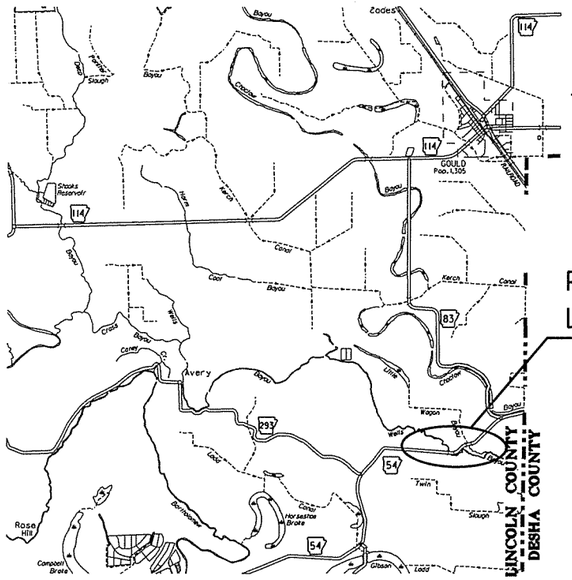
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020419	1	90
				(2) WELLS BAYOU STR. & APPRS. (S)				

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT
CONSTRUCTION PLANS FOR STATE HIGHWAY

WELLS BAYOU STR. & APPRS. (S)



PROJECT LOCATION

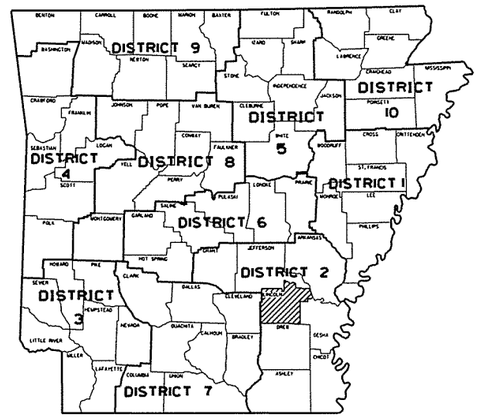
VICINITY MAP

LINCOLN COUNTY

ROUTE 54 SECTION 3

JOB 020419

FED. AID PROJ. STPR-0040(23)



ARK. HWY. DIST. NO. 2

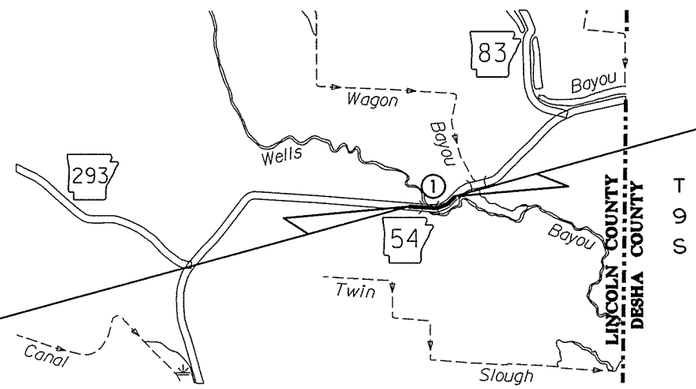
• DESIGN TRAFFIC DATA •

DESIGN YEAR	2035
2015 ADT	1100
2035 ADT	1400
2035 DHV	154
DIRECTIONAL DISTRIBUTION	60 %
TRUCKS	9 %
DESIGN SPEED	50 MPH

NOT TO SCALE

BRIDGE INFORMATION

(1) BR. END STA. 19+03.49
BRIDGE NO. 07068
90' CONT. COMP. W-BEAM UNIT
(28', 34', 28')
30'-0" CLEAR ROADWAY
45° RT. FORWARD SKEW
93'-0 1/4" BRIDGE LENGTH
BR. END STA. 19+96.51



STA. 14+25.00
BEGIN JOB 020419
LOG MILE 1.60

STA. 28+50.58
END JOB 020419

R 5 W

N

APPROVED

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

11-13-15

DEPUTY DIRECTOR
AND CHIEF ENGINEER

	BEGIN PROJECT	MID-POINT OF PROJECT	END PROJECT
LATITUDE	N 33°54'06"	N 33°54'05"	N 33°54'09"
LONGITUDE	W 91°34'36"	W 91°34'26"	W 91°34'18"

LENGTH OF PROJECT CALCULATED ALONG C.L.

GROSS LENGTH OF	PROJECT	1425.58	FEET	OR	0.270	MILES
NET	. .	ROADWAY	1332.56	.	0.252	MILES
NET	. .	BRIDGES	93.02	.	0.018	MILES
NET	. .	PROJECT	1425.58	.	0.270	MILES

P.E. 020419

11/9/2015

R020419.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1/15/16				6	ARK.			
				JOB NO.		020419	2	90

(2) INDEX, GOV. SPECS., AND GEN. NOTES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
1-15-16

INDEX OF SHEETS

SHEET NO.	TITLE	BRIDGE NO.	DRWG.NO.	DATE
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2	INDEX OF SHEETS, GOVERNING SPECIFICATIONS, AND GENERAL NOTES			
3 - 4	TYPICAL SECTIONS OF IMPROVEMENT			
5 - 7	SPECIAL DETAILS			
8 - 11	TEMPORARY EROSION CONTROL DETAILS			
12 - 17	MAINTENANCE OF TRAFFIC			
18 - 19	PERMANENT PAVEMENT MARKING DETAILS			
20 - 23	QUANTITIES			
24	SCHEDULE OF BRIDGE QUANTITIES	07068	48264	
25	SUMMARY OF QUANTITIES AND REVISIONS			
26 - 27	SURVEY CONTROL DETAILS			
28 - 29	PLAN AND PROFILE SHEETS			
30	LAYOUT OF BRIDGE OVER WELLS BAYOU	07068	48265	
31	DETAILS OF BENT NO. 1	07068	48266	
32	DETAILS OF BENT NO. 4	07068	48267	
33	DETAILS OF WING & RAIL	07068	48268	
34	DETAILS OF BENT NO. 2	07068	48269	
35	DETAILS OF BENT NO. 3	07068	48270	
36	DETAILS OF 90'-0" CONTINUOUS W-BEAM UNIT (SHEET 1 OF 6)	07068	48271	
37	DETAILS OF 90'-0" CONTINUOUS W-BEAM UNIT (SHEET 2 OF 6)	07068	48272	
38	DETAILS OF 90'-0" CONTINUOUS W-BEAM UNIT (SHEET 3 OF 6)	07068	48273	
39	DETAILS OF 90'-0" CONTINUOUS W-BEAM UNIT (SHEET 4 OF 6)	07068	48274	
40	DETAILS OF 90'-0" CONTINUOUS W-BEAM UNIT (SHEET 5 OF 6)	07068	48275	
41	DETAILS OF 90'-0" CONTINUOUS W-BEAM UNIT (SHEET 6 OF 6)	07068	48276	
42	DETAILS OF TYPE SPECIAL APPROACH GUTTERS	07068	48277	
43	STANDARD DETAILS FOR EMBANKMENT CONSTRUCTION AND BACKFILL AT BRIDGE ENDS		55000	2-27-14
44	STANDARD DETAILS FOR DUMPED RIPRAP AND FILTER BLANKET AND COMPUTING EXCAVATION FOR STRUCTURES		55001	2-27-14
45	STANDARD DETAILS FOR PERMANENT STEEL BRIDGE DECK FORMS FOR STEEL & CONCRETE GIRDER SPANS		55005	2-27-14
46	STANDARD DETAILS FOR TYPE D BRIDGE NAME PLATE		55010	1-14-15
47	STANDARD DETAILS FOR CONCRETE PILES		55022	2-27-14
48	GUARD RAIL DETAILS		GR-8	7-14-10
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50	GUARD RAIL DETAILS		GR-9	4-17-08
51	GUARD RAIL DETAILS		GR-9A	4-17-08
52	GUARD RAIL DETAILS		GR-10	7-14-10
53	GUARD RAIL DETAILS		GR-10A	7-14-10
54	GUARD RAIL DETAILS		GRT-1	7-14-10
55	MAILBOX DETAILS		MB-1	11-18-04
56	CONCRETE PIPE CULVERT FILL HEIGHTS & BEDDING		PCC-1	2-27-14
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58	PLASTIC PIPE CULVERT (HIGH DENSITY POLYETHYLENE)		PCP-1	2-27-14
59	PLASTIC PIPE CULVERT (PVC F949)		PCP-2	2-27-14
60	PAVEMENT MARKING DETAILS		PM-1	9-12-13
61	DETAILS OF PIPE UNDERDRAIN		PU-1	4-10-03
62	TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC		SE-2	10-18-96
63	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION		TC-1	9-02-15
64	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION		TC-2	9-02-15
65	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION		TC-3	9-02-15
66	TEMPORARY EROSION CONTROL DEVICES		TEC-1	12-15-11
67	TEMPORARY EROSION CONTROL DEVICES		TEC-2	6-02-94
68	TEMPORARY EROSION CONTROL DEVICES		TEC-3	11-03-94
69 - 90	CROSS SECTIONS			

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

GOVERNING SPECIFICATIONS

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

NUMBER	TITLE
ERRATA	ERRATA FOR THE BOOK OF STANDARD SPECIFICATIONS
FHWA-1273	REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - NOTICE TO CONTRACTORS
FHWA-1273	SUPPLEMENT - SPECIFIC EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITIES (23 U.S.C. 140)
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - GOALS AND TIMETABLES
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - FEDERAL STANDARDS
FHWA-1273	SUPPLEMENT - POSTERS AND NOTICES REQUIRED FOR FEDERAL-AID PROJECTS
FHWA-1273	SUPPLEMENT - WAGE RATE DETERMINATION
100-3	CONTRACTOR'S LICENSE
108-1	LIQUIDATED DAMAGES
400-1	TACK COATS
410-1	CONSTRUCTION REQUIREMENTS AND ACCEPTANCE OF ASPHALT CONCRETE PLANT MIX COURSES
604-1	RETROREFLECTIVE SHEETING FOR TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES
606-1	PIPE CULVERTS FOR SIDE DRAINS
620-1	MULCH COVER
JOB 020419	BIDDING REQUIREMENTS AND CONDITIONS
JOB 020419	BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB 020419	BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB 020419	CARGO PREFERENCE ACT REQUIREMENTS
JOB 020419	CONSTRUCTION IN SPECIAL FLOOD HAZARD AREAS
JOB 020419	DISADVANTAGED BUSINESS ENTERPRISE BIDDER'S RESPONSIBILITIES
JOB 020419	GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
JOB 020419	HIGH PERFORMANCE PAVEMENT MARKING
JOB 020419	MANDATORY ELECTRONIC CONTRACT
JOB 020419	NESTING SITES OF MIGRATORY BIRDS
JOB 020419	PLASTIC PIPE
JOB 020419	SHORING FOR CULVERTS
JOB 020419	SOIL STABILIZATION
JOB 020419	STORM WATER POLLUTION PREVENTION PLAN
JOB 020419	SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB 020419	UTILITY ADJUSTMENTS
JOB 020419	WARM MIX ASPHALT

GENERAL NOTES

1. GRADE LINE DENOTES FINISHED GRADE WHERE SHOWN ON PLANS.
2. ALL PIPE LINES, POWER, TELEPHONE, AND TELEGRAPH LINES TO BE MOVED OR LOWERED BY THE RESPECTIVE OWNERS AS PER AGREEMENT WITH SUCH OWNERS.
3. ANY EQUIPMENT OR APPURTENANCE THAT INTERFERES WITH THE PROPOSED CONSTRUCTION AND WHICH MAY BE THE PROPERTY OF UTILITY SERVICE ORGANIZATIONS SHALL BE MOVED BY THE OWNERS UNLESS OTHERWISE PROVIDED.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING U. S. MAILBOXES WITHIN THE PROJECT LIMITS IN SUCH A MANNER THAT THE PUBLIC MAY RECEIVE CONTINUED MAIL SERVICE. PAYMENT WILL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE VARIOUS BID ITEMS.
5. ALL LAND MONUMENTS LOCATED WITHIN THE CONSTRUCTION AREA SHALL BE PROTECTED IN ACCORDANCE WITH SECTION 107.12 OF THE STANDARD SPECIFICATIONS.
6. ALL TREES THAT DO NOT DIRECTLY INTERFERE WITH THE PROPOSED CONSTRUCTION SHALL BE SPARED AS DIRECTED BY THE ENGINEER. CARE AND DISCRETION SHALL BE USED TO INSURE THAT ALL TREES NOT TO BE REMOVED SHALL BE HARMED AS LITTLE AS POSSIBLE DURING THE CONSTRUCTION OPERATIONS.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A FENCE TO CONTROL LIVESTOCK IN AREAS WHERE PASTURES ARE SEVERED. WIRE FENCE MAY BE CONSTRUCTED INITIALLY, OR IN LIEU THEREOF, THE CONTRACTOR AT HIS OWN EXPENSE, MAY ELECT TO PROVIDE TEMPORARY FENCING SUITABLE TO CONTAIN LIVESTOCK.
8. THIS PROJECT IS COVERED UNDER A SECTION 404 NATIONWIDE 14 PERMIT. REFER TO SECTION 110 OF THE STANDARD SPECIFICATIONS, EDITION OF 2014, FOR PERMIT REQUIREMENTS.
9. ALL FLEXIBLE BASE AND ASPHALTIC PAVEMENTS REMOVED SHALL BE PAID FOR UNDER THE ITEM NO. 210 - UNCLASSIFIED EXCAVATION.
10. THE EXISTING ASPHALT PAVEMENT TO BE REMOVED FROM THE REMAINING PAVEMENT SHALL BE SEPARATED BY SAWING ALONG A NEAT LINE. AFTER SAWING, THE PAVEMENT TO BE REMOVED SHALL BE CAREFULLY REMOVED IN A MANNER THAT WILL NOT DAMAGE THE PAVEMENT THAT IS TO REMAIN. ANY DAMAGE OF THE ASPHALT PAVEMENT THAT IS TO REMAIN IN PLACE SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.

1/15/2016

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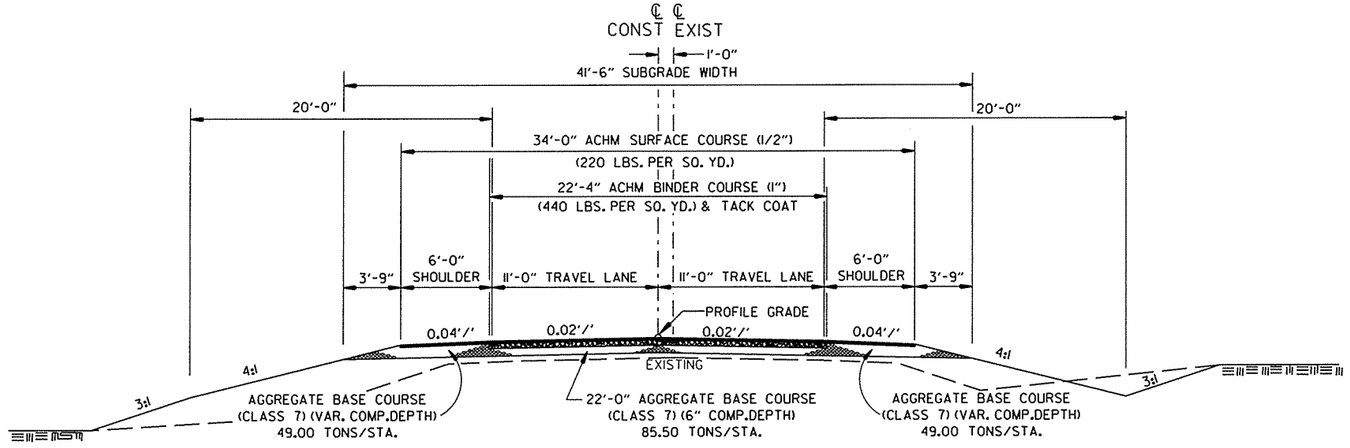
INDEX OF SHEETS, GOVERNING SPECIFICATIONS, AND GENERAL NOTES

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020419	3	90

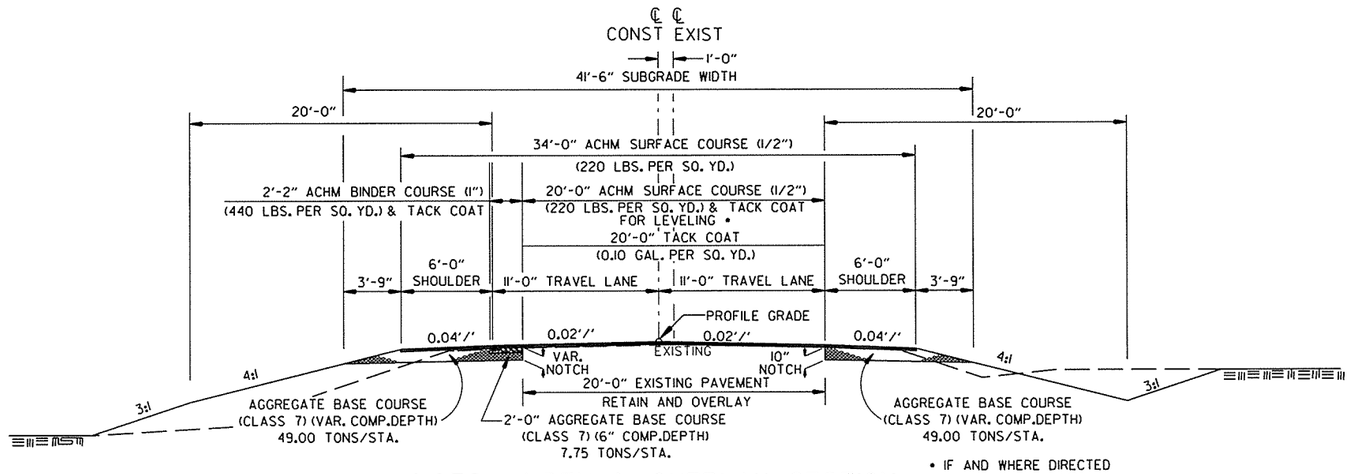
(2) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-19-15



FULL DEPTH SECTION

STA. 15+96.00 TO STA. 19+03.49
STA. 19+96.51 TO STA. 28+00.00



NOTCH, WIDEN, & OVERLAY SECTION

STA. 14+25.00 TO STA. 15+96.00
STA. 28+00.00 TO STA. 28+50.58

• IF AND WHERE DIRECTED BY THE ENGINEER

NOTES:

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

THE THICKNESS OF AGGREGATE BASE COURSE SHALL BE WITHIN PLUS OR MINUS 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" OF SURFACE COURSE IS TO BE PLACED AFTER ALL OTHER COURSES HAVE BEEN LAID. LONGITUDINAL JOINTS SHALL BE AT LANE LINES.

7/8/2015

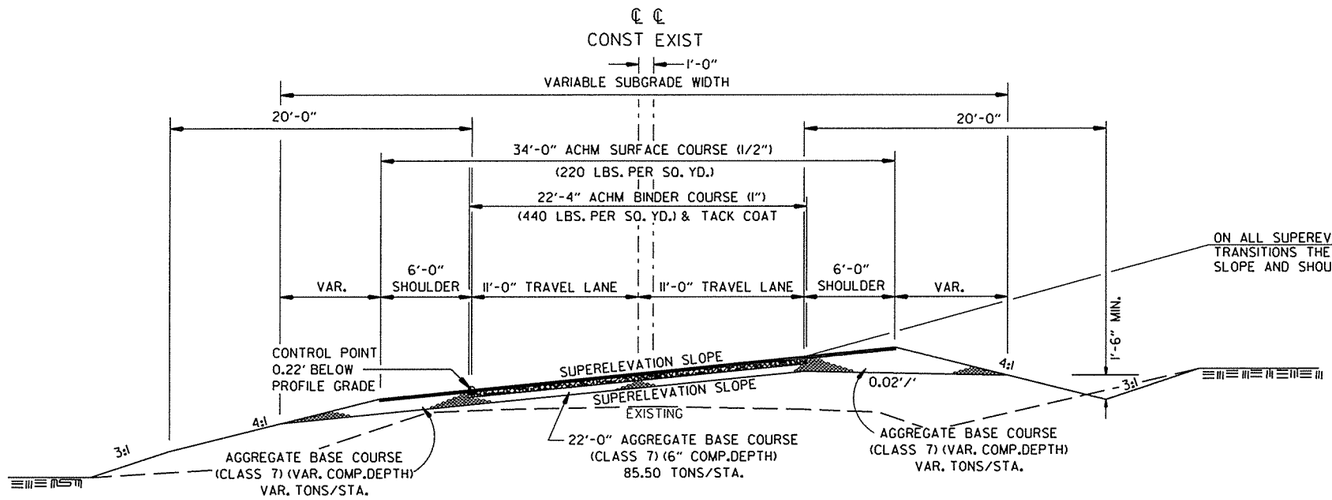
r020419.dgn

TYPICAL SECTIONS OF IMPROVEMENT

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020419	4	90

(2) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-19-15



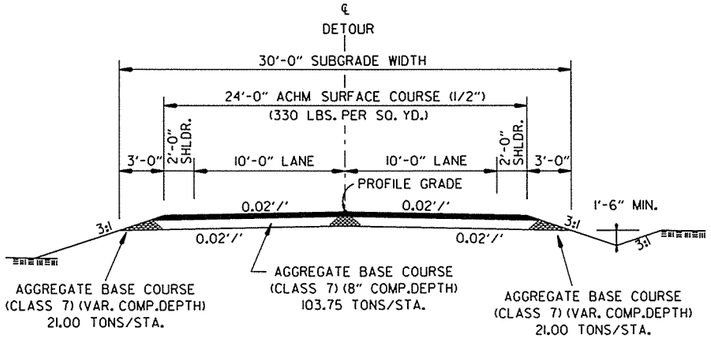
SUPERELEVATION SECTION

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

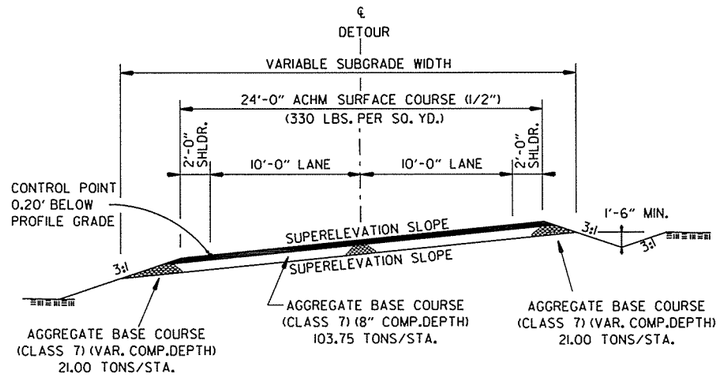
NOTES:
REFER TO CROSS SECTIONS FOR DEVIATION FROM THE NORMAL SLOPES. NO CHANGES SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.

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

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



DETOUR ROAD - TANGENT SECTION
STA. 16+51.82 TO STA. 27+91.00



DETOUR ROAD - SUPERELEVATION SECTION

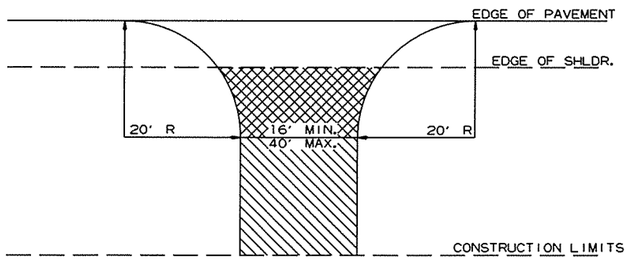
7/8/2015

r020419.dgn

TYPICAL SECTIONS OF IMPROVEMENT

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020419	5	90

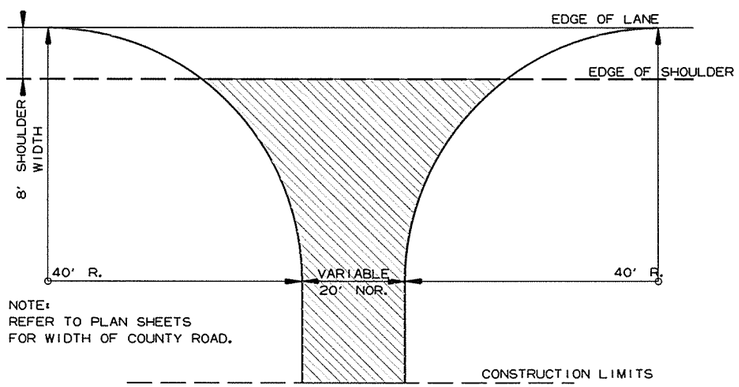
(2) SPECIAL DETAILS



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

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

DETAIL FOR DRIVEWAY TURNOUTS (COLLECTORS)

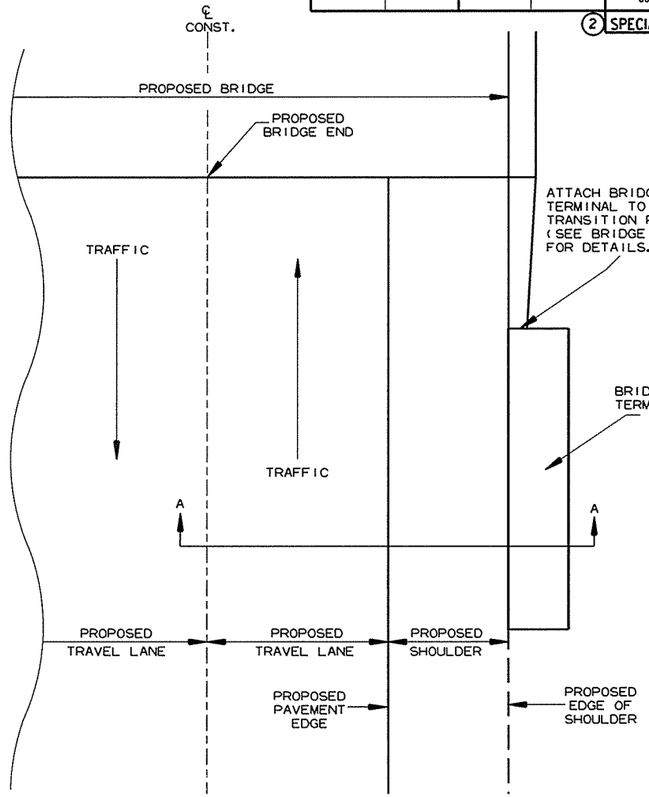


NOTE:
REFER TO PLAN SHEETS
FOR WIDTH OF COUNTY ROAD.

