

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.	020509	1 103

2 HWY. 165 STR. & APPRS. (MONTROSE)

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT
CONSTRUCTION PLANS FOR STATE HIGHWAY

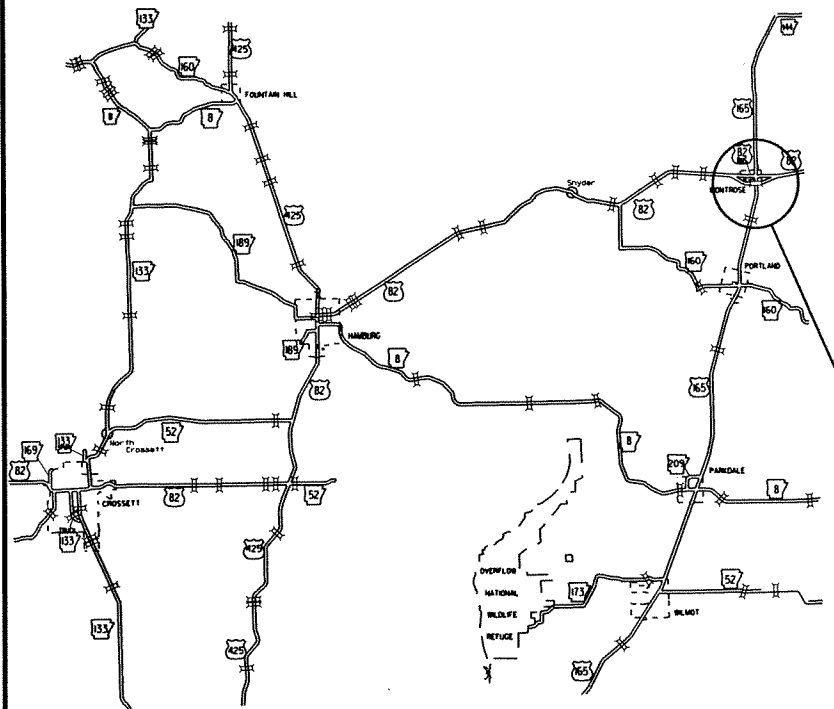
HWY. 165 STR. & APPRS.
(MONTROSE) (S)

ASHLEY COUNTY

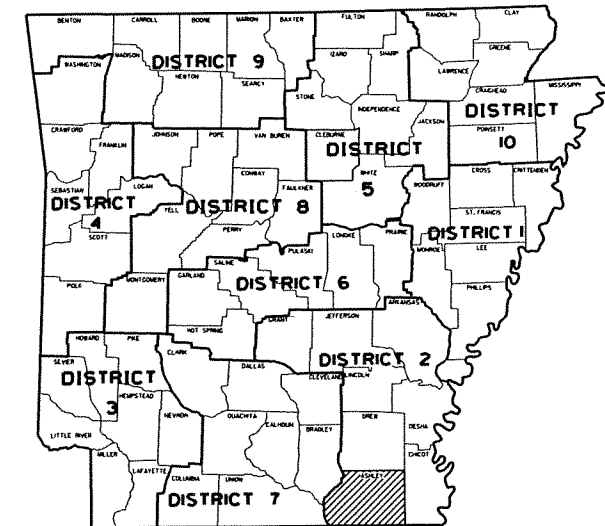
ROUTE 82 SECTION 9

JOB 020509

F. A. P. NO. NHPP-0002(30)



VICINITY MAP



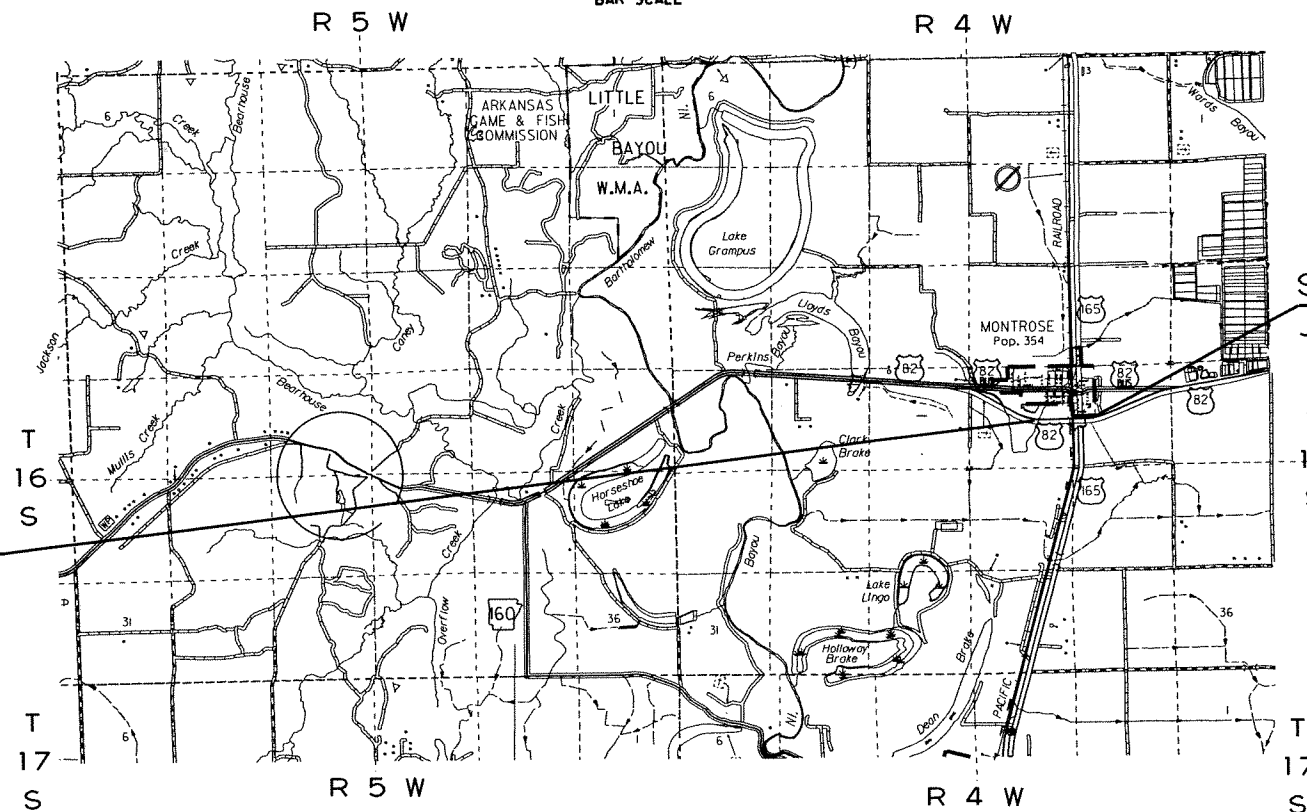
ARK. HWY. DIST. NO. 2

• DESIGN TRAFFIC DATA •

DESIGN YEAR	-----	2033
2013 ADT	-----	1800
2033 ADT	-----	2200
2033 DHV	-----	242
DIRECTIONAL DISTRIBUTION	-----	60%
TRUCKS	-----	23%
DESIGN SPEED	-----	55 MPH

STRUCTURES OVER 20' -0" SPAN

BR. END STA. 336+57.92
BRIDGE NO. 070230
40' -0" CLEAR ROADWAY
306' -2" TOTAL LENGTH
304' -0" CONT. COMP. W-BEAM UNIT
(65' -0", 94' -6", 79' -6", 65' -0")
BR. END STA. 339+64.08



STA. 308+21.91 BEGIN
JOB 020509
LOG MILE 18.86

STA. 357+15.32 END
JOB 020509



APPROVED



4/16/13
DEPUTY DIRECTOR
AND CHIEF ENGINEER

GROSS LENGTH OF PROJECT	4893.41	FEET	OR	0.927	MILES
NET " " ROADWAY	4587.25	"	"	0.869	"
NET " " BRIDGES	306.16	"	"	0.058	"
NET " " PROJECT	4893.41	"	"	0.927	"

P.E. 020509
NON-PART.

020509

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				JOB NO.	020509		2	103

2 INDEX OF SHEETS, GOV. SPECS., AND GEN. NOTES

INDEX OF SHEETS

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6-9	SPECIAL DETAILS			
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16-22	MAINTENANCE OF TRAFFIC DETAILS			
23	PERMANENT PAVEMENT MARKING DETAILS			
24-26	QUANTITIES			
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28	SUMMARY OF QUANTITIES AND REVISIONS			
29-32	SURVEY CONTROL DETAILS			
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39	LAYOUT OF BRIDGE OVER UNION PACIFIC RAILROAD AND U.S. HWY. 165 (SHEET 2 OF 2)	07230	53024	
40	EXHIBIT A LAYOUT OF BRIDGE OVER UNION PACIFIC RAILROAD AND U.S. HWY. 165 (SHEET 1 OF 2)	07230	53025	
41	EXHIBIT A LAYOUT OF BRIDGE OVER UNION PACIFIC RAILROAD AND U.S. HWY. 165 (SHEET 2 OF 2)	07230	53026	
42	DETAILS OF END BENTS (SHEET 1 OF 2)	07230	53027	
43	DETAILS OF END BENTS (SHEET 2 OF 2)	07230	53028	
44	DETAILS OF INTERMEDIATE BENTS	07230	53029	
45	DETAILS OF CONCRETE FILLED STEEL SHELL PILES	07230	53030	
46	DETAILS OF 304'-0" CONTINUOUS COMPOSITE W-BEAM UNIT (SHEET 1 OF 7)	07230	53031	
47	DETAILS OF 304'-0" CONTINUOUS COMPOSITE W-BEAM UNIT (SHEET 2 OF 7)	07230	53032	
48	DETAILS OF 304'-0" CONTINUOUS COMPOSITE W-BEAM UNIT (SHEET 3 OF 7)	07230	53033	
49	DETAILS OF 304'-0" CONTINUOUS COMPOSITE W-BEAM UNIT (SHEET 4 OF 7)	07230	53034	
50	DETAILS OF 304'-0" CONTINUOUS COMPOSITE W-BEAM UNIT (SHEET 5 OF 7)	07230	53035	
51	DETAILS OF 304'-0" CONTINUOUS COMPOSITE W-BEAM UNIT (SHEET 6 OF 7)	07230	53036	
52	DETAILS OF 304'-0" CONTINUOUS COMPOSITE W-BEAM UNIT (SHEET 7 OF 7)	07230	53037	
53	DETAILS OF JOINTS	07230	53038	
54	DETAILS OF ELASTOMERIC BEARINGS WITH SHEAR BLOCKS	07230	53039	
55	DETAILS OF TYPE SPECIAL APPROACH SLAB	07230	53040	
56	EMBANKMENT CONSTRUCTION AND BACKFILL AT BRIDGE ENDS		1888A	4-10-03
57	DETAILS FOR DUMPED RIPRAP AND FILTER BLANKET AND DETAILS FOR COMPUTING EXCAVATION FOR STRUCTURES		1891F	4-10-03
58	DETAILS OF STANDARD TYPE C APPROACH GUTTERS		2016C	7-14-10
59	DETAILS OF STANDARD TYPE D BRIDGE NAME PLATES		2387	1-10-13
60	DETAILS OF PERMISSIBLE TYPE PERMANENT STEEL BRIDGE DECK FORMS FOR STEEL & CONCRETE GIRDER SPANS		14991	4-10-03
61	DETAILS OF CONCRETE RIPRAP AND MISC. DETAILS OF STEEL PILING		14995A	4-10-03
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68	GUARD RAIL DETAILS		GR-10	7-14-10
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70	GUARD RAIL DETAILS		GRT-1	7-14-10
71	CONCRETE PIPE CULVERT FILL HEIGHTS & BEDDING		PCC-1	12-15-11
72	METAL PIPE CULVERT FILL HEIGHTS & BEDDING		PCM-1	12-15-11
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76	DETAILS OF PIPE UNDERDRAIN		PU-1	4-10-03
77	TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC		SE-2	10-18-96
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79	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION		TC-1	12-15-11
80	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION		TC-2	3-11-10
81	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION		TC-3	10-15-09
82	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION - TEMPORARY PRECAST BARRIER		TC-4	10-15-09
83	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION - TEMPORARY PRECAST BARRIER		TC-5	10-15-09
84	TEMPORARY EROSION CONTROL DEVICES		TEC-1	12-15-11
85	TEMPORARY EROSION CONTROL DEVICES		TEC-2	6-2-94
86	TEMPORARY EROSION CONTROL DEVICES		TEC-3	11-3-94
87	CHAIN LINK FENCE		WF-3	11-17-10
88	WIRE FENCE TYPE C AND D		WF-4	8-22-02
89-103	CROSS SECTIONS			

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

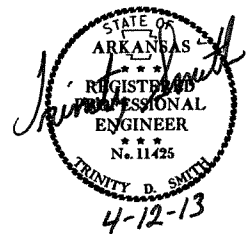
GOVERNING SPECIFICATIONS

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	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)
102-1	BIDDING REQUIREMENTS AND CONDITIONS
103-1	DETERMINATION OF DBE PARTICIPATION
105-1	CONSTRUCTION CONTROL MARKINGS
105-2	EQUIPMENT AND MATERIAL STORAGE ON BRIDGE STRUCTURES
105-3	CONTROL OF WORK
107-1	WORKER VISIBILITY
108-1	LIQUIDATED DAMAGES
110-1	PROTECTION OF WATER QUALITY AND WETLANDS
303-1	AGGREGATE BASE COURSE
404-1	PRODUCTION VERIFICATION OF ASPHALT CONCRETE HOT MIX
404-2	DESIGN AND QUALITY CONTROL OF ASPHALT MIXTURES
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
604-2	INSPECTION OF 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 020509	BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB 020509	BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB 020509	DRIVEN STEEL PILING BY METHOD B
JOB 020509	EXTENSION FOR PIPE CULVERTS
JOB 020509	GEOSYNTHETIC INTERNAL REINFORCED EMBANKMENT CONSTRUCTION
JOB 020509	GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
JOB 020509	HIGH PERFORMANCE PAVEMENT MARKING
JOB 020509	INSURANCE, CONSTRUCTION, AND FLAGGING REQUIREMENTS ON RAILROAD PROPERTY (UPRR)
JOB 020509	INTERNET BIDDING
JOB 020509	NESTING SITES OF MIGRATORY BIRDS
JOB 020509	PARTNERING REQUIREMENTS
JOB 020509	PLASTIC PIPE
JOB 020509	REMOVAL AND DISPOSAL OF GUARDRAIL
JOB 020509	SILICONE JOINT SEALANT
JOB 020509	SOIL STABILIZATION
JOB 020509	SPECIAL SAFETY REQUIREMENTS FOR BRIDGES
JOB 020509	STEEL SHELL PILES
JOB 020509	STORM WATER POLLUTION PREVENTION PLAN
JOB 020509	SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB 020509	UTILITY ADJUSTMENTS
JOB 020509	VALUE ENGINEERING
JOB 020509	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 SECTION 107.12 OF SHALL BE PROTECTED IN ACCORDANCE WITH SECTION 107.12 OF THE STANDARD SPECIFICATIONS, EDITION OF 2003.
- ALL TREES THAT DO NOT DIRECTLY INTERFERE WITH THE PROPOSED CONSTRUCTION SHALL BE SPARED AS DIRECTED BY THE ENGINEER. CARE AND DISCRETION SHALL BE USED TO INSURE THAT ALL TREES NOT TO BE REMOVED SHALL BE HARMED AS LITTLE AS POSSIBLE DURING THE CONSTRUCTION OPERATIONS.
- 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.
- ALL FLEXIBLE BASE AND ASPHALTIC PAVEMENTS REMOVED SHALL BE PAID FOR UNDER THE ITEM NO. 210, UNCLASSIFIED EXCAVATION.

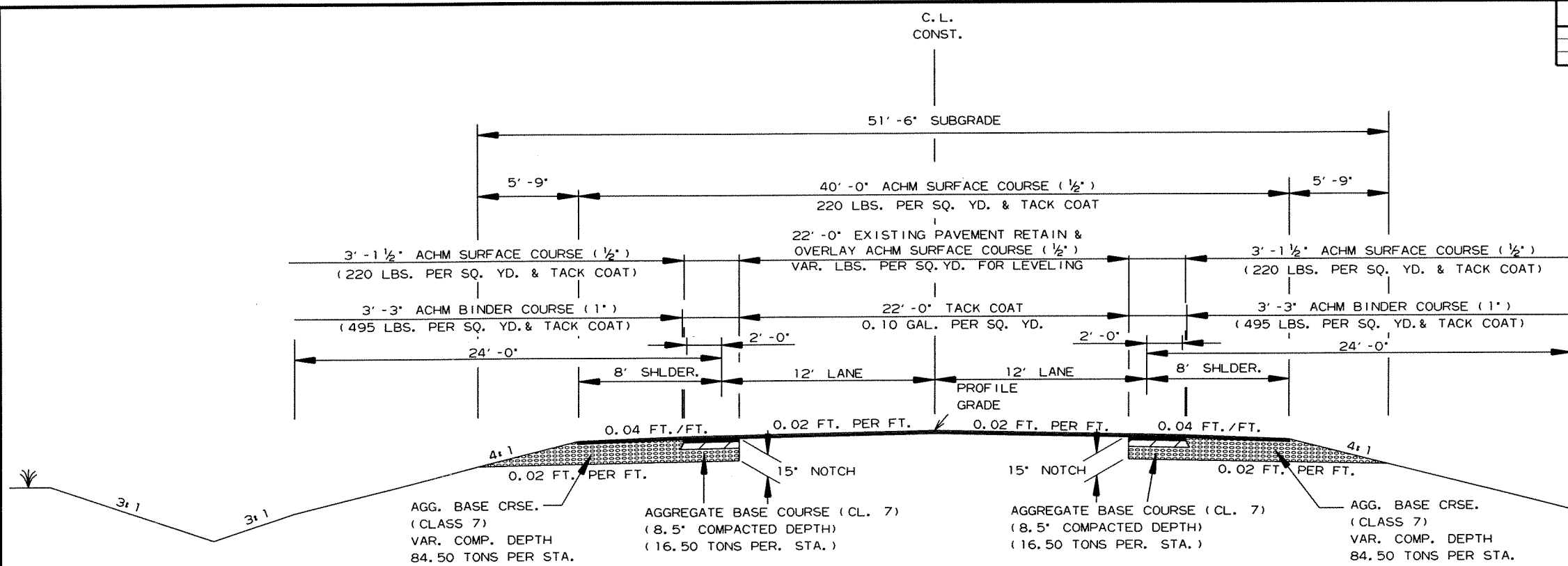


4/9/2013

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2 TYPICAL SECTIONS OF IMPROVEMENT



TYPICAL SECTION OF IMPROVEMENT

HWY. 82
 STA. 308+21.91 - STA. 323+13.00
 STA. 352+33.00 - STA. 357+15.32

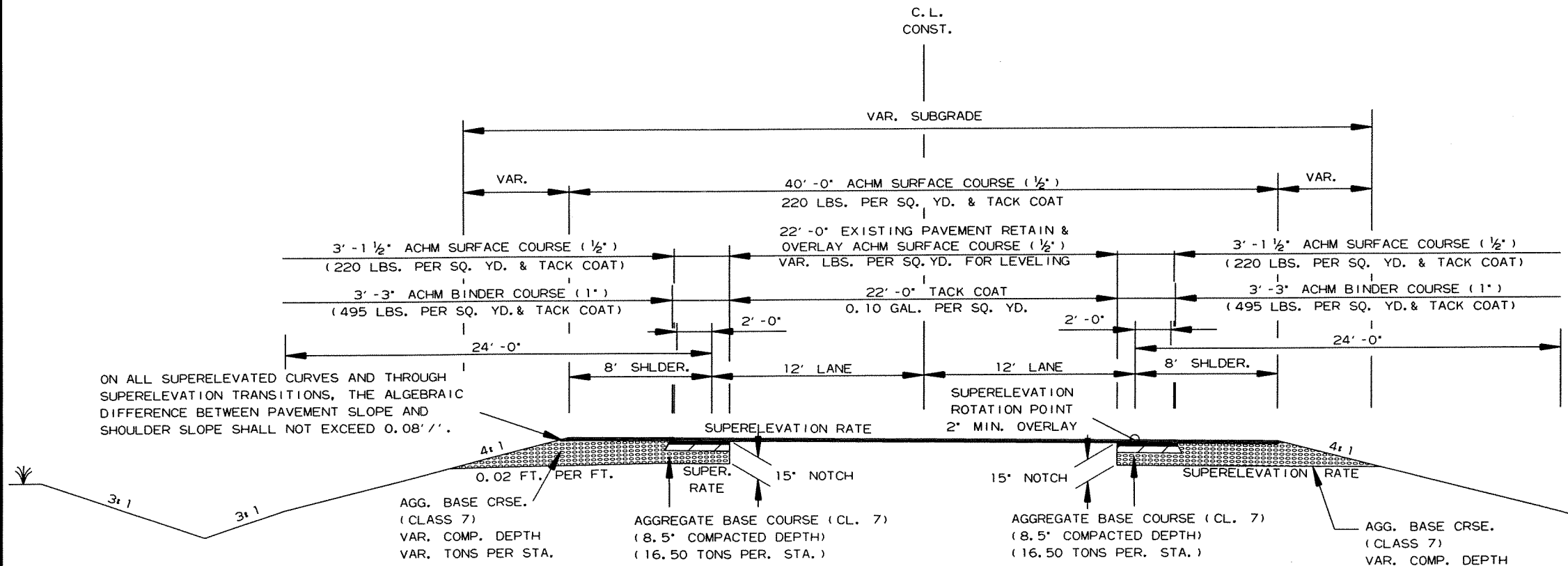
NOTES:
 REFER TO CROSS SECTIONS FOR DEVIATION FROM NORMAL SLOPES. NO CHANGES SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.

THE THICKNESS OF AGGREGATE BASE COURSE SHALL BE WITHIN PLUS OR MINUS ONE INCH 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.

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.

WITH THE APPROVAL OF THE ENGINEER, THE CONTRACTOR WILL BE ALLOWED TO SUBSTITUTE, AT NO ADDITIONAL COST TO THE DEPARTMENT, THE FIRST LIFT OF ACHM SURFACE (1/2") IN LIEU OF AGGREGATE BASE COURSE ON THE SHOULDERS.

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. CALCULATIONS WILL NOT BE PAID FOR DIRECTLY, BUT PAYMENT WILL BE CONSIDERED INCLUDED IN THE VARIOUS CONTRACT ITEMS.



TYPICAL SECTION OF IMPROVEMENT

HWY. 82

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

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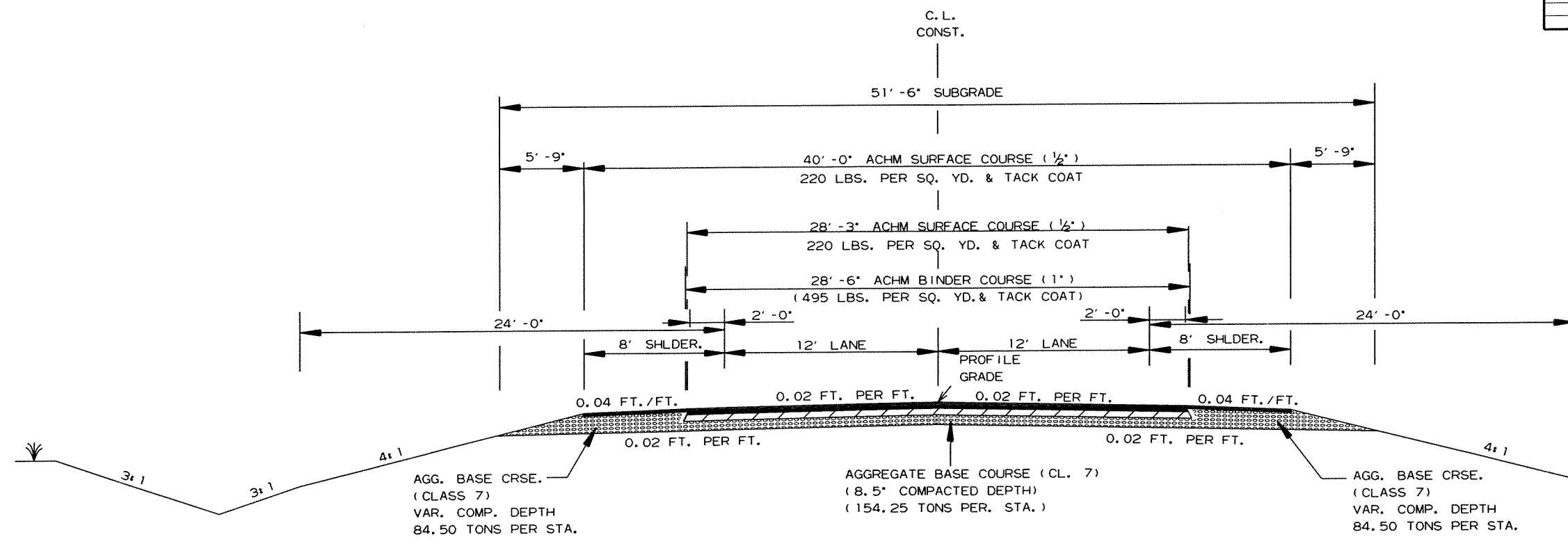
TYPICAL SECTIONS OF IMPROVEMENT

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2 TYPICAL SECTIONS OF IMPROVEMENT



4-12-13



TYPICAL SECTION OF IMPROVEMENT
HWY. 82

STA. 323+13.00 - STA. 336+21.42
STA. 340+00.58 - STA. 352+33.00

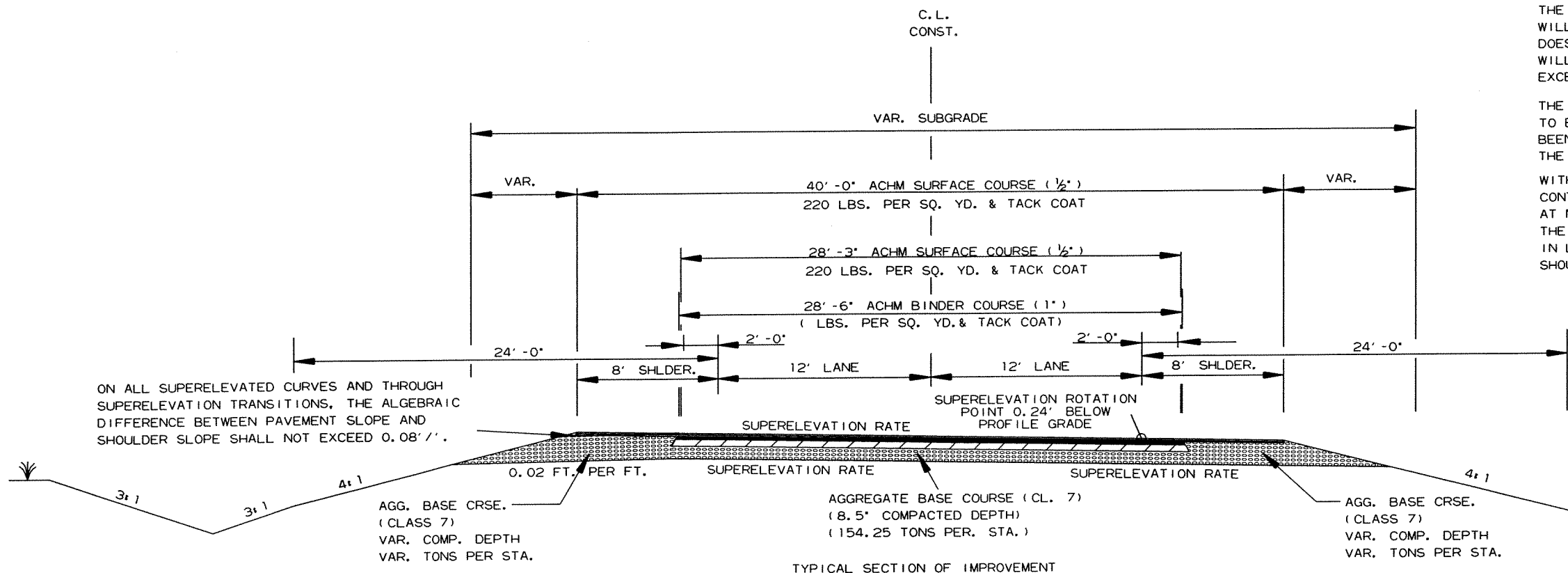
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TYPICAL SECTION OF IMPROVEMENT
SUPERELEVATION
HWY. 82

TYPICAL SECTIONS OF IMPROVEMENT

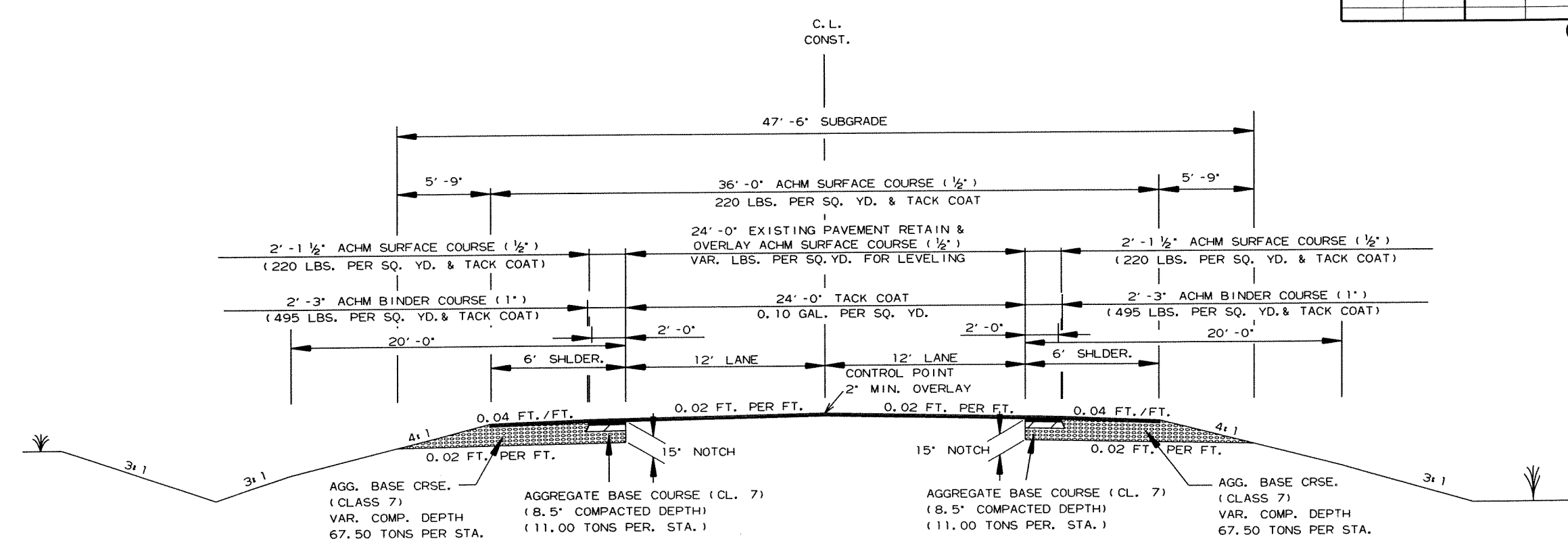
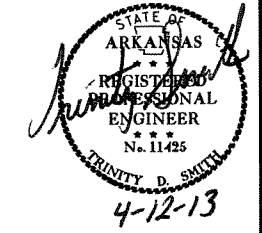
ON ALL SUPERELEVATED CURVES AND THROUGH SUPERELEVATION TRANSITIONS, THE ALGEBRAIC DIFFERENCE BETWEEN PAVEMENT SLOPE AND SHOULDER SLOPE SHALL NOT EXCEED 0.08'/'.

4/15/2013

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② TYPICAL SECTIONS OF IMPROVEMENT



TYPICAL SECTION OF IMPROVEMENT
 HWY. 165
 STA. 8+00.00 - STA. 14+00.00

NOTES:

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

THE THICKNESS OF AGGREGATE BASE COURSE SHALL BE WITHIN PLUS OR MINUS ONE INCH 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.

WITH THE APPROVAL OF THE ENGINEER, THE CONTRACTOR WILL BE ALLOWED TO SUBSTITUTE, AT NO ADDITIONAL COST TO THE DEPARTMENT, THE FIRST LIFT OF ACHM SURFACE (1/2") IN LIEU OF AGGREGATE BASE COURSE ON THE SHOULDERS.

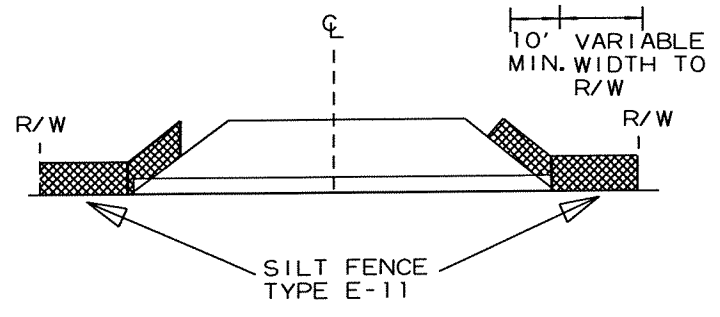
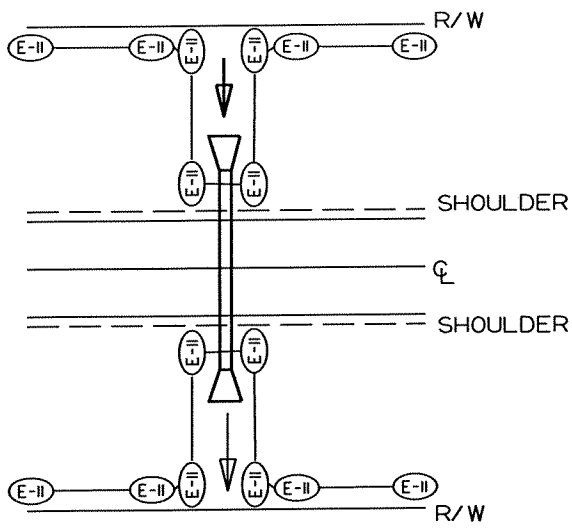
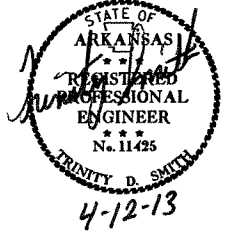
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THE FINAL 2 INCHES OF SURFACE COURSE IS TO BE PLACED AFTER ALL OTHER COURSES HAVE BEEN LAID. LONGITUDINAL JOINTS SHALL BE AT THE LANE LINES.

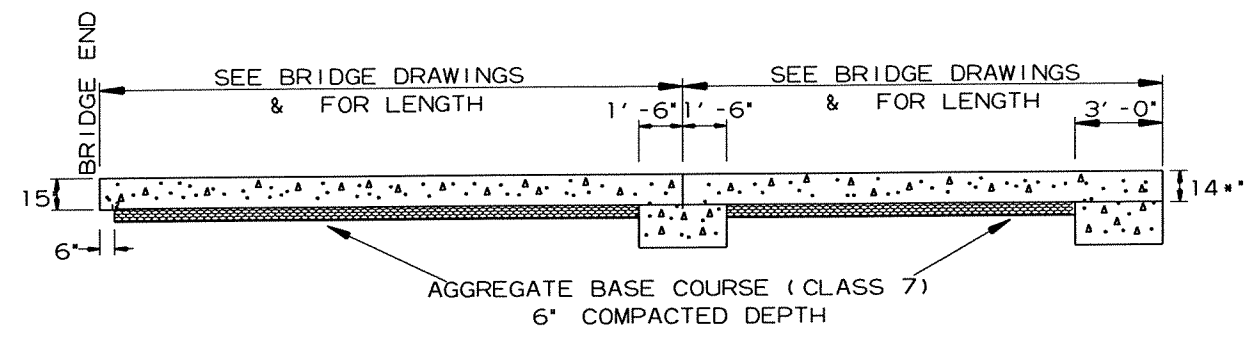
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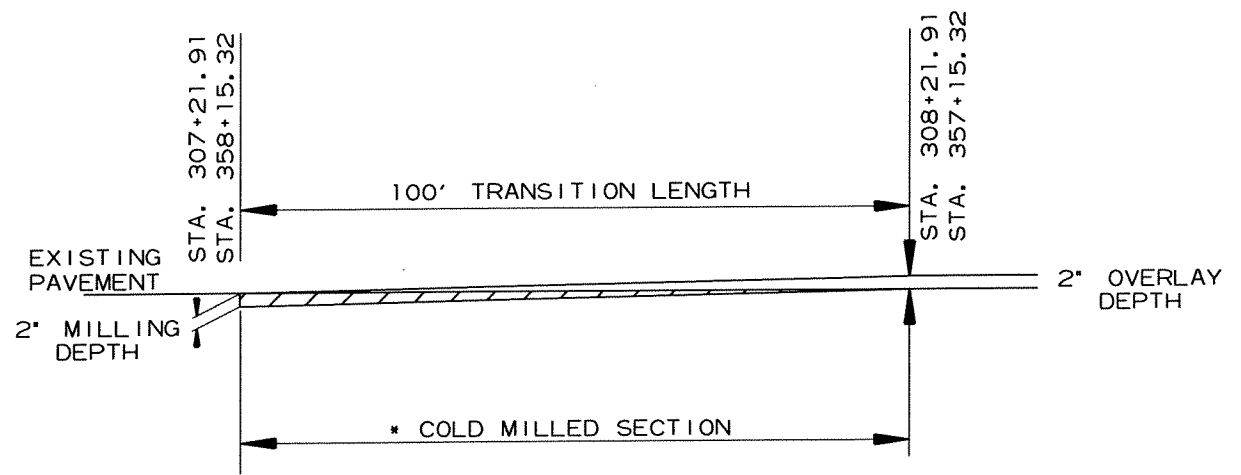
2 SPECIAL DETAILS



DETAIL OF SILT FENCE
AT CROSS DRAIN

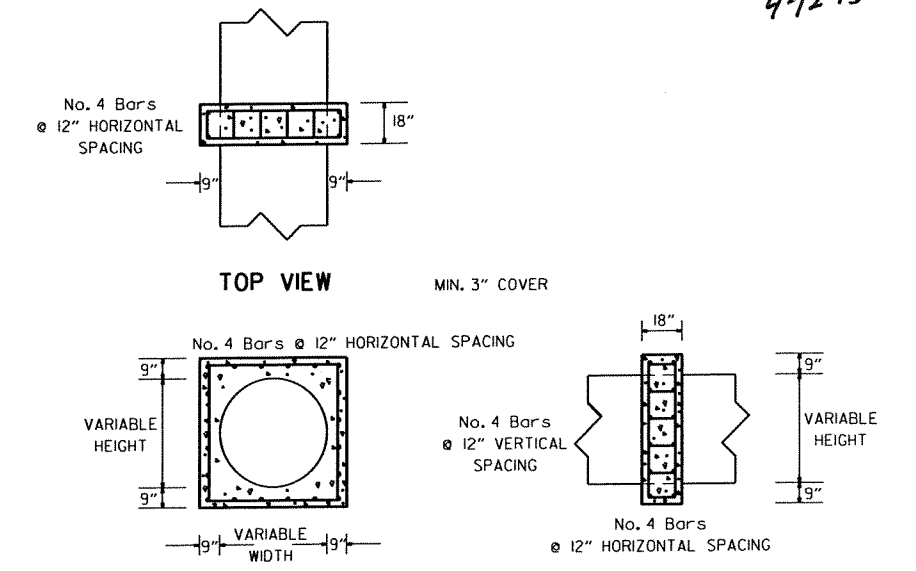


SPECIAL DETAIL OF APPROACH SLAB



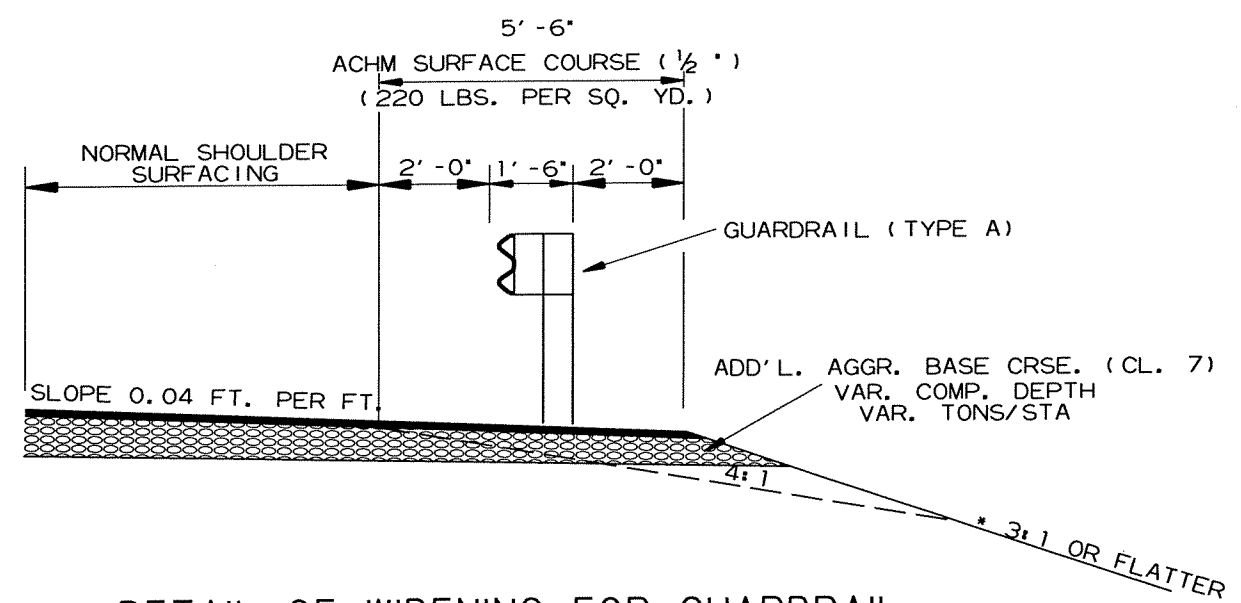
DETAIL SHOWING TAPER TO EXISTING PAVEMENT

* TO BE USED AS DIRECTED BY THE ENGINEER



PIPE EXTENSION
REINFORCED CONCRETE COLLAR DETAIL

NOTE: PIPE COLLAR TO BE UTILIZED AS APPROVED BY THE ENGINEER.



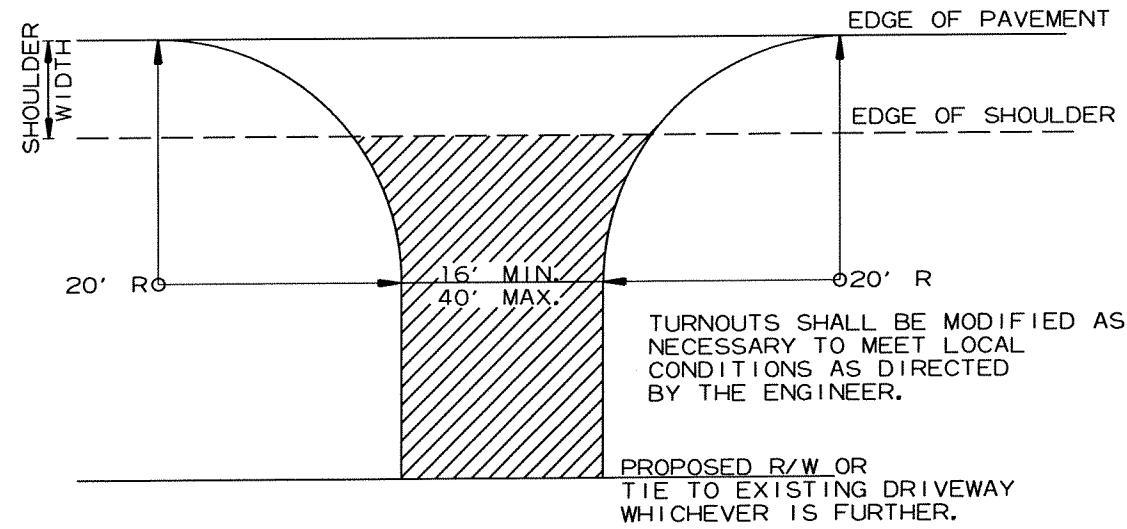
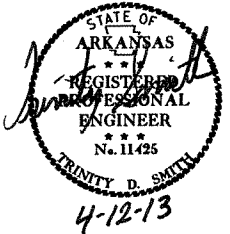
DETAIL OF WIDENING FOR GUARDRAIL


* REFER TO STD. DWG. GR-9A FOR SLOPE REQUIREMENTS BEHIND GUARDRAIL.

4/8/2013
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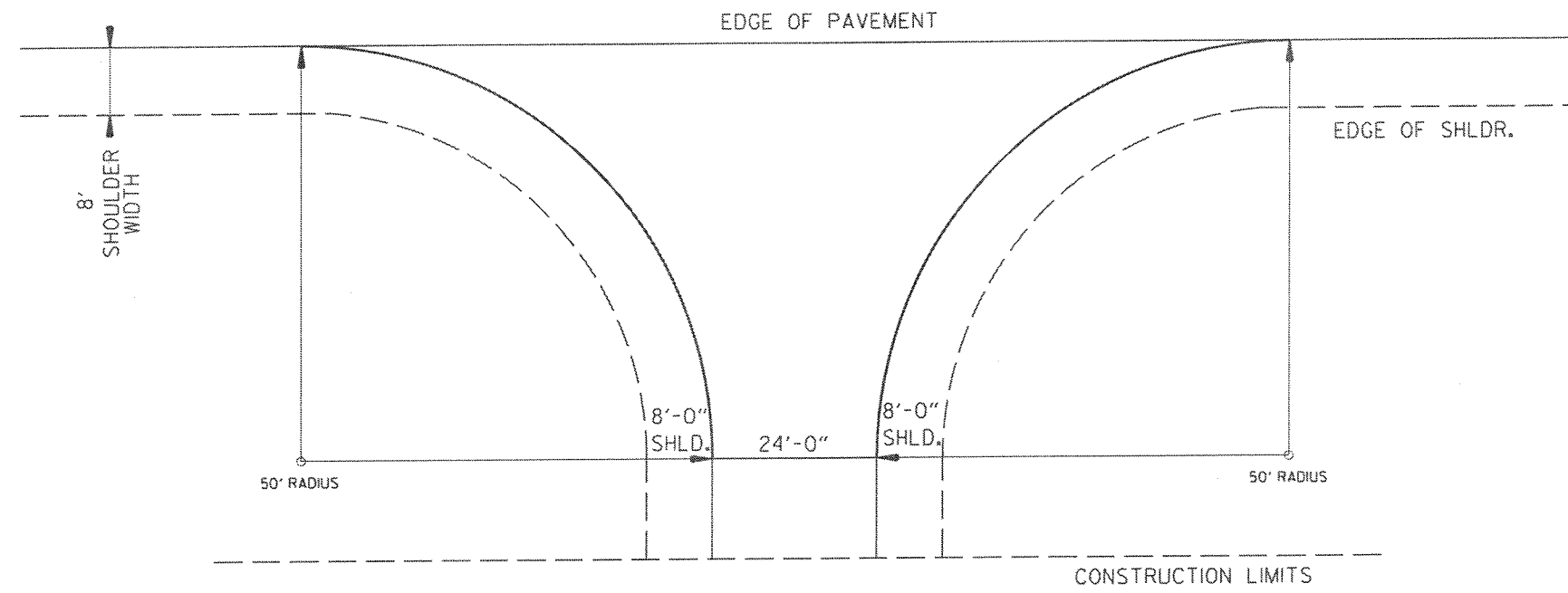
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② SPECIAL DETAILS



 A. C. H. M. SURFACE COURSE (1/2")
(220 LBS./SQ. YD.) & AGGREGATE BASE
COURSE (CLASS 7) (7" COMPACTED DEPTH)

**DETAIL FOR
DRIVEWAY TURNOUTS (ARTERIALS)**



DETAIL FOR STATE HIGHWAY TURNOUT

NOTE: SURFACING FOR STATE HIGHWAYS TO
MATCH MAIN LANES SURFACING.

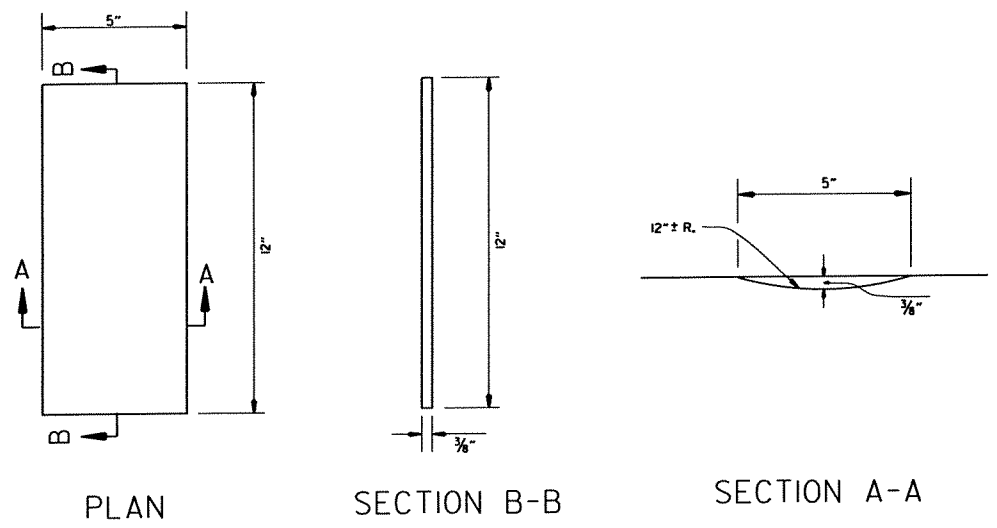
SPECIAL DETAILS

4/8/2013

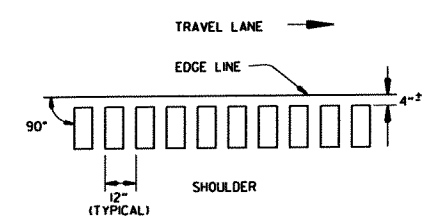
R020509.DGN

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. 020509							8	103

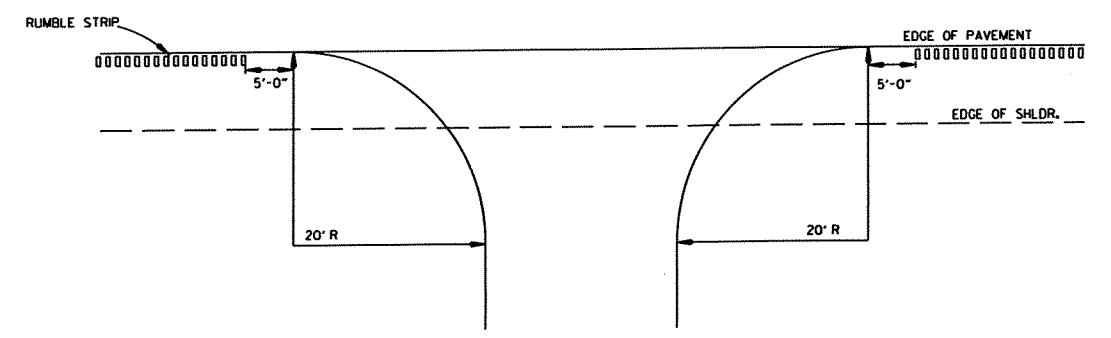
2 SPECIAL DETAILS



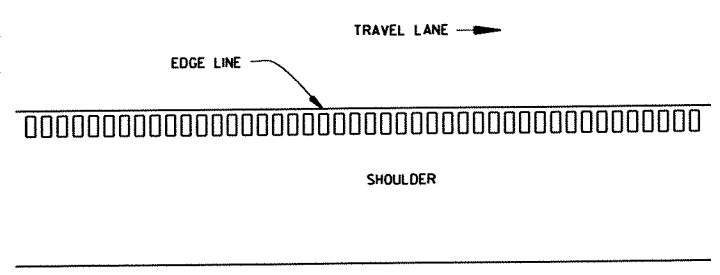
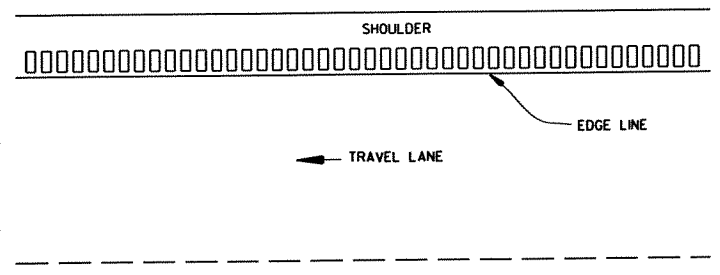
DETAILS OF RUMBLE STRIPS



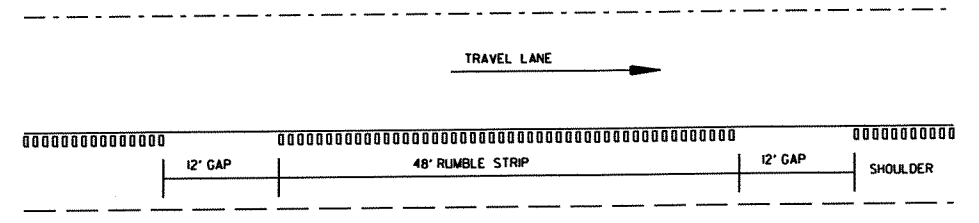
LOCATION PLAN OF RUMBLE STRIPS LEFT OR RIGHT SHOULDER



DETAIL FOR RUMBLE STRIP GAP AT DRIVEWAY TURNOUTS



PLAN VIEW



DETAIL FOR GAP PATTERN RUMBLE STRIP

NOTE: GAP PATTERN SHALL BE ADJUSTED BY THE ENGINEER IN THE FIELD ALLOWING FOR DRIVEWAYS TO SERVE AS THE GAP.

GENERAL NOTES

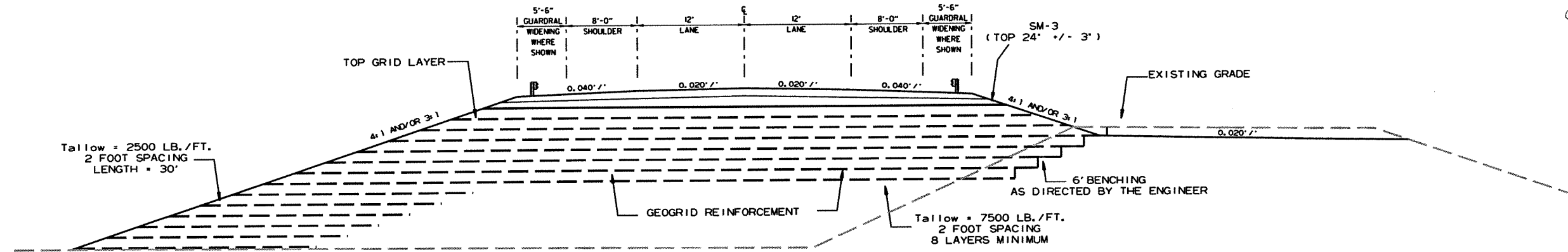
1. RUMBLE STRIPS SHALL NOT BE INSTALLED ON CURB SECTIONS, BRIDGE DECKS, APPROACH SLABS, INTERSECTING STREETS OR ROADWAYS, RESIDENTIAL OR COMMERCIAL DRIVEWAYS OR ACROSS TRANSVERSE JOINTS OF CONCRETE SHOULDERS.
2. RUMBLE STRIPS SHALL NOT BE INSTALLED ON A PAVED SHOULDER THAT IS USED AS A DECELERATION LANE FOR THE LENGTH DEEMED APPROPRIATE BY THE ENGINEER.
3. THE 4" OFFSET FROM THE EDGE LINE MAY BE INCREASED TO AVOID LONGITUDINAL JOINTS. IN ALL CASES, THE LATERAL DEVIATION FROM THE PLANNED OFFSET SHOULD BE KEPT TO A MINIMUM.
4. RUMBLE STRIPS SHALL BE MEASURED BY THE LINEAR FOOT LONGITUDINALLY ALONG THE SHOULDER. PAYMENT SHALL ONLY INCLUDE THAT PORTION OF THE SHOULDER ON WHICH RUMBLE STRIPS HAVE BEEN CONSTRUCTED. NO MEASUREMENT OR PAYMENT WILL BE MADE FOR GAPS, DRIVEWAYS, TURNOUTS, OR OTHER PUBLIC ROAD INTERSECTIONS WHERE RUMBLE STRIPS HAVE NOT BEEN CONSTRUCTED.
5. THE 3/8" DEPTH SHALL GENERALLY APPLY FOR THE ENTIRE 12" LENGTH. SOME VARIATION TO SUIT SHOULDER SLOPE BREAKS MAY BE NECESSARY.

SPECIAL DETAILS

4/8/2013
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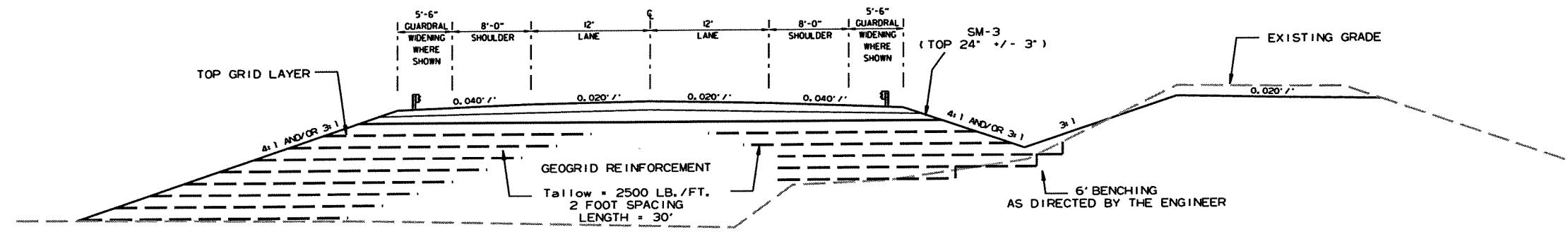
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				6	ARK.			
						JOB NO. 020509	9	103

2 SPECIAL DETAILS



GEOSYNTHETIC INTERNAL REINFORCED EMBANKMENT CONSTRUCTION
 STA. 333+50.00 - STA. 337+10.00
 STA. 339+09.00 - STA. 342+50.00
 HWY. 82

NOTES:
 REFER TO SPECIAL PROVISION
 "GEOSYNTHETIC INTERNAL REINFORCED EMBANKMENT CONSTRUCTION"
 FOR SPECIFIC DETAILS.
 REFER TO CROSS SECTIONS FOR DEVIATION FROM THE NORMAL SLOPES.
 NO CHANGES SHALL BE MADE FROM THE PLANNED
 SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.



GEOSYNTHETIC INTERNAL REINFORCED EMBANKMENT CONSTRUCTION
 STA. 329+00.00 - STA. 333+50.00
 STA. 342+50.00 - STA. 347+00.00
 HWY. 82

SPECIAL DETAILS

4/9/2013
 R020509.DGN

EROSION CONTROL GENERAL NOTES

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.

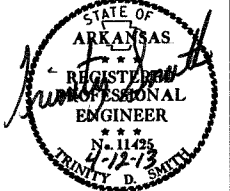
EROSION CONTROL QUANTITIES - STAGE 1

SAND BAG DITCH CHECKS (E-5) = 375 BAGS
 DIVERSION DITCH (E-8) = 5440 LIN. FT.
 SILT FENCE (E-11) = 2336 LIN. FT.
 PIPE FOR SLOPE DRAIN (E-12) = 340 LIN. FT.
 SEDIMENT BASIN (E-14) = 64 CU. YD.
 OBLITERATION OF SEDIMENT BASIN = 64 CU. YD.
 SEDIMENT REMOVAL AND DISPOSAL = 500 CU. YD.
 DUMPED RIPRAP = 7 CU. YD.

- (E-5) SAND BAG DITCH CHECKS
- (E-8) DIVERSION DITCH
- (E-11) SILT FENCE
- (E-12) PIPE FOR SLOPE DRAIN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		10	103

2 TEMPORARY EROSION CONTROL DETAILS



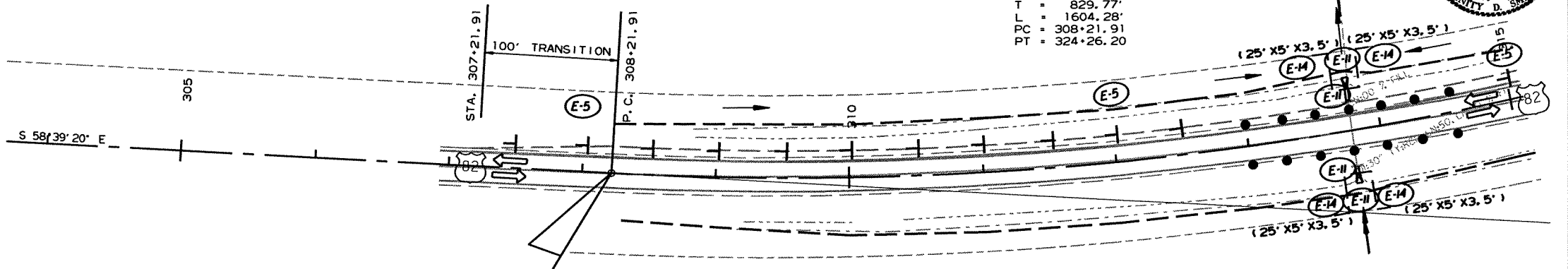
PI = 316+51.68
 Δ = 36°05'47.0" LT.
 D = 2°15'00.0"
 T = 829.77'
 L = 1604.28'
 PC = 308+21.91
 PT = 324+26.20

STATION	STATION	SIDE	DIVERSION DITCH LIN. FT.	PIPE FOR SLOPE DRAIN LIN. FT.	DUMPED RIPRAP CU. YD.
321+50	336+30	LT.	1480	16	1
321+50	336+30	LT.			
323+50	336+30	RT.	1280		

SAND BAG DITCH CHECK (E-5)	SIDE	BAG
STA. 308+00	LT.	25
STA. 312+00	LT.	25
STA. 315+00	LT.	25
STA. 318+00	LT.	25
STA. 322+00	LT.	25
STA. 329+00	RT.	25

SEDIMENT BASIN (E-14)	SIDE	CU. YD.
STA. 313+45 - STA. 313+70 (25' X 5' X 3.5')	RT.	16
STA. 313+45 - STA. 313+70 (25' X 5' X 3.5')	LT.	16
STA. 314+00 - STA. 314+25 (25' X 5' X 3.5')	RT.	16
STA. 314+00 - STA. 314+25 (25' X 5' X 3.5')	LT.	16

SILT FENCE (E-11)	SIDE	LIN. FT.
STA. 313+54 - STA. 314+00	RT.	103
STA. 313+54 - STA. 314+00	LT.	108
STA. 321+00 - STA. 321+59	LT.	117



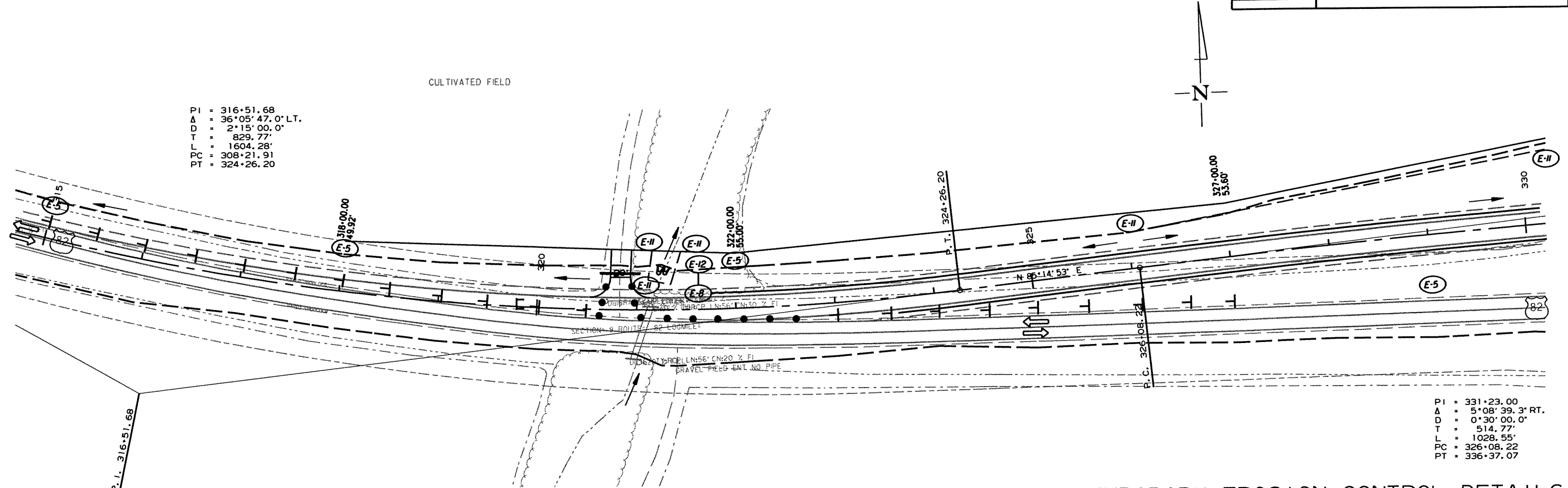
STA. 308+21.91 BEGIN
 JOB 020509
 L.M. 18.86

REVISION BOX

DATE	REVISION

CULTIVATED FIELD

PI = 316+51.68
 Δ = 36°05'47.0" LT.
 D = 2°15'00.0"
 T = 829.77'
 L = 1604.28'
 PC = 308+21.91
 PT = 324+26.20



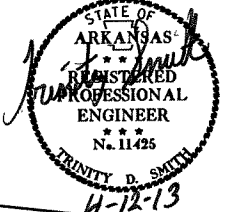
PI = 331+23.00
 Δ = 5°08'39.3" RT.
 D = 0°30'00.0"
 T = 514.77'
 L = 1028.55'
 PC = 326+08.22
 PT = 336+37.07

**TEMPORARY EROSION CONTROL DETAILS
 STAGE 1**

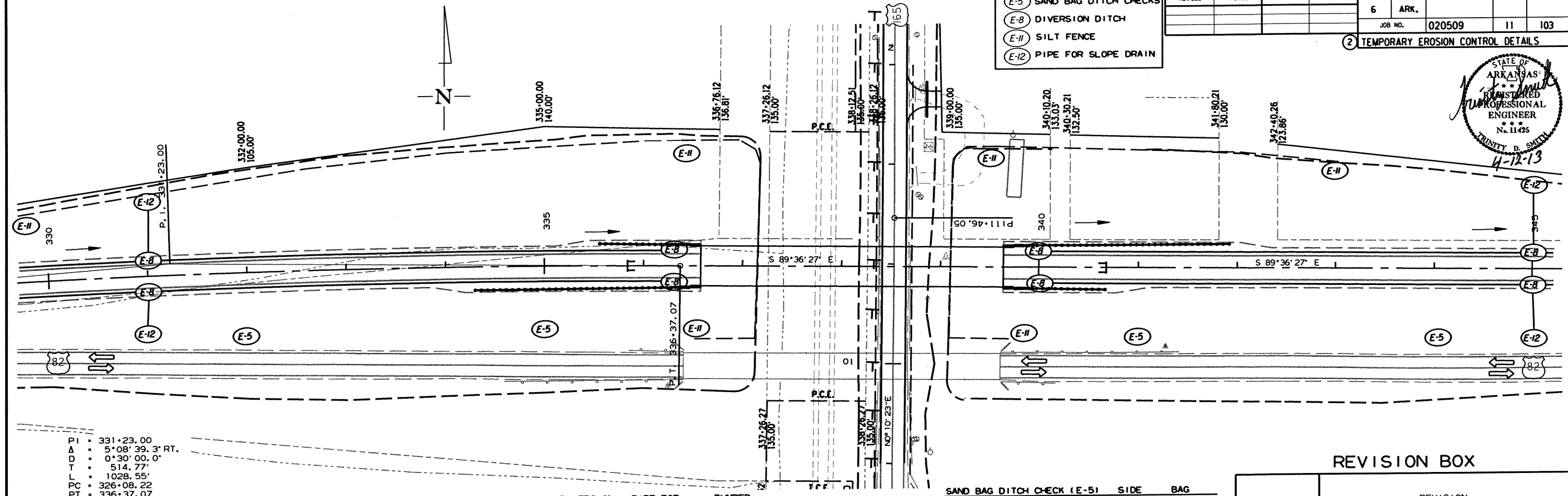
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		11	103

JOB NO. 020509

- (E-5) SAND BAG DITCH CHECKS
- (E-8) DIVERSION DITCH
- (E-11) SILT FENCE
- (E-12) PIPE FOR SLOPE DRAIN



2 TEMPORARY EROSION CONTROL DETAILS



PI = 331+23.00
 Δ = 5°08'39.3" RT.
 D = 0°30'00.0"
 T = 514.77'
 L = 1028.55'
 PC = 326+08.22
 PT = 336+37.07

SILT FENCE (E-11)	SIDE	LIN. FT.
STA. 326+00 - STA. 337+20	LT.	1371
STA. 339+10 - STA. 343+00	LT.	637

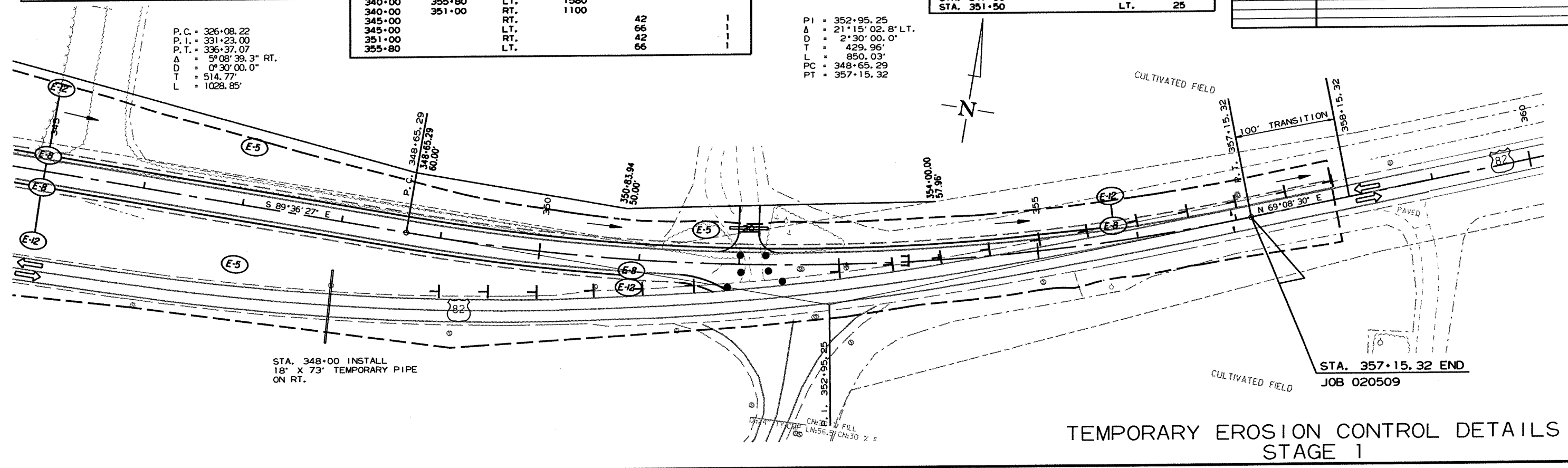
STATION	STATION	SIDE	DIVERSION DITCH LIN. FT.	PIPE FOR SLOPE DRAIN LIN. FT.	DUMPED RIPRAP CU. YD.
331+00		LT.		66	
331+00		RT.		42	
340+00	355+80	LT.	1580		
340+00	351+00	RT.	1100		
345+00		RT.		42	
345+00		LT.		66	
351+00		RT.		42	
355+80		LT.		66	

SAND BAG DITCH CHECK (E-5)	SIDE	BAG
STA. 332+00	RT.	25
STA. 335+00	RT.	25
STA. 341+00	RT.	25
STA. 344+00	RT.	25
STA. 347+00	LT.	25
STA. 347+00	RT.	25
STA. 351+50	LT.	25

REVISION BOX	
DATE	REVISION

P.C. = 326+08.22
 P.I. = 331+23.00
 P.T. = 336+37.07
 Δ = 5°08'39.3" RT.
 D = 0°30'00.0"
 T = 514.77'
 L = 1028.85'

PI = 352+95.25
 Δ = 21°15'02.8" LT.
 D = 2°30'00.0"
 T = 429.96'
 L = 850.03'
 PC = 348+65.29
 PT = 357+15.32



STA. 348+00 INSTALL 18" X 73" TEMPORARY PIPE ON RT.

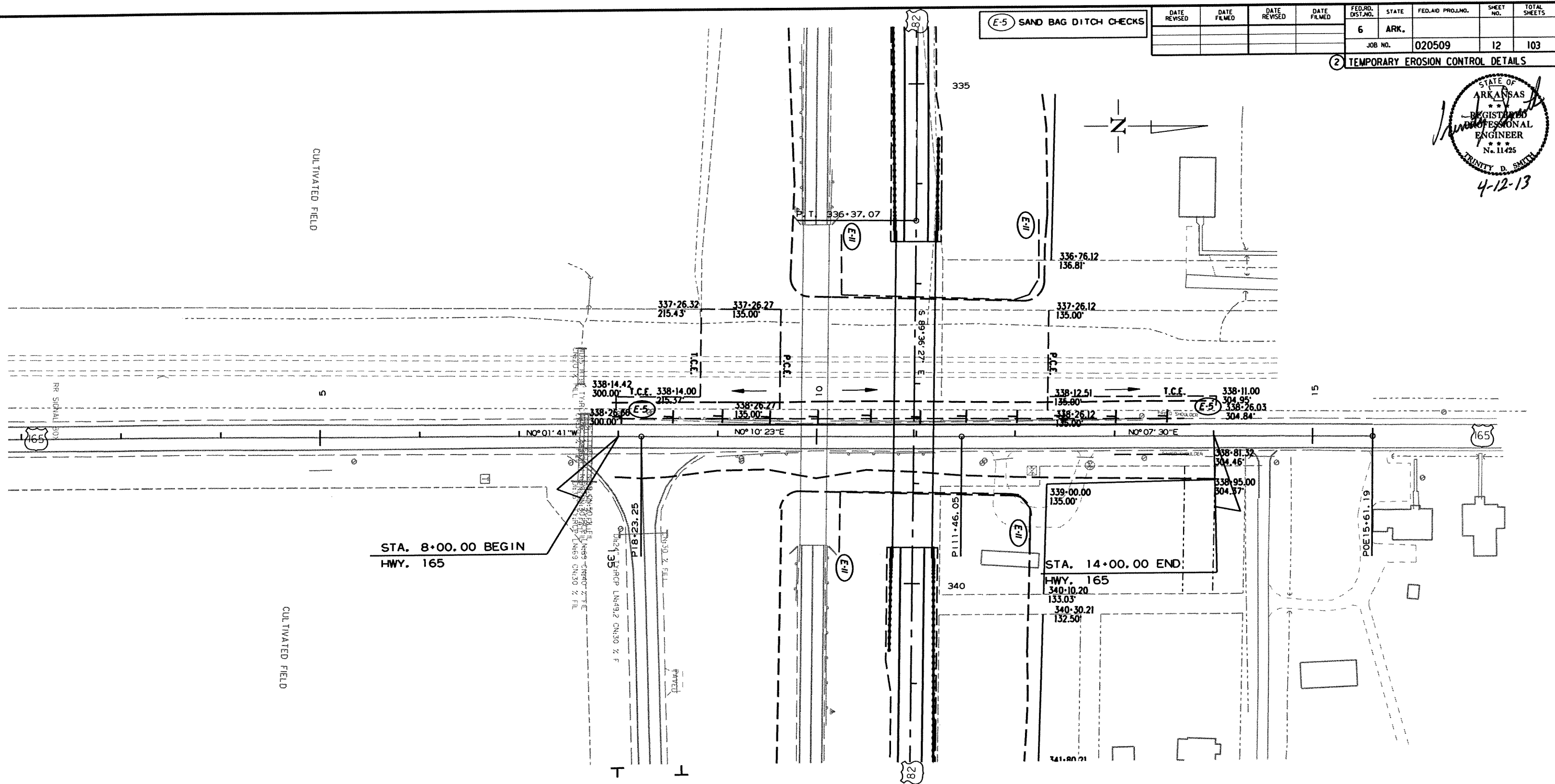
STA. 357+15.32 END JOB 020509

TEMPORARY EROSION CONTROL DETAILS STAGE 1

(E-5) SAND BAG DITCH CHECKS

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JOB NO. 020509							12	103

2 TEMPORARY EROSION CONTROL DETAILS



STA. 8+00.00 BEGIN
HWY. 165

STA. 14+00.00 END
HWY. 165

SAND BAG DITCH CHECK (E-5)	SIDE	BAG
STA. 8+25	LT.	25
STA. 13+90	LT.	25

REVISION BOX

DATE	REVISION

TEMPORARY EROSION CONTROL DETAILS
STAGE 1

EROSION CONTROL GENERAL NOTES

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.

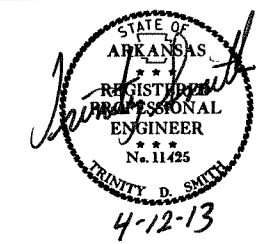
EROSION CONTROL QUANTITIES - STAGE 2

SAND BAG DITCH CHECKS (E-5) = 300 BAGS
 SILT FENCE (E-11) = 3100 LIN.FT.
 SEDIMENT REMOVAL AND DISPOSAL = 200 CU. YD.

- (E-5) SAND BAG DITCH CHECKS
- (E-11) SILT FENCE

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
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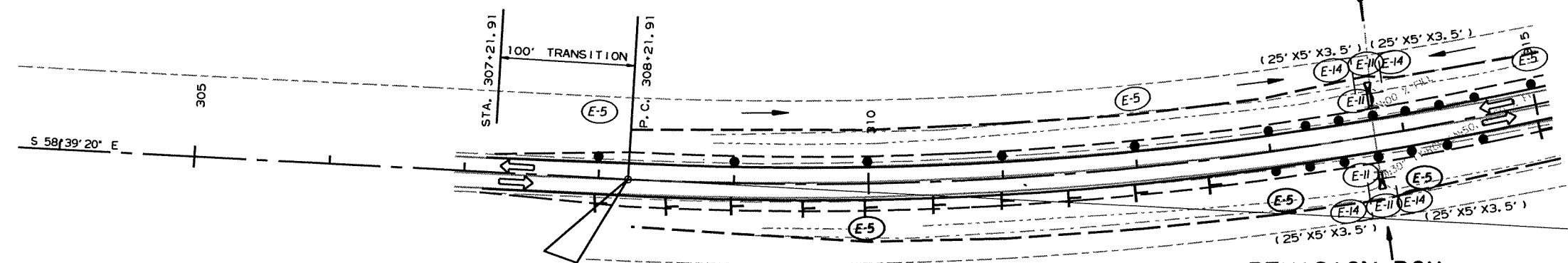
TEMPORARY EROSION CONTROL DETAILS



PI = 316+51.68
 Δ = 36°05'47.0" LT.
 D = 2°15'00.0"
 T = 829.77'
 L = 1604.28'
 PC = 308+21.91
 PT = 324+26.20

SILT FENCE (E-11)	SIDE	LIN. FT.
STA. 316+00 - STA. 320+90	RT.	490
STA. 324+00 - STA. 337+20	RT.	1320

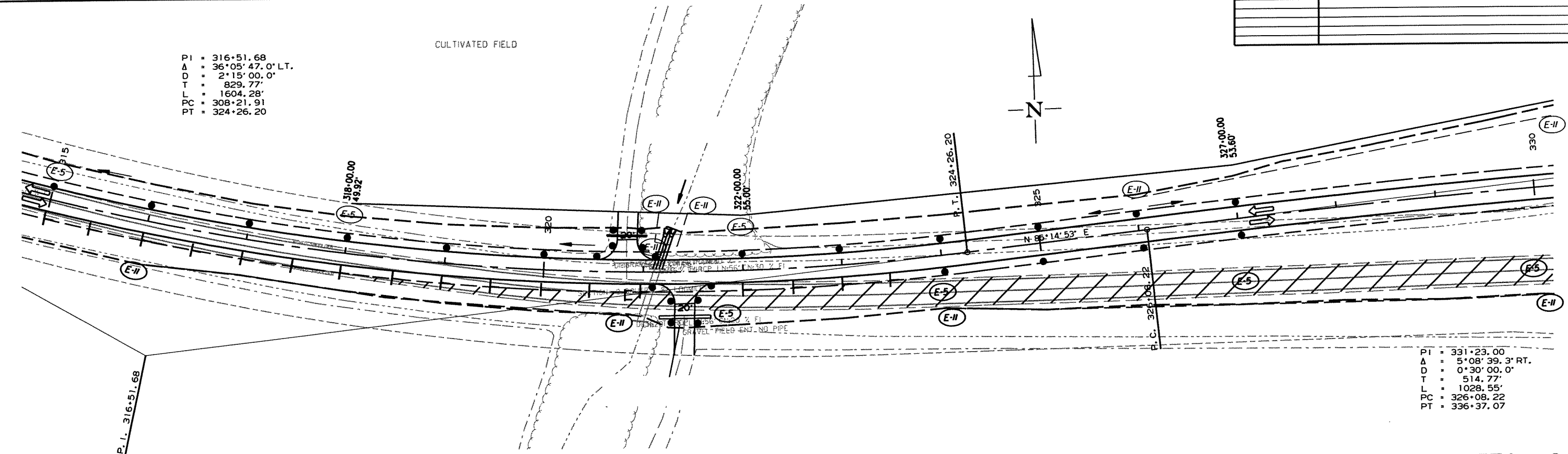
SAND BAG DITCH CHECK (E-5)	SIDE	BAG
STA. 310+00	RT.	25
STA. 313+00	RT.	25
STA. 321+85	RT.	25
STA. 324+00	RT.	25
STA. 327+00	RT.	25
STA. 330+00	RT.	25



STA. 308+21.91 BEGIN
 JOB 020509
 L.M. 18.86

REVISION BOX

DATE	REVISION



PI = 316+51.68
 Δ = 36°05'47.0" LT.
 D = 2°15'00.0"
 T = 829.77'
 L = 1604.28'
 PC = 308+21.91
 PT = 324+26.20

PI = 331+23.00
 Δ = 5°08'39.3" RT.
 D = 0°30'00.0"
 T = 514.77'
 L = 1028.55'
 PC = 326+08.22
 PT = 336+37.07

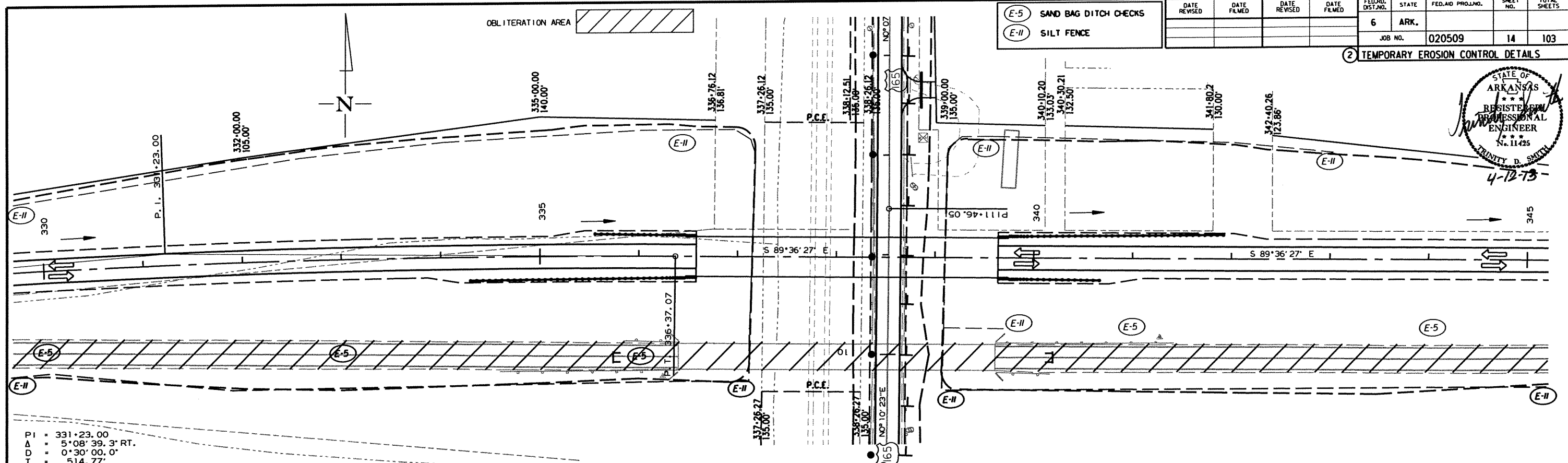
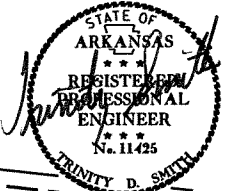
**TEMPORARY EROSION CONTROL DETAILS
 STAGE 2**

OBLITERATION AREA

- (E-5) SAND BAG DITCH CHECKS
- (E-11) SILT FENCE

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
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2 TEMPORARY EROSION CONTROL DETAILS



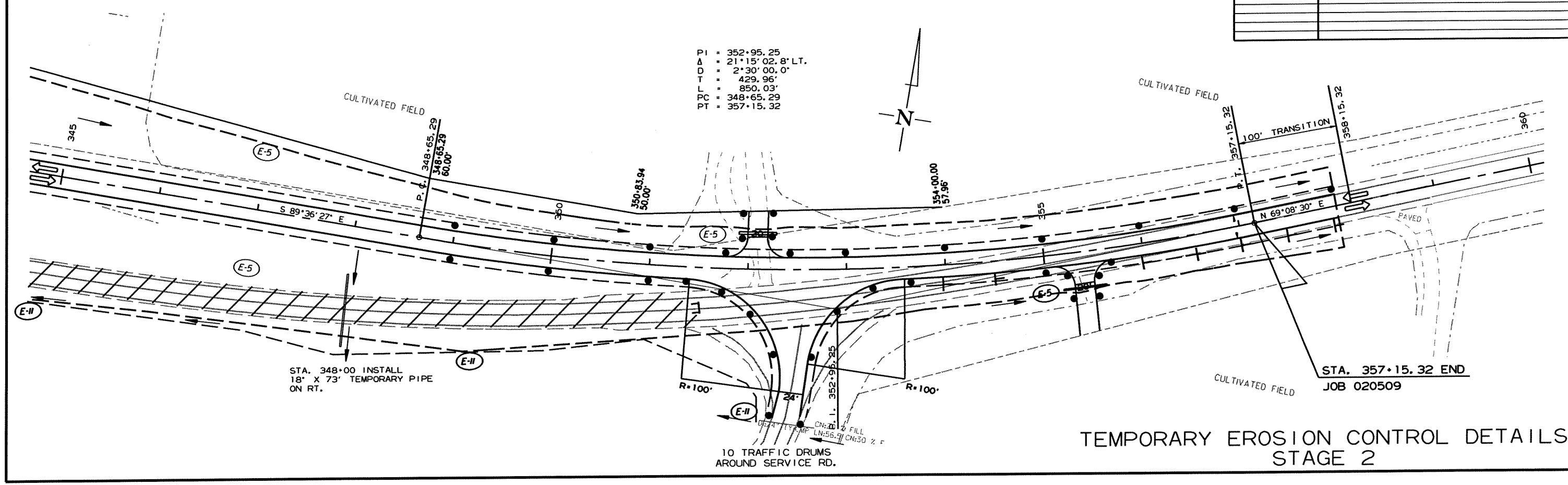
PI = 331+23.00
 Δ = 5°08'39.3" RT.
 D = 0°30'00.0"
 T = 514.77'
 L = 1028.55'
 PC = 326+08.22
 PT = 336+37.07

SAND BAG DITCH CHECK (E-5)	SIDE	BAG	SILT FENCE (E-11)	SIDE	LIN. FT.
STA. 333+00	RT.	200	STA. 339+10 - STA. 352+00	RT.	1290
STA. 336+00	RT.	200			
STA. 355+00	RT.	200			

REVISION BOX

DATE	REVISION

PI = 352+95.25
 Δ = 21°15'02.8" LT.
 D = 2°30'00.0"
 T = 429.96'
 L = 850.03'
 PC = 348+65.29
 PT = 357+15.32



STA. 348+00 INSTALL
 18" X 73' TEMPORARY PIPE
 ON RT.

