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.		080379	1	85

(2) OUACHITA RIVER STR. & APPRS. (S)

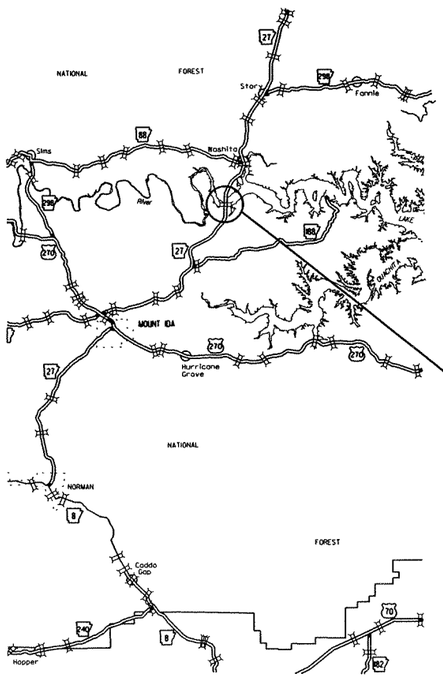
ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT
CONSTRUCTION PLANS FOR STATE HIGHWAY

OUACHITA RIVER
STR. & APPRS. (S)

MONTGOMERY COUNTY
ROUTE 27 SECTION 7

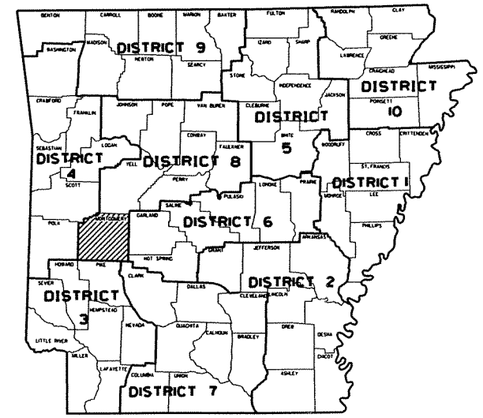
JOB 080379

F. A. P. NO. STPR-0049(13)



VICINITY MAP

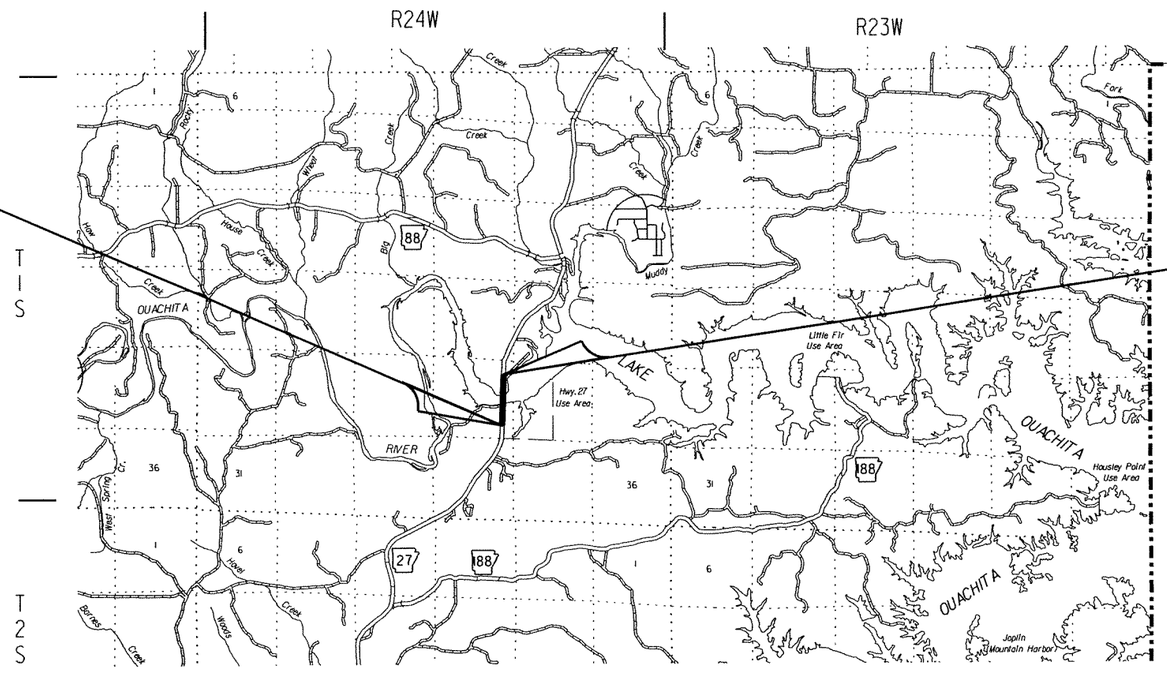
0 1 2 MILE
BAR SCALE



ARK. HWY. DIST. NO. 8

• DESIGN TRAFFIC DATA •

DESIGN YEAR	2033
2013 ADT	1100
2033 ADT	1400
2033 DHV	154
DIRECTIONAL DISTRIBUTION	60%
TRUCKS	14%
DESIGN SPEED	55 MPH



STA. 502+96.10
BEGIN JOB 080379
L.M. 7.59

STA. 546+81.96
END JOB 080379
L.M. 8.42

BRIDGE DATA

BR. END STA. 522+30.91
BRIDGE NO. 07264
34'-0" CLEAR ROADWAY
436'-2¼" TOTAL LENGTH
434'-0" CONT. COMP. PLATE GIRDER
(97'-0",120'-0",120'-0",97'-0")
BR. END STA. 526+67.07

BEGINNING:	
LAT: N34° 37' 13"	
LONG: W93° 32' 50"	
MID POINT:	
LAT: N34° 37' 36"	
LONG: W93° 32' 49"	
ENDING:	
LAT: N34° 37' 55"	
LONG: W93° 32' 48"	

GROSS LENGTH OF PROJECT	4385.86	FEET OR	0.831 MILES
NET " " ROADWAY	3949.70	"	0.748 "
NET " " BRIDGES	436.16	"	0.083 "
NET " " PROJECT	4385.86	"	0.831 "

P.E. 080379
NON-PART.

APPROVED

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 3917
FRANK VOZEL

9/16/13
DEPUTY DIRECTOR
AND CHIEF ENGINEER

080379

R080379.DGN 08/16/2013

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.		080379	2	85

(2) INDEX OF SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-10-13

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2	INDEX OF SHEETS			
3	GOVERNING SPECIFICATIONS AND GENERAL NOTES			
4	TYPICAL SECTIONS OF IMPROVEMENT			
5-7	SPECIAL DETAILS			
8-11	TEMPORARY EROSION CONTROL DETAILS			
12-16	MAINTENANCE OF TRAFFIC DETAILS			
17	PERMANENT PAVEMENT MARKING DETAILS			
18-20	QUANTITIES			
21	SCHEDULE OF BRIDGE QUANTITIES	07264	53183	
22	SUMMARY OF QUANTITIES AND REVISIONS			
23-25	SURVEY CONTROL DETAILS			
26-29	PLAN AND PROFILE SHEETS			
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31	LAYOUT OF BRIDGE OVER OUACHITA RIVER (SHEET 2 OF 2)	07264	53185	
32	DETAILS OF BENT 1 OUACHITA RIVER (SHEET 1 OF 2)	07264	53186	
33	DETAILS OF BENT 1 OUACHITA RIVER (SHEET 2 OF 2)	07264	53187	
34	DETAILS OF BENTS 2, 3 & 4 OUACHITA RIVER (SHEET 1 OF 2)	07264	53188	
35	DETAILS OF BENTS 2, 3 & 4 OUACHITA RIVER (SHEET 2 OF 2)	07264	53189	
36	DETAILS OF BENT 5 OUACHITA RIVER (SHEET 1 OF 2)	07264	53190	
37	DETAILS OF BENT 5 OUACHITA RIVER (SHEET 2 OF 2)	07264	53191	
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39	DETAILS OF 434'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT (SHEET 2 OF 6)	07264	53193	
40	DETAILS OF 434'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT (SHEET 3 OF 6)	07264	53194	
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9/9/2013

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10/17/2013				6	ARK.			
				JOB NO.		080379	3	85

(2) GOV. SPECS. & GEN. NOTES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-17-13

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
804-1	INSTALLATION OF DOWEL BARS AND TIE BARS
JOB 080379	ARMORED JOINT WITH NEOPRENE STRIP SEAL
JOB 080379	BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB 080379	BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB 080379	DETAILS FOR BOATER SAFETY ON LAKE OUACHITA
JOB 080379	DIRECT TENSION INDICATORS FOR HIGH STRENGTH BOLT ASSEMBLIES
JOB 080379	DRILLED SHAFT FOUNDATIONS
JOB 080379	EXTENSION FOR PIPE CULVERT
JOB 080379	FOREST SERVICE REQUIREMENTS
JOB 080379	GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
JOB 080379	HIGH PERFORMANCE PAVEMENT MARKING
JOB 080379	INTERNET BIDDING
JOB 080379	NESTING SITES OF MIGRATORY BIRDS
JOB 080379	NONDESTRUCTIVE TESTING OF DRILLED SHAFTS
JOB 080379	PARTNERING REQUIREMENTS
JOB 080379	PLASTIC PIPE
JOB 080379	ROCK FILL
JOB 080379	SOIL STABILIZATION
JOB 080379	SPECIAL FACILITIES AT SITE
JOB 080379	SPECIAL SEEDING REQUIREMENTS
JOB 080379	STORM WATER POLLUTION PREVENTION PLAN
JOB 080379	SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB 080379	TRIANGULAR SILT DIKE
JOB 080379	UTILITY ADJUSTMENTS
JOB 080379	VALUE ENGINEERING
JOB 080379	WARM MIX ASPHALT
JOB 080379	WATER POLLUTION CONTROL
JOB 080379	WATTLES

GENERAL NOTES

1. GRADE LINE DENOTES FINISHED GRADE WHERE SHOWN ON PLANS.
2. ALL PIPE LINES, POWER, TELEPHONE AND TELEGRAPH LINES TO BE MOVED OR LOWERED BY THE RESPECTIVE OWNERS AS PER AGREEMENT WITH SUCH OWNERS.
3. ANY EQUIPMENT OR APPURTENANCE THAT INTERFERES WITH THE PROPOSED CONSTRUCTION AND WHICH MAY BE THE PROPERTY OF UTILITY SERVICE ORGANIZATIONS SHALL BE MOVED BY THE OWNERS UNLESS OTHERWISE PROVIDED.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING U. S. MAILBOXES WITHIN THE PROJECT LIMITS IN SUCH A MANNER THAT THE PUBLIC MAY RECEIVE CONTINUED MAIL SERVICE. PAYMENT WILL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE VARIOUS BID ITEMS.
5. ALL LAND MONUMENTS LOCATED WITHIN THE CONSTRUCTION AREA SECTION 107.12 OF SHALL BE PROTECTED IN ACCORDANCE WITH SECTION 107.12 OF THE STANDARD SPECIFICATIONS, EDITION OF 2003.
6. ALL TREES THAT DO NOT DIRECTLY INTERFERE WITH THE PROPOSED CONSTRUCTION SHALL BE SPARED AS DIRECTED BY THE ENGINEER. CARE AND DISCRETION SHALL BE USED TO INSURE THAT ALL TREES NOT TO BE REMOVED SHALL BE HARMED AS LITTLE AS POSSIBLE DURING THE CONSTRUCTION OPERATIONS.
7. THIS PROJECT IS COVERED UNDER A SECTION 404 NATIONWIDE 23 PERMIT. REFER TO SECTION 110 OF THE STANDARD SPECIFICATIONS, EDITION OF 2003, FOR PERMIT REQUIREMENTS.
8. 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.
9. ALL FLEXIBLE BASE AND ASPHALTIC PAVEMENTS REMOVED SHALL BE PAID FOR UNDER THE ITEM NO. 210, UNCLASSIFIED EXCAVATION.

R080379.DGN 10/17/2013

GOVERNING SPECIFICATIONS & GENERAL NOTES

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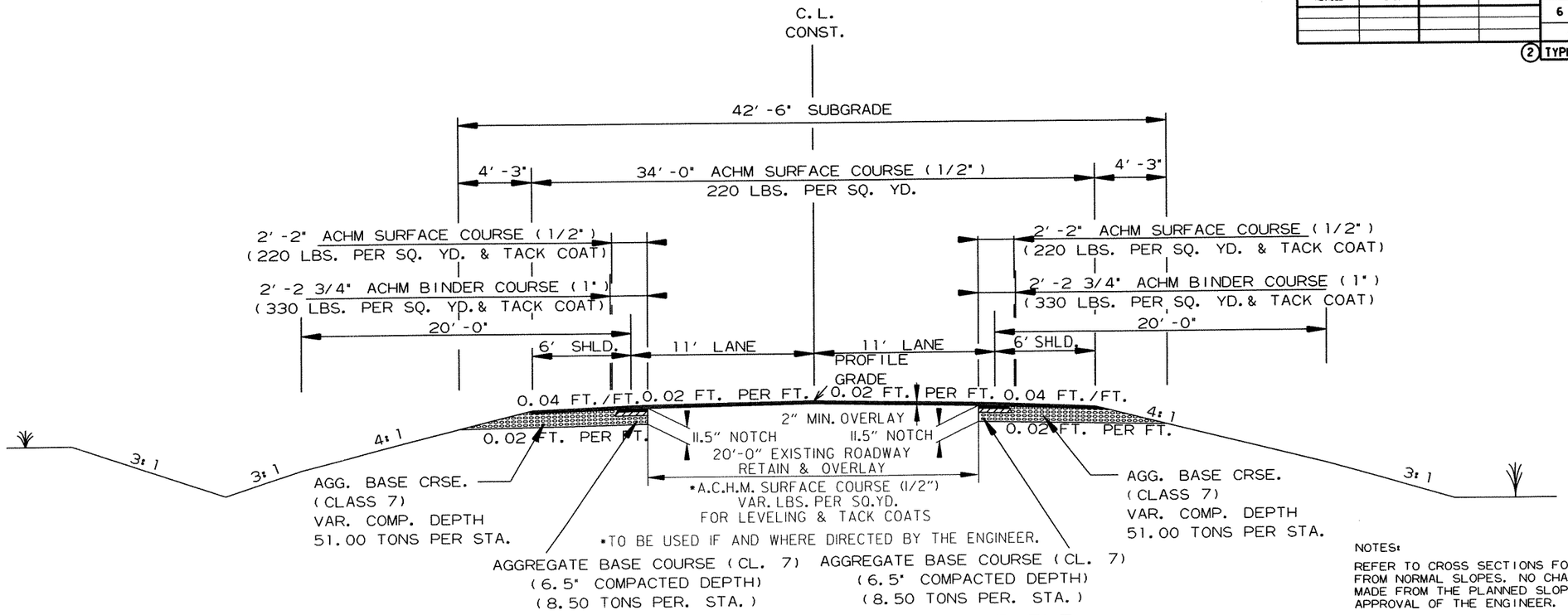
				6	ARK.			
				JOB NO.		080379	4	85

(2) TYPICAL SECTIONS OF IMPROVEMENT

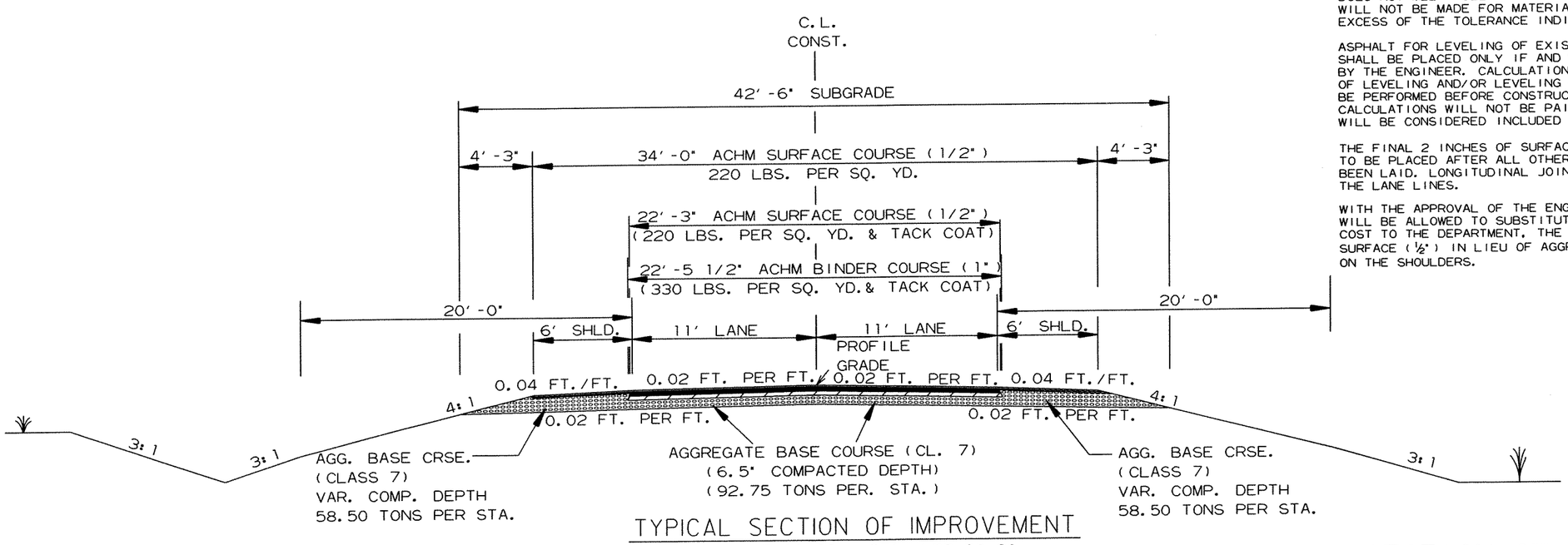
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-12-13



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

TYPICAL SECTION OF IMPROVEMENT

STA. 502+96.10 - STA. 507+23.00
STA. 541+72.00 - STA. 546+81.96



TYPICAL SECTION OF IMPROVEMENT

STA. 507+23.00 - STA. 522+30.91
STA. 526+67.07 - STA. 541+72.00

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.

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 PAY ITEMS.

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 (½") IN LIEU OF AGGREGATE BASE COURSE ON THE SHOULDERS.

9/11/2013

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TYPICAL SECTION OF IMPROVEMENT

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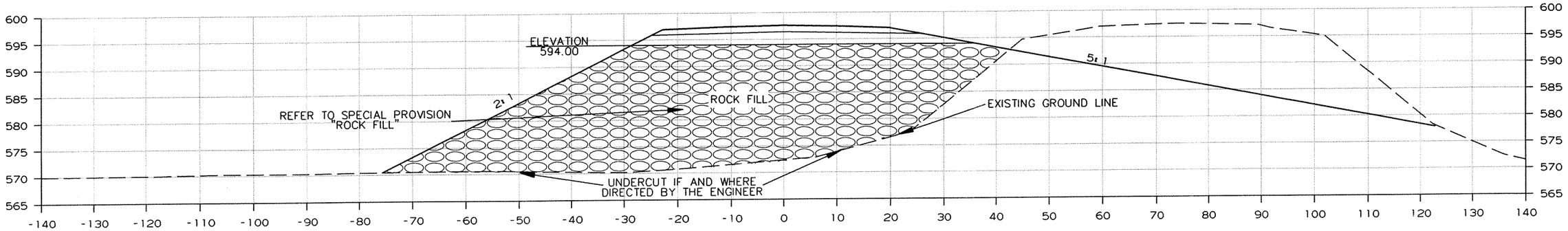
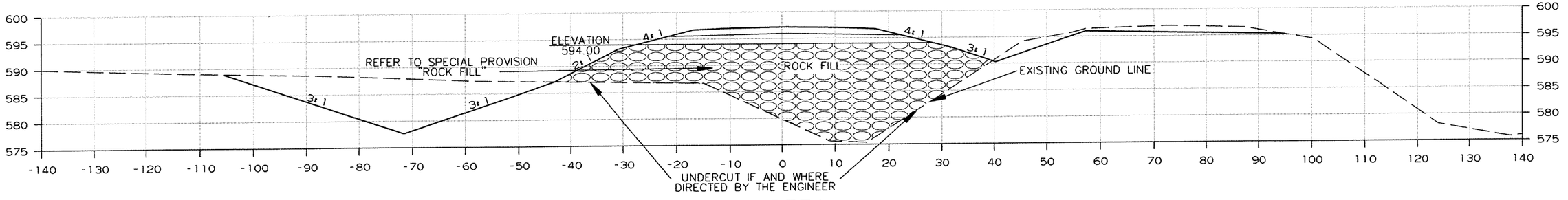
(2) SPECIAL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-10-13



ROCK FILL DETAIL

STA. 526+66 TO STA. 529+00
REFER TO TYPICAL SECTIONS FOR ADDITIONAL INFORMATION.



ROCK FILL DETAIL

STA. 529+00 TO STA. 536+00
REFER TO TYPICAL SECTIONS FOR ADDITIONAL INFORMATION.

9/5/2013

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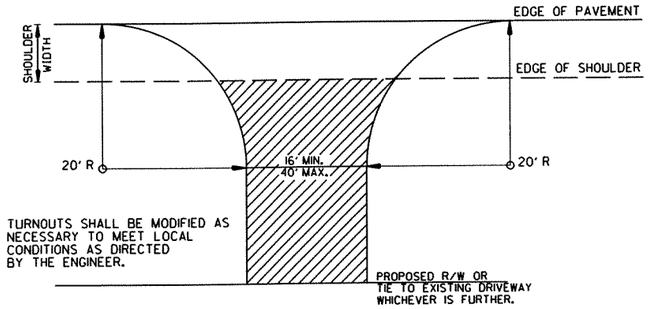
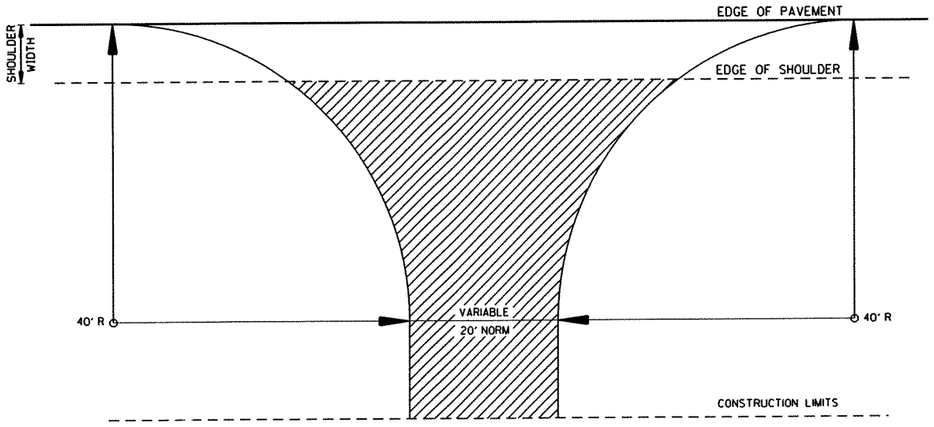
(2) SPECIAL DETAILS



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

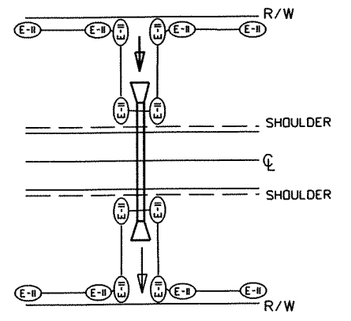
DETAIL FOR DRIVEWAY TURNOUTS



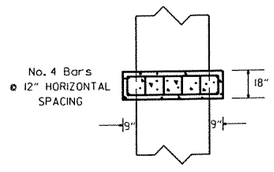
ASPHALT CONCRETE HOT MIX SURFACE COURSE (1/2") (220 LBS. PER SQ. YD.) AND AGGREGATE BASE COURSE (CLASS 7) (7" COMPACTED DEPTH)

TURNOUTS SHALL BE MODIFIED AS NECESSARY TO MEET LOCAL CONDITIONS, AS SHOWN IN PLANS AND IF AND WHERE DIRECTED BY THE ENGINEER.

DETAIL FOR COUNTY ROAD TURNOUT

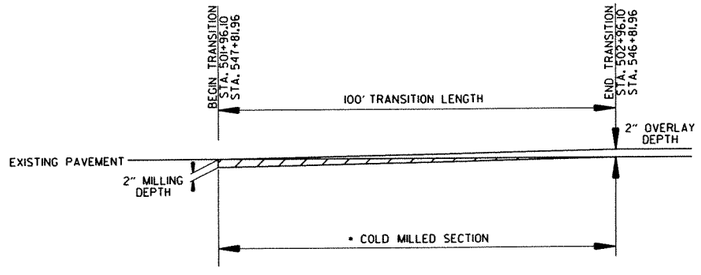


DETAIL OF SILT FENCE AT CROSS DRAIN



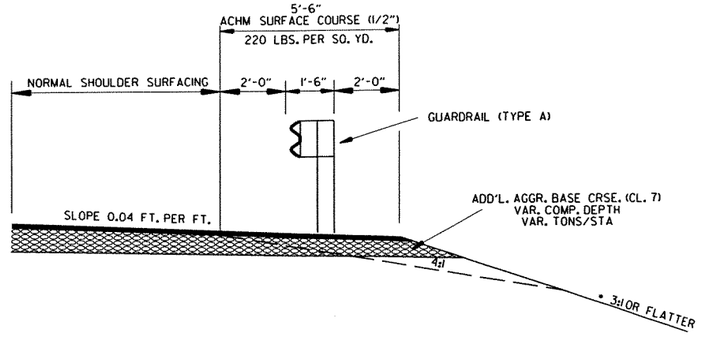
NOTE: PIPE COLLAR TO BE UTILIZED AS APPROVED BY THE ENGINEER.

PIPE EXTENSION REINFORCED CONCRETE COLLAR DETAIL



DETAIL SHOWING TAPER TO EXISTING PAVEMENT

• TO BE USED AS DIRECTED BY THE ENGINEER



DETAIL OF WIDENING FOR GUARDRAIL

• REFER TO STD. DWG. GR-9A AND CROSS SECTIONS FOR SLOPE REQUIREMENTS BEHIND GUARDRAIL.

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 9-10-13

9/5/2013

R080379.DGN

SPECIAL DETAILS

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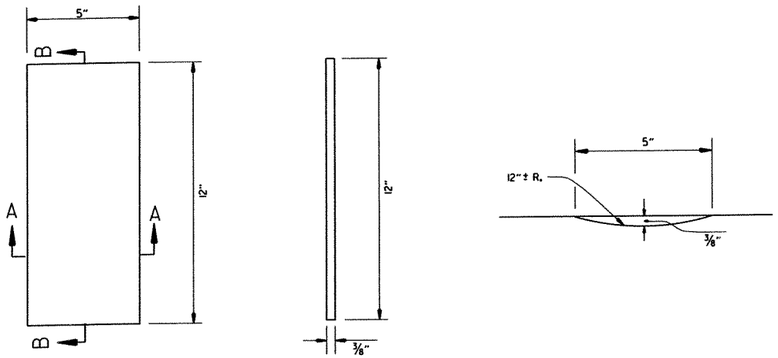
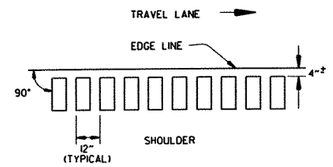
(2) SPECIAL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-10-13

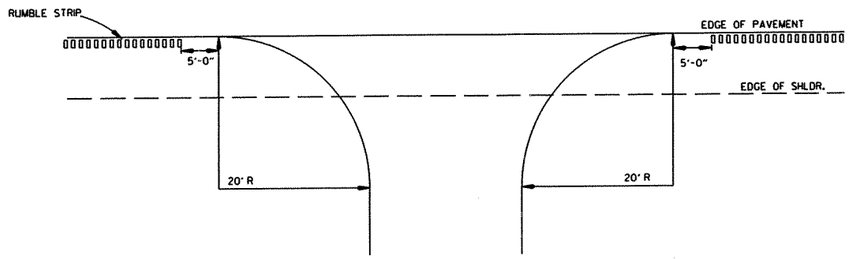


PLAN SECTION B-B SECTION A-A

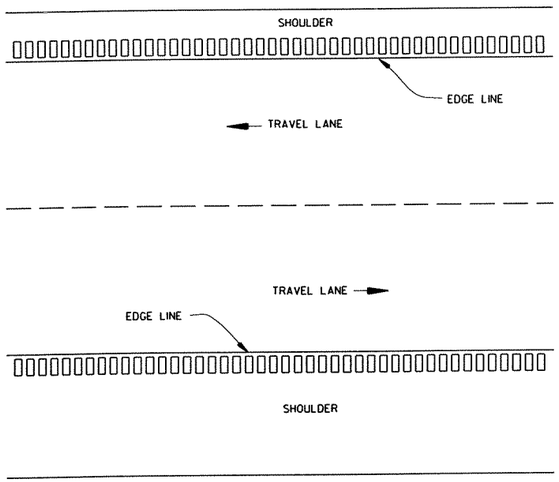
DETAILS OF RUMBLE STRIPS



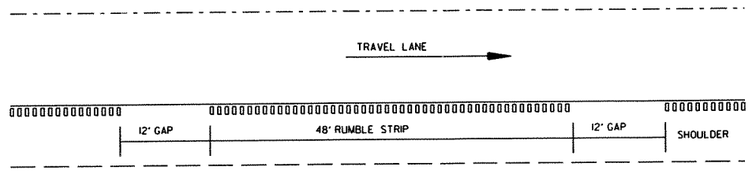
LOCATION PLAN OF RUMBLE STRIPS
LEFT OR RIGHT SHOULDER



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.

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SPECIAL DETAILS

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

ROCK DITCH CHECKS (E-6) = 50 CU. YD.
DIVERSION DITCH (E-8) = 5046 LIN. FT.
SILT FENCE (E-11) = 2218 LIN. FT.
PIPE FOR SLOPE DRAIN (E-12) = 167 LIN. FT.
SEDIMENT BASIN (E-14) = 80 CU. YD.
OBLITERATION OF SEDIMENT BASIN = 80 CU. YD.
SEDIMENT REMOVAL AND DISPOSAL = 1000 CU. YD.
DUMPED RIPRAP = 8 CU. YD.

P. I. = 506+93.13
Δ = 3°58'07.4" LT.
D = 0°30'00.0"
T = 397.03'
L = 793.74'
P.C. = 502+96.10
P.T. = 510+89.84
NO SUPER

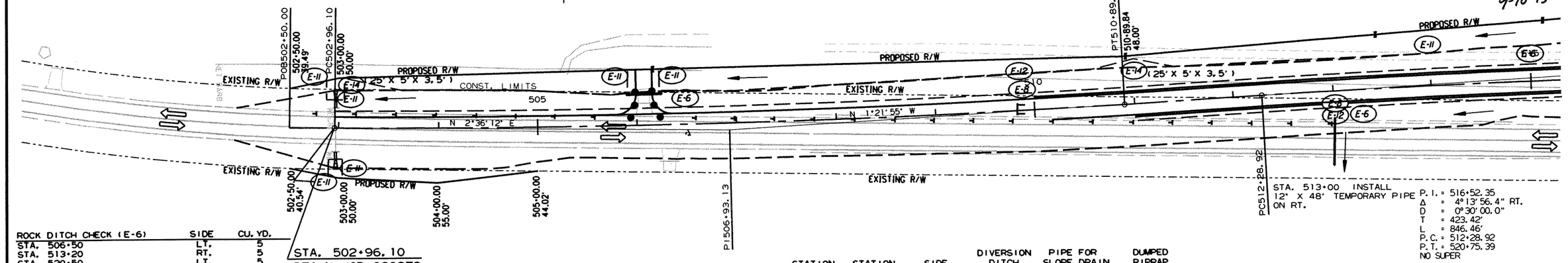
E-6 ROCK DITCH CHECKS
E-8 DIVERSION DITCH
E-11 SILT FENCE
E-12 PIPE FOR SLOPE DRAIN
E-14 SEDIMENT BASIN

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.		080379	8	85

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-10-13



P. I. = 516+52.35
Δ = 4°13'56.4" RT.
D = 0°30'00.0"
T = 423.42'
L = 846.46'
P.C. = 512+28.92
P.T. = 520+75.39
NO SUPER

ROCK DITCH CHECK (E-6)	SIDE	CU. YD.
STA. 506+50	LT.	5
STA. 513+20	RT.	5
STA. 520+50	LT.	5
STA. 521+50	RT.	5
STA. 527+00	RT.	5
STA. 530+00	RT.	5

STA. 502+96.10
BEGIN JOB 080379
LOG MILE 7.59

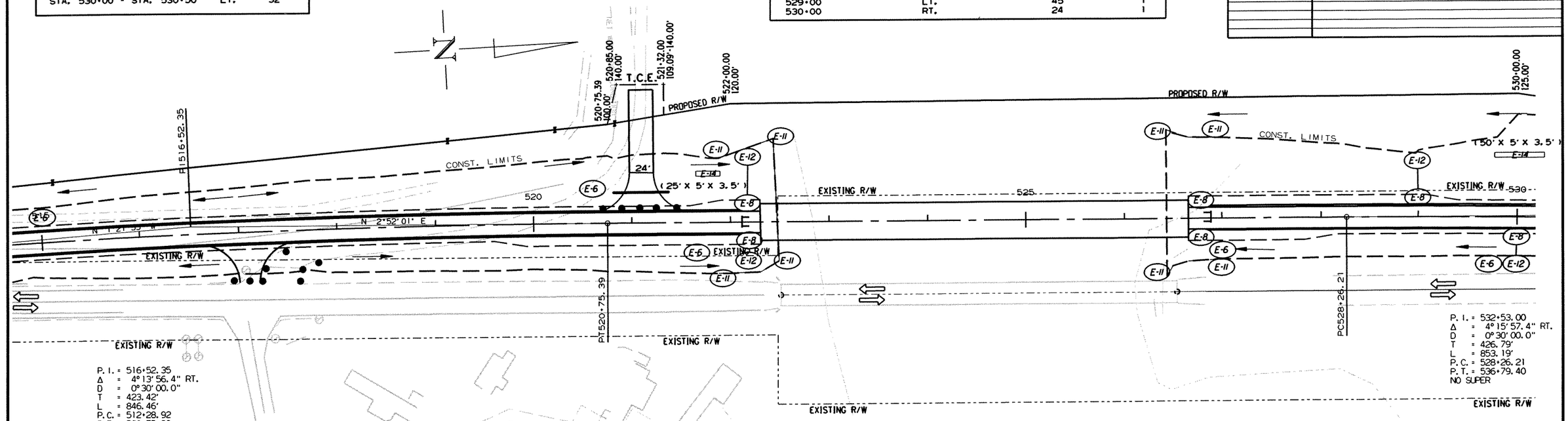
SILT FENCE (E-11)	SIDE	LIN. FT.
STA. 502+75 - STA. 514+00	LT.	1176
STA. 502+75 - STA. 503+20	RT.	63
STA. 522+00 - STA. 522+40		243
STA. 526+44 - STA. 527+00		258

SEDIMENT BASIN (E-14)	SIDE	CU. YD.
STA. 503+10 - STA. 503+35	LT.	16
STA. 511+00 - STA. 511+25	LT.	16
STA. 521+75 - STA. 522+00	LT.	16
STA. 530+00 - STA. 530+50	LT.	32

STATION	STATION	SIDE	DIVERSION DITCH LIN. FT.	PIPE FOR SLOPE DRAIN LIN. FT.	DUMPED RIPRAP CU. YD.
510+00	522+39	LT.	1239		
510+00		LT.		20	1
511+00	522+39	RT.	1039		
513+00		RT.		7	1
522+39		RT.		5	1
522+39		LT.		24	1
526+66	543+00	LT.	1634		
526+66	538+00	RT.	1134		
529+00		LT.		45	1
530+00		RT.		24	1

REVISION BOX

DATE	REVISION



P. I. = 516+52.35
Δ = 4°13'56.4" RT.
D = 0°30'00.0"
T = 423.42'
L = 846.46'
P.C. = 512+28.92
P.T. = 520+75.39
NO SUPER

P. I. = 532+53.00
Δ = 4°15'57.4" RT.
D = 0°30'00.0"
T = 426.79'
L = 853.19'
P.C. = 528+26.21
P.T. = 536+79.40
NO SUPER

TEMPORARY EROSION CONTROL DETAILS STAGE 1

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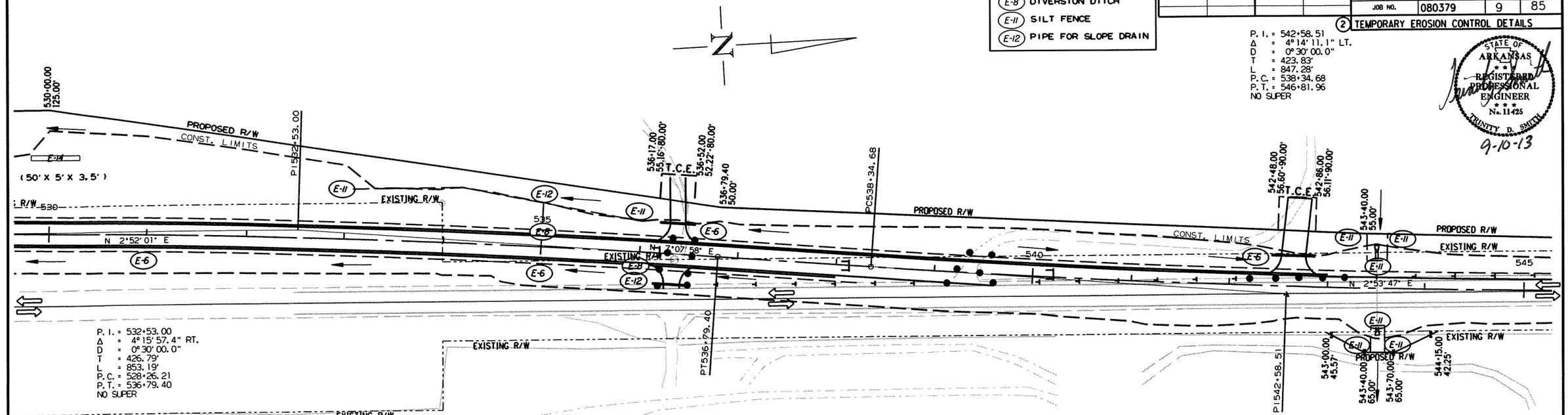
E-5	SAND BAG DITCH CHECKS
E-8	DIVERSION DITCH
E-11	SILT FENCE
E-12	PIPE FOR SLOPE DRAIN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		080379	9	85

(2) TEMPORARY EROSION CONTROL DETAILS



P. I. = 542+58.51
Δ = 4°14' 11.1" LT.
D = 0°30' 00.0"
T = 423.83'
L = 847.28'
P.C. = 538+34.68
P.T. = 546+81.96
NO SUPER

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-10-13

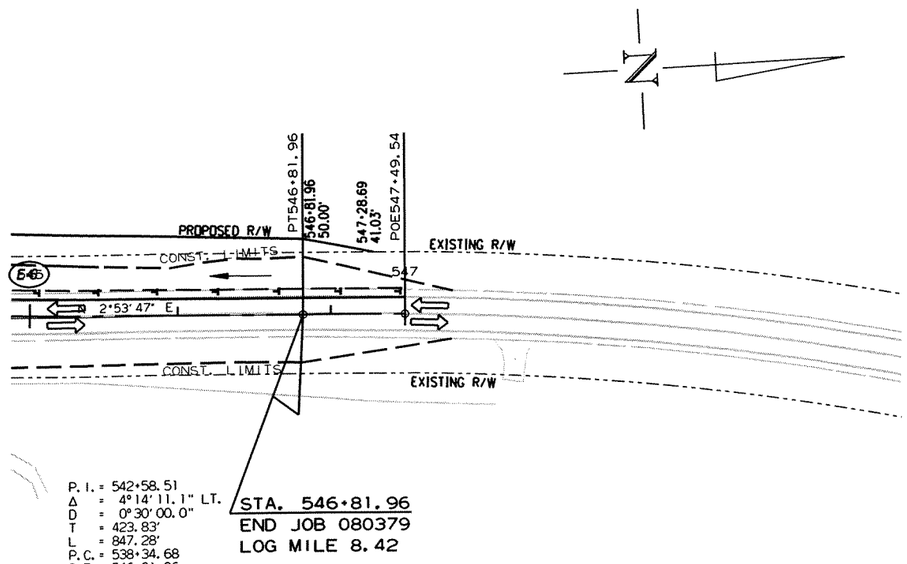
ROCK DITCH CHECK (E-6)	SIDE	CU. YD.
STA. 531+00	RT.	5
STA. 535+00	RT.	5
STA. 536+75	LT.	5
STA. 542+30	LT.	5

SILT FENCE (E-11)		SIDE	LIN. FT.
STA. 533+00	STA. 536+00	LT.	300
STA. 543+30	STA. 543+75	LT.	93
STA. 543+40	STA. 543+70	RT.	85

STATION	STATION	SIDE	PIPE FOR SLOPE DRAIN LIN. FT.	DUMPED RIPRAP CU. YD.
535+00		LT.	30	1
536+00		RT.	12	1

REVISION BOX

DATE	REVISION



STA. 546+81.96
END JOB 080379
LOG MILE 8.42

9/5/2013

R080379.DGN

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

ROCK DITCH CHECKS (E-6) = 40 CU. YD.
SILT FENCE (E-11) = 200 LIN. FT.
SEDIMENT BASIN (E-14) = 16 CU. YD.
OBLITERATION OF SEDIMENT BASIN = 16 CU. YD.
SEDIMENT REMOVAL AND DISPOSAL = 100 CU. YD.

P. I. = 506+93.13
Δ = 3°58' 07.4" LT.
D = 0°30' 00.0"
T = 397.03'
L = 793.74'
P. C. = 502+96.10
P. T. = 510+89.84
NO SUPER

E-6 ROCK DITCH CHECKS
E-11 SILT FENCE
E-14 SEDIMENT BASIN

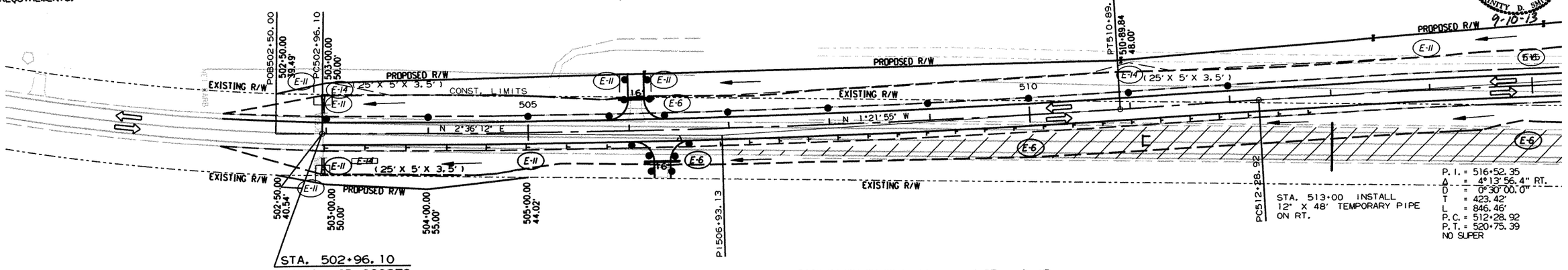
OBLITERATION AREA

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.		080379	10	85

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-10-13



STA. 502+96.10
BEGIN JOB 080379
LOG MILE 7.59

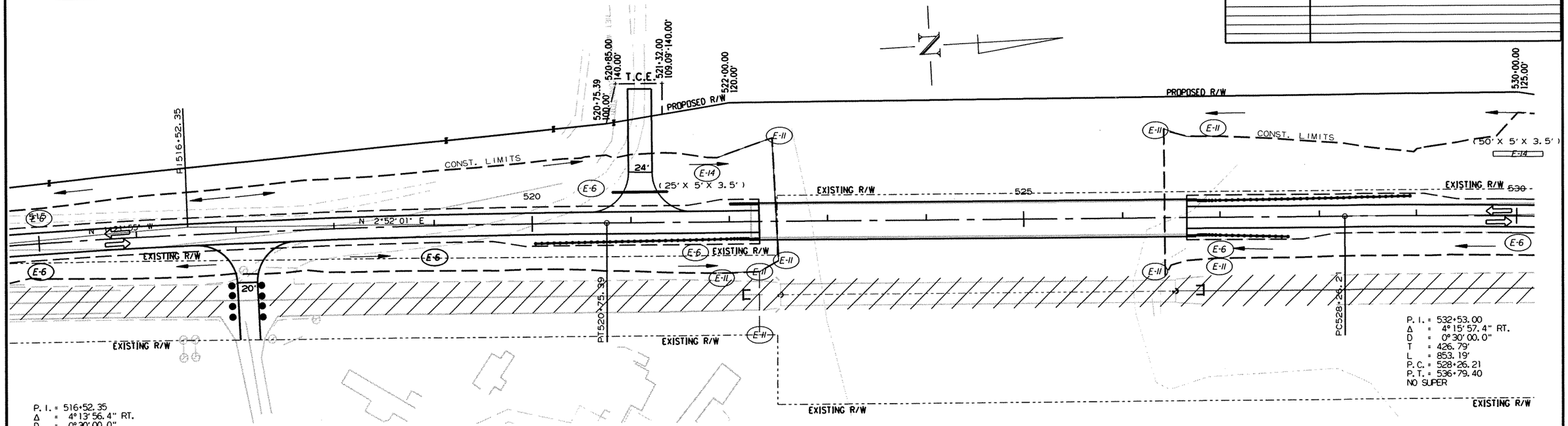
SEDIMENT BASIN (E-14)	SIDE	CU. YD.
STA. 503+10 - STA. 503+35	RT.	16

SILT FENCE (E-11)	SIDE	LIN. FT.
STA. 503+00 - STA. 505+00	RT.	200
STA. 522+30	RT.	75

ROCK DITCH CHECK (E-6)	SIDE	CU. YD.
STA. 506+75	RT.	5
STA. 510+00	RT.	5
STA. 515+00	RT.	5
STA. 519+00	RT.	5

REVISION BOX

DATE	REVISION



P. I. = 516+52.35
Δ = 4°13'56.4" RT.
D = 0°30'00.0"
T = 423.42'
L = 846.46'
P. C. = 512+28.92
P. T. = 520+75.39
NO SUPER

TEMPORARY EROSION CONTROL DETAILS STAGE 2

9/5/2013

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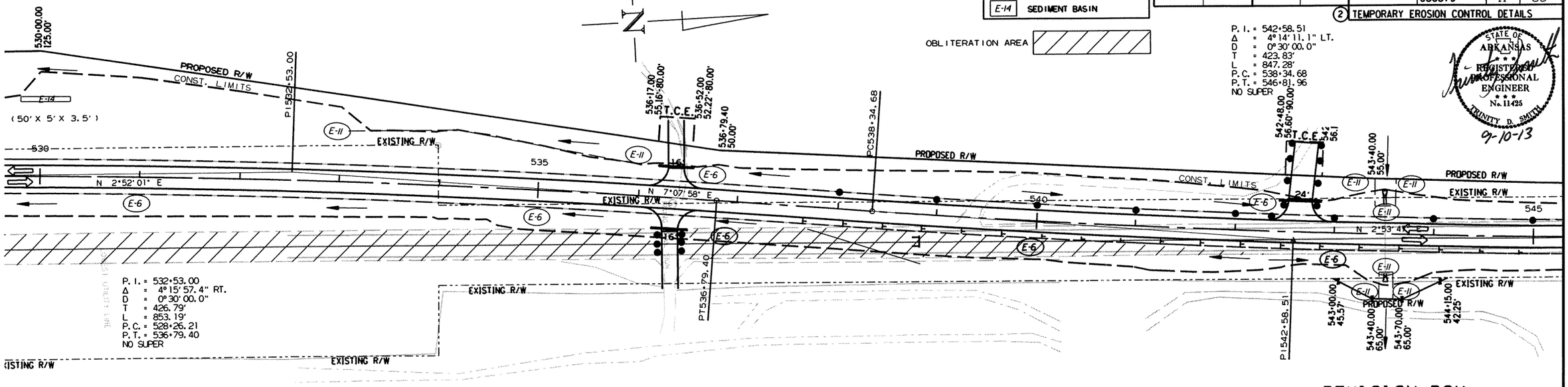
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		080379	11	85

(2) TEMPORARY EROSION CONTROL DETAILS

E-6 ROCK DITCH CHECKS
E-11 SILT FENCE
E-14 SEDIMENT BASIN

OBLITERATION AREA

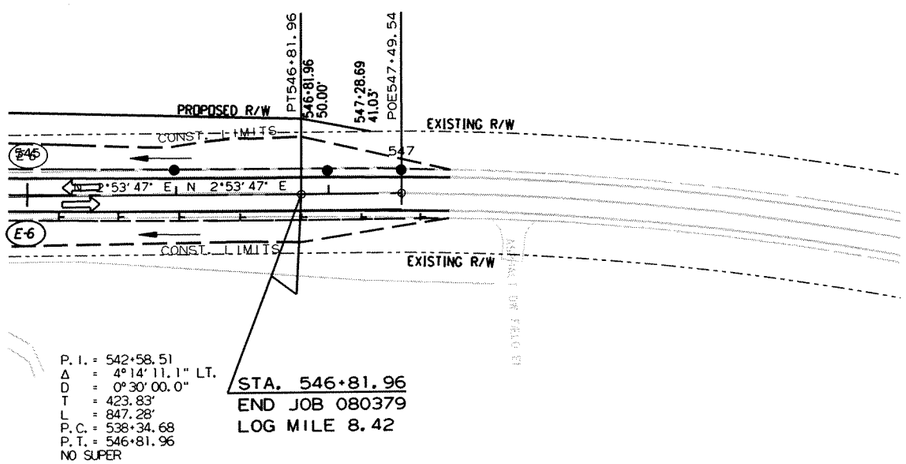


STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TIMOTHY D. SMITH
9-10-13

ROCK DITCH CHECK (E-6)	SIDE	CU. YD.
STA. 537+00	RT.	5
STA. 540+00	RT.	5
STA. 543+00	RT.	5
STA. 545+00	RT.	5

REVISION BOX

DATE	REVISION



TEMPORARY EROSION CONTROL DETAILS
STAGE 2

9/5/2013
R080379.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.		080379	12	85

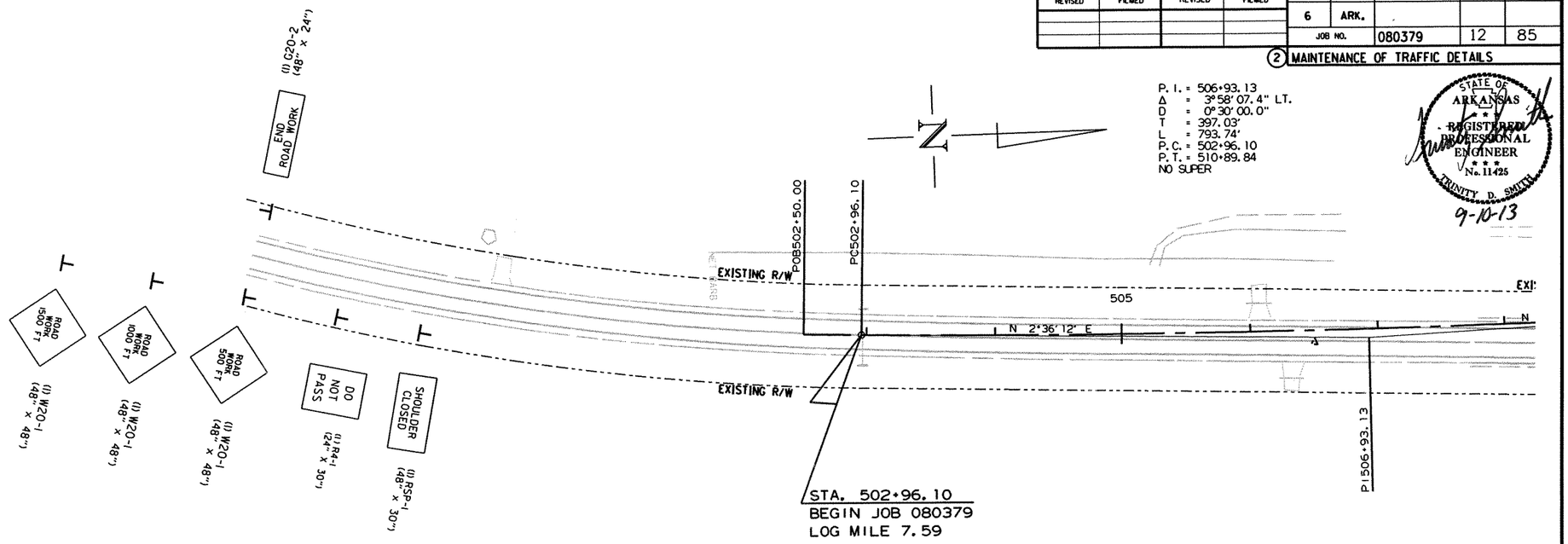
(2) MAINTENANCE OF TRAFFIC DETAILS

SEQUENCE OF CONSTRUCTION

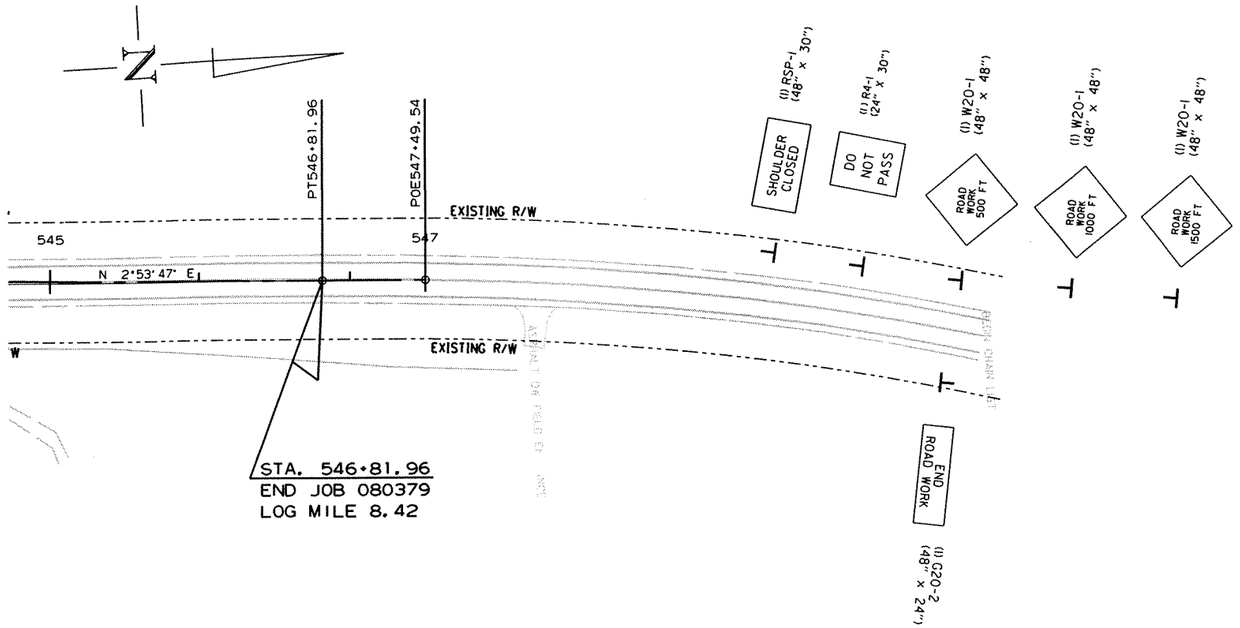
STAGE 1
STA. 502+96.10 - STA. 546+81.96:
CONSTRUCT NEW LOCATION AS SHOWN.
CONSTRUCT NEW BRIDGE AS SHOWN.

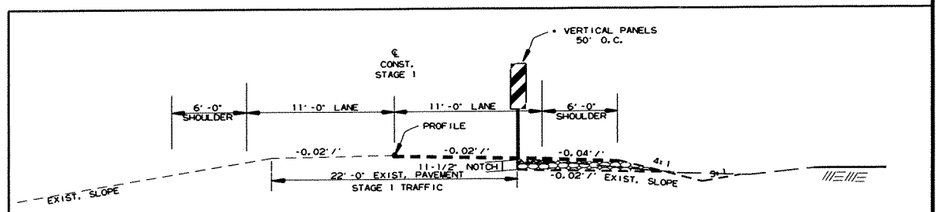
STAGE 2
STA. 502+96.10 - STA. 546+81.96:
SHIFT TRAFFIC ONTO NEW LOCATION.
FINISH TIE-INS TO EXISTING PAVEMENT.
REMOVE EXISTING BRIDGE AND OBLITERATE
EXISTING ROADWAY WHERE SHOWN.

END OF JOB
INSTALL FINAL STRIPING.

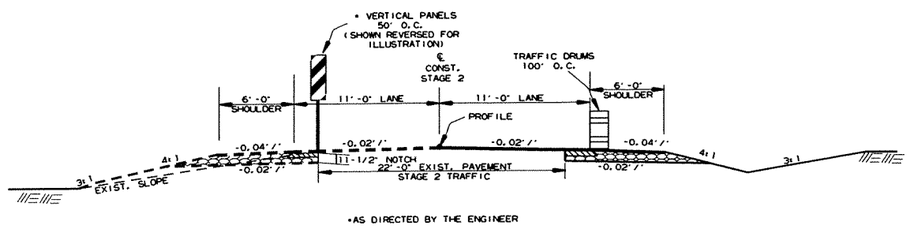


STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-10-13





OVERLAY TANGENT - RIGHT SIDE WIDENING



OVERLAY TANGENT - LEFT SIDE WIDENING

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

9/5/2013

R080379.DGN

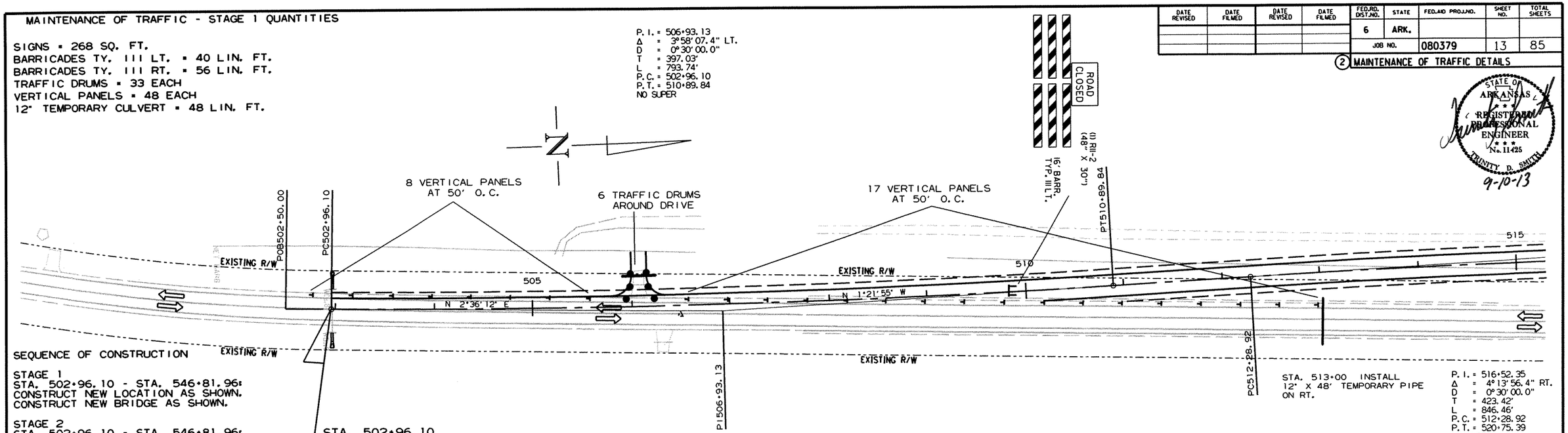
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		080379	13	85

(2) MAINTENANCE OF TRAFFIC DETAILS

MAINTENANCE OF TRAFFIC - STAGE 1 QUANTITIES

SIGNS = 268 SQ. FT.
BARRICADES TY. III LT. = 40 LIN. FT.
BARRICADES TY. III RT. = 56 LIN. FT.
TRAFFIC DRUMS = 33 EACH
VERTICAL PANELS = 48 EACH
12" TEMPORARY CULVERT = 48 LIN. FT.