DETAIL FOR COUNTY ROAD TURNOUTS OPEN SHOULDER SECTION

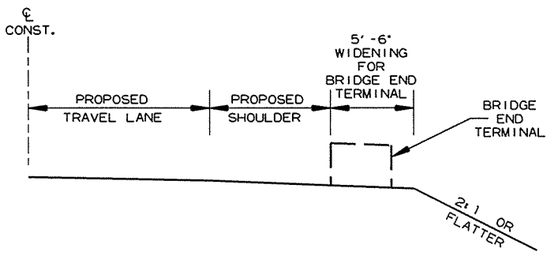
NOTE: TURNOUTS AND PRIVATE DRIVES SHALL BE MODIFIED WHERE NECESSARY TO MEET LOCAL CONDITIONS AS DIRECTED BY THE ENGINEER.

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



STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-19-15

PLAN VIEW
BRIDGE END TERMINAL DETAILS



SECTION A-A

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

NOTE:
BRIDGE END TERMINAL SHALL CONFORM TO THE FOLLOWING:
-MAXIMUM LENGTH: 20'
-MAXIMUM HEIGHT: 2.75'
-DESIGN SPEED: 60 MPH

11/8/2011

ZBORDER.CEL

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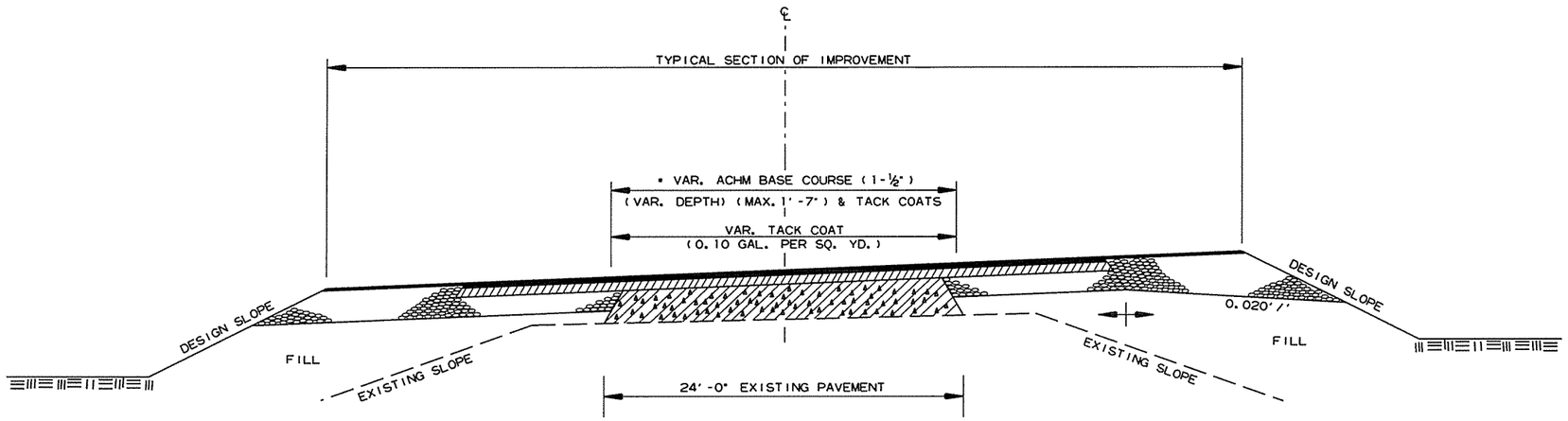
(2) SPECIAL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-19-15



• 7" AGGREGATE BASE COURSE (CLASS 7)
TO BE REPLACED WITH A.C.H.M. BASE COURSE (1-½")

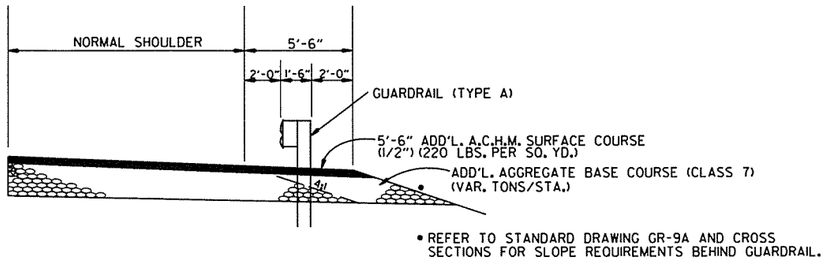
METHOD OF RAISING GRADE

NOTES:

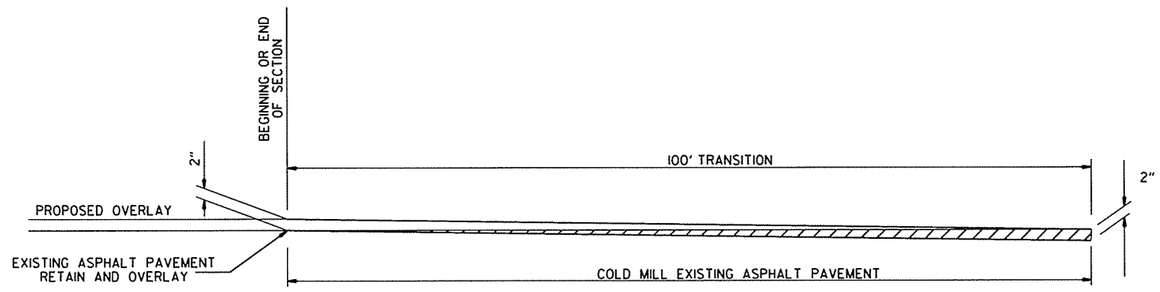
(1) THIS DETAIL TO BE USED ONLY WHERE DIRECTED BY THE ENGINEER.

(2) QUANTITIES FOR METHOD OF GRADE RAISE USING ASPHALT WERE CALCULATED ON THIS PROJECT AT LOCATIONS WHERE THE DISTANCE BETWEEN THE EXISTING ASPHALT ROADWAY AND THE PROPOSED SUBGRADE WAS ONE FOOT OR LESS.

(3) IN LOCATIONS WHERE THE DISTANCE BETWEEN THE PROPOSED SUBGRADE AND THE EXISTING ASPHALT ROADWAY IS MORE THAN ONE FOOT, SCARIFICATION OF THE EXISTING ASPHALT ROADWAY WILL BE REQUIRED AS STATED IN SECTION 210, SUBSECTION 210.09 OF THE STANDARD SPECIFICATIONS.



WIDENING FOR GUARDRAIL



DETAIL FOR TRANSITIONS

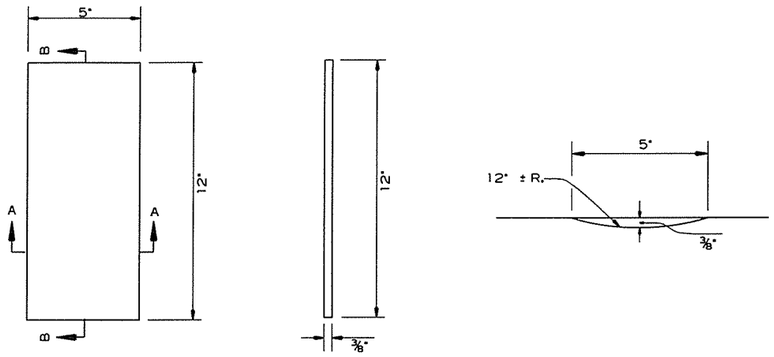
11/8/2011

ZBORDER.CEL

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.		020419	7	90

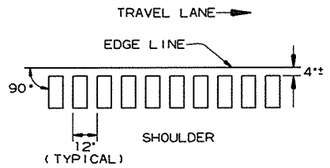
(2) SPECIAL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-19-15

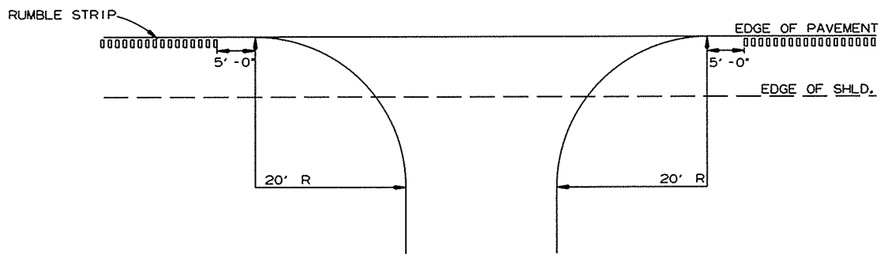


PLAN SECTION B-B SECTION A-A

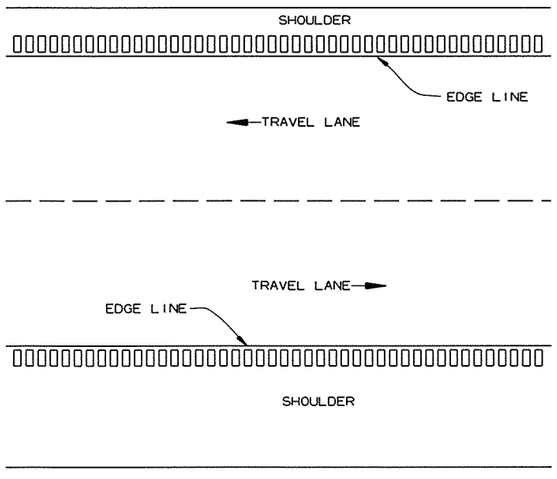
DETAILS OF RUMBLE STRIPS



LOCATION PLAN OF RUMBLE STRIPS
LEFT OR RIGHT SHOULDER



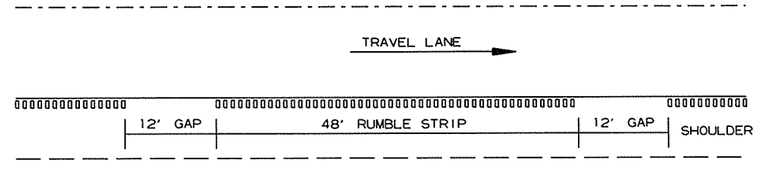
DETAIL FOR RUMBLE STRIP GAP
AT DRIVEWAY TURNOUTS



PLAN VIEW

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.



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

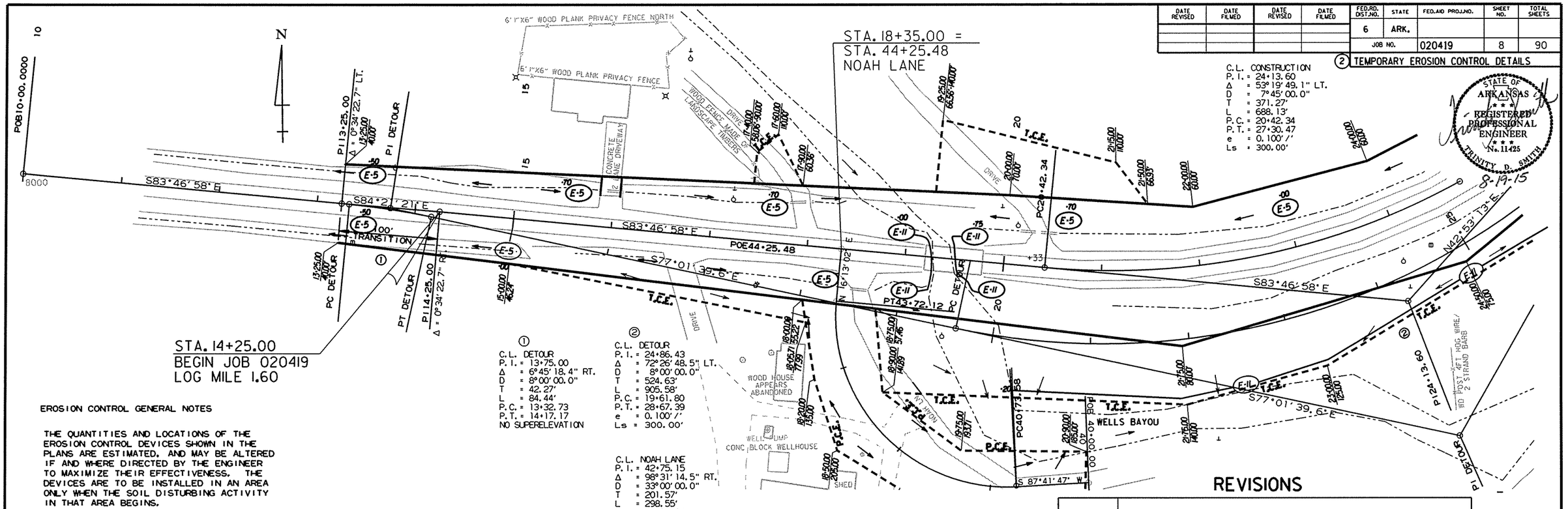
DETAIL FOR GAP PATTERN RUMBLE STRIP

8/6/2015

R020419.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.		020419	8	90

2 TEMPORARY EROSION CONTROL DETAILS



① C.L. DETOUR
P.I. = 13+75.00
Δ = 6°45'18.4" RT.
D = 8°00'00.0"
T = 42.27'
L = 84.44'
P.C. = 13+32.73
P.T. = 14+17.17
NO SUPERELEVATION

② C.L. DETOUR
P.I. = 24+86.43
Δ = 72°26'48.5" LT.
D = 8°00'00.0"
T = 524.63'
L = 905.58'
P.C. = 19+61.80
P.T. = 28+67.39
e = 0.100'/'
Ls = 300.00'

C.L. NOAH LANE
P.I. = 42+75.15
Δ = 98°31'14.5" RT.
D = 33°00'00.0"
T = 201.57'
L = 298.55'
P.C. = 40+73.58
P.T. = 43+72.12
e = 0.100'/'
Ls = 250.00'

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

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.

REVISIONS

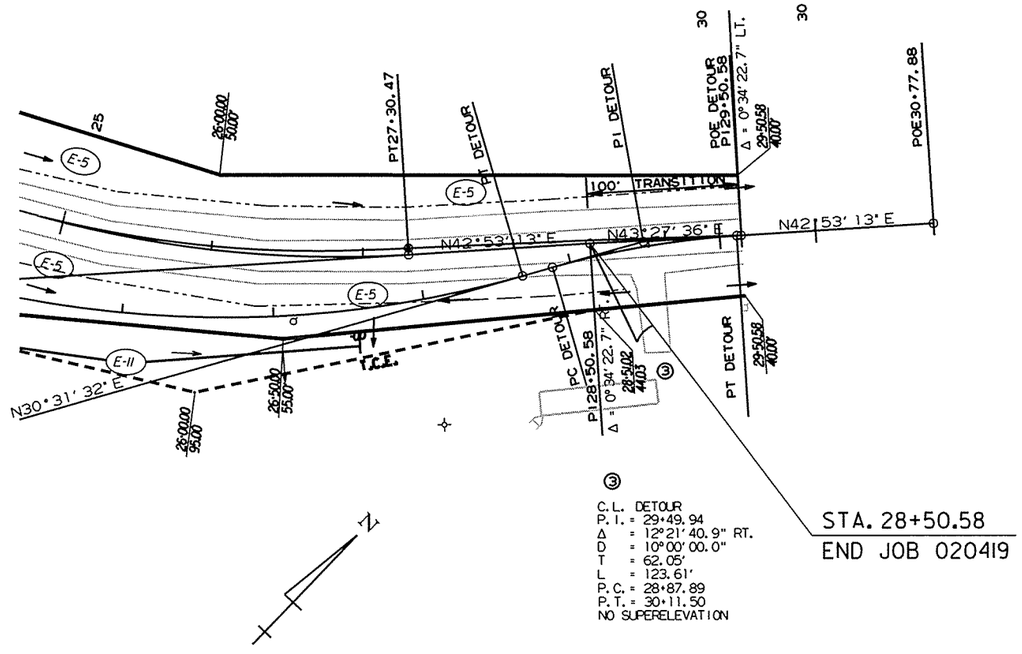
DATE	REVISION

STAGE 1
CONSTRUCT DETOUR, TEMPORARY DRIVES AND MOST OF PERMANENT DRIVE STA. 21+15 LT.

STAGE 2
SHIFT TRAFFIC TO DETOUR
CONSTRUCT NEW BRIDGE AND MAIN LANES.

STAGE 3
SHIFT TRAFFIC TO C.L. CONST.
OBLITERATE DETOUR AND FINISH TIE-INS.

END OF JOB
PLACE FINAL STRIPING



③ C.L. DETOUR
P.I. = 29+49.94
Δ = 12°21'40.9" RT.
D = 10°00'00.0"
T = 62.05'
L = 123.61'
P.C. = 28+87.89
P.T. = 30+11.50
NO SUPERELEVATION

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-19-15

8/14/2015

r020419.dgn

TEMPORARY EROSION CONTROL DETAILS
CLEARING AND GRUBBING

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.		020419	9	90

(2) TEMPORARY EROSION CONTROL DETAILS

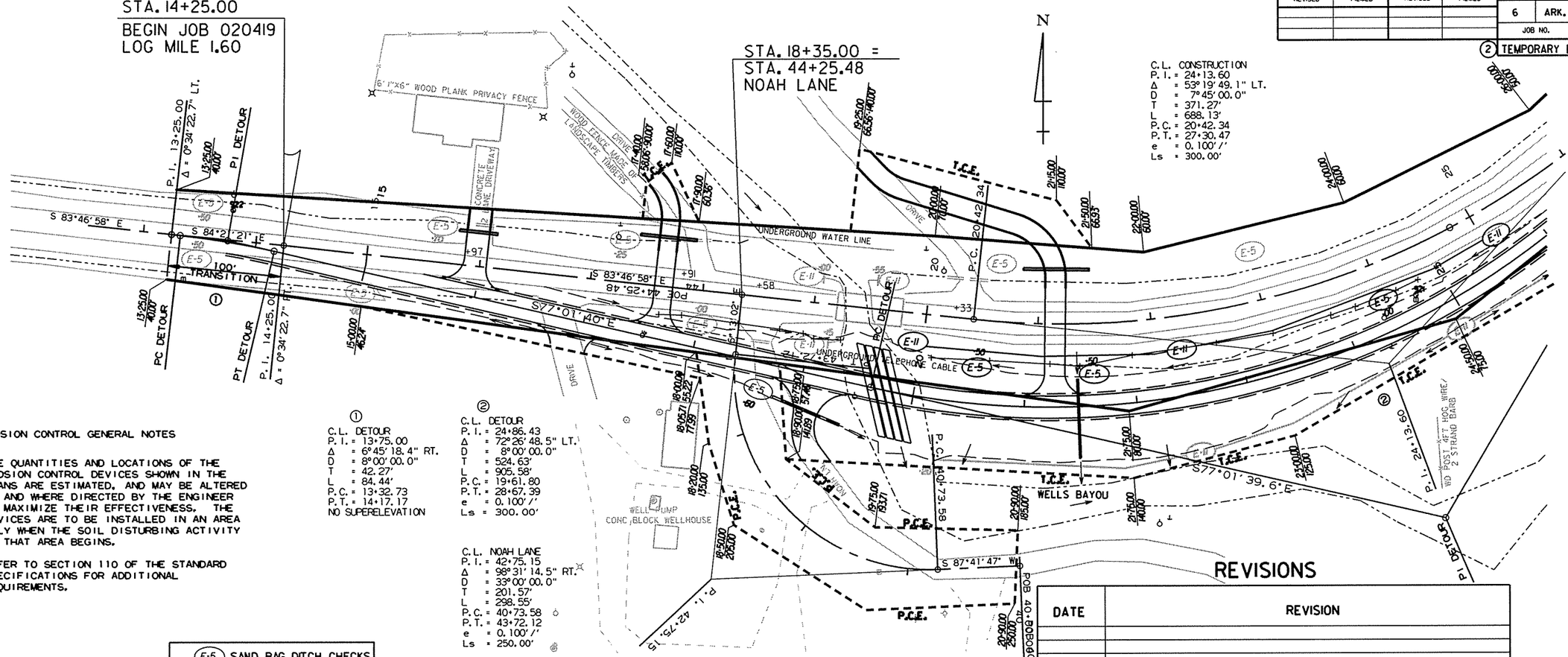
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-19-15

STA. 14+25.00
BEGIN JOB 020419
LOG MILE 1.60

STA. 18+35.00 =
STA. 44+25.48
NOAH LANE

N

C.L. CONSTRUCTION
P.I. = 24+13.60
Δ = 53°19'49.1" LT.
D = 7°45'00.0"
T = 371.27'
L = 688.13'
P.C. = 20+42.34
P.T. = 27+30.47
e = 0.100'/'
Ls = 300.00'



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.

① C.L. DETOUR
P.I. = 13+75.00
Δ = 6°45'18.4" RT.
D = 8°00'00.0"
T = 42.27'
L = 84.44'
P.C. = 13+32.73
P.T. = 14+17.17
NO SUPERELEVATION

② C.L. DETOUR
P.I. = 24+86.43
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P.C. = 19+61.80
P.T. = 28+67.39
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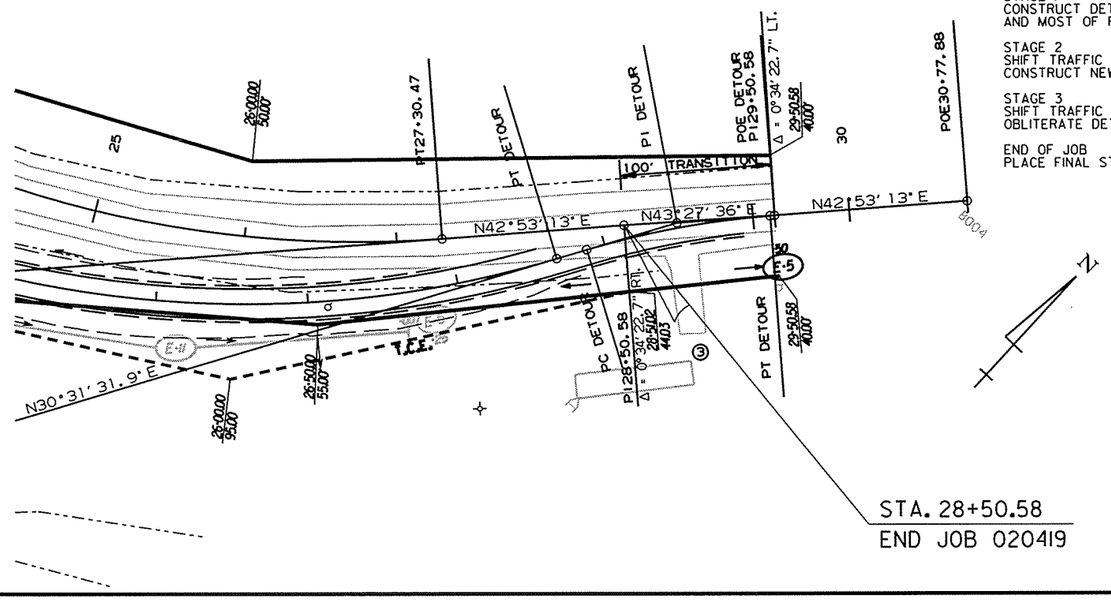
C.L. NOAH LANE
P.I. = 42+75.15
Δ = 98°31'14.5" RT.
D = 33°00'00.0"
T = 201.57'
L = 298.55'
P.C. = 40+73.58
P.T. = 43+72.12
e = 0.100'/'
Ls = 250.00'

REVISIONS

DATE	REVISION

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



STAGE 1
CONSTRUCT DETOUR, TEMPORARY DRIVES AND MOST OF PERMANENT DRIVE STA. 21+15 LT.

STAGE 2
SHIFT TRAFFIC TO DETOUR
CONSTRUCT NEW BRIDGE AND MAIN LANES.

STAGE 3
SHIFT TRAFFIC TO C.L. CONST.
OBLITERATE DETOUR AND FINISH TIE-INS.