10 TRAFFIC DRUMS
 AROUND SERVICE RD.

TEMPORARY EROSION CONTROL DETAILS
 STAGE 2

STA. 357+15.32 END
 JOB 020509

4/9/2013

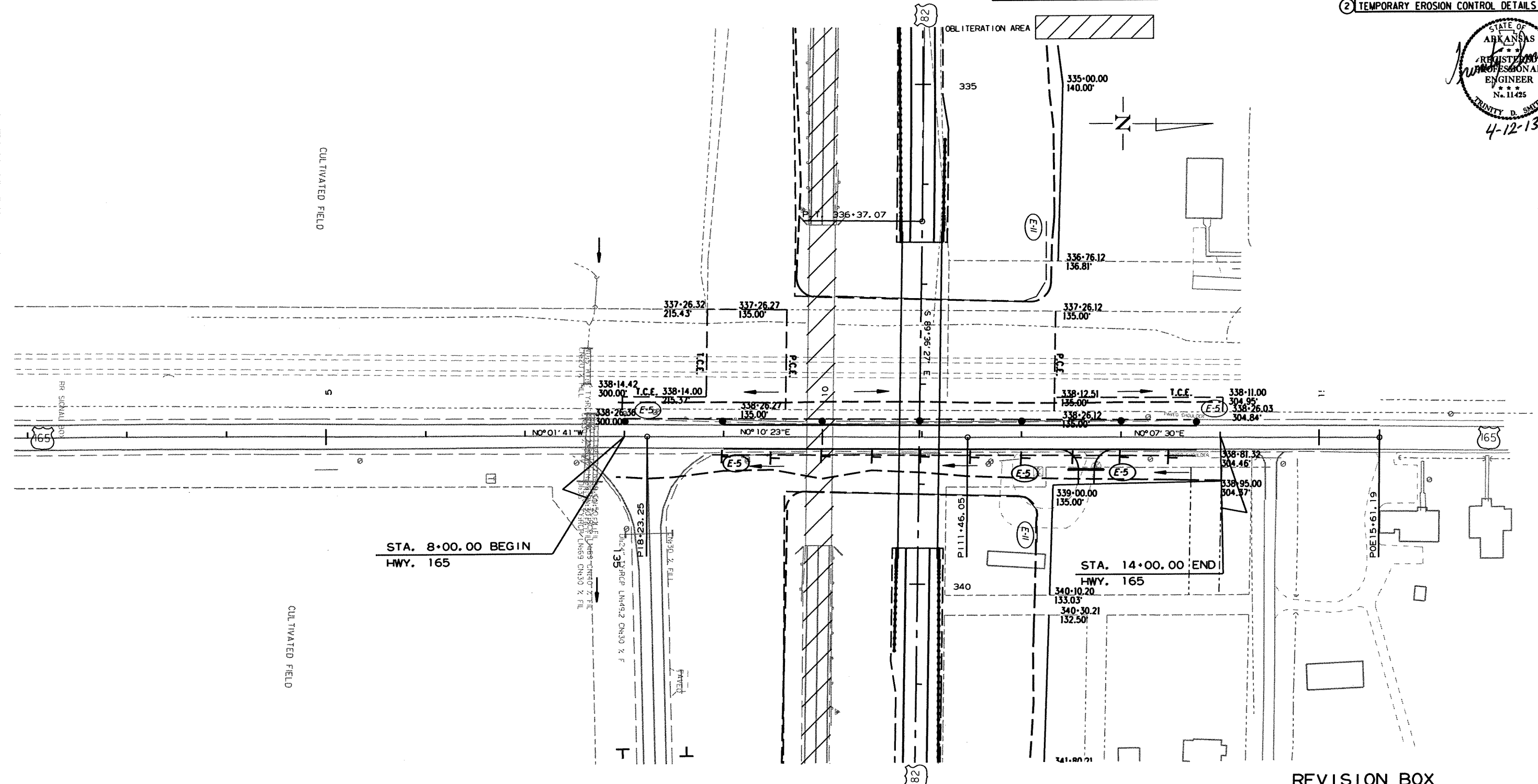
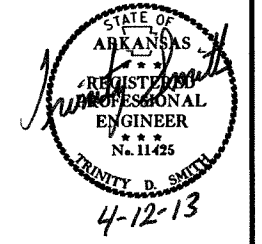
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- (E-5) SAND BAG DITCH CHECKS
- (E-11) SILT FENCE

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
6	ARK.		15	103

2 TEMPORARY EROSION CONTROL DETAILS



STA. 8+00.00 BEGIN
HWY. 165

STA. 14+00.00 END
HWY. 165

SAND BAG DITCH CHECK (E-5)	SIDE	BAG
STA. 9+00	RT.	25
STA. 12+00	RT.	25
STA. 13+00	RT.	25

REVISION BOX	
DATE	REVISION

TEMPORARY EROSION CONTROL DETAILS
STAGE 2

4/9/2013

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. PROJ. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS	
				6	ARK.				
							JOB NO. 020509	16	103

② MAINTENANCE OF TRAFFIC DETAILS



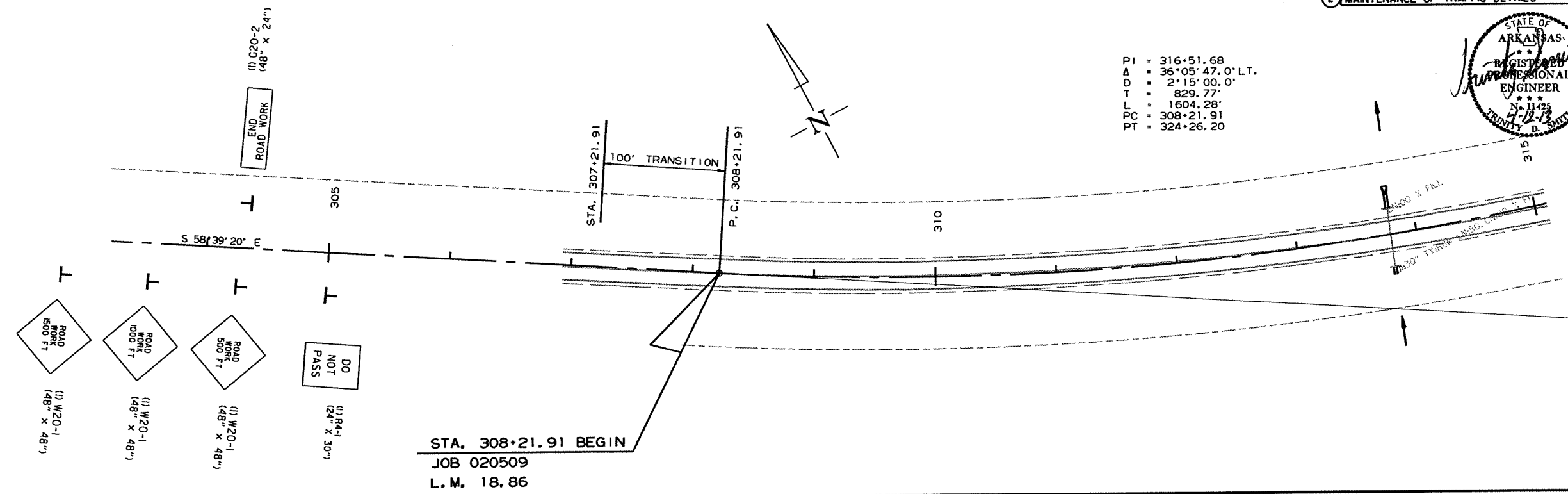
PI = 316+51.68
 A = 36°05'47.0" LT.
 D = 2°15'00.0"
 L = 829.77'
 T = 1604.28'
 PC = 308+21.91
 PT = 324+26.20

SEQUENCE OF CONSTRUCTION

STAGE 1
 CONSTRUCT NEW LOCATION AS SHOWN.
 CONSTRUCT NEW BRIDGE AS SHOWN.

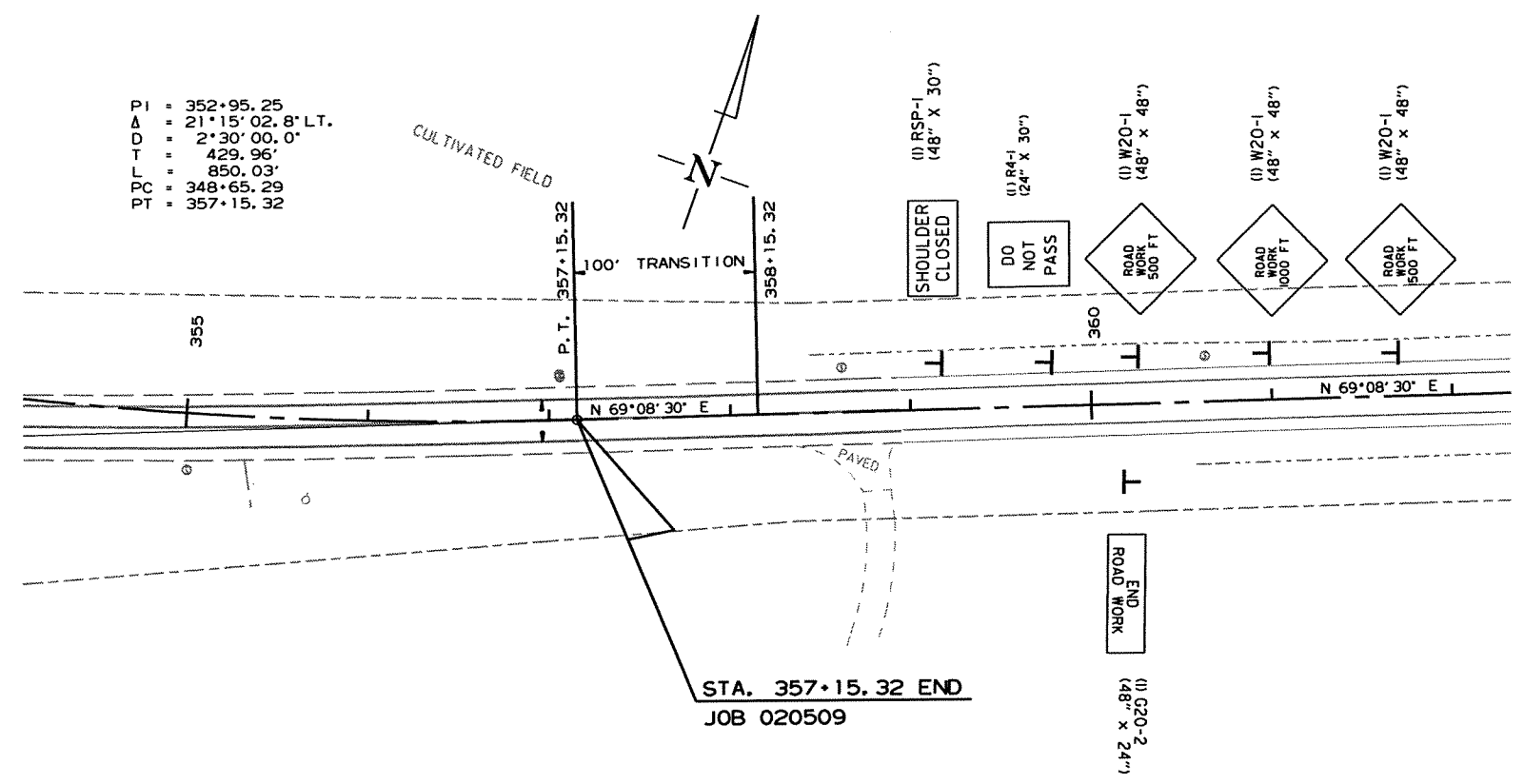
STAGE 2
 SHIFT TRAFFIC ONTO NEW LOCATION.
 FINISH TIE-INS TO EXISTING PAVEMENT.
 REMOVE EXISTING BRIDGE AND OBLITERATE
 EXISTING ROADWAY WHERE SHOWN.

END OF JOB
 INSTALL FINAL STRIPING.

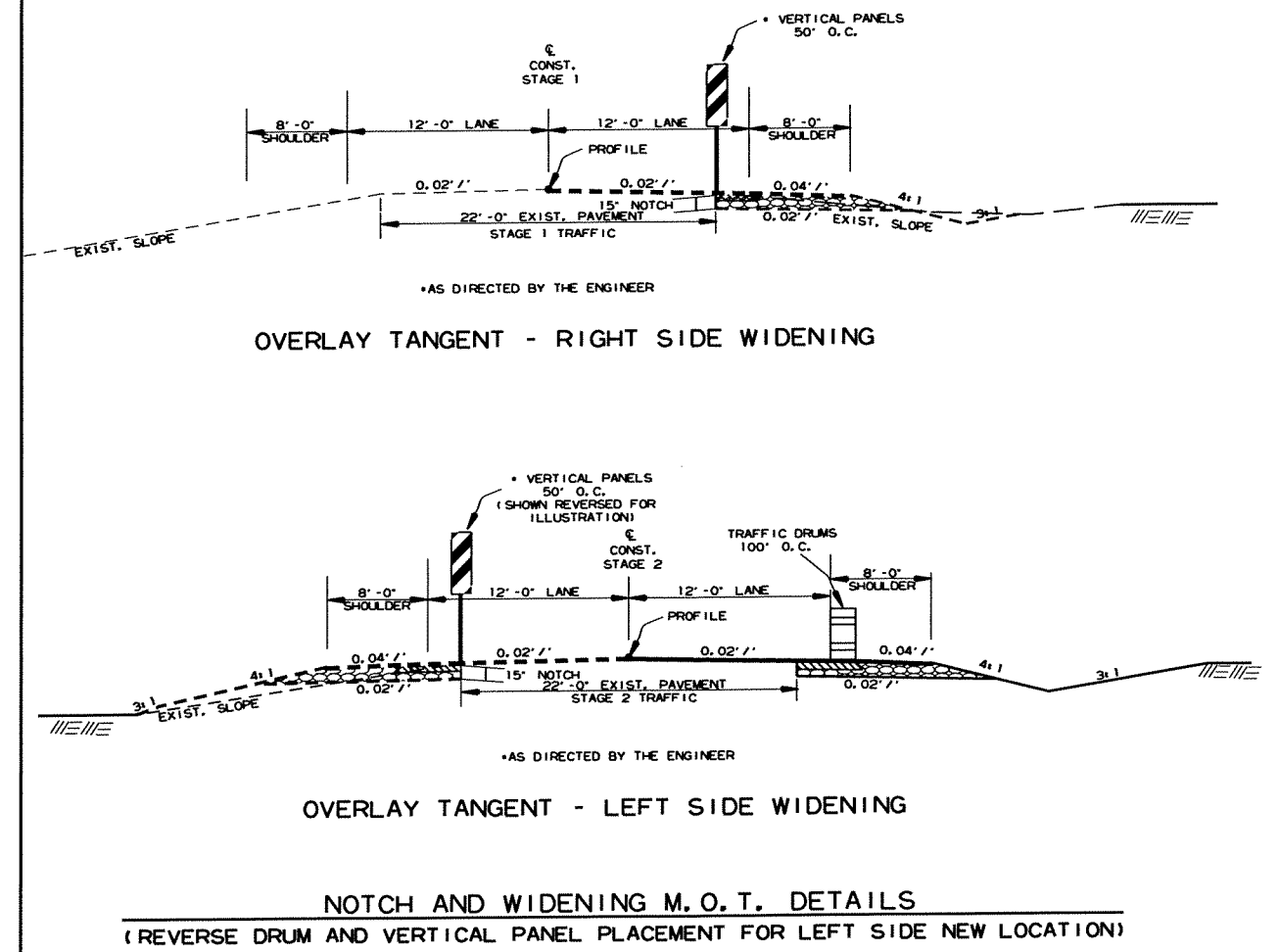


STA. 308+21.91 BEGIN
 JOB 020509
 L. M. 18.86

PI = 352+95.25
 A = 21°15'02.8" LT.
 D = 2°30'00.0"
 T = 429.96'
 L = 850.03'
 PC = 348+65.29
 PT = 357+15.32



STA. 357+15.32 END
 JOB 020509



NOTCH AND WIDENING M.O.T. DETAILS
 (REVERSE DRUM AND VERTICAL PANEL PLACEMENT FOR LEFT SIDE NEW LOCATION)

MAINTENANCE OF TRAFFIC DETAILS
 ADVANCE WARNING SIGNS

4/8/2013

R020509.DGN

SEQUENCE OF CONSTRUCTION

STAGE 1
CONSTRUCT NEW LOCATION AS SHOWN.
CONSTRUCT NEW BRIDGE AS SHOWN.

STAGE 2
SHIFT TRAFFIC ONTO NEW LOCATION.
FINISH TIE-INS TO EXISTING PAVEMENT.
REMOVE EXISTING BRIDGE AND OBLITERATE
EXISTING ROADWAY WHERE SHOWN.

END OF JOB
INSTALL FINAL STRIPING.

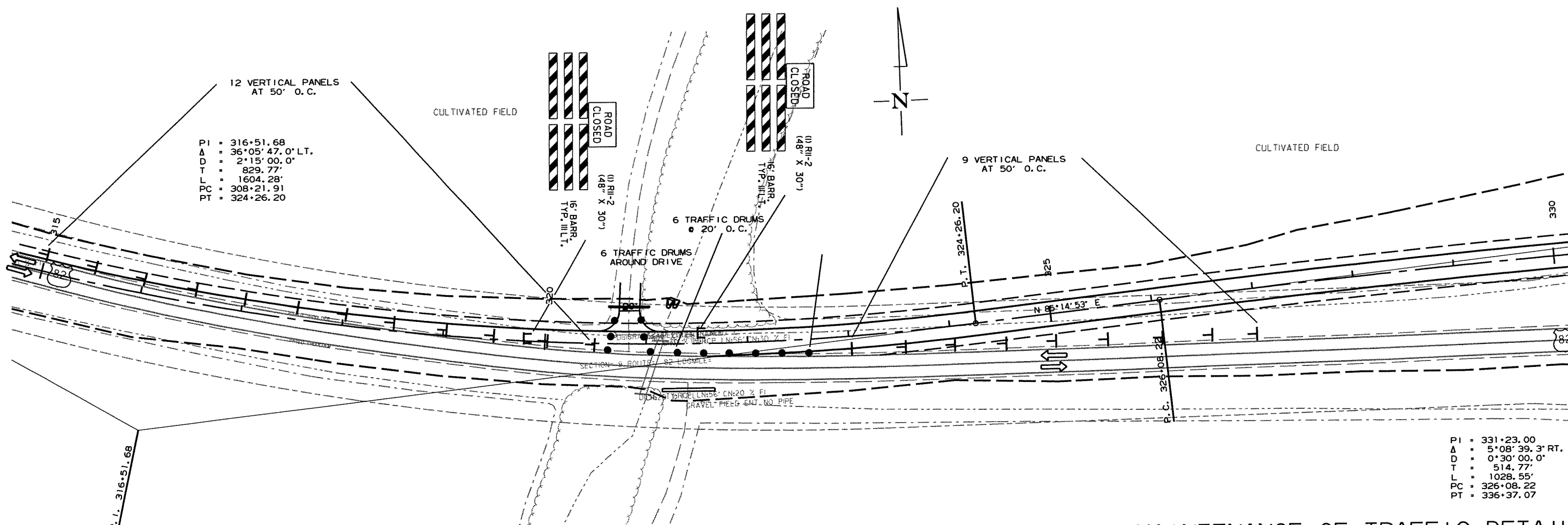
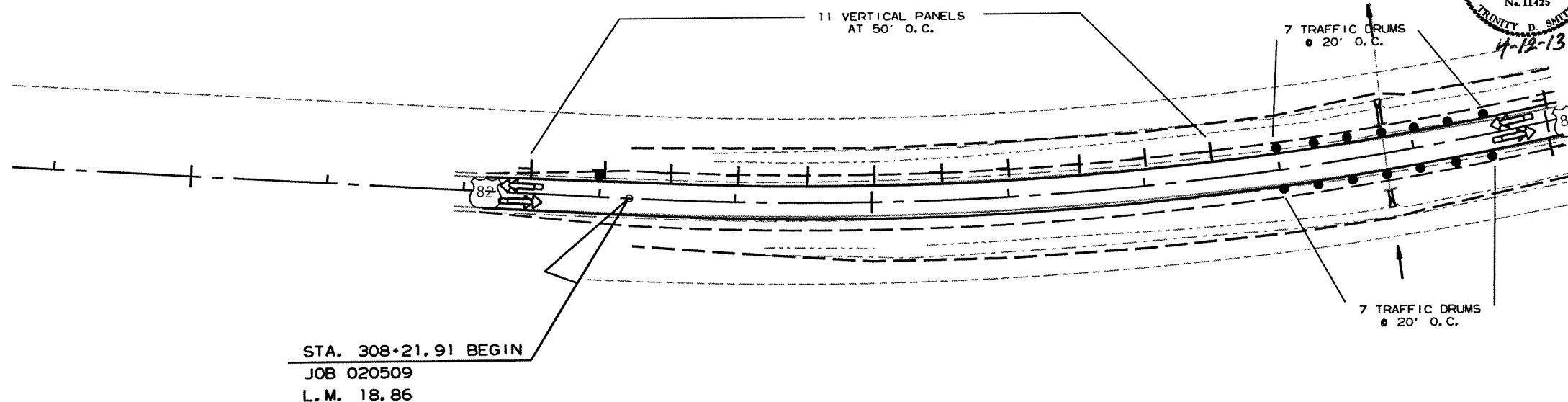
MAINTENANCE OF TRAFFIC - STAGE 1 QUANTITIES

SIGNS = 316 SQ. FT.
BARRICADES TY. 111 LT. = 32 LIN. FT.
BARRICADES TY. 111 RT. = 32 LIN. FT.
TRAFFIC DRUMS = 32 EACH
VERTICAL PANELS = 61 EACH
CONSTRUCTION PAVEMENT MARKING = 15600 LIN. FT.
RAISED PAVEMENT MARKERS (TY. 11) (YEL./YEL.) = 98 EACH

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		17	103
							JOB NO. 020509	

② MAINTENANCE OF TRAFFIC DETAILS

PI = 316+51.68
Δ = 36°05'47.0" LT.
D = 2°15'00.0"
T = 829.77'
L = 1604.28'
PC = 308+21.91
PT = 324+26.20



MAINTENANCE OF TRAFFIC DETAILS
STAGE 1

SEQUENCE OF CONSTRUCTION

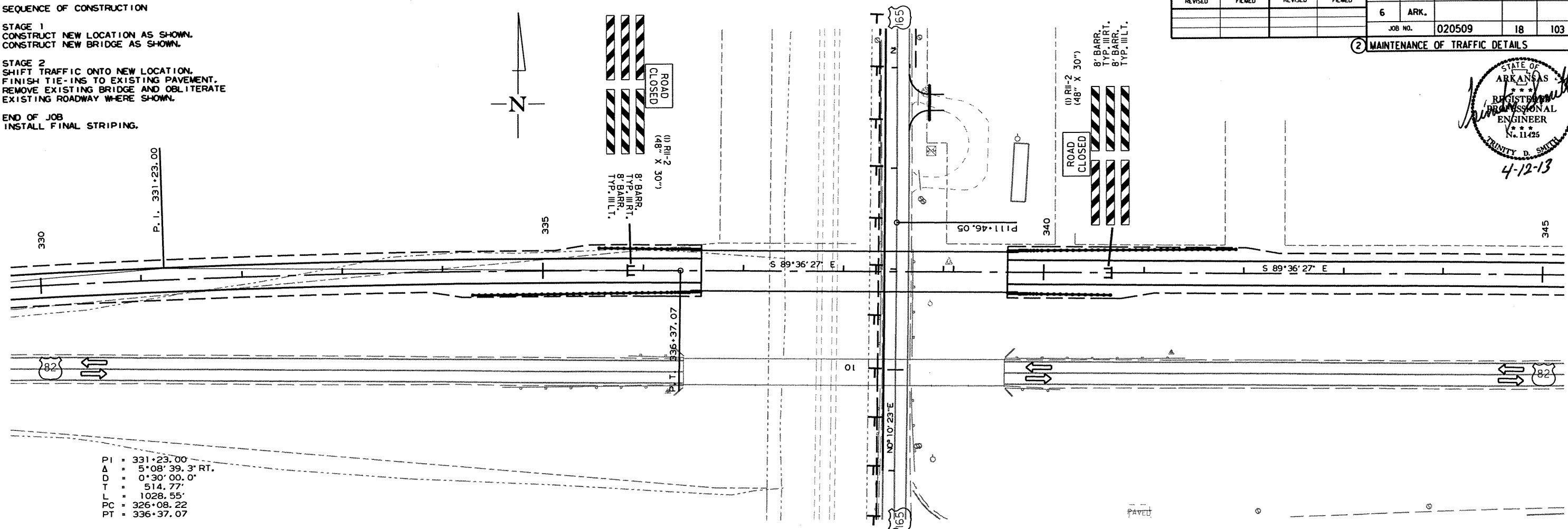
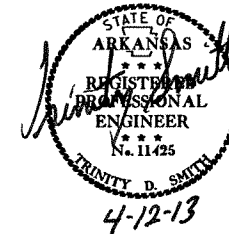
STAGE 1
CONSTRUCT NEW LOCATION AS SHOWN.
CONSTRUCT NEW BRIDGE AS SHOWN.

STAGE 2
SHIFT TRAFFIC ONTO NEW LOCATION.
FINISH TIE-INS TO EXISTING PAVEMENT.
REMOVE EXISTING BRIDGE AND OBLITERATE
EXISTING ROADWAY WHERE SHOWN.

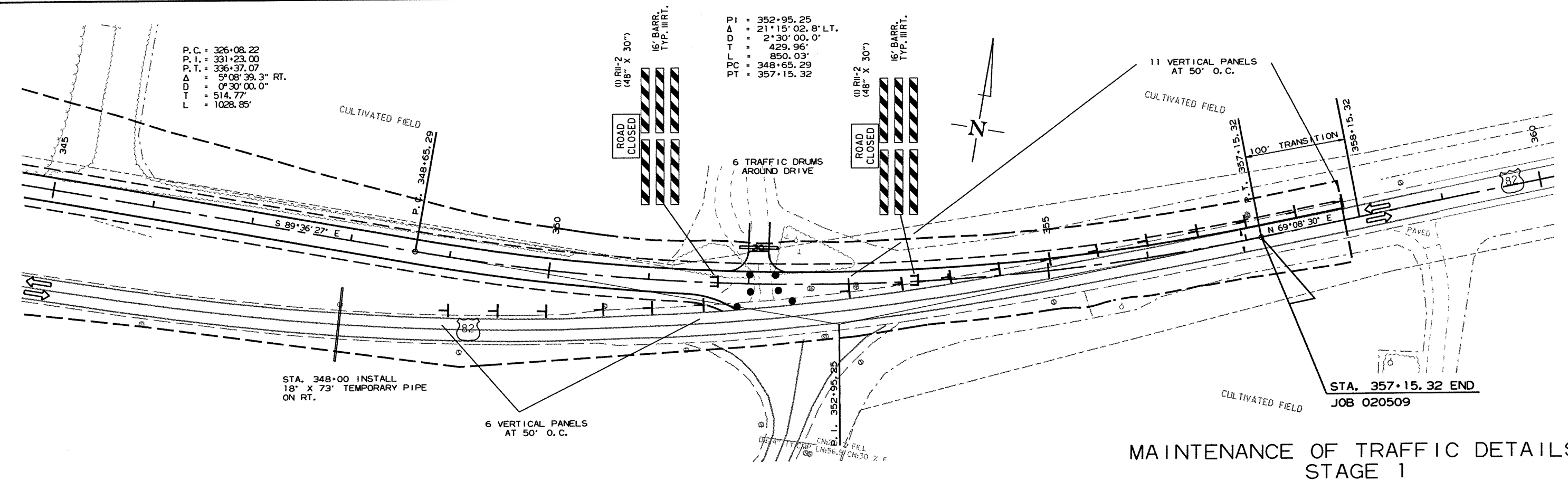
END OF JOB
INSTALL FINAL STRIPING.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		18	103

② MAINTENANCE OF TRAFFIC DETAILS



PI = 331+23.00
 Δ = 5°08'39.3" RT.
 D = 0°30'00.0"
 T = 514.77'
 L = 1028.55'
 PC = 326+08.22
 PT = 336+37.07



P.C. = 326+08.22
 P.I. = 331+23.00
 P.T. = 336+37.07
 Δ = 5°08'39.3" RT.
 D = 0°30'00.0"
 T = 514.77'
 L = 1028.85'

PI = 352+95.25
 Δ = 21°15'02.8" LT.
 D = 2°30'00.0"
 T = 429.96'
 L = 850.03'
 PC = 348+65.29
 PT = 357+15.32

STA. 348+00 INSTALL
18" X 73' TEMPORARY PIPE
ON RT.

STA. 357+15.32 END
JOB 020509

MAINTENANCE OF TRAFFIC DETAILS
STAGE 1

4/8/2013

R020509.DGN

SEQUENCE OF CONSTRUCTION

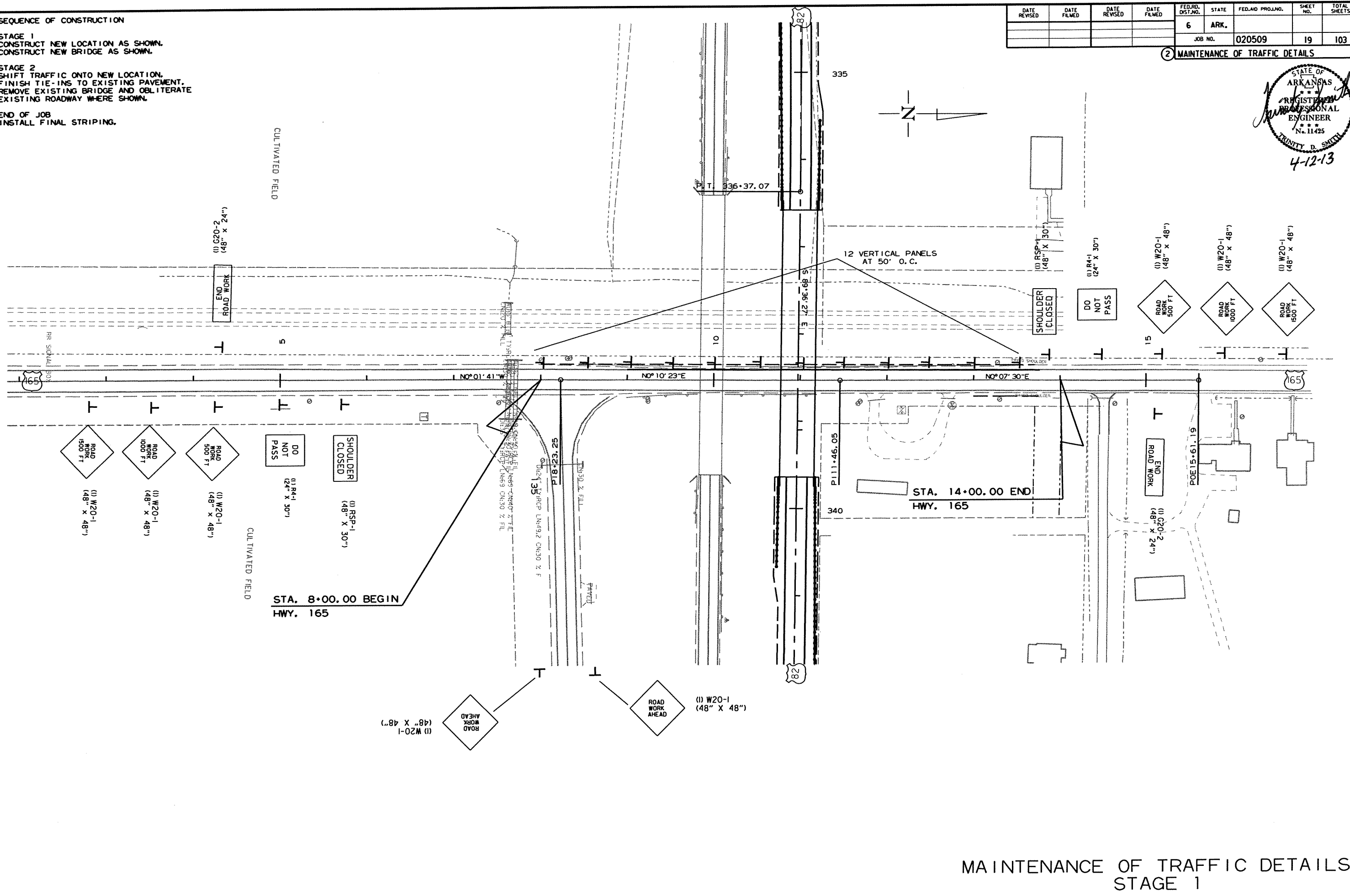
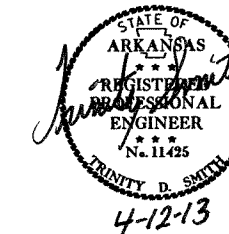
STAGE 1
 CONSTRUCT NEW LOCATION AS SHOWN.
 CONSTRUCT NEW BRIDGE AS SHOWN.

STAGE 2
 SHIFT TRAFFIC ONTO NEW LOCATION.
 FINISH TIE-INS TO EXISTING PAVEMENT.
 REMOVE EXISTING BRIDGE AND OBLITERATE
 EXISTING ROADWAY WHERE SHOWN.

END OF JOB
 INSTALL FINAL STRIPING.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		19	103
						JOB NO.	020509	

2 MAINTENANCE OF TRAFFIC DETAILS



MAINTENANCE OF TRAFFIC DETAILS
 STAGE 1

SEQUENCE OF CONSTRUCTION

STAGE 1
CONSTRUCT NEW LOCATION AS SHOWN.
CONSTRUCT NEW BRIDGE AS SHOWN.

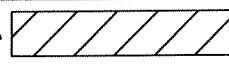
STAGE 2
SHIFT TRAFFIC ONTO NEW LOCATION.
FINISH TIE-INS TO EXISTING PAVEMENT.
REMOVE EXISTING BRIDGE AND OBLITERATE
EXISTING ROADWAY WHERE SHOWN.

END OF JOB
INSTALL FINAL STRIPING.

MAINTENANCE OF TRAFFIC - STAGE 2 QUANTITIES

SIGNS = 332 SQ. FT.
BARRICADES TY. III LT. = 32 LIN. FT.
BARRICADES TY. III RT. = 32 LIN. FT.
TRAFFIC DRUMS = 75 EACH
VERTICAL PANELS = 44 EACH
REMOVAL OF CONSTRUCTION PAVEMENT MARKING = 6860 LIN. FT.
CONSTRUCTION PAVEMENT MARKING = 6860 LIN. FT.
RAISED PAVEMENT MARKERS (TY. III) (YEL./YEL.) = 43 EACH

OBLITERATION AREA

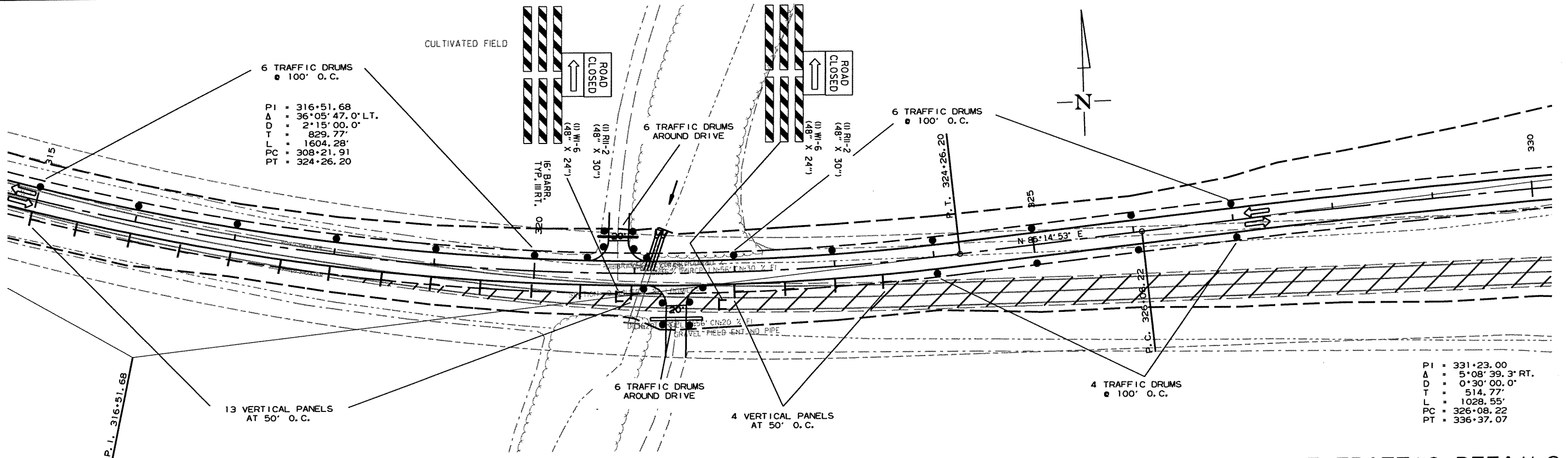
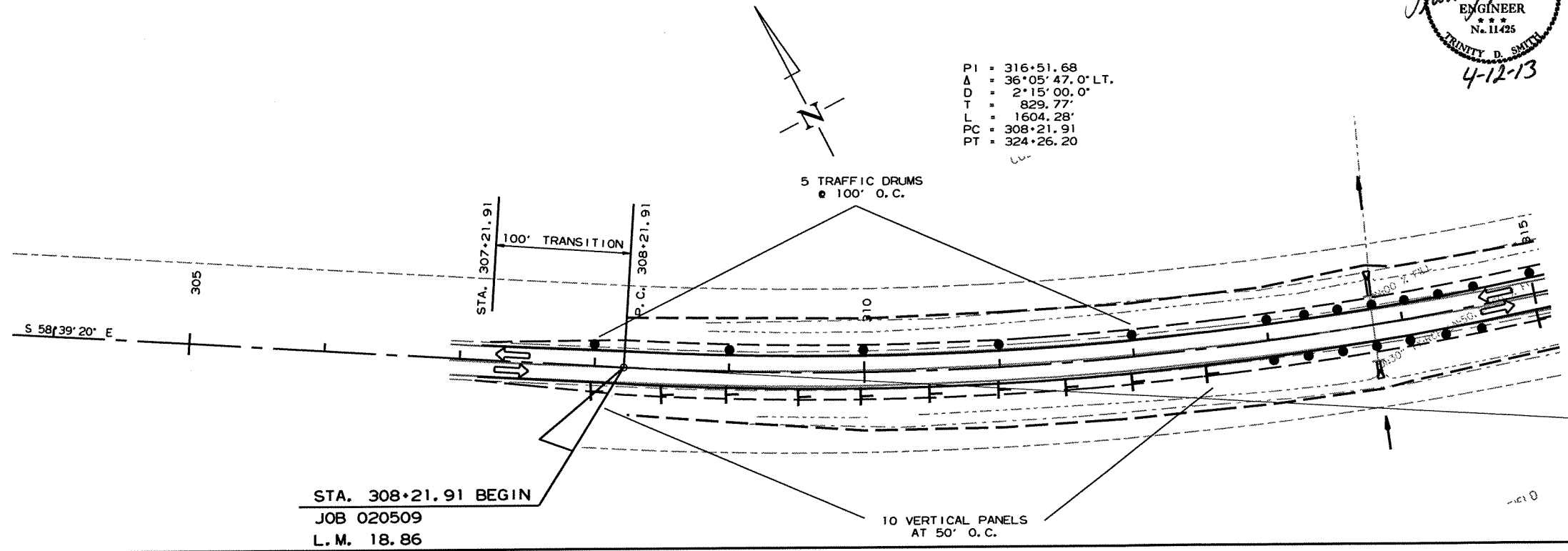


DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS	
				6	ARK.				
							JOB NO. 020509	20	103

② MAINTENANCE OF TRAFFIC DETAILS



PI = 316+51.68
Δ = 36°05'47.0" LT.
D = 2°15'00.0"
T = 829.77'
L = 1604.28'
PC = 308+21.91
PT = 324+26.20



PI = 316+51.68
Δ = 36°05'47.0" LT.
D = 2°15'00.0"
T = 829.77'
L = 1604.28'
PC = 308+21.91
PT = 324+26.20

PI = 331+23.00
Δ = 5°08'39.3" RT.
D = 0°30'00.0"
T = 514.77'
L = 1028.55'
PC = 326+08.22
PT = 336+37.07

MAINTENANCE OF TRAFFIC DETAILS
STAGE 2

4/8/2013

R020509.DGN

SEQUENCE OF CONSTRUCTION

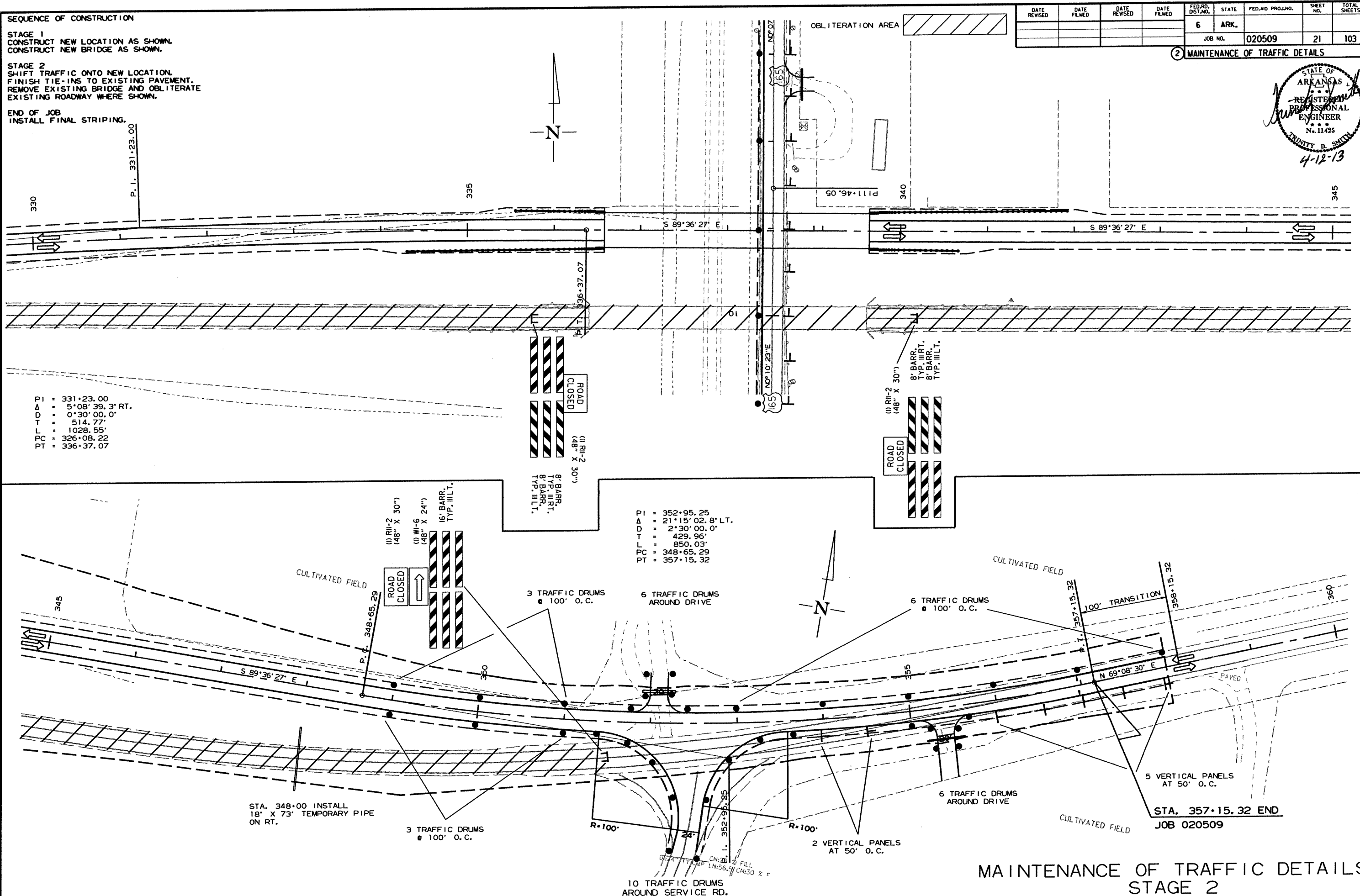
STAGE 1
CONSTRUCT NEW LOCATION AS SHOWN.
CONSTRUCT NEW BRIDGE AS SHOWN.

STAGE 2
SHIFT TRAFFIC ONTO NEW LOCATION.
FINISH TIE-INS TO EXISTING PAVEMENT.
REMOVE EXISTING BRIDGE AND OBLITERATE
EXISTING ROADWAY WHERE SHOWN.

END OF JOB
INSTALL FINAL STRIPING.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		21	103

② MAINTENANCE OF TRAFFIC DETAILS



PI = 331+23.00
A = 5'08'39.3" RT.
D = 0'30'00.0"
T = 514.77'
L = 1028.55'
PC = 326+08.22
PT = 336+37.07

PI = 352+96.25
A = 21'15'02.8" LT.
D = 2'30'00.0"
T = 429.96'
L = 850.03'
PC = 348+65.29
PT = 357+15.32

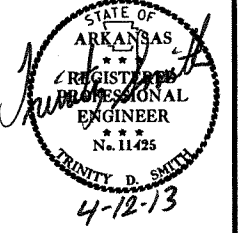
STA. 348+00 INSTALL
18" X 73' TEMPORARY PIPE
ON RT.

MAINTENANCE OF TRAFFIC DETAILS
STAGE 2

STA. 357+15.32 END
JOB 020509

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		22	103
						JOB NO.	020509	

② MAINTENANCE OF TRAFFIC DETAILS

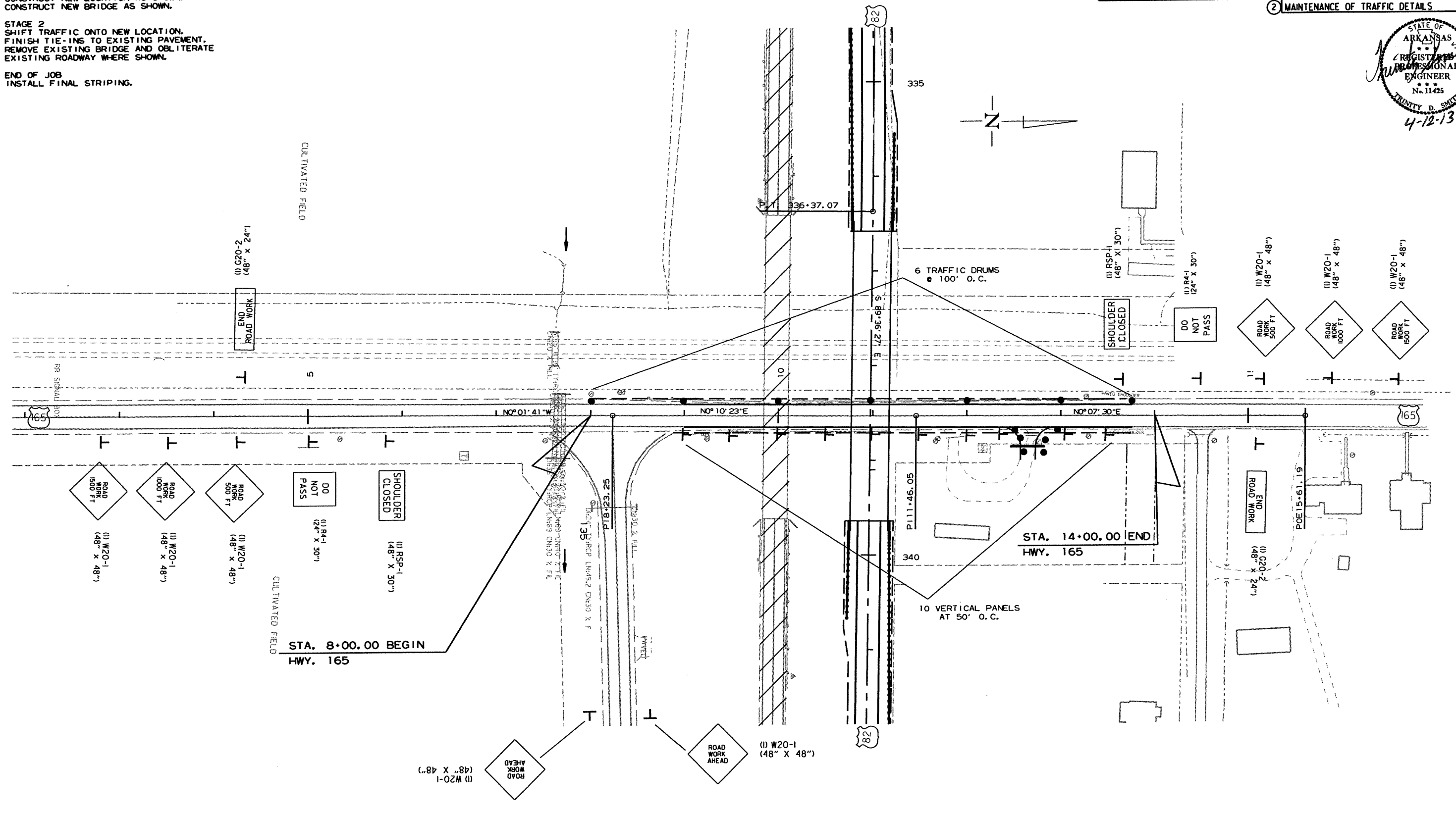


SEQUENCE OF CONSTRUCTION

STAGE 1
CONSTRUCT NEW LOCATION AS SHOWN.
CONSTRUCT NEW BRIDGE AS SHOWN.

STAGE 2
SHIFT TRAFFIC ONTO NEW LOCATION.
FINISH TIE-INS TO EXISTING PAVEMENT.
REMOVE EXISTING BRIDGE AND OBLITERATE
EXISTING ROADWAY WHERE SHOWN.

END OF JOB
INSTALL FINAL STRIPING.



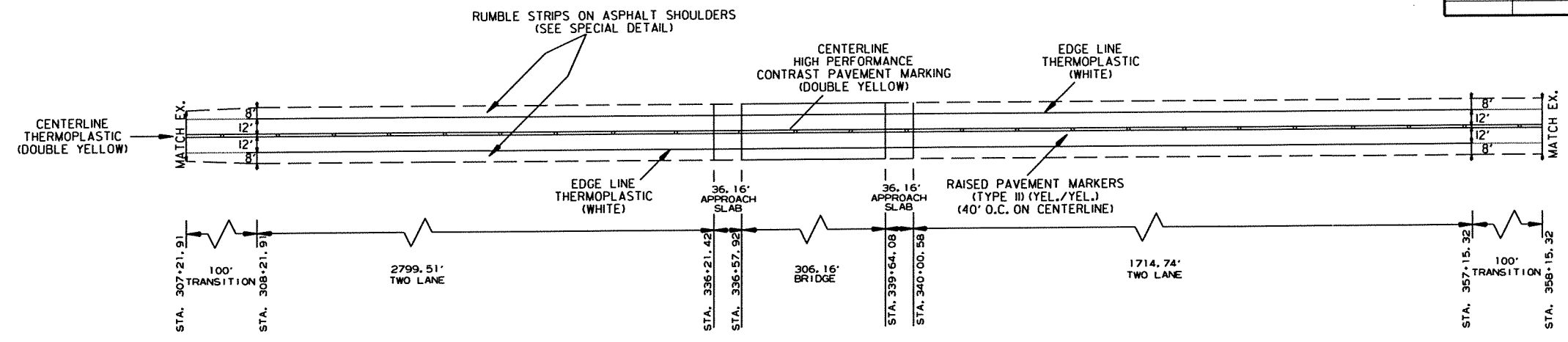
MAINTENANCE OF TRAFFIC DETAILS
STAGE 2

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. 020509							23	103

② PERMANENT PAVEMENT MARKING DETAILS



4-12-13



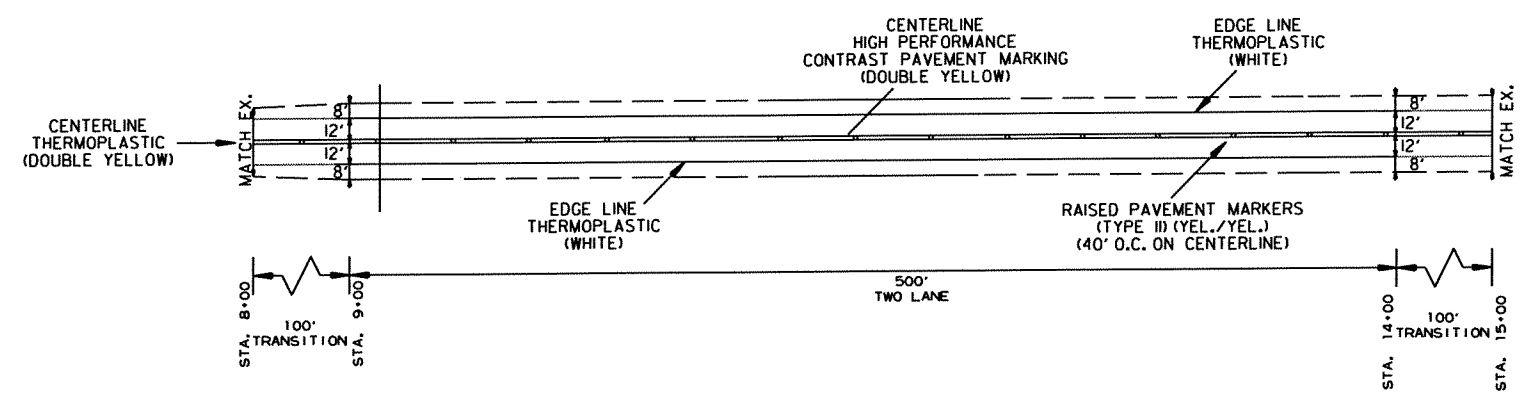
HWY. 82

PERMANENT PAVEMENT MARKING DETAILS:

THERMOPLASTIC PAVEMENT MARKINGS:
 RT. AND LT. EDGE LINES = 10185 LIN. FT. WHITE
 DBL. CENTERLINE = 9429 LIN. FT. YELLOW

HIGH PERFORMANCE CONTRAST PAVEMENT MARKINGS:
 DBL. CENTERLINE = 757 LIN. FT. YELLOW

RAISED PAVEMENT MARKERS:
 TYPE II (YEL./YEL.) 40' O.C. ON CENTERLINE = 127 EACH



HWY. 165

PERMANENT PAVEMENT MARKING DETAILS:

THERMOPLASTIC PAVEMENT MARKINGS:
 RT. AND LT. EDGE LINES = 1400 LIN. FT. WHITE
 DBL. CENTERLINE = 1400 LIN. FT. YELLOW

RAISED PAVEMENT MARKERS:
 TYPE II (YEL./YEL.) 40' O.C. ON CENTERLINE = 35 EACH

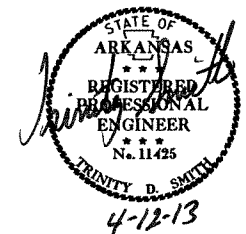
PERMANENT PAVEMENT MARKING DETAILS

4/8/2013

R020509.DGN

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.	020509
							24	103

② QUANTITIES



MAINTENANCE OF TRAFFIC ITEMS

LOCATION	BARRICADES		TRAFFIC DRUMS	VERTICAL PANELS	CONSTRUCTION PAVEMENT MARKINGS	REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS
	TY. III RT.	TY. III LT.				
	LIN. FT.					
MAIN LANES-STAGE 1	64	64	32	61	15600	
MAIN LANES-STAGE 2	64	32	75	44	6860	6860
TOTALS	128	96	107	105	22460	6860

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

SIGNS

SIGN NO.	DESCRIPTION	SIZE	QUANTITY		MAXIMUM REQUIRED	SIGNS SQ. FT.
			STAGE 1	STAGE 2		
G20-2	END ROAD WORK	48" X 24"	4	4	4	32
R4-1	DO NOT PASS	24" X 30"	4	4	4	20
R11-2	ROAD CLOSED	48" X 30"	6	3	6	60
RSP-1	SHOULDER CLOSED	48" X 30"	3	3	3	30
W1-6	ARROW	48" X 24"		3	3	24
W20-1	ROAD WORK 1500 FT.	48" X 48"	4	4	4	64
W20-1	ROAD WORK 1000 FT.	48" X 48"	4	4	4	64
W20-1	ROAD WORK 500 FT.	48" X 48"	4	4	4	64
W20-1	ROAD WORK AHEAD	48" X 48"	2	2	2	32
TOTAL						390

PERMANENT PAVEMENT MARKING ITEMS

LOCATION	THERMOPLASTIC PAVEMENT MARKING		HIGH PERFORMANCE CONTRAST PAVEMENT MARKING	RAISED PAVEMENT MARKERS
	WHITE	YELLOW	YELLOW	(TY. II)(YEL./YEL.)
	4"	4"	4"	
LIN. FT.				
ENTIRE PROJECT	11585	10186	757	162
TOTALS	11585	10186	757	162

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

EROSION CONTROL ITEMS - TEMPORARY

LOCATION	SAND BAG DITCH CHECKS (E-5)	DIVERSION DITCH (E-8)	SILT FENCE (E-11)	PIPE FOR SLOPE DRAINS (E-12)	SEDIMENT BASIN (E-14)	OBLITERATION OF SEDIMENT BASIN	*SEDIMENT REMOVAL & DISPOSAL	TEMPORARY SEEDING	MULCH COVER	WATER	DUMPED RIPRAP
	BAG		LIN. FT.				CU.YD.	ACRE		M. GAL.	CU.YD.
MAIN LANES-STAGE 1	375	5440	2336	340	64	64	500				7
MAIN LANES-STAGE 2	300		3100				200				
ENTIRE PROJECT								11.08	11.08	226.0	
TOTALS	675	5440	5436	340	64	64	700	11.08	11.08	226.0	7

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

BASIS OF ESTIMATE: WATER 20.4 M.G. PER ACRE TEMP. SEEDING * QUANTITIES ESTIMATED- TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER. SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

BENCH MARKS

LOCATION	BENCH MARKS
	EACH
STA. 336+57.92 RT. BRIDGE END	1

SHOWN FOR INFORMATIONAL PURPOSES ONLY. BENCH MARKS TO BE FURNISHED, PLACED AND RECORDED BY STATE FORCES.

EROSION CONTROL ITEMS - PERMANENT

LOCATION	SEEDING	LIME	MULCH COVER	SECOND SEEDING APPL.	WATER
	ACRE	TON	ACRE		M. GAL.
MAIN LANES - HWY. 82	11.08	22	11.08	11.08	1130.2
HWY. 165	0.53	1	0.53	0.53	54.1
TOTALS	11.61	23	11.61	11.61	1184.3

BASIS OF ESTIMATE: LIME: 2 TONS PER ACRE SEEDING; WATER: 102.0 M.GAL. PER ACRE SEEDING

GUARDRAIL

STATION	STATION	SIDE	GUARDRAIL (TY. A)	TERMINAL ANCHOR POSTS (TYPE 1)	THRIE BEAM GUARDRAIL TERMINAL
			LIN. FT.	EACH	
			334+29.77	336+57.92	RT.
335+54.77	336+57.92	LT.	75	1	1
339+64.08	341+92.23	LT.	200	1	1
339+64.08	340+67.23	RT.	75	1	1
TOTALS			550	4	4

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				6	ARK.			
						JOB NO.	020509	25 / 103

SOIL LOG

STATION	LOCATION	DEPTH	LIQUID LIMIT	PLASTICITY INDEX	AASHTO SOIL CLASS	COLOR
310+00	19'RT	0-5	22	7	A-4(2)	RD/BR
310+00	11'RT	0-5	47	34	A-7-6(32)	RD/BR
310+00	5'RT	0-5	53	38	A-7-6(39)	RD/BR
318+00	19'LT	0-5	31	21	A-6(11)	BR/GR
318+00	11'LT	0-5	21	6	A-4(2)	BROWN
318+00	4'LT	0-5	45	31	A-7-6(27)	GR/BR
318+00	19'LT	0-5	ND	NP	A-4(0)	BROWN
326+00	CL	0-5	23	2	A-4(0)	BROWN
350+00	CL	0-5	26	9	A-4(7)	BROWN
357+00	25'LT	0-5	ND	NP	A-4(0)	BROWN
357+00	13'LT	0-5	17	1	A-4(0)	BR/GR
357+00	5'LT	0-5	20	4	A-4(1)	BROWN
402+00	5'RT	0-5	27	14	A-6(10)	GRAY
402+00	25'RT	0-5	23	3	A-4(1)	BROWN
402+00	13'RT	0-5	37	22	A-6(20)	BROWN
410+00	25'LT	0-5	30	16	A-6(13)	BROWN
410+00	13'LT	0-5	37	25	A-6(19)	BR/GR
410+00	5'LT	0-5	36	26	A-6(16)	RD/BR

NOTE: 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 ABOVE TABULATIONS.

REMOVAL AND DISPOSAL OF PIPE CULVERTS

STATION	SIDE	DESCRIPTION	EACH
320+85	LT.	18" X 26' C.M. PIPE CULVERT	1
11+87	RT.	18" X 20' C.M. PIPE CULVERT	1
12+72	RT.	18" X 16' C.M. PIPE CULVERT	1
13+95	RT.	18" X 8' R.C. PIPE CULVERT	1
TOTAL			4

REMOVAL AND DISPOSAL OF PIPE CULVERTS INCLUDES HEADWALLS AND FLARED END SECTIONS IF APPLICABLE.

APPROACH SLABS (TYPE SPECIAL) & APPROACH GUTTERS (TYPE C)

LOCATION	APPROACH SLABS	APPROACH GUTTERS	REINFORCING STEEL - ROADWAY (GRADE 60)	AGGREGATE BASE COURSE (CL.7) (6" COMP. DEPTH)	DROP INLET (TYPE N-2)	CONCRETE SPILLWAY (TYPE A)	12" ZINC COATED (GALVANIZED) CORRUGATED STEEL PIPE CULVERT (16 GAUGE)
	(TY. SPECIAL)	(TY. C) (W=8')					
	CU. YD.		POUND	TON	EACH		LIN. FT.
STA. 336+21.42 - STA. 336+57.92	49.00	29.58	7416	47	2	2	141
STA. 339+64.08 - STA. 340+00.58	49.00	29.58	7416	47	2	2	133
TOTALS	98.00	59.16	14832	94	4	4	274

REMOVAL AND DISPOSAL OF GUARDRAIL AND BARRIER WALL

STATION	STATION	SIDE	REMOVAL AND DISPOSAL OF	
			GUARDRAIL	BARRIER WALL
			LIN. FT.	
334+58	336+38	RT.	237	
339+61	341+46	RT.	237	
8+50	13+21	LT.	440	32
9+00	11+21	RT.	190	32
TOTAL			1104	64

REFER TO SPECIAL PROVISION "REMOVAL AND DISPOSAL OF GUARDRAIL".

ASPHALT CONCRETE PATCHING FOR MAINT. OF TRAFFIC

LOCATION	ACHM PATCHING FOR M.O.T.	TACK COAT
	TON	GALLON
ENTIRE PROJECT - IF AND WHERE DIRECTED BY THE ENGINEER.	23	46
TOTALS	23	46

BASIS OF ESTIMATE:
PATCHING: 25 TONS PER MILE; TACK COAT: 50 GAL. PER MILE
QUANTITY ESTIMATED. SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

ASPHALT CONCRETE HOT MIX PATCHING OF EXISTING ROADWAY

LOCATION	ACHM PATCHING OF EXISTING ROADWAY
	TON
ENTIRE PROJECT - IF AND WHERE DIRECTED BY THE ENGINEER.	25
TOTAL	25

QUANTITY ESTIMATED.
SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

QUANTITIES



TEMPORARY PIPE CULVERT

LOCATION	TEMPORARY PIPE CULVERT
	18" LIN. FT.
STA. 348+00 ON RT.	73
TOTAL	73

STRUCTURES - PIPE CULVERTS

STATION	DESCRIPTION	PIPE CULVERTS		FLARED END SECTIONS		SOLID SODDING	WATER	STANDARD DRAWINGS
		CONCRETE (CLASS III)		30"	36"			
		30"	36"	30"	36"	SQ. YD.	M. GAL.	
		LIN. FT.		EACH				
313+79	30" X 50' R.C. PIPE CULVERT RETAIN AND EXTEND 6' RT. & 11' LT. W/ FES LT. & RT. TO AN OVERALL LENGTH OF 70'	25		2		26	0.3	FES-1, FES-2, PCC-1
321+13	DBL. 36" X 56' R.C. PIPE CULVERT RETAIN AND EXTEND 34' LT. W/ FES LT. TO AN OVERALL LENGTH OF 90'		76		2	18	0.2	FES-1, FES-2, PCC-1
TOTALS		25	76	2	2	44	0.5	

BASIS OF ESTIMATE: WATER = 12.6 GAL. PER SQ. YD. SOLID SODDING
NOTE: FOR R.C. PIPE CULVERT INSTALLATION USE TYPE 3 BEDDING UNLESS OTHERWISE SPECIFIED

PIPE UNDERDRAINS

LOCATION	4" PIPE UNDERDRAINS	UNDERDRAIN OUTLET PROTECTORS
	LIN. FT.	EACH
ENTIRE PROJECT - IF AND WHERE DIRECTED BY THE ENGINEER.	1000	8
TOTALS	1000	8

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

SELECTED PIPE BEDDING

LOCATION	SELECTED PIPE BEDDING
	CU. YD.
IF AND WHERE DIRECTED BY THE ENGINEER.	10
TOTAL	10

QUANTITY ESTIMATED.
SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

FENCING ITEMS

STATION	STATION	SIDE	REMOVAL AND DISPOSAL OF FENCE	WIRE FENCE (TYPE D-2)
			LIN. FT.	
340+30.21	341+80.21	LT.	266	150
TOTALS			266	150

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.							020509	26	103

② QUANTITIES



BASE AND SURFACING

STATION	STATION	LOCATION	LENGTH	AGGREGATE BASE COURSE (CL. 7)			ACHM BINDER COURSE (1") (495 LBS./SQ. YD.)						ACHM SURFACE COURSE (1/2")						TACK COAT					
										(220 LBS./SQ. YD.)			*LEVELING			(0.03 GAL./SQ. YD.)			(0.10 GAL./SQ. YD.)					
				LIN. FT.	TONS/STA.	TON	AVG. WIDTH	SQ. YD.	TON	AVG. WIDTH	SQ. YD.	TON	AVG. WIDTH	SQ. YD.	LBS./SQ. YD.	TON	AVG. WIDTH	SQ. YD.	GAL.	AVG. WIDTH	SQ. YD.	GAL.		
307+21.91	308+21.91	MAIN LANES - TRANSITION	100.00	101.00	101	3.50	38.89	10	36.25	402.78	44	22.00	244.44	220	27	27.50	305.56	9	22.00	244.44	24			
308+21.91	323+13.00	MAIN LANES - NOTCH AND WIDEN	1491.09	202.00	3012	6.50	1076.90	267	46.25	7662.55	843	22.00	3644.89	220	401	34.75	5757.26	173	22.00	3644.89	364			
323+13.00	336+21.42	MAIN LANES - FULL DEPTH	1308.42	323.25	4229	28.50	4143.33	1025	68.25	9922.19	1091					56.75	8250.32	248						
340+00.58	352+33.00	MAIN LANES - FULL DEPTH	1232.42	323.25	3984	28.50	3902.66	966	68.25	9345.85	1028					56.75	7771.09	233						
352+33.00	357+15.32	MAIN LANES - NOTCH AND WIDEN	482.32	202.00	974	6.50	348.34	86	46.25	2478.59	273	22.00	1179.00	220	130	34.75	1862.29	56	22.00	1179.00	118			
357+15.32	358+15.32	MAIN LANES - TRANSITION	100.00	101.00	101	3.50	38.89	10	36.25	402.78	44	22.00	244.44	220	27	27.50	305.56	9	22.00	244.44	24			
352+50		STATE HWY. TURNOUT			737			184			164							45						
8+00	14+00	HWY. 165	600.00	157.00	942	4.50	300.00	74	40.25	2683.33	295	24	1600.00	220	176	32.75	2183.33	65	24.00	1600	160			
		ADDITIONAL FOR GUARDRAIL WIDENING			345						60													
		ADDITIONAL AGGREGATE FOR SUPERELEVATION			1186																			
TOTALS					15611			9849.01	2622				32898.07	3842			6912.77			26435.41	838		6912.77	690

VOLUME CONTROL:
 ACHM BINDER COURSE (1"): MIN. AGGR. 95.8%, ASPHALT BINDER (PG 64-22) 4.2%
 ACHM SURFACE COURSE (1/2"): MIN. AGGR. 94.7%, ASPHALT BINDER (PG 64-22) 5.3%
 Nmax= 115 GYRATIONS
 *QUANTITY ESTIMATED. SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

DRIVEWAYS

STATION	DESCRIPTION	SIDE	WIDTH	TURNOUT AREA	EXTENSION AREA	TOTAL DRIVEWAY AREA	*AGGREGATE BASE COURSE (CL. 7)	ACHM SURFACE COURSE (1/2") (220 LB./SQ. YD.)	SIDE DRAIN			
									ASPHALT	18"	30"	36"
320+85	PRIVATE DRIVE	LT.	20	65	61	126	51	14	40			
321+41	PRIVATE DRIVE	RT.	20	65	114	179	73	20			52	
352+05	PRIVATE DRIVE	LT.	20	65	58	123	50	14		38		
355+38	PRIVATE DRIVE	RT.	20	65	112	177	72	19	44			
12+72	PRIVATE DRIVE	RT.	16	55	26	81	33	9	36			
TOTALS							279	76	120	38	52	

VOLUME CONTROL:
 ACHM SURFACE COURSE (1/2"): MIN. AGGR. 94.7%, ASPHALT BINDER (PG-64-22) 5.3%
 Nmax= 115 GYRATIONS
 * REFER TO DETAIL FOR DRIVEWAY TURNOUTS (ARTERIALS).
 FOR R.C. PIPE CULVERTS USE TYPE 3 BEDDING UNLESS OTHERWISE SPECIFIED.
 FOR C.M. PIPE CULVERTS USE TYPE 2 BEDDING UNLESS OTHERWISE SPECIFIED.

RUMBLE STRIPS IN ASPHALT SHOULDERS

STATION	STATION	SIDE	LIN. FT.
308+21.91	336+21.42	RT.	2170
308+21.91	336+21.42	LT.	2170
340+00.58	357+15.32	RT.	1068
340+00.58	357+15.32	LT.	1302
TOTAL			6710

EARTHWORK

STATION	STATION	LOCATION	UNCLASSIFIED EXCAVATION	COMPACTED EMBANKMENT	COMPACTED EMBANKMENT (SPECIAL)
307+21.91	358+15.32	MAIN LANES- HWY. 82	14683	25081	
8+00	14+00	HWY. 165	931	105	
		DRIVES		375	
329+00.00	347+00.00	*BENCHING/SLOPE REPAIR	3000		
329+00.00	336+57.92	*GEOGRID AREA			66748
339+64.08	347+00.00	*GEOGRID AREA			66400
TOTALS			18614	25561	133148

* IF AND WHERE DIRECTED BY THE ENGINEER.
 QUANTITY ESTIMATED. SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

COLD MILLING ASPHALT PAVEMENT

LOCATION	COLD MILLING ASPHALT PAVEMENT SQ. YD.
STA. 307+21.91 - STA. 308+21.91	244
STA. 357+15.32 - STA. 358+15.32	267
STA. 7+00.00 - STA. 8+00.00	267
STA. 14+00.00 - -STA. 15+00.00	267
TOTAL	1045

SOIL STABILIZATION

LOCATION	SOIL STABILIZATION TON
ENTIRE PROJECT - IF AND WHERE DIRECTED BY THE ENGINEER.	50
TOTAL	50

QUANTITY ESTIMATED.
 SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

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.	020509		27	103
				①	07230 -	QUANTITIES	- 53022	

SCHEDULE OF BRIDGE QUANTITIES - JOB NO. 020509

BRIDGE NO.	CODE NO.	NAME PLATE TITLE	UNIT OF STRUCTURE	ITEM NO.	205	619	801	802	802	803	SS & 804	SS & 804	SP & 805	807	808	812	816	SP JOB 020509											
				ITEM	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO.)	7' STEEL CHAIN LINK FENCE	UNCLASSIFIED EXCAVATION FOR STRUCTURES- BRIDGE	CLASS S CONCRETE- BRIDGE	CLASS (S/AE) CONCRETE- BRIDGE	CLASS I PROTECTIVE SURFACE TREATMENT	REINFORCING STEEL- BRIDGE (GRADE 60)	EPOXY COATED REINFORCING STEEL (GRADE 60)	① STEEL SHELL PILING (18" DIA.)	STRUCTURAL STEEL IN BEAM SPANS (M270, GR. 50W)	ELASTOMERIC BEARINGS	BRIDGE NAME PLATE (TYPE D)	CONCRETE RIPRAP	SILICONE JOINT SEALANT	UNIT	LUMP SUM	LIN. FT.	CU. YD.	CU. YD.	CU. YD.	GAL.	LB.	LB.	LIN. FT.	LB.
07230	X571	U.P.R.R. & HWY. 165 OVERPASS	BENT NO. 1					35.09		0.3	5,310	583	405	765				92											
			BENT NO. 2			216	142.14					24,110		940															
			BENT NO. 3			217	142.14					24,110		840															
			BENT NO. 4			222	142.14					24,110		840															
			BENT NO. 5						34.99		0.3	5,310	583	340	765				91										
			304'-0" CONTINUOUS COMPOSITE W-BEAM UNIT EXISTING BR. NO. 02171 (SITE NO. 1)			200				388.30	31.6		94,574		338,890	11,408.0	1			86									
			TOTAL FOR JOB NO. 020509	1	200	655	496.50	388.30	32.2	82,950	95,740	3,365	340,420	11,408.0	1	183	86												

① PILES SHALL CONFORM TO DWG. NO. 53030.

BRYAN FREELING
DESIGN SECTION SUPERVISOR



BRIDGE ENGINEER

SCHEDULE OF BRIDGE QUANTITIES
UNION PACIFIC RAILROAD AND U.S. HWY. 165
HWY. 165 STR. & APPRS.
(MONTROSE) (S)
ASHLEY COUNTY

ROUTE 82 SEC. 9
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CJR DATE: 5-30-12 FILENAME: b020509.q1.dgn
CHECKED BY: BEF DATE: 8/7/12 SCALE: NONE
DESIGNED BY: DATE:
BRIDGE NO. 07230 DRAWING NO. 53022

SUMMARY OF QUANTITIES

ITEM NO.	ITEM	QUANTITY	UNIT
201	CLEARING	50	STATION
201	GRUBBING	50	STATION
202	REMOVAL AND DISPOSAL OF FENCE	266	LIN. FT.
202	REMOVAL AND DISPOSAL OF BARRIER WALL	64	LIN. FT.
202	REMOVAL AND DISPOSAL OF PIPE CULVERTS	4	EACH
SP&202	REMOVAL AND DISPOSAL OF GUARDRAIL	1104	LIN. FT.
210	UNCLASSIFIED EXCAVATION	18614	CU. YD.
210	COMPACTED EMBANKMENT	25561	CU. YD.
SP&210	SOIL STABILIZATION	133148	CU. YD.
SS&303	AGGREGATE BASE COURSE (CLASS 7)	15984	TON
401	TACK COAT	1574	GAL
SPSS&406	MINERAL AGGREGATE IN ACHM BINDER COURSE (1")	2512	TON
SPSS&406	ASPHALT BINDER (PG 64-22) IN ACHM BINDER COURSE (1")	110	TON
SPSS&407	MINERAL AGGREGATE IN ACHM SURFACE COURSE (1 1/2")	4431	TON
SPSS&407	ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1 1/2")	248	TON
412	COLD MILLING ASPHALT PAVEMENT	1045	SQ. YD.
SPSS&414	ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC	23	TON
SPSS&415	ACHM PATCHING OF EXISTING ROADWAY	25	TON
504	APPROACH SLABS	98.00	CU. YD.
504	APPROACH GUTTERS (TYPE C)	59.16	CU. YD.
601	MOBILIZATION	1.00	LUMP SUM
SP&602	FURNISHING FIELD OFFICE	1	EACH
SS&603	MAINTENANCE OF TRAFFIC	1.00	LUMP SUM
603	18" TEMPORARY CULVERT	1.00	LUMP SUM
SS&604	SIGNS	73	LIN. FT.
SS&604	BARRICADES	390	SQ. FT.
SS&604	TRAFFIC DRUMS	224	LIN. FT.
SS&604	CONSTRUCTION PAVEMENT MARKINGS	107	EACH
604	REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS	22460	LIN. FT.
SS&604	VERTICAL PANELS	6860	LIN. FT.
SS&606	30" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	105	EACH
SS&606	36" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	25	LIN. FT.
606	30" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS	76	LIN. FT.
606	36" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS	2	EACH
SPSS&606	18" SIDE DRAIN	2	EACH
SPSS&606	30" SIDE DRAIN	120	LIN. FT.
SPSS&606	36" SIDE DRAIN	38	LIN. FT.
606	SELECTED PIPE BEDDING	52	LIN. FT.
606	12" ZNC COATED (GALVANIZED) CORRUGATED STEEL PIPE CULVERT (16 GAUGE)	10	CU. YD.
609	DROP INLETS (TYPE N2)	274	LIN. FT.
611	UNDERDRAIN OUTLET PROTECTORS	4	EACH
611	4" PIPE UNDERDRAINS	8	EACH
614	CONCRETE SPILLWAY (TYPE A)	1000	LIN. FT.
SS&617	GUARDRAIL (TYPE A)	4	EACH
SS&617	TERMINAL ANCHOR POSTS (TYPE 1)	550	LIN. FT.
SS&617	THREE BEAM GUARDRAIL TERMINAL	4	EACH
619	WIRE FENCE (TYPE D-2)	4	EACH
620	LIME	150	LIN. FT.
620	SEEDING	23	TON
620	MULCH COVER	11.61	ACRE
SS&620	WATER	22.69	ACRE
621	TEMPORARY SEEDING	1410.8	MGAL
621	SILT FENCE	11.08	ACRE
621	SAND BAG DITCH CHECKS	5436	LIN. FT.
621	DIVERSION DITCH	675	BAG
621	SEDIMENT BASIN	5440	LIN. FT.
621	OBTERATION OF SEDIMENT BASIN	64	CU. YD.
621	SEDIMENT REMOVAL AND DISPOSAL	64	CU. YD.
621	PIPE FOR SLOPE DRAINS	700	CU. YD.
623	SECOND SEEDING APPLICATION	340	LIN. FT.
624	SOLID SODDING	11.61	ACRE
635	ROADWAY CONSTRUCTION CONTROL	44	SQ. YD.
642	RUMBLE STRIPS IN ASPHALT SHOULDERS	1.00	LUMP SUM
SS&719	THERMOPLASTIC PAVEMENT MARKING WHITE (4")	6710	LIN. FT.
SS&719	THERMOPLASTIC PAVEMENT MARKING YELLOW (4")	11585	LIN. FT.
SP&719	INVERTED PROFILE THERMOPLASTIC CONTRAST PAVEMENT MARKING YELLOW (4")	10186	LIN. FT.
SP	HIGH PERFORMANCE CONTRAST MARKING TAPE YELLOW (4")	757	LIN. FT.
721	RAISED PAVEMENT MARKERS (TYPE II)	757	LIN. FT.
SS&804	REINFORCING STEEL-ROADWAY (GRADE 60)	182	EACH
816	DUMPED RIPRAP	14832	POUND
		7	CU. YD.
	STRUCTURES OVER 20'-0" SPAN		
205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 1)	1.00	LUMP SUM
619	7" STEEL CHAIN LINK FENCE	200	LIN. FT.
636	BRIDGE CONSTRUCTION CONTROL	1.00	LUMP SUM
801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE	655	CU. YD.
802	CLASS S CONCRETE-BRIDGE	496.50	CU. YD.
803	CLASS S(AE) CONCRETE - BRIDGE	388.30	CU. YD.
803	CLASS 1 PROTECTIVE SURFACE TREATMENT	32.2	GAL.
SS&804	REINFORCING STEEL-BRIDGE (GRADE 60)	82950	POUND
SS&804	EPOXY COATED REINFORCING STEEL (GRADE 60)	95740	POUND
SP&805	STEEL SHELL PILING (18" DIAMETER)	3365	LIN. FT.
807	STRUCTURAL STEEL IN BEAM SPANS (M270-GR50W)	340420	POUND
808	ELASTOMERIC BEARINGS	11408.0	CU. IN.
SP	SILICONE JOINT SEALANT	86	LIN. FT.
812	BRIDGE NAME PLATE (TYPE D)	1	EACH
816	CONCRETE RIPRAP	183	CU. YD.

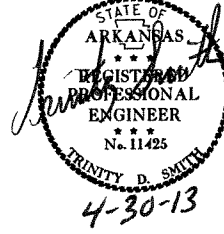
* DENOTES ALTERNATE BID ITEMS

REVISIONS

DATE	DESCRIPTION	PAGE NO.(S)

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.		020509	28	103

2 SUMMARY OF QUANTITIES AND REVISIONS

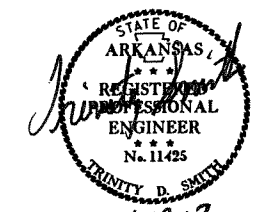


DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. RD. PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	020509		29	103

SURVEY CONTROL COORDINATES

Project Name: s020509
 Date: 3/17/2011
 Coordinate System: ARKANSAS STATE PLANE - SOUTH ZONE BASED ON GPS CONTROL, PROJECTED TO GROUND.
 Units: U.S. SURVEY FOOT

2 SURVEY CONTROL DETAILS



Point Name	Northing	Easting	Elev	Feature	Description
1	1537960.2125	1466959.6360	125.305	CTL	*5/8" Rebar with 2' Aluminum Cap
2	1538742.3050	1467110.1173	126.293	CTL	*5/8" Rebar with 2' Aluminum Cap, 6' EAST OF EP 48' SW OF PP
3	1539566.5120	1467114.6925	123.973	CTL	*5/8" Rebar with 2' Aluminum Cap
4	1540471.6154	1467110.4096	122.315	CTL	*5/8" Rebar with 2' Aluminum Cap
5	1541293.4791	1467063.6580	121.049	CTL	*5/8" Rebar with 2' Aluminum Cap
6	1542852.1096	1467077.2112	125.762	CTL	*5/8" Rebar with 2' Aluminum Cap
7	1541424.2688	1464103.6341	128.342	CTL	*5/8" Rebar with 2' Aluminum Cap, 4' SW OF EP HWY 82
8	1541130.1720	1464764.9631	127.773	CTL	*5/8" Rebar with 2' Aluminum Cap, 7' SOUTH OF EP OF HWY 82
9	1541010.0604	1465542.9159	128.429	CTL	*5/8" Rebar with 2' Aluminum Cap, 5' SOUTH OF EP OF HWY 82
10	1541006.8554	1466287.5829	135.154	CTL	*5/8" Rebar with 2' Aluminum Cap, 4' SOUTH OF HWY 82
11	1541037.3958	1466872.4169	151.662	CTL	*5/8" Rebar with 2' Aluminum Cap
12	1540997.8646	1467234.0146	150.380	CTL	*5/8" Rebar with 2' Aluminum Cap
13	1541002.8066	1467939.7019	128.217	CTL	*5/8" Rebar with 2' Aluminum Cap
14	1541137.2095	1468654.4017	125.399	CTL	*5/8" Rebar with 2' Aluminum Cap
15	1541396.7531	1469344.3106	122.422	CTL	*5/8" Rebar with 2' Aluminum Cap, 3' SOUTH OF EP OF HWY 82
16	1541658.5876	1470045.4164	119.037	CTL	*5/8" Rebar with 2' Aluminum Cap, 9' SOUTH OF EP OF HWY 82
17	1540840.5605	1467586.5405	123.373	CTL	*5/8" Rebar with 2' Aluminum Cap, 2' SOUTH OF EP OF ACCESS
902	1543195.2986	1467069.4848	125.465	TBM	*CPS IN PP, 14' WEST OF EP OF HWY165
903	1541214.8705	1464640.4162	127.113	TBM	*CHZLD SQRE TOP CNT HM
904	1541037.9650	1467204.2668	151.853	TBM	*CHZLD SQRE AT NE CORNER
905	1540988.9507	1468530.1645	123.444	TBM	*CHZLD SQRE
998	1544719.5893	1467137.6251	123.495	BM	*USGS BM 11 LMTA
999	1540790.7289	1467135.4170	123.040	BM	*USGS BM 11 LMT 1977

HWY. 82

POINT NO.	TYPE	STATION	NORTHING	EASTING
8000	POB	300+00.00	1541857.6133	1463428.4470
8001	PC	308+21.91	1541430.0685	1464130.4044
8003	PT	324+26.20	1541067.1741	1465665.9916
8004	PC	326+08.22	1541082.2533	1465847.3935
8006	PT	336+37.07	1541121.3715	1466875.1552
8007	PC	348+65.29	1541112.9595	1468103.3415
8009	PT	357+15.32	1541263.1043	1468935.0649
8010	POE	366+03.87	1541579.4788	1469765.3780

HWY. 165

POINT NO.	TYPE	STATION	NORTHING	EASTING
8100	POB	0+00.00	1540022.4997	1467090.6956
8101	PI	8+23.25	1540845.7490	1467090.2931
8102	PI	11+46.05	1541168.5501	1467091.2685
8103	POE	15+61.19	1541583.6827	1467092.1732

*Note - Rebar and Cap - Standard - 5/8" Rebar with 2' Aluminum Cap stamped
 *(standard markings common to all caps), or as indicated
 (other markings indicated in the point description of the individual point).
 USE CAF = 1.0 FOR STAKEOUT FOR THIS PROJECT
 A PROJECT CAF OF 0.99999943 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, s020509gi.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

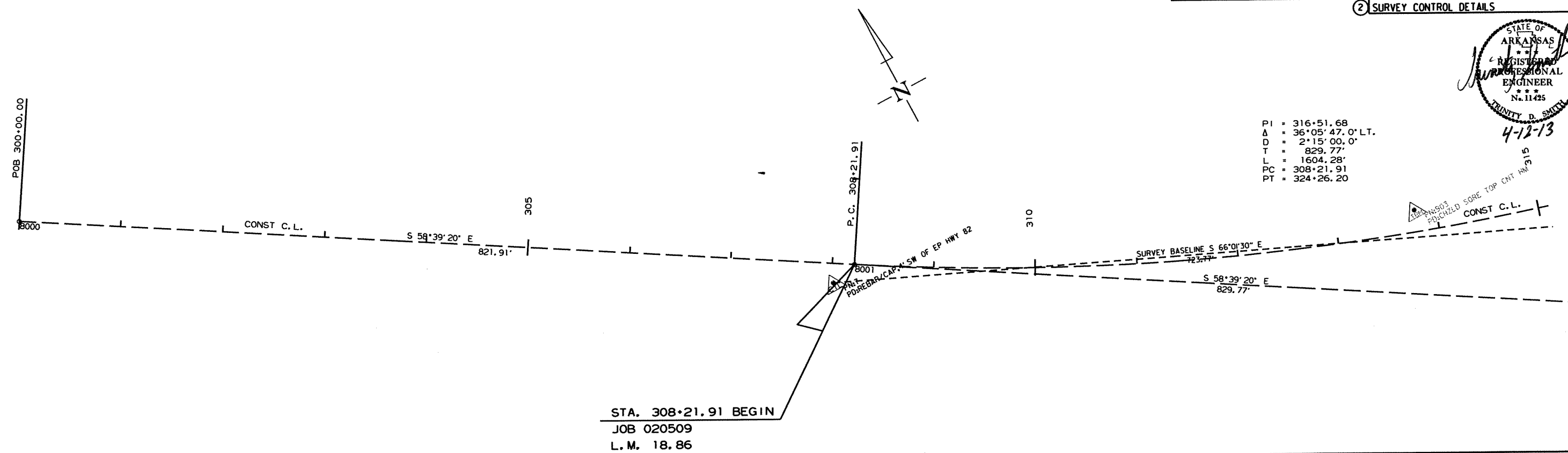
BASIS OF BEARING:
 ARKANSAS STATE PLANE GRID BEARINGS - 0302-SOUTH ZONE
 DETERMINED FROM GPS CONTROL POINTS: 020028 - 020028A
 CONVERGENCE ANGLE: 0-17-00 RIGHT AT LT: 33-17-41.3 LG: 091-29-37.1
 GRID AZIMUTH = ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
JOB NO. 020509							30	103

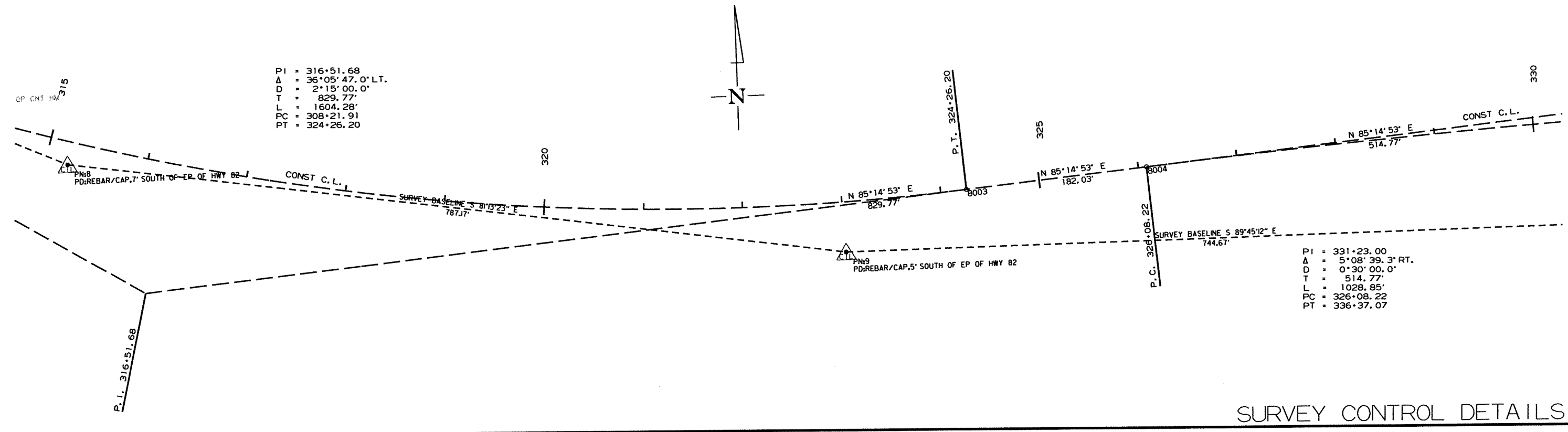
2 SURVEY CONTROL DETAILS



PI = 316+51.68
 Δ = 36°05'47.0" LT.
 D = 2°15'00.0"
 T = 829.77'
 L = 1604.28'
 PC = 308+21.91
 PT = 324+26.20



PI = 316+51.68
 Δ = 36°05'47.0" LT.
 D = 2°15'00.0"
 T = 829.77'
 L = 1604.28'
 PC = 308+21.91
 PT = 324+26.20



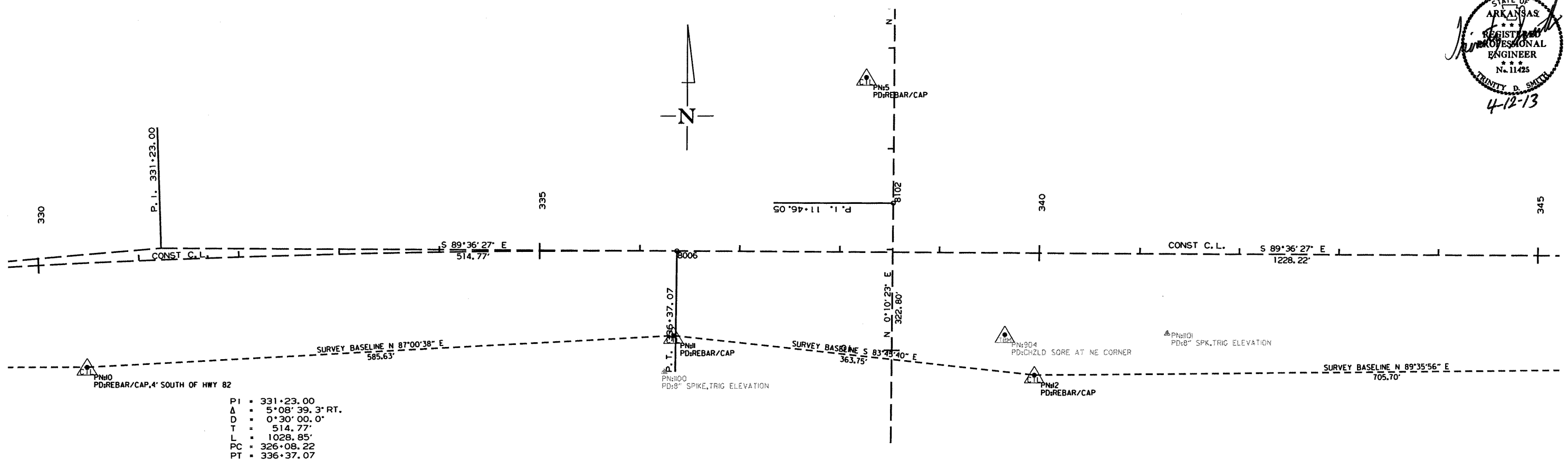
PI = 331+23.00
 Δ = 5°08'39.3" RT.
 D = 0°30'00.0"
 T = 514.77'
 L = 1028.85'
 PC = 326+08.22
 PT = 336+37.07

SURVEY CONTROL DETAILS

4/8/2013
R020509.DCN

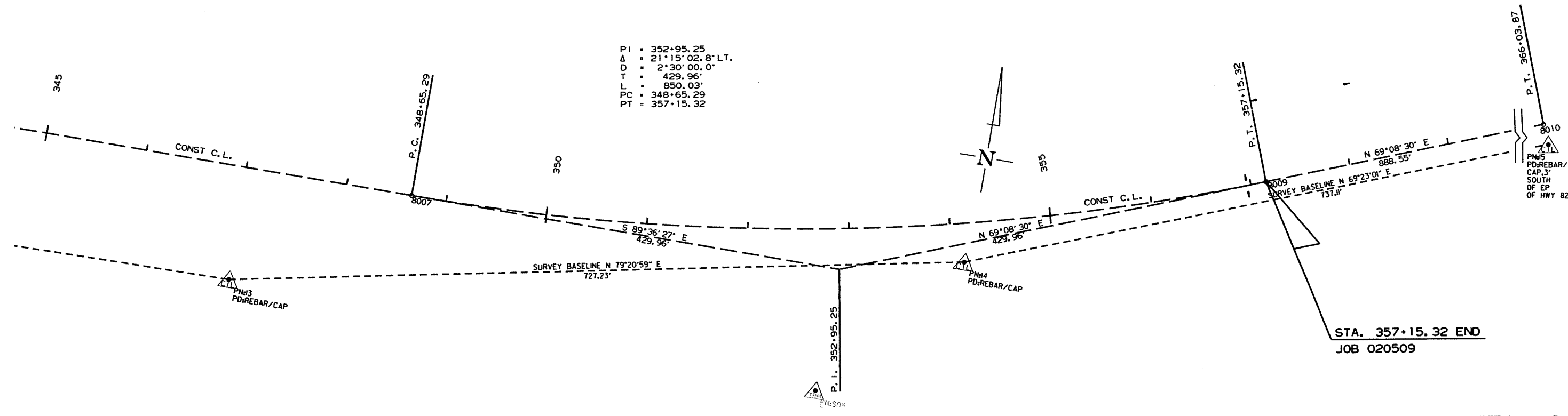
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				6	ARK.			
JOB NO. 020509							31	103