P. I. = 506+93.13
Δ = 3°58'07.4" LT.
D = 0°30'00.0"
T = 397.03'
L = 793.74'
P.C. = 502+96.10
P.T. = 510+89.84
NO SUPER



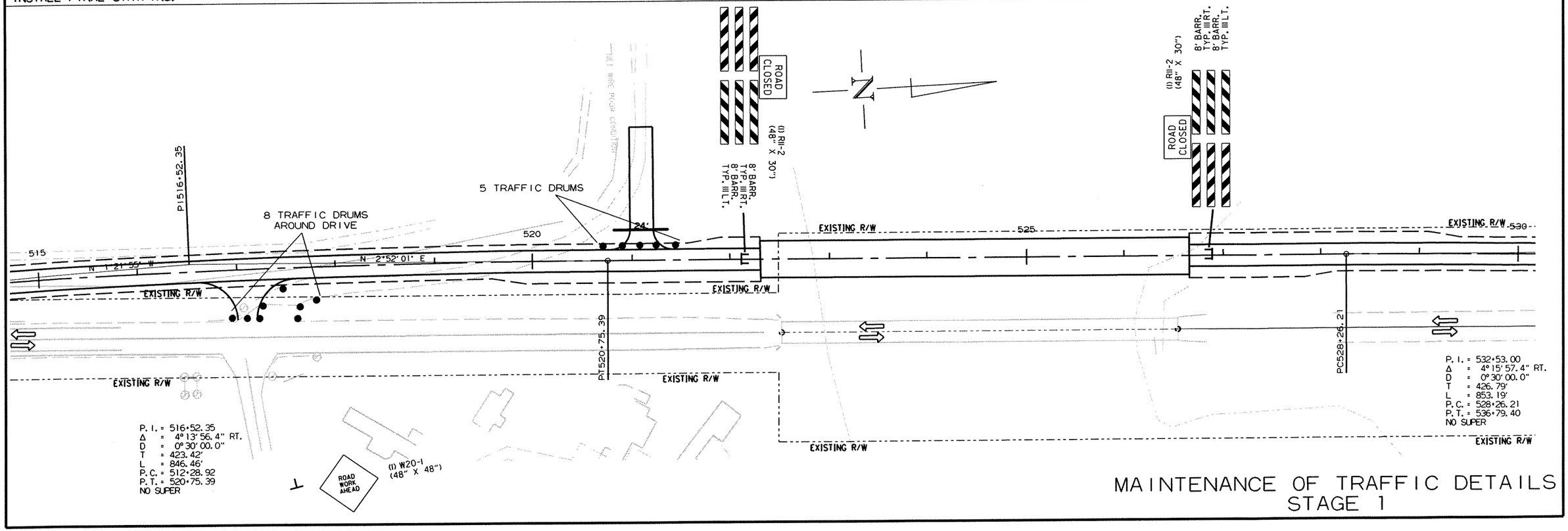
SEQUENCE OF CONSTRUCTION

STAGE 1
STA. 502+96.10 - STA. 546+81.96:
CONSTRUCT NEW LOCATION AS SHOWN.
CONSTRUCT NEW BRIDGE AS SHOWN.

STAGE 2
STA. 502+96.10 - STA. 546+81.96:
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. 502+96.10
BEGIN JOB 080379
LOG MILE 7.59



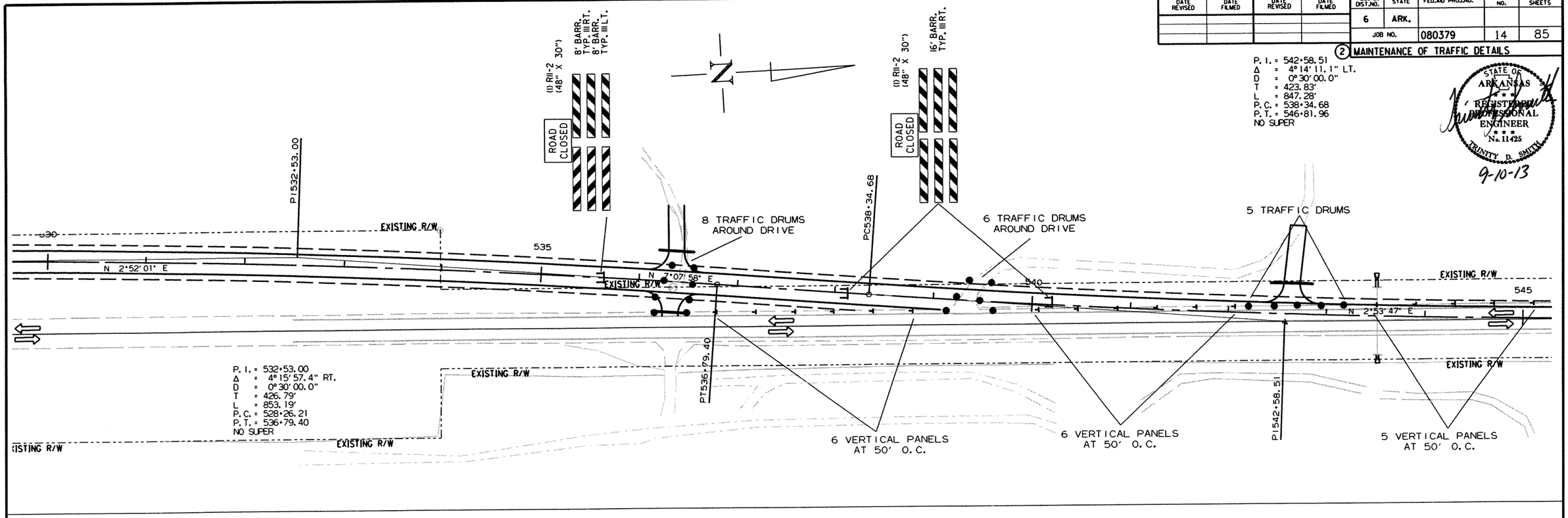
MAINTENANCE OF TRAFFIC DETAILS
STAGE 1

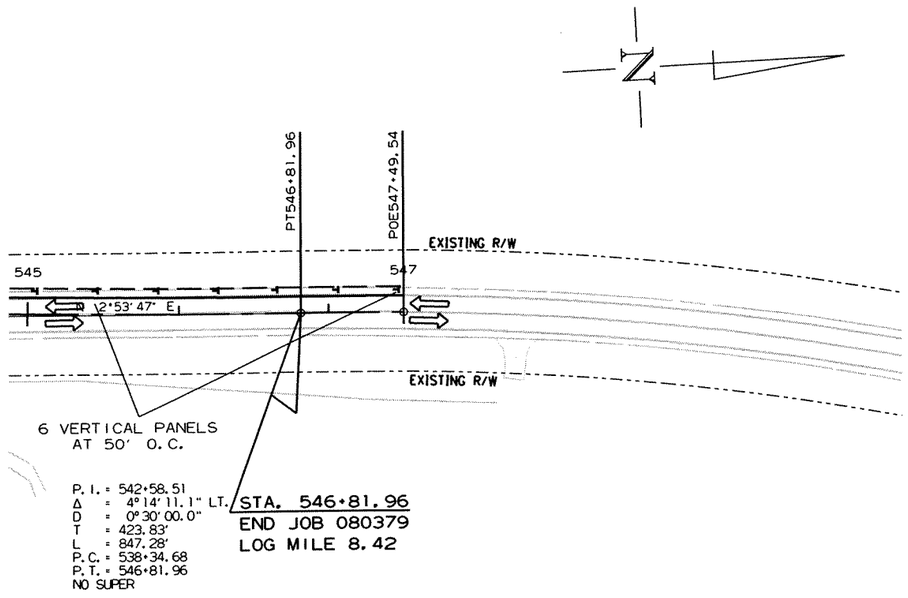
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-10-13

9/5/2013
R080379.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.		080379	14	85

(2) MAINTENANCE OF TRAFFIC DETAILS





MAINTENANCE OF TRAFFIC DETAILS
STAGE 1

9/5/2013

R080379.DGN

MAINTENANCE OF TRAFFIC - STAGE 2 QUANTITIES

SIGNS = 264 SQ. FT.
BARRICADES TY. III LT. = 32 LIN. FT.
BARRICADES TY. III RT. = 32 LIN. FT.
TRAFFIC DRUMS = 49 EACH
VERTICAL PANELS = 55 EACH
CONSTRUCTION PAVEMENT MARKING = 5360 LIN. FT.
RAISED PAVEMENT MARKERS (TY. II) (YEL./YEL.) = 50 EACH

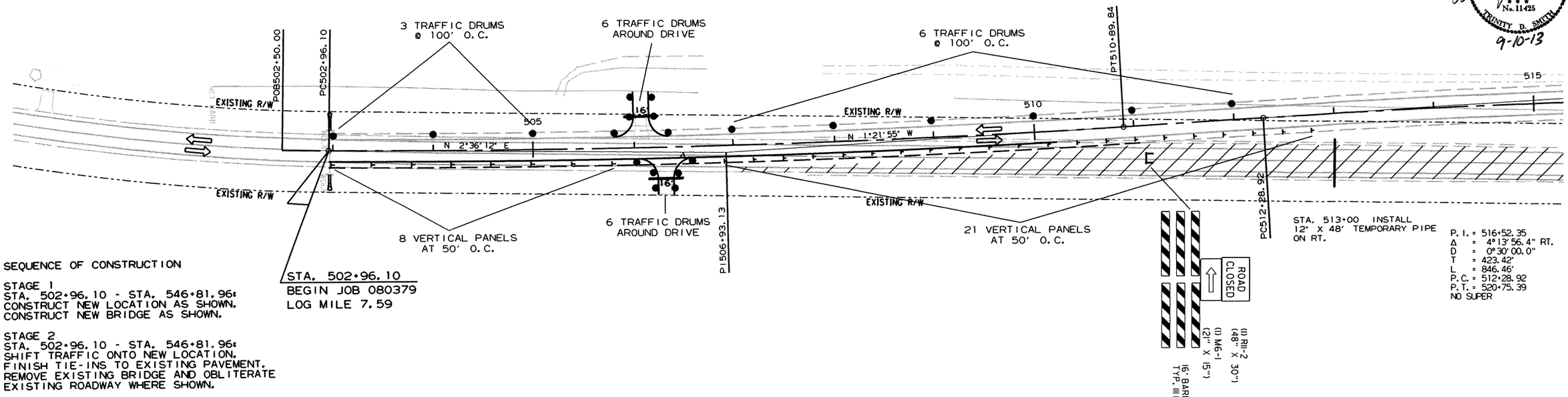
P.I. = 506+93.13
Δ = 3°58'07.4" LT.
D = 0°30'00.0"
T = 397.03'
L = 793.74'
P.C. = 502+96.10
P.T. = 510+89.84
NO SUPER

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.		080379	15	85

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-10-13



P.I. = 516+52.35
Δ = 4°13'56.4" RT.
D = 0°30'00.0"
T = 423.42'
L = 846.46'
P.C. = 512+28.92
P.T. = 520+75.39
NO SUPER

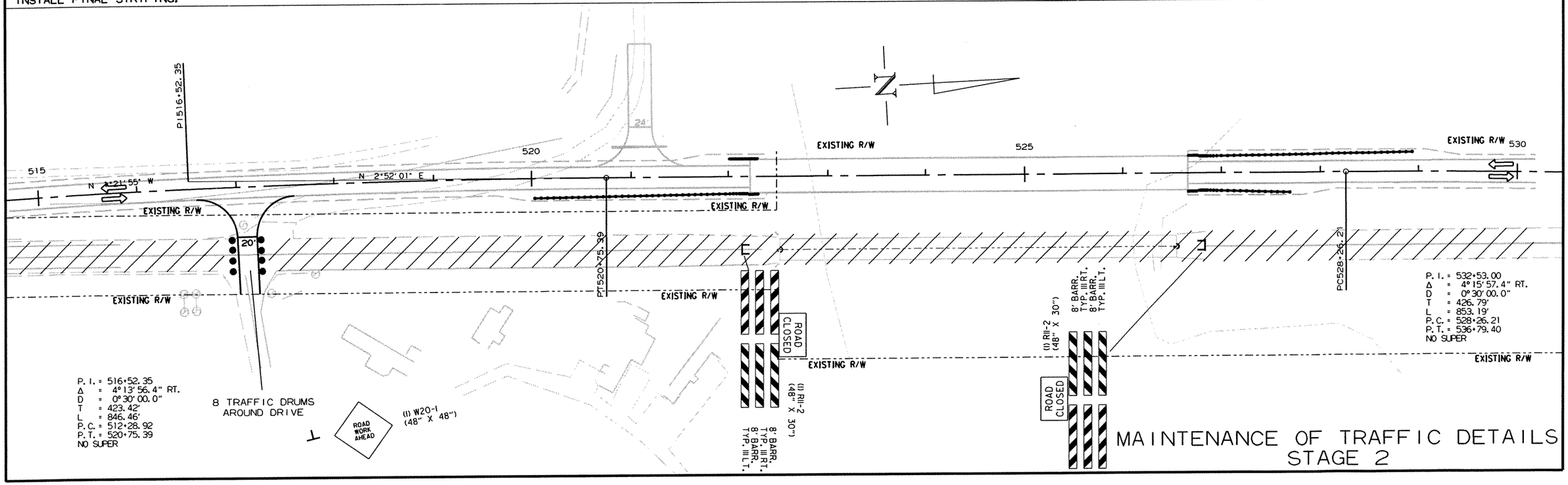
SEQUENCE OF CONSTRUCTION

STAGE 1
STA. 502+96.10 - STA. 546+81.96:
CONSTRUCT NEW LOCATION AS SHOWN.
CONSTRUCT NEW BRIDGE AS SHOWN.

STAGE 2
STA. 502+96.10 - STA. 546+81.96:
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. 502+96.10
BEGIN JOB 080379
LOG MILE 7.59



P.I. = 516+52.35
Δ = 4°13'56.4" RT.
D = 0°30'00.0"
T = 423.42'
L = 846.46'
P.C. = 512+28.92
P.T. = 520+75.39
NO SUPER

P.I. = 532+53.00
Δ = 4°15'57.4" RT.
D = 0°30'00.0"
T = 426.79'
L = 853.19'
P.C. = 528+26.21
P.T. = 536+79.40
NO SUPER

MAINTENANCE OF TRAFFIC DETAILS STAGE 2

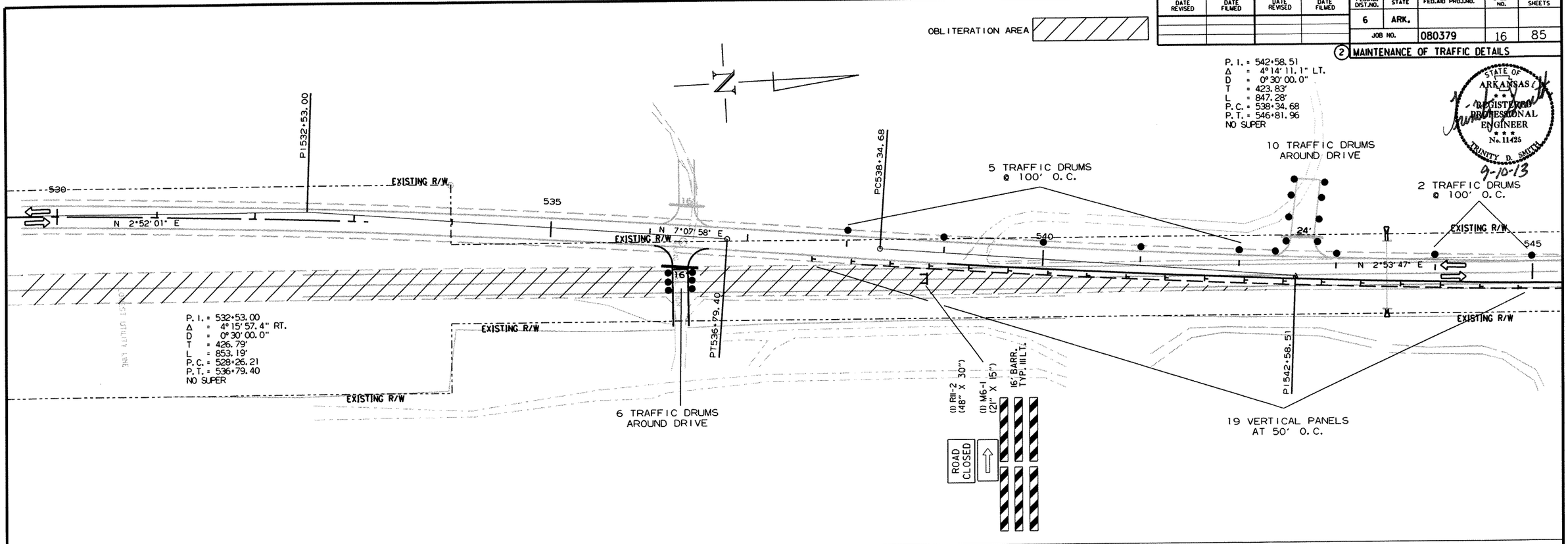
9/5/2013
R080379.DGN

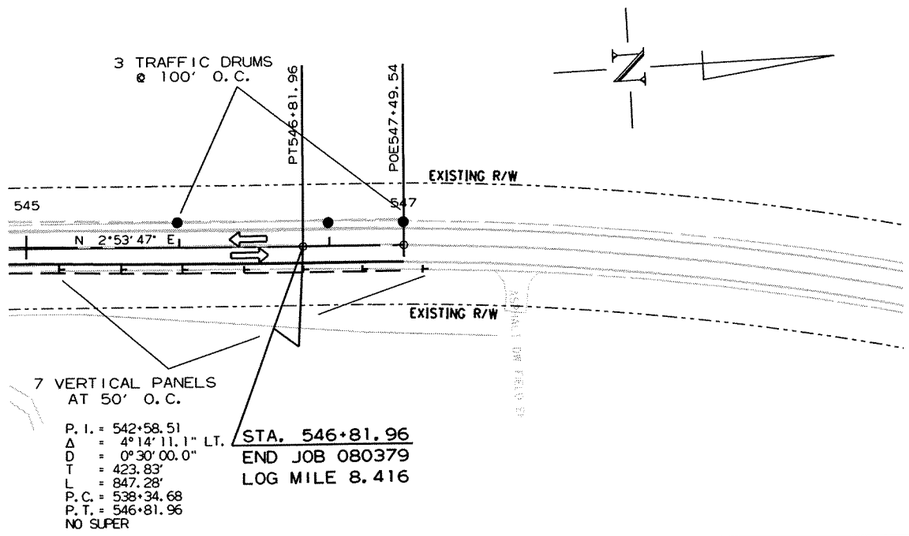
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		080379	16	85

OBLITERATION AREA

(2) MAINTENANCE OF TRAFFIC DETAILS





MAINTENANCE OF TRAFFIC DETAILS
STAGE 2

9/9/2013

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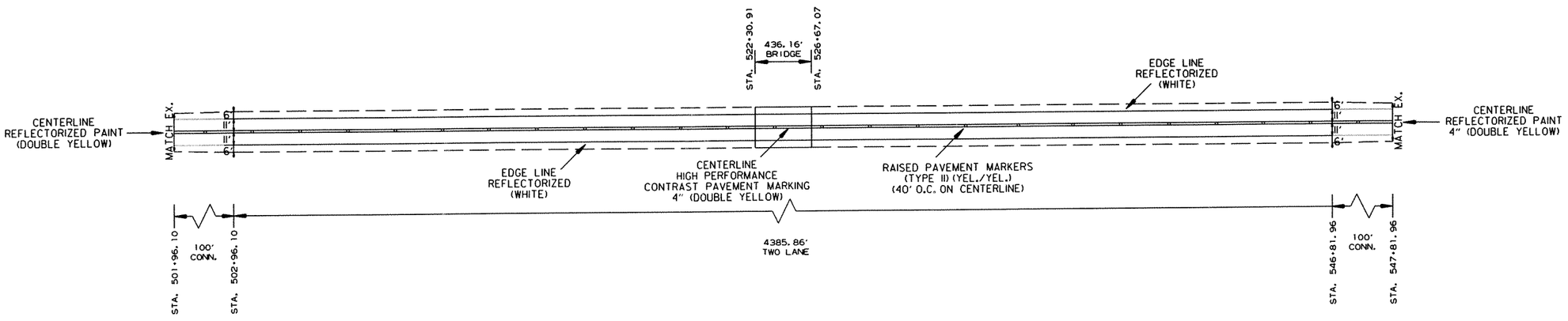
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		080379	17	85

(2) PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-10-13



PERMANENT PAVEMENT MARKING DETAILS:

REFLECTORIZED PAINT PAVEMENT MARKINGS:
RT. AND LT. EDGE LINES = 9172 LIN. FT. WHITE (4")
DBL. CENTERLINE = 8304 LIN. FT. YELLOW (4")

HIGH PERFORMANCE CONTRAST PAVEMENT MARKINGS:
DBL. CENTERLINE = 868 LIN. FT. YELLOW (4")

RAISED PAVEMENT MARKERS:
TYPE II (YEL./YEL.) 40' O.C. ON CENTERLINE = 116 EACH

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PERMANENT PAVEMENT MARKING DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		080379	18	85

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-10-13

EROSION CONTROL ITEMS - TEMPORARY

LOCATION	ROCK DITCH CHECKS (E-6)	DIVERSION DITCH (E-8)	SILT FENCE (E-11)	PIPE FOR SLOPE DRAINS (E-12)	*SEDIMENT REMOVAL & DISPOSAL	SEDIMENT BASIN	OBLITERATION OF SEDIMENT BASIN	*TRIANGULAR SILT DIKES	TEMPORARY SEEDING	MULCH COVER	WATER	DUMPED RIPRAP	*WATTLE (12")
	CU. YD.	LIN. FT.			CU. YD.			LIN. FT.	ACRE		M. GAL.	CU.YD.	LIN. FT.
MAIN LANES-STAGE 1	50	5046	2218	167	1000	80	80					8	
MAIN LANES-STAGE 2	40		275		100	16	16						
ENTIRE PROJECT								200	6.25	6.25	127.5		200
TOTALS:	**90**	**5046**	**2493**	**167**	**1100**	**96**	**96**	**200**	**6.25**	**6.25**	**127.5**	**8**	**200**

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.

EROSION CONTROL ITEMS - PERMANENT

LOCATION	SPECIAL SEEDING	LIME	MULCH COVER	SPECIAL SECOND SEEDING APPLICATION	WATER
	ACRE	TON	ACRE		M. GAL.
MAIN LANES	6.25	13	6.25	6.25	637.5
TOTALS:	**6.25**	**13**	**6.25**	**6.25**	**637.5**

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

APPROACH GUTTERS (TYPE B)

LOCATION	APPROACH GUTTERS (TY. B) (W=6')	REINFORCING STEEL - RDWY. (GR. 60)
	CU.YD.	POUND
STA. 522+03.91 - STA. 522+30.91 ON RT.	5.25	459
STA. 522+03.91 - STA. 522+30.91 ON LT.	5.25	459
STA. 526+67.07 - STA. 526+94.07 ON RT.	5.25	459
STA. 526+67.07 - STA. 526+94.07 ON LT.	5.25	459
TOTALS:	**21.00**	**1836**

TEMPORARY PIPE CULVERT

LOCATION	TEMPORARY PIPE CULVERT
	12"
	LIN. FT.
STA. 513+00 ON RT.	48
TOTAL:	**48**

PAVEMENT REPAIR OVER CULVERTS

STATION	LOCATION	ASPHALT
		TON
513+00	CENTERLINE	15
TOTAL:		**15**

ADVANCE WARNING SIGNS AND DEVICES,CONSTRUCTION PAVEMENT MARKINGS, AND PERMANENT PAVEMENT MARKINGS

SIGN NUMBER	DESCRIPTION	SIGN SIZE	STAGE 1	STAGE 2	MAXIMUM NUMBER REQUIRED	TOTAL SIGNS REQUIRED		VERTICAL PANELS	TRAFFIC DRUMS	BARRICADES (TYPE III)		CONSTRUCTION PAVEMENT MARKINGS	RAISED PAVEMENT MARKERS	REFLECTORIZED PAINT PAVEMENT MARKINGS		HIGH PERF. CONTRAST MRKG. TAPE
										RIGHT	LEFT		TYPE II (YEL/YEL)	4" WHITE	4" YELLOW	4" YELLOW
			SQ. FT.-LIN.FT.-EACH			NO.	SQ. FT.	EACH	EACH	LIN.FT.		LIN.FT.	EACH	LIN.FT.		LIN.FT.
G20-2	END ROAD WORK	48" X 24"	2	2	2	2	16									
RSP-1	SHOULDER CLOSED	48" X 30"	2	2	2	2	20									
R4-1	DO NOT PASS	24" X 30"	4	4	4	4	20									
R11-2	ROAD CLOSED	48" X 30"	6	4	6	6	60									
W1-6	ARROW	48" X 24"		2	2	2	16									
W20-1	ROAD WORK 1500 FT.	48" X 48"	2	2	2	2	32									
W20-1	ROAD WORK 1000 FT.	48" X 48"	2	2	2	2	32									
W20-1	ROAD WORK 500 FT.	48" X 48"	2	2	2	2	32									
W20-1	ROAD WORK AHEAD	48" X 48"	1	1	1	1	16									
	*DETAIL A	60" X 36"	2	2	2	2	30									
	*DETAIL B	60" X 36"	2	2	2	2	30									
	VERTICAL PANELS		48	55	55			55								
	TRAFFIC DRUMS		33	49	49				49							
	TYPE III BARRICADE-RT. (16')		56	32	56					56						
	TYPE III BARRICADE-LT. (16')		40	32	40						40					
	CONSTRUCTION PAVEMENT MARKINGS			5360	5360							5360				
	REFLECTORIZED PAINT PAVEMENT MARKING-WHITE (4")			9172	9172									9172		
	REFLECTORIZED PAINT PAVEMENT MARKINGS-YELLOW (4")			8304	8304										8304	
	HIGH PERFORMANCE CONTRAST PAVEMENT MARKINGS-YELLOW (4")			868	868											868
	RAISED PAVEMENT MARKERS TYPE II (YEL/YEL)			116	116								116			
	HIGH PERFORMANCE CONTRAST PAVEMENT MARKING-YELLOW (4")															
TOTALS:							**304**	**55**	**49**	**56**	**40**	**5360**	**116**	**9172**	**8304**	**868**

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

W11-15, COMBINATION BIKE AND PEDESTRIAN CROSSING SIGNS AND W11-15P, TRAIL CROSSING SIGNS, TO BE FURNISHED AND INSTALLED BY THE MAINTENANCE DIVISION.

*REFER TO BOATER SAFETY SP.

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		080379	19	85

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-10-13

GUARDRAIL

STATION	STATION	SIDE	REMOVAL AND DISPOSAL OF GUARDRAIL	GUARDRAIL (TY. A)	TERMINAL ANCHOR POSTS (TYPE 1)	THRIE BEAM GUARDRAIL TERMINAL	BRIDGE END TERMINAL
			LIN. FT.		EACH		
520+02.76	522+30.91	RT.	40	200	1	1	
521+82.76	522+30.91	LT.					1
526+67.07	528+98.22	LT.		200	1	1	
526+67.07	527+73.22	RT.	66	75	1	1	
TOTALS:			**106**	**475**	**3**	**3**	**1**

SOIL STABILIZATION

LOCATION	SOIL STABILIZATION
	TON
ENTIRE PROJECT - IF AND WHERE DIRECTED BY THE ENGINEER.	100
TOTAL:	**100**

QUANTITY ESTIMATED.
SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

ACHM 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.

BENCH MARKS

LOCATION	BENCH MARKS
	EACH
STA. 522+30.91 RT. BRIDGE END	1

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

RUMBLE STRIPS IN ASPHALT SHOULDERS

STATION	STATION	SIDE	LIN. FT.
502+96.10	522+03.91	RT.	1385
502+96.10	522+03.91	LT.	1382
526+94.07	546+81.96	RT.	1538
526+94.07	546+81.96	LT.	1478
TOTAL:			**5783**

COLD MILLING ASPHALT PAVEMENT

LOCATION	COLD MILLING ASPHALT PAVEMENT
	SQ. YD.
STA. 501+96.10 - STA. 502+96.10	244
STA. 546+81.96 - STA. 547+81.96	244
TOTAL:	**488**

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.

CLEARING AND GRUBBING

STATION	STATION	CLEARING	GRUBBING
		STATION	
502+96.10	522+30.91	20	20
530+00.00	546+81.96	17	17
TOTALS:		**37**	**37**

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.	21	42
TOTALS:	**21**	**42**

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

SOIL LOG

STATION	LOCATION	DEPTH	LIQUID LIMIT	PLASTICITY INDEX	AASHTO SOIL CLASS	COLOR
503+00	32'RT	0-1.0Z	40	24	A-6(11)	BROWN
503+00	14'RT	0-5	29	13	A-6(2)	BROWN
503+00	6'RT	0-5	25	12	A-6(1)	BROWN
511+00	CL	0-3.2Z	33	15	A-6(10)	RED
536+00	15'RT	0-5	29	13	A-6(7)	RED
536+00	15'RT	0-5	28	10	A-4(3)	RED
544+00	27'LT	0-5	40	20	A-6(8)	GRAY
544+00	14'LT	0-5	28	12	A-6(4)	RED
544+00	6'LT	0-5	28	13	A-6(6)	RED

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.

FENCING ITEMS

STATION	STATION	SIDE	REMOVAL AND DISPOSAL OF FENCE	WIRE FENCE (TYPE C)
			LIN. FT.	
506+17	520+83	LT.	1506	1473
TOTALS:			**1506**	**1473**

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				6	ARK.			
				JOB NO.		080379	20	85

(2) QUANTITIES

STRUCTURES - PIPE CULVERTS

STATION	DESCRIPTION	PIPE CULVERTS CONCRETE (CLASS III) 24"	PIPE CULVERTS CONCRETE (CLASS III) 30"	FLARED END SECTIONS 24"	FLARED END SECTIONS 30"	SOLID SODDING	WATER	STANDARD DRAWINGS
		LIN. FT.		EACH		SQ.YD.	M.GAL.	
502+97	RETAIN AND EXTEND 24" X 45' R.C. PIPE CULVERT 11' LT. AND 9' RT.	28		2		16	0.2	PCC-1, FES-1, FES-2
543+52	RETAIN AND EXTEND 30" X 70' R.C. PIPE CULVERT 8' LT. AND 2' RT.		18		2	26	0.3	PCC-1, FES-1, FES-2
TOTALS:		**28**	**18**	**2**	**2**	**42**	**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.

SELECTED PIPE BEDDING

LOCATION	SELECTED PIPE BEDDING
	CU. YD.
ENTIRE PROJECT	10
TOTAL:	**10**

QUANTITY ESTIMATED.

SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

EARTHWORK

STATION	STATION	LOCATION	UNCLASSIFIED EXCAVATION	COMPACTED EMBANKMENT	ROCK FILL
			CU. YD.		TON
502+96.10	522+30.91	MAIN LANES	23105	4180	
526+07.00	546+81.96	MAIN LANES	15001	5284	52305
ENTIRE PROJECT		DRIVES	730	430	
TOTALS:			**38836**	**9894**	**52305**

REMOVAL AND DISPOSAL OF PIPE CULVERTS

STATION	SIDE	DESCRIPTION	EACH
506+07	LT.	18" X 21' C.M. PIPE CULVERT	1
506+32	RT.	18" X 19' C.M. PIPE CULVERT	1
TOTAL:			**2**

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

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-13-13

DRIVEWAYS

STATION	DESCRIPTION	SIDE	WIDTH	TURNOUT AREA	EXTENSION AREA ASPHALT	TOTAL DRIVEWAY AREA	*AGGREGATE BASE COURSE (CL.7)	ACHM SURFACE COURSE (1/2") (220 LB./SQ.YD.) (PG 64-22)	SIDE DRAIN 18"
			LIN. FT.	SQ. YD.			TON	TON	LIN. FT.
506+07	PRIVATE DRIVE	LT.	16	56	43	99	40	11	35
506+32	PRIVATE DRIVE	RT.	16	56	30	86	35	9	35
517+05	CO. RD.	RT.	20	165	128	293	120	32	
521+12	COMMERCIAL DRIVE	LT.	24	182	224	406	166	45	56
536+34	PRIVATE DRIVE	RT.	16	56	93	149	61	16	37
536+45	PRIVATE DRIVE	LT.	16	56	85	141	58	16	36
542+65	COMMERCIAL DRIVE	LT.	24	78	151	229	93	25	43
* ENTIRE PROJECT TEMPORARY DRIVES							100		
TOTALS:							**673**	**154**	**242**

VOLUME CONTROL:

ACHM SURFACE COURSE (1/2"): MIN. AGGR. 94.6%, ASPHALT BINDER (PG-64-22) 5.4%

Nmax= 115 GYRATIONS

* REFER TO DETAIL FOR DRIVEWAY TURNOUTS (ARTERIALS).

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

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

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

BASE AND SURFACING

STATION	STATION	LOCATION	LENGTH	AGGREGATE BASE COURSE (CL. 7)		ACHM BINDER COURSE (1") (330 LBS./SQ. YD.) (PG 64-22)			ACHM SURFACE COURSE (1/2") (PG 64-22) (220 LBS./SQ. YD.)			*LEVELING				TACK COAT (0.03 GAL./SQ. YD.)			TACK COAT (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.
501+96.10	502+96.10	MAIN LANES-TRANSITION	100.00	59.50	60	3.25	36.11	6	37.17	413.00	45					25.25	280.56	8	20.00	222.22	22
502+96.10	507+23.00	MAIN LANES-NOTCH AND WIDEN	426.90	119.00	508	4.50	213.45	35	38.33	1818.12	200	20.00	948.67	220	104	26.50	1256.98	38	20.00	948.67	95
507+23.00	522+30.91	MAIN LANES-FULL DEPTH	1507.91	209.75	3163	22.50	3769.78	622	56.25	9424.44	1037					44.50	7455.78	224			
526+67.07	541+72.00	MAIN LANES-FULL DEPTH	1504.93	209.75	3157	22.50	3762.33	621	56.25	9405.81	1035					44.50	7441.04	223			
541+72.00	546+81.96	MAIN LANES-NOTCH AND WIDEN	509.96	119.00	607	4.50	254.98	42	38.33	2171.86	239	20.00	1133.24	220	125	26.50	1501.55	45	20.00	1133.24	113
546+81.96	547+81.96	MAIN LANES-TRANSITION	100.00	59.50	60	3.25	36.11	6	37.17	413.00	45					25.25	280.56	8	20.00	222.22	22
		ADDITIONAL FOR GUARDRAIL WIDENING			486						52										
TOTALS:					**8041**		**8072.76**	**1332**		**23646.23**	**2653**		**2081.91**		**229**		**18216.47**	**546**		**2526.46**	**252**

VOLUME CONTROL:

ACHM BINDER COURSE (1"): MIN. AGGR. 95.5%, ASPHALT BINDER (PG 64-22) 4.5%

ACHM SURFACE COURSE (1/2"): MIN. AGGR. 94.6%, ASPHALT BINDER (PG 64-22) 5.4%

Nmax= 115 GYRATIONS

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

9/11/2013

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		080379	21	85
① 07264	-	QUANTITIES	-	53183

SCHEDULE OF BRIDGE QUANTITIES-JOB 080379

BRIDGE NO. / CODE NO. / NAME PLATE TITLE	UNIT OF STRUCTURE	ITEM NO.	205	801	802	802	803	SS & 804	805	SP & 807	808	812	816	816	SP JOB 080379	SP JOB 080379	SP JOB 080379	SP JOB 080379	SP JOB 080379
		ITEM	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO.)	UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE	CLASS S CONCRETE-BRIDGE	CLASS S(AE) CONCRETE-BRIDGE	CLASS 1 PROTECTIVE SURFACE TREATMENT	REINFORCING STEEL-BRIDGE (GRADE 60)	① STEEL PILING (HP 12X53)	STRUCTURAL STEEL IN PLATE GIRDER SPANS (M 270, GRADE 50W)	ELASTOMERIC BEARINGS	BRIDGE NAME PLATE (TYPE D)	FILTER BLANKET	DUMPED RIPRAP	ARMORED JOINT WITH NEOPRENE STRIP SEAL	CROSSHOLE SONIC LOGGING (120" DIA.)	DRILLED SHAFT (120" DIA.)	PERMANENT STEEL CASING (120" DIA.)	CORING DRILLED SHAFT
		UNIT	LUMP SUM	CU.YD.	CU.YD.	CU.YD.	GAL.	LB.	LIN.FT.	LB.	CU. IN.	EACH	SQ.YD.	CU.YD.	LIN. FT.	EACH	LIN. FT.	LIN. FT.	LIN. FT.
07264 / X071 / OUACHITA RIVER	BENT NO. 1			58	50.45		0.3	3,957		548	2,720.0								
	BENT NO. 2				63.77			11,548			2,803.0					1	62	29	62
	BENT NO. 3				59.77			11,053			2,175.0					1	63	36	
	BENT NO. 4				56.52			10,669			2,803.0					1	62	35	
	BENT NO. 5				31.59		0.3	3,477	270	548	2,720.0		65	33					
	434'-0" CONT. COMP. PLATE GIRDER UNIT					479.20	39.6	107,196		449,244		1			72				
SITE NO. 1 (BRIDGE NO. 02766)			1																
TOTALS FOR JOB NO. 080379				② 58	262.10	479.20	40.2	147,900	270	450,340	13,221.0	1	65	33	72	3	187	100	62

① All steel piling are required to have approved driving points which will not be paid for directly, but will be considered subsidiary to the item "Steel Piling (HP 12X53)".

② Includes 58 cu. yd. of Rock excavation.

STEWART LINZ
DESIGN SECTION SUPERVISOR

STATE OF ARKANSAS
Carl J. Fussell
REGISTERED PROFESSIONAL ENGINEER
No. 7510
5/9/13
CARL J. FUSSELLER

BRIDGE ENGINEER

SCHEDULE OF BRIDGE QUANTITIES
OUACHITA RIVER STR. & APPRS. (S)
MONTGOMERY COUNTY

ROUTE 27 SEC. 7

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CMW DATE: 06/06/2012 FILENAME: b080379_ql.dgn
CHECKED BY: RBR DATE: 5/7/13 SCALE:
DESIGNED BY: DATE:

BRIDGE NO. 07264 DRAWING NO. 53183

PRINT DATE: 5/7/2013

SUMMARY OF QUANTITIES

ITEM NO.	ITEM	QUANTITY	UNIT
201	CLEARING	37	STATION
201	GRUBBING	37	STATION
202	REMOVAL AND DISPOSAL OF FENCE	1506	LIN. FT.
202	REMOVAL AND DISPOSAL OF PIPE CULVERTS	2	EACH
202	REMOVAL AND DISPOSAL OF GUARDRAIL	106	LIN. FT.
210	UNCLASSIFIED EXCAVATION	38836	CU. YD.
210	COMPACTED EMBANKMENT	9894	CU. YD.
SP&210	ROCK FILL	52305	TON
SP&210	SOIL STABILIZATION	100	TON
SS&303	AGGREGATE BASE COURSE (CLASS 7)	8714	TON
401	TACK COAT	840	GAL
SPSS&406	MINERAL AGGREGATE IN ACHM BINDER COURSE (1")	1272	TON
SPSS&406	ASPHALT BINDER (PG 64-22) IN ACHM BINDER COURSE (1")	60	TON
SPSS&407	MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2")	2872	TON
SPSS&407	ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2")	164	TON
412	COLD MILLING ASPHALT PAVEMENT	488	SQ. YD.
SPSS&414	ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC	21	TON
SPSS&415	ACHM PATCHING OF EXISTING ROADWAY	25	TON
504	APPROACH GUTTERS (TYPE B)	21.00	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	12" TEMPORARY CULVERT	48	LIN. FT.
SPSS&604	SIGNS	304	SQ. FT.
SS&604	BARRICADES	96	LIN. FT.
SS&604	TRAFFIC DRUMS	49	EACH
SS&604	CONSTRUCTION PAVEMENT MARKINGS	5360	LIN. FT.
SS&604	VERTICAL PANELS	55	EACH
SS&606	24" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	28	LIN. FT.
SS&606	30" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	18	LIN. FT.
606	24" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS	2	EACH
606	30" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS	2	EACH
SPSS&606	18" SIDE DRAIN	242	LIN. FT.
606	SELECTED PIPE BEDDING	10	CU. YD.
611	UNDERDRAIN OUTLET PROTECTORS	8	EACH
611	4" PIPE UNDERDRAINS	1000	LIN. FT.
615	PAVEMENT REPAIR OVER CULVERTS (ASPHALT)	15	TON
SS&617	GUARDRAIL (TYPE A)	475	LIN. FT.
SS&617	TERMINAL ANCHOR POSTS (TYPE 1)	3	EACH
SS&617	THRIE BEAM GUARDRAIL TERMINAL	3	EACH
619	WIRE FENCE (TYPE C)	1473	LIN. FT.
620	LIME	13	TON
SP&620	SPECIAL SEEDING	6.25	ACRE
620	MULCH COVER	12.50	ACRE
SS&620	WATER	765.5	MGAL
621	TEMPORARY SEEDING	6.25	ACRE
621	SILT FENCE	2493	LIN. FT.
621	ROCK DITCH CHECKS	90	CU. YD.
621	DIVERSION DITCH	5046	LIN. FT.
621	SEDIMENT BASIN	96	CU. YD.
621	OBLITERATION OF SEDIMENT BASIN	96	CU. YD.
621	SEDIMENT REMOVAL AND DISPOSAL	1100	CU. YD.
621	PIPE FOR SLOPE DRAINS	167	LIN. FT.
SP	WATTLE (12")	200	LIN. FT.
SP&623	SPECIAL SECOND SEEDING APPLICATION	6.25	ACRE
624	SOLID SODDING	42	SQ. YD.
635	ROADWAY CONSTRUCTION CONTROL	1.00	LUMP SUM
642	RUMBLE STRIPS IN ASPHALT SHOULDERS	5783	LIN. FT.
SS&718	REFLECTORIZED PAINT PAVEMENT MARKING WHITE (4")	9172	LIN. FT.
SS&718	REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (4")	8304	LIN. FT.
SP&719	INVERTED PROFILE THERMOPLASTIC CONTRAST PAVEMENT MARKING YELLOW (4") (ALTERNATE NO. 1)	868	LIN. FT.
* SP	HIGH PERFORMANCE CONTRAST MARKING TAPE YELLOW (4") (ALTERNATE NO. 2)	868	LIN. FT.
721	RAISED PAVEMENT MARKERS (TYPE II)	116	EACH
SS&734	BRIDGE END TERMINAL	1	EACH
SS&804	REINFORCING STEEL-ROADWAY (GRADE 60)	1836	POUND
816	DUMPED RIPRAP	8	CU. YD.
SP	TRIANGULAR SILT DIKE	200	LIN. FT.
	STRUCTURES OVER 20'-0" SPAN		
205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 1)	1.00	LUMP SUM
636	BRIDGE CONSTRUCTION CONTROL	1.00	LUMP SUM
801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE	58	CU. YD.
802	CLASS S CONCRETE-BRIDGE	262.10	CU. YD.
802	CLASS S(AE) CONCRETE - BRIDGE	479.20	CU. YD.
803	CLASS 1 PROTECTIVE SURFACE TREATMENT	40.2	GAL.
SS&804	REINFORCING STEEL-BRIDGE (GRADE 60)	147900	POUND
805	STEEL PILING (HP 12X53)	270	LIN. FT.
SP&807	STRUCTURAL STEEL IN PLATE GIRDER SPANS (M270-GR50W)	450340	POUND
808	ELASTOMERIC BEARINGS	13221.0	CU. IN.
812	BRIDGE NAME PLATE (TYPE D)	1	EACH
816	FILTER BLANKET	65	SQ. YD.
816	DUMPED RIPRAP	33	CU. YD.
SP	ARMORED JOINT WITH NEOPRENE STRIP SEAL	72	LIN. FT.
SP	CROSSHOLE SONIC LOGGING (120" DIAMETER)	3	EACH
SP	DRILLED SHAFT (120" DIAMETER)	187	LIN. FT.
SP	PERMANENT STEEL CASING (120" DIAMETER)	100	LIN. FT.
SP	CORING DRILLED SHAFT	62	LIN. FT.

* DENOTES ALTERNATE BID ITEMS

REVISIONS

DATE	DESCRIPTION	PAGE NO.(S)
10/17/2013	ADDED WATTLES SP AND REVISED SWPPP SP	3, 22

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
10-17-13

SUMMARY OF QUANTITIES & REVISIONS

DATE REVISED	DATE FILED	DATE REVISED	DATE FILED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
10/17/2013				6	ARK.		22	85
				JOB NO. 080379				

(2) SUMMARY OF QUANTITIES AND REVISIONS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		080379	23	85

(2) SURVEY CONTROL DETAILS

SURVEY CONTROL COORDINATES

Project Name: s080379
Date: 11/9/2010
Coordinate System: ARKANSAS STATE PLANE - SOUTH ZONE BASED ON GPS CONTROL, PROJECTED TO GROUND.
Units: U.S. SURVEY FOOT

Point Name	Northing	Easting	Elev	Feature	Description
1	2027351.6253	846880.3321	602.798	CTL	5/8" REBAR W 2" CAP
2	2028178.0047	846970.5302	617.761	CTL	5/8" REBAR W 2" CAP
3	2029231.4932	846980.4055	596.834	CTL	5/8" REBAR W 2" CAP
4	2029965.3179	847013.4490	595.324	CTL	5/8" REBAR W 2" CAP
5	2030786.3543	847051.0723	597.068	CTL	5/8" REBAR W 2" CAP
6	2031496.6258	847105.8839	608.278	CTL	5/8" REBAR W 2" CAP
100	2025364.3303	846279.8069	616.135	GPS	AHTD GPS 490020A
101	2026509.5310	846868.1531	597.816	GPS	AHTD GPS 490020
102	2036382.5484	850824.3991	618.135	GPS	AHTD GPS 490011A
103	2037843.0202	851364.7505	602.346	GPS	AHTD GPS 490011

*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 0.9999426314 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 s080379gi.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:
490011 - 490011A
490020 - 490020A
CONVERGENCE ANGLE: 0-51-57.1 LEFT AT LT: 34-37-36.33 LG: 093-32-49.32
GRID AZIMUTH = ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-10-13

CONST

POINT NO.	TYPE	STATION	NORTHING	EASTING
8000	POB	502+50.00	2026821.4366	846876.7186
8001	PC	502+96.10	2026867.4852	846878.8123
8003	PT	510+89.84	2027661.0224	846887.3851
8004	PC	512+28.92	2027800.0693	846884.0708
8006	PT	520+75.39	2028646.2683	846895.1594
8007	PC	528+26.21	2029396.1469	846932.7126
8009	PT	536+79.40	2030245.8944	847007.0543
8010	PC	538+34.68	2030399.9741	847026.3357
8012	PT	546+81.96	2031243.8224	847100.3805
8013	POE	547+49.54	2031311.3173	847103.7954

8/14/2012

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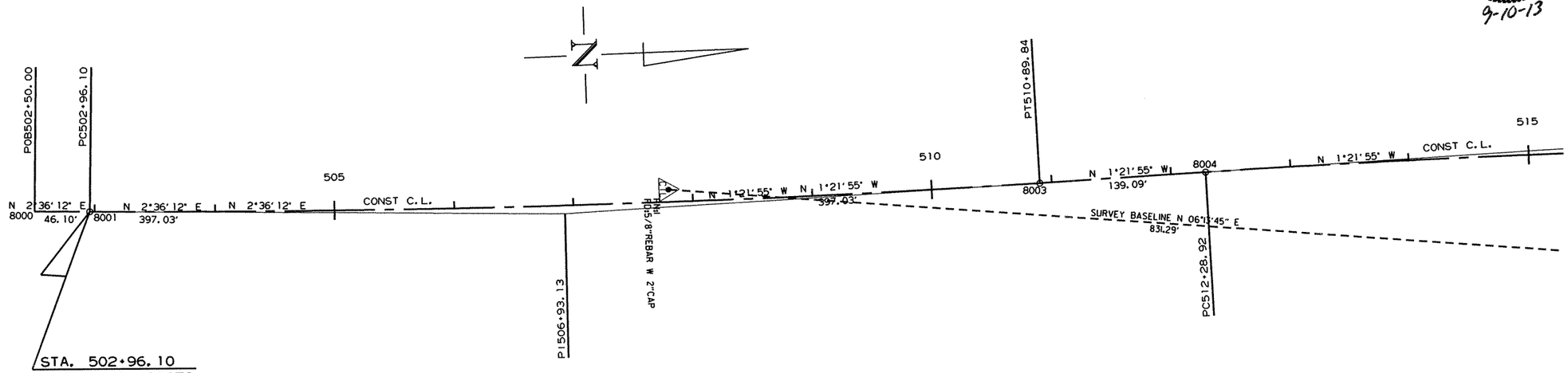
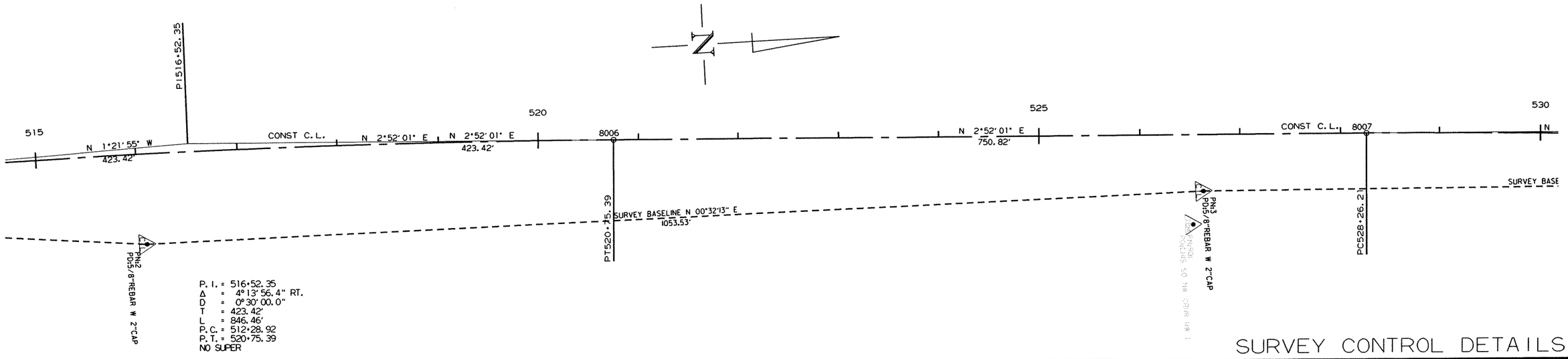
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		080379	24	85

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-10-13

P. I. = 506+93.13
Δ = 3°58'07.4" LT.
D = 0°30'00.0"
T = 397.03'
L = 793.74'
P.C. = 502+96.10
P.T. = 510+89.84
NO SUPER





8/14/2012

R080379.DGN

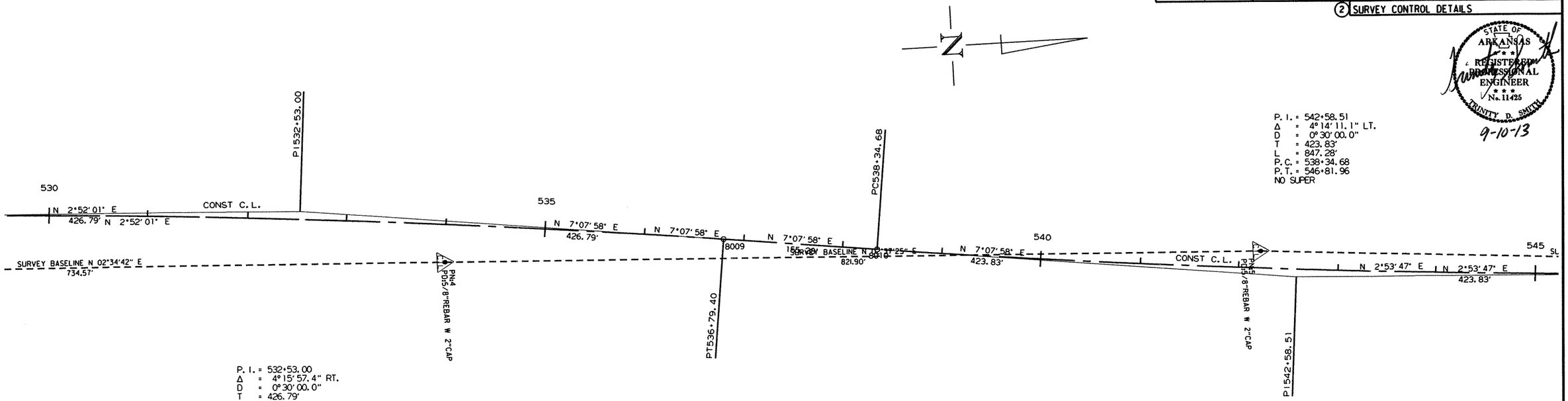
SURVEY CONTROL DETAILS

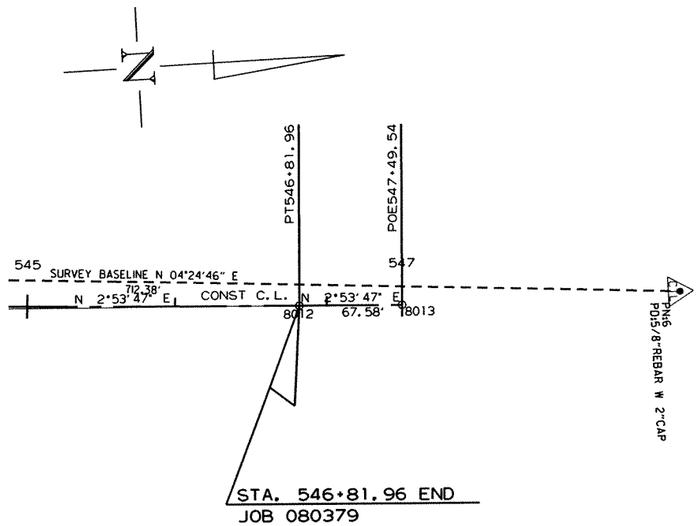
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		080379	25	85

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-10-13





8/14/2012

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SURVEY CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		080379	26	85

(2) PLAN AND PROFILE STA. 502+96.10-515+00.00

STA. 506+07 IN PLACE
18" X 21' C.M.
PIPE CULVERT LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 35' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH= 50 CU. YD.

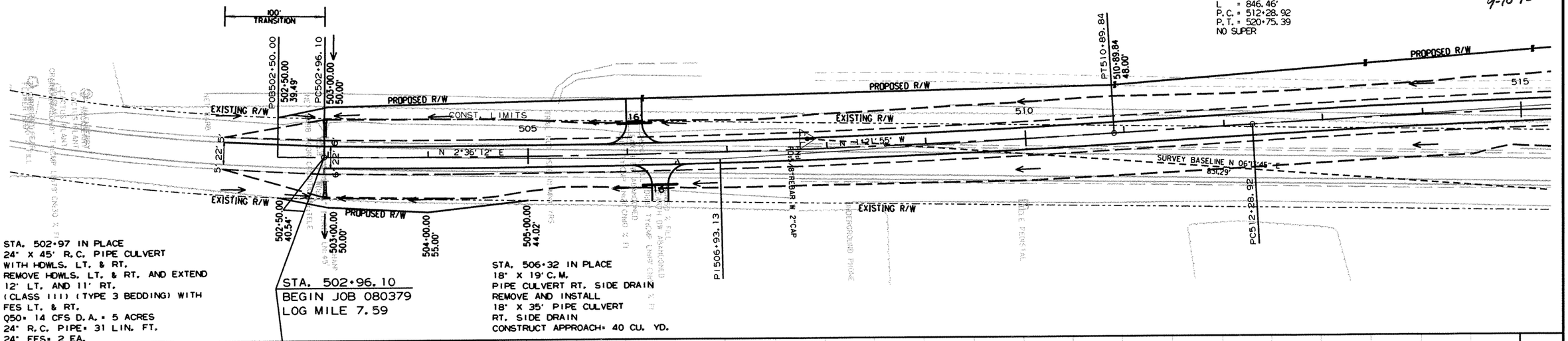
P.I. = 506+93.13
Δ = 3°58' 07.4" LT.
D = 0°30' 00.0"
T = 397.03'
L = 793.74'
P.C. = 502+96.10
P.T. = 510+89.84
NO SUPER

FENCING

STATION	STATION	SIDE	WIRE FENCE TYPE C LIN. FT.
506+17	520+83	LT.	1473

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-10-13

P.I. = 516+52.35
Δ = 4°13' 56.4" RT.
D = 0°30' 00.0"
T = 423.42'
L = 846.46'
P.C. = 512+28.92
P.T. = 520+75.39
NO SUPER



9/5/2013

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STA.	STA.		GUARDRAIL (TYPE A) LIN. FT.	THRIE BEAM GUARDRAIL TERMINAL EACH	TERMINAL ANCHOR POSTS (TYPE 1) EACH	BRIDGE END TERMINAL EACH
520+02.76	522+30.91	RT.	200	1	1	
521+82.76	522+30.91	LT.				1
526+67.07	528+98.22	LT.	200	1	1	
526+67.07	527+73.22	RT.	75	1	1	

FENCING

STATION	STATION	SIDE	WIRE FENCE TYPE C LIN. FT.
506+17	520+83	LT.	1473

STA. 521+12 INSTALL
18" X 56' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT CO. RD. APPROACH= 65 CU. YD. COMPACTED EMBANKMENT
730 CU. YD. UNCLASSIFIED EXCAVATION

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.	080379		27	85

(2) PLAN AND PROFILE STA. 515+00.00-530+00.00

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-10-13

STA. 522+30.91 - STA. 526+67.07 CONSTRUCT
436'-2 1/4" X 34' BRIDGE NO. 07264
434'-0" CONTINUOUS COMPOSITE PLATE GIRDER
UNIT (97'-0", 120'-0", 120'-0", 97'-0")

WOMBLE RD.
520+85.00
140.00'
520+75.39
140.00'
T.C.E.
521+32.00
109.09'-140.00'
522+00.00
120.00'
PROPOSED R/W
CONST. LIMITS
EXISTING R/W
P.I. 516+52.35
515
520
525
530
N 12° 55' W
N 2°52'01" E
24'
20' FISHING VILLAGE RD.
P.T. 520+75.39
SURVEY BASELINE N 00°32'13" E
1053.53'
SURVEY BASE
PK NAIL
PIPE/8"REBAR W 2"CAP
OUACHITA RIVER
P.C. 528+26.21

P. I. = 516+52.35
Δ = 4°13'56.4" RT.
D = 0°30'00.0"
T = 423.42'
L = 846.46'
P.C. = 512+28.92
P.T. = 520+75.39
NO SUPER

P. I. = 532+53.00
Δ = 4°15'57.4" RT.
D = 0°30'00.0"
T = 426.79'
L = 853.19'
P.C. = 528+26.21
P.T. = 536+79.40
NO SUPER

STA. 517+10 CONSTRUCT
CO. RD. APPROACH ON RT. =45 CU. YD.

STA. 522+52 TO STA. 526+55 - IN PLACE
402' X 22' CLEAR ROADWAY BRIDGE NO. 02766 CONSISTING OF
A CONCRETE DECK WITH CONCRETE PIERS
REMOVE AS EXISTING BRIDGE STRUCTURE (SITE NO. 1) = 1.00 LUMP SUM

BRIDGE END
STA. 522+30.91
ELEV. 608.14

STREAM NAME	STATION	STREAM TYPE	TOP OF CHANNEL
LAKE OUACHITA	STA. 522+75-STA. 528+50	5 CFS	574.3 ft. msl

K=240.63
VC=800'
e=3.32'
BRIDGE END
STA. 526+67.07
ELEV. 598.88
P.V.T. 529+91.56
ELEV. 597.13
-3.19%
0.13%
MAX. FLOOD POOL
ELEV. = 592.00
P.V.I. 525+91.56
ELEV. 596.60
2:1
LT. DITCH
GRADE 0.7%
529+00.00
577.14

P.V.I. 517+84.72
ELEV. 622.35
K=120.26
VC=600'
e=-3.74'
-3.19%
P.V.T. 520+84.72
ELEV. 612.78
P.V.C. 521+91.56
ELEV. 609.37
K=240.63
VC=800'
e=3.32'

BM: 901 CHIS SQ NW CRNR NW END BR, IN HEADWALL
88.67 RT. OF STA. 526+53.94
ELEVATION = 598.83

645 640 635 630 625 620 615 610 605 600
610 605 600 595 590 585 580 575 570 565
515+00 516+00 517+00 518+00 519+00 520+00 521+00 522+00 523+00 524+00 525+00 526+00 527+00 528+00 529+00 530+00

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		080379	28	85

(2) PLAN AND PROFILE STA.530+00.00-545+00.00

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-10-13

STA. 536+45 INSTALL
18" X 36' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH= 105 CU. YD.

STA. 542+65 INSTALL
18" X 43' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH= 85 CU. YD.

P. I. = 542+58.51
Δ = 4°14'11.1" LT.
D = 0°30'00.0"
T = 423.83'
L = 847.28'
P.C. = 538+34.68
P.T. = 546+81.96
NO SUPER

530+00.00
125.00'

PROPOSED R/W
CONST. LIMITS

P I 532+53.00

EXISTING R/W

R/W 530

535

N 2°52'01" E

SURVEY BASELINE N 02°34'42" E
734.57'

PIN FOUND
1/2" REBAR W/ 2"CAP

EXISTING R/W

EXISTING R/W

536+17.00
55.16'-80.00'

536+52.00
52.22'-80.00'

536+79.40
50.00'

T.C.E

16'

N 7°07'58" E

PT 536+79.40

PC 538+34.68

PROPOSED R/W

EXISTING R/W

SURVEY BASELINE N 02°37'25" E
821.90

540

542+48.00
56.60'-90.00'

542+86.00
56.11'-90.00'

T.C.E

24'

543+40.00
55.00'

PROPOSED R/W

CONST. LIMITS

EXISTING R/W

545

SUR

N 2°53'47" E

PIN FOUND
1/2" REBAR W/ 2"CAP

P I 542+58.51

543+00.00
45.57'

543+40.00
65.00'

543+70.00
65.00'

PROPOSED R/W

544+15.00
42.25'

EXISTING R/W

STA. 543+52 IN PLACE
30" X 70' R.C. PIPE CULVERT
WITH HDWLS. LT. & RT.
REMOVE HDWLS. LT. & RT. AND EXTEND
8' LT. AND 2' RT.
(CLASS III) (TYPE 3 BEDDING) WITH
FES LT. & RT.
Q50= 34 CFS D.A.= 8.4 ACRES
30" R.C. PIPE= 18 LIN. FT.
30" FES= 2 EA.

