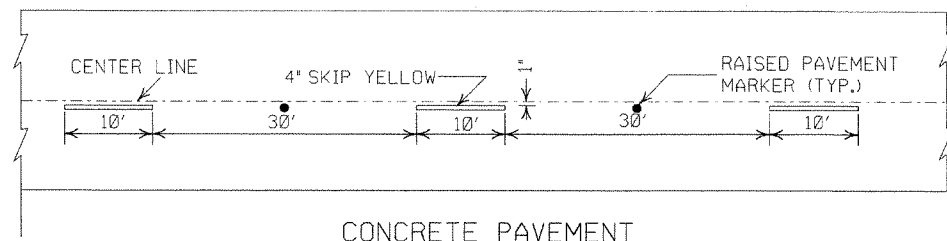
ARKANSAS STATE HIGHWAY COMMISSION

METAL PIPE CULVERT
FILL HEIGHTS & BEDDING

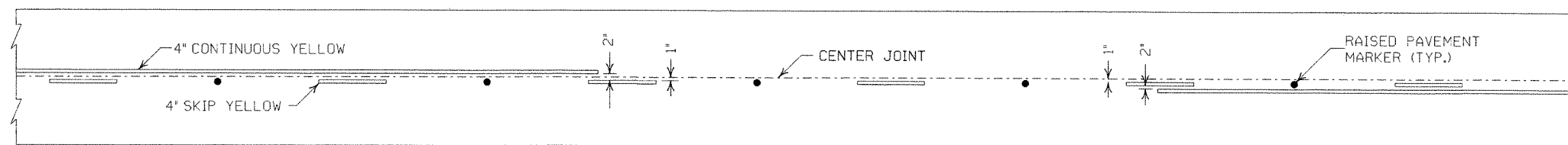
STANDARD DRAWING PCM-1

NOTES:

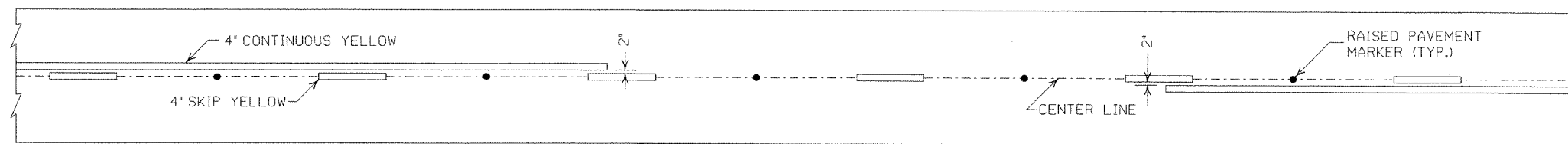
1. ALL LINES SHALL HAVE A WIDTH OF 4 INCHES.
2. THE THICKNESS AND RATE OF PAINT APPLICATION SHALL BE AS SPECIFIED IN SECTION 718 OF THE STANDARD SPECIFICATIONS.
3. THIS DRAWING SHALL BE USED IN CONJUNCTION WITH THE LATEST REVISED ADDITION OF THE 'MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.'
4. RAISED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



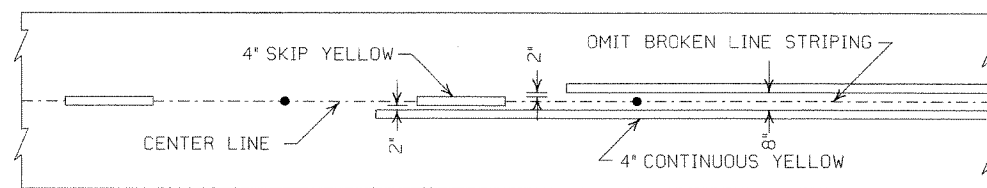
BROKEN LINE STRIPING



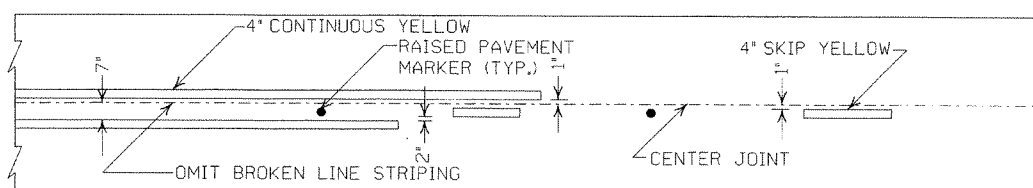
SOLID LINE STRIPING ON CONCRETE PAVEMENT



SOLID LINE STRIPING ON ASPHALT PAVEMENT



ASPHALT PAVEMENT



CONCRETE PAVEMENT

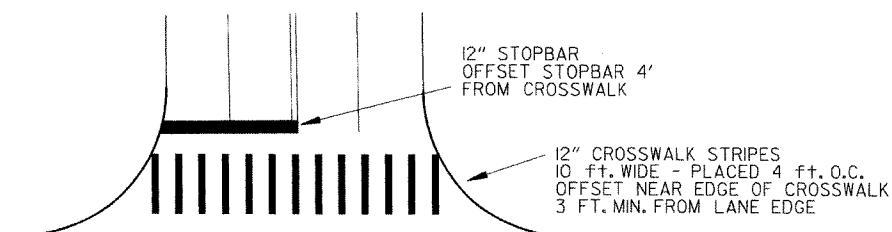
STRIPING AT ADJACENT NO PASSING LANES

GENERAL NOTES:

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

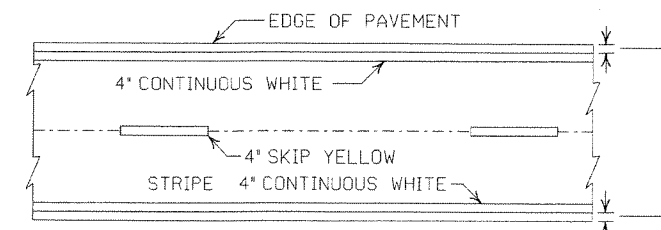
THIS DRAWING SHOULD BE USED IN CONJUNCTION WITH THE 'MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES', LATEST REVISION.

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

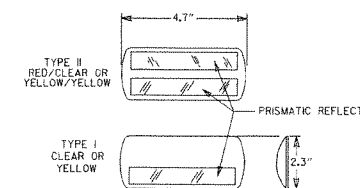


CROSSWALK AND STOPBAR DETAILS

2" FOR ASPHALT OR CONCRETE PAVEMENT
6" FOR BITUMINOUS SURFACE TREATMENT



PAVEMENT EDGE LINE MARKING



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

DETAIL OF STANDARD RAISED PAVEMENT MARKERS

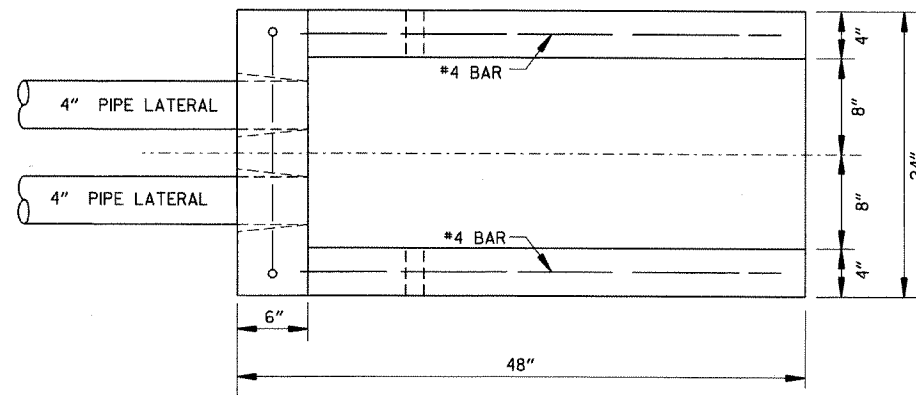
DATE	REVISION	FILMED
11-17-10	REVISED GENERAL NOTES & REMOVED FLOWABLE PVMT MRKRS	
11-18-04	REVISED NOTE 2 & GENERAL NOTES	
8-22-02	ADDED CROSSWALK & STOPBAR DTLS.	
7-02-98	ADDED DETAILS OF STD. RAISED PAV'T. MARKERS	
4-26-96	REV. NOTES 3&4; ADDED R.P.M.	
9-30-80	DRAWN	1-9-30-80

ARKANSAS STATE HIGHWAY COMMISSION

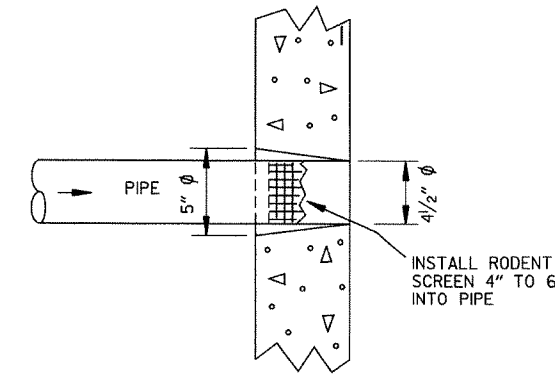
PAVEMENT MARKING DETAILS

STANDARD DRAWING PM-1

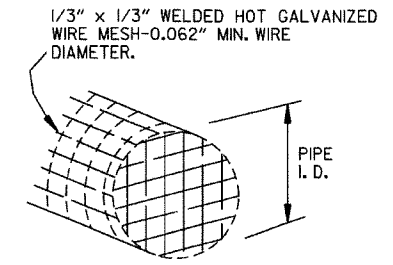
NOTE:
 1. GRANULAR BACKFILL TO BE SUBSIDIARY TO PIPE UNDERDRAIN.
 2. UNLESS OTHERWISE SPECIFIED ON THE PLANS, THE UNDERDRAIN COVER SHALL BE THOROUGHLY COMPACTED EARTH AND SHALL BE SUBSIDIARY TO PIPE UNDERDRAIN.
 3. GRANULAR MATERIAL SHALL BE WRAPPED WITH GEOTEXTILE FABRIC, LAP FABRIC 12" OR THE WIDTH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



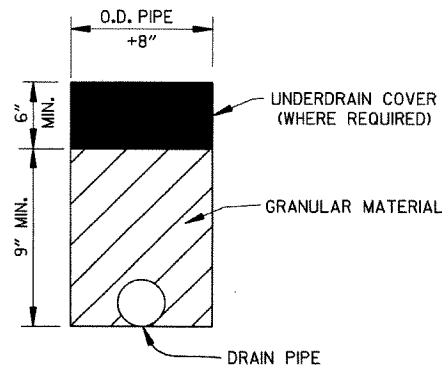
PLAN VIEW



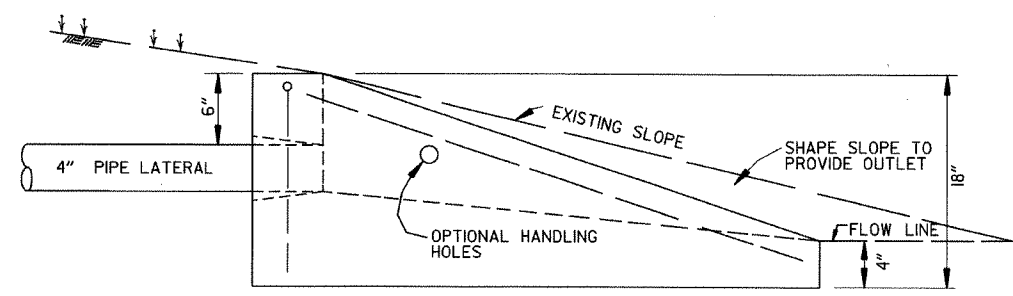
DETAIL OF HOLE FOR 4" PIPE



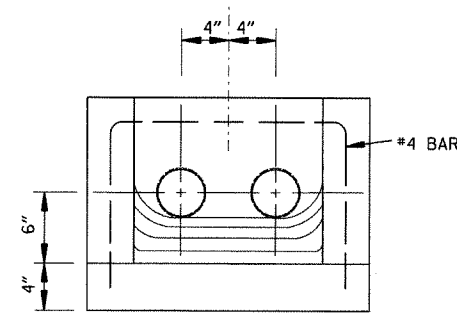
DETAIL OF RODENT SCREEN



DETAILS OF PIPE UNDERDRAIN

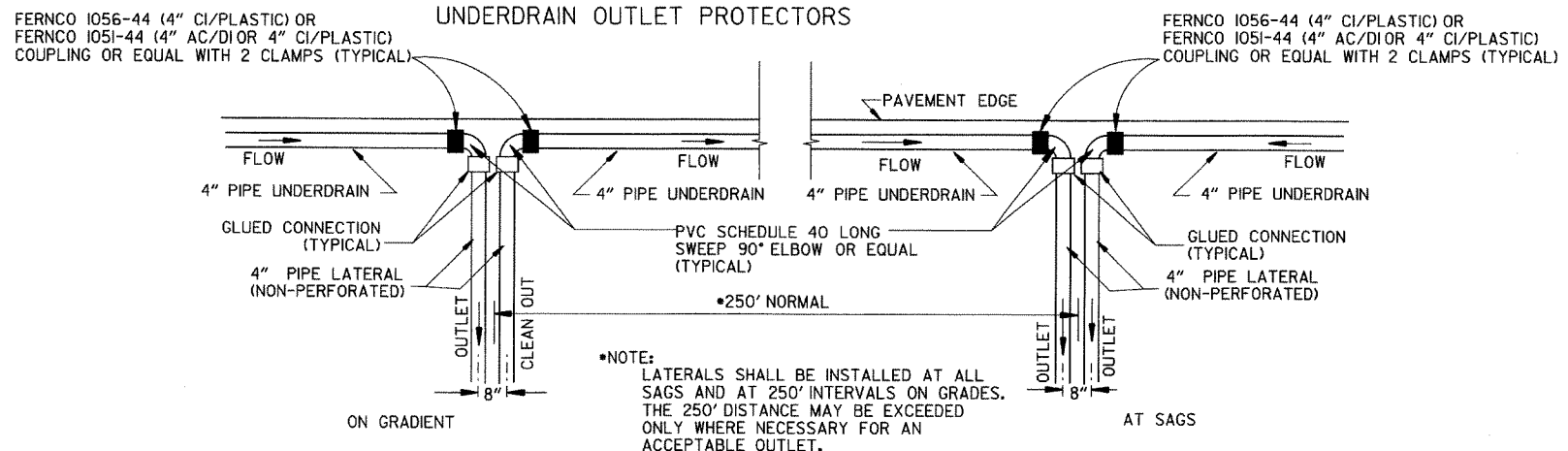


SIDE VIEW



FRONT VIEW

UNDERDRAIN OUTLET PROTECTORS



*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.

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

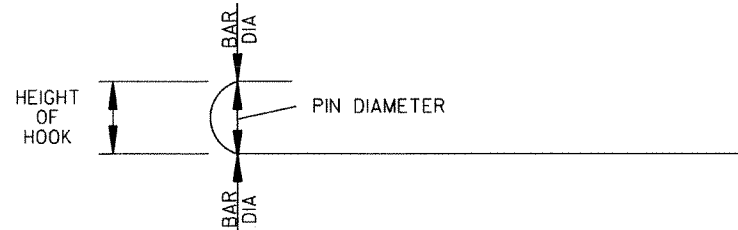
DETAILS OF PIPE UNDERDRAIN

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", "b1", "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", "b1", "b2" OR "b3" BENT BARS THEY REPLACE.



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

OVERALL HEIGHT OF HOOKED BAR DIAGRAM

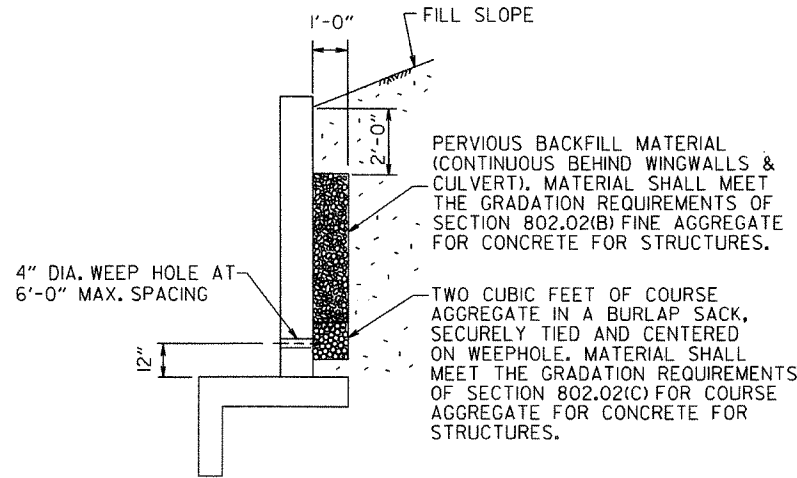
THE HOOKED BARS SHALL BE PLACED IN THE BOTTOM OF THE TOP SLAB AND THE TOP OF THE BOTTOM SLAB. THE STRAIGHT BARS SHALL BE PLACED IN THE TOP OF THE TOP SLAB AND THE BOTTOM OF THE BOTTOM SLAB. SEE TABLE BELOW FOR LENGTHS OF REPLACEMENT HOOKED AND STRAIGHT BARS.

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

REPLACEMENT BAR LENGTHS TABLE

BAR SIZE: "b", "b1", "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.

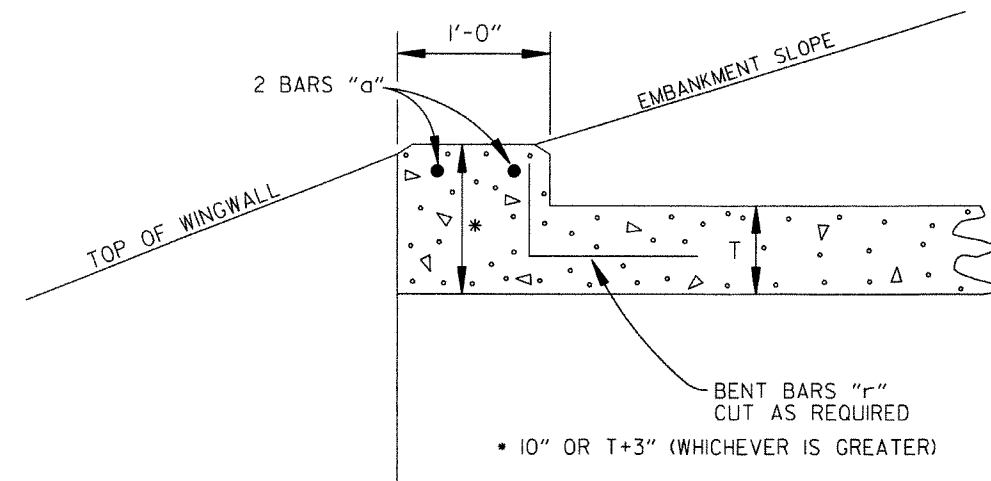
MEMBRANE WATERPROOFING SHALL BE APPLIED TO ALL CONSTRUCTION JOINTS IN THE TOP SLAB AND THE SIDEWALLS OF R.C. BOX CULVERTS AS DIRECTED BY THE ENGINEER. NO PAYMENT SHALL BE MADE FOR THIS ITEM, BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS BID FOR THE R.C. BOX CULVERT.

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.

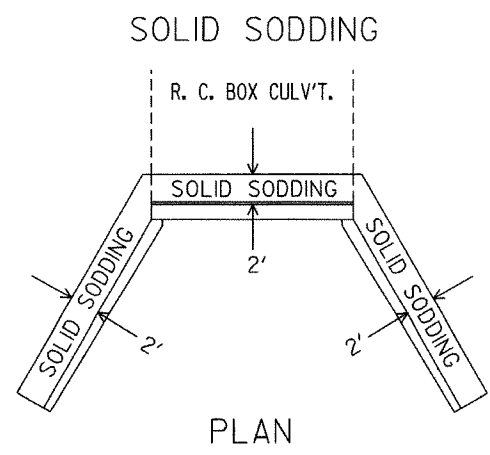
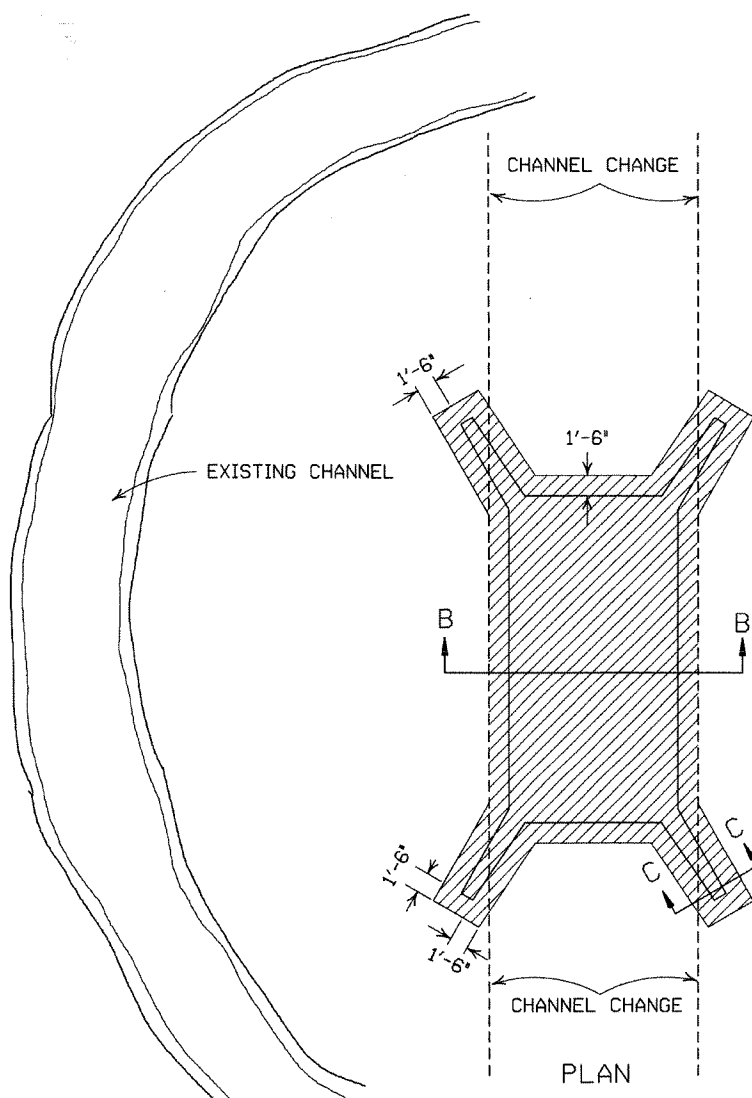


NOTE: FOR ALL SKEWED R.C. BOX CULVERTS THE LENGTH "K" OF THE MODIFIED HEADWALL SHALL BE EQUAL TO THE ROADWAY LENGTH "RL". THE ENDS OF THE HEADWALL SHALL BE CONSTRUCTED PARALLEL TO THE SKEW ANGLE OF THE BOX CULVERT.