2 SURVEY CONTROL DETAILS



P I = 331+23.00
 Δ = 5°08'39.3" RT.
 D = 0°30'00.0"
 T = 514.77'
 L = 1028.85'
 PC = 326+08.22
 PT = 336+37.07

P I = 352+95.25
 Δ = 21°15'02.8" LT.
 D = 2°30'00.0"
 T = 429.96'
 L = 850.03'
 PC = 348+65.29
 PT = 357+15.32



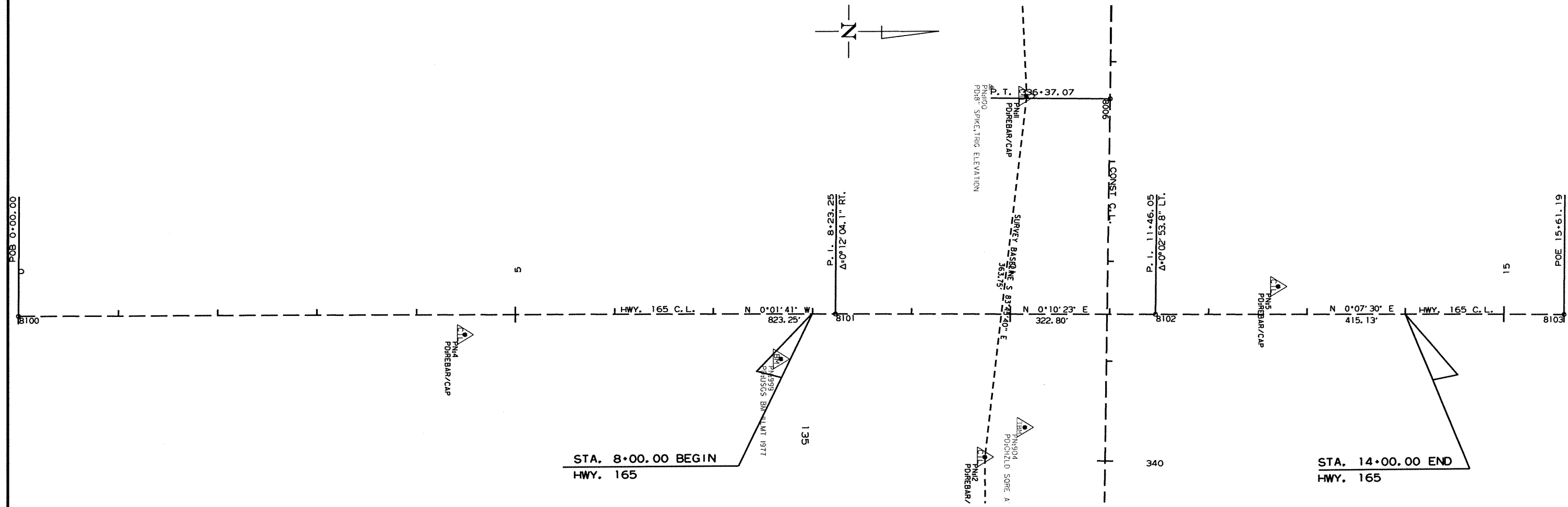
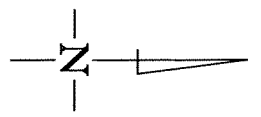
STA. 357+15.32 END
 JOB 020509

SURVEY CONTROL DETAILS

4/9/2013
 R020509.DGN

DATE REVISED	DATE FILED	DATE REVISED	DATE FILED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
JOB NO. 020509							32	103

② SURVEY CONTROL DETAILS



SURVEY CONTROL DETAILS

4/8/2013

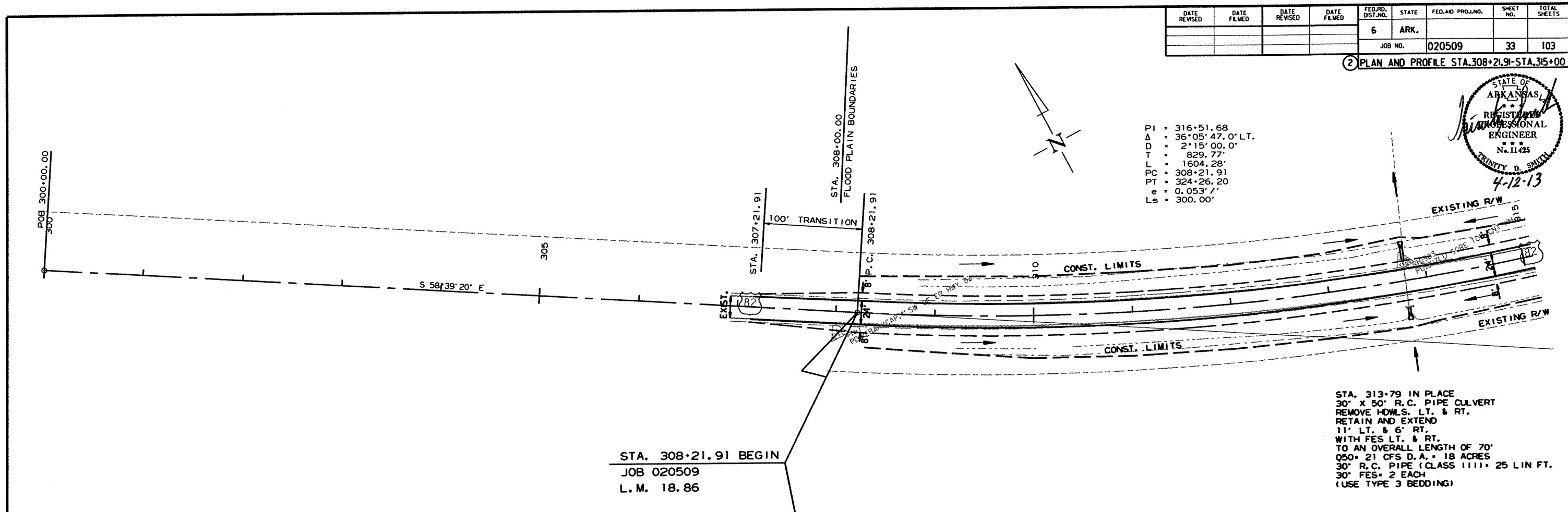
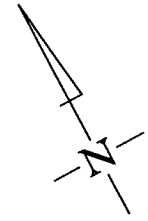
R020509.DGN

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. 020509							33	103

2 PLAN AND PROFILE STA. 308+21.91-STA. 315+00



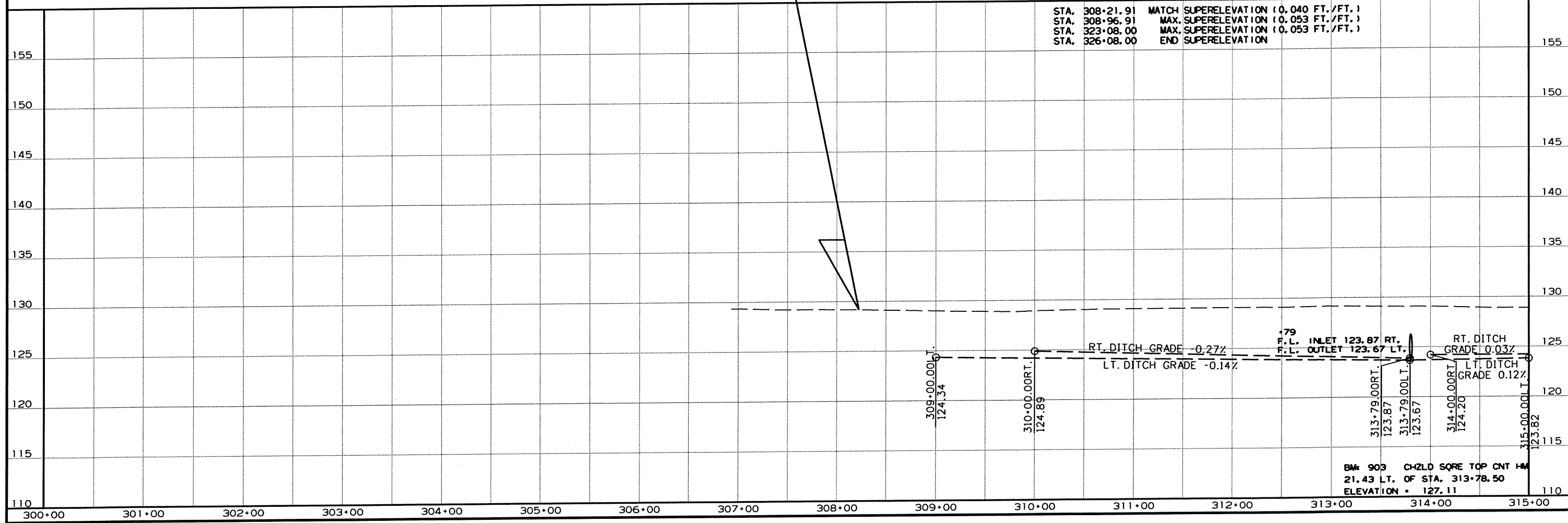
PI = 316+51.68
 A = 36°05'47.0" LT.
 D = 2°15'00.0"
 T = 829.77'
 L = 1604.28'
 PC = 308+21.91
 PT = 324+26.20
 e = 0.053' /'
 Ls = 300.00'



STA. 308+21.91 BEGIN
 JOB 020509
 L. M. 18.86

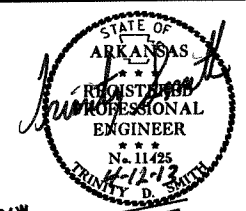
STA. 313+79 IN PLACE
 30" X 50" R.C. PIPE CULVERT
 REMOVE HOWLS, LT. & RT.
 RETAIN AND EXTEND
 11' LT. & 6' RT.
 WITH FES LT. & RT.
 TO AN OVERALL LENGTH OF 70'
 Q50 = 21 CFS D.A. = 18 ACRES
 30" R.C. PIPE (CLASS III) = 25 LIN FT.
 30" FES = 2 EACH
 (USE TYPE 3 BEDDING)

STA. 308+21.91 MATCH SUPERELEVATION (0.040 FT./FT.)
 STA. 308+96.91 MAX. SUPERELEVATION (0.053 FT./FT.)
 STA. 323+08.00 MAX. SUPERELEVATION (0.053 FT./FT.)
 STA. 326+08.00 END SUPERELEVATION



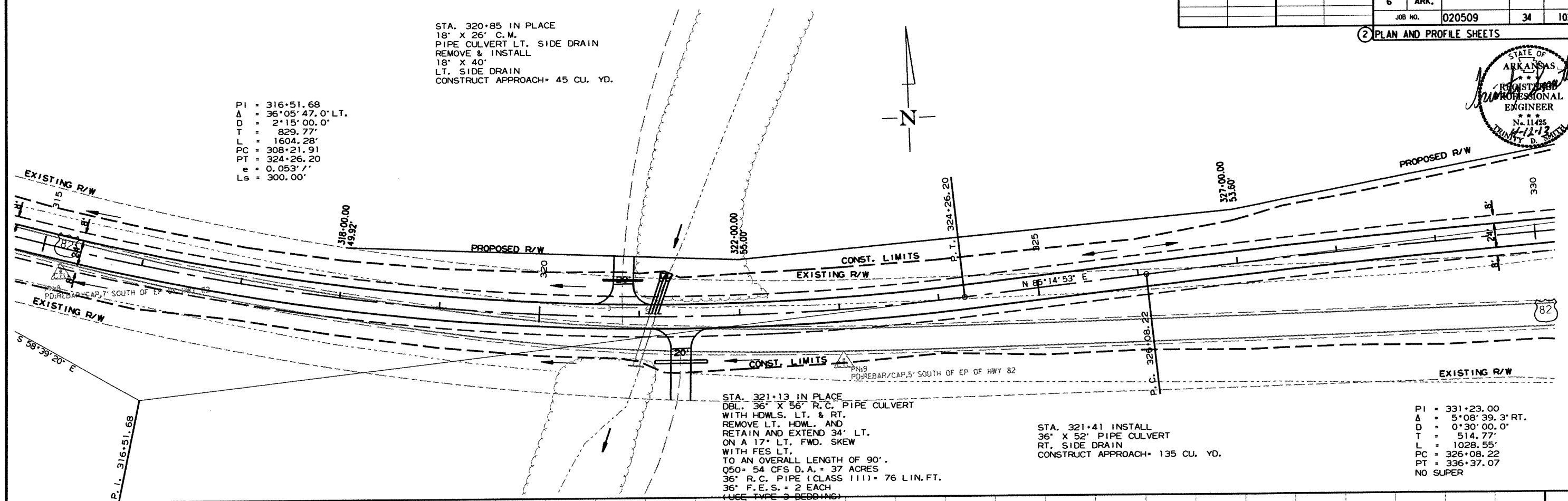
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
JOB NO. 020509							34	103

2 PLAN AND PROFILE SHEETS



STA. 320+85 IN PLACE
 18" X 26" C.M.
 PIPE CULVERT LT. SIDE DRAIN
 REMOVE & INSTALL
 18" X 40"
 LT. SIDE DRAIN
 CONSTRUCT APPROACH= 45 CU. YD.

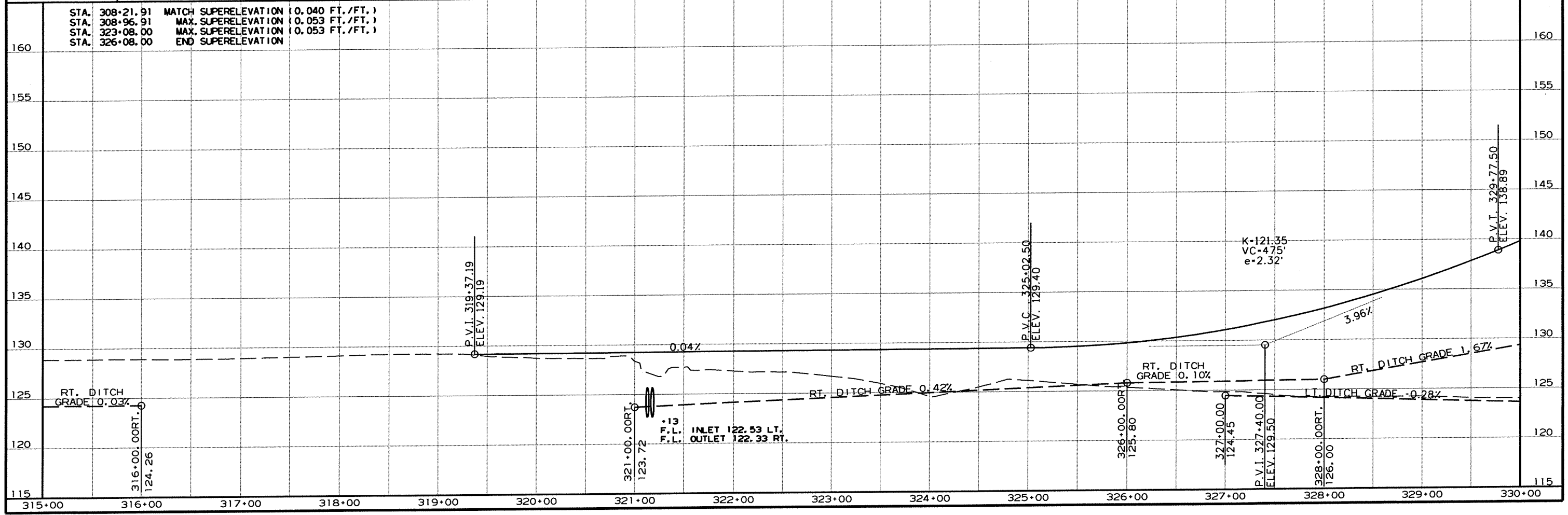
PI = 316+51.68
 Δ = 36°05'47.0" LT.
 D = 2°15'00.0"
 T = 829.77'
 L = 1604.28'
 PC = 308+21.91
 PT = 324+26.20
 e = 0.053' /'
 Ls = 300.00'



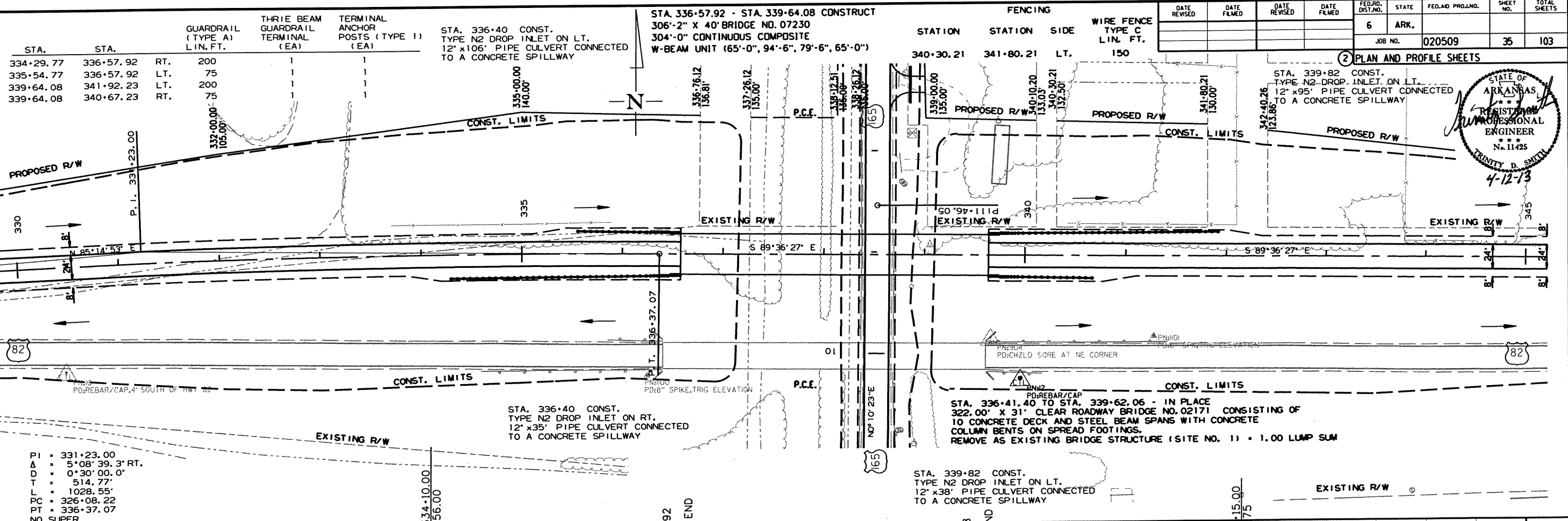
STA. 321+13 IN PLACE
 DBL. 36" X 56" R.C. PIPE CULVERT
 WITH HDWLS. LT. & RT.
 REMOVE LT. HDWL. AND
 RETAIN AND EXTEND 34' LT.
 ON A 17° LT. FWD. SKEW
 WITH FES LT.
 TO AN OVERALL LENGTH OF 90'.
 Q50 = 54 CFS D. A. = 37 ACRES
 36" R.C. PIPE (CLASS III) = 76 LIN. FT.
 36" F.E.S. = 2 EACH
 (USE TYPE 3 BEDDING)

STA. 321+41 INSTALL
 36" X 52" PIPE CULVERT
 RT. SIDE DRAIN
 CONSTRUCT APPROACH= 135 CU. YD.

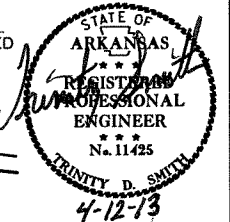
PI = 331+23.00
 Δ = 5°08'39.3" RT.
 D = 0°30'00.0"
 T = 514.77'
 L = 1028.55'
 PC = 326+08.22
 PT = 336+37.07
 NO SUPER



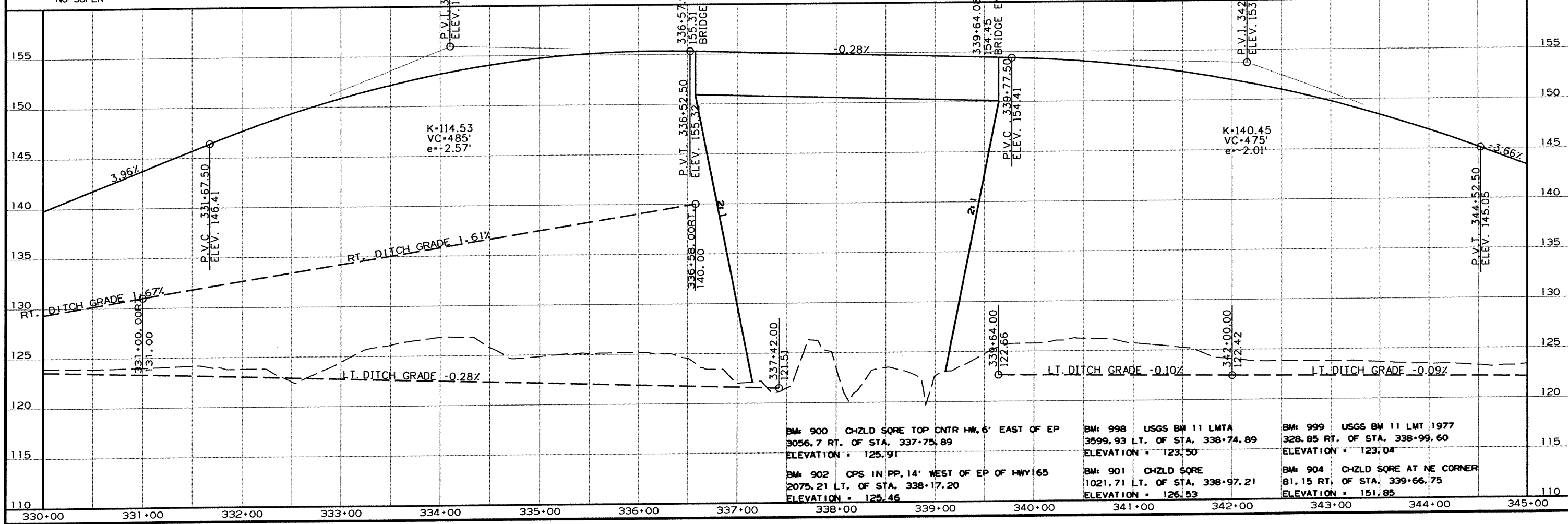
R020509.DGN 4/9/2013



DATE REVISED	DATE FILED	DATE REVISED	DATE FILED	FED. PROJ. NO.	STATE	FED. PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		35	103



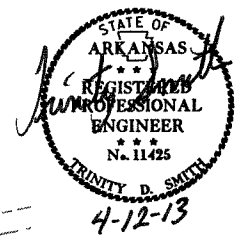
P.I. = 331+23.00
 Δ = 5°08'39.3" RT.
 D = 0°30'00.0"
 T = 514.77'
 L = 1028.55'
 PC = 326+08.22
 PT = 336+37.07
 NO SUPER



4/9/2013
 R020509.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		36	103
JOB NO. 020509								

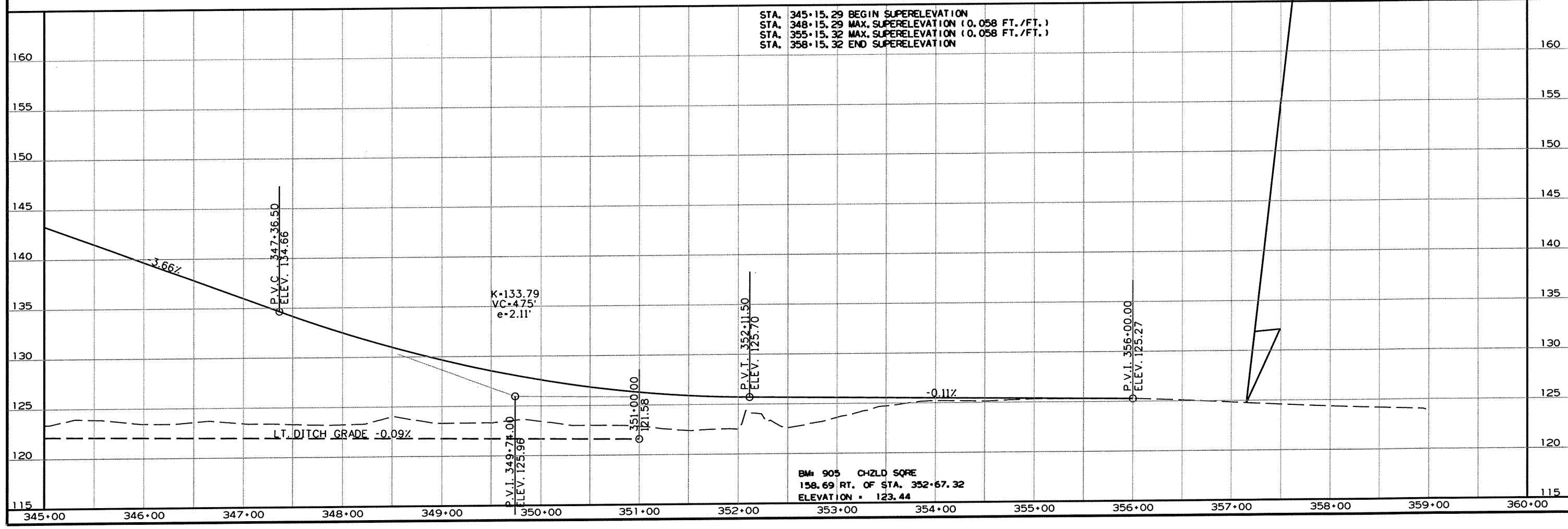
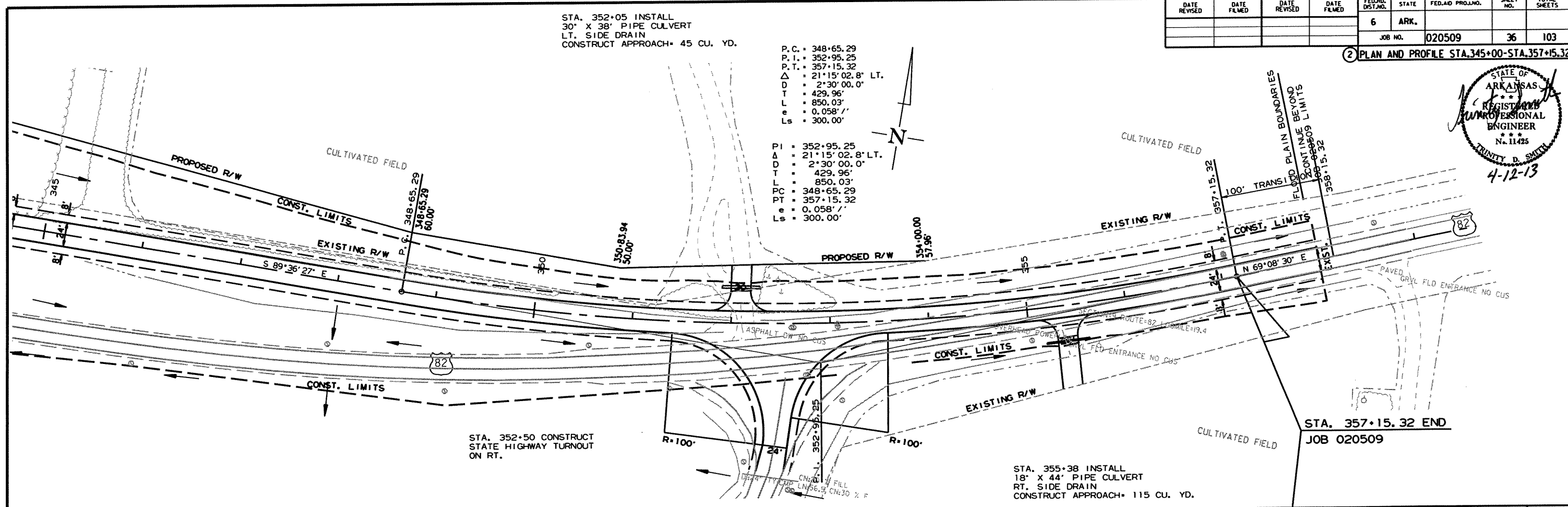
2 PLAN AND PROFILE STA. 345+00-STA. 357+15.32



STA. 352+05 INSTALL
30" X 38" PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH= 45 CU. YD.

P.C. = 348+65.29
P.I. = 352+95.25
P.T. = 357+15.32
Δ = 21°15'02.8" LT.
D = 2°30'00.0"
T = 429.96'
L = 850.03'
e = 0.058'/'
Ls = 300.00'

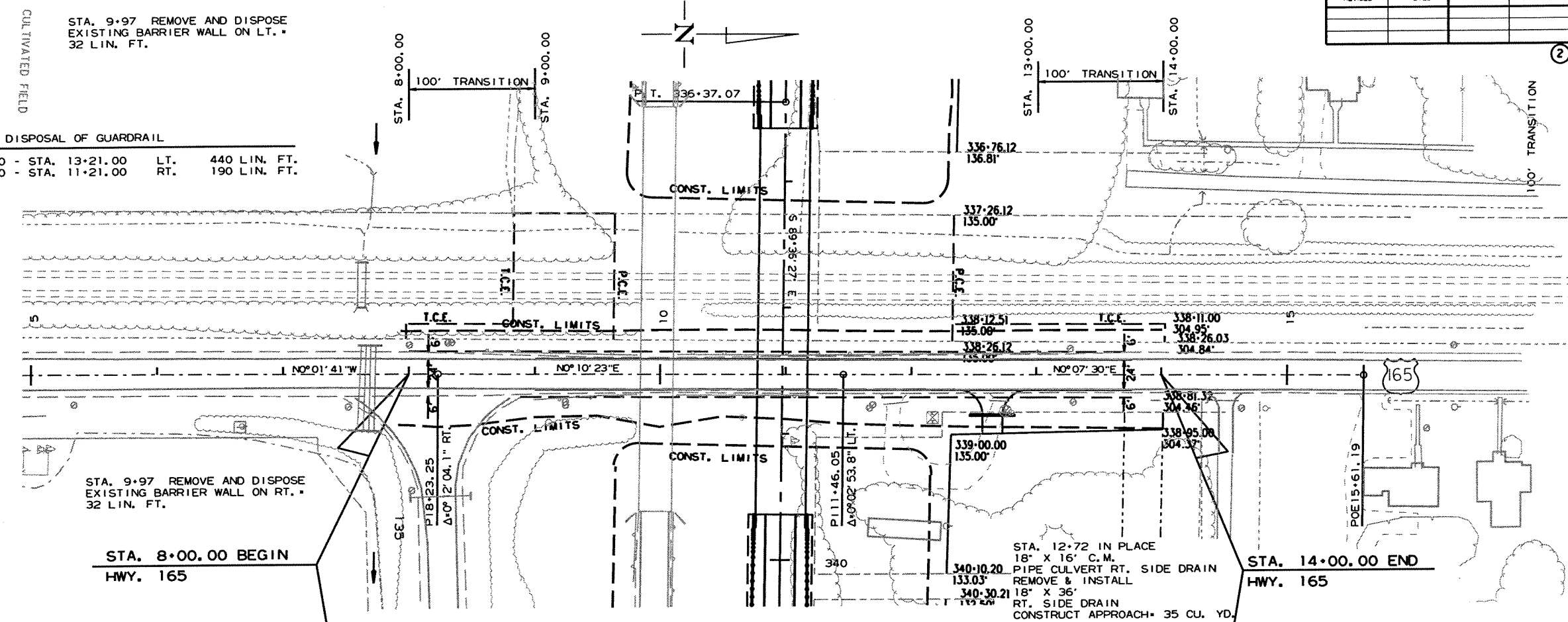
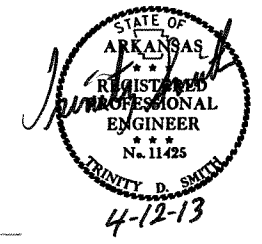
PI = 352+95.25
Δ = 21°15'02.8" LT.
D = 2°30'00.0"
T = 429.96'
L = 850.03'
PC = 348+65.29
PT = 357+15.32
e = 0.058'/'
Ls = 300.00'



R020509.DGN 4/10/2013

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		37	103

2 PLAN AND PROFILE STA. 8+00-STA. 14+00



REMOVAL AND DISPOSAL OF GUARDRAIL
 STA. 8+50.00 - STA. 13+21.00 LT. 440 LIN. FT.
 STA. 9+00.00 - STA. 11+21.00 RT. 190 LIN. FT.

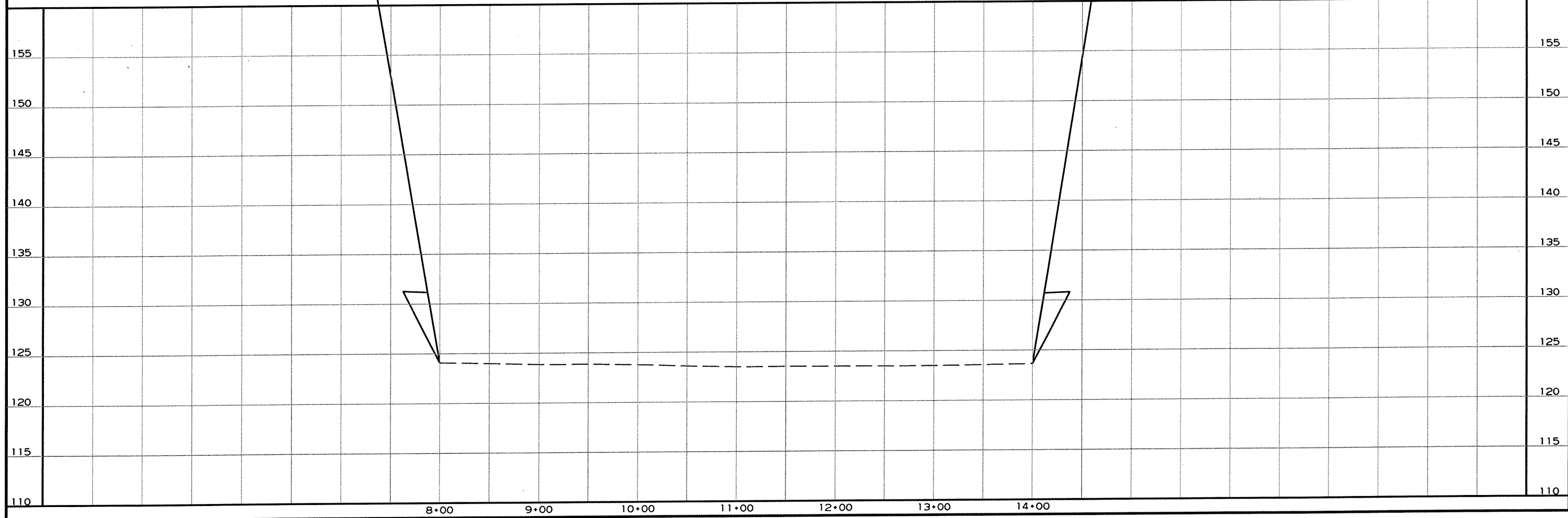
STA. 9+97 REMOVE AND DISPOSE
 EXISTING BARRIER WALL ON RT. *
 32 LIN. FT.

STA. 8+00.00 BEGIN
 HWY. 165

STA. 12+72 IN PLACE
 18" X 16" C.M.
 PIPE CULVERT RT. SIDE DRAIN
 REMOVE & INSTALL
 18" X 36"
 RT. SIDE DRAIN
 CONSTRUCT APPROACH+ 35 CU. YD.

STA. 14+00.00 END
 HWY. 165

HWY. 165



4/10/2013 R020509.DGN

For R/W Data, See Rdwy. Plans

Place Type C Approach Gutters ("w" = 8'-0") and Type Special Approach Slabs at both ends of bridge. See Std. Dwg. No. 2016C and 53040.

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.		020509	38	108
				07230 - LAYOUT				53023

GENERAL NOTES

BENCH MARK: Chiseled square on wingwall at NE corner of existing bridge, 81.5 Rt. of Sta. 339+66.75 Elev. 151.85.

CONSTRUCTION SPECIFICATION: 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 numbers in the plans refer to the Standard Construction Specifications.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications (Fifth edition, 2010 with 2010 Interims).

LIVE LOADING: HL-93 SEISMIC ZONE: 2

MATERIALS AND STRENGTHS:
 Class (S/AE) Concrete (superstructure) f'c = 4,000 psi
 Class 5 Concrete (substructure) f'c = 3,500 psi
 Reinforcing Steel (AASHTO M31 or M53, Gr. 60) fy = 60,000 psi
 Structural Steel (AASHTO M270, Gr. 36) fy = 36,000 psi
 Structural Steel (AASHTO M270, Gr. 50W) fy = 50,000 psi

BORING LOGS: Boring logs may be obtained from the Programs and Contracts Division.

STEEL SHELL PILING: Piling for Bents 1 - 5 shall be 18" diameter concrete filled steel shell piles and shall be driven to a minimum ultimate bearing capacity of 250 tons per pile and in accordance with SP Job No. 020509 "Driven Steel Piling by Method B". Piling shall be driven to a tip elevation of 68.0 or lower for Bent 1, 92.0 or lower for Bents 2 - 4, and 102.0 or lower for Bent 5. All piling shall be driven with an approved air, steam, or diesel hammer. Piling in end bents shall be driven after embankment to bottom of cap is in place.

Length of piling shown are assumed for estimating quantities only. Actual lengths to be determined in the field. No payment will be made for cut-off or build-up. Test piles are not required but may be driven for the Contractor's information in accordance with Subsection 805.08(g). No piles will be paid for as test piles.

DRIVING SYSTEM: The driving system approval and ultimate bearing capacity determination for piling shall be based on the requirements of Subsection 805.09(b) "Method B - Wave Equation Analysis (WEAP)". It is estimated that a minimum rated hammer energy of 42,000 ft. lbs. per blow will be required to obtain the ultimate bearing capacity at all bents.

PREBORING: Preboring, water jetting or other methods approved by the Engineer may be needed to achieve the minimum pile penetration. Any cost associated with achieving the minimum pile penetration shall be considered subsidiary to "Steel Shell Piling".

FOOTINGS: Footings at Bents 2 and 4 shall have a minimum cover of 2'-0" above top of footings. The top of footings at Bent 3 shall have a minimum cover of 2'-0" above top of footings and shall be a minimum of 6'-0" below the UPRR base of rail. Foundations shall be prepared in accordance with Subsection 801.04 and backfilled according to Subsection 801.08.

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.

DETAIL DRAWINGS:	DRAWING NOS.
End Bents	53027-53028
Intermediate Bents	53029
304' Cont. Comp. W-Beam Unit	53031-53037
Elastomeric Bearings	53039
Concrete Filled Steel Shell Piling	53030
Concrete Riprap	14995A
Type C Approach Gutter	2016C
Type Special Approach Slab	53040

EXISTING BRIDGE: Existing Br. No. 02171 (Log Mi. 19.40) is 310' wide and 322' long and consists of 10 concrete deck and steel beam spans supported by concrete column bents on pile footings. The existing bridge is approximately 100' south of the proposed bridge.

REMOVAL AND SALVAGE: After the new bridge is open to traffic, the existing Bridge No. 02171 shall be removed in accordance with Section 205. All material from the existing bridge shall become the property of the contractor, except for the bridge name plate which shall remain the property of the state.

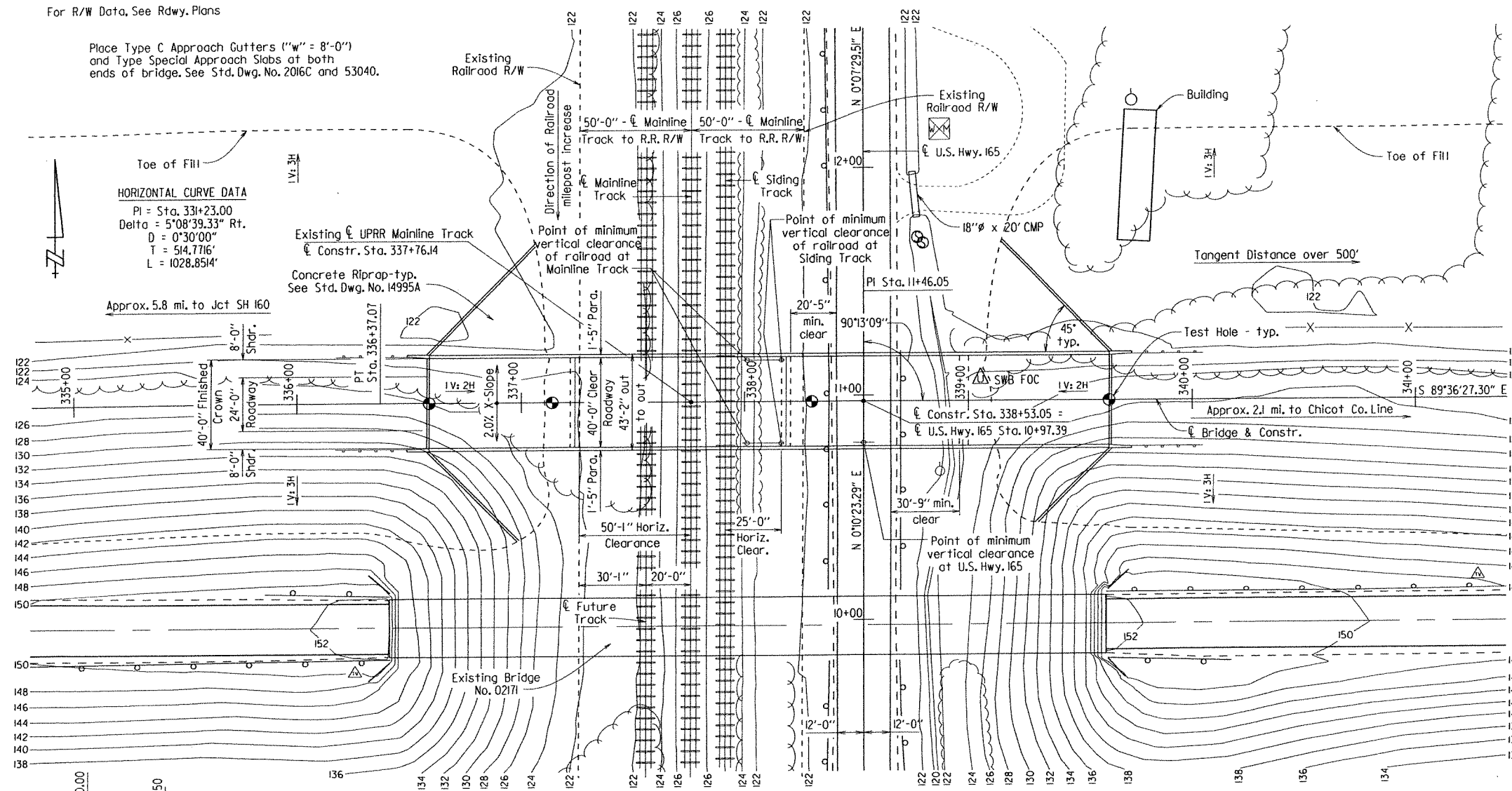
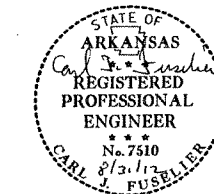
MAINTENANCE OF TRAFFIC: See Roadway Plans.

For Soil Boring Information, see Dwg. No. 53024.

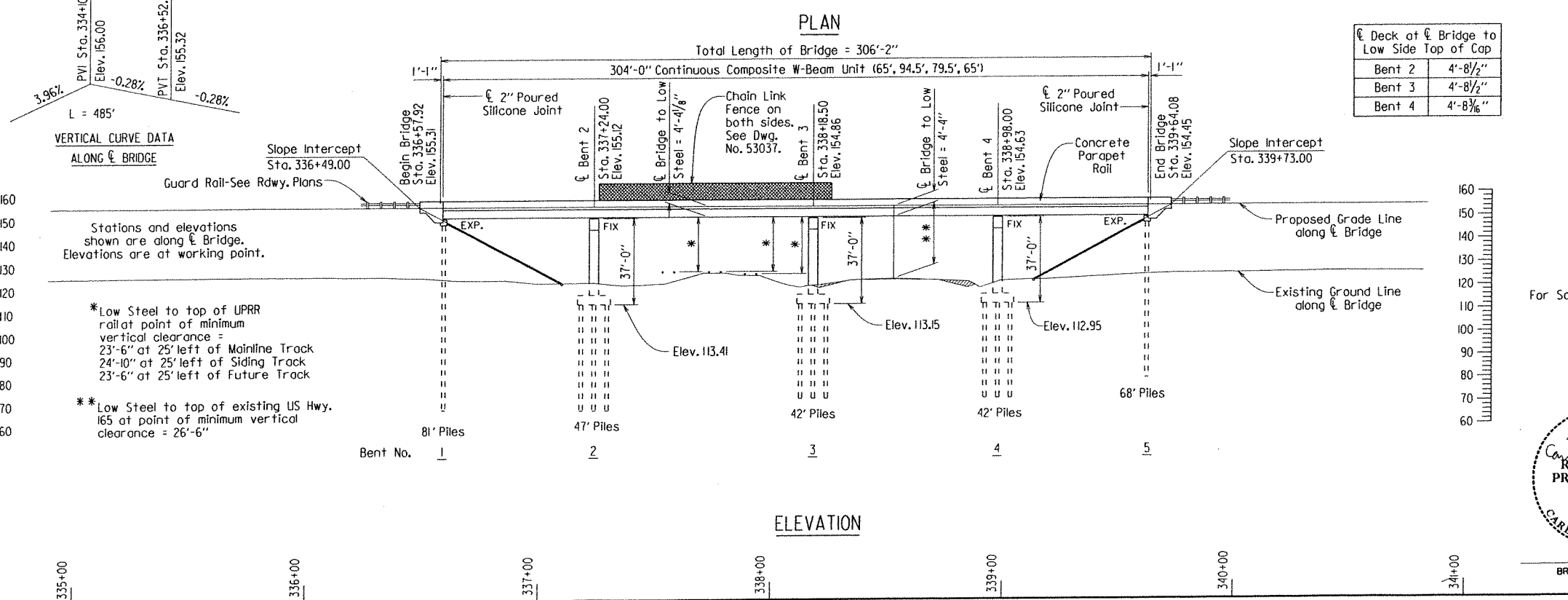
SHEET 1 OF 2
 LAYOUT OF BRIDGE OVER
 UNION PACIFIC RAILROAD AND U.S. HWY. 165
 HWY. 165 STR. & APPRS.
 (MONTROSE) (S)
 ASHLEY COUNTY

ROUTE 82 SEC. 9
 ARKANSAS STATE HIGHWAY COMMISSION
 LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 8-17-11 FILENAME: b020509_ll.dgn
 CHECKED BY: BEF DATE: 8/17/12 SCALE: 1" = 30'
 DESIGNED BY: Dem DATE: 6-11
 BRIDGE NO. 07230 DRAWING NO. 53023



PLAN



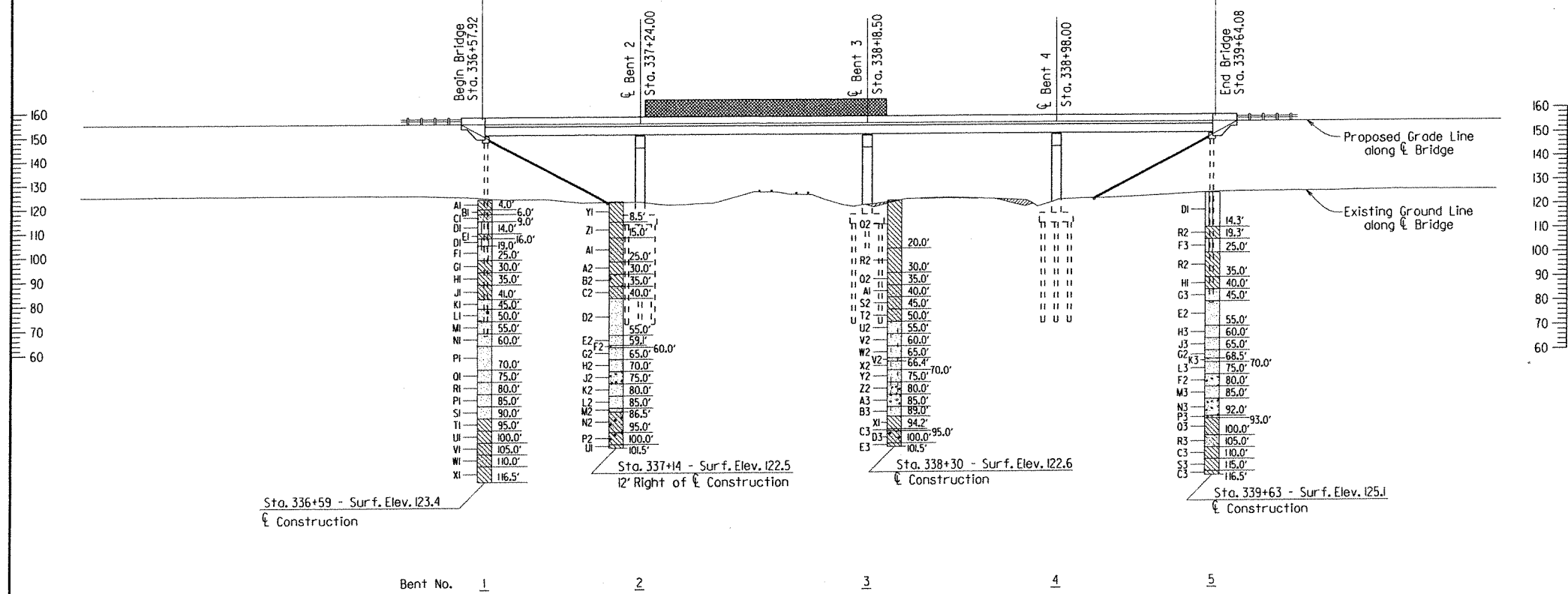
ELEVATION

Deck at Bridge to Low Side Top of Cap	
Bent 2	4'-8 1/2"
Bent 3	4'-8 1/2"
Bent 4	4'-8 1/2"

PRINT DATE: 8/31/2012

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.		020509	39	103
				07230 - LAYOUT				53024

Total Length of Bridge = 306'-2"



BORING LEGEND

- AI-Moist, Medium Stiff, Reddish Brown Clay with Sand
- BI-Moist, Stiff, Reddish Brown and Gray Clay
- CI-Moist, Medium Dense, Reddish Brown Sand with Clay
- DI-Moist, Loose, Reddish Brown Silt
- EI-Wet, Medium Stiff, Reddish Brown Clay
- FI-Moist, Medium Dense, Reddish Brown Silty Sand
- GI-Wet, Soft, Brown and Gray Clay
- HI-Moist, Stiff, Brown Clay
- JI-Wet, Medium Stiff, Brown Clay with Sand
- KI-Wet, Medium Dense, Brown and Gray Sand *
- LI-Wet, Loose, Gray Sand with Organic Matter (Wood)
- MI-Wet, Medium Dense, Gray Silty Sand
- NI-Wet, Dense, Brown and Gray Sand with Trace of Gravel
- OI-Wet, Medium Dense, Brown and Gray Sand with Trace of Gravel
- RI-Wet, Dense, Brown and Gray Sand with occasional Gravel
- SI-Wet, Dense, Gray Sand with Trace of Gravel
- TI-Moist, Very Stiff, Gray Clay with Trace of Sand
- UI-Moist, Hard, Gray Clay with Trace of Lignite
- VI-Moist, Very Stiff, Gray Clay with Sand and Trace of Lignite
- WI-Moist, Hard, Gray Clay with Sand
- XI-Moist, Hard, Gray Clay
- YI-Moist, Stiff, Brown and Gray Clay with some Sand
- ZI-Moist, Medium Stiff, Reddish Brown Clay with some Sand
- A2-Moist, Medium Stiff, Reddish Brown and Gray Clay with Trace of Sand
- B2-Moist, Medium Stiff, Gray Clay with Organic Matter
- C2-Moist, Medium Stiff, Gray and Brown Clay with Sand and Trace of Organic Matter
- D2-Wet, Medium Dense, Gray Sand
- E2-Wet, Dense, Brown Sand
- F2-Wet, Dense, Brown Sand with Gravel
- G2-Wet, Very Dense, Brown Sand
- H2-Wet, Dense, Brown Sand with Trace of Gravel
- J2-Wet, Very Dense, Gray and Brown Sand with Gravel
- K2-Wet, Very Dense, Gray and Brown Sand
- L2-Wet, Dense, Gray and Brown Sand with Trace of Gravel
- M2-Wet, Dense, Gray and Brown Sand with occasional Gravel
- N2-Moist, Very Stiff, Gray Clay with Sand and Lignite
- P2-Moist, Hard, Dark Brown Clay with Lignite
- Q2-Moist, Medium Stiff, Reddish Brown Clay
- R2-Moist, Medium Stiff, Brown Clay
- S2-Moist, Soft, Brown and Gray Clay with Sand
- T2-Wet, Stiff, Gray Sandy Clay
- U2-Wet, Very Dense, Brown and Gray Sand with Silt
- V2-Wet, Dense, Brown Sand with Silt
- W2-Wet, Medium Dense, Brown Sand with Silt
- X2-Wet, Dense, Brown Sand with Silt and Trace of Gravel
- Y2-Wet, Dense, Brown and Gray Sand with Silt and occasional Gravel
- Z2-Wet, Medium Dense, Brown and Gray Sand with Silt and Gravel
- A3-Wet, Dense, Brown and Gray Sand with Gravel
- B3-Wet, Medium Dense, Brown and Gray Sand with Silt and some Organic Matter
- C3-Moist, Very Stiff, Gray Clay
- D3-Moist, Hard, Gray Sandy Clay with Lignite
- E3-Moist, Hard, Gray Sandy Clay
- F3-Moist, Very Loose, Brown Silt
- G3-Wet, Medium Dense, Brown Sand
- H3-Wet, Medium Dense, Brown Sand with some Gray Clay and Trace of Gravel
- J3-Wet, Medium Dense, Brown Sand with Trace of Gravel
- K3-Wet, Very Dense, Brown Sand with Gravel
- L3-Wet, Very Dense, Brown Sand with Trace of Gravel
- M3-Wet, Medium Dense, Gray Sand with Trace of Gravel and Organic Matter
- N3-Wet, Dense to Medium Dense, Gray Sand with Gravel
- P3-Gravel
- Q3-Moist, Very Stiff, Gray Clay with Sand and some Lignite
- R3-Moist, Dense, Gray Clayey Sand
- S3-Moist, Very Stiff, Dark Gray Clay

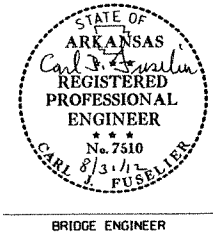
ELEVATION

"N" VALUES

Sta. 336+59 - Construction	Sta. 337+14 - 12' Right of Construction	Sta. 338+30 - Construction	Sta. 339+63 - Construction
6.5 - 7.5, N=11	4.0 - 5.0, N=10	4.2 - 5.2, N=8	6.8 - 7.8, N=6
9.5 - 10.5, N=5	9.0 - 10.0, N=7	9.2 - 10.2, N=7	11.8 - 12.8, N=5
16.5 - 17.5, N=7	15.5 - 16.5, N=5	15.5 - 16.5, N=5	16.8 - 17.8, N=5
19.5 - 20.5, N=7	20.5 - 21.5, N=7	20.5 - 21.5, N=6	21.8 - 22.8, N=4
25.5 - 26.5, N=4	25.5 - 26.5, N=6	25.5 - 26.5, N=6	25.5 - 26.5, N=7
30.5 - 31.5, N=12	30.5 - 31.5, N=8	30.5 - 31.5, N=8	30.5 - 31.5, N=8
35.5 - 36.5, N=7	35.5 - 36.5, N=7	35.5 - 36.5, N=7	35.5 - 36.5, N=9
40.5 - 41.5, N=18	40.5 - 41.5, N=12	40.5 - 41.5, N=4	40.5 - 41.5, N=30
45.5 - 46.5, N=8	45.5 - 46.5, N=26	45.5 - 46.5, N=11	45.5 - 46.5, N=37
50.5 - 51.5, N=13	50.5 - 51.5, N=19	50.5 - 51.5, N=51	50.5 - 51.5, N=48
55.5 - 56.5, N=40	55.5 - 56.5, N=41	55.5 - 56.5, N=43	55.5 - 56.5, N=30
60.5 - 61.5, N=38	60.5 - 61.5, N=58	60.5 - 61.5, N=25	60.5 - 61.5, N=28
65.5 - 66.5, N=47	65.5 - 66.5, N=38	65.5 - 66.5, N=45	65.5 - 66.5, N=56
70.5 - 71.5, N=28	70.5 - 71.5, N=53	70.5 - 71.5, N=40	70.5 - 71.5, N=74
75.5 - 76.5, N=39	75.5 - 76.5, N=65	75.5 - 76.5, N=23	75.5 - 76.5, N=34
80.5 - 81.5, N=39	80.5 - 81.5, N=37	80.5 - 81.5, N=49	80.5 - 81.5, N=26
85.5 - 86.5, N=37	85.5 - 86.5, N=39	85.5 - 86.5, N=26	85.5 - 86.5, N=33
90.5 - 91.5, N=22	90.5 - 91.5, N=29	90.5 - 91.5, N=36	90.5 - 91.5, N=20
95.5 - 96.5, N=42	95.5 - 96.5, N=37	95.5 - 96.5, N=33	95.5 - 96.5, N=25
100.5 - 101.5, N=29	100.5 - 101.5, N=41	100.5 - 101.5, N=55	100.5 - 101.5, N=41
105.5 - 106.5, N=34			105.5 - 106.5, N=30
110.5 - 111.5, N=31			110.5 - 111.5, N=27
115.5 - 116.5, N=36			115.5 - 116.5, N=34

NOTE: Traces and seams of lignite were encountered in the borings and may be encountered in greater amounts at other locations within the project area.

SHEET 2 OF 2
 LAYOUT OF BRIDGE OVER
 UNION PACIFIC RAILROAD AND U.S. HWY. 165
 HWY. 165 STR. & APPRS.
 (MONTROSE) (S)
 ASHLEY COUNTY



ROUTE 82 SEC. 9
 ARKANSAS STATE HIGHWAY COMMISSION
 LITTLE ROCK, ARK.
 DRAWN BY: KDH DATE: 8-17-11 FILENAME: b020509_ll.dgn
 CHECKED BY: ADN DATE: 7-20 SCALE: 1" = 30'
 DESIGNED BY: Dem DATE: 6-11
 BRIDGE NO. 07230 DRAWING NO. 53024

PRINT DATE: 8/31/2012

335+00

336+00

337+00

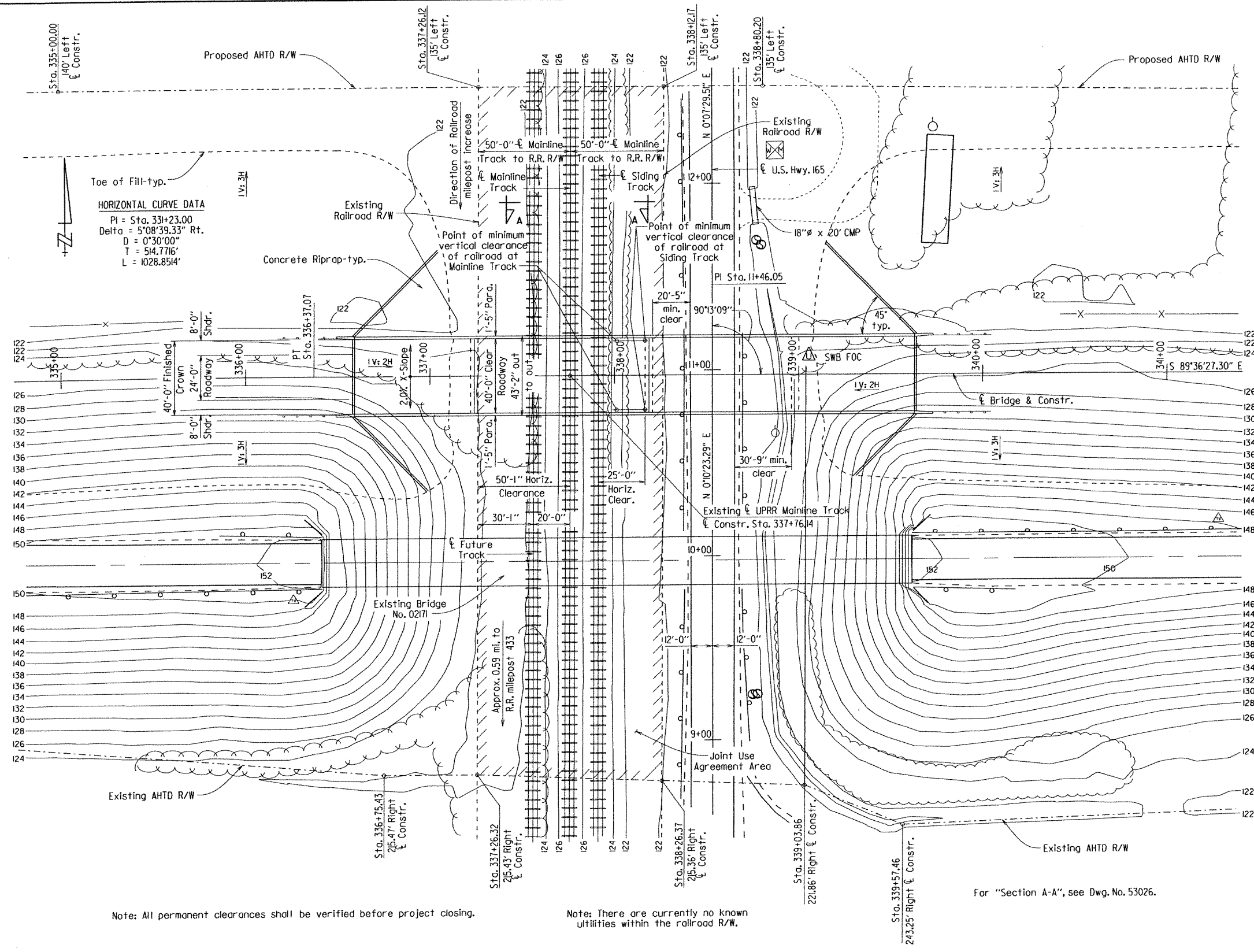
338+00

339+00

340+00

341+00

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.	020509		40103	
				07230 -	EXHIBIT A		- 53025	



HORIZONTAL CURVE DATA
 PI = Sta. 331+23.00
 Delta = 5°08'39.33" Rt.
 D = 0°30'00"
 T = 514.7716'
 L = 1028.8514'

GENERAL NOTES

- All demolitions within the Railroad's right-of-way and/or demolition that may impact the Railroad's tracks or operations shall comply with the Railroad's demolition requirements.
- Erection over the Railroad's right-of-way shall be designed to cause no interruption to the Railroad's operation. Erection over the Railroad's track(s) shall be developed such that it enables the track(s) to remain open to traffic per the Railroad's requirements.
- The Contractor must submit a proposed method of erosion and sediment control and have the method approved by the Railroad prior to beginning any grading on the project site.
- Railroad requirements do not allow work within 50 feet of track centerline when a train passes the work site and all personnel must clear the area within 25 feet of the track centerline and secure all equipment when trains are present.
- The State shall not plow ice, snow, or sleet over the sides of the structure. In consideration of this practice, the Carrier waives its request for the State to attach splash boards to sides of the structure. This statement is in the State Railroad Agreement.
- Pier protection will be added to Bent 3, if necessary in the future, at no expense to Union Pacific Railroad. This statement is in the State Railroad Agreement.
- The proposed bridge structure will not significantly change the quantity and/or characteristic of the flow in the railway's ditches and/or drainage structure.
- Closed Parapet Railing (No Deck Drains) over Railroad Right of Way on both sides of Bridge.
- Construction shall comply with the Union Pacific Railroad requirements noted in Job 020509 Special Provision "Insurance, Construction, and Flagging Requirements on Railroad Property (Union Pacific Railroad)". Any shoring shall comply with UPRR requirements.
- Railroad review and approval of Shoring, Erection and Falsework is required. Allow a minimum of four weeks for the review and approval of each submittal.
- For Railroad coordination, refer to the Railroad Minimum Requirements of SP Job 020509 "Insurance, Construction and Flagging Requirements on Railroad Property (Union Pacific Railroad)".

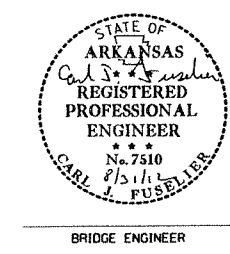
Note: All permanent clearances shall be verified before project closing.

Note: There are currently no known utilities within the railroad R/W.

PLAN
 Scale: 1" = 30'

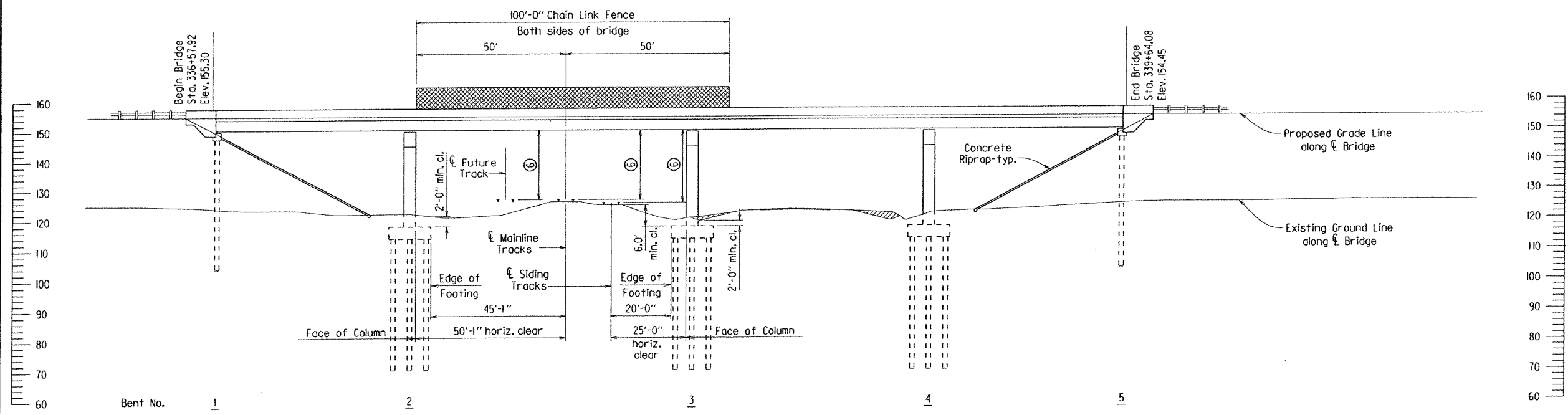
For "Section A-A", see Dwg. No. 53026.

SHEET 1 OF 2
 EXHIBIT A
 LAYOUT OF BRIDGE OVER
 UNION PACIFIC RAILROAD AND U.S. HWY. 165
 HWY. 165 STR. & APPRS.
 (MONTROSE) (S)
 ASHLEY COUNTY



ROUTE 82 SEC. 9
 ARKANSAS STATE HIGHWAY COMMISSION
 LITTLE ROCK, ARK.
 DRAWN BY: KDH DATE: 8-17-11 FILENAME: b020509_exa.dgn
 CHECKED BY: BEF DATE: 8/17/12 SCALE: 1" = 30'
 DESIGNED BY: D6M DATE: 6-11
 BRIDGE NO. 07230 DRAWING NO. 53025

PRINT DATE: 8/31/2012



⑥ Low Steel to top of UPRR rail at point of minimum vertical clearance =
 23'-6" at 25' left of Mainline Track
 24'-10" at 25' left of Siding Track
 23'-6" at 25' left of Future Track

**ELEVATION SECTION
 NORMAL TO TRACK**
 Scale: 1" = 20'

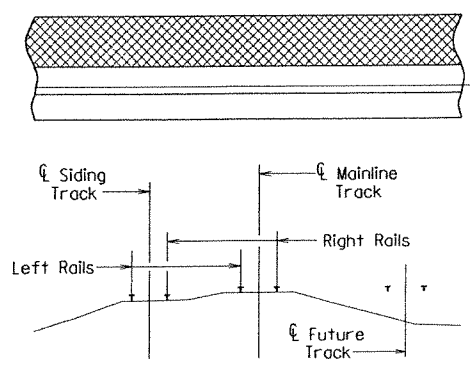
TOP OF RAIL ELEVATIONS

Looking in direction of Milepost increase.
 Stations increase with Milepost increase

SIDING TRACK				MAINLINE TRACK			
① LEFT RAIL	② RIGHT RAIL	③ LEFT RAIL	④ RIGHT RAIL	STATION	ELEVATION	STATION	ELEVATION
2+00	128.52	1+00	128.61	5+00	129.22	5+00	129.22
3+00	127.73	2+00	127.80	6+00	129.01	6+00	129.02
4+00	127.49	3+00	127.53	7+00	128.85	7+00	128.84
5+00	127.25	4+00	127.32	8+00	128.52	8+00	128.54
6+00	126.89	5+00	127.00	9+00	128.21	9+00	128.23
7+00	126.48	6+00	126.60	10+00	127.91	10+00	127.90
8+00	126.11	7+00	126.23	11+00	127.63	11+00	127.63
9+00	125.83	8+00	125.95	12+00	127.37	12+00	127.38
10+00	125.65	9+00	125.77	13+00	127.16	13+00	127.18
11+00	125.50	10+00	125.62	14+00	127.04	14+00	127.04
12+00	125.47	11+00	125.57	15+00	126.98	15+00	126.97
13+00	125.44	12+00	125.56	16+00	126.89	16+00	126.91
14+00	125.42	13+00	125.51	17+00	126.95	17+00	126.95
15+00	125.47	14+00	125.59	18+00	127.02	18+00	127.03
16+00	125.46	15+00	125.58	19+00	127.06	19+00	127.05
17+00	125.57	16+00	125.66	20+00	127.06	20+00	127.05
18+00	125.62	17+00	125.73	21+00	127.10	21+00	127.10
19+00	125.67	18+00	125.75	22+00	127.12	22+00	127.13
20+00	125.72	19+00	125.76	23+00	127.15	23+00	127.17
21+00	125.76	20+00	125.78	24+00	127.26	24+00	127.26
22+00	125.86	21+00	125.87	25+00	127.42	25+00	127.41
23+00	126.00	22+00	125.97	26+00	127.56	26+00	127.55

- ① Rail Sta. 12+71.19 =
Constr. Sta. 337+93.83
- ② Rail Sta. 11+80.49 =
Constr. Sta. 337+88.98
- ③ Rail Sta. 15+26.52 =
Constr. Sta. 337+78.62
- ④ Rail Sta. 15+26.62 =
Constr. Sta. 337+73.66

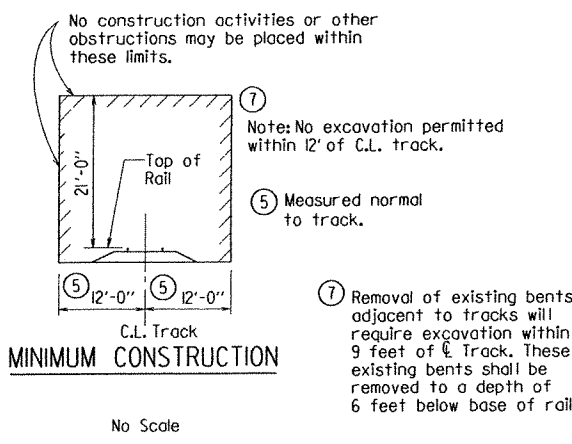
The elevations of the existing top-of-rail profile shall be verified by the Contractor prior to beginning construction. Any discrepancies that will decrease the vertical clearance shown in the Elevation Section shall be brought to the attention of the railroad prior to construction.



SECTION A-A

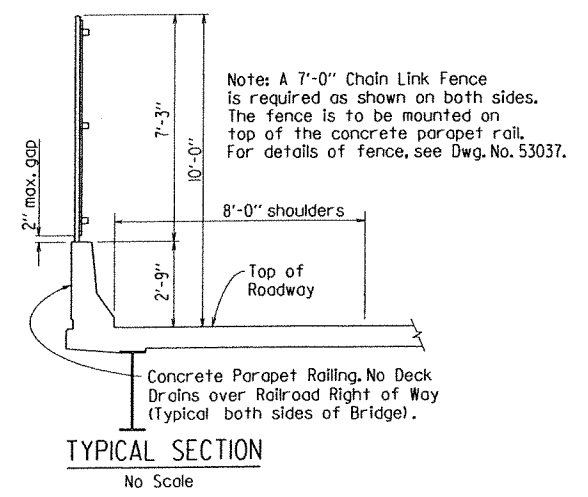
Looking in the the direction of the milepost increase

No Scale



MINIMUM CONSTRUCTION

No Scale

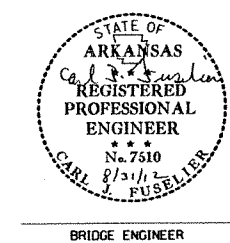


TYPICAL SECTION

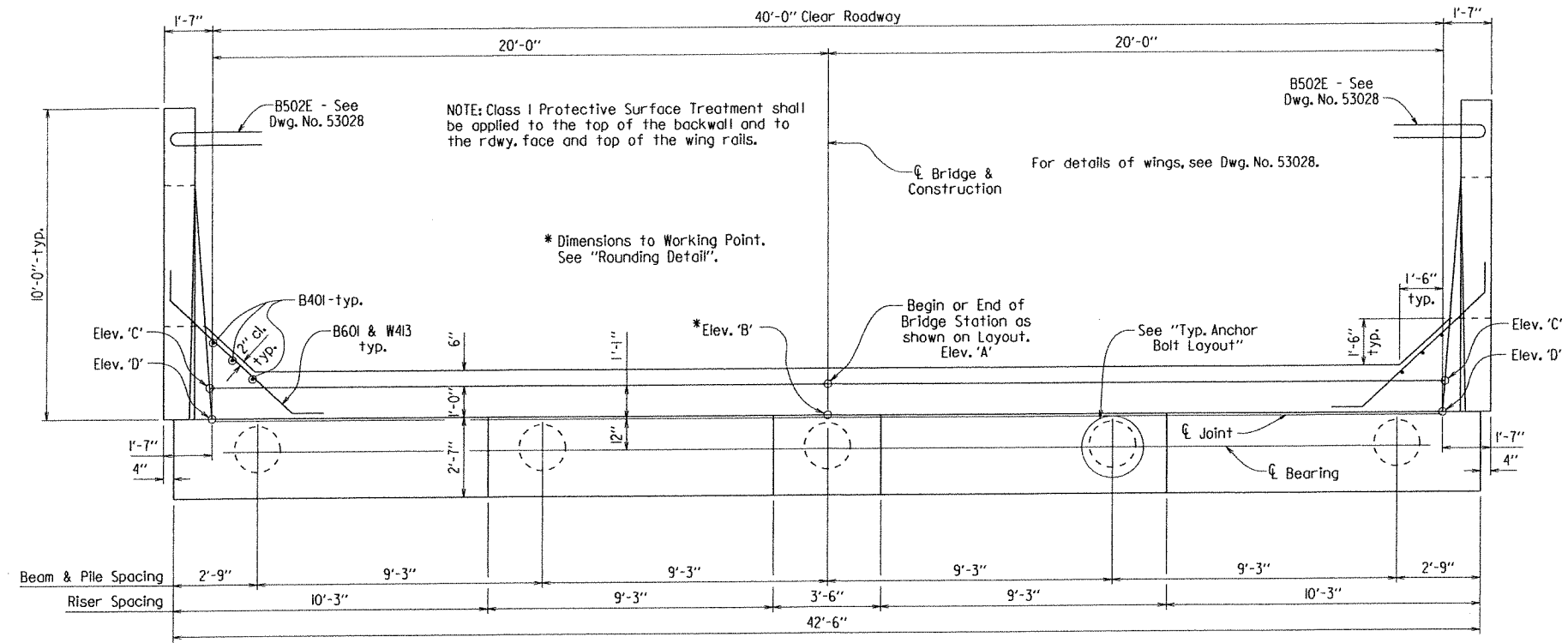
No Scale

SHEET 2 OF 2
 EXHIBIT A
 LAYOUT OF BRIDGE OVER
 UNION PACIFIC RAILROAD AND U.S. HWY. 165
 HWY. 165 STR. & APPRS.
 (MONTROSE) (S)
 ASHLEY COUNTY

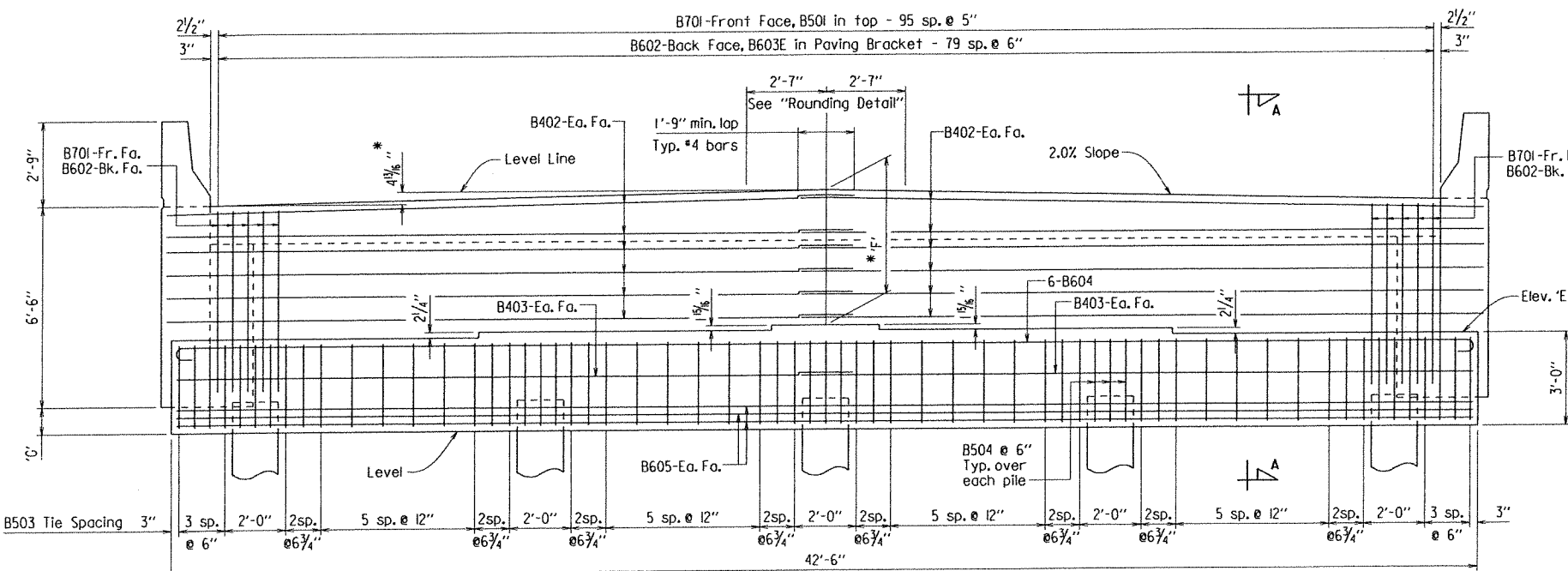
ROUTE 82 SEC. 9
 ARKANSAS STATE HIGHWAY COMMISSION
 LITTLE ROCK, ARK.
 DRAWN BY: KDH DATE: 8-17-11 FILENAME: b020509_exa.dgn
 CHECKED BY: BEF DATE: 8/17/12 SCALE: AS NOTED
 DESIGNED BY: Dcm DATE: 6-11
 BRIDGE NO. 07230 DRAWING NO. 53026



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.		020509	42103	
				07230 -	END BENTS		53027	



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



ELEVATION
Looking Back - Bent 1
Looking Ahead - Bent 5
Scale: 3/8" = 1'-0"

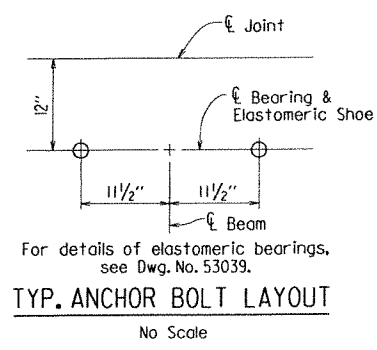
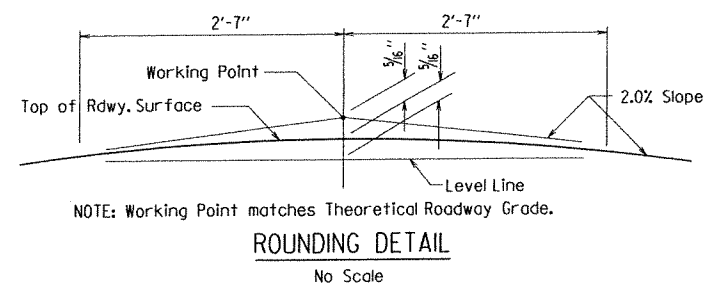
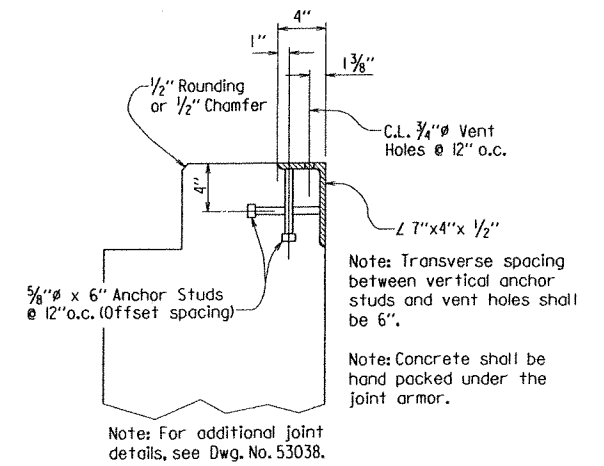
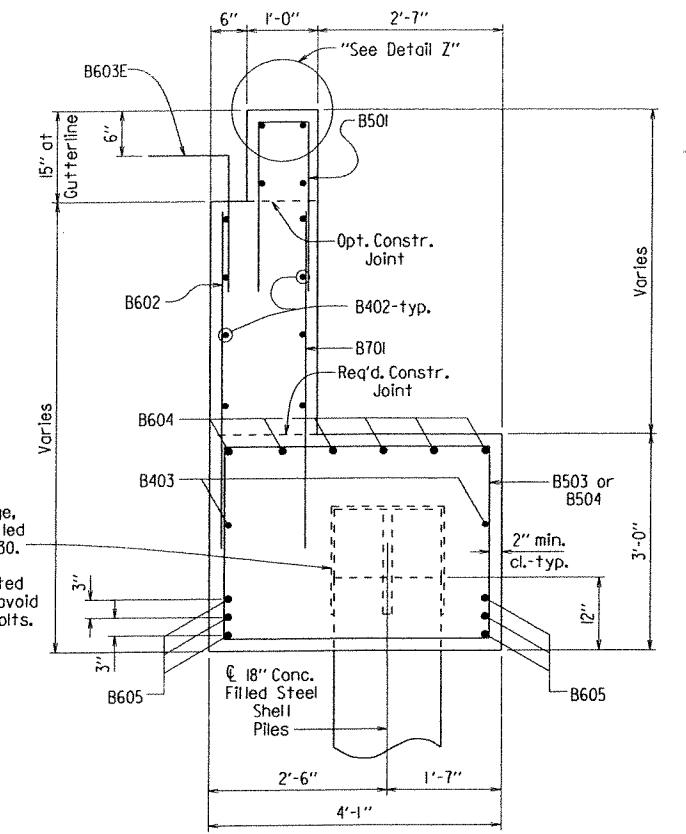


TABLE OF VARIABLES

	BENT 1	BENT 5
Elev. 'A'	155.31	154.45
Elev. 'B'	155.30	154.45
Elev. 'C'	154.91	154.05
Elev. 'D'	154.90	154.05
Elev. 'E'	150.54	149.72
'F'	4'-4 5/8"	4'-4 7/16"
'G'	10 5/8"	9 9/16"

For details of pile anchorage, see "Details of Concrete Filled Steel Shell Piles", Dwg. No. 53030.

Pile anchorage shall be located on piling in such a way to avoid interference with anchor bolts.

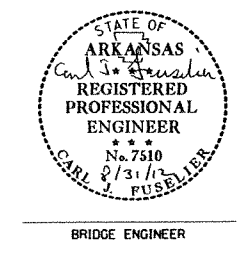


For General Notes, see Dwg. No. 53028.

SHEET 1 OF 2
DETAILS OF END BENTS
UNION PACIFIC RAILROAD & U.S. HWY. 165

ROUTE 65
SEC. 165
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 4-19-12 FILENAME: b020509.bl.dgn
CHECKED BY: CSE DATE: 8/7/12 SCALE: AS NOTED
DESIGNED BY: CSE DATE: 12/11
BRIDGE NO. 07230 DRAWING NO. 53027



PRINT DATE: 8/31/2012

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.	020509		42	103
				07230 -	END BENTS		- 53028	

BAR LIST - PER BENT

MARK	NO. REQ'D.	LENGTH	P.D.	BENDING DIAGRAMS
B401	6	4'-11"	Str.	
B402	24	22'-4"	Str.	
B403	4	22'-0"	Str.	
R401	8	3'-11"	2"	
R402	8	4'-0"	2"	
R403	12	9'-8"	Str.	
W401	6	8'-7"	2"	
W402	6	8'-11"	Str.	
W403-W407	2 each	Var. 3'-5" to 7'-5"	2"	
W408-W412	2 each	Var. 4'-7" to 8'-7"	Str.	
W413	6	7'-7"	2"	
B501	96	6'-7"	3 3/4"	
B502E	16	6'-2"	3 3/4"	
B503	48	13'-4"	2 1/2"	
B504	15	8'-11"	2 1/2"	
B601	8	7'-5"	4 1/2"	
B602	80	4'-6"	Str.	
B603E	80	4'-0"	4 1/2"	
B604	6	43'-6"	4 1/2"	
B605	6	42'-2"	Str.	
R601	20	4'-5"	Str.	
R602	6	5'-0"	Str.	
B701	96	5'-0"	Str.	
W701	12	9'-8"	Str.	
W702	4	6'-7"	Str.	
W703	4	5'-10"	Str.	
W704	4	5'-1"	Str.	
W705	4	4'-4"	Str.	
W706	4	3'-7"	Str.	
W707	4	11'-3"	5 1/4"	

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

GENERAL NOTES

- All concrete shall be Class "S" with a minimum 28 day compressive strength, $f'_c = 3500$ 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 M31 or M53, Grade 60.
- No portion of the backwall shall be poured before beams are in place. The portion of the backwall above the optional construction joint shall not be placed until the adjacent deck pour has been made.
- Structural steel in end bents shall be AASHTO M270, Gr. 50W and shall be paid for as "Structural Steel in Beam Spans (M270, Gr. 50W)".
- If anchor bolts are drilled into cap, top reinforcing bars shall be placed to avoid damage.
- For additional information, see layout.