P. I. = 532+53.00
Δ = 4°15'57.4" RT.
D = 0°30'00.0"
T = 426.79'
L = 853.19'
P.C. = 528+26.21
P.T. = 536+79.40
NO SUPER

STA. 536+34 INSTALL
18" X 37' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH= 40 CU. YD.

610
605
600
595
590
585
580
575
570
565

0.13%

P.V.I. 542+23.38
ELEV. 598.77

LT. DITCH GRADE 0.71%

533+00.00
580.00

STA. 543+52
F.L. INLET 589.44
F.L. OUTLET 587.72

530+00 531+00 532+00 533+00 534+00 535+00 536+00 537+00 538+00 539+00 540+00 541+00 542+00 543+00 544+00 545+00

9/5/2013

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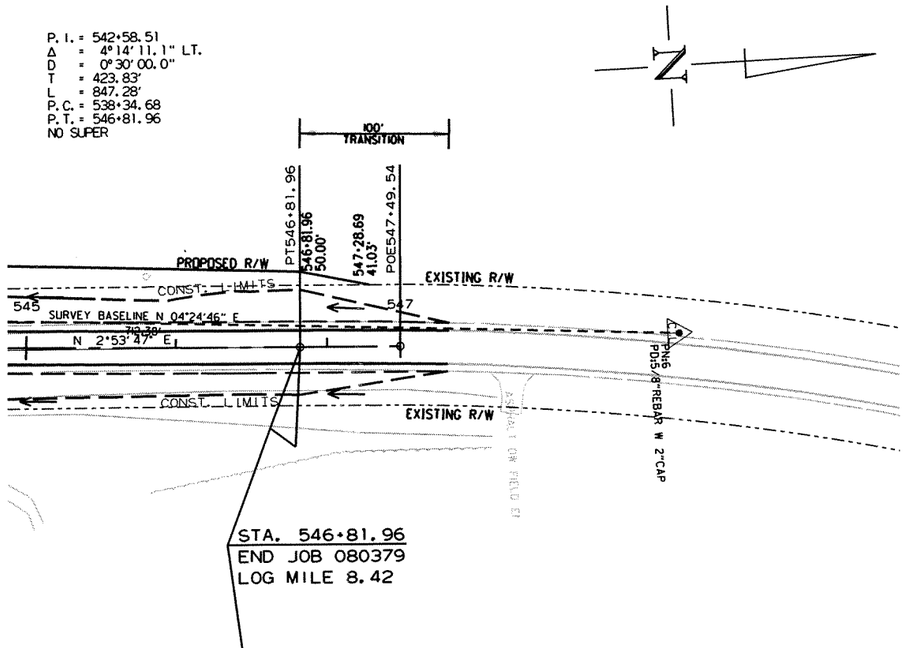
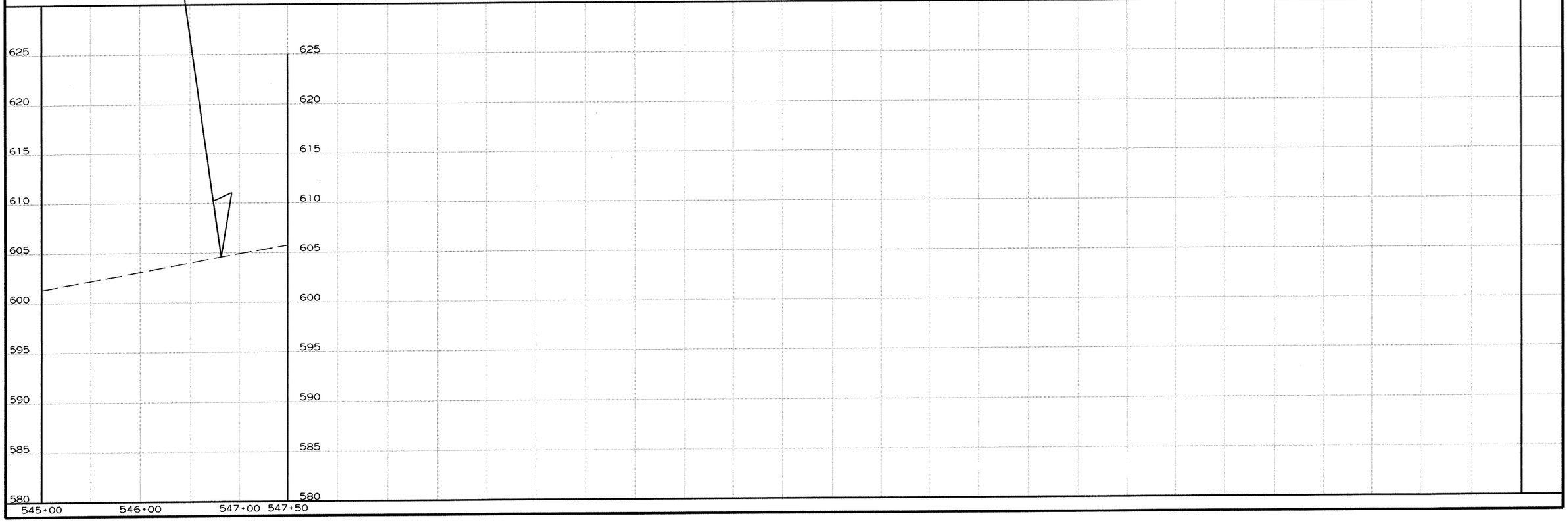
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		080379	29	85

(2) PLAN AND PROFILE STA.545+00.00-546+81.96

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-10-13

P. I. = 542+58.51
Δ = 4°14' 11.1" LT.
D = 0°30' 00.0"
T = 423.83'
L = 847.28'
P. C. = 538+34.68
P. T. = 546+81.96
NO SUPER





R080379.DGN 9/5/2013

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.		080379	30	85

(1) 07264 - LAYOUT - 53184

GENERAL NOTES

BENCH MARK: BM 901 Chiseled Square Northwest Corner Bridge in Headwall, 88.67 feet Right of C.L. Construction Sta. 526+53.94, Elev. 598.83.

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2003 edition), with applicable supplemental specifications and special provisions. Unless otherwise noted, Section and subsection refer to the Standard Construction Specifications.

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

LIVE LOADING: HL-93

SEISMIC PERFORMANCE ZONE: I S_{D1} = 0.061 SITE CLASS: B

MATERIALS AND STRENGTHS:

Class S (AE) Concrete (Superstructure)	f'c = 4,000 psi
Class S Concrete (Substructure)	f'c = 3,500 psi
Reinforcing Steel (Grade 60, AASHTO M31 or M322, Type A)	fy = 60,000 psi
Structural Steel (AASHTO M270, Grade 36)	Fy = 36,000 psi
Structural Steel (AASHTO M270, Grade 50W)	Fy = 50,000 psi

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

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

STEEL PILING: Piling in Bent 5 shall be HP12x53 and shall be driven with an approved air, steam, or diesel hammer to a minimum safe bearing capacity of 70 tons per pile and into the material designated as Shale on the boring legend. Lengths of piling shown are for estimating quantities and for use in determining payment for cut-off and build-up in accordance with the Standard Specifications. Piles to be driven after embankment to bottom of cap is in place. On all piling, the Contractor shall use approved steel H-Pile driving points.

DRILLED SHAFTS: All drilled shafts shall be founded a minimum of 27' into material designated as Hard Shale on the boring legend at bents 2, 3 and 4. No adjustment in plan tip elevation shall be made without prior approval of the Engineer. Methods of construction of the drilled shafts shall be in accordance with Special Provision Job 080379 "Drilled Shaft Foundations".

CROSSHOLE SONIC LOGGING: Nondestructive testing shall be performed on each drilled shaft in accordance with Special Provision Job No. 080379 "Nondestructive Testing of Drilled Shafts".

FOOTINGS: Footing for Bent 1 shall be set a minimum of 2'-0" into material designated as Slightly Weathered, Dark Gray, Hard Shale on the boring legend. Foundations for footings shall be prepared in accordance with Section 801.04 of the Standard Specifications. Rock excavation shall be made to neat lines of the concrete footing. Care shall be exercised to avoid shattering of rock faces by excessive blasting. Concrete in footing shall be poured directly against excavated surfaces of rock. Backfill from top of footing (Elev. 599.83) to top of berm (Elev. 602.00)

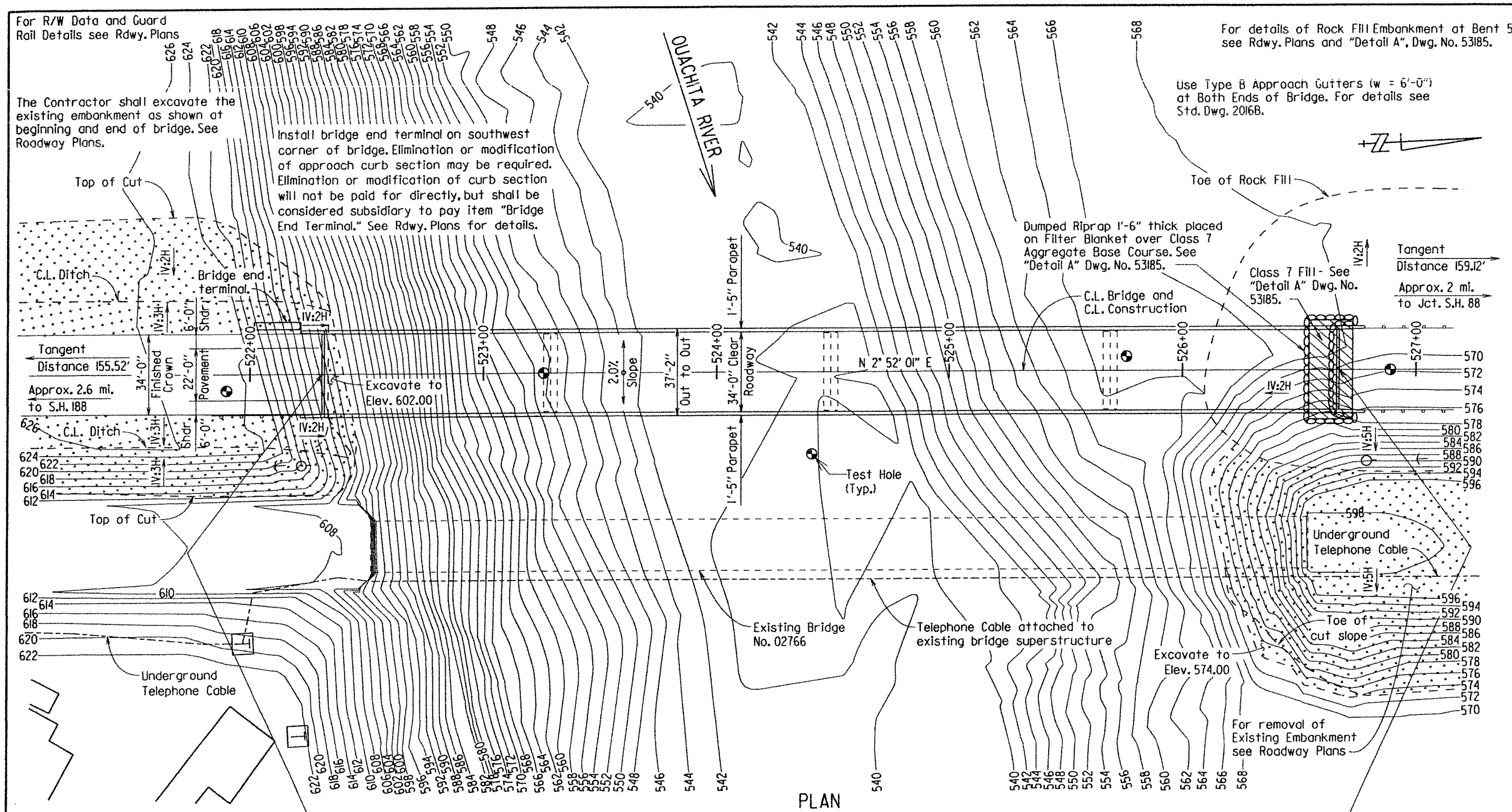
DETAIL DRAWINGS:	DRAWING NUMBER
End Bents	53186, 53187, 53190 & 53191
Intermediate Bents	53188 & 53189
434' Cont. Comp. Plate Girder Unit	53192-53197
Elastomeric Bearings	53198
Steel Piling	14995A
Type B Approach Gutters	2016B

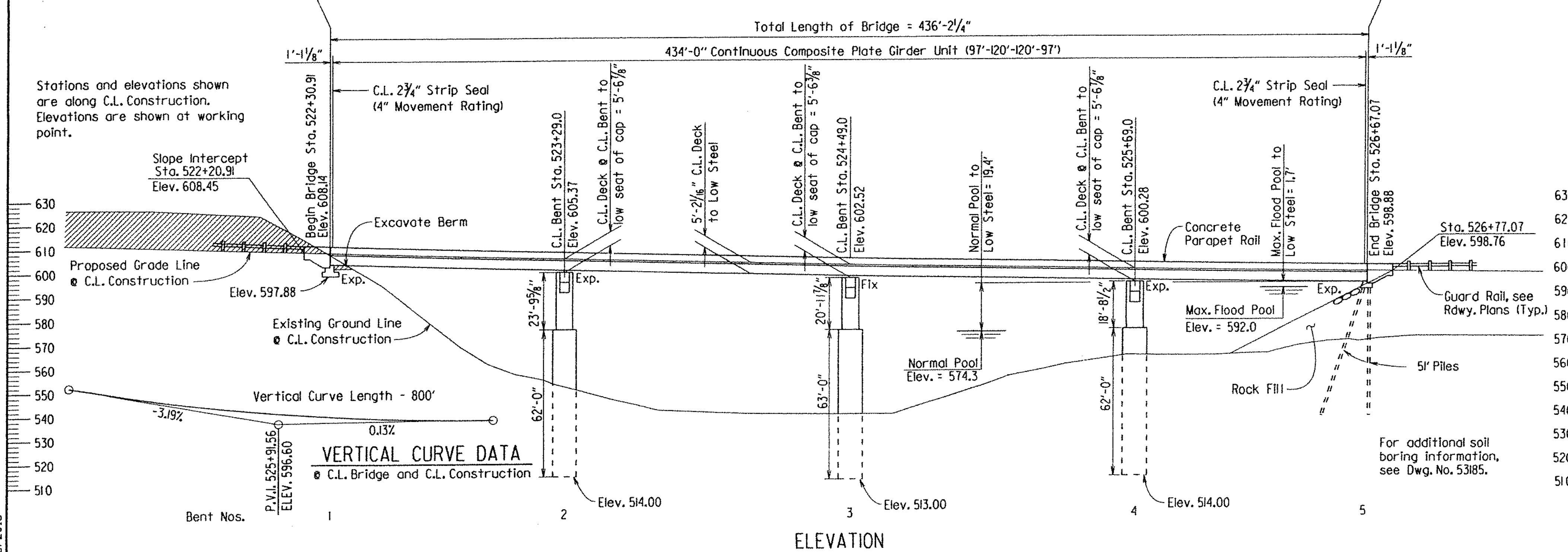
EXISTING BRIDGE: Existing Bridge No. 02766 (Log Mile 7.96) is 26.5' wide and 402' long with six spans (one 50' simple span, two 75', two 76' cantilever spans and one 48' suspended span) supported by concrete piers. The existing bridge is located approximately 75' downstream of the proposed bridge.

REMOVAL AND SALVAGE: After the new bridge is open to traffic the Contractor shall remove existing Bridge No. 02766 in accordance with Section 205, except for the existing Intermediate Bents 2 thru 6 which shall be removed to Elevation 562.0 or lower. Debris from Bridge Removal shall not enter the waterway. All material from the existing bridge shall become the property of the Contractor.

MAINTENANCE OF TRAFFIC: See Roadway Plans.

For Hydraulics data see Dwg. No. 53185.





SHEET 1 OF 2

LAYOUT OF BRIDGE OVER OUACHITA RIVER
OUACHITA RIVER STR. & APPRS. (S)
MONTGOMERY COUNTY

ROUTE 27 SEC. 7

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

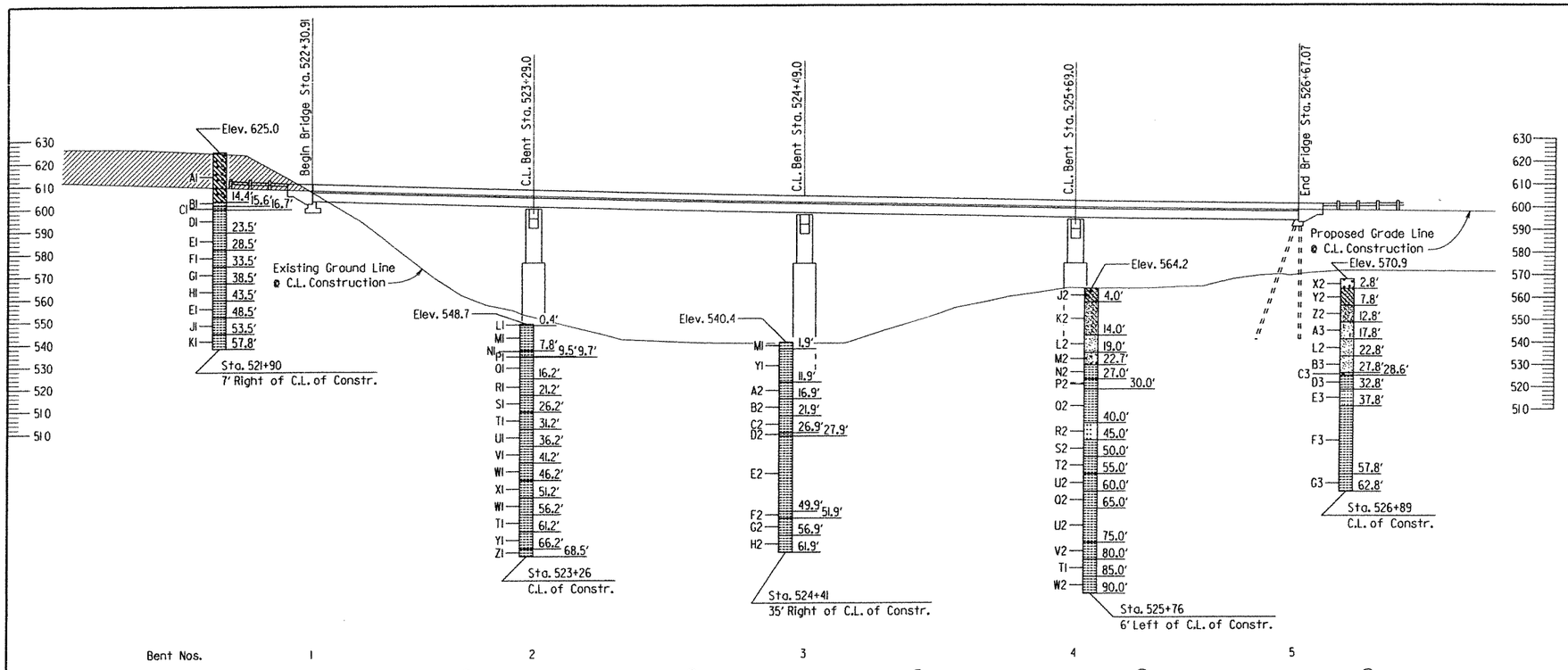
STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 7510 CARL S. FUSELIER 5/8/13

BRIDGE ENGINEER

DRAWN BY: MRE	DATE: 04/08/11	FILENAME: b080379_ll.dgn	
CHECKED BY: CMW	DATE: 5/7/13	SCALE: 1"=30'-0"	
DESIGNED BY: CSL	DATE: Apr. 2011		
BRIDGE NO. 07264		DRAWING NO. 53184	

PRINT DATE: 5/8/2013

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.		080379	31	85
				①	07264	- LAYOUT -	53185	



BORING LEGEND

AI-Moist, Very Hard, Brown Clay with Gravel(Sandstone Fragments)
BI-SHALE - Gray, Hard
CI-SHALE - Gray, Medium Hard
DI-SHALE - Dark Gray, Laminated, Slightly Weathered, Hard, with Slight Dip and Fractured Layers
EI-SHALE - Dark Gray, Laminated, Slightly Weathered, Hard, with Steep Dip
FI-SHALE - Dark Gray, Laminated, Slightly Weathered, Hard, with Steep Dip and Vertically Fractured Layers
GI-SHALE WITH OCCASIONAL PYRITE PARTINGS - Dark Gray, Laminated, Slightly Weathered, Hard, with Slight Dip and Fractured Layers
HI-SHALE WITH OCCASIONAL PYRITE PARTINGS - Dark Gray, Laminated, Slightly Weathered, Hard, with Slight Dip and Vertically Fractured Layers
JI-SHALE WITH OCCASIONAL NOVACULITE SEAMS AND PYRITE PARTINGS - Dark Gray, Laminated, Slightly Weathered, Hard, with Steep Dip
KI-SHALE WITH OCCASIONAL QUARTZ SEAMS AND PYRITE PARTINGS - Dark Gray, Laminated, Slightly Weathered, Hard, with Steep Dip, Fractured Layers and Slickensides
LI-Wet, Loose, Gray Clayey Sand
MI-SHALE - Dark Gray, Medium Hard
NI-SHALE WITH QUARTZ SEAMS - Dark Gray, Laminated, Slightly Weathered, Hard, with Steep Dip
PI-SANDSTONE - Gray, Poorly-Cemented, with Steep Dip
QI-SHALE WITH QUARTZ SEAMS - Dark Gray, Laminated, Slightly Weathered, Hard, with Steep Dip and Fractured Layers
RI-SHALE WITH QUARTZ SEAMS - Dark Gray, Laminated, Slightly Weathered, Hard, with Steep Dip, Vertically Fractured Layers and Slickensides
SI-SHALE WITH QUARTZ LAYERS - Dark Gray, Laminated, Slightly Weathered, Hard, with Steep Dip, Vertically Fractured Layers, occasional Pyrite Seams and Slickensides
TI-SHALE WITH QUARTZ LAYERS - Dark Gray, Laminated, Slightly Weathered, Hard, with Steep Dip, Vertically Fractured Layers, and Slickensides
UI-SHALE WITH QUARTZ SEAMS - Dark Gray, Laminated, Slightly Weathered, Hard, with Steep Dip, Vertically Fractured Layers, and Slickensides
VI-SHALE WITH QUARTZ LAYERS - Dark Gray, Laminated, Slightly Weathered, Hard, with Steep Dip, Fractured Layers, and Slickensides
WI-SHALE WITH QUARTZ SEAMS - Dark Gray, Laminated, Slightly Weathered, Hard, with Steep Dip, Fractured Layers, and Slickensides
XI-SHALE WITH QUARTZ SEAMS - Dark Gray, Laminated, Slightly Weathered, Hard, with Steep Dip, Vertically Fractured Layers, occasional Pyrite Seams and Slickensides
YI-SHALE WITH NOVACULITE LAYERS AND QUARTZ SEAMS - Dark Gray, Laminated, Slightly Weathered, Hard, with Steep Dip, and Slickensides
ZI-SHALE WITH NOVACULITE LAYERS - Dark Gray, Laminated, Slightly Weathered, Hard, with Steep Dip, and Slickensides
A2-SHALE WITH NOVACULITE LAYERS - Dark Gray, Laminated, Slightly Weathered, Hard, with Steep Dip, and Slickensides
B2-SHALE WITH NOVACULITE SEAMS - Dark Gray, Laminated, Slightly Weathered, Hard, with Steep Dip, Fractured Layers and Slickensides
C2-SHALE WITH NOVACULITE SEAMS - Dark Gray, Laminated, Slightly Weathered, Hard, with Steep Dip, and Slickensides
D2-SHALE WITH NOVACULITE SEAMS AND PYRITE PARTINGS - Dark Gray, Laminated, Slightly Weathered, Hard, with Steep Dip, Vertically Fractured Layers and Slickensides
E2-SHALE - Dark Gray, Laminated, Slightly Weathered, Hard, with Steep Dip, and Slickensides
F2-SHALE WITH NOVACULITE AND QUARTZ LAYERS AND PYRITE PARTINGS - Dark Gray, Laminated, Slightly Weathered, Hard, with Steep Dip, Fractured Layers and Slickensides
G2-SHALE WITH QUARTZ LAYERS, NOVACULITE SEAMS AND PYRITE PARTINGS - Dark Gray, Laminated, Slightly Weathered, Hard, with Steep Dip, Fractured layers and Slickensides
H2-SHALE WITH QUARTZ LAYERS AND NOVACULITE SEAMS - Dark Gray, Laminated, Slightly Weathered, Hard, with Steep Dip, and Slickensides
J2-Wet, Soft, Gray and Brown Sandy Clay with Organic Matter
K2-Wet, Very Loose to Loose, Brown Clayey Sand
L2-Wet, Loose, Brown Sand
M2-Wet, Loose, Brown and Gray Sand with Gravel
N2-SHALE - Dark Gray, Hard
P2-SHALE WITH QUARTZ SEAMS - Dark Gray, Laminated, Slightly Weathered, Hard, with Steep Dip, Fractured Layers and Slickensides
Q2-SHALE WITH QUARTZ LAYERS - Dark Gray, Laminated, Slightly Weathered, Hard, with Steep Dip, Vertically Fractured Layers, occasional Pyrite Seams and Slickensides
R2-QUARTZ WITH SHALE SEAMS - White, Thin Bedded, Hard, with Fractured Layers
S2-SHALE WITH QUARTZ LAYERS - Dark Gray, Laminated, Slightly Weathered, Hard, with Steep Dip, Fractured Layers and occasional Pyrite Seams
T2-SHALE WITH QUARTZ LAYERS - Dark Gray, Laminated, Slightly Weathered, Hard, with Steep Dip, Vertically Fractured Layers and occasional Pyrite Seams and Slickensides
U2-SHALE WITH QUARTZ LAYERS - Dark Gray, Laminated, Slightly Weathered, Hard, with Steep Dip, Fractured Layers, occasional Pyrite Seams and Slickensides
V2-SHALE WITH WEATHERED SHALE AND OCCASIONAL SANDSTONE LAYERS - Dark Gray, Laminated, Hard, with Steep Dip, Fractured Layers, occasional Pyrite Seams and Slickensides
W2-SHALE - Dark Gray, Laminated, Slightly Weathered, Hard, with Steep Dip, Vertically Fractured Layers, and Slickensides
X2-Very Loose, Gravel
Y2-Wet, Soft, Gray Sandy Clay with Trace of Gravel
Z2-Wet, Very Loose, Gray Clayey Sand
A3-Wet, Very Loose, Brown Silty Sand
B3-Wet, Very Loose, Brown Sand
C3-Wet, Dense, Brown Sand with Gravel
D3-SHALE - Dark Gray, Laminated, Slightly Weathered, Hard, with Steep Dip and Fractured Layers
E3-SHALE INTERBEDDED WITH SANDSTONE AND QUARTZ - Dark Gray, Laminated, Slightly Weathered, Hard, with Steep Dip and Fractured Layers (Sandstone)
F3-SHALE WITH QUARTZ SEAMS - Dark Gray, Laminated, Slightly Weathered, Hard, with Steep Dip and Vertically Fractured Layers
G3-SHALE WITH QUARTZ SEAMS - Dark Gray, Laminated, Slightly Weathered, Hard, with Steep Dip, Fractured Layers and occasional Pyrite Seam

"N" VALUES

Sta. 521+90 - 7' Right of C.L. of Constr.
4.9- 5.9, N=108
9.9- 10.9, N=79
14.9- 15.5, N=119(7")
16.4- 16.7, N=60(4")

Sta. 523+26 - C.L. of Constr.
0.5- 1.5, N=8
7.8- 7.8, N=60(0.01")

Sta. 524+41 - 35' Right of C.L. of Constr.
0- 0.4, N=10(5")

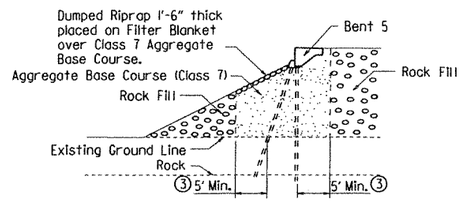
Sta. 525+76 - 6' Left of C.L. Constr.
0.5- 1.5, N=3
4.5- 5.5, N=4
9.5- 10.5, N=6
14.5- 15.5, N=6
19.5- 20.5, N=8

Sta. 526+89 - C.L. Constr.
0.5- 1.5, N=2
3.3- 4.3, N=2
8.3- 9.3, N=3
13.3- 14.3, N=2
18.3- 19.3, N=5
23.3- 24.3, N=4
28.3- 28.8, N=60(6")

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
CARL J. FUSELIER 5/8/13

BRIDGE ENGINEER

③ 5'-0" clear from rock fill to pile for both longitudinal and transverse direction.



Where rock fill is used for embankment construction, aggregate base course (Class 7), in accordance with section 303.02, shall be placed as shown in areas where piling will be located. Aggregate base course (Class 7) shall be paid for as "Compacted Embankment".

At the Contractor's option preboring or other methods as approved by the Engineer may be used to facilitate pile installation thru the aggregate base course (Class 7) material at these locations. Preboring or other methods used for installation of piles where rock fill is used for embankment construction will not be paid for separately but shall be included in item "Steel Piling (HP 12X53)".

DETAIL A

No Scale

HYDRAULIC DATA

FLOOD DESCRIPTION	FREQUENCY	DISCHARGE	① NATURAL WATER SURFACE ELEVATION	② WATER SURFACE ELEV. WITH BACKWATER
	YEARS	CFS	FEET	FEET
Design	50	79000	576.8	577.3
Base	100	93400	578.7	579.4
Extreme	500	153500	585.2	586.9
Overtopping	>500	-	-	-

①Unconstricted water surface elevation without structure and roadway approaches.

②Stage Elevations without backwater from Lake Ouachita.
Estimated 100-Year backwater elevation with Existing Structures in place is 579.3 ft.
Proposed Low Bridge Member Elev. = 593.7
Drainage area = 512.5 square miles
Q 100 (Lake Ouachita = 583.7, Normal Pool = 574.3)
Historical Highwater Elev. = 590.1
Maximum Flood Pool Elev. = 592.0

SHEET 2 OF 2

LAYOUT OF BRIDGE OVER OUACHITA RIVER
OUACHITA RIVER STR. & APPRS. (S)
MONTGOMERY COUNTY

ROUTE 27 SEC. 7

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 04/08/11 FILENAME: b080379_ll.dgn
CHECKED BY: CMW DATE: 5/7/13 SCALE: 1"=30'-0"
DESIGNED BY: CSL DATE: April 2011

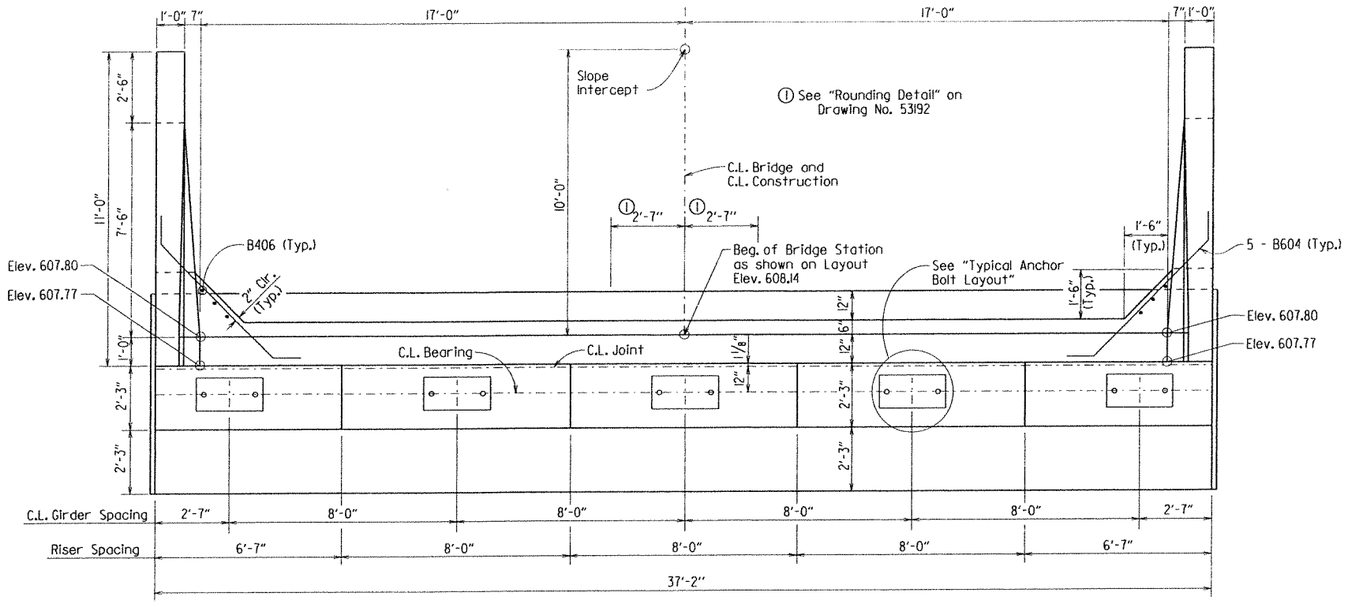
BRIDGE NO. 07264 DRAWING NO. 53185

PRINT DATE: 5/7/2013

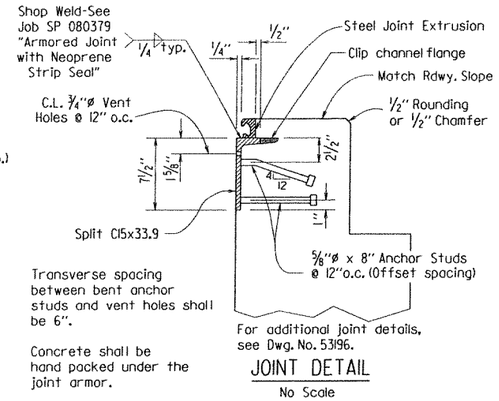
For details of wings and rails, see Dwg. No. 53187.

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

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		080379	32	85
				① 07264		BENT 1		53186

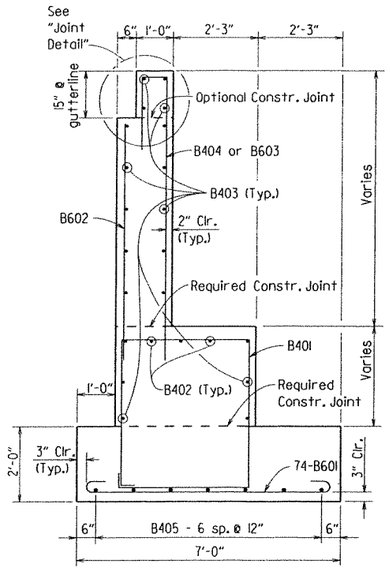


PLAN



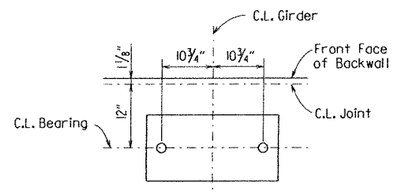
JOINT DETAIL

No Scale



SECTION A-A

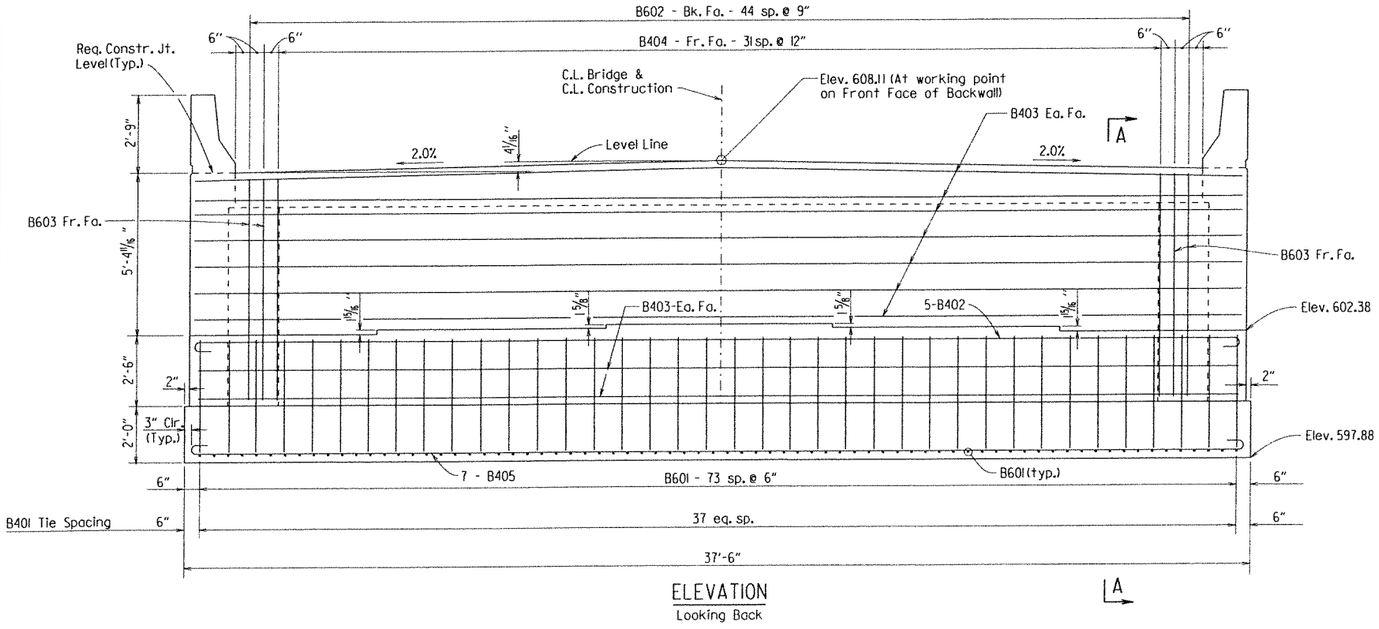
Scale: 1/2"= 1'-0"



For Details of Elastomeric Bearings, See Dwg. No. 53198.

TYPICAL ANCHOR BOLT LAYOUT

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



ELEVATION

Looking Back

GENERAL NOTES

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

All reinforcing steel shall be Grade 60 (Yield Strength = 60,000 psi) conforming to AASHTO M31 or M322, Type A, with mill test reports.

All structural steel shall be AASHTO M270, Gr. 50W. Structural steel in backwall shall be paid for as "Structural Steel in Plate Girder Spans M270, Grade 50W)". No portion of the backwall shall be poured before the girders are in place. The portion of the backwall above the optional construction joint at the paving bracket shall not be placed until the deck pour has been made. Refer to the "Expansion Device Installation" note, see Dwg. 53196.

Special care shall be taken to properly and thoroughly consolidate the concrete in the vicinity of the expansion joint device in the backwall. See subsection 802.09 (a)(3).

For additional information see Layout.

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

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7510
CARL J. FUSELIER
5/8/13

BRIDGE ENGINEER

SHEET 1 OF 2

DETAILS OF BENT 1
OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 09/06/11 FILENAME: b080379_b1.dgn

CHECKED BY: CMU DATE: 5/7/13 SCALE: 3/8"=1'-0" or as noted

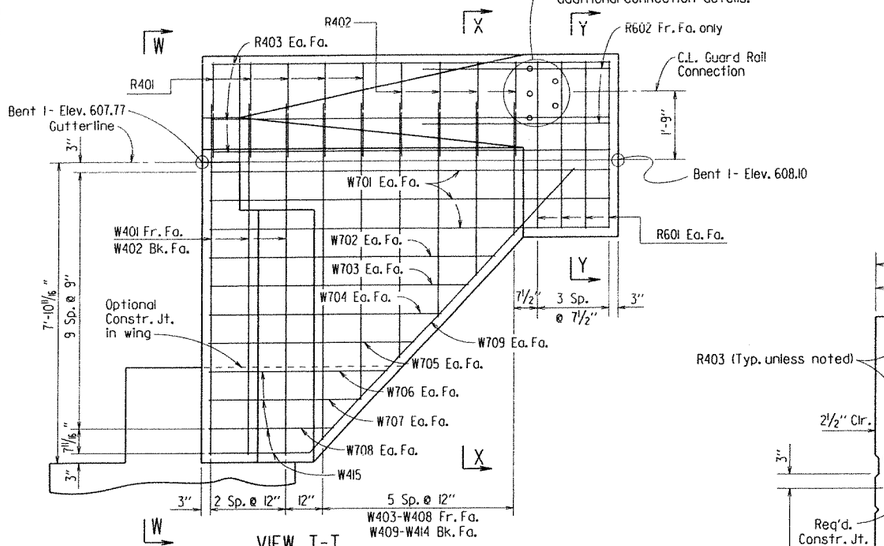
DESIGNED BY: CMU DATE: 10/11

BRIDGE NO. 07264 DRAWING NO. 53186

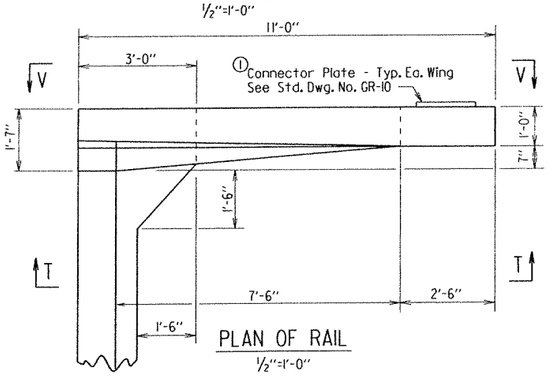
PRINT DATE: 5/7/2013

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.		080379	33	85
				①	07264	BENT 1		53187

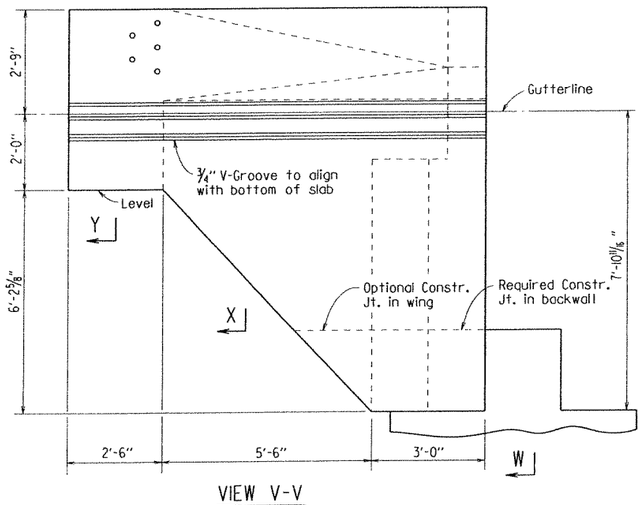
① 5- 1"ø formed holes for guard rail connection. See Std. Dwg. No. GR-10 for bolt spacing and additional connection details.



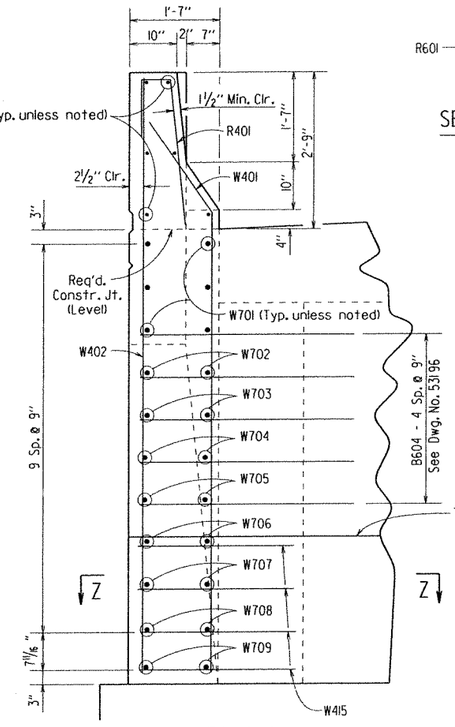
VIEW T-T
1/2"=1'-0"



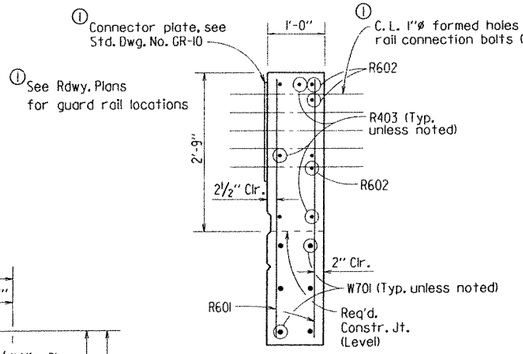
PLAN OF RAIL
1/2"=1'-0"



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



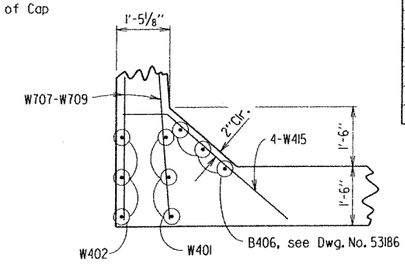
VIEW W-W
3/4"=1'-0"



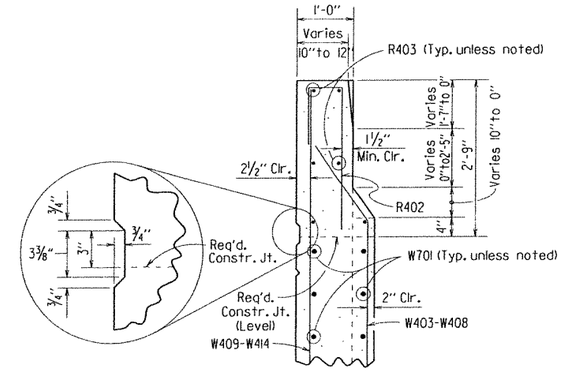
SECTION Y-Y
3/4"= 1'-0"

① Connection Plate as required. See Roadway Plans for location of Guardrail.

Modification of Bridge Rail and Connection may be required where Bridge End Terminal is located. Modifications to Bridge Rail and Connection will not be paid for directly, but shall be considered subsidary to the pay item "Bridge End Terminal". See Roadway Plans for location.



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

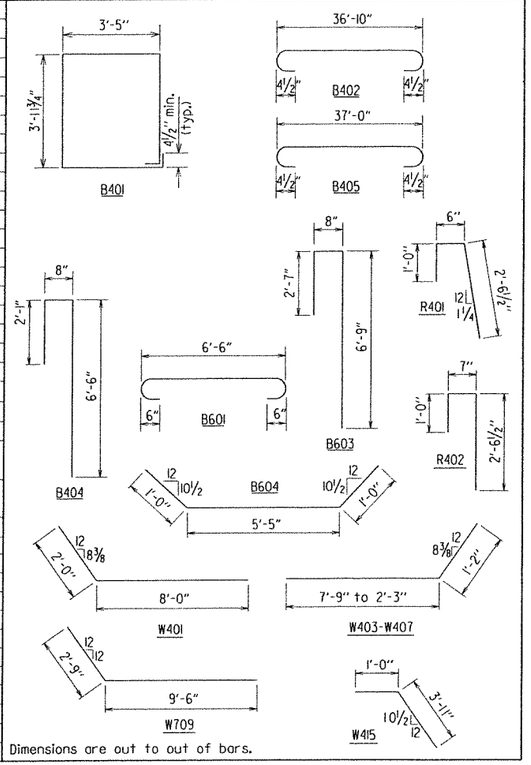


SECTION X-X
3/4"=1'-0"

BAR LIST

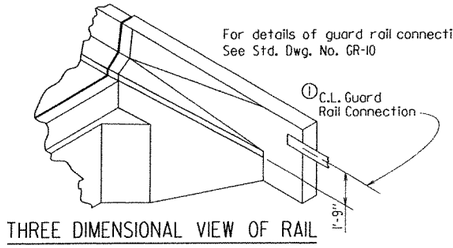
Mark	No. Req'd.	Length	Pin Dia.
B401	38	15'-2"	2"
B402	5	37'-10"	3"
B403	18	36'-10"	Str.
B404	32	9'-1"	2"
B405	7	38'-0"	3"
B406	6	6'-3"	Str.
B601	74	7'-10"	4 1/2"
B602	45	5'-10"	Str.
B603	4	9'-9"	4 1/2"
B604	10	7'-5"	4 1/2"
R401	10	3'-11"	2"
R402	8	4'-0"	2"
R403	12	10'-8"	Str.
R601	16	4'-5"	Str.
R602	6	5'-0"	Str.
W401	6	10'-0"	2"
W402	6	10'-4"	Str.
W403-W408	2 ea.	8'-11" to 3'-5"	2"
W409-W414	2 ea.	10'-0" to 4'-6"	Str.
W415	8	4'-11"	2"
W701	12	10'-8"	Str.
W702	4	7'-5"	Str.
W703	4	6'-9"	Str.
W704	4	6'-2"	Str.
W705	4	5'-6"	Str.
W706	4	4'-10"	Str.
W707	4	4'-1"	Str.
W708	4	3'-5"	Str.
W709	4	12'-3"	5 1/4"

Bending Diagram



Dimensions are out to out of bars.

For General Notes, see Dwg. No. 53186.



THREE DIMENSIONAL VIEW OF RAIL
No Scale

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
5/8/13
CARL J. FUSELIER

BRIDGE ENGINEER

SHEET 2 OF 2
DETAILS OF BENT 1
OUACHITA RIVER

ROUTE SEC.

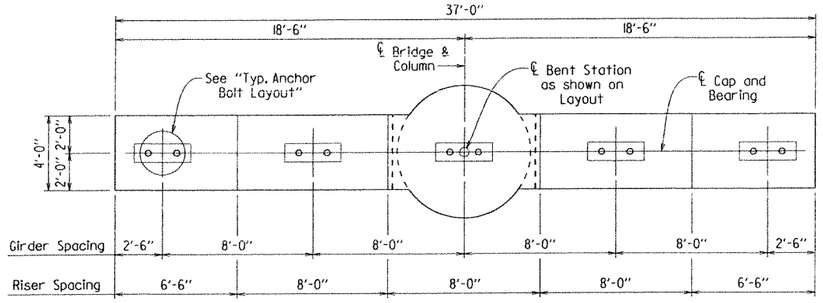
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 09/07/11 FILENAME: b080379_bl.dgn
CHECKED BY: CMW DATE: 5/7/13 SCALE: As Noted
DESIGNED BY: CMW DATE: 10/11

BRIDGE NO. 07264 DRAWING NO. 53187

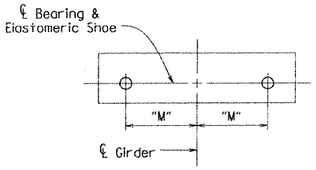
PRINT DATE: 5/7/2013

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.		080379	34	85
				①	07264	BENTS 2, 3 & 4	53188	



PLAN

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

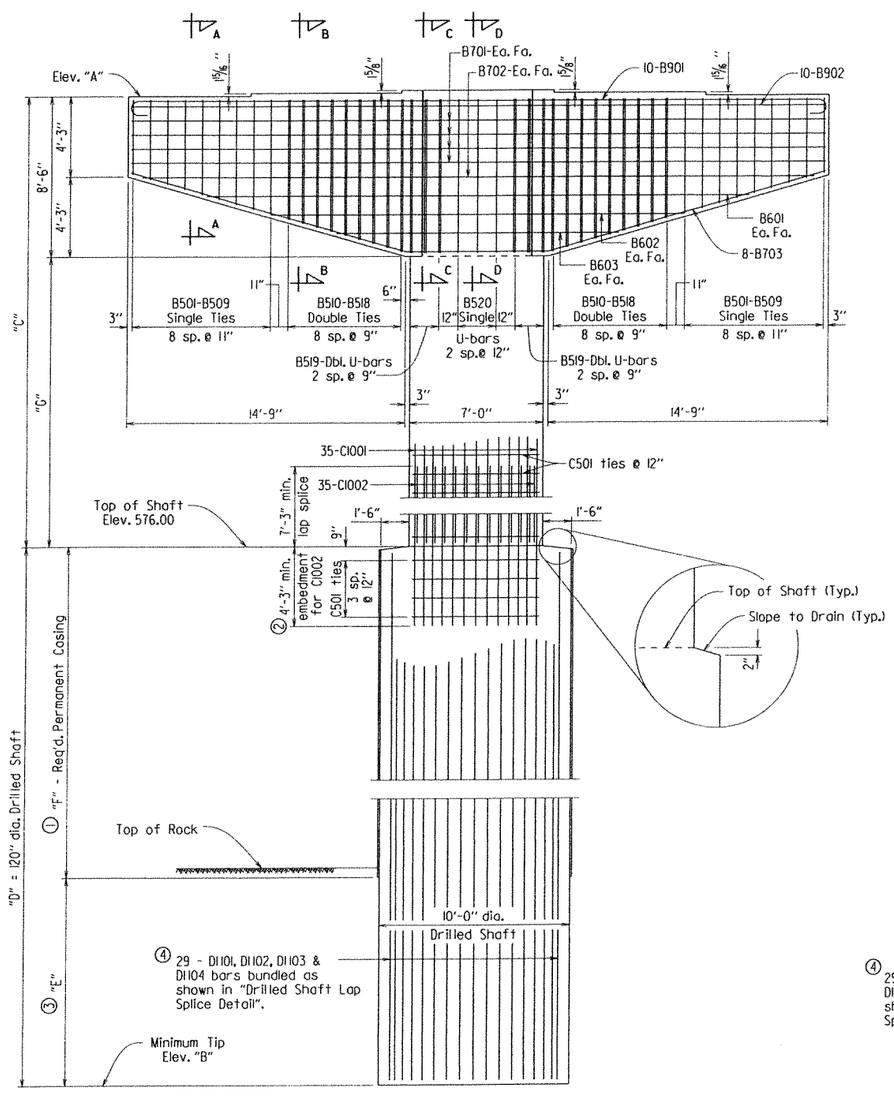


TYP. ANCHOR BOLT LAYOUT

No Scale

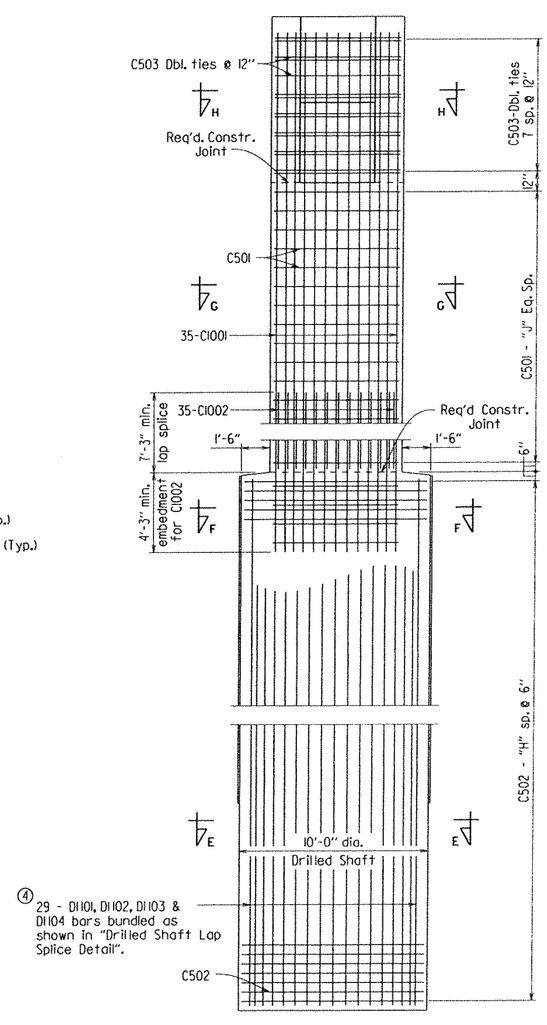
TABLE OF VARIABLES

Bent	Elev."A"	Elev."B"	"C"	"D"	"E"	"F"	"G"	"H"	"J"	"K"	"L"	"M"	"N"	"P"
2	599.80	514.00	23'-9 5/8"	62'-0"	33'-0"	29'-0"	15'-3 5/8"	122	15	20	123	12"	23'-9"	61'-6"
3	596.99	513.00	20'-11 7/8"	63'-0"	27'-0"	36'-0"	12'-5 7/8"	124	12	17	125	15 1/2"	20'-11"	62'-6"
4	594.71	514.00	18'-8 1/2"	62'-0"	27'-0"	35'-0"	10'-2 1/2"	122	10	15	123	12"	18'-8"	61'-6"



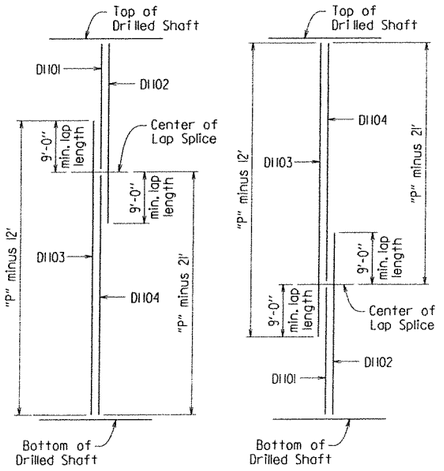
ELEVATION

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



END VIEW

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



④ DRILLED SHAFT LAP SPLICE DETAIL

No Scale

GENERAL NOTES

Concrete in the cap and column shall be Class S with a minimum 28 day compressive strength, f'c = 3500 psi., and shall be poured in the dry. Concrete in the drilled shaft shall be Class S as modified by SP Job 080379 "Drilled Shaft Foundations". All exposed corners to be chamfered 3/4" unless otherwise noted.

All reinforcing steel shall be Grade 60 (Yield Strength = 60,000 psi.) conform to AASHTO M31 or M322, Type A, with mill test reports.

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

For additional information see layout.

Drilled shafts and permanent casing shall conform to SP Job 080379 "Drilled Shaft Foundations" and shall be paid for at the unit bid price for "Drilled Shaft (120" Dia.)" and "Permanent Steel Casing (120" Dia.)".

For all "Sections", see Dwg. No. 53189.

① Length of Permanent Casing shown is for estimating quantities only. Actual lengths are to be detemined in the field. Provisions shall be made to rigidly support the casings at locations where the soil that overlies rock is thin, absent or the casing extends above the groundline. The extension of permanent casing into competent rock beyond the depth required to maintain seal is not an acceptable method of rigid support. The upper 10'-0" of the permanent casing shall be painted. See SP Job 080379 "Drilled Shaft Foundations".

② The column reinforcing cage, consisting of bars C501 & C1002, may be placed before or after concrete placement in the shaft is complete. Vibration of concrete in the top 10 feet of the shaft will be needed to ensure the consolidation of the concrete around the reinforcing steel and to insert the column reinforcing cage. The contractor will be responsible for obtaining satisfactory results.

③ Minimum penetration into competent rock below bottom of permanent casing shall not be less than 27 feet.

④ Lap splice locations of adjacent bars shall be staggered as shown to prevent adjacent bars from being spliced at the same location.

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SHEET 1 OF 2

DETAILS OF BENTS 2, 3 & 4 OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: CMW DATE: 8/17/2012 FILENAME: b080379_b2.dgn

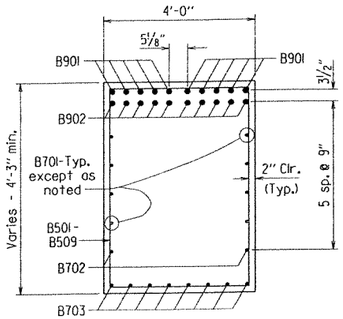
CHECKED BY: RBR DATE: 5/7/13 SCALE: As Noted

DESIGNED BY: CMW DATE: 5/12

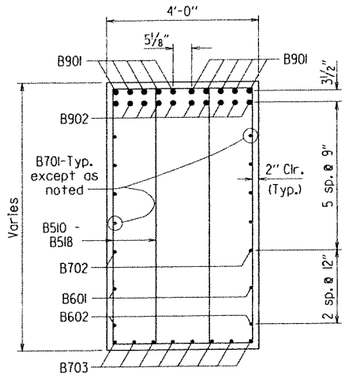
BRIDGE NO. 07264 DRAWING NO. 53188

PRINT DATE: 5/7/2013

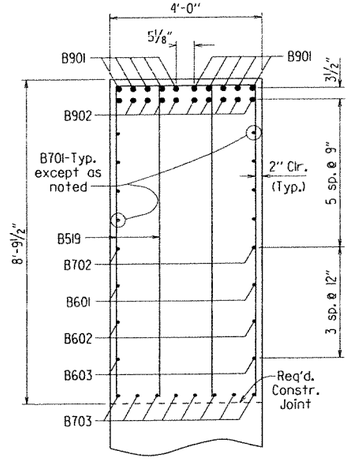
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		080379	35	85
				(1) 07264		BENTS 2, 3 & 4		53189



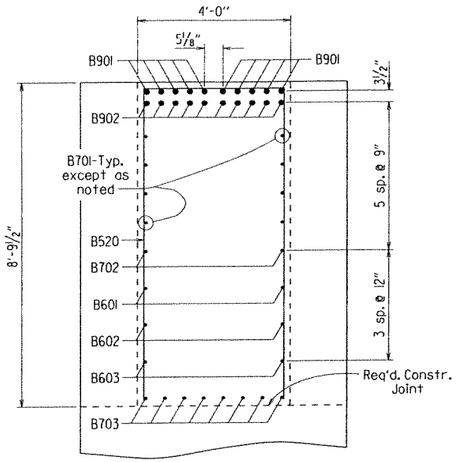
SECTION A-A
Scale: 1/2" = 1'-0"



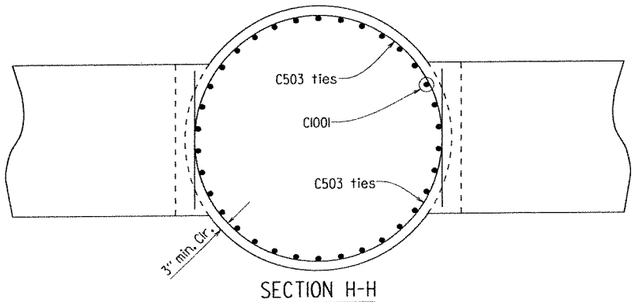
SECTION B-B
Scale: 1/2" = 1'-0"



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



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

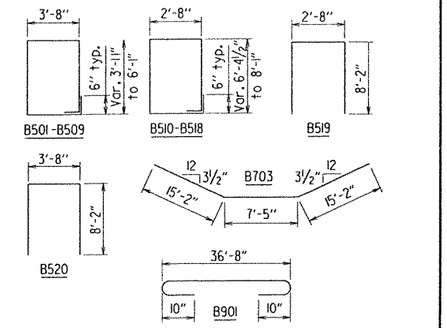


SECTION H-H
Scale: 1/2" = 1'-0"

BAR LIST - PER BENT

	MARK	NO. REQ'D.	LENGTH	P.D.
	B501 - B509	2 each	Var. 15'-8" to 20'-0"	2 1/2"
	B510 - B518	4 each	Var. 18'-7" to 22'-0"	2 1/2"
	B519	12	18'-10"	2 1/2"
	B520	3	19'-10"	2 1/2"
	C501	(6) "K"	21'-9"	3 3/4"
(5)	C502	(6) "L"	29'-8"	3 3/4"
	C503	16	13'-10"	3 3/4"
	B601	2	28'-6"	Str.
	B602	2	21'-7"	Str.
	B603	2	14'-8"	Str.
	B701	8	36'-8"	Str.
	B702	2	35'-6"	Str.
	B703	8	37'-9"	5 1/4"
	B901	10	39'-2"	9"
	B902	10	36'-8"	Str.
	C1001	35	"N"	Str.
	C1002	35	11'-8"	Str.
(5)	D1101	29	21'-0"	Str.
(5)	D1102	29	30'-0"	Str.
(6) (5)	D1103	29	"P" minus 12'	Str.
(6) (5)	D1104	29	"P" minus 21'	Str.