R.C. BOX CULVERT HEADWALL MODIFICATIONS

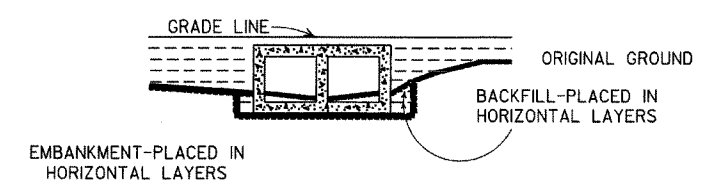
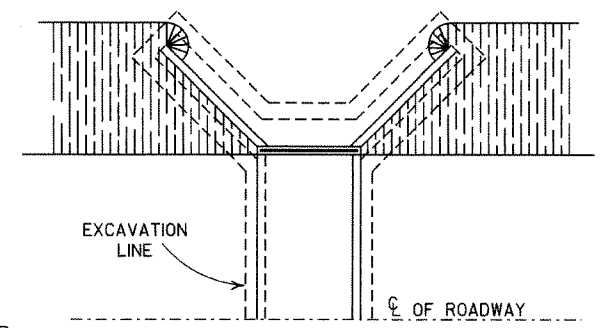
DATE	REVISION	DATE FILMED
12-15-11	REQUIRE WEEP HOLES IN BOX CULVERT WALLS	
5-25-06	REV. GEN. NOTES AND DETAILS FOR WEEP HOLES; BAR DIAGRAM	
11-16-01	ADDED WINGWALL DRAINAGE DETAIL/EDITED GEN. NOTES	
10-18-96	REV. ASTM REF. TO AASHTO & ADDED BAR DIAGRAM	
10-12-95	MOVED SOLID SODDING DETAIL TO RCB-2	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

ARKANSAS STATE HIGHWAY COMMISSION	
REINFORCED CONCRETE BOX CULVERT DETAILS	
STANDARD DRAWING RCB-1	

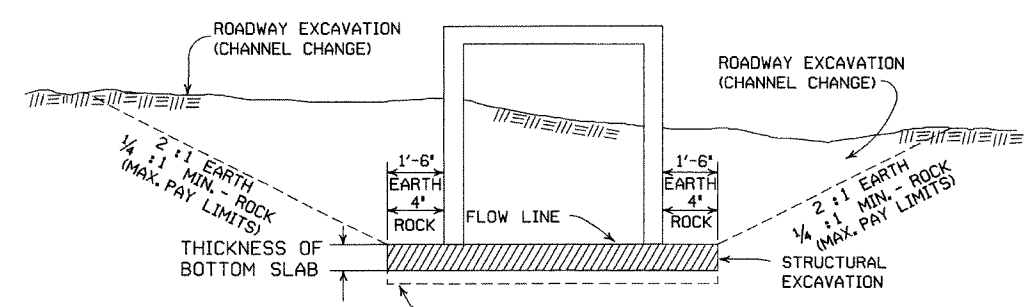
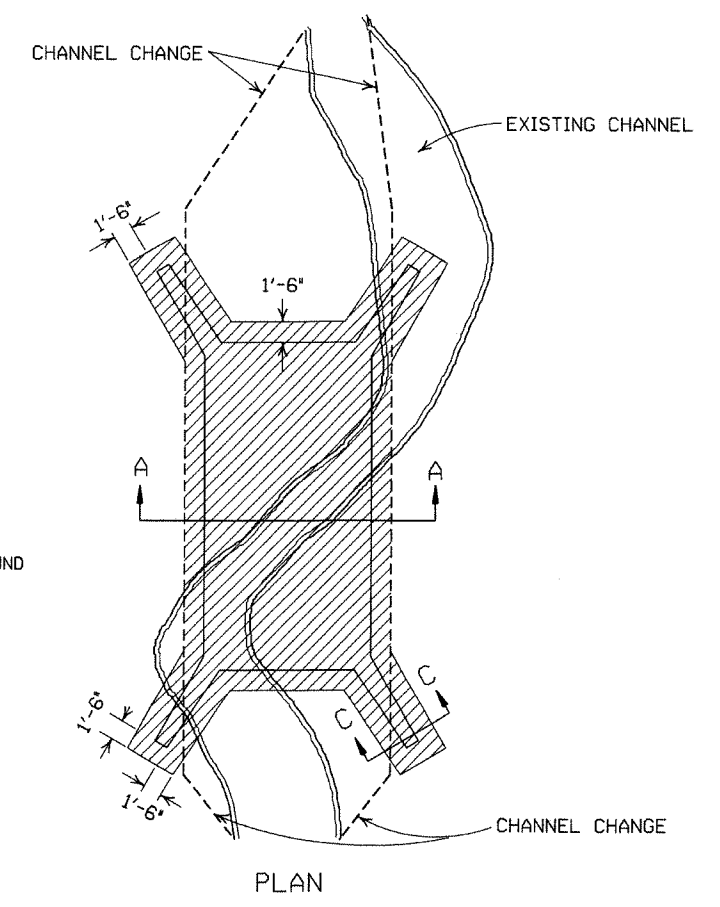


PARTIAL SECTION SHOWING SOLID SODDING AT HEADWALLS AND WING WALLS

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

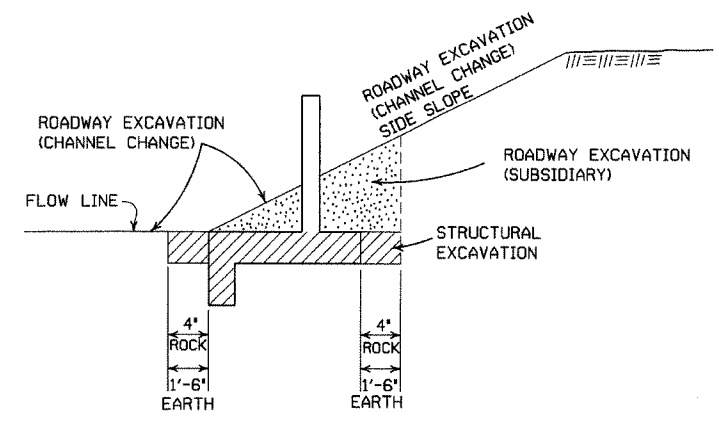


BACKFILL DETAILS FOR BOX CULVERT

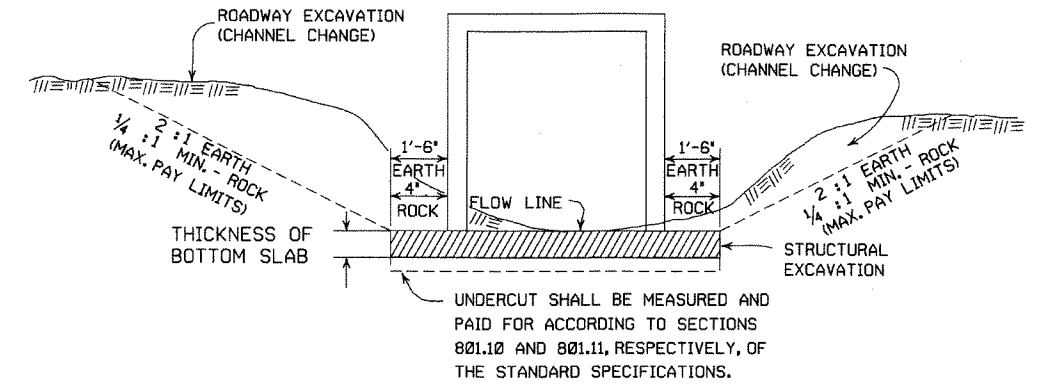


SECTION B-B
DETAILS FOR NEW CHANNELS

UNDERCUT SHALL BE MEASURED AND PAID FOR ACCORDING TO SECTIONS 801.10 AND 801.11, RESPECTIVELY, OF THE STANDARD SPECIFICATIONS.



SECTION C-C



SECTION A-A
DETAILS THROUGH EXISTING CHANNELS

UNDERCUT SHALL BE MEASURED AND PAID FOR ACCORDING TO SECTIONS 801.10 AND 801.11, RESPECTIVELY, OF THE STANDARD SPECIFICATIONS.

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.

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
DATE	REVISION	FILMED

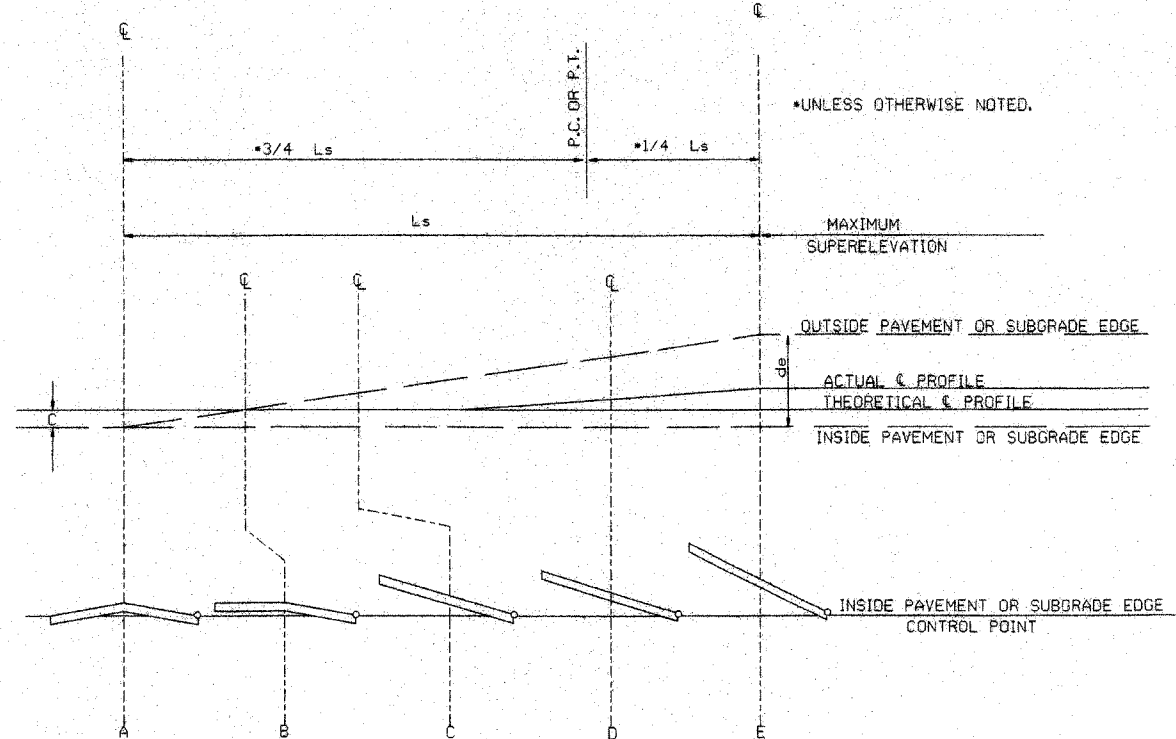
ARKANSAS STATE HIGHWAY COMMISSION

EXCAVATION PAY LIMITS, BACKFILL, & SOLID SODDING FOR BOX CULVERTS

STANDARD DRAWING RCB-2

SUPERELEVATION TABLE FOR TWO - WAY TRAFFIC

DEGREE OF CURVE	30 MPH		40 MPH		50 MPH		55 MPH		60 MPH		70 MPH	
	Ls (FT)		Ls (FT)		Ls (FT)		Ls (FT)		Ls (FT)		Ls (FT)	
	MINIMUM	DESIRABLE	MINIMUM	DESIRABLE	MINIMUM	DESIRABLE	MINIMUM	DESIRABLE	MINIMUM	DESIRABLE	MINIMUM	DESIRABLE
0° 15'	N.C.		N.C.		N.C.		N.C.		N.C.		N.C.	
0° 30'	N.C.		N.C.		N.C.		N.C.		N.C.		N.C.	
0° 45'	N.C.		N.C.		N.C.		N.C.		N.C.		N.C.	
0° 00'	N.C.		N.C.		N.C.		N.C.		N.C.		N.C.	
1° 15'	N.C.		N.C.		N.C.		N.C.		N.C.		N.C.	
1° 30'	N.C.		N.C.		N.C.		N.C.		N.C.		N.C.	
1° 45'	N.C.		N.C.		N.C.		N.C.		N.C.		N.C.	
2° 00'	R.C.		R.C.		R.C.		R.C.		R.C.		R.C.	
2° 15'	R.C.		R.C.		R.C.		R.C.		R.C.		R.C.	
2° 30'	0.021		0.031		0.041		0.051		0.061		0.071	
2° 45'	0.023		0.033		0.043		0.053		0.063		0.073	
3° 00'	0.025		0.035		0.045		0.055		0.065		0.075	
3° 15'	0.027		0.037		0.047		0.057		0.067		0.077	
3° 30'	0.029		0.039		0.049		0.059		0.069		0.079	
3° 45'	0.031		0.041		0.051		0.061		0.071		0.081	
4° 00'	0.033		0.043		0.053		0.063		0.073		0.083	
4° 30'	0.037		0.047		0.057		0.067		0.077		0.087	
5° 00'	0.040		0.050		0.060		0.070		0.080		0.090	
5° 30'	0.043		0.053		0.063		0.073		0.083		0.093	
6° 00'	0.046		0.056		0.066		0.076		0.086		0.096	
6° 30'	0.050		0.060		0.070		0.080		0.090		0.100	
7° 00'	0.053		0.063		0.073		0.083		0.093		0.100	
7° 30'	0.056		0.066		0.076		0.086		0.096		0.100	
8° 00'	0.058		0.068		0.078		0.088		0.098		0.100	
8° 30'	0.061		0.071		0.081		0.091		0.100		0.100	
9° 00'	0.063		0.073		0.083		0.093		0.100		0.100	
10° 00'	0.068		0.078		0.088		0.098		0.100		0.100	
11° 00'	0.072		0.082		0.092		0.100		0.100		0.100	
12° 00'	0.076		0.086		0.096		0.100		0.100		0.100	
13° 00'	0.080		0.090		0.100		0.100		0.100		0.100	
14° 00'	0.083		0.093		0.100		0.100		0.100		0.100	
15° 00'	0.086		0.096		0.100		0.100		0.100		0.100	
16° 00'	0.089		0.099		0.100		0.100		0.100		0.100	
17° 00'	0.091		0.101		0.100		0.100		0.100		0.100	
18° 00'	0.093		0.103		0.100		0.100		0.100		0.100	
19° 00'	0.095		0.105		0.100		0.100		0.100		0.100	
20° 00'	0.097		0.107		0.100		0.100		0.100		0.100	
21° 00'	0.098		0.108		0.100		0.100		0.100		0.100	
22° 00'	0.099		0.109		0.100		0.100		0.100		0.100	
23° 00'	0.099		0.109		0.100		0.100		0.100		0.100	
24° 00'	0.100		0.110		0.100		0.100		0.100		0.100	



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

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

ABBREVIATIONS

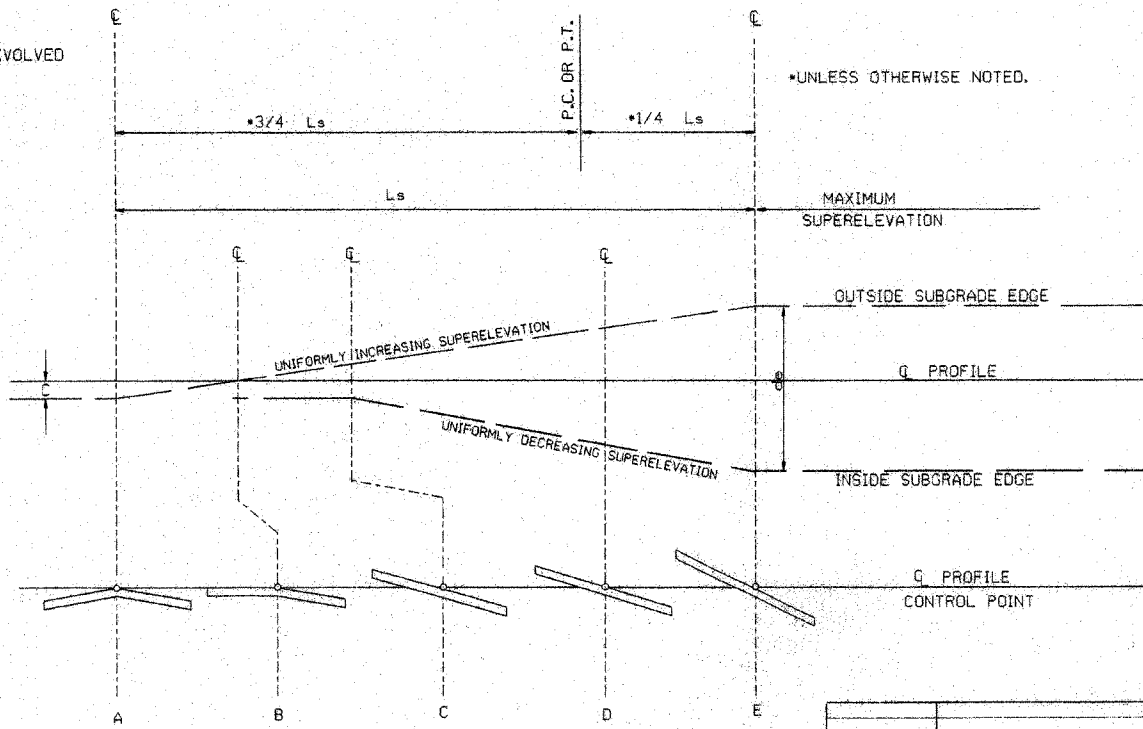
- NC - NORMAL CROWN
- RC - REVERSE CROWN, SUPERELEVATION AT NORMAL CROWN SLOPE
- e - RATE OF SUPERELEVATION (FT. PER FT.)
- Ls - LENGTH OF SUPERELEVATION TRANSITION (FT.)
- L - DISTANCE FROM BEGINNING OF SUPERELEVATION TRANSITION TO ANY POINT (FT.)
- d - WIDTH OF PAVEMENT (FT.) OR WIDTH OF SUBGRADE (FT.)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

GENERAL NOTES

- 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 2%. RATE OF SUPERELEVATION SHALL BE COMPUTED ON STRAIGHT LINE METHOD USING APPLICABLE Ls.



STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND CENTER LINE

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

ARKANSAS STATE HIGHWAY COMMISSION	
TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC	
DATE	REVISION
10-18-96	ADDED FORMULA
01-09-87	ISSUED
10-18-96	DATE FILLED
534-1-9-87	
STANDARD DRAWING SE-2	

ADVANCE DISTANCES (XXXX)

500 FT	1/2 MILE
1000 FT	3/4 MILE
1500 FT	1 MILE AHEAD


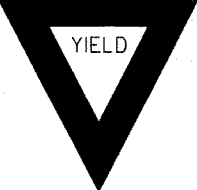
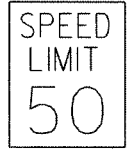
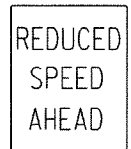




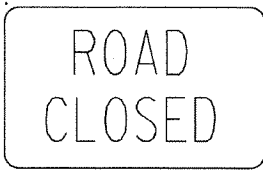
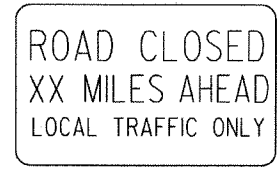
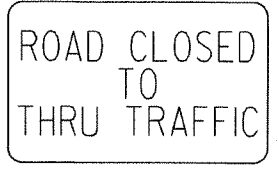
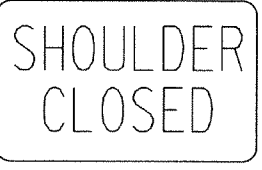
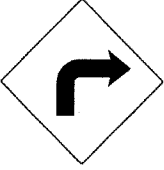
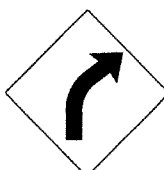



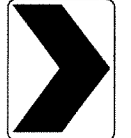
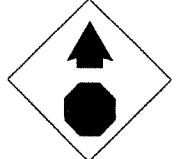
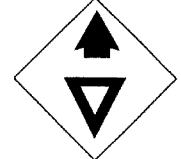
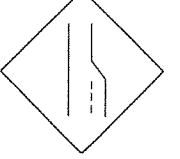



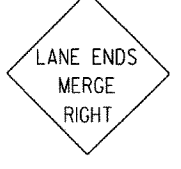
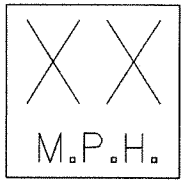

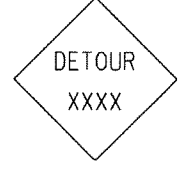


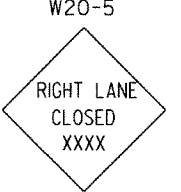



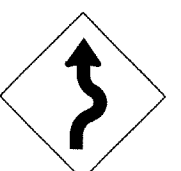
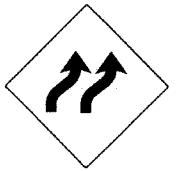


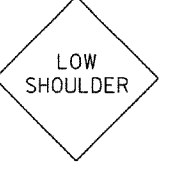
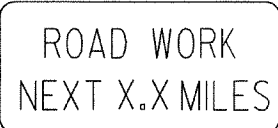
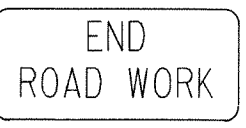
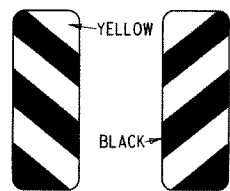


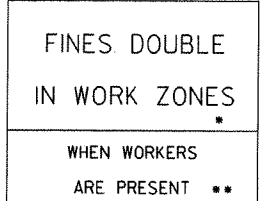
GENERAL NOTES:

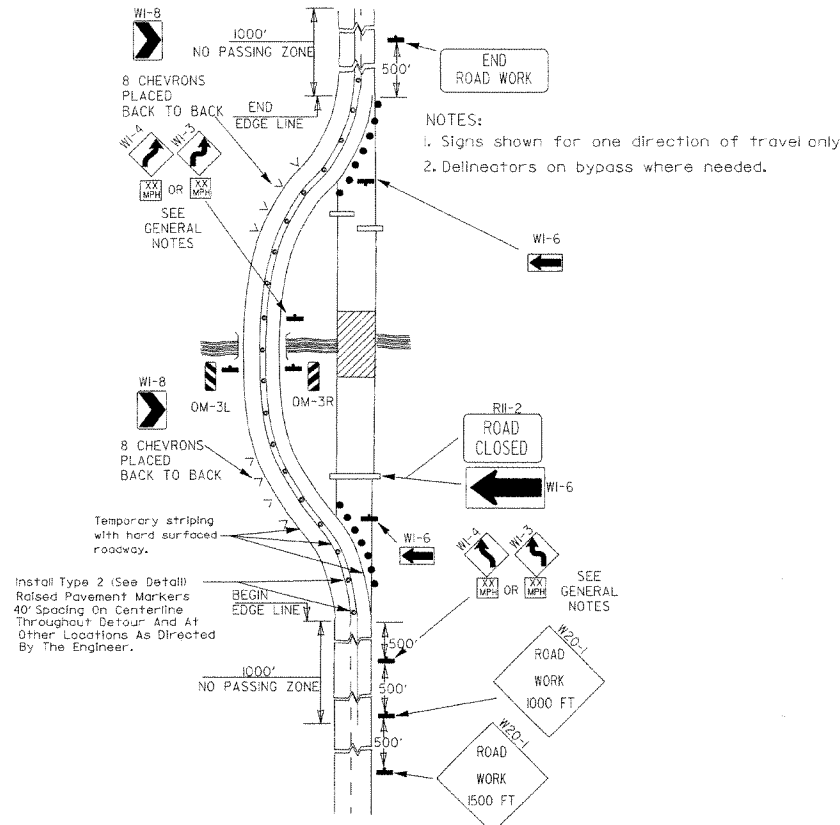
- ALL TRAFFIC CONTROL DEVICES USED ON ROAD CONSTRUCTION SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION, AND TO THE STANDARD HIGHWAY SIGNS, LATEST EDITION, OR AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION.
- TRAFFIC CONTROL DEVICES SHALL BE SET UP JUST BEFORE THE START 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.
- 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.
- 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.
- 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.
- 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.
- 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.

- FLAGGERS SHALL USE REFLECTORIZED STOP-SLOW PADDLES. FLAGS MAY BE USED ONLY FOR EMERGENCY SITUATIONS.
- 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.
- R55-1 SIGNS SHALL BE PLACED AT LEAST 1500' BUT NOT MORE THAN 1 MILE IN ADVANCE OF THE WORK ZONE. IF A SPEED LIMIT REDUCTION IS IN EFFECT, THE SIGN SHALL BE PLACED A MINIMUM OF 500' IN ADVANCE OF THE "REDUCED SPEED AHEAD" SIGN.