END OF JOB
PLACE FINAL STRIPING

TEMPORARY EROSION CONTROL DETAILS
STAGE 1

8/14/2015

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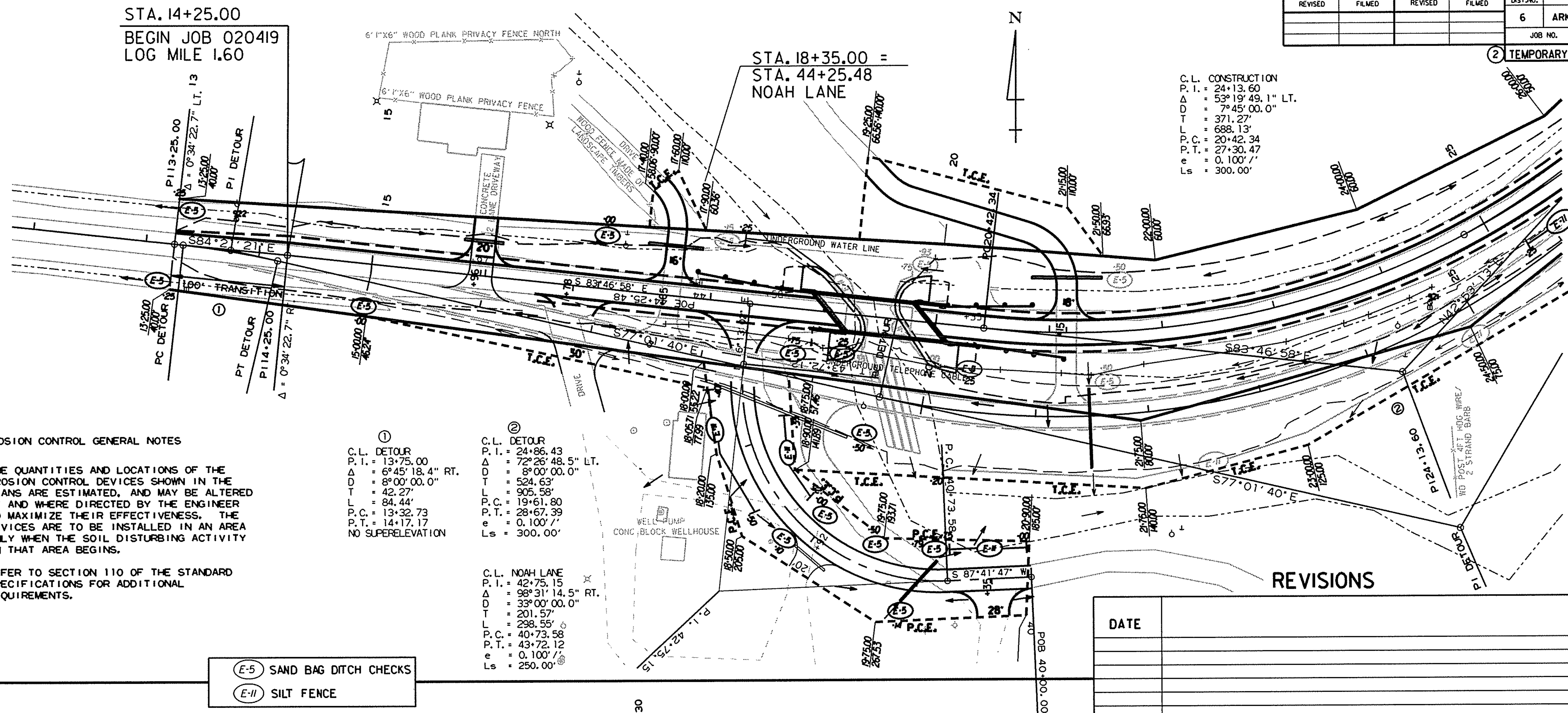
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020419	10	90

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-19-15



EROSION CONTROL GENERAL NOTES

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(1)
C.L. DETOUR
P.I. = 13+75.00
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L = 84.44'
P.C. = 13+32.73
P.T. = 14+17.17
NO SUPERELEVATION

(2)
C.L. DETOUR
P.I. = 24+86.43
Δ = 72°26'48.5" LT.
D = 8°00'00.0"
T = 524.63'
L = 905.58'
P.C. = 19+61.80
P.T. = 28+67.39
e = 0.100'/'
Ls = 300.00'

C.L. NOAH LANE
P.I. = 42+75.15
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D = 33°00'00.0"
T = 201.57'
L = 298.55'
P.C. = 40+73.58
P.T. = 43+72.12
e = 0.100'/'
Ls = 250.00'

C.L. CONSTRUCTION
P.I. = 24+13.60
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L = 688.13'
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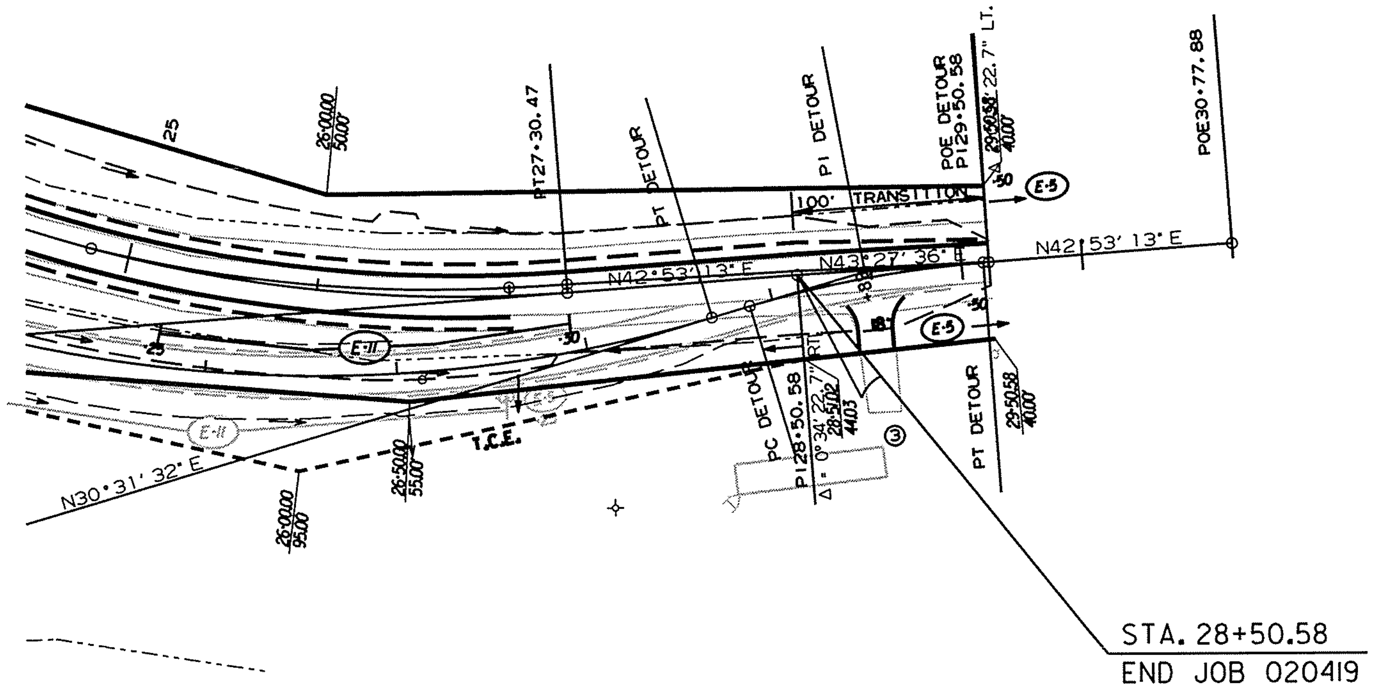
P.T. = 27+30.47
e = 0.100'/'
Ls = 300.00'

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

REVISIONS

DATE	



STAGE 1
CONSTRUCT DETOUR, TEMPORARY DRIVES AND MOST OF PERMANENT DRIVE STA. 21+15 LT.

STAGE 2
SHIFT TRAFFIC TO DETOUR
CONSTRUCT NEW BRIDGE AND MAIN LANES.

STAGE 3
SHIFT TRAFFIC TO C.L. CONST.
OBLITERATE DETOUR AND FINISH TIE-INS.

END OF JOB
PLACE FINAL STRIPING

TEMPORARY EROSION CONTROL DETAILS STAGE 2

8/14/2015

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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.		020419	11	90

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-19-15

STA. 14+25.00
BEGIN JOB 020419
LOG MILE 1.60

STA. 18+35.00 =
STA. 44+25.48
NOAH LANE

N

DENOTES OBLITERATION AREA

C.L. CONSTRUCTION
P. I. = 24+13.60
Δ = 53° 19' 49.1" LT.
D = 7° 45' 00.0"
T = 371.27'
L = 688.13'
P.C. = 20+42.34
P. T. = 27+30.47
e = 0.100'/'
Ls = 300.00'

C.L. NOAH LANE
P. I. = 42+75.15
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E-5 SAND BAG DITCH CHECKS
E-11 SILT FENCE

REVISIONS

DATE	REVISION

STAGE 1
CONSTRUCT DETOUR, TEMPORARY DRIVES AND MOST OF PERMANENT DRIVE STA. 21+15 LT.

STAGE 2
SHIFT TRAFFIC TO DETOUR
CONSTRUCT NEW BRIDGE AND MAIN LANES.

STAGE 3
SHIFT TRAFFIC TO C.L. CONST.
OBLITERATE DETOUR AND FINISH TIE-INS.

END OF JOB
PLACE FINAL STRIPING

STA. 28+50.58
END JOB 020419

8/14/2015

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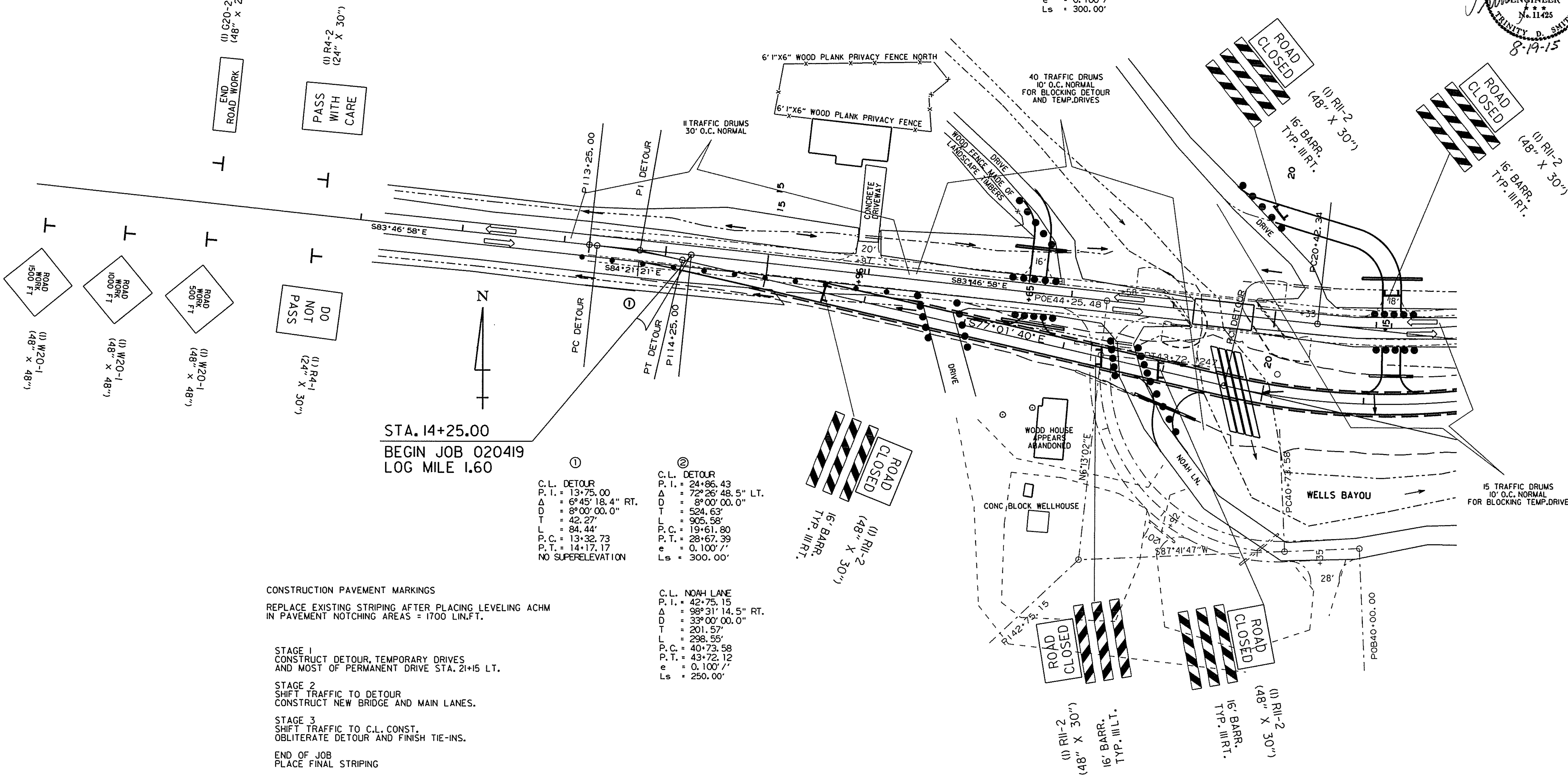
TEMPORARY EROSION CONTROL DETAILS
STAGE 3

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.		020419	12	90

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 8-19-15



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P.C. = 13+32.73
P.T. = 14+17.17
NO SUPERELEVATION

(2)
C.L. DETOUR
P.I. = 24+86.43
Δ = 72°26'48.5" LT.
D = 8°00'00.0"
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L = 905.58'
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C.L. NOAH LANE
P.I. = 42+75.15
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T = 201.57'
L = 298.55'
P.C. = 40+73.58
P.T. = 43+72.12
e = 0.100'/'
Ls = 250.00'

CONSTRUCTION PAVEMENT MARKINGS

REPLACE EXISTING STRIPING AFTER PLACING LEVELING ACHM IN PAVEMENT NOTCHING AREAS = 1700 LIN.FT.

STAGE 1
CONSTRUCT DETOUR, TEMPORARY DRIVES AND MOST OF PERMANENT DRIVE STA. 21+15 LT.

STAGE 2
SHIFT TRAFFIC TO DETOUR
CONSTRUCT NEW BRIDGE AND MAIN LANES.

STAGE 3
SHIFT TRAFFIC TO C.L. CONST.
OBLITERATE DETOUR AND FINISH TIE-INS.

END OF JOB
PLACE FINAL STRIPING

MAINTENANCE OF TRAFFIC STAGE 1

7/8/2015

r020419.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.		020419	13	90

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-19-15

C.L. CONSTRUCTION
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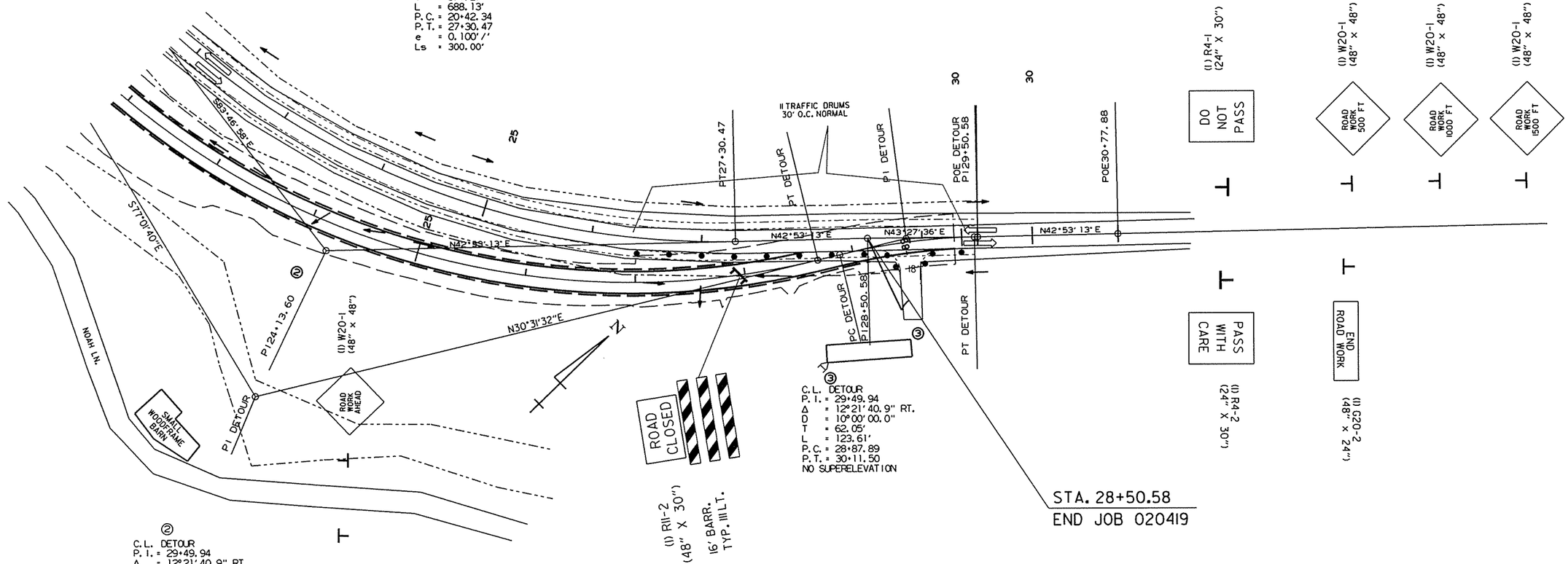

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L = 123.61'
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P.T. = 30+11.50
NO SUPERELEVATION

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P.I. = 29+49.94
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D = 10°00'00.0"
T = 62.05'
L = 123.61'
P.C. = 28+87.89
P.T. = 30+11.50
NO SUPERELEVATION

STA. 28+50.58
END JOB 020419

STAGE 1
CONSTRUCT DETOUR, TEMPORARY DRIVES AND MOST OF PERMANENT DRIVE STA. 21+15 LT.

STAGE 2
SHIFT TRAFFIC TO DETOUR
CONSTRUCT NEW BRIDGE AND MAIN LANES.

STAGE 3
SHIFT TRAFFIC TO C.L. CONST.
OBLITERATE DETOUR AND FINISH TIE-INS.

END OF JOB
PLACE FINAL STRIPING

7/8/2015

r020419.dgn

MAINTENANCE OF TRAFFIC
STAGE 1

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020419	14	90

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-19-15

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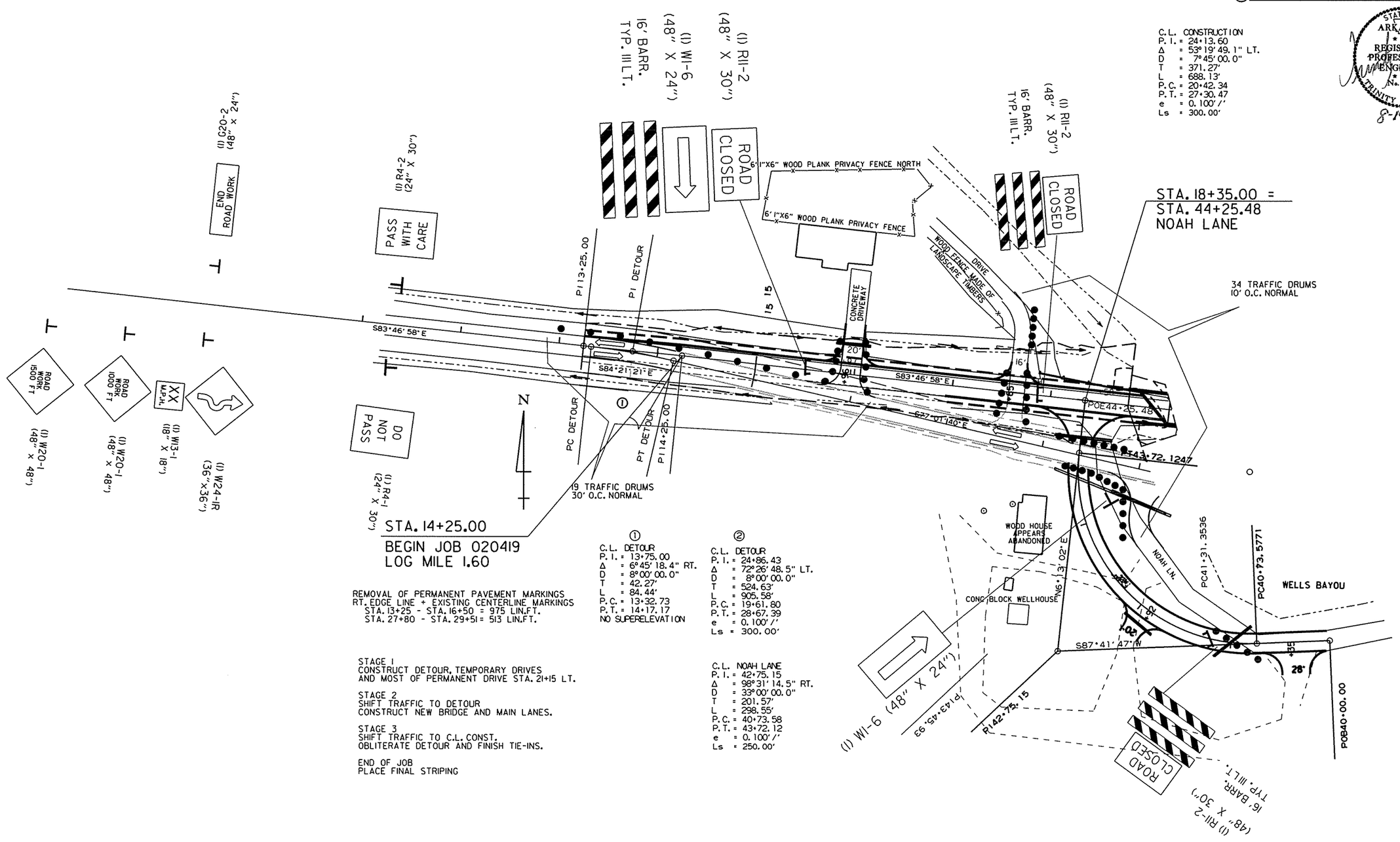

REMOVAL OF PERMANENT PAVEMENT MARKINGS
RT. EDGE LINE + EXISTING CENTERLINE MARKINGS
STA. 13+25 - STA. 16+50 = 975 LIN.FT.
STA. 27+80 - STA. 29+51 = 513 LIN.FT.

STAGE 1
CONSTRUCT DETOUR, TEMPORARY DRIVES AND MOST OF PERMANENT DRIVE STA. 21+15 LT.

STAGE 2
SHIFT TRAFFIC TO DETOUR
CONSTRUCT NEW BRIDGE AND MAIN LANES.

STAGE 3
SHIFT TRAFFIC TO C.L. CONST.
OBLITERATE DETOUR AND FINISH TIE-INS.

END OF JOB
PLACE FINAL STRIPING

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C.L. DETOUR
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P.T. = 14+17.17
NO SUPERELEVATION

②
C.L. DETOUR
P.I. = 24+86.43
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L = 905.58'
P.C. = 19+61.80
P.T. = 28+67.39
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C.L. NOAH LANE
P.I. = 42+75.15
Δ = 98°31'14.5" RT.
D = 33°00'00.0"
T = 201.57'
L = 298.55'
P.C. = 40+73.58
P.T. = 43+72.12
e = 0.100'/'
Ls = 250.00'

7/8/2015

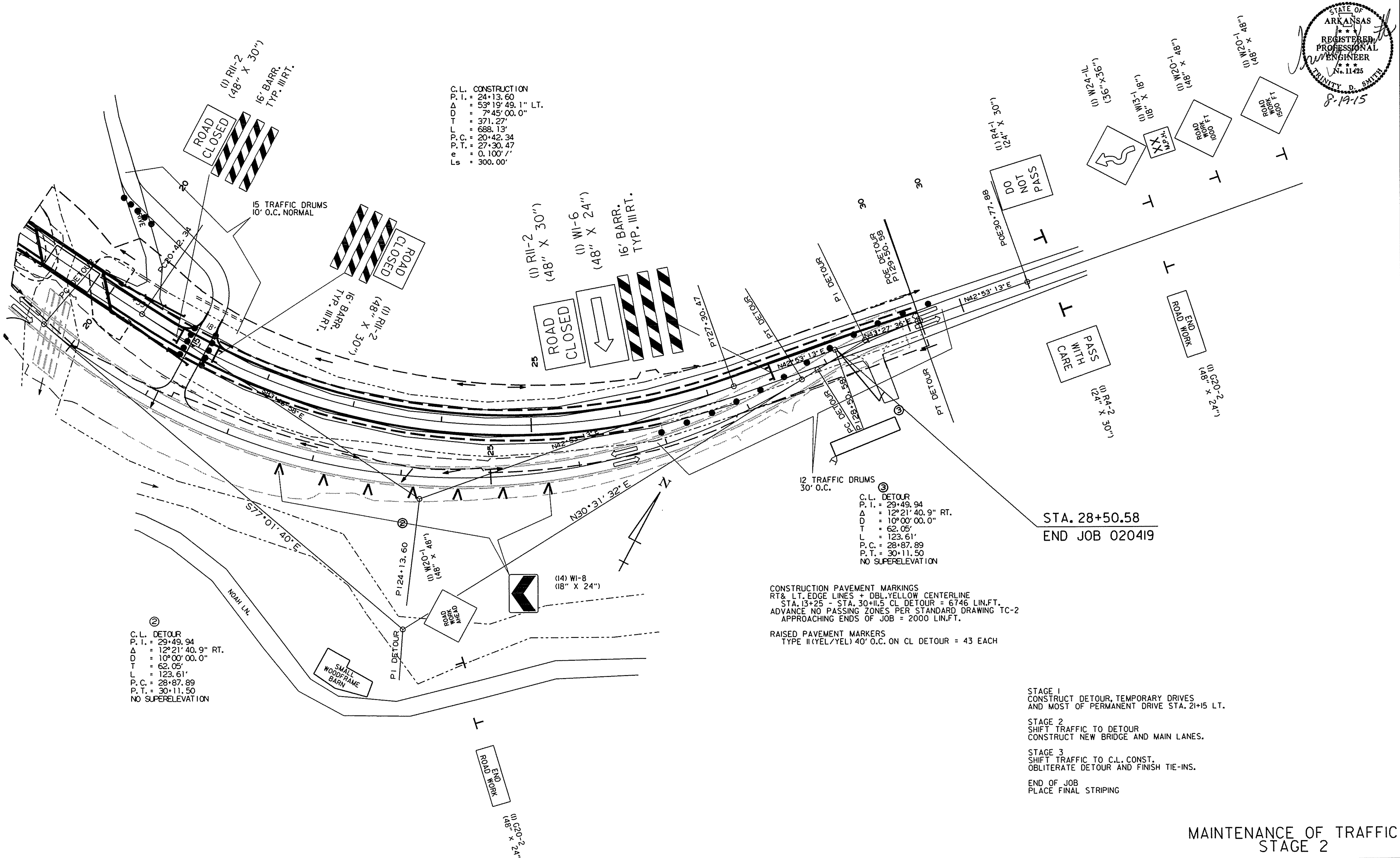
r020419.dgn

MAINTENANCE OF TRAFFIC
STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020419	15	90

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 8-19-15



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P.C. = 20+42.34
P.T. = 27+30.47
e = 0.100'/'
Ls = 300.00'

(3)
C.L. DETOUR
P.I. = 29+49.94
Δ = 12°21'40.9" RT.
D = 10°00'00.0"
T = 62.05'
L = 123.61'
P.C. = 28+87.89
P.T. = 30+11.50
NO SUPERELEVATION

STA. 28+50.58
END JOB 020419

(2)
C.L. DETOUR
P.I. = 29+49.94
Δ = 12°21'40.9" RT.
D = 10°00'00.0"
T = 62.05'
L = 123.61'
P.C. = 28+87.89
P.T. = 30+11.50
NO SUPERELEVATION

CONSTRUCTION PAVEMENT MARKINGS
RT& LT.EDGE LINES + DBL.YELLOW CENTERLINE
STA. 13+25 - STA. 30+11.5 CL DETOUR = 6746 LIN.FT.
ADVANCE NO PASSING ZONES PER STANDARD DRAWING TC-2
APPROACHING ENDS OF JOB = 2000 LIN.FT.