BENDING DIAGRAMS

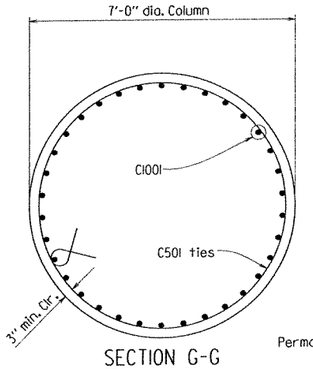


Dimensions are out to out of bars.

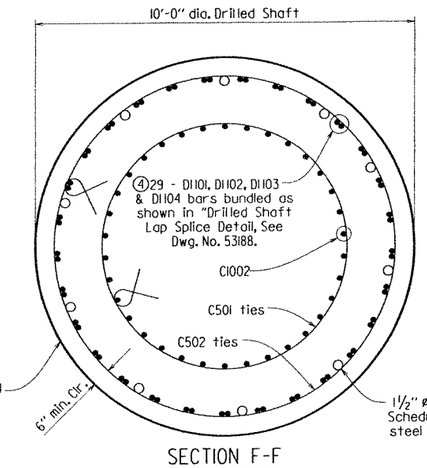
(4) Lap splice locations of adjacent bars shall be staggered as shown to prevent adjacent bars from being spliced at the same location.

(5) Non-pay item - Subsidiary to SP Job 080379 "Drilled Shaft Foundations"

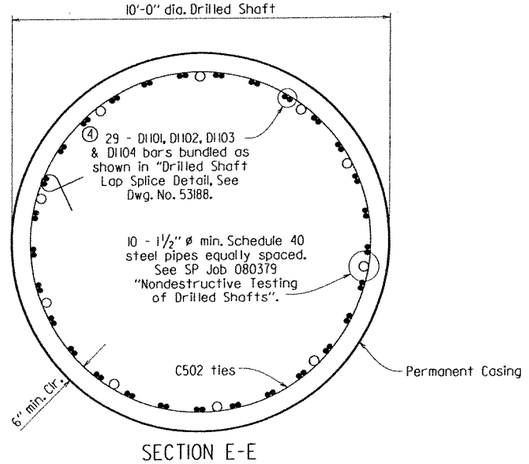
(6) See "Table of Variables", Dwg. No. 53188.



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



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



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

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SHEET 2 OF 2

DETAILS OF BENTS 2, 3 & 4 OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: CMW DATE: 8/17/2012 FILENAME: b080379_b2.dgn
CHECKED BY: RBR DATE: 5/7/13 SCALE: As Noted
DESIGNED BY: CMW DATE: 5/12

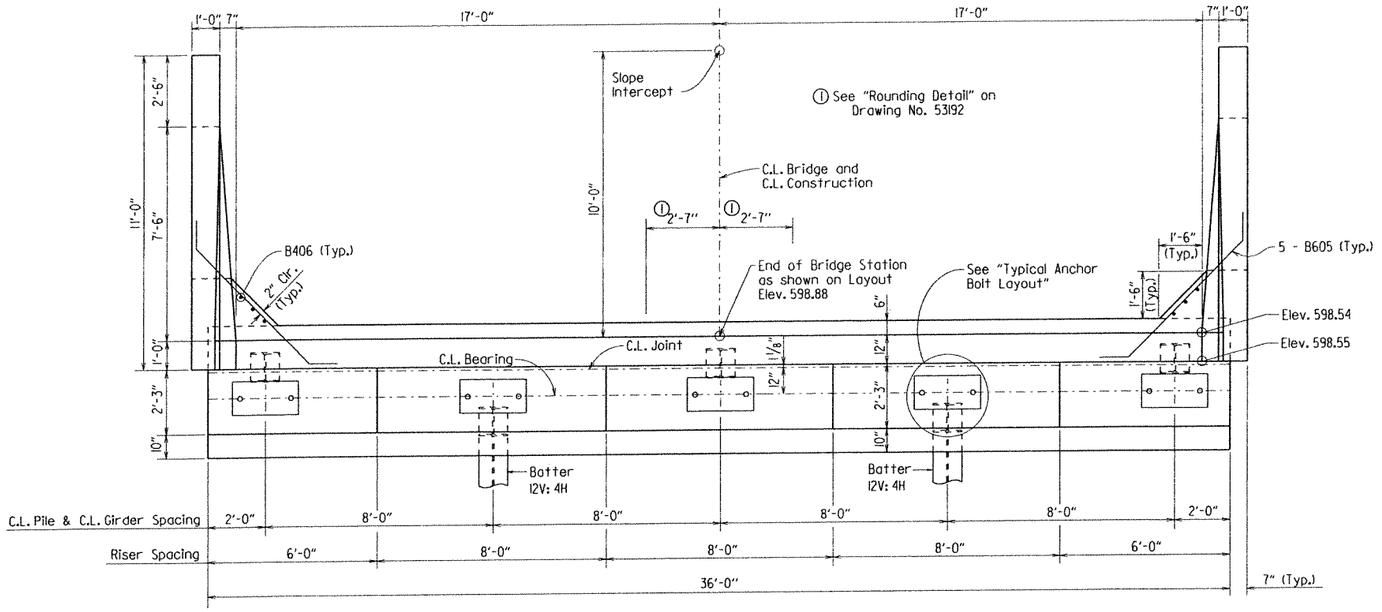
BRIDGE NO. 07264 DRAWING NO. 53189

PRINT DATE: 5/7/2013

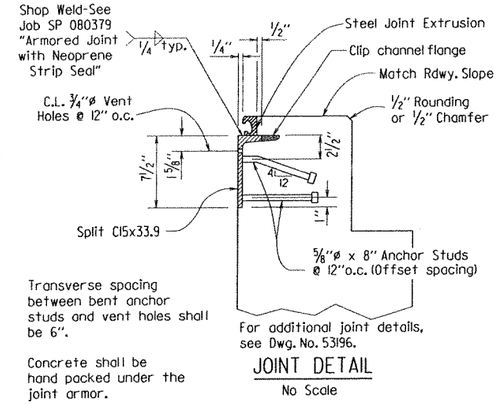
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		080379	36	85
				① 07264		BENT 5		53190

For details of wings and rails, see Dwg. No. 53191.

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



PLAN

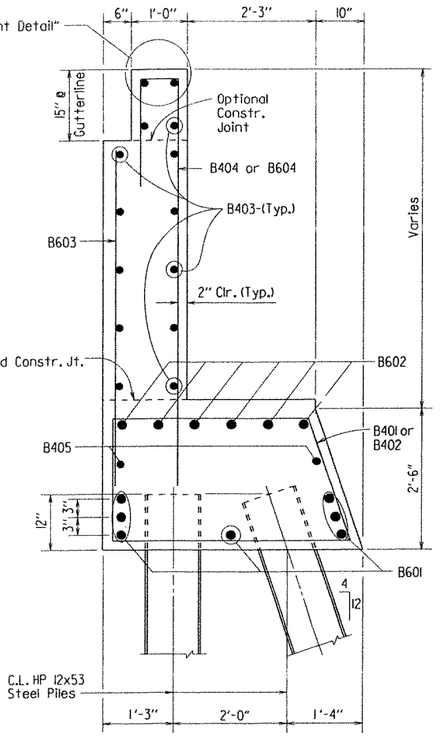


Transverse spacing between bent anchor studs and vent holes shall be 6".

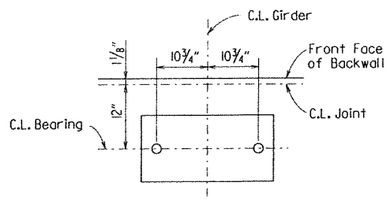
Concrete shall be hand packed under the joint armor.

For additional joint details, see Dwg. No. 53196.

JOINT DETAIL
No Scale

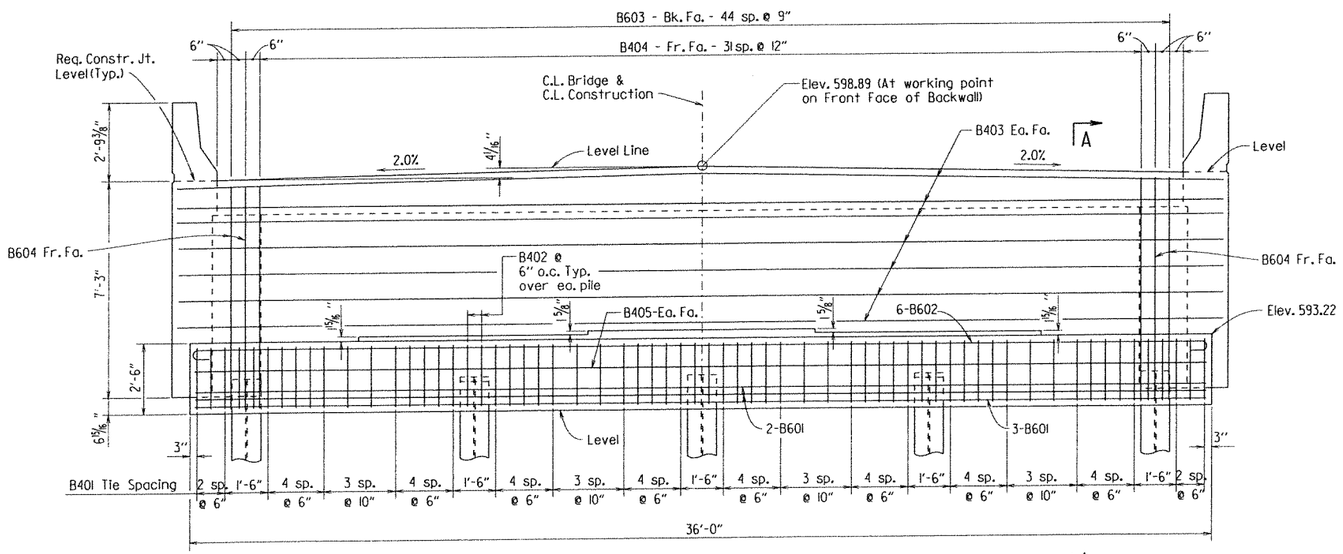


SECTION A-A
Scale: 3/4" = 1'-0"



For Details of Elastomeric Bearings, See Dwg. No. 53198.

TYPICAL ANCHOR BOLT LAYOUT
Scale: 3/4" = 1'-0"



ELEVATION
Looking Back

GENERAL NOTES

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

All reinforcing steel shall be Grade 60 (Yield Strength = 60,000 psi) conforming to AASHTO M31 or M322, Type A, with mill test reports.

All structural steel shall be AASHTO M270, Gr. 50W. Structural steel in backwall shall be paid for as "Structural Steel in Plate Girder Spans M270, Grade 50W)". No portion of the backwall shall be poured before the girders are in place. The portion of the backwall above the optional construction joint at the paving bracket shall not be placed until the deck pour has been made. Refer to the "Expansion Device Installation" note, see Dwg. 53196.

Special care shall be taken to properly and thoroughly consolidate the concrete in the vicinity of the expansion joint device in the backwall. See subsection 802.09 (a)(3).

For additional information see Layout.

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

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SHEET 1 OF 2

DETAILS OF BENT 5 OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

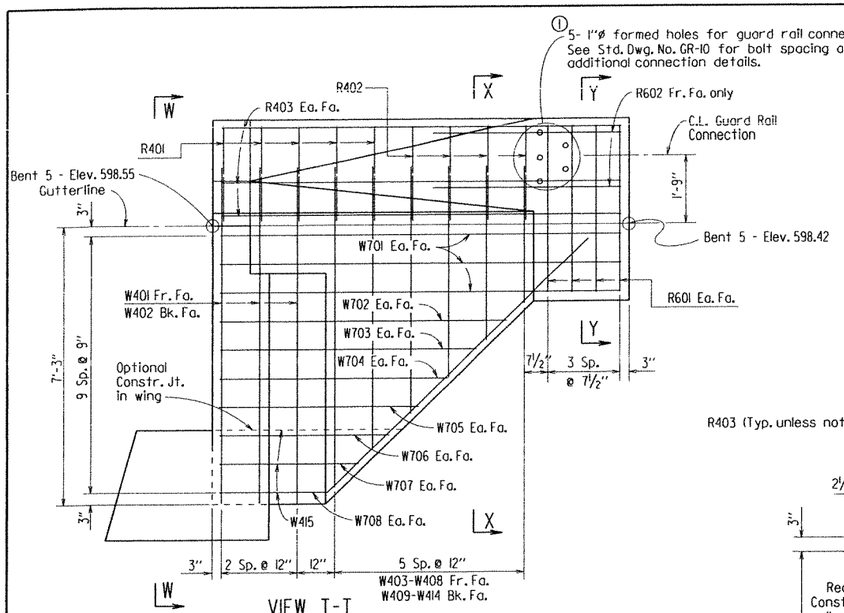
LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 09/06/11 FILENAME: b080379_b1.dgn
CHECKED BY: CMW DATE: 5/7/13 SCALE: 3/8"=1'-0" or as noted
DESIGNED BY: CMW DATE: 10/11

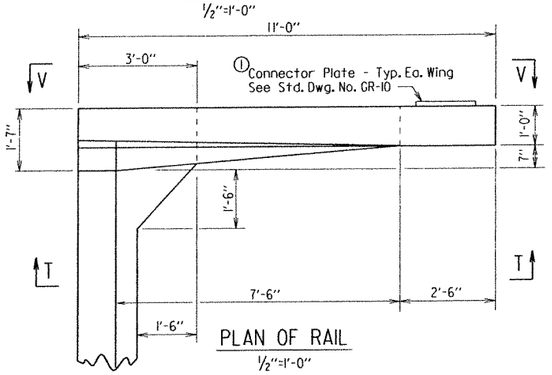
BRIDGE NO. 07264 DRAWING NO. 53190

PRINT DATE: 5/7/2013

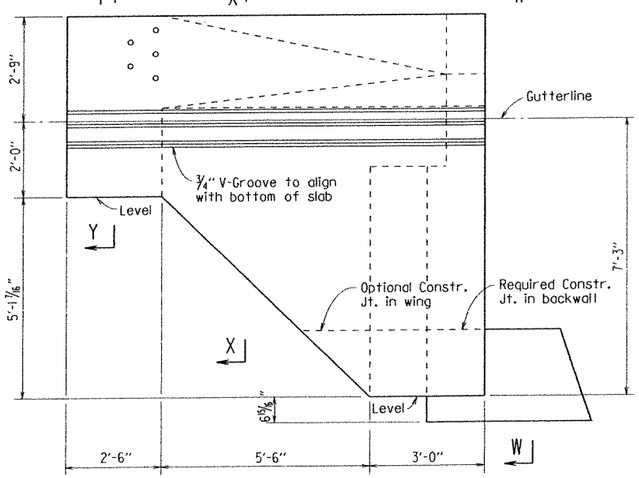
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		080379	37	85
				① 07264		BENT 5		53191



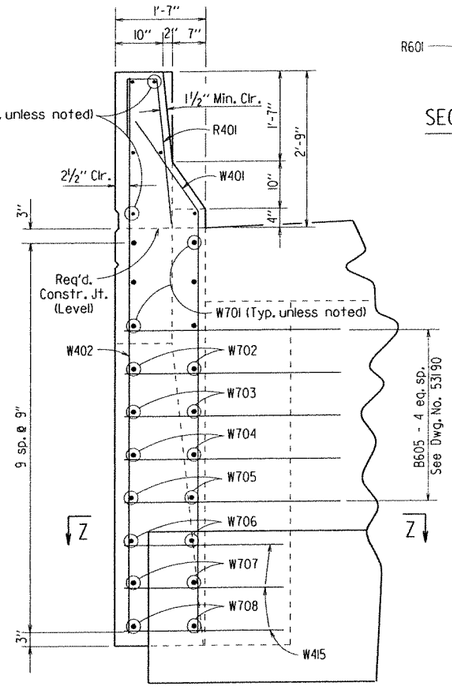
VIEW T-T
½"=1'-0"



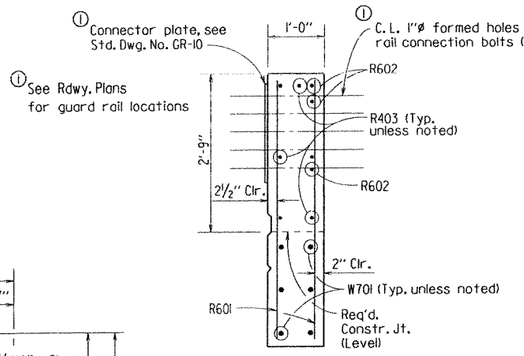
PLAN OF RAIL
½"=1'-0"



VIEW V-V
½"=1'-0"

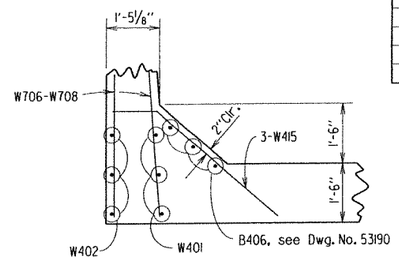


VIEW W-W
¾"=1'-0"

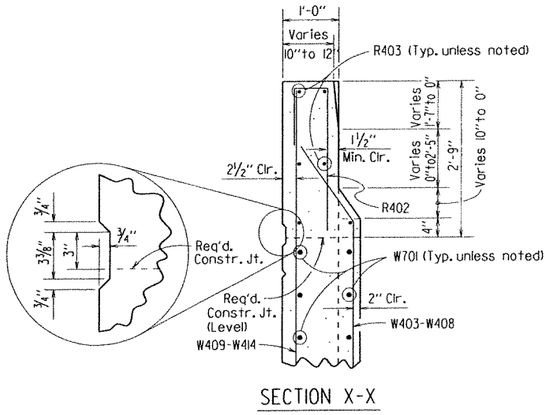


SECTION Y-Y
¾"= 1'-0"

① Connection Plate as required. See Roadway Plans for location of Guardrail.



SECTION Z-Z
½"=1'-0"

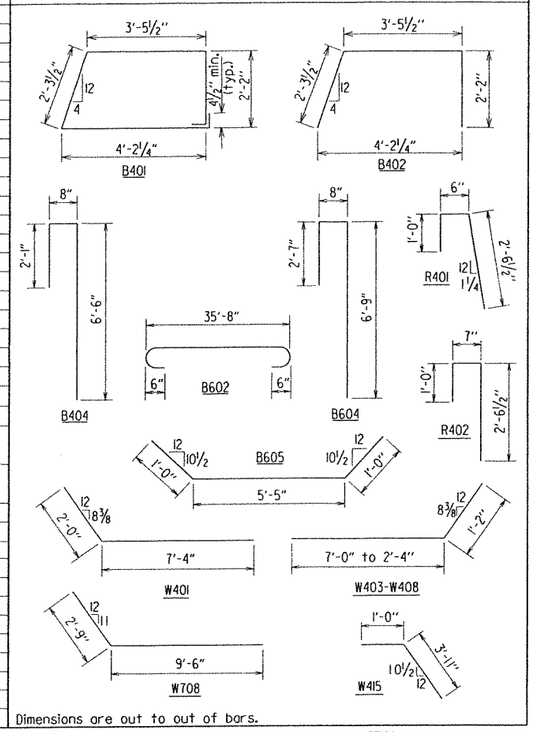


SECTION X-X
¾"=1'-0"

BAR LIST

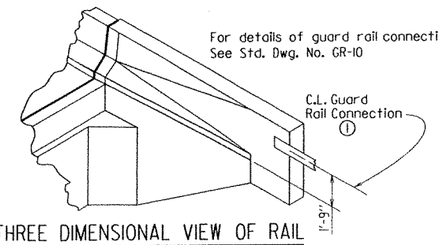
Mark	No. Req'd.	Length	Pin Dia.
B401	54	12'-6"	2"
B402	10	7'-9"	2"
B403	14	36'-10"	Str.
B404	32	9'-1"	2"
B405	2	35'-8"	Str.
B406	6	5'-8"	Str.
B601	7	35'-8"	Str.
B602	6	37'-0"	4½"
B603	45	5'-10"	Str.
B604	4	9'-9"	4½"
B605	10	7'-5"	4½"
R401	10	3'-11"	2"
R402	8	4'-0"	2"
R403	12	10'-8"	Str.
R601	16	4'-5"	Str.
R602	6	5'-0"	Str.
W401	6	9'-4"	2"
W402	6	9'-8"	Str.
W403-W408	2 ea.	8'-2" to 3'-6"	2"
W409-W414	2 ea.	9'-4" to 4'-7"	Str.
W415	6	4'-11"	2"
W701	12	10'-8"	Str.
W702	4	7'-8"	Str.
W703	4	6'-10"	Str.
W704	4	6'-0"	Str.
W705	4	5'-3"	Str.
W706	4	4'-5"	Str.
W707	4	3'-7"	Str.
W708	4	12'-3"	5¼"

Bending Diagram



Dimensions are out to out of bars.

For General Notes, see Dwg. No. 53190.



THREE DIMENSIONAL VIEW OF RAIL
No Scale

STATE OF ARKANSAS
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BRIDGE ENGINEER

SHEET 2 OF 2

DETAILS OF BENT 5 OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 09/07/11 FILENAME: b080379_bi.dgn
CHECKED BY: CMW DATE: 5/7/13 SCALE: As Noted
DESIGNED BY: CMW DATE: 10/11

BRIDGE NO. 07264 DRAWING NO. 53191

PRINT DATE: 5/7/2013

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.		080379	38	85
				(1)	07264	SPAN DETAILS		53192

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

Slab Reinforcing:

Longitudinal: S401 in top and bottom
S601 placed as shown over interior supports (See Reinf. Plan)

Transverse: S502 @ 12" o.c. bent up over beams — Alternate
S501 @ 12" o.c. in top, S402 @ 12" o.c. in bottom
S503 @ 6" o.c. in top of overhang

At the Contractor's option, two straight #5 bars, top and bottom, may be substituted for bar S502. Payment will be based on weight of S502 bar.

(1) See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE WHEN REMOVABLE DECK FORMING IS USED"

(2) Tolerance: Minus = 1/4"
Plus = Equal to amount of slab thickening used to meet slab thickness tolerance- See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE WHEN REMOVABLE DECK FORMING IS USED"

(3) Working Point to Gutter line

(4) See "ROUNDING DETAIL"

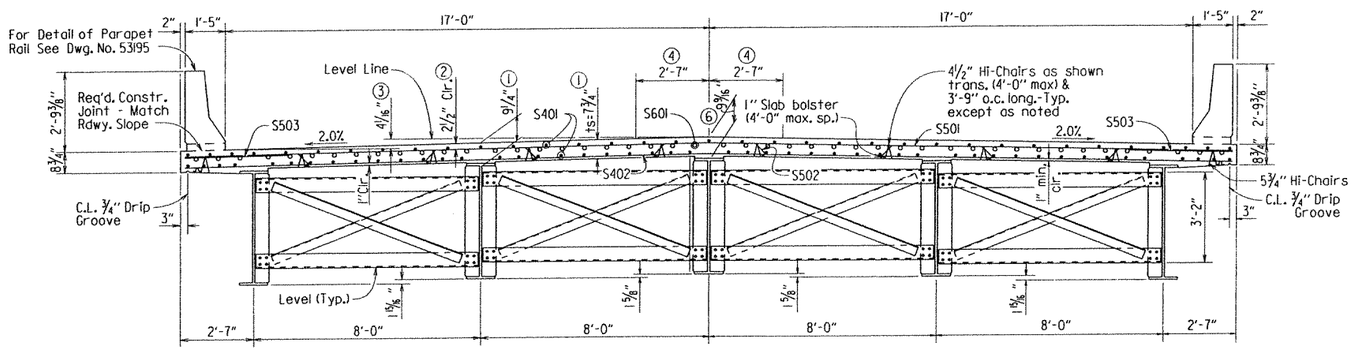
(6) To Working Point @ CL Bearing, see "ROUNDING DETAIL".

The superstructure details shown are for use when Removable Deck Forming is used and are the basis for measurement of Class S(AE) Concrete.

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"	
Over 3/4"	5/16"	

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.

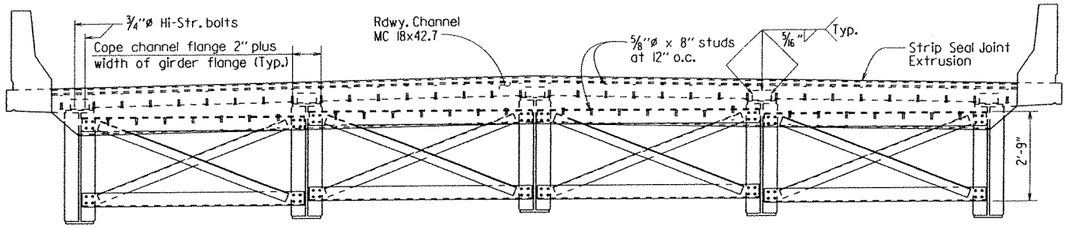


TYPICAL ROADWAY SECTION

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

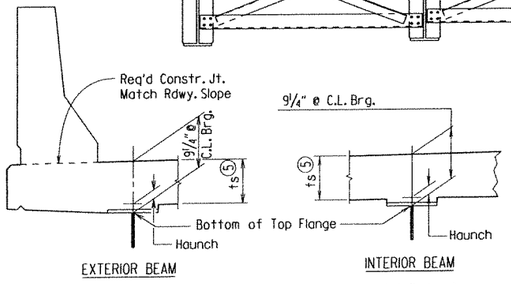
Expansion Device:
Rdwy. Channel - MC 18x42.7
Conn. L's 8"x4"x 1/2"
Detail Device 1/8" high & provide 1/4" shims using 2- 1/16" & 1- 1/8" PLs
Neoprene Strip Seal with Steel Extrusion

For details of joint, see Dwg. No. 53196.



SECTION THRU JOINT

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



EXTERIOR BEAM — INTERIOR BEAM

ts = slab thickness as shown on superstructure detail drawings

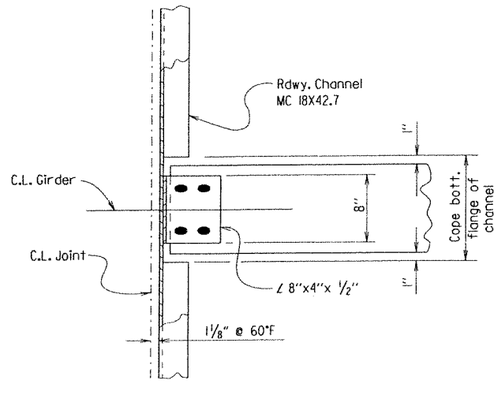
(5) Tolerance when removable deck forming is used is + 1/2", - 1/4". Haunch forming is required and shall be adjusted to maintain slab thickness tolerance.

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. 1499 for tolerances when permanent steel deck forms are used. Payment for concrete shall be based on removable deck forming.

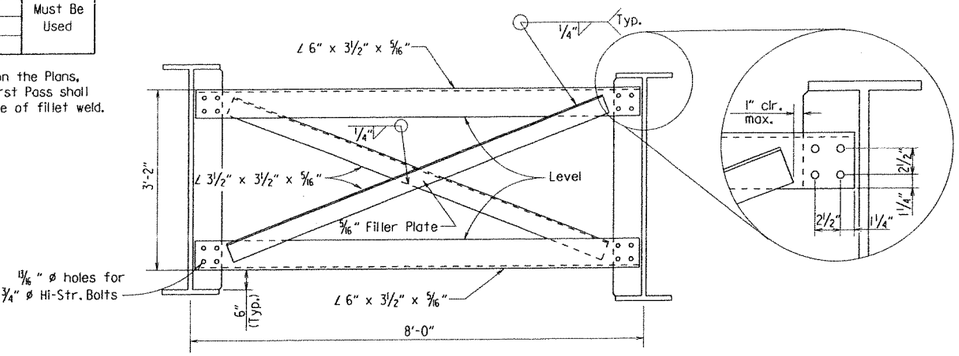
ADJUSTMENT FOR SLAB THICKNESS TOLERANCE WHEN REMOVABLE DECK FORMING IS USED

No Scale



CHANNEL CONNECTION DETAIL

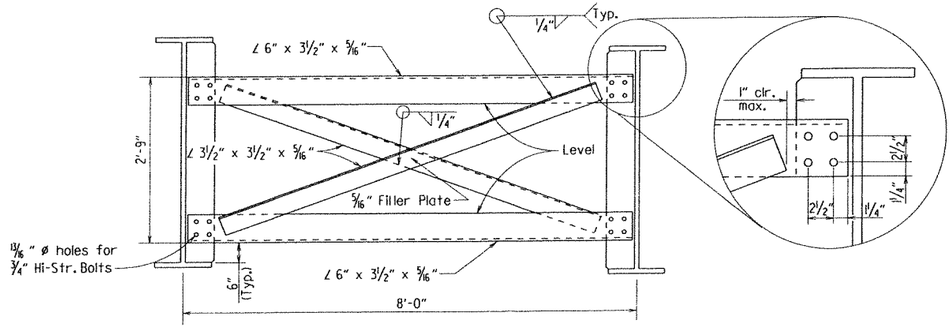
No Scale



CROSSFRAME DETAIL

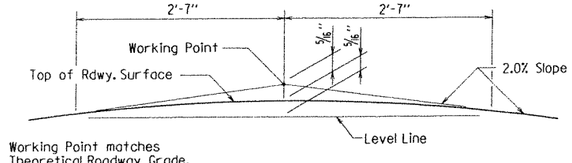
Scale: 3/4" = 1'-0"

For connection plate, intermediate transverse stiffener and bearing stiffener details, See Dwg. No. 53197.



CROSSFRAME DETAIL AT JOINT

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



ROUNDING DETAIL

No Scale

SHEET 1 OF 6

DETAILS OF 434'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

STATE OF ARKANSAS
Carl J. Fusselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
5/8/13
CARL J. FUSSELIER

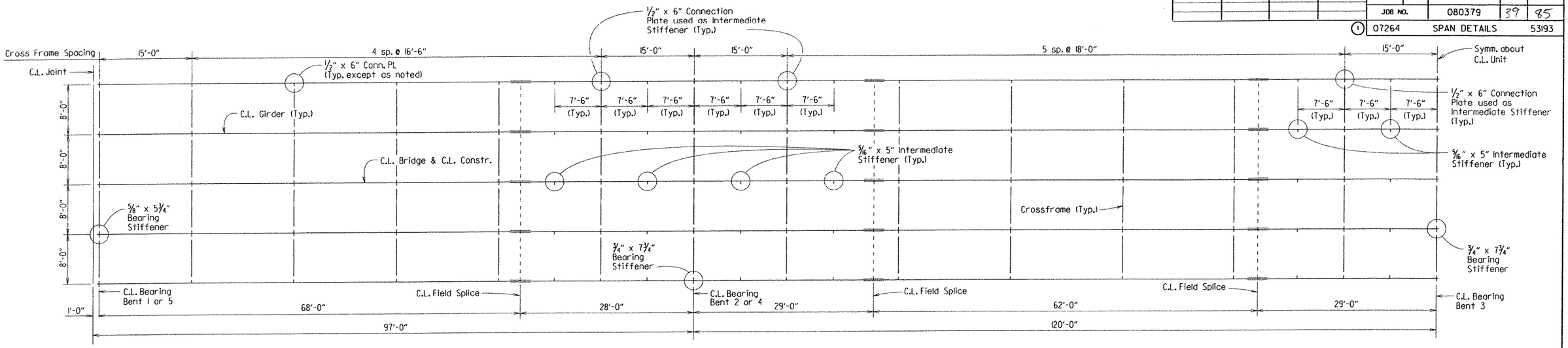
BRIDGE ENGINEER

DRAWN BY: MRE DATE: 06/22/11 FILENAME: b080379_sl.dgn
CHECKED BY: DHP DATE: 5/7/13 SCALE: 3/8"= 1'-0" or as noted
DESIGNED BY: CMLJ DATE: 8/11

BRIDGE NO. 07264 DRAWING NO. 53192

PRINT DATE: 5/7/2013

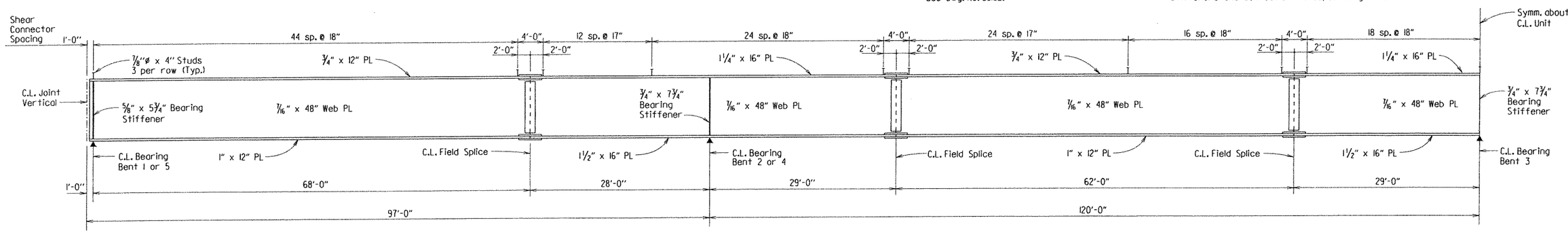
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		080379	39	85
				(1) 07264		SPAN DETAILS		53193



FRAMING PLAN

For details of Crossframes, see Dwg. No. 53192.

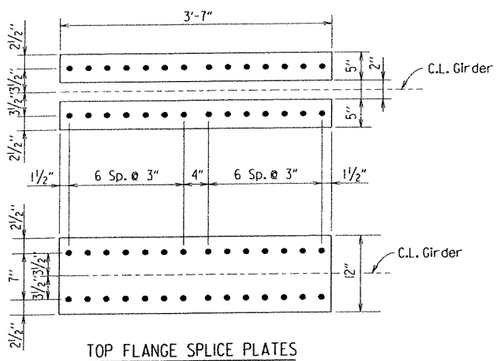
For details of Bearing Stiffeners, Intermediate Stiffeners and Connection Plates, see Dwg. No. 53197.



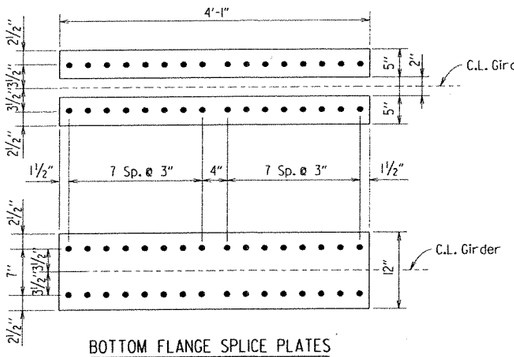
BEAM ELEVATION

All structural Steel shall be AASHTO M270 Gr. 50W unless otherwise noted. Bolted field splices may be eliminated or shop welded splices may be substituted with the approval of the Bridge Engineer. Payment will be made on the basis of plan quantities.

For Details of Welded Splices, see Dwg. No. 53195.



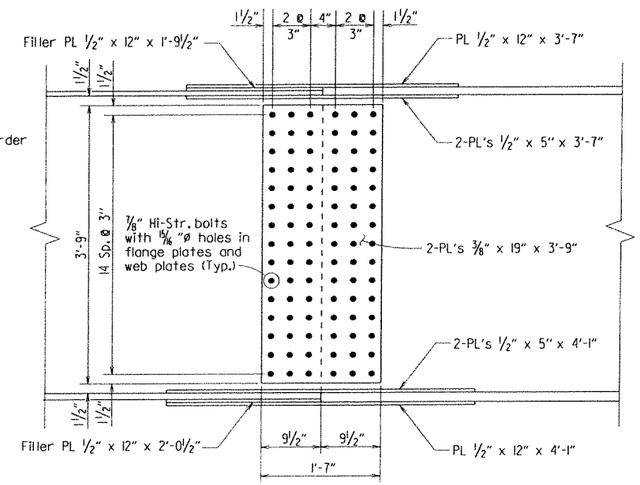
TOP FLANGE SPLICE PLATES



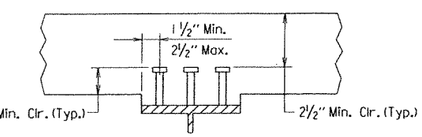
BOTTOM FLANGE SPLICE PLATES

All field splice plates shall be AASHTO M270 Gr. 50W steel.

FIELD SPLICE DETAILS
Scale: 1" = 1'-0"



WEB SPLICE



Stud Shear Connectors shown shall be 7/8"ø x 4" long, granular flux filled, solid fluxed or equal, and automatically end welded to the beam flange in accordance with the recommendations of the Manufacturer. 3/4"ø studs may be used in place of the 7/8"ø studs shown, at the ratio of 1.361 - 3/4"ø studs in place of one 7/8"ø stud. 7/8"ø studs will be used as basis for measurement of structural steel in shear connectors. Maximum stud spacing = 24".

SHEAR CONNECTOR DETAIL
No Scale

STATE OF ARKANSAS
Carl J. Fuselier
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No. 7510
5/8/13
CARL J. FUSELIER
BRIDGE ENGINEER

SHEET 2 OF 6

DETAILS OF 434'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

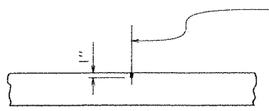
DRAWN BY: MRE DATE: 07/07/11
CHECKED BY: DHP DATE: 5/7/13
DESIGNED BY: CMW DATE: 8/11
FILENAME: b080379_sl.dgn
SCALE: 1/8" = 1'-0" or as noted

BRIDGE NO. 07264 DRAWING NO. 53193

PRINT DATE: 5/7/2013

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.		080379	40	85
				①	07264	SPAN DETAILS		53194

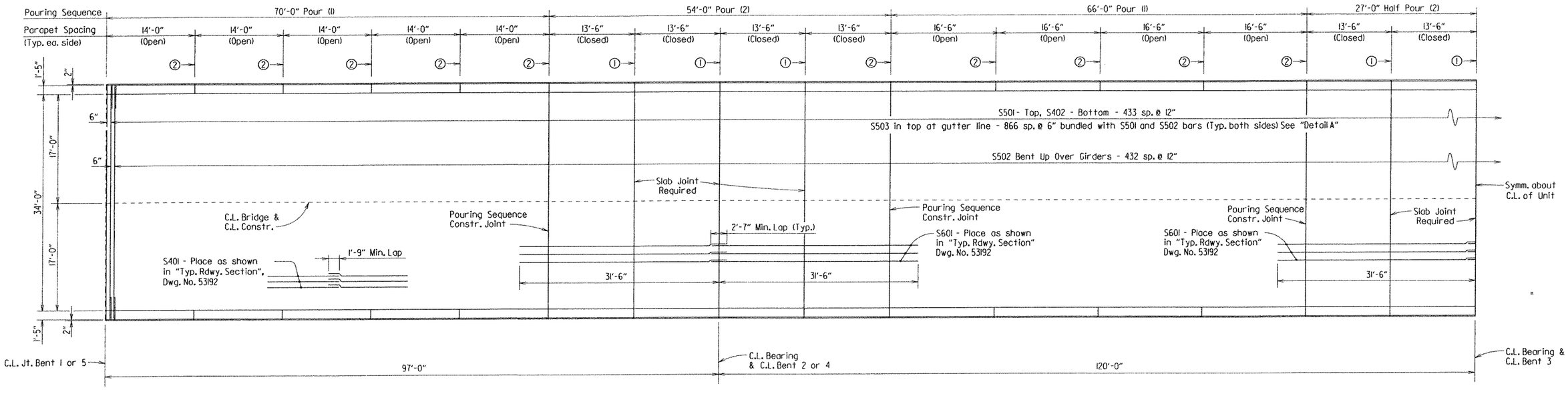
Pours with the same number may be placed simultaneously or separately. All pours (1) must be placed before Pour (2) can be placed. 48 hours shall elapse between the end of a Pour and the start of the next pour. 72 hours shall elapse between the end of a pour and the start of an adjacent pour. Any railing pours made before the entire slab unit has been placed must be approved by the Engineer. Concrete in bridge superstructure shall be consolidated for the entire pour before any concrete has taken its initial set. This may require the use of a retarding agent. The Contractor must obtain approval from the Engineer for any deviations from the pouring sequence shown.



SLAB JOINT DETAIL

No Scale

½" x 1" 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 S (AE) Concrete-Bridge. Slab joints shall extend to the outside edge of the deck slab. Slab joint shall be installed before the parapet rail 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. Slab Joints shall align with parapet open joints.



① C.L. Full-Depth Parapet Joint (¼" to 1" max.) Stop 4" from top of slab

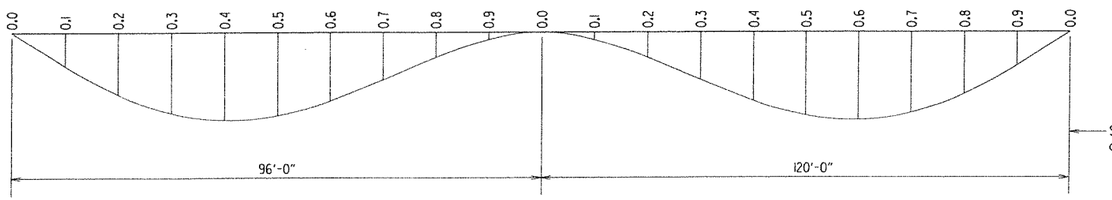
② C.L. Partial-Depth Parapet Joint (¼" to 1" max.) Stop 1'-2" from top of slab

REINFORCING PLAN & DECK POURING SEQUENCE

TABLE OF DEAD LOAD DEFLECTIONS (INCHES)

Span	Point of Deflection	Exterior Girders			Interior Girders		
		Str. Steel	Str. Steel + Slab	Str. Steel + Slab + Parapet	Str. Steel	Str. Steel + Slab	Str. Steel + Slab + Parapet
1 or 4	0	0.000	0.000	0.000	0.000	0.000	0.000
	0.1	0.081	0.415	0.473	0.087	0.491	0.527
	0.2	0.149	0.759	0.865	0.159	0.899	0.965
	0.3	0.193	0.984	1.121	0.207	1.166	1.252
	0.4	0.208	1.066	1.216	0.224	1.263	1.357
	0.5	0.196	1.004	1.146	0.210	1.190	1.279
	0.6	0.160	0.822	0.939	0.172	0.974	1.048
	0.7	0.109	0.567	0.649	0.118	0.673	0.724
	0.8	0.058	0.305	0.349	0.063	0.363	0.391
	0.9	0.017	0.095	0.108	0.018	0.113	0.121
2 or 3	0	0.000	0.000	0.000	0.000	0.000	0.000
	0.1	0.028	0.112	0.130	0.029	0.131	0.142
	0.2	0.089	0.383	0.443	0.093	0.449	0.487
	0.3	0.156	0.697	0.804	0.164	0.820	0.887
	0.4	0.208	0.947	1.090	0.219	1.115	1.205
	0.5	0.227	1.043	1.199	0.239	1.229	1.328
	0.6	0.207	0.955	1.098	0.218	1.126	1.216
	0.7	0.155	0.712	0.819	0.163	0.838	0.906
	0.8	0.087	0.397	0.458	0.092	0.468	0.506
	0.9	0.027	0.122	0.141	0.029	0.144	0.156
C.L. Unit →	0	0.000	0.000	0.000	0.000	0.000	0.000

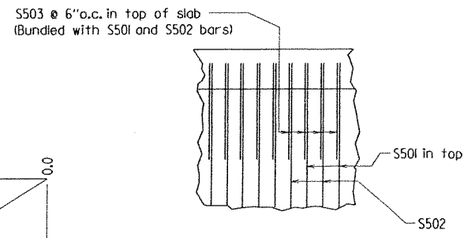
Table is symmetrical about C.L. Unit



Camber for Dead Load Deflection plus Vertical curve +/-¼" tolerance. Deflections shown are along C.L. Girder from a chord from C.L. Bearing to C.L. Bearing. Vertical curve corrections not included.

DEAD LOAD DEFLECTION DIAGRAM

No Scale



DETAIL A

No Scale

STATE OF ARKANSAS
CARL J. FUSELIER
REGISTERED PROFESSIONAL ENGINEER
No. 7510
5/8/13

BRIDGE ENGINEER

SHEET 3 OF 6

DETAILS OF 434'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 07/07/11 FILENAME: b080379_sl.dgn

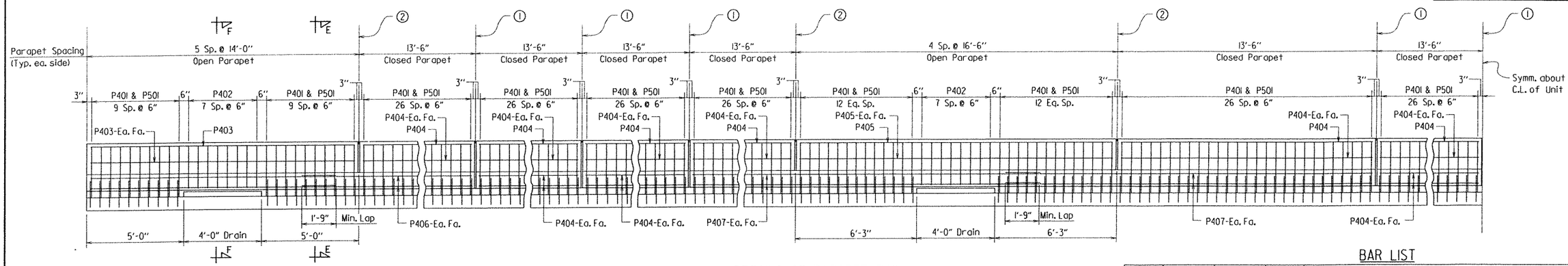
CHECKED BY: DHP DATE: 5/7/13 SCALE: 1/8" = 1'-0" or as noted

DESIGNED BY: CMW DATE: 8/11

BRIDGE NO. 07264 DRAWING NO. 53194

PRINT DATE: 5/7/2013

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.		080379	41	85
				(1) 07264		SPAN DETAILS		53195



(1) C.L. Full-Depth Parapet Joint (¼" to 1" Max.) as shown in "Reinforcing Plan & Deck Pouring Sequence" Dwg. No. 53194. Stop 4" from top of slab.

(2) C.L. Partial-Depth Parapet Joint (¼" to 1" Max.) as shown in "Reinforcing Plan & Deck Pouring Sequence" Dwg. No. 53194. Stop 1'-2" from top of slab.

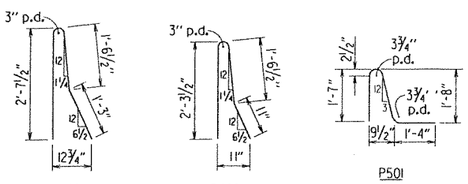
DETAILS OF PARAPET RAIL

Scale: ⅜" = 1'-0"

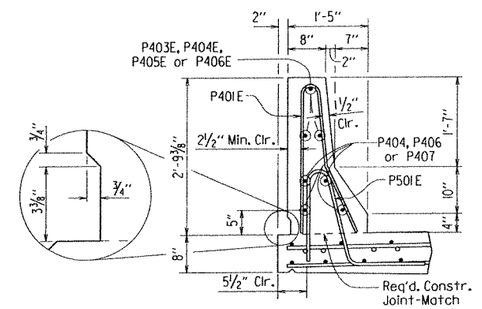
BAR LIST

MARK	NO. REQ'D	LENGTH	P.D.
S401	996	37'-9"	Str.
S402	434	36'-10"	Str.
S501	434	36'-10"	Str.
S502	433	37'-8"	3"
S503	1734	3'-8"	Str.
S601	276	32'-10"	Str.
P401	1464	5'-6"	3"
P402	288	4'-10"	3"
P403	60	13'-8"	Str.
P404	120	13'-2"	Str.
P405	48	16'-2"	Str.
P406	32	42'-6"	Str.
P407	32	47'-3"	Str.
P501	1464	4'-8"	3¾"

BENDING DIAGRAMS

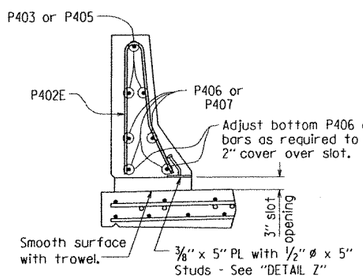


Dimensions are out to out of bars.



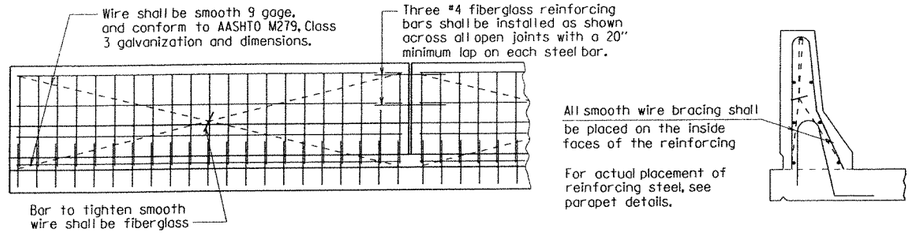
SECTION E-E

Scale: ¾" = 1'-0"



SECTION F-F

Scale: ¾" = 1'-0"

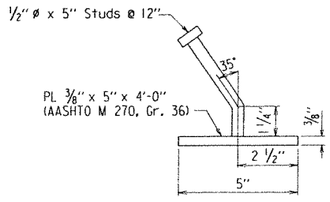


All panels shall be braced as required to prevent racking. All open joints shall be sawed as soon as practical to a minimum width of ¼". To control cracking before sawing all joints must be grooved before the concrete is set. Sawing of the joints must be controlled so it will follow the grooved joint.

The extruded parapet shall conform to the horizontal and vertical lines shown on the plans or as directed by the Engineer and shall present a smooth, uniform appearance and texture. Exposed surfaces 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

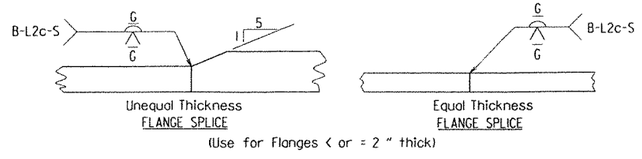


DETAIL Z

No Scale

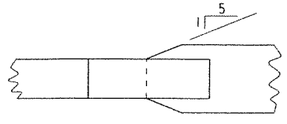
The surfaces of the ⅜" plates which will not be in contact with concrete shall be painted with aluminum epoxy paint in accordance with Section 638, or as approved by the Engineer. Only one coat is required and shall be applied in the fabricator's shop. Painting will not be paid for directly, but will be considered subsidiary to "Structural Steel in Plate Girder 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 Plate Girder Spans (M270, Gr. 50W)."



DETAILS OF WELDED SPLICES

No Scale



FIELD SPLICE AT UNEQUAL FLANGE WIDTHS

No Scale

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
CARL J. FUSELIER
5/8/13

BRIDGE ENGINEER

SHEET 4 OF 6

DETAILS OF 434'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

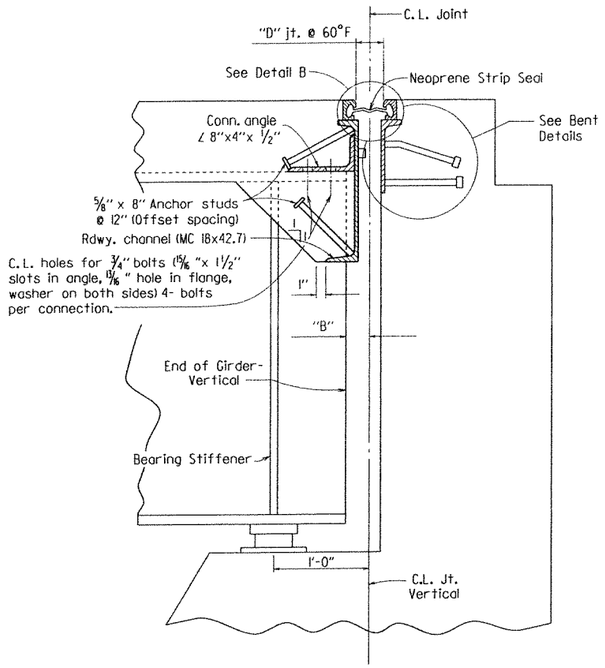
LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 07/07/11 FILENAME: b080379_sl.dgn
CHECKED BY: DHP DATE: 5/7/13 SCALE: As Noted
DESIGNED BY: CMW DATE: 8/11

BRIDGE NO. 07264 DRAWING NO. 53195

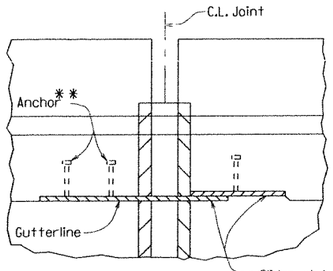
PRINT DATE: 5/7/2013

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.		080379	42	85
				(1) 07264		SPAN DETAILS		53196



DETAILS OF JOINT AT BENTS 1 & 5

No Scale



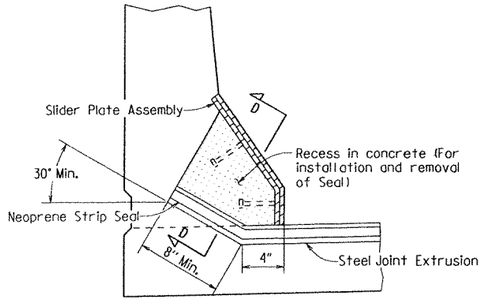
Details of Joint turn-up in curb and parapet are general and show basic design controls only. See SP Job 080379, "Armored Joint with Neoprene Strip Seal." Method of installation and fabrication shall be determined by the manufacturer.

** The method of attachment of the slider plate assembly must be such that it may be removed in order to provide for future replacement of the neoprene seal.

SECTION C-C

No Scale

Slider plates shall be AASHTO M270-Gr. 36 and shall be paid for as "Structural Steel in Plate Girder Spans (M270, Gr. 50W). The surfaces of the plates which will not be in contact with the concrete shall be cleaned and painted in accordance with Section 638, or as directed by the Engineer. Only one coat is required and shall be applied in the fabricator's shop. Painting shall not be paid for directly, but will be considerd subsidiary to "Structural Steel in Plate Girder Spans (M270, Gr. 50W).



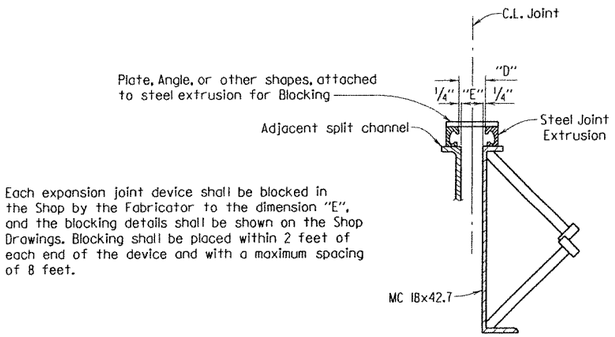
SECTION B-B

Scale: 1½" = 1'-0"

STRIP SEAL DATA

Bent Number	* "E" width perpendicular to joint at 24 hour average temperature of:			"D" Joint width perpendicular to joint at 60° F	Movement Rating	"B" perpendicular to joint
	40°	60°	80°			
1 & 5	2 9/16"	2 1/4"	1 15/16"	2¾"	4"	3½"

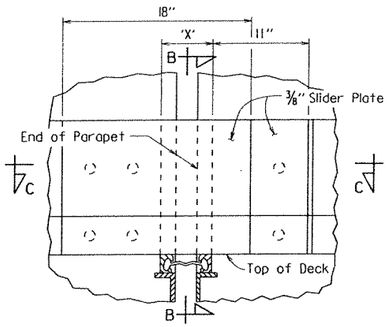
The temperature used to set the joint opening shall be the approximate average air temperature during the 24 hour period immediately before the bolts are tightened. The Engineer shall establish the temperature. Interpolation of the table may be necessary.



Each expansion joint device shall be blocked in the Shop by the Fabricator to the dimension "E", and the blocking details shall be shown on the Shop Drawings. Blocking shall be placed within 2 feet of each end of the device and with a maximum spacing of 8 feet.

DETAILS FOR BLOCKING EXPANSION JOINT DEVICE AT STRIP SEAL JOINTS

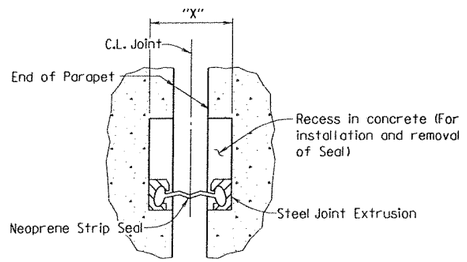
No Scale



Note: Dimension 'X' equals the width of opening in parapet at curb to allow for removal or repair of joint.

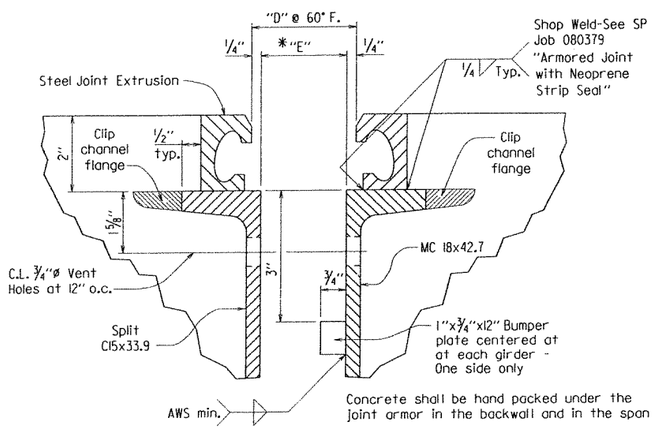
DETAIL OF NEOPRENE STRIP SEAL AT CURB

No Scale



SECTION D-D

No Scale



DETAIL B

No Scale

EXPANSION DEVICE INSTALLATION

Bent 1 or 5

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

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

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

STATE OF ARKANSAS
CARL J. FUSELIER
REGISTERED PROFESSIONAL ENGINEER
No. 7510
5/9/13

BRIDGE ENGINEER

For General Notes, see Dwg. No. 53197.

SHEET 5 OF 6

DETAILS OF 434'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: CMW DATE: 12/01/11 FILENAME: b080379_sl.dgn

CHECKED BY: DHP DATE: 5/7/13 SCALE: As Noted

DESIGNED BY: CMW DATE: 8/11

BRIDGE NO. 07264 DRAWING NO. 53196

PRINT DATE: 5/7/2013

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.		080379	43	85
				①	07264	SPAN DETAILS		53197

GENERAL NOTES

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

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

LIVE LOADING: HL-93

MATERIALS AND STRENGTHS:
Concrete: All concrete shall be Class S(AE) with a minimum 28 day strength f'c = 4,000 psi.

Reinforcing Steel: Reinforcing steel (Grade 60, AASHTO M31 or M322, Type A)
(Yield Strength = 60,000 psi.).

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

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

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

Longitudinal Girders and all 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 will be considered subsidiary to the item "Structural Steel in Plate Girder Spans (M270, Gr. 50W)"

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

Drawings show general features of design only. Shop drawings shall be made in accordance with Subsection 807.04, submitted and approval secured before fabrication is begun. Girder webs may be made by shop splicing with minimum lengths of 25'-0" for sections. Flange plates longer than 50'-0" may be made by shop splicing with minimum lengths of 25'-0" for sections. Material specifications and location of shop-welded splices, if any, shall be shown on the shop drawings. No additional payment for welds for these splices will be made.