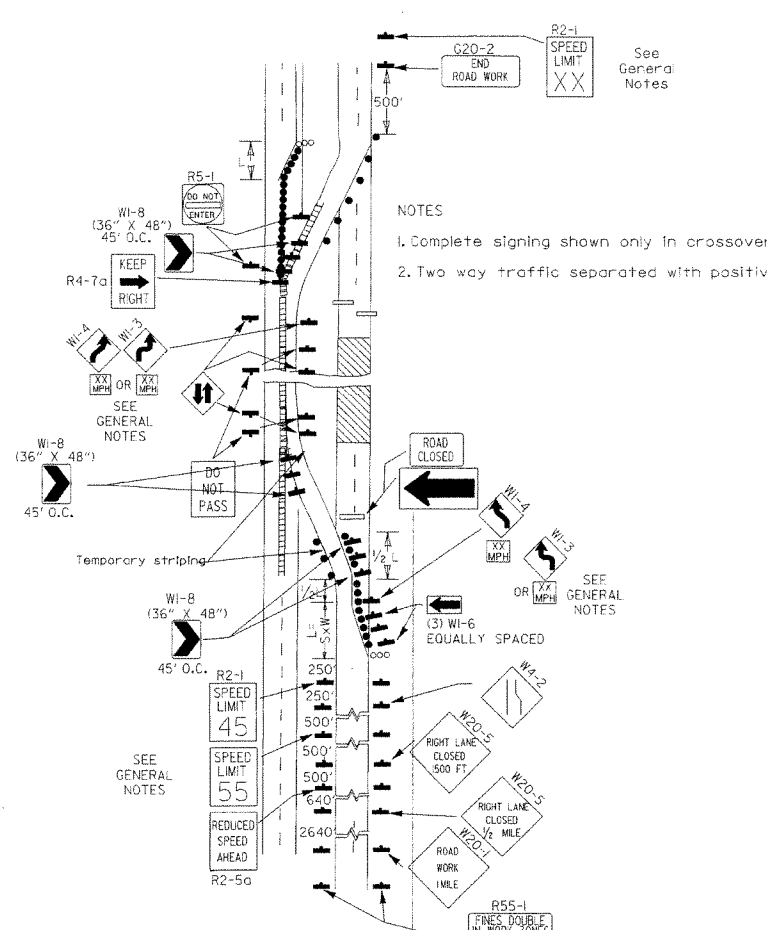
NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE REQUIREMENTS SHOWN IN NOTES 4 & 5, BUT MEET THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH), WILL BE ACCEPTED. COMPLIANCE WITH THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY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

DATE	REVISION	FILMED
12-5-81	REVISED W24-1	
11-17-10	DELETED W8-9a & ADDED W8-9	
10-5-09	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	
11-6-01	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	

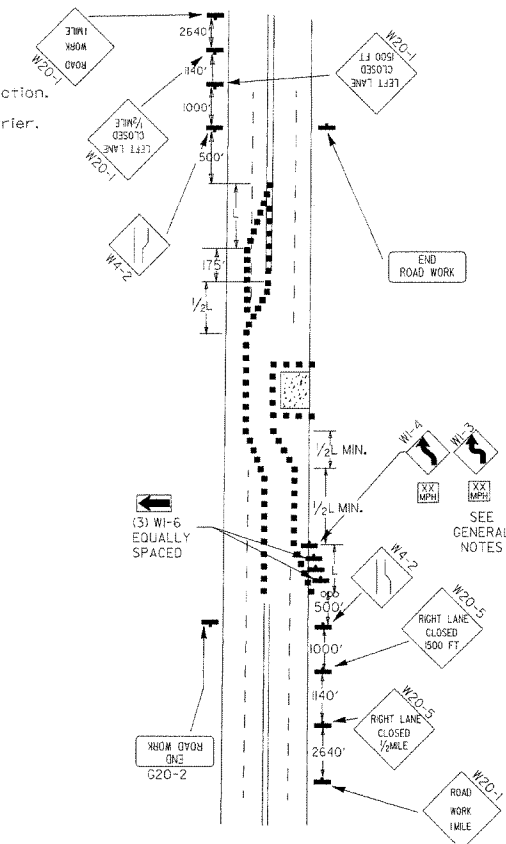
<p>RI-1</p>  <p>STANDARD 30"x30" EXPRESSWAY 36"x36" SPECIAL 48"x48"</p>	<p>RI-2</p>  <p>STD. 36"x36"x36" EXPWY. 48"x48"x48" FWY. 60"x60"x60"</p>	<p>R2-1</p>  <p>STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"</p>	<p>R2-5A</p>  <p>STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"</p>	<p>R2-5C</p>  <p>STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"</p>	<p>R4-1</p>  <p>STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"</p>	<p>R4-2</p>  <p>STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"</p>
<p>R5-1</p>  <p>STD. 30"x30" EXPWY. 36"x36" SPECIAL 48"x48"</p>	<p>R11-2</p>  <p>48"x30"</p>	<p>R11-3A</p>  <p>60"x30"</p>	<p>R11-4</p>  <p>60"x30"</p>	<p>RSP-1</p>  <p>48"x30"</p>	<p>W1-1</p>  <p>STD. 36"x36" FWY. 48"x48"</p>	<p>W1-2</p>  <p>STD. 36"x36" FWY. 48"x48"</p>
<p>W1-3</p>  <p>STD. 48"x48"</p>	<p>W1-4</p>  <p>STD. 48"x48"</p>	<p>W1-6</p>  <p>STD. 48"x24" SPECIAL 60"x30"</p>	<p>W1-8</p>  <p>STD. 18"x24" SPECIAL 24"x30" EXPWY. 30"x36" FWY. 36"x48"</p>	<p>W3-1</p>  <p>STD. 36"x36" SPECIAL 48"x48"</p>	<p>W3-2</p>  <p>STD. 36"x36" SPECIAL 48"x48"</p>	<p>W4-2</p>  <p>STD. 36"x36" FWY. 48"x48"</p>
<p>W5-1</p>  <p>STD. 36"x36" SPECIAL 48"x48"</p>	<p>W6-3</p>  <p>EXPWY. 36"x36" SPECIAL 48"x48"</p>	<p>W8-7</p>  <p>EXPWY. 36"x36" FWY. 48"x48"</p>	<p>W9-2</p>  <p>STD. 36"x36" FWY. 48"x48"</p>	<p>W13-1</p>  <p>STD. 24"x24"</p>	<p>W20-1</p>  <p>STD. 48"x48"</p>	<p>W20-2</p>  <p>STD. 48"x48"</p>
<p>W20-3</p>  <p>STD. 48"x48"</p>	<p>W20-4</p>  <p>STD. 48"x48"</p>	<p>W20-5</p>  <p>STD. 48"x48"</p>	<p>W20-7a</p>  <p>STD. 36"x36" FWY. 48"x48"</p>	<p>W21-2</p>  <p>STD. 30"x30" SPECIAL 36"x36"</p>	<p>W21-5</p>  <p>STD. 30"x30" SPECIAL 36"x36"</p>	<p>W24-1</p>  <p>STD. 36"x36"</p>
<p>W1-4b</p>  <p>STD. 48"x48"</p>	<p>R56-1</p>  <p>STD. 18"x18"</p>	<p>W8-11</p>  <p>STD. 36"x36" FWY. 48"x48"</p>	<p>W8-9</p>  <p>STD. 36"x36" FWY. 48"x48"</p>	<p>G20-1</p>  <p>60"x24"</p>	<p>G20-2</p>  <p>48"x24"</p>	<p>OM-3L OM-3R</p>  <p>12"x36"</p>
<p>M4-9</p>  <p>STD. 30"x24" SPECIAL 48"x36" SPECIAL 60"x48"</p>	<p>M4-10</p>  <p>48"x18"</p>	<p>R55-1</p>  <p>36"x60"</p> <p>• USE 6" C LETTERS •• USE 4" D LETTERS</p>				



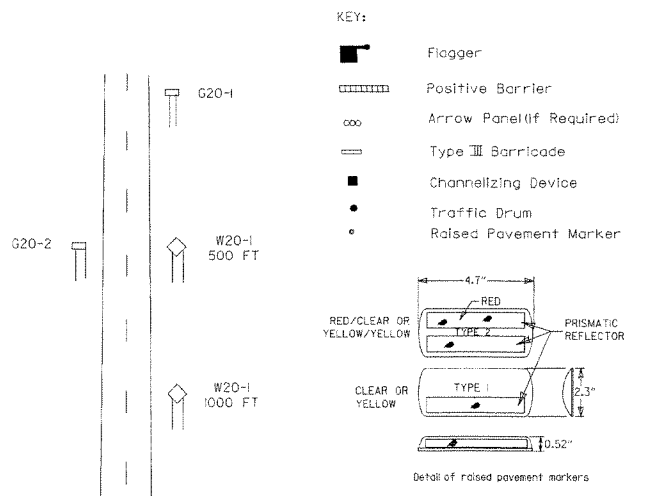
(A) Typical application of traffic control devices on a 2-lane highway where the entire roadway is closed and a bypass detour is provided.



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



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



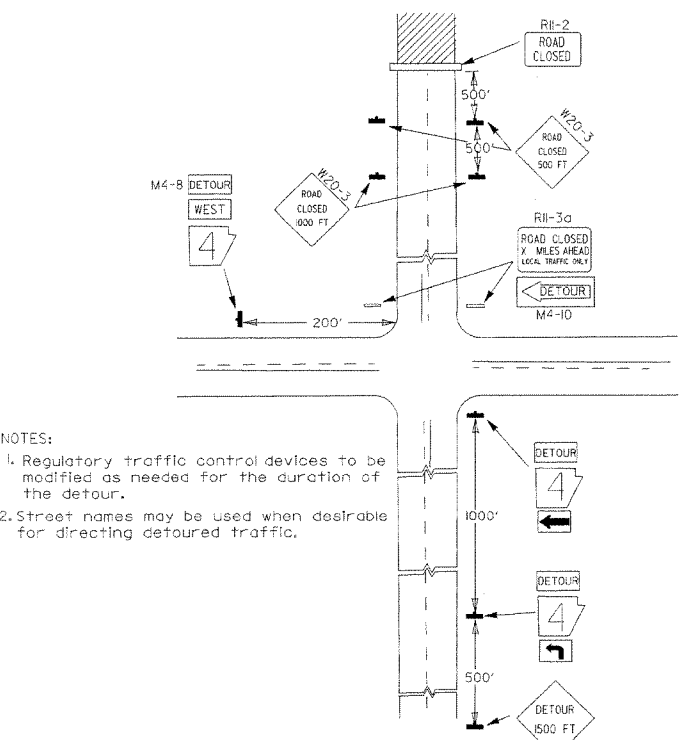
Typical advance warning sign placement

Taper formulae:

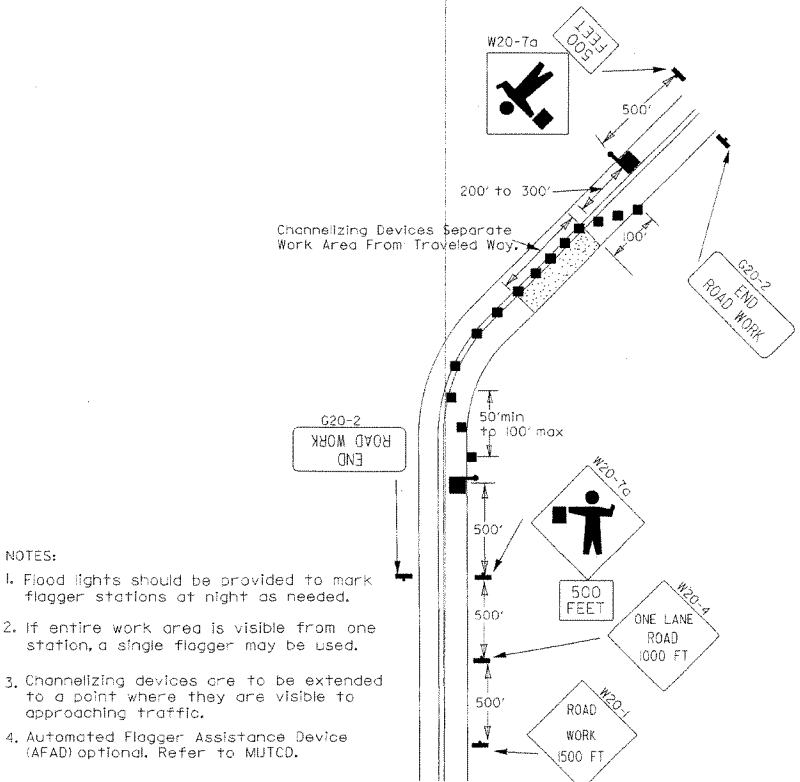
$L = S \times W$ for speeds of 45mph or more.
 $L = \frac{W \times S^2}{60}$ for speeds of 40mph or less.

Where:
 L= Minimum length of taper.
 S= Numerical value of posted speed limit prior to work or 85th percentile speed.
 W= Width of offset.

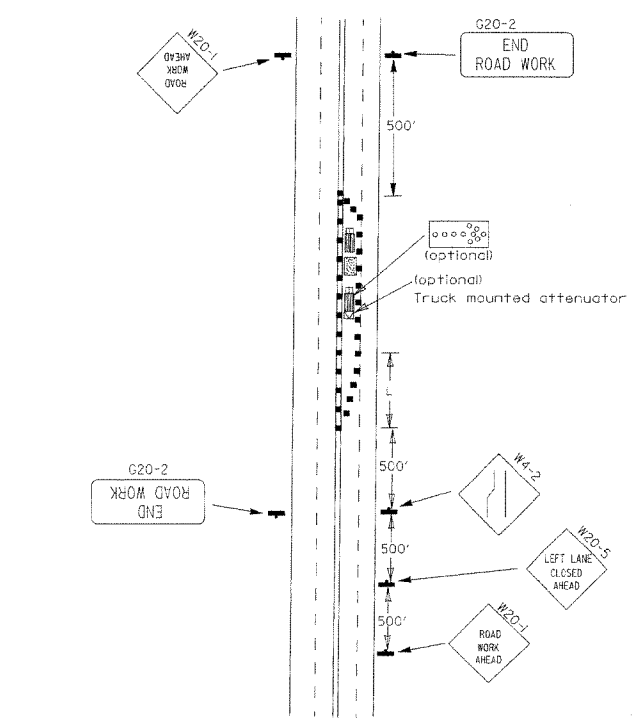
- GENERAL NOTES:
- Advisory speed posted on W1-3 or W1-4 curve warning signs to be determined at site. Use W1-4 when speed is greater than 30mph and W1-3 when 30mph or less.
 - When the existing speed limit is 55mph and the plans require a speed limit of 45mph, the R2-1(55) shall be omitted and the R2-5A shall be installed at that location. Additional R2-145mph speed limit signs shall be installed at a maximum of 1/2 mile intervals. At the end of the work area a R2-1(45) shall be installed to match original speed limit.
 - When the existing speed limit is 65mph and the plans require a speed limit of 55mph, the R2-1(65) 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 R2-1(55) shall be installed to match original speed limit.
 - 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.
 - Warning lights and/or flags may be mounted to signs or channelizing devices at night as needed.
 - Pavement markings no longer applicable which might create confusion in the minds of vehicle operators shall be removed or obliterated as soon as practicable.
 - 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.



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



(E) Typical application of traffic control devices on 2-lane highway where one lane is closed and flagging is provided.

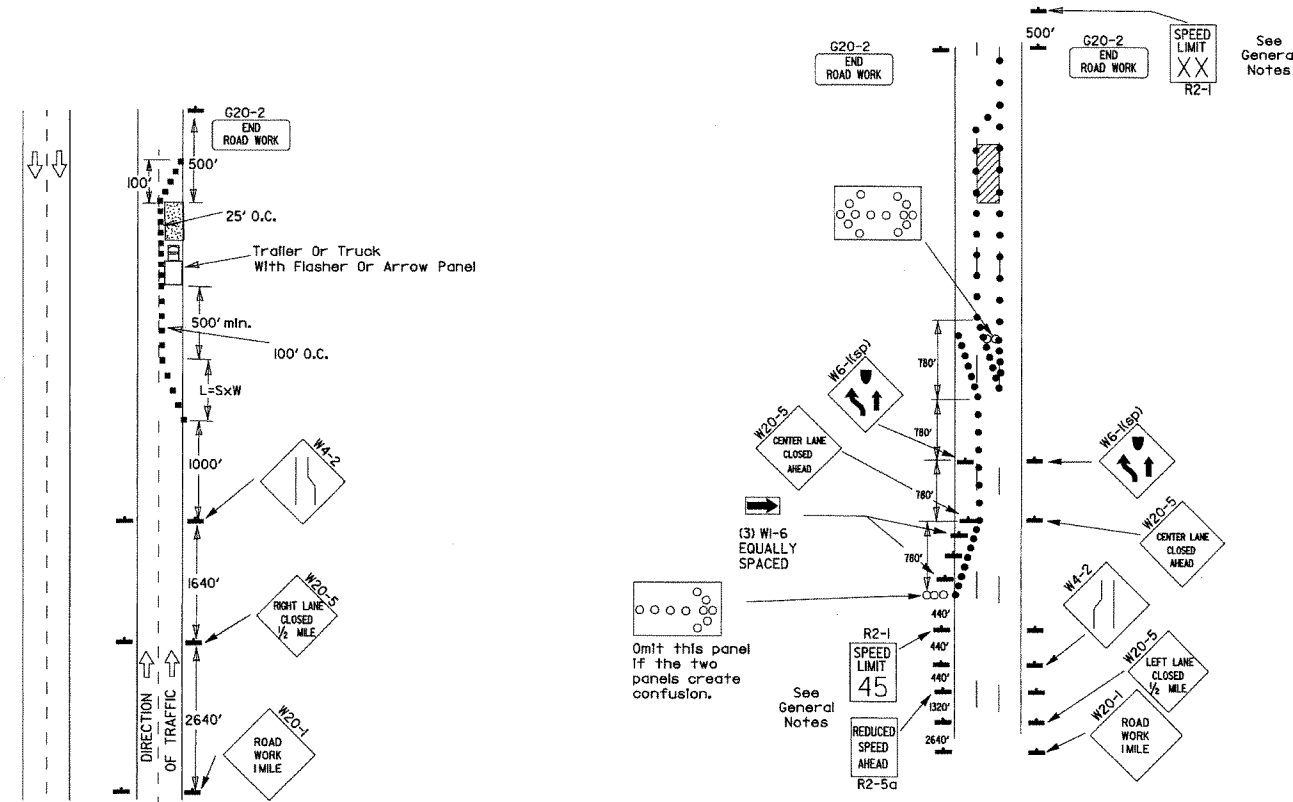


(F) Typical application - 4-lane undivided roadway with inside lane closed.

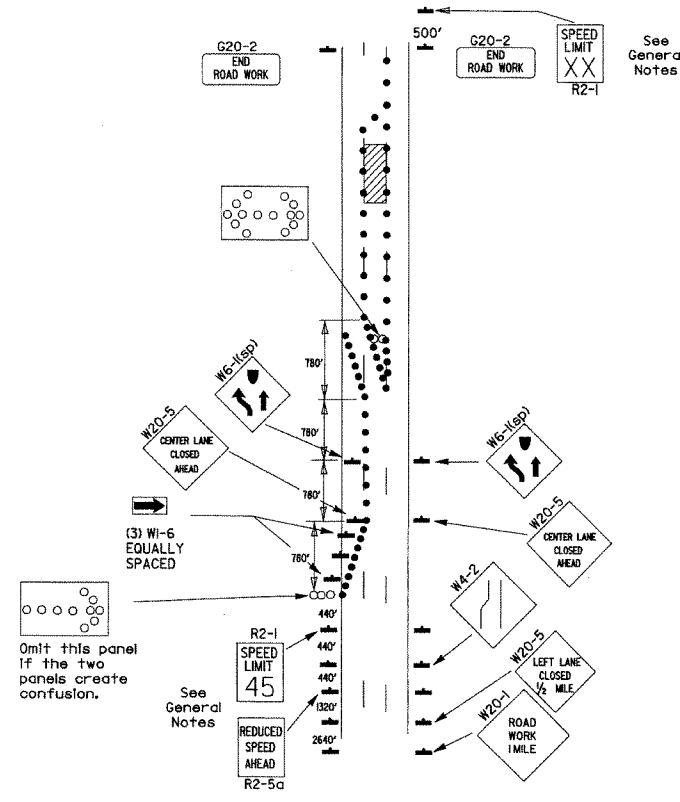
DATE	REVISION	FILMED
3-11-80	ADDED (AFAD)	
11-20-08	REVISED SIGN DESIGNATIONS	
11-18-04	ADDED GENERAL NOTE	
10-18-96	ADDED R55-1	
4-26-96	CORRECTED (a) BEHIND G20-2	
6-8-95	CORRECTED SIGN IDENT. ON W1-4A	6-8-95
2-2-95	REVISED PER PART VI MUTCD, SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	

ARKANSAS STATE HIGHWAY COMMISSION
 STANDARD TRAFFIC CONTROLS
 FOR HIGHWAY CONSTRUCTION

Channelizing devices



(A) Typical application - daytime maintenance operations of short duration on a 4-lane divided roadway where half of the roadway is closed.



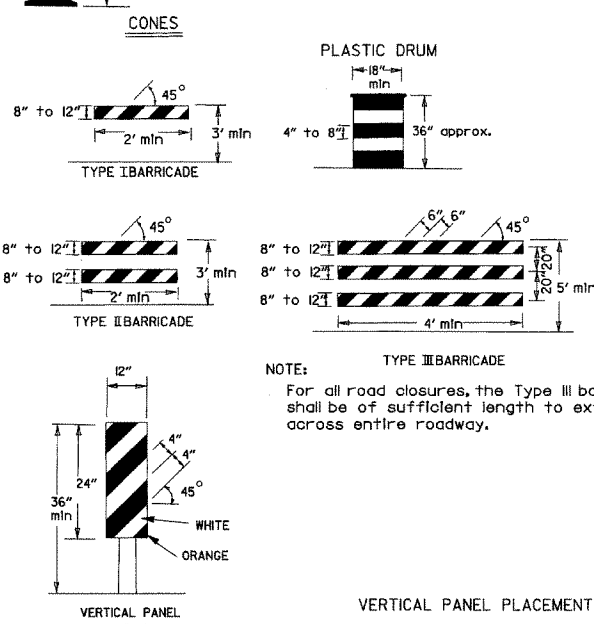
(B) Typical application - 3-lane oneway roadway where center lane is closed.

- KEY:
- Arrow Panel (if Required)
 - Channelizing Device
 - Traffic drum

GENERAL NOTES:

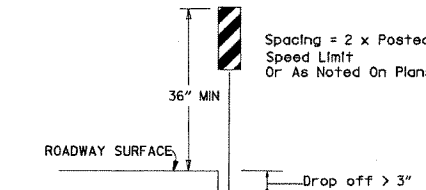
1. A speed limit reduction may be implemented ONLY when designated in the plan or when recommended by the Roadway Design Division.
2. When the existing speed limit is 55mph and the plans require a speed limit of 45mph, the R2-1(55) shall be omitted and the R2-5a shall be installed at that location. Additional R2-145mph speed limit signs shall be installed at a maximum of 1mile intervals. At the end of the work area a R2-1(XX) shall be installed to match original speed limit.
3. When the existing speed limit is 65mph and the plans require a speed limit of 55mph, the R2-1(65) shall be omitted. Additional R2-155mph speed limit signs shall be installed at a maximum of 1mile intervals. At the end of the work area a R2-1(XX) shall be installed to match original speed limit.
4. The maximum spacing between channelizing devices in a taper should be approximately equal in feet to the speed limit. Beyond the taper, maximum spacing shall be two times the speed limit or as directed by the Engineer.
5. Warning lights and/or flags may be mounted to signs or channelizing devices at night as needed.
6. Pavement markings no longer applicable which might create confusion in the minds of vehicle operators shall be removed or obliterated as soon as practicable.
7. The G20-1 sign will be required on jobs of over two miles in length. When the lane closure is not at the beginning of the project, the G20-1 sign shall be erected 125' in advance of the job limit. Additional W20-1 (1 MILE) signs are not required in advance of lane closures that begin inside the project limits.
8. Flaggers shall use STOP/SLOW paddles for controlling traffic through work zones. Flags may be used only for emergency situations.
9. All plastic drums and cones shall meet the requirements of NCHRP-350 or Manual for Assessing Safety Hardware (MASH).
10. Trailer mounted devices such as arrow panels and portable changeable message signs shall be delineated by affixing conspicuity material in a continuous line on the face of the trailer. When placed on or adjacent to the shoulder and not behind a positive barrier, these devices shall be delineated by placing five (5) traffic drums, equally spaced along the traffic side of the device.