SHEET 2 OF 2
 DETAILS OF END BENTS
 UNION PACIFIC RAILROAD & U.S. HWY. 165

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

DRAWN BY: KDH DATE: 4-20-12 FILENAME: b020509.bl.dgn
 CHECKED BY: CSR DATE: 8/7/12 SCALE: AS NOTED
 DESIGNED BY: CSR DATE: 12/11
 BRIDGE NO. 07230 DRAWING NO. 53028

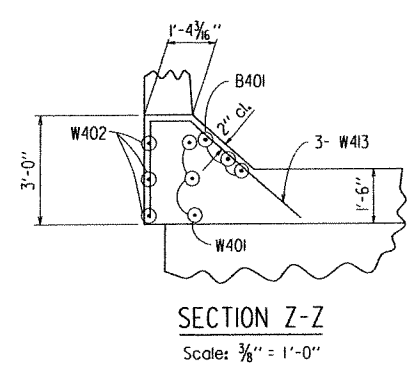
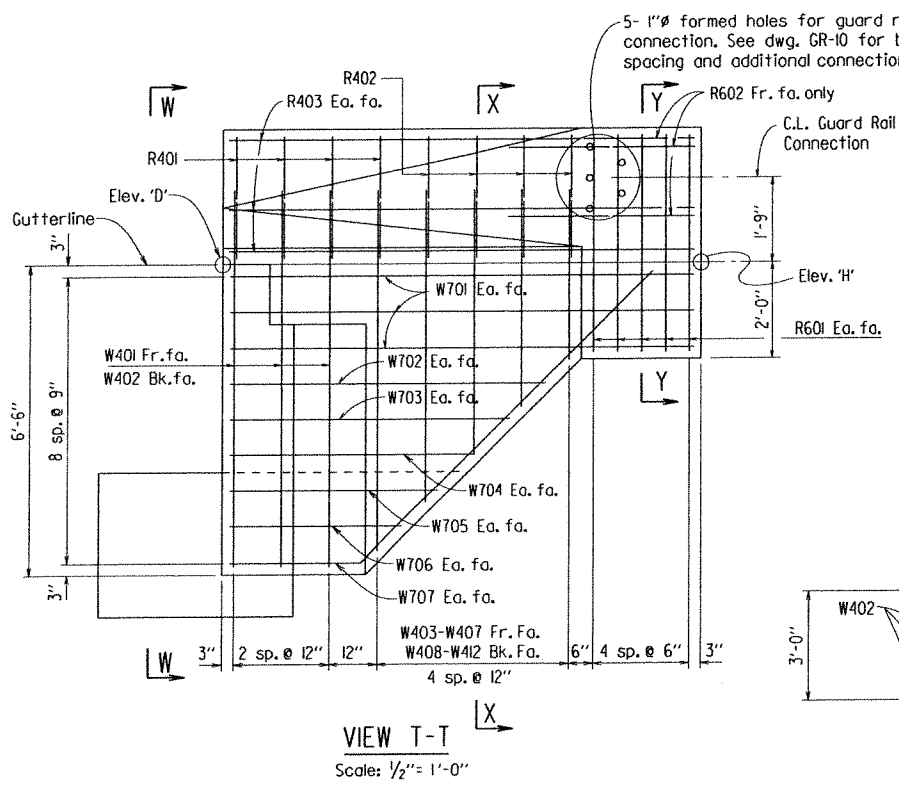
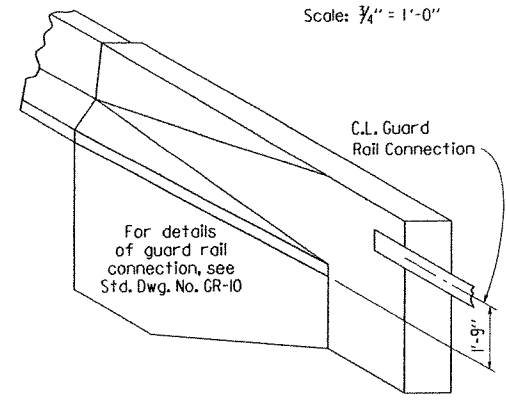
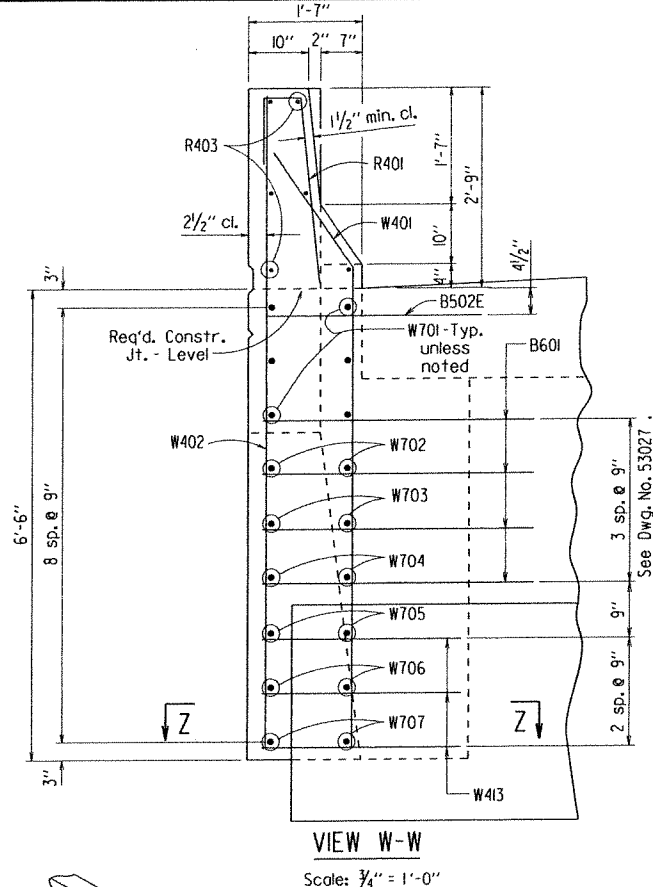
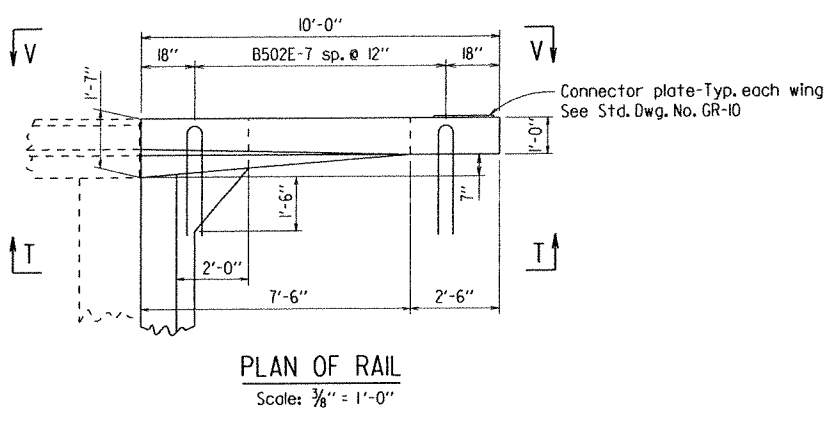
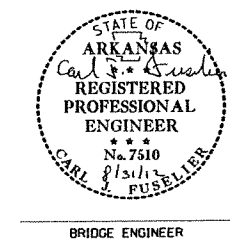
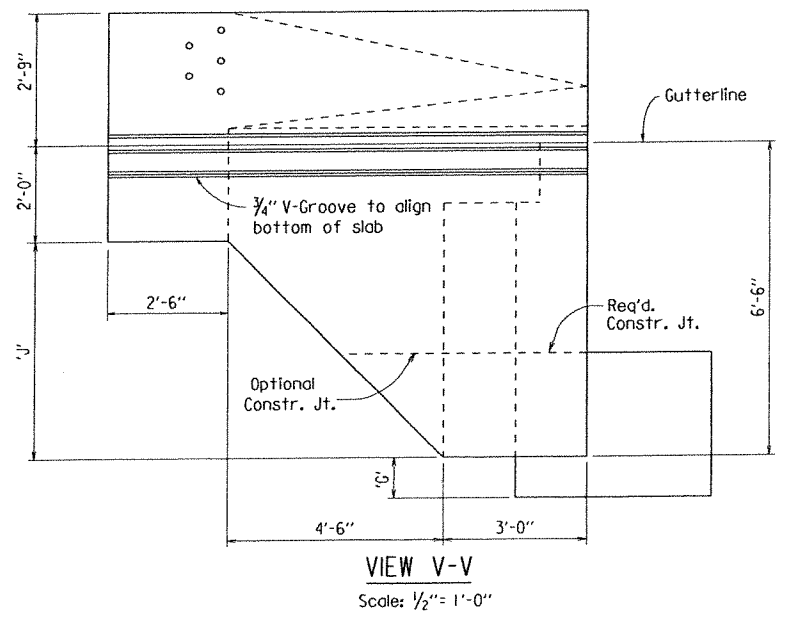
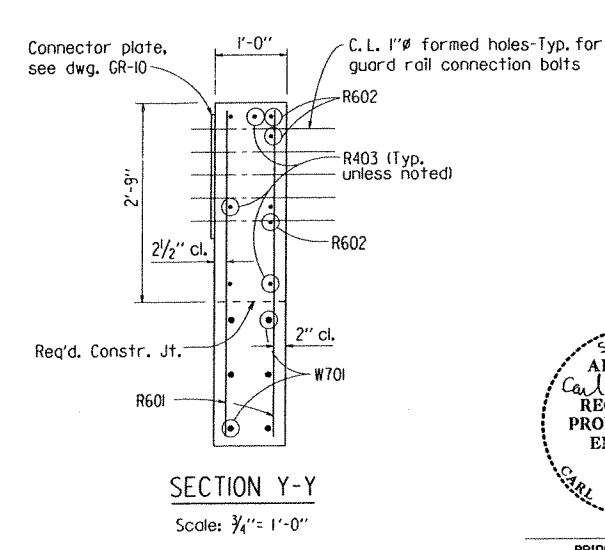
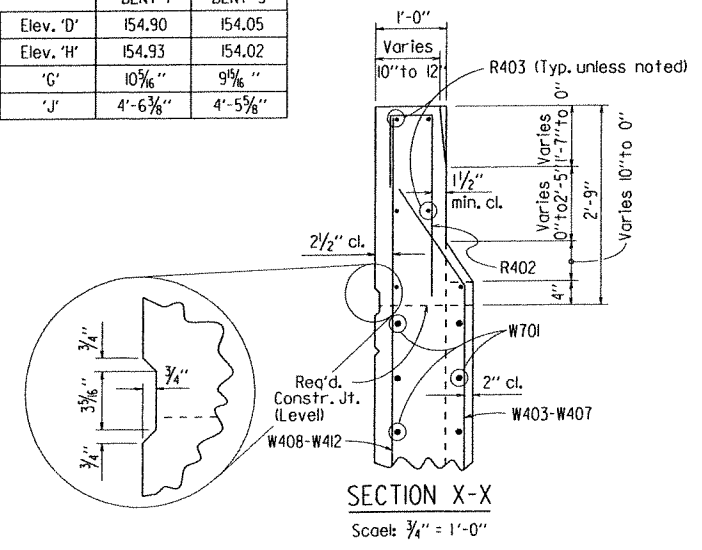


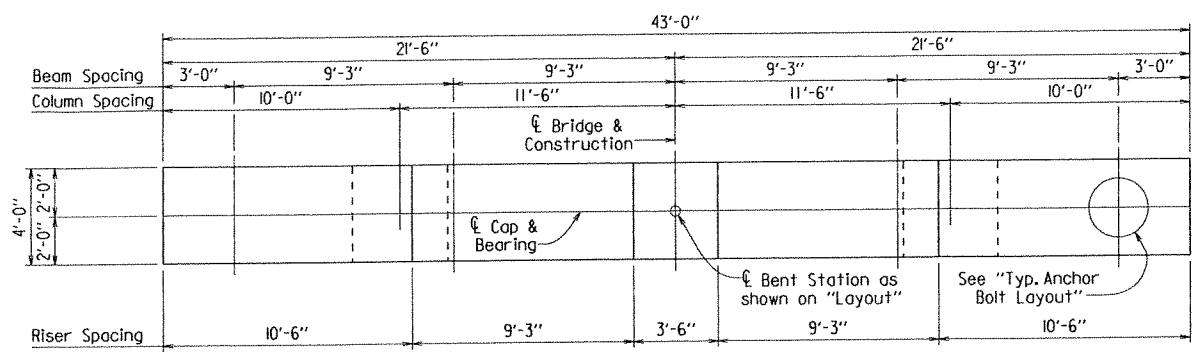
TABLE OF VARIABLES

	BENT 1	BENT 5
Elev. 'D'	154.90	154.05
Elev. 'H'	154.93	154.02
'G'	10 5/16"	9 5/16"
'J'	4'-6 3/4"	4'-5 5/8"

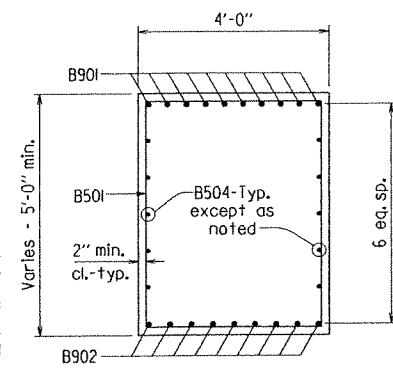


PRINT DATE: 8/31/2012

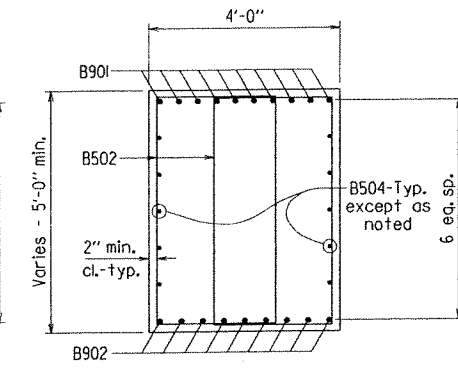
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				6	ARK.			
JOB NO. 020509							41	103
07230 - INT. BENTS							- 53029	



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



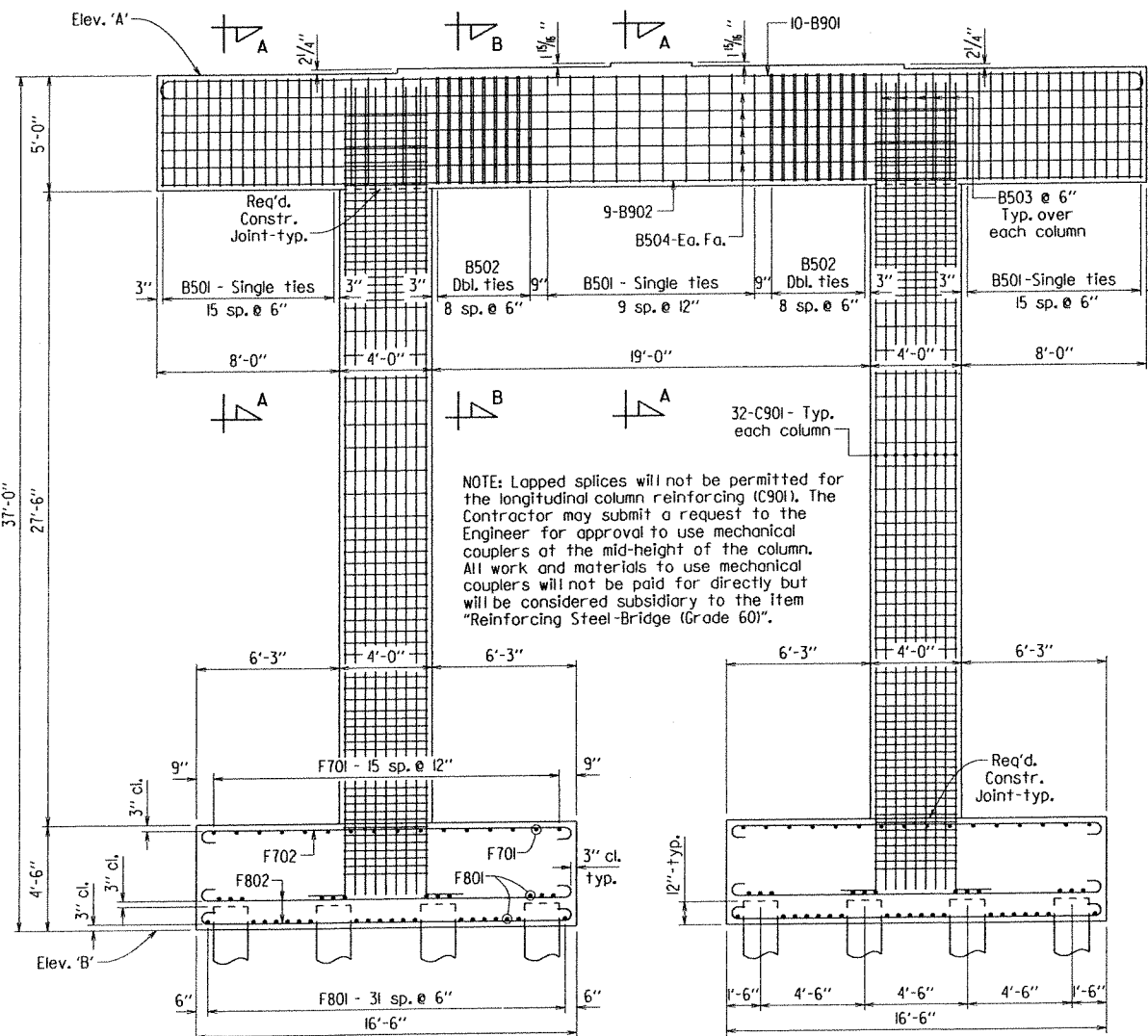
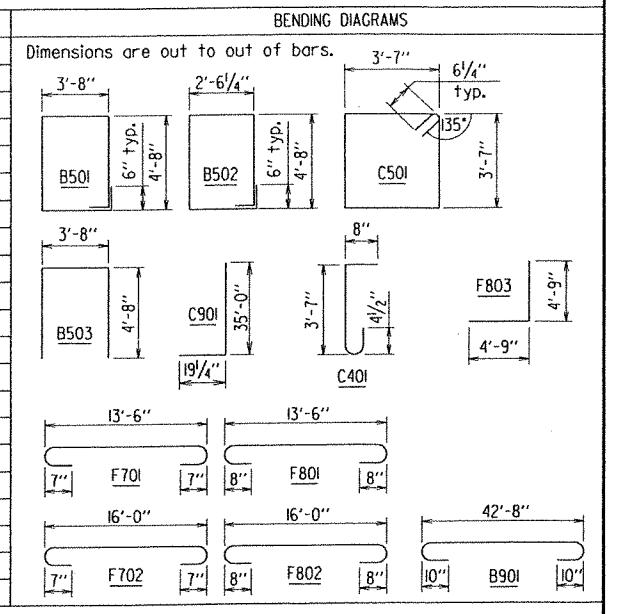
SECTION A-A
Scale: 1/2" = 1'-0"



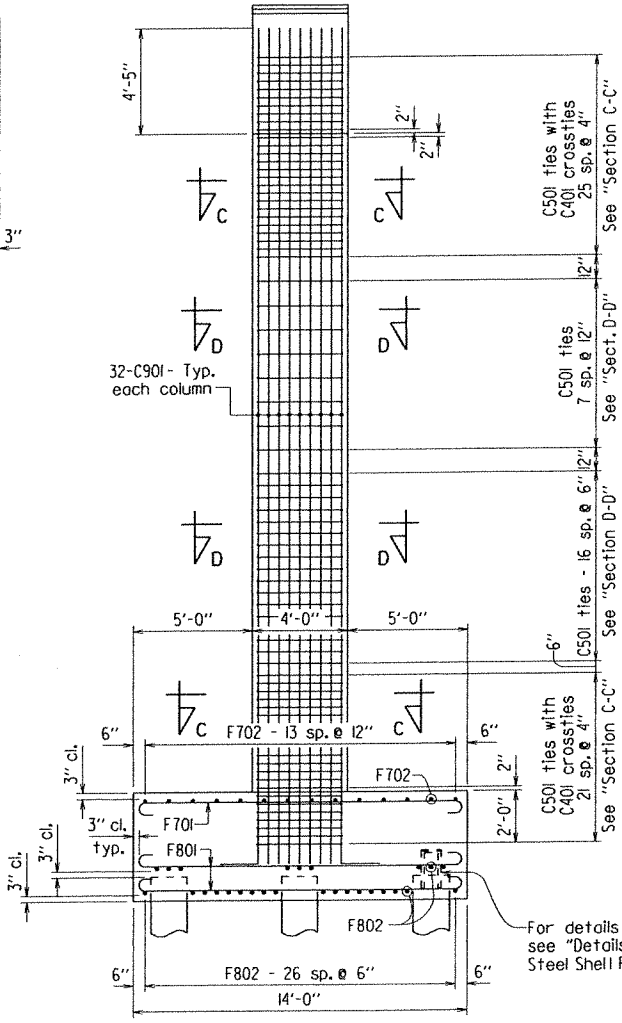
SECTION B-B
Scale: 1/2" = 1'-0"

BAR LIST - PER BENT

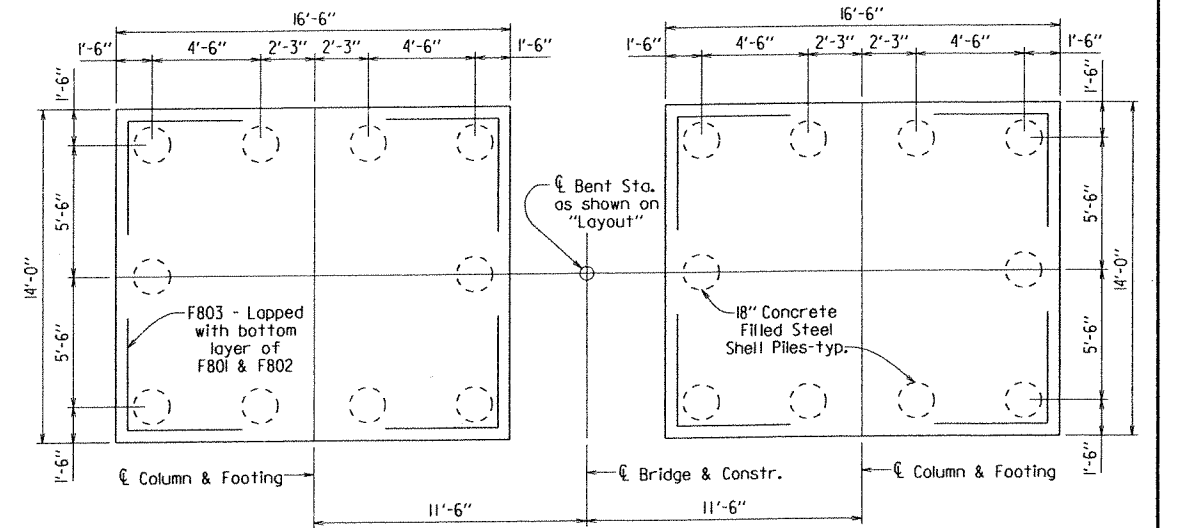
MARK	NO. REQ'D.	LENGTH	P.D.
C401	576	4'-8"	3"
B501	42	17'-2"	2 1/2"
B502	36	14'-11"	2 1/2"
B503	10	12'-10"	2 1/2"
B504	10	42'-8"	Str.
C501	146	15'-0"	3 3/4"
F701	32	15'-2"	5 1/4"
F702	28	17'-8"	5 1/4"
F801	64	15'-4"	6"
F802	54	17'-10"	6"
F803	8	9'-4"	6"
B901	10	45'-2"	9"
B902	9	42'-8"	Str.
C901	64	36'-4"	9"



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



END VIEW
Scale: 1/4" = 1'-0"



PLAN OF FOOTING
Scale: 1/4" = 1'-0"

GENERAL NOTES

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

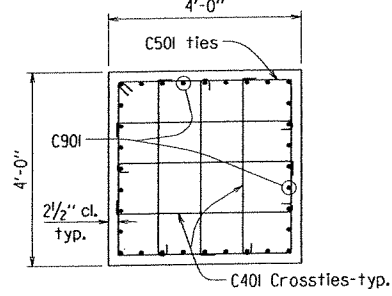
All reinforcing steel shall conform to AASHTO M31 or M53, Grade 60 (yield strength = 60,000 psi).

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

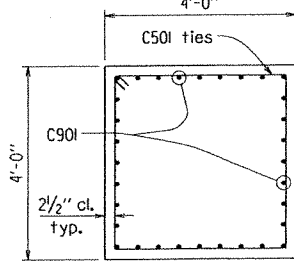
For additional information, see Layout.

TABLE OF VARIABLES

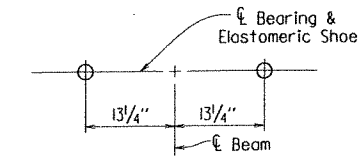
Bent No.	Elev. 'A'	Elev. 'B'
2	150.41	113.41
3	150.15	113.15
4	149.95	112.95



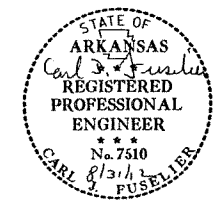
SECTION C-C
Scale: 1/2" = 1'-0"



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



TYP. ANCHOR BOLT LAYOUT
No Scale

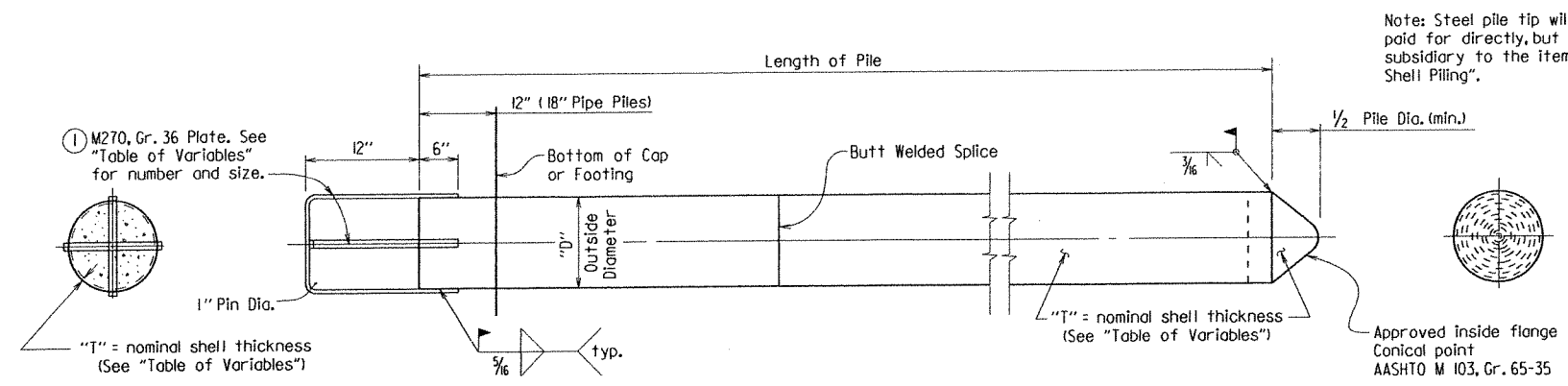


DETAILS OF INTERMEDIATE BENTS
UNION PACIFIC RAILROAD & U.S. HWY. 165

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

DRAWN BY: KDH DATE: 4-25-12 FILENAME: b020509_b2.dgn
CHECKED BY: MCB DATE: 7/13/12 SCALE: AS NOTED
DESIGNED BY: CSR DATE: 1/12
BRIDGE NO. 07230 DRAWING NO. 53029

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.		020509	45103	
				07230 - STEEL SHELL PILES - 53030				

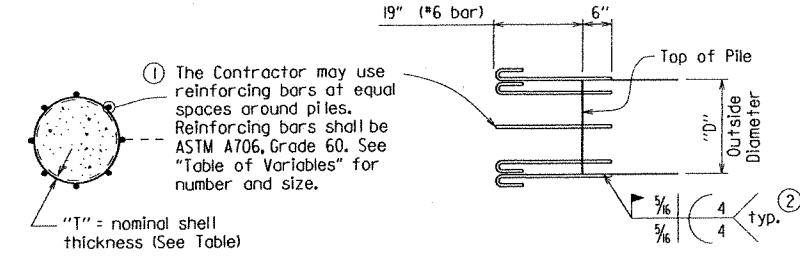


CONCRETE FILLED STEEL SHELL PILE

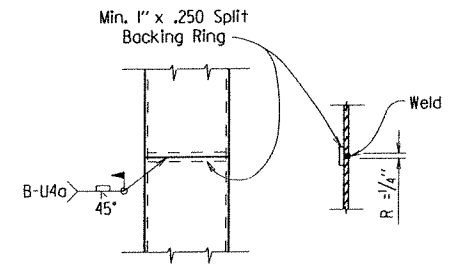
TABLE OF VARIABLES

BRIDGE NUMBER	OUTSIDE DIAMETER "D"	NOMINAL SHELL THICKNESS "T"	PILE STRAPS	
			PLATE	REINFORCING
07230	18"	0.50"	2 @ 1/2" x 1 1/2"	6 - #6

① Pile anchorage shall be placed to minimize interference with anchor bolts and reinforcing in cap or footing.



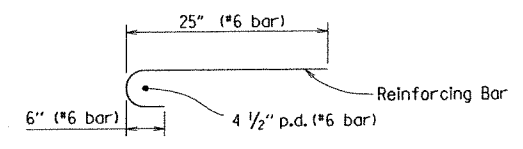
ALTERNATE PILE ANCHORAGE DETAIL



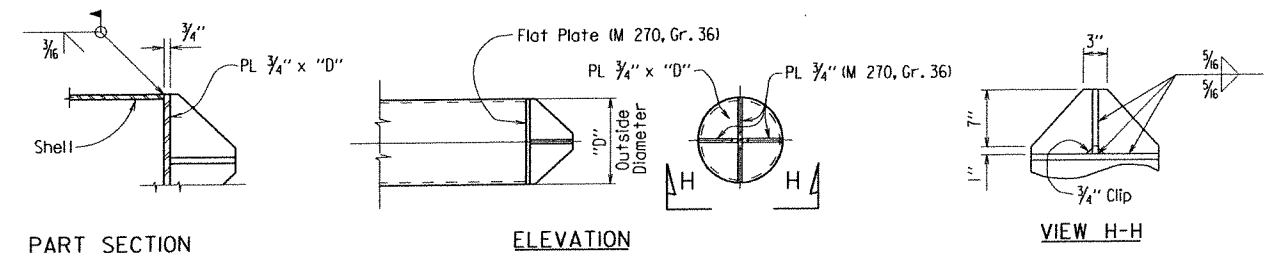
TYPICAL SPLICE DETAILS

GENERAL NOTES FOR CONCRETE FILLED STEEL SHELL PILES:

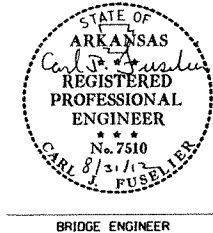
Steel shells shall conform ASTM A252, Grade 3 (Fy = 45,000 psi).
 Concrete used for filling of steel shell shall be Class S with a minimum 28-day compressive strength, f'c = 3,500 psi, and shall be poured in the dry.
 Steel shell piling that extends above the ground and is not protected by pile encasement shall be painted in accordance with subsection 805.02.
 See Bridge Layout for size and estimated length of steel shell piles and for additional driving information.
 Concrete, structural steel, reinforcing steel (including welding), and painting will not be paid for separately, but will be considered subsidiary to the item "Steel Shell Piling".



HOOKED BAR DETAIL



ALTERNATE VANED TIP DETAIL



DETAILS OF CONCRETE FILLED STEEL SHELL PILES UNION PACIFIC RAILROAD & U.S. HWY 165

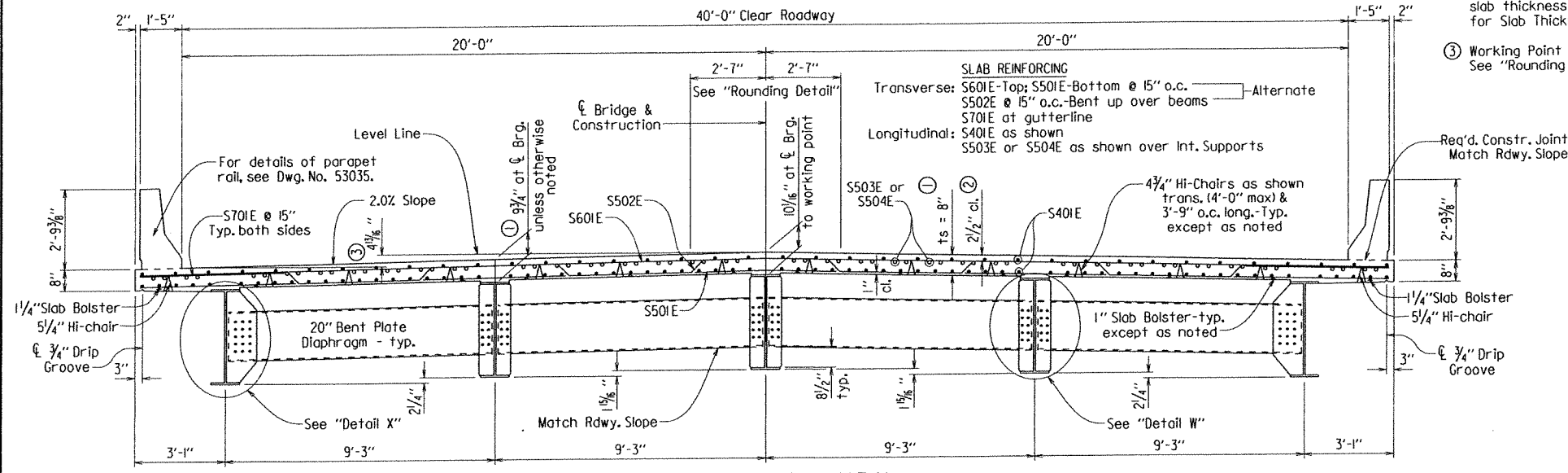
ROUTE SEC.
 ARKANSAS STATE HIGHWAY COMMISSION
 LITTLE ROCK, ARK.
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 CHECKED BY: BEF DATE: 8/7/12 SCALE: NONE
 DESIGNED BY: CSP DATE: 1/12
 BRIDGE NO. 07230 DRAWING NO. 53030

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.	020509	46	103	
				①	07230 - 304 FT. UNIT	- 53031		

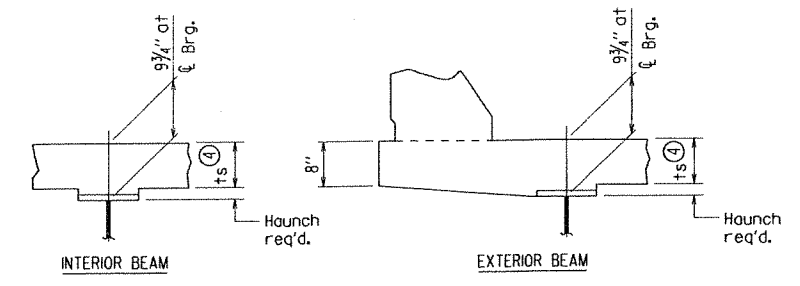
NOTE: Class I Protective Surface Treatment shall be applied to the Roadway Surface and to the Face & Top of the Concrete Parapet Rail.

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

- See "Adjustment for Slab Thickness Tolerance"
- Tolerance: Minus = $1/4"$; Plus equal to the amount of slab thickening used to meet slab thickness tolerance. See "Adjustment for Slab Thickness Tolerance".
- Working Point to Gutterline See "Rounding Detail"



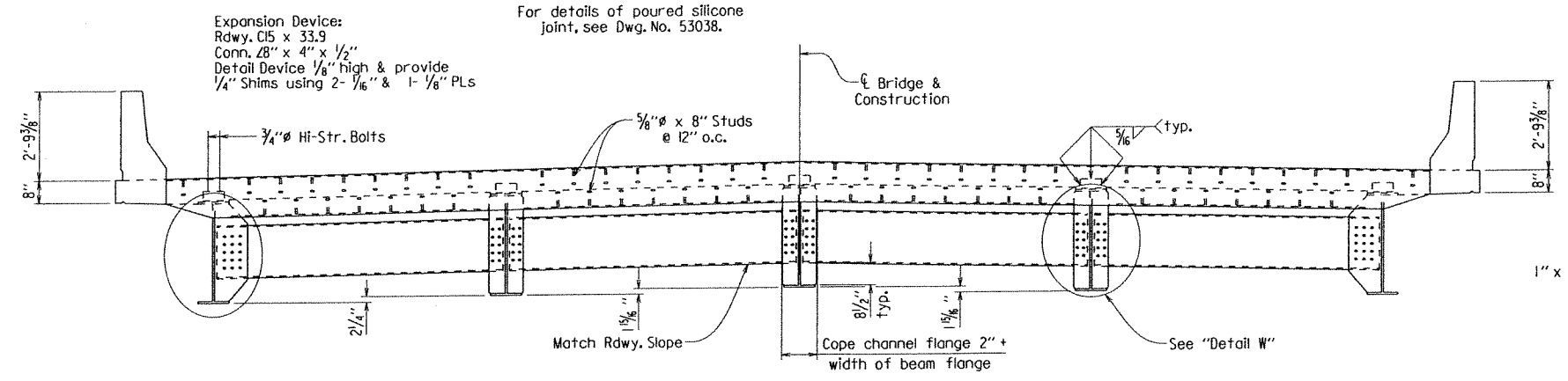
TYPICAL ROADWAY SECTION
Scale: $3/8" = 1'-0"$



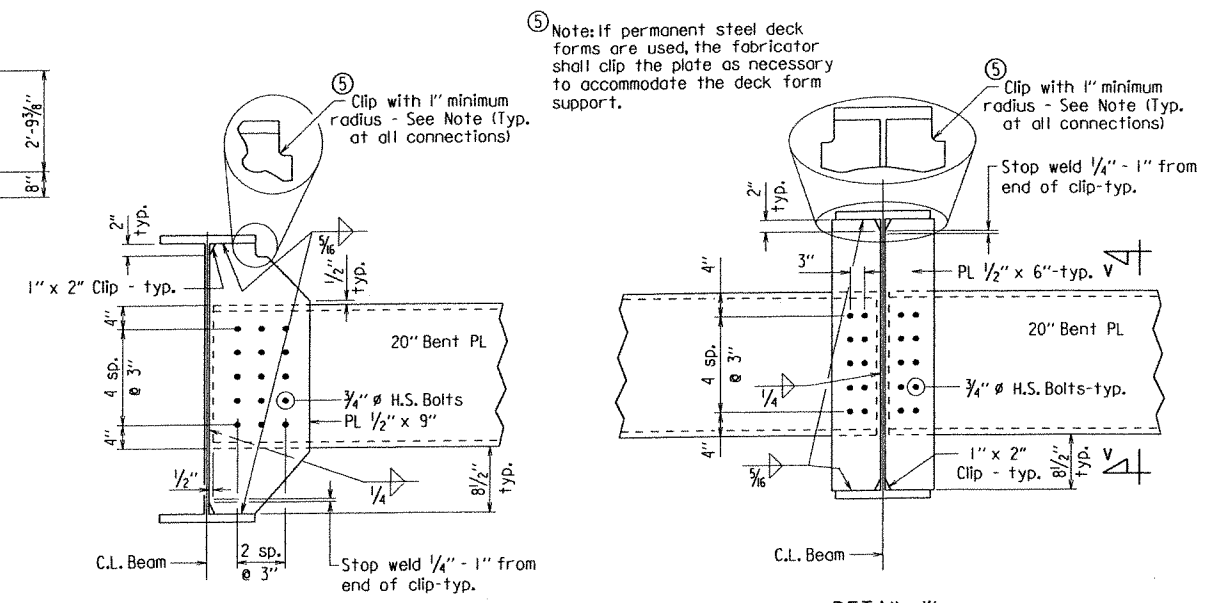
ADJUSTMENT FOR SLAB THICKNESS TOLERANCE
No Scale

Haunch dimension may vary within the following limits to maintain the grade and slab thickness tolerance: Minimum - occurs when top flange contacts bottom reinforcing steel; Maximum - top flange thickness plus $1 3/4"$. 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.

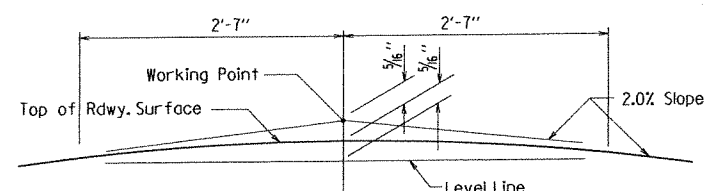


TYPICAL SECTION THRU JOINT
Scale: $3/8" = 1'-0"$



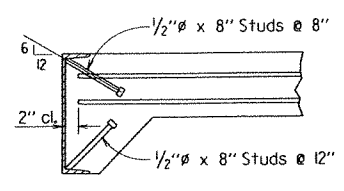
DETAIL X
No Scale

DETAIL W
No Scale



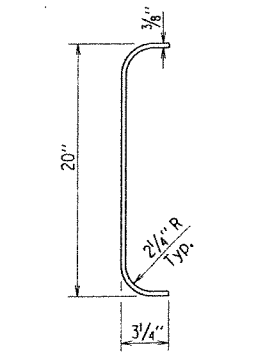
ROUNDING DETAIL
No Scale

NOTE: Working Point matches Theoretical Roadway Grade.



DETAILS OF ALTERNATE ANCHORS
No Scale

Note: As an alternate to $5/8"$ studs, $1/2"$ x 8" studs spaced as shown may be used. Use weight of $5/8"$ stud as basis of measurement of structural steel in anchors.

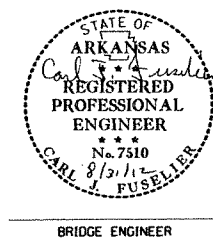


SECTION V-V
No Scale

SHEET 1 OF 7
DETAILS FOR 304'-0" CONTINUOUS
COMPOSITE W-BEAM UNIT
UNION PACIFIC RAILROAD & U.S. HWY. 165

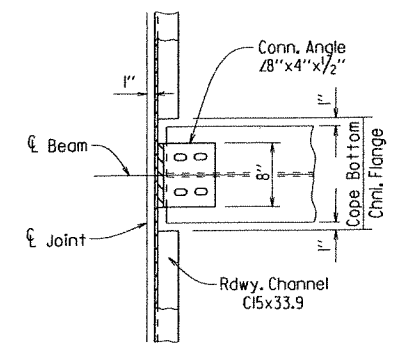
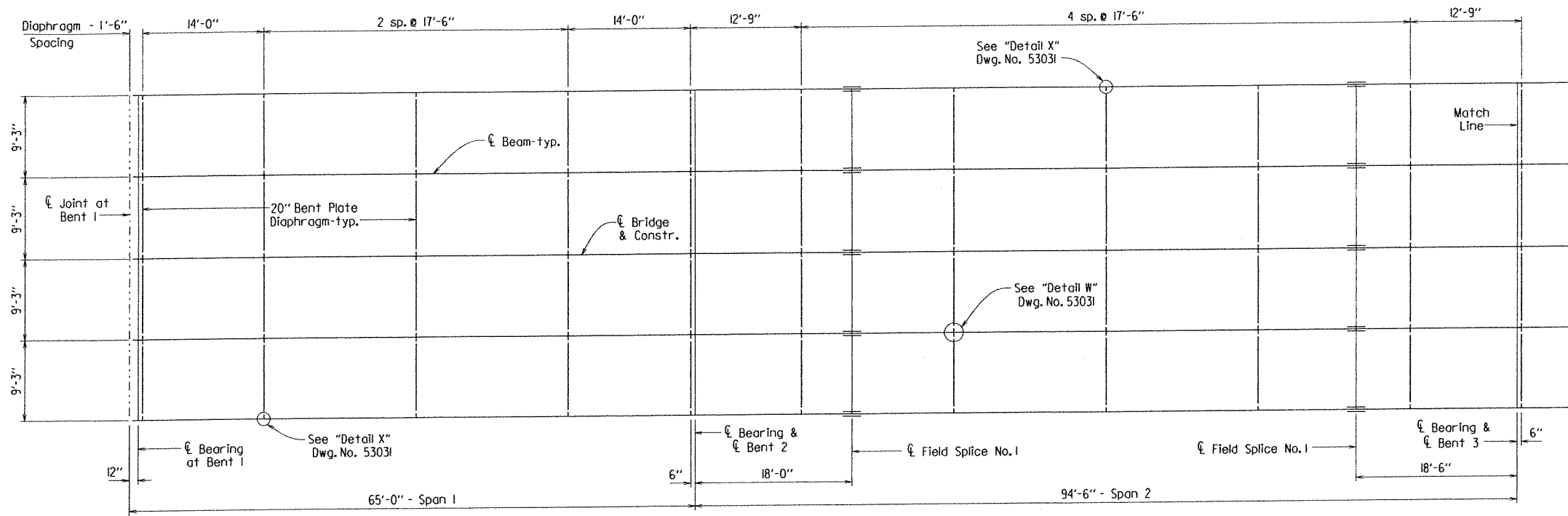
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 1-18-12 FILENAME: b020509.sldgn
CHECKED BY: BEF DATE: 7/14/12 SCALE: AS NOTED
DESIGNED BY: CSR DATE: 11/11
BRIDGE NO. 07230 DRAWING NO. 53031



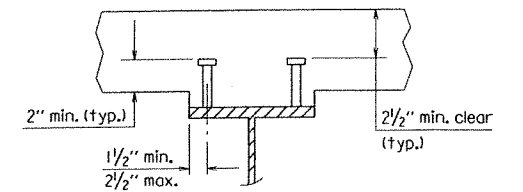
PRINT DATE: 31-AUG-2012

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.	020509		47103	
				07230 -	304 FT. UNIT		- 53032	

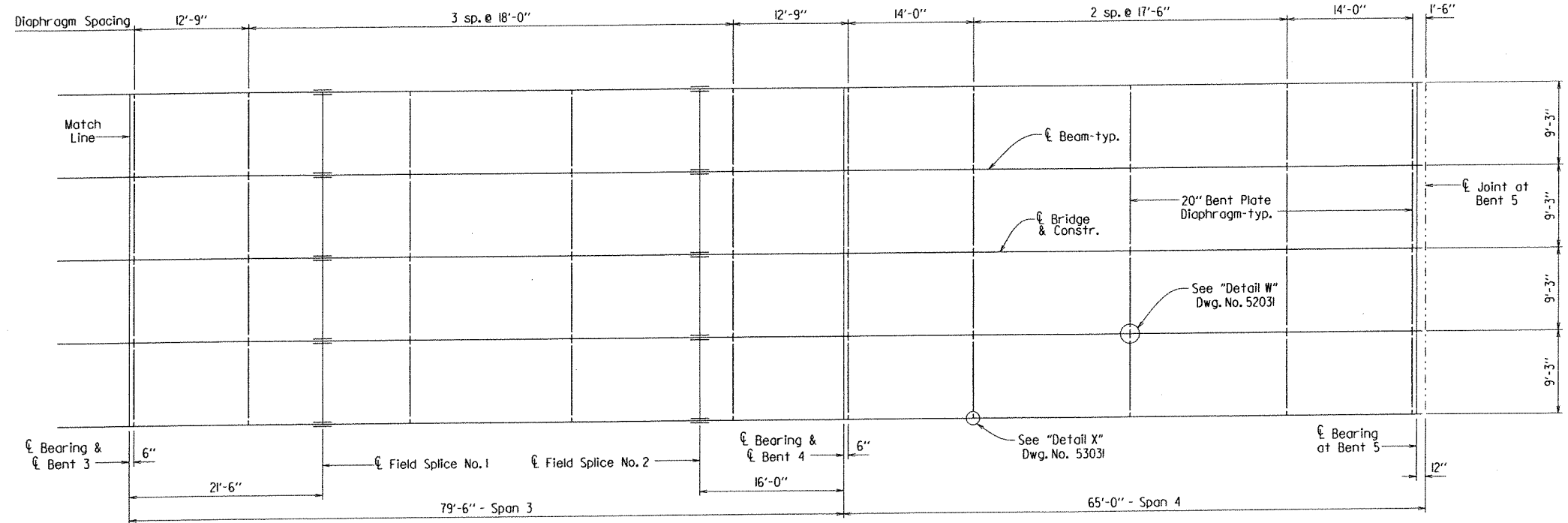


CHANNEL CONNECTION DETAIL
No Scale

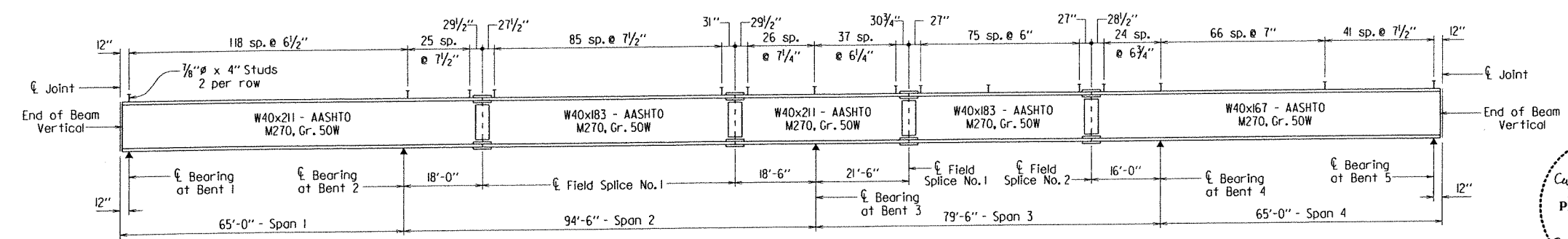
Stud Shear Connectors shown shall be 7/8" x 4" long, granular flux filled, solid fluxed or equal, and automatically end welded to the beam flange in accordance with the recommendations of the Manufacturer. Maximum stud spacing = 24".



SHEAR CONNECTOR DETAIL
No Scale

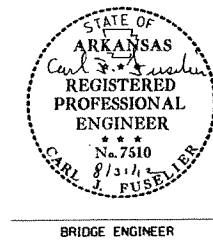


FRAMING PLAN
Scale: 1/8" = 1'-0"



BEAM ELEVATION
No Scale

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



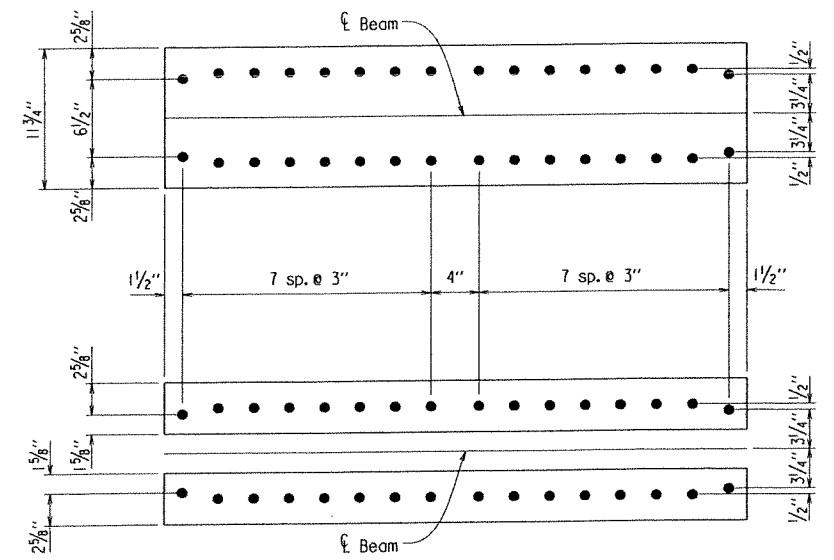
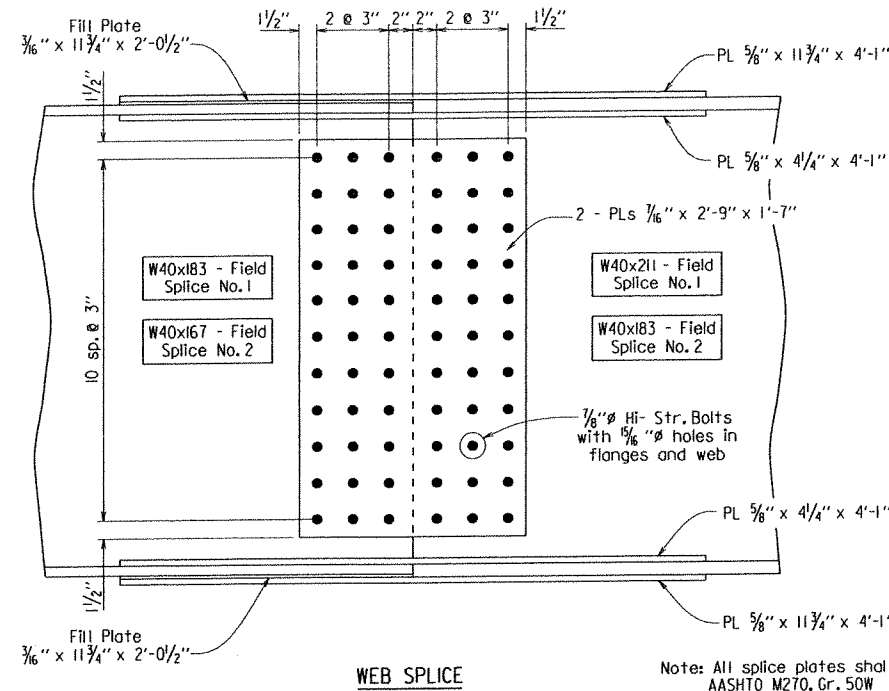
SHEET 2 OF 7
DETAILS FOR 304'-0" CONTINUOUS
COMPOSITE W-BEAM UNIT
UNION PACIFIC RAILROAD & U.S. HWY. 165

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ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.
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DESIGNED BY: CJE DATE: 11/11
BRIDGE NO. 07230 DRAWING NO. 53032

PRINT DATE: 31-AUG-2012

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
1	0	0	0	0	0	0	0
	0.1	0.023	0.002	0.102	0.090	0.109	0.098
	0.2	0.041	0.040	0.182	0.162	0.195	0.176
	0.3	0.053	0.051	0.229	0.203	0.246	0.221
	0.4	0.055	0.054	0.234	0.209	0.251	0.227
	0.5	0.050	0.048	0.201	0.178	0.215	0.193
	0.6	0.037	0.036	0.135	0.121	0.145	0.131
	0.7	0.020	0.020	0.055	0.050	0.059	0.054
	0.8	0.004	0.004	-0.016	-0.014	-0.017	-0.016
	0.9	-0.005	-0.005	-0.047	-0.042	-0.051	-0.046
2	0	0	0	0	0	0	0
	0.1	0.042	0.040	0.257	0.226	0.276	0.246
	0.2	0.107	0.102	0.631	0.555	0.678	0.605
	0.3	0.171	0.164	0.997	0.878	1.071	0.956
	0.4	0.217	0.208	1.256	1.106	1.349	1.204
	0.5	0.233	0.224	1.347	1.187	1.447	1.292
	0.6	0.217	0.209	1.252	1.104	1.345	1.202
	0.7	0.172	0.165	0.990	0.872	1.063	0.949
	0.8	0.108	0.103	0.623	0.549	0.669	0.598
	0.9	0.043	0.041	0.251	0.221	0.270	0.241
3	0	0	0	0	0	0	0
	0.1	-0.005	-0.004	-0.038	-0.032	-0.041	-0.035
	0.2	0.010	0.010	0.035	0.032	0.037	0.034
	0.3	0.032	0.031	0.150	0.133	0.161	0.144
	0.4	0.052	0.050	0.256	0.226	0.274	0.245
	0.5	0.062	0.060	0.313	0.277	0.335	0.301
	0.6	0.061	0.059	0.307	0.272	0.329	0.295
	0.7	0.048	0.046	0.238	0.210	0.255	0.228
	0.8	0.027	0.026	0.130	0.115	0.139	0.125
	0.9	0.007	0.007	0.026	0.024	0.028	0.026
4	0	0	0	0	0	0	0
	0.1	0.012	0.011	0.080	0.070	0.085	0.076
	0.2	0.034	0.032	0.217	0.190	0.232	0.206
	0.3	0.058	0.055	0.366	0.321	0.391	0.348
	0.4	0.079	0.075	0.491	0.432	0.525	0.468
	0.5	0.091	0.087	0.567	0.499	0.606	0.540
	0.6	0.094	0.090	0.580	0.510	0.620	0.552
	0.7	0.085	0.081	0.521	0.458	0.557	0.496
	0.8	0.064	0.061	0.394	0.346	0.421	0.375
	0.9	0.035	0.033	0.213	0.187	0.228	0.203
0	0	0	0	0	0	0	

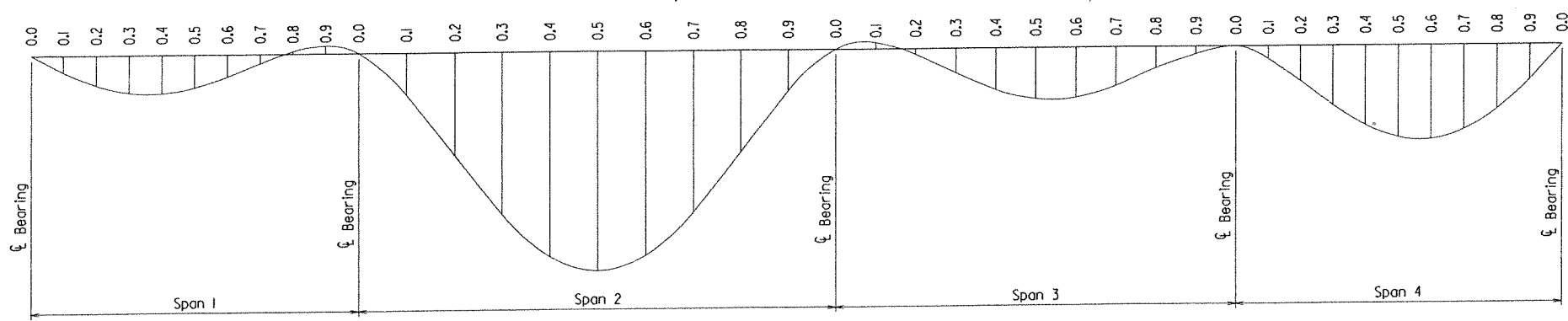


WEB SPICE
FIELD SPICE DETAIL
Scale: 1 1/2" = 1'-0"

TABLE FOR WELD

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

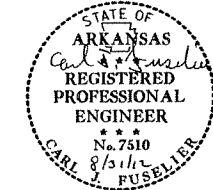
Note: When a fillet weld size, as shown on the plans, is larger than the minimum, the first pass shall be that specified for minimum size of fillet weld.



DEAD LOAD DEFLECTIONS DIAGRAM

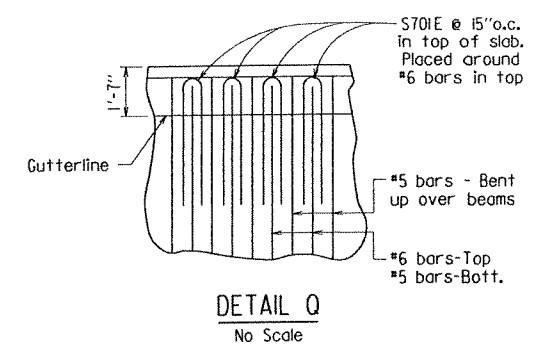
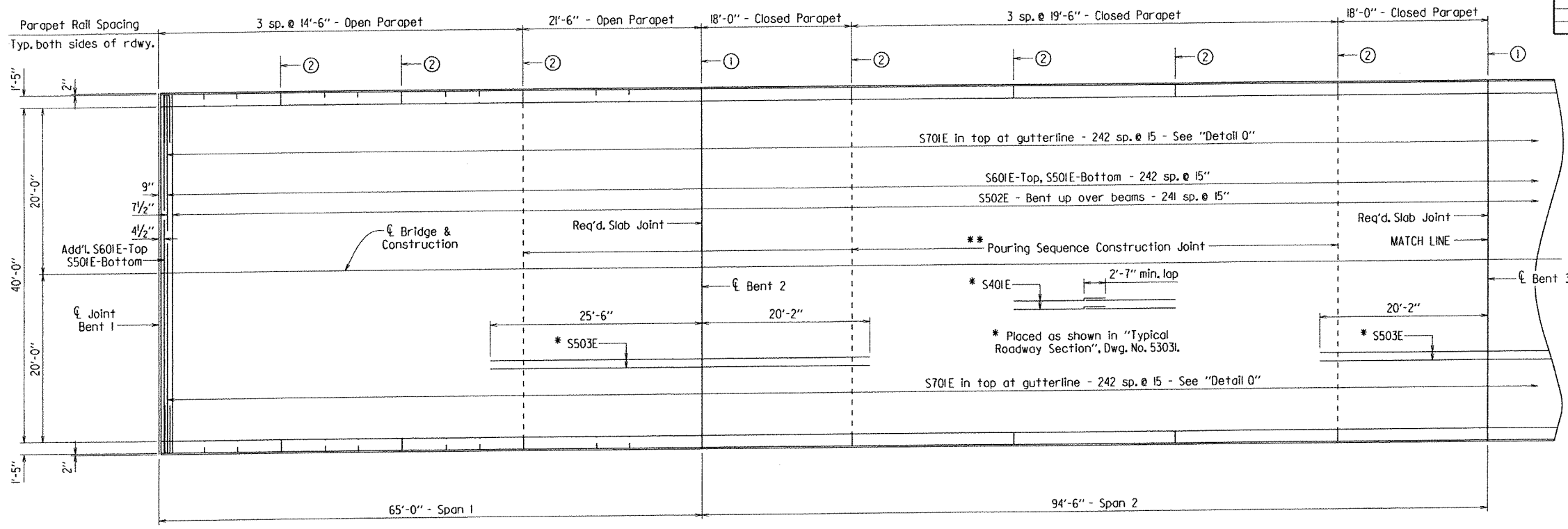
Note: Camber for Dead Load Deflection plus Vertical curve ± 1/4" tolerance. Deflections shown are from a chord from Bearing to Bearing. Vertical curve corrections not included. Negative sign (-) indicates point above chord.

SHEET 3 OF 7
DETAILS FOR 304'-0" CONTINUOUS
COMPOSITE W-BEAM UNIT
UNION PACIFIC RAILROAD & U.S. HWY. 165

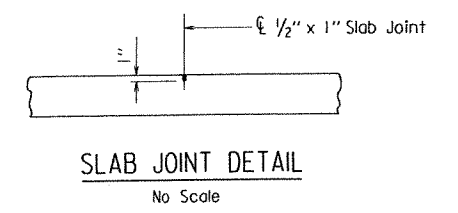


ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.
DRAWN BY: KDH DATE: 1-19-12 FILENAME: b020509.sl.dgn
CHECKED BY: BEF DATE: 7/14/12 SCALE: AS NOTED
DESIGNED BY: CSR DATE: 11/11
BRIDGE NO. 07230 DRAWING NO. 53033

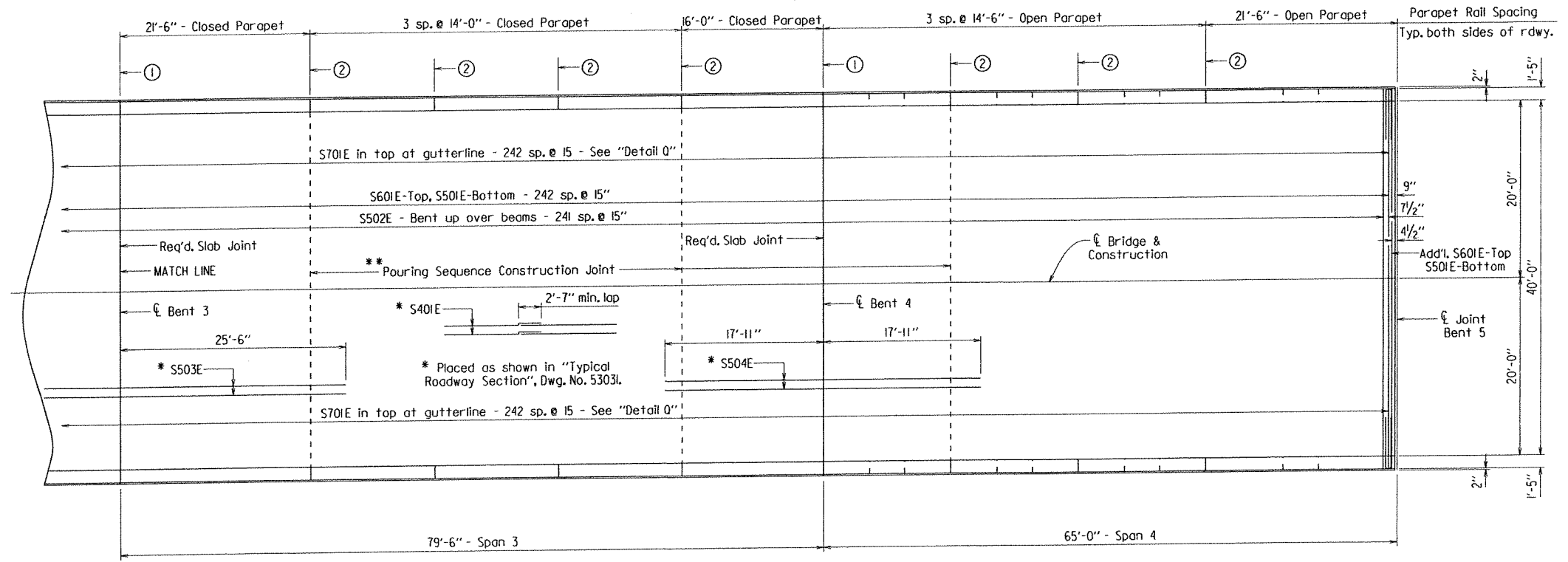
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				6	ARK.			
				JOB NO.	020509		49103	
				07230 -	304 FT. UNIT		-	53034



Use Type 3, 4, or 6 Joint Sealer. See subsections 501.02 (h) and 501.05 (j). Backer Rod filler will not be required. Joint Sealer shall be measured and paid for as Class (S1AE) 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 concrete has sufficiently set to allow sawing of the joint without damage to the slab. Slab joints shall be placed at all pouring sequence construction joints and required slab joint locations. The joint sealer shall extend across the deck slab (gutterline to gutterline). Slab joints shall align with parapet open joints.

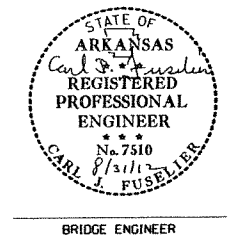


- ① Full-Depth Parapet Joint (1/4" to 1" max.) Stop 4" from top of slab. Typ. both sides of Rdwy.
- ② Partial-Depth Parapet Joint (1/4" to 1" max.) Stop 1'-2" from top of slab. Typ. both sides of Rdwy.



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

** See "Concrete Pouring Sequence", Dwg. No. 53036.

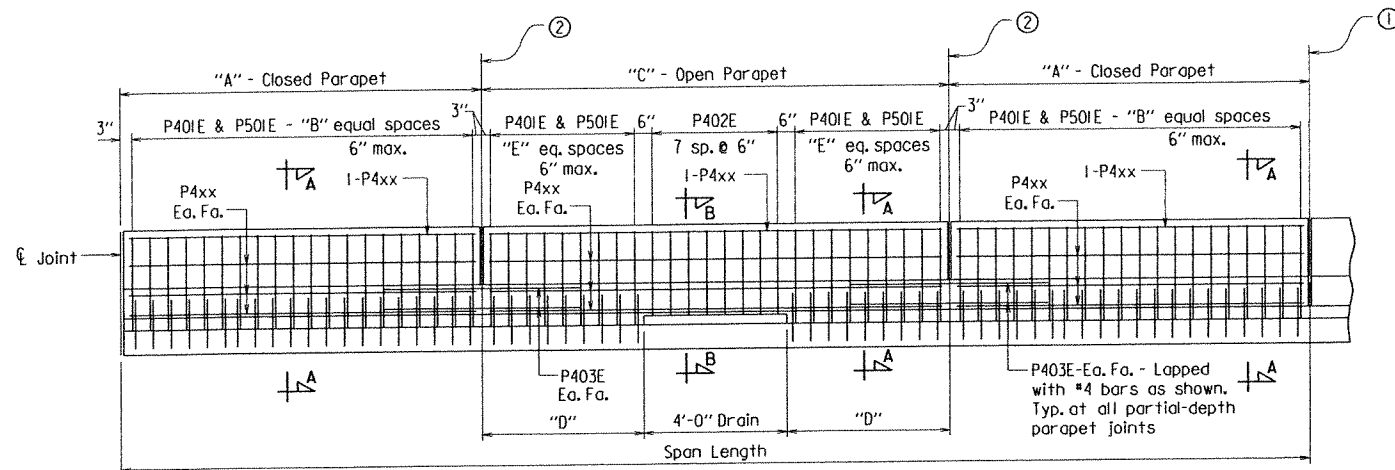


SHEET 4 OF 7
DETAILS FOR 304'-0" CONTINUOUS
COMPOSITE W-BEAM UNIT
UNION PACIFIC RAILROAD & U.S. HWY. 165

ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.
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CHECKED BY: BEF DATE: 7/16/12 SCALE: AS NOTED
DESIGNED BY: CSR DATE: 11/11
BRIDGE NO. 07230 DRAWING NO. 53034

PRINT DATE: 31-AUG-2012

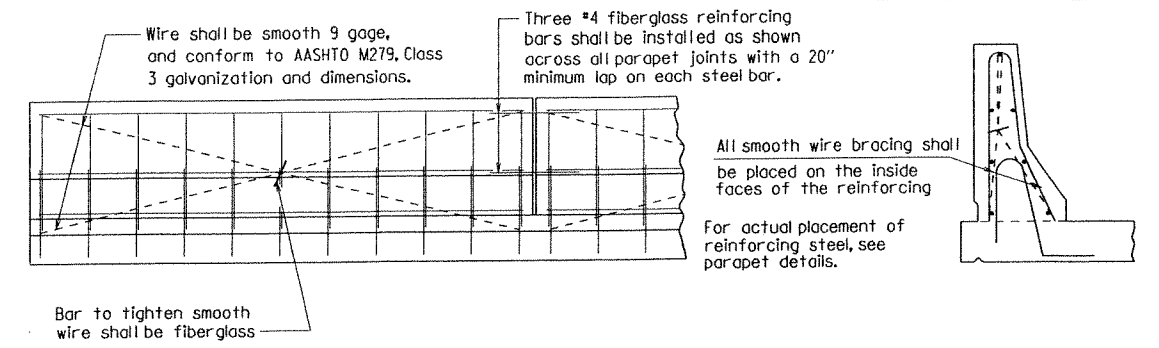
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	020509	50103		
				07230 -	304 FT. UNIT	-	53035	



① Full-Depth Parapet Joint (1/4" to 1" max.) as shown in "Reinforcing Plan", Dwg. No. 53034. Stop 4" from top of slab.

② Partial-Depth Parapet Joint (1/4" to 1" max.) as shown in "Reinforcing Plan", Dwg. No. 53034. Stop 1'-2" from top of slab.

DETAILS OF PARAPET RAIL
No Scale



Wire shall be smooth 9 gage, and conform to AASHTO M279, Class 3 galvanization and dimensions.

Three #4 fiberglass reinforcing bars shall be installed across all parapet joints with a 20" minimum lap on each steel bar.

All smooth wire bracing shall be placed on the inside faces of the reinforcing

For actual placement of reinforcing steel, see parapet details.

Bar to tighten smooth wire shall be fiberglass

All panels shall be braced as required to prevent racking. All parapet joints shall be sawed as soon as practical to a minimum width of 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.

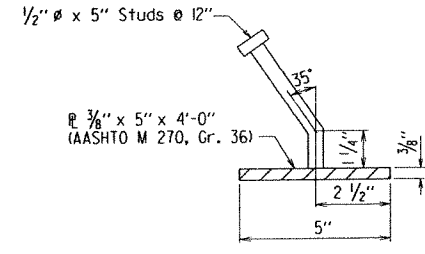
The extruded parapet shall conform to the horizontal and vertical lines shown on the plans or as directed by the Engineer and shall present a smooth, uniform appearance and texture. Exposed surface may be given a light brush finish or a Class 3, Textured Coating Finish, in place of the Class 2, Rubbed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

DETAILS OF OPTIONAL SLIPFORMING OF CONCRETE PARAPET RAIL
No Scale

TABLE OF PARAPET RAIL VARIABLES

"A" Closed Parapet	"B"	P4xx Bar	"C" Open Parapet	"D"	"E"	P4xx Bar
18'-0"	35	P404E	14'-6"	5'-3"	10	P409E
19'-6"	38	P405E				
21'-6"	42	P406E	21'-6"	8'-9"	17	P406E
14'-0"	27	P407E				
16'-0"	31	P408E				

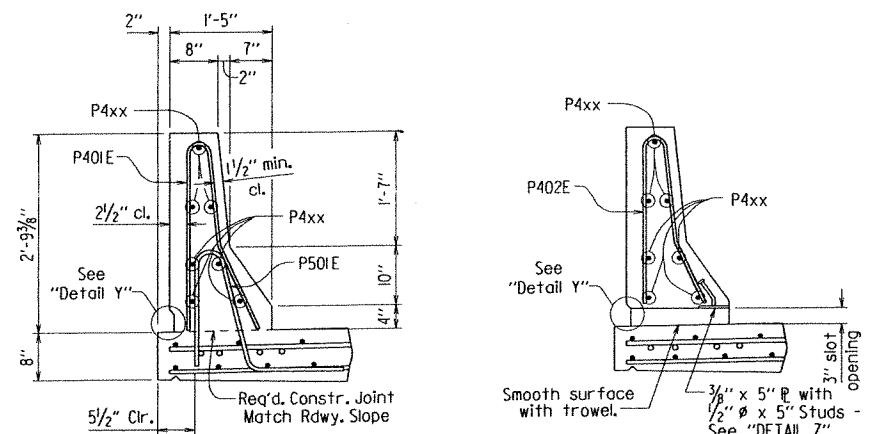
Note: For location of Open and Closed Parapet panels, see "Reinforcing Plan", Dwg. No. 53034.



DETAIL Z
No Scale

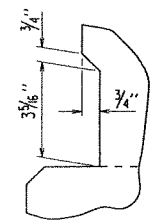
Note: The surfaces of the 3/8" plates which will not be in contact with concrete shall be painted with aluminum epoxy paint in accordance with Section 638, or as approved by the Engineer. Only one coat is required and shall be applied in the fabricator's shop. Pointing will not be paid for directly, but will be considered subsidiary to "Structural Steel in Beam Spans (M270, Gr. 50W)".

Parapet studs shall be 5" long, granular flux filled, solid fluxed or equal, and automatically end welded to the plate. Studs and plates shall meet the requirements of Section 807 and shall be measured and paid for as "Structural Steel in Beam Spans (M270, Gr. 50W)".



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

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



DETAIL Y
No Scale

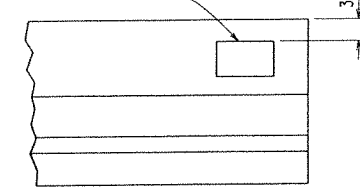
BAR LIST

MARK	NO. REQ'D.	LENGTH	P.D.	BENDING DIAGRAMS
S401E	972	36'-1"	Str.	<p>Dimensions are out to out of bars.</p>
P401E	1104	5'-6"	2"	
P402E	128	4'-10"	2"	
P403E	112	5'-6"	Str.	
P404E	28	17'-8"	Str.	
P405E	42	19'-2"	Str.	
P406E	42	21'-2"	Str.	
P407E	42	13'-8"	Str.	
P408E	14	15'-8"	Str.	
P409E	84	14'-2"	Str.	
S501E	245	42'-10"	Str.	
S502E	242	43'-8"	3"	
S503E	128	45'-8"	Str.	
S504E	64	35'-10"	Str.	
P501E	1104	4'-10"	3 3/4"	
S601E	245	42'-8"	Str.	
S701E	486	11'-10"	6 1/2"	

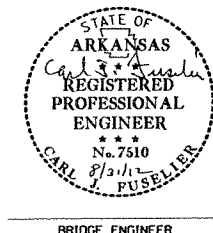
① 1/2" Over tolerance
No Under tolerance

Note: Bars designated with an "E" suffix to be Epoxy Coated.

Place Type D Bridge Name Plate on right parapet rail approx. 2'-0" from front face of backwall. (Beg. of bridge only)



NAME PLATE DETAIL
No Scale



BRIDGE ENGINEER

SHEET 5 OF 7
DETAILS FOR 304'-0" CONTINUOUS
COMPOSITE W-BEAM UNIT
UNION PACIFIC RAILROAD & U.S. HWY. 165

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

DRAWN BY: KDH DATE: 1-27-12 FILENAME: b020509_sl.dgn
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DESIGNED BY: CJP DATE: 11/11
BRIDGE NO. 07230 DRAWING NO. 53035

PRINT DATE: 31-AUG-2012

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.		020509	51	163
				①	07230 -	304 FT. UNIT	-	53036

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 (Fifth Edition, 2010 with 2010 Interims).

MATERIALS AND STRENGTHS
 Class (S/AE) Concrete $f'c = 4,000$ psi.
 Reinforcing Steel (AASHTO M31 or M53, Gr. 60) $f_y = 60,000$ psi.
 Structural Steel (AASHTO M 270, Gr. 50W) $F_y = 50,000$ psi.
 Structural Steel (AASHTO M 270, Gr. 36) $F_y = 36,000$ psi.

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

The superstructure details shown are for use when removable deck forming is used and are the basis for measurement of Class (S/AE) Concrete. See Standard Drawing No. I4991 for allowable modifications and for tolerances when Permanent Steel Bridge Deck Forms are used.

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 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. If a longitudinal strike-off is used, a vertical camber adjustment must be made in the strike-off to account for the future dead load deflection due to the rolling. A minimum of 72 hours shall elapse between completion of the slab and the pouring of the parapet railing.

REINFORCING STEEL: All reinforcing steel shall conform to AASHTO M31 or M53, Grade 60. The reinforcing steel is to be accurately located in the forms and firmly held in place by steel wire supports, sufficient in number and size to prevent displacement during the course of construction. The wire supports will not be paid for directly, but will be considered subsidiary to the item "Epoxy Coated Reinforcing Steel (Grade 60)".

STRUCTURAL STEEL: Structural steel shall be AASHTO M 270, Grade 50W unless otherwise noted and shall be paid for as "Structural Steel in Beam Spans (M 270, Gr. 50W)". Grade 50W steel shall not be painted. All exposed surfaces shall be cleaned in accordance with subsection 807.84(e) unless otherwise noted. Structural steel completely embedded in concrete may be AASHTO M 270, Gr. 36 or Gr. 50 unless otherwise noted.

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

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

Beams and field 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)".

All beams shall be blocked in their true position in the shop with webs horizontal in groups as specified in subsection 807.54(b)(2). The camber, length of sections, distance between bearings and openings of joints shall be measured with the beams in their true position and this information shall become part of the permanent records for this job. The component parts shall be match marked in this assembly and these marks shall be shown on the erection diagram. All beam dimensions are based on a temperature of 60 degrees F. A tolerance of $\frac{1}{4}$ " +/- is allowed for camber.

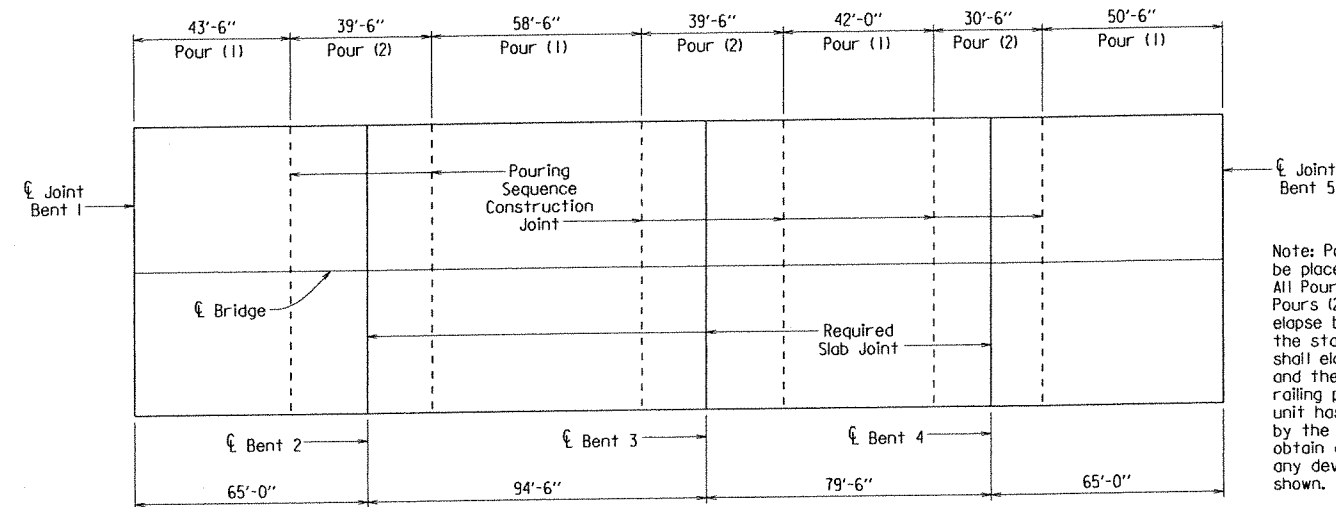
Flange field splice plates shall be cut and fabricated so that the primary direction of rolling is parallel to the direction of the main tensile and/or compressive stresses.

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

Field connections shall be bolted with high-strength bolts and shall be $\frac{3}{4}$ " bolts unless otherwise noted. Open holes shall be $\frac{1}{8}$ " unless otherwise noted. Bolts shall be placed with heads on the outside face of the exterior beam webs and on the bottom of the beam flanges. Holes for $\frac{3}{4}$ " high-strength bolts may be $\frac{1}{8}$ " diameter if a washer is supplied for use under both the nut and head of the bolt.

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.

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

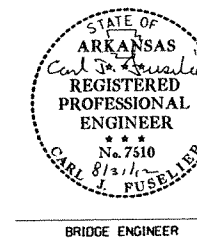


CONCRETE POURING SEQUENCE

No Scale

Note: Pours with the same number may be placed simultaneously or separately. All Pours (1) must be placed before Pours (2) can be placed. 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 rolling pours made before the entire slab unit has been placed must be approved by the Engineer. The Contractor must obtain approval from the Engineer for any deviations from the pouring sequence shown.

PRINT DATE: 31-AUG-2012

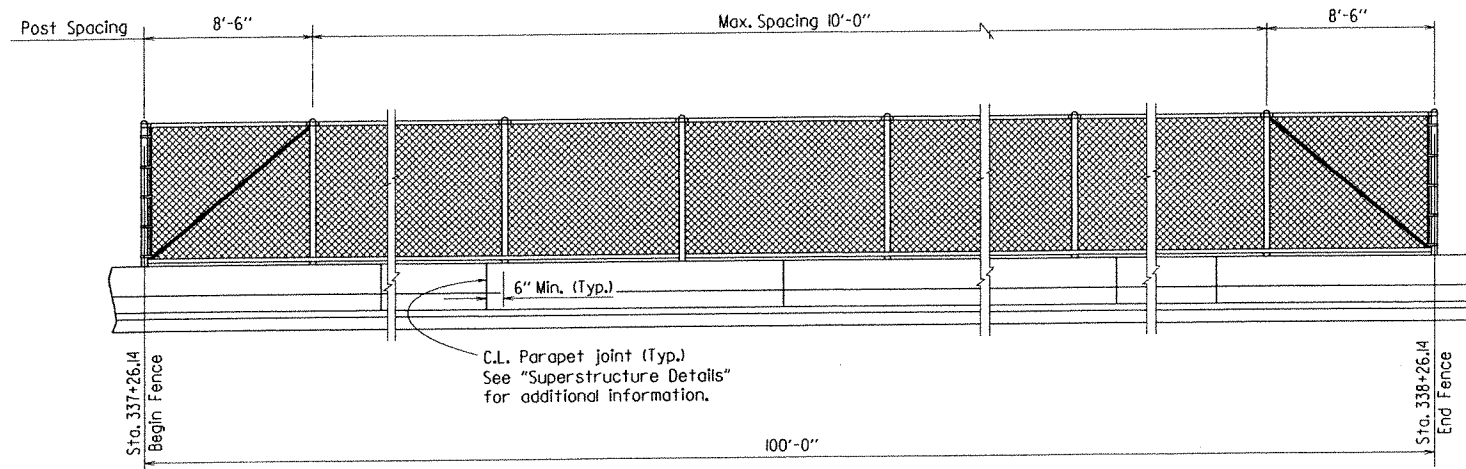


SHEET 6 OF 7
 DETAILS FOR 304'-0" CONTINUOUS
 COMPOSITE W-BEAM UNIT
 UNION PACIFIC RAILROAD & U.S. HWY. 165

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

DRAWN BY: KDH DATE: 1-30-12 FILENAME: b020509_sl.dgn
 CHECKED BY: BEF DATE: 7/16/12 SCALE: AS NOTED
 DESIGNED BY: CSR DATE: 11/11
 BRIDGE NO. 07230 DRAWING NO. 53036

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.	020509		52103	
				07230 - 304 FT. UNIT		- 53037		



LONGITUDINAL VIEW OF CHAIN LINK FENCE

NOTES:

Fence layout shall conform to the vertical and horizontal bridge alignments. Fence posts shall be set plumb (true vertical position). Parapet rail concrete shall be at least 7 days old before stretching and securing fabric to posts.

Cast in place anchor bolts shall be of stainless steel or high strength steel. Stainless steel anchor bolts shall conform to ASTM A193 or A320-Grade B8 with a minimum yield strength of 80,000 psi. High strength steel anchor bolts shall conform to AASHTO M164 or ASTM A354-Grade BC galvanized in accordance with AASHTO M232, or M298, Class 40 or 50.

Nuts: Nuts shall conform to AASHTO M292, Gr. 8A (stainless steel) or galvanized in accordance with AASHTO M232 or M298, Class 40 or 50.

Threads: Threads on bolts, screws, and nuts shall conform to American Standard Course Series, Class 2 Fit, ASA Specification B11.

Washers: Washers shall be stainless steel and conform to the requirements of ASTM A276 or A167-Type 302 with dimensions meeting ASTM F436, or high strength steel conforming to AASHTO M293 and galvanized in accordance with AASHTO M232 or M298, Class 40 or 50.

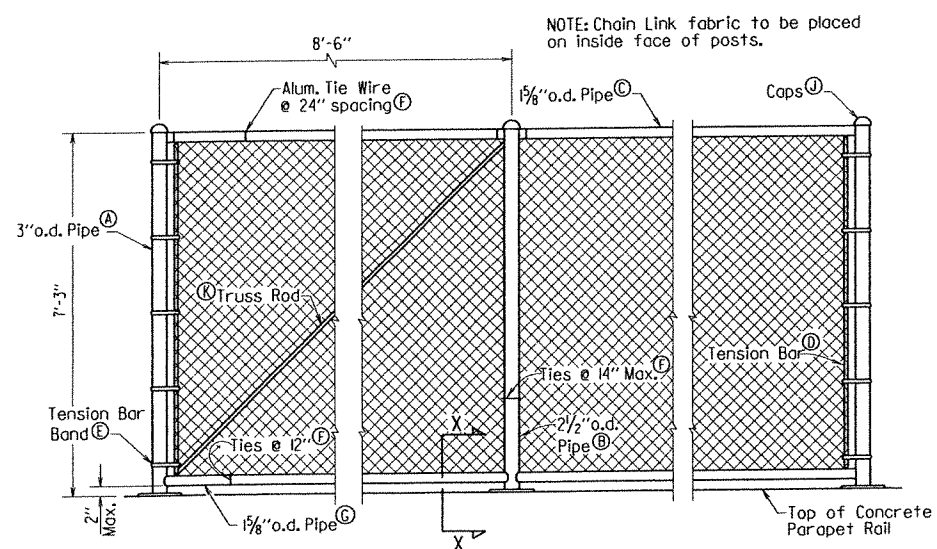
Base plates shall not be placed upon areas that are improperly finished, deformed, or irregular.

Plate Washers shall be stainless steel and conform to the requirements of ASTM A167-Type 302 or AASHTO M270, Gr. 36, galvanized in accordance with AASHTO M232 or M298, Class 40 or 50. Plate Washers shall have dimensions meeting the requirements of ANSI/ASME B18.22.1, Type A plain washer (Wide Series).

Chain Link Fence attached to Bridge and including tapered panel section shall be paid for as "7' Steel Chain Link Fence". For additional details of Chain Link Fence, See Standard Drawing WF-3.

Neoprene pad and template plates shall not be paid directly, but shall be considered incidental to the unit price bid for item "7' Steel Chain Link Fence".

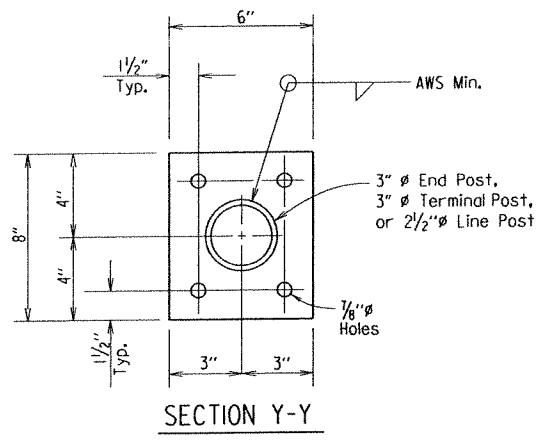
Mixing of stainless steel and galvanized fasteners will not be permitted.



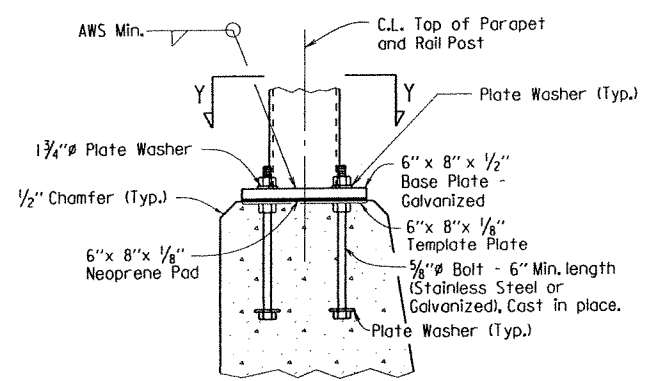
DETAIL OF CHAIN LINK FENCE

- (A) END POST: 3" O.D.
- (B) LINE POST: 2 1/2" O.D.
- (C) TOP RAIL: 1 5/8" O.D.
- (D) TENSION BAR: 3/8" x 3/4" Bar
- (E) TENSION BAR BAND: 3/4" x .074 w/ 3/16" x 1 1/4" Bolt (1 Band Top and Bottom w/ 15" Max. spaces)
- (F) TIE WIRE: 9 Ga. Aluminum
- (G) BOTTOM RAIL: 1 5/8" O.D.
- (H) FABRIC: 9 Ga. 2" Mesh w/ Knocklug or Twisting Selvage
- (J) CAPS: All Posts shall be Capped and Shall Conform to ASTM F626-84
- (K) TRUSS ROD: Min. of 3/8" Round with Tighteners and Fittings

NOTE: Chain Link Fence attached to Bridge and including tapered panel section shall be paid for as "7' Steel Chain Link Fence". For additional details of Chain Link Fence, See Standard Drawing WF-3.

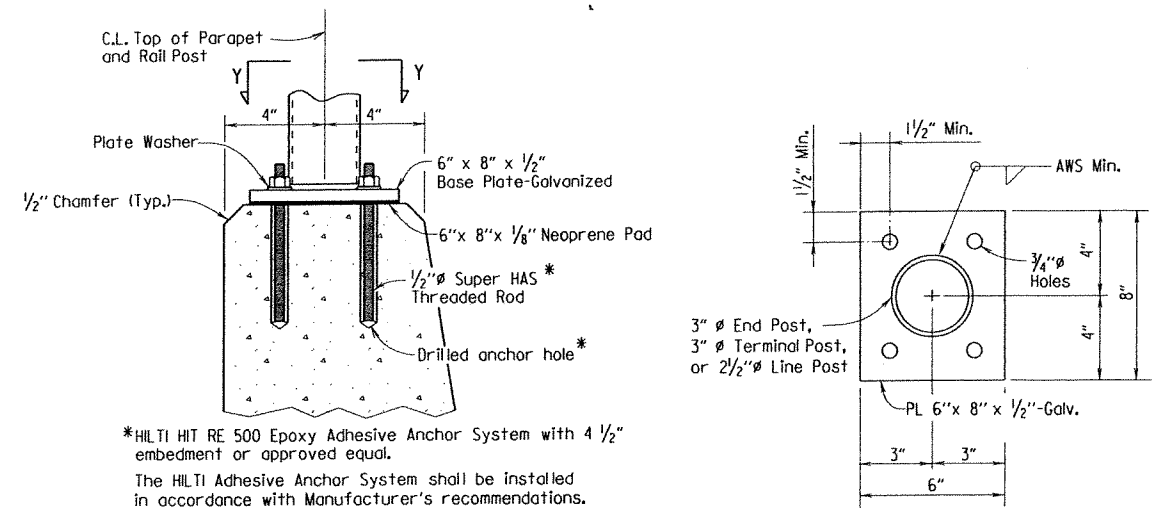


SECTION Y-Y



SECTION X-X

DETAILS OF POST ANCHOR SYSTEM



SECTION X-X

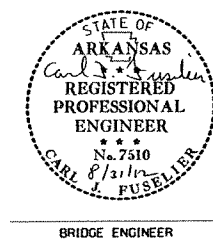
SECTION Y-Y

DETAILS OF ALTERNATE POST ANCHOR SYSTEM (EPOXY ADHESIVE ANCHORS)

SHEET 7 OF 7
 DETAILS FOR 304'-0" CONTINUOUS
 COMPOSITE W-BEAM UNIT
 UNION PACIFIC RAILROAD & U.S. HWY. 165

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

DRAWN BY: KDH DATE: 1-30-12 FILENAME: b020509.sldgn
 CHECKED BY: BEF DATE: 7/16/12 SCALE: AS NOTED
 DESIGNED BY: STD DATE: BRIDGE ENGINEER
 BRIDGE NO. 07230 DRAWING NO. 53037



PRINT DATE: 31-AUG-2012

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
						020509	53103	
				① 07230 - JOINT DETAILS - 53038				

SILICONE JOINT DATA

Bent Number	"A" Width Perpendicular to Joint at 24 Hour Average Temperature ① of:			"B" Perpendicular to Joint at 60°F	Bumper Plate Size	"D"
	40°F	60°F	80°F			
1 & 5	2 1/4"	2"	1 3/4"	2 1/4"	1" x 1"	4 1/2"

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

Notes: The temperature limitations recommended by the sealant manufacturer shall be observed.