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

All Girders shall be blocked in their true position in the shop in groups of a minimum of the three (3) sections as specified in subsection 807.54 (b)(2). The camber, length of sections, distance between bearings, and opening of joints shall be measured with the girders in their true position and this information shall become part of the permanent record of this job. The component parts shall be match marked in this assembly and those marks shall be shown on the erection diagram. All girder dimensions are based on a temperature of 60 degrees F. A tolerance of 1/4" (plus or minus) allowed for camber.

Field connections shall be bolted with high-strength bolts. Bolts shall be 3/4" diameter, except as noted, and open holes shall be 13/16", unless noted otherwise. Holes for 3/4" diameter bolts may be 15/16" diameter if a washer is supplied for use under both the nut and head of the bolt. Bolt spacing shall be 2 1/2" for 3/4" diameter bolts unless otherwise noted. For Field Splices and Cross-Frame Connections, bolts shall be 7/8" diameter bolts unless otherwise noted. Open holes shall be 15/16" unless noted otherwise. Bolt spacing shall be 3" for 7/8" diameter bolts unless otherwise noted. Bolts shall be placed with heads on the outside face of the exterior girder web and on the bottom of the girder flanges.

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

Groove welds in main plate girder members shall be Quality Control (Q.C.) tested by nondestructive testing, as required by the governing specifications in Subsection 807.23(b). Fillet welds at flange to web plate connections shall be Q.C. tested by the magnetic particle method. All (Q.C.) testing is at the contractor's expense.

Cross Frames shall be installed as girders are erected. All bolts in cross frames and field splices shall be installed and tightened in accordance with subsection 807.71 prior to pouring the concrete deck.

Elastomeric Bearings shall be seated in accordance with subsection 808.08. This work and material will not be paid for directly but will be considered subsidiary to the item "Structural Steel in Plate Girder Spans (M270, Gr. 50W)".

REINFORCING STEEL:
All reinforcing steel shall be Grade 60 (Yield Strength = 60,000 psi) AASHTO M31 or M322, Type A, with mill test reports. The reinforcing steel shall 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 of "Reinforcing Steel-Bridge (Grade 60)".

CONCRETE:
All concrete shall be Class S(AE) with a minimum 28 day compressive strength f'c = 4.000 psi. Concrete shall be poured in the dry and all exposed corners to be chamfered 3/4" unless otherwise noted.

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

The concrete deck shall be given a Tine 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 girder.

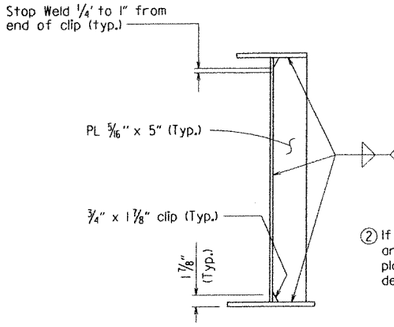
A minimum of 72 hours shall elapse between completion of the bridge deck slab and the pouring of the parapet railing. Any railing pours made before the entire slab has been placed and cured must be approved by the Engineer.

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

Load Distribution
Dead Load:

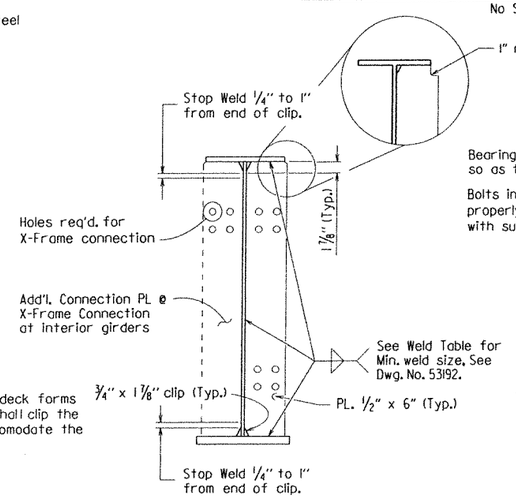
A. To Girder	Girder No.		
	1 & 5	646	
	2, 3 & 4	775	plf + Wt. of Structural Steel
B. To Composite Girder	Girder No.		
	1, 2, 3, 4 & 5	320	plf ①

① Includes 163 plf future wearing surface.



INTERMEDIATE STIFFENER DETAIL
No Scale

② If permanent steel bridge deck forms are used, the fabricator shall clip the plate as necessary to accomodate the deck form support.



CONNECTION PLATE DETAIL
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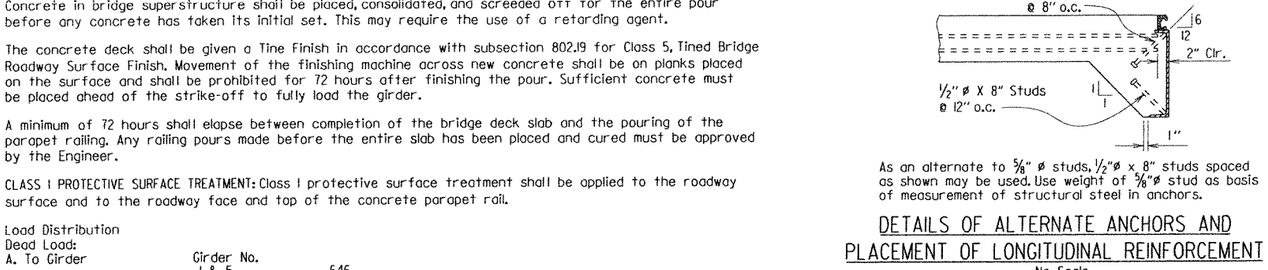
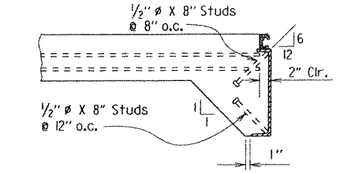


If a transverse finishing machine is used, the rail shall be supported directly over the exterior girders, or as an alternate, the rail may be supported by the overhang brackets if the above strutting system is used. The strutting system may be omitted if 1/2" x 6" web stiffeners are welded to the insides of the exterior girders at the location of each bracket or if the alternate bracket arrangement shown above is used. The Alternate Bracket arrangement shall extend down to the junction of the web and bottom flange. The stiffener shall conform to the details for crossframe connection plates. No direct payment will be made for brackets, timber bracing, supports, or welded stiffeners. Payment shall be subsidiary to "Structural Steel in Plate Girder Spans (M270, Gr. 50W)".

SCREED RAIL SUPPORT
No Scale

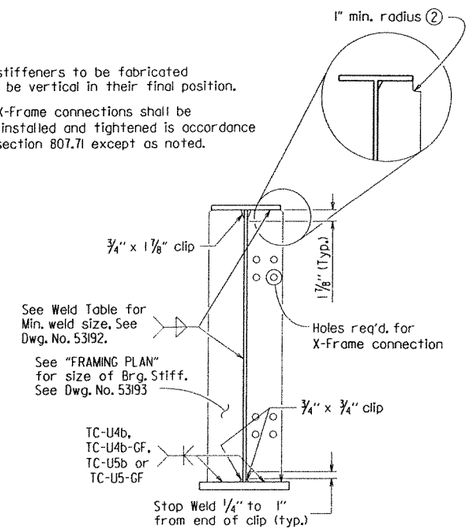


As an alternate to 5/8" ø studs, 1/2"ø x 8" studs spaced as shown may be used. Use weight of 5/8"ø stud as basis of measurement of structural steel in anchors.

DETAILS OF ALTERNATE ANCHORS AND PLACEMENT OF LONGITUDINAL REINFORCEMENT
No Scale

Bearing stiffeners to be fabricated so as to be vertical in their final position.

Bolts in X-Frame connections shall be properly installed and tightened is accordance with subsection 807.71 except as noted.



BEARING STIFFENER DETAIL
No Scale

STATE OF ARKANSAS
Carl J. Puseller
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No. 7510
5/8/13
CARL J. PUSELLER

BRIDGE ENGINEER

SHEET 6 OF 6

DETAILS OF 434'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

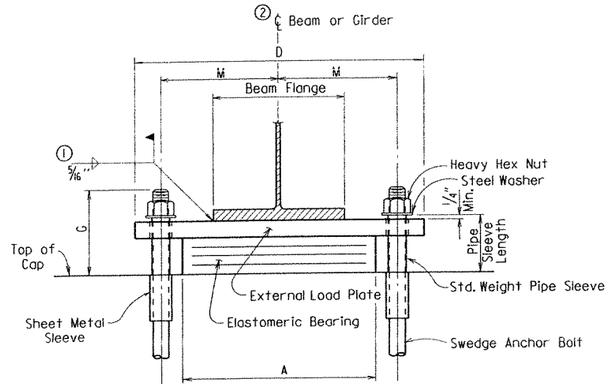
LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 07/07/11 FILENAME: b080379_sl.dgn
CHECKED BY: DHP DATE: 5/7/13 SCALE: As Noted
DESIGNED BY: CMW DATE: 8/11

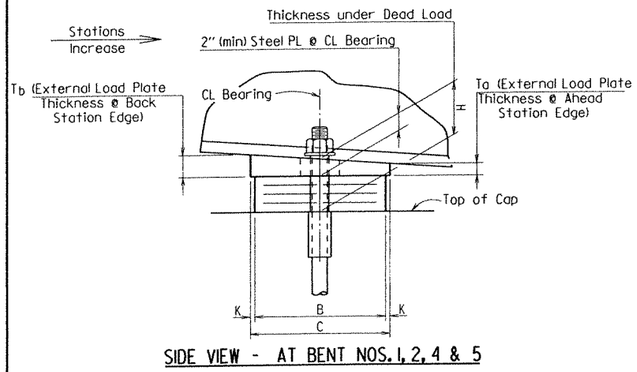
BRIDGE NO. 07264 DRAWING NO. 53197

PRINT DATE: 5/7/2013

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.		080379	44	85
				(1)	07264	ELASTOMERIC BEARINGS		53198



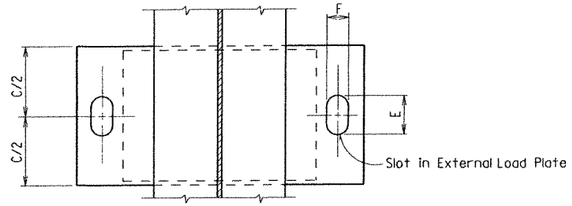
FRONT VIEW - AT BENT NOS. 1, 2, 3 & 5



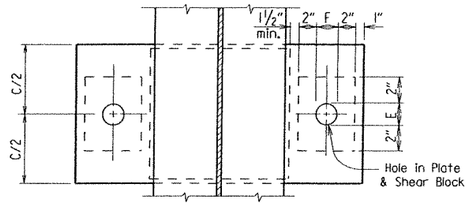
SIDE VIEW - AT BENT NOS. 1, 2, 4 & 5

① Care shall be taken to ensure that the external load plate is in full and complete contact with the beam or girder flange before welding begins.

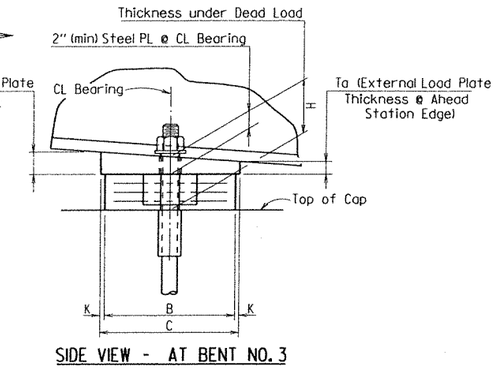
② Centerline Beam or Girder shall align with centerline bearing.



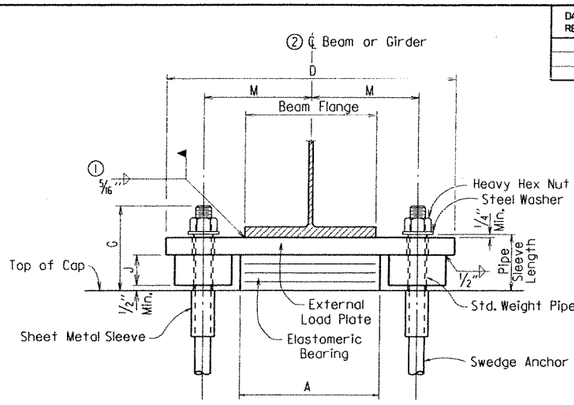
PLAN VIEW - AT BENT NOS. 1, 2, 4 & 5



PLAN VIEW - AT BENT NO. 3



SIDE VIEW - AT BENT NO. 3



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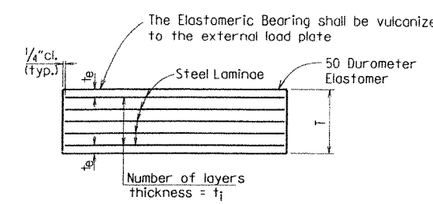
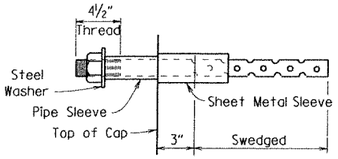


t_e = thickness of elastomer cover on top and bottom of pad
t_i = thickness of elastomer between steel laminae
N = number of elastomer layers of thickness t

ELASTOMERIC BEARING



ANCHOR BOLT DETAIL

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

If Anchor Bolts are to be drilled and grouted in place, the Galvanized Sheet Metal Sleeves shall be cast in place as shown. Sleeves shall be dry packed with styrofoam, urethane foam or approved equal prior to pouring of concrete. After pouring of the cap and prior to erection of Structural Steel, the dry pack shall be removed and holes for the anchor bolts shall be accurately drilled into the masonry. Bolts placed in drilled holes shall be accurately set and fixed using a QPL approved epoxy or non-shrink grout that completely fills the holes. Galvanized Sheet Metal Sleeves will not be paid for directly, but will be considered subsidiary to the item "Structural Steel in Plate Girder Spans (M 270, 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 M 270, 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 external load plates with shear blocks shall be completely fabricated (including bevel and bolt holes) and shall be cleaned before vulcanizing to the elastomeric bearing. Surfaces 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 weathering steel.

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

Pipe Sleeves, Anchor Bolts, Washers and Nuts shall be paid for at the unit price bid for "Structural Steel in Plate Girder Spans (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".

TABLE OF FABRICATOR VARIABLES

BRIDGE NO.	LOCATION: BENT NO(S).	LOCATION: UNIT	LOCATION: BEAM NO.	BEARING TYPE	NO. of BEARINGS EACH BENT	*MAXIMUM DESIGN LOAD (KIPS)	ELASTOMERIC PAD: G	H	A	B	N	t_i	t_e	NO. & THICKNESS OF STEEL LAMINAE	T	EXTERNAL LOAD PLATE: C	D	E	F	J	K	M	T_a	T_b	ANCHOR BOLT: ANCHOR BOLT (ø x L)	ANCHOR BOLT: GRADE	PIPE SLEEVE SIZE (ø x L)	SHEET METAL SLEEVE SIZE (ø x L)	STEEL WASHER SIZE (O.D.)
07264	1	434'	1-5	Exp	5	121.00	9 1/2"	6 3/16"	16"	8"	6	1/2"	1/4"	7 @ 12 Ga.	4 1/4"	9"	28"	6 1/2"	3 1/8"	NA	1/2"	10 3/4"	1.86"	2.14"	2"ø x 31"	55	2 1/2"ø x 6 1/2"	4"ø x 6"	3 3/4"
	2	434'	1-5	Exp	5	314.00	8 1/4"	4 5/16"	20"	11 1/2"	3	1/2"	1/4"	4 @ 12 Ga.	2 7/16"	9"	31"	5 3/4"	3 3/4"	NA	1/2"	12"	1.88"	2.12"	2 1/2"ø x 35"	55	3"ø x 4 5/8"	4"ø x 6"	4 1/2"
	3	434'	1-5	Fix	5	315.00	7 3/4"	3 13/16"	20"	12"	2	1/2"	1/4"	3 @ 12 Ga.	1 13/16"	13"	40 3/4"	3 3/4"	3 3/4"	1 1/4"	1/2"	15 1/2"	1.86"	2.14"	2 1/2"ø x 35"	55	3"ø x 4 1/8"	4"ø x 6"	4 1/2"
	4	434'	1-5	Exp	5	314.00	8 1/4"	4 5/16"	20"	11 1/2"	3	1/2"	1/4"	4 @ 12 Ga.	2 7/16"	9"	31"	5 3/4"	3 3/4"	NA	1/2"	12"	1.93"	2.07"	2 1/2"ø x 35"	55	3"ø x 4 5/8"	4"ø x 6"	4 1/2"
	5	434'	1-5	Exp	5	121.00	9 1/2"	6 3/16"	16"	8"	6	1/2"	1/4"	7 @ 12 Ga.	4 1/4"	9"	28"	6 1/2"	3 1/8"	NA	1/2"	10 3/4"	1.94"	2.06"	2"ø x 31"	55	2 1/2"ø x 6 1/2"	4"ø x 6"	3 3/4"

PRINT DATE: 5/7/2013

*Maximum Design Load = Service I Limit State

Tabular Data by : CMW Date: 06/05/2012
Checked by : DHP Date: 5/7/13
Designed by : CMW Date: 9/11

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
5/8/13
CARL J. FUSELIER

BRIDGE ENGINEER

DETAILS OF ELASTOMERIC BEARINGS OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

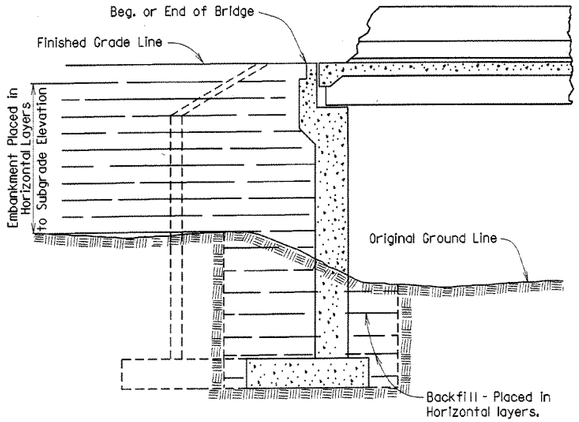
LITTLE ROCK, ARK.

DRAWN BY: CMW DATE: 06/05/2012 FILENAME: b080379_el.dgn
CHECKED BY: DATE:
DESIGNED BY: CMW DATE: 9/11 SCALE: No Scale

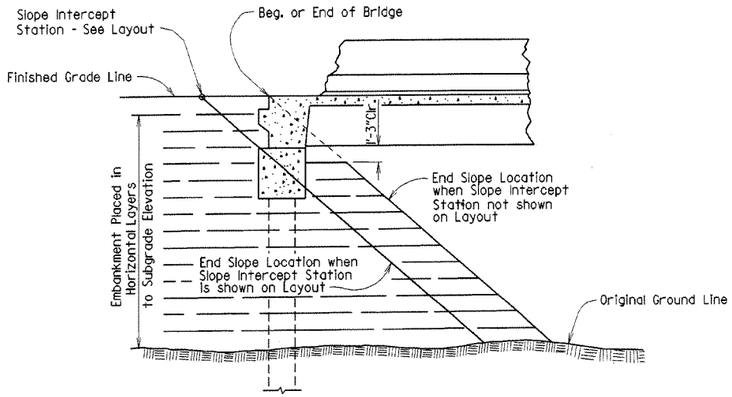
BRIDGE NO. 07264 DRAWING NO. 53198

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

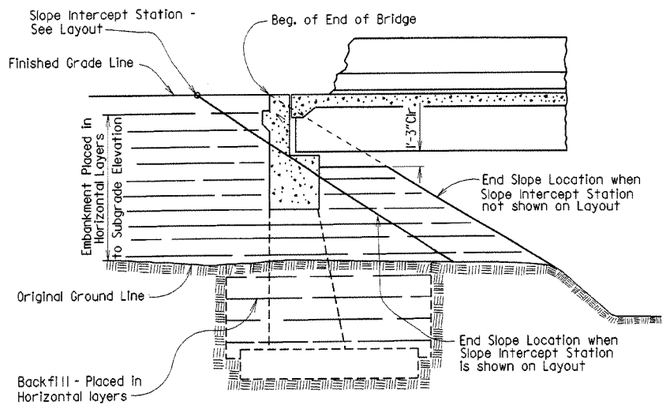
① EMBANKMENT & BACKFILL 1888A



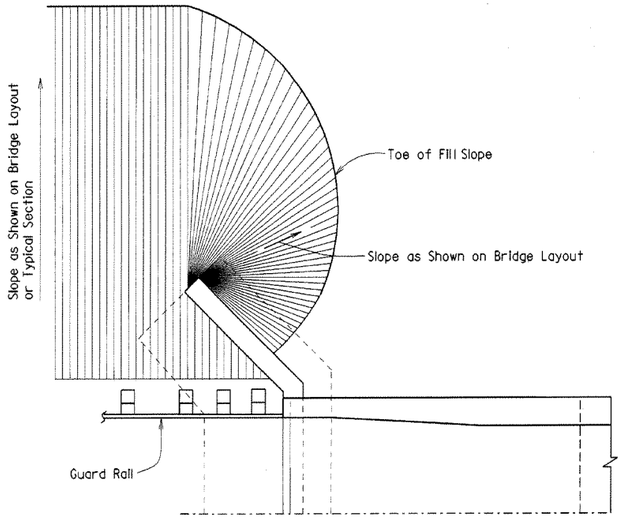
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT VERTICAL WALL ABUTMENTS



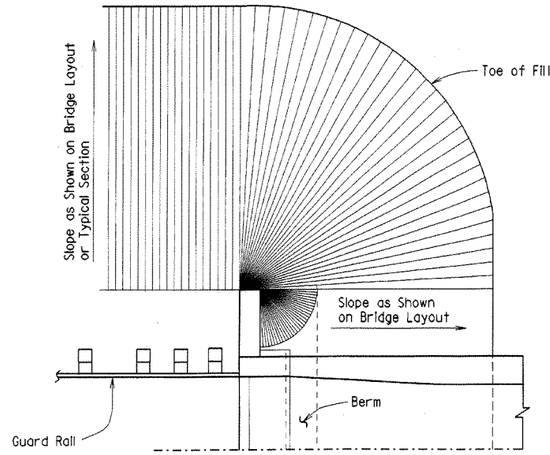
EMBANKMENT CONSTRUCTION AT SPILL-THROUGH PILE END BENTS



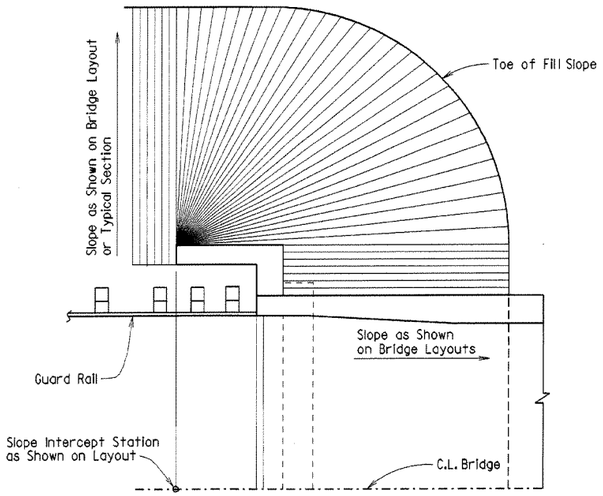
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT SPILL-THROUGH END BENTS



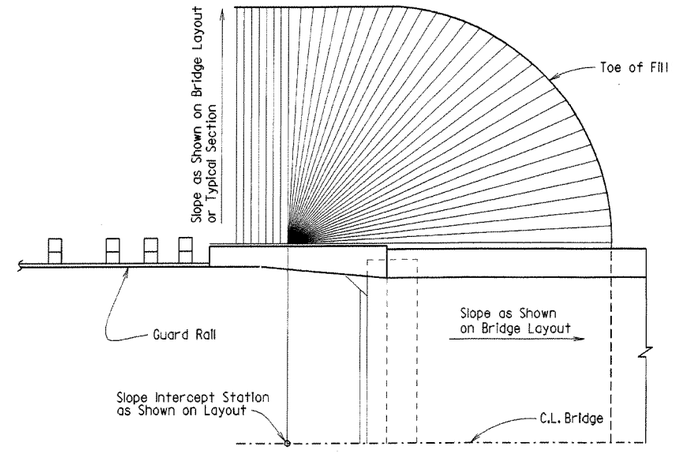
VERTICAL WALL ABUTMENTS



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

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 4537
CHARLES P. BRAND

BRIDGE ENGINEER

EMBANKMENT CONSTRUCTION AND BACKFILL AT BRIDGE ENDS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

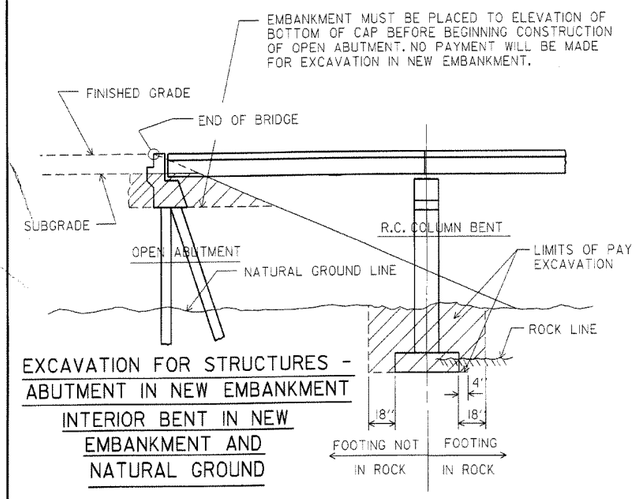
DRAWN BY: MJT DATE: 04-10-2003 FILENAME: BI888A.STD
CHECKED BY: CJF DATE: 04-10-2003 SCALE: NO SCALE
DESIGNED BY: STD. DATE: ——

BRIDGE NO. DRAWING NO. 1888A

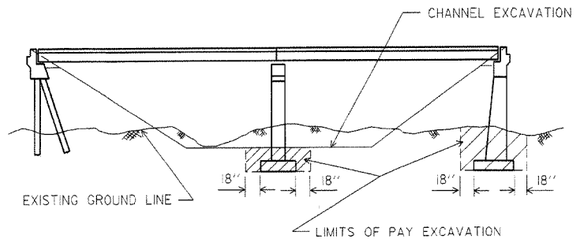
BI888A.STD

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.		46	
				JOB NO.				

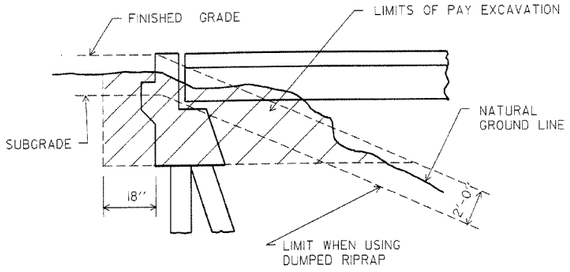
1 RIP. & EXCAV. 1891F



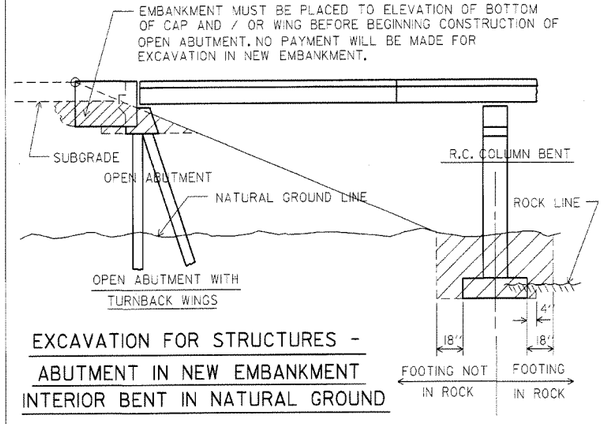
EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NEW EMBANKMENT AND NATURAL GROUND



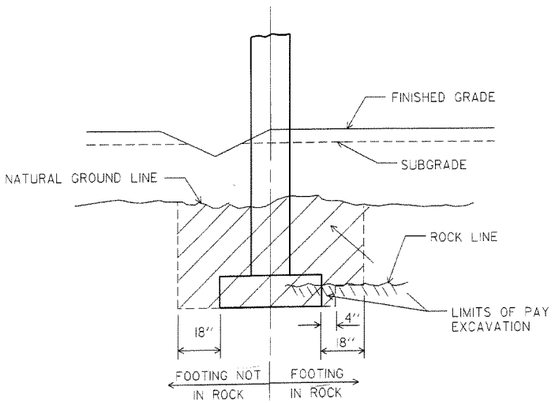
EXCAVATION FOR STRUCTURES - BRIDGE LOCATION WITH DESIGNATED CHANNEL CHANGE



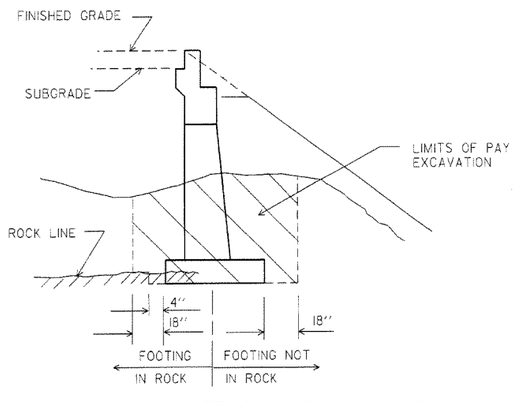
EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND



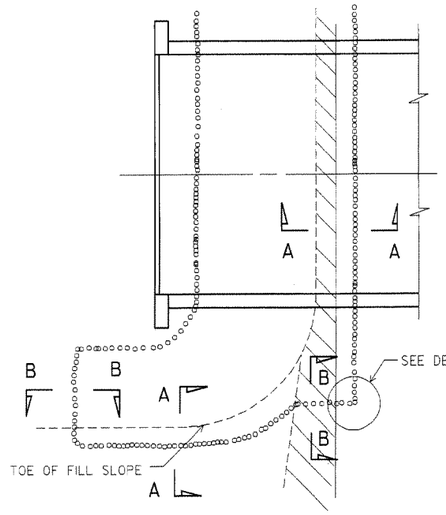
EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NATURAL GROUND



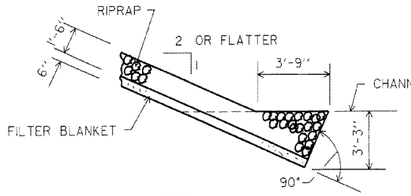
EXCAVATION FOR STRUCTURES - BENT IN ROADWAY FILL SECTION AND NATURAL GROUND



EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND AND NEW EMBANKMENT



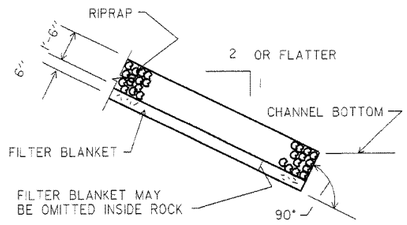
PLAN OF DUMPED RIPRAP



SECTION A-A

(TOE EXCAVATION IN SOIL)

EXCAVATION FOR TOES IS NOT A PAY ITEM



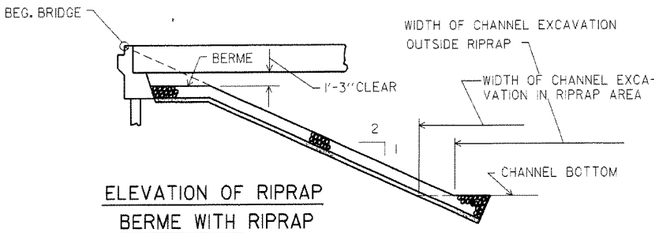
SECTION A-A

(TOE EXCAVATION IN ROCK)

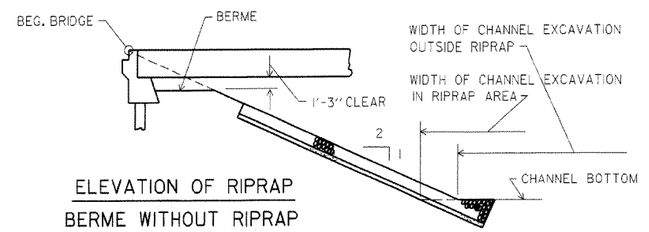
NOTE : USE THIS TYPE OF TOE WHEN ROCK IS ENCOUNTERED WHICH IS IN A STABLE CONDITION.

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

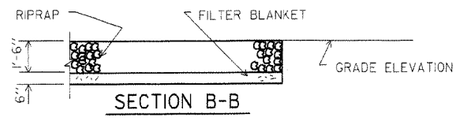
NOTE : DETAILS FOR COMPUTING EXCAVATION FOR STRUCTURES ARE INCLUDED FOR INFORMATION AS TO HOW PLAN QUANTITIES WERE CALCULATED AND FOR USE WHEN ADJUSTING QUANTITIES WHEN CHANGING FOOTING ELEVATION.



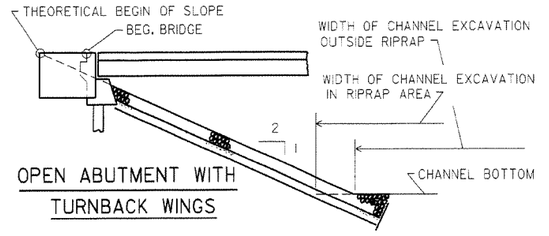
ELEVATION OF RIPRAP BERME WITH RIPRAP



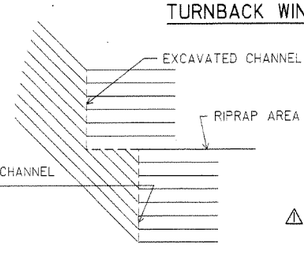
ELEVATION OF RIPRAP BERME WITHOUT RIPRAP



SECTION B-B



OPEN ABUTMENT WITH TURNBACK WINGS



DETAIL C

⚠ 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

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

ROUTE SEC.

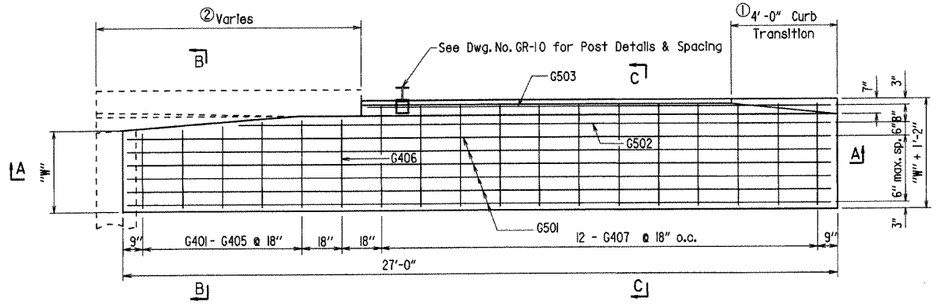
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: MJT DATE: 04-10-2003 FILENAME: B1891F.STD
CHECKED BY: CJF DATE: 04-10-2003 SCALE: NO SCALE
DESIGNED BY: STD. DATE: ——

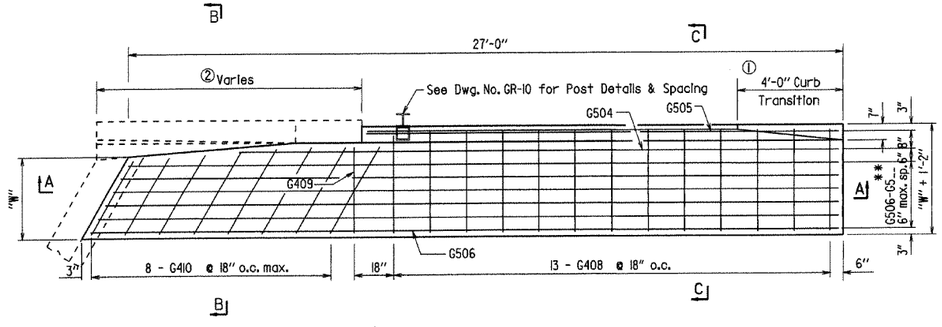
BRIDGE NO. DRAWING NO. 1891F

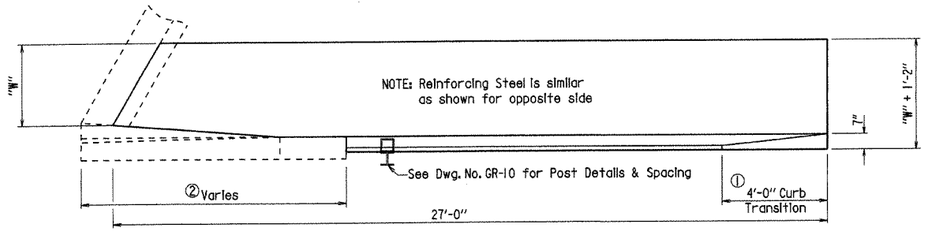
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4-10-2003				6	ARK.		47	
07-14-2010				JOB NO.				
						TYPE B GUTTERS		2016B



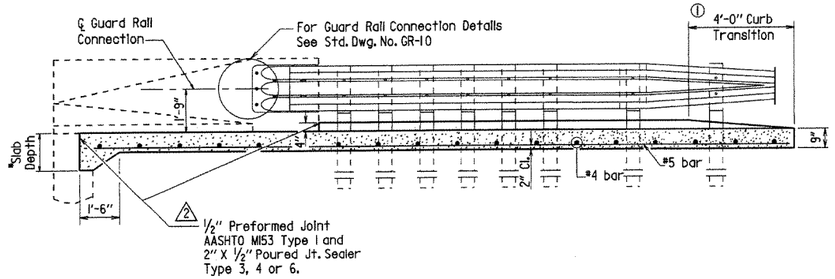
HALF PLAN OF APPROACH GUTTERS FOR SQUARE BRIDGE

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





PLAN OF APPROACH GUTTERS FOR SKEWED BRIDGE

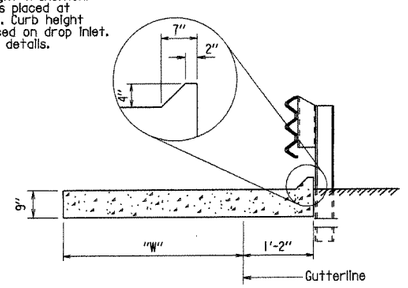


SECTION A - A

*Slab Depth Varies - See Span and Bent Details

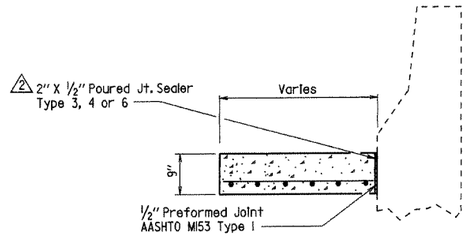
① Construct gutter curb with height-transition as shown if drop inlet is not placed at end of gutter.

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



SECTION C - C

N.T.S.



SECTION B - B

N.T.S.

QUANTITIES FOR ONE SQUARE APPROACH GUTTER

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

***BAR LIST ②
TYPE B GUTTER

Mark	No. Required for Width "W"				Length	Square or Skewed
	3'-0"	4'-0"	6'-0"	8'-0"		
G401-G405	1 each	1 each	1 each	1 each	"W" - 3" to "W" + 3"	Square
G406	1	1	1	1	"W" + 3"	Square
G407	12	12	12	12	"W" + 10"	Square
G408	13	13	13	13	"W" + 10"	Skewed
G409	1	1	1	1	"W" + 3"	Skewed
G410	8	8	8	8	*	Skewed
G501	6	8	12	16	26'-8"	Square
G502	1	1	1	1	22'-2"	Square
G503	1	1	1	1	17'-8"	Square
G504	1	1	1	1	*	Skewed
G505	1	1	1	1	*	Skewed
G506-G5__**	1 each	1 each	1 each	1 each	*	Skewed

*Bar Lengths vary with Skew,

**G512 for "W" = 3'
G514 for "W" = 4'
G518 for "W" = 6'
G522 for "W" = 8'

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

GENERAL NOTES

Concrete shall be Class S or Class S(AE) or mixture used for Portland Cement Concrete Pavement.

Reinforcement Steel shall conform to AASHTO M31 or M53, Grade 60 (fy = 60,000 psi).

Approach Gutters will be measured and paid for in accordance with Section 504 of the Standard Specifications.

1 Revised and redrawn 4-10-2003. By KDH Ck. By: CJF 4-10-2003

2 Added joint sealer type & revised transition rail length 07-14-2010 by MJT Checked by: CJF 07-14-2010

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

BRIDGE ENGINEER

DETAILS OF STANDARD TYPE B APPROACH GUTTERS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 4-10-2003 FILENAME: B2016B.STD
CHECKED BY: CJF DATE: 4-10-2003 SCALE: 3/8" = 1'-0"
DESIGNED BY: STD DATE:

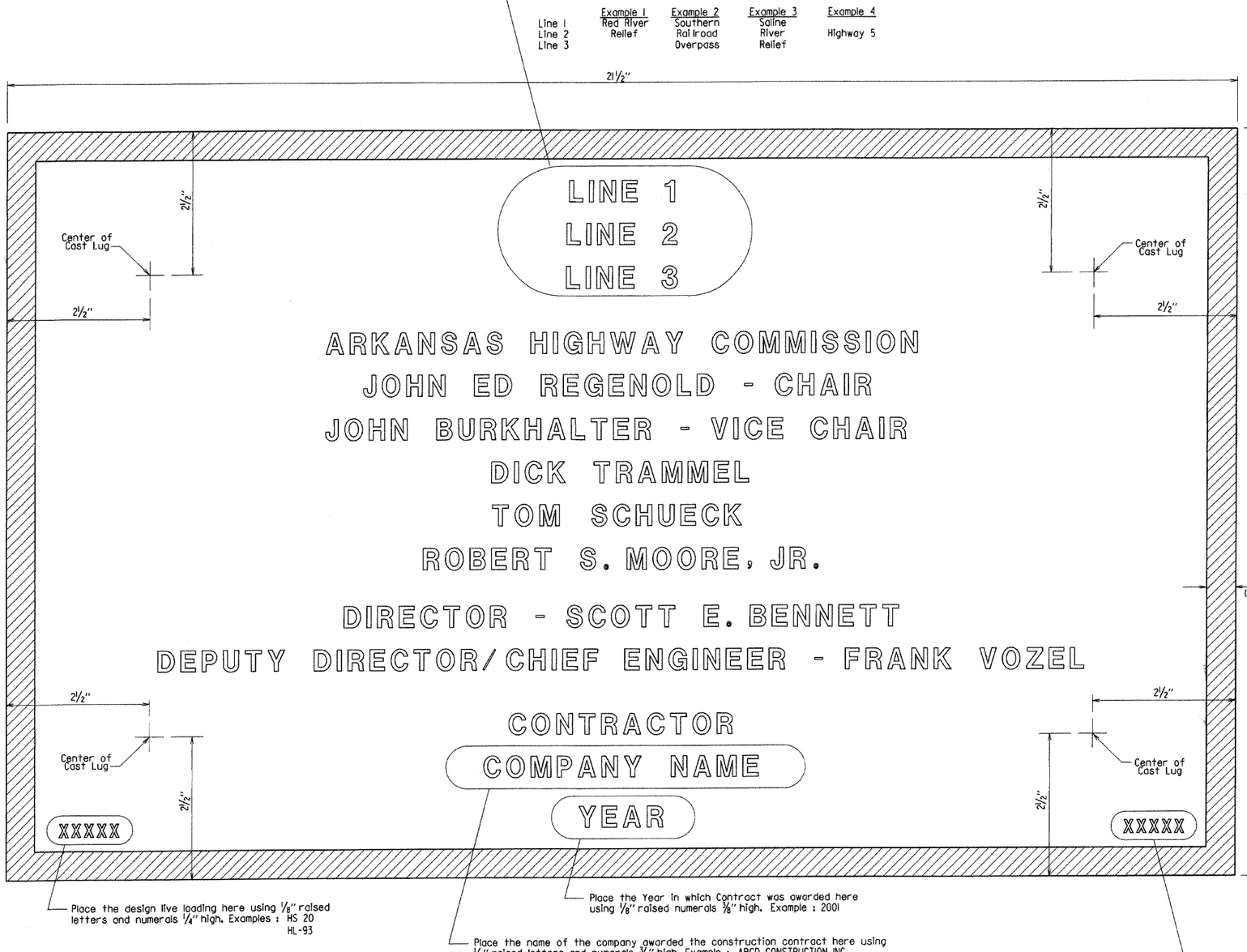
BRIDGE NO. DRAWING NO. 2016B

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.		48	
1-3-13				JOB NO.				
1-10-13								

① NAME PLATE 2387

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

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



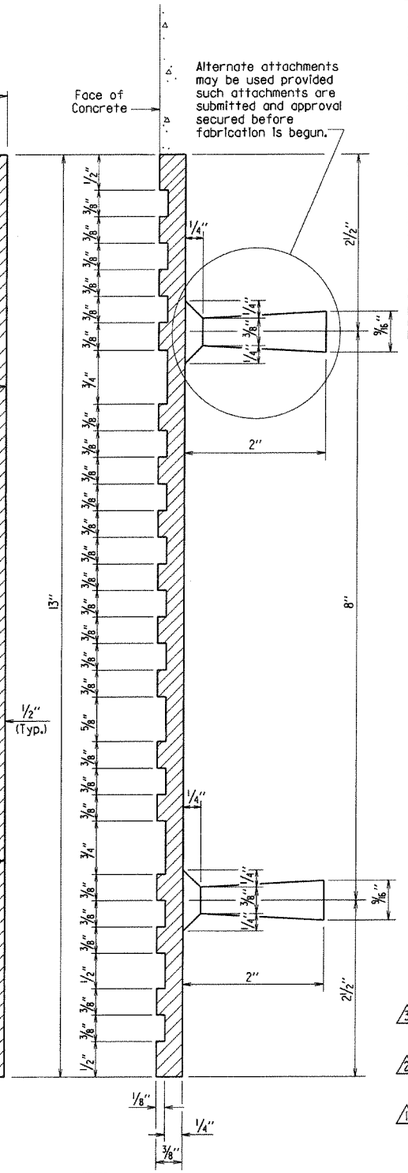
Place the design llve loading here using 1/8" raised letters and numerals 1/4" high. Examples : HS 20
HL-93

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

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

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

TYPICAL BRIDGE NAME PLATE



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 9/16"x 2" long. The border and all lettering shall be raised 1/8" above the face of plate and shall be polished.

All lettering shall be plain gothic, square cut and not tapered. The number of plates required and the location and name on the plate for each bridge shall be as designated on the plans.

3 Revised Commission Names 1-10-13 KDH Checked By: CJF

2 Revised Commission Names 1-3-13 KDH Checked By: CJF

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

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7510
CARL J. PUSELLIER

BRIDGE ENGINEER

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

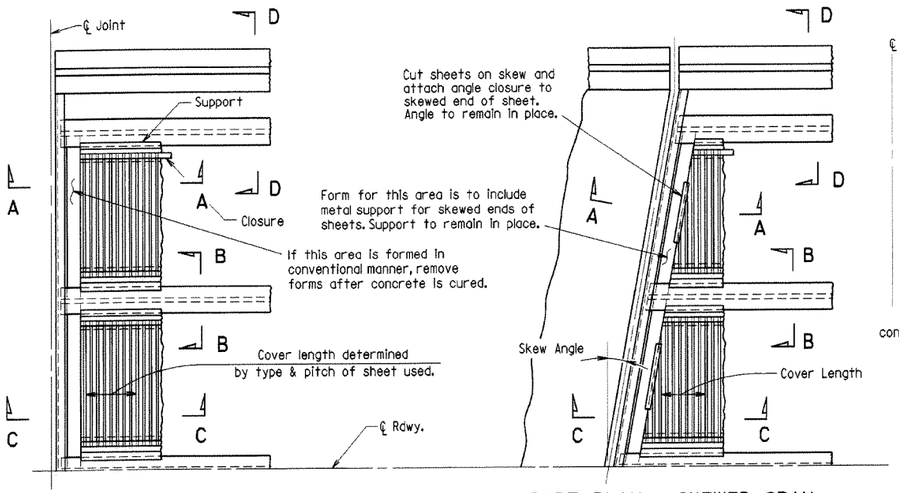
DRAWN BY: KDH DATE: 9-8-11 FILENAME: b2387_std.dgn
CHECKED BY: CRE DATE: 9-8-11 SCALE: 1'-0" = 1'-0"
DESIGNED BY: STD. DATE: —— OR AS NOTED
BRIDGE NO. DRAWING NO. 2387

PRINT DATE: 1/18/2013

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED
11-27-96					
04-10-2003					

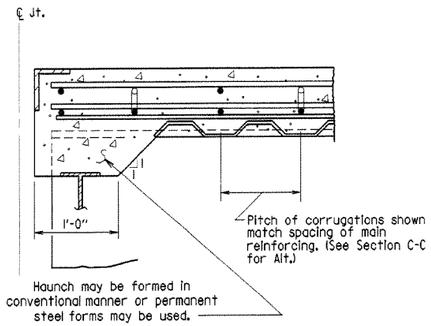
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
6	ARK.		49	
JOB NO.				

1 BR. DECK FORMS 14991

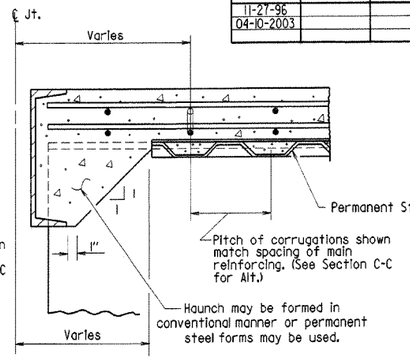


PART PLAN - SQUARE SPAN
3/8" = 1'-0"

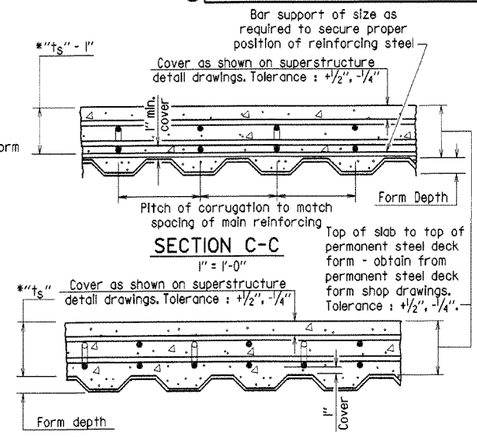
PART PLAN - SKEWED SPAN
3/8" = 1'-0"



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

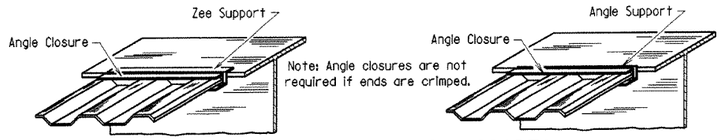


SECTION A-A
N.T.S.
(Channel at end of span)



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

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



SKETCH OF PERMISSIBLE SUPPORTS
N.T.S.

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

GENERAL NOTES

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

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

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

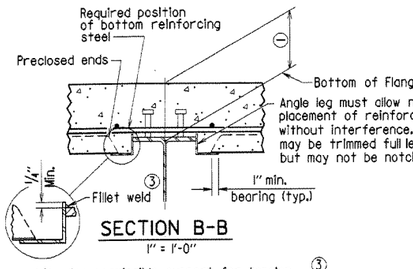
Form sheets shall be fastened to supporting members and to each other with galvanized metal screws sufficient in size and number to provide a secure attachment. Alternate methods of attachment must be approved by the Bridge Engineer.

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.

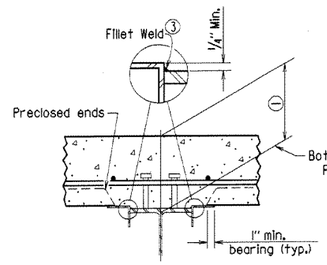
High chairs shall be sized to support the top mat of reinforcing at the proper position. High chairs shall be placed at locations shown on the detail drawings.

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

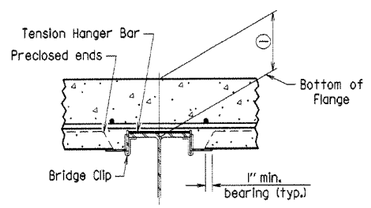


SECTION B-B
1" = 1'-0"
(Showing permissible support for tension flange where shear connectors are used, and for all compression flanges)

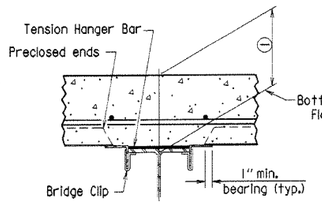
3 Minimum weld: 1/8" x 1" @ 18". More weld may be required; maximum length per weld = 1 1/2" (typ.)



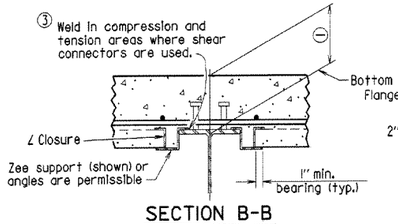
SECTION B-B
1" = 1'-0"
(Showing permissible support for tension flange where shear connectors are used and for all compression flanges)



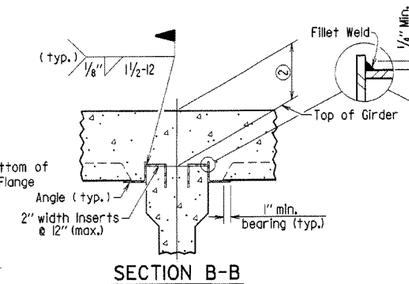
SECTION B-B
1" = 1'-0"
(Showing permissible support for tension flange where shear connectors are not used)



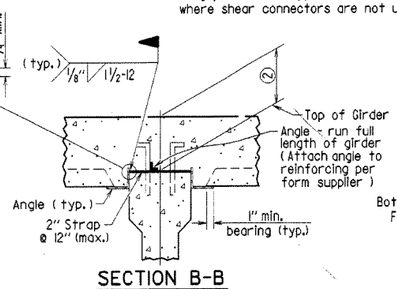
SECTION B-B
1" = 1'-0"
(Showing permissible support for tension flange where shear connectors are not used)



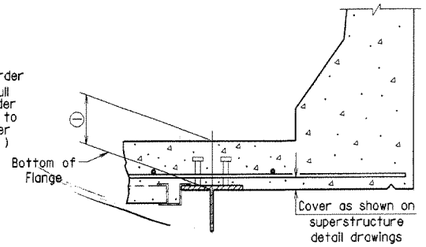
SECTION B-B
1" = 1'-0"
(Showing ∠ Closure)



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



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



SECTION D-D
1" = 1'-0"
Note: Only Bottom Reinforcing is shown.

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

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

1 Redrawn and revised 11/27/96; MJT

2 Revised for 2003 AHTD Construction Specifications and CPB Seal. MJT 04-10-2003
Chk'd. By: CAF 04-10-2003

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 4537
CHARLES P. BRAND

BRIDGE ENGINEER

DETAILS OF PERMISSIBLE TYPE PERMANENT STEEL BRIDGE DECK FORMS FOR STEEL & CONCRETE GIRDER SPANS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

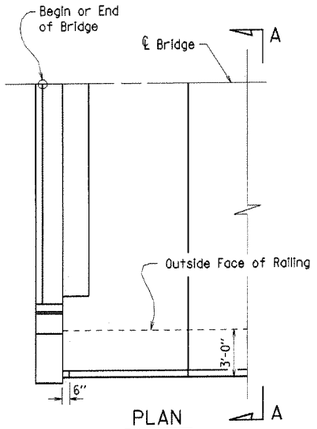
DRAWN BY: MJT DATE: 10-17-96
CHECKED BY: CPB DATE: 10-17-96
DESIGNED BY: STD. DATE: —
SCALE: as noted

BRIDGE NO. DRAWING NO. 14991

B14991.STD

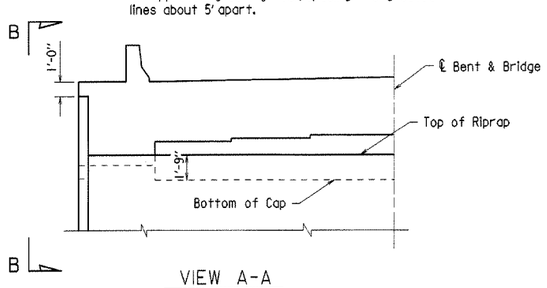
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
04-10-2003				6	ARK.		50	
				JOB NO.				

1 RIPRAP & PILE - 14995A

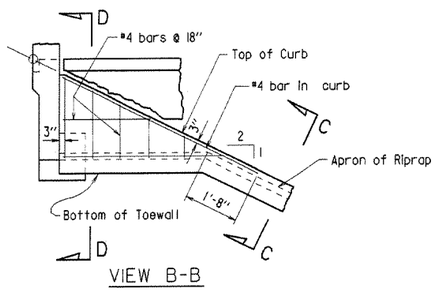


PLAN

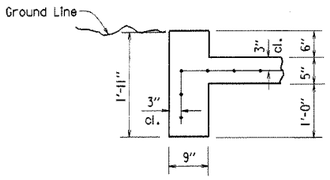
Note:
Sloped surfaces of concrete riprap to be marked off into blocks (construction joints optional) with an approved grooving tool, spacing the grooved lines about 5' apart.



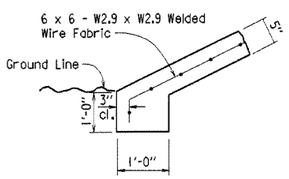
VIEW A-A



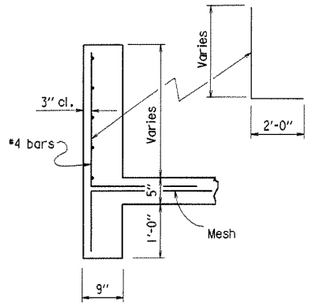
VIEW B-B



SECTION C-C

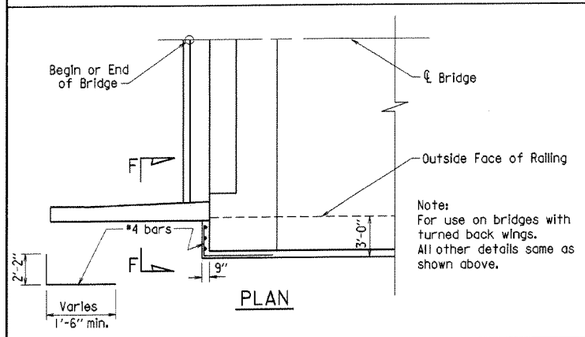


TOE WALL



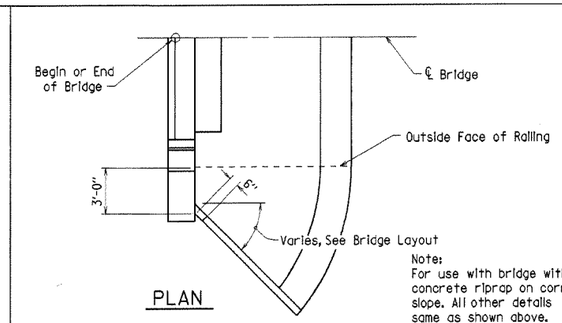
SECTION D-D

DETAILS OF CONCRETE RIPRAP



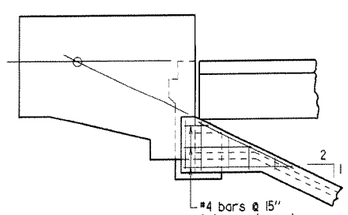
PLAN

Note:
For use on bridges with turned back wings. All other details same as shown above.

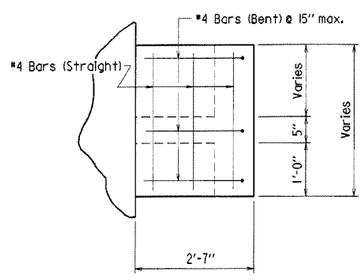


PLAN

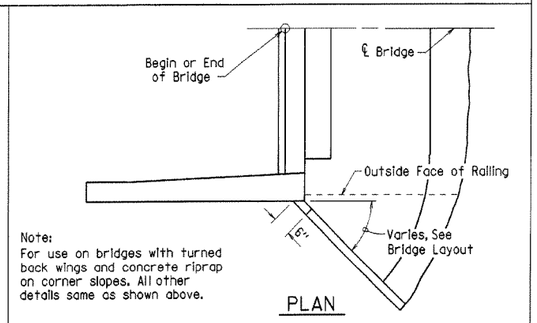
Note:
For use with bridge with concrete riprap on corner slope. All other details same as shown above.



ELEVATION

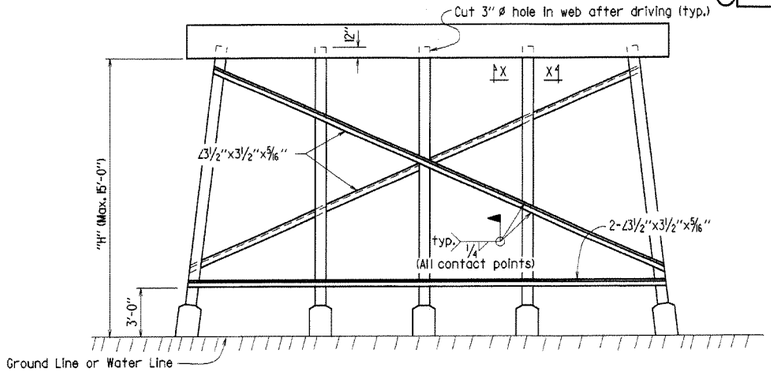


SECTION F-F



Note:
For use on bridges with turned back wings and concrete riprap on corner slopes. All other details same as shown above.