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



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

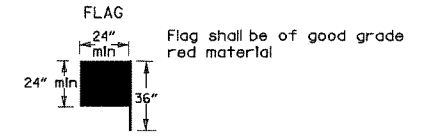
VERTICAL PANEL PLACEMENT



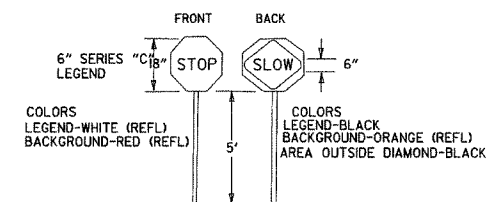
TRAFFIC CONTROL DEVICES FOR VERTICAL PAVEMENT DIFFERENTIALS

VERTICAL DIFFERENTIAL	LOCATIONS	TRAFFIC CONTROL
1" to 3"	Centerline, lane lines	W8-11
1" to 3"	Edge of shoulder	W8-9
Greater than 3"	Lane lines	Standard lane closure required
Greater than 3"	Edge of traveled lane	*RSP-1 and vertical panels, drums or concrete barrier
Greater than 3"	Edge of shoulder	*Vertical panels, drums or concrete barrier

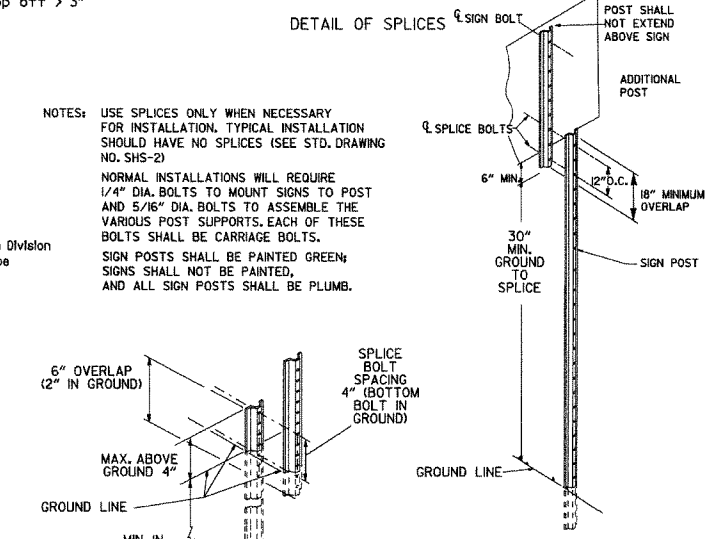
* When shown on the plans concrete barrier will be used. When the shoulder area is used as part of the traveled lane and there is insufficient width to place drums on the remaining shoulder width, then vertical panels shall be used.



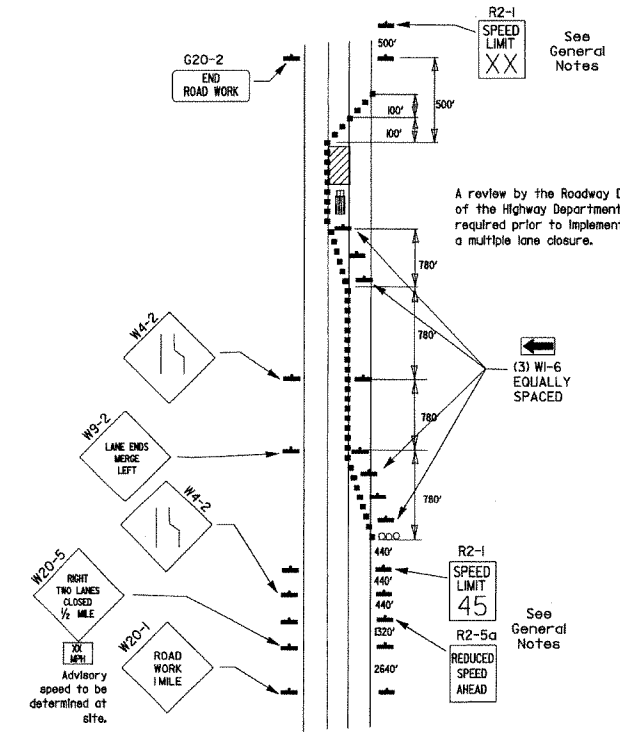
STOP SLOW PADDLE



DETAIL OF SPLICES



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



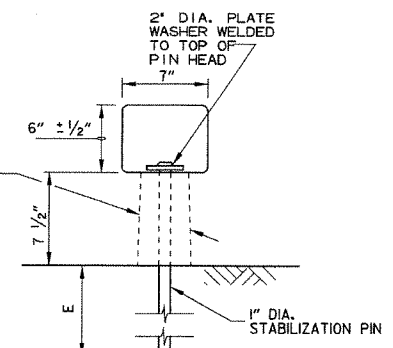
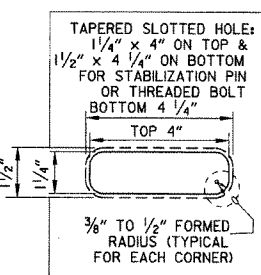
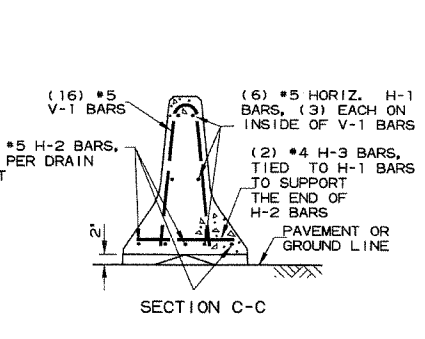
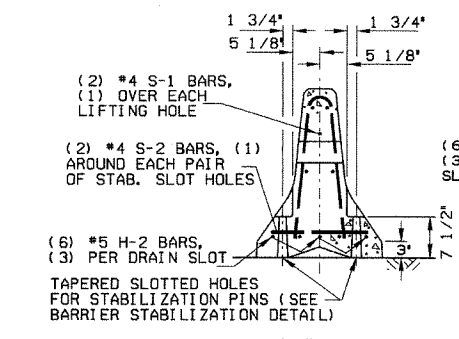
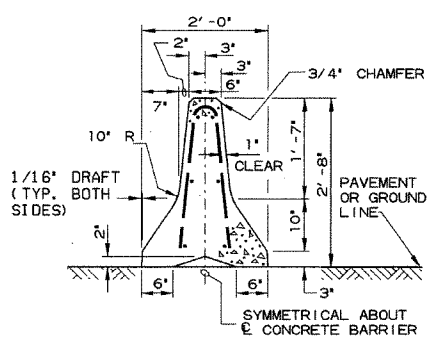
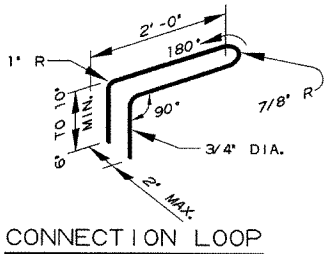
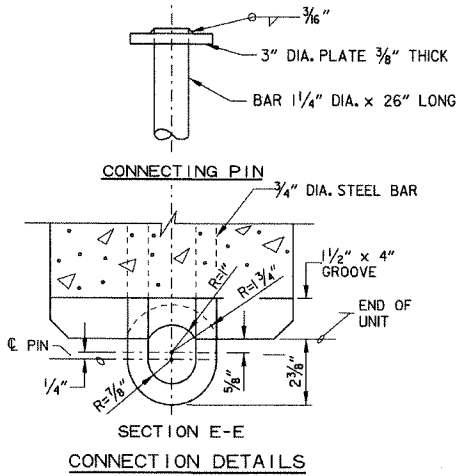
(D) Typical application - closing multiple lanes of a multi-lane highway.

(C) Typical application - construction operations of intermediate to long term duration on a 4-lane divided roadway where half of the roadway is closed.

DATE	REVISION	FILMED
10-15-09	ADDED REFERENCE TO MASH	
11-20-08	REVISED SIGN DESIGNATIONS	
11-18-04	ADDED NOTE	
10-1-98	ADDED NOTE	
4-03-97	ADDED (SP) TO W6-1 & REVISED TRAFFIC CONTROL DEVICES NOTE	
10-18-96	ADDED R55-1	
10-12-95	MOVED UPPER SPLICE	
6-8-95	REVISED SPLICE DETAIL, TEXT	6-8-95
2-2-95	REVISED PER PART VI, MUTCD, SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	

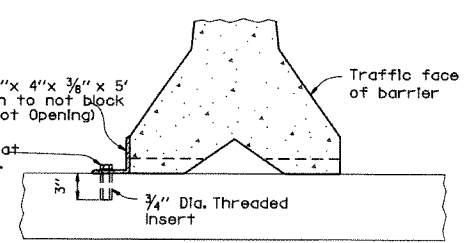
ARKANSAS STATE HIGHWAY COMMISSION
STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION
STANDARD DRAWING TC-3

REINFORCING BAR TABLE PER BARRIER UNIT			
MARK	LOCATION	BAR SIZE	(NO. BARS)
H-1	HORIZONTAL IN BARRIER TIED INSIDE V-1 BARS	#5	(6)
H-2	CENTERED ABOVE DRAIN SLOTS LONG. & TRANSVERSELY	#5	(6)
H-3	TIED ABOVE H-1 BARS TO SUPPORT H-2, TIED TO V-1	#4	(2)
S-1	OVER LIFT HOLES	#4	(2)
S-2	HORIZ. AROUND SLOTS BETWEEN V-1'S & DRAIN SLOTS	#4	(2)
V-1	VERTICAL IN BARRIER (3) EACH END & (2) AT EACH DRAIN SLOTS	#5	(16)



BARRIER STABILIZATION DETAIL

ROADWAY SECTION

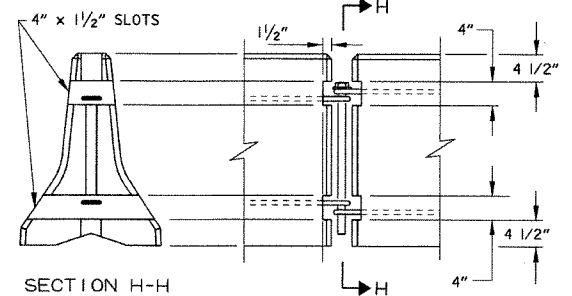
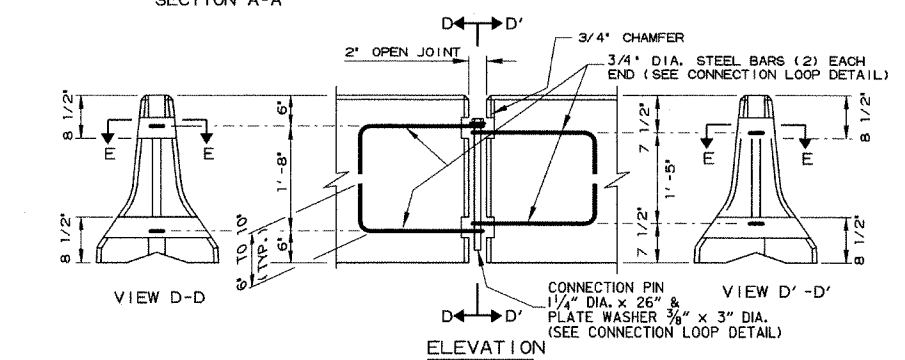


NOTE: 3/4" Threaded inserts shall be cast in place for all new bridge decks and drilled and grouted for existing bridge decks to be retained. Inserts shall have a minimum ultimate load capacity of 8000 lbs. in tension. After removal of barrier, bolts, and angles, the inserts shall be filled with approved non-shrink epoxy.

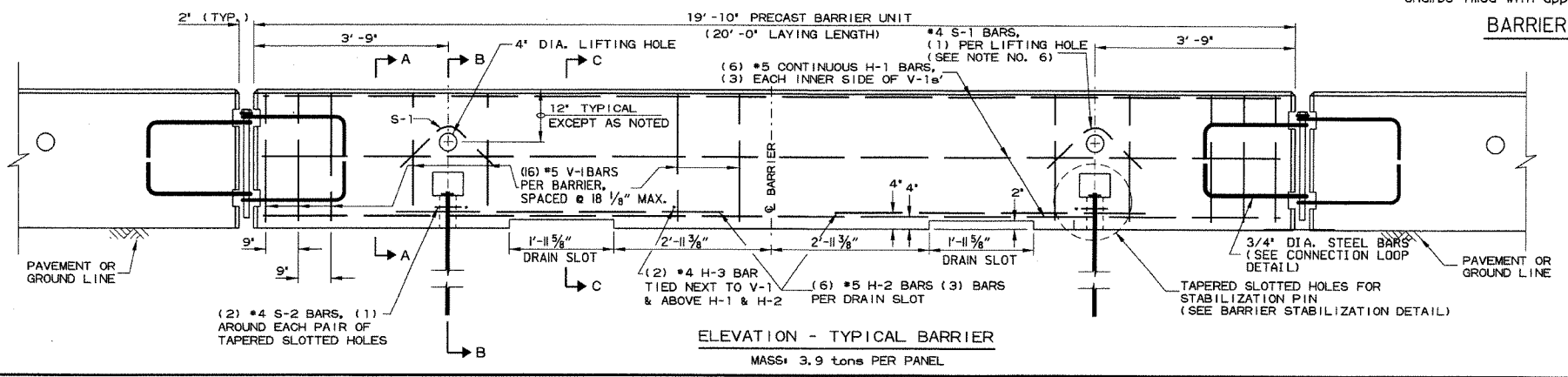
BARRIER STABILIZATION DETAIL
BRIDGE DECKS

- General Notes**
- The contractor shall furnish the Precast Concrete Barrier Units and shall be responsible for the manufacture, shipment, storage, placement and removal. At the completion of the project, the precast units will remain the property of the contractor.
 - Materials shall meet the following minimum requirements: Concrete: 2500 psi compressive strength at 28 days. Reinforcing Steel: AASHTO M 31 or M 53, Grade 60. Structural Steel: AASHTO-M270 Grade 36 shall be used for the Connection Pin, Connection Loops, and Stabilization Pins. A One Piece Pin with a 3" rounded top may be used in place of the detailed Connection Pin. Delineators: Delineators shall be mounted at 10' spacing on top of precast barrier.

In applications where barrier walls within 6 feet of a traffic lane, additional delineators shall be placed on the barrier at 10' spacing approximately one (1) foot from the top of the barrier. Delineators shall be on the AHTD Qualified Products List for Construction Concrete Barrier Markers. Delineator color shall be in accordance with the Manual on Uniform Traffic Control Devices. Payment for delineators shall be considered included in the price bid per Lin. Ft. for "Furnishing and Installing Precast Concrete Barrier". The contractor shall certify to the Engineer that the material and the design used in the precast barrier units meets the requirements as shown on this standard drawing.
 - Other Precast Concrete Barriers that have been crash tested and approved by the Federal Highway Administration to meet the requirements of NCHRP-350 test level 3 or Manual For Assessing Safety Hardware (MASH) will be accepted in lieu of the barrier shown. Drain slots shall be provided as needed or as directed by the Engineer. The Contractor shall furnish a certification of NCHRP Report 350 or Manual For Assessing Safety Hardware (MASH) compliance for any other types of precast barrier to be used. The certification shall state that the precast concrete barrier meets the requirements of NCHRP Report 350 or Manual For Assessing Safety Hardware (MASH) and include a copy of the Federal Highway Administration's (FHWA) approval letter with all attachments. Precast concrete barrier units shall be fabricated and installed in accordance with crash testing and documentation provided in the FHWA approval letter. Mixing of shapes will not be allowed in a continuous line of units.
 - Dowel holes in pavement or bridge slabs that are to remain in place shall be filled. Holes in concrete pavement and bridge slabs shall be filled with an approved non-shrink epoxy grout. Holes in asphalt pavement shall be filled with an approved asphalt joint filler. Payment for drilling and filling holes to be included in the price for various barrier items.
 - Attach Units To Roadway Surface with Stabilization Pins and to Deck Slabs using bolts when required.
 - A 4" White PVC Sleeve may be used to form the Lifting Hole and if used the Sleeve is to be left in place.



BARRIER REMOVAL SLOT DETAILS

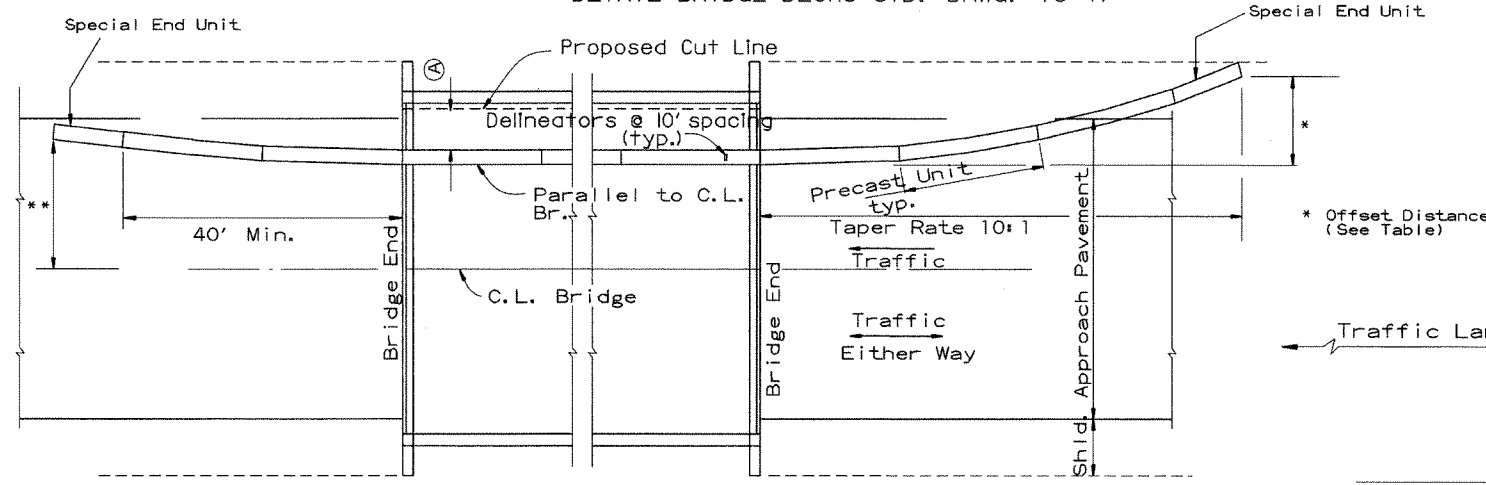


ELEVATION - TYPICAL BARRIER
MASS: 3.9 tons PER PANEL

DATE	REVISION	FILED
10-15-09	ADDED REFERENCE TO MASH	
8-5-09	REV. NOTE 3 CONCERNING DRAIN SLOTS	
11-29-07	REVISED NOTE 3	
5-25-06	DELETED GENERAL NOTE 7	
11-18-04	REVISED BARRIER STABILIZATION DETAIL BRIDGE DECKS	
4-10-03	REVISED GENERAL NOTE 2	
8-22-02	ISSUED NEW DRAWING	

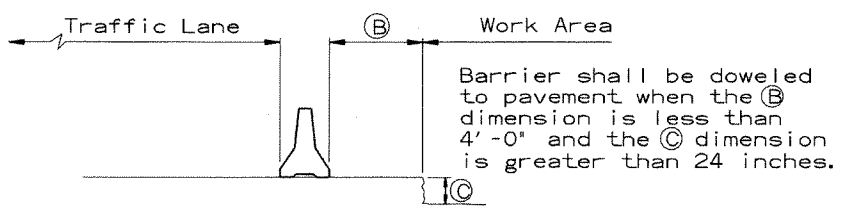
ARKANSAS STATE HIGHWAY COMMISSION
STANDARD TRAFFIC CONTROLS
FOR HIGHWAY CONSTRUCTION -
TEMPORARY PRECAST BARRIER
STANDARD DRAWING TC-4

(A) 4 feet or greater preferred. If less than 4 feet, Precast Units shall be connected to slab (SEE BARRIER STABILIZATION DETAIL-BRIDGE DECKS STD. DRWG. TC-4)



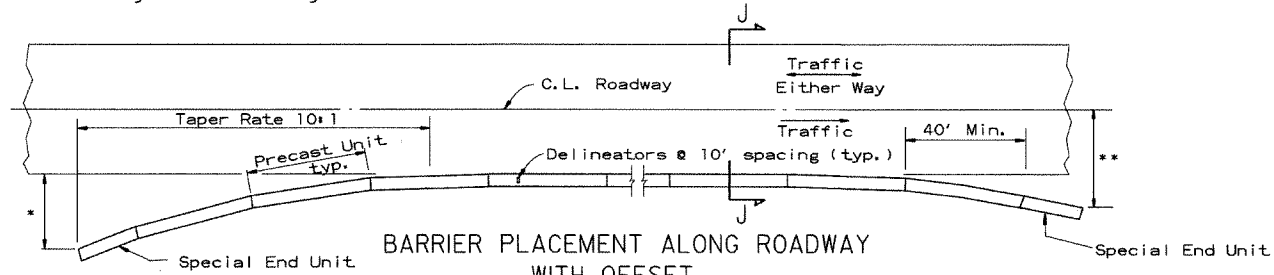
BARRIER PLACEMENT ALONG BRIDGE WITH OFFSET

No Scale



SECTION J-J
No Scale

** Offset Distance for Two Way Traffic Only



BARRIER PLACEMENT ALONG ROADWAY WITH OFFSET

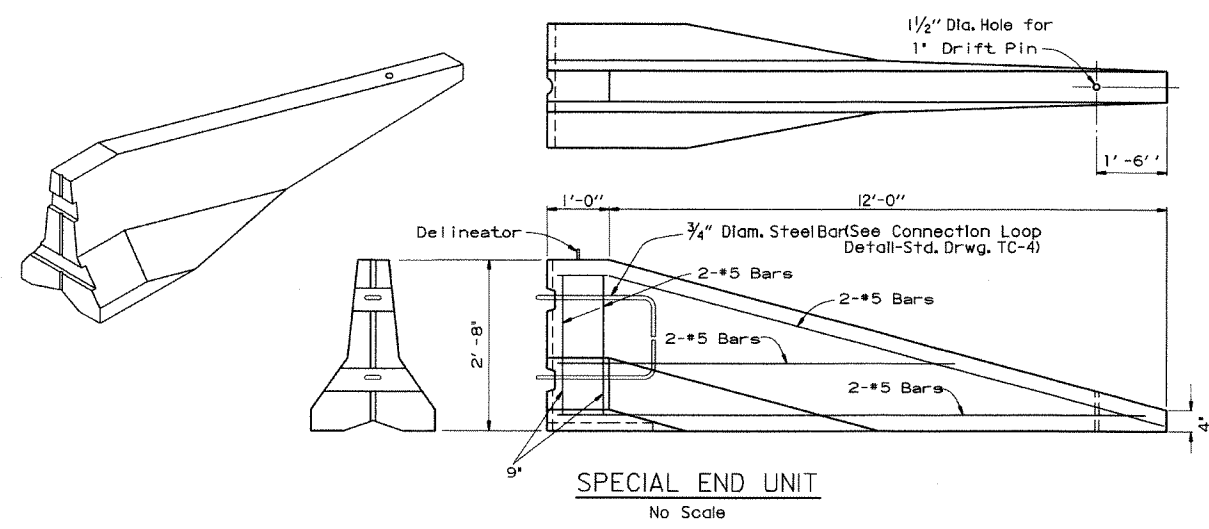
No Scale

** Offset Distance For Two Way Traffic Only

* Offset Distance (See Table)

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

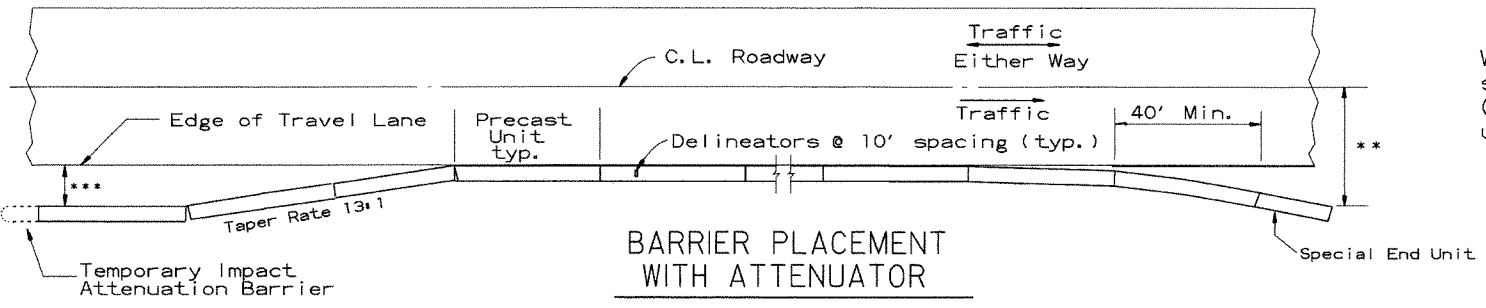
If offset distance is not attainable, then see 'Barrier Placement With Attenuator' Detail shown below.