RAISED PAVEMENT MARKERS
TYPE II(YEL/YEL) 40' O.C. ON CL DETOUR = 43 EACH

STAGE 1
CONSTRUCT DETOUR, TEMPORARY DRIVES
AND MOST OF PERMANENT DRIVE STA. 21+15 LT.

STAGE 2
SHIFT TRAFFIC TO DETOUR
CONSTRUCT NEW BRIDGE AND MAIN LANES.

STAGE 3
SHIFT TRAFFIC TO C.L. CONST.
OBLITERATE DETOUR AND FINISH TIE-INS.

END OF JOB
PLACE FINAL STRIPING

MAINTENANCE OF TRAFFIC
STAGE 2

7/8/2015

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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.		020419	16	90

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-19-15

C.L. CONSTRUCTION
P.I. = 24+13.60
Δ = 53°19'49.1" LT.
D = 7°45'00.0"
T = 371.27'
L = 688.13'
P.C. = 20+42.34
P.T. = 27+30.47
e = 0.100'/'
Ls = 300.00'

(1) C20-2 (48" x 24")
END ROAD WORK

(1) R4-2 (24" x 30")
PASS WITH CARE

(1) W20-1 (48" x 48") ROAD WORK 1500 FT
(1) W20-1 (48" x 48") ROAD WORK 1000 FT
(1) W20-1 (48" x 48") ROAD WORK 500 FT

DO NOT PASS
(1) R4-1 (24" x 30")

34 TRAFFIC DRUMS 30' O.C. NORMAL

6'1"X6" WOOD PLANK PRIVACY FENCE NORTH
6'1"X6" WOOD PLANK PRIVACY FENCE
WOOD FENCE MADE OF LANDSCAPE TIMBERS
CONCRETE DRIVEWAY
DRIVE

STA. 18+35.00 =
STA. 44+25.48
NOAH LANE

5 TRAFFIC DRUMS AT TEMP DRIVE REMOVAL

P.I. 13+25.00
P.I. DETOUR
PC DETOUR
PT DETOUR
P.I. 14+25.00
S83°46'58"E
S83°21'21"E
S77°01'40"E
S83°46'58"E
POE 44+25.48
PT 43+72.12
PC DETOUR
PC 20+42.34

N

(1) R11-2 (48" X 30")
16' BARR. TYP. III RT.
ROAD CLOSED
16' BARR. TYP. III RT.
(1) R11-2 (48" X 30")

N6°13'02"E
PC 40+73.5771
WELLS BAYOU
S87°41'47"W
P.I. 42+75.15
POB 40+00.00

ROAD CLOSED
(1) R11-2 (48" X 30")
16' BARR. TYP. III RT.
5 TRAFFIC DRUMS AT NOAH LANE REMOVAL

STA. 14+25.00
BEGIN JOB 020419
LOG MILE 1.60

C.L. DETOUR
P.I. = 13+75.00
Δ = 6°45'18.4" RT.
D = 8°00'00.0"
T = 42.27'
L = 84.44'
P.C. = 13+32.73
P.T. = 14+17.17
NO SUPERELEVATION

C.L. DETOUR
P.I. = 24+86.43
Δ = 72°26'48.5" LT.
D = 8°00'00.0"
T = 524.63'
L = 905.58'
P.C. = 19+61.80
P.T. = 28+67.39
e = 0.100'/'
Ls = 300.00'

C.L. NOAH LANE
P.I. = 42+75.15
Δ = 98°31'14.5" RT.
D = 33°00'00.0"
T = 201.57'
L = 298.55'
P.C. = 40+73.58
P.T. = 43+72.12
e = 0.100'/'
Ls = 250.00'

CONSTRUCTION PAVEMENT MARKINGS
LT. & RT. EDGE LINES + DBL. CENTERLINE NOAH LN. = 1850 LIN.FT.
LT. & RT. EDGE LINES + DBL. CENTERLINE STA. 13+25 - STA. 24+80 CL HWY.54 = 4620 LIN.FT.

REMOVABLE CONSTRUCTION PAVEMENT MARKINGS
LT. & RT. EDGE LINES + DBL.CENTERLINE IN SHIFT-LEFT AREAS
STA. 24+80 - STA. 29+51 = 1884 LIN.FT.

STAGE 1
CONSTRUCT DETOUR, TEMPORARY DRIVES
AND MOST OF PERMANENT DRIVE STA. 21+15 LT.

STAGE 2
SHIFT TRAFFIC TO DETOUR
CONSTRUCT NEW BRIDGE AND MAIN LANES.

STAGE 3
SHIFT TRAFFIC TO C.L. CONST.
OBLITERATE DETOUR AND FINISH TIE-INS.

END OF JOB
PLACE FINAL STRIPING

7/8/2015

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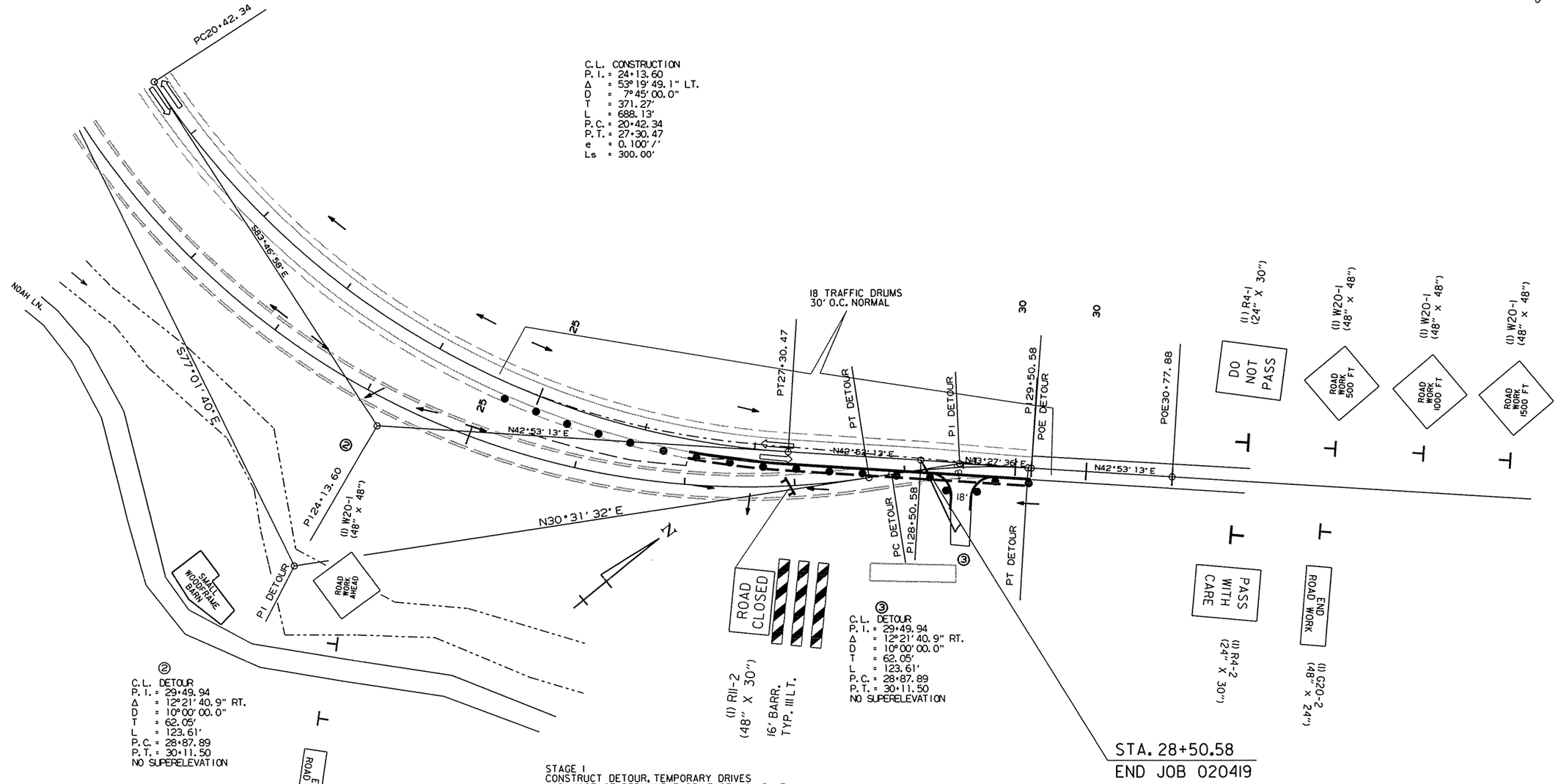
MAINTENANCE OF TRAFFIC
STAGE 3

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.		020419	17	90

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-19-15



② C.L. DETOUR
P.I. = 29+49.94
Δ = 12°21'40.9" RT.
D = 10°00'00.0"
T = 62.05'
L = 123.61'
P.C. = 28+87.89
P.T. = 30+11.50
NO SUPERELEVATION

③ C.L. DETOUR
P.I. = 29+49.94
Δ = 12°21'40.9" RT.
D = 10°00'00.0"
T = 62.05'
L = 123.61'
P.C. = 28+87.89
P.T. = 30+11.50
NO SUPERELEVATION

STAGE 1
CONSTRUCT DETOUR, TEMPORARY DRIVES AND MOST OF PERMANENT DRIVE STA. 21+15 LT.

STAGE 2
SHIFT TRAFFIC TO DETOUR
CONSTRUCT NEW BRIDGE AND MAIN LANES.

STAGE 3
SHIFT TRAFFIC TO C.L. CONST.
OBLITERATE DETOUR AND FINISH TIE-INS.

END OF JOB
PLACE FINAL STRIPING

7/8/2015

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MAINTENANCE OF TRAFFIC
STAGE 3

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.		020419	18	90

(2) PERMANENT PAVEMENT MARKING DETAILS

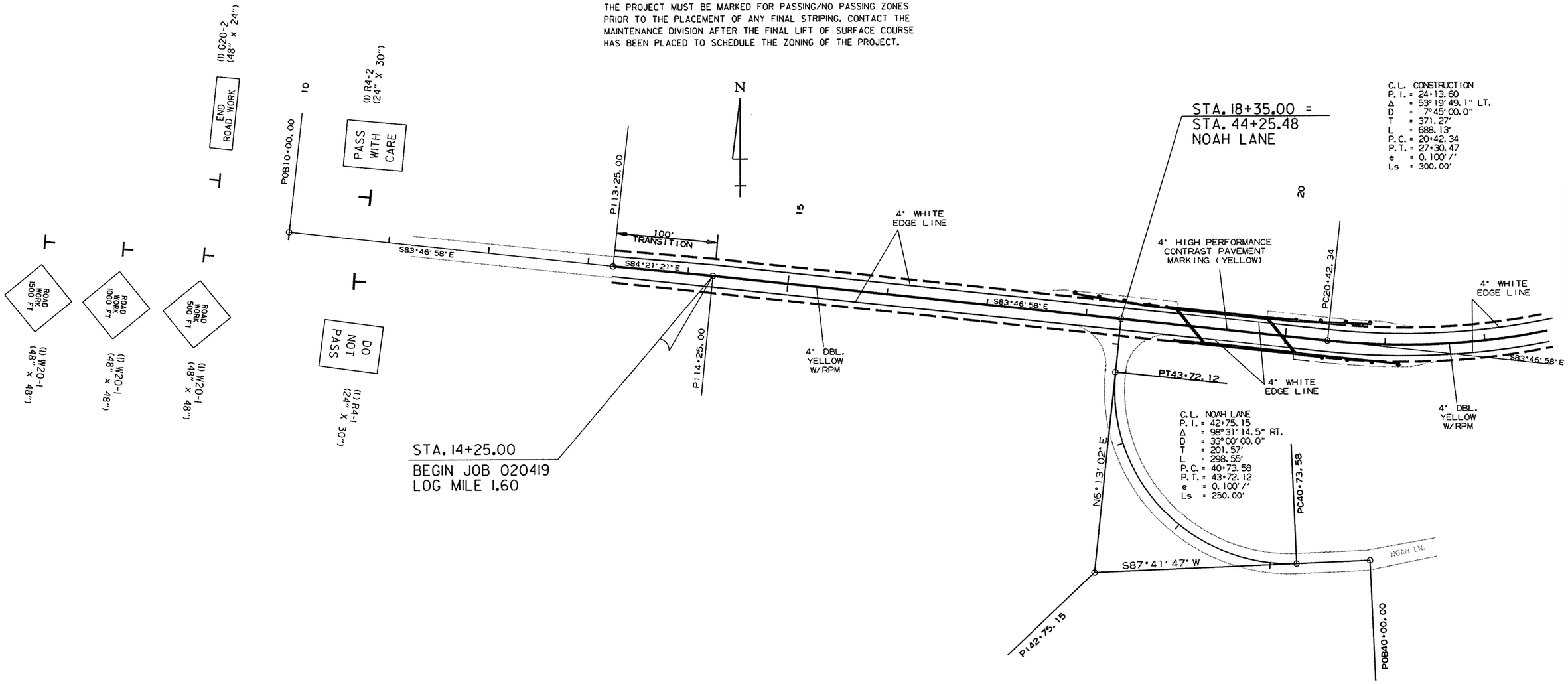
END OF JOB
FINAL STRIPING

REFLECTORIZED PAINT PAVEMENT MARKINGS
LT. & RT. EDGE LINES HWY. 54 = 3436 LIN.FT. 4" WHITE
DBL. CENTERLINE HWY. 54 ON ACHM SURFACE= 3064 LIN.FT. 4" YELLOW

HIGH PERFORMANCE CONTRAST PAVEMENT MARKING
DBL. CENTERLINE ON BRIDGE DECK = 186 LIN.FT. 4" YELLOW

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-19-15

•THE 4" YELLOW STRIPING QUANTITY HAS BEEN ESTIMATED BASED ON A DOUBLE YELLOW CENTERLINE STRIPE FOR THE ENTIRE PROJECT. THE PROJECT MUST BE MARKED FOR PASSING/NO PASSING ZONES PRIOR TO THE PLACEMENT OF ANY FINAL STRIPING. CONTACT THE MAINTENANCE DIVISION AFTER THE FINAL LIFT OF SURFACE COURSE HAS BEEN PLACED TO SCHEDULE THE ZONING OF THE PROJECT.



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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.		020419	19	90

(2) PERMANENT PAVEMENT MARKING DETAILS

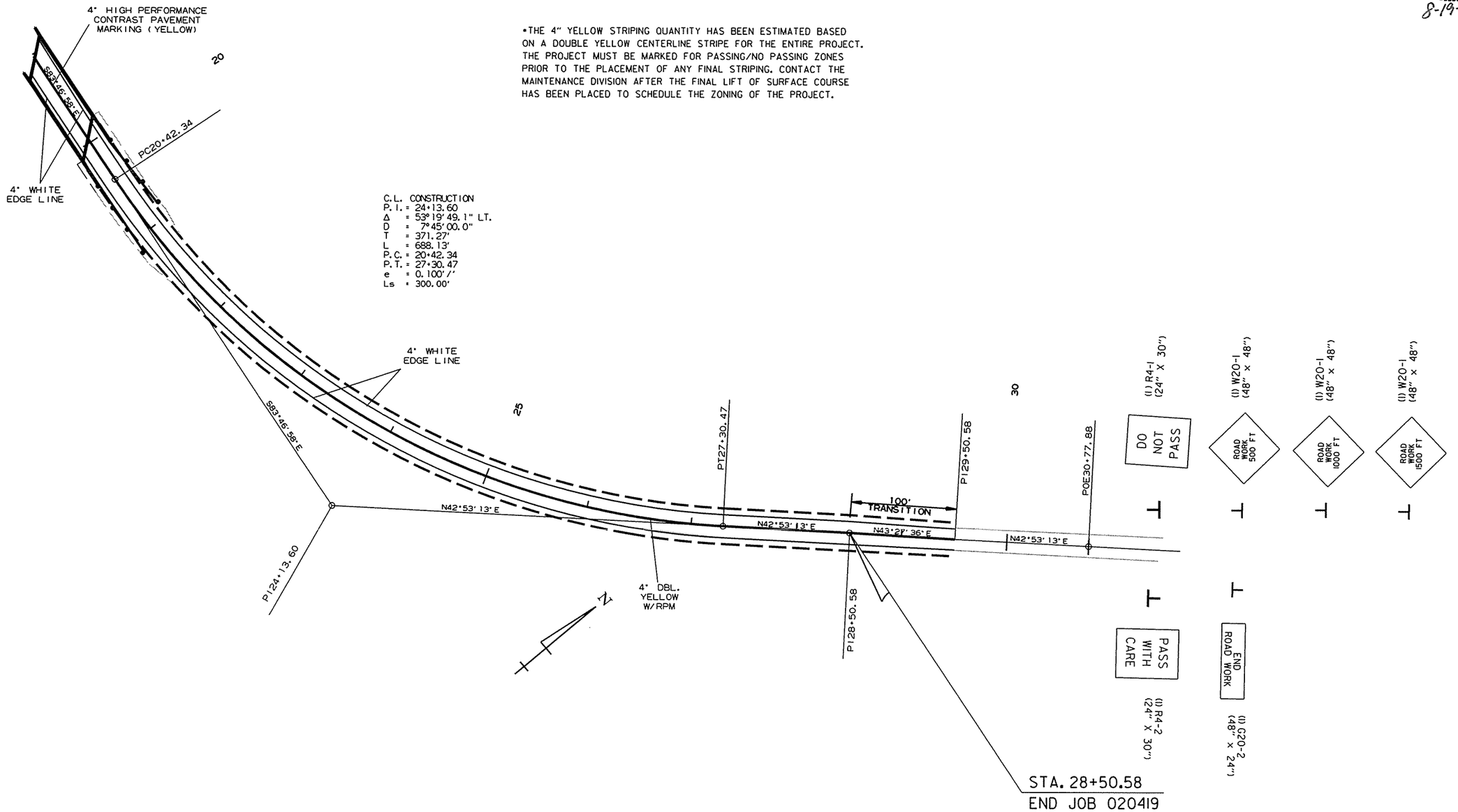
END OF JOB
FINAL STRIPING

REFLECTORIZED PAINT PAVEMENT MARKINGS
LT. & RT. EDGE LINES HWY. 54 = 3436 LIN.FT. 4" WHITE
DBL. CENTERLINE HWY. 54 ON ACHM SURFACE= 3064 LIN.FT. 4" YELLOW

HIGH PERFORMANCE CONTRAST PAVEMENT MARKING
DBL. CENTERLINE ON BRIDGE DECK = 186 LIN.FT. 4" YELLOW

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-19-15

•THE 4" YELLOW STRIPING QUANTITY HAS BEEN ESTIMATED BASED ON A DOUBLE YELLOW CENTERLINE STRIPE FOR THE ENTIRE PROJECT. THE PROJECT MUST BE MARKED FOR PASSING/NO PASSING ZONES PRIOR TO THE PLACEMENT OF ANY FINAL STRIPING. CONTACT THE MAINTENANCE DIVISION AFTER THE FINAL LIFT OF SURFACE COURSE HAS BEEN PLACED TO SCHEDULE THE ZONING OF THE PROJECT.



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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.		020419	20	90

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-19-15

ADVANCE WARNING SIGNS AND DEVICES

SIGN NUMBER	DESCRIPTION	SIGN SIZE	STAGE 1	STAGE 2	STAGE 3	END OF JOB	MAXIMUM NUMBER REQUIRED	TOTAL SIGNS REQUIRED		TRAFFIC DRUMS	BARRICADES (TYPE III)	
											RIGHT	LEFT
			LIN. FT. - EACH					NO.	SQ. FT.	EACH	LIN. FT.	
W20-1	ROAD WORK 1500 FT.	48"x48"	2	2	2		2	2	32.0			
W20-1	ROAD WORK 1000 FT.	48"x48"	2	2	2		2	2	32.0			
W20-1	ROAD WORK 500 FT.	48"x48"	2		2		2	2	32.0			
W20-1	ROAD WORK AHEAD	48"x48"	1	1	1		1	1	16.0			
G20-2	END ROAD WORK	48"x24"	3	3	3		3	3	24.0			
W24-1R	DOUBLE REVERSE CURVE RT.	36"x36"		1			1	1	9.0			
W24-1L	DOUBLE REVERSE CURVE LT.	36"x36"		1			1	1	9.0			
W13-1	SPEED LIMIT (ADVISORY)	24"x24"		2			2	2	8.0			
R11-2	ROAD CLOSED	48"x30"	6	6	2		6	6	60.0			
W1-6	LARGE ARROW	48"x24"		3			3	3	24.0			
W1-8	CHEVRONS	18"x24"		14			14	14	42.0			
R4-1	DO NOT PASS	24"x30"		2	2		2	2	10.0			
R4-2	PASS WITH CARE	24"x30"		2	2		2	2	10.0			
	TRAFFIC DRUMS		82	80	56		82			82		
	TYPE III BARRICADE-RT. (16')		4	3	1		4				64	
	TYPE III BARRICADE-LT. (16')		2	3	1		3					48
TOTALS:									308.0	82	64	48

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

CONSTRUCTION PAVEMENT MARKINGS AND PERMANENT PAVEMENT MARKINGS

DESCRIPTION	STAGE 1	STAGE 2	STAGE 3	END OF JOB	REMOVAL OF PERMANENT PAVEMENT MARKINGS	CONSTRUCTION PAVEMENT MARKINGS	REMOVABLE CONSTRUCTION PAVEMENT MARKINGS	RAISED PAVEMENT MARKERS	REFLECTORIZED PAINT PAVEMENT MARKING		HIGH PERFORMANCE CONTRAST PAVEMENT MARKING
								TYPE II (YEL/YEL)	4"		4"
									WHITE	YELLOW	YELLOW
	LIN. FT. - EACH				LIN. FT.		LIN. FT.	EACH	LIN. FT.		
REMOVAL OF PERMANENT PAVEMENT MARKINGS		1488			1488						
CONSTRUCTION PAVEMENT MARKINGS	1700	8476				10176					
REMOVABLE CONSTRUCTION PAVEMENT MARKINGS			1884				1884				
RAISED PAVEMENT MARKERS (TYPE II) (YEL/YEL)		43						43			
REFLECTORIZED PAINT PAVEMENT MARKING WHITE (4")				3436					3436		
REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (4")				3064						3064	
HIGH PERFORMANCE CONTRAST PAVEMENT MARKING YELLOW (4")				186							186
TOTALS:					1488	10176	1884	43	3436	3064	186

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

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QUANTITIES

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.		020419	21	90

(2) QUANTITIES

DUMPED RIPRAP AND FILTER BLANKET

STATION	LOCATION	DUMPED RIPRAP	FILTER BLANKET
		CU. YDS.	SQ. YDS.
ENTIRE	TO BE USED IF AND WHERE		
PROJECT	DIRECTED BY THE ENGINEER	8	16
TOTALS:		8	16

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

BENCH MARKS

STATION	LOCATION	BENCH MARKS
		EACH
19+18.00	RT. SIDE OF BRIDGE END	1
TOTAL:		1

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

CLEARING AND GRUBBING

STATION	STATION	LOCATION	CLEARING	GRUBBING
			STATION	
18+00.00	25+00.00	MAIN LANES	7	7
26+00.00	29+50.00	MAIN LANES	4	4
TOTALS:			11	11

MAILBOXES

LOCATION	MAILBOXES	MAILBOX SUPPORTS	
		(SINGLE)	(DOUBLE)
		EACH	
ENTIRE PROJECT	5	1	2
TOTALS:	5	1	2

REMOVAL AND DISPOSAL OF CULVERTS

STATION	DESCRIPTION	PIPE CULVERTS
		EACH
15+96.00	24" X 25' PIPE CULVERT ON LT.	1
17+91.00	24" X 24' PIPE CULVERT ON LT.	1
18+58.00	24" X 21' PIPE CULVERT ON RT.	1
20+33.00	24" X 37' PIPE CULVERT ON LT.	1
TOTAL:		4

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

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-19-15

GUARDRAIL

STATION	STATION	LOCATION	GUARDRAIL (TYPE A)	THRIE BEAM GUARDRAIL TERMINAL	TERMINAL ANCHOR POSTS (TYPE 1)	BRIDGE END TERMINAL
			LIN. FT.	EACH		
17+85.34	18+79.09	LT. SIDE	75	1	1	
18+97.49	19+18.49	RT. SIDE				1
19+90.91	20+84.66	LT. SIDE	75	1	1	
20+20.91	21+14.66	RT. SIDE	75	1	1	
TOTALS:			225	3	3	1

SELECTED PIPE BEDDING

LOCATION	SELECTED PIPE BEDDING
	CU.YD.
ENTIRE PROJECT TO BE USED IF	96
AND WHERE DIRECTED BY THE	
ENGINEER	
TOTAL:	96

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

SOIL LOG

STATION	LOCATION	DEPTH	LIQUID LIMIT	PLASTICITY INDEX	AASHTO CLASSIFICATION	COLOR
		FEET				
15+00.00	5' RT. CL	0-5	ND	NP	A-4(0)	BROWN
24+00.00	5' LT. CL	0-5	19	5	A-4(1)	BROWN

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

EROSION CONTROL

STATION	STATION	LOCATION	PERMANENT EROSION CONTROL					TEMPORARY EROSION CONTROL					
			SEEDING	LIME	MULCH COVER	WATER	SECOND SEEDING APPLICATION	TEMPORARY SEEDING	MULCH COVER	WATER	SAND BAG DITCH CHECKS (E-5)	SILT FENCE (E-11)	*SEDIMENT REMOVAL & DISPOSAL
			ACRE	TON	ACRE	M.GAL.	ACRE	ACRE	ACRE	M.GAL.	BAG	LIN. FT.	CU. YD.
13+25.00	29+50.00	CLEARING AND GRUBBING STAGE									242	856	
13+25.00	29+50.00	STAGE 1 - MAIN LANES						5.63	5.63	114.9		517	30
13+25.00	43+40.00	STAGE 2 - MAIN LANES									66	194	21
17+30.00	27+00.00	STAGE 3 - MAIN LANES	1.33	2.7	1.33	135.7	1.33				44	467	19
13+75.00	30+14.00	DETOUR						0.88	0.88	18.0			
40+03.67	44+89.00	NOAH LANE	0.20	0.4	0.20	20.4	0.20						
*ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.											52	271	12
TOTALS:			1.53	3.1	1.53	156.1	1.53	6.51	6.51	132.9	404	2305	82

BASIS OF ESTIMATE:
LIME .....2 TONS / ACRE OF SEEDING
WATER.....102.0 M.G. / ACRE OF SEEDING
WATER.....20.4 M.G. / ACRE OF TEMPORARY SEEDING
WATER.....12.6 GAL. / SQ. YD. OF SOLID SODDING
SAND BAG DITCH CHECKS.....22 BAGS / LOCATION

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

*QUANTITIES ESTIMATED.