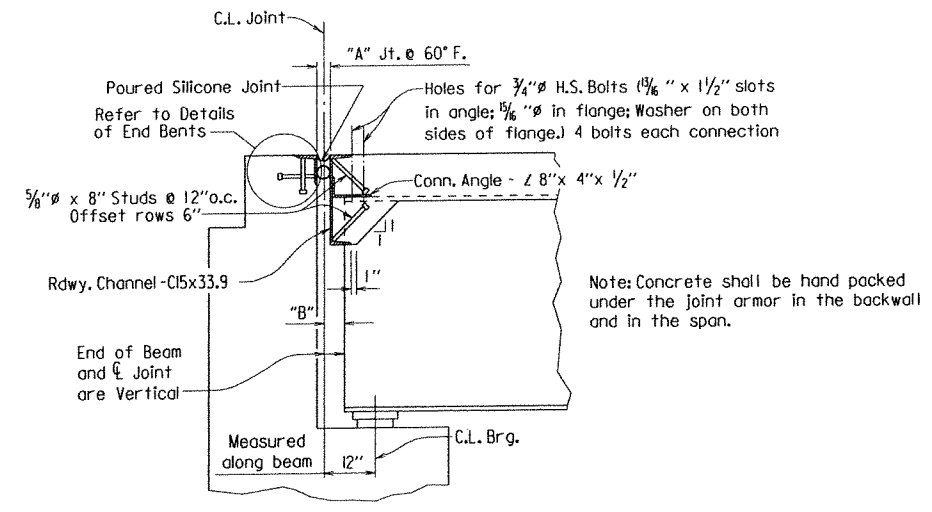
The sealant shall be installed only when the average 24 hour air temperature is between 40° and 80°F.

② BACKER ROD NOTE:

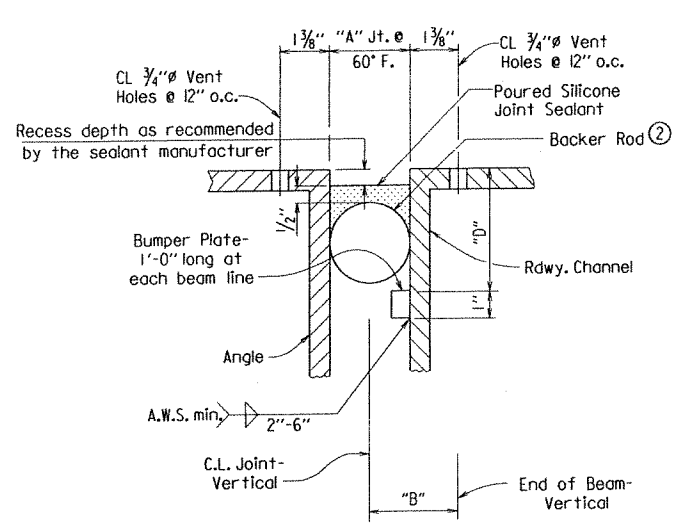
Use an appropriately sized backer rod at the depth shown in the manufacturer's literature based on the joint width at the time of sealing.

Except as noted, do not install more backer rod than can be sealed in the same day.

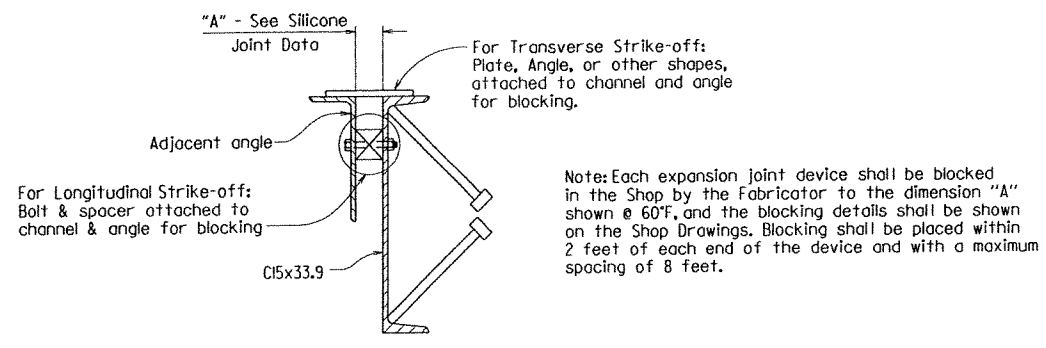
The contractor shall verify separation of the backer rod from the joint material after the joint material has set.



SECTION THRU JOINT AT BENTS 1 & 5
No Scale



DETAIL OF POURED SILICONE JOINT SEAL
No Scale

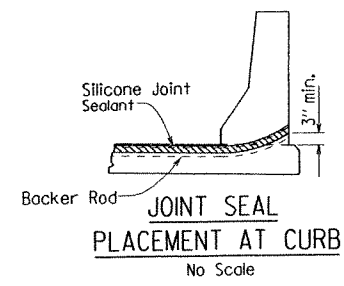


DETAILS FOR BLOCKING EXPANSION JOINT DEVICE
No Scale

EXPANSION DEVICE INSTALLATION AT END BENTS

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

- 1) The concrete span pour adjacent to joint shall be placed before the end bent backwall is placed. After the end bent backwall forms are in place and the beams erected, the blocked expansion device shall be installed and adjusted for grade. All connection bolts shall be fully tightened prior to placing the deck concrete adjacent to the bent. Immediately prior to pouring the backwall concrete, the blocking shall be removed, the opening adjusted for temperature, and the backwall constructed.
- 2) The backwall shall be poured to the optional construction joint after beams are erected. The blocked expansion device shall be installed and adjusted for grade. All connection bolts shall be fully tightened prior to placing the deck concrete adjacent to the bent. Immediately prior to pouring the remainder of the backwall concrete, the blocking shall be removed and the opening adjusted for temperature. Backfill shall not be placed behind the backwall until the deck concrete on the adjacent span has been placed.



JOINT SEAL PLACEMENT AT CURB
No Scale



BRIDGE ENGINEER

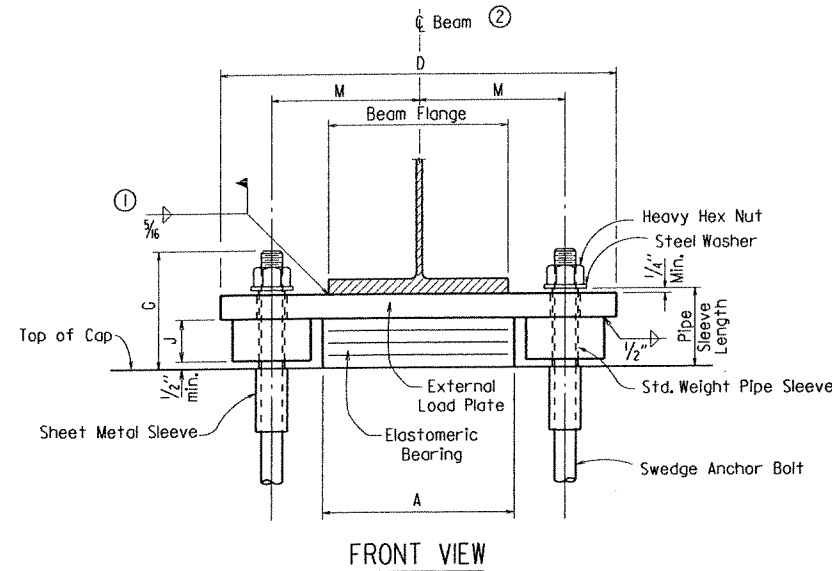
DETAILS OF JOINTS
UNION PACIFIC RAILROAD AND U.S. HWY. 165

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

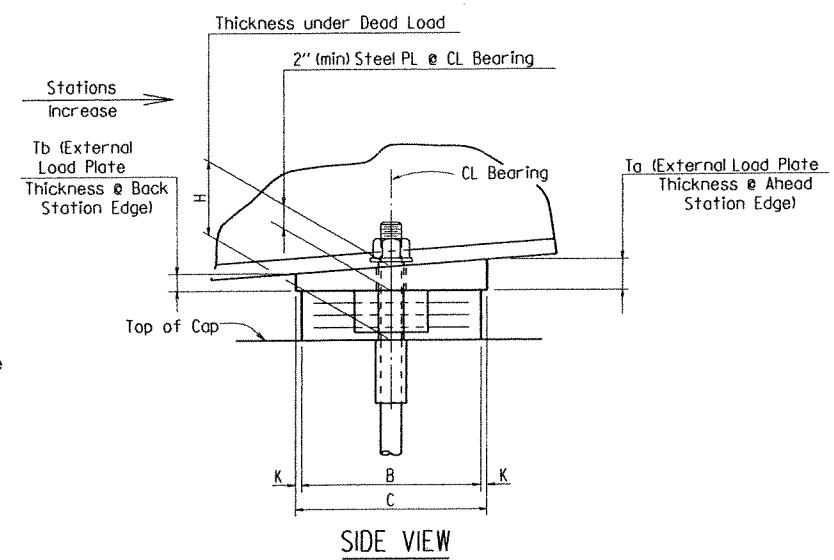
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CHECKED BY: BEE DATE: 7/16/12 SCALE: AS NOTED
DESIGNED BY: CSR DATE: 1/1/11
BRIDGE NO. 07230 DRAWING NO. 53038

PRINT DATE: 8/31/2012

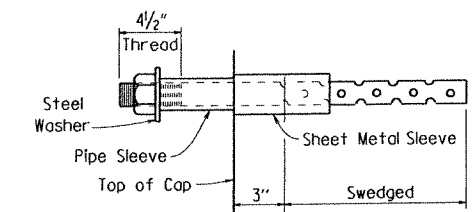
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.	020509	54	103
				JOB NO.		020509	54/103	
				07230 - ELASTO. BRGS. - 53039				



- ① Care shall be taken to ensure that the external load plate is in full and complete contact with the beam flange before welding begins.
- ② Elastomeric pad shall be aligned with C of Beam



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



ANCHOR BOLT DETAIL

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

If Anchor Bolts are to be drilled and grouted in place, the Galvanized Sheet Metal Sleeves shall be cast in place as shown. Sleeves shall be dry packed with styrofoam, urethane foam or approved equal prior to pouring of concrete. After pouring of the cap and prior to erection of Structural Steel, the dry pack shall be removed and holes for the anchor bolts shall be accurately drilled into the masonry. Bolts placed in drilled holes shall be accurately set and fixed using a OPL approved epoxy or non-shrink grout that completely fills the holes. Galvanized Sheet Metal Sleeves will not be paid for directly, but will be considered subsidiary to the item "Structural Steel in Beam Spans (M270, Gr. 50W)".

GENERAL NOTES

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

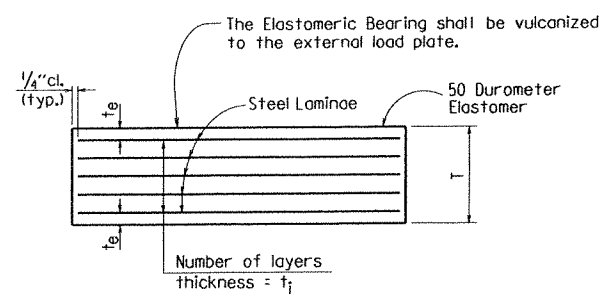
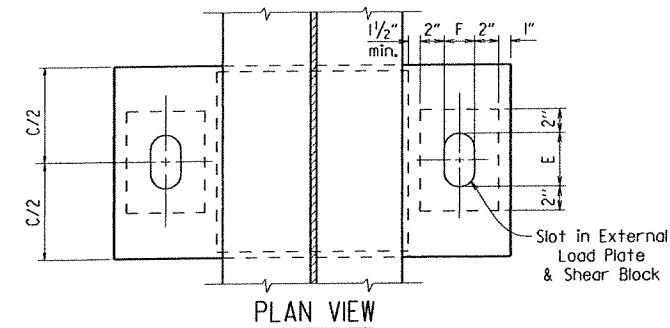
External load plates and shear blocks shall conform to AASHTO M270, Grade 50W. Pipe sleeves shall be ASTM A53, Grade B, and shall be galvanized to conform to AASHTO M 232, Class C or AASHTO M 298, Class 50.

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

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

Pipe sleeves, anchor bolts, washers and nuts shall be paid for at the unit price bid for "Structural Steel in Beam Spans (M270, Gr. 50W)". External load plates and shear blocks will not be measured or paid for separately but will be considered included in the unit bid price for "Elastomeric Bearings".

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



te = thickness of elastomer cover on top and bottom of pad
ti = thickness of elastomer between steel laminae
N = number of elastomer layers of thickness ti

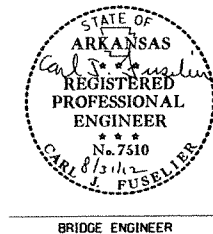
ELASTOMERIC BEARING

TABLE OF FABRICATOR VARIABLES

BRIDGE NO.	LOCATION		BEARING TYPE	NO. of BEARINGS EACH BENT	* MAXIMUM DESIGN LOAD (KIPS)	G	H	ELASTOMERIC PAD					EXTERNAL LOAD PLATE							ANCHOR BOLT									
								A	B	N	ti	te	NO. & THICKNESS OF STEEL LAMINAE	T	C	D	E	F	J	K	M	To	Tb	ANCHOR BOLT		PIPE SLEEVE SIZE (Ø x L)	SHEET METAL SLEEVE SIZE (Ø x L)	STEEL WASHER SIZE (Ø, D.)	
																								Ø	L				GRADE
07230	1 & 5	304'	All	Exp.	5	112	8"	5"	13"	9"	4	1/2"	1/4"	5 @ 12 Gauge	3"	10"	31 5/8"	5 1/8"	2 5/8"	2 1/2"	1 1/2"	11 1/2"	2.00"	2.00"	1 3/4" Ø x 29"	55	2" Ø x 5 1/4"	4" Ø x 8"	3 3/8"
	2 - 4	304'	All	Fix	5	278	7 5/8"	4 3/8"	16	13 1/2"	3	1/2"	1/4"	4 @ 12 Gauge	2 3/8"	14 1/2"	35 5/8"	3 1/8"	3 1/8"	1 1/8"	1 1/2"	13 3/4"	2.00"	2.00"	2" Ø x 31"	55	2 1/2" Ø x 4 5/8"	4" Ø x 8"	3 3/4"

* Maximum Design Load = Service I Limit State

Tabular Data by: KDH Date: 8-3-12
Checked by: BEF Date: 8/7/12
Designed by: CSR Date: 11/11

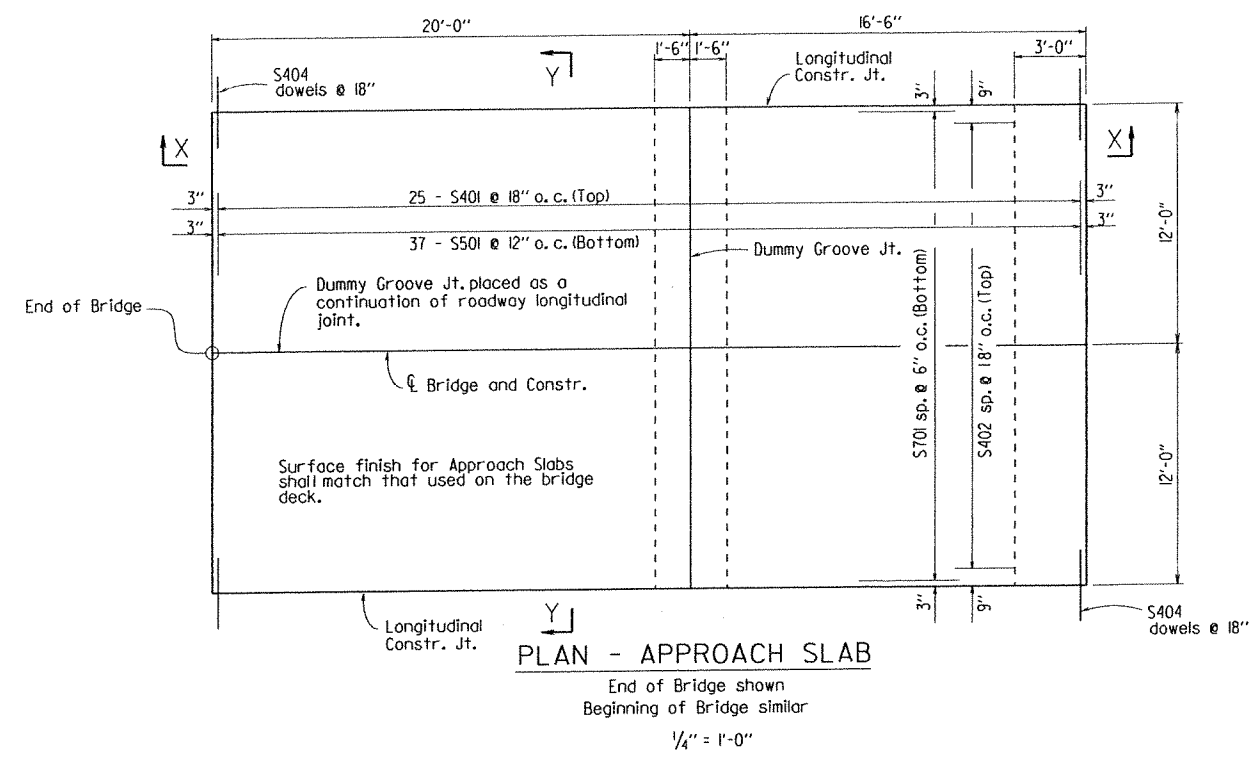


DETAILS OF ELASTOMERIC BEARINGS WITH SHEAR BLOCKS UNION PACIFIC RAILROAD AND U.S. HWY. 165 ROUTE SEC. ARKANSAS STATE HIGHWAY COMMISSION LITTLE ROCK, ARK.

DRAWN BY: MJT DATE: Nov. 12, 96 FILENAME: b020509_el.dgn
CHECKED BY: AMS DATE: Nov. 15, 96 SCALE: NONE
DESIGNED BY: Std. DATE: BRIDGE NO. 07230 DRAWING NO. 53039

PRINT DATE: 8/31/2012

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.	020509		53103	
				① 07230 - APPROACH SLAB - 53040				



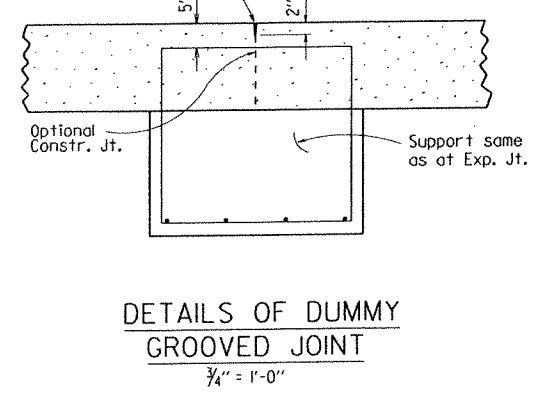
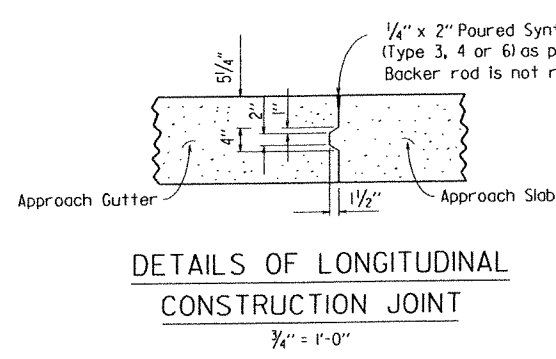
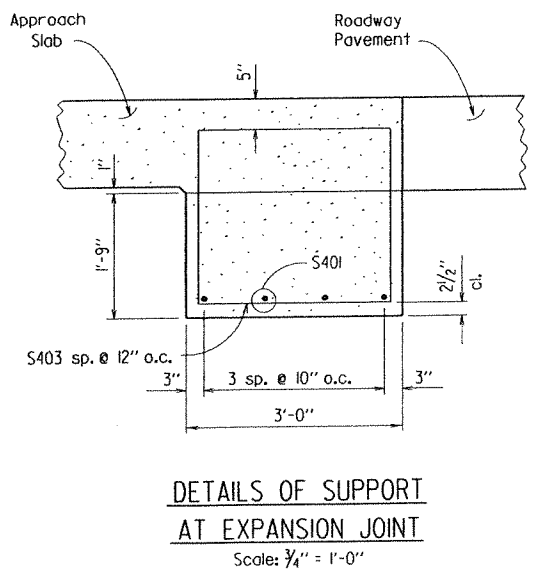
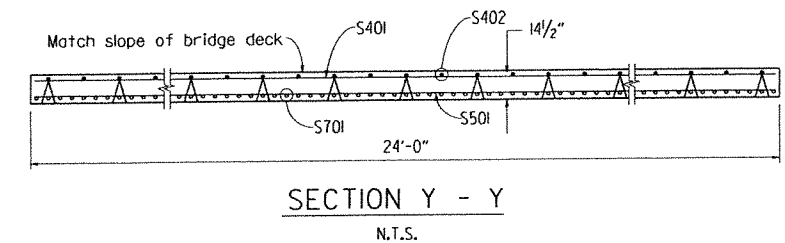
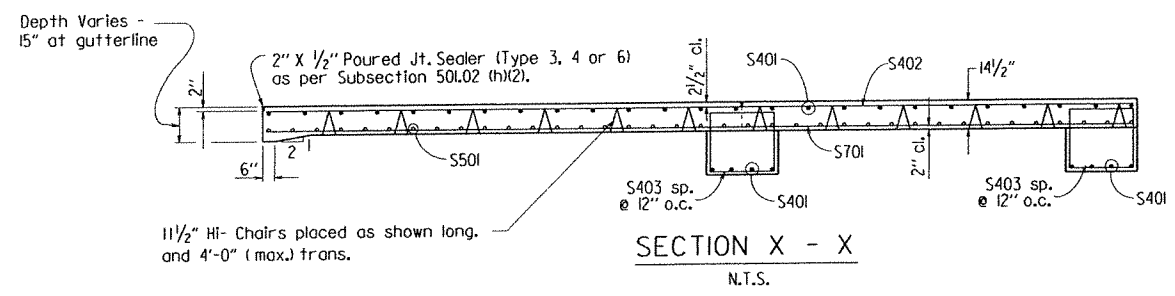
BAR LIST

Mark	No. Req'd.	Length
S401	33	23'-8"
S402	16	36'-2"
S403	48	10'-4"
S404	50	3'-0"
S501	37	23'-8"
S701	48	36'-2"

TABLE OF QUANTITIES FOR ONE APPROACH SLAB

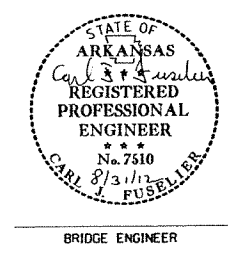
Reinforcing Steel (lb.)	Concrete (Cu. Yds.)
5802	49.00

Note:
 The 1/2" Preformed Joint AASHTO M53 Type I shall be eliminated between concrete faces where dowel bars are used to tie approach slabs and gutters to the bridge components. See End Bent details.



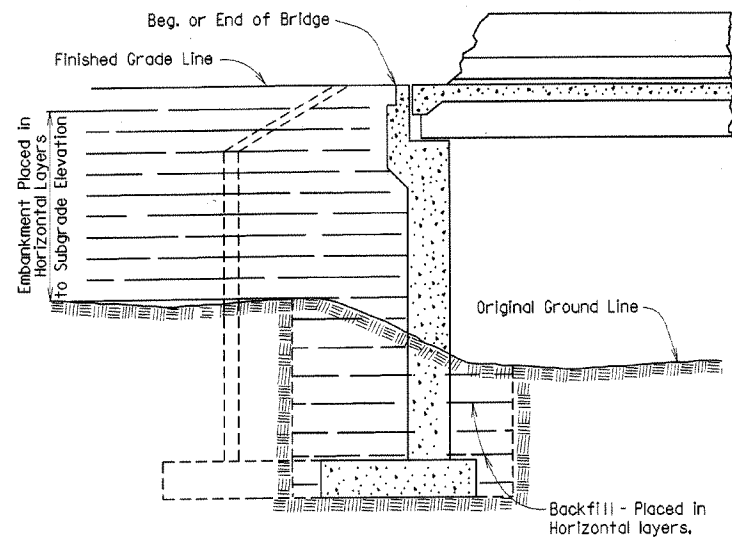
GENERAL NOTES
 Concrete shall be Class (SAE) (f'c = 4,000 psi).
 Reinforcement Steel shall conform to AASHTO M31 or M53, Grade 60 (fy = 60,000 psi).
 Approach Slabs will be measured and paid for in accordance with Section 504.
 Joint sealer included in the pay item "Approach Slab".

DETAILS OF TYPE SPECIAL APPROACH SLAB
 UNION PACIFIC RAILROAD & U.S. HWY. 165
 ROUTE SEC.
 ARKANSAS STATE HIGHWAY COMMISSION
 LITTLE ROCK, ARK.
 DRAWN BY: MCB DATE: 06/28/12 FILENAME: b020509_as.dgn
 CHECKED BY: ADN DATE: 7/4/12 SCALE: AS SHOWN
 DESIGNED BY: STD DATE: BRIDGE NO. 07230 DRAWING NO. 53040

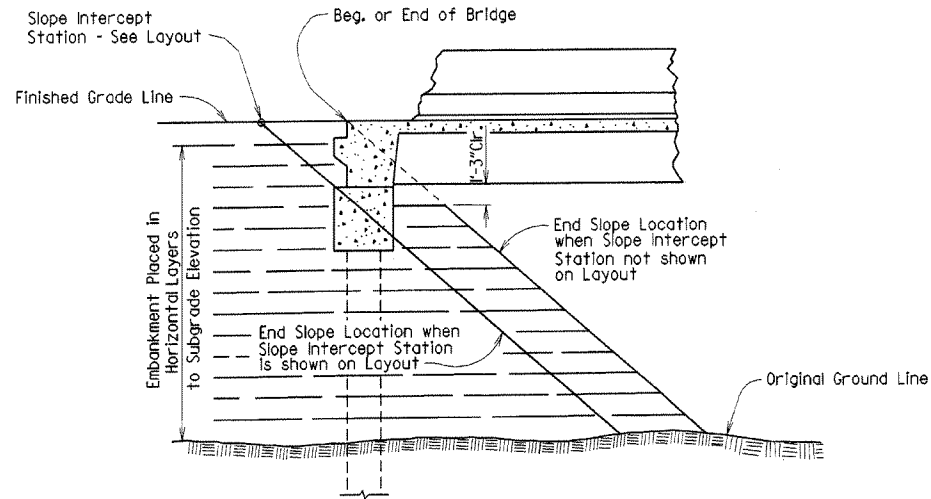


PRINT DATE: 8/31/2012

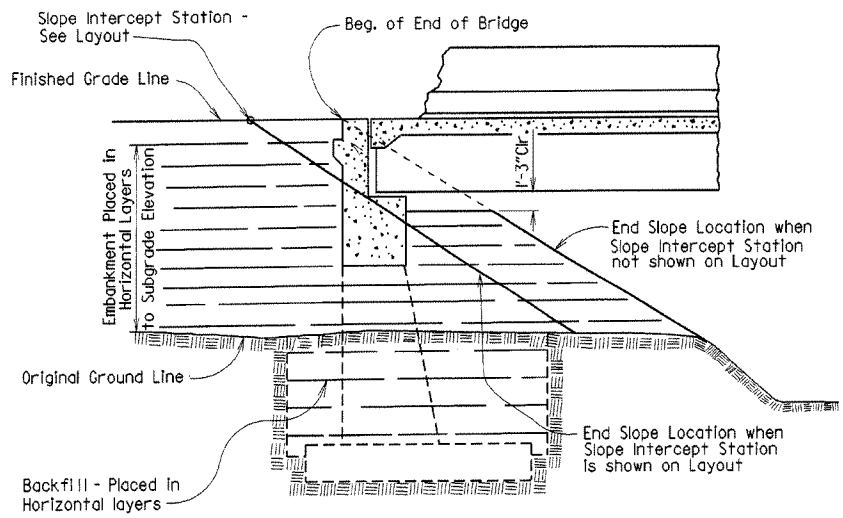
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							JOB NO.	
① EMBANKMENT & BACKFILL								1888A



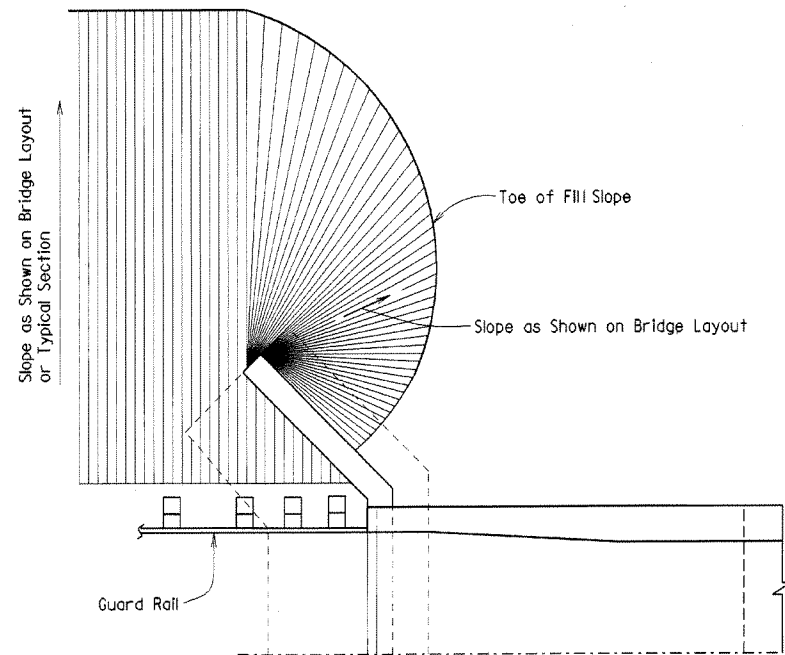
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT VERTICAL WALL ABUTMENTS



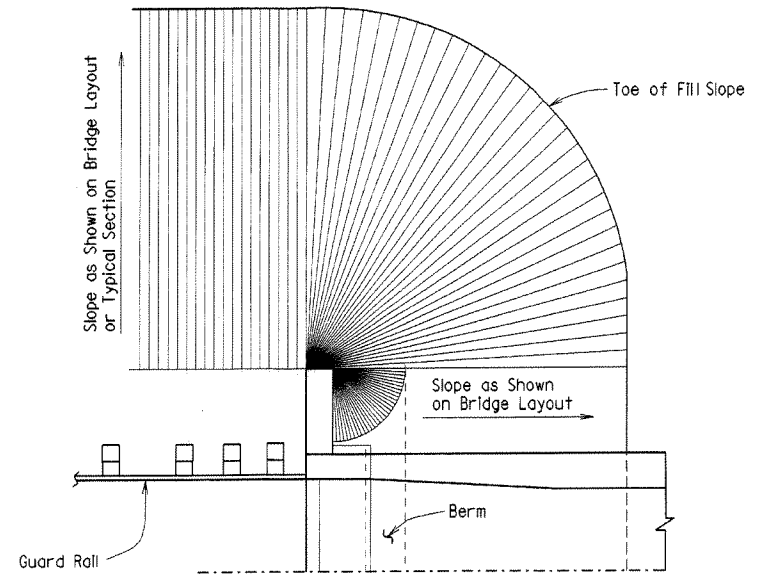
EMBANKMENT CONSTRUCTION AT SPILL-THROUGH PILE END BENTS



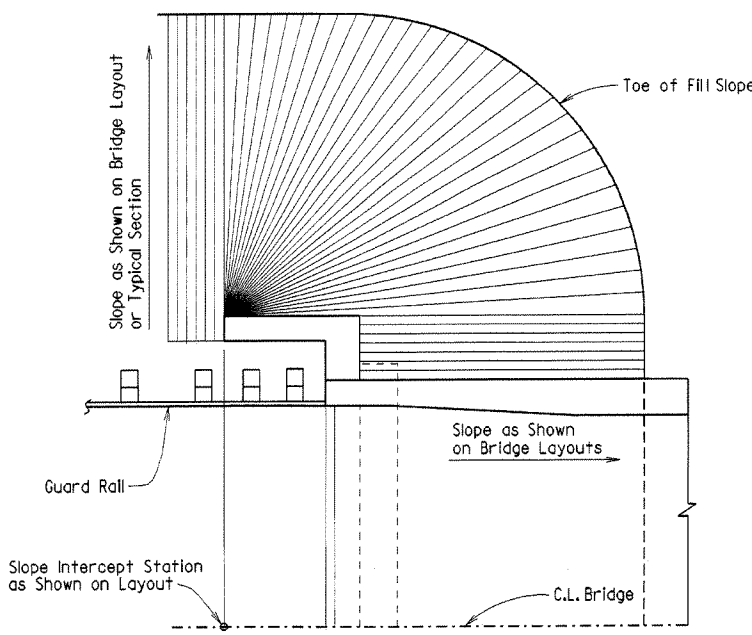
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT SPILL-THROUGH END BENTS



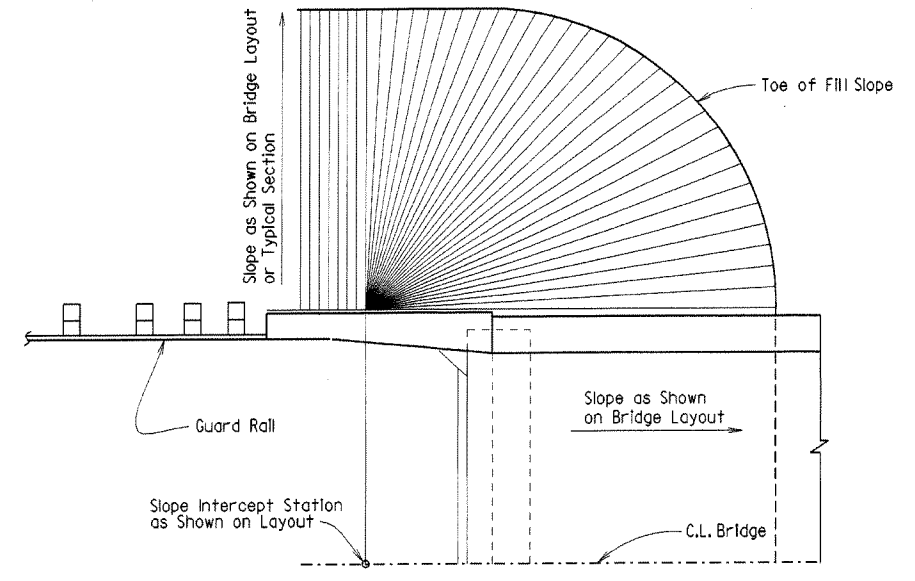
VERTICAL WALL ABUTMENTS



SPILL-THROUGH END BENTS WITH STUB WING



SPILL-THROUGH END BENTS WITH TURNBACK WING



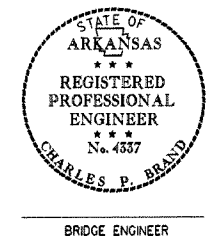
SPILL-THROUGH END BENTS WITH TRANSITION WING

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.

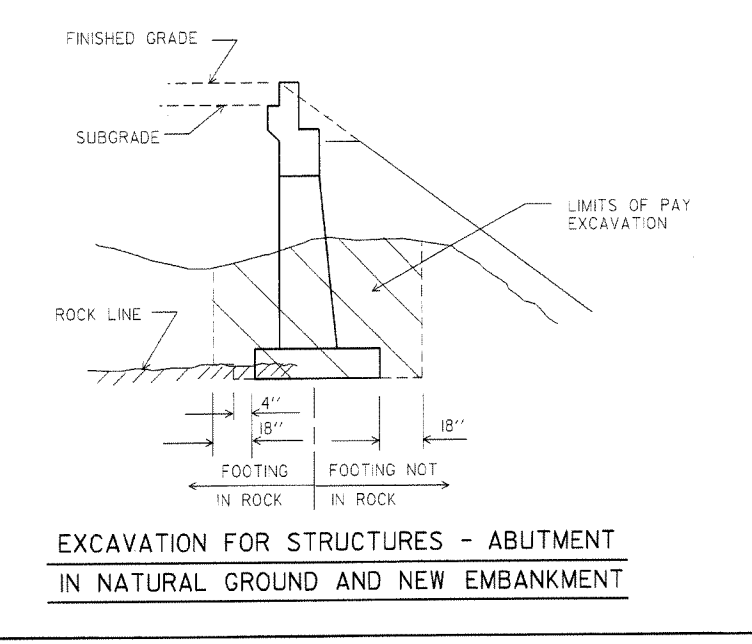
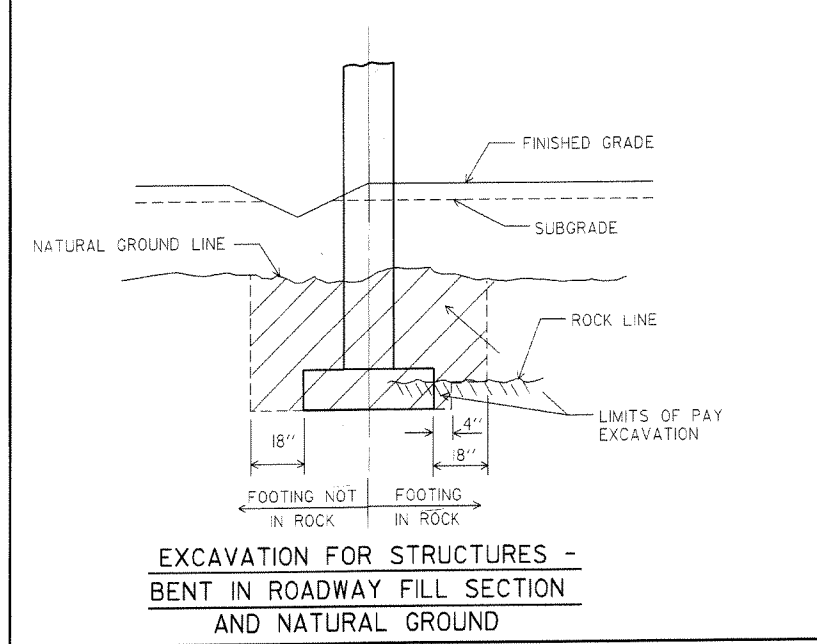
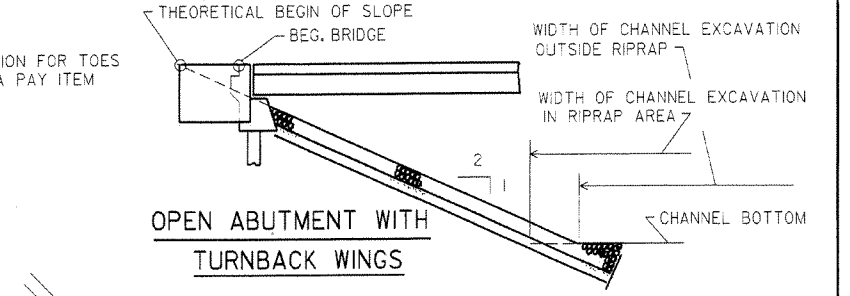
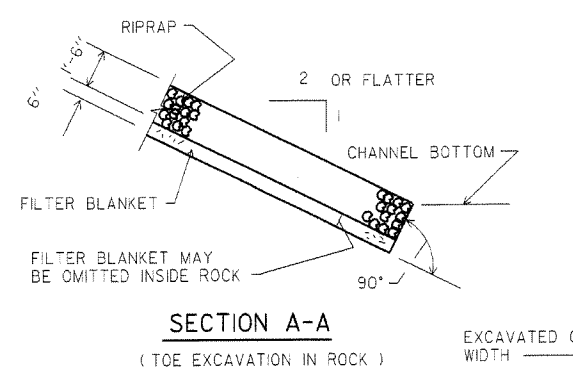
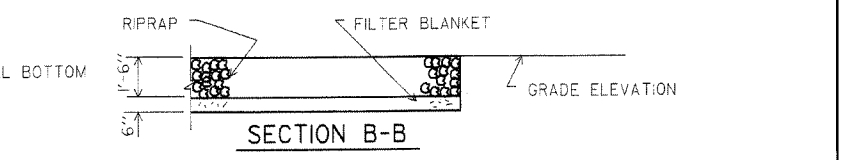
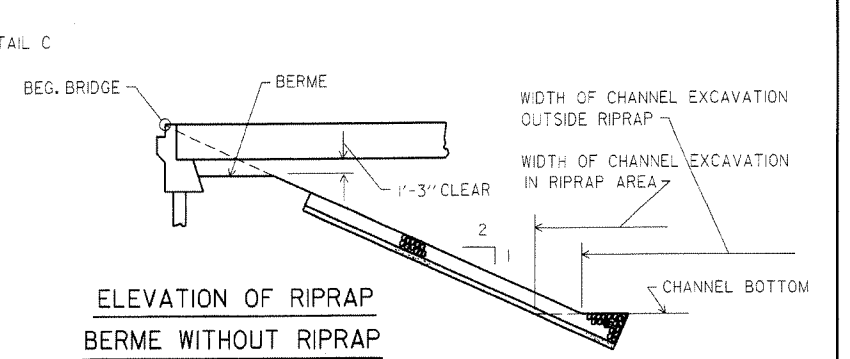
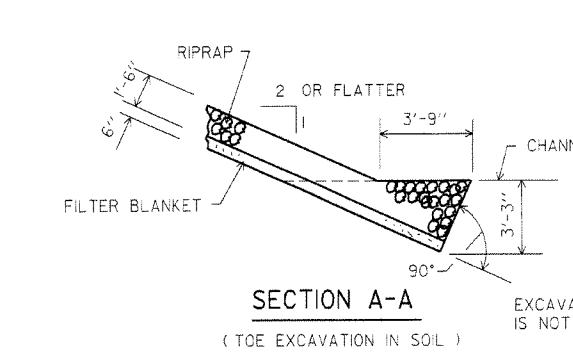
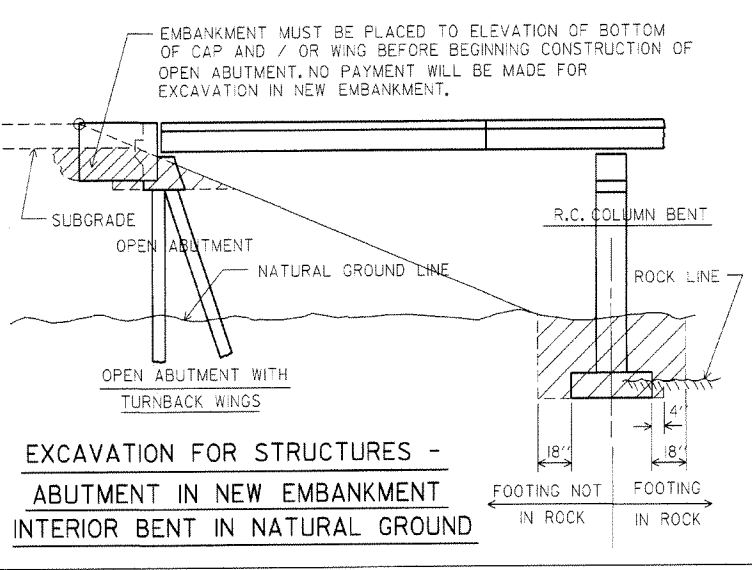
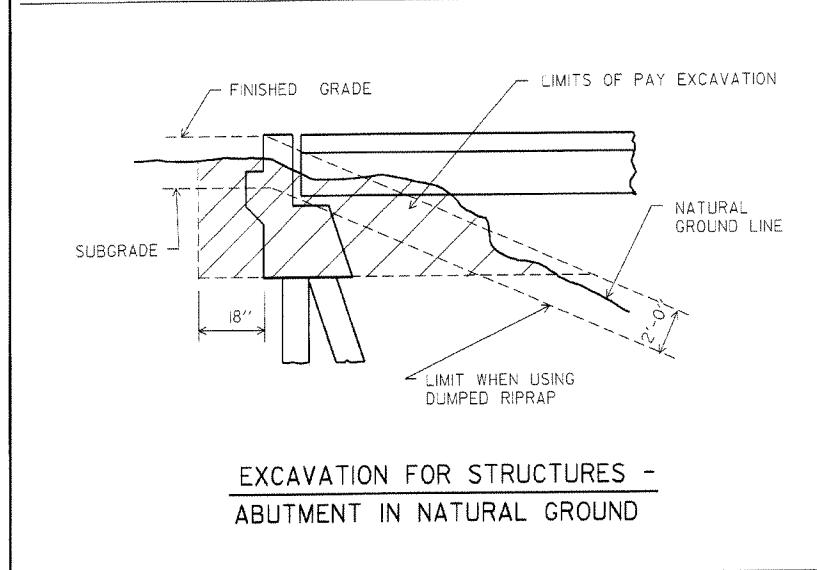
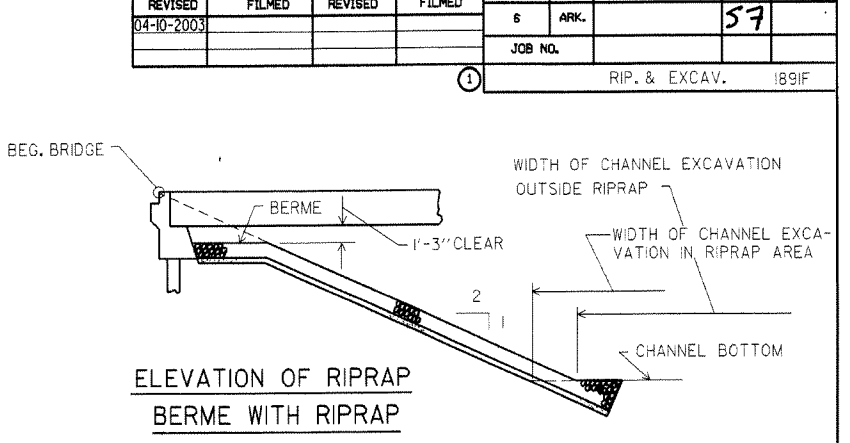
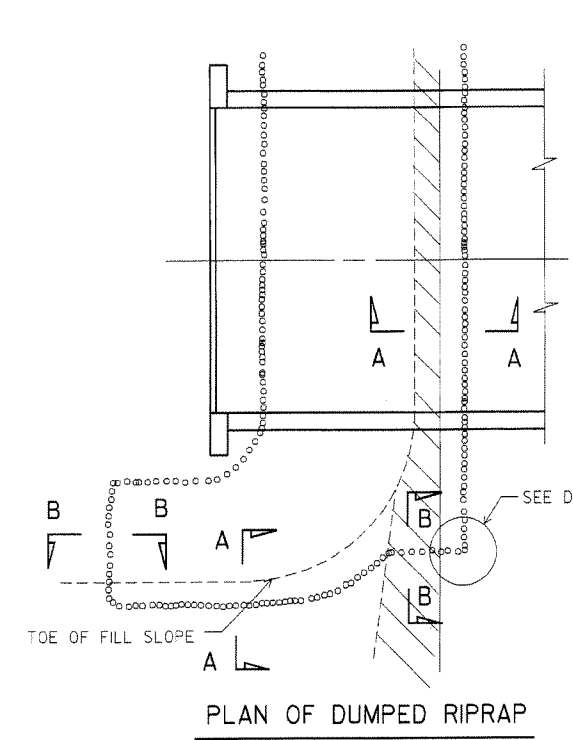
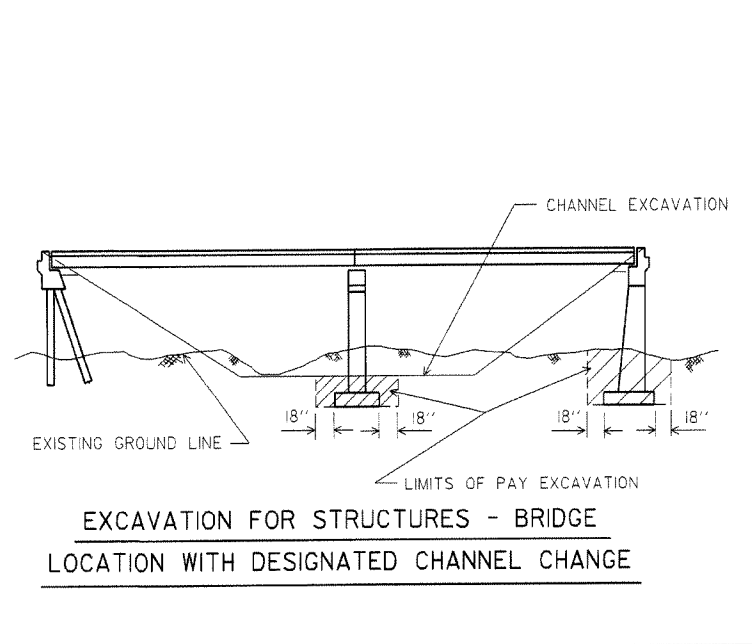
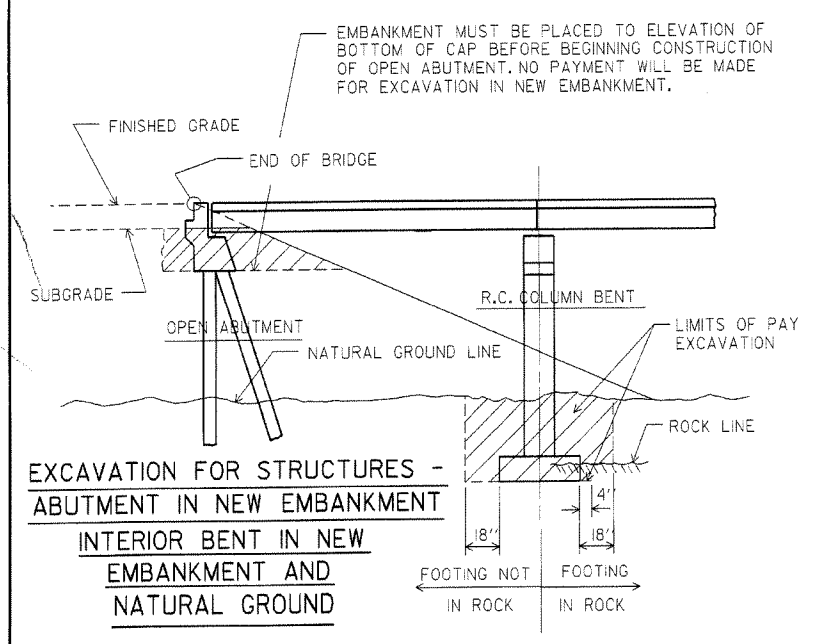
Revised and redrawn MJT 04-10-2003
 Chk'd. By: cJF 04-10-2003



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

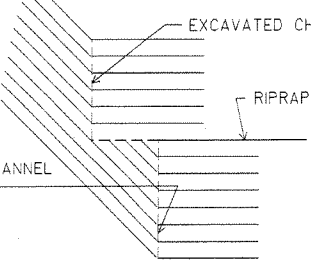
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DEPT. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
04-10-2003				6	ARK.		57	
JOB NO.							RIP. & EXCAV. 1891F	



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. 4537
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
9-8-11				6	ARK.		59	
1-3-13								
1-10-13								

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.

Line	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	

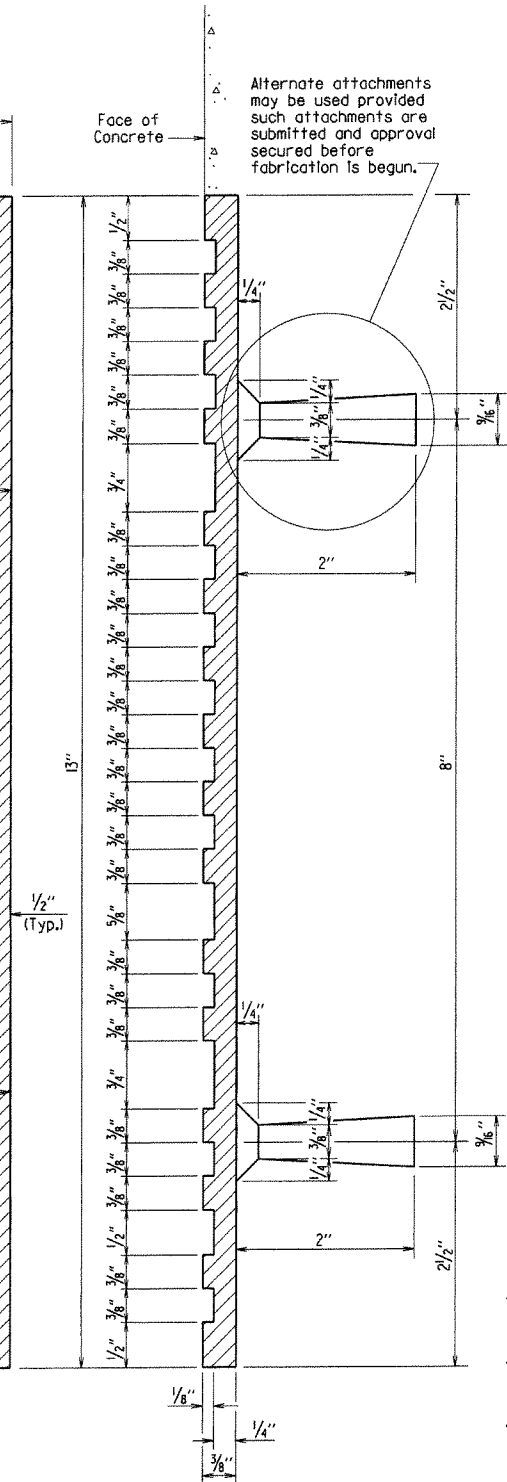
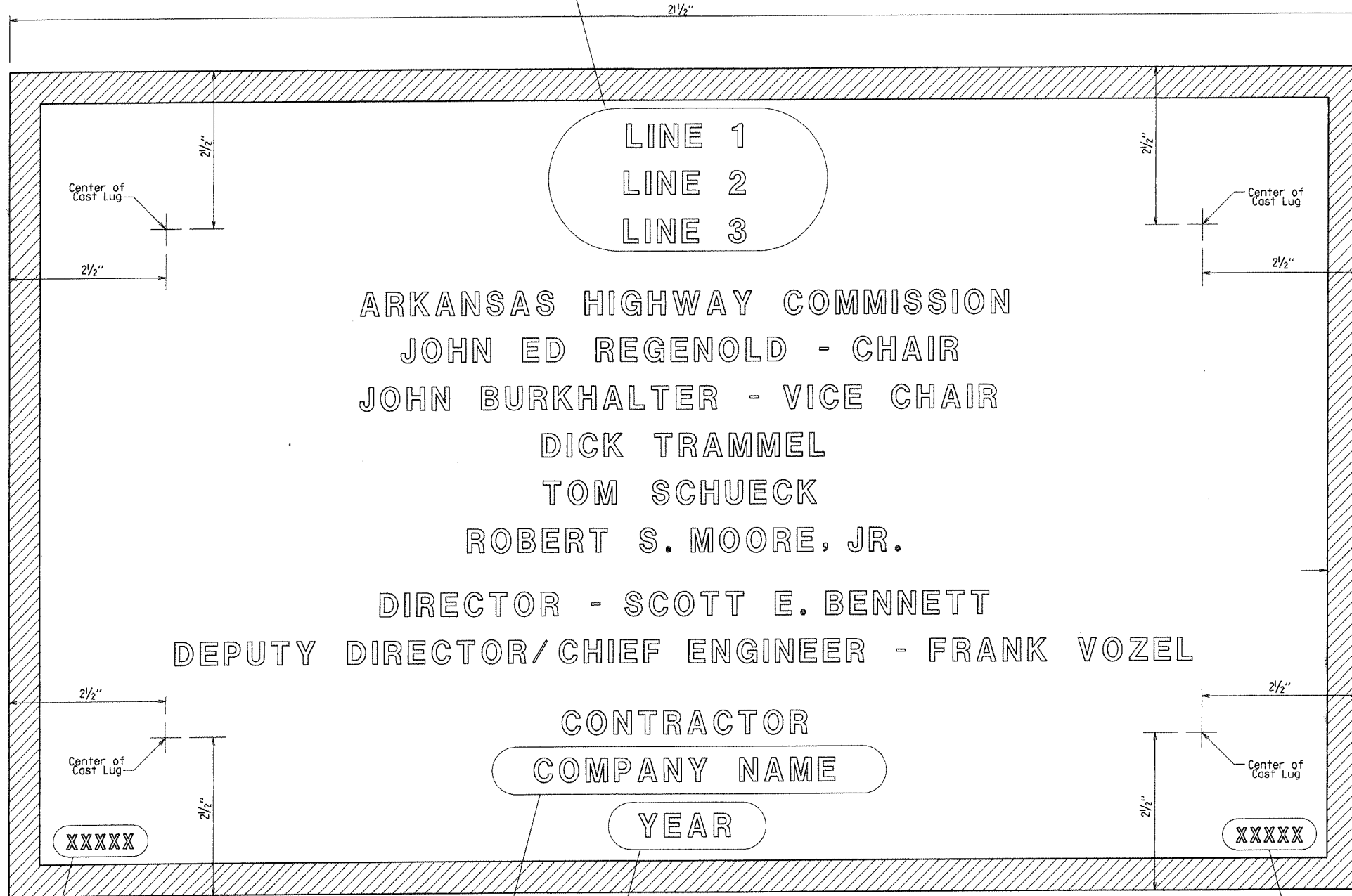
GENERAL NOTES

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.



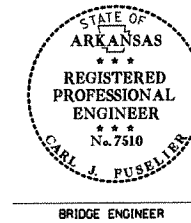
Place the design live loading here using 1/8" raised letters and numerals 1/4" high. Examples: HS 20, HL-93

Place the 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 Commission Names 1-10-13 KDH Checked By: C.J.F
- △ Revised Commission Names 1-3-13 KDH Checked By: C.J.F
- △ Revised and Redrawn 9-8-11 KDH Checked By: CRE

TYPICAL BRIDGE NAME PLATE

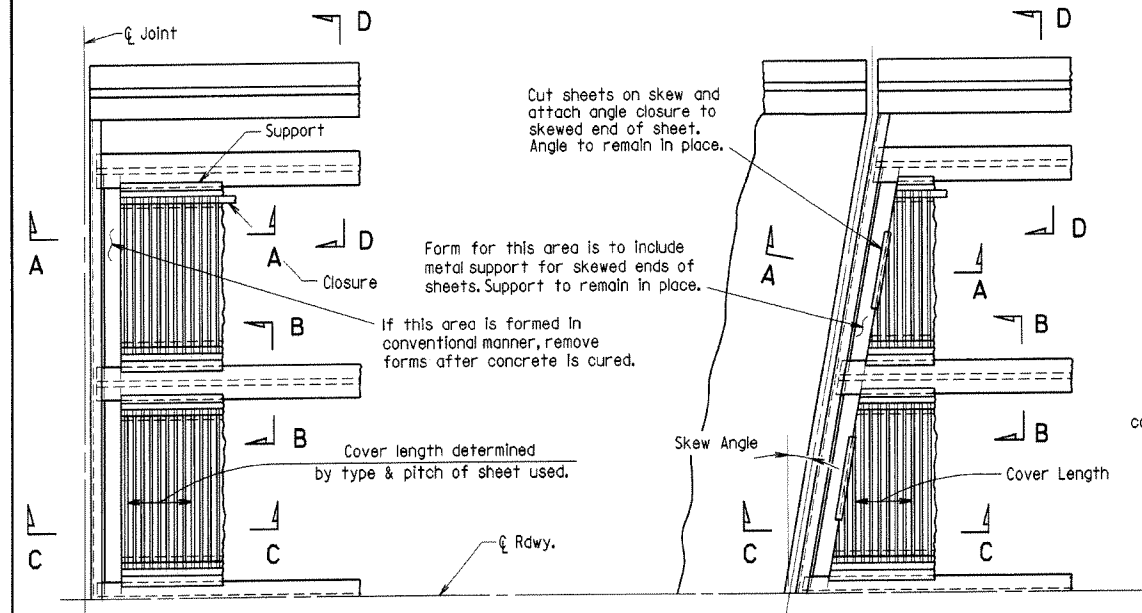


DETAILS OF STANDARD TYPE D BRIDGE NAME PLATE
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 9-8-11 FILENAME: b2387.std.dgn
CHECKED BY: CRE DATE: 9-8-11 SCALE: 1'-0" = 1'-0"
DESIGNED BY: STD. DATE: OR AS NOTED
BRIDGE NO. DRAWING NO. 2387

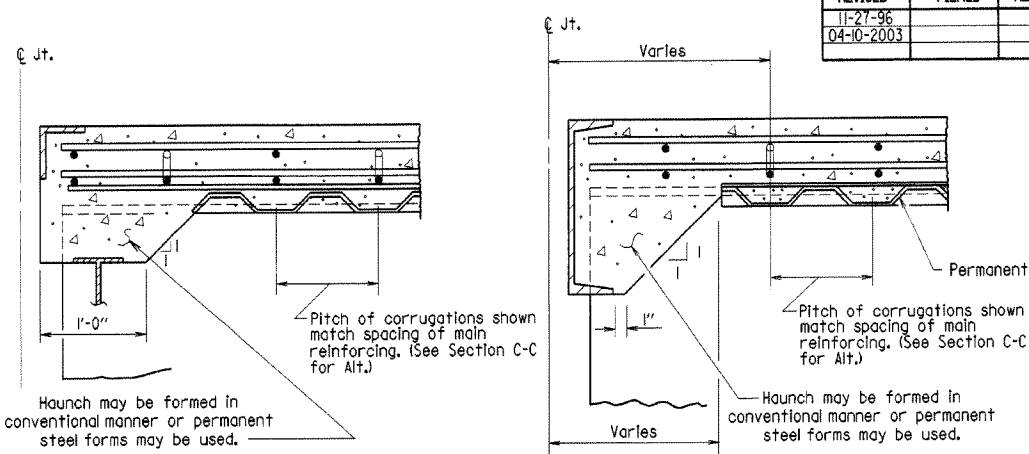
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
11-27-96						6	ARK.		60	
04-10-2003										

BR. DECK FORMS 1499I



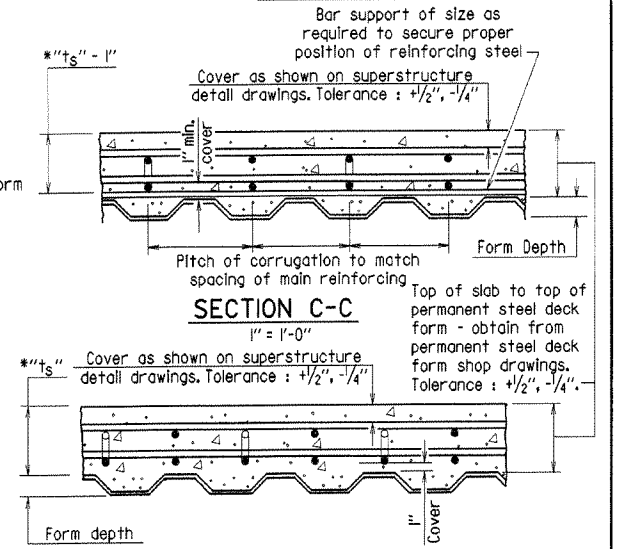
PART PLAN - SQUARE SPAN
3/8" = 1'-0"

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



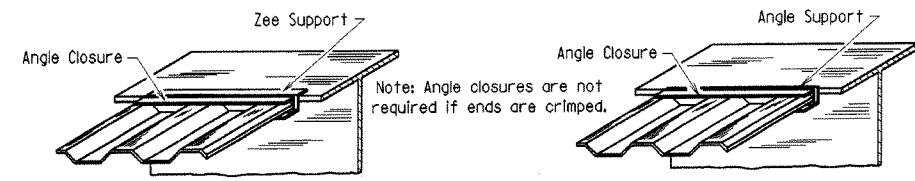
SECTION A-A
N.T.S.
(Angle at end of span)

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

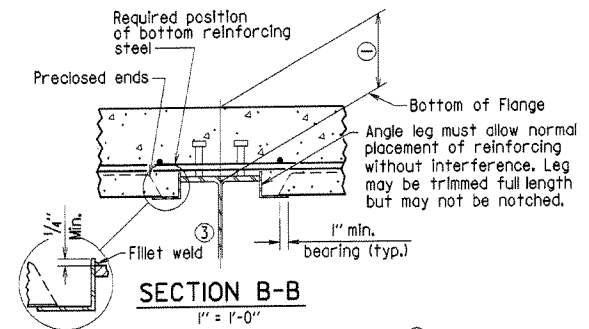


SECTION C-C
1" = 1'-0"

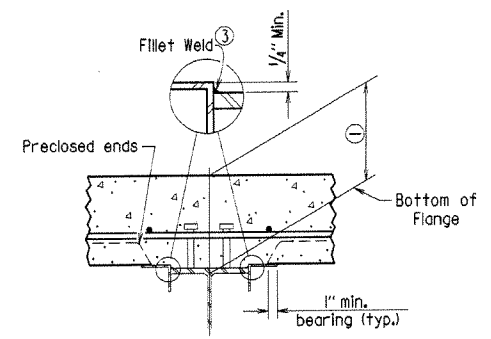
SECTION C-C - ALTERNATE
1" = 1'-0"



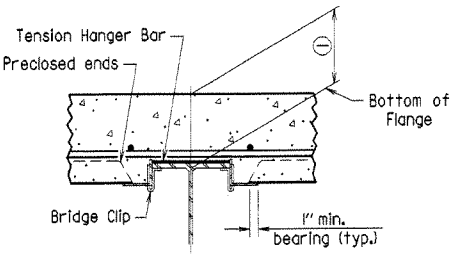
SKETCH OF PERMISSIBLE SUPPORTS
N.T.S.



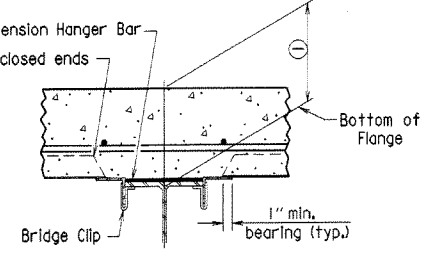
SECTION B-B
1" = 1'-0"



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



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



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

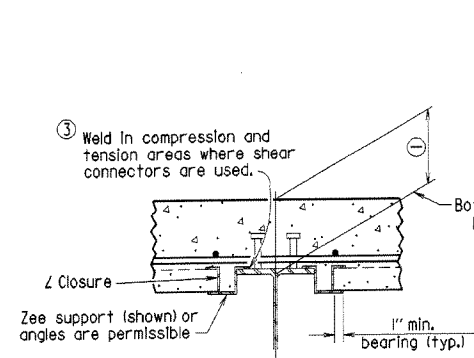
(Showing permissible support for tension flange where shear connectors are used, and for all compression flanges)

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

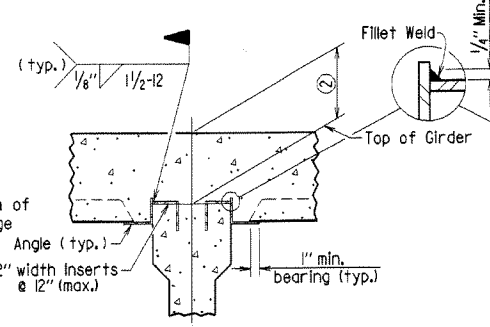
(Showing permissible support for tension flange where shear connectors are used and for all compression flanges)

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

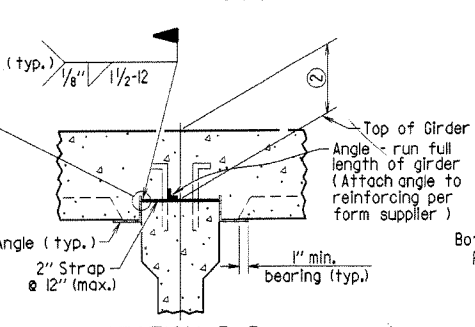
(Showing permissible support for tension flange where shear connectors are not used)



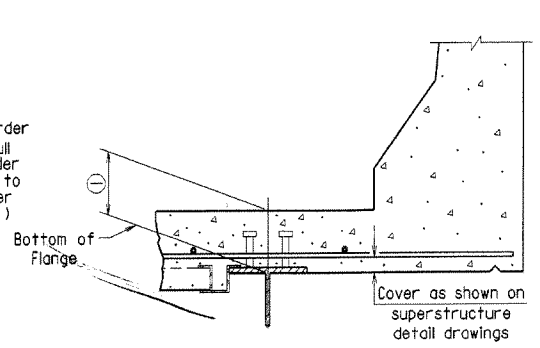
SECTION B-B
1" = 1'-0"
(Showing Z Closure)



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.

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 Seal. MJT 04-10-2003
Chk'd. By: CBF 04-10-2003

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.

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

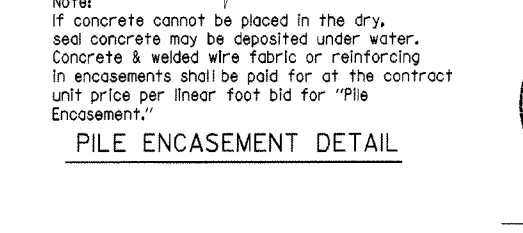
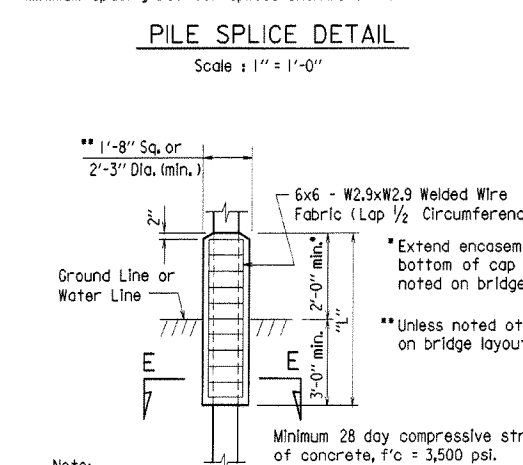
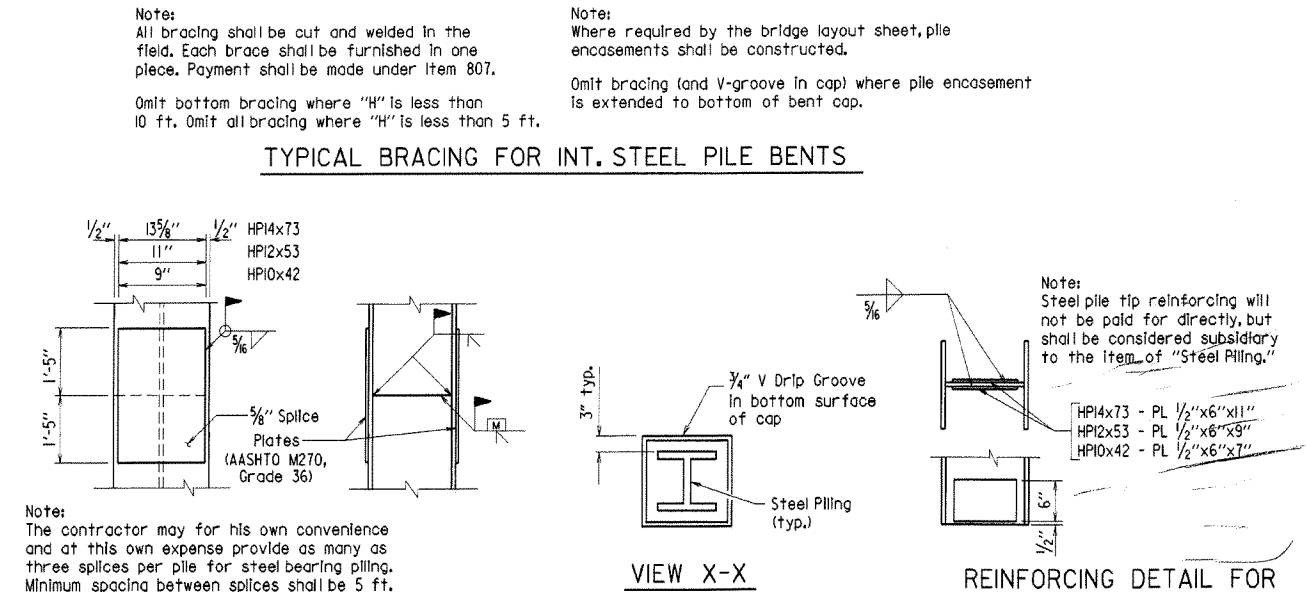
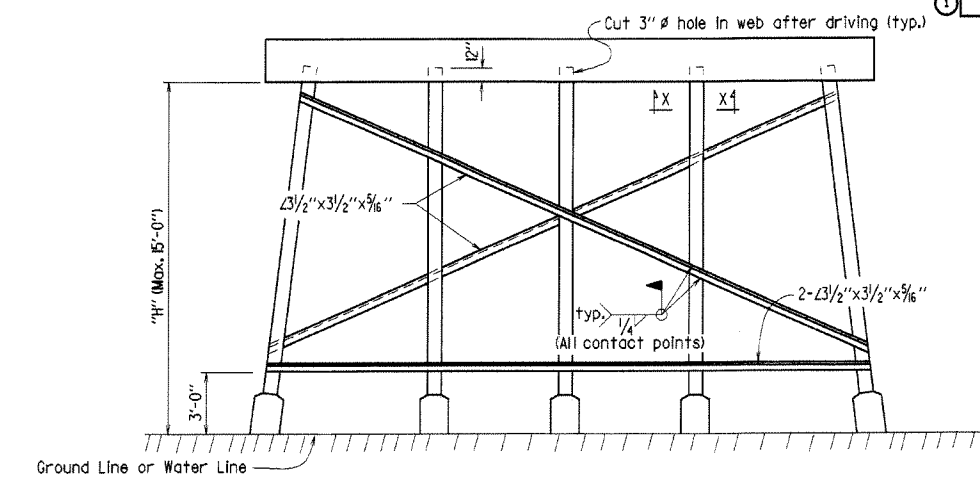
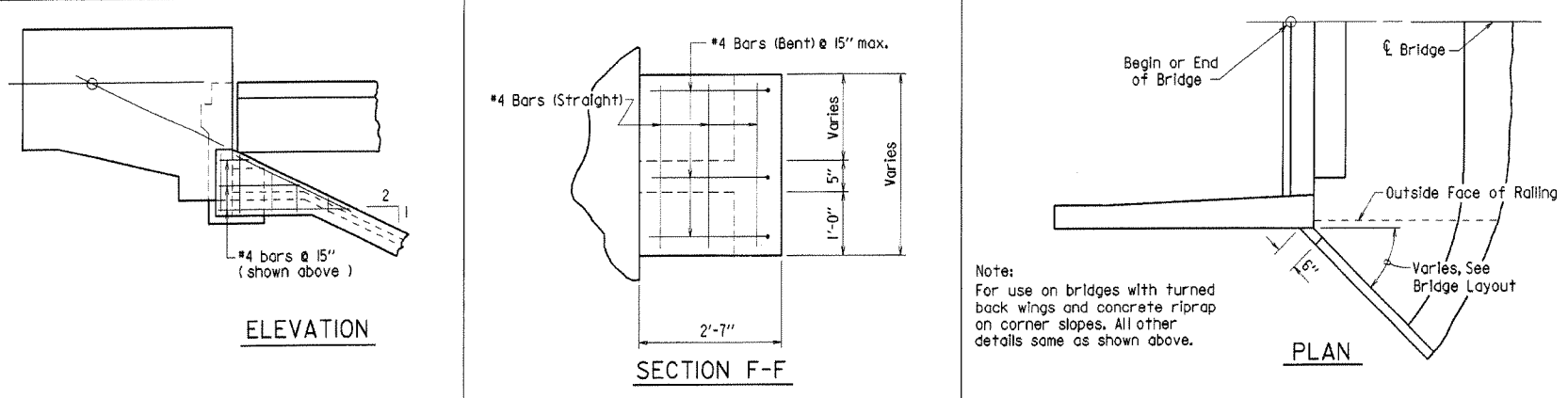
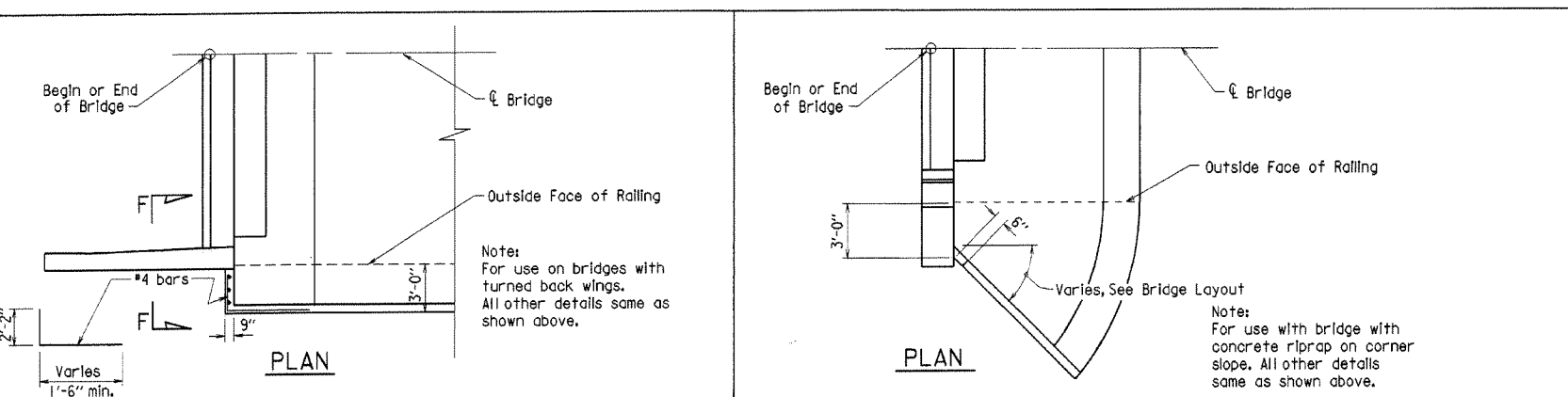
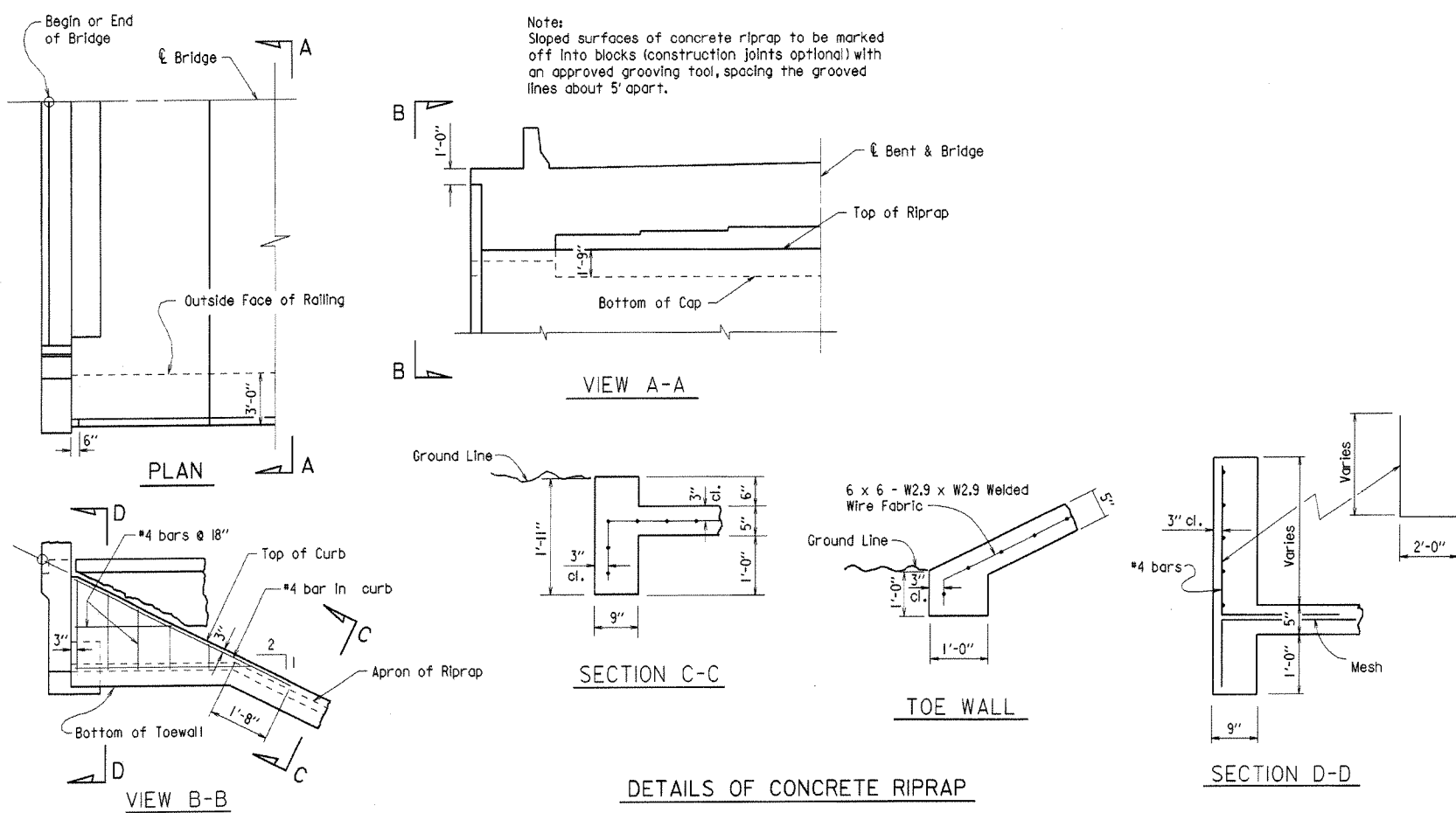
DRAWN BY: MJT DATE: 10-17-96
CHECKED BY: CPB DATE: 10-17-96
DESIGNED BY: STD. DATE: ---
BRIDGE NO. DRAWING NO. 1499I



Redrawn and revised 11/27/96; MJT

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.		61	
				JOB NO.		RIPRAP & PILE - 14995A		



DETAILS OF CONCRETE RIPRAP AND MISC. DETAILS OF STEEL PILING

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

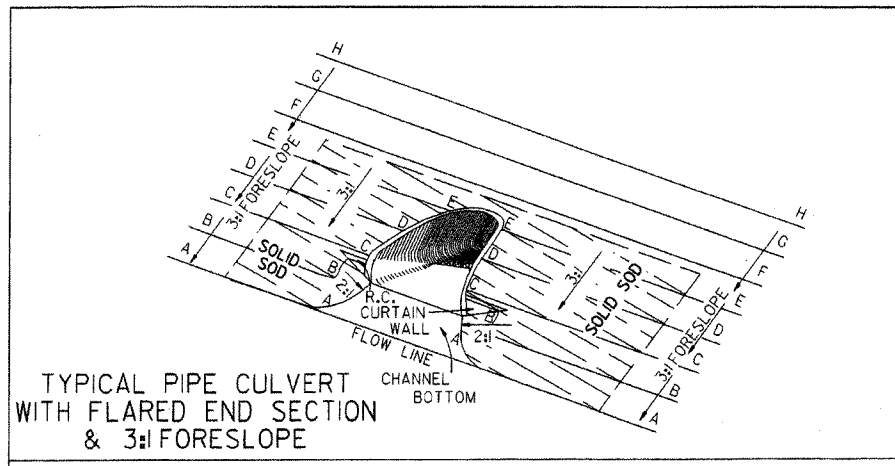
Revised and redrawn MJT 04-10-2003
 Chk'd. By: CJF 04-10-2003

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

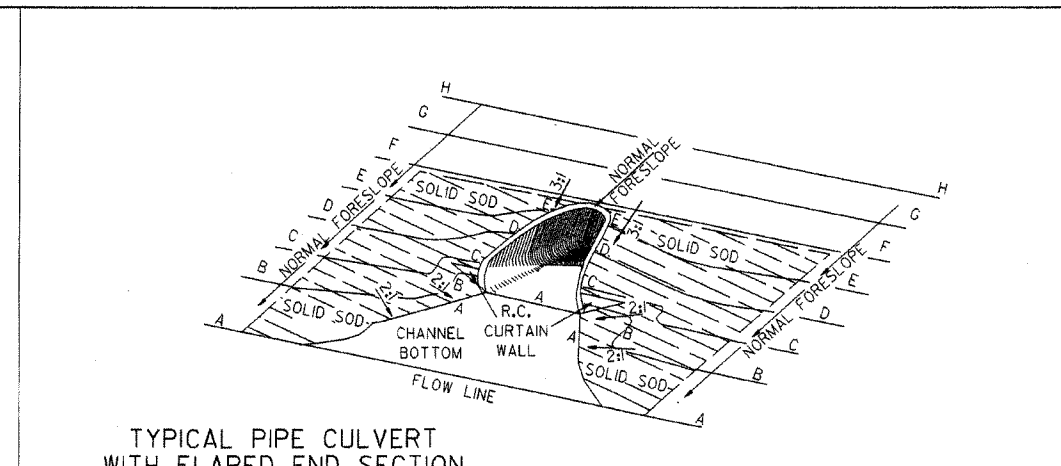
BRIDGE ENGINEER

DRAWN BY: MJT DATE: 04-10-2003 FILENAME: B14995A.STD
 CHECKED BY: CJF DATE: 04-10-2003 SCALE: No Scale or As Noted
 DESIGNED BY: STD DATE: -

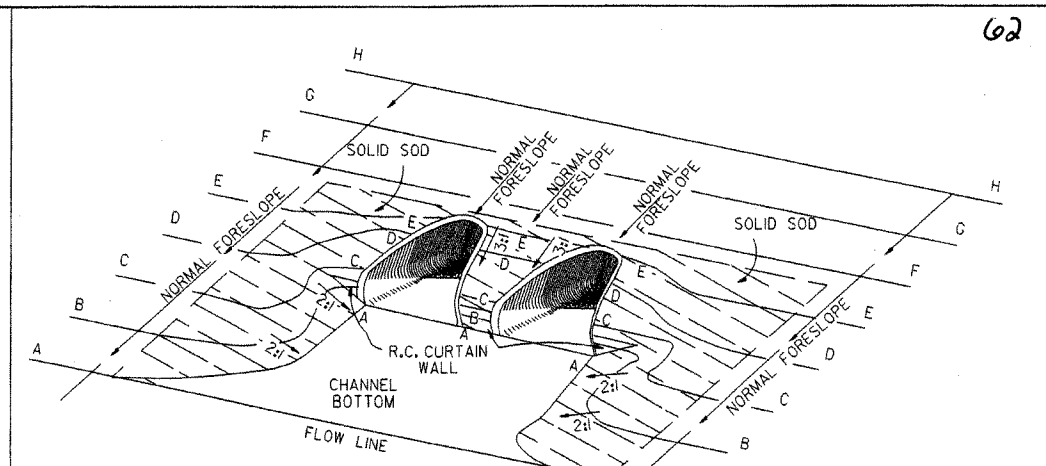
BRIDGE NO. DRAWING NO. 14995A



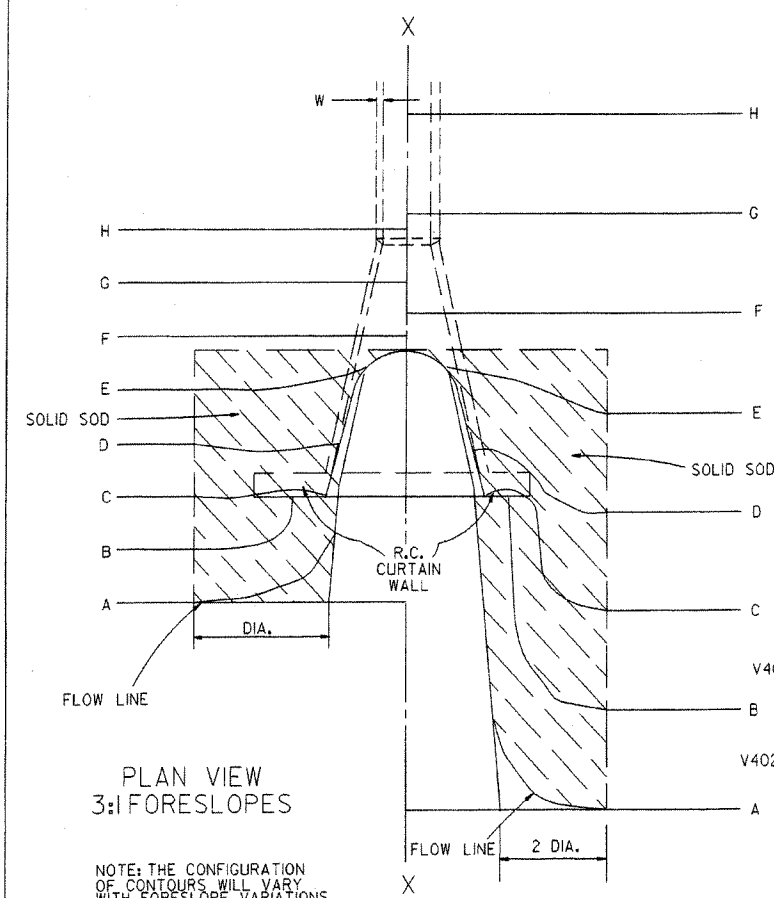
TYPICAL PIPE CULVERT WITH FLARED END SECTION & 3:1 FORESLOPE



TYPICAL PIPE CULVERT WITH FLARED END SECTION & FLATTENED ADJACENT SLOPES

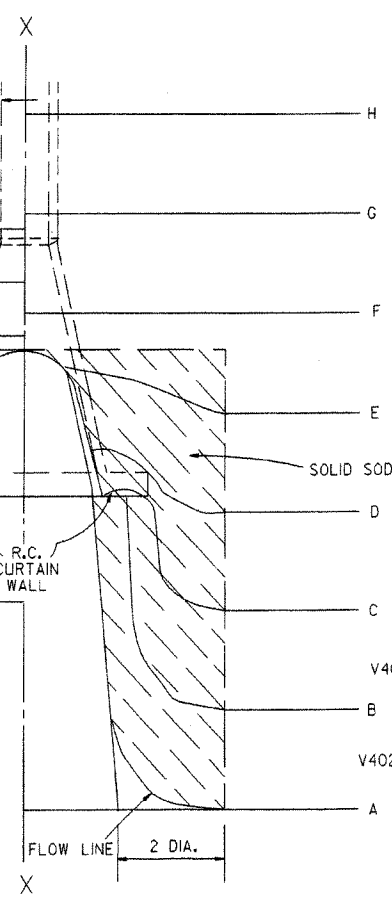


TYPICAL MULTIPLE PIPE CULVERT WITH FLARED END SECTIONS & FLATTENED ADJACENT SLOPES



PLAN VIEW 3:1 FORESLOPES

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

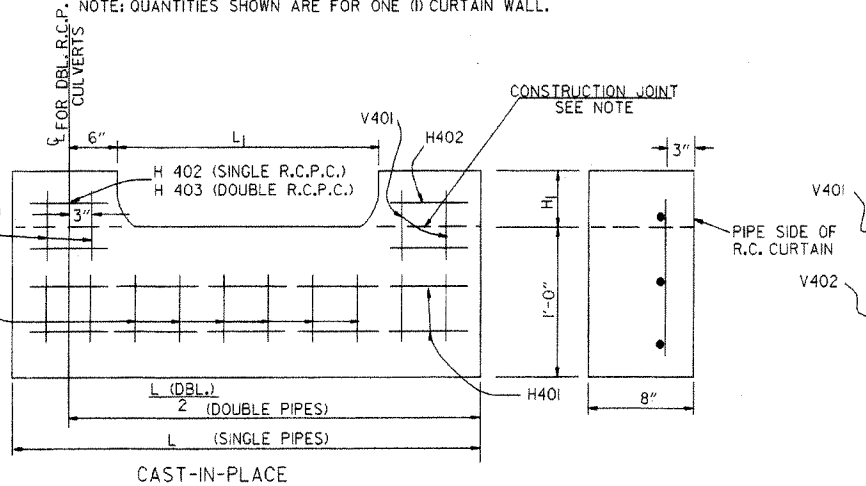


PLAN VIEW FLATTENED FORESLOPES

R.C. CURTAIN WALL DIMENSIONS & QUANTITIES

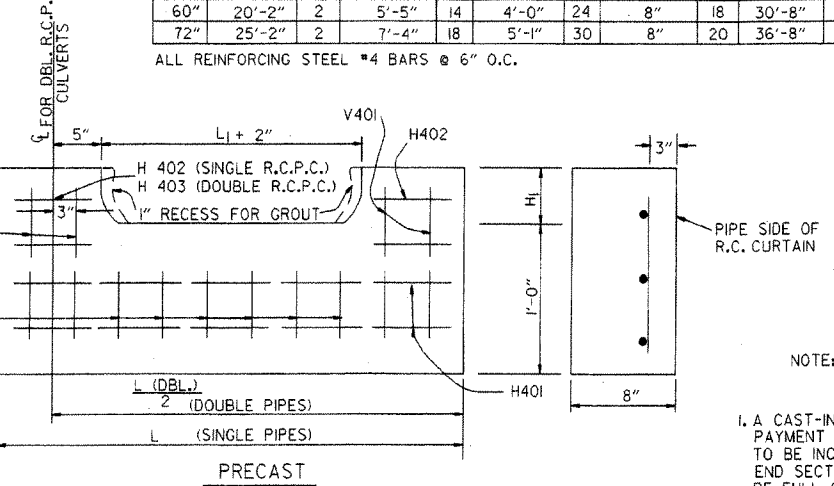
PIPE DIA.	H ₁	L ₁	L	L (DBL.) 2	SINGLE R.C.P.C.		DOUBLE R.C.P.C.	
					CONC.	REINF. STEEL	CONC.	REINF. STEEL
					CU. YDS.	LBS.	CU. YDS.	LBS.
18"	11/2"	3'-5"	8'-0"	6'-3"	0.31	27.7	0.45	39.5
24"	1'-0 1/2"	4'-6"	9'-6"	7'-6"	0.37	33.4	0.53	48.0
30"	1'-3 1/2"	5'-7"	11'-0"	9'-0"	0.45	39.0	0.67	59.0
36"	1'-7"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

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



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

R.C. CURTAIN WALL DETAILS



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

REINFORCING STEEL SCHEDULE

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

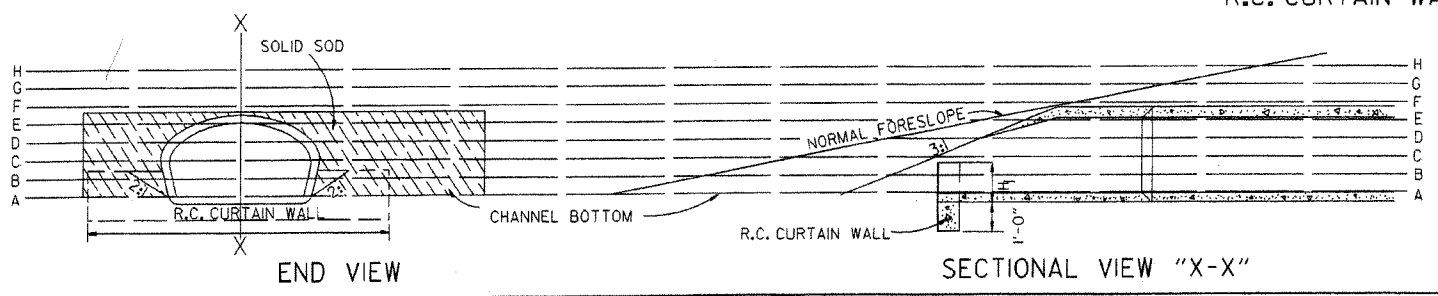
ALL REINFORCING STEEL #4 BARS @ 6" O.C.