SPECIAL END UNIT
No Scale

General Notes

When shown on the Plans, the ends of the Temporary Precast Concrete Barrier shall be protected with an NCHRP-350 or Manual For Assessing Safety Hardware (MASH) approved Crash Cushion. Payment for Crash Cushions shall be made under the item of 'Temporary Impact Attenuation Barrier.'



BARRIER PLACEMENT WITH ATTENUATOR

No Scale

** Offset Distance For Two Way Traffic Only

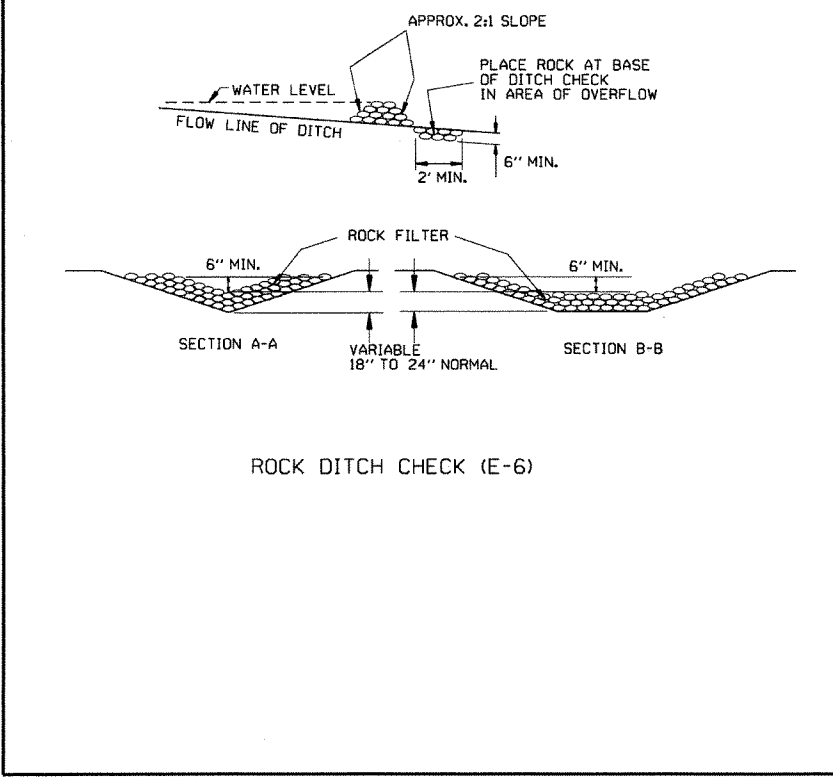
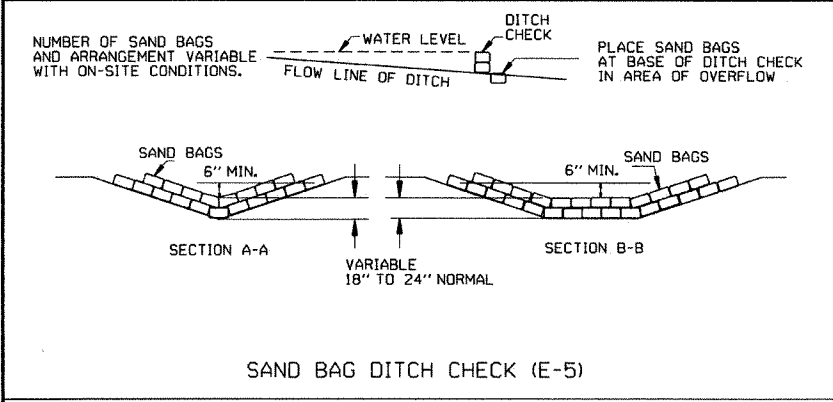
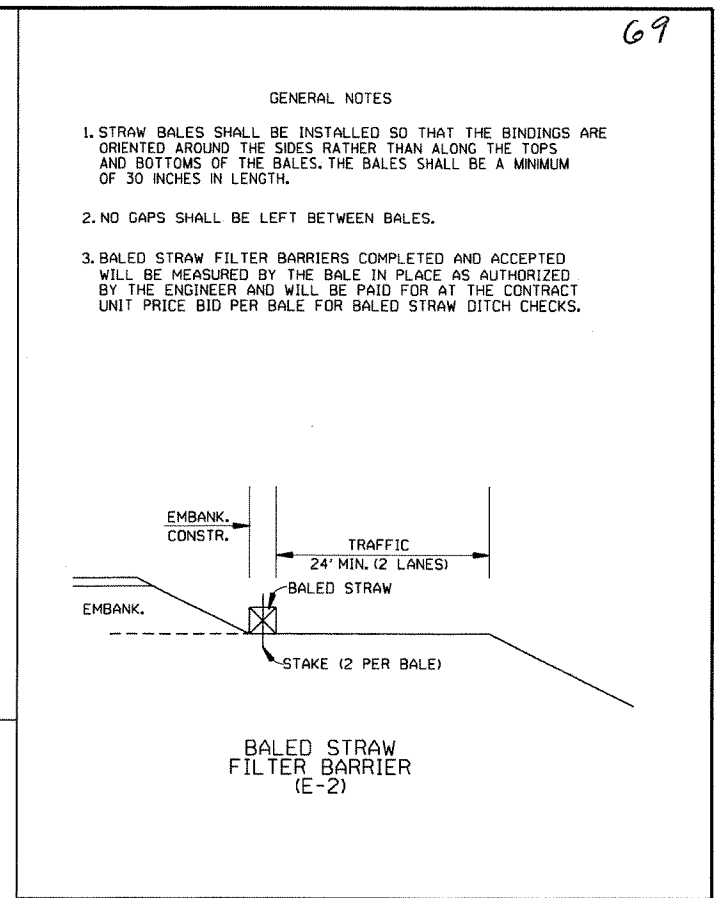
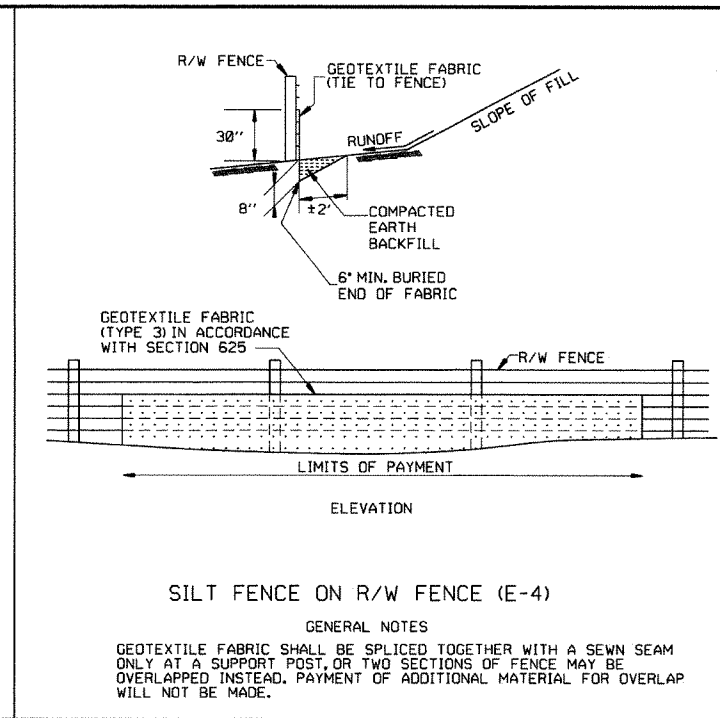
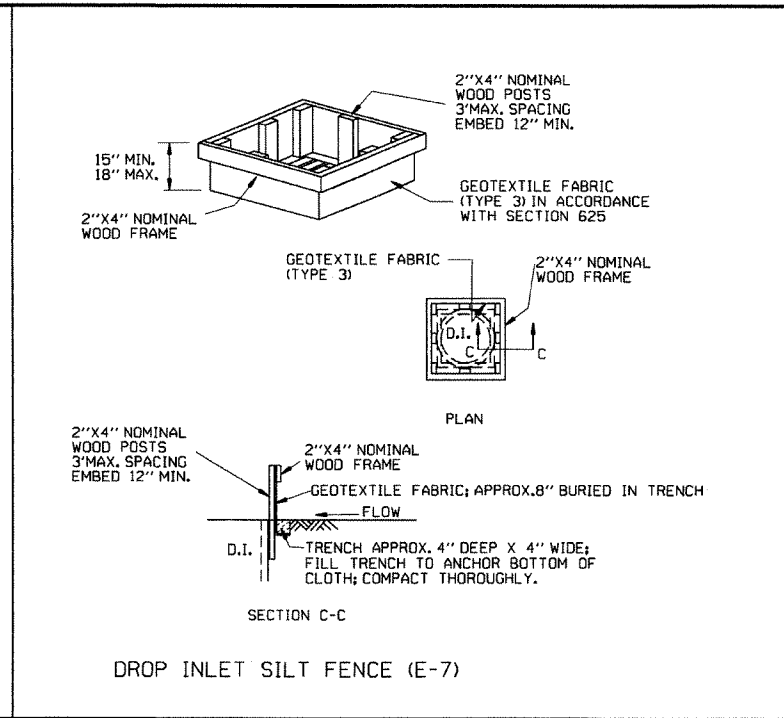
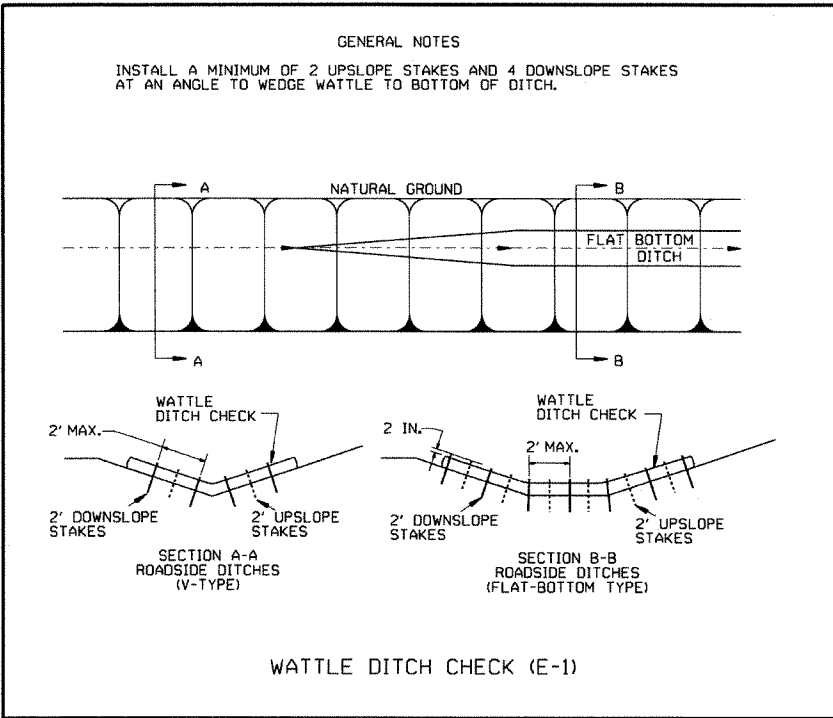
*** Min. 3'-0" From Edge of Travel Lane to Nearest Edge of Attenuator

DATE	REVISION	FILMED
10-15-09	ADDED REFERENCE TO MASH	
5-25-06	REVISED BARRIER PLACEMENT	
8-22-02	ISSUED NEW DRAWING	

ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS
FOR HIGHWAY CONSTRUCTION -
TEMPORARY PRECAST BARRIER

STANDARD DRAWING TC-5

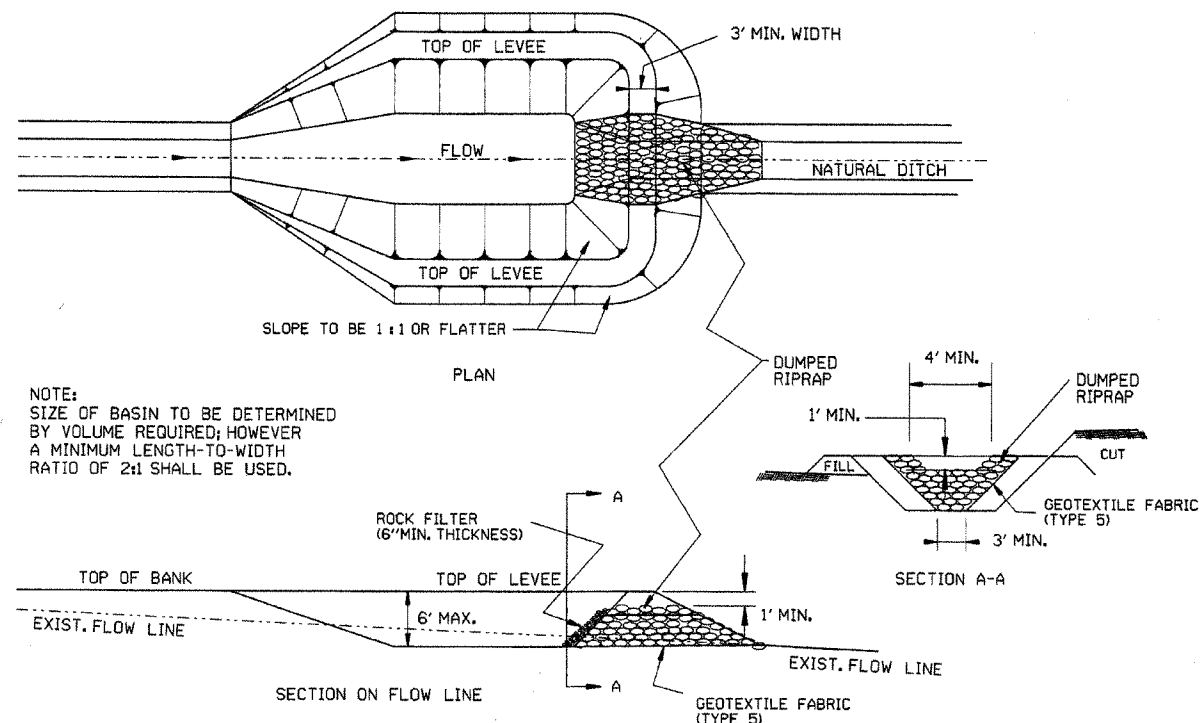


DATE	REVISION	
12-15-11	DELETED BALED STRAW DITCH CHECK & ADDED WATTLE DITCH CHECK	
11-18-98	ADDED NOTES	
7-02-98	ADDED BALED STRAW FILTER BARRIER (E-2)	
7-20-95	REVISED SILT FENCE E-4 AND E-11	7-20-95
7-15-94	REV. E-4 & E-11 MIN. 13" BURIED END OF FABRIC	
6-2-94	REVISED E-1, 4, 7 & 11; DELETED E-2 & 3	6-2-94
4-1-93	REDRAWN	
10-1-92	REDRAWN	
8-2-76	ISSUED R.D.M.	298-7-28-76
		FILMED

ARKANSAS STATE HIGHWAY COMMISSION

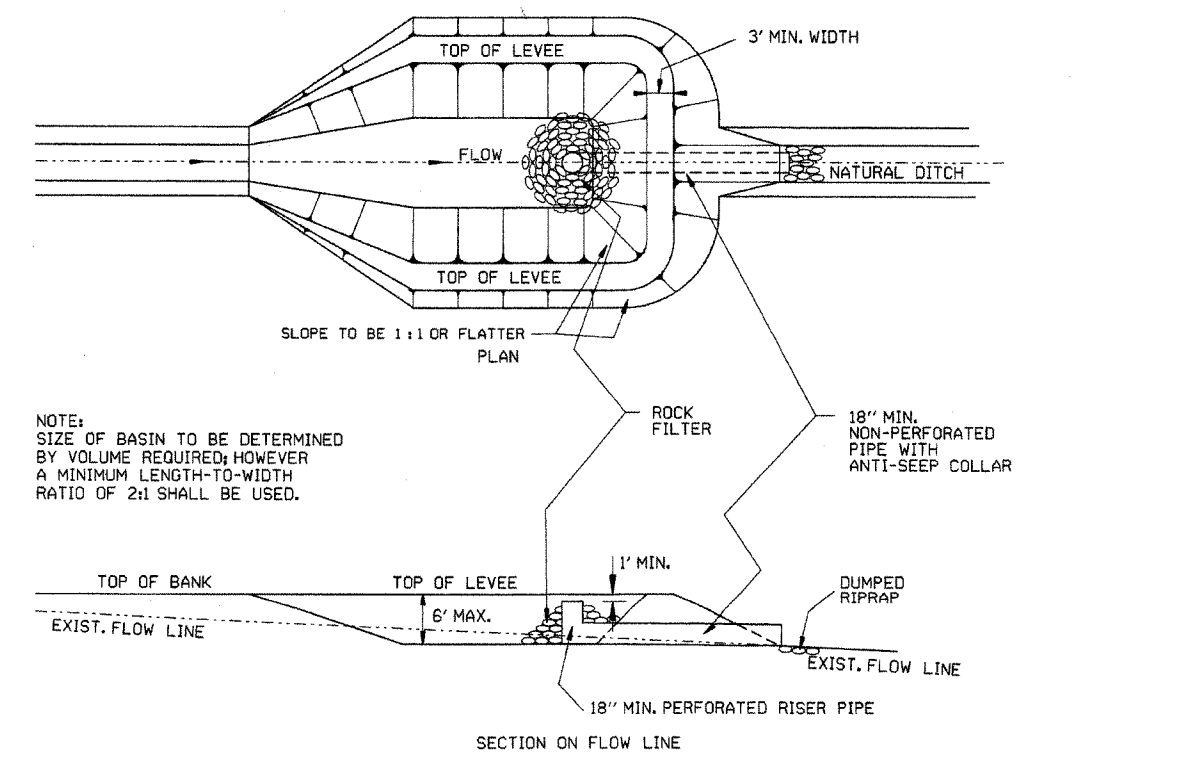
TEMPORARY EROSION CONTROL DEVICES

STANDARD DRAWING TEC-1



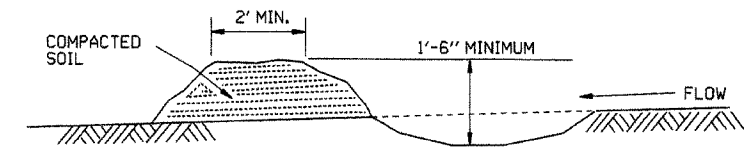
NOTE:
SIZE OF BASIN TO BE DETERMINED
BY VOLUME REQUIRED; HOWEVER
A MINIMUM LENGTH-TO-WIDTH
RATIO OF 2:1 SHALL BE USED.

SEDIMENT BASIN WITH RIPRAP OUTLET (E-9)

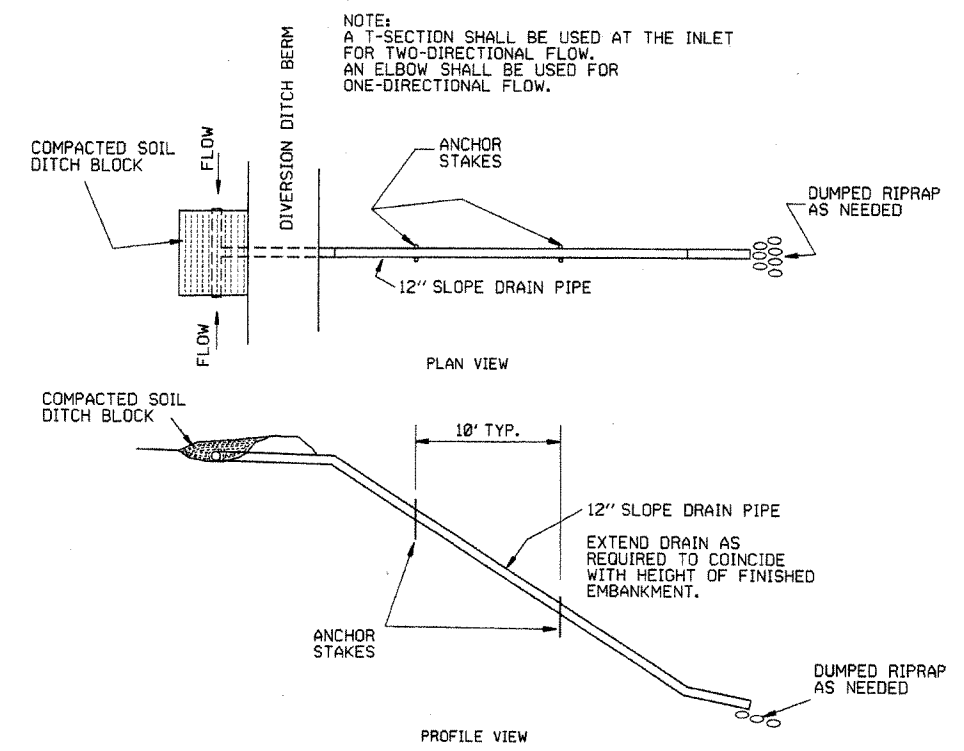


NOTE:
SIZE OF BASIN TO BE DETERMINED
BY VOLUME REQUIRED; HOWEVER
A MINIMUM LENGTH-TO-WIDTH
RATIO OF 2:1 SHALL BE USED.

SEDIMENT BASIN WITH PIPE OUTLET (E-10)

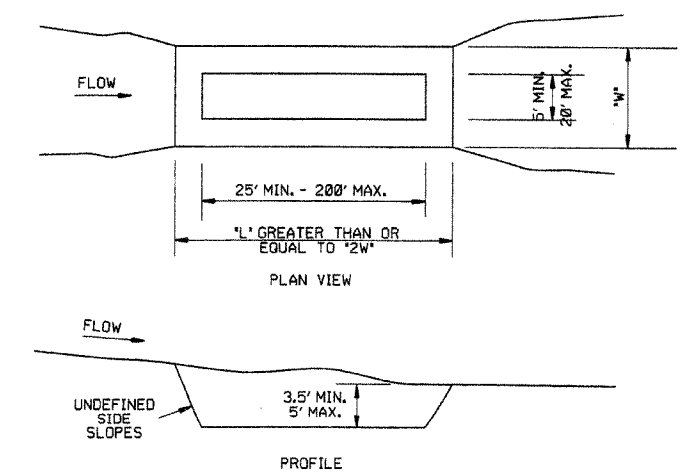


DIVERSION DITCH (E-8)



NOTE:
A T-SECTION SHALL BE USED AT THE INLET
FOR TWO-DIRECTIONAL FLOW.
AN ELBOW SHALL BE USED FOR
ONE-DIRECTIONAL FLOW.

SLOPE DRAIN (E-12)



SEDIMENT BASIN (E-14)

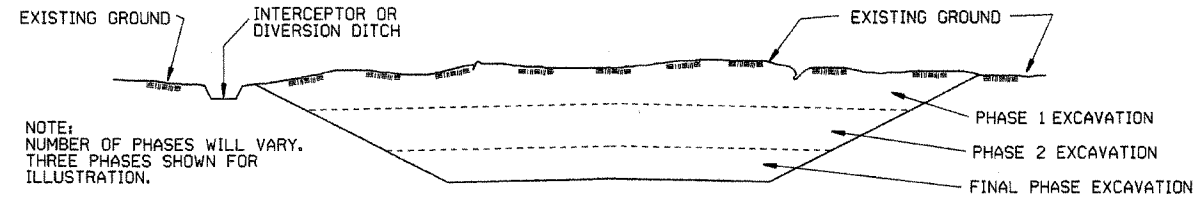
ARKANSAS STATE HIGHWAY COMMISSION			
TEMPORARY EROSION CONTROL DEVICES			
STANDARD DRAWING TEC-2			
6-2-94	Revised E-8 & E-12; Added E-14 & Deleted E-13		
4-1-93	ISSUED		
DATE	REVISION		FILMED

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.