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				6	ARK.			
				JOB NO.		020419	22	90

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-19-15

4" PIPE UNDERDRAIN

STATION	STATION	LOCATIONS	4" PIPE UNDERDRAINS	UNDERDRAIN OUTLET PROTECTORS
			LIN. FT.	EACH
* ENTIRE PROJECT TO BE USED IF AND			500	8
WHERE DIRECTED BY THE ENGINEER				
TOTALS:			500	8

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

REMOVAL AND DISPOSAL OF ITEMS

STATION	STATION	LOCATION	CONCRETE DRIVEWAYS
			SQ. YD.
15+96.00		CONCRETE DRIVE ON LT.	85
TOTAL:			85

RUMBLE STRIPS IN ASPHALT SHOULDERS

STATION	STATION	LOCATION	* RUMBLE STRIPS IN ASPHALT SHOULDERS
			LIN.FT.
14+25.00	28+50.58	RT. MAIN LANES	753
14+25.00	28+50.58	LT. MAIN LANES	794
TOTAL:			1547

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

TEMPORARY CULVERTS

STATION	DESCRIPTION	TEMPORARY CULVERTS			STD. DWG. NOS.
		18"	24"	72"	
		LIN. FT.			
18+73.00	RT. MAIN LANES		126		PCC-1, PCM-1, PCP-1, PCP-2
19+69.00	DETOUR - QUAD PIPE CULVERT ON 25^ RT. FWD. SKEW			344	PCC-1, PCM-1
21+35.00	DETOUR	72			PCC-1, PCM-1, PCP-1, PCP-2
TOTALS:		72	126	344	

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.

EARTHWORK

STATION	STATION	LOCATION / DESCRIPTION	UNCLASSIFIED EXCAVATION	COMPACTED EMBANKMENT	* SOIL STABILIZATION
			CU. YD.		TON
13+25.00	29+50.58	STAGE 1-DETOUR CONST.	212	9148	
13+25.00	29+50.58	STAGE 2-MAIN LANES	344	11760	
13+25.00	29+50.58	STAGE 3-DETOUR OBLITERATION	10064	329	
ENTIRE	PROJECT	APPROACHES		1775	
		BRIDGE EARTHWORK	140		
40+00.00	44+14.00	NOAH LANE	276	901	
* ENTIRE	PROJECT	TO BE USED IF AND WHERE			200
		DIRECTED BY THE ENGINEER			
TOTALS:			11036	23913	200

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

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

DRIVEWAYS & TURNOUTS

STATION	SIDE	LOCATION	WIDTH	PORTLAND CEMENT CONCRETE DRIVEWAY	ACHM SURFACE COURSE (1/2") 220 LBS. PER SQ. YD. (PG 64-22)		AGGREGATE BASE COURSE (CLASS 7)	SIDE DRAINS		STANDARD DRAWINGS
								24"	21"X15"	
			FEET	SQ. YD.	SQ. YD.	TON	TON	LIN. FT.		
15+96.00	LT.	MAIN LANES	20	81.09				34		PCC-1, PCM-1, PCP-1, PCP-2
16+78.00	RT.	MAIN LANES	30		52.21	5.74	81.78			
17+65.00	LT.	MAIN LANES	16		30.43	3.35	83.36	48		PCC-1, PCM-1, PCP-1, PCP-2
18+35.00	RT.	MAIN LANES	20		117.44	12.92	504.12	58		PCC-1, PCM-1, PCP-1, PCP-2
21+15.00	LT.	MAIN LANES	18		33.54	3.69	256.25	62		PCC-1, PCM-1, PCP-1, PCP-2
28+89.00	RT.	MAIN LANES	18		33.54	3.69	26.30			
40+35.00	LT.	NOAH LANE	20		36.65	4.03	18.76			
41+00.00		NOAH LANE-CROSS DRAIN							50	PCC-1, PCM-1, PCP-1, PCP-2
41+92.00	LT.	NOAH LANE	28		49.10	5.40	29.41		34	PCC-1, PCM-1, PCP-1, PCP-2
* ENTIRE PROJECT TEMPORARY DRIVES							400.00			
TOTALS:				81.09	352.91	38.82	1399.98	202	84	

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....94.4% MIN. AGGR.....5.6% ASPHALT BINDER
MAXIMUM NUMBER OF GYRATIONS = 115 FOR PG 64-22

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

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

EROSION CONTROL MATTING

STATION	STATION	LOCATION	LENGTH	CLASS 3
			LIN. FT.	SQ. YD.
14+00.00	15+25.00	RT. OF MAIN LANES	125.00	111.11
14+75.00	15+79.00	LT. OF MAIN LANES	104.00	92.44
16+13.00	17+41.00	LT. OF MAIN LANES	128.00	113.78
17+00.00	17+34.00	RT. OF MAIN LANES	34.00	30.22
17+89.00	18+37.00	LT. OF MAIN LANES	48.00	42.67
17+95.00	18+15.00	RT. OF MAIN LANES	20.00	17.78
26+75.00	28+75.00	LT. OF MAIN LANES	200.00	177.78
27+25.00	28+75.00	RT. OF MAIN LANES	150.00	133.33
41+12.00	41+76.00	LT. OF NOAH LANE	64.00	56.89
41+25.00	42+25.00	RT. OF NOAH LANE	100.00	88.89
42+05.00	42+50.00	LT. OF NOAH LANE	45.00	40.00
ENTIRE	PROJECT	TO BE USED IF AND WHERE DIRECTED	108.00	96.00
		BY THE ENGINEER.		
TOTAL:				1000.89

NOTE: AVERAGE WIDTH = 8'-0"

4/9/2015

R020419.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.		020419	23	90

(2) QUANTITIES

REMOVAL AND DISPOSAL OF FENCE

STATION	STATION	LOCATION	FENCE
			LIN. FT.
17+40.00		WOOD FENCE ON LT.	17
TOTAL:			17

ACHM PATCHING OF EXISTING ROADWAY

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

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

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-19-15

COLD MILLING ASPHALT PAVEMENT

STATION	STATION	LOCATION	AVG. WIDTH	COLD MILLING ASPHALT PAVEMENT
			FEET	SQ. YD.
13+25.00	14+25.00	MAIN LANES	20	222.22
28+50.58	29+50.58	MAIN LANES	20	222.22
TOTAL:				444.44

NOTE: AVERAGE MILLING DEPTH 1".

APPROACH GUTTERS

STATION	STATION	LOCATION	APPROACH GUTTER (TYPE SPECIAL)	REINFORCING STEEL-RDWY. (GR. 60)
			CU.YD.	POUND
18+61.49	18+88.49	LT. SIDE	3.77	317
18+91.49	19+18.49	RT. SIDE	3.77	317
19+81.51	20+08.51	LT. SIDE	3.77	317
20+11.51	20+38.51	RT. SIDE	3.77	317
TOTALS:			15.08	1268

NOTE: USE "W" = 4'-0"

ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC

LOCATION	TON	TACK COAT
		GALLON
ENTIRE PROJECT - TO BE USED IF AND WHERE	7	14
DIRECTED BY THE ENGINEER		
TOTALS:	7	14

BASIS OF ESTIMATE:
ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC...25 TON/MILE
TACK COAT FOR MAINTENANCE OF TRAFFIC.....50 GAL./MILE

BASE AND SURFACING

STATION	STATION	LOCATION	LENGTH	AGGREGATE BASE COURSE (CLASS 7)		TACK COAT				ACHM BINDER COURSE (1")				ACHM SURFACE COURSE (1/2")			
				TON / STATION	TON	AVG. WID.	SQ.YD.	GALLONS / SQ.YD.	GALLON	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 64-22	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 64-22
			FEET			FEET				FEET			TON	FEET			TON
MAIN LANES																	
13+25.00	14+25.00	TRANSITION	100.00	VAR.	52.88	VAR.	316.67	0.03	9.50	VAR.	50.92	440.00	11.20	29.00	322.22	VAR.	37.90
14+25.00	15+96.00	NOTCH, WIDENING, & OVERLAY	171.00	105.75	180.83	22.17	421.23	0.03	12.64	2.17	41.23	440.00	9.07	34.00	646.00	220.00	71.06
15+96.00	19+03.49	FULL DEPTH	307.49	183.50	564.24	22.33	762.92	0.03	22.89	22.33	762.92	440.00	167.84	34.00	1161.63	220.00	127.78
19+96.51	24+80.00	FULL DEPTH	483.49	183.50	887.20	22.33	1199.59	0.03	35.99	22.33	1199.59	440.00	263.91	34.00	1826.52	220.00	200.92
24+80.00	28+00.00	FULL DEPTH	320.00	167.75	536.80	22.17	788.27	0.03	23.65	22.17	788.27	440.00	173.42	34.00	1208.89	220.00	132.98
28+00.00	28+50.58	NOTCH, WIDENING, & OVERLAY	50.58	90.00	45.52	VAR.	422.97	0.03	12.69	2.17	12.20	440.00	2.68	34.00	191.08	220.00	21.02
28+50.58	29+50.58	TRANSITION	100.00	VAR.	42.10					VAR.	66.77	440.00	14.69	29.00	322.22	VAR.	46.50
DETOUR																	
13+75.04	16+51.52	TAPER	276.48	VAR.	293.50									VAR.	559.29	330.00	92.28
16+51.82	27+91.00	FULL DEPTH	1139.18	145.75	1660.35									24.00	3037.81	330.00	501.24
27+91.00	29+93.06	TAPER	202.06	VAR.	200.10									VAR.	379.81	330.00	62.67
NOAH LANE																	
40+00.00	40+79.00	TRANSITION	79.00	51.13	40.39									20.00	175.56	220.00	19.31
40+79.00	43+74.00	FULL DEPTH	295.00	102.25	301.64									20.00	655.56	220.00	72.11
43+74.00	44+14.00	TURNOUT	40.00	VAR.	52.70									VAR.	117.56	220.00	12.93
ADDITIONAL FOR GRADE CHANGE																	
14+25.00	15+96.00	TRANSITION TO FULL DEPTH	171.00			VAR.	275.11	0.03	8.25	20.00	380.00	660.00	125.40	20.00	380.00	220.00	41.80
28+00.00	28+50.58	TRANSITION TO NOTCH, WIDENING, & OVERLAY	50.58			VAR.	179.83	0.03	5.39	20.00	112.40	440.00	24.73	20.00	112.40	220.00	12.36
ADDITIONAL FOR LEVELING																	
14+25.00	15+96.00	HWY. 54	171.00			20.00	380.00	0.10	38.00					20.00	380.00	VAR.	47.50
28+00.00	28+50.58	HWY. 54	50.58			20.00	112.40	0.10	11.24					20.00	112.40	VAR.	14.00
ADDITIONAL FOR SUPERELEVATION AND GUARDRAIL WIDENING																	
17+42.34	18+88.49	SUPERELEVATION AND GUARDRAIL ON LT.	146.15	VAR.	27.20									VAR.	76.36	220.00	8.40
17+72.34	19+18.49	SUPERELEVATION AND BRIDGE END TERMINAL ON RT.	146.15	VAR.	66.30									VAR.	76.64	220.00	8.43
19+81.51	28+35.47	SUPERELEVATION AND GUARDRAIL ON LT.	853.96	VAR.	214.50									VAR.	76.36	220.00	8.40
20+11.51	29+50.58	SUPERELEVATION AND GUARDRAIL ON RT.	939.07	VAR.	573.50									VAR.	76.36	220.00	8.40
TOTALS:					5739.75		4858.99		180.24		3414.30		792.94		11894.67		1547.99

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....94.4% MIN. AGGR.....5.6% ASPHALT BINDER
ACHM BINDER COURSE (1").....95.6% MIN. AGGR.....4.4% ASPHALT BINDER
MAXIMUM NUMBER OF GYRATIONS = 115 FOR PG 64-22

4/9/2015

R020419.DGN

QUANTITIES

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		020419	24	90
(1) 07068		QUANTITIES		48264

SCHEDULE OF BRIDGE QUANTITIES - JOB NO. 020419

BRIDGE NO. / CODE NO. / NAME PLATE TITLE	UNIT OF STRUCTURE	ITEM NO.	205	801	802	802	803	804	805	805	805	805	807	809	812	816	816
		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)	CONCRETE PILING (14" SQ.)	CONCRETE PILING (18" SQ.)	TEST PILE (14" SQ.)	TEST PILE (18" SQ.)	STRUCTURAL STEEL IN BEAM SPANS (M270, GRADE 50W)	PREFORMED JOINT SEAL	BRIDGE NAME PLATE (TYPE D)	FILTER BLANKET	DUMPED RIPRAP
		UNIT	LUMP SUM	CU. YD.	CU. YD.	CU. YD.	GAL.	LB.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LB.	LIN. FT.	EACH	SQ. YD.	CU. YD.
07068 X071 WELLS BAYOU	BENT NOS. 1 & 4			6	59.77		0.6	7,315	315		40		1,599			487	270
	BENT NOS. 2 & 3				35.73			4,140		385		40					
	90'-0" CONT. COMP. W-BEAM UNIT					94.90	7.4	27,565					47,601	91.0	1		
	SITE NO. 1		1														
TOTALS FOR JOB NO. 020419				6	95.50	94.90	8.0	39,020	315	385	40	40	49,200	91.0	1	487	270

AILEEN SCHUBEL
DESIGN SECTION SUPERVISOR

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7510
CARL J. FUSELIER
4/7/14

BRIDGE ENGINEER

SCHEDULE OF BRIDGE QUANTITIES
WELLS BAYOU STR. & APPRS. (S)
LINCOLN COUNTY

ROUTE 54 SEC. 3
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: DDD DATE: 10/20/05 FILENAME: b020419_ql.dgn
CHECKED BY: AMS DATE: 7/11/13 SCALE: NONE
DESIGNED BY: — DATE: —
BRIDGE NO. 07068 DRAWING NO. 48264

SUMMARY OF QUANTITIES

ITEM NUMBER	ITEM	QUANTITY	UNIT
201	CLEARING	11	STATION
201	GRUBBING	11	STATION
202	REMOVAL AND DISPOSAL OF FENCE	17	LIN. FT.
202	REMOVAL AND DISPOSAL OF CONCRETE DRIVEWAYS	85	SQ. YD.
202	REMOVAL AND DISPOSAL OF PIPE CULVERTS	4	EACH
210	UNCLASSIFIED EXCAVATION	11036	CU. YD.
210	COMPACTED EMBANKMENT	23913	CU. YD.
SP & 210	SOIL STABILIZATION	200	TON
303	AGGREGATE BASE COURSE (CLASS 7)	7140	TON
SS & 401	TACK COAT	194	GAL.
SP, SS, & 406	MINERAL AGGREGATE IN ACHM BINDER COURSE (1")	758	TON
SP, SS, & 406	ASPHALT BINDER (PG 64-22) IN ACHM BINDER COURSE (1")	35	TON
SP, SS, & 407	MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2")	1498	TON
SP, SS, & 407	ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2")	89	TON
412	COLD MILLING ASPHALT PAVEMENT	444	SQ. YD.
SP & 414	ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC	7	TON
SP & 415	ACHM PATCHING OF EXISTING ROADWAY	25	TON
504	APPROACH GUTTERS	15.08	CU. YD.
505	PORTLAND CEMENT CONCRETE DRIVEWAY	81.09	SQ. YD.
601	MOBILIZATION	1.00	LUMP SUM
SP&602	FURNISHING FIELD OFFICE	1	EACH
603	MAINTENANCE OF TRAFFIC	1.00	LUMP SUM
603	18" TEMPORARY CULVERT	72	LIN. FT.
603	24" TEMPORARY CULVERT	126	LIN. FT.
603	72" TEMPORARY CULVERT	344	LIN. FT.
SS & 604	SIGNS	308	SQ. FT.
SS & 604	BARRICADES	112	LIN. FT.
SS & 604	TRAFFIC DRUMS	82	EACH
604	CONSTRUCTION PAVEMENT MARKINGS	10176	LIN. FT.
604	REMOVABLE CONSTRUCTION PAVEMENT MARKINGS	1884	LIN. FT.
604	REMOVAL OF PERMANENT PAVEMENT MARKINGS	1488	LIN. FT.
SP, SS, & 606	24" SIDE DRAIN	202	LIN. FT.
SS & 606	21" X 15" SIDE DRAIN	84	LIN. FT.
606	SELECTED PIPE BEDDING	96	CU. YD.
611	UNDERDRAIN OUTLET PROTECTORS	8	EACH
611	4" PIPE UNDERDRAINS	500	LIN. FT.
617	GUARDRAIL (TYPE A)	225	LIN. FT.
617	TERMINAL ANCHOR POSTS (TYPE 1)	3	EACH
617	THRIE BEAM GUARDRAIL TERMINAL	3	EACH
620	LIME	3	TON
620	SEEDING	1.53	ACRE
SS & 620	MULCH COVER	8.04	ACRE
620	WATER	289.0	M.GAL.
621	TEMPORARY SEEDING	6.51	ACRE
621	SILT FENCE	2305	LIN. FT.
621	SAND BAG DITCH CHECKS	404	BAG
621	SEDIMENT REMOVAL AND DISPOSAL	82	CU. YD.
623	SECOND SEEDING APPLICATION	1.53	ACRE
626	EROSION CONTROL MATTING (CLASS 3)	1001	SQ. YD.
635	ROADWAY CONSTRUCTION CONTROL	1.00	LUMP SUM
637	MAILBOXES	5	EACH
637	MAILBOX SUPPORTS (SINGLE)	1	EACH
637	MAILBOX SUPPORTS (DOUBLE)	2	EACH
642	RUMBLE STRIPS IN ASPHALT SHOULDERS	1547	LIN. FT.
718	REFLECTORIZED PAINT PAVEMENT MARKING WHITE (4")	3436	LIN. FT.
718	REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (4")	3064	LIN. FT.
* SP & 719	INVERTED PROFILE THERMOPLASTIC CONTRAST PAVEMENT MARKING YELLOW (4") (ALTERNATE NO. 1)	186	LIN. FT.
* SP	HIGH PERFORMANCE CONTRAST MARKING TAPE YELLOW (4") (ALTERNATE NO. 2)	186	LIN. FT.
721	RAISED PAVEMENT MARKERS (TYPE II)	43	EACH
734	BRIDGE END TERMINAL	1	EACH
804	REINFORCING STEEL-ROADWAY (GRADE 60)	1268	POUND
816	FILTER BLANKET	16	SQ. YD.
816	DUMPED RIPRAP	8	CU. YD.
	STRUCTURES OVER 20' SPAN		
205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 1)	1.00	LUMP SUM
636	BRIDGE CONSTRUCTION CONTROL	1.00	LUMP SUM
801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE	6	CU. YD.
802	CLASS S CONCRETE-BRIDGE	95.50	CU. YD.
802	CLASS S(AE) CONCRETE-BRIDGE	94.90	CU. YD.
803	CLASS 1 PROTECTIVE SURFACE TREATMENT	8.0	GAL.
804	REINFORCING STEEL-BRIDGE (GRADE 60)	39020	POUND
805	CONCRETE PILING (14" SQUARE)	315	LIN. FT.
805	CONCRETE PILING (18" SQUARE)	385	LIN. FT.
805	TEST PILE (14" SQUARE)	40	LIN. FT.
805	TEST PILE (18" SQUARE)	40	LIN. FT.
807	STRUCTURAL STEEL IN BEAM SPANS (M270-GR50W)	49200	POUND
809	PREFORMED JOINT SEAL	91.0	LIN. FT.
812	BRIDGE NAME PLATE (TYPE D)	1	EACH
816	FILTER BLANKET	487	SQ. YD.
816	DUMPED RIPRAP	270	CU. YD.

* DENOTES ALTERNATE BID ITEMS.

REVISIONS

DATE	REVISION	SHEET NUMBER
12/21/2015	REVISED HIGH PERFORMANCE PAVEMENT MARKING SPECIAL PROVISION	25
1/15/2016	ADDED CARGO PREFERENCE ACT REQUIREMENTS SPECIAL PROVISION	2,25

SUMMARY OF QUANTITIES AND REVISIONS

TIMOTHY D. SMITH
REGISTERED PROFESSIONAL ENGINEER
No. 11425
STATE OF ARKANSAS
1-15-16

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.AID DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
12/21/15				6	ARK.	020419	25	90
1/15/16				JOB NO.				

(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.		020419	26	90

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-19-15

COORDINATES
FEET
ARKANSAS STATE PLANE; BASED ON GPS CONTROL, PROJECTED TO GROUND.