PLAN



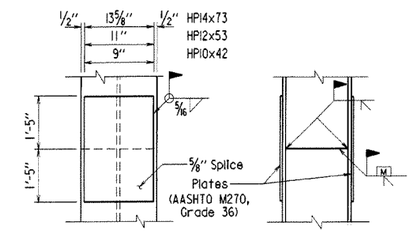
Note:
All bracing shall be cut and welded in the field. Each brace shall be furnished in one piece. Payment shall be made under Item 807.

Omit bottom bracing where "H" is less than 10 ft. Omit all bracing where "H" is less than 5 ft.

Note:
Where required by the bridge layout sheet, pile encasements shall be constructed.

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

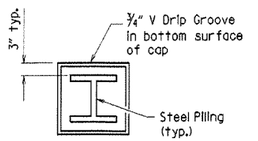
TYPICAL BRACING FOR INT. STEEL PILE BENTS



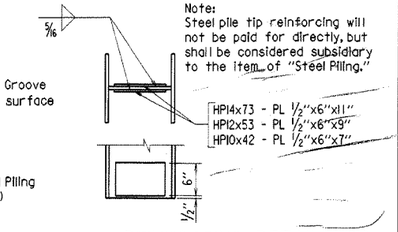
Note:
The contractor may for his own convenience and at this own expense provide as many as three splices per pile for steel bearing piling. Minimum spacing between splices shall be 5 ft.

PILE SPLICE DETAIL

Scale : 1" = 1'-0"



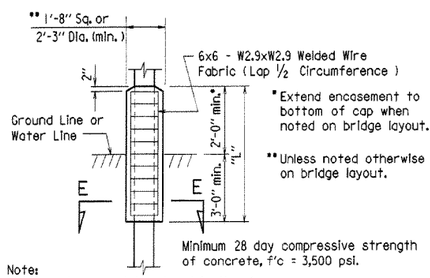
VIEW X-X



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

REINFORCING DETAIL FOR STEEL PILE TIP

Scale : 1" = 1'-0"



* Extend encasement to bottom of cap when noted on bridge layout.

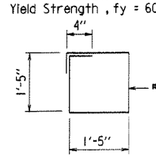
** Unless noted otherwise on bridge layout.

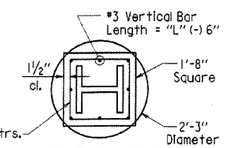
Minimum 28 day compressive strength of concrete, f'c = 3,500 psi.

Note:
If concrete cannot be placed in the dry, seal concrete may be deposited under water. Concrete & welded wire fabric or reinforcing in encasements shall be paid for at the contract unit price per linear foot bid for "Pile Encasement."

PILE ENCASEMENT DETAIL

Reinforcing Alternate
#3 Vertical - 8 per encasement
#3 ties @ 12" ctrs.
Yield Strength , fy = 60,000 psi.





SECTION E-E
REINF. ALTERNATE

⚠ 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

DETAILS OF CONCRETE RIPRAP
AND MISC. DETAILS OF STEEL PILING

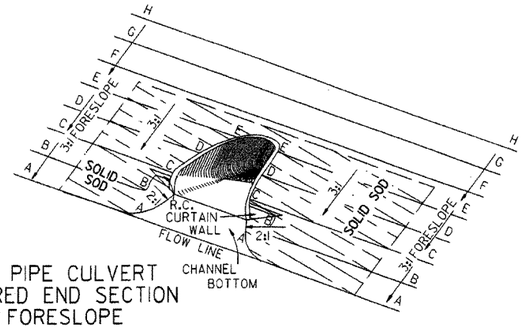
ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

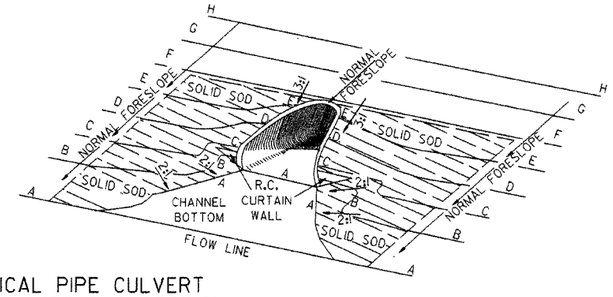
LITTLE ROCK, ARK.

DRAWN BY: MJT DATE: 04-10-2003 FILENAME: BI4995A.STD
CHECKED BY: CJF DATE: 04-10-2003 SCALE: No Scale or As Noted
DESIGNED BY: STD. DATE: —

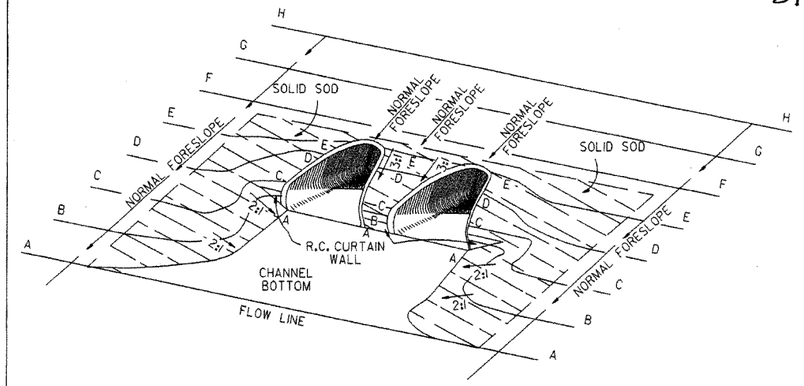
BRIDGE NO. DRAWING NO. 14995A



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

R.C. CURTAIN WALL
DIMENSIONS & QUANTITIES

PIPE DIA.	H_1	L_1	L	L (DBL.)/2	SINGLE R.C.P.C. CONC.	SINGLE R.C.P.C. REINF. STEEL	DOUBLE R.C.P.C. CONC.	DOUBLE R.C.P.C. REINF. STEEL
					CU. YDS.	LBS.	CU. YDS.	LBS.
18"	1'-11½"	3'-5"	8'-0"	6'-3"	0.31	27.7	0.45	39.5
24"	1'-0½"	4'-6"	9'-6"	7'-6"	0.37	33.4	0.53	48.0
30"	1'-3½"	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'-1½"	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'-9½"	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.

REINFORCING STEEL SCHEDULE

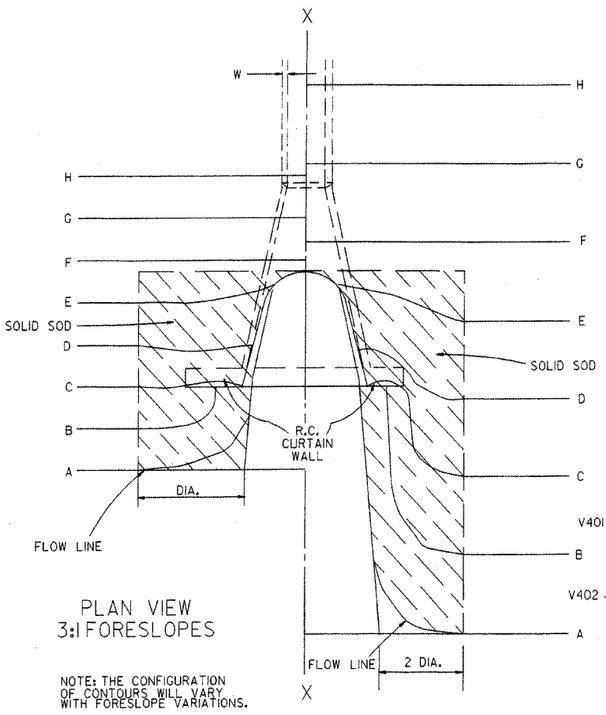
PIPE DIA.	SINGLE R.C. PIPE CULVERT H401 L	H401 NO.	H402 L	H402 NO.	V401 L	V401 NO.	V402 L	V402 NO.	DOUBLE R.C. PIPE CULVERT H401 L	H401 NO.	H402 L	H402 NO.	H403 L	H403 NO.	V401 L	V401 NO.	V402 L	V402 NO.
18"	7'-8"	2	1'-11½"	4	1'-7½"	8	8"	8	12'-2"	2	1'-11½"	4	8"	2	1'-7½"	10	8"	14
24"	9'-2"	2	2'-2"	4	1'-8½"	10	8"	9	14'-8"	2	2'-2"	4	8"	2	1'-8½"	12	8"	18
30"	10'-8"	2	2'-4½"	4	1'-11½"	10	8"	12	17'-8"	2	2'-4½"	4	8"	2	1'-11½"	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'-9½"	8	2'-9½"	16	8"	15	23'-8"	2	3'-9½"	8	8"	4	2'-9½"	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'-8½"	12	3'-5½"	20	8"	17	27'-8"	2	4'-9"	12	8"	6	3'-5½"	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. 3:1	4:1	6:1	DOUBLE R.C.P.C. 3:1	4:1	6:1
	SQ. YDS.			SQ. YDS.		
18"	5	7	12	6	8	13
24"	8	12	19	9	13	20
30"	13	18	29	14	19	30
36"	17	26	41	18	28	43
42"	23	35	55	25	37	57
48"	29	46	68	31	48	70
54"	35	57	85	37	59	87
60"	45	62	104	48	65	107
72"	64	92	156	67	95	159

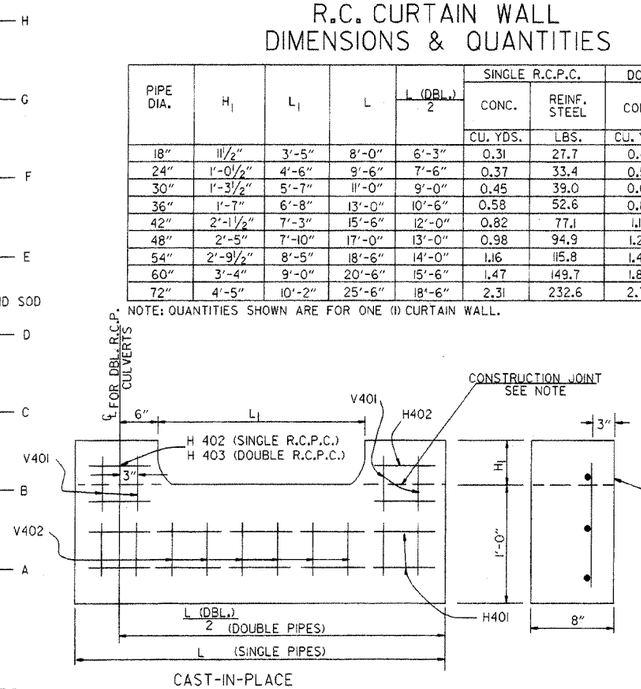
NOTE: QUANTITIES SHOWN ABOVE ARE FOR ONE (1) END OF F.E.S.



PLAN VIEW
3:1 FORESLOPES

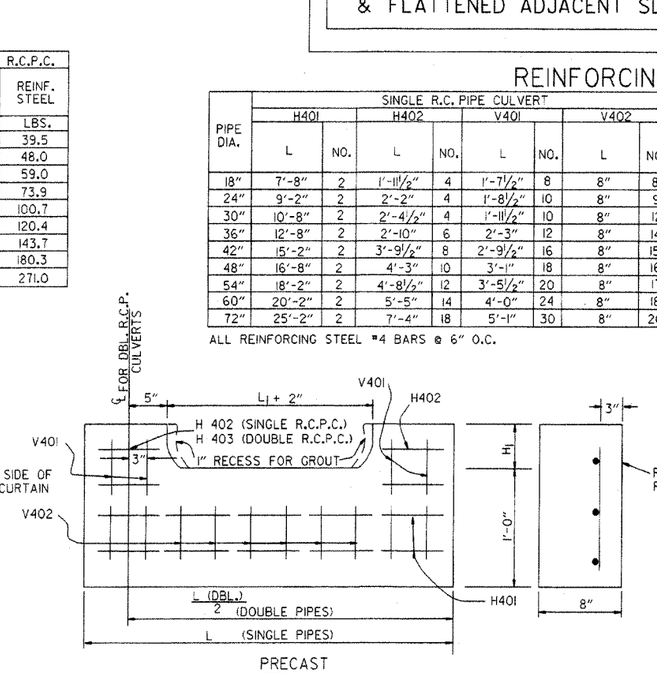
NOTE: THE CONFIGURATION OF CONTOURS WILL VARY WITH FORESLOPE VARIATIONS.

PLAN VIEW
FLATTENED FORESLOPES



CAST-IN-PLACE

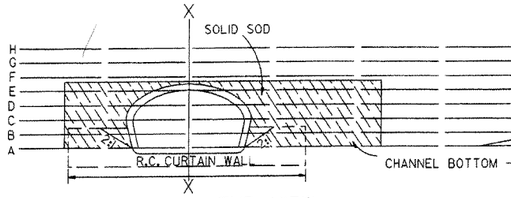
NOTE: THE PORTION OF THE R.C. CURTAIN WALL BENEATH THE FLARED END SECTION (LOWER 1'-0") SHALL BE PLACED MONOLITHICALLY. THE FLARED END SECTION SHALL THEN BE SET IN PLACE & THE REMAINING PORTIONS OF THE R.C. CURTAIN WALL PLACED.



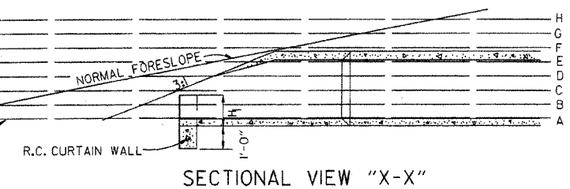
PRECAST

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

R.C. CURTAIN WALL DETAILS



END VIEW



SECTIONAL VIEW "X-X"

GENERAL NOTES

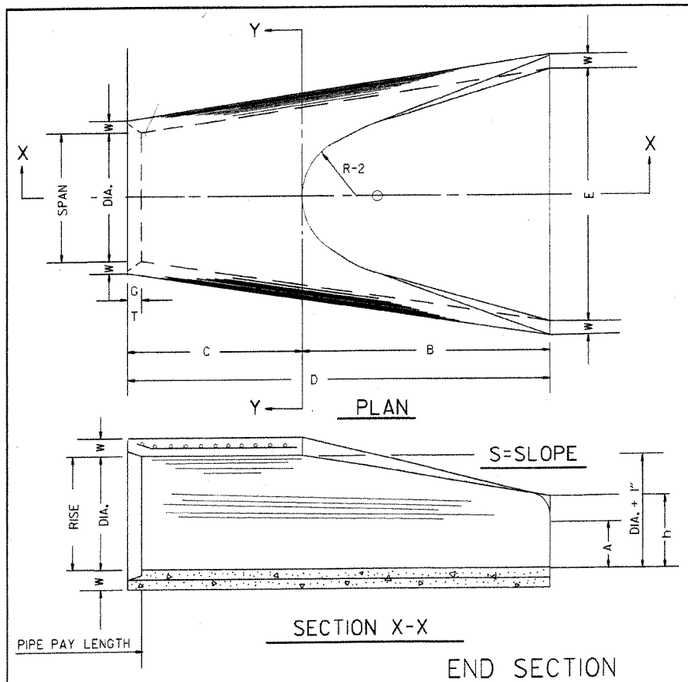
1. A CAST-IN-PLACE OR PRECAST CURTAIN WALL MAY BE USED. PAYMENT FOR THE CURTAIN WALL SHALL BE CONSIDERED TO BE INCLUDED IN THE UNIT PRICE BID EACH FOR FLARED END SECTIONS OF THE SEVERAL SIZES, WHICH PRICE SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIALS INCLUDING REINFORCING STEEL AND CONCRETE; 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 ¾".
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 × 3 W10 × W10 MAY BE USED IN LIEU OF REINFORCING BARS.

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

ARKANSAS STATE HIGHWAY COMMISSION

FLARED END SECTION

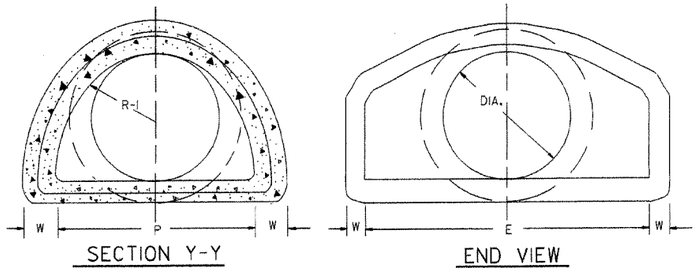
STANDARD DRAWING FES-1



END SECTION
FOR REINFORCED CONCRETE PIPE CULVERTS

TABLE OF DIMENSIONS

DIA.	WALL	A	B	C	D	E	S	DIA. + 1"	P	R-1	R-2	G-T	WT.	h
18"	2½"	9"	2'-3"	3'-10"	6'-1"	3'-0"	3:1	19"	29"	15½"	12"	2"	1000	1'-0½"
24"	3"	9½"	3'-7½"	2'-6"	6'-11½"	4'-0"	3:1	25"	33 3/16"	16 13/16"	14"	2½"	1600	1'-1½"
30"	3½"	1'-0"	4'-6"	1'-7¾"	6'-13/4"	5'-0"	3:1	31"	37"	18½"	15"	3¼"	1940	1'-4⅝"
36"	4"	1'-3"	5'-3"	2'-10¾"	8'-13/4"	6'-0"	3:1	37"	47 11/16"	24 5/16"	20"	3½"	4100	1'-8"
42"	4½"	1'-9"	5'-3"	2'-11"	8'-2"	6'-6"	3:1	43"	53⅜"	27½"	22"	3½"	5380	2'-2½"
48"	5"	2'-0"	6'-0"	2'-2"	8'-2"	7'-0"	3:1	49"	56½"	28½"	22"	3½"	6550	2'-6"
54"	5½"	2'-4"	6'-6"	1'-10"	8'-4"	7'-6"	3:1	55"	65½"	33⅛"	24"	4"	8750	2'-10½"
60"	6"	2'-10"	6'-6"	1'-10"	8'-4"	8'-0"	3:1	61"	72½"	36 11/16"	24"	4"	9270	3'-5"
72"	7"	3'-10"	6'-6"	1'-10"	8'-4"	9'-0"	3:1	73"	77 13/16"	38 13/16"	24"	5"	13250	4'-6"

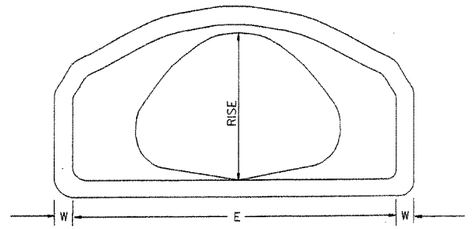


NOTE: TONGUE END ON UPSTREAM SECTION
GROOVE END ON DOWNSTREAM SECTION

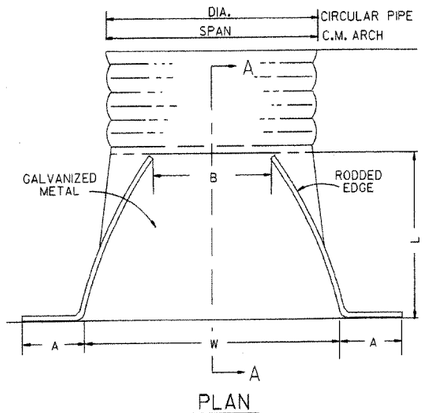
ARCH PIPE

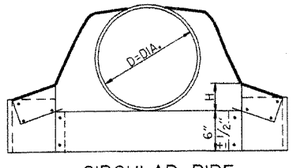
EQUIV. DIA.	• SPAN AASHTO M 206	• SPAN AHD NOMINAL	• RISE AASHTO M 206	• RISE AHD NOMINAL	W	A	B	C	D	E	P	R2	G-T	S
	INCHES													
15	18	18	11	11	2"	4"	2'-0"	4'-0"	6'-0"	3'-0"	29"	12"	1½"	2½±1
18	22	22	13½	14	2½"	5"	2'-0"	4'-1"	6'-1"	3'-6"	32⅛"	13"	2½"	2½±1
21	26	26	15½	16	2¾"	7"	2'-3"	3'-10"	6'-1"	4'-0"	34⅛"	14"	2½"	2½±1
24	28½	29	18	18	3"	9"	2'-3"	3'-10"	6'-1"	5'-0"	36 13/16"	15"	2½"	2½±1
30	36¼	36	22½	23	3½"	10"	3'-1"	3'-0½"	6'-1½"	6'-0"	47 11/16"	20"	3"	2½±1
36	43¾	44	26⅝	27	4"	10½"	4'-0"	2'-11½"	6'-1½"	6'-6"	54⅝"	22"	3½"	2½±1
42	51⅛	51	31 5/16	31	4½"	11½"	4'-7"	1-10¼"	6'-5¼"	7'-2"	59½"	23"	3¾"	2½±1
48	58½	59	36	36	5"	1'-3"	5'-3"	2'-10¾"	8'-1¾"	7'-10"	70 5/16"	24"	4¼"	2½±1
54	65	65	40	40	5½"	1'-7"	5'-3"	2'-11"	8'-2"	8'-6"	72 13/16"	24"	4¾"	2¼±1
60	73	73	45	45	6"	1'-10"	5'-6"	2'-8"	8'-2"	9'-0"	77 13/16"	24"	5"	2¼±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

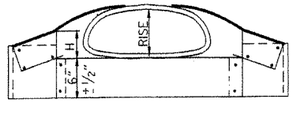




CIRCULAR PIPE

CIRCULAR PIPE

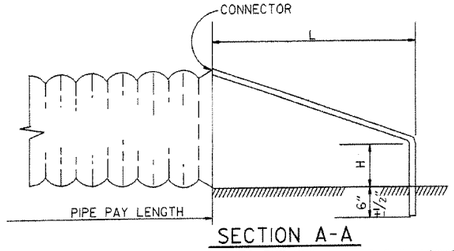
D. DIA.	GAUGE	A 1" ±	B. MAX.	H 1" ±	L 1½" ±	W 2" ±	S
		INCHES					
12	16	6	6	6	21	24	2½±1
15	16	7	8	6	26	30	2½±1
18	16	8	10	6	31	36	2½±1
21	16	9	12	6	36	42	2½±1
24	16	10	13	6	41	48	2½±1
30	14	12	16	8	51	60	2½±1
36	14	14	19	9	60	72	2½±1
42	12	16	22	11	69	84	2½±1
48	12	18	27	12	78	90	2½±1
54	12	18	30	12	84	102	2±1
60	12	18	33	12	87	114	1¾±1
66	12	18	36	12	87	120	1½±1
72	12	18	39	12	87	126	1 1/3±1



C.M. ARCH PIPE

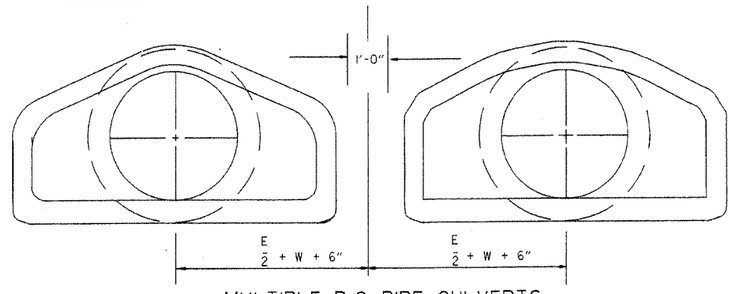
C.M. ARCH PIPE

EQUIV. DIA.	SPAN	RISE	A 1" ±	B MAX.	H 1" ±	L 1½" ±	W 2" ±	S	GAUGE
	INCHES								
15"	17	13	7	9	6	19	30	2½±1	16
18"	21	15	7	10	6	23	36	2½±1	16
21"	24	18	8	12	6	28	42	2½±1	16
24"	28	20	9	14	6	32	48	2½±1	16
30"	35	24	10	16	6	39	60	2½±1	14
36"	42	29	12	18	8	46	75	2½±1	14
42"	49	33	13	21	9	53	85	2½±1	12
48"	57	38	18	26	12	63	90	2½±1	12
54"	64	43	18	30	12	70	102	2¼±1	12
60"	71	47	18	33	12	77	114	2¼±1	12

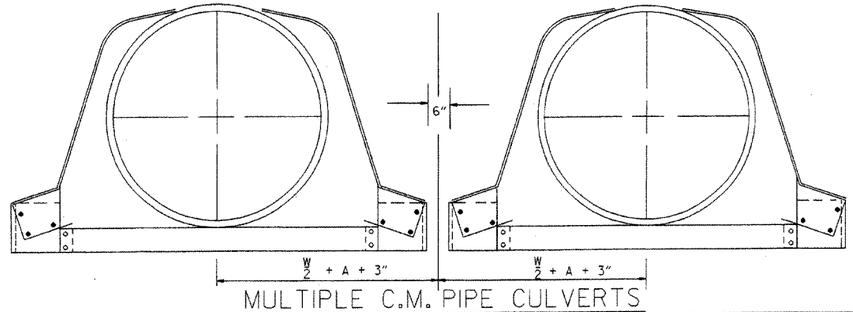


NOTE: ALTERNATE CONNECTIONS TO THE PIPE CULVERTS, IN ACCORDANCE WITH MANUFACTURER'S STANDARD PRACTICES, MAY BE MADE SUBJECT TO THE APPROVAL OF THE ENGINEER.

END SECTIONS FOR CORRUGATED METAL PIPE CULVERTS



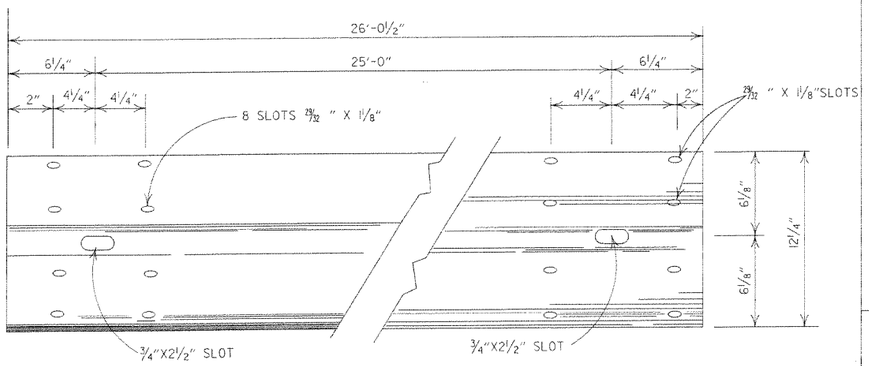
MULTIPLE R.C. PIPE CULVERTS

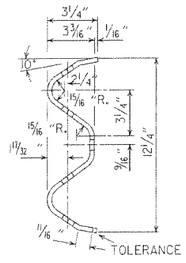


MULTIPLE C.M. PIPE CULVERTS

DATE	REVISION	FILMED	
10-18-96	REVISED ASTM REF. TO AASHTO	10-18-96	ARKANSAS STATE HIGHWAY COMMISION
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	

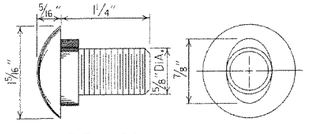
stdfes2.dgn



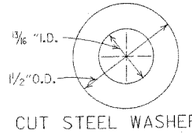


DETAILS OF W-BEAM GUARD RAIL

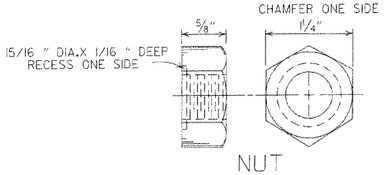
RAIL SECTION OF CLOSELY SIMILAR DIMENSIONS AND COMPARABLE STRENGTH MAY BE SUBSTITUTED IF APPROVED BY THE ENGINEER.



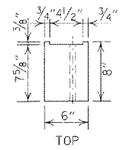
SPLICE BOLT
POST BOLT - SAME EXCEPT LENGTH



CUT STEEL WASHER

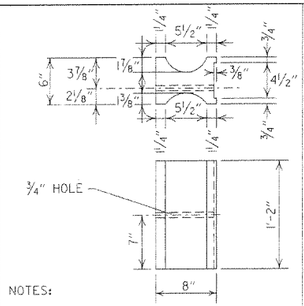


NUT



WOOD BLOCKOUT USED WITH WOOD POSTS SHALL BE 6"x8"x1'-2" WITH NO NOTCH REQUIRED.

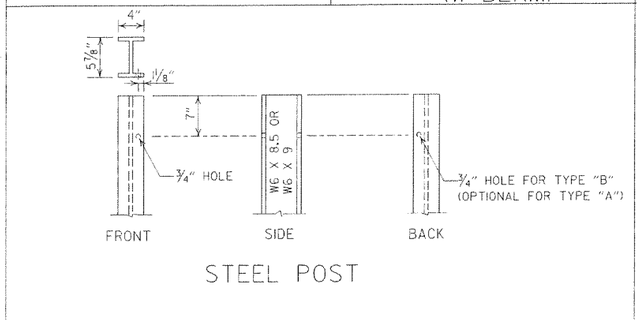
WOOD BLOCKOUT (W-BEAM)



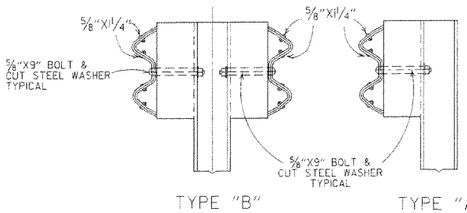
NOTES:

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

PLASTIC BLOCKOUT (W-BEAM)



STEEL POST



TYPE "B" TYPE "A"

DETAILS OF STEEL LINE POST CONNECTIONS (W-BEAM)

-GENERAL NOTES-

ALL BOLTS SHALL BE SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND NO MORE THAN 3/4" BEYOND IT.

WHERE W-BEAM GUARD RAIL CONTINUES, THE INTERMEDIATE SECTIONS SHALL HAVE A POST SPACING OF 6'-3" UNLESS OTHERWISE NOTED.

W-BEAM GUARD RAIL REPRESENTING INTERMEDIATE SECTIONS WILL BE MEASURED ALONG THE ROADWAY FACE FROM CENTERLINE OF POST TO CENTERLINE OF POST.

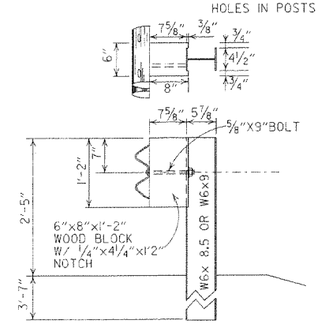
USE W-BEAM GUARD RAIL COMPONENTS OF SAME MATERIAL FOR ENTIRE JOB. FOR EXTENSIONS OR MODIFICATION OF EXISTING GUARD RAIL, W-BEAM GUARD RAIL COMPONENTS OF THE SAME TYPE AS THOSE EXISTING SHALL BE USED.

ANY BACKFILLING UNDER OR AROUND POST SHALL BE DAMP SAND THOROUGHLY TAMPED IN PLACE.

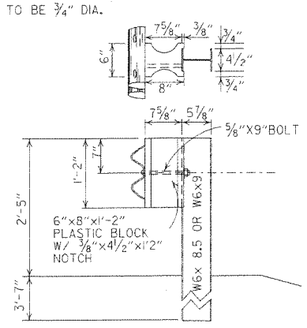
WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7# (1400 f) OR NO. 1 1350 f SOUTHERN PINE.

CONTRACTOR SHALL HAVE THE OPTION OF USING WOOD BLOCKOUTS FOR W-BEAM GUARD RAIL OR PLASTIC BLOCKOUTS, AS LONG AS BLOCKOUT USED MEETS NCHRP-350 TEST LEVEL 3 SPECIFICATIONS OR REQUIREMENTS FOR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) FOR W-BEAM GUARD RAIL.

HOLES IN POSTS AND BLOCKS TO BE 3/4" DIA.



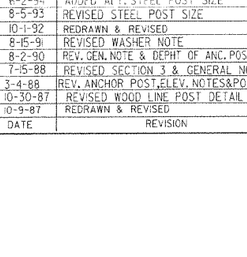
WOOD BLOCKOUT CONNECTIONS



PLASTIC BLOCKOUT CONNECTIONS

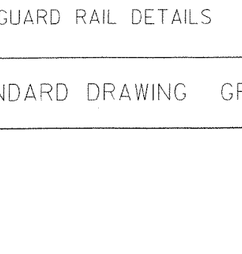
DETAILS OF STEEL LINE POST CONNECTIONS (W-BEAM)

HOLES IN POSTS AND BLOCKS TO BE 3/4" DIA.



POSTS AND BLOCKS TO BE ROUGH SAWN 6"X8" WITH A TOLERANCE OF + OR - 1/4".

WOOD BLOCKOUT CONNECTIONS



PLASTIC BLOCKOUT CONNECTIONS

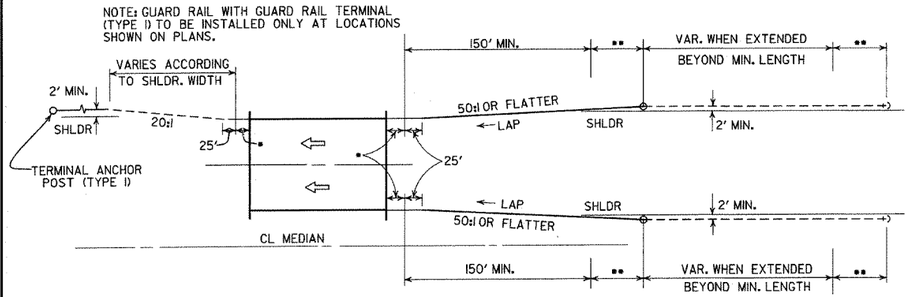
DETAILS OF WOOD LINE POST CONNECTIONS (W-BEAM)

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

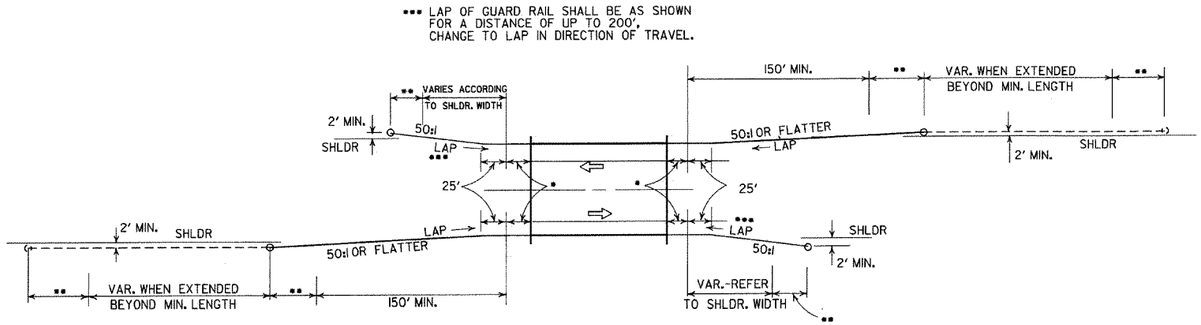
ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR-8



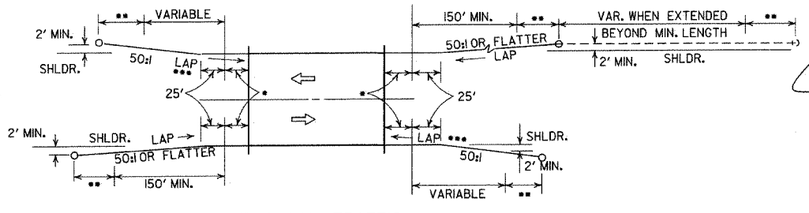
ONE-WAY TRAFFIC



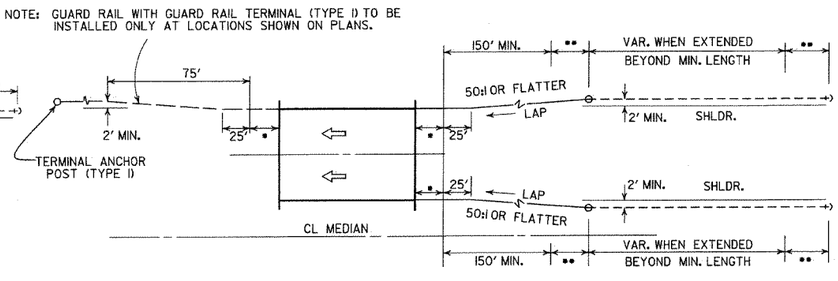
TWO-WAY TRAFFIC

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

••• LAP OF GUARD RAIL SHALL BE AS SHOWN FOR A DISTANCE OF UP TO 200', CHANGE TO LAP IN DIRECTION OF TRAVEL.



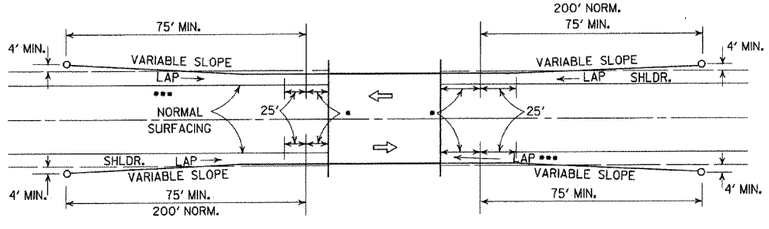
TWO-WAY TRAFFIC



ONE-WAY TRAFFIC

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

••• LAP OF GUARD RAIL SHALL BE AS SHOWN FOR A DISTANCE OF UP TO 200', CHANGE TO LAP IN DIRECTION OF TRAVEL.



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

LEGEND

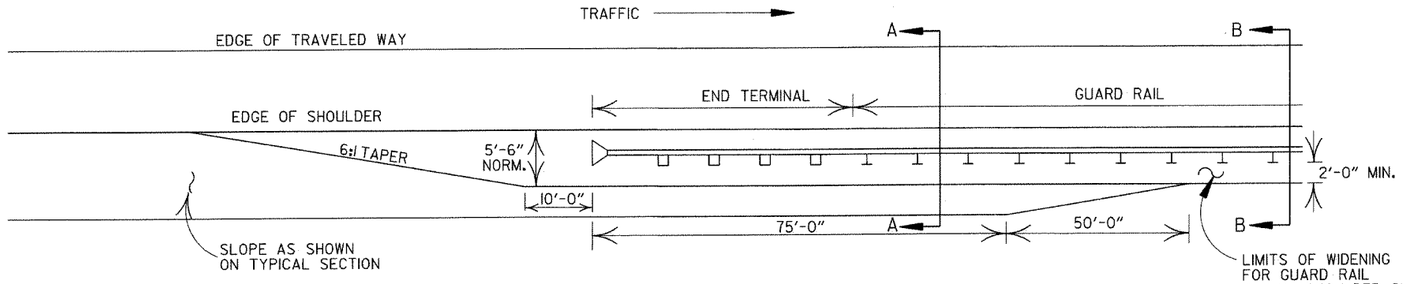
- • THRIE BEAM GUARD RAIL TERMINAL
- •• GUARD RAIL TERMINAL (TYPE 2)

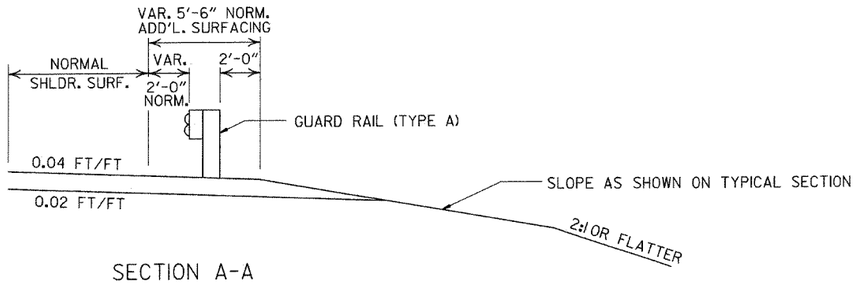
DATE	REVISION	DATE FILM
4-17-08	REVISED LAYOUTS	
11-10-05	REMOVED GUARD RAIL NOTES AND DETAILS	
11-16-01	DELETED NOTE-METHOD OF INSTALLATION OF GUARD RAIL USING GUARD RAIL TERM. (TY. I)	
1-12-00	ADDED CONSTRUCTION NOTE	1-12-00
6-26-97	REVISED LAYOUT	
10-1-92	REDRAWN & REVISED	10-1-92
	ADDED NOTE	
10-9-87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

ARKANSAS STATE HIGHWAY COMMISSION

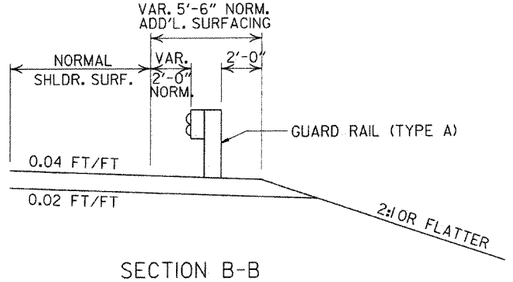
GUARD RAIL DETAILS

STANDARD DRAWING GR-9





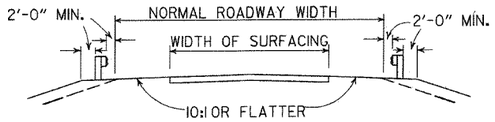
SECTION A-A



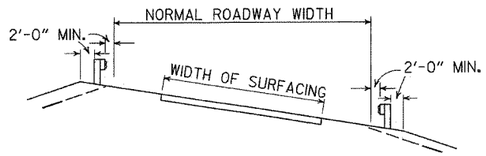
SECTION B-B

DETAILS OF WIDENING FOR GUARD RAIL

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

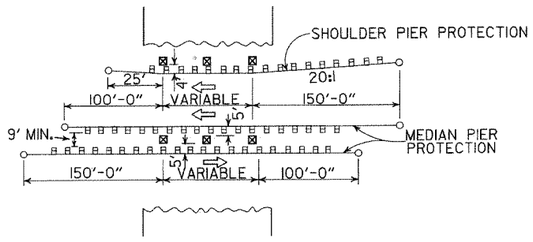


SECTION ON TANGENT



SECTION ON CURVE

DETAILS SHOWING POSITION OF GUARD RAIL ON HIGHWAY



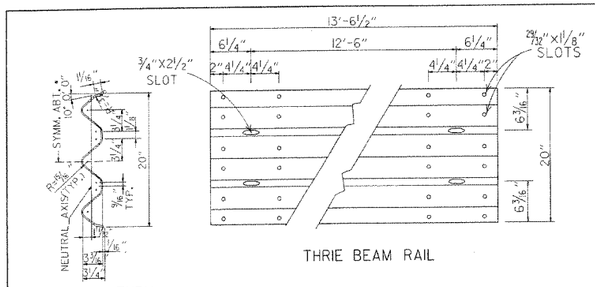
METHOD OF INSTALLATION OF GUARD RAIL AT FIXED OBSTACLE

DATE	REVISION	DATE FILM
4-17-08	MINOR REVISION	
11-10-05	DRAWN	

ARKANSAS STATE HIGHWAY COMMISSION

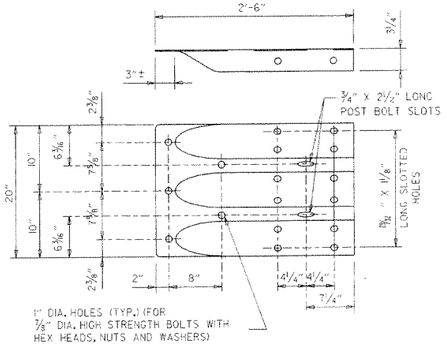
GUARD RAIL DETAILS

STANDARD DRAWING GR-9A



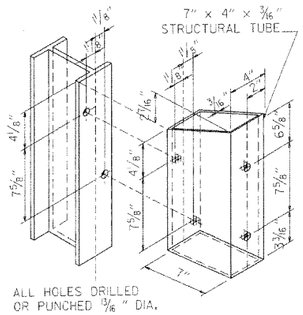
THRIE BEAM RAIL

SECTION THRU THRIE BEAM RAIL



1" DIA. HOLES (TYP.) (FOR ⅞" DIA. HIGH STRENGTH BOLTS WITH HEX HEADS, NUTS AND WASHERS)

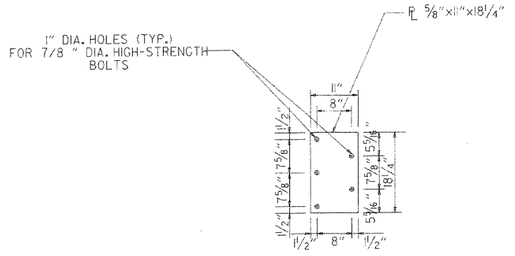
SPECIAL END SHOE



ATTACH BLOCKOUT TO POST USING ⅝" DIA. HEX HEAD BOLTS WITH 1½" O.D. CUT STEEL WASHERS AND NUT.

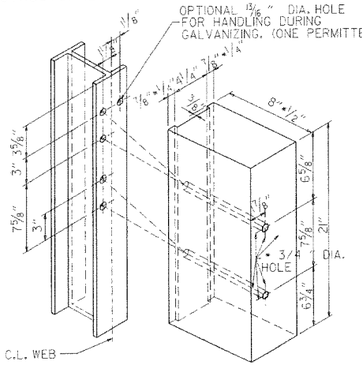
ALL HOLES DRILLED OR PUNCHED ⅜" DIA.

STRUCTURAL STEEL TUBING BLOCKOUT DETAIL



CONNECTOR PLATE

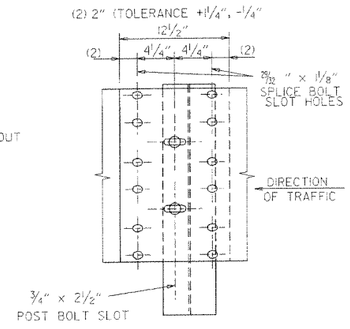
CONNECTOR PLATE SHALL BE AASHTO M270, GR. 36 AND SHALL BE GALVANIZED AFTER FABRICATION. GALVANIZING SHALL CONFORM TO SUBSECTION 807.19 OF THE STANDARD SPECIFICATIONS. CONNECTOR PLATE TO BE BOLTED TO SPECIAL END SHOE USING ⅞" DIA. HIGH STRENGTH BOLTS, WITH THE HEADS PLACED ON THE TRAFFIC FACE. WASHERS SHALL BE USED UNDER THE HEAD AND NUT. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED AND SHALL CONFORM TO SUBSECTION 807.06.



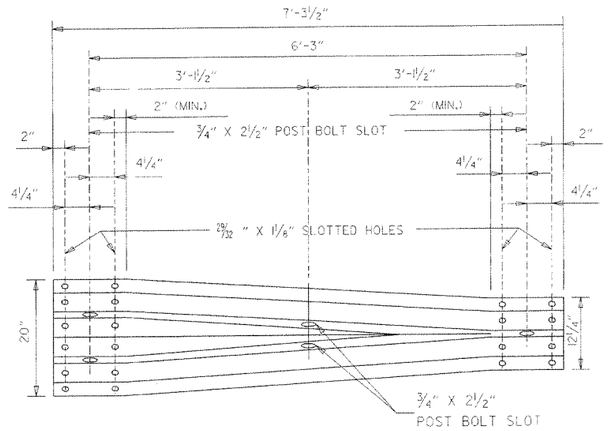
ALL HOLES 13/16 " DIAMETER EXCEPT AS NOTED

HOLE PUNCHING DETAIL FOR STEEL POST & WOOD OR PLASTIC BLOCKOUTS

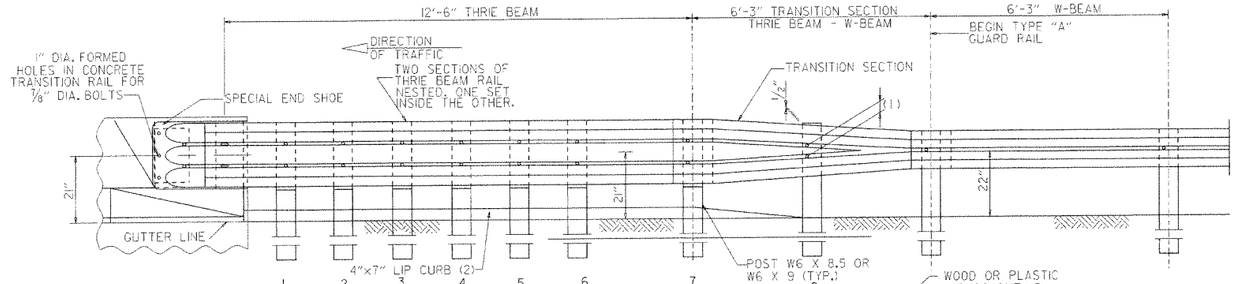
NOTE: BLOCKS SHALL BE THE SAME TYPE THROUGHOUT THE PROJECT LIMITS.



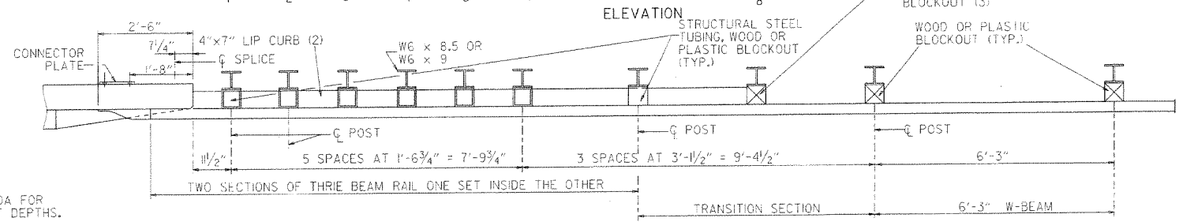
THRIE BEAM RAIL SPLICE AT POST



TRANSITION SECTION

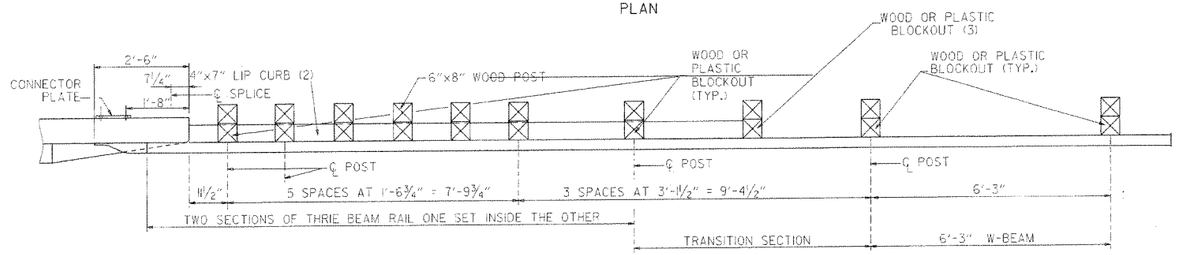


ELEVATION



PLAN

NOTE:
SEE STANDARD DRAWING GR-10A FOR GUARD RAIL POST EMBEDMENT DEPTHS.



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 ¾" 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 9.7# (1400 f) OR NO. 1 1350 f SOUTHERN PINE.

REFER TO STD. DRWG. GR-10A FOR POST DETAILS.

USE THRIE BEAM GUARD RAIL COMPONENTS OF SAME MATERIAL FOR ENTIRE JOB.

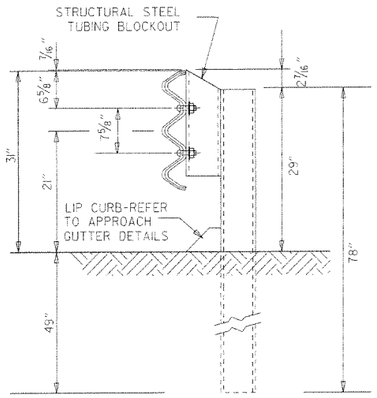
THRIE BEAM POSTS SHALL BE SAME MATERIAL AS W-BEAM POSTS FOR ENTIRE JOB.

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	

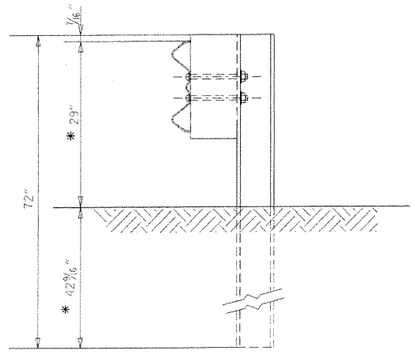
ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR-10

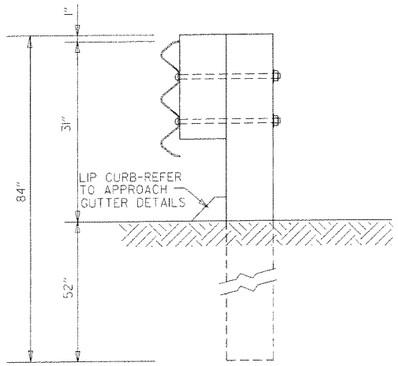


THRIE BEAM RAIL WITH STEEL TUBING BLOCKOUT
AND STEEL POST
POSTS 1-7

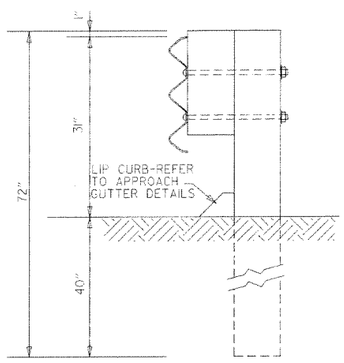


W-BEAM TO THRIE BEAM TRANSITION RAIL
WITH WOOD OR PLASTIC BLOCKOUT AND STEEL POST
POST 8

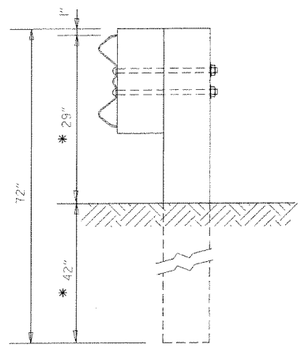
* NOTE:
THESE DIMENSIONS WILL NEED TO BE ADJUSTED IN THE FIELD TO MAKE THE TRANSITION FROM 21" MID POINT OF THRIE BEAM TO 22" MID POINT OF W-BEAM.



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.

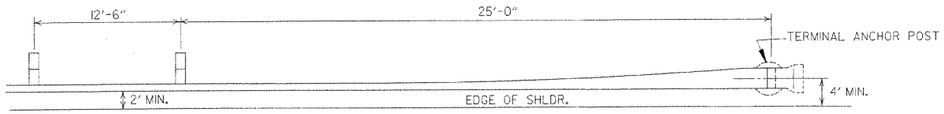
WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7f (1400 f) OR NO. 1 1350 f SOUTHERN PINE.

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	

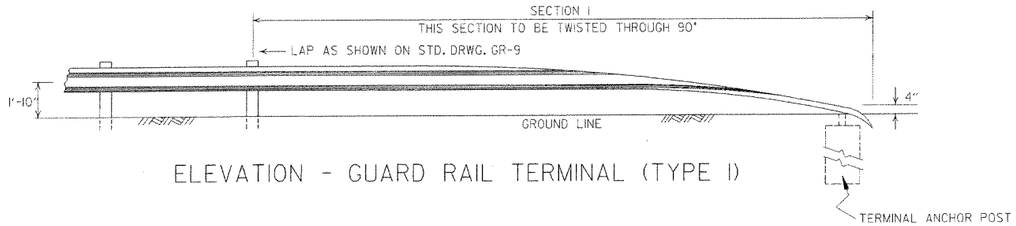
ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR-10A

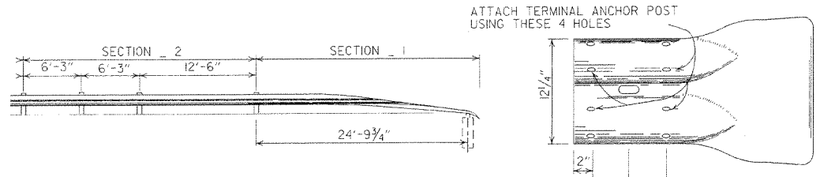


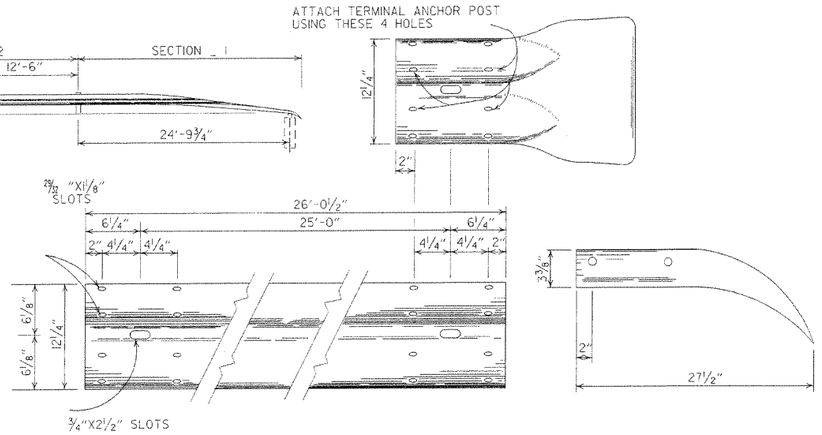
PLAN - GUARD RAIL TERMINAL (TYPE I)



ELEVATION - GUARD RAIL TERMINAL (TYPE I)

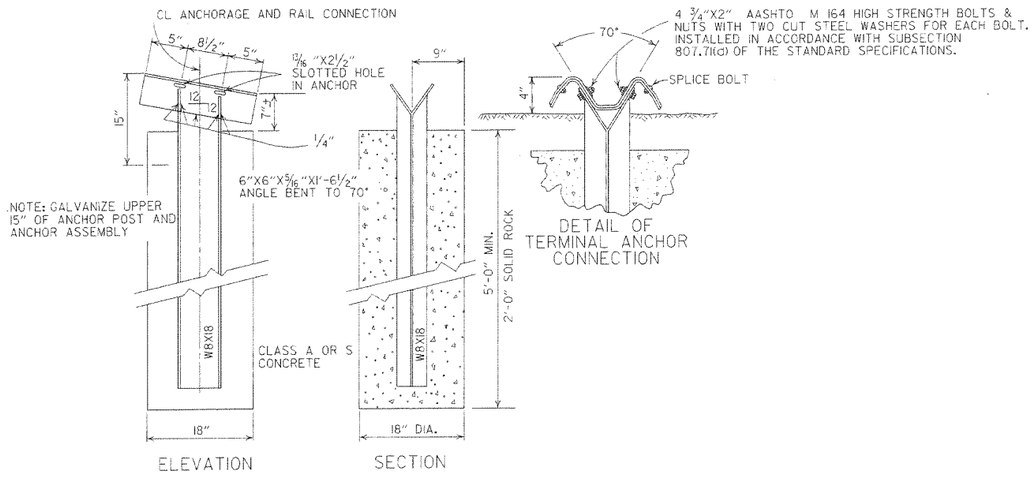
NOTE:
SECTIONS 1 AND 2 OF GUARD RAIL TERMINAL SHALL BE PAID FOR AT THE PRICE BID PER LINEAR FOOT OF THE TYPE OF GUARD RAIL SPECIFIED.