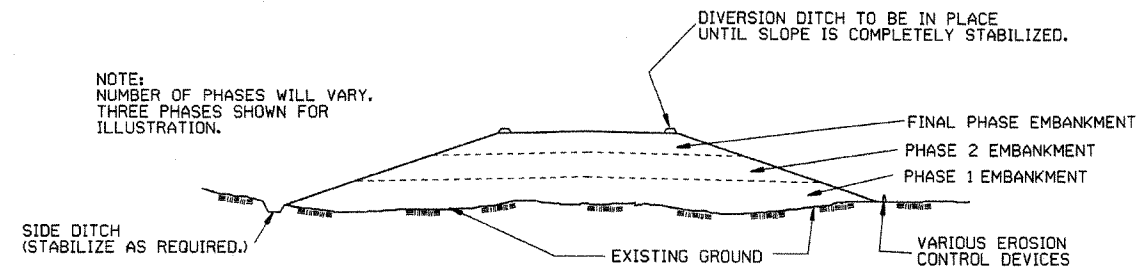
GENERAL NOTE

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

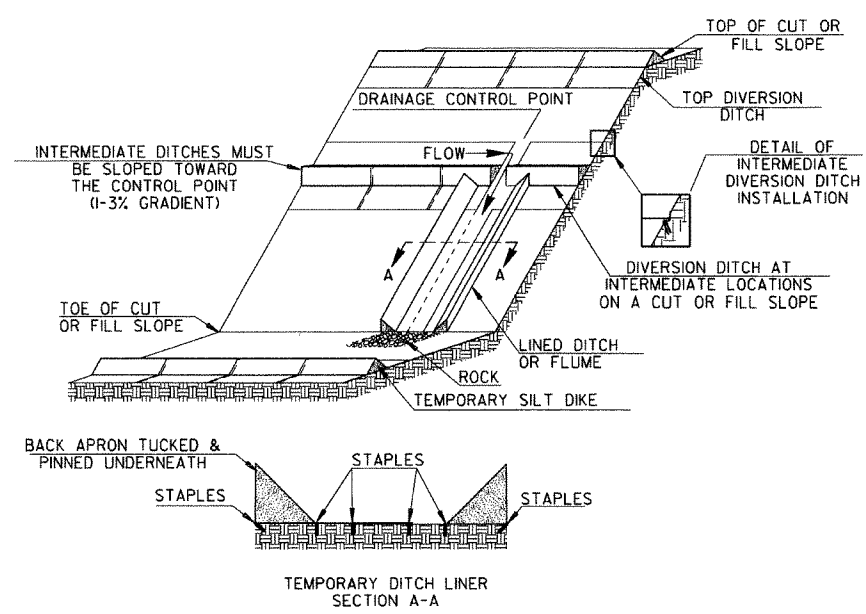
ALL EMBANKMENT SLOPES SHALL BE DRESSED, PREPARED, SEEDED, AND MULCHED AS THE WORK PROGRESSES. SLOPES SHALL BE CONSTRUCTED AND STABILIZED IN EQUAL INCREMENTS NOT TO EXCEED 25 FEET, MEASURED VERTICALLY.

CONSTRUCTION SEQUENCE

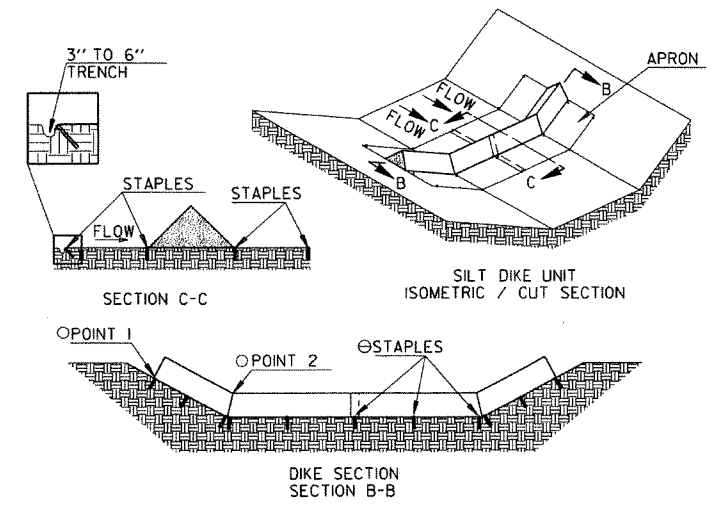
1. CONSTRUCT DIVERSION DITCHES, DITCH CHECKS, SEDIMENT BASINS, SILT FENCES, OR OTHER EROSION CONTROL DEVICES AS SPECIFIED.
2. PLACE PHASE 1 EMBANKMENT WITH PERMANENT OR TEMPORARY SEEDING. PROVIDE DIVERSION DITCHES AND SLOPE DRAINS IF EMBANKMENT CONSTRUCTION IS TO BE TEMPORARILY ABANDONED FOR A PERIOD 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.

71

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

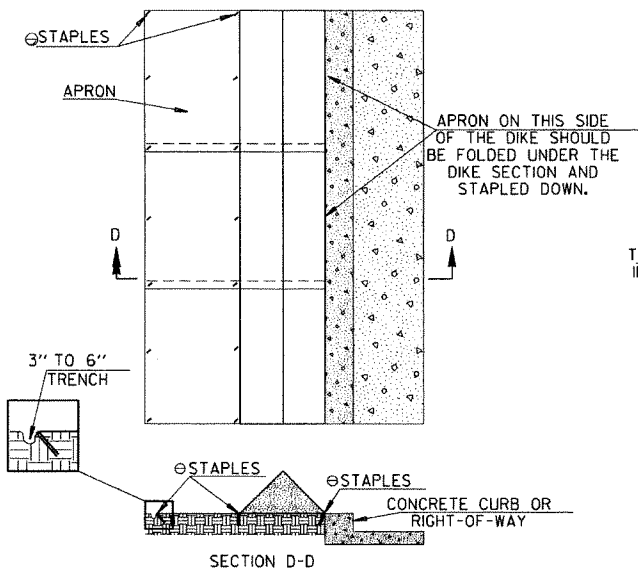


TRIANGULAR SILT DIKE INSTALLATION FOR DIVERSION DITCH AND/OR DITCH LINER

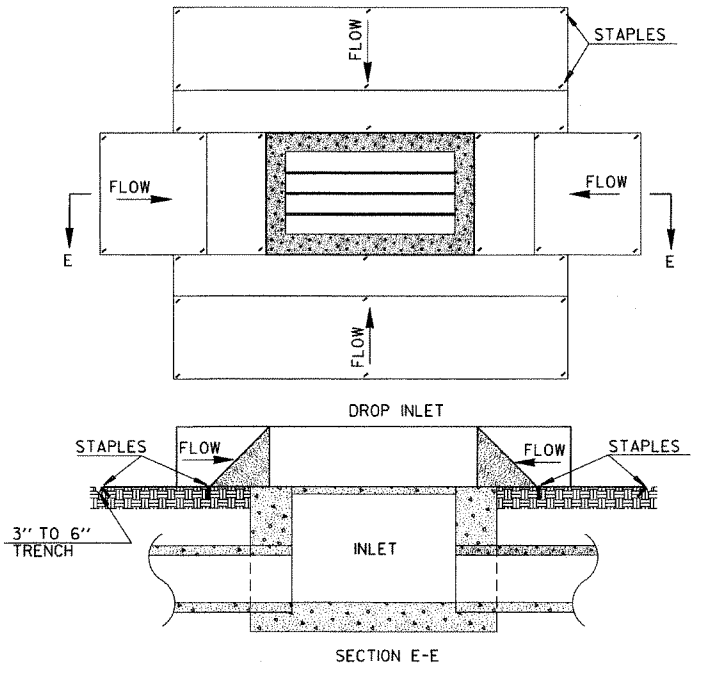


TRIANGULAR SILT DIKE INSTALLATION FOR ROADWAY DITCH OR DRAINAGE DITCH

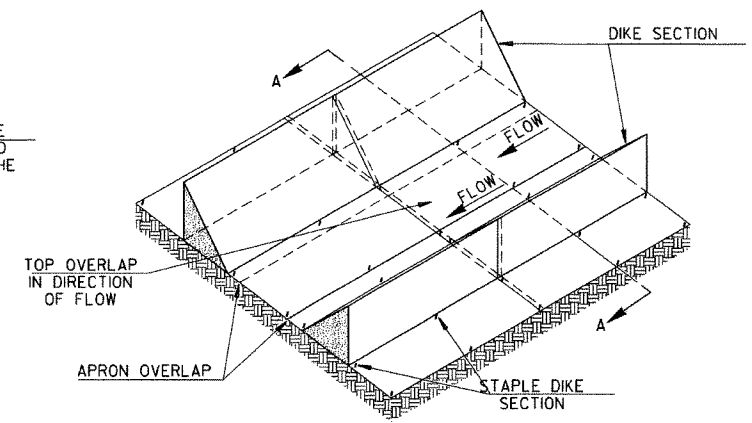
- POINT "1" MUST BE HIGHER THAN POINT "2" TO ENSURE THAT WATER FLOWS OVER THE DIKE AND NOT AROUND THE ENDS.
- ⊙ STAPLES SHALL BE PLACED WHERE THE UNITS OVERLAP AND IN THE CENTER OF THE UNIT AS SHOWN ON THE DIAGRAM.



TRIANGULAR SILT DIKE INSTALLATION FOR CONTINUOUS BARRIER



TRIANGULAR SILT DIKE INSTALLATION FOR DROP INLETS

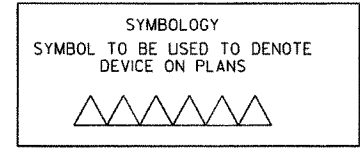


TRIANGULAR SILT DIKE INSTALLATION FOR TEMPORARY DITCH LINER

GENERAL NOTES

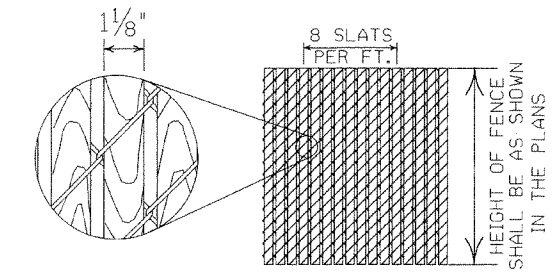
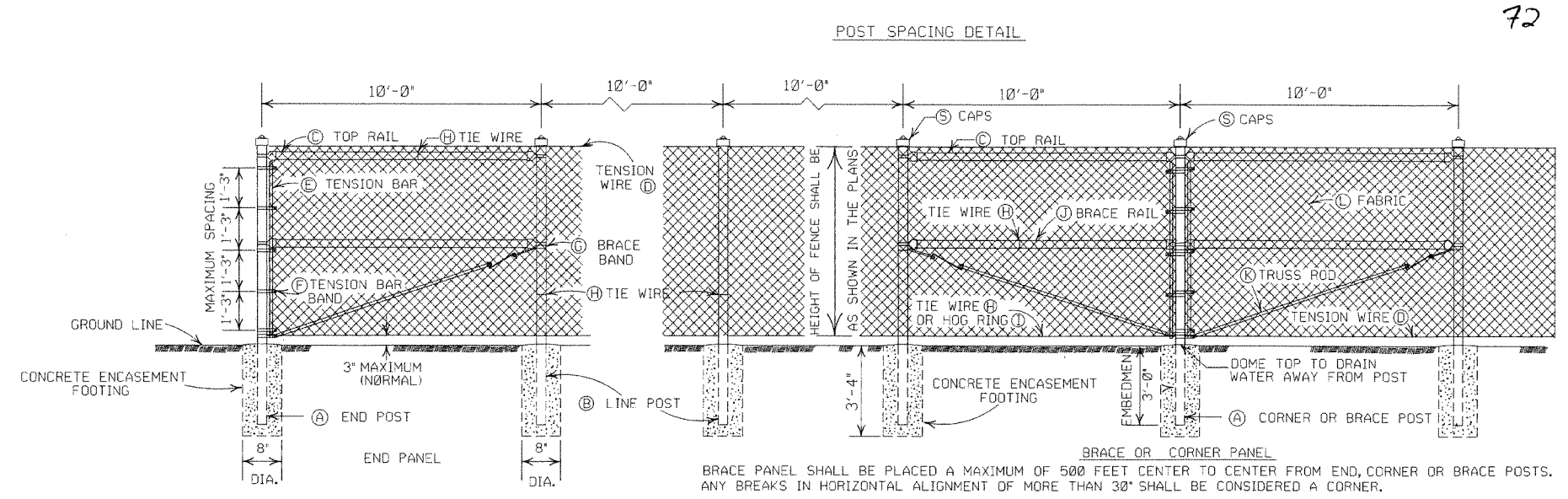
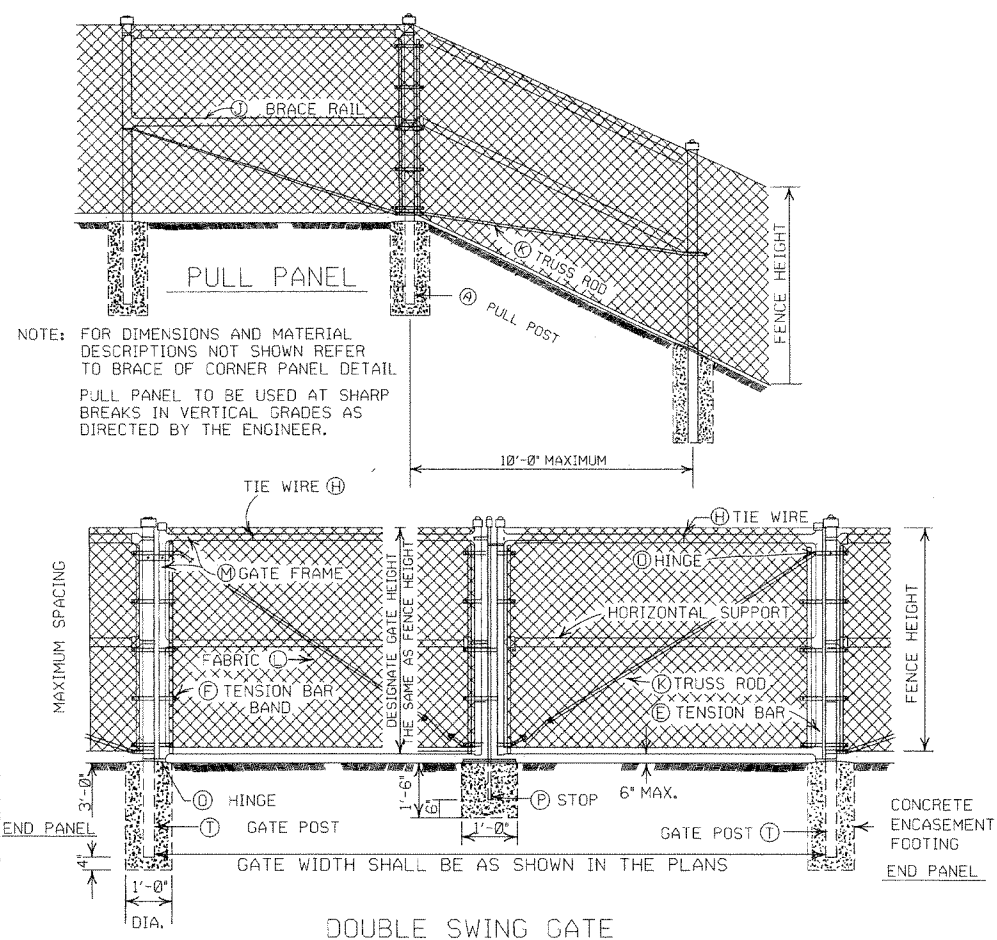
1. THIS WORK SHALL CONSIST OF FURNISHING, INSTALLING, AND MAINTAINING THE TRIANGULAR SILT DIKE. THE DIKES SHALL BE USED AS A CONTINUOUS LINE BARRIER AT THE TOE OF SLOPE OR ACROSS THE ROADWAY DITCH TO CONTAIN SEDIMENT AND MINIMIZE EROSION, OR AS DIRECTED BY THE ENGINEER. THESE DIKES SHALL BE INSTALLED AND LOCATED AS SOON AS CONSTRUCTION WILL ALLOW OR AS DIRECTED BY THE ENGINEER.
2. TRIANGULAR SILT DIKE SHALL BE TRIANGULAR SHAPED HAVING A HEIGHT OF AT LEAST 8" TO 10" IN THE CENTER WITH EQUAL SIDES AND A 16" TO 20" BASE. THE TRIANGULAR SHAPED INNER MATERIAL SHALL BE URETHANE FOAM MEETING THE REQUIREMENTS FOR ASTM D-3574. THE OUTER COVER SHALL BE A WOVEN GEOTEXTILE FABRIC PLACED AROUND THE INNER MATERIAL & ALLOWED TO EXTEND BEYOND BOTH SIDES OF THE TRIANGLE 24" TO 36". THIS FABRIC SHOULD BE MILDEW RESISTANT, ROT-PROOF AND RESISTANT TO HEAT AND ULTRAVIOLET RADIATION MEETING REQUIREMENTS FOR SEDIMENT CONTROL IN AASHTO M288. THE DIKES SHALL BE ATTACHED TO THE GROUND WITH WIRE STAPLES. THE STAPLES SHALL BE NO. 11 GAUGE WIRE AND BE AT LEAST 6" TO 8" LONG. STAPLES SHALL BE PLACED AS SHOWN ON THESE DETAILS.
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.

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.



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

ARKANSAS STATE HIGHWAY COMMISSION			
TEMPORARY EROSION CONTROL DEVICES			
STANDARD DRAWING TEC-4			
12-15-11	ISSUED	REVISION	FILMED
DATE			



- GENERAL NOTES:**
- (C) CHAIN LINK FENCE BEING PLACED ON PRIVATE PROPERTY SHALL INCLUDE A TOP RAIL. ALL LABOR, MATERIALS, EQUIPMENT, TOOLS, AND INCIDENTALS NECESSARY TO COMPLETE THE WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE BID PER LIN. FT. OF CHAIN LINK FENCE.
 - (D) TENSION WIRE: SHALL BE SECURED TO ALL TERMINAL, PULL, BRACE OR CORNER POSTS WITH TENSION BAR BANDS.
 - (J) BRACE RAIL: BRACE RAILS SHALL BE PROVIDED AT ALL TERMINAL, PULL, BRACE OR CORNER POSTS HALF WAY BETWEEN THE TOP RAIL AND GROUND LEVEL WHEN TOPRAIL IS SPECIFIED AND TWELVE INCHES (12") DOWN FROM TOP OF FABRIC WHEN TOP TENSION WIRE IS SPECIFIED. BRACE RAIL SHALL EXTEND FROM SUCH POST TO THE FIRST ADJACENT LINE POST.
 - (L) FABRIC: SHALL CONFORM TO THE SPECIFICATIONS.

HEIGHT OF FENCE FABRIC	(A) END, PULL CORNER OR BRACE POST		(B) LINE POSTS			(C) TOP RAIL			(D) TENSION WIRE		(E) TENSION BAR		(F) TENSION BAR BAND			(G) BRACE BAND	
	SIZE	TIE SPACING	SIZE	TIE SPACING	MIN. LENGTH	SIZE	TIE SPACING	MIN. OF	MIN. OF	MIN. OF	BOLT SIZE	SPACING	SIZE	BOLT SIZE			
6' AND LESS	2 1/2" O.D.	2' O.D.	1 TIE EVERY 1'-2" OF FABRIC HEIGHT	1 1/2" O.D.	10'-0"	7 GAUGE COIL SPRING WIRE	1 TIE EVERY 1'-0"	3/8" x 3/4"	MIN. OF 2" LESS THAN FABRIC HEIGHT	3/4" x 1/4"	1 BAND AT TOP AND BOTTOM 15" MAX. INTERVAL BETWEEN BANDS	MIN. OF 0.074	3/4" x 1/4"	MIN. OF 0.105	3/8" x 1/4"		
OVER 6' TO 12' INCL.	3" O.D.	2 1/2" O.D.	1 TIE EVERY 1'-2" OF FABRIC HEIGHT	1 1/2" O.D.	10'-0"	7 GAUGE COIL SPRING WIRE	1 TIE EVERY 1'-0"	3/8" x 3/4"	MIN. OF 2" LESS THAN FABRIC HEIGHT	3/4" x 1/4"	1 BAND AT TOP AND BOTTOM 15" MAX. INTERVAL BETWEEN BANDS	MIN. OF 0.074	3/4" x 1/4"	MIN. OF 0.105	3/8" x 1/4"		

HEIGHT OF FENCE FABRIC	(H) TIE WIRE	(I) HOG RING	(J) BRACE RAIL		(K) TRUSS ROD	(L) FABRIC		(M) GATE FRAME		(N) HORIZONTAL SUPPORT	(O) HINGE TYPE	(P) GATE POST	
	SIZE	TIE SPACING	SIZE	TIE SPACING	MIN. OF	SIZE	MESH SELVAGE	SIZE	TIE SPACING	SIZE	TIE SPACING	GATE WIDTH 12' AND LESS	GATE WIDTH OVER 12' TO 24' INCL.
6' AND LESS	MIN. OF 12 GA. STEEL OR 9 GA. ALUM.	SAME GAUGE AS FABRIC	1 1/2" O.D.	1 TIE EVERY 2'-0"	MIN. OF 3/8" ROUND WITH TIGHTENERS AND FITTINGS	9 GA. 2"	KNUCKLING AND/OR TWISTING	2" O.D.	1 TIE EVERY 1'-0"	2" C.D.	1 TIE EVERY 1'-0"	3' O.D.	4' O.D.
OVER 6' TO 12' INCL.	MIN. OF 12 GA. STEEL OR 9 GA. ALUM.	SAME GAUGE AS FABRIC	1 1/2" O.D.	1 TIE EVERY 2'-0"	MIN. OF 3/8" ROUND WITH TIGHTENERS AND FITTINGS	9 GA. 2"	KNUCKLING AND/OR TWISTING	2" O.D.	1 TIE EVERY 1'-0"	2" C.D.	1 TIE EVERY 1'-0"	3' O.D.	4' O.D.

NOTE: POST SIZES SHOWN ARE FOR STEEL. WHERE ALUMINUM IS PROVIDED, LINE POSTS SHALL HAVE AN OUTSIDE DIAMETER OF 2 1/2" FOR FENCE HEIGHT OF 6' AND LESS, AN OUTSIDE DIAMETER OF 3" FOR FENCE HEIGHT OF 6' TO 12'. END, PULL, CORNER OR BRACE POSTS SHALL HAVE AN OUTSIDE DIAMETER OF 3" FOR FENCE HEIGHT OF 6' AND LESS; AN OUTSIDE DIAMETER OF 3 1/2" FOR FENCE HEIGHTS OF 6' TO 12'. GATE POSTS WHERE GATE WIDTH IS 12' AND LESS SHALL HAVE AN OUTSIDE DIAMETER OF 3 1/2" FOR FENCE HEIGHT OF 6' AND LESS. ALUMINUM TENSION WIRE SHALL BE 0.192" IN DIAMETER. MINIMUM THICKNESS OF MATERIAL FROM WHICH EXPANSION SLEEVES SHALL BE MADE WILL BE 0.078". POSTS AND RAILS MAY HAVE ANY CROSS-SECTIONAL SHAPE THAT WILL MEET THE SPECIFICATIONS.

OTHER DETAILS APPLY TO BOTH STEEL AND ALUMINUM FENCE.

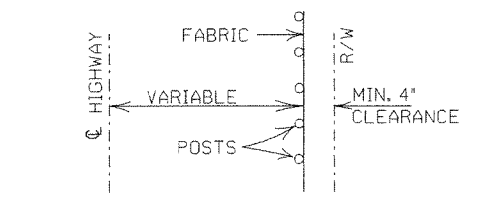
ALL MISCELLANEOUS FITTINGS AND HARDWARE SHALL MEET THE REQUIREMENTS AND PRODUCTION TOLERANCES AS SET FORTH IN THE SPECIFICATIONS. 9 GAUGE ALUMINUM WIRE SHALL BE ACCEPTABLE FOR TIEING FABRIC TO TUBULAR AND ROLL FORMED MEMBERS OF STEEL FENCE.