SOLID SODDING

PIPE DIA.	SINGLE R.C.P.C.						DOUBLE R.C.P.C.					
	3:1		4:1		6:1		3:1		4:1		6:1	
	SQ. YDS.						SQ. YDS.					
18"	5	7	12	6	8	13	5	7	12	6	8	13
24"	8	12	19	9	13	20	8	12	19	9	13	20
30"	13	18	29	14	19	30	13	18	29	14	19	30
36"	17	26	41	18	28	43	17	26	41	18	28	43
42"	23	35	55	25	37	57	23	35	55	25	37	57
48"	29	46	68	31	48	70	29	46	68	31	48	70
54"	35	57	85	37	59	87	35	57	85	37	59	87
60"	45	62	104	48	65	107	45	62	104	48	65	107
72"	64	92	156	67	95	159	64	92	156	67	95	159

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

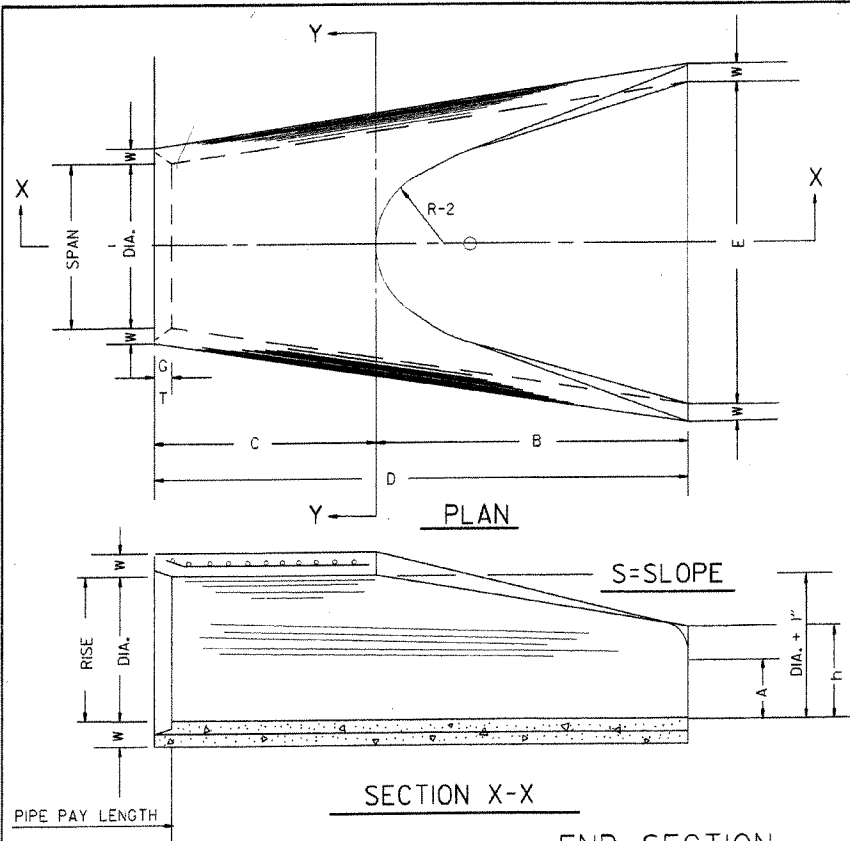
- GENERAL NOTES
1. A CAST-IN-PLACE OR PRECAST CURTAIN WALL MAY BE USED. PAYMENT FOR THE CURTAIN WALL SHALL BE CONSIDERED TO BE INCLUDED IN THE UNIT PRICE BID EACH FOR FLARED END SECTIONS OF THE SEVERAL SIZES, WHICH PRICE SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIALS INCLUDING REINFORCING STEEL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



END VIEW

SECTIONAL VIEW "X-X"

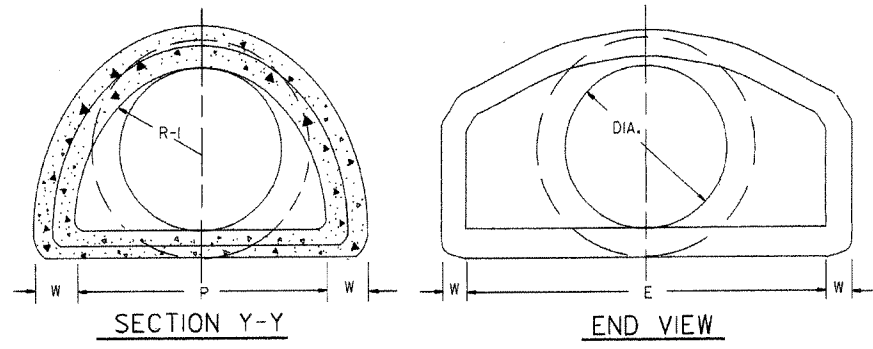
10-18-96	ADDED NOTE TO SOLID SODDING	10-18-96	ARKANSAS STATE HIGHWAY COMMISSION
10-12-95	CORRECTED SPELLING		
11-3-94	ADDED GENERAL NOTE NO. 4		
8-15-91	REV. CURTAIN WALL QUANT. STEEL SCH. & SOLID SOD QUANT.		
3-2-81	ALLOW PRECAST IN 2 OR MORE PIECES CHAMFER EDGES		
5-15-80	ADDED PRECAST WALL & GENERAL NOTES		
10-2-72	REVISED AND REDRAWN		
DATE	REVISION	FILMED	STANDARD DRAWING FES-1



END SECTION FOR REINFORCED CONCRETE PIPE CULVERTS

TABLE OF DIMENSIONS

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

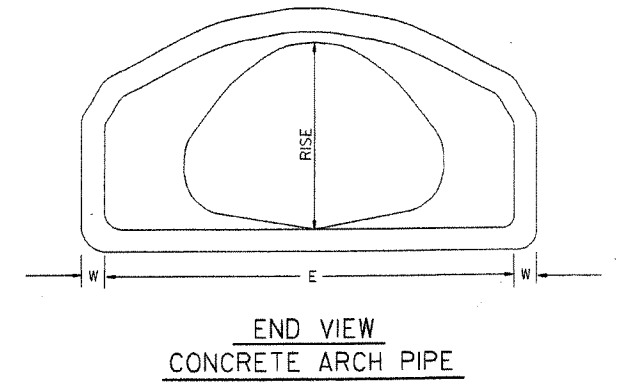


NOTE: TONGUE END ON UPSTREAM SECTION GROOVE END ON DOWNSTREAM SECTION

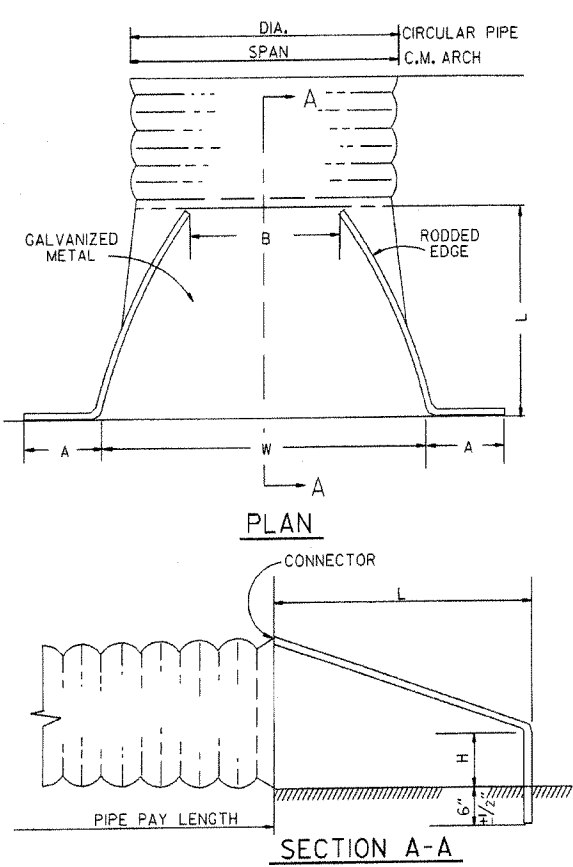
ARCH PIPE

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

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



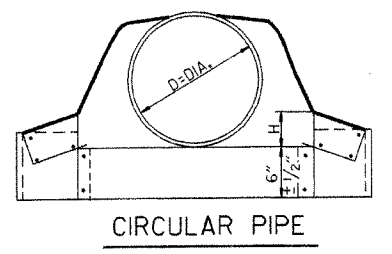
END VIEW CONCRETE ARCH PIPE



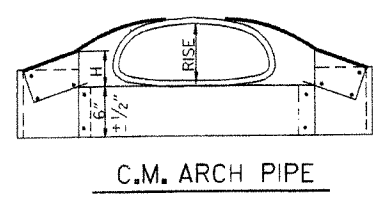
SECTION A-A

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

END SECTIONS FOR CORRUGATED METAL PIPE CULVERTS



CIRCULAR PIPE



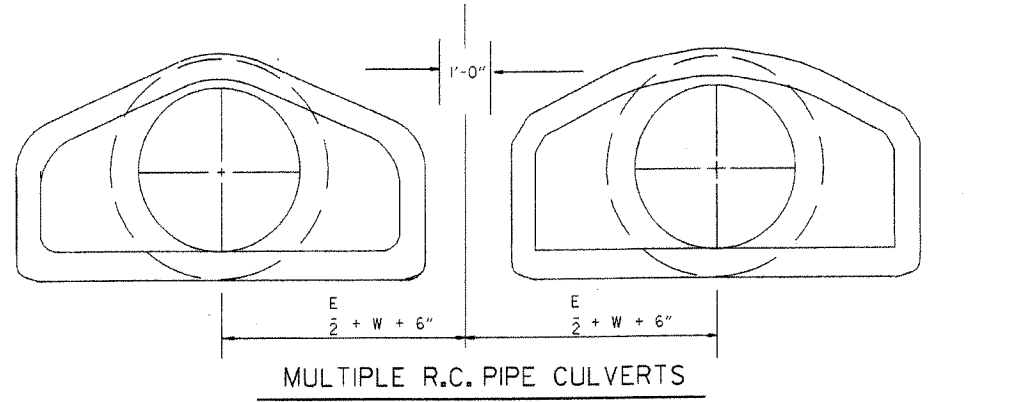
C.M. ARCH PIPE

CIRCULAR PIPE

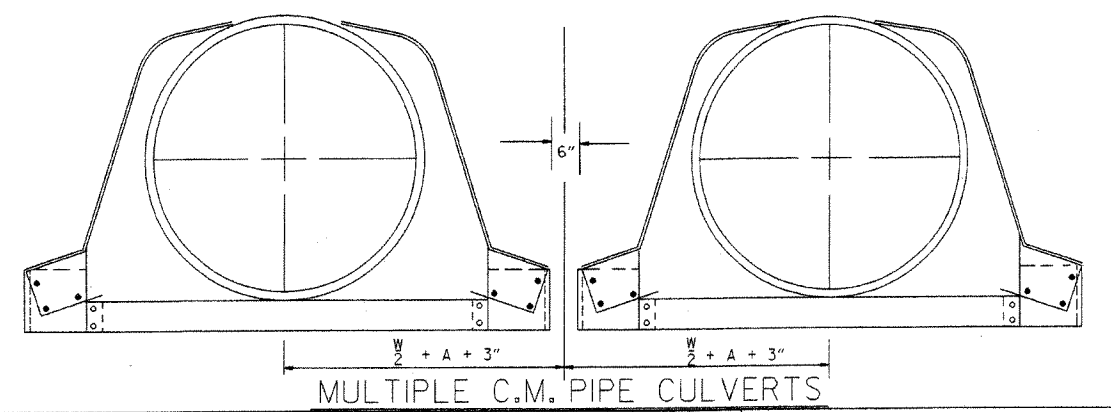
D. DIA.	GAUGE	A 1" ±	B. MAX.	H 1" ±	L 1 1/2" ±	W 2" ±	S
12	16	6	6	6	21	24	2 1/2:1
15	16	7	8	6	26	30	2 1/2:1
18	16	8	10	6	31	36	2 1/2:1
21	16	9	12	6	36	42	2 1/2:1
24	16	10	13	6	41	48	2 1/2:1
30	14	12	16	8	51	60	2 1/2:1
36	14	14	19	9	60	72	2 1/2:1
42	12	16	22	11	69	84	2 1/2:1
48	12	18	27	12	78	90	2 1/2:1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

C.M. ARCH PIPE

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

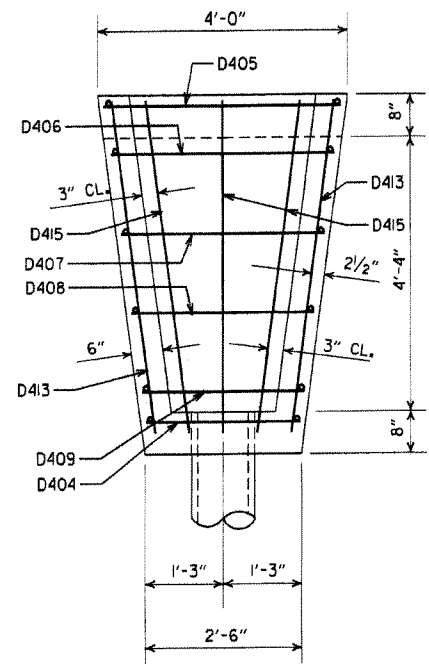


MULTIPLE R.C. PIPE CULVERTS

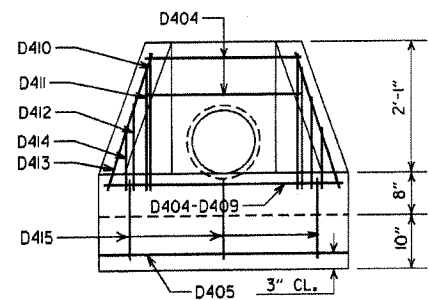


MULTIPLE C.M. PIPE CULVERTS

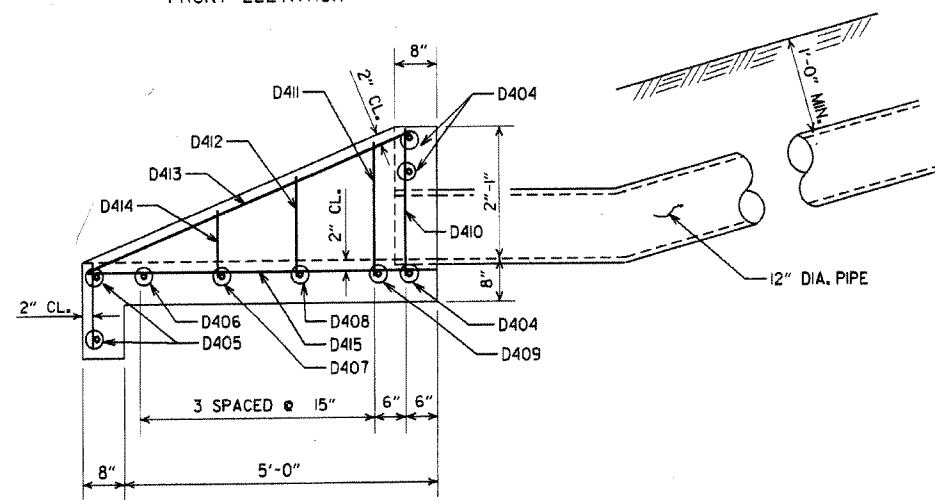
10-18-96	REVISED ASTM REF. TO AASHTO	10-18-96	ARKANSAS STATE HIGHWAY COMMISSION
5-15-80	REVISED DISTANCE BETWEEN MULTIPLE R.C.P. F.E.S.	664-5-15-80	
7-14-78	C.M. ARCH SIZES TO CONFORM WITH AASHTO SIZES	752-7-14-78	FLARED END SECTION
8-22-75	ADDED MULTIPLE PIPE CULVERTS	517-8-22-75	
12-5-74	REMOVED NOTE RE REINF. FOR R.C. F.E.S.	500-12-5-74	STANDARD DRAWING FES-2
5-24-73	CMP END SECTION, SHOW PIPE PAY LENGTH	627-5-24-73	
10-2-72	REVISED AND REDRAWN	760-10-2-72	
DATE	REVISION	FILE NO.	



PLAN



FRONT ELEVATION



SIDE ELEVATION
CONCRETE SPILLWAY

DETAILS OF CONCRETE SPILLWAY (TYPE A)

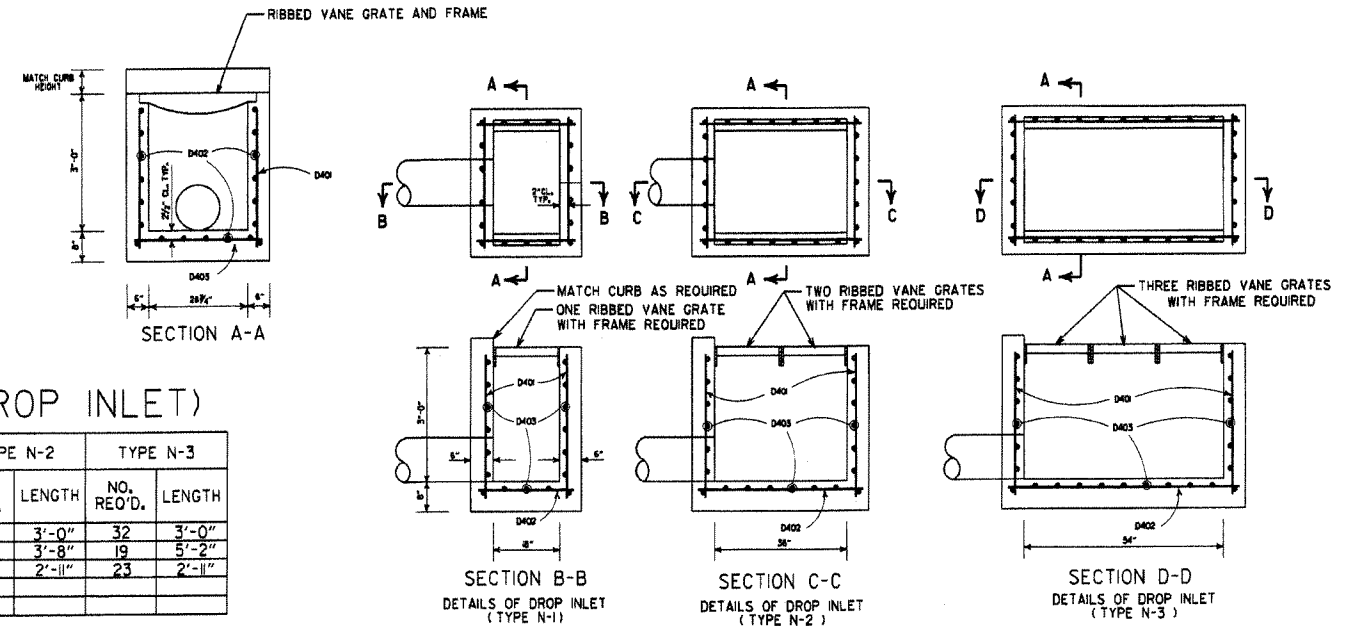
BAR LIST
(CONCRETE SPILLWAY)

MARK	NO. REQ'D.	LENGTH	BENDING DIAGRAM
D404	3	2'-2"	
D405	2	3'-8"	
D406	1	3'-5"	
D407	1	3'-1"	
D408	1	2'-9"	
D409	1	2'-5"	
D410	2	2'-5"	
D411	2	2'-2"	
D412	2	1'-9"	
D413	2	5'-6"	
D414	2	1'-2"	
D415	3	6'-5"	

BAR LIST (DROP INLET)

MARK	TYPE N-1		TYPE N-2		TYPE N-3	
	NO. REQ'D.	LENGTH	NO. REQ'D.	LENGTH	NO. REQ'D.	LENGTH
D401	20	3'-0"	26	3'-0"	32	3'-0"
D402	19	2'-2"	19	3'-8"	19	5'-2"
D403	17	2'-11"	20	2'-11"	23	2'-11"

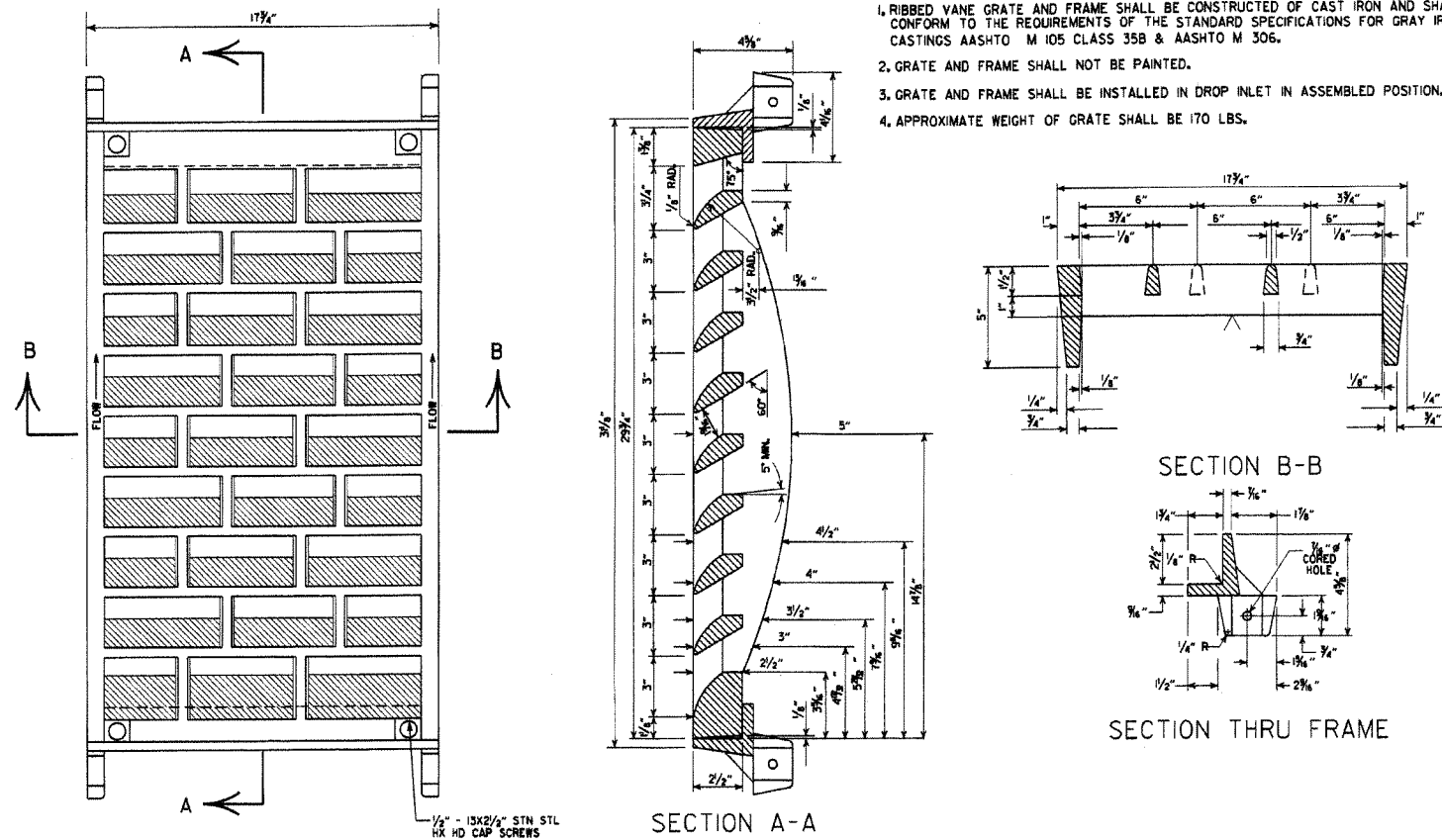
ALL BARS #4 @ 6" SPACING



DETAILS OF DROP INLET

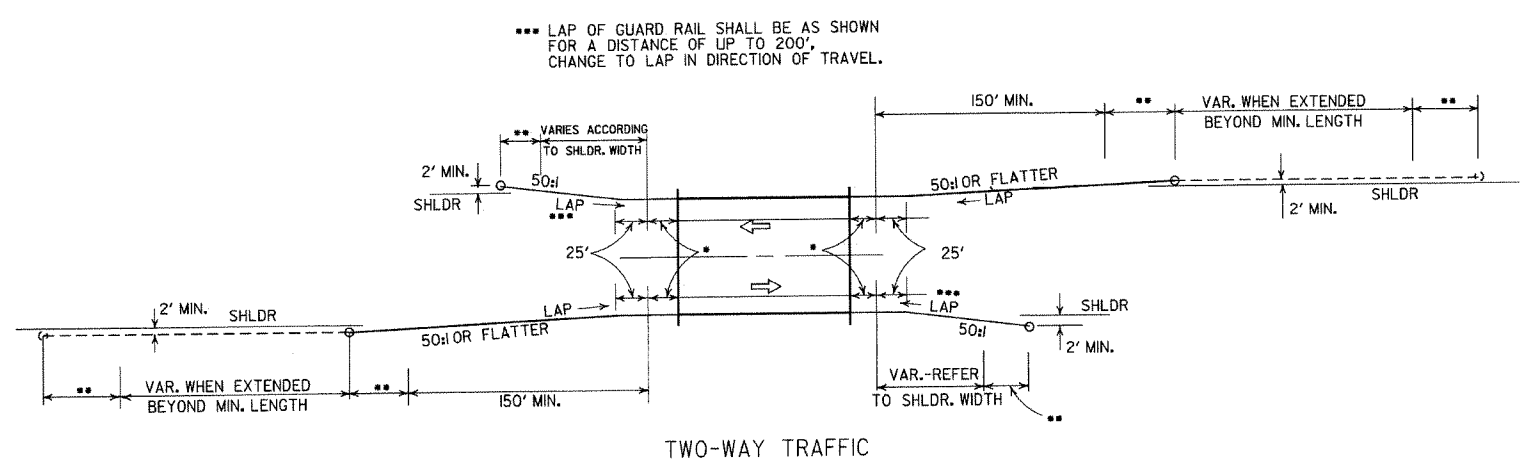
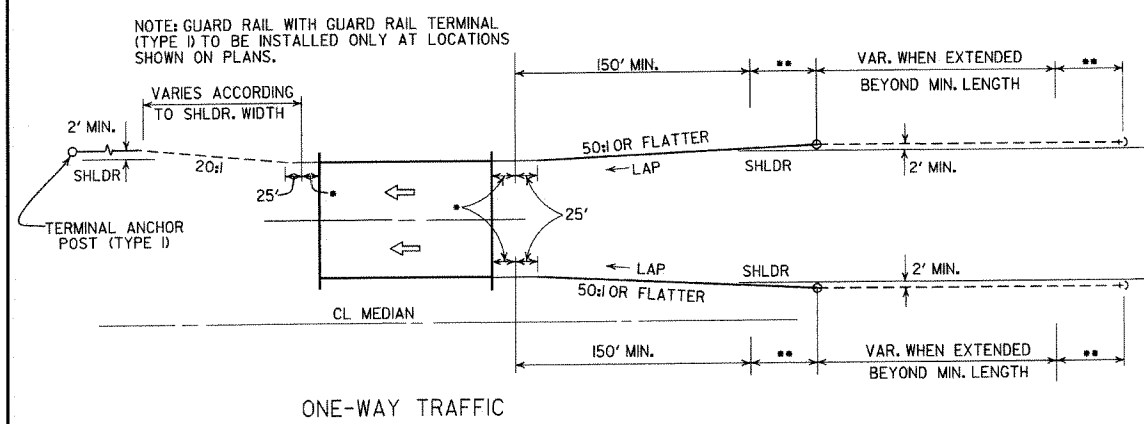
GENERAL NOTES (GRATE & FRAME)

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

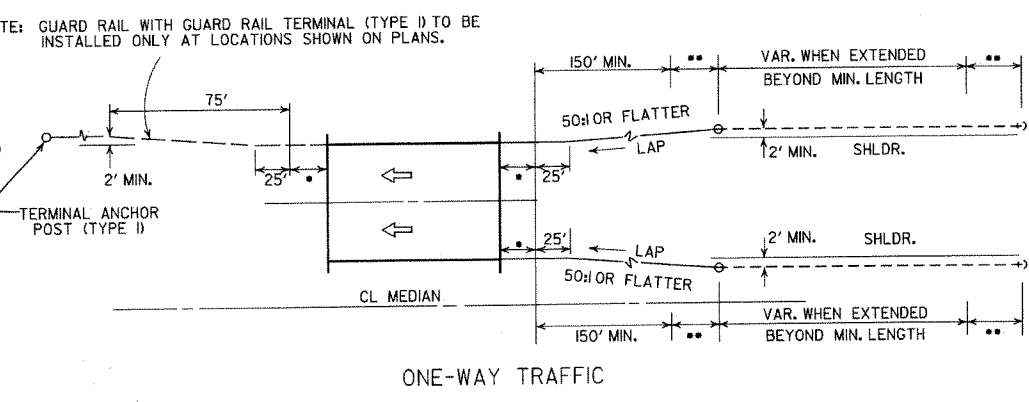
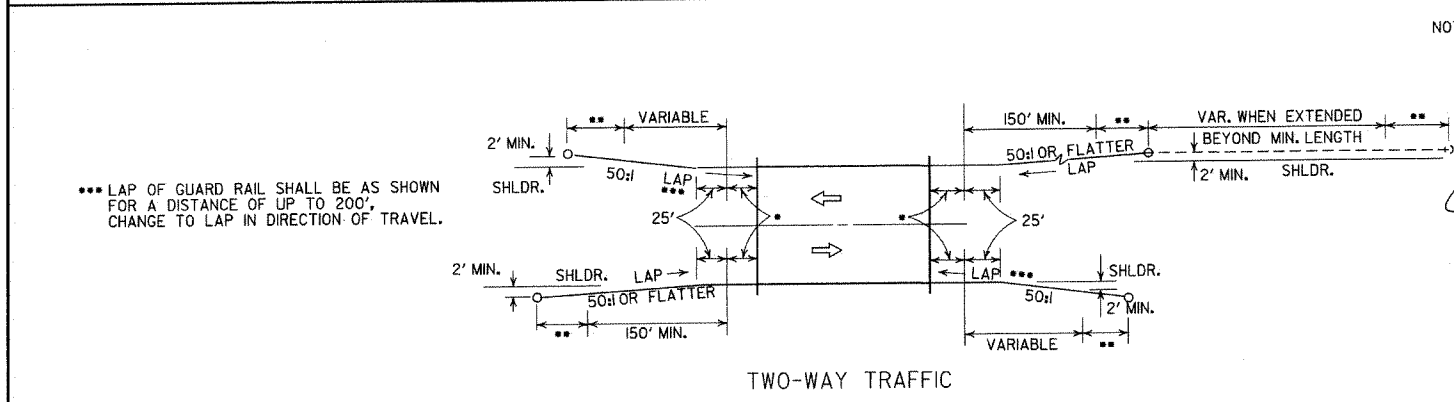


DETAILS OF RIBBED VANE GRATE AND FRAME

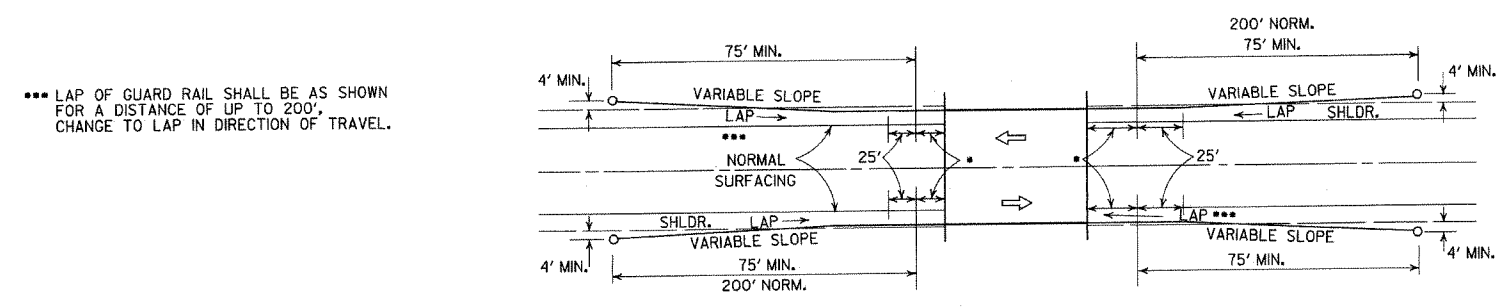
DATE REVISED	DATE FILMED	DESCRIPTION	ARKANSAS STATE HIGHWAY COMMISSION
7-02-98	7-2-98	REVISED SECT. A-A DETAIL OF DROP INLET & ADDED AASHTO REF. TO NOTE 1, REVISED GRATE	DETAILS OF DROP INLETS AND SPILLWAY OUTLET
10-18-96		REVISED ASTM REF. TO AASHTO	
8-15-91		ISSUED	
			STANDARD DRAWING FPC-9N



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)

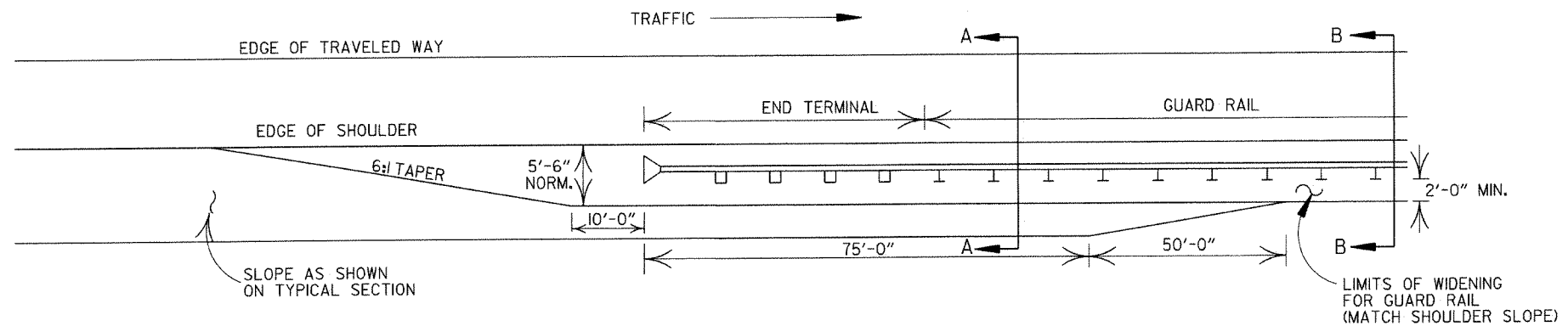


LEGEND

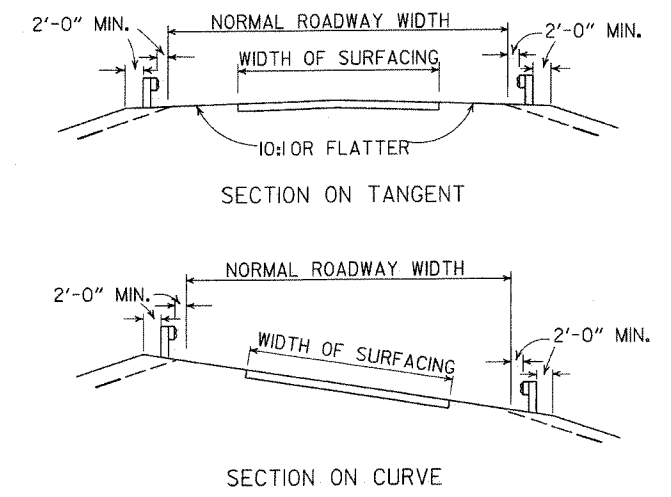
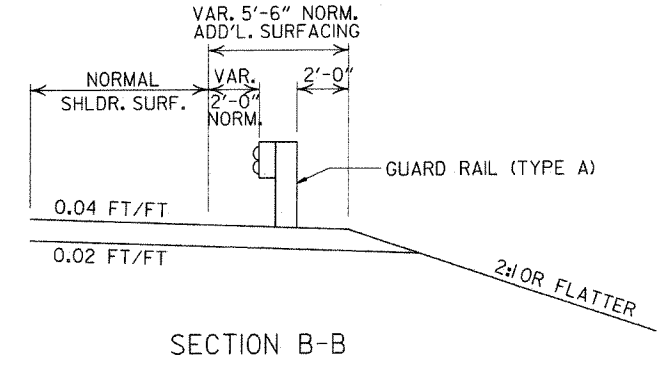
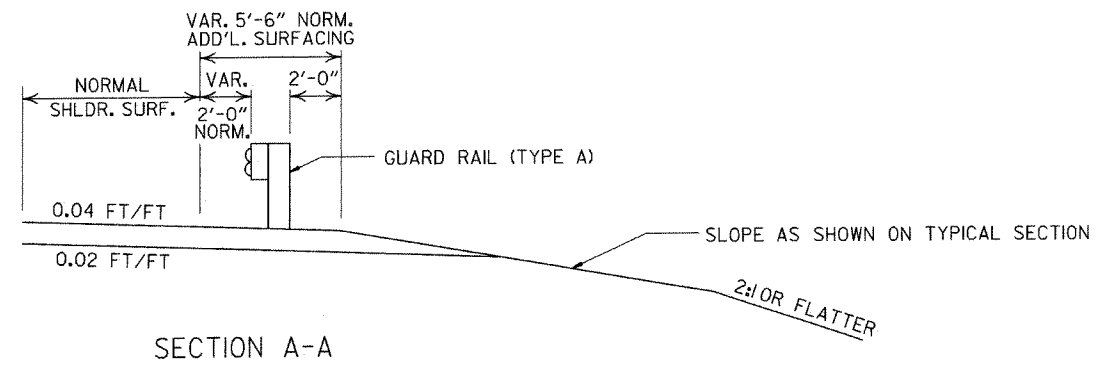
- THRIE BEAM GUARD RAIL TERMINAL
- GUARD RAIL TERMINAL (TYPE 2)

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

ARKANSAS STATE HIGHWAY COMMISSION		
GUARD RAIL DETAILS		
STANDARD DRAWING GR-9		
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. I)	
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 FILM

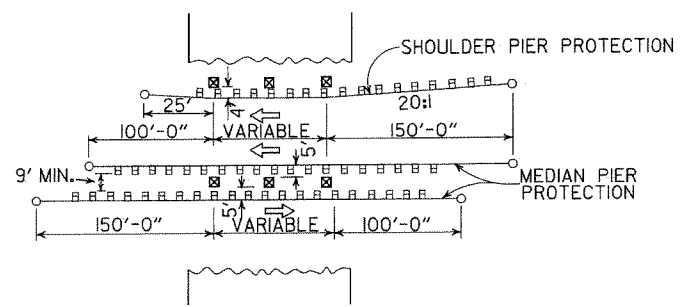


NOTE: NORMAL SECTION TO BE WIDENED APPROX. 5'-6" EACH SIDE TO SUPPORT GUARD RAIL.



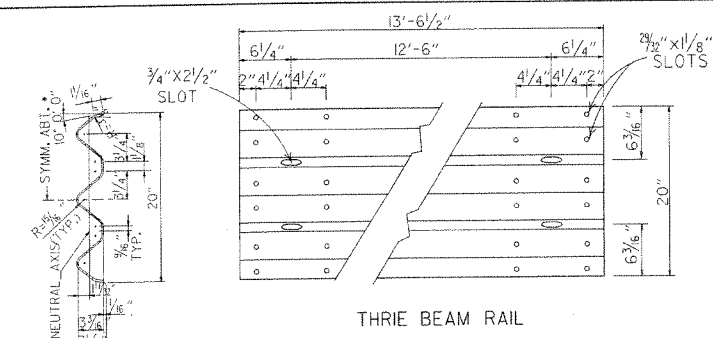
DETAILS OF WIDENING FOR GUARD RAIL

DETAILS SHOWING POSITION OF GUARD RAIL ON HIGHWAY

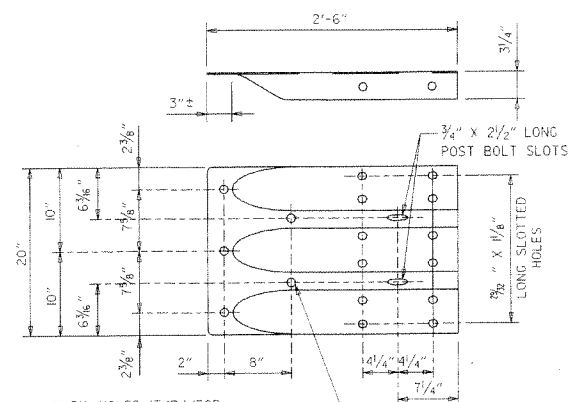


METHOD OF INSTALLATION OF GUARD RAIL AT FIXED OBSTACLE

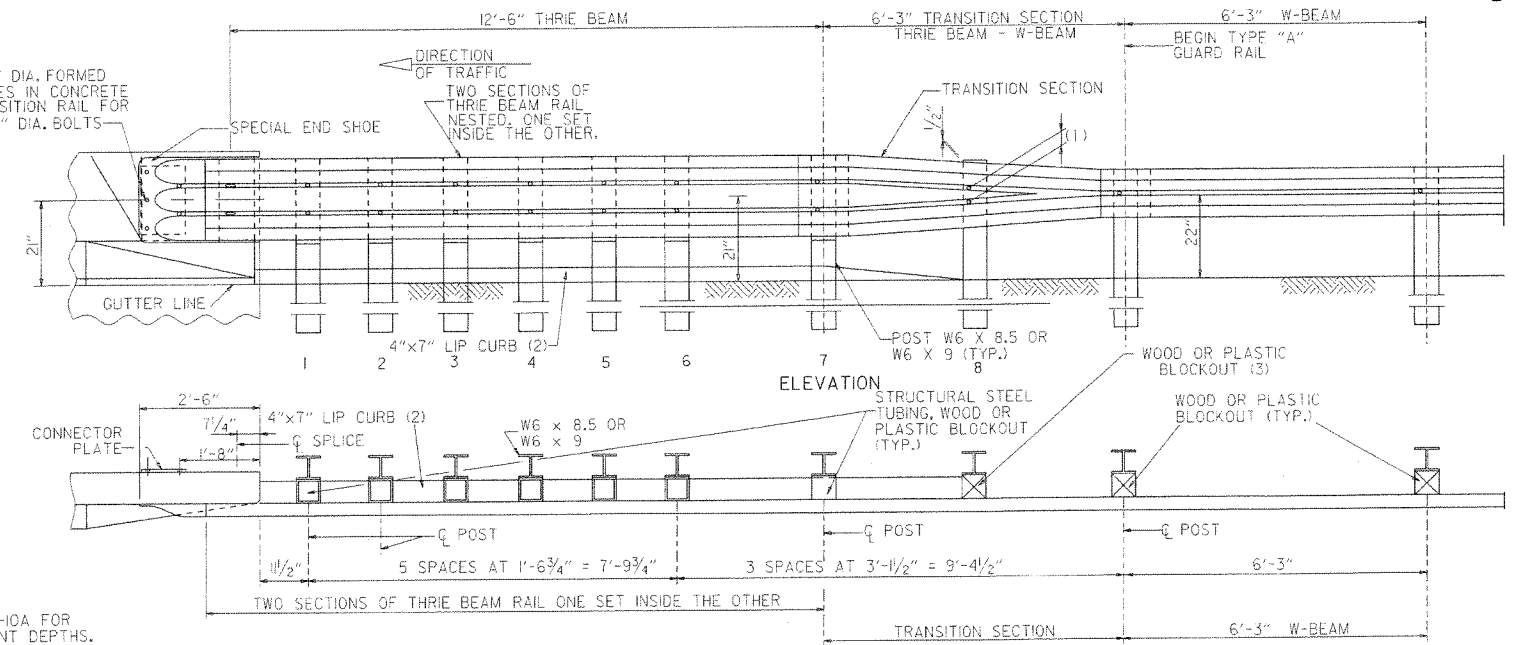
ARKANSAS STATE HIGHWAY COMMISSION			
GUARD RAIL DETAILS			
STANDARD DRAWING GR-9A			
4-17-08	MINOR REVISION		
11-10-05	DRAWN		
DATE	REVISION	DATE	FILM



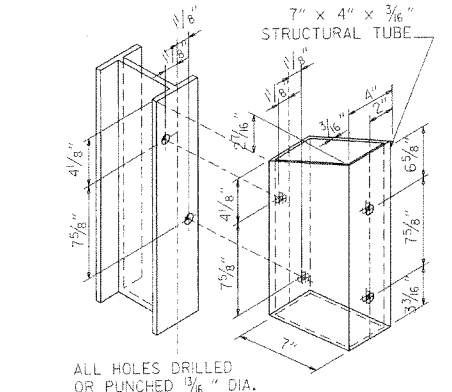
SECTION THRU THRIE BEAM RAIL



SPECIAL END SHOE

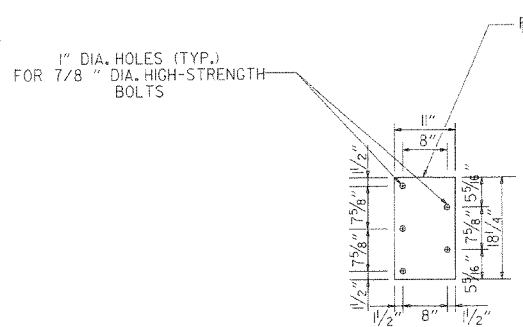


ELEVATION



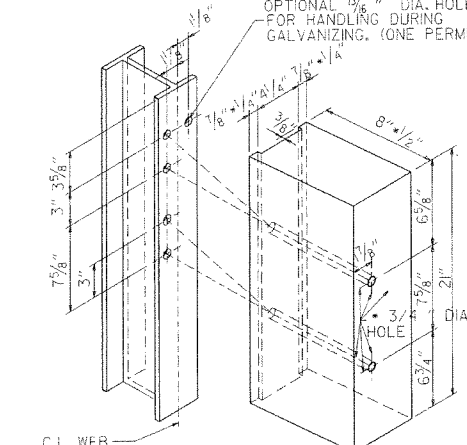
STRUCTURAL STEEL TUBING BLOCKOUT DETAIL

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



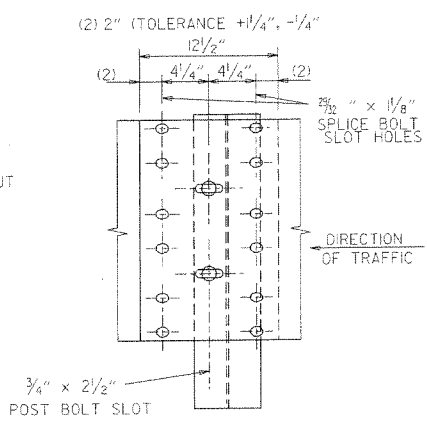
CONNECTOR PLATE

CONNECTOR PLATE SHALL BE AASHTO M270, GR. 36 AND SHALL BE GALVANIZED AFTER FABRICATION. GALVANIZING SHALL CONFORM TO SUBSECTION 807.19 OF THE STANDARD SPECIFICATIONS. CONNECTOR PLATE TO BE BOLTED TO SPECIAL END SHOE USING 7/8" DIA. HIGH STRENGTH BOLTS, WITH THE HEADS PLACED ON THE TRAFFIC FACE. WASHERS SHALL BE USED UNDER THE HEAD AND NUT. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED AND SHALL CONFORM TO SUBSECTION 807.06.

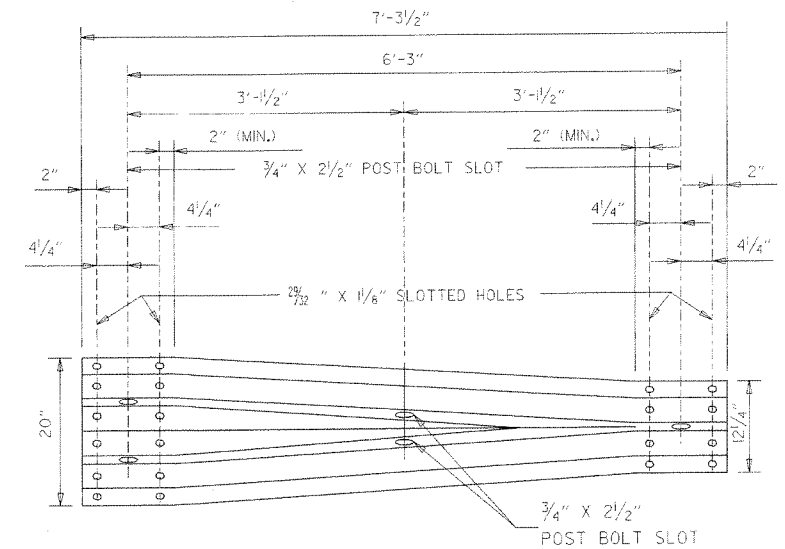


HOLE PUNCHING DETAIL FOR STEEL POST & WOOD OR PLASTIC BLOCKOUTS

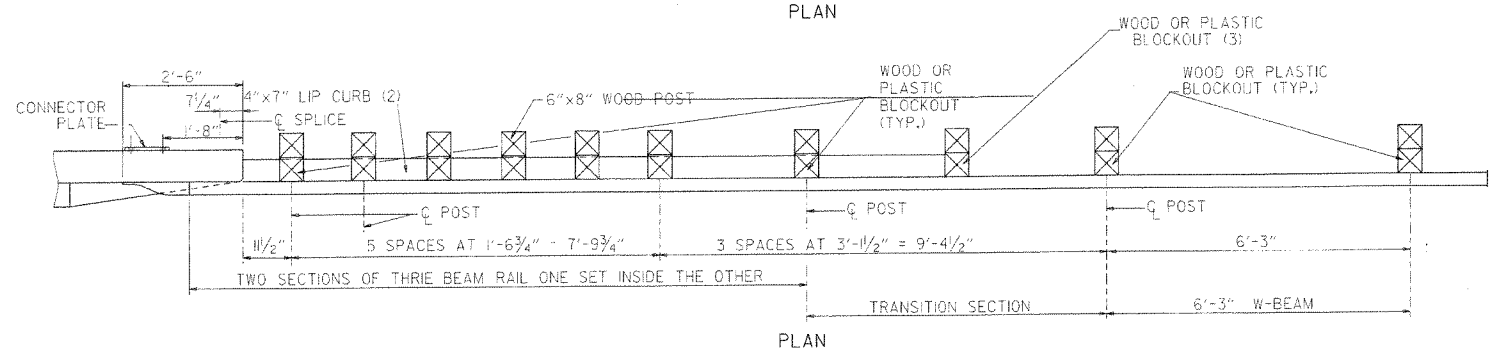
NOTE: BLOCKS SHALL BE THE SAME TYPE THROUGHOUT THE PROJECT LIMITS.



THRIE BEAM RAIL SPLICE AT POST



TRANSITION SECTION



PLAN

PLAN

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

THRIE BEAM GUARD RAIL CONNECTION AT BRIDGE ENDS

GENERAL NOTES:

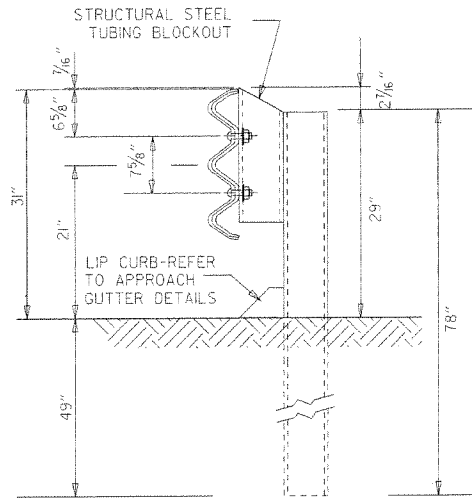
THE THRIE BEAM RAIL, SPECIAL END SHOE, AND THE TRANSITION SECTION SHALL BE MADE OF STEEL AND SHALL BE 12 GAGE. ZINC COATING SHALL BE TYPE I. RAIL POSTS SHALL BE SET PERPENDICULAR TO THE ROADWAY PROFILE GRADE AND VERTICALLY IN CROSS SECTION. ALL BOLTS SHALL BE SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND NO MORE THAN 3/4" BEYOND IT. ALL LAP SPLICES, INCLUDING SPECIAL END SHOES, SHALL BE MADE IN THE DIRECTION SHOWN ON STANDARD DRAWINGS GR-9 & GR-11. WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7F (1400 F) OR NO. 1 350 F SOUTHERN PINE. REFER TO STD. DRWG. GR-10A FOR POST DETAILS. USE THRIE BEAM GUARD RAIL COMPONENTS OF SAME MATERIAL FOR ENTIRE JOB. THRIE BEAM POSTS SHALL BE SAME MATERIAL AS W-BEAM POSTS FOR ENTIRE JOB.

DATE	REVISION	DATE FILM
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	

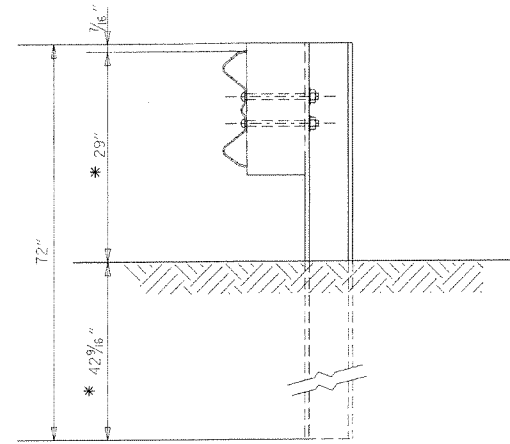
ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR-10

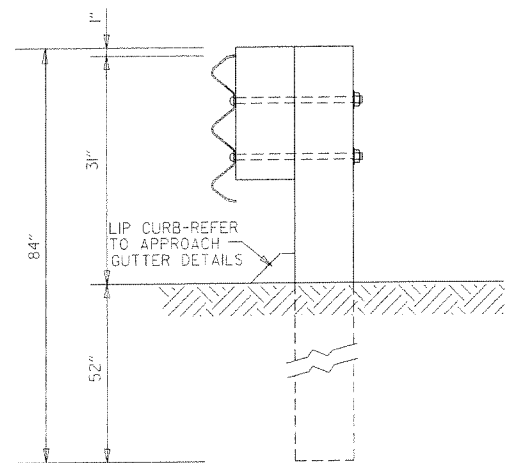


THRIE BEAM RAIL WITH STEEL TUBING BLOCKOUT AND STEEL POST
POSTS 1-7

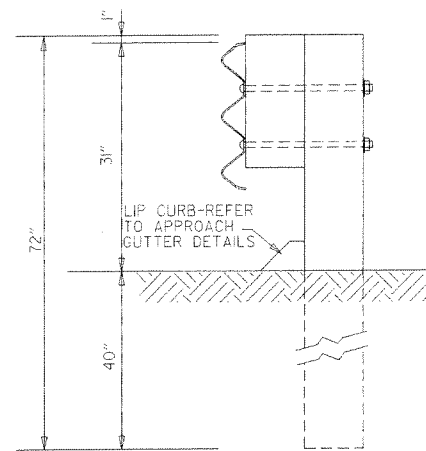


W-BEAM TO THRIE BEAM TRANSITION RAIL WITH WOOD OR PLASTIC BLOCKOUT AND STEEL POST
POST 8

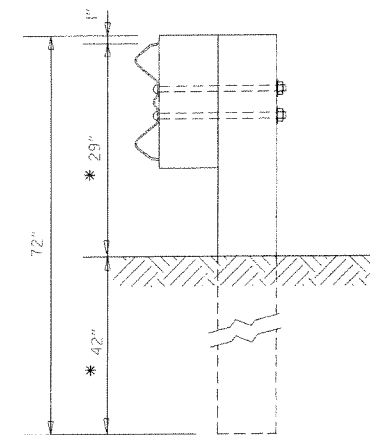
* NOTE:
THESE DIMENSIONS WILL NEED TO BE ADJUSTED IN THE FIELD TO MAKE THE TRANSITION FROM 21" MID POINT OF THRIE BEAM TO 22" MID POINT OF W-BEAM.



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

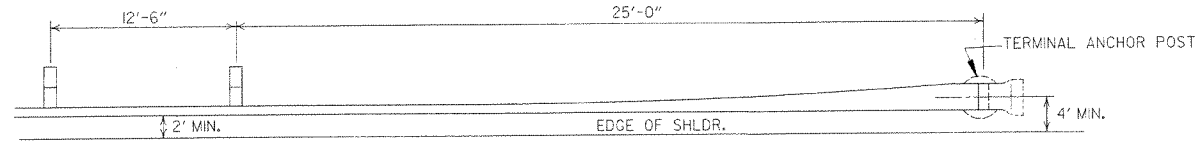
GENERAL NOTES:
RAIL POSTS SHALL BE SET PERPENDICULAR TO THE ROADWAY PROFILE GRADE AND VERTICALLY IN CROSS SECTION.
WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7f (1400 f) OR NO. 1 350 f SOUTHERN PINE.

DATE	REVISION	DATE FILM
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	

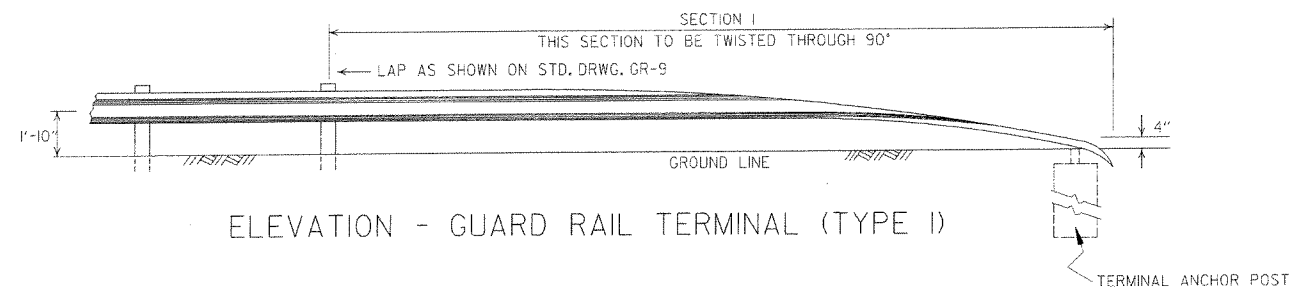
ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR-10A

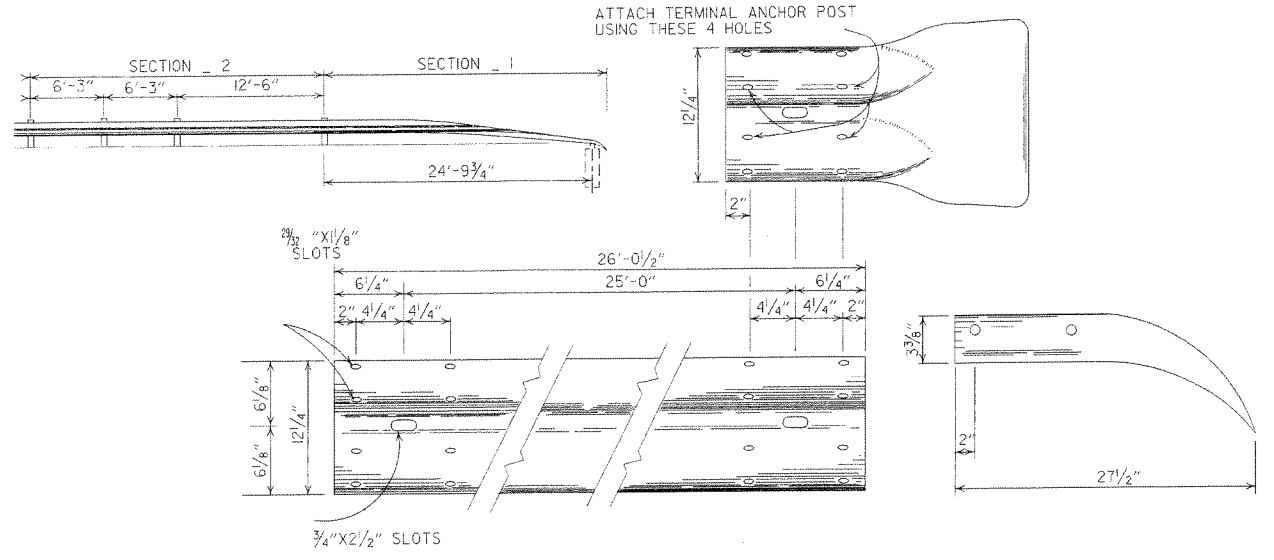


PLAN - GUARD RAIL TERMINAL (TYPE I)



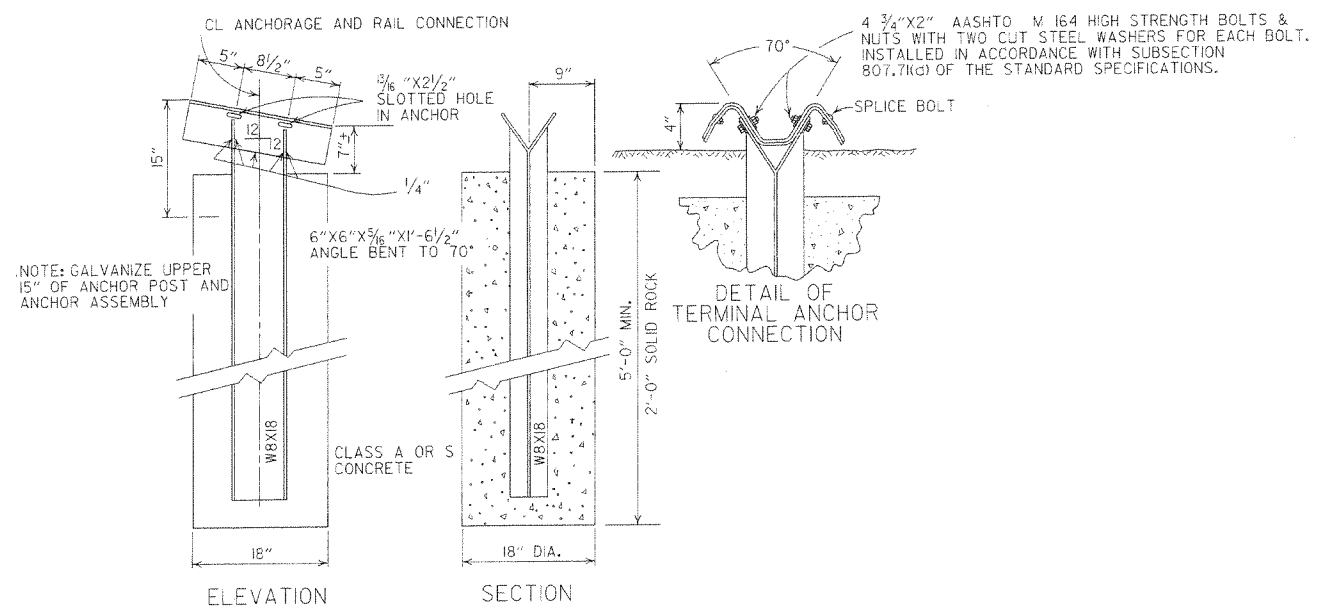
ELEVATION - GUARD RAIL TERMINAL (TYPE I)

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: GALVANIZE UPPER 15" OF ANCHOR POST AND ANCHOR ASSEMBLY
NOTE: RAIL MEMBERS MAY BE BOLTED TO ANGLE AT TERMINAL ANCHOR AND THE TWO ASSEMBLIES POSITIONED TO PROPER ALIGNMENT PRIOR TO PLACING CONCRETE AROUND 8 WF 17 POST IF CONTRACTOR SO DESIRES.

			ARKANSAS STATE HIGHWAY COMMISSION
			GUARD RAIL DETAILS
			STANDARD DRAWING GRT-1
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 FILM	

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 1/8	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)(i).

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

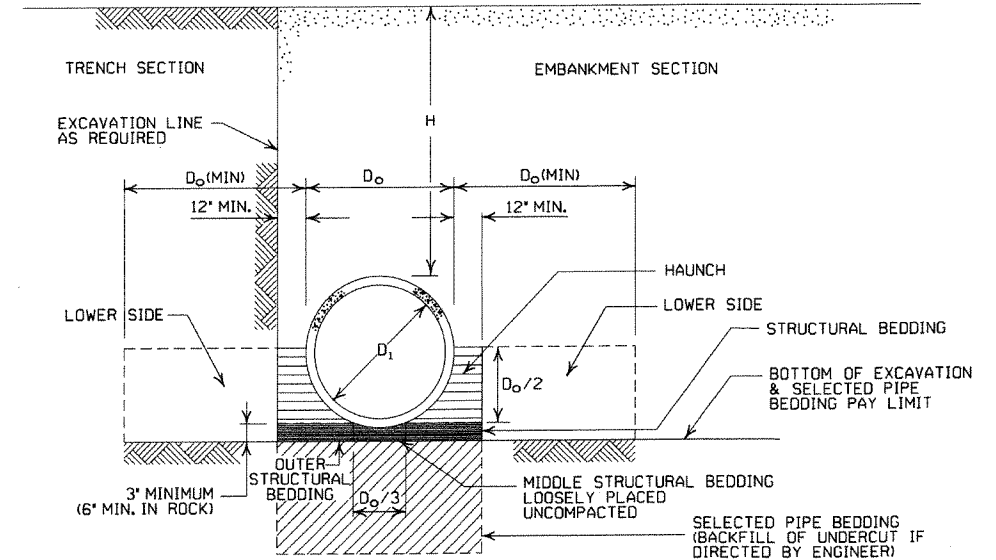
- LEGEND -

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

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

* SM-3 WILL NOT BE ALLOWED.

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



EMBANKMENT AND TRENCH INSTALLATIONS

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

GENERAL NOTES

1. CONCRETE PIPE CULVERT CONSTRUCTION SHALL CONFORM TO ARKANSAS 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 3/8 INCH BY 1/2 INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM						
12	1	84	91			
15	1	67	73			
18	1	56	61			
24	1	42	46	59		
30	2	34	36	47		
36	2		30	39	41	
42	2		43	67	70	73
48	2		37	58	61	64
② 3 INCH BY 1 INCH OR 5 INCH BY 1 INCH CORRUGATION RIVETED, WELDED, BOLTED, OR HELICAL LOCK-SEAM						
36	1	48	60	88	111	118
42	1	41	51	72	90	102
48	1	36	45	64	77	85
54	2	32	40	59	71	79
60	2	29	36	53	64	71
66	2	26	33	47	58	64
72	2	24	30	44	53	59
78	2		28	41	49	54
84	2		26	38	45	51
90	2		24	35	43	45
96	2		22	33	40	44
102	2			31	38	42
108	2			30	35	39
114	2			28	34	37
120	2			27	32	35

CONSTRUCTION SEQUENCE

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

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

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

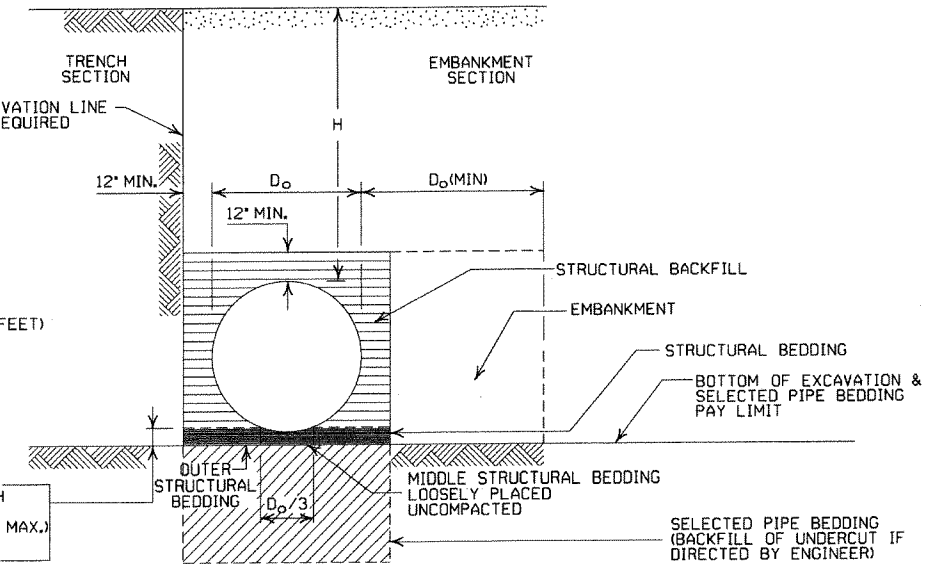
③ SM-3 WILL NOT BE ALLOWED.

CORRUGATED ALUMINUM PIPE (ROUND)

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

EQUIVALENT METAL THICKNESSES AND GAUGES

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



- LEGEND -

- D_o = OUTSIDE DIAMETER OF PIPE
- MAX. = MAXIMUM
- MIN. = MINIMUM
- [Symbol] = STRUCTURAL BACKFILL MATERIAL
- [Symbol] = UNDISTURBED SOIL
- [Symbol] = 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 3/8" X 1/2" CORRUGATION.
4. INSTALLATION TYPE 1 OR 2 MAY BE USED FOR CORRUGATED STEEL OR ALUMINUM PIPE ARCHES WITH 3" X 1" OR 5" X 1" CORRUGATION.

GENERAL NOTES

1. METAL PIPE CULVERT CONSTRUCTION SHALL CONFORM TO ARKANSAS 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."

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			INSTALLATION		
				TYPE 1	TYPE 1		TYPE 1	TYPE 1	
2 3/8 INCH BY 1/2 INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM									
15	17x13	3	0.064	2	15	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	0.164	3	15	
66	77x52	8	0.168	3	15				
72	83x57	9	0.168	3	15				
② 3 INCH BY 1 INCH OR 5 INCH BY 1 INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM									
			INSTALLATION				INSTALLATION		
			TYPE 2	TYPE 1	TYPE 2	TYPE 1			
36	40x31	5	0.079	3	2	12	15		
42	46x36	6	0.079	3	2	13	15		
48	53x41	7	0.079	3	2	13	15		
54	60x46	8	0.079	3	2	13	15		
60	66x51	9	0.079	3	2	13	15		
66	73x55	12	0.079	3	2	15	15		
72	81x59	14	0.079	3	2	15	15		
78	87x63	14	0.079	3	2	15	15		
84	95x67	16	0.109	3	2	15	15		
90	103x71	16	0.109	3	2	15	15		
96	112x75	18	0.109	3	2	15	15		
102	117x79	18	0.109	3	2	15	15		
108	128x83	18	0.138	3	2	15	15		

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

② WHERE THE STANDARD 2 3/8" 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.

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

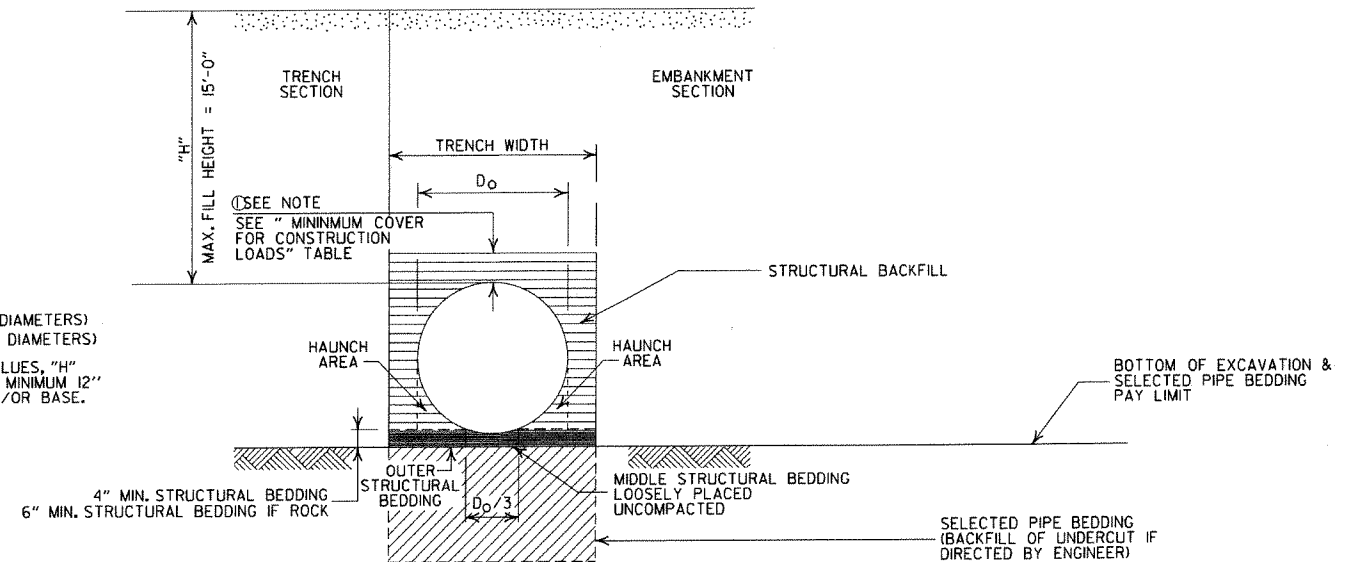
INSTALLATION TYPE	** MATERIAL REQUIREMENTS FOR STRUCTURAL BACKFILL AND STRUCTURAL BEDDING
TYPE 2	*SELECTED MATERIALS (CLASS SM-1, SM-2 OR SM-4)

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

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

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

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



TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

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

MULTIPLE INSTALLATION OF HIGH DENSITY POLYETHYLENE PIPES

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

MINIMUM COVER FOR CONSTRUCTION LOADS

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

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

CONSTRUCTION SEQUENCE

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

GENERAL NOTES

1. PIPE SHALL CONFORM TO AASHTO M294, TYPE S. INSTALLATION SHALL CONFORM TO JOB SPECIAL PROVISION "PLASTIC PIPE" AND SECTION 606 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, 2003 EDITION.
2. PLASTIC PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) WITH 2010 INTERIMS.
3. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PLUS A SUFFICIENT WIDTH TO ENSURE WORKING ROOM TO PROPERLY AND SAFELY PLACE AND COMPACT HAUNCHING AND OTHER BACKFILL MATERIAL.
4. IMPERVIOUS MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
5. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH (BELOW THE AREA IDENTIFIED AS "STRUCTURAL BEDDING" ABOVE) WILL BE EXCAVATED AND REPLACED WITH SELECTED PIPE BEDDING. THE QUANTITY OF MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE SELECTED PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS "SELECTED PIPE BEDDING."
6. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED ABOVE AS STRUCTURAL BACKFILL), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."
7. FOR PIPE TYPES THAT ARE NOT SMOOTH ON THE OUTSIDE (CORRUGATED OR PROFILE WALLS), BACKFILL GRADATIONS SHOULD BE SELECTED THAT WILL PERMIT THE FILLING OF THE CORRUGATION OR PROFILE VALLEY.
8. HIGH DENSITY POLYETHYLENE PIPES OF DIAMETERS OTHER THAN SHOWN WILL NOT BE ALLOWED.
9. JOINTS FOR HDPE PIPE SHALL MEET THE REQUIREMENTS FOR SOIL TIGHTNESS AS SPECIFIED IN AASHTO SECTION 26.4.2.4 AND 30.4.2 "AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS." JOINTS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

- LEGEND -

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

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

12-15-11	REVISED GENERAL NOTES & MINIMUM COVER NOTE	
11-17-10	ISSUED	
DATE	REVISION	DATE FILMED

ARKANSAS STATE HIGHWAY COMMISSION

**PLASTIC PIPE CULVERT
(HIGH DENSITY POLYETHYLENE)**

STANDARD DRAWING PCP-1

MAXIMUM FILL HEIGHT
BASED ON STRUCTURAL BACKFILL

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

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

- AGGREGATE BASE COURSE (CLASS 4, 5, 6, OR 7) MAY BE USED IN LIEU OF SELECTED MATERIAL. SM3 WILL NOT BE ALLOWED.
 - STRUCTURAL BEDDING MATERIAL SHALL HAVE A MAXIMUM PARTICLE SIZE OF 1/8 INCH. STRUCTURAL BACKFILL MATERIAL SHALL BE FREE OF ORGANIC MATERIAL, STONES LARGER THAN 1.50 INCH IN GREATEST DIMENSION, OR FROZEN LUMPS.
- STRUCTURAL BACKFILL AND STRUCTURAL BEDDING MATERIAL WILL NOT BE PAID FOR SEPARATELY, BUT COMPENSATION WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID PER LINEAR FOOT OF PVC PIPE.

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

MINIMUM TRENCH WIDTH
BASED ON FILL HEIGHT "H"

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

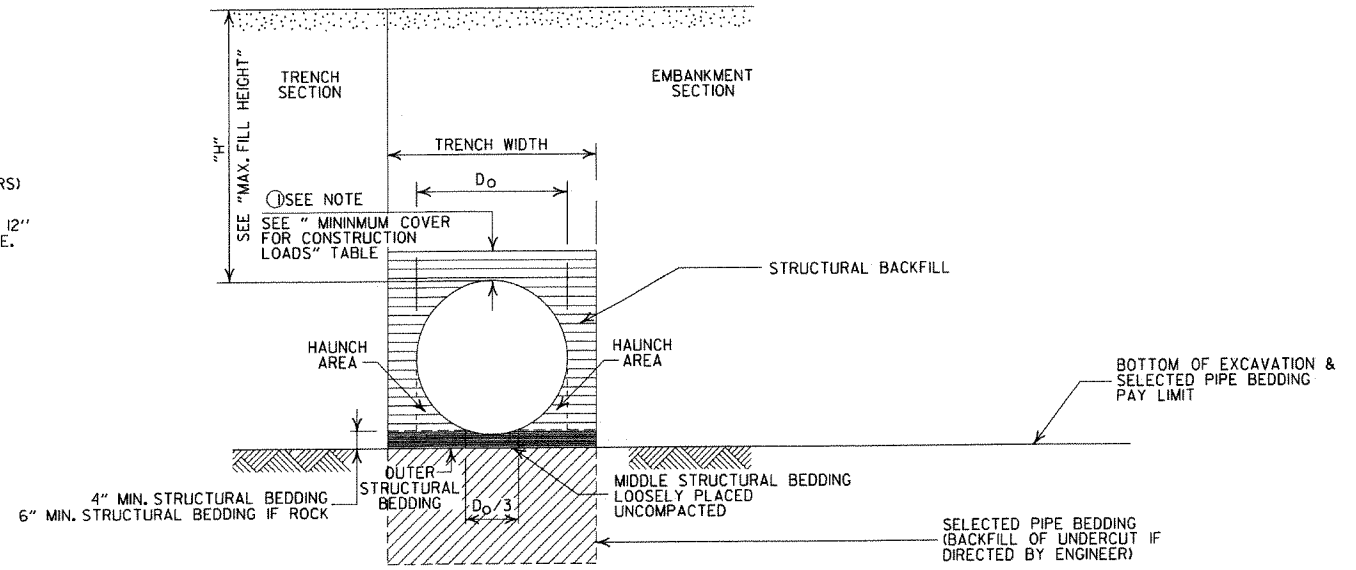
MULTIPLE INSTALLATION OF
PVC PIPES

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

MINIMUM COVER FOR
CONSTRUCTION LOADS

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

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



TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

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

CONSTRUCTION SEQUENCE

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

- LEGEND -

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

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

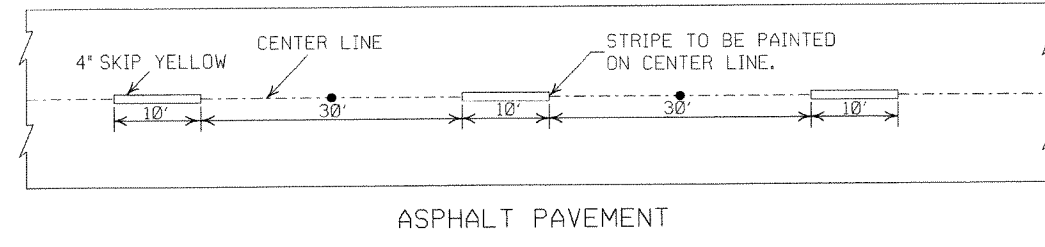
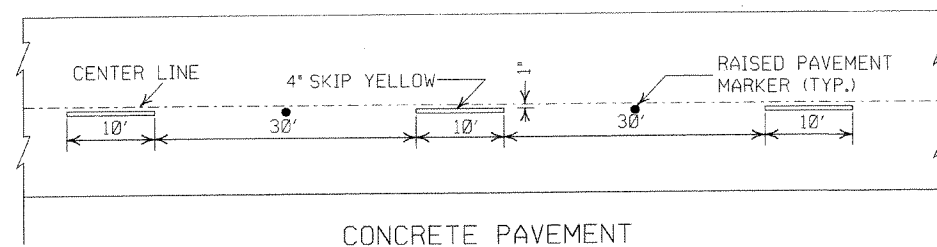
GENERAL NOTES

1. PIPE SHALL CONFORM TO ASTM F949, CELL CLASS 12454. INSTALLATION SHALL CONFORM TO JOB SPECIAL PROVISION "PLASTIC PIPE" AND SECTION 606 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, 2003 EDITION.
2. PLASTIC PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) WITH 2010 INTERIMS.
3. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PLUS A SUFFICIENT WIDTH TO ENSURE WORKING ROOM TO PROPERLY PLACE AND COMPACT HAUNCHING AND OTHER BACKFILL MATERIAL.
4. IMPERVIOUS MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
5. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH (BELOW THE AREA IDENTIFIED AS "STRUCTURAL BEDDING" ABOVE) WILL BE EXCAVATED AND REPLACED WITH SELECTED PIPE BEDDING. THE QUANTITY OF MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE SELECTED PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS "SELECTED PIPE BEDDING."
6. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED ABOVE AS STRUCTURAL BACKFILL), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."
7. FOR PIPE TYPES THAT ARE NOT SMOOTH ON THE OUTSIDE (CORRUGATED OR PROFILE WALLS), BACKFILL GRADATIONS SHOULD BE SELECTED THAT WILL PERMIT THE FILLING OF THE CORRUGATION OR PROFILE VALLEY.
8. PVC PIPES OF DIAMETERS OTHER THAN SHOWN WILL NOT BE ALLOWED.
9. JOINTS FOR PVC PIPE SHALL MEET THE REQUIREMENTS FOR SOIL TIGHTNESS AS SPECIFIED IN AASHTO SECTION 26.4.2.4 AND 30.4.2 "AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS." JOINTS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

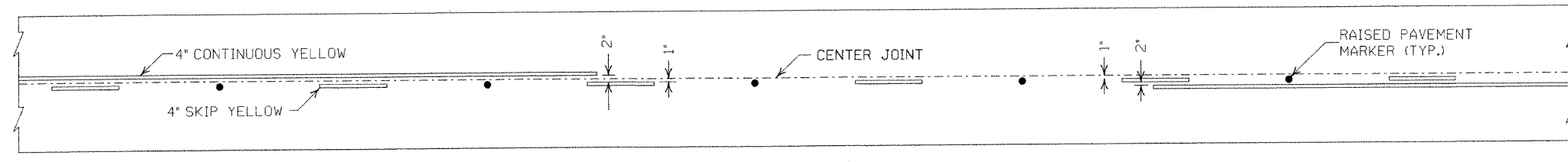
12-15-11	REV GENERAL NOTES & MINIMUM COVER NOTE; DELETED SM3 MATERIAL	
11-17-10	ISSUED	
DATE	REVISION	DATE FILMED

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

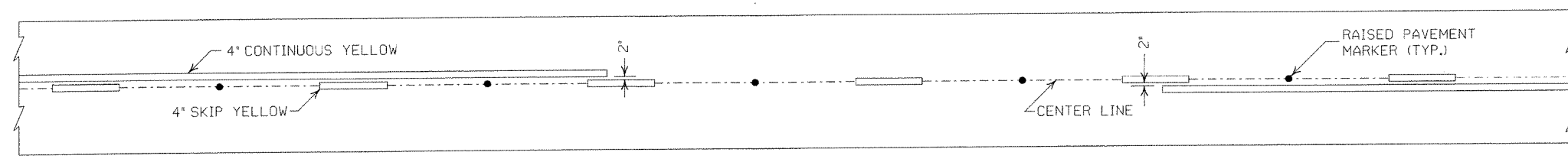
- NOTES:
1. ALL LINES SHALL HAVE A WIDTH OF 4 INCHES.
 2. THE THICKNESS AND RATE OF PAINT APPLICATION SHALL BE AS SPECIFIED IN SECTION 718 OF THE STANDARD SPECIFICATIONS.
 3. THIS DRAWING SHALL BE USED IN CONJUNCTION WITH THE LATEST REVISED ADDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES."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



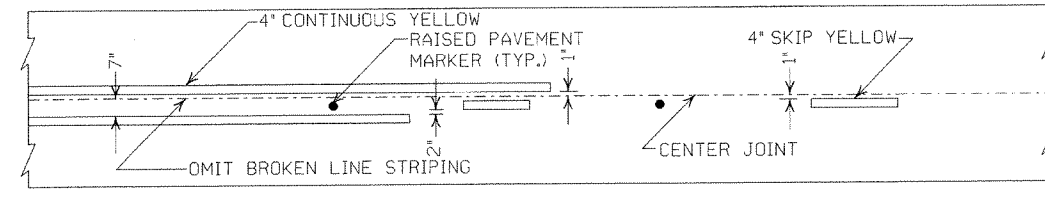
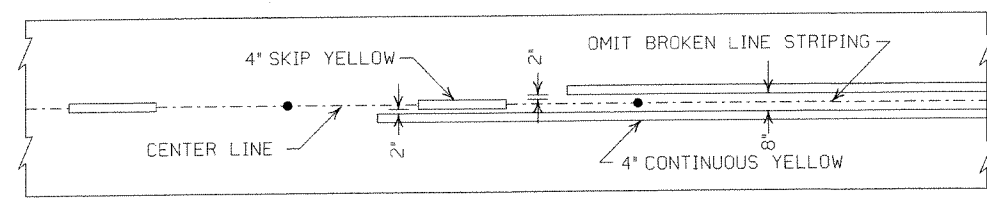
BROKEN LINE STRIPING



SOLID LINE STRIPING ON CONCRETE PAVEMENT



SOLID LINE STRIPING ON ASPHALT PAVEMENT

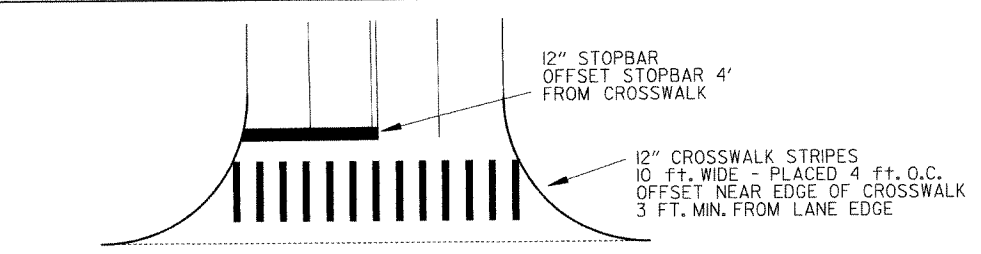


ASPHALT PAVEMENT

CONCRETE PAVEMENT

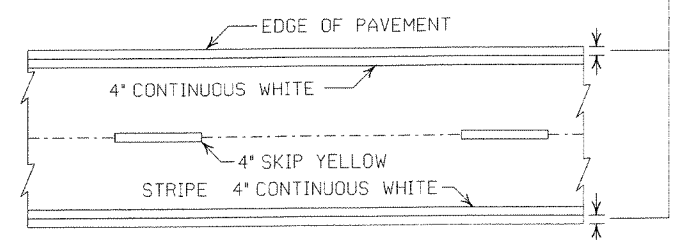
STRIPING AT ADJACENT NO PASSING LANES

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.