SECTION 1

TERMINAL SECTION



DETAIL OF TERMINAL ANCHOR CONNECTION

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

DETAIL OF TERMINAL ANCHOR POST (TYPE I)

DATE	REVISION	DATE FILM
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

ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GRT-1

REINFORCED CONCRETE ARCH PIPE DIMENSIONS

EQUIV. DIA.	SPAN		RISE	
	AASHTO M 206	AHTD NOMINAL	AASHTO M 206	AHTD NOMINAL
INCHES	INCHES			
15	18	18	11	11
18	22	22	13½	14
21	26	26	15½	16
24	28½	29	18	18
30	36¼	36	22½	23
36	43⅜	44	26⅝	27
42	51⅛	51	31 5/16	31
48	58½	59	36	36
54	65	65	40	40
60	73	73	45	45
72	88	88	54	54
84	102	102	62	62
90	115	115	72	72
96	122	122	77½	77
108	138	138	87⅞	87
120	154	154	96⅞	97
132	168¾	169	106½	107

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

REINFORCED CONCRETE HORIZONTAL ELLIPTICAL PIPE DIMENSIONS

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

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

CONSTRUCTION SEQUENCE

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

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

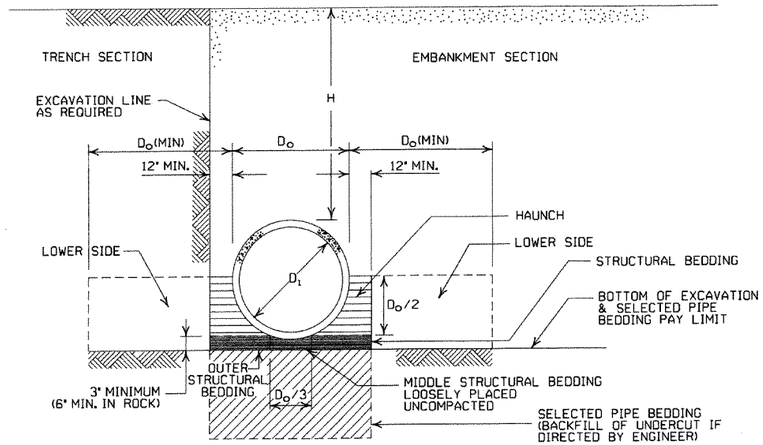
- LEGEND -

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

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

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

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

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

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

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

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

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

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

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

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

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 MINUMUM COVER TOP OF PIPE TO TOP OF GROUND "H" (FEET)	MAX. FILL HEIGHT "H" ABOVE TOP OF PIPE (FEET)				
		METAL THICKNESS (INCHES)				
		0.064	0.079	0.109	0.138	0.168
2⅔ INCH BY ½ INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM						
12	1	84	91			
15	1	67	73			
18	1	56	61			
24	1	42	46	59		
30	2	34	36	47		
36	2		30	39	41	
42	2		43	67	70	73
48	2		37	58	61	64
② 3 INCH BY 1 INCH OR 5 INCH BY 1 INCH CORRUGATION RIVETED, WELDED, BOLTED, OR HELICAL LOCK-SEAM						
36	1	48	60	88	111	118
42	1	41	51	72	90	102
48	1	36	45	64	77	85
54	2	32	40	59	71	79
60	2	29	36	53	64	71
66	2	26	33	47	58	64
72	2	24	30	44	53	59
78	2		28	41	49	54
84	2		26	38	45	51
90	2		24	35	43	45
96	2		22	33	40	44
102	2			31	38	42
108	2			30	35	39
114	2			28	34	37
120	2			27	32	35

CORRUGATED ALUMINUM PIPE (ROUND)

PIPE DIAMETER (INCHES)	① MINUMUM COVER TOP OF PIPE TO TOP OF GROUND "H" (FEET)	MAX. FILL HEIGHT "H" ABOVE TOP OF PIPE (FEET)				
		METAL THICKNESS IN INCHES				
		0.060	0.075	0.105	0.135	0.164
		2 ⅔ INCH BY ½ INCH CORRUGATION RIVETED OR HELICAL LOCK-SEAM				
12	1	45	45			
18	2	30	30	52		
24	2	22	22	39	41	
30	2		18	31	32	34
36	2.5		15	26	27	28
42	2			43	43	44
48	2			40	41	43
54	2			35	37	38
60	2				33	34
66	2					31
72	2					29

CORRUGATED METAL PIPE ARCHES

EQUIV. DIA. (INCHES)	PIPE DIMENSION SPAN X RISE (INCHES)	MINUMUM CORNER RADIUS (INCHES)	STEEL				ALUMINUM			
			MIN. THICKNESS REQUIRED INCHES	① MIN. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 1	MAX. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 1		MIN. THICKNESS REQUIRED INCHES	① MIN. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 1	MAX. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 1	
			2 ⅔ INCH BY ½ INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM				2 ⅔ INCH BY ½ INCH CORRUGATION RIVETED OR HELICAL LOCK-SEAM			
15	17x13	3	0.064	2	15		0.060	2	15	
18	21x15	3	0.064	2	15		0.060	2	15	
21	24x18	3	0.064	2.25	15		0.060	2.25	15	
24	28x20	3	0.064	2.5	15		0.075	2.5	15	
30	35x24	3	0.079	3	12		0.075	3	12	
36	42x29	3½	0.079	3	12		0.105	3	12	
42	49x33	4	0.079	3	12		0.105	3	12	
48	57x38	5	0.109	3	13		0.135	3	13	
54	64x43	6	0.109	3	14		0.135	3	14	
60	71x47	7	0.138	3	15		0.164	3	15	
66	77x52	8	0.168	3	15					
72	83x57	9	0.168	3	15					
② 3 INCH BY 1 INCH OR 5 INCH BY 1 INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM										
				INSTALLATION TYPE 2	INSTALLATION TYPE 1	INSTALLATION TYPE 2		INSTALLATION TYPE 1	INSTALLATION TYPE 1	
36	40x31	5	0.079	3	2	12		15		
42	46x36	6	0.079	3	2	13		15		
48	53x41	7	0.079	3	2	13		15		
54	60x46	8	0.079	3	2	13		15		
60	66x51	9	0.079	3	2	13		15		
66	73x55	12	0.079	3	2	15		15		
72	81x59	14	0.079	3	2	15		15		
78	87x63	14	0.079	3	2	15		15		
84	95x67	16	0.109	3	2	15		15		
90	103x71	16	0.109	3	2	15		15		
96	112x75	18	0.109	3	2	15		15		
102	117x79	18	0.109	3	2	15		15		
108	128x83	18	0.138	3	2	15		15		

CONSTRUCTION SEQUENCE

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

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

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

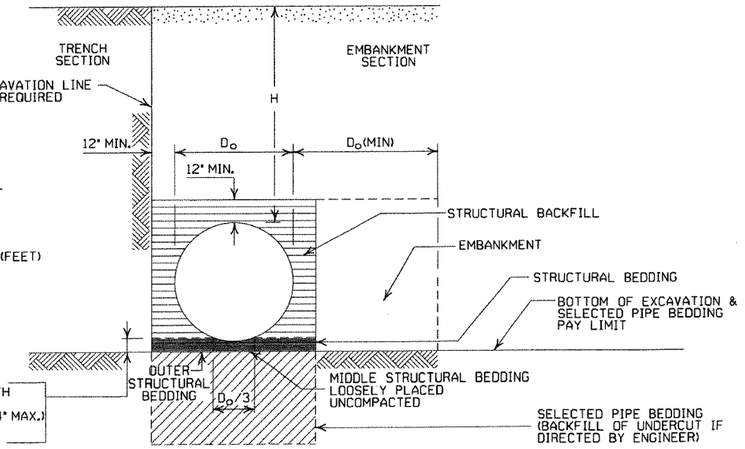
③ SM-3 WILL NOT BE ALLOWED.

EQUIVALENT METAL THICKNESSES AND GAUGES

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

- LEGEND -

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



EMBANKMENT AND TRENCH INSTALLATIONS

1. STRUCTURAL BACKFILL, EMBANKMENT, AND OUTER STRUCTURAL BEDDING MATERIAL SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.
2. INSTALLATION TYPE 1 OR 2 MAY BE USED FOR CORRUGATED STEEL OR ALUMINUM PIPE (ROUND).
3. INSTALAALTION TYPE 1 SHALL BE USED FOR CORRUGATED STEEL OR ALUMINUM PIPE ARCHES WITH 2⅔" X ½" CORRUGATION.
4. INSTALLATION TYPE 1 OR 2 MAY BE USED FOR CORRUGATED STEEL OR ALUMINUM PIPE ARCHES WITH 3" X 1" OR 5" X 1" CORRUGATION.

GENERAL NOTES

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

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

② WHERE THE STANDARD 2 2/3"x ½" CORRUGATION AND GAUGE IS SPECIFIED FOR A GIVEN DIAMETER, A PIPE OF THE SAME DIAMETER WITH A 3" x 1" OR 5" x 1" CORRUGATION MAY BE SUBSTITUTED, PROVIDING IT IS GAUGED FOR A FILL HEIGHT CONDITION EQUAL TO OR GREATER THAN THE MAXIMUM FILL HEIGHT CONDITION FOR THE SPECIFIED GAUGE AND CORRUGATION.

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 1INCH. STRUCTURAL BACKFILL MATERIAL SHALL BE FREE OF ORGANIC MATERIAL, STONES LARGER THAN 1.50 INCH IN GREATEST DIMENSION, OR FROZEN LUMPS.

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

MULTIPLE INSTALLATION OF HIGH DENSITY POLYETHYLENE PIPES

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

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

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

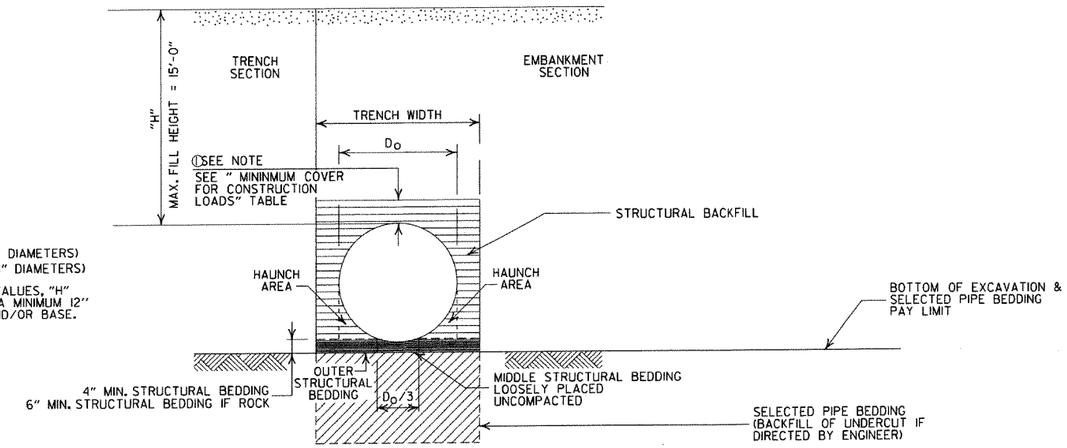
①NOTE:
18" MIN. (18" - 30" DIAMETERS)
24" MIN. (36" - 48" DIAMETERS)

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

MINIMUM COVER FOR CONSTRUCTION LOADS

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

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



TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

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

CONSTRUCTION SEQUENCE

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

GENERAL NOTES

1. PIPE SHALL CONFORM TO AASHTO M294, TYPE S. INSTALLATION SHALL CONFROM TO JOB SPECIAL PROVISION "PLASTIC PIPE" AND SECTION 606 OF THE STANDARD SPECIFICIATIONS 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.)
Ø = OUTSIDE DIAMETER OF PIPE
MAX. = MAXIMUM
MIN. = MINIMUM

= STRUCTURAL BACKFILL MATERIAL

= UNDISTURBED SOIL

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

ARKANSAS STATE HIGHWAY COMMISSION

PLASTIC PIPE CULVERT (HIGH DENSITY POLYETHYLENE)

STANDARD DRAWING PCP-1

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

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

SM3 WILL NOT BE ALLOWED.

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

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

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

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

MULTIPLE INSTALLATION OF PVC PIPES

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

MAXIMUM FILL HEIGHT BASED ON STRUCTURAL BACKFILL

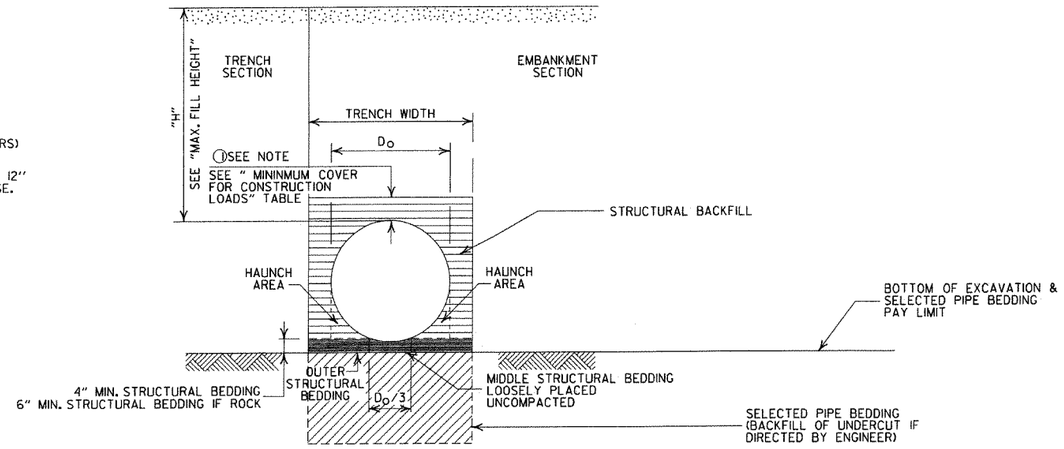
PIPE DIAMETER	"H"
18"	45'-0"
24"	45'-0"
30"	40'-0"
36"	40'-0"

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

MINIMUM COVER FOR CONSTRUCTION LOADS

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

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



TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

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

CONSTRUCTION SEQUENCE

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

GENERAL NOTES

1. PIPE SHALL CONFORM TO ASTM F949, CELL CLASS 12454. INSTALLATION SHALL CONFROM TO JOB SPECIAL PROVISION "PLASTIC PIPE" AND SECTION 606 OF THE STANDARD SPECIFICIATIONS 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. PVC PIPES OF DIAMETERS OTHER THAN SHOWN WILL NOT BE ALLOWED.
9. JOINTS FOR PVC PIPE SHALL MEET THE REQUIREMENTS FOR SOIL TIGHTNESS AS SPECIFIED IN AASHTO SECTION 26.4.2.4 AND 30.4.2 "AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS." JOINTS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

- LEGEND -

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

= STRUCTURAL BACKFILL MATERIAL

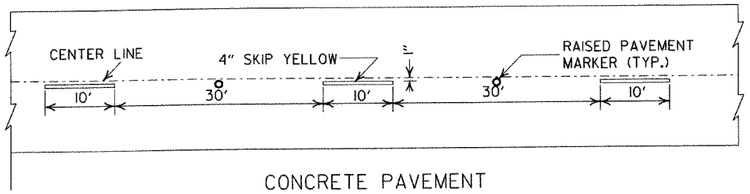
= UNDISTURBED SOIL

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

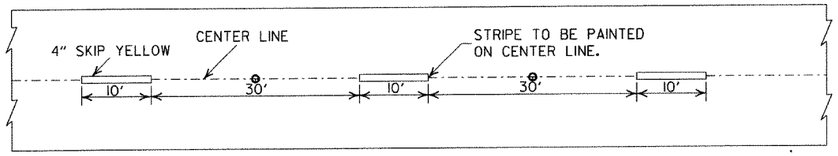
ARKANSAS STATE HIGHWAY COMMISSION

PLASTIC PIPE CULVERT (PVC F949)

STANDARD DRAWING PCP-2

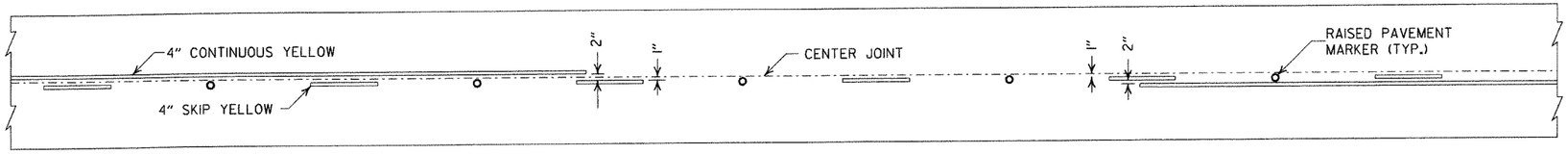


CONCRETE PAVEMENT

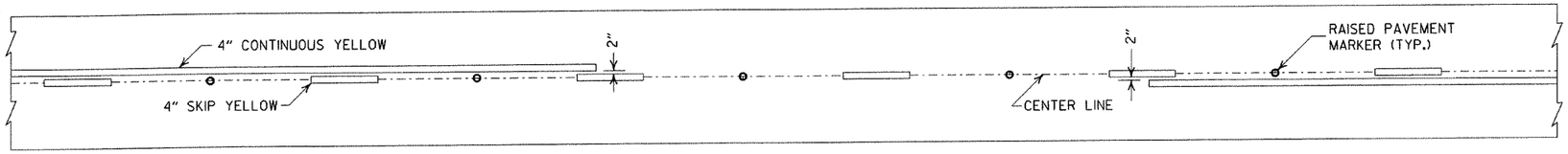


ASPHALT PAVEMENT

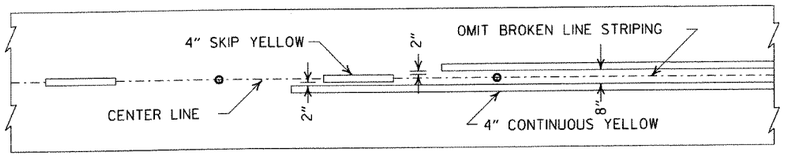
BROKEN LINE STRIPING



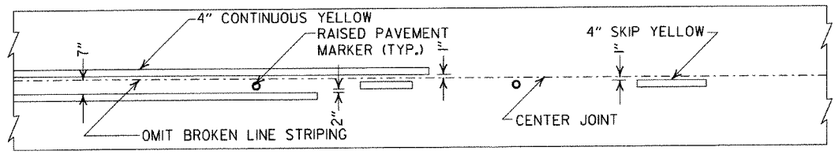
SOLID LINE STRIPING ON CONCRETE PAVEMENT



SOLID LINE STRIPING ON ASPHALT PAVEMENT

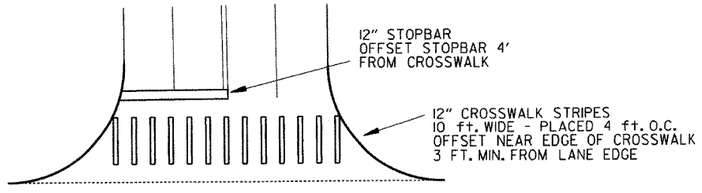


ASPHALT PAVEMENT



CONCRETE PAVEMENT

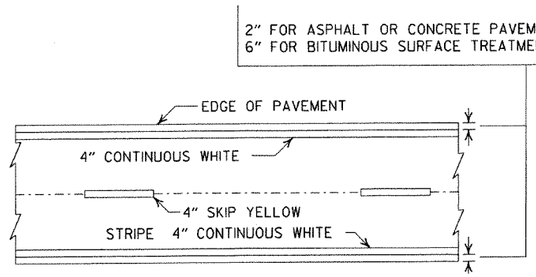
STRIPING AT ADJACENT NO PASSING LANES



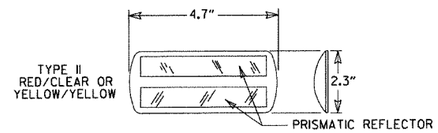
CROSSWALK AND STOPBAR DETAILS

NOTES:

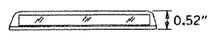
1. ALL LINES SHALL HAVE A WIDTH OF 4 INCHES.
2. THE THICKNESS AND RATE OF PAINT APPLICATION SHALL BE AS SPECIFIED IN SECTION 718 OF THE STANDARD SPECIFICATIONS.
3. THIS DRAWING SHALL BE USED IN CONJUNCTION WITH THE LATEST REVISED ADDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES."
4. RAISED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



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

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.

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

ARKANSAS STATE HIGHWAY COMMISSION

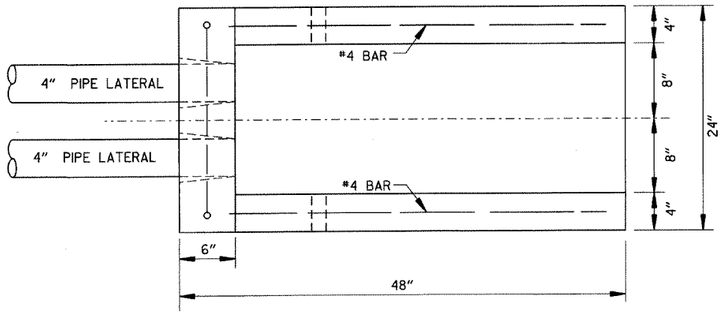
PAVEMENT MARKING DETAILS

STANDARD DRAWING PM-1

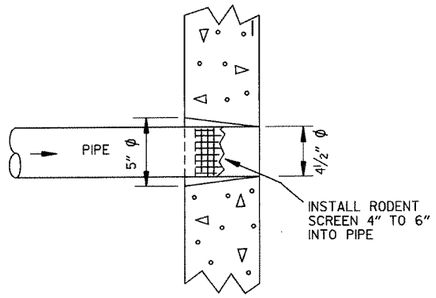
NOTE:
1. GRANULAR BACKFILL TO BE SUBSIDIARY TO PIPE UNDERDRAIN.

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

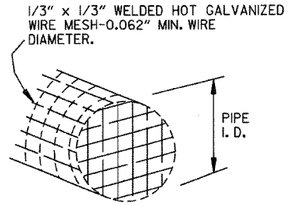
3. GRANULAR MATERIAL SHALL BE WRAPPED WITH GEOTEXTILE FABRIC. LAP FABRIC 12" OR THE WIDTH OF THE TRENCH AT THE TOP.



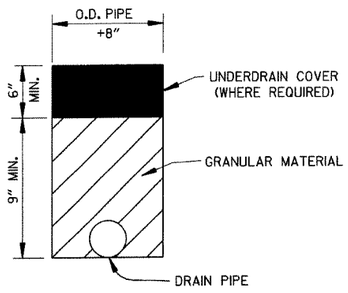
PLAN VIEW

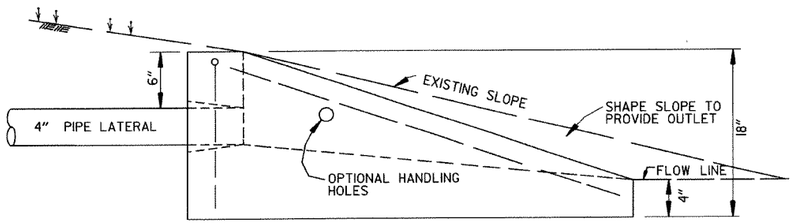


DETAIL OF HOLE FOR 4" PIPE

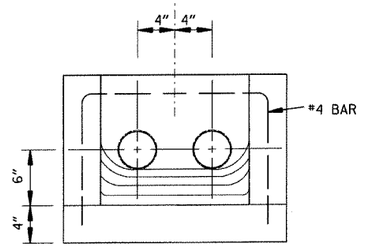


DETAIL OF RODENT SCREEN

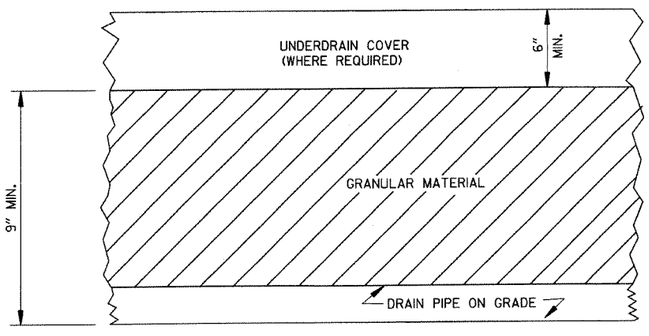




SIDE VIEW

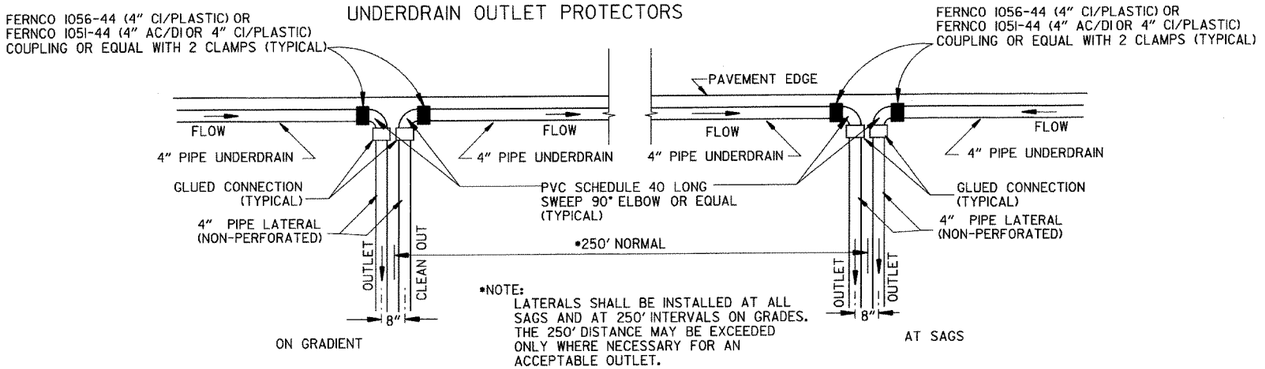


FRONT VIEW



DETAILS OF PIPE UNDERDRAIN

UNDERDRAIN OUTLET PROTECTORS



DETAIL OF PIPE UNDERDRAIN LATERALS WHEN PLACED ALONG PAVEMENT EDGE

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

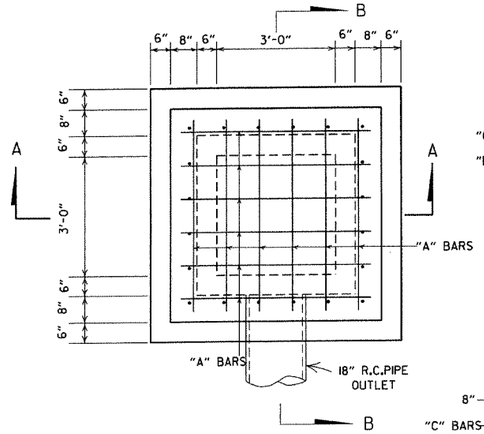
DATE	REVISION	DATE FILMED
4-10-03	REVISED NOTE 3	
1-12-00	REVISED DETAIL OF UNDERDRAIN LATERALS	
11-18-98	REVISED NOTE	
10-18-96	REVISED MIN. DEPTH & GEOTEXTILE FABRIC	
4-26-96	ADDED LATERAL NOTE; 5½" TO 5"	
11-22-95	REVISED LATERALS	
7-20-95	REVISED LATERALS & ADDED NOTE	
11- 3-94	REVISED FOR DUAL LATERALS	11- 3-94
10- 1-92	SUBSTITUTED GEOTEXTILE	10- 1-92
8-15-91	ADDED POLYEDTHYLENE PIPE	8-15-91
11- 8-90	DELETED ALTERNATE NOTE	11- 8-90
1-25-90	ADDED 4" SNAP ADAPTER	1-25-90
11-30-89	DEL. (SUBGRADE); ADDED (WHERE REQUIRED)	11-30-89
7-15-88	ISSUED P.L.M.	647-7-15-88

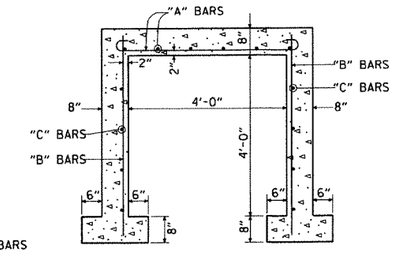
ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF PIPE UNDERDRAIN

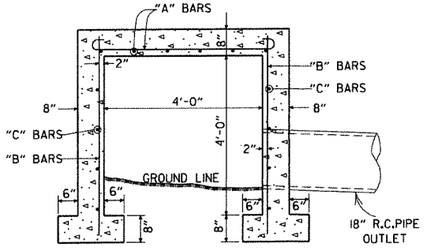
STANDARD DRAWING PU-1

7-20-95 INSTD.PUI





SEC A-A



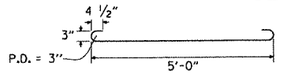
SEC B-B

NOTE: MAX FILL HEIGHT ABOVE TOP OF BOX = 13'-0".

STEEL SCHEDULE

BARS	NUMBER	LENGTH	SPACING
"A"	12	6'-0"	10"
"B"	20	5'-0"	10 ½"
"C"	16	5'-0"	12"

ALL STEEL TO BE #4 BARS



"A" BARS

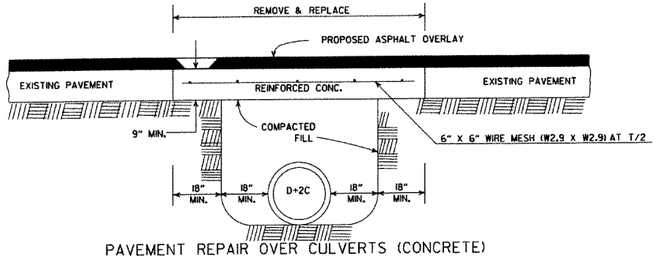
QUANTITIES

CONCRETE 3.31 CU. YDS.
REINFORCING STEEL 168 LB.

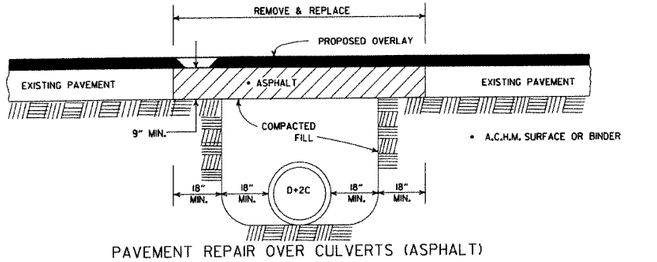
GENERAL NOTE:

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

REINFORCED CONCRETE SPRING BOX



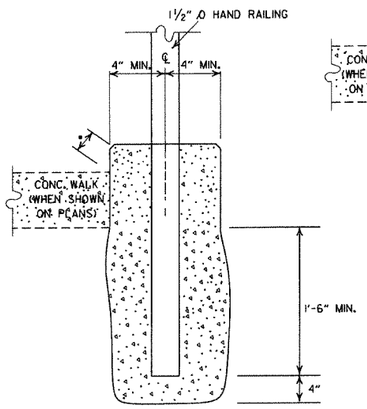
PAVEMENT REPAIR OVER CULVERTS (CONCRETE)



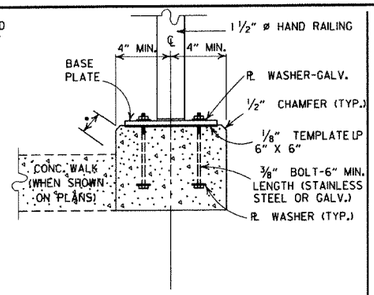
PAVEMENT REPAIR OVER CULVERTS (ASPHALT)

DETAIL SHOWING REPAIR OF EXISTING PAVEMENT AT CULVERT INSTALLATIONS

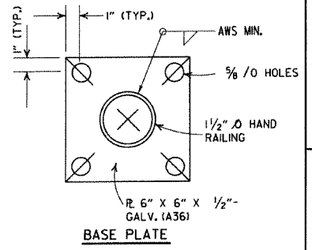
• A 2" MIN. HIGH CURB IS REQUIRED WHEN CONCRETE WALK IS ADJACENT TO THE HAND RAILING. PAYMENT FOR CURB SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR CONCRETE WALKS.



DETAIL OF HAND RAILING SET IN CONCRETE

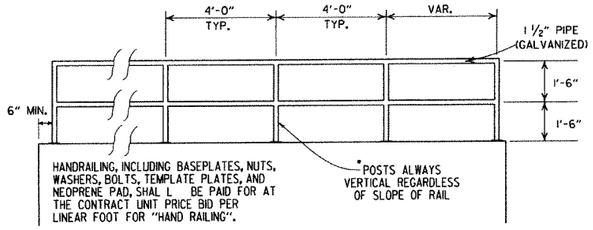


POST CONNECTION TO WALL

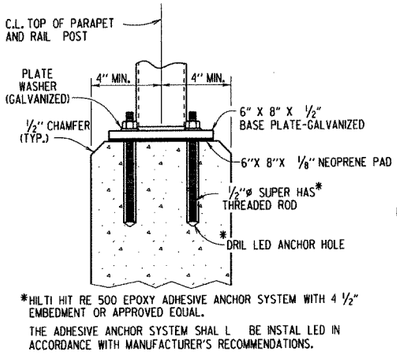


BASE PLATE

POST CONNECTION DETAILS



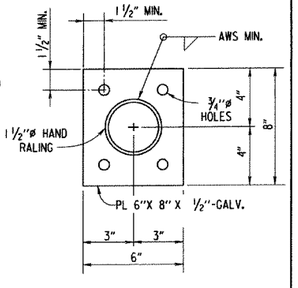
HAND RAILING SHALL CONFORM TO SECTION 633.



*HILTI HIT RE 500 EPOXY ADHESIVE ANCHOR SYSTEM WITH 4 ½" EMBEDMENT OR APPROVED EQUAL.

THE ADHESIVE ANCHOR SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

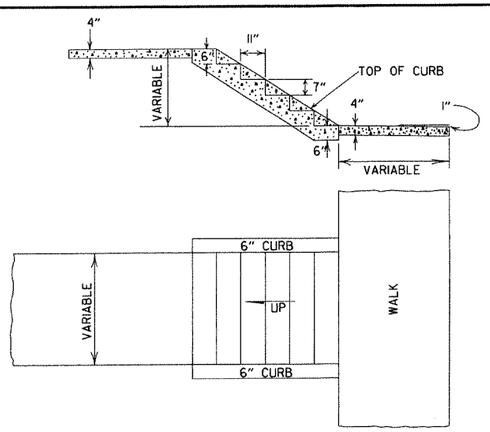
POST CONNECTION TO WALL



BASE PLATE

DETAILS OF ALTERNATE POST ANCHOR SYSTEM
(EPOXY ADHESIVE ANCHORS)

HAND RAILING DETAILS



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.

DETAILS OF CONCRETE STEPS & WALKS

DATE	REVISION	DATE FILMED
9-12-13	REVISED REINFORCED CONCRETE SPRING BOX	
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 ADDED HDWL. MODS. DEL. PIPE UNDERDRAINS	649-7-15-88
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

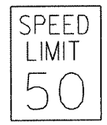
R1-1

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

R1-2

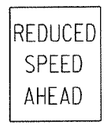
STD. 36"X36"X36"
EXPWY. 48"X48"X48"
FWY. 60"X60"X60"

R2-1



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

R2-5A



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

R2-5C

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

R4-1

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

R4-2

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

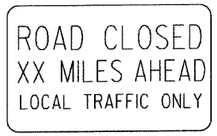
R5-1

STD. 30"X30"
EXPWY. 36"X36"
SPECIAL 48"X48"

RII-2

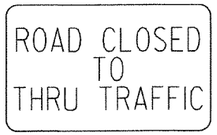
48"X30"

RII-3A



60"X30"

RII-4

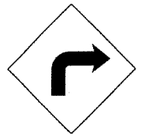


60"X30"

RSP-1

48"X30"

WI-1



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

WI-2

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

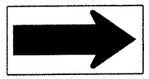
WI-3

STD. 48"X48"

WI-4

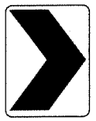
STD. 48"X48"

WI-6



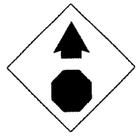
STD. 48"X24"
SPECIAL 60"X30"

WI-8



STD. 18"X24"
SPECIAL 24"X30"
EXPWY. 30"X36"
FWY. 36"X48"

W3-1

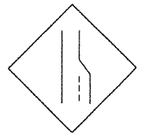


STD. 36"X36"
SPECIAL 48"X48"

W3-2

STD. 36"X36"
SPECIAL 48"X48"

W4-2



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

W5-1

STD. 36"X36"
SPECIAL 48"X48"

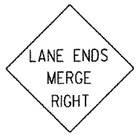
W6-3

EXPWY. 36"X36"
SPECIAL 48"X48"

W8-7

EXPWY. 36"X36"
FWY. 48"X48"

W9-2



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

W13-1

STD. 24"X24"

W20-1

STD. 48"X48"

W20-2

STD. 48"X48"

W20-3

STD. 48"X48"

W20-4

STD. 48"X48"

W20-5

STD. 48"X48"

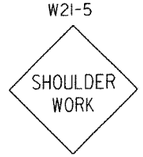
W20-7a

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

W21-2

STD. 30"X30"
SPECIAL 36"X36"

W21-5



STD. 30"X30"
SPECIAL 36"X36"

W24-1

STD. 36"X36"

WI-4b

STD. 48"X48"

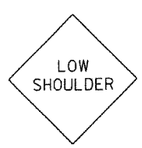
R56-1

STD. 18"X18"

W8-11

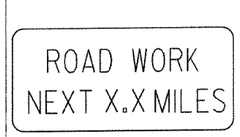
STD. 36"X36"
FWY. 48"X48"

W8-9



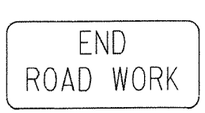
STD. 36"X36"
FWY. 48"X48"

G20-1



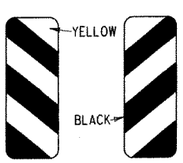
60"X24"

G20-2



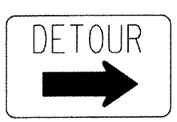
48"X24"

OM-3L OM-3R



12"X36"

M4-9



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

M4-10

48"X18"

R55-1

FINES DOUBLE
IN WORK ZONES *
WHEN WORKERS
ARE PRESENT **

36"X60"

* USE 6" C LETTERS
** USE 4" D LETTERS

ADVANCE DISTANCES
(XXXX)

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

GENERAL NOTES:

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

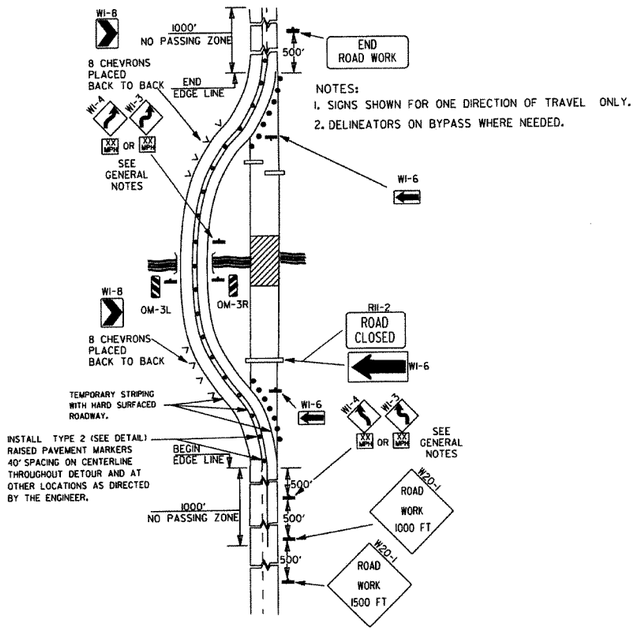
- NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE REQUIREMENTS SHOWN IN NOTES 4 & 5, BUT MEET THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH), WILL BE ACCEPTED. COMPLIANCE WITH THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY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

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

ARKANSAS STATE HIGHWAY COMMISSION

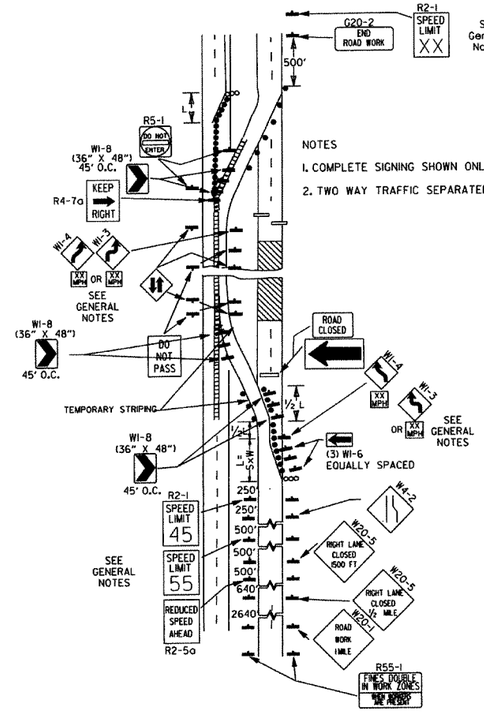
STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-1



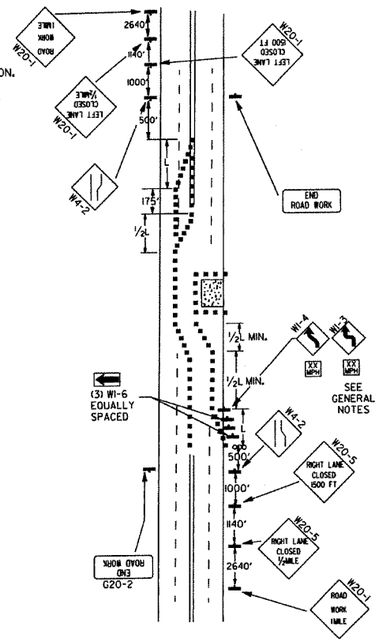
NOTES:
1. SIGNS SHOWN FOR ONE DIRECTION OF TRAVEL ONLY.
2. DELINEATORS ON BYPASS WHERE NEEDED.

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

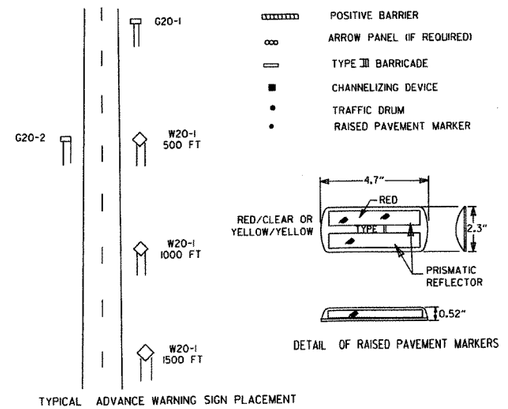


NOTES
1. COMPLETE SIGNING SHOWN ONLY IN CROSSOVER DIRECTION.
2. TWO WAY TRAFFIC SEPARATED WITH POSITIVE BARRIER.

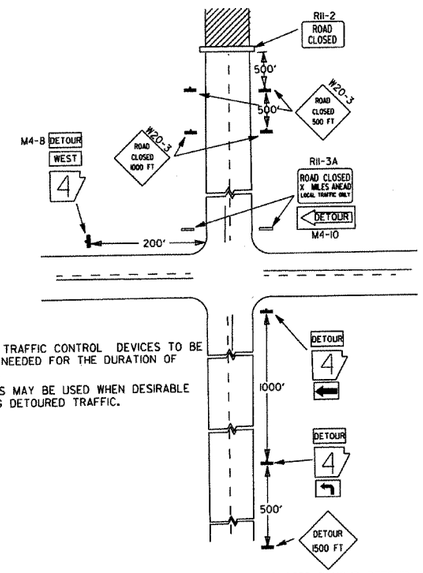
(B) TYPICAL APPLICATION - 4-LANE DIVIDED ROADWAY WHERE ONE ROADWAY IS CLOSED.



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

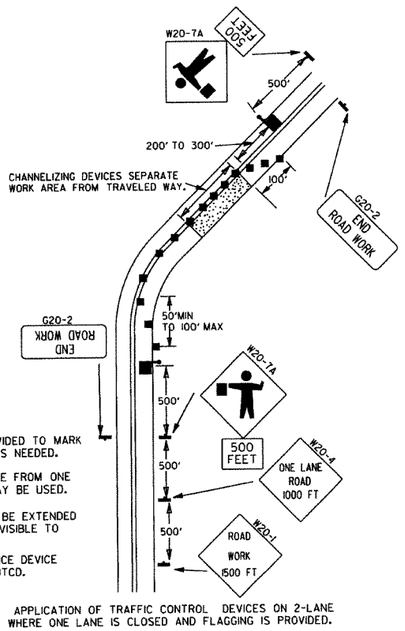


TYPICAL ADVANCE WARNING SIGN PLACEMENT



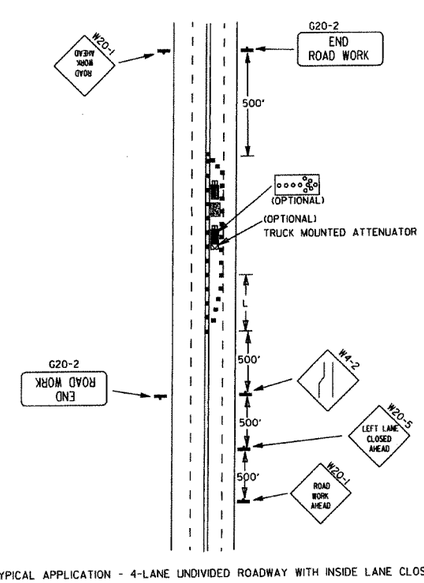
NOTES:
1. REGULATORY TRAFFIC CONTROL DEVICES TO BE MODIFIED AS NEEDED FOR THE DURATION OF THE DETOUR.
2. STREET NAMES MAY BE USED WHEN DESIRABLE FOR DIRECTING DETOURED TRAFFIC.

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



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

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



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

TAPER FORMULAE:

L=SXW FOR SPEEDS OF 45MPH OR MORE.

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

WHERE:
L= MINIMUM LENGTH OF TAPER.
S= NUMERICAL VALUE OF POSTED SPEED LIMIT PRIOR TO WORK OR 85TH PERCENTILE SPEED.
W= WIDTH OF OFFSET.

GENERAL NOTES:

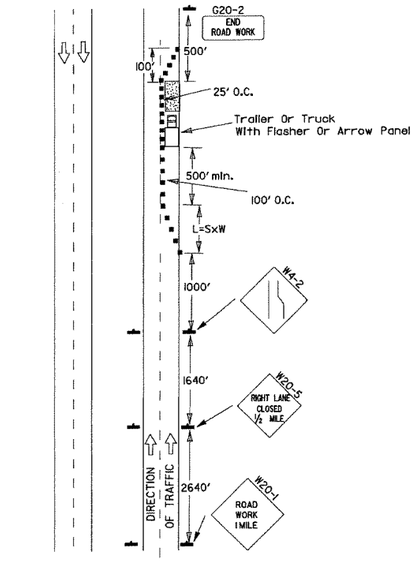
1. ADVISORY SPEED POSTED ON W1-3 OR W1-4 CURVE WARNING SIGNS TO BE DETERMINED AT SITE. USE W1-4 WHEN SPEED IS GREATER THAN 30MPH AND W1-3 WHEN 30MPH OR LESS.
2. WHEN THE EXISTING SPEED LIMIT IS 55MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 45MPH, THE R2-1(55) SHALL BE OMITTED AND THE R2-5A SHALL BE INSTALLED AT THAT LOCATION. ADDITIONAL R2-1 45MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1MILE INTERVALS. AT THE END OF THE WORK AREA A R2-1(XX) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
3. WHEN THE EXISTING SPEED LIMIT IS 65MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 55MPH, THE R2-1(45) SHALL BE OMITTED. ADDITIONAL R2-1 55MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1MILE INTERVALS. AT THE END OF THE WORK AREA A R2-1(XX) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
4. THE MAXIMUM SPACING BETWEEN CHANNELIZING DEVICES IN A TAPER SHOULD BE APPROXIMATELY EQUAL IN FEET TO THE SPEED LIMIT. BEYOND THE TAPER, MAXIMUM SPACING SHALL BE TWO TIMES THE SPEED LIMIT, OR AS DIRECTED BY THE ENGINEER.
5. WARNING LIGHTS AND/OR FLAGS MAY BE MOUNTED TO SIGNS OR CHANNELIZING DEVICES AT NIGHT AS NEEDED.
6. PAVEMENT MARKINGS NO LONGER APPLICABLE WHICH MIGHT CREATE CONFUSION IN THE MINDS OF VEHICLE OPERATORS SHALL BE REMOVED OR OBLITERATED AS SOON AS PRACTICABLE.
7. TRAILER MOUNTED DEVICES SUCH AS ARROW PANELS AND PORTABLE CHANGEABLE MESSAGE SIGNS SHALL BE DELINEATED BY AFFIXING CONSPICUITY MATERIAL IN A CONTINUOUS LINE ON THE FACE OF THE TRAILER. WHEN PLACED ON OR ADJACENT TO THE SHOULDER AND NOT BEHIND A POSITIVE BARRIER, THESE DEVICES SHALL BE DELINEATED BY PLACING FIVE (5) TRAFFIC DRUMS, EQUALLY SPACED ALONG THE TRAFFIC SIDE OF THE DEVICE.

DATE	REVISION	FR.MED
9-12-13	REVISED DETAIL OF RAISED PAVEMENT MARKERS	
3-11-10	ADDED (AFAD)	
11-20-08	REVISED SIGN DESIGNATIONS	
11-18-04	ADDED GENERAL NOTE	
10-18-96	ADDED R55-1	
4-26-96	CORRECTED (a) BEHIND G20-2	
6-8-95	CORRECTED SIGN IDENT. ON W1-4A	6-8-95
2-2-95	REVISED PER PART VI, MUTCD, SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	

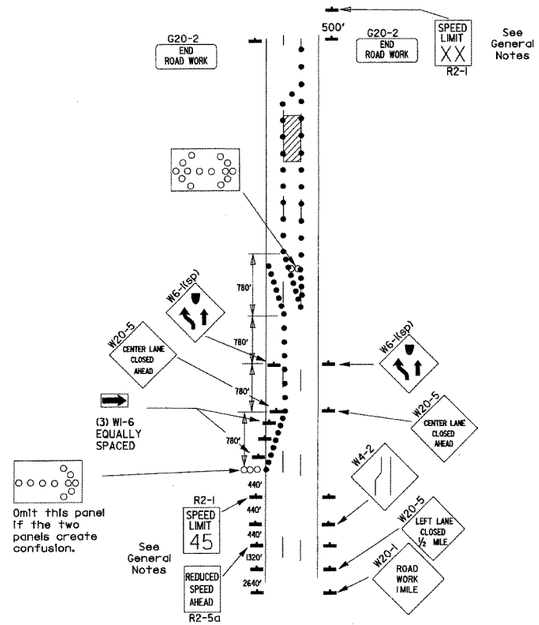
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

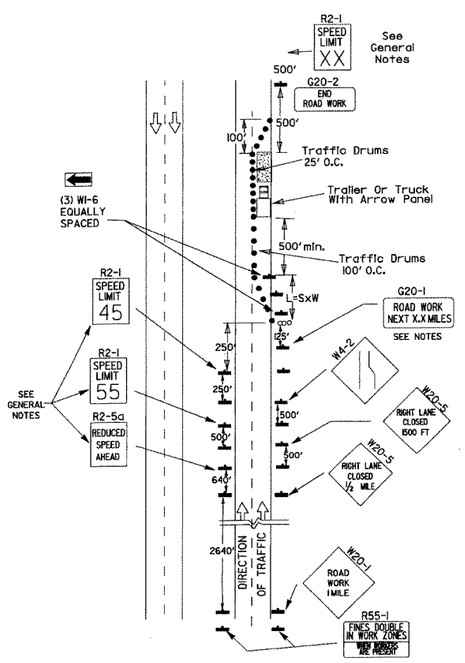
STANDARD DRAWING TC-2



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



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



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

KEY:

○○○ Arrow Panel (If Required)

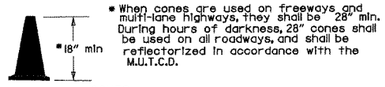
■ Channelizing Device

● Traffic drum

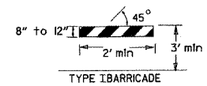
GENERAL NOTES:

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

Channelizing devices

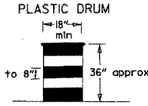


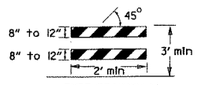
CONES



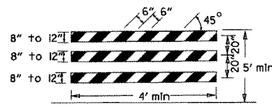
TYPE I BARRICADE

PLASTIC DRUM

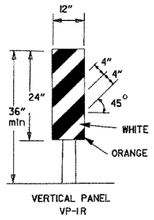




TYPE II BARRICADE



TYPE III BARRICADE



VERTICAL PANEL
VP-1R

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

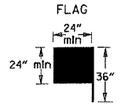
TRAFFIC CONTROL DEVICES
FOR
VERTICAL PAVEMENT DIFFERENTIALS

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 shown on the plans concrete barrier will be used.

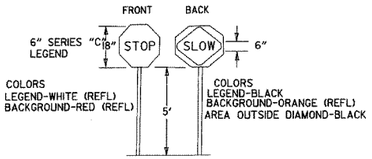
When the shoulder area is used as part of the traveled lane and there is insufficient width to place drums on the remaining shoulder width, then vertical panels shall be used.

FLAG

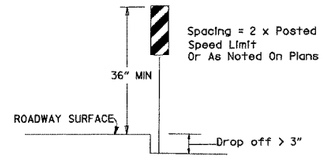


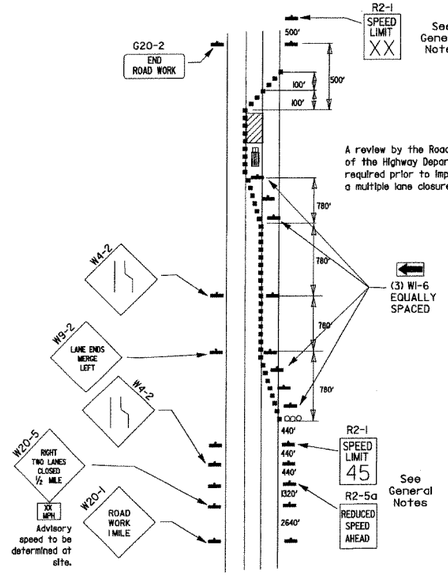
Flag shall be of good grade red material

STOP SLOW PADDLE



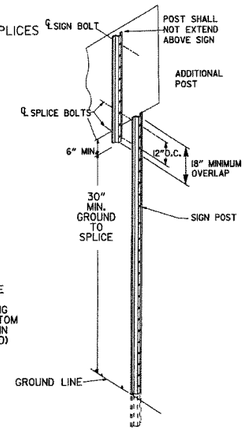
VERTICAL PANEL PLACEMENT





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

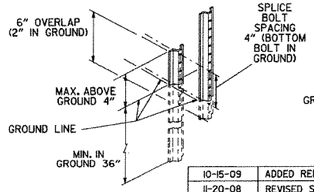
DETAIL OF SPLICES



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

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

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



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

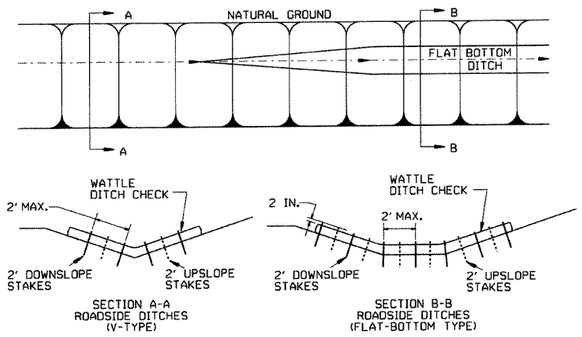
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

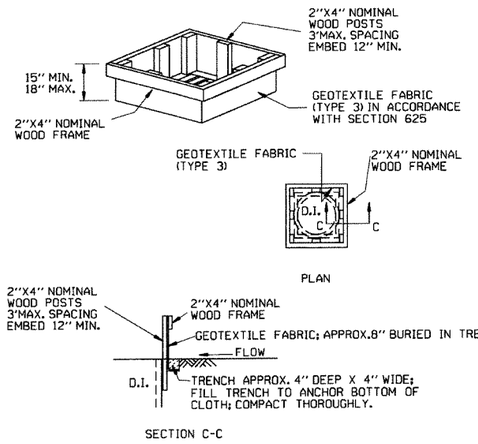
STANDARD DRAWING TC-3

GENERAL NOTES

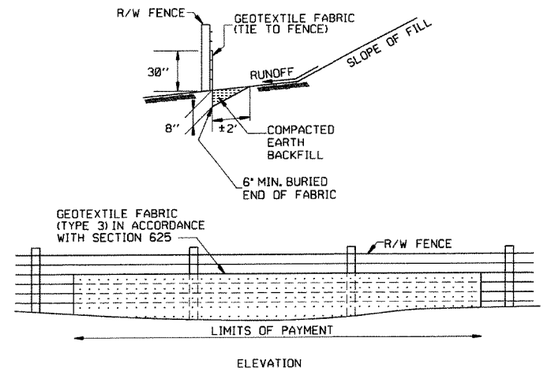
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.



WATTLE DITCH CHECK (E-1)



DROP INLET SILT FENCE (E-7)



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

GENERAL NOTES

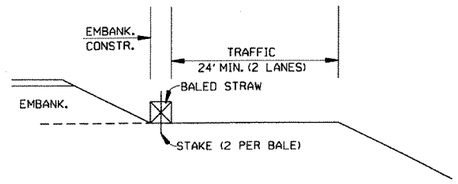
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST, OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

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.

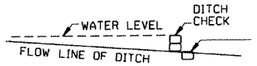
2. NO GAPS SHALL BE LEFT BETWEEN BALES.

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.

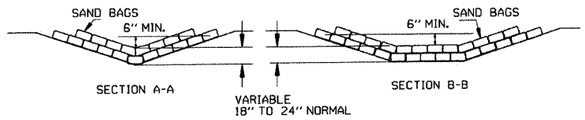


BALED STRAW FILTER BARRIER (E-2)

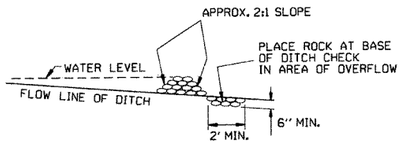
NUMBER OF SAND BAGS AND ARRANGEMENT VARIABLE WITH ON-SITE CONDITIONS.