- (M) GATE FRAMES: SHALL BE CONSTRUCTED OF TUBULAR MEMBERS ASSEMBLED BY USE OF HEAVY PRESSED STEEL, MALLEABLE FITTINGS OR BY WELDING. ALL GATES SHALL HAVE ONE HORIZONTAL SUPPORT EXTENDING THE WIDTH OF THE GATE AT THE MIDPOINTS OF VERTICAL FRAME MEMBERS. THE COMPLETE FRAME SHALL BE RIGID AND HAVE AMPLE STRENGTH TO BE FREE FROM SAG AND TWIST.
- (O) HINGES: SHALL BE OF HEAVY PATTERN, OF ADEQUATE STRENGTH FOR GATE, AND WITH LARGE BEARING SURFACES FOR CLAMPING IN POSITION. THE HINGE SHALL BE OF THE PROPER TYPE TO ALLOW FOR THE DESIGNATED DEGREE OF SWING. THE HINGE SHALL NOT TWIST OR TURN UNDER THE ACTION OF THE GATE. THE GATES SHALL BE CAPABLE OF BEING OPENED AND CLOSED EASILY BY ONE PERSON.
- (P) LATCHES AND STOPS: SHALL BE PROVIDED FOR ALL GATES. GATES SHALL HAVE A DROP BAR LATCH. LATCHES SHALL BE ARRANGED FOR LOCKING. THE STOP FOR DROP BAR LATCHES SHALL BE SET IN CONCRETE AND ENGAGE THE PLUNGER OF THE BAR LATCH.
- (S) CAPS: ALL POSTS, EXCEPT ROLL FORMED POSTS AND *T* POSTS SHALL BE CAPPED OVER THE EXTERIOR OF THE POST, AND SHALL CONFORM TO ASTM F626.

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

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

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



POSTS AND RAILS

SIZE O.D.	GRADE 1 AND ALUMINUM ALLOY				GRADE 2		
	O.D. INCHES	WALL THICKNESS	LBS. PER LINEAR FT.		O.D. INCHES	WALL THICKNESS	LBS. PER LINEAR FT.
1 1/2"	1.660	0.140	2.27	0.786	1.660	0.111	1.84
2"	1.900	0.145	2.72	0.940	1.900	0.120	2.28
2 1/2"	2.375	0.154	3.65	1.264	2.375	0.130	3.11
3"	2.875	0.203	5.79	2.004	2.875	0.160	4.64
3 1/2"	3.500	0.216	7.58	2.621	3.500	0.160	5.71
4"	4.000	0.226	9.11	3.151	4.000	0.160	6.56

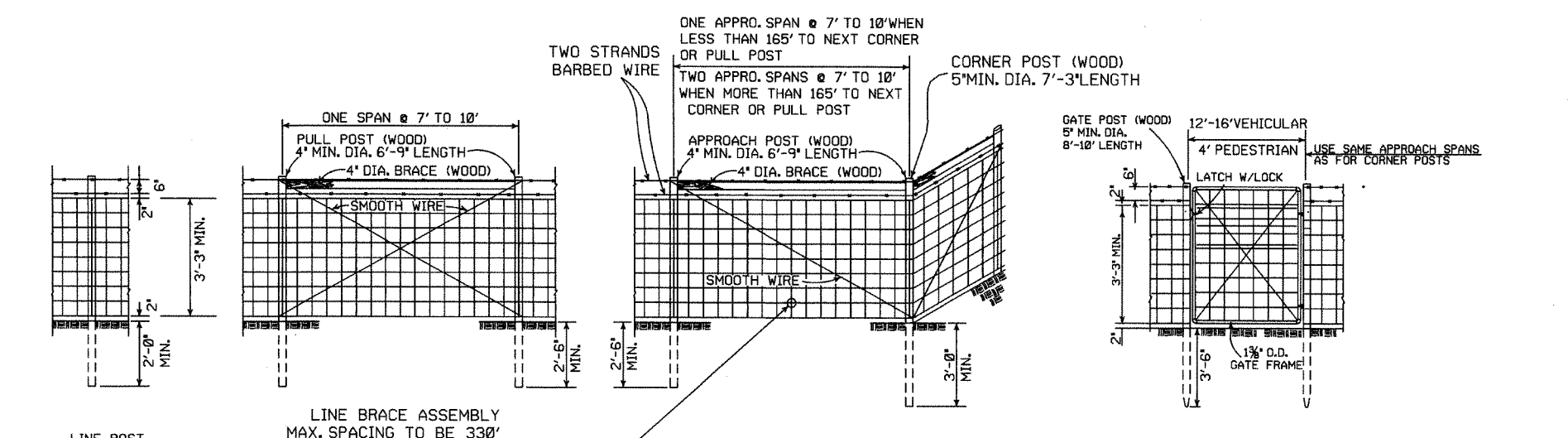
TOLERANCES ON DIMENSIONS AND WEIGHTS ACCORDING TO AASHTO M 181

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

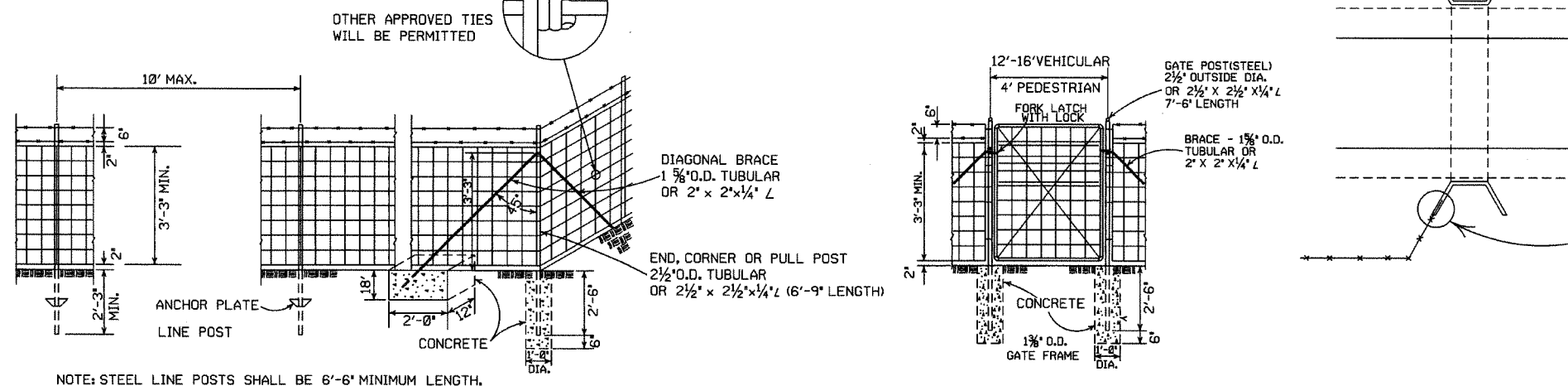
ARKANSAS STATE HIGHWAY COMMISSION

CHAIN LINK FENCE

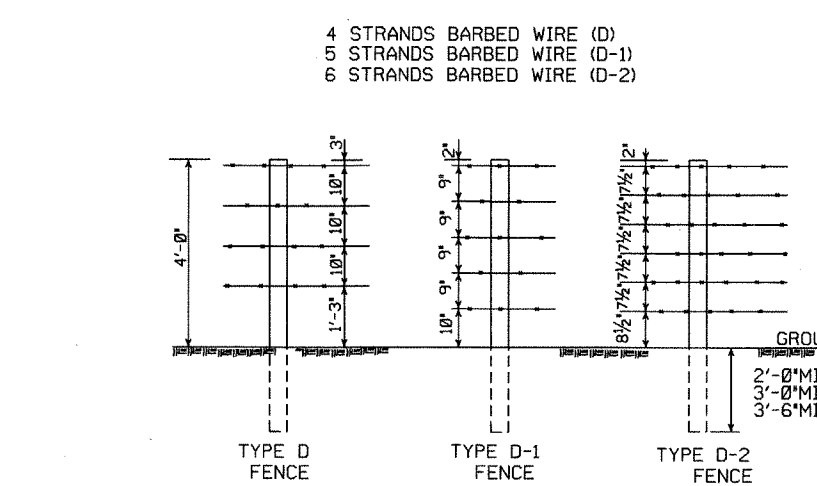
STANDARD DRAWING WF-3



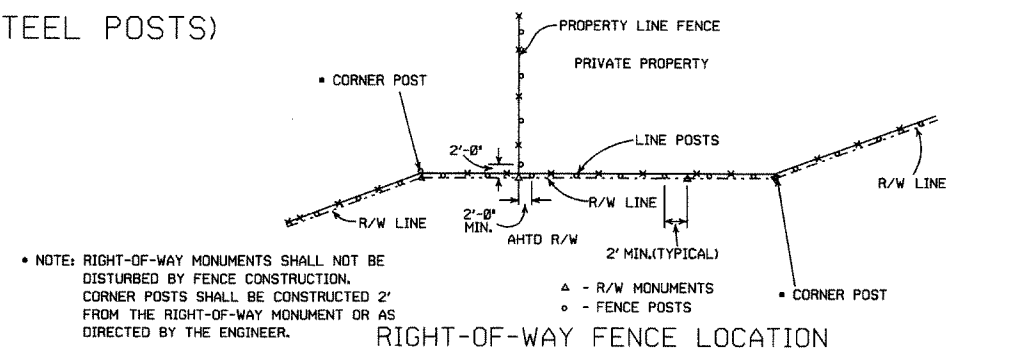
TYPE C FENCE (WOOD POSTS)



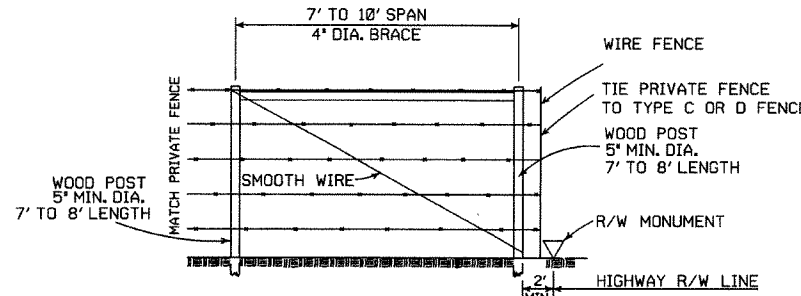
TYPE C FENCE (STEEL POSTS)



TYPE D FENCE
TYPE D-1 FENCE
TYPE D-2 FENCE



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.

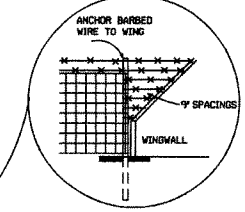
GENERAL NOTES:
STEEL LINE POSTS SHALL BE PAINTED OR GALVANIZED. TUBULAR END, CORNER, PULL, OR DIAGONAL BRACES MUST CONFORM TO THE DIMENSIONS AND WEIGHTS SPECIFIED ON STANDARD DRAWING WF-3 (CHAIN LINK). APPROVED ALTERNATES ARE ACCEPTABLE.
AN ACCEPTABLE TOLERANCE IN LENGTH OF TUBULAR OR WOODEN POSTS SHALL 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 3/8" X 1 1/2" LAG BOLT & SHIELD OR AS APPROVED BY THE ENGINEER.

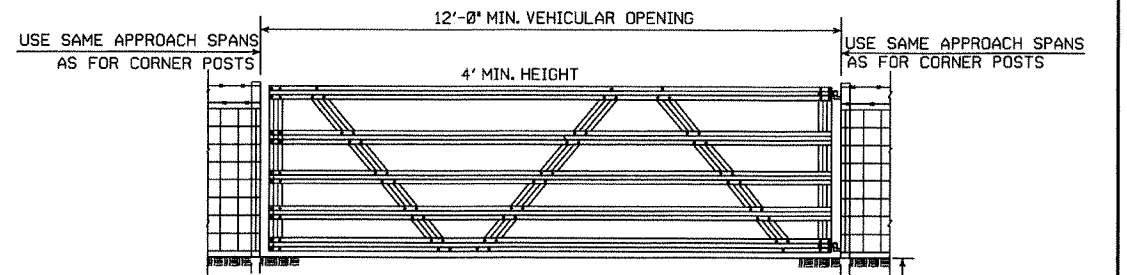


DETAIL OF FENCE CONSTRUCTION AT LARGE CULVERTS (5' IN HEIGHT AND OVER)

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.



TYPICAL VEHICULAR GATES (ALTERNATE TYPE)

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

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

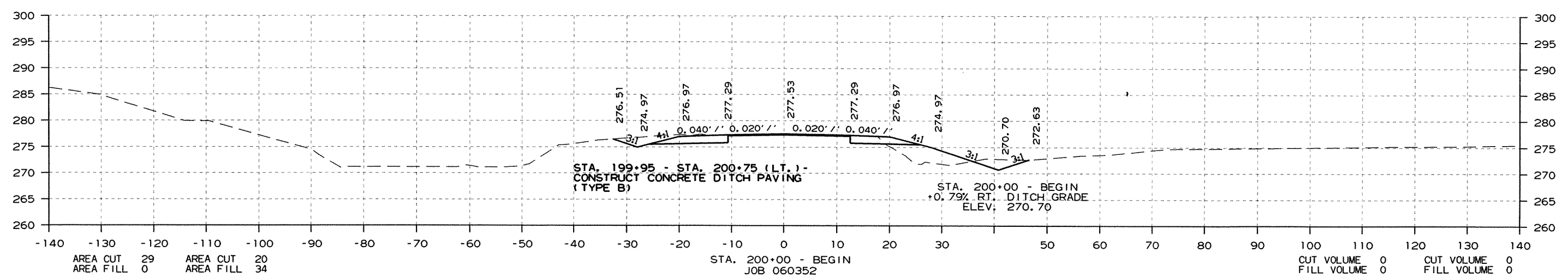
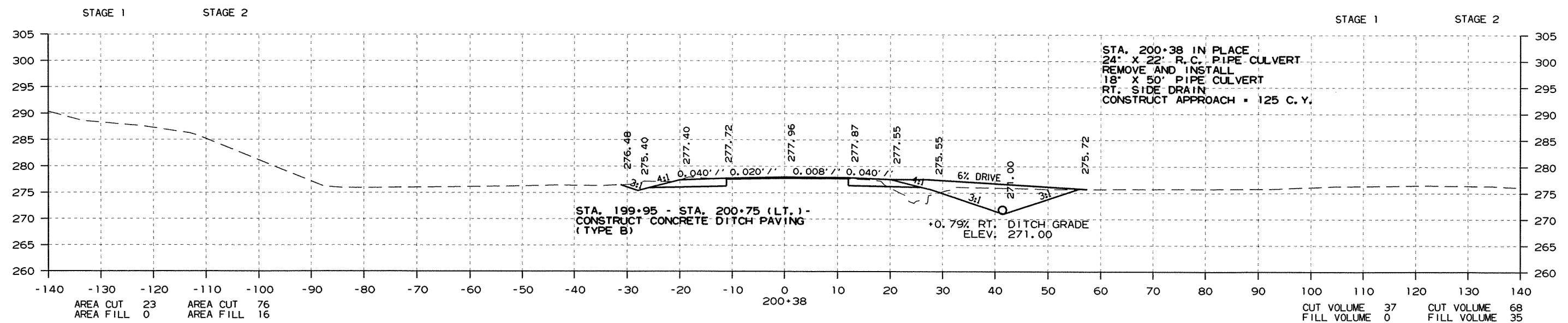
ARKANSAS STATE HIGHWAY COMMISSION

WIRE FENCE
TYPE C AND D

STANDARD DRAWING WF-4

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
						JOB NO.	060352	74

2 CROSS SECTIONS

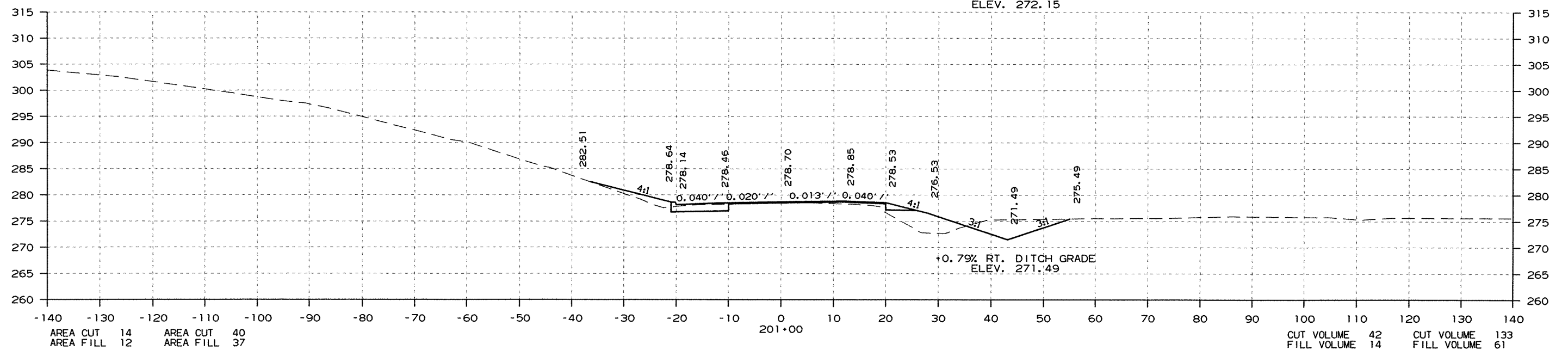
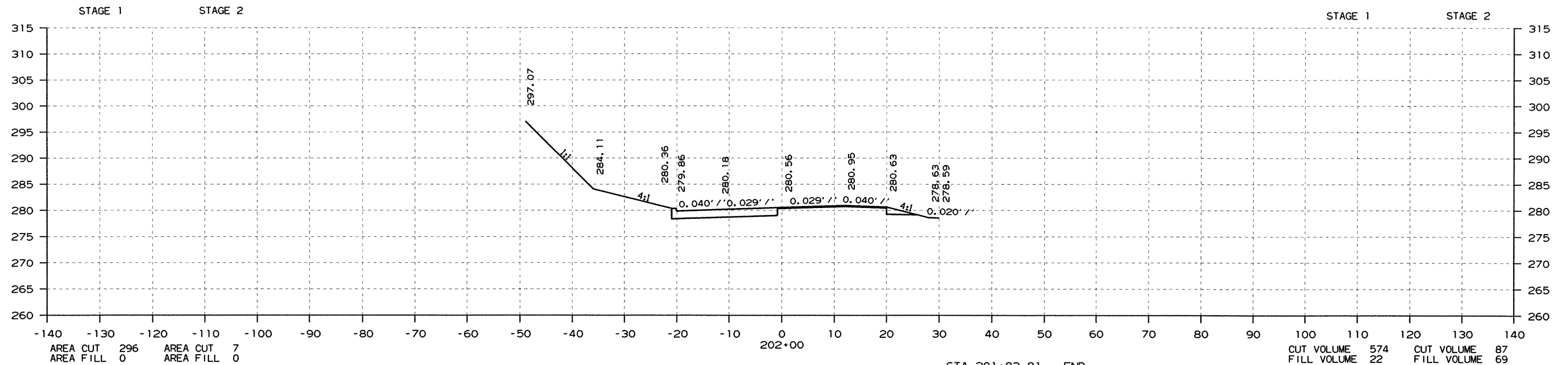


STA. 199+00 - STA. 212+70
FLOODPLAIN LIMITS

STA. 200+00 TO STA. 200+38

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.	060352	75

2 CROSS SECTIONS



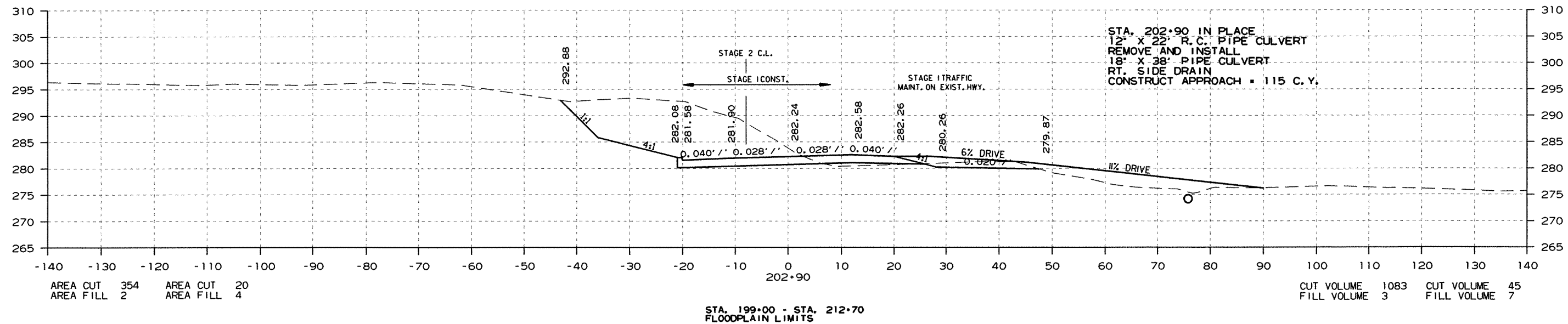
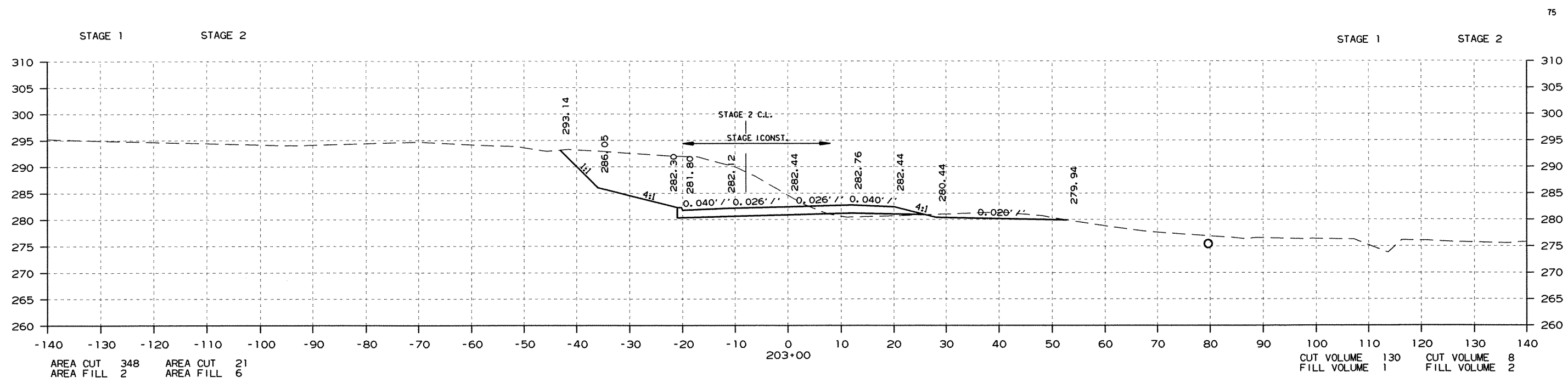
STA. 199+00 - STA. 212+70
FLOODPLAIN LIMITS

STA. 199+95 - STA. 200+75 (LT.) -
CONSTRUCT CONCRETE DITCH PAVING
(TYPE B)

STA. 201+00 TO STA. 202+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.	060352	76