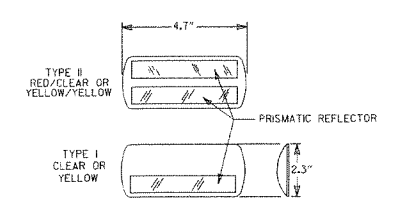


CROSSWALK AND STOPBAR DETAILS

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

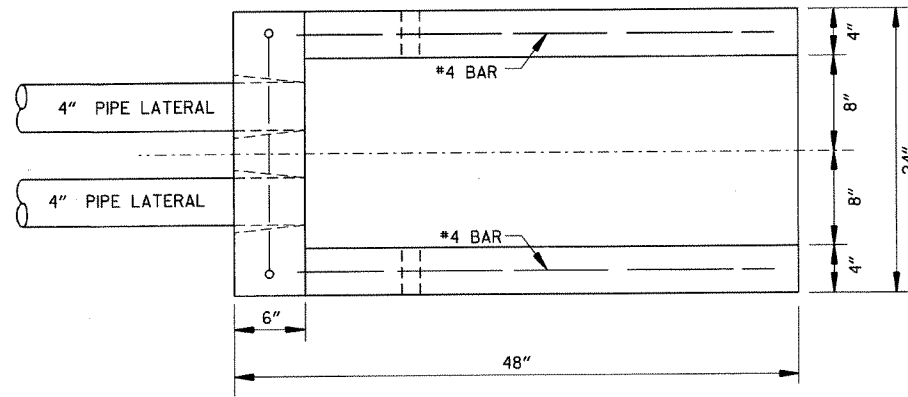
DATE	REVISION	FILMED
11-17-10	REVISED GENERAL NOTES & REMOVED PLOWABLE PVMT MRKRS	
11-18-04	REVISED NOTE 2 & GENERAL NOTES	
8-22-02	ADDED CROSSWALK & STOPBAR DTLS.	
7-02-98	ADDED DETAILS OF STD. RAISED PAVT. MARKERS	
4-26-96	REV. NOTES 3&4; ADDED R.P.M.	
9-30-80	DRAWN	1-9-30-80

ARKANSAS STATE HIGHWAY COMMISSION

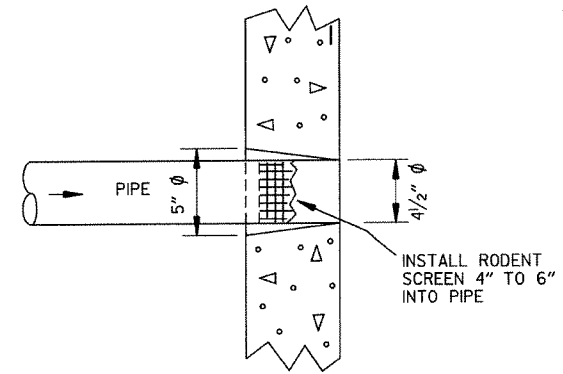
PAVEMENT MARKING DETAILS

STANDARD DRAWING PM-1

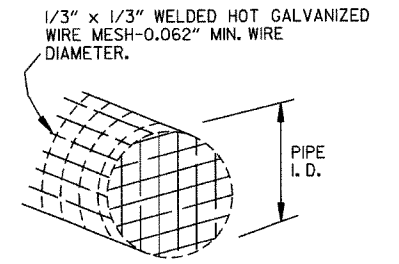
- NOTE:
 1. GRANULAR BACKFILL TO BE SUBSIDIARY TO PIPE UNDERDRAIN.
 2. UNLESS OTHERWISE SPECIFIED ON THE PLANS, THE UNDERDRAIN COVER SHALL BE THOROUGHLY COMPACTED EARTH AND SHALL BE SUBSIDIARY TO PIPE UNDERDRAIN.
 3. GRANULAR MATERIAL SHALL BE WRAPPED WITH GEOTEXTILE FABRIC. LAP FABRIC 12" OR THE WIDTH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



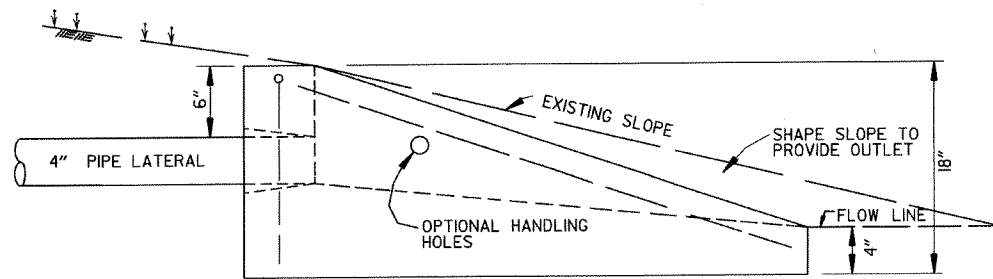
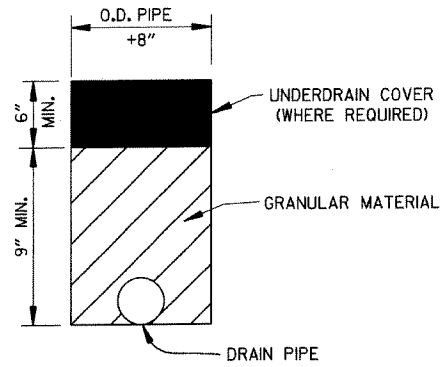
PLAN VIEW



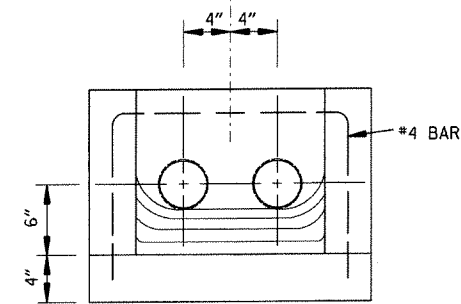
DETAIL OF HOLE FOR 4" PIPE



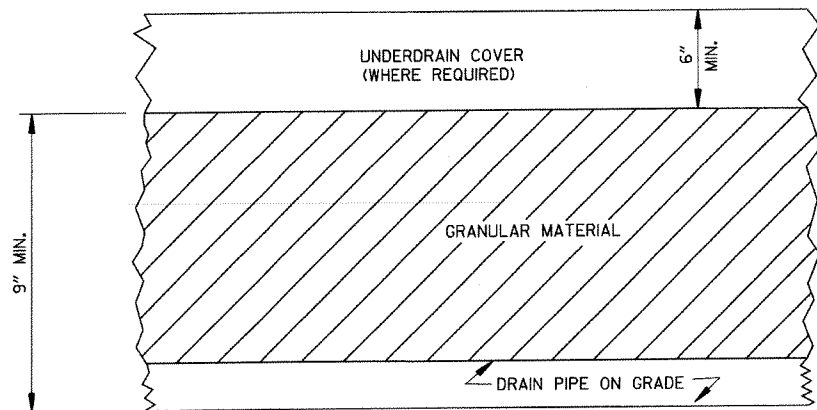
DETAIL OF RODENT SCREEN



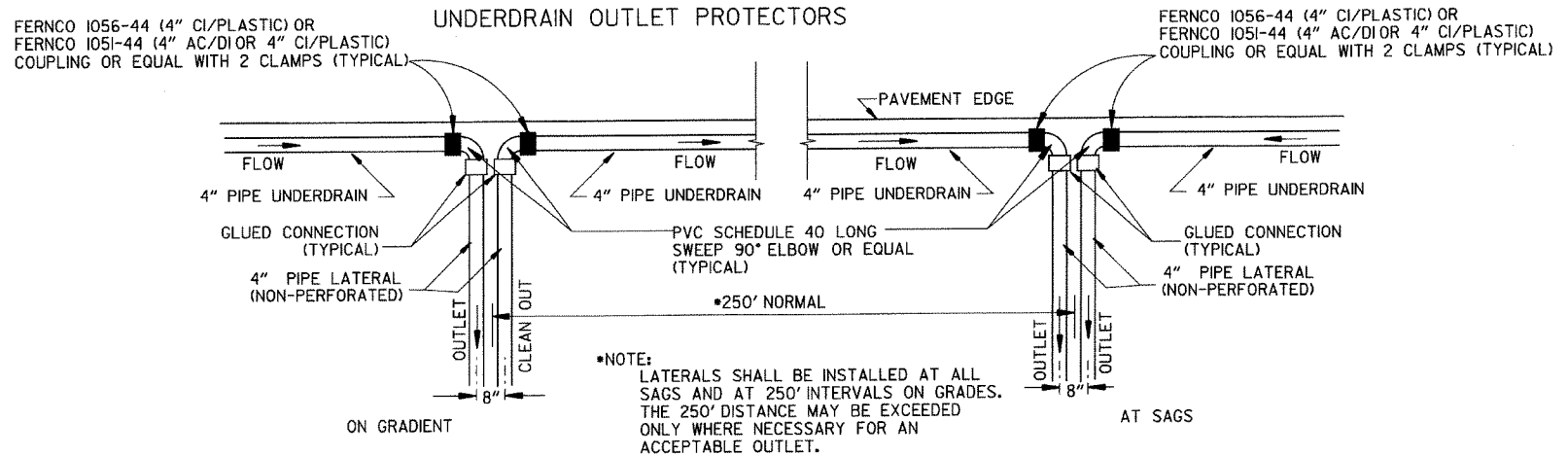
SIDE VIEW



FRONT VIEW



DETAILS OF PIPE UNDERDRAIN



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

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.	
1° 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		0.021		0.021		0.021		0.021		0.021	
2° 45'	0.023		0.023		0.023		0.023		0.023		0.023	
3° 00'	0.025	150	0.025	200	0.025	200	0.025	200	0.025	200	0.025	200
3° 15'	0.027		0.027		0.027		0.027		0.027		0.027	
3° 30'	0.029		0.029		0.029		0.029		0.029		0.029	
3° 45'	0.031		0.031		0.031		0.031		0.031		0.031	
4° 00'	0.033		0.033		0.033		0.033		0.033		0.033	
4° 30'	0.037		0.037		0.037		0.037		0.037		0.037	
5° 00'	0.040		0.040		0.040		0.040		0.040		0.040	
5° 30'	0.043		0.043		0.043		0.043		0.043		0.043	
6° 00'	0.046		0.046		0.046		0.046		0.046		0.046	
6° 30'	0.049		0.049		0.049		0.049		0.049		0.049	
7° 00'	0.053		0.053		0.053		0.053		0.053		0.053	
7° 30'	0.056		0.056		0.056		0.056		0.056		0.056	
8° 00'	0.058		0.058		0.058		0.058		0.058		0.058	
8° 30'	0.061		0.061		0.061		0.061		0.061		0.061	
9° 00'	0.063		0.063		0.063		0.063		0.063		0.063	
10° 00'	0.068	160	0.068	250	0.068	250	0.068	250	0.068	250	0.068	250
11° 00'	0.072	170	0.072	250	0.072	250	0.072	250	0.072	250	0.072	250
12° 00'	0.076	175	0.076	250	0.076	250	0.076	250	0.076	250	0.076	250
13° 00'	0.080	180	0.080	250	0.080	250	0.080	250	0.080	250	0.080	250
14° 00'	0.083	190	0.083	250	0.083	250	0.083	250	0.083	250	0.083	250
15° 00'	0.086	195	0.086	250	0.086	250	0.086	250	0.086	250	0.086	250
16° 00'	0.089	200	0.089	250	0.089	250	0.089	250	0.089	250	0.089	250
17° 00'	0.091	200	0.091	250	0.091	250	0.091	250	0.091	250	0.091	250
18° 00'	0.093	205	0.093	250	0.093	250	0.093	250	0.093	250	0.093	250
19° 00'	0.095	210	0.095	250	0.095	250	0.095	250	0.095	250	0.095	250
20° 00'	0.097	215	0.097	250	0.097	250	0.097	250	0.097	250	0.097	250
21° 00'	0.098	215	0.098	250	0.098	250	0.098	250	0.098	250	0.098	250
22° 00'	0.099	215	0.099	250	0.099	250	0.099	250	0.099	250	0.099	250
23° 00'	0.099	215	0.099	250	0.099	250	0.099	250	0.099	250	0.099	250
24° 00'	0.100	220	0.100	250	0.100	250	0.100	250	0.100	250	0.100	250

D MAX = 24° 45'

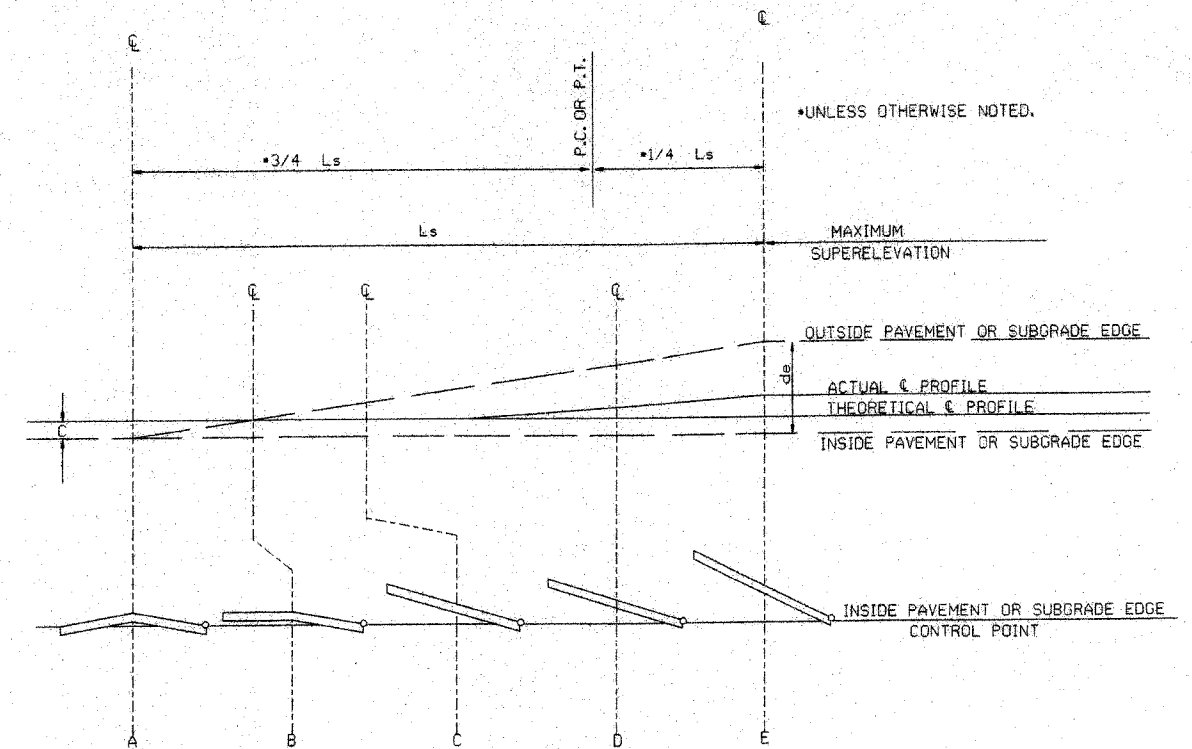
GENERAL NOTES

- ON PAVEMENT WITH TWO-WAY TRAFFIC, THE SUPERELEVATION SHALL BE REVOLVED ON THE INSIDE PAVEMENT EDGE UNLESS OTHERWISE NOTED ON THE PLANS
- SUPERELEVATION VALUES SHOWN ON THE CROSS SECTIONS ARE VALUES (+) OR (-) TO BE ADDED TO OR SUBTRACTED FROM THE POINT OF CONTROL.
- LENGTHS FOR L MAY BE ROUNDED IN MULTIPLES OF 25 FT. OR 50 FT. TO PERMIT SIMPLER CALCULATIONS.
- PAVEMENTS WIDER THAN 2 LANES SHALL HAVE ADDITIONAL TRANSITION LENGTHS AS FOLLOWS:
 - 3 LANE UNDIVIDED ----- +20%
 - 4 LANE UNDIVIDED ----- +50%
 - 5 LANE UNDIVIDED ----- +80%
 - 6 LANE UNDIVIDED ----- +100%

NOTE: MAINTAIN NORMAL CROWN ON INSIDE UNTIL SUPERELEVATION EXCEEDS 2C.
RATE OF SUPERELEVATION SHALL BE COMPUTED ON STRAIGHT LINE METHOD USING APPLICABLE Ls.

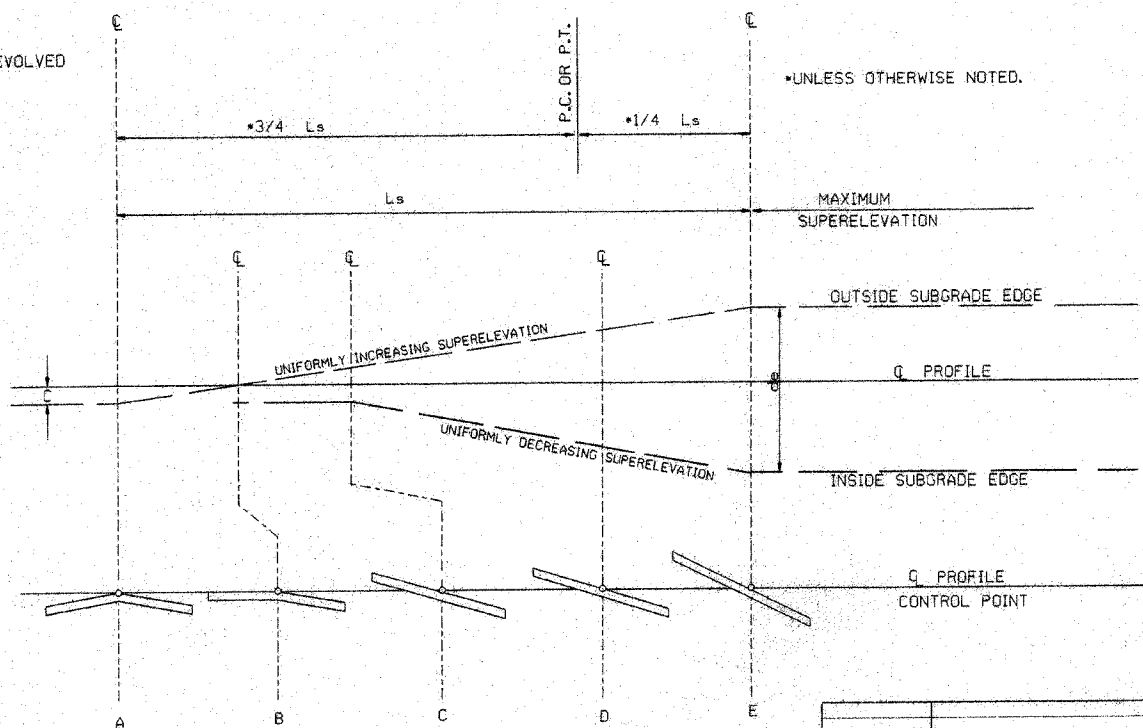
ABBREVIATIONS

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



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

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

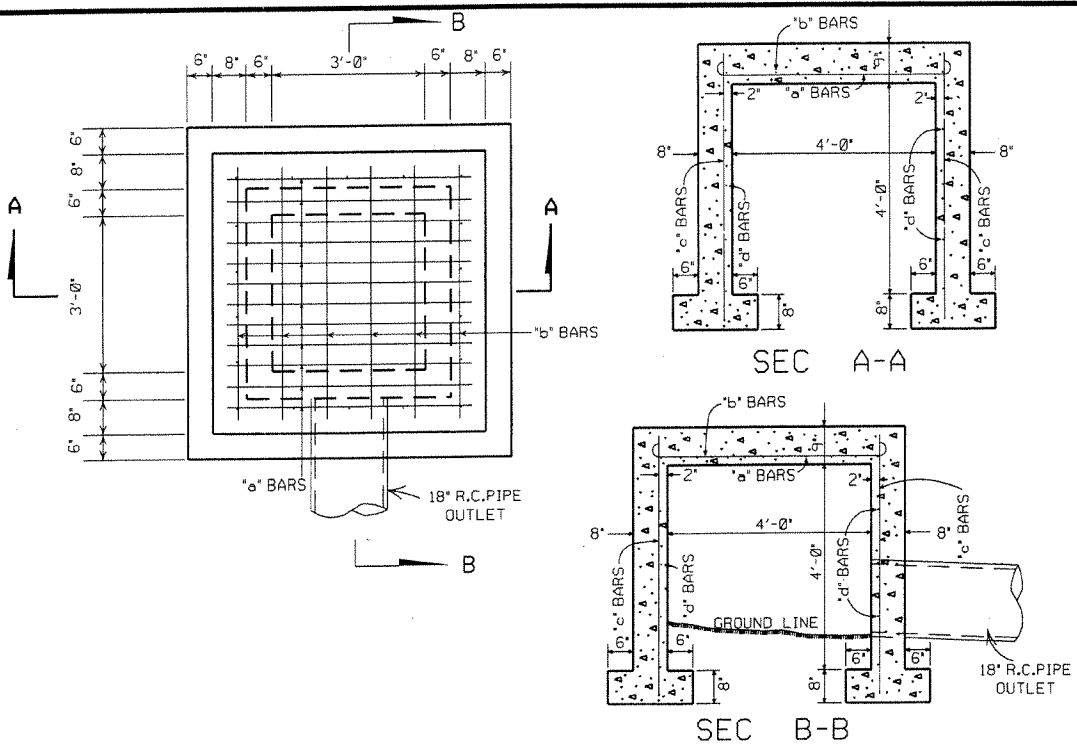


STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND CENTER LINE

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

ARKANSAS STATE HIGHWAY COMMISSION
TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC
STANDARD DRAWING SE-2

10-18-96	ADDED FORMULA	16-18-96
01-03-87	ISSUED	534-1-9-87
DATE	REVISION	DATE FILMED



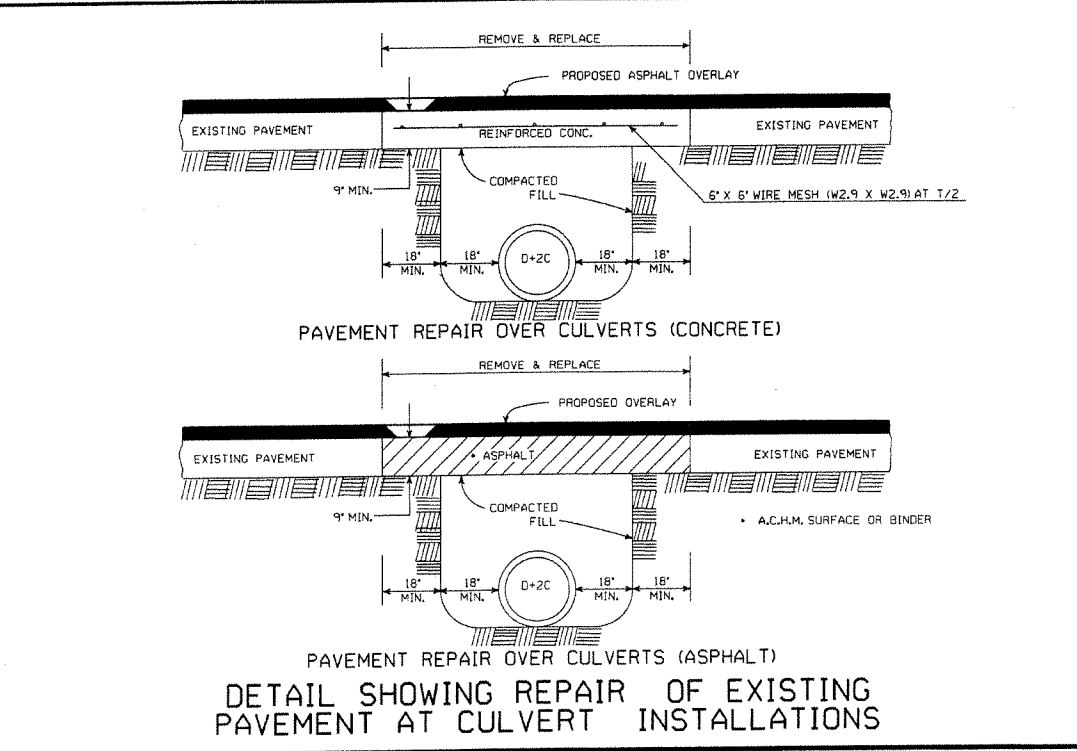
STEEL SCHEDULE

BARS	NUMBER	LENGTH	SPACING
'a'	11	6'-0"	5"
'b'	6	6'-0"	10"
'c'	16	5'-1"	12"
'd'	16	5'-0"	12"

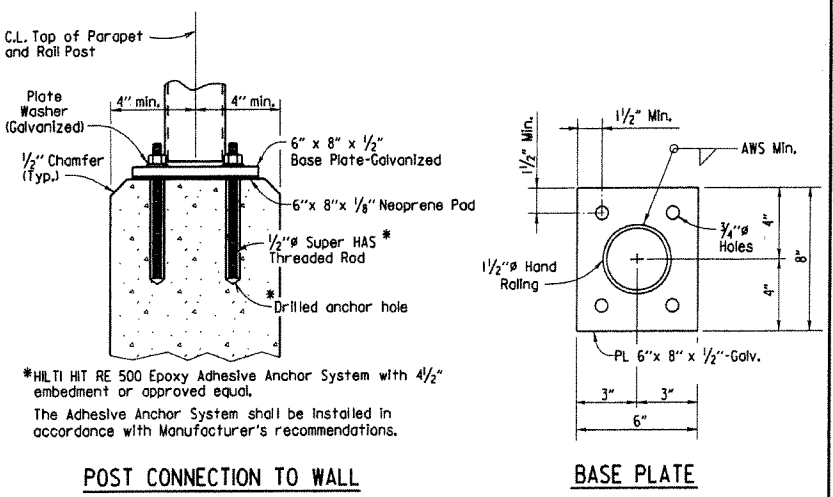
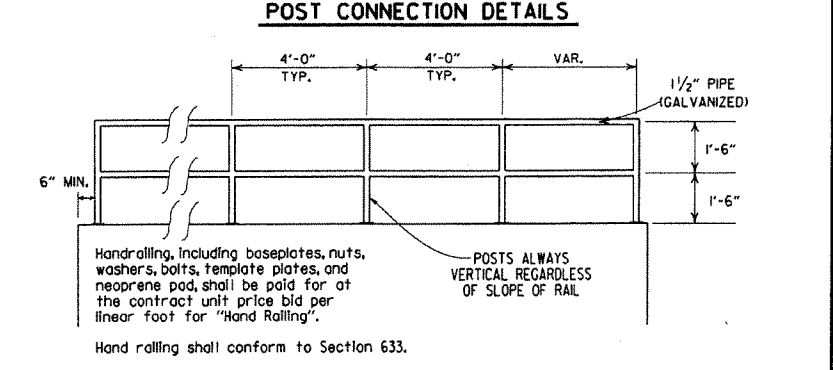
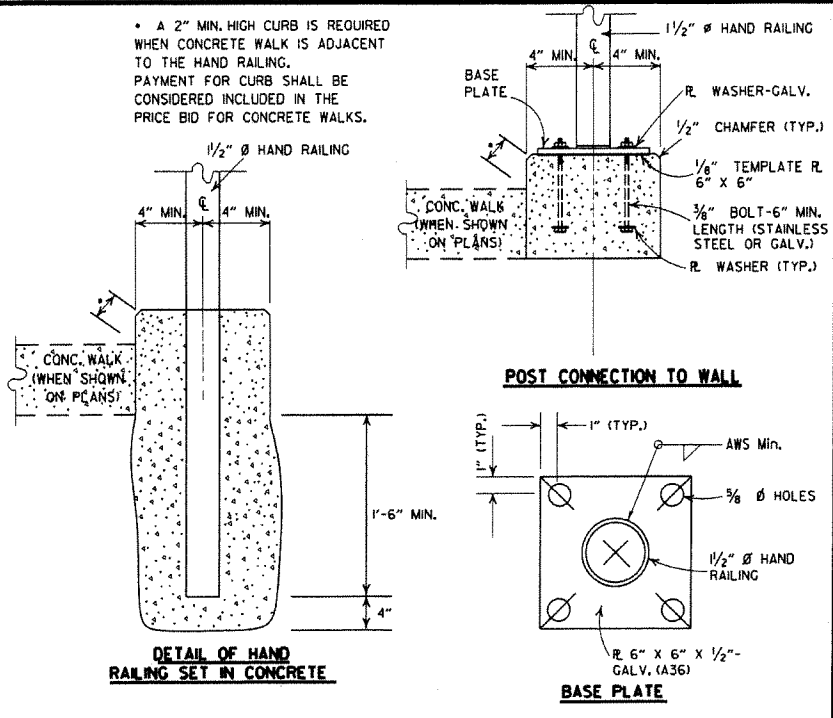
QUANTITIES
 'a' & 'b' BARS
 CONCRETE 3.40 CU. YDS.
 REINFORCING STEEL 176 LB.

GENERAL NOTE:
 THE PAY ITEMS FOR REINFORCED CONCRETE SPRING BOXES SHALL BE FOR THE QUANTITIES OF CONCRETE OF THE CLASS SPECIFIED, REINFORCING STEEL, EXCAVATION FOR STRUCTURES AND 18" R.C. PIPE CULVERT.

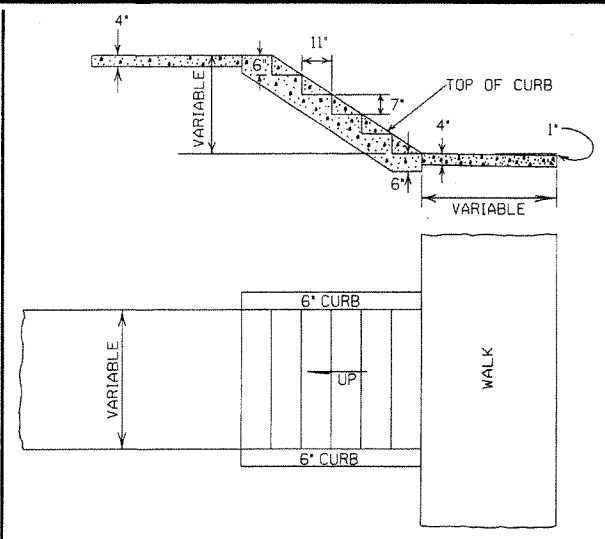
REINFORCED CONCRETE SPRING BOX



DETAIL SHOWING REPAIR OF EXISTING PAVEMENT AT CULVERT INSTALLATIONS



DETAILS OF ALTERNATE POST ANCHOR SYSTEM (EPOXY ADHESIVE ANCHORS)
HAND RAILING DETAILS



DETAILS OF CONCRETE STEPS & WALKS

- GENERAL NOTES**
1. RISE AND TREAD DIMENSIONS OF STEPS MAY BE VARIED AS DIRECTED BY THE ENGINEER, HOWEVER, TREAD WIDTHS SHALL BE 11" MIN. ALL STEPS IN A FLIGHT SHALL HAVE CONSISTENT TREAD & RISER DIMENSIONS.
 2. 1' TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE WALKS AT 45' INTERVALS.

DATE	REVISION	DATE FILMED
7-26-12	REMOVED RETAINING WALL DETAILS & REVISED HAND RAILING DETAILS	
4-17-08	REV. JOINT & FOOTING STEP DETAILS	
11-29-07	REVISED RETAINING WALL DRAINAGE	
5-25-06	REVISED PVMT REPAIR OVER CULVERTS (CONC); REVISED REINFORCED CONC SPRING BOX	
10-9-03	REVISED PIPE RAILING DETAILS TO HAND RAILING DETAILS	
4-10-03	REVISED RETAINING WALL DRAWING	
8-22-02	ADDED HAND RAILING DETAIL	
11-16-01	REVISED PVMT REPAIR OVER CULVERTS (CONC); CORRECTED SPELLING IN GENERAL NOTES	
11-18-98	ADDED GENERAL NOTES TO CONCRETE STEPS & WALKS	
7-02-98	ENLARGED PIPE	
4-03-97	ADDED NOTE TO STEEL BAR SCHED.	
10-18-96	CORRECTED SPELLING	
4-26-96	ADD WEEP HOLE, REV. JOINT SPACING IN RET. WALL	
6-2-94	CHANGED CONST. TO CONTRACTION JOINT	
10-1-92	CHANGED MESH FABRIC TO WIRE MESH	10-1-92
8-15-91	DELETED HDWL MODIFICATION DETAIL	8-15-91
11-8-90	DELETED COLD MIX FROM CULV'T. REPAIR	11-8-90
11-30-89	REV. RETAINING WALL STEEL SCHEDULE	11-30-89
11-17-88	V. BARS BEHIND ARROW	665-11-17-88
7-15-88	REV. PAVEMENT REPAIR	649-7-15-88
	ADDED HDWL MODS, DEL. PIPE UNDERDRAINS	
11-1-84	REV. TRENCH FOR PIPE UNDERDRAIN	510-11-1-84
1-4-83	ELIMINATED CONC. CLASS & ADDED CHAMFER NOTE	682-1-4-83
3-2-81	SPELLING OF 'UNDERDRAIN'	721-3-2-81
4-20-79	REV. UNDERDRAIN DET. & PAVEMENT REPAIR	674-4-20-79
2-2-76	12" MIN. GRAN. MAT'L. OVER PIPE	919-2-2-76
4-10-75	REM. SPECS. FOR GRAN. MAT'L.	568-4-10-75-853
5-22-74	GRANULAR MAT'L. TO BE SB-3	567-5-22-74-740
10-2-72	REVISED AND REDRAWN	564-10-16-72

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF SPECIAL ITEMS

STANDARD DRAWING SI - 1


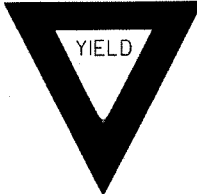



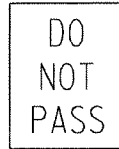



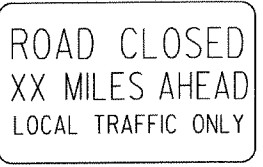
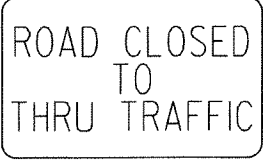

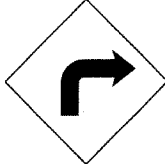
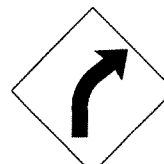



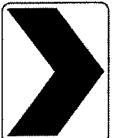
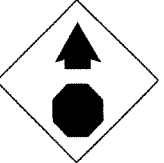
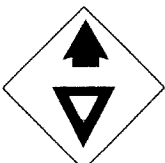
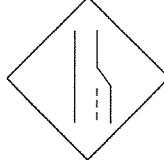

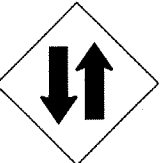

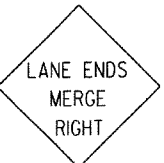


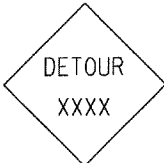




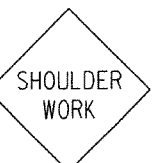
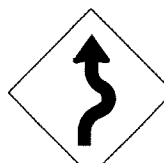


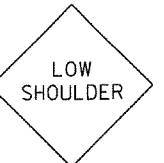
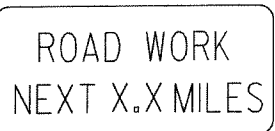
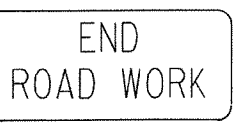
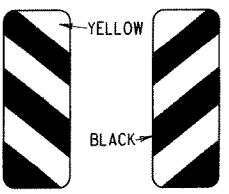
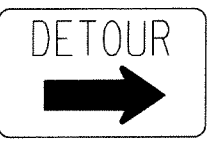


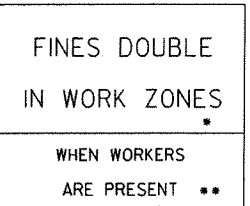
500 FT	1/2 MILE
1000 FT	3/4 MILE
1500 FT	1 MILE AHEAD

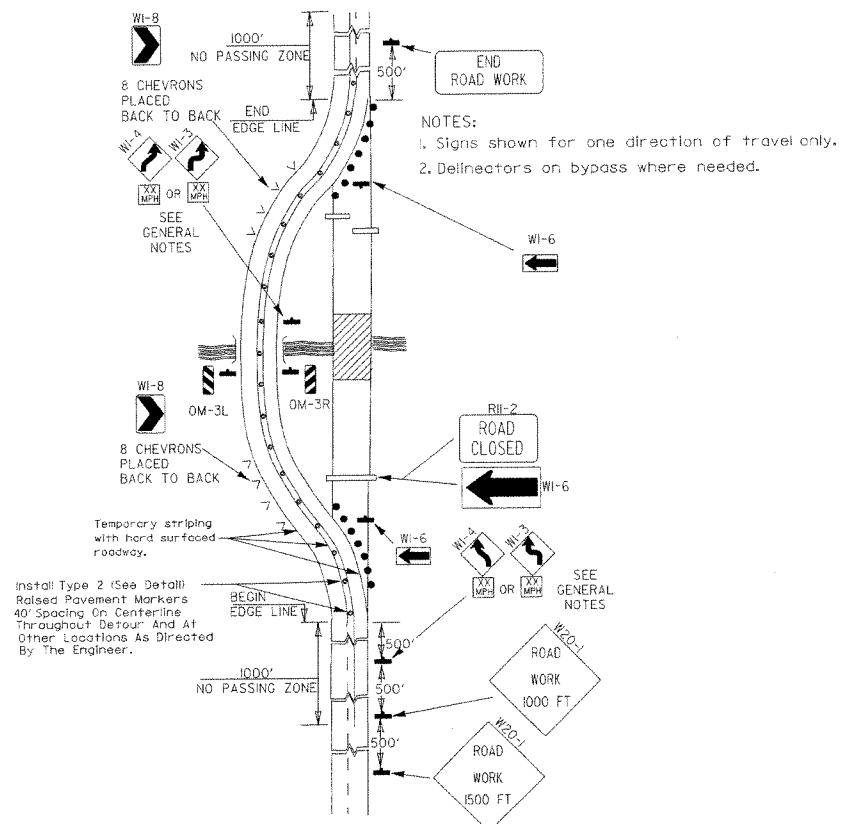
GENERAL NOTES:

- 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-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.

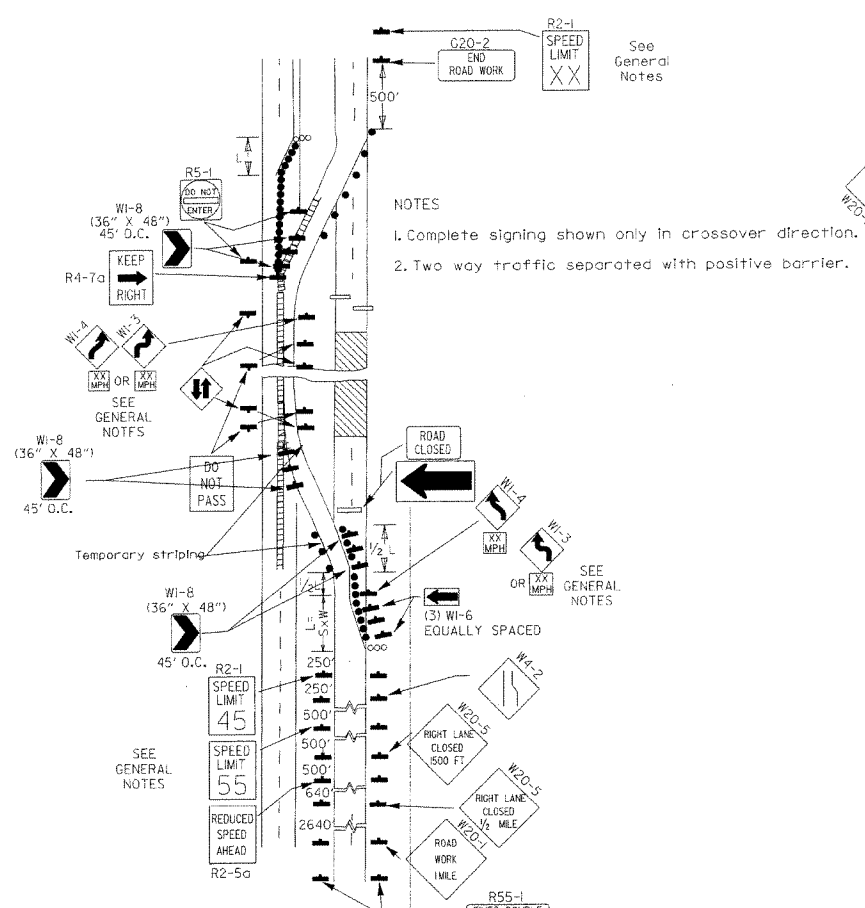
* NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE REQUIREMENTS SHOWN IN NOTES 4 & 5, BUT MEET THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH), WILL BE ACCEPTED. COMPLIANCE WITH THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY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

DATE	REVISION	FILMED
12-15-81	REVISED W24-1	
11-17-10	DELETED W8-9a & ADDED W8-9	
10-15-09	ADDED REFERENCE TO MASH & ADDED SIGN W24-1	
4-17-08	REVISED SIGN DESIGNATIONS	
11-18-04	REVISED NOTES	
10-9-03	REVISED NOTE 1	
11-16-01	REVISED NOTE 7	
9-28-00	REVISED NOTE	
11-18-98	ADDED NOTE	
6-26-97	REVISED NOTE 5	
4-03-97	REVISED NOTE 5	
10-18-96	ADDED CONTROLLED ACCESS HWY. SIGN & TO NOTE 7	
10-12-95	ADDED R55-1	
6-8-95	REVISED TO CORRECT SIGN ILLUSTRATIONS	6-8-95
2-2-95	REVISED PER PART VI, MUTCD SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	

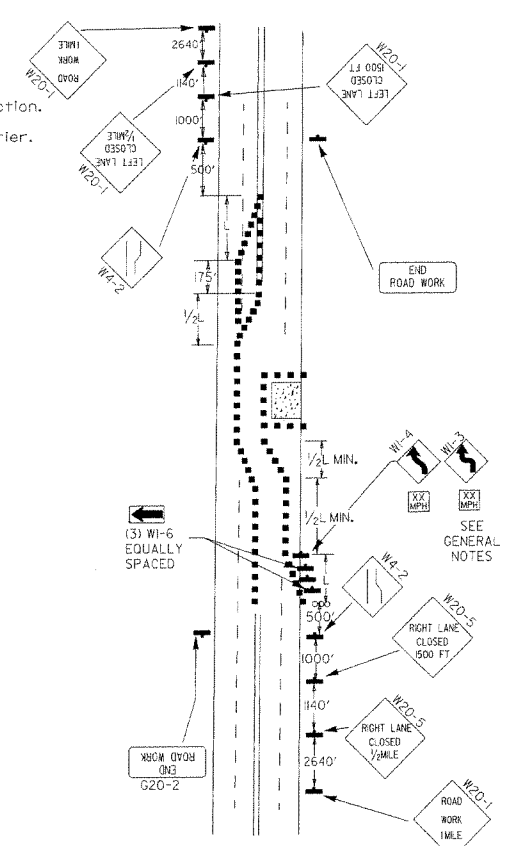
<p>RI-1</p>  <p>STANDARD 30"x30" EXPRESSWAY 36"x36" SPECIAL 48"x48"</p>	<p>RI-2</p>  <p>STD. 36"x36"x36" EXPWY. 48"x48"x48" FWY. 60"x60"x60"</p>	<p>R2-1</p>  <p>STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"</p>	<p>R2-5A</p>  <p>STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"</p>	<p>R2-5C</p>  <p>STD. 24"x30" EXPWY. 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>WI-1</p>  <p>STD. 36"x36" FWY. 48"x48"</p>	<p>WI-2</p>  <p>STD. 36"x36" FWY. 48"x48"</p>
<p>WI-3</p>  <p>STD. 48"x48"</p>	<p>WI-4</p>  <p>STD. 48"x48"</p>	<p>WI-6</p>  <p>STD. 48"x24" SPECIAL 60"x30"</p>	<p>WI-8</p>  <p>STD. 18"x24" SPECIAL 24"x30" EXPWY. 30"x36" FWY. 48"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>W20-4</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>WI-4b</p>  <p>STD. 48"x48"</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>R56-1</p>  <p>STD. 18"x18"</p>
						<p>R55-1</p>  <p>36"x60"</p> <p>WHEN WORKERS ARE PRESENT **</p> <p>* USE 6" C LETTERS ** USE 4" D LETTERS</p>



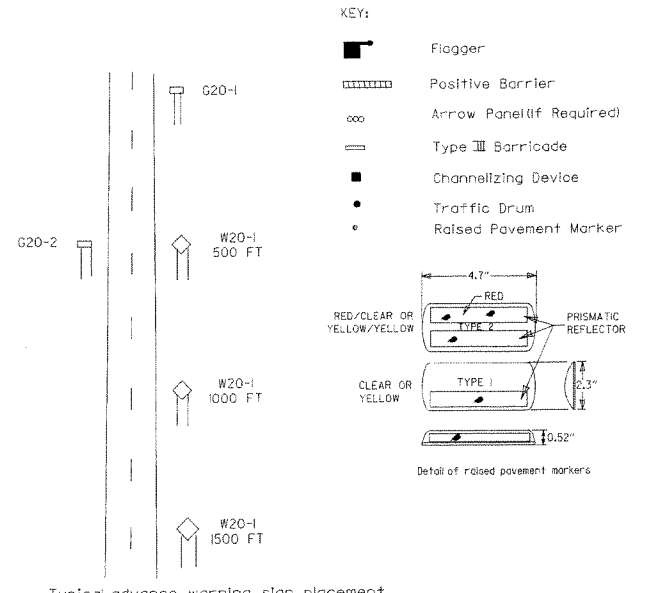
(A) Typical application of traffic control devices on a 2-lane highway where the entire roadway is closed and a bypass detour is provided.



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

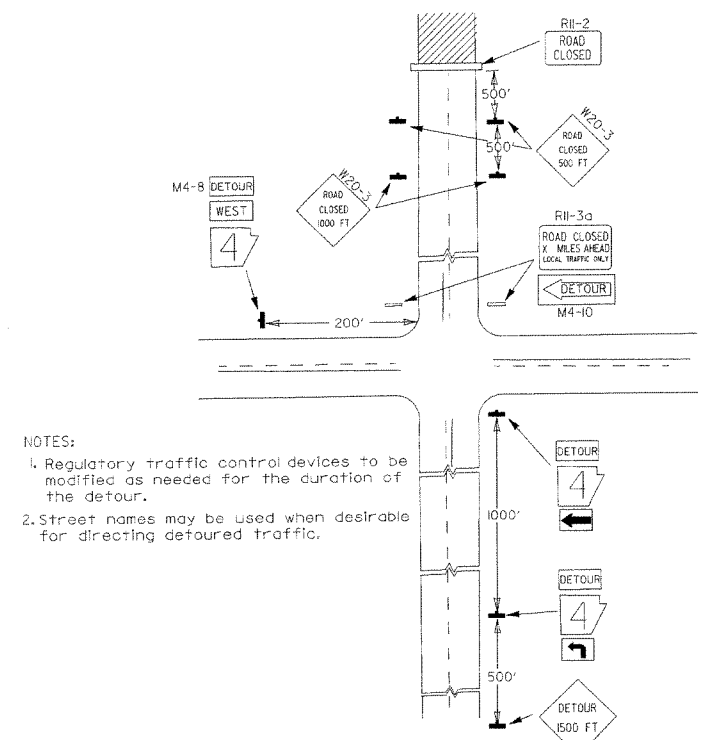


(C) Typical application - 4-lane undivided roadway where half of the roadway is closed.

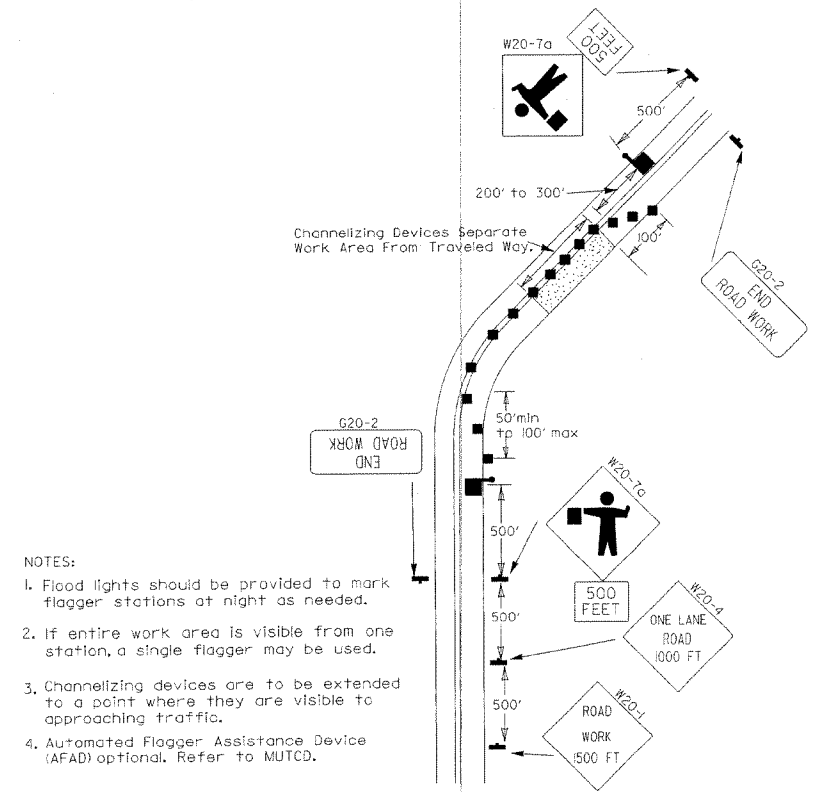


Taper formulae:
 $L = S \times W$ for speeds of 45mph or more.
 $L = \frac{WS^2}{60}$ for speeds of 40mph or less.
 Where:
 L = Minimum length of taper.
 S = Numerical value of posted speed limit prior to work or 85th percentile speed.
 W = Width of offset.

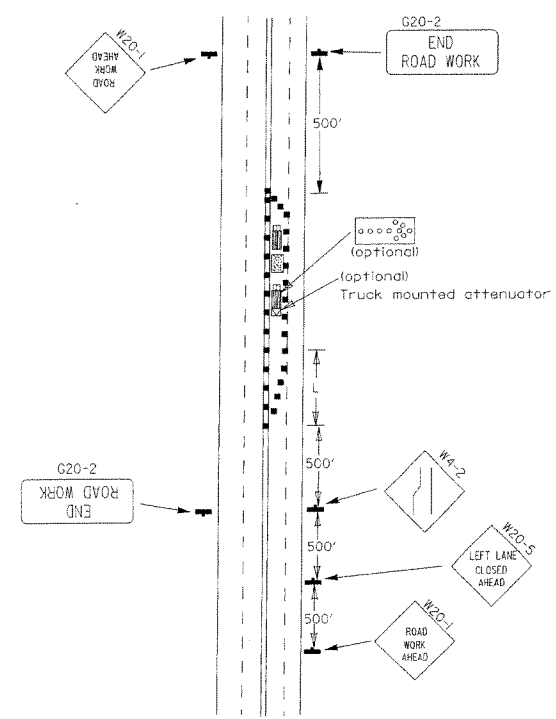
- GENERAL NOTES:
- Advisory speed posted on W1-3 or W1-4 curve warning signs to be determined at site. Use W1-4 when speed is greater than 30mph and W1-3 when 30mph or less.
 - When the existing speed limit is 55mph and the plans require a speed limit of 45mph, the R2-1(55) shall be omitted and the R2-1(45) shall be installed at that location. Additional R2-1(45) 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 R2-1(55) 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.



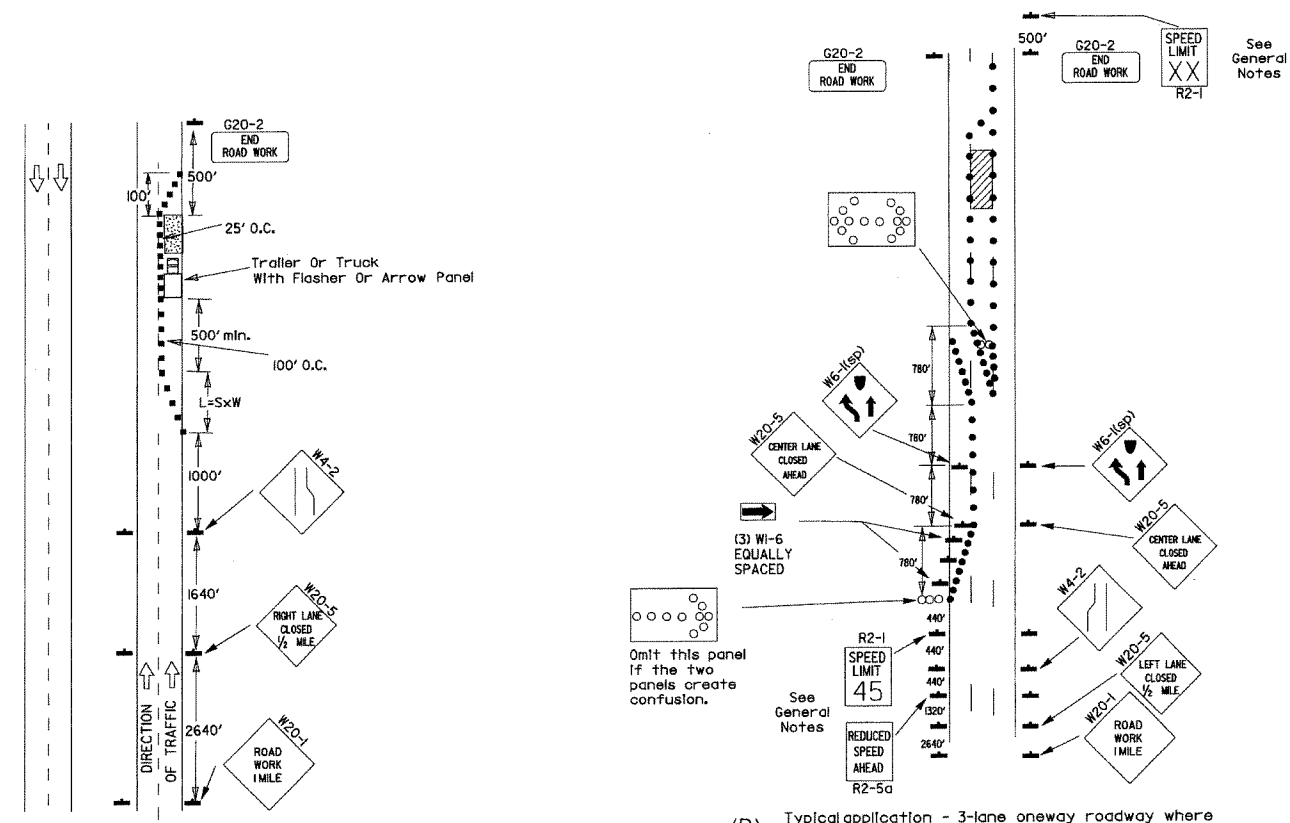
(E) Typical application of traffic control devices on 2-lane highway where one lane is closed and flagging is provided.



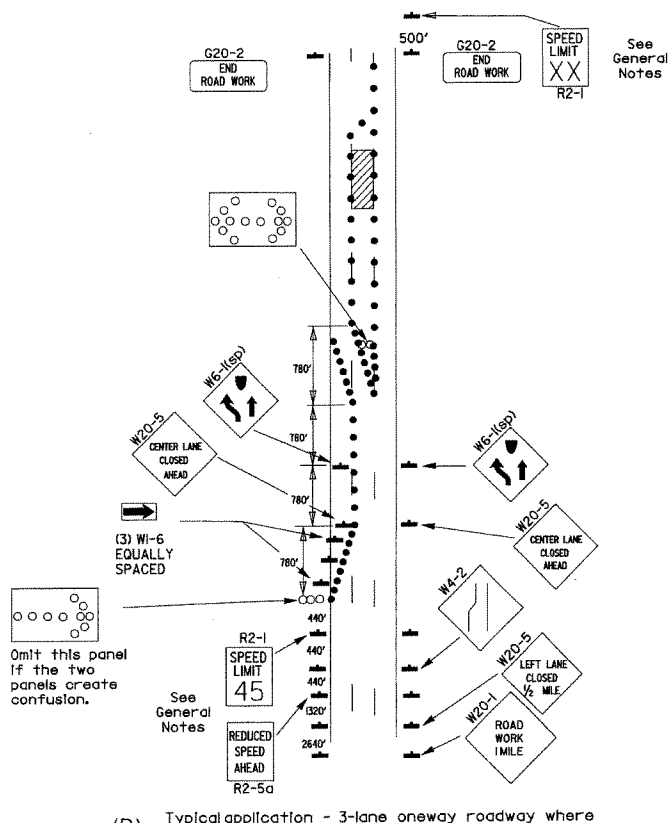
(F) Typical application - 4-lane undivided roadway with inside lane closed.

DATE	REVISION	FILMED
3-11-10	ADDED (AFAD)	
11-20-08	REVISED SIGN DESIGNATIONS	
11-18-04	ADDED GENERAL NOTE	
10-18-96	ADDED R55-1	
4-26-96	CORRECTED (a) BEHIND G20-2	
6-8-95	CORRECTED SIGN IDENT. ON W1-4A	6-8-95
2-2-95	REVISED PER PART VI, MUTCD, SEPT. 3, 1993	
8-5-91	DRAWN AND PLACED IN USE	

Channelizing devices

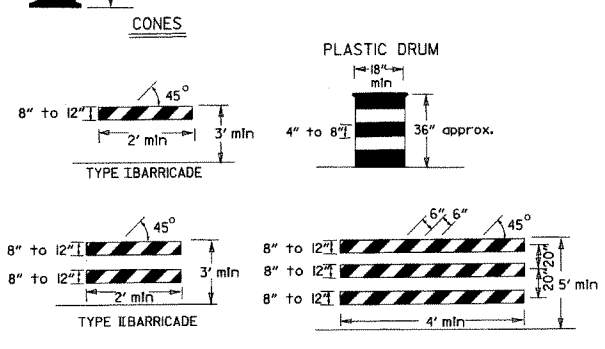


(A) Typical application - daytime maintenance operations of short duration on a 4-lane divided roadway where half of the roadway is closed.



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

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.



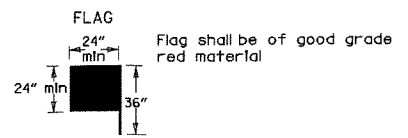
NOTE: For all road closures, the Type III barricades shall be of sufficient length to extend across entire roadway.

TRAFFIC CONTROL DEVICES

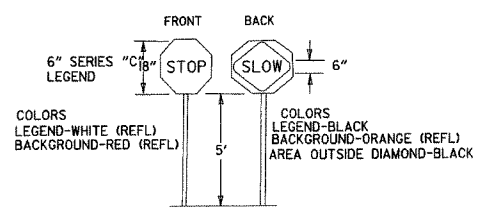
FOR VERTICAL PAVEMENT DIFFERENTIALS

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 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.



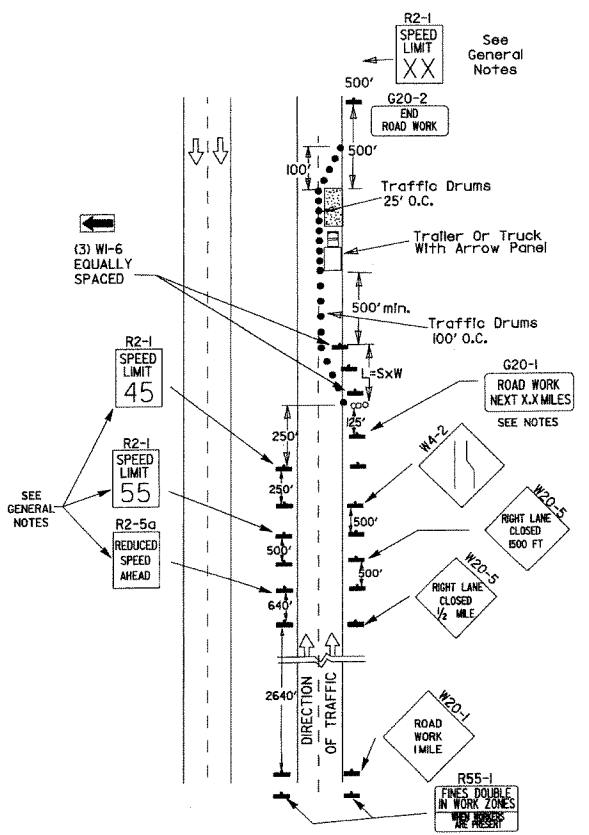
STOP SLOW PADDLE



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

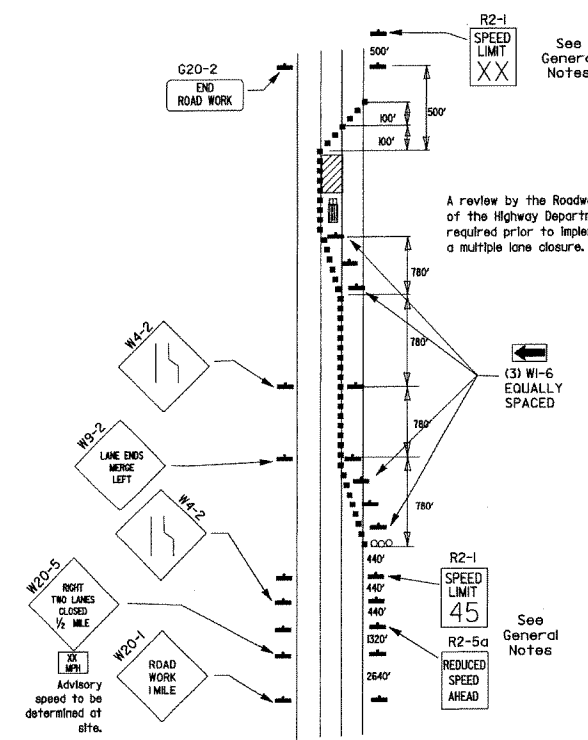
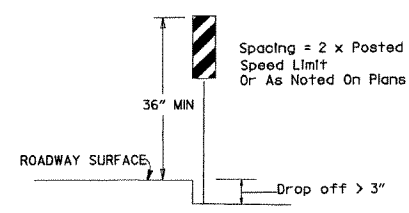
GENERAL NOTES:

- A speed limit reduction may be implemented ONLY when designated in the plan or when recommended by the Roadway Design Division.
- 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 R2-1(45) speed limit signs shall be installed at a maximum of 1/2 mile intervals. At the end of the work area a R2-1(XX) 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 R2-1(55) speed limit signs shall be installed at a maximum of 1/2 mile intervals. At the end of the work area a R2-1(XX) 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.
- The G20-1 sign will be required on jobs of over two miles in length. When the lane closure is not at the beginning of the project, the G20-1 sign shall be erected 125' in advance of the job limit. Additional W20-1 (1/2 MILE) signs are not required in advance of lane closures that begin inside the project limits.
- Flaggers shall use STOP/SLOW paddles for controlling traffic through work zones. Flags may be used only for emergency situations.
- All plastic drums and cones shall meet the requirements of NCHRP-350 or Manual for Assessing Safety Hardware (MASH).
- 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.



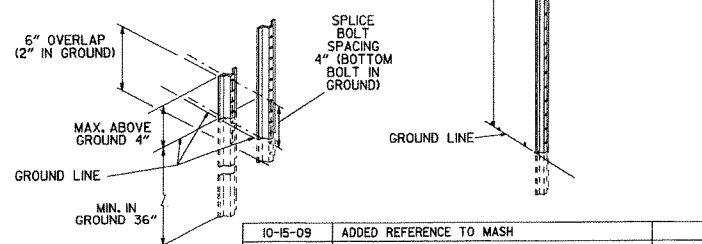
(C) Typical application - construction operations of intermediate to long term duration on a 4-lane divided roadway where half of the roadway is closed.

VERTICAL PANEL PLACEMENT



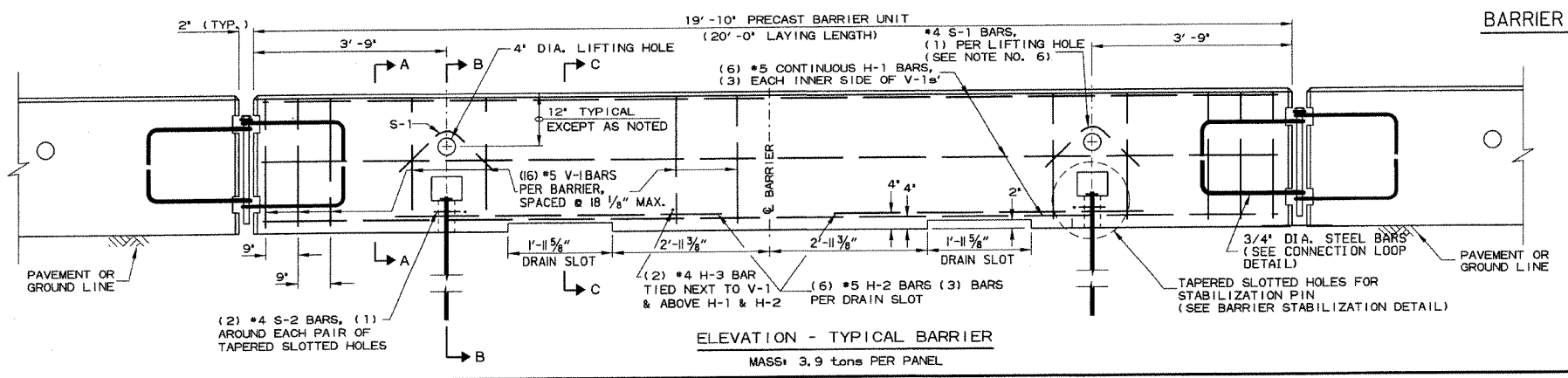
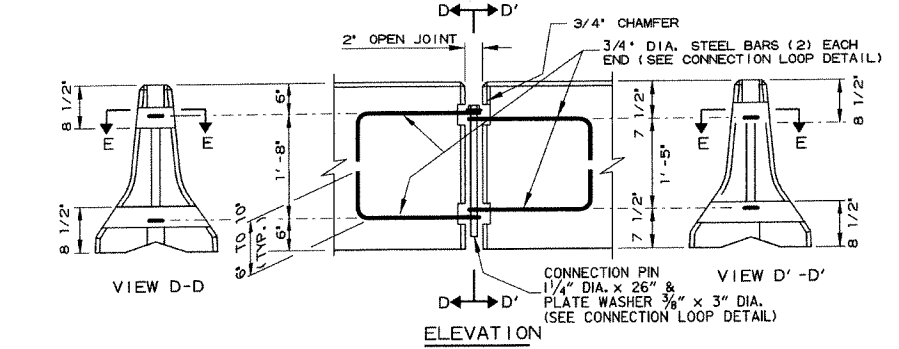
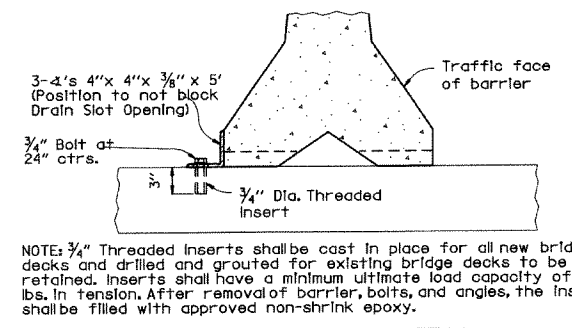
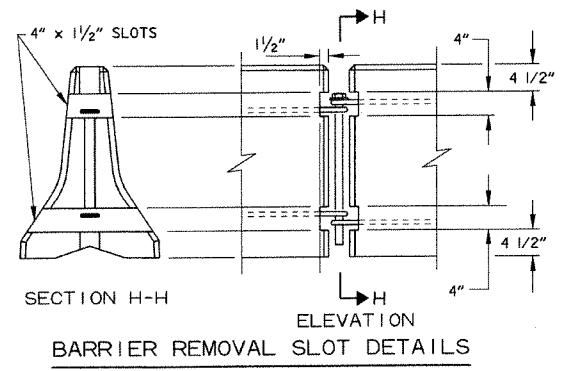
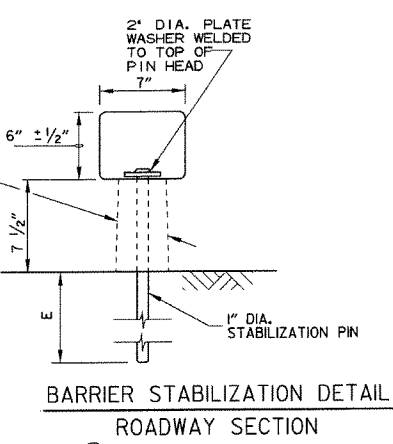
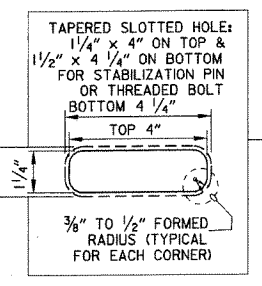
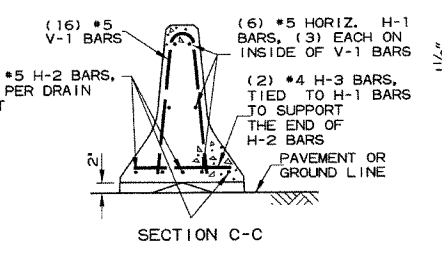
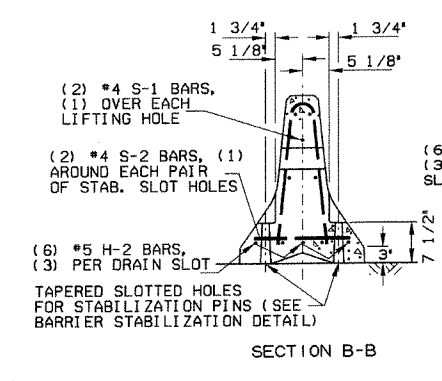
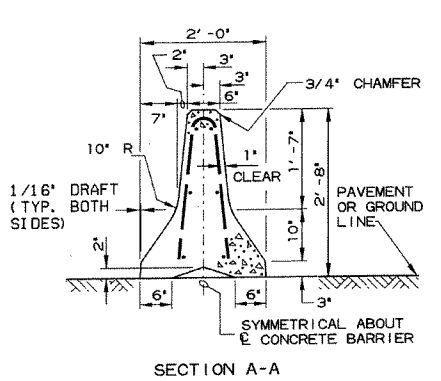
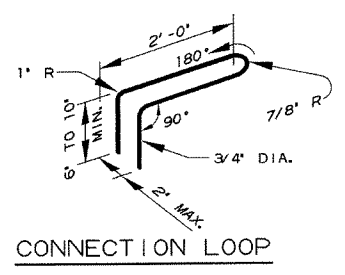
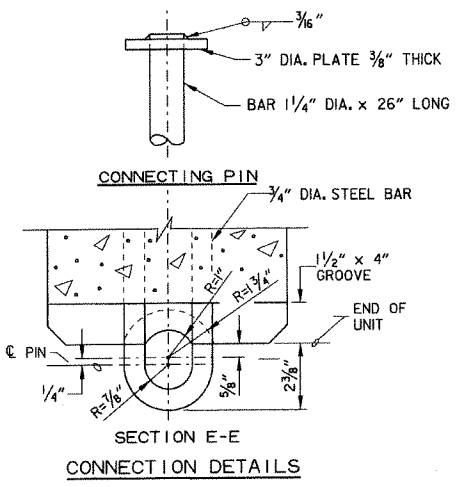
(D) Typical application - closing multiple lanes of a multi-lane highway.

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



DATE	REVISION	FILMED
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	

REINFORCING BAR TABLE PER BARRIER UNIT			
MARK	LOCATION	BAR SIZE (NO. BARS)	SKETCH
H-1	HORIZONTAL IN BARRIER TIED INSIDE V-1 BARS	#5 (6)	19'-3"
H-2	CENTERED ABOVE DRAIN SLOTS LONG. & TRANSVERSELY	#5 (6)	6'-6"
H-3	TIED ABOVE H-1 BARS TO SUPPORT H-2, TIED TO V-1	#4 (2)	1'-6"
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)	



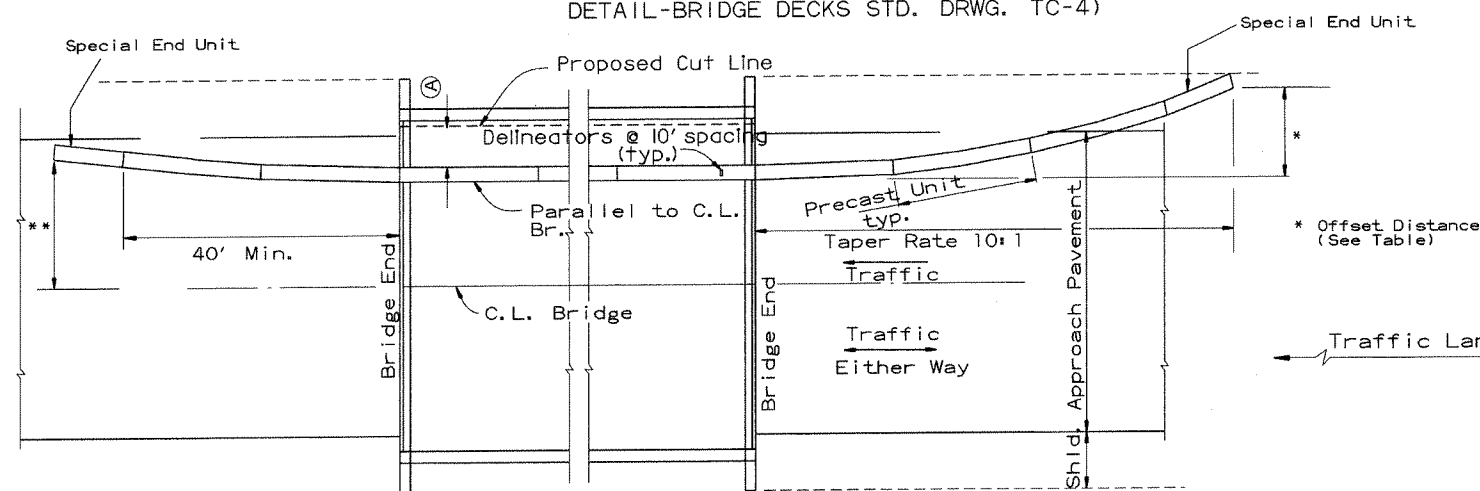
- General Notes**
- The contractor shall furnish the Precast Concrete Barrier Units and shall be responsible for the manufacture, shipment, storage, placement and removal. At the completion of the project, the precast units will remain the property of the contractor.
 - Materials shall meet the following minimum requirements: Concrete: 2500 psi compressive strength at 28 days. Reinforcing Steels: AASHTO M 31 or M 53, Grade 60. Structural Steels: AASHTO M 270 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 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.

DATE	REVISION	FILMED
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	

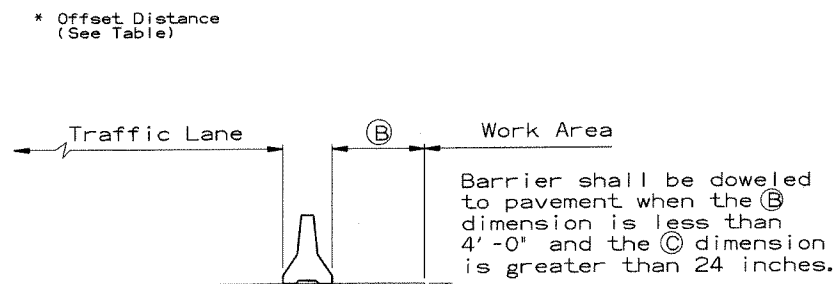
ARKANSAS STATE HIGHWAY COMMISSION
STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION - TEMPORARY PRECAST BARRIER
STANDARD DRAWING TC-4

(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

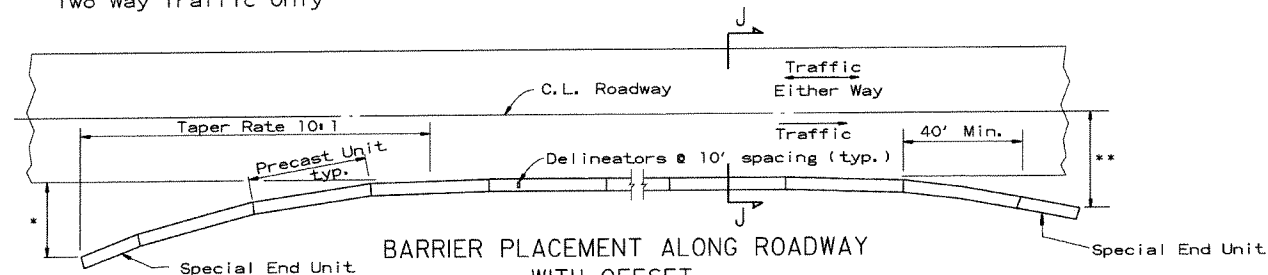
No Scale



SECTION J-J

No Scale

** Offset Distance for Two Way Traffic Only



BARRIER PLACEMENT ALONG ROADWAY WITH OFFSET

No Scale

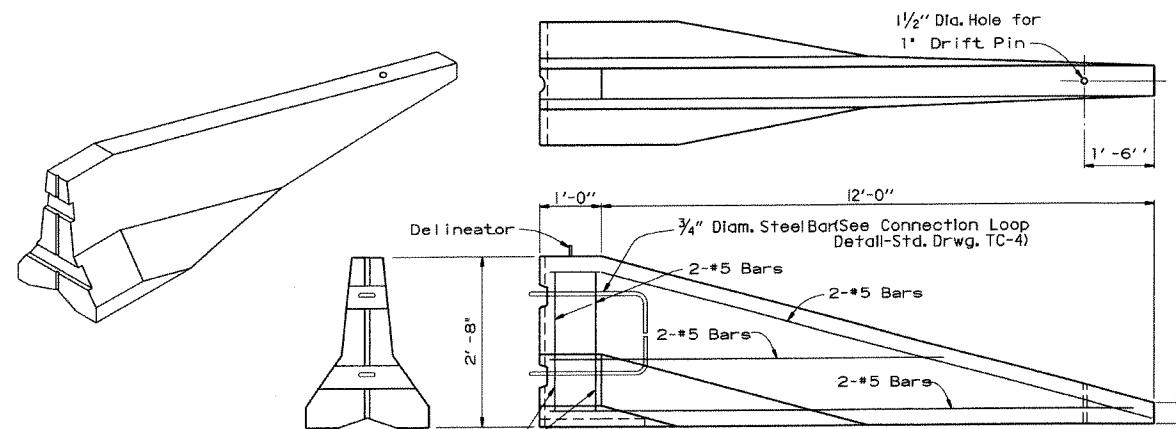
** Offset Distance For Two Way Traffic Only

* Offset Distance (See Table)

Offset Distance Table

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

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

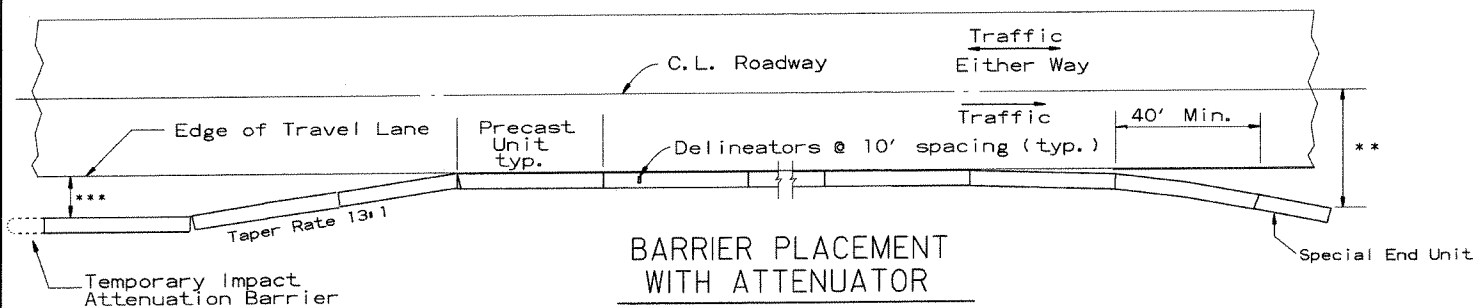


SPECIAL END UNIT

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

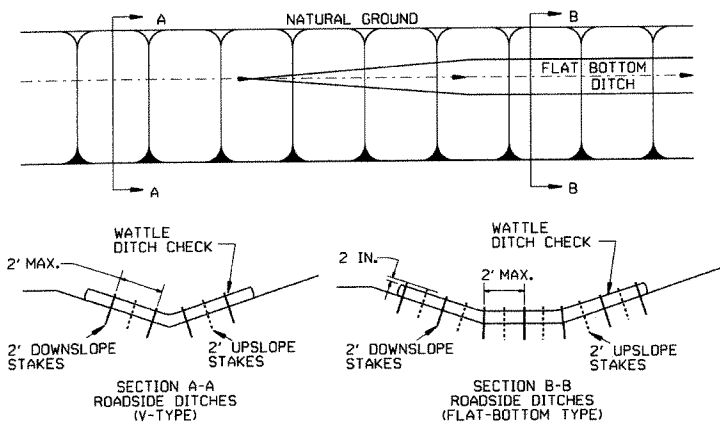
No Scale

** Offset Distance For Two Way Traffic Only

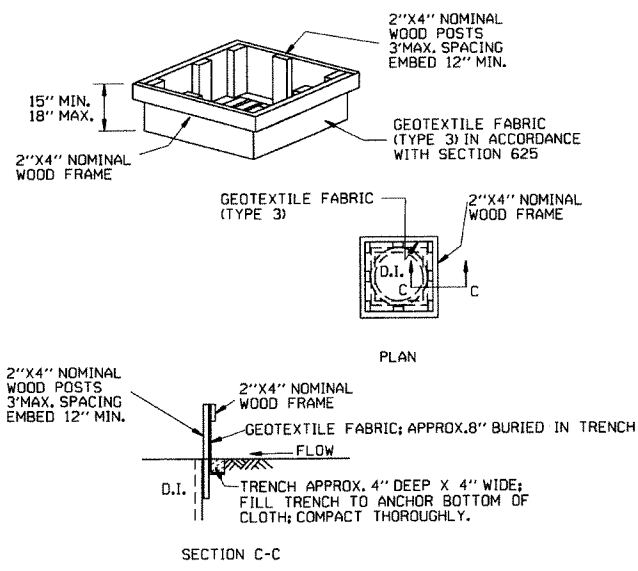
*** Min. 3'-0" From Edge of Travel Lane to Nearest Edge of Attenuator

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

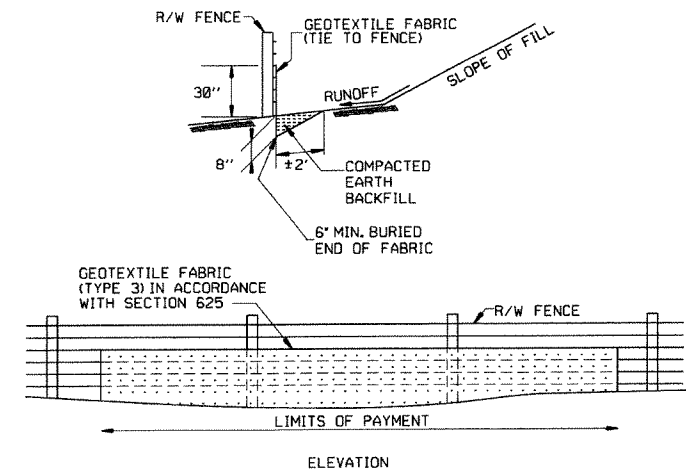
GENERAL NOTES
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.



WATTLE DITCH CHECK (E-1)



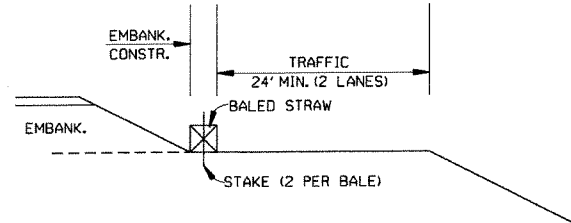
DROP INLET SILT FENCE (E-7)



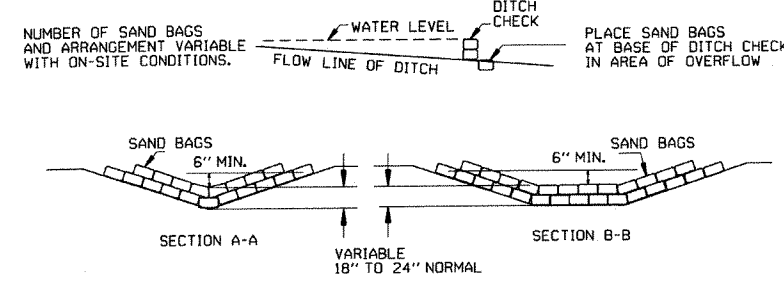
SILT FENCE ON R/W FENCE (E-4)

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

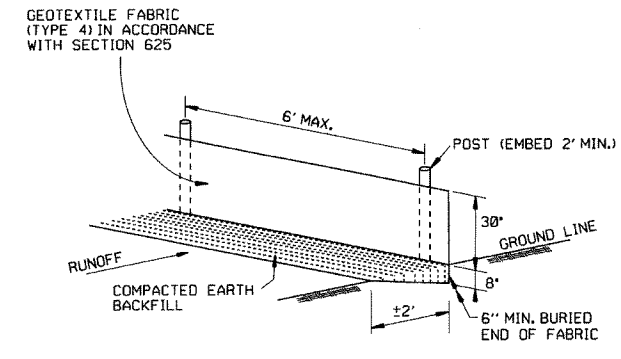
- GENERAL NOTES
1. STRAW BALES SHALL BE INSTALLED SO THAT THE BINDINGS ARE ORIENTED AROUND THE SIDES RATHER THAN ALONG THE TOPS AND BOTTOMS OF THE BALES. THE BALES SHALL BE A MINIMUM OF 30 INCHES IN LENGTH.
 2. NO GAPS SHALL BE LEFT BETWEEN BALES.
 3. BALED STRAW FILTER BARRIERS COMPLETED AND ACCEPTED WILL BE MEASURED BY THE BALE IN PLACE AS AUTHORIZED BY THE ENGINEER AND WILL BE PAID FOR AT THE CONTRACT UNIT PRICE BID PER BALE FOR BALED STRAW DITCH CHECKS.