Point	Northing	Easting	Elevation
1	1762066.8560	1441668.1348	168.2648
2	1762026.4538	1442063.9238	167.8068
3	1762435.1869	1442310.4123	165.1897
100	1762206.3931	1440899.5981	167.9442
101	1762320.7600	1439219.8232	164.6023
200	1762807.3117	1434838.6131	168.1961
201	1762029.5519	1442663.3649	166.0075
900	-100007.6830	-100007.6830	168.2900
901	-100007.6830	-100007.6830	167.8220
902	-100007.6830	-100007.6830	163.4650
903	-100007.6830	-100007.6830	163.8540
904	-100007.6830	-100007.6830	164.7910
905	-100007.6830	-100007.6830	166.2110
906	-100007.6830	-100007.6830	166.4590
907	-100007.6830	-100007.6830	167.4630
908	-100007.6830	-100007.6830	167.5740
909	-100007.6830	-100007.6830	167.2960
910	-100007.6830	-100007.6830	166.7510
911	-100007.6830	-100007.6830	167.8080
912	-100007.6830	-100007.6830	167.6480
913	-100007.6830	-100007.6830	169.6230
914	-100007.6830	-100007.6830	167.7960
915	-100007.6830	-100007.6830	171.5890
916	-100007.6830	-100007.6830	167.7850
917	-100007.6830	-100007.6830	165.9590
918	-100007.6830	-100007.6830	166.5320
919	-100007.6830	-100007.6830	165.9880
920	-100007.6830	-100007.6830	167.4630
921	1762113.2427	1442006.0682	165.9880
922	1762190.9444	1440954.1732	167.4630
1000	1762115.2351	1441598.2960	168.6395
1100	1762266.9886	1441311.6778	167.7273
1101	1762266.9886	1441311.6778	167.7273
1200	1762507.9174	1437543.6894	165.7872
1201	1762624.5961	1436440.2142	166.2486
1202	1762763.0834	1435247.5795	169.0264
1203	1762637.9072	1436701.8959	166.8451
1204	1762507.3655	1437959.4160	165.0305
1205	1762372.2722	1439203.1296	165.1243
1206	1762238.7898	1440479.8988	167.0601
1207	1761663.4413	1442811.9048	166.3728
1500	1762221.3930	1440794.2916	**********
1501	1762154.7128	1440788.8684	**********
1502	1762133.2737	1440994.9894	**********
1503	1762216.4527	1441002.4625	**********
1504	1762115.0131	1441572.8269	**********
1505	1762064.5859	1441577.1769	**********
1506	1762028.6840	1441762.4321	**********
1507	1762114.3878	1441767.4463	**********
1508	1762087.1115	1441988.2432	**********
1509	1762084.0922	1442148.1039	**********
1510	1761901.9638	1442173.7294	**********
1511	1761912.9949	1441978.7214	**********
1512	1762370.0792	1442229.3498	**********
1513	1762519.8269	1442369.2679	**********
1514	1762479.9493	1442411.7538	**********
1515	1762333.6020	1442273.7973	**********
1516	1762180.5839	1441540.1724	**********
1517	1762112.2435	1441696.8065	**********
1518	1762046.3013	1441686.7204	**********
1519	1762092.1493	1441465.7990	**********

USE CAF = 1.0 FOR STAKEOUT FOR THIS PROJECT TO CONVERT TO GRID USE CAF = 0.9999131764
GRID DISTANCE = GROUND DISTANCE X CAF.
GROUND COORDINATES ARE STORED UNDER FILE NAME S020419go.ctl
HORIZONTAL DATUM: NAD 83
VERTICAL DATUM: NGVD 88
REFERENCE POINTS (1500 SERIES) TO BE USED TO ESTABLISH CONTROL; NOT TO BE USED FOR VERTICAL CONTROL POINTS BY RESECTION.
BASIS OF BEARINGS
BASED ON GPS PTS 400018
ARKANSAS STATE PLANE GRID
COORDINATES SOUTH ZONE
GRID AZIMUTH = ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE.
PN: 100

CONST

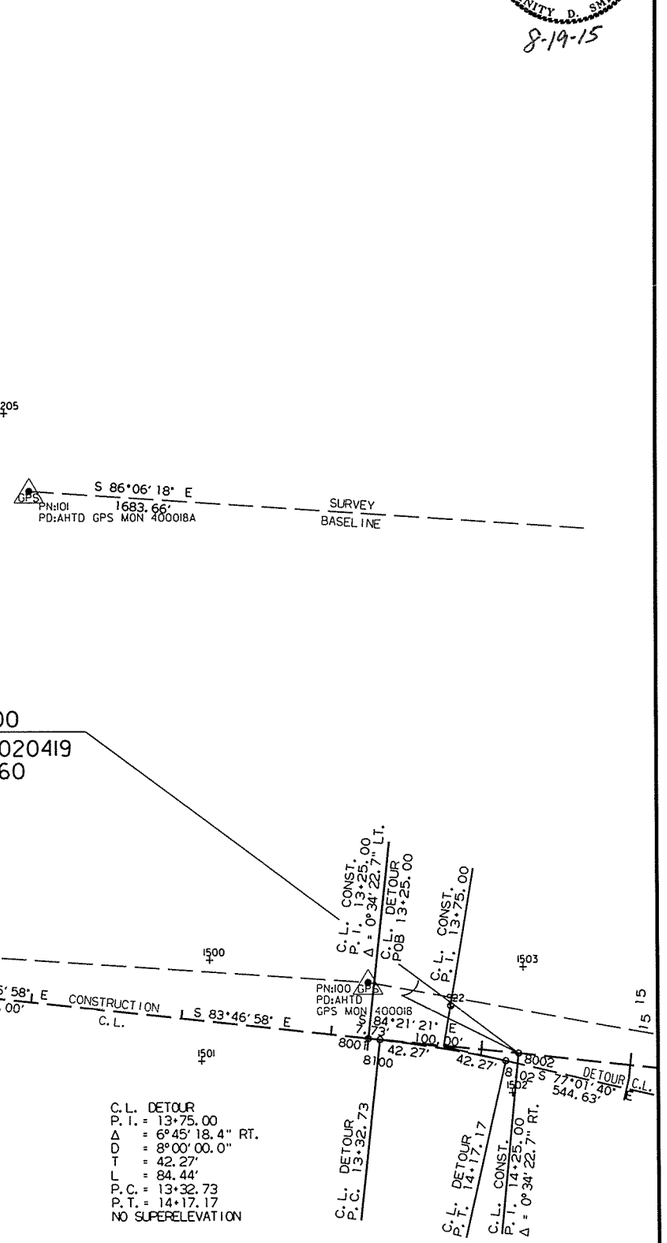
POINT NO.	TYPE	STATION	NORTHING	EASTING
8000	POB	10+00.00	1762204.5551	1440576.4977
8001	PI	13+25.00	1762169.3583	1440899.5862
8002	PI	14+25.00	1762159.5231	1440999.1013
8003	PC	20+42.34	1762092.6668	1441612.8079
8005	PT	27+30.47	1762324.4858	1442234.5570
8006	PI	28+50.58	1762412.4872	1442316.2954
8011	PI	29+50.58	1762485.0729	1442385.0801
8007	POE	30+77.88	1762578.3486	1442471.7175

NOAH LN.

POINT NO.	TYPE	STATION	NORTHING	EASTING
8200	POB	40+00.00	1761872.7508	1441654.0102
8201	PC	40+73.58	1761869.7935	1441580.4925
8203	PT	43+72.12	1762062.0799	1441400.9117
8204	POE	44+25.48	1762115.1210	1441406.6899

DETOUR

POINT NO.	TYPE	STATION	NORTHING	EASTING
8001	POB	13+25.00	1762169.3583	1440899.5862
8100	PC	13+32.73	1762168.5210	1440907.2722
8102	PT	14+17.17	1762154.4549	1440990.4818
8103	PC	19+61.80	1762032.1962	1441521.2121
8105	PT	28+67.39	1762366.3426	1442298.9187
8106	PC	28+87.89	1762384.0031	1442309.3321
8108	PT	30+11.50	1762482.9133	1442383.0742
8011	POE	30+14.45	1762485.0729	1442385.0801



7/10/2015
R020419.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.		020419	27	90

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-19-15

STA. 18+35.00
STA. 44+25.48
NOAH LANE

STA. 28+50.58
END JOB 020419

C.L. DETOUR
P.I. = 24+86.43
Δ = 72°26'48.5" LT.
D = 8°00'00.0"
T = 524.63'
L = 905.58'
P.C. = 19+61.80
P.T. = 28+67.39
e = 0.100'/'
Ls = 300.00'

C.L. CONSTRUCTION
P.I. = 24+13.60
Δ = 53°19'49.1" LT.
D = 7°45'00.0"
T = 371.27'
L = 688.13'
P.C. = 20+42.34
P.T. = 27+30.47
e = 0.100'/'
Ls = 300.00'

C.L. DETOUR
P.I. = 29+49.94
Δ = 12°21'40.9" RT.
D = 10°00'00.0"
T = 62.05'
L = 123.61'
P.C. = 28+87.89
P.T. = 30+11.50
NO SUPERELEVATION

C.L. NOAH LANE
P.I. = 42+75.15
Δ = 98°31'14.5" RT.
D = 33°00'00.0"
T = 201.57'
L = 298.55'
P.C. = 40+73.58
P.T. = 43+72.12
e = 0.100'/'
Ls = 250.00'

PN:1
PD:5/8X24" RBR W/ALUM CAP

PN:2
PD:5/8X24" RBR W/ALUM CAP

C.L. NOAH LN.
POE 44+25.48

C.L. NOAH LN.
P.I. 43+72.12

C.L. NOAH LN.
P.I. 42+75.15

C.L. NOAH LN.
P.C. 40+73.58

C.L. NOAH LN.
POB 40+00.00

DETOUR C.L.

CONSTRUCTION C.L.

NOAH LANE C.L.

SURVEY BASELINE

7/10/2015

R020419.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.		020419	28	90

(2) PLAN AND PROFILE

C.L. CONST.
STA. 15+96 IN PLACE
24" x 25' PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
24" x 34' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPR. = 50 CU. YDS.

C.L. CONST.
STA. 17+91 IN PLACE
24" x 24' PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL @ 1+65
24" x 48' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPR. = 335 CU. YDS.

STA. 19+20.29 - STA. 19+78.47 IN PLACE
58.18' x 24' BRIDGE CONSISTING OF
TIMBER AND MULTI-BEAM SUBSTRUCTURE
REMOVE AS EXISTING BRIDGE STRUCTURE
(SITE NO. 1) = 1.00 LUMP SUM.

STA. 19+03.49 - STA. 19+96.51 CONSTRUCT
93'-0 1/4" x 30'-0" BRIDGE
90° CONT. COMP. W-BEAM UNIT
ON A 45° RT. FWD. SKEW

C.L. CONST.
STA. 20+33 IN PLACE
24" x 37' PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL @ 21+15
24" x 62' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPR. = 1205 CU. YDS.

C.L. CONSTRUCTION
P.I. = 24+13.60
Δ = 53°19'49.1" LT.
D = 7°45'00.0"
T = 371.27'
L = 688.13'
P.C. = 20+42.34
P.T. = 27+30.47
e = 0.100'/'
Ls = 300.00'

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-19-15

STA. 18+35.00 = STA. 44+25.48
NOAH LANE
Δ = 90°

POB 10+00.00

EXISTING R/W — S83°46'58"E — EXISTING R/W

PI 13+25.00
Δ = 0°34'22.7" LT.
13+25.00
40.00'

100' TRANSITION

PI DETOUR

PNH66
PD:AHTD
GPS MON 400018

CONST. LIMITS — PROPOSED R/W — S84°21'21"E

CONCRETE DRIVEWAY

S83°46'58"E 45'

CONST. LIMITS — PROPOSED R/W — S77°01'40"E 30'

T.C.E.

PC DETOUR
13+25.00
40.00'

PT DETOUR

PI 14+25.00
Δ = 0°34'22.7" RT.
15+00.00
46.24'

* * INSTALL BRIDGE END TERMINAL AS SHOWN. ELIMINATE OR MODIFY APPROACH CURB SECTIONS TO FIT BRIDGE END TERMINAL. PAYMENT FOR ELIMINATING OR MODIFYING THESE CURBS SHALL BE CONSIDERED SUBSIDIARY TO APPROACH GUTTERS (TYPE SPECIAL).

STA. 14+25.00
BEGIN JOB 020419
LOG MILE 1.60

① C.L. DETOUR
P.I. = 13+75.00
Δ = 6°45'18.4" RT.
D = 8°00'00.0"
T = 42.27'
L = 84.44'
P.C. = 13+32.73
P.T. = 14+17.17
NO SUPERELEVATION

② C.L. DETOUR
P.I. = 24+86.43
Δ = 72°26'48.5" LT.
D = 8°00'00.0"
T = 524.63'
L = 905.58'
P.C. = 19+61.80
P.T. = 28+67.39
e = 0.100'/'
Ls = 300.00'

C.L. CONST.
STA. 16+78 CONTRUCT
APPROACH ON RT. = 70 CU. YDS.

C.L. CONST.
STA. 18+58 IN PLACE
24" x 21' PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL @ 1+35
24" x 58' PIPE CULVERT
RT. SIDE DRAIN

C.L. CONST.
STA. 18+73 INSTALL
24" x 126' TEMPORARY PIPE CULVERT
RT. SIDE DRAIN

PT 43+72.12

PC DETOUR

PC 20+42.34

PC 40+73.58

PI 24+13.60

PI 27+30.47

PNH2
PD:5/8X24" RBR W/ALUM CAP

PNH1
PD:5/8X24" RBR W/ALUM CAP

WELL PUMP
CONC. BLOCK WELLHOUSE

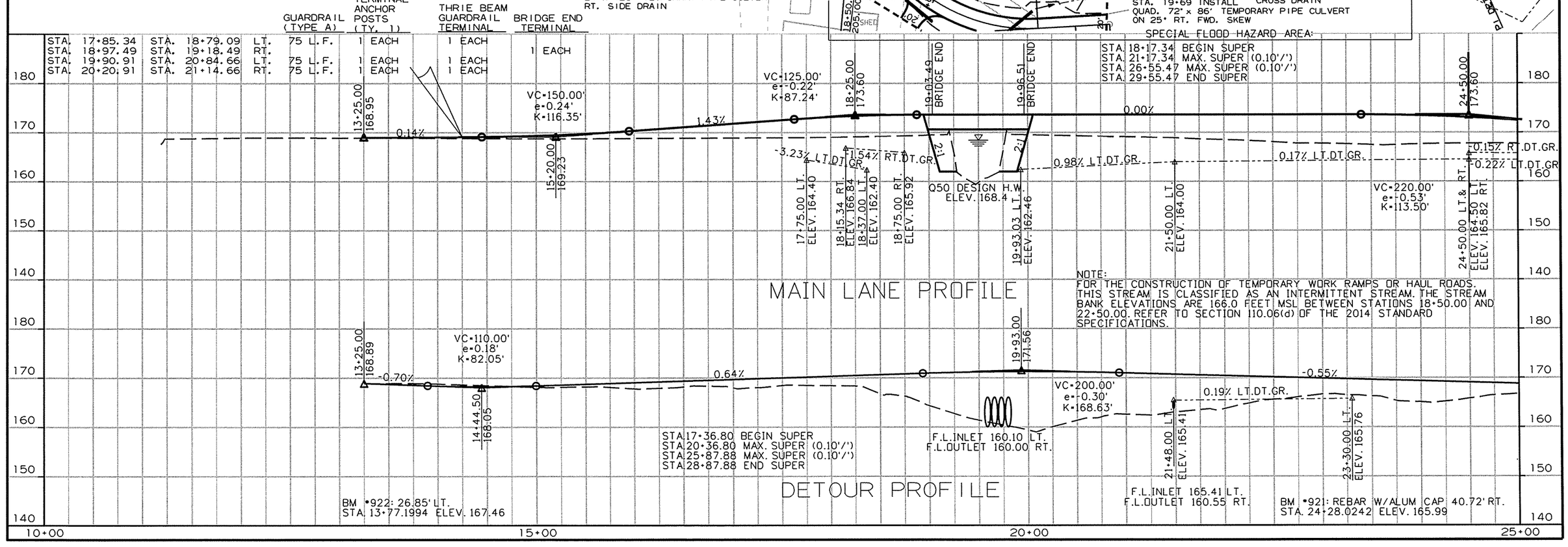
WELLS BAYOU

C.L. DETOUR
STA. 21+35 INSTALL
18" x 72' TEMPORARY PIPE CULVERT
CROSS DRAIN

C.L. DETOUR
STA. 19+69 INSTALL
QUAD. 72" x 86' TEMPORARY PIPE CULVERT
ON 25° RT. FWD. SKEW

SPECIAL FLOOD HAZARD AREA:
STA. 18+17.34 BEGIN SUPER
STA. 21+17.34 MAX. SUPER (0.10'/')
STA. 26+55.47 MAX. SUPER (0.10'/')
STA. 29+55.47 END SUPER

	GUARDRAIL (TYPE A)	TERMINAL ANCHOR POSTS (TY. 1)	THRIE BEAM GUARDRAIL TERMINAL	BRIDGE END TERMINAL
STA. 17+85.34 STA. 18+79.09 LT.	75 L.F.	1 EACH	1 EACH	1 EACH
STA. 18+97.49 STA. 19+18.49 RT.				
STA. 19+90.91 STA. 20+84.66 LT.	75 L.F.	1 EACH	1 EACH	
STA. 20+20.91 STA. 21+14.66 RT.	75 L.F.	1 EACH	1 EACH	

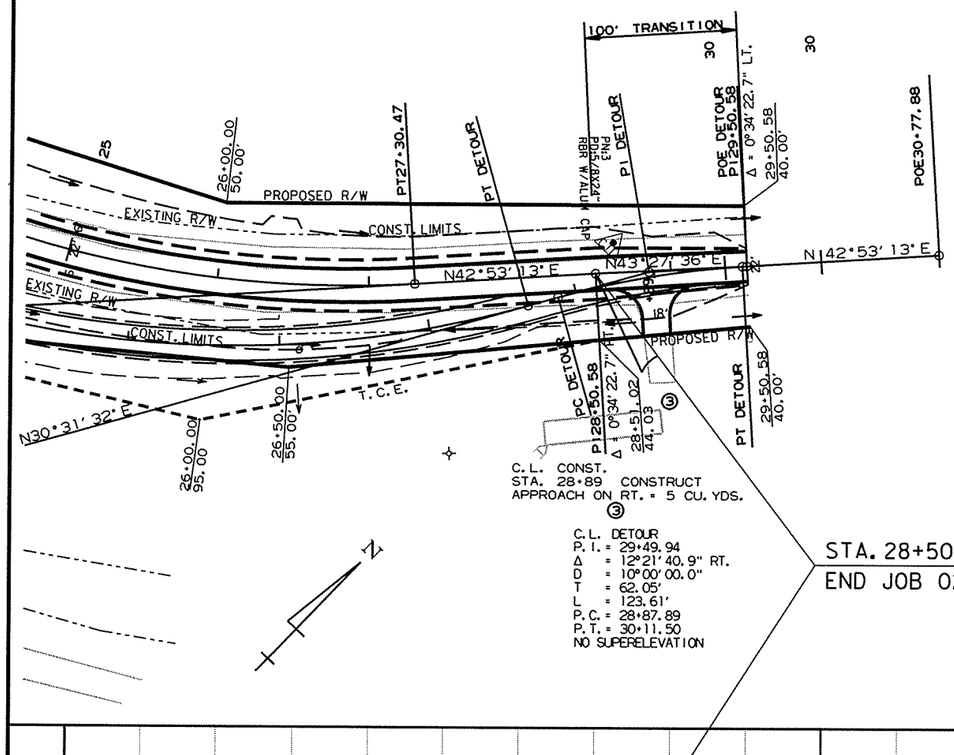


r020419_p01.dgn 8/17/2015

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.		020419	29	90

(2) PLAN AND PROFILE

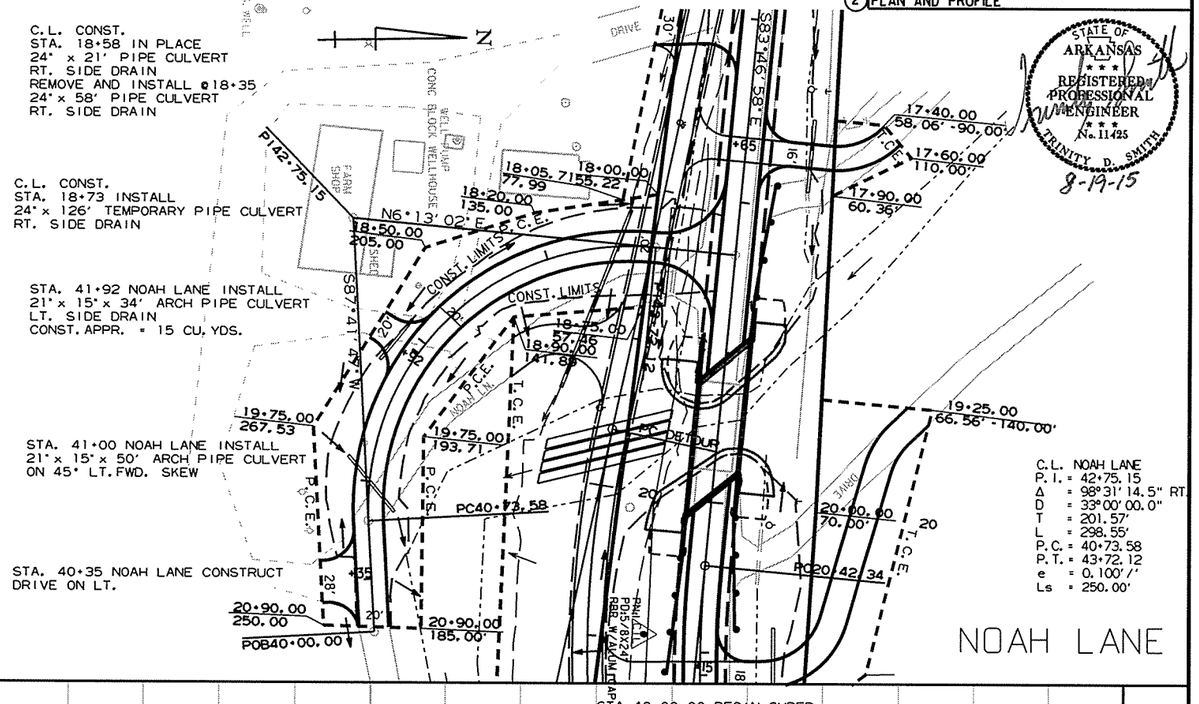
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-19-15



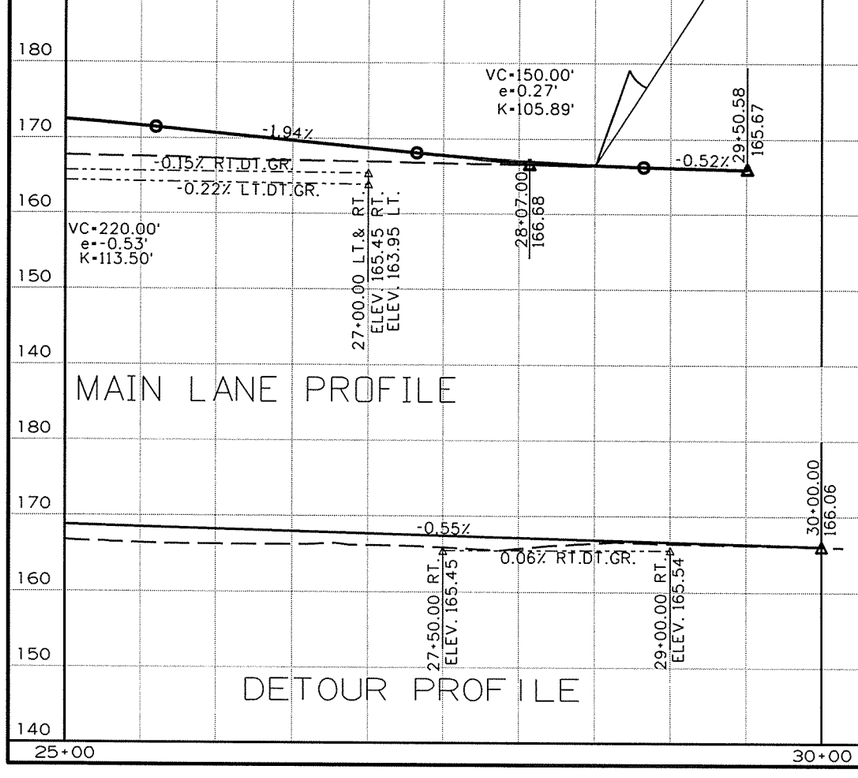
C.L. CONST.
STA. 28+89 CONSTRUCT
APPROACH ON RT. = 5 CU. YDS.
(3)

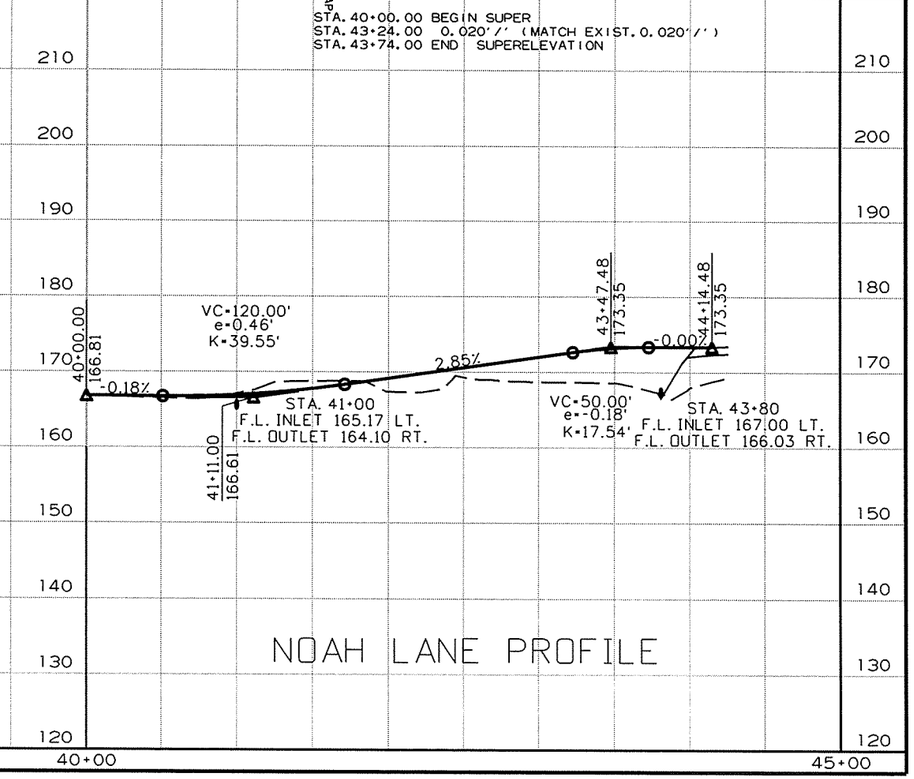
C.L. DETOUR
P.I. = 29+49.94
Δ = 12°21'40.9" RT.
D = 10°00'00.0"
T = 62.05'
L = 123.61'
P.C. = 28+87.89
P.T. = 30+11.50
NO SUPERELEVATION