2 CROSS SECTIONS

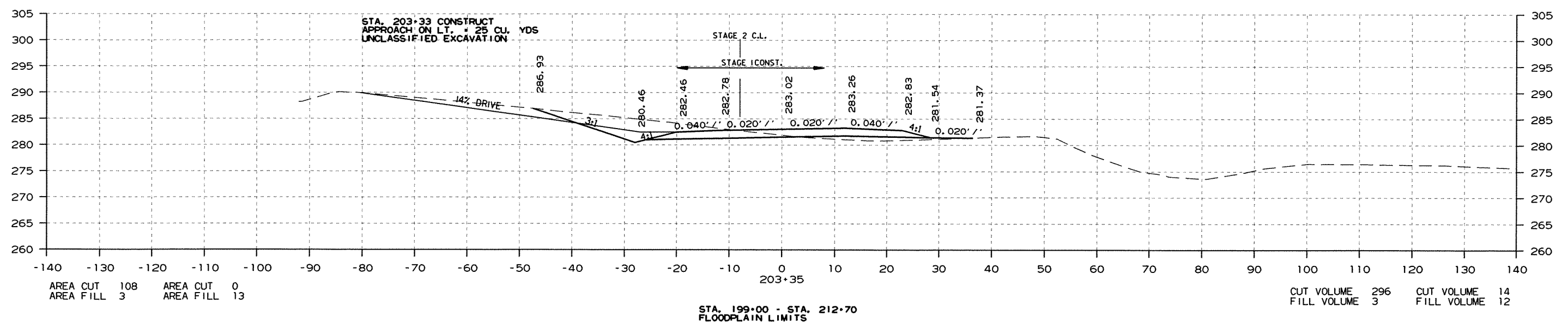
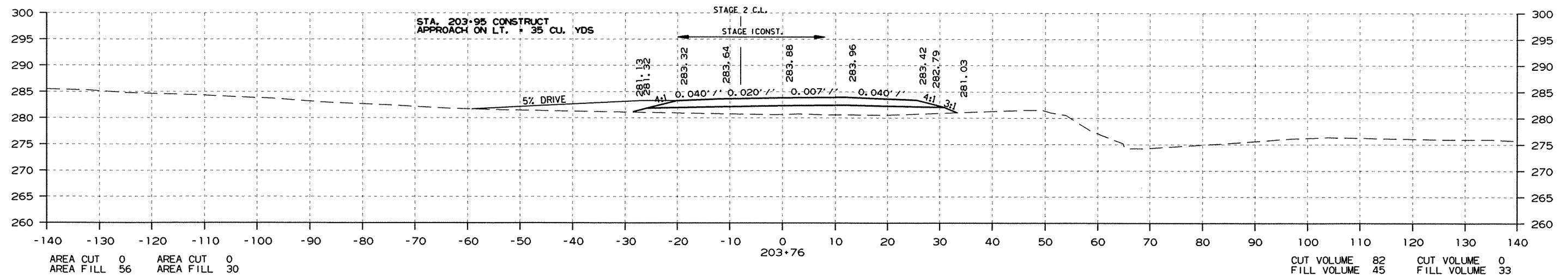
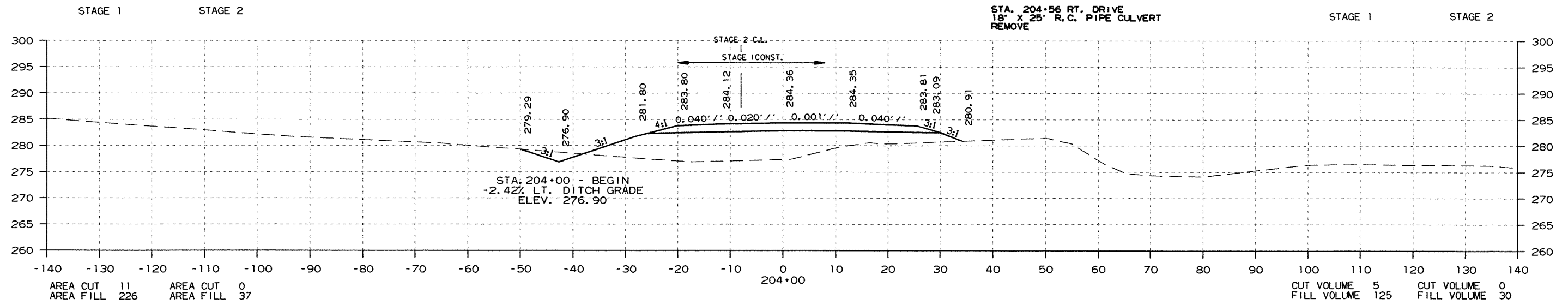


STA. 199+00 - STA. 212+70
FLOODPLAIN LIMITS

STA. 202+90 TO STA. 203+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. 060352	77	83

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.	060352		78	83

2 CROSS SECTIONS

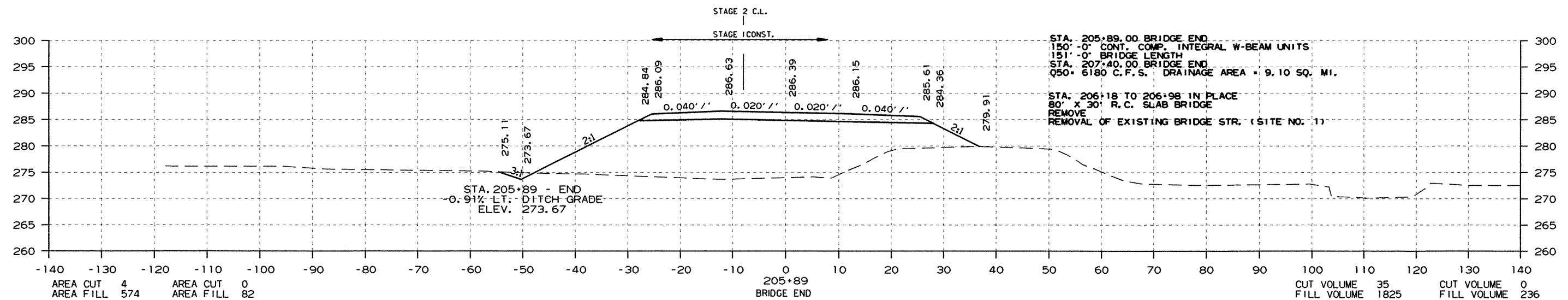
STAGE 1 STAGE 2

AREA CUT 0 AREA CUT 0
 AREA FILL 0 AREA FILL 0

STAGE 1 STAGE 2

CUT VOLUME 1 CUT VOLUME 0
 FILL VOLUME 213 FILL VOLUME 30

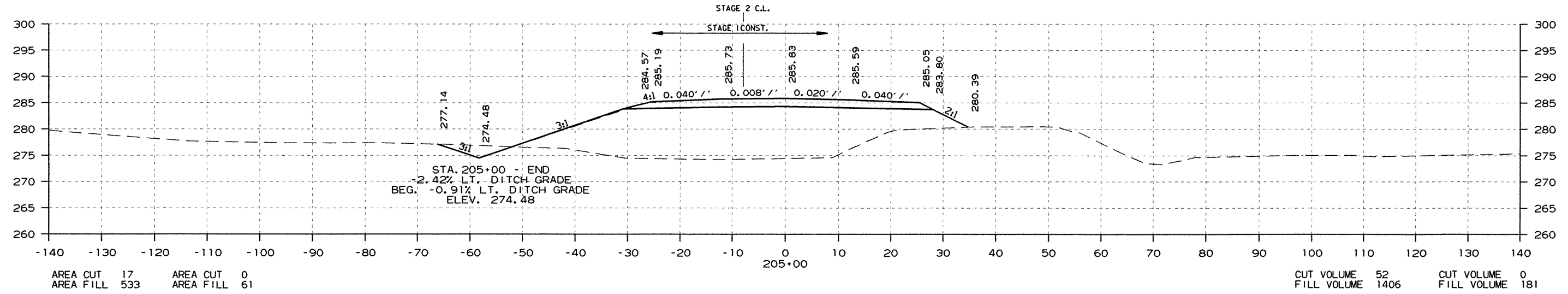
STA. 206+09
 (TOE OF SLOPE)



AREA CUT 4 AREA CUT 0
 AREA FILL 574 AREA FILL 82

CUT VOLUME 35 CUT VOLUME 0
 FILL VOLUME 1825 FILL VOLUME 236

205+89
 BRIDGE END



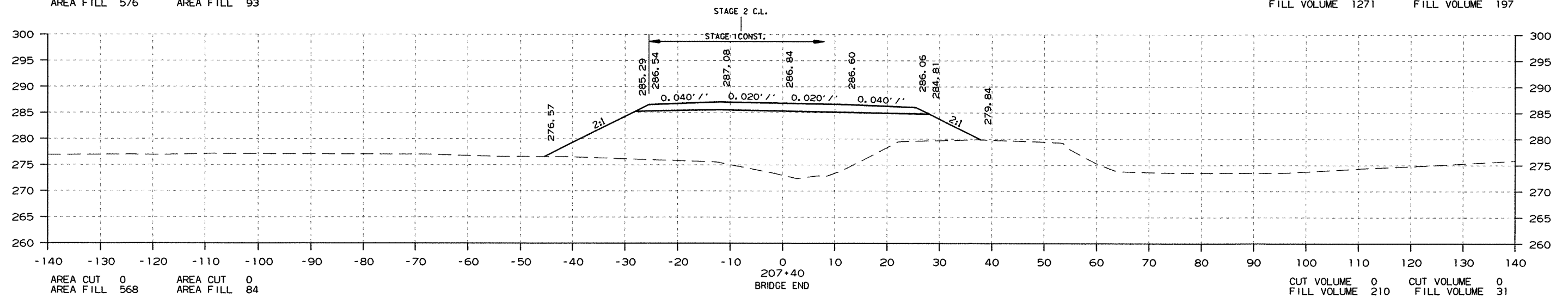
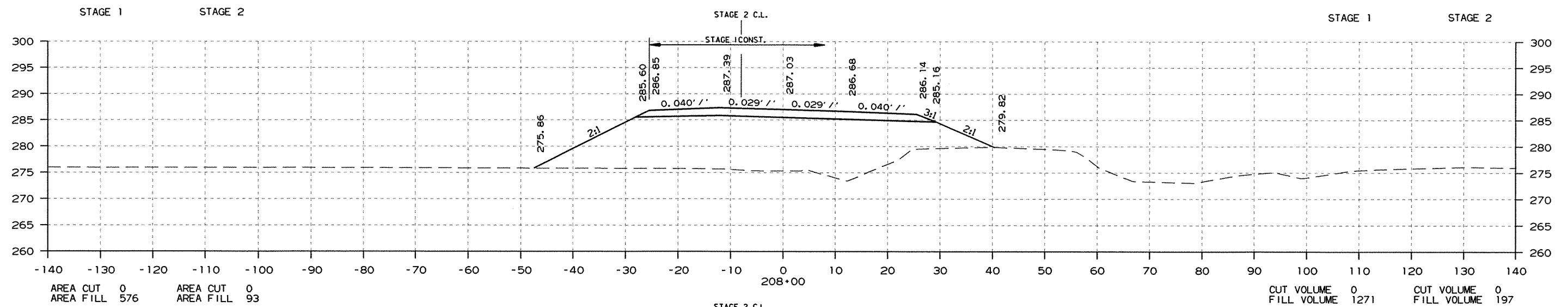
AREA CUT 17 AREA CUT 0
 AREA FILL 533 AREA FILL 61

CUT VOLUME 52 CUT VOLUME 0
 FILL VOLUME 1406 FILL VOLUME 181

STA. 199+00 - STA. 212+70
 FLOODPLAIN LIMITS

STA. 205+00 TO STA. 206+14

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.		060352	79	83
② CROSS SECTIONS								



AREA CUT 0 AREA CUT 0
 AREA FILL 0 AREA FILL 0

CUT VOLUME 0 CUT VOLUME 0
 FILL VOLUME 0 FILL VOLUME 0

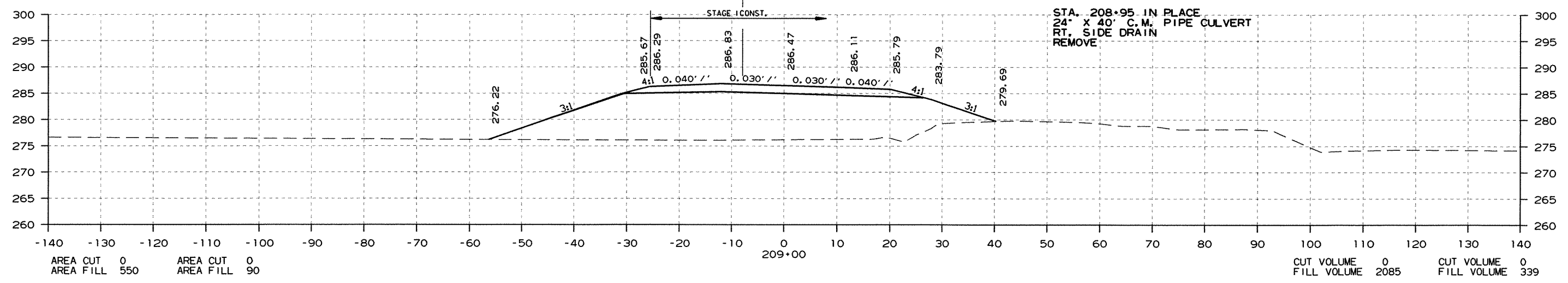
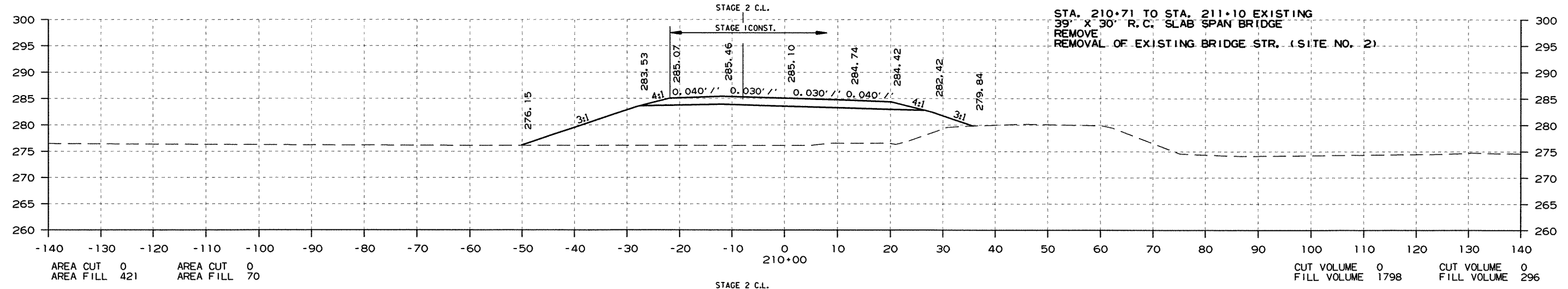
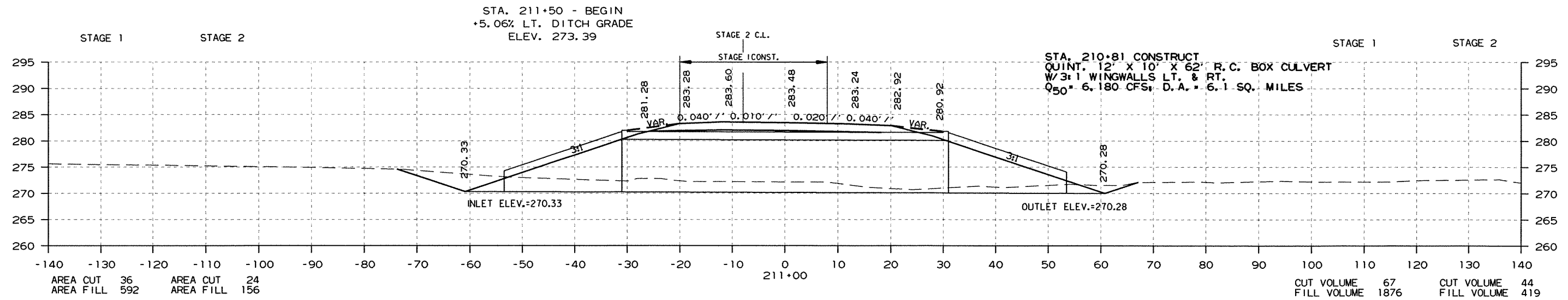
STA. 207+20
(TOE OF SLOPE)

STA. 199+00 - STA. 212+70
FLOODPLAIN LIMITS

STA. 207+12 TO STA. 208+00

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		80	83
						JOB NO.	060352	

2 CROSS SECTIONS

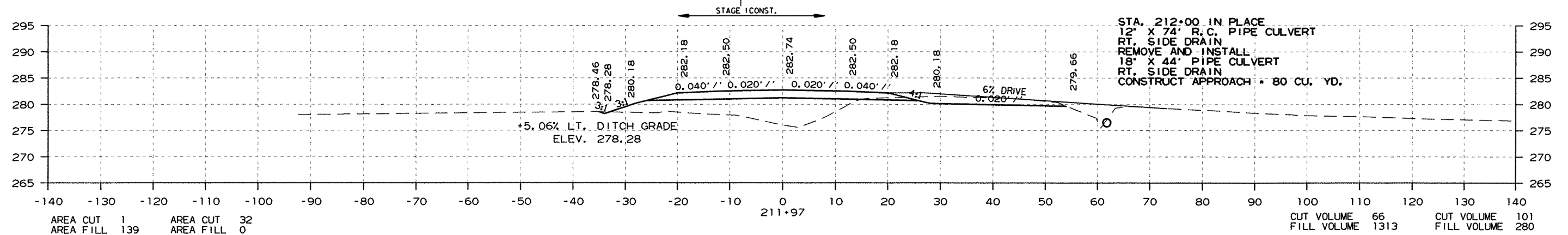
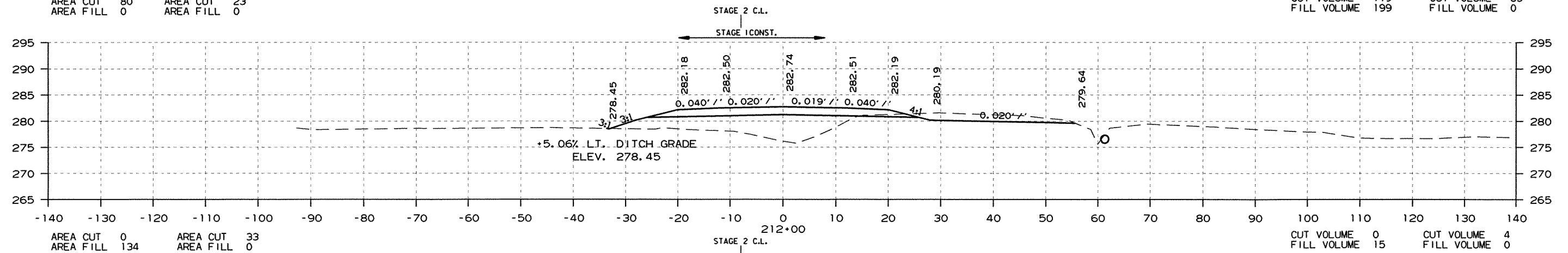
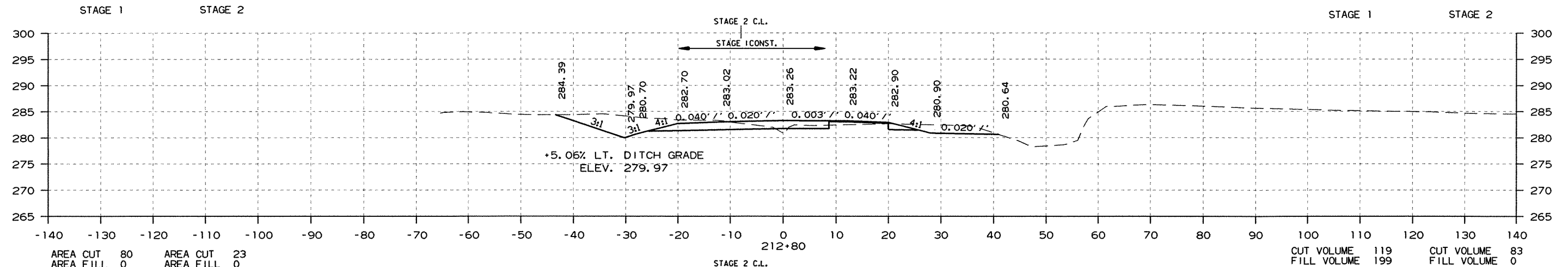


STA. 199+00 - STA. 212+70
FLOODPLAIN LIMITS

STA. 209+00 TO STA. 211+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.	060352		81	83

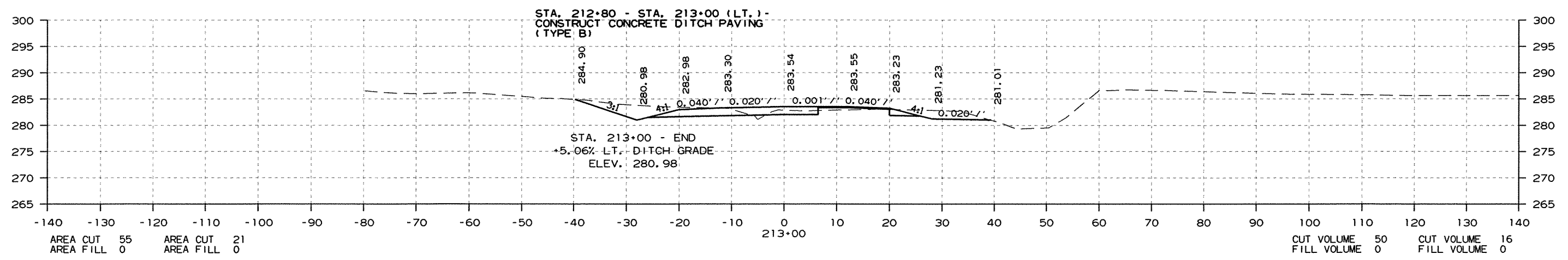
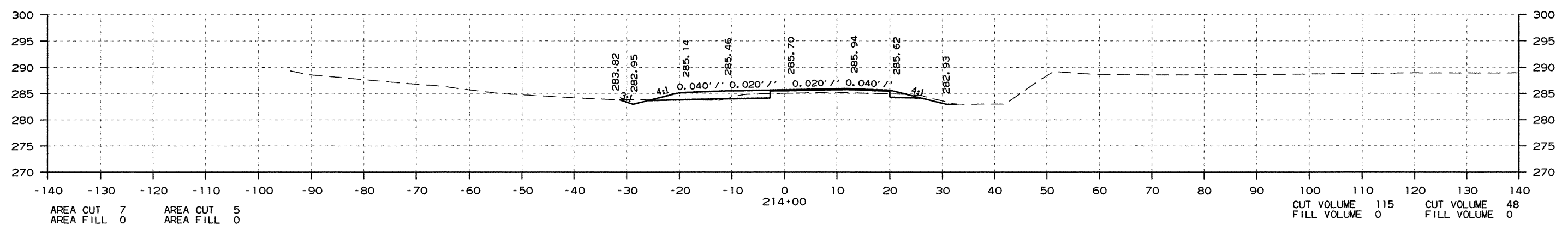
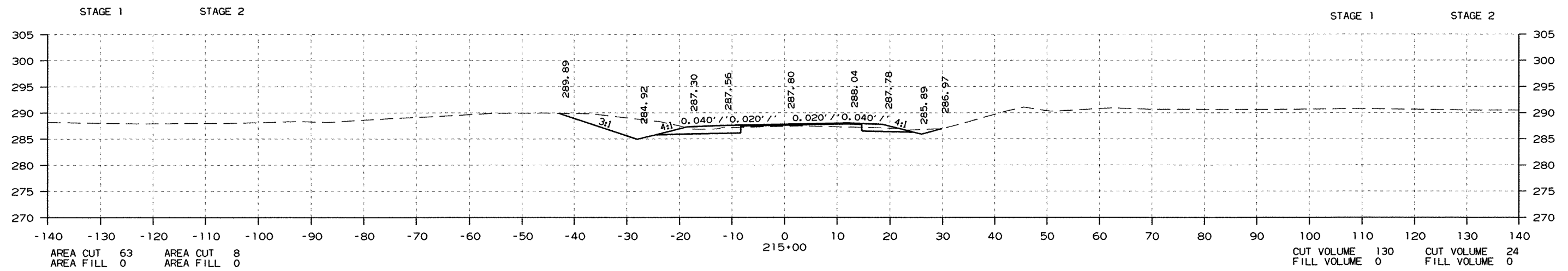
2 CROSS SECTIONS



STA. 199+00 - STA. 212+70
FLOODPLAIN LIMITS

STA. 211+97 TO STA. 212+80

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.	060352	82
						2 CROSS SECTIONS		



STA. 213+00 TO STA. 215+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. 060352							83	83

2 CROSS SECTIONS