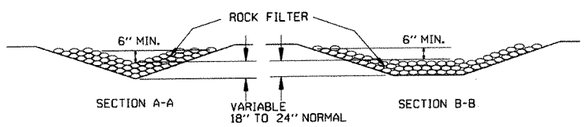


PLACE SAND BAGS AT BASE OF DITCH CHECK IN AREA OF OVERFLOW

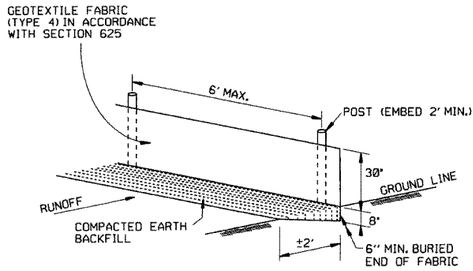


SAND BAG DITCH CHECK (E-5)





ROCK DITCH CHECK (E-6)



SILT FENCE (E-11)

GENERAL NOTES

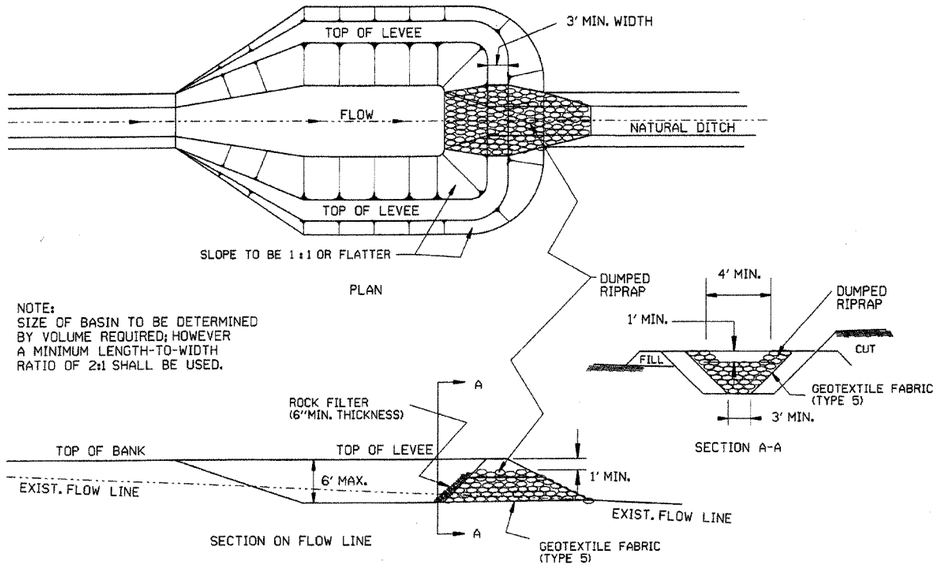
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

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

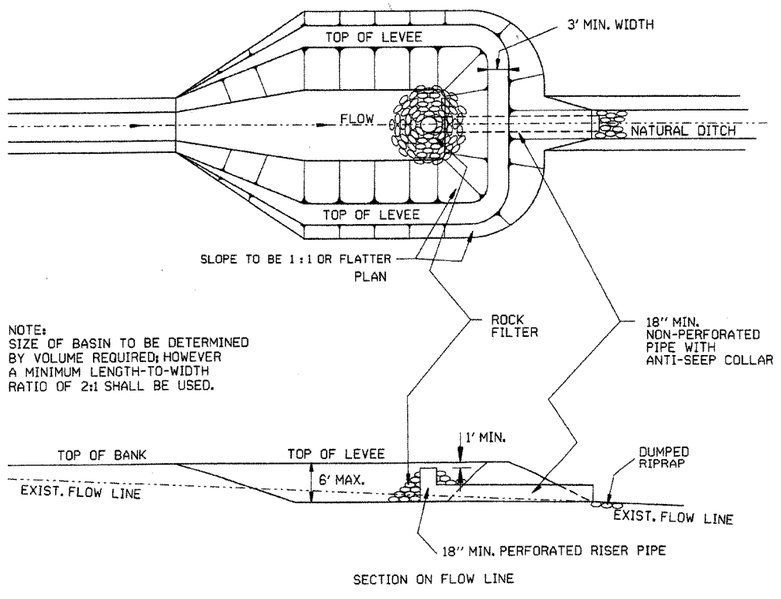
ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

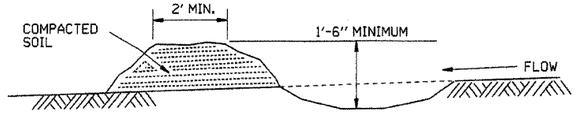
STANDARD DRAWING TEC-1



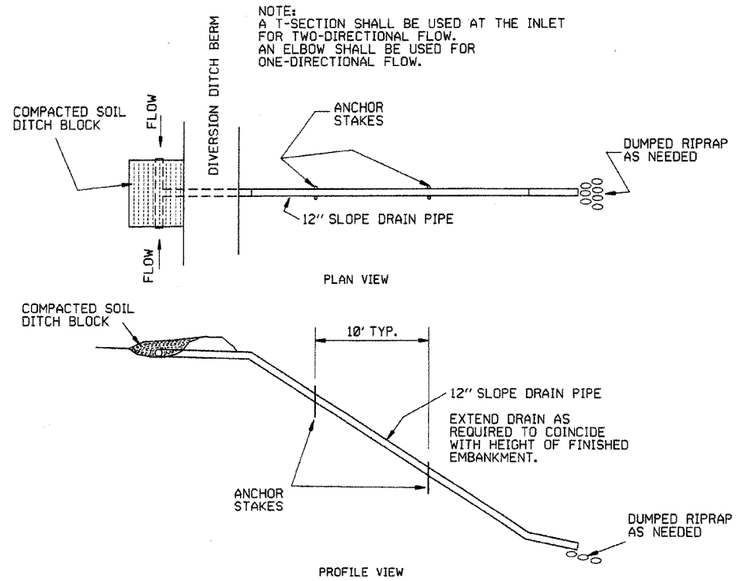
SEDIMENT BASIN WITH RIPRAP OUTLET (E-9)



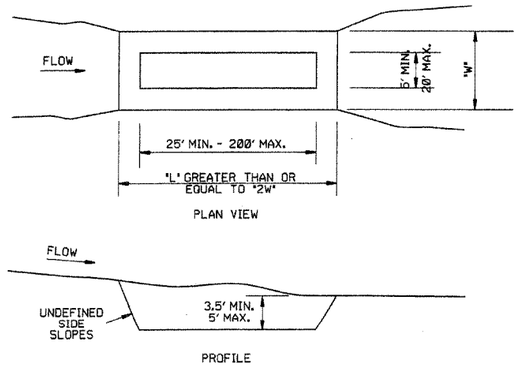
SEDIMENT BASIN WITH PIPE OUTLET (E-10)



DIVERSION DITCH (E-8)



SLOPE DRAIN (E-12)



SEDIMENT BASIN (E-14)

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

ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

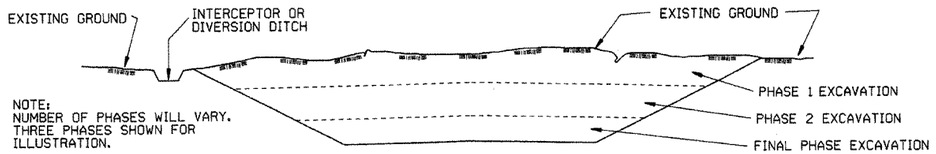
STANDARD DRAWING TEC-2

CLEARING AND GRUBBING

CONSTRUCTION SEQUENCE

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

EXCAVATION



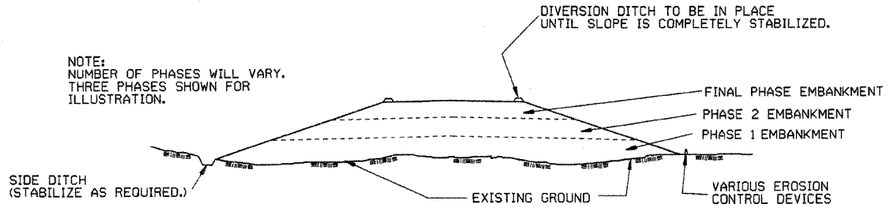
GENERAL NOTE

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

CONSTRUCTION SEQUENCE

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

EMBANKMENT



GENERAL NOTE

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

CONSTRUCTION SEQUENCE

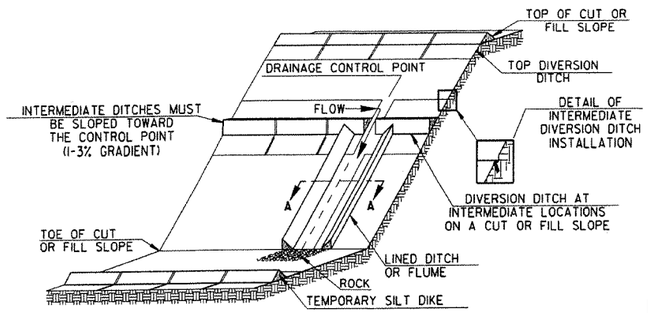
1. CONSTRUCT DIVERSION DITCHES, DITCH CHECKS, SEDIMENT BASINS, SILT FENCES, OR OTHER EROSION CONTROL DEVICES AS SPECIFIED.
2. PLACE PHASE 1 EMBANKMENT WITH PERMANENT OR TEMPORARY SEEDING. PROVIDE DIVERSION DITCHES AND SLOPE DRAINS IF EMBANKMENT CONSTRUCTION IS TO BE TEMPORARILY ABANDONED FOR A PERIOD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

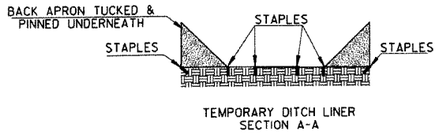
DATE	REVISION	FILMED
11-03-94	CORRECTED SPELLING	
6-2-94	Drawn & Issued	6-2-94

ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

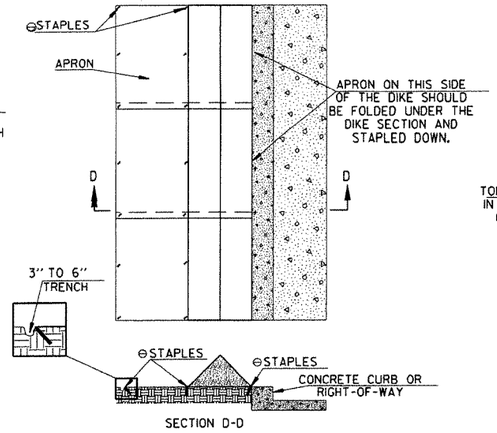
STANDARD DRAWING TEC-3





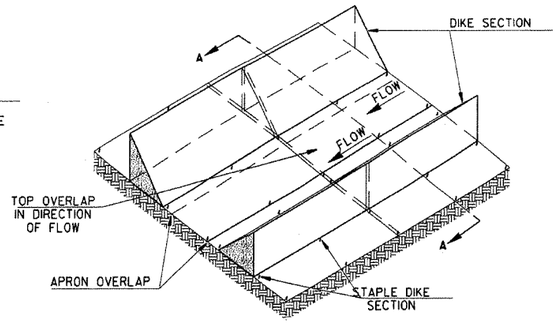
TEMPORARY DITCH LINER
SECTION A-A

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

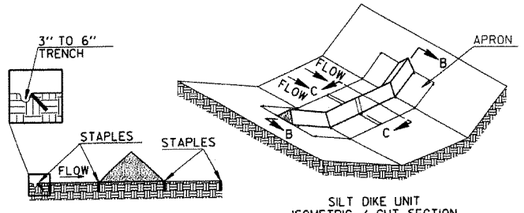


SECTION D-D

TRIANGULAR SILT DIKE INSTALLATION
FOR
CONTINUOUS BARRIER

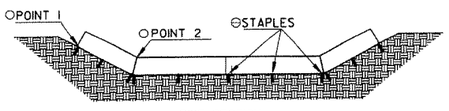


TRIANGULAR SILT DIKE INSTALLATION
FOR
TEMPORARY DITCH LINER



SECTION C-C

SILT DIKE UNIT
ISOMETRIC / CUT SECTION

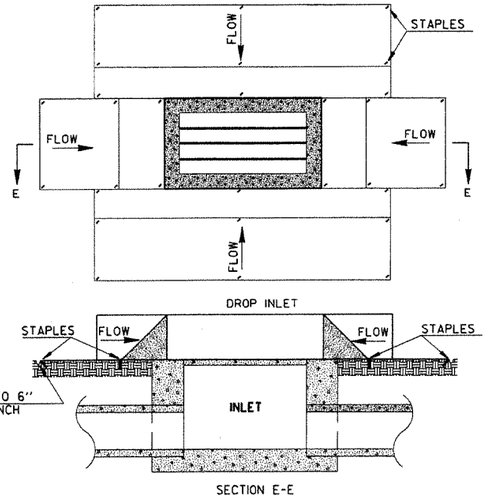


DIKE SECTION
SECTION B-B

TRIANGULAR SILT DIKE INSTALLATION
FOR
ROADWAY DITCH OR DRAINAGE DITCH

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

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



SECTION E-E

TRIANGULAR SILT DIKE INSTALLATION
FOR
DROP INLETS

SYMBOLOGY
SYMBOL TO BE USED TO DENOTE DEVICE ON PLANS

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

GENERAL NOTES

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

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

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

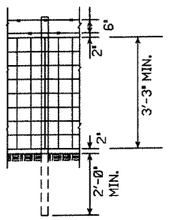
3. ACCEPTED TRIANGULAR SILT DIKE, MEASURED AS PROVIDED ABOVE, WILL BE PAID FOR AT THE CONTRACT UNIT PRICE BID FOR TRIANGULAR SILT DIKE. PRICE BID WILL INCLUDE THE COST OF FURNISHING THE DIKES, INSTALLING, MAINTAINING AND REMOVAL WHEN DIRECTED BY THE ENGINEER.

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

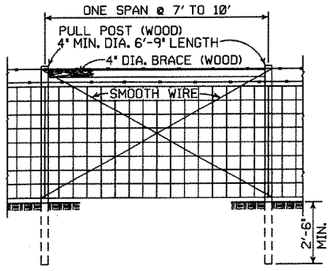
ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

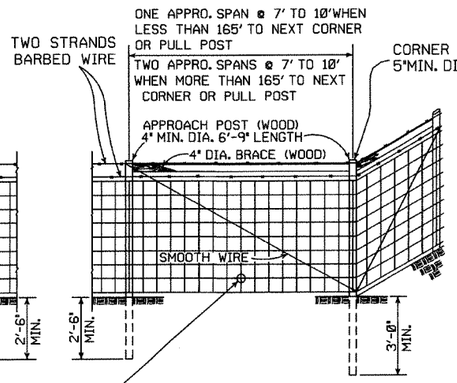
STANDARD DRAWING TEC-4

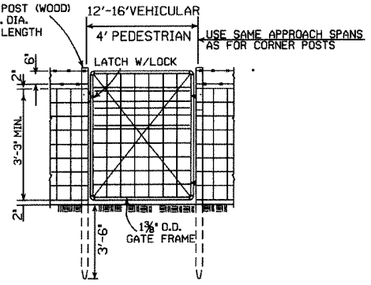


LINE POST
3" MIN. DIA. 6'-3" LENGTH
MAX. SPACING TO BE 10'-0"

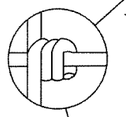


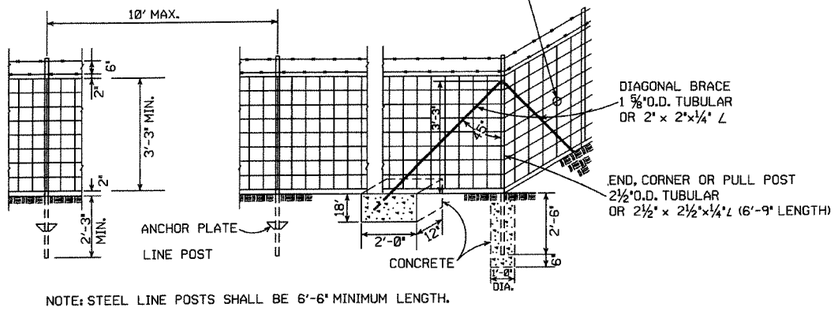
LINE BRACE ASSEMBLY
MAX. SPACING TO BE 330'

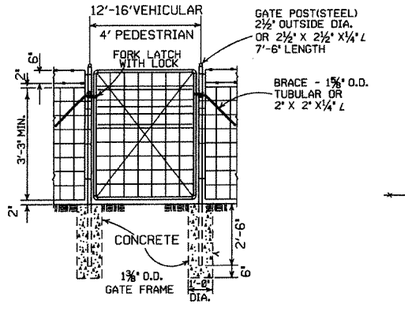


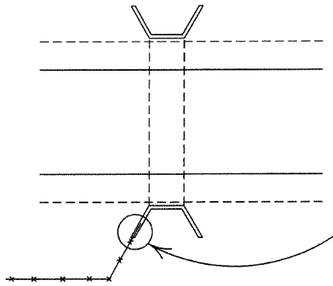


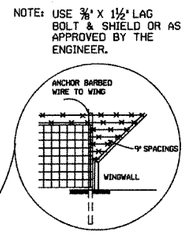
TYPE C FENCE (WOOD POSTS)









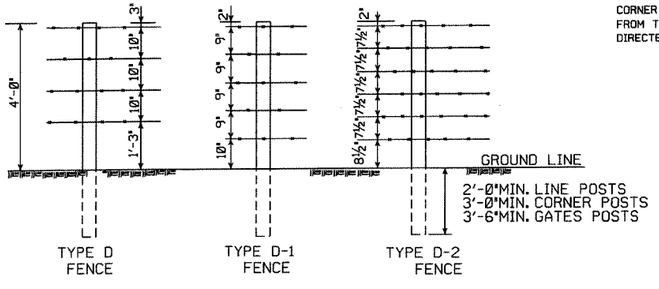


DETAIL OF FENCE CONSTRUCTION
AT LARGE CULVERTS
(5' IN HEIGHT AND OVER)

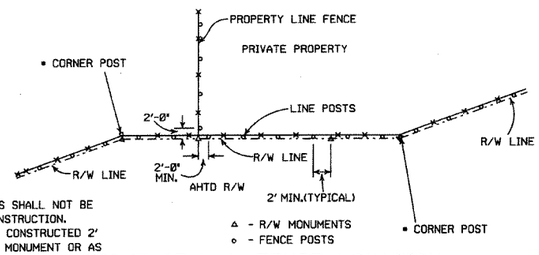
NOTE: STEEL LINE POSTS SHALL BE 6'-6" MINIMUM LENGTH.

TYPE C FENCE (STEEL POSTS)

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

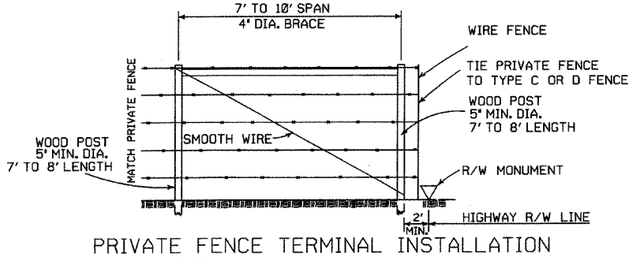


NOTE: SPACING AND SIZE (EXCEPT LENGTH) OF POSTS, APPROACH SPANS, PULL POST ASSEMBLIES, AND CORNER BRACING FOR TYPE D FENCE SHALL CONFORM TO TYPE C FENCE. USE GALVANIZED STAPLES ON WOOD POSTS AND APPROVED FASTENERS ON STEEL POSTS.



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

RIGHT-OF-WAY FENCE LOCATION



PRIVATE FENCE TERMINAL INSTALLATION

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

GENERAL NOTES:

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

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

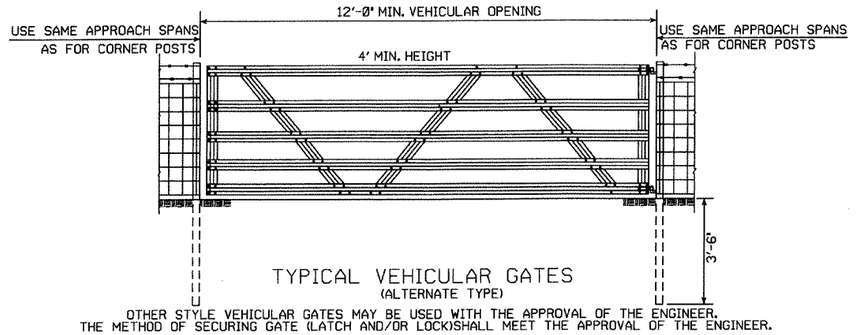
DRIVEWAY GATES, EITHER SINGLE 12' TO 16' OR DOUBLE 6' TO 8' OPENING OF THE SAME TYPE AS THE PEDESTRIAN GATE, SHALL BE INSTALLED ON THE RIGHT SIDE OF EACH THROUGH LANE ROAD AT LARGE CULVERTS OR BRIDGE CROSS FENCE, FOR USE OF MAINTENANCE EQUIPMENT. LOCATION OF GATES TO BE SHOWN ON PLANS OR AS DESIGNATED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

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

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

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

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



TYPICAL VEHICULAR GATES
(ALTERNATE TYPE)

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

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

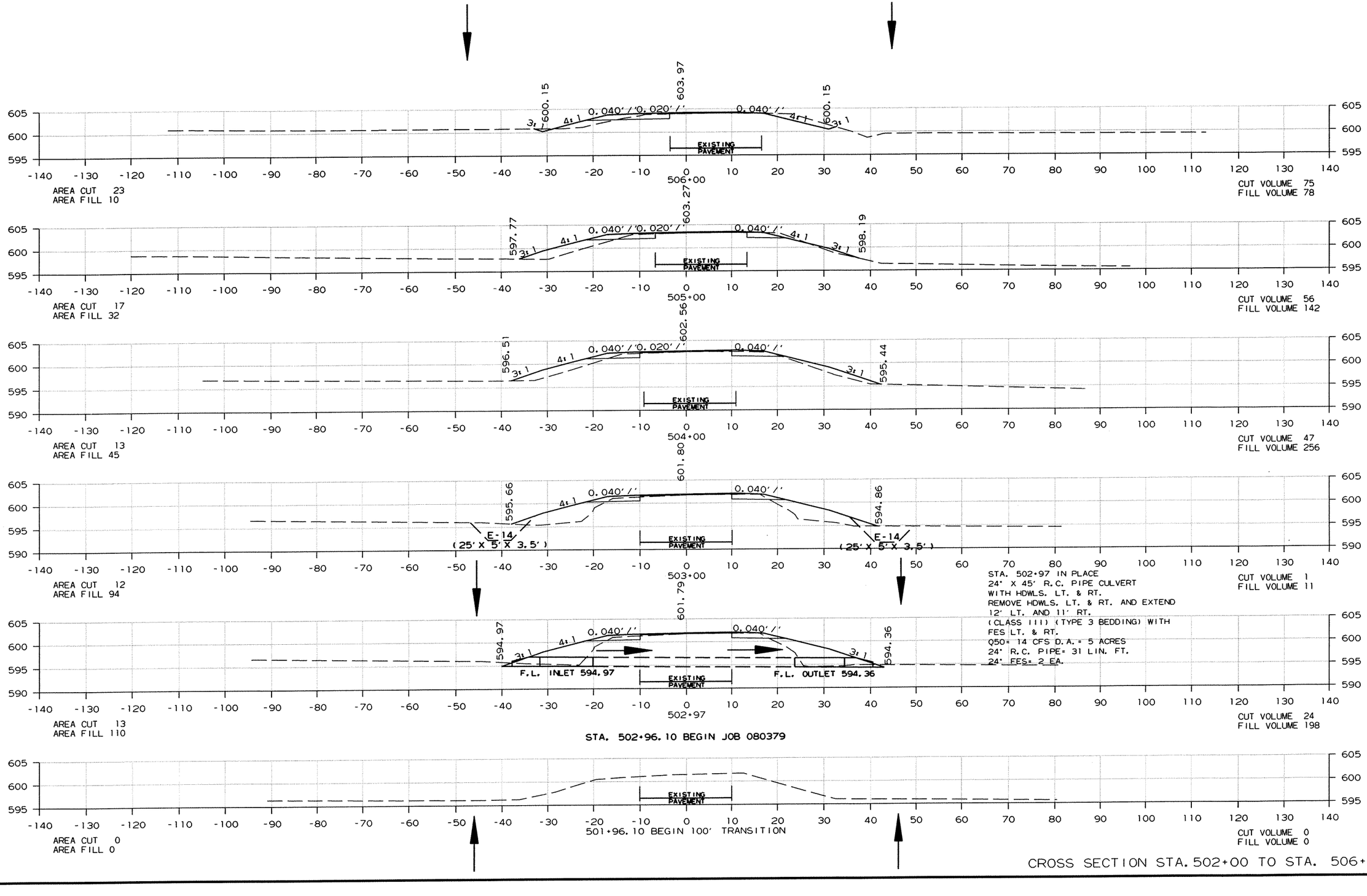
ARKANSAS STATE HIGHWAY COMMISSION

WIRE FENCE
TYPE C AND D

STANDARD DRAWING WF-4

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.		080379	74	85

(2) CROSS SECTIONS



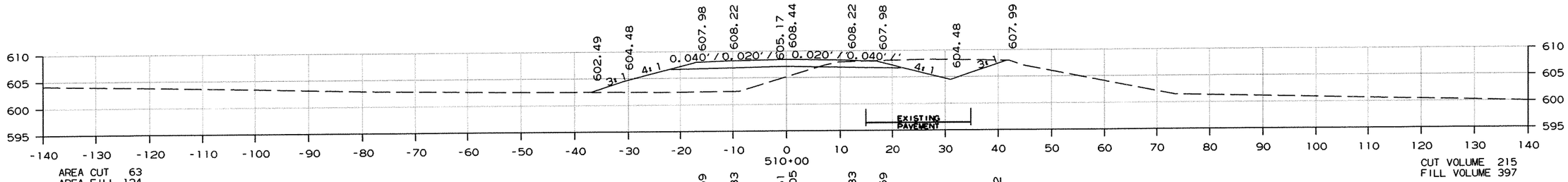
CROSS SECTION STA. 502+00 TO STA. 506+00

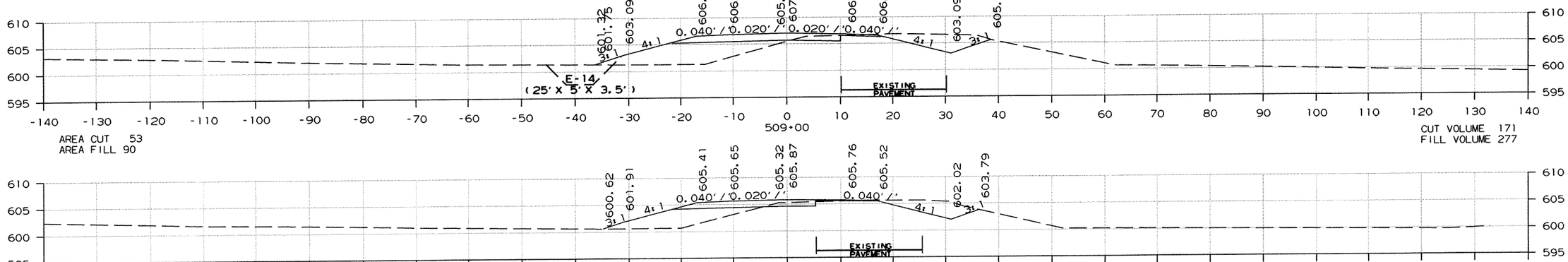
9/5/2013

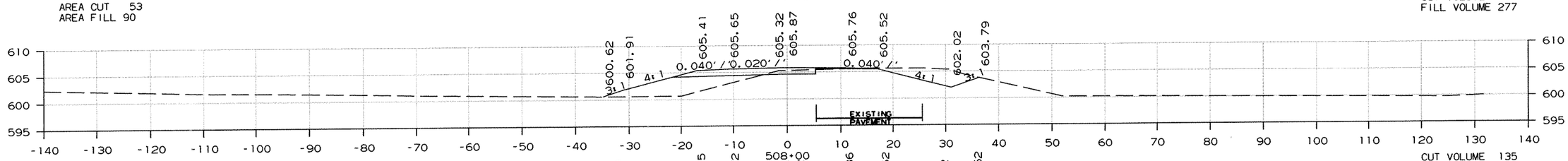
R080379.DGN

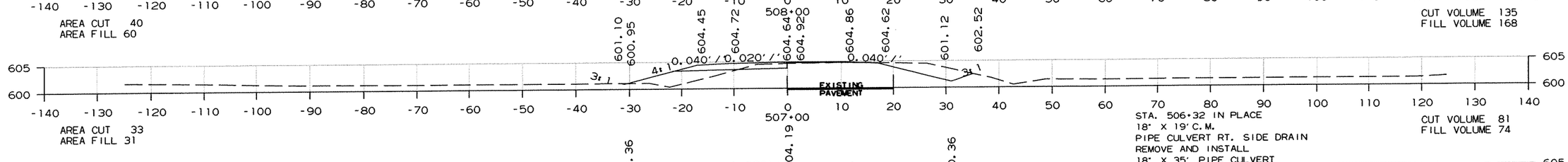
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		080379	75	85

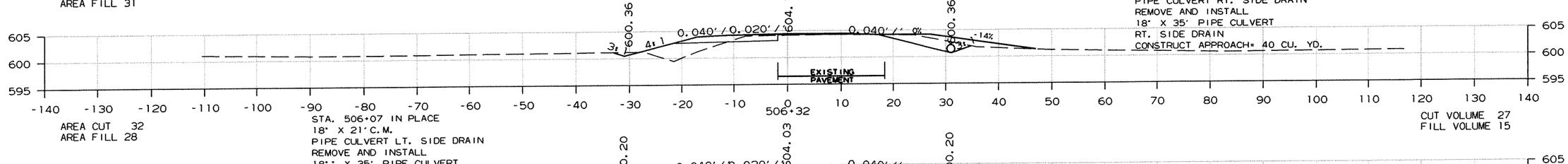
(2) CROSS SECTIONS

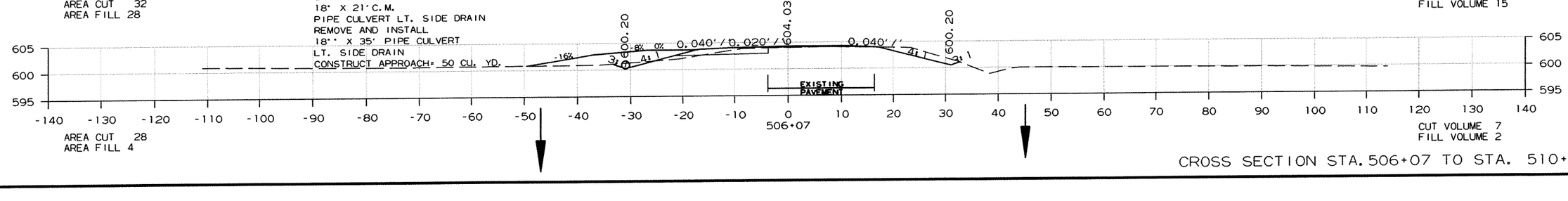












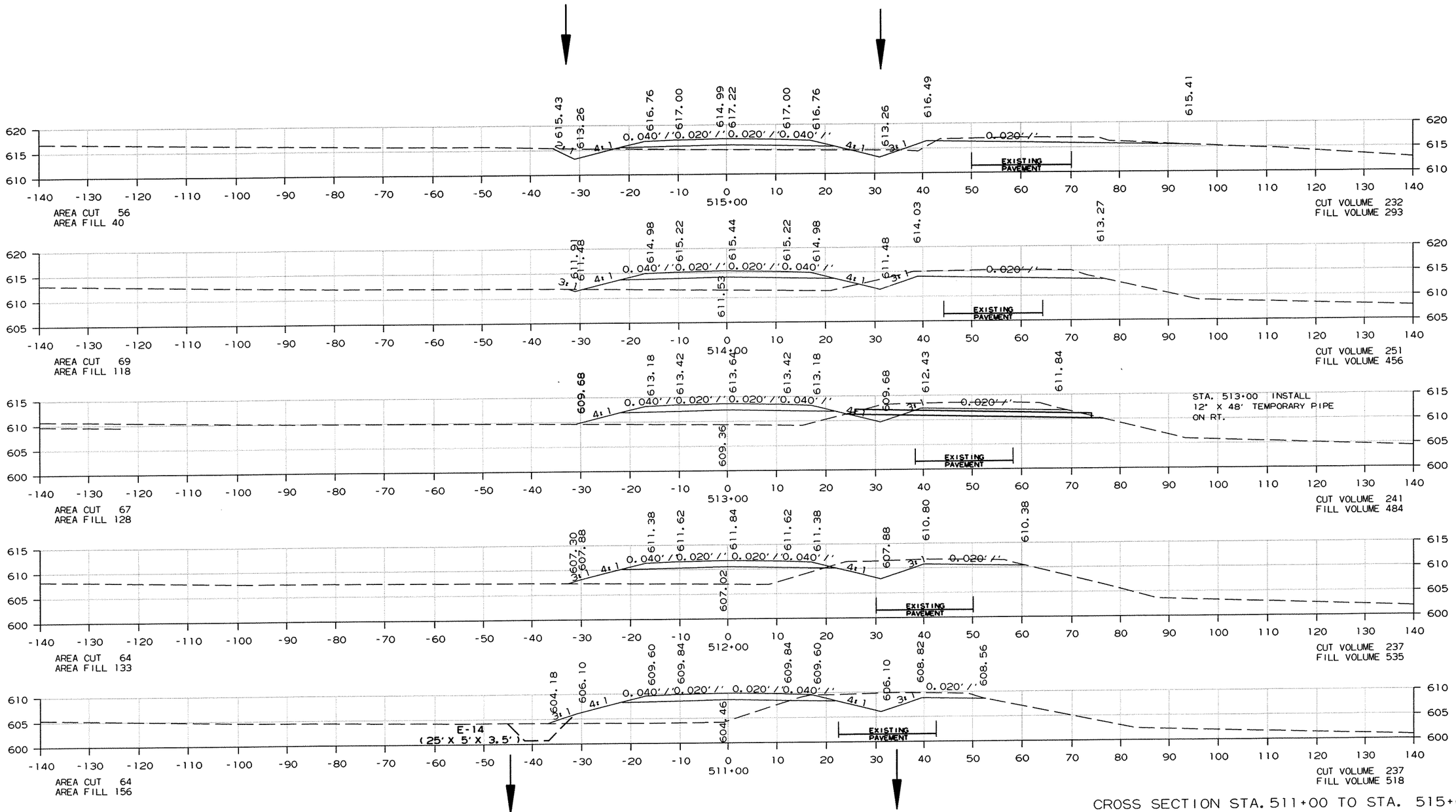
CROSS SECTION STA. 506+07 TO STA. 510+00

9/5/2013

R080379.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.		080379	76	85

(2) CROSS SECTIONS



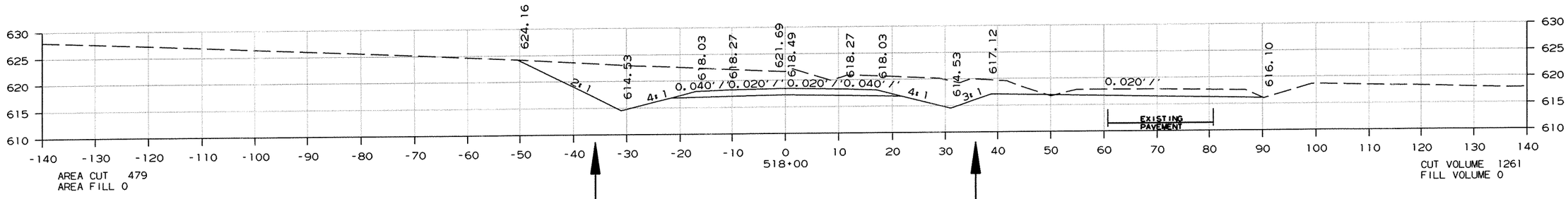
CROSS SECTION STA. 511+00 TO STA. 515+00

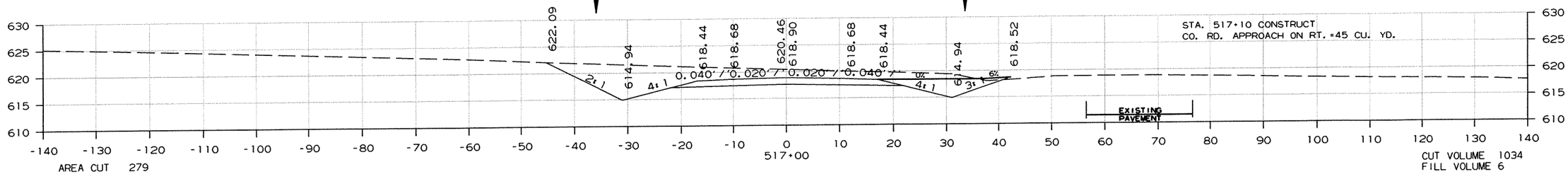
9/5/2013

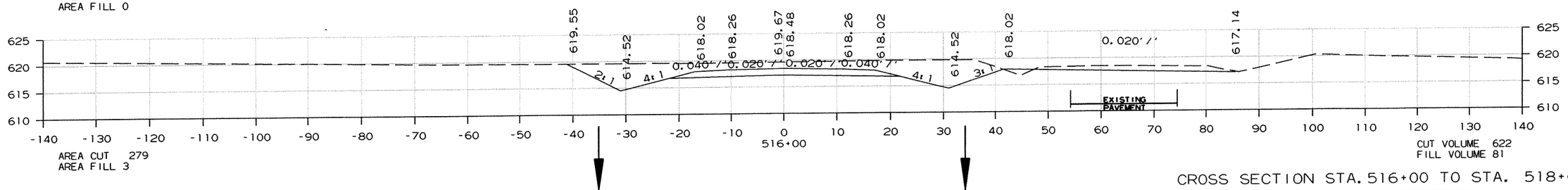
R080379.DGN

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.		080379	77	85

(2) CROSS SECTIONS







CROSS SECTION STA. 516+00 TO STA. 518+00

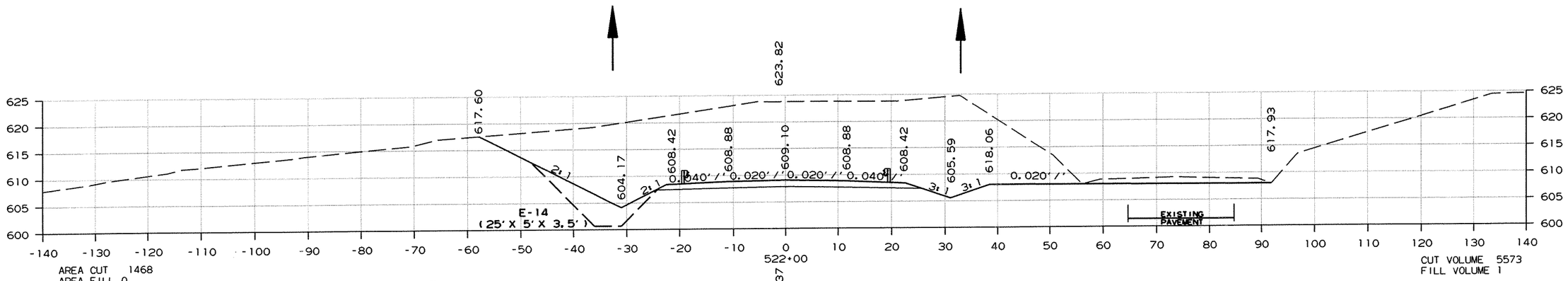
9/5/2013

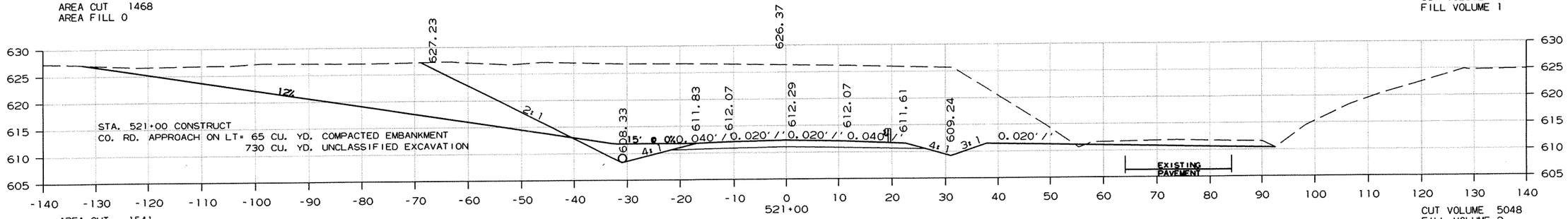
R080379.DGN

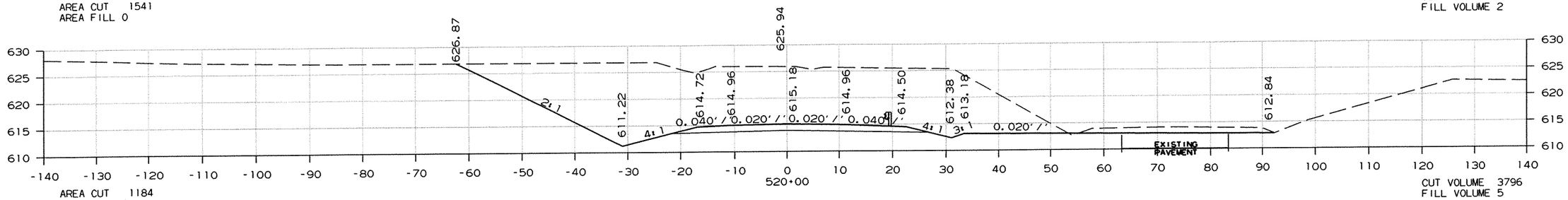
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		080379	78	85

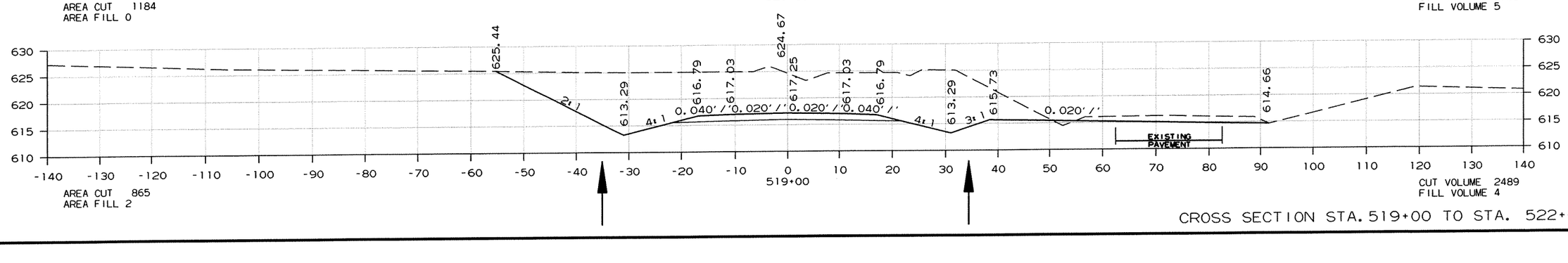
(2) CROSS SECTIONS

STA.	STA.		GUARDRAIL (TYPE A) LIN. FT.	THRIE BEAM GUARDRAIL TERMINAL EACH	TERMINAL ANCHOR POSTS (TYPE 1) EACH	BRIDGE END TERMINAL EACH
520+02.76						1
521+82.76	522+30.91	LT.				
526+67.07	528+98.22	LT.	200	1	1	
526+67.07	527+73.22	RT.	75	1	1	









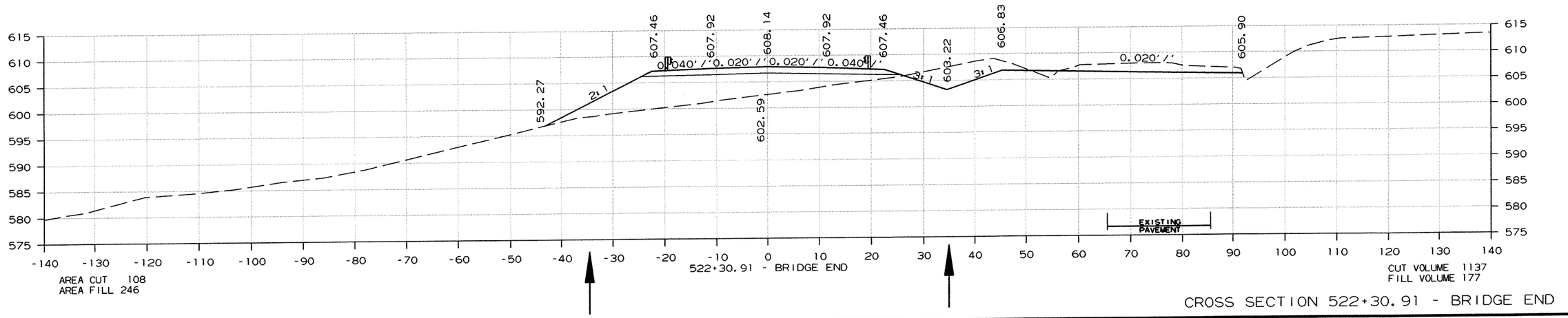
CROSS SECTION STA. 519+00 TO STA. 522+00

9/5/2013

R080379.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.		080379	79	85

(2) CROSS SECTIONS



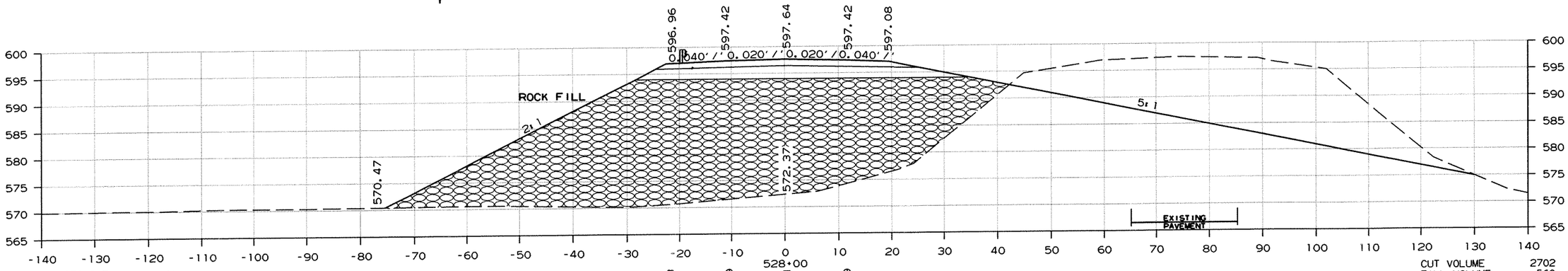
CROSS SECTION 522+30.91 - BRIDGE END

9/5/2013

R080379.DGN

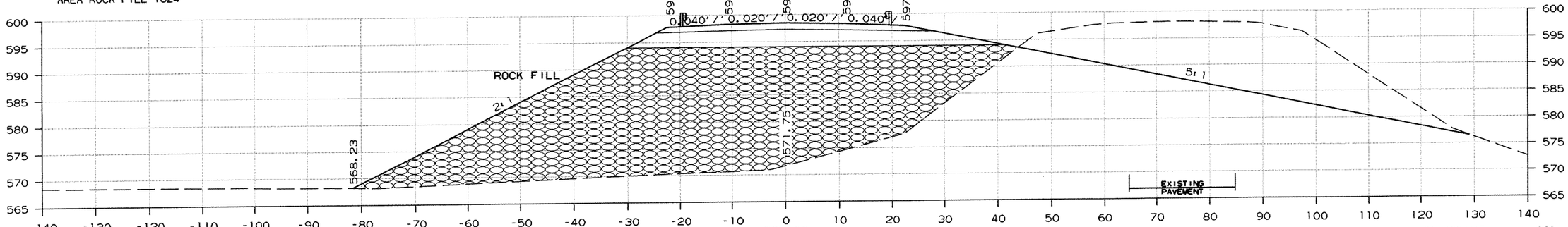
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		080379	80	85

(2) CROSS SECTIONS



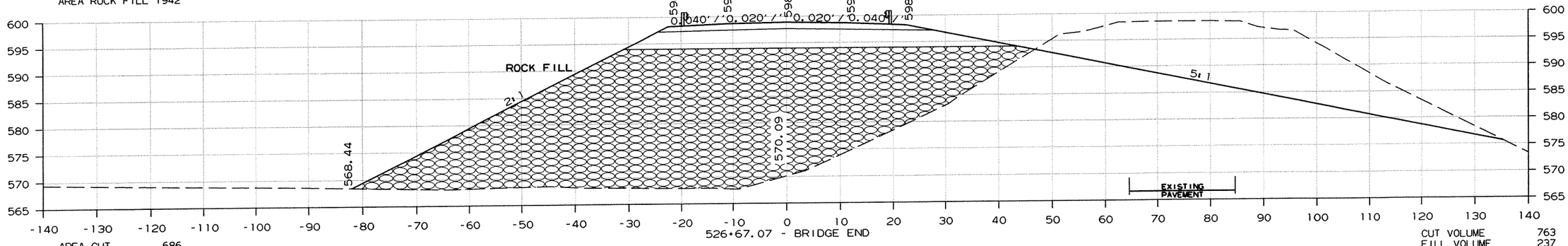
AREA CUT 765
AREA FILL 121
AREA ROCK FILL 1824

CUT VOLUME 2702
FILL VOLUME 569
ROCK FILL VOLUME 6974



AREA CUT 694
AREA FILL 186
AREA ROCK FILL 1942

CUT VOLUME 869
FILL VOLUME 243
ROCK FILL VOLUME 3735



AREA CUT 686
AREA FILL 213
AREA ROCK FILL 2091

CUT VOLUME 763
FILL VOLUME 237
ROCK FILL VOLUME 2326

526+07.00 - TOE OF SLOPE

AREA CUT 0
AREA FILL 0
AREA ROCK FILL 0

CUT VOLUME 0
FILL VOLUME 0
ROCK FILL VOLUME 0

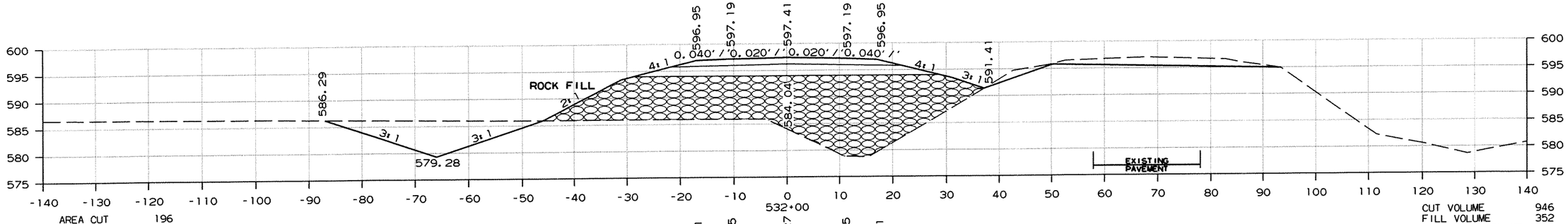
CROSS SECTION STA. 526+07 TO STA. 528+00

9/5/2013

R080379.DGN

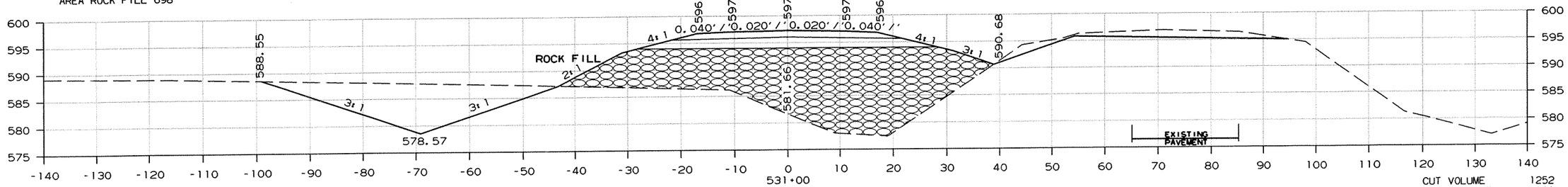
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		080379	81	85

(2) CROSS SECTIONS



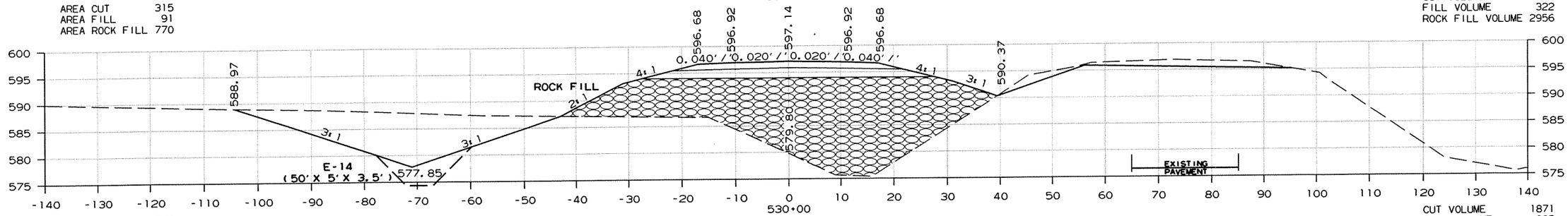
AREA CUT 196
AREA FILL 99
AREA ROCK FILL 698

CUT VOLUME 946
FILL VOLUME 352
ROCK FILL VOLUME 2719



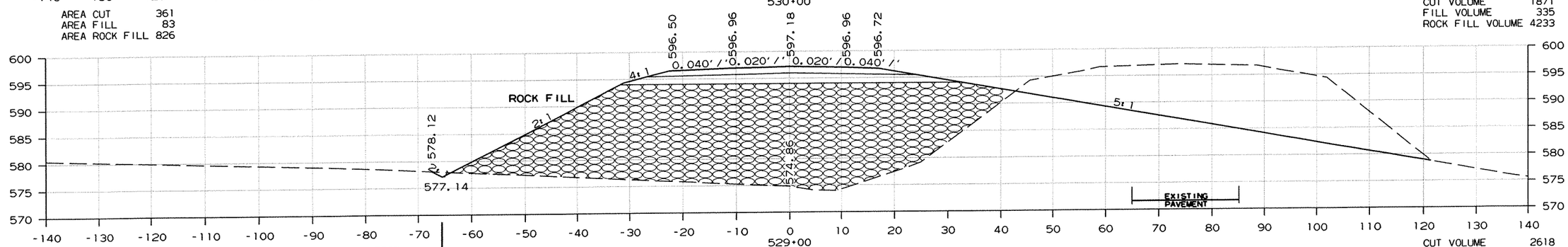
AREA CUT 315
AREA FILL 91
AREA ROCK FILL 770

CUT VOLUME 1252
FILL VOLUME 322
ROCK FILL VOLUME 2956



AREA CUT 361
AREA FILL 83
AREA ROCK FILL 826

CUT VOLUME 1871
FILL VOLUME 335
ROCK FILL VOLUME 4233



AREA CUT 649
AREA FILL 98
AREA ROCK FILL 1460

STA. 529+00 BEGIN
0.71% LT. DITCH GRADE

CUT VOLUME 2618
FILL VOLUME 406
ROCK FILL VOLUME 6081

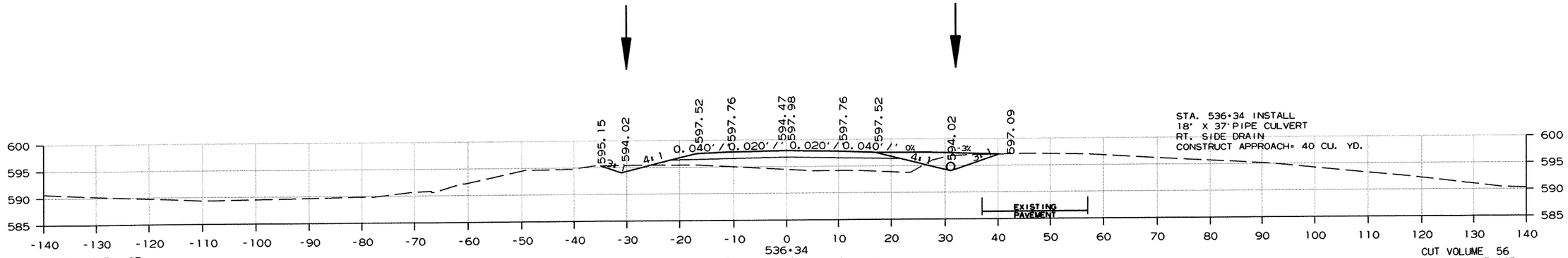
CROSS SECTION STA. 529+00 TO STA. 532+00

9/5/2013

R080379.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.		080379	82	85

(2) CROSS SECTIONS



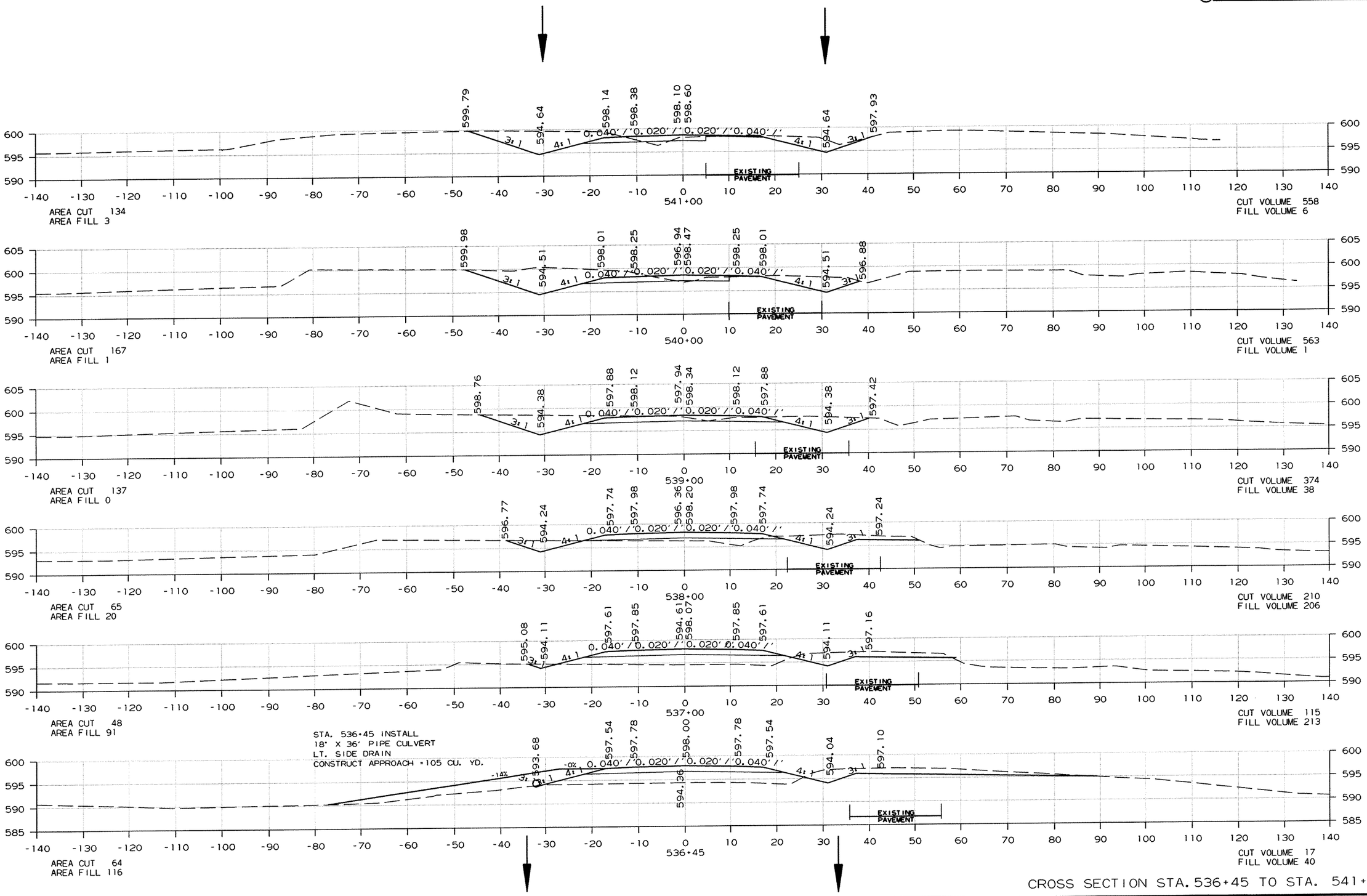
CROSS SECTION STA. 533+00 TO STA. 536+34

9/5/2013

R080379.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.		080379	83	85

(2) CROSS SECTIONS



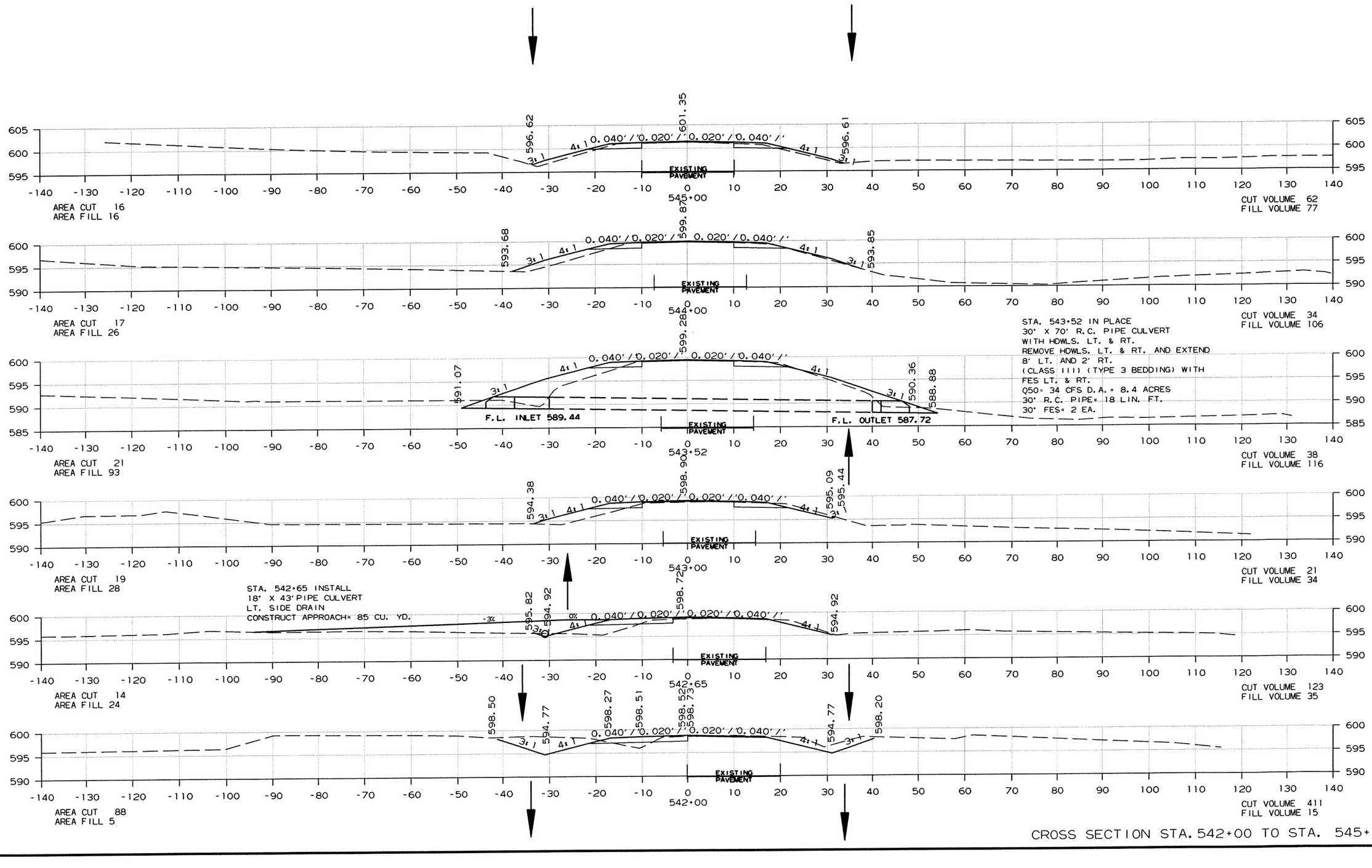
CROSS SECTION STA. 536+45 TO STA. 541+00

9/5/2013

R080379.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.		080379	84	85

(2) CROSS SECTIONS



CROSS SECTION STA. 542+00 TO STA. 545+00

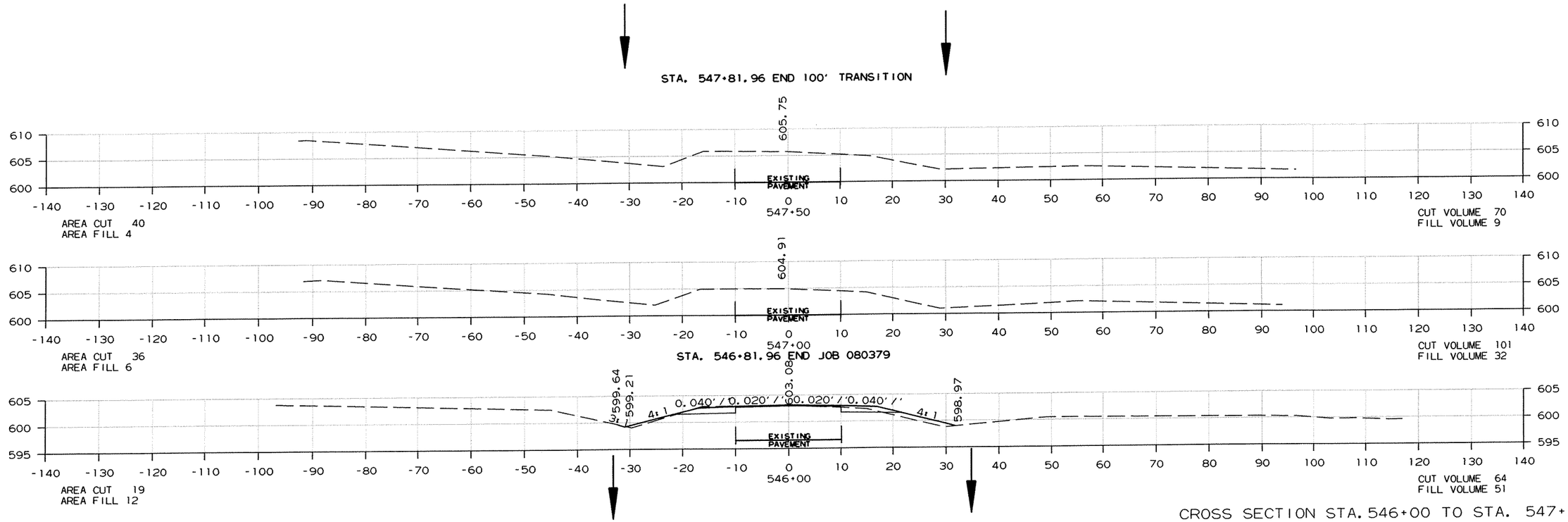
9/5/2013

R080379.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.		080379	85	85

(2) CROSS SECTIONS



CROSS SECTION STA. 546+00 TO STA. 547+50

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