MAIN LANES



STA. 40+00.00 BEGIN SUPER
STA. 43+24.00 0.020'/' (MATCH EXIST. 0.020'/')
STA. 43+74.00 END SUPERELEVATION

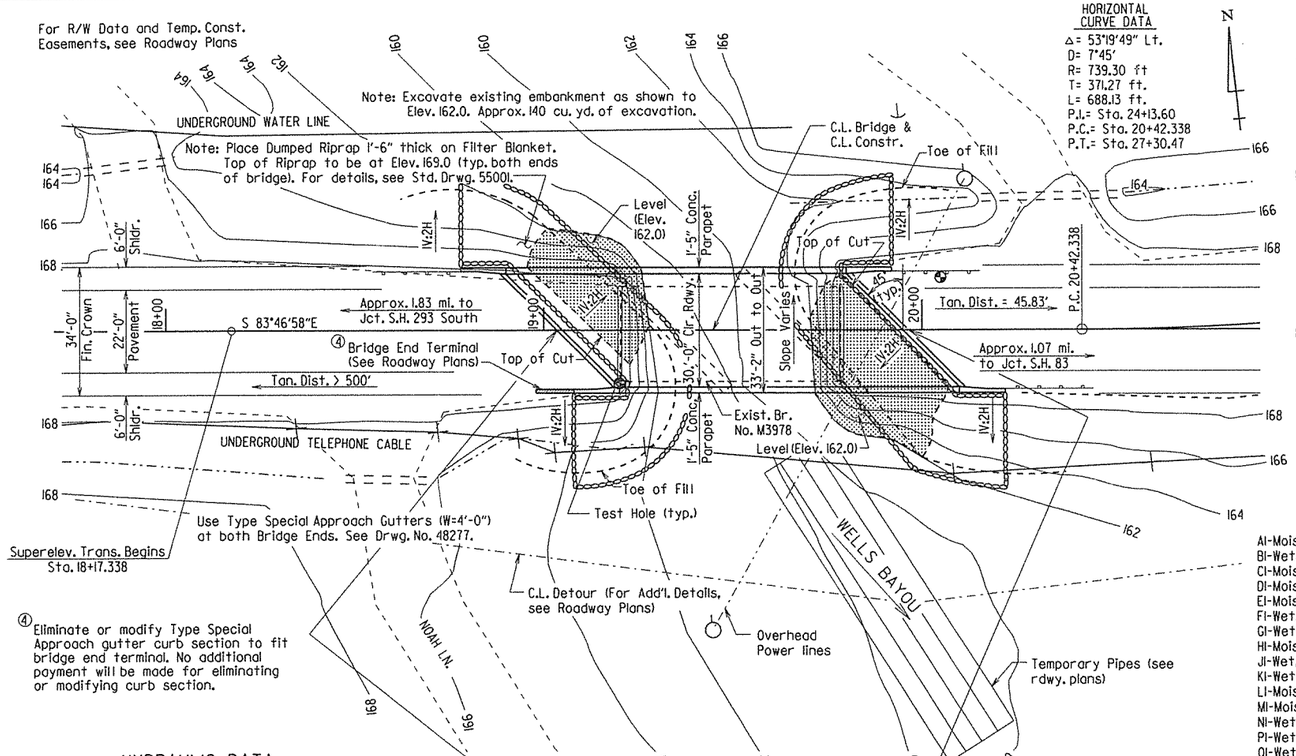




r020419_p01.dgn 8/17/2015

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.		020419	30	90
				① 07068		LAYOUT	48265	

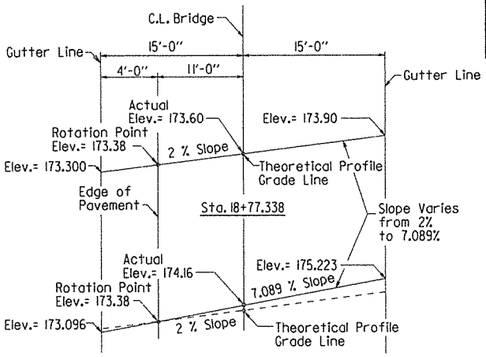
For R/W Data and Temp. Const. Easements, see Roadway Plans



④ Eliminate or modify Type Special Approach gutter curb section to fit bridge end terminal. No additional payment will be made for eliminating or modifying curb section.

PLAN

HORIZONTAL CURVE DATA
Δ = 53°19'49" Lt.
D = 7°45'
R = 739.30 ft
T = 371.27 ft.
L = 688.13 ft.
P.I.= Sta. 24+13.60
P.C.= Sta. 20+42.338
P.T.= Sta. 27+30.47



SUPERELEVATION TRANSITION
LOOKING FORWARD

BORING LEGEND

AI-Moist, Soft, Brown Sandy Clay with Traces of Gravel
BI-Wet, Soft, Brown Sandy Clay with Traces of Gravel
CI-Moist, Stiff, Brown and Gray Sandy Clay
DI-Moist, Medium Stiff, Reddish Brown and Gray Clay with some Sand
EI-Moist, Medium Stiff, Reddish Brown Clay
FI-Wet, Very Dense, Brown Sand
GI-Wet, Very Dense, Brown Sand with Pea Gravel
HI-Moist, Stiff, Reddish Brown Sandy Clay
JI-Wet, Very Loose, Gray Sand with some Clay and Traces of Organic Matter
KI-Wet, Medium Stiff, Gray and Brown Clay
LI-Moist, Medium Stiff, Gray Sandy Clay
MI-Moist, Stiff, Gray Clay with some Sand
NI-Wet, Medium Dense, Gray Sand
PI-Wet, Very Dense, Brown and Gray Sand with some Clay
QI-Wet, Very Dense, Brown Sand with Traces of Clay
RI-Wet, Very Dense, Brown and Gray Sand with Clay Seams
SI-Wet, Very Dense, Brown Sand with Traces of Gravel
TI-Wet, Medium Dense, Brown Sand with Gravel
UI-Wet, Very Dense, Brown and Gray Sand with Traces of Gravel
VI-Wet, Very Dense, Brown and Gray to Gray Sand with Gravel
WI-Wet, Dense, Gray Sand with Gravel
XI-Wet, Very Dense, Gray Sand with Gravel

Note: Some iron-cemented and thin organic (lignite) deposits may be encountered in the subsurface.

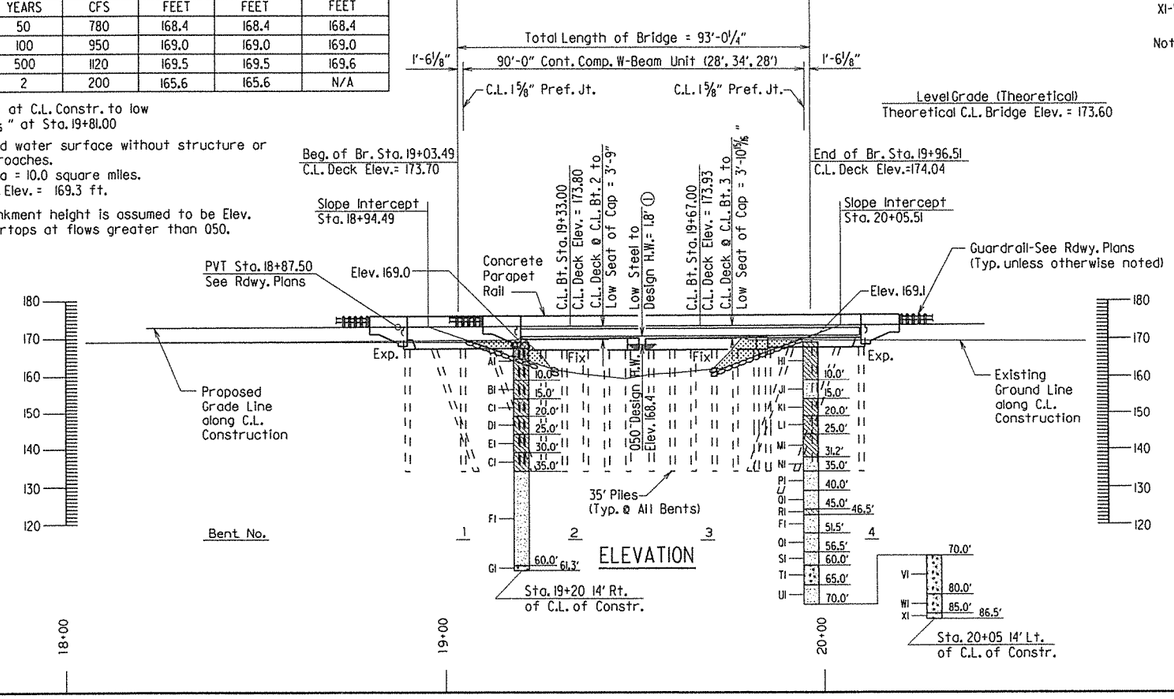
HYDRAULIC DATA

FLOOD DESCRIPTION	FREQUENCY	DISCHARGE	②NATURAL WATER SURFACE ELEVATION	WATER SURFACE ELEV. WITH BACKWATER	
				PLAN EMBANKMENT	FUTURE ③ EMBANKMENT
	YEARS	CFS	FEET	FEET	FEET
Design	50	780	168.4	168.4	168.4
Base	100	950	169.0	169.0	169.0
Extreme	500	1120	169.5	169.5	169.6
Overtopping	2	200	165.6	165.6	N/A

① Top of Deck at C.L. Constr. to low Steel = 3'-8 13/16" at Sta. 19+81.00

②Unconstricted water surface without structure or roadway approaches.
Drainage area = 10.0 square miles.
Historical H.W. Elev. = 169.3 ft.

③Future embankment height is assumed to be Elev. 168.4 and overtops at flows greater than 050.



ELEVATION

"N" VALUES

Sta. 19+20 - 14' Rt. of C.L. of Constr.

10.5- 11.5, N=3
15.5- 16.5, N=9
20.5- 21.5, N=7
25.5- 26.5, N=8
30.5- 31.5, N=9
35.5- 36.5, N=66
40.5- 41.5, N=71
45.5- 46.5, N=70
50.5- 51.5, N=96
55.5- 55.9, N=60(5")
60.5- 61.3, N=120(10")

Sta. 20+05 - 14' Lt. of C.L. of Constr.

5.5- 6.5, N=9
10.5- 11.5, N=3
15.5- 16.5, N=5
20.5- 21.5, N=6
25.5- 26.5, N=9
30.5- 31.5, N=14
35.5- 36.5, N=69
40.5- 41.5, N=55
45.5- 46.5, N=62
50.5- 51.5, N=85
55.5- 56.5, N=54
60.5- 61.5, N=26
65.5- 66.5, N=50
70.5- 71.5, N=91
75.5- 76.5, N=54
80.5- 81.5, N=40
85.5- 86.5, N=105

GENERAL NOTES

BENCH MARK: 5/8" Rebar with Aluminum Cap Sta. 24+28.00, 40' Rt. of C.L. Bridge, Elev. 166.0.

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2014 edition) with applicable supplemental specifications and special provisions. Unless otherwise noted in the plans, Section and Subsection refer to the Standard Construction Specifications.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications (2004 edition).

LIVE LOADING: HL93

SEISMIC ZONE: 1

MATERIALS AND STRENGTHS:

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

CONCRETE PILING: Piling in Bents 1 and 4 shall be 14" square precast concrete and shall be driven to a minimum safe bearing capacity of 44 tons per pile. Piling in Bents 2 and 3 shall be 18" square precast concrete and shall be driven to a minimum safe bearing capacity of 55 tons per pile. All piling shall be driven with an approved air, steam, or diesel hammer. Lengths of piling shown are assumed for estimating quantities only. Actual lengths to be determined in the field. Drive one 40' test pile in Bent 2 and one 40' test pile in Bent 4. Piles in end bents to be driven after embankment to bottom of cap is in place.

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.

DETAIL DRAWINGS:	DRAWING NO.
End Bents	48266 - 48268
Intermediate Bents	48269 & 48270
90'-0" Cont. W-Beam Unit	48271 - 48276
Type Special Approach Gutters	48277
Concrete Piling	55022

EXISTING BRIDGE: Existing Bridge No. M3978 (log mile 1.50) is 25.4' wide and 59' long and consists of timber multi-beam spans with concrete deck, supported by timber bent caps on timber piling, and timber abutments. The existing bridge occupies the same location as the proposed new bridge.

EXISTING PILES: The proposed bridge shall be constructed to avoid interference with the existing piling. The Contractor shall verify measurements before driving any piling. Any adjustments necessary to fit the proposed bridge to the existing bridge location shall be submitted for the Engineer's approval. No direct payment shall be made for this work.

REMOVAL AND SALVAGE: Existing bridge No. M3978 shall be removed in accordance with Section 205. All material from the existing bridge shall become the property of the Contractor except the timber girders and caps which shall remain the property of the State.

MAINTENANCE OF TRAFFIC: See Roadway Plans.

STATE OF ARKANSAS
Carl Pusellier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
CARL PUSELLIER
BRIDGE ENGINEER

LAYOUT OF BRIDGE OVER WELLS BAYOU
WELLS BAYOU STR. & APPRS. (S)
LINCOLN COUNTY
ROUTE 54 SEC. 3
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: DDD DATE: 7/1/05 FILENAME: b020419_ll.dgn
CHECKED BY: AMS DATE: 7/11/13 SCALE: 1" = 20'
DESIGNED BY: DDD DATE: 6/05

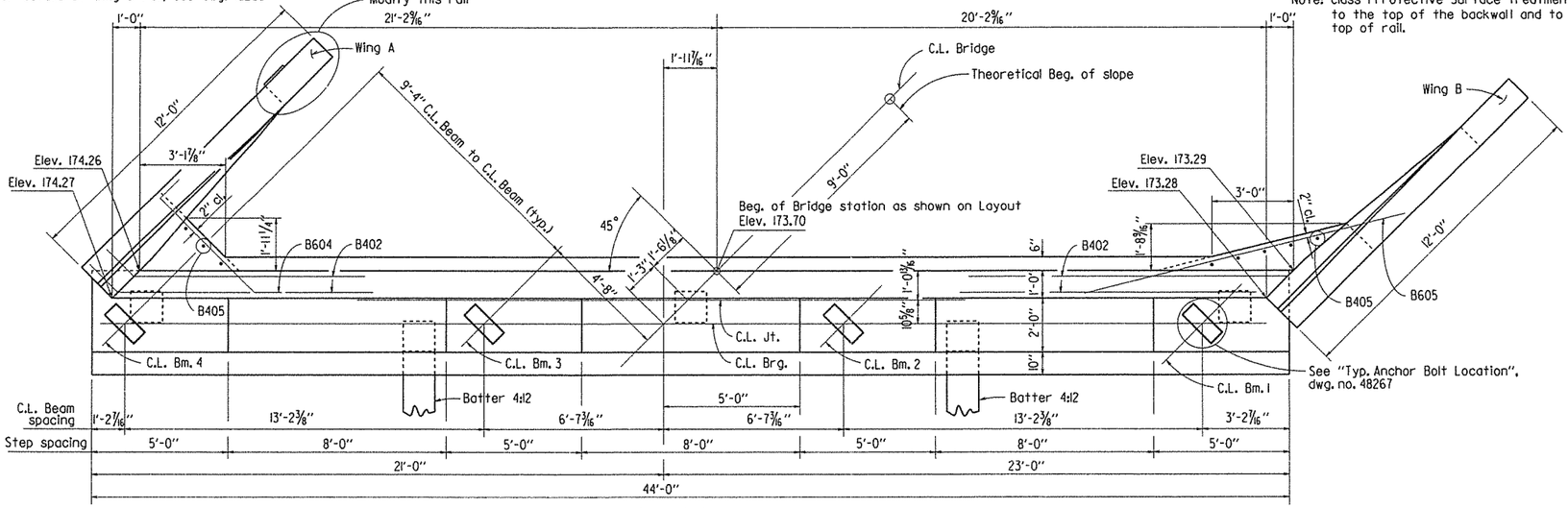
BRIDGE NO. 07068 DRAWING NO. 48265

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.		020419	31	90
				(1) 07068		END BENT 48266		

For details of wing & rail, see dwg. 48268

* Modify this rail

Note: Class I Protective Surface Treatment shall be applied to the top of the backwall and to the face and top of rail.



PLAN

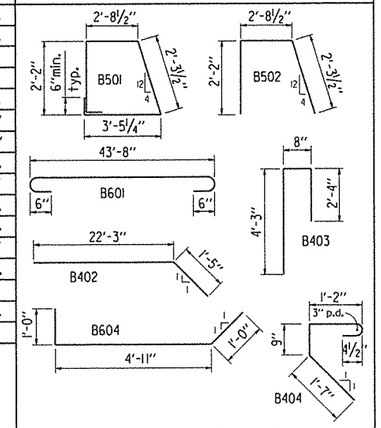
* Modify this bent rail and connection details as required by the manufacturer of the bridge end terminal. Reinforcing bars that are relocated or bent to fit the modified bridge rail shall have minimum cover.

Note: The backwall above the required construction joint shall not be poured until the beams are in place. Backwall may be placed prior to placing the adjacent concrete deck only if the optional backwall construction joint is used. See Dwg. No. 48275 "Expansion Device Installation at End Bents" for additional information.

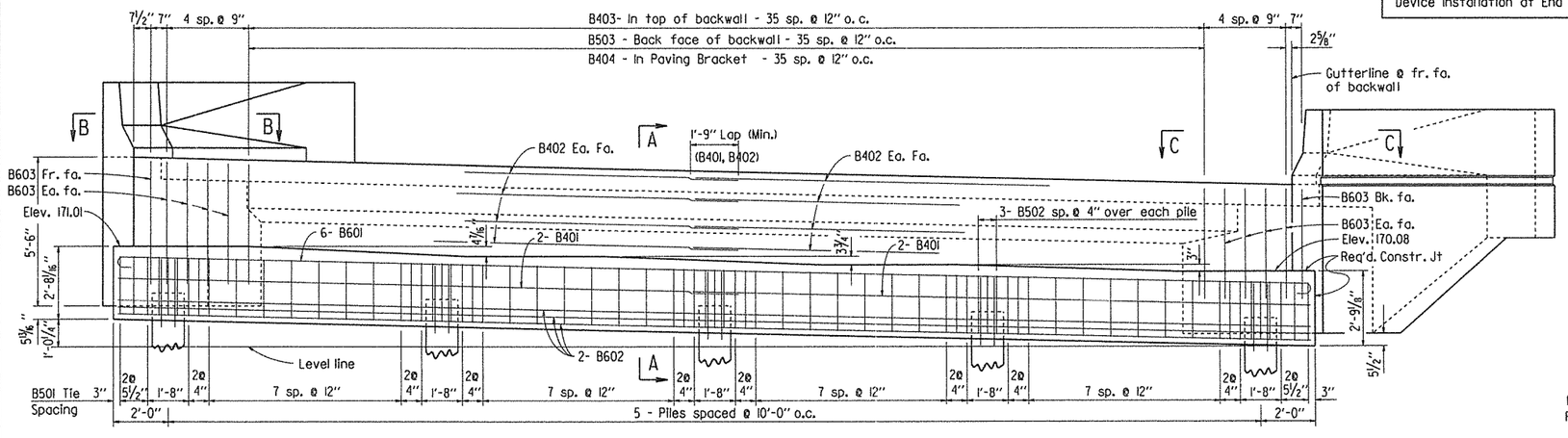
BAR LIST (PER BENT)

Mark	No. Req'd.	Length	Pin Dia.
B401	4	22'-9"	Str.
B402	16	23'-8"	Str.
B403	36	7'-1"	2"
B404	36	3'-11"	2"
B405	8	4'-5"	Str.
B501	54	11'-1"	2 1/2"
B502	15	7'-0"	2 1/2"
B503	36	3'-10"	Str.
B601	6	45'-0"	4 1/2"
B602	6	43'-8"	Str.
B603	18	4'-6"	Str.
B604	3	6'-9"	4 1/2"
B605	3	12'-1"	Str.
D501	20	2'-6"	Str.

Bending Diagram

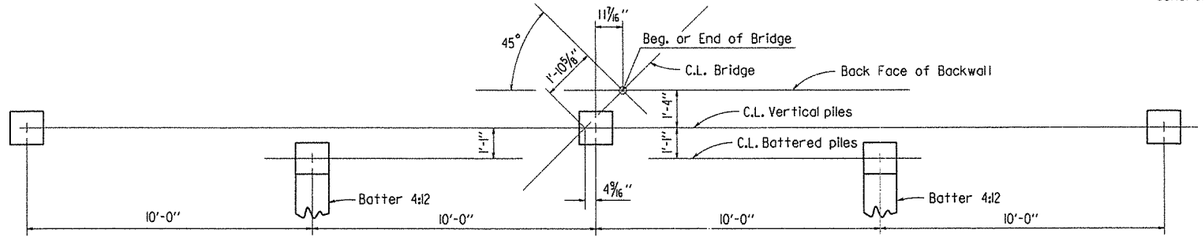


Dimensions are out to out of bars.



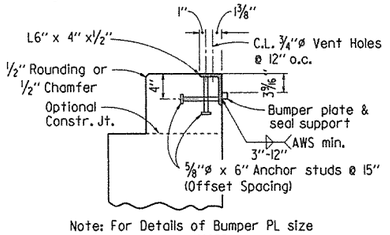
ELEVATION

Looking back - Bent I



LAYOUT OF PILES

For "VIEW B - B", For "VIEW C - C", and General Notes, see dwg. no. 48267

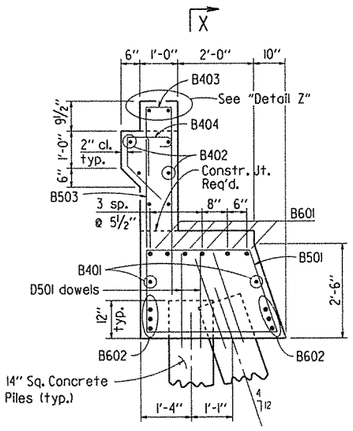


Note: For Details of Bumper PL size see dwg. no. 48275

Note: Concrete shall be hand packed under the joint armor in the backwall.

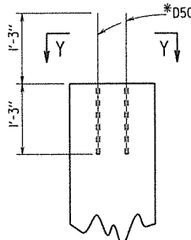
DETAIL Z

NTS



SECTION A-A

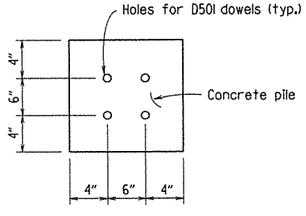
1/2" = 1'-0"



*Drill and grout D501 dowels 1'-3" into piles using an approved non-shrink grout or an epoxy grout listed on the QPL. Diameter of holes and installation procedure shall be as recommended by the grout manufacturer.

SECTION X - X

NTS



VIEW Y - Y

NTS

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
CARL J. FUSELIER

BRIDGE ENGINEER

DETAILS OF BENT NO. I
WELLS BAYOU

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: LM DATE: 11-17-05 FILENAME: b020419_bl.dgn

CHECKED BY: AMS DATE: 7/11/13 SCALE: 3/8" = 1'-0" or as shown

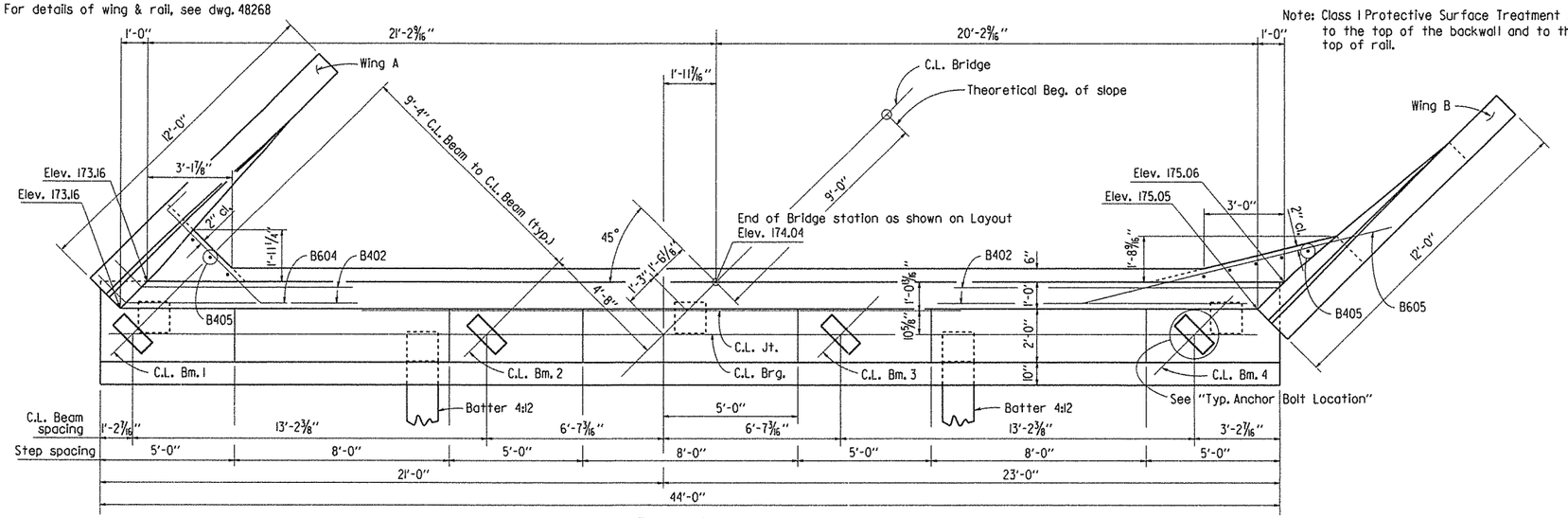
DESIGNED BY: JAC DATE: 9-7-05

BRIDGE NO. 07068 DRAWING NO. 48266

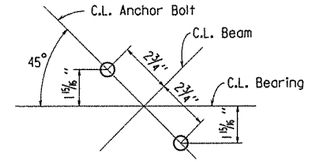
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020419	32	90
				① 07068		END BENT	48267	

For details of wing & rail, see dwg. 48268

Note: Class I Protective Surface Treatment shall be applied to the top of the backwall and to the face and top of rail.



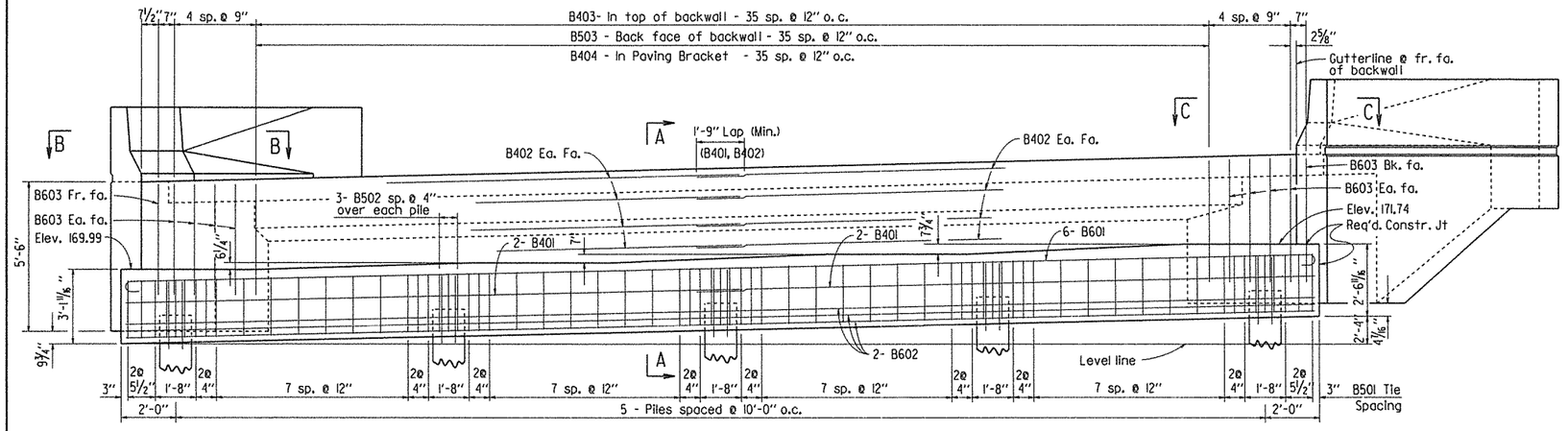
PLAN



Note: For details of Type C-I shoes, see dwg. no. 48275

TYP. ANCHOR BOLT LOCATION

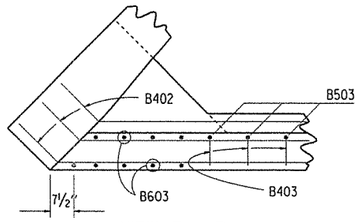
3" = 1'-0"



ELEVATION

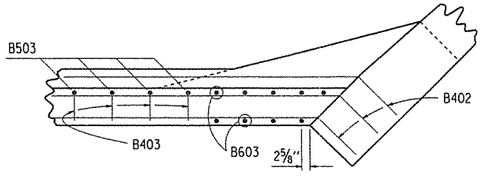
Looking forward - Bent 4

NTS



VIEW B - B

1/2" = 1'-0"



VIEW C - C

1/2" = 1'-0"

GENERAL NOTES

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

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

Structural steel in end bents shall be M270, Gr. 50W and shall be paid for as "Structural Steel in Beam Spans (M270, Gr. 50W)".

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

For additional information, see layout.

For "SECTION A - A",
For "PILE LAYOUT", and
BAR LIST, see dwg. no. 48266

STATE OF ARKANSAS
Carl J. Pusellier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
7/11/13
CARL J. PUSELLIER

BRIDGE ENGINEER

DETAILS OF BENT NO. 4
WELLS BAYOU

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

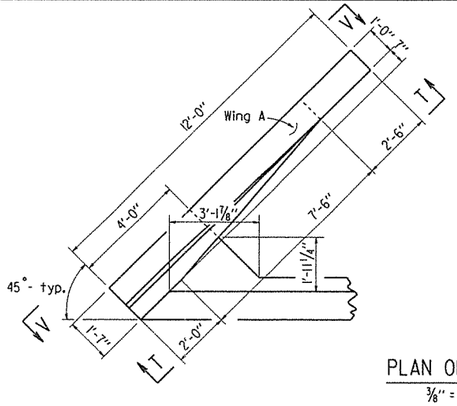
DRAWN BY: LM DATE: 11-18-05 FILENAME: b020419xl_b4.dgn

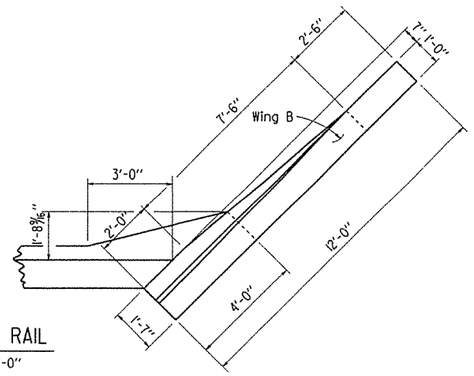
CHECKED BY: AMS DATE: 7/11/13 SCALE: 3/8" = 1'-0" or as shown

DESIGNED BY: JAC DATE: 9-4-05

BRIDGE NO. 07068 DRAWING NO. 48267

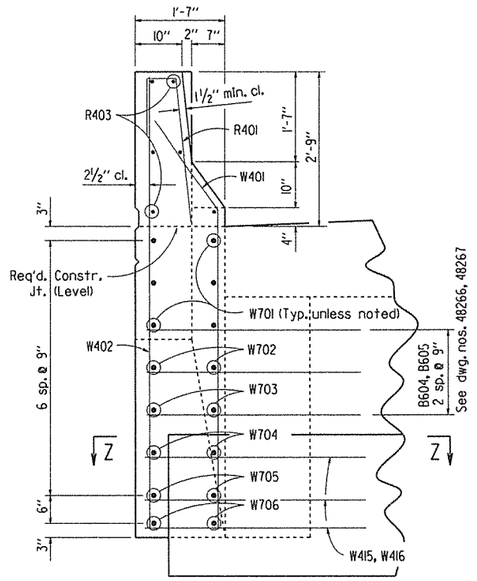
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020419	33	90
				(1) 07068		WING		48268





PLAN OF RAIL

3/8" = 1'-0"



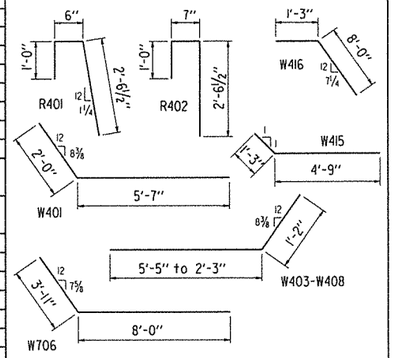
VIEW W-W

3/4" = 1'-0"

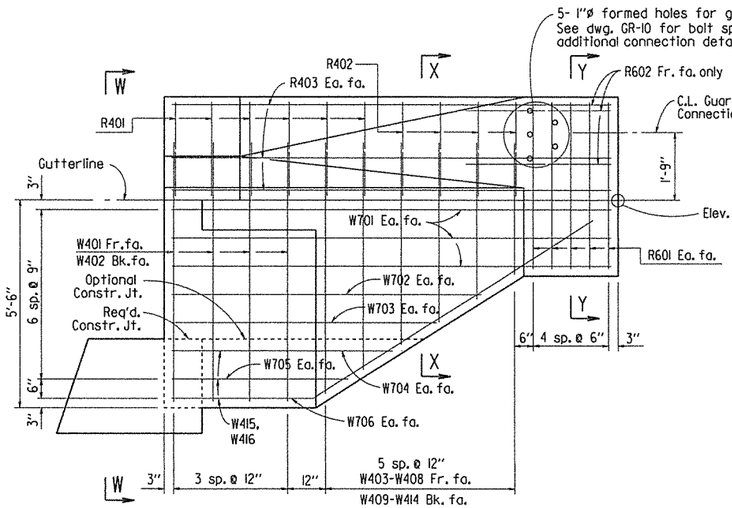
BAR LIST - PER BENT (WINGS A & B)

Mark	No. Req'd.	Length	Pin Dia.
R401	12	3'-11"	2"
R402	8	4'-0"	2"
R403	12	11'-8"	Str.
R601	20	4'-5"	Str.
R602	6	5'-0"	Str.
W401	8	7'-7"	2"
W402	8	7'-11"	Str.
W403-W408	2 ea.	6'-7" to 3'-5"	2"
W409-W414	2 ea.	7'-8" to 4'-6"	Str.
W415	3	6'-0"	2"
W416	3	9'-3"	2"
W701	12	11'-8"	Str.
W702	4	8'-2"	Str.
W703	4	7'-0"	Str.
W704	4	5'-10"	Str.
W705	4	4'-8"	Str.
W706	4	11'-11"	5 1/4"

Bending Diagram

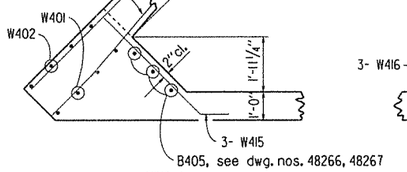


Dimensions are out to out of bars.

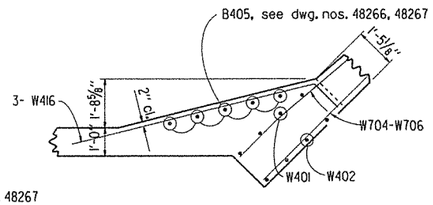


VIEW T-T

1/2"=1'-0"



WING A



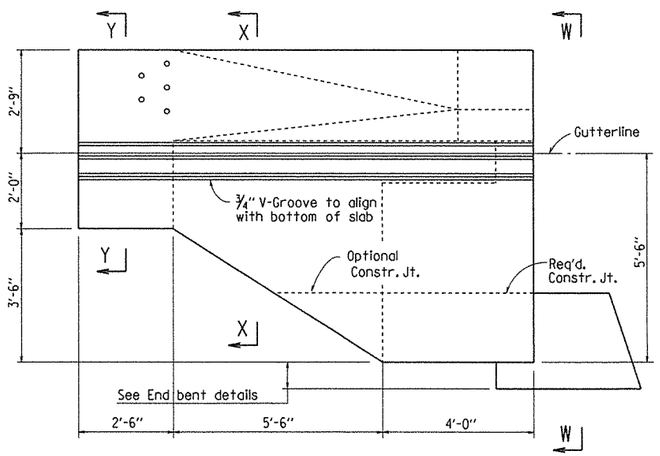
WING B

SECTION Z-Z

3/8" = 1'-0"

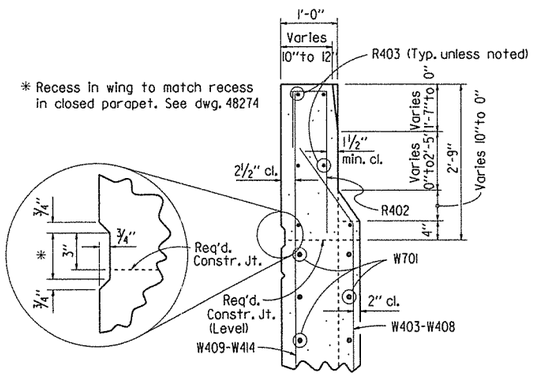
THREE DIMENSIONAL VIEW OF RAIL

N.T.S



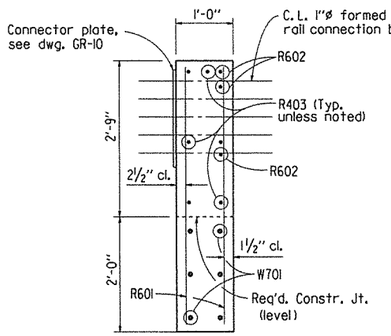
VIEW V-V

1/2"=1'-0"



SECTION X-X

3/4"=1'-0"



SECTION Y-Y

3/4"= 1'-0"

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

BRIDGE ENGINEER

TABLE OF VARIABLES

Wing Location		Elev. "R"
Bent 1	Wing A	174.16
	Wing B	173.29
Bent 4	Wing A	173.15
	Wing B	175.15

DETAILS OF WING & RAIL
WELLS BAYOU

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

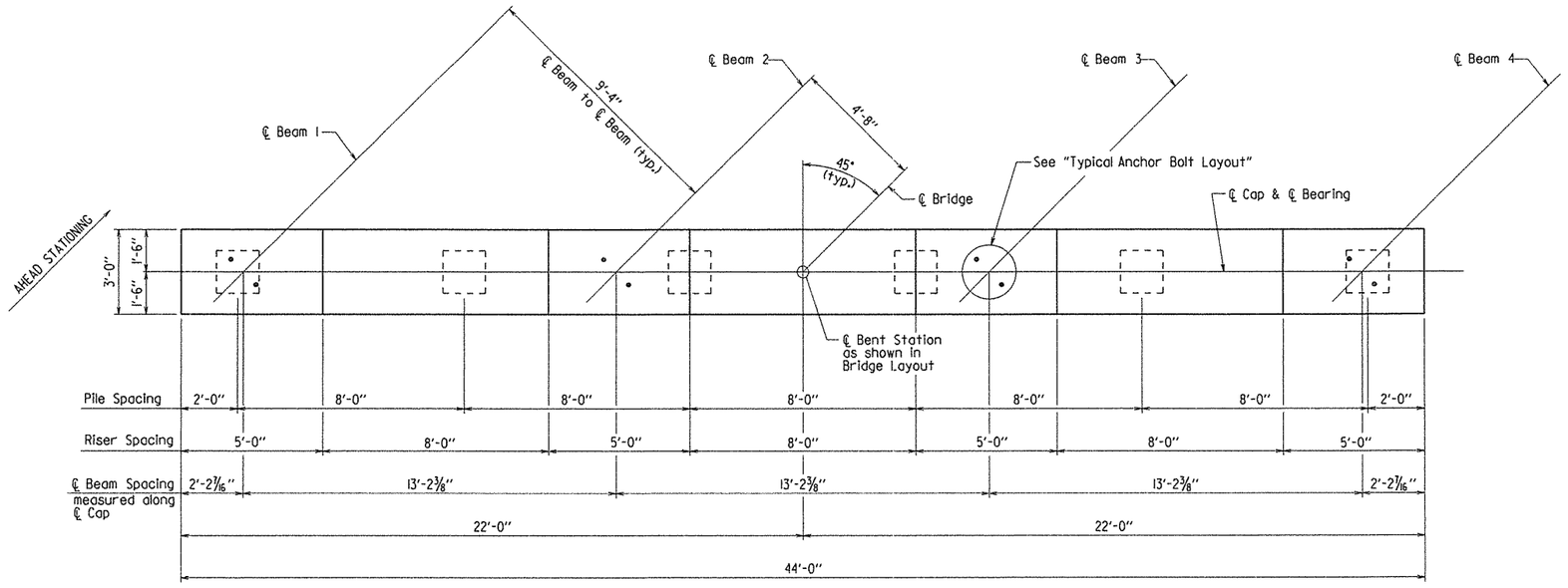
DRAWN BY: LM DATE: 11-21-05 FILENAME: b020419xl_wl.dgn

CHECKED BY: AMS DATE: 7/11/13 SCALE: As Shown

DESIGNED BY: JAC DATE: 9-4-05

BRIDGE NO. 07068 DRAWING NO. 48268

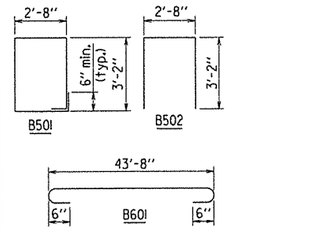
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020419	34	90
				(1) 07068		INT. BENTS		48269

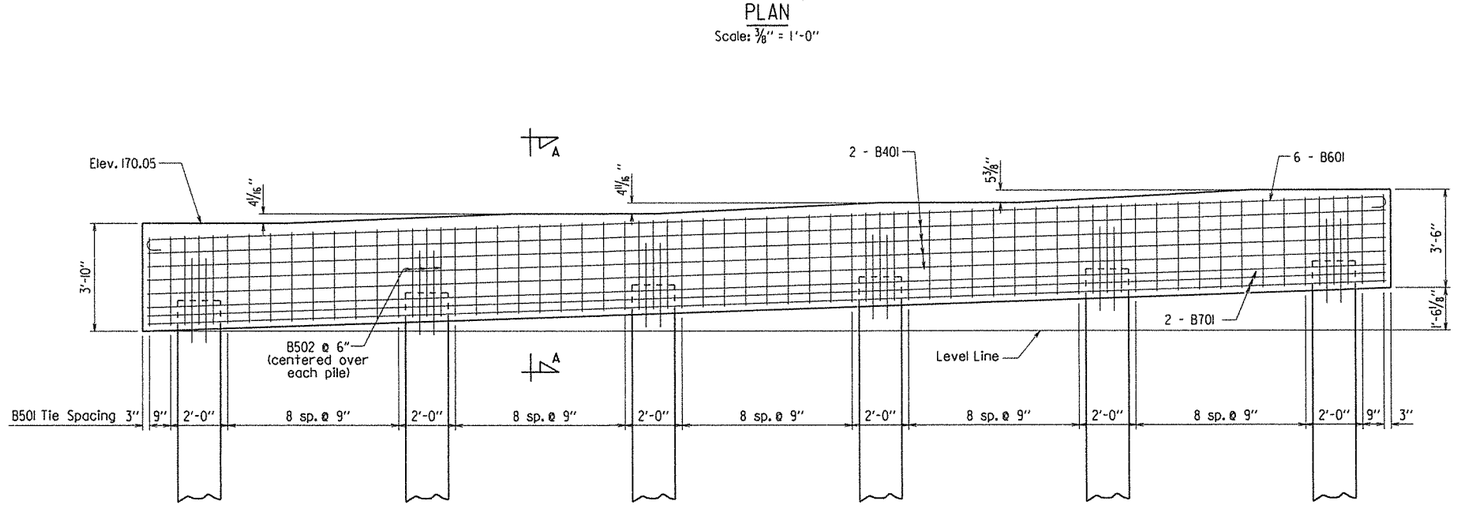


PLAN
Scale: 3/8" = 1'-0"

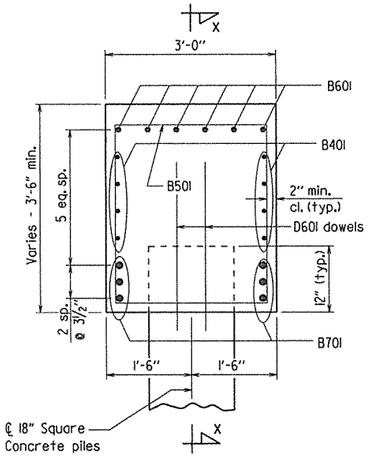
BAR LIST

MARK	NO. REQ'D.	LENGTH	P.D.	BENDING DIAGRAMS
B401	8	43'-8"	Str.	Dimensions are out to out of bars.
B501	49	12'-2"	2 1/2"	
B502	18	8'-10"	2 1/2"	
B601	6	45'-0"	4 1/2"	
B701	6	43'-8"	Str.	
D601	24	3'-0"	Str.	

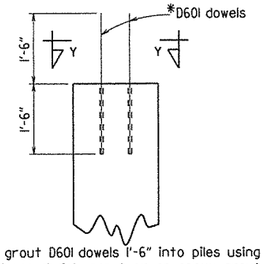




ELEVATION
Looking Ahead
Scale: 3/8" = 1'-0"

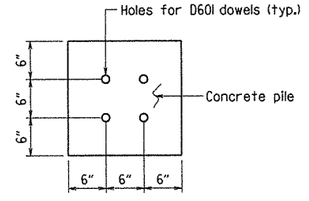


SECTION A-A
3/4" = 1'-0"

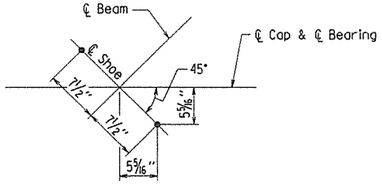


*Drill and grout D601 dowels 1'-6" into piles using an approved non-shrink grout or an epoxy grout listed on the QPL. Diameter of holes and installation procedure shall be as recommended by the grout manufacturer.

SECTION X-X
No Scale



VIEW Y-Y
No Scale



NOTE: For details of Type C-2 Shoes, see Dwg. No. 48275.

TYPICAL ANCHOR BOLT LAYOUT
No Scale

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.

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

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

For additional information, see Bridge Layout.

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
7/11/13
CARL J. FUSELIER

BRIDGE ENGINEER

DETAILS OF BENT NO. 2
WELLS BAYOU

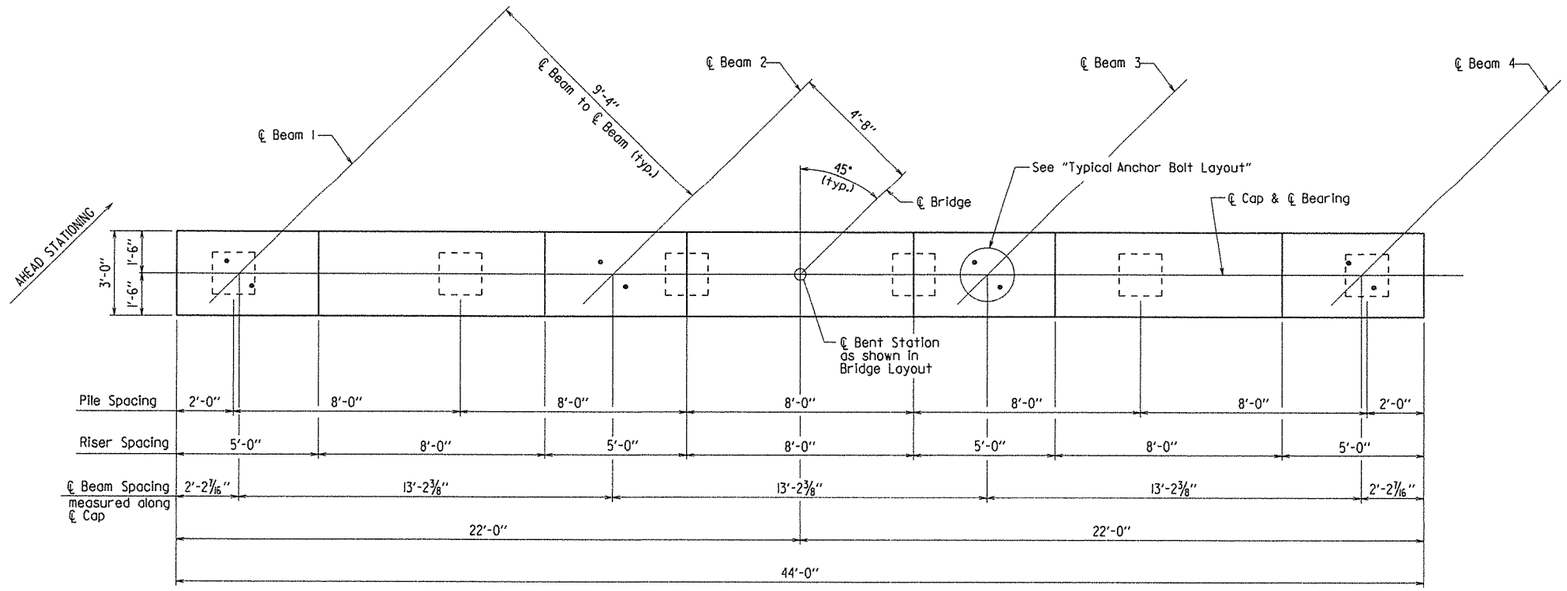
ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: KWY DATE: 11-10-05 FILENAME: b020419xl_b2l.dgn
CHECKED BY: AMS DATE: 7/11/13 SCALE: as noted
DESIGNED BY: JAC DATE: 10-28-05

BRIDGE NO. 07068 DRAWING NO. 48269

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.		020419	35	90
				(1) 07068		INT. BENTS		48270

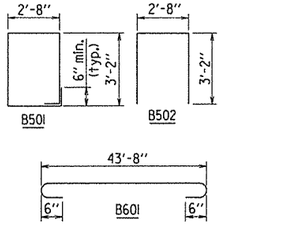