BALED STRAW FILTER BARRIER (E-2)

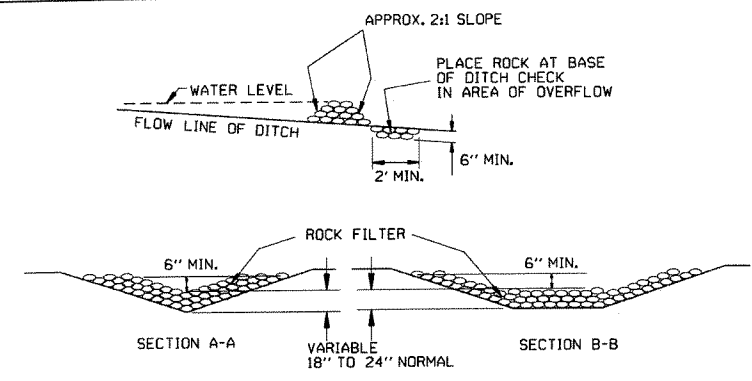


SAND BAG DITCH CHECK (E-5)



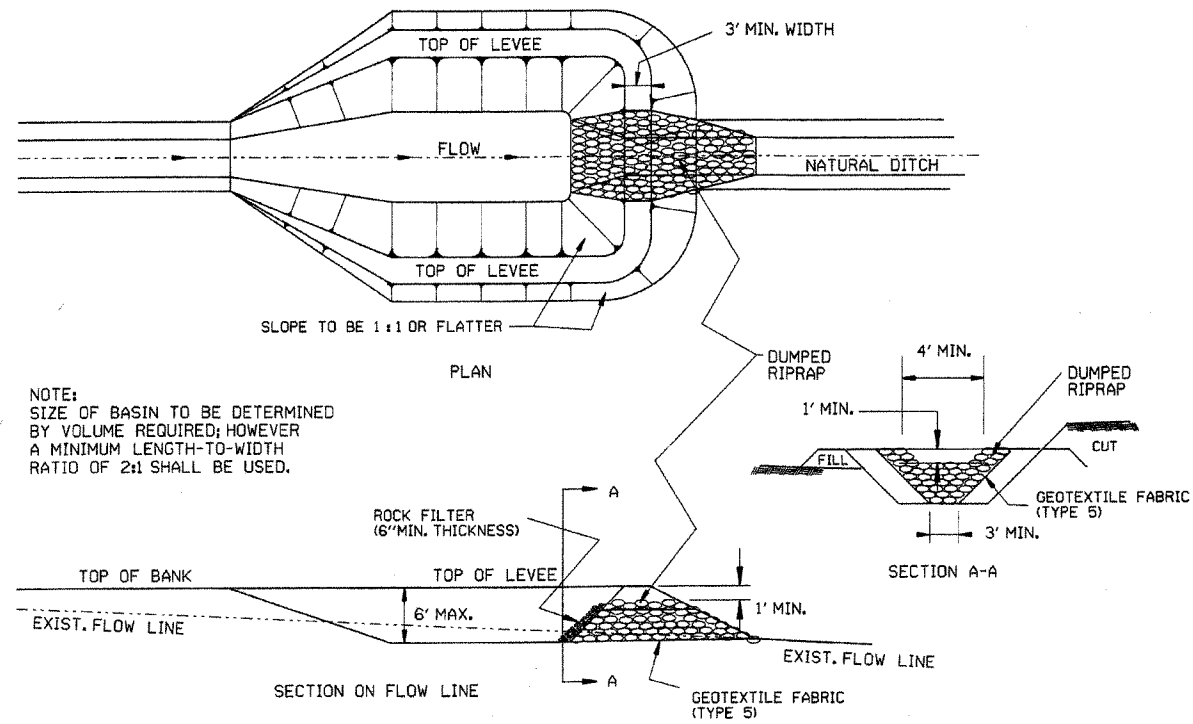
SILT FENCE (E-11)

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

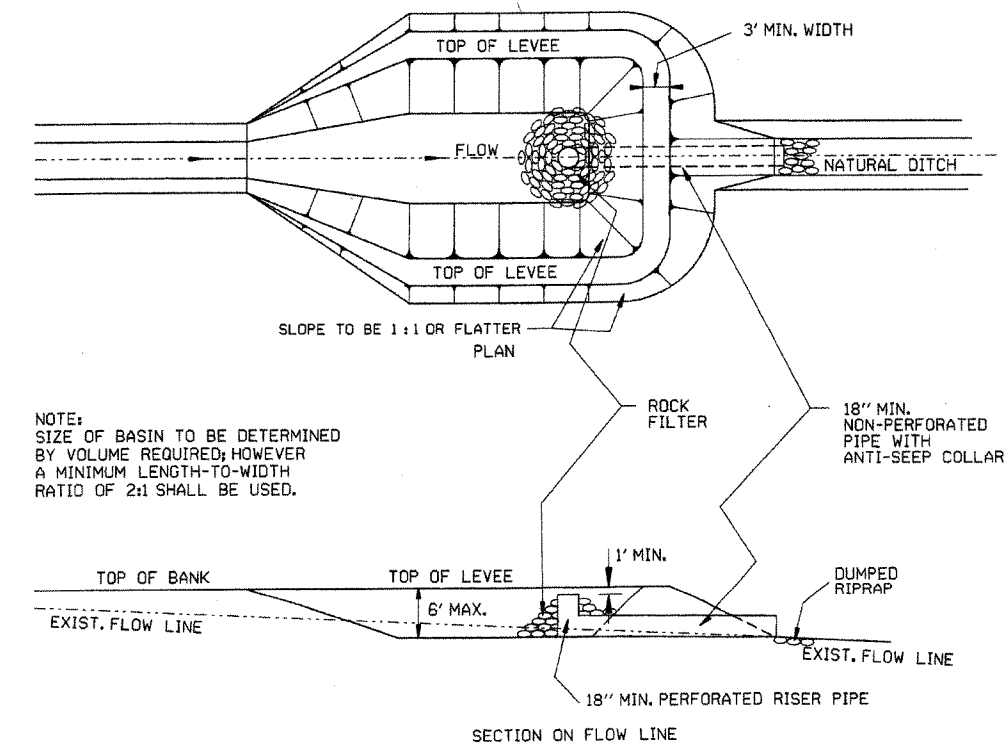


ROCK DITCH CHECK (E-6)

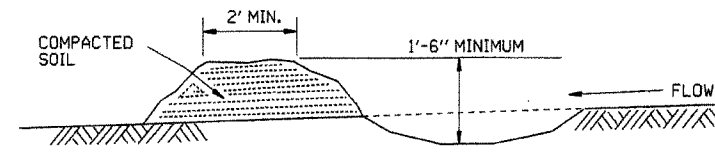
12-15-11	DELETED BALED STRAW DITCH CHECK & ADDED WATTLE DITCH CHECK		ARKANSAS STATE HIGHWAY COMMISSION
11-18-98	ADDED NOTES		TEMPORARY EROSION CONTROL DEVICES
7-02-98	ADDED BALED STRAW FILTER BARRIER (E-2)		
7-20-95	REVISED SILT FENCE E-4 AND E-11	7-20-95	STANDARD DRAWING TEC-1
7-15-94	REV. E-4 & E-11 MIN. 13\"/>		
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	
DATE	REVISION	FILMED	



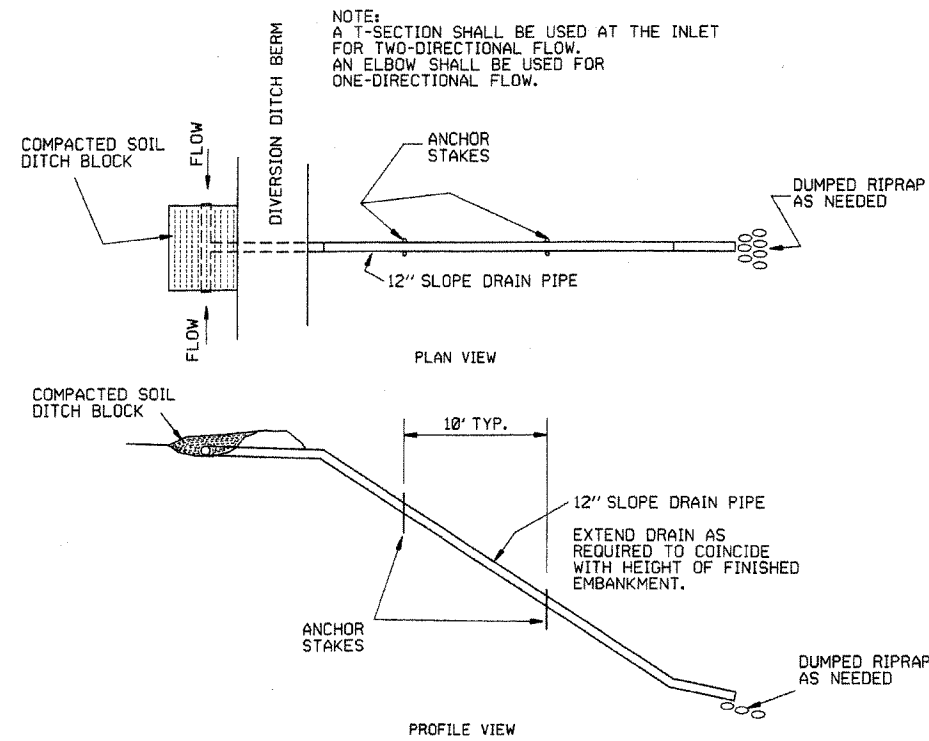
SEDIMENT BASIN WITH RIPRAP OUTLET (E-9)



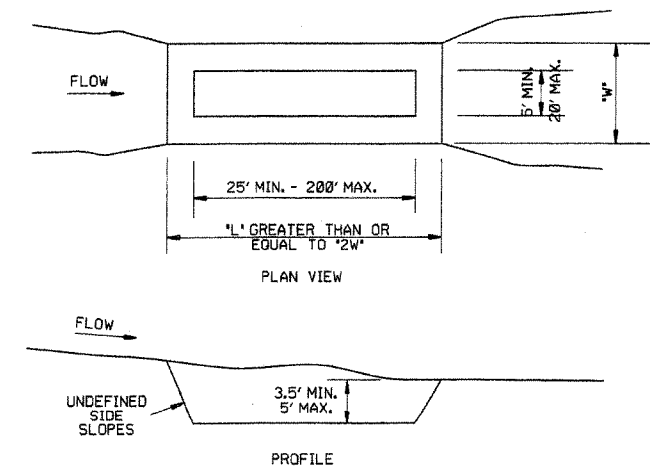
SEDIMENT BASIN WITH PIPE OUTLET (E-10)



DIVERSION DITCH (E-8)



SLOPE DRAIN (E-12)



SEDIMENT BASIN (E-14)

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

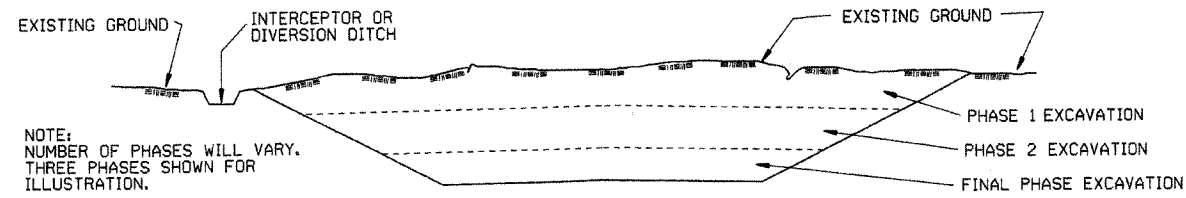
ARKANSAS STATE HIGHWAY COMMISSION
 TEMPORARY EROSION CONTROL DEVICES
 STANDARD DRAWING TEC-2

CLEARING AND GRUBBING

CONSTRUCTION SEQUENCE

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

EXCAVATION



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

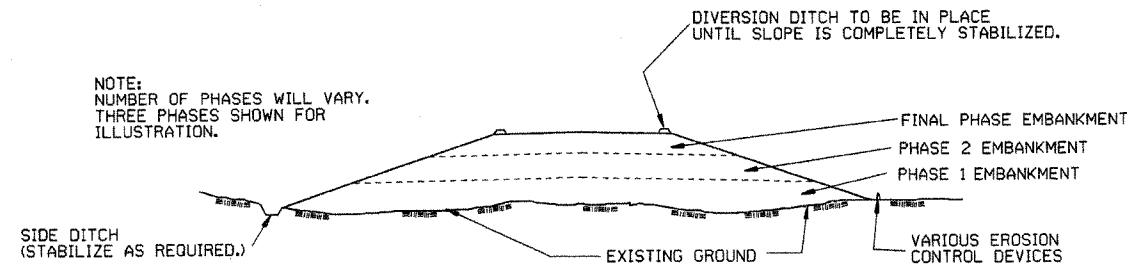
GENERAL NOTE

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

CONSTRUCTION SEQUENCE

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

EMBANKMENT



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

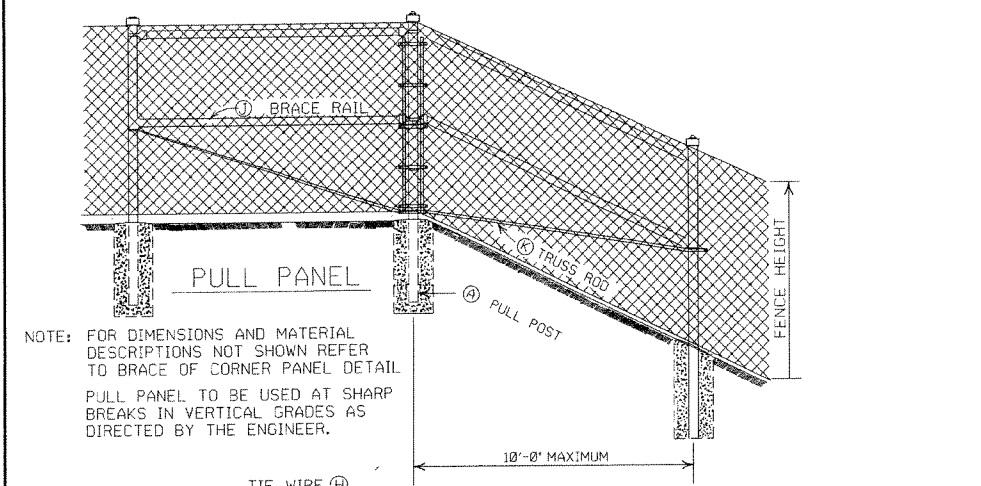
GENERAL NOTE

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

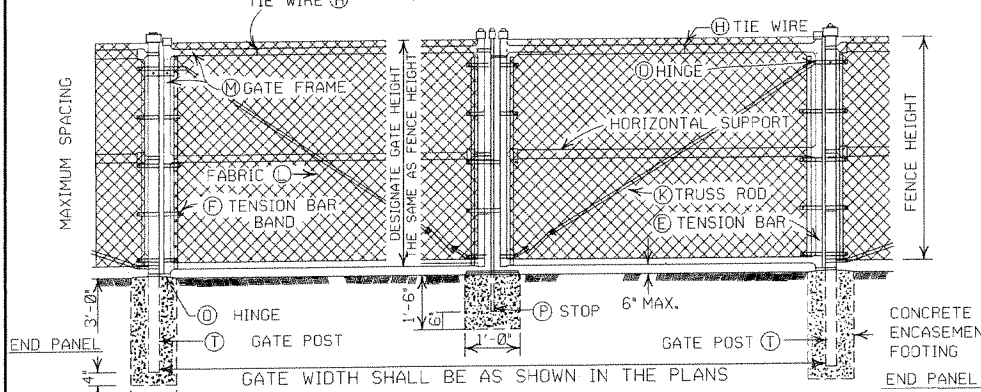
CONSTRUCTION SEQUENCE

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

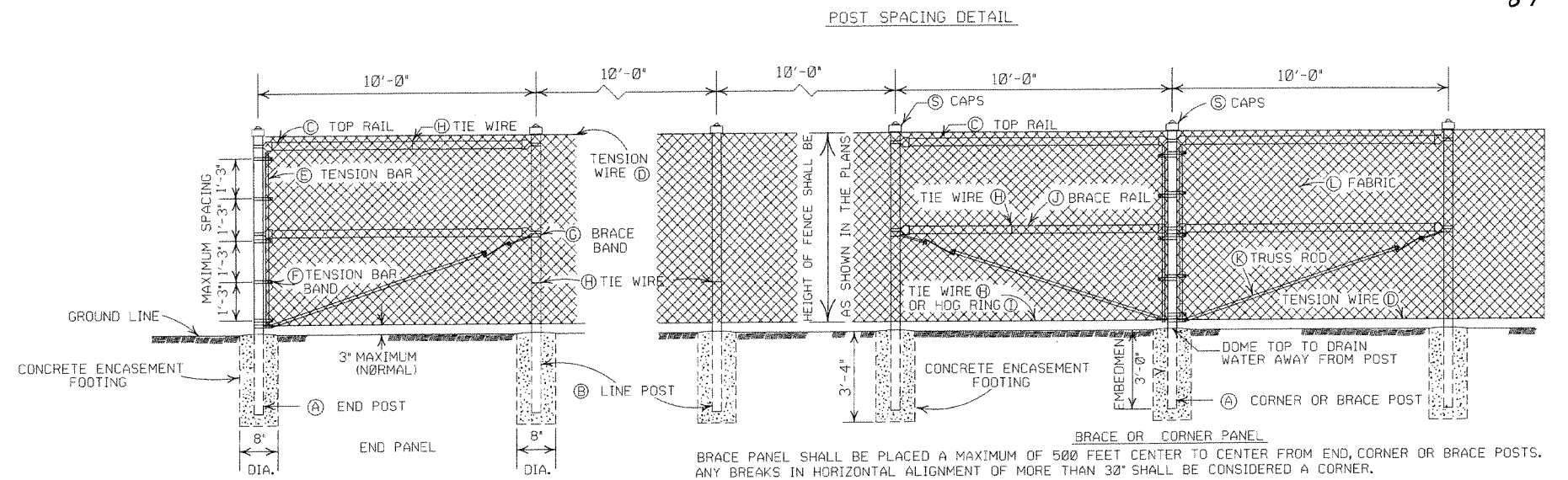
			ARKANSAS STATE HIGHWAY COMMISSION
			TEMPORARY EROSION CONTROL DEVICES
11-23-94	CORRECTED SPELLING		
6-2-94	Drawn & Issued		6-2-94
DATE	REVISION		FILMED
			STANDARD DRAWING TEC-3



NOTE: FOR DIMENSIONS AND MATERIAL DESCRIPTIONS NOT SHOWN REFER TO BRACE OF CORNER PANEL DETAIL.
PULL PANEL TO BE USED AT SHARP BREAKS IN VERTICAL GRADES AS DIRECTED BY THE ENGINEER.



DOUBLE SWING GATE

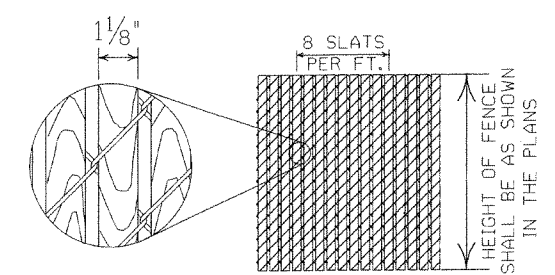


POST SPACING DETAIL

BRACE PANEL SHALL BE PLACED A MAXIMUM OF 500 FEET CENTER TO CENTER FROM END, CORNER OR BRACE POSTS. ANY BREAKS IN HORIZONTAL ALIGNMENT OF MORE THAN 30' SHALL BE CONSIDERED A CORNER.

GENERAL NOTES:

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



1 1/8" x 1/4" REDWOOD SLATS (LENGTH TO MATCH HEIGHT OF FENCE) (L) FABRIC SHALL CONFORM TO THE SPECIFICATIONS.
DETAIL OF REDWOOD SLAT INSTALLATION
(WHERE APPLICABLE)

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	LENGTH	MIN. OF	BOLT SIZE	SPACING	MIN. OF	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.	1 TIE EVERY 2'-0"	10'-0"	7 GAUGE COIL SPRING WIRE	1 TIE EVERY 1'-0"	3/8" x 3/4"	2" LESS THAN FABRIC HEIGHT	3/4" x 1/2"	5/8" x 1 1/4"	1 BAND AT TOP AND BOTTOM 15' MAX. INTERVAL BETWEEN BANDS	3/4" x 1/2"	3/8" x 1 1/4"	
OVER 6' TO 12' INCL.	3" O.D.	2 1/2" O.D.									0.074			0.105		

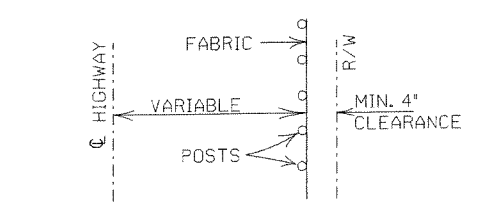
HEIGHT OF FENCE FABRIC	(H) TIE WIRE	(I) HOG RING	(J) BRACE RAIL		(K) TRUSS ROD	(L) FABRIC		(M) GATE FRAME		(N) HORIZONTAL SUPPORT	(O) HINGE TIE	(P) GATE POST		
	MIN. OF 12 GA. STEEL OR 9 GA. ALUM.	SAME GAUGE AS FABRIC	SIZE	TIE SPACING	MIN. OF 3/8" ROUND WITH TIGHTENERS AND FITTINGS	SIZE	MESH SELVAGE	SIZE	TIE SPACING	SIZE	TIE SPACING	SWING	12' AND LESS	12' TO 24' INCL.
6' AND LESS			1 1/2" O.D.	1 TIE EVERY 2'-0"		2" GA.	2"	2' O.D.	1 TIE EVERY 1'-0"	2' O.D.	1 TIE EVERY 1'-0"	180°	3' O.D.	4' O.D.
OVER 6' TO 12' INCL.														

NOTE: POST SIZES SHOWN ARE FOR STEEL. WHERE ALUMINUM IS PROVIDED, LINE POSTS SHALL HAVE AN OUT SIDE 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.

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.



INSTALLATION MAY BE MODIFIED AS SHOWN IN THE PLANS
TYPICAL INSTALLATION DIAGRAM

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.
			STEEL	ALUMINUM			
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

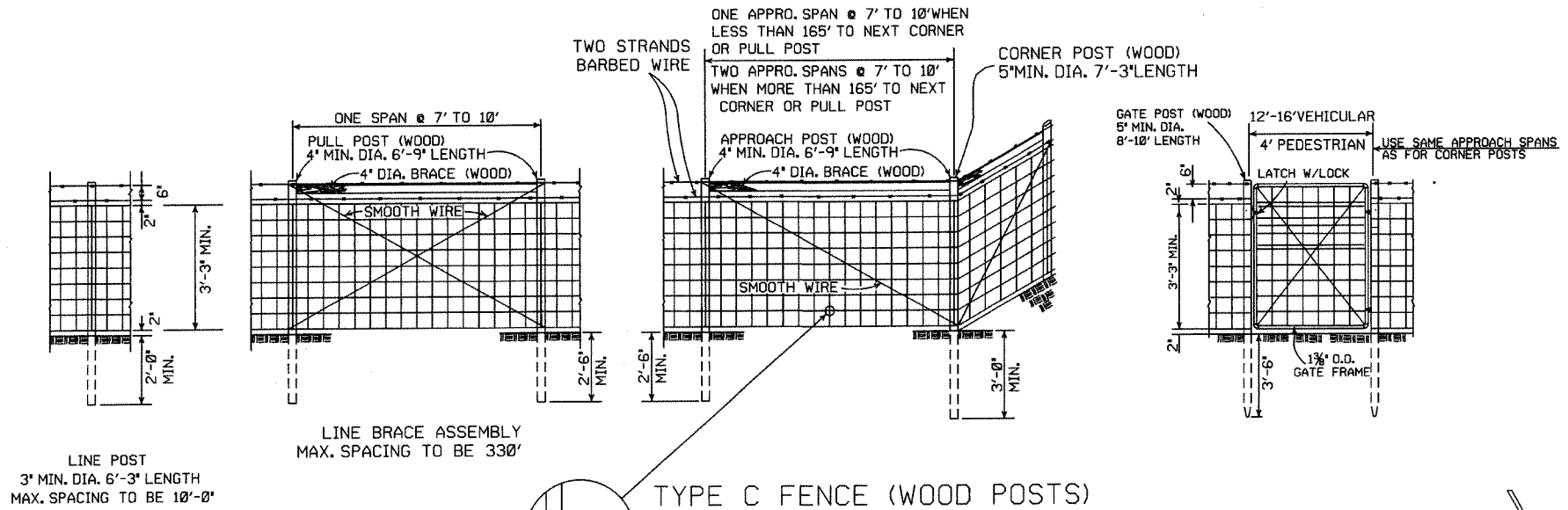
TOLERANCES ON DIMENSIONS AND WEIGHTS ACCORDING TO AASHTO M 181

DATE	REVISION	FILED
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	
10-10-96	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	8-15-91
8-15-91	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

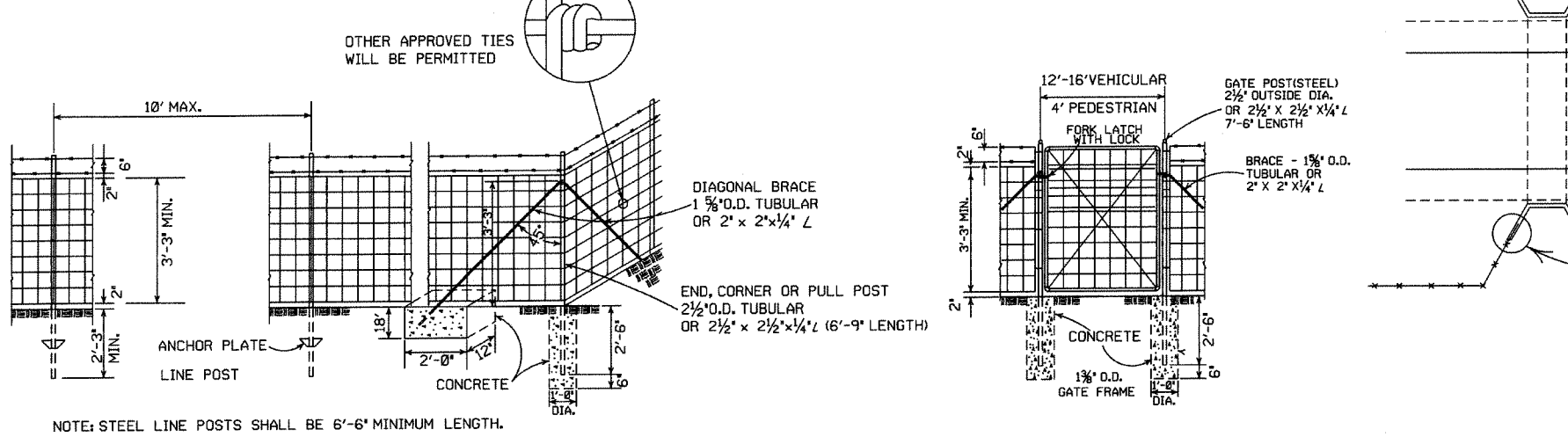


GENERAL NOTES:
 STEEL LINE POSTS SHALL BE PAINTED OR GALVANIZED. TUBULAR END, CORNER, PULL, OR DIAGONAL BRACES MUST CONFORM TO THE DIMENSIONS AND WEIGHTS SPECIFIED ON STANDARD DRAWING WF-3 (CHAIN LINK). APPROVED ALTERNATES ARE ACCEPTABLE.
 AN ACCEPTABLE TOLERANCE IN LENGTH OF TUBULAR OR WOODEN POSTS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

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

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

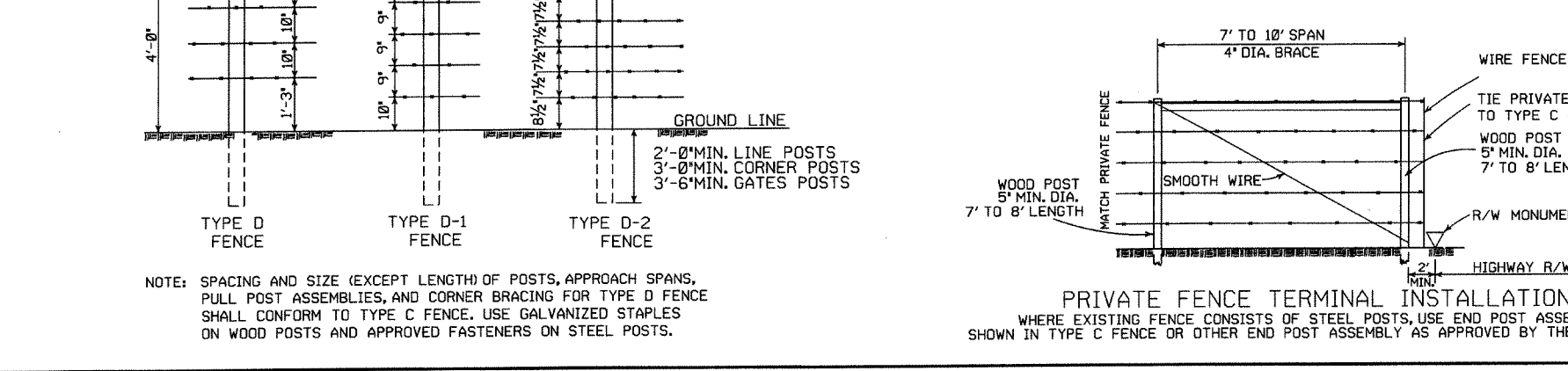
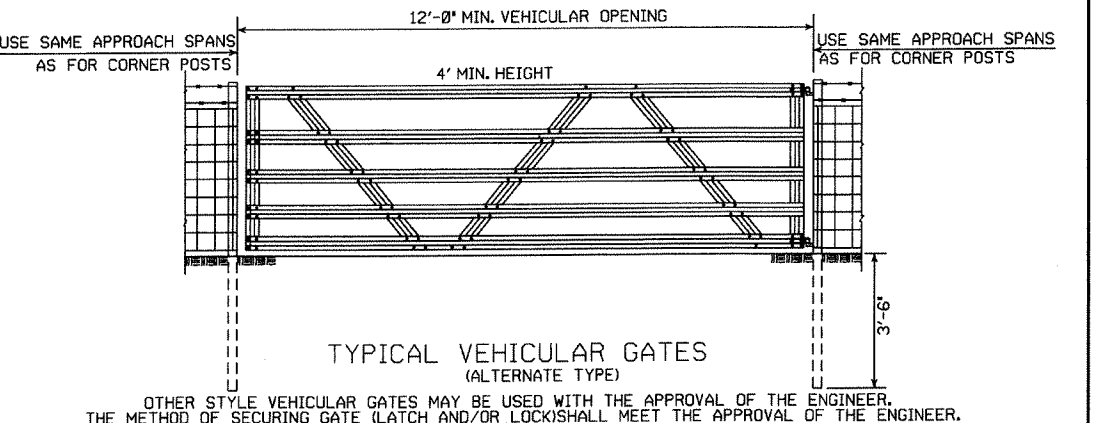
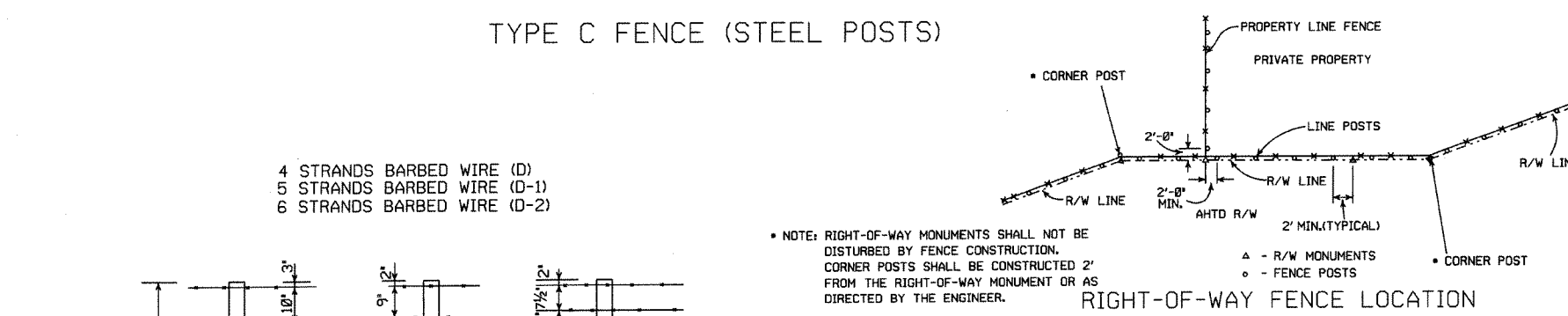
AT STREAM CROSSINGS, THE FENCE SHALL NOT BE CONSTRUCTED ACROSS LARGE STREAMS, WHERE CLEARANCE IS SUFFICIENT FROM THE TOP OF THE BANK TO THE BRIDGE STRUCTURE A CROSS CONNECTION SHALL BE CONSTRUCTED BETWEEN THE FENCE ON EACH SIDE OF THE ROAD, WHERE THE CLEARANCE IS NOT SUFFICIENT, THE FENCE SHALL BE TERMINATED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



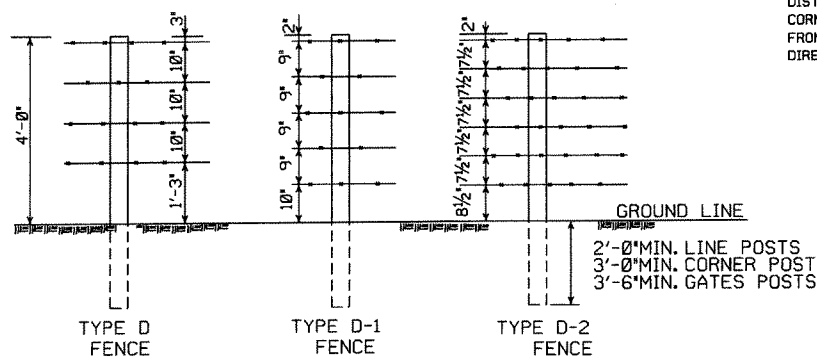
SPLICE FOR BARBED WIRE BETWEEN PULL POST ASSEMBLY SHALL BE BY THE 'EYE METHOD' AS DESCRIBED AS FOLLOWS: THE ENDS OF THE BARBED WIRE SHALL BE BENT TO FORM A LOOP. THE LOOPS SHALL BE CONNECTED. AFTER THE LOOPS ARE CONNECTED THE ENDS OF THE WIRE SHALL BE WRAPPED AROUND THE PROJECTING WIRES A MINIMUM OF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

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

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



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



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

DATE	REVISION	FILMED
8-22-02	REVISED GENERAL NOTES	
10-18-96	REVISED AASHTO	
11-22-95	REVISED R-O-W LOCATION DETAIL	
6-2-94	REVISED BARB WIRE AND ADDED CORNER POST NOTES	6-2-94
8-5-93	REVISED R/W INSTALLATION FENCE	8-5-93
10-1-92	ADDED STAPLE NOTE	10-1-92
8-15-91	ADDED TYPE D-2 FENCE	8-15-91
11-30-89	DELETED CLASS CONCRETE	11-30-89
7-15-88	ADDED SPLICE NOTE	700-7-15-88
10-30-87	GENERAL REVISIONS	549-10-30-87
11-1-84	MAX. POST SPACING MIN. WIRE GAUGE	507-11-1-84
1-4-83	MIN. DIA. LINE POST	640-1-4-83
3-2-81	TOLERANCE FOR POST LENGTH	722-3-2-81
12-1-72	ADDED D-1 & FENCE INSTALLATION	564-12-1-72
10-2-72	REVISED AND REDRAWN	540-10-2-72

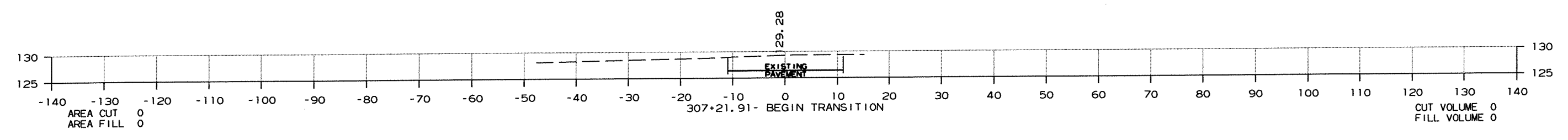
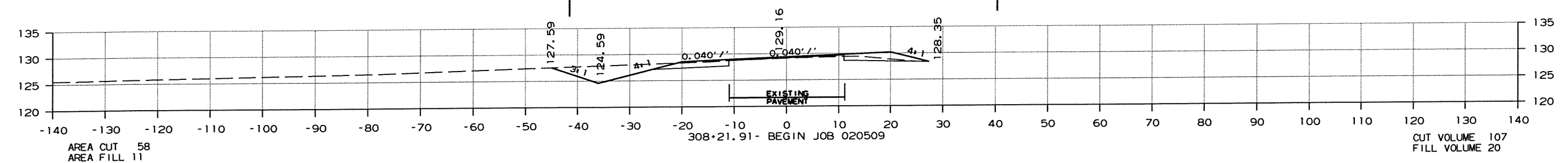
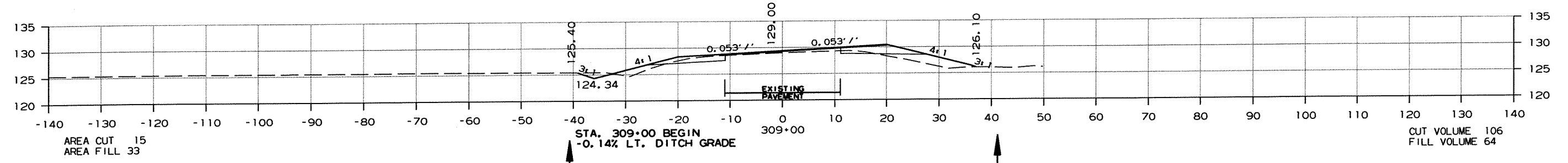
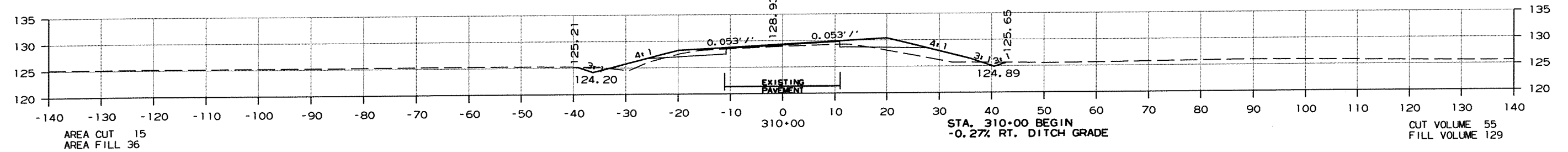
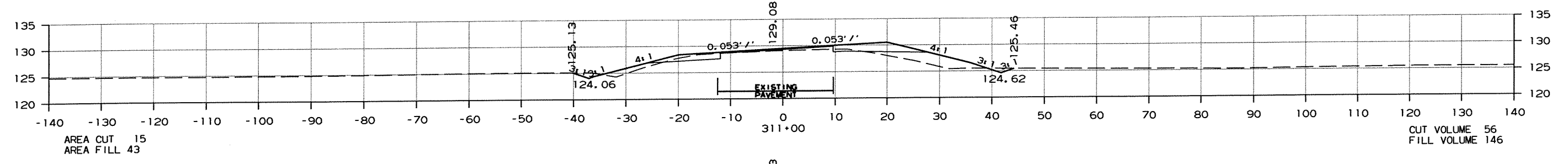
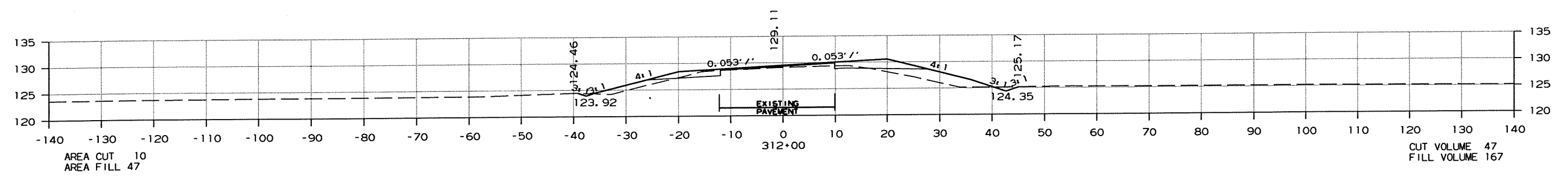
ARKANSAS STATE HIGHWAY COMMISSION

WIRE FENCE
 TYPE C AND D

STANDARD DRAWING WF-4

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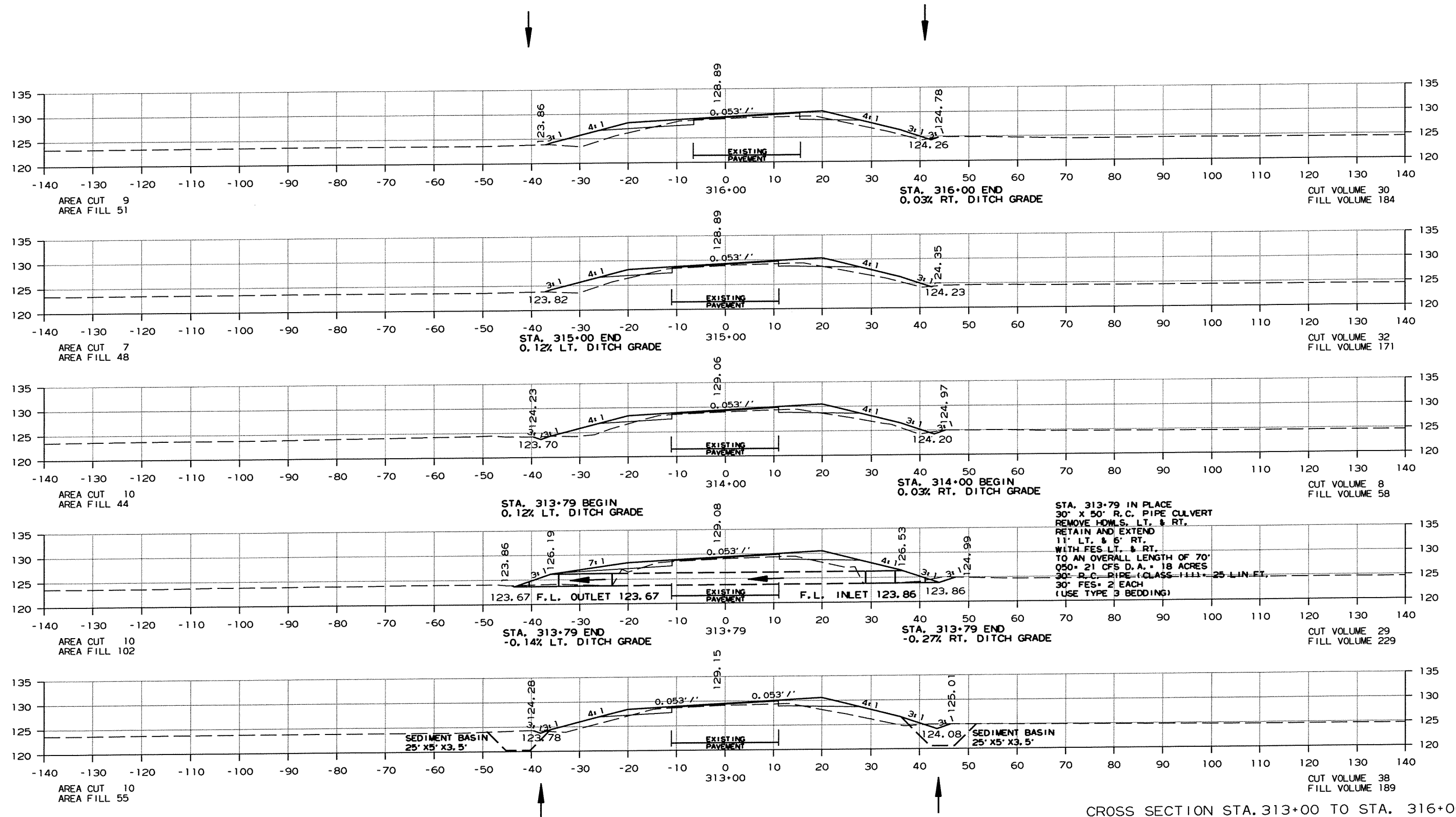
2 CROSS SECTIONS



CROSS SECTION STA. 307+21.91 TO STA. 312+00

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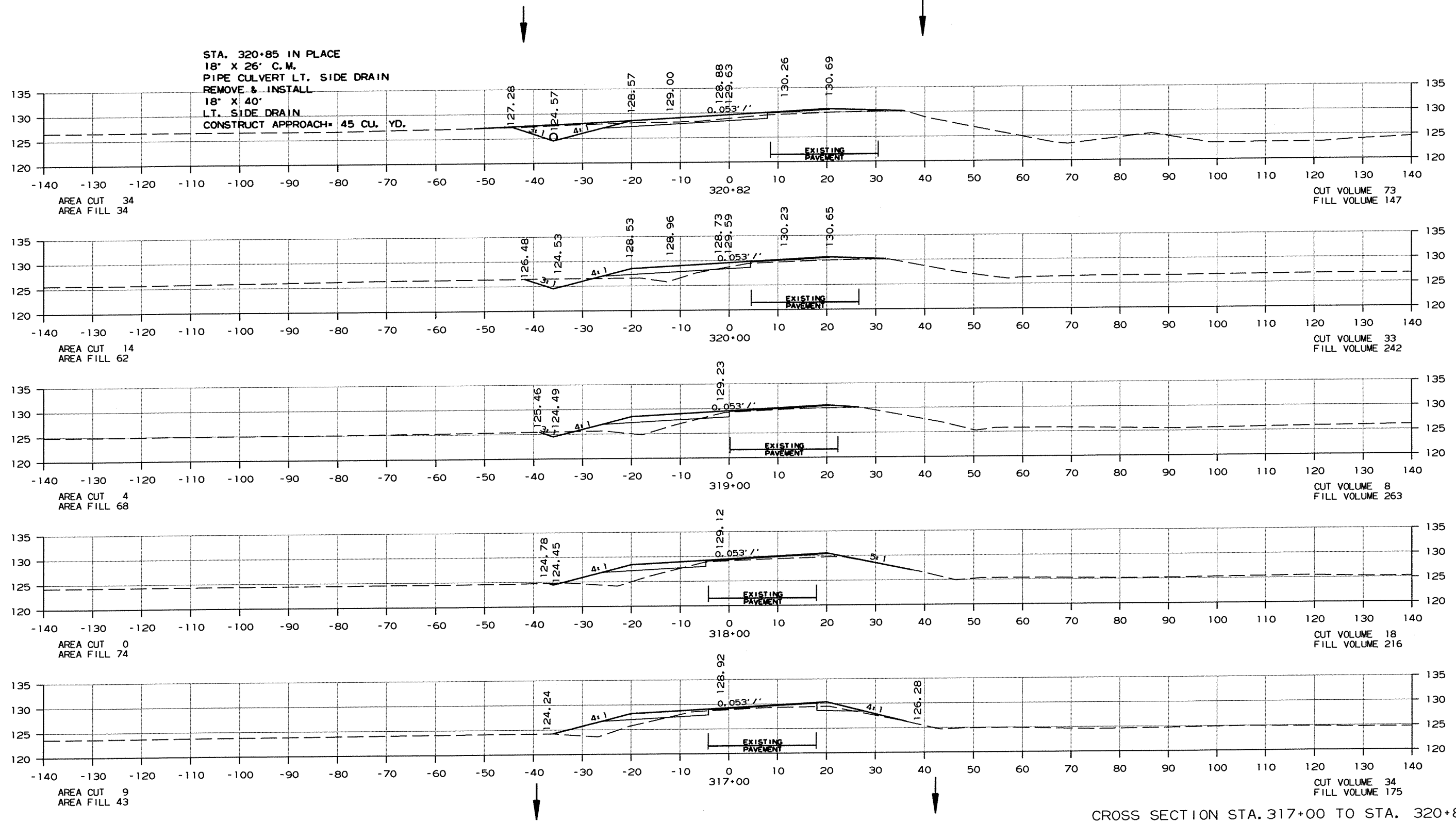
2 CROSS SECTIONS



CROSS SECTION STA. 313+00 TO STA. 316+00

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2 CROSS SECTIONS

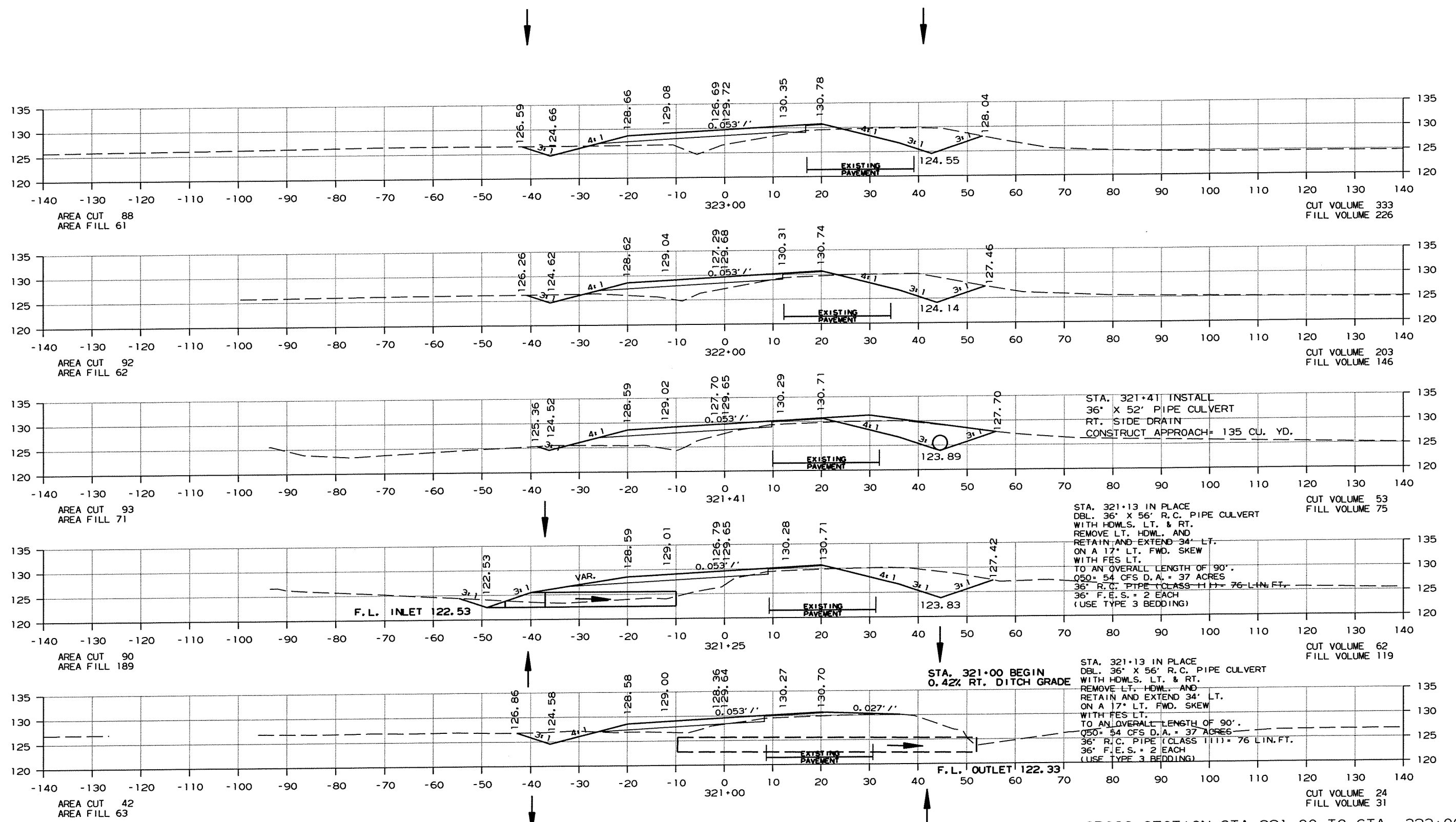


CROSS SECTION STA. 317+00 TO STA. 320+82

R020509.DGN 4/9/2013

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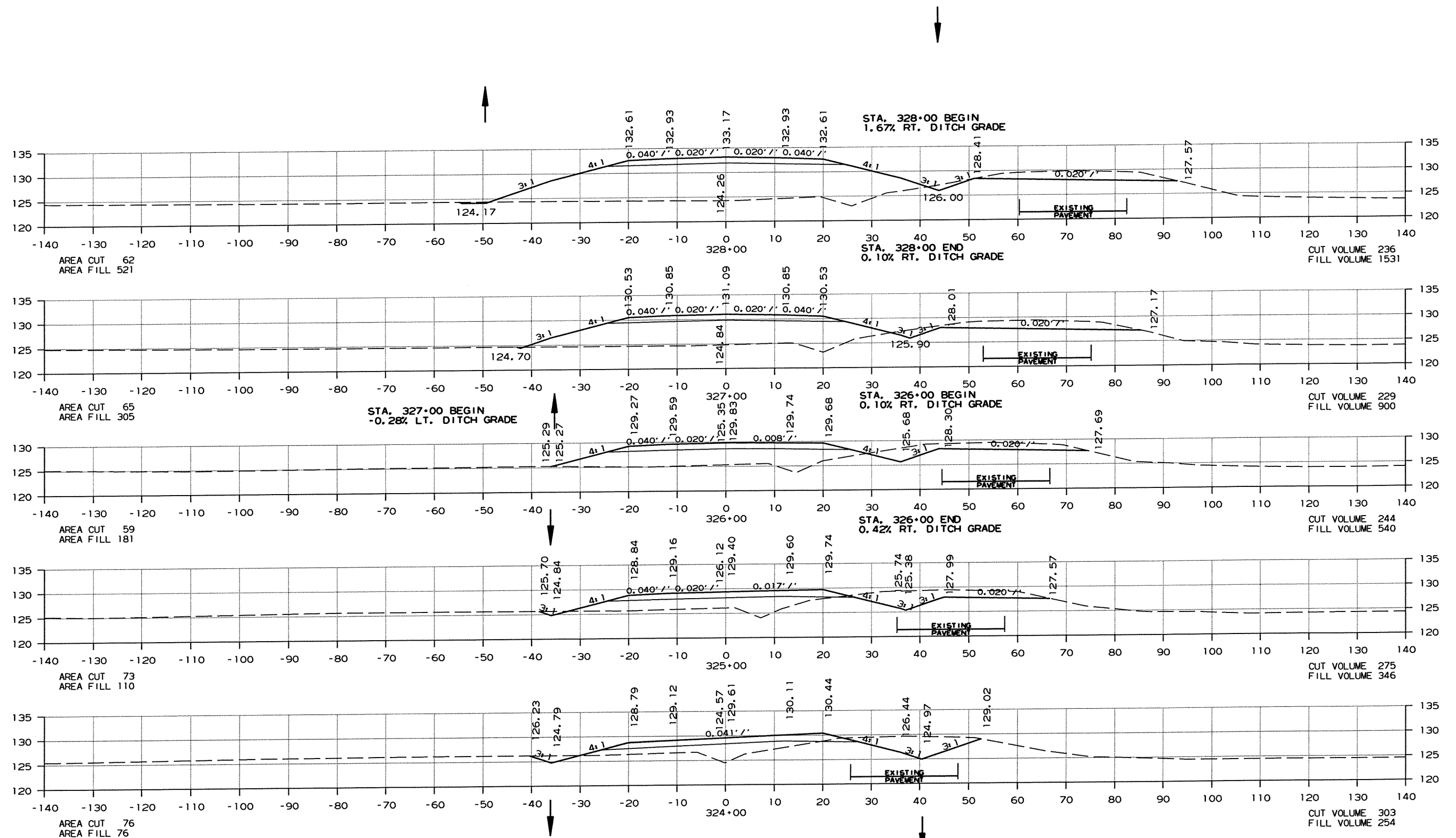
2 CROSS SECTIONS



CROSS SECTION STA. 321+00 TO STA. 323+00

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JOB NO. 020509								

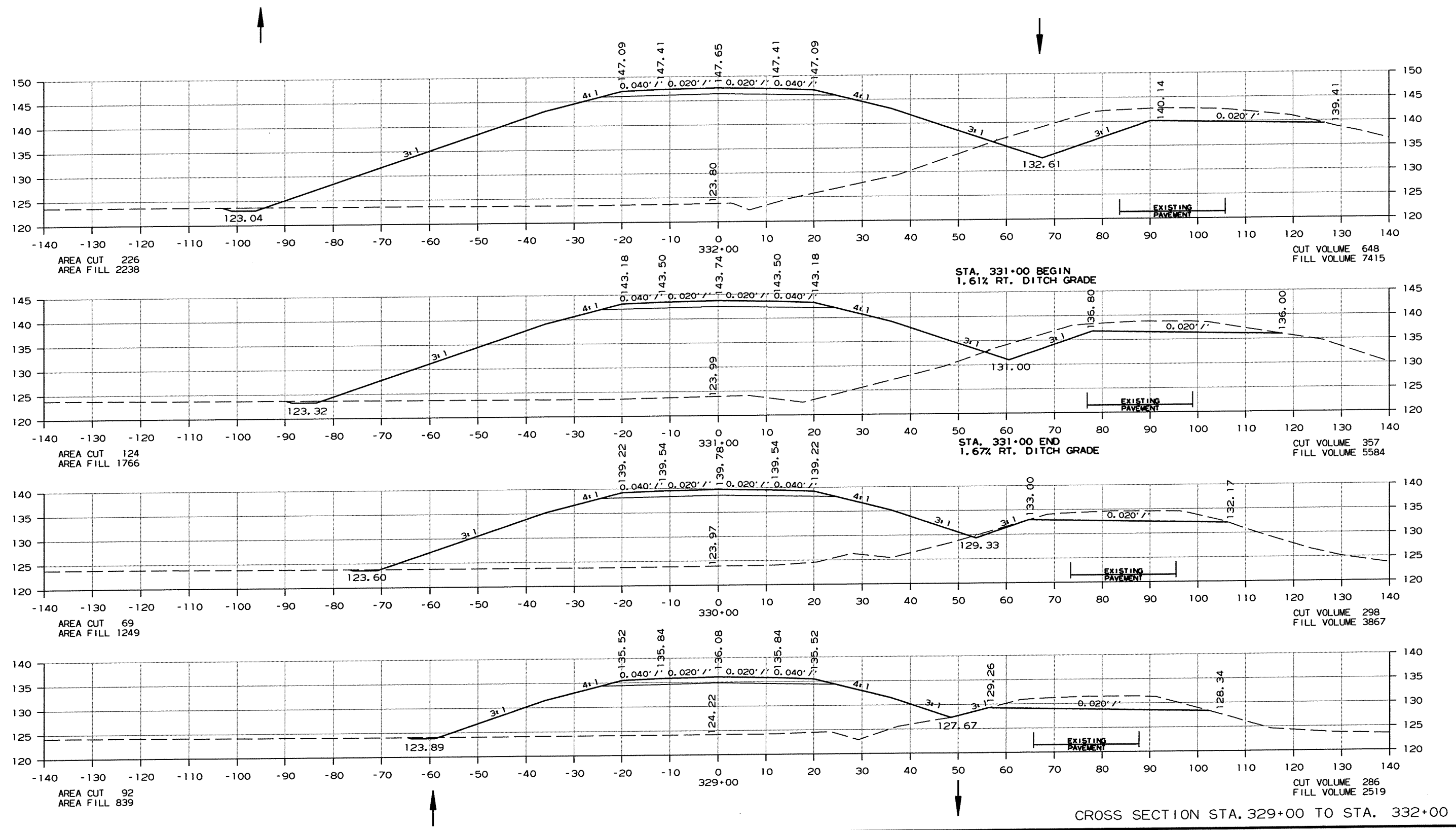
2 CROSS SECTIONS



CROSS SECTION STA. 324+00 TO STA. 328+00

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JOB NO. 020509							94	103

② CROSS SECTIONS

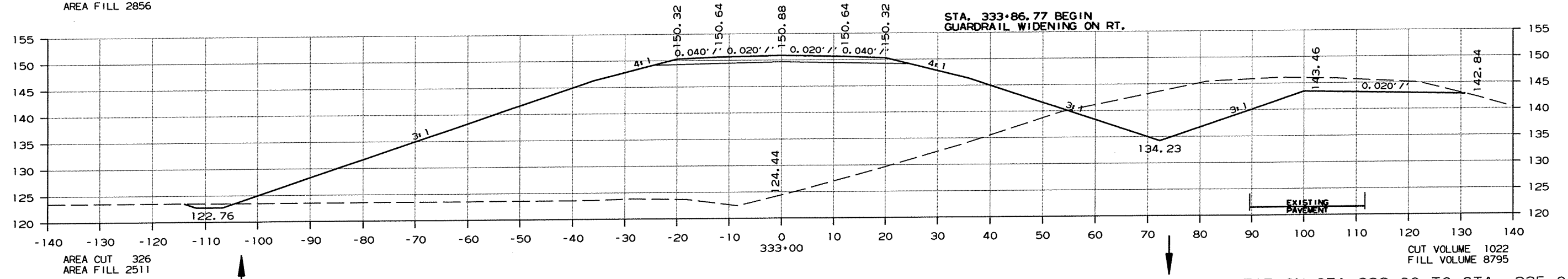
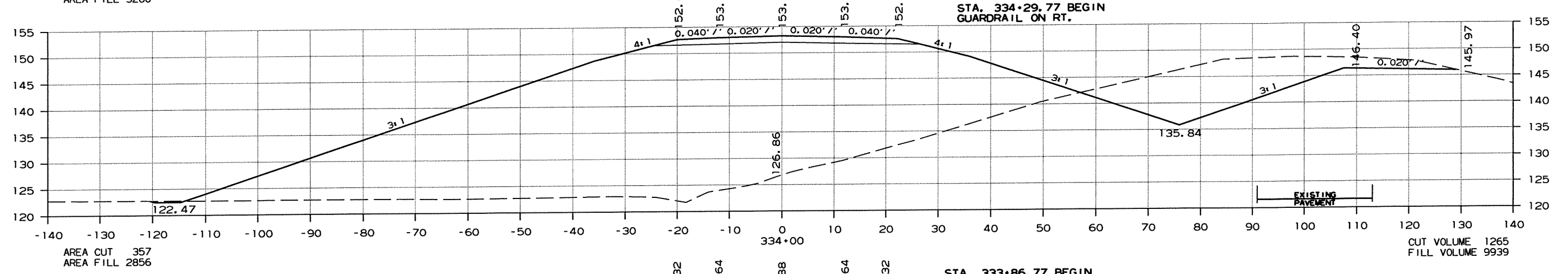
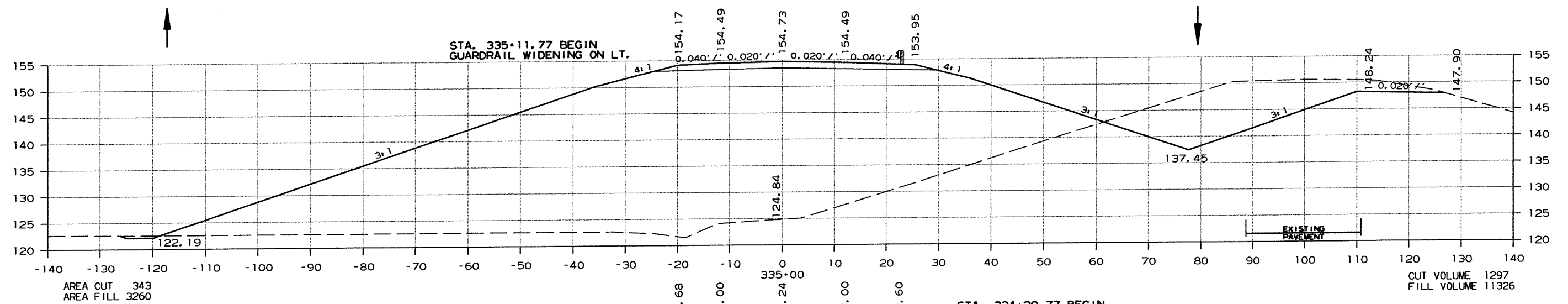


R020509.DGN 4/9/2013

CROSS SECTION STA. 329+00 TO STA. 332+00

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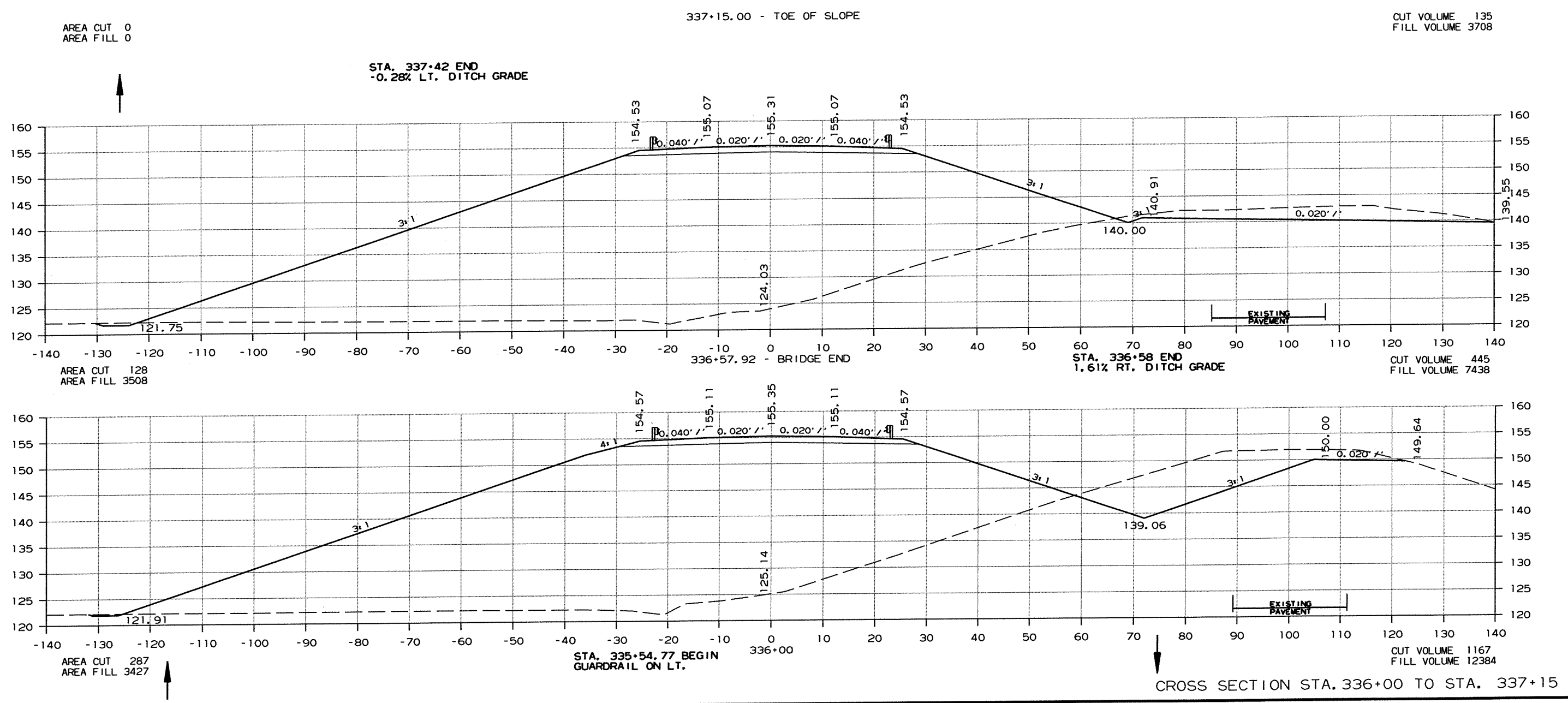
② CROSS SECTIONS



CROSS SECTION STA. 333+00 TO STA. 335+00

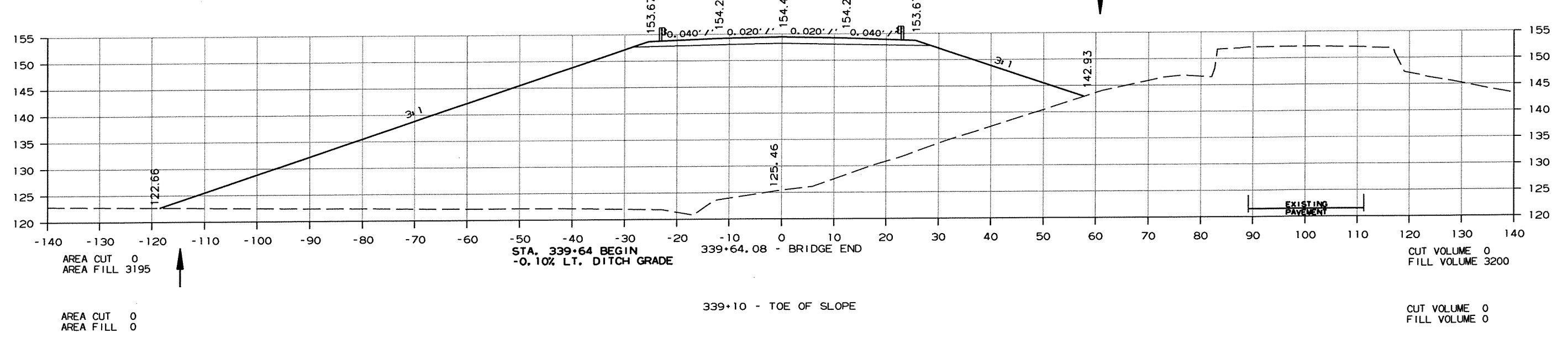
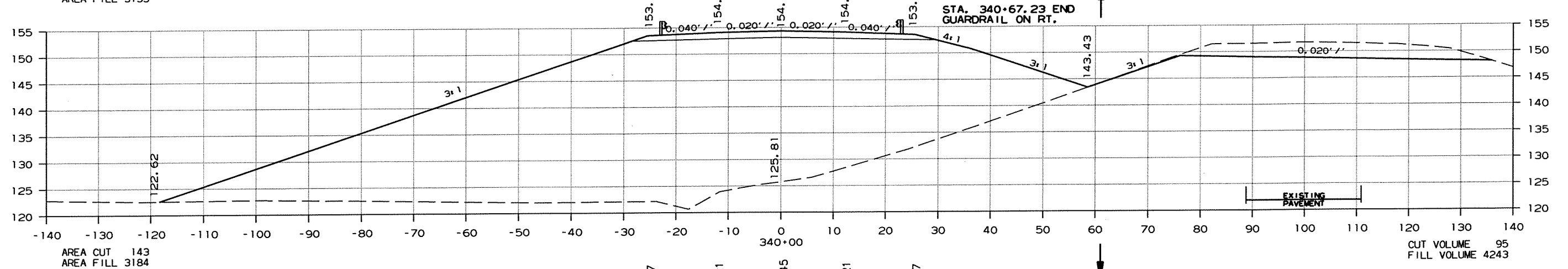
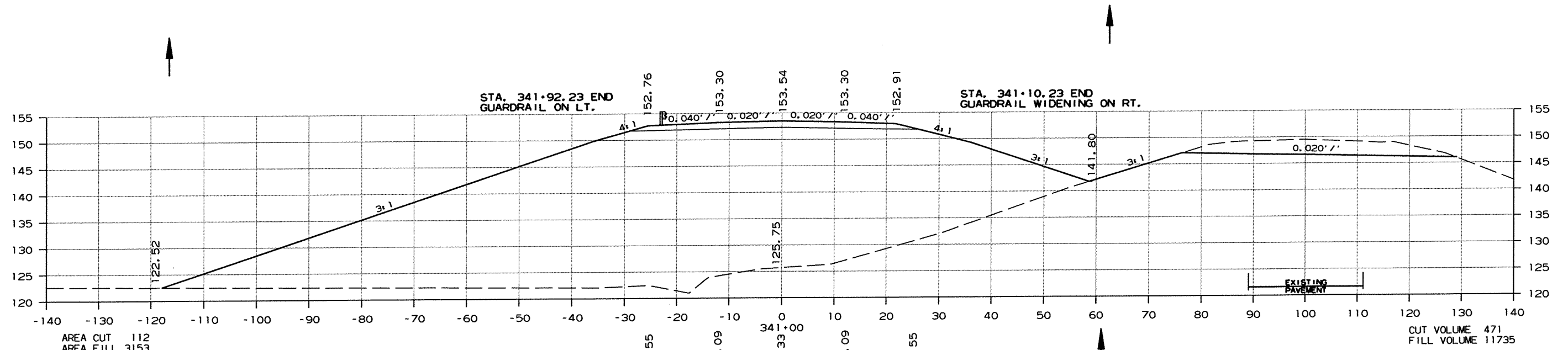
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② CROSS SECTIONS



DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
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JOB NO. 020509								

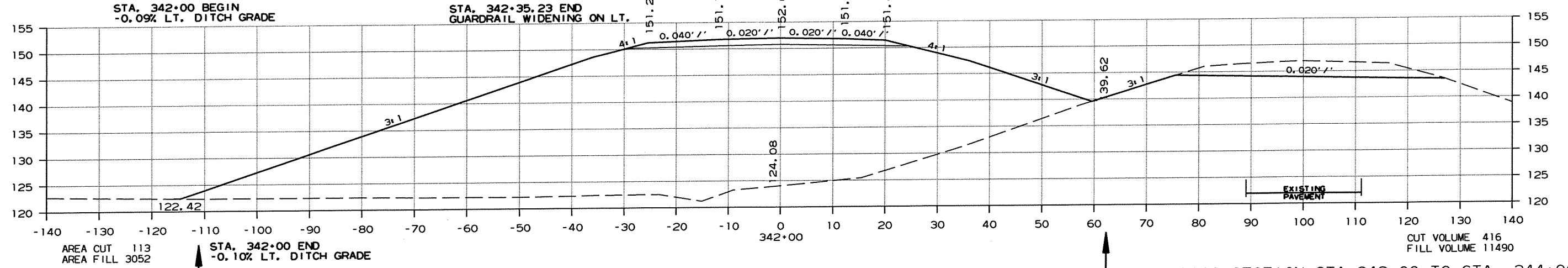
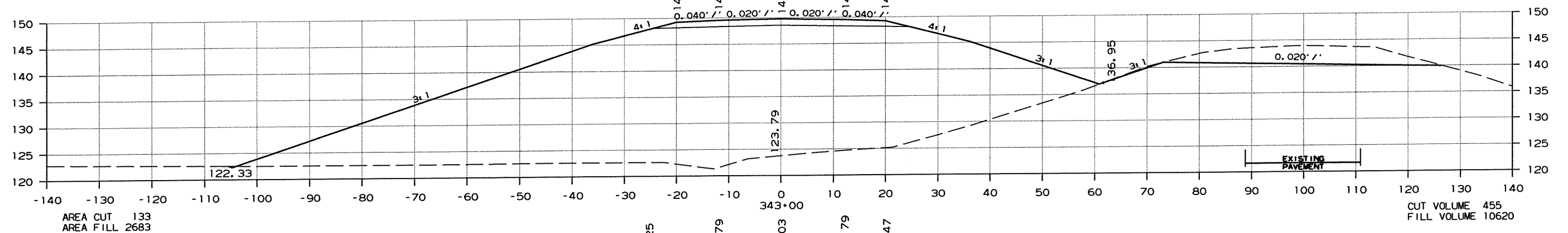
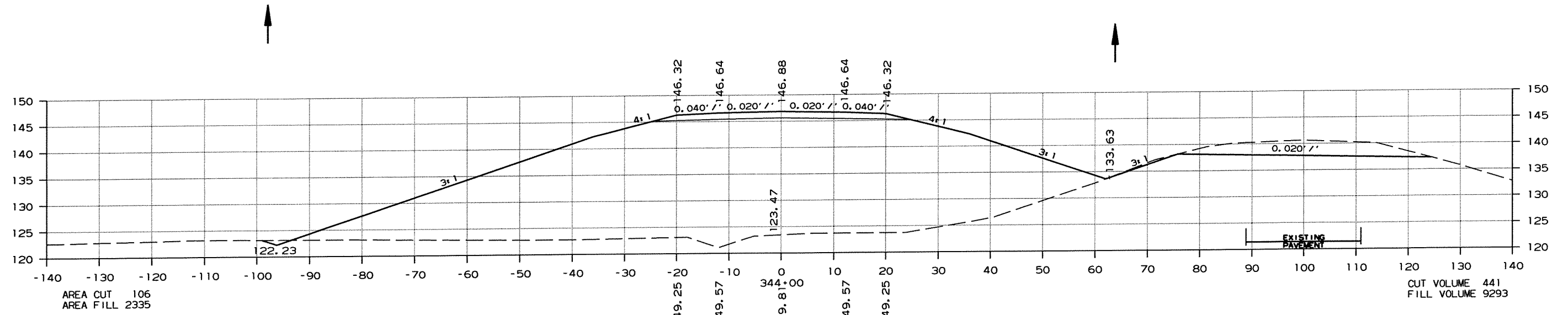
② CROSS SECTIONS



CROSS SECTION STA. 339+10 TO STA. 341+00

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JOB NO.						020509	98	103

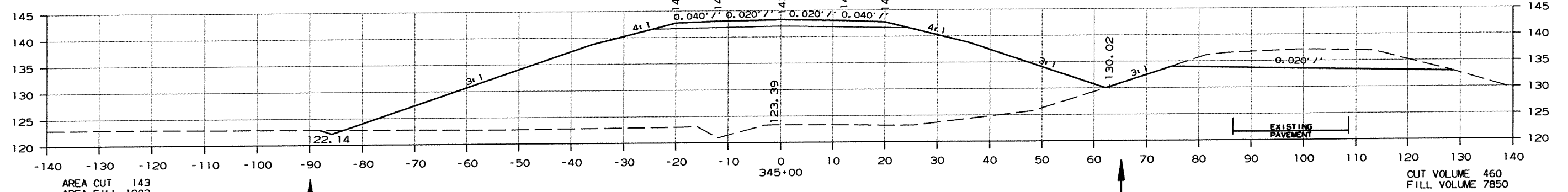
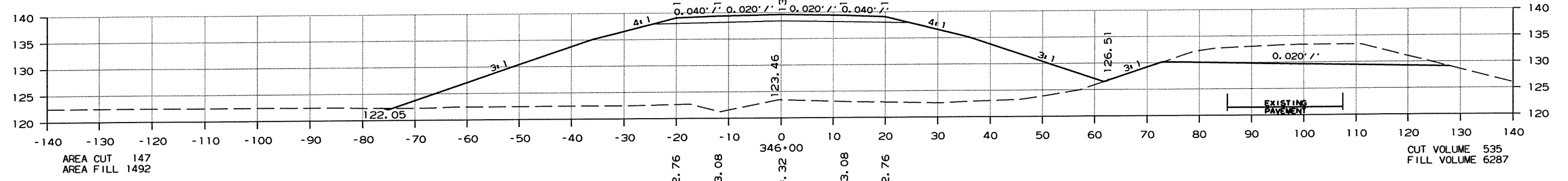
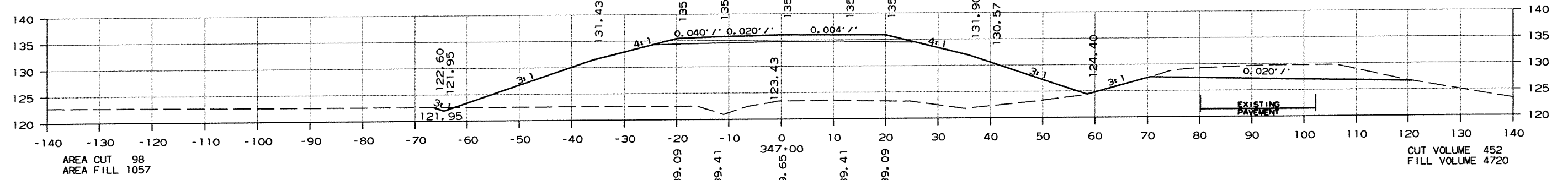
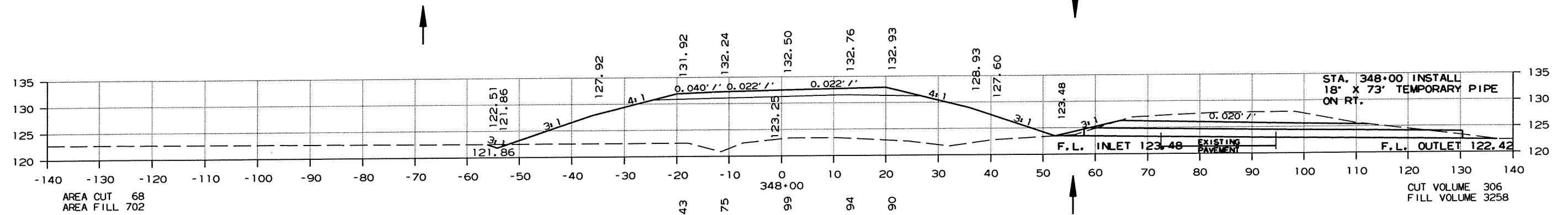
2 CROSS SECTIONS



CROSS SECTION STA. 342+00 TO STA. 344+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. 020509							99	103

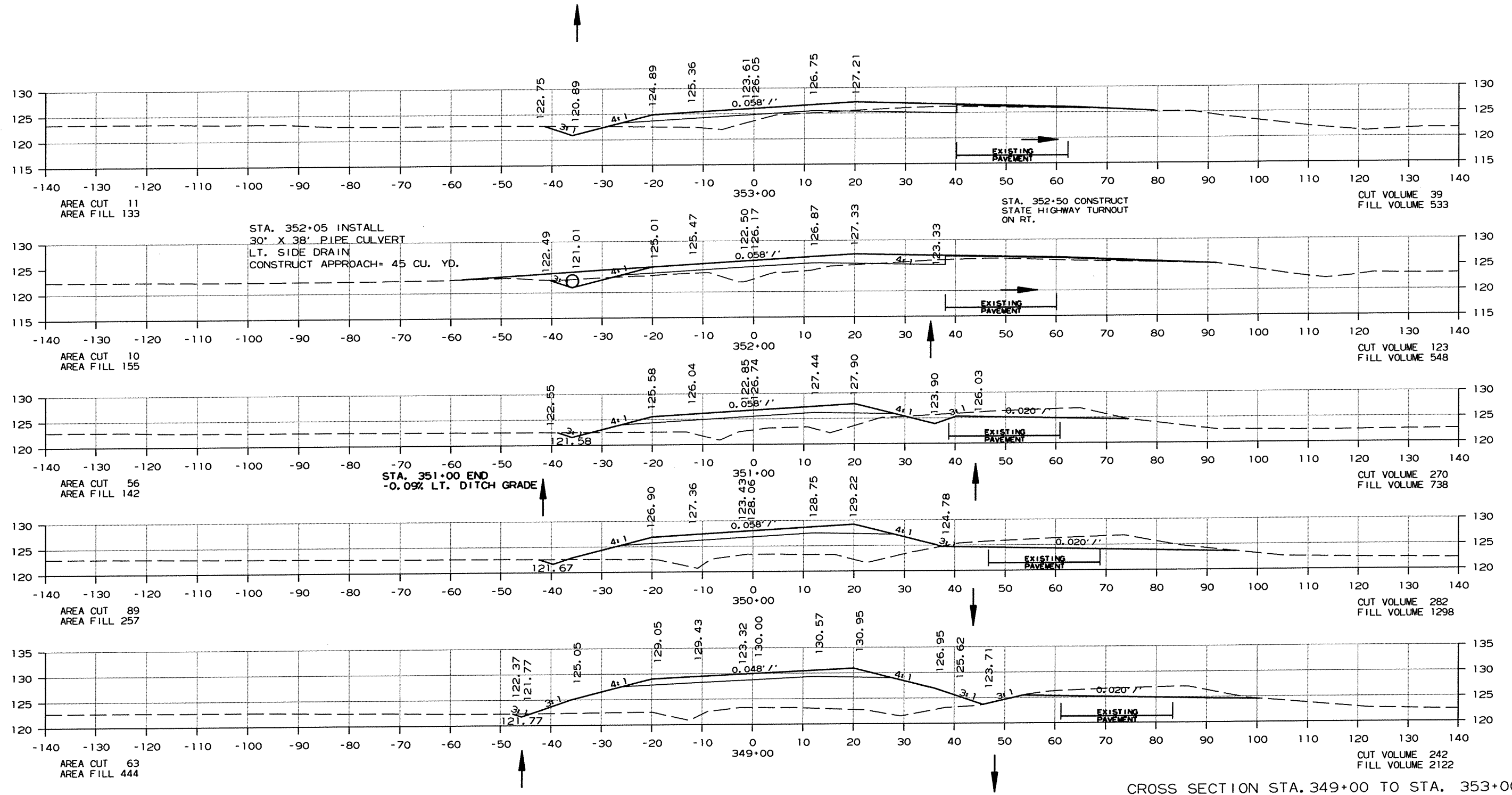
2 CROSS SECTIONS



CROSS SECTION STA. 345+00 TO STA. 348+00

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. AID DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
JOB NO. 020509							100	103

2 CROSS SECTIONS

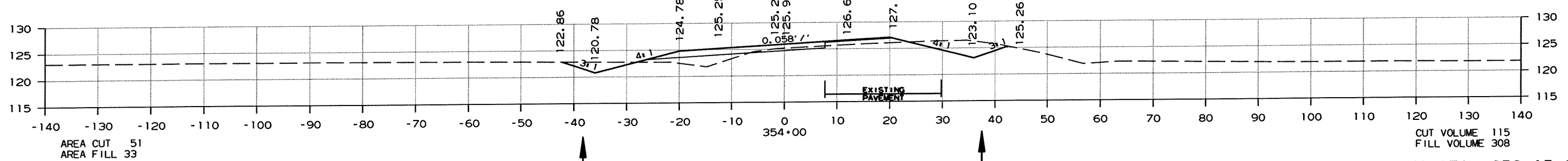
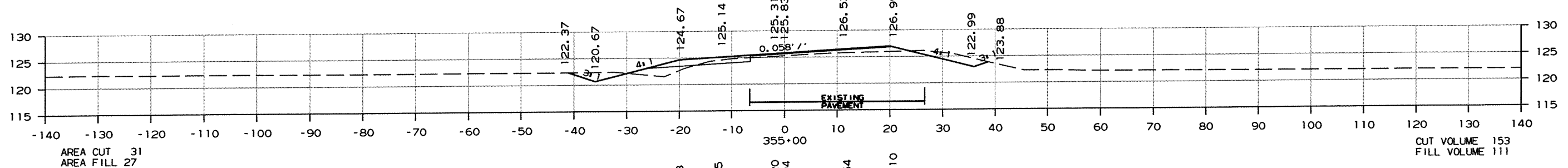
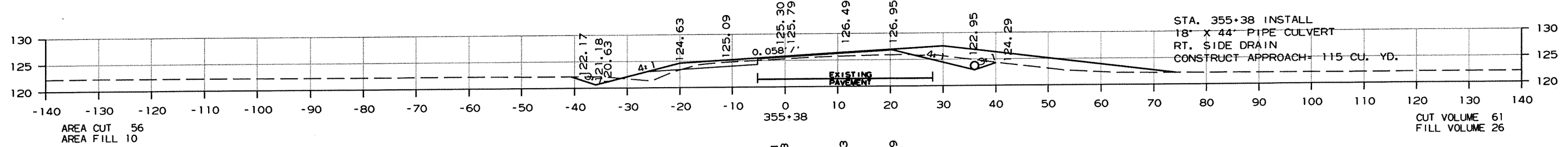
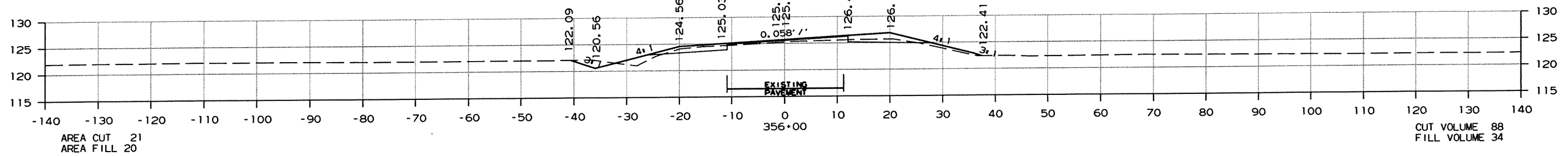
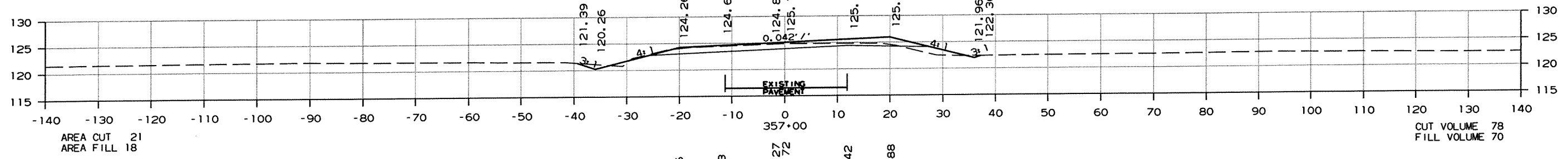
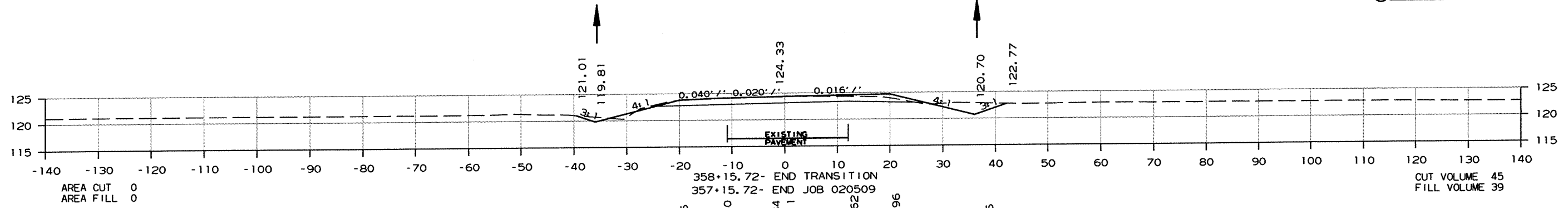


CROSS SECTION STA. 349+00 TO STA. 353+00

R020509.DCN 4/9/2013

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		101	103
JOB NO. 020509								

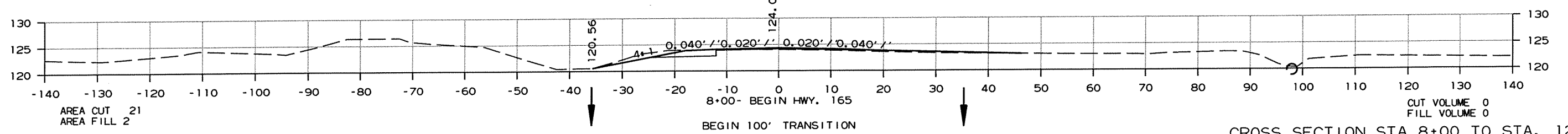
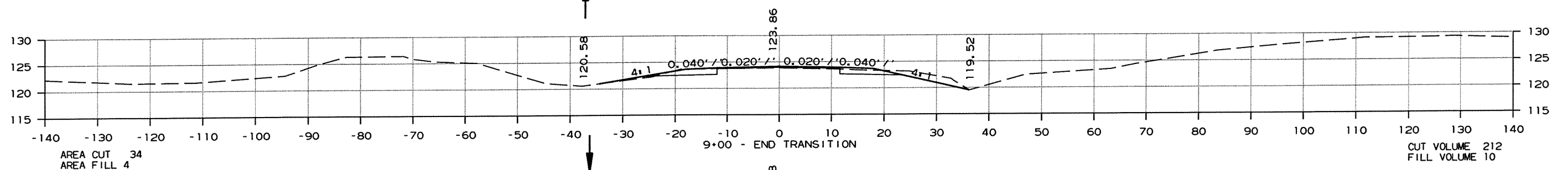
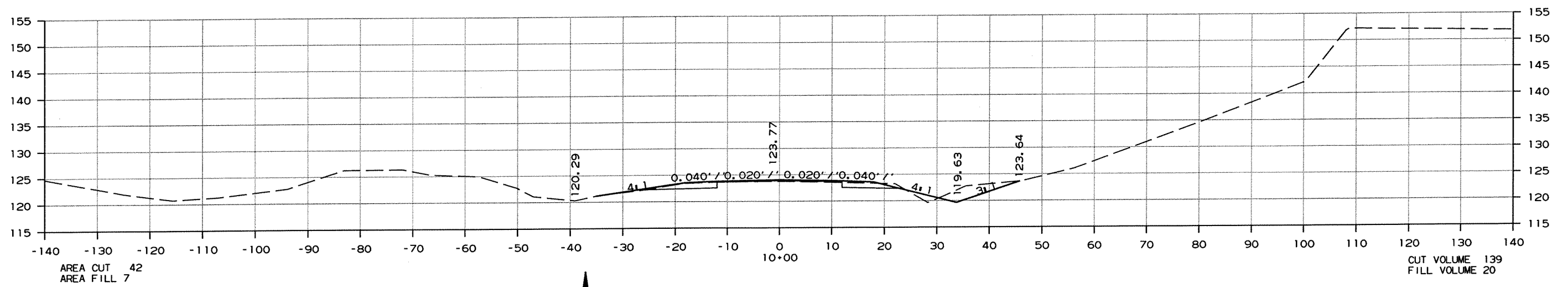
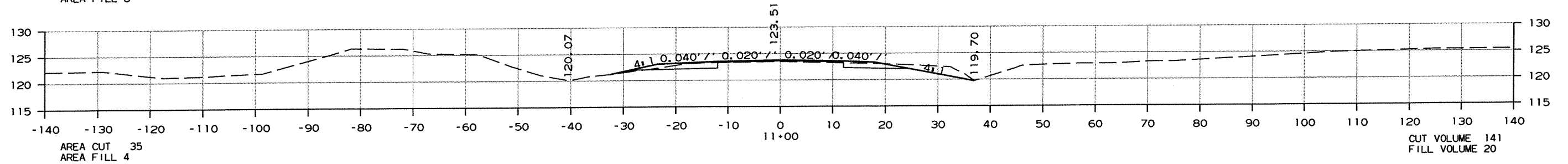
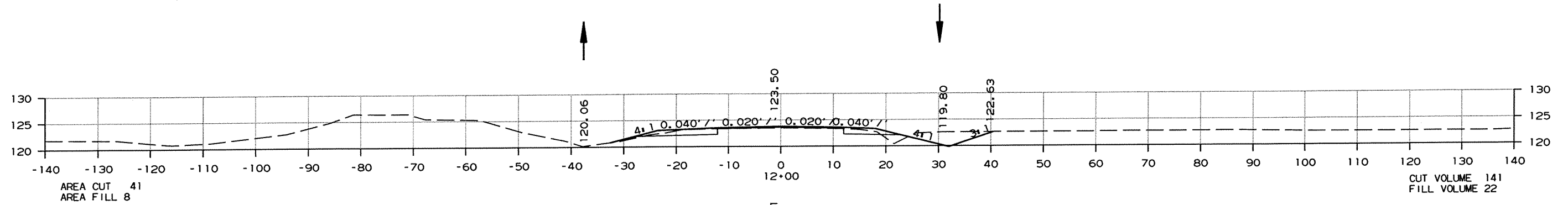
② CROSS SECTIONS



CROSS SECTION STA. 354+00 TO STA. 358+15.32

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. 020509							102	103

2 CROSS SECTIONS

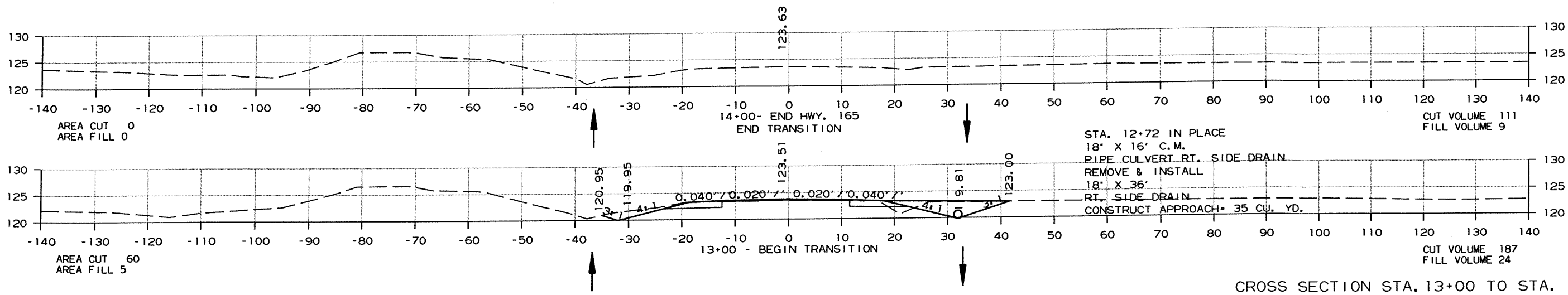


CROSS SECTION STA. 8+00 TO STA. 12+00

R020509.DGN 4/10/2013

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. 020509	103	103

② CROSS SECTIONS



CROSS SECTION STA. 13+00 TO STA. 14+00

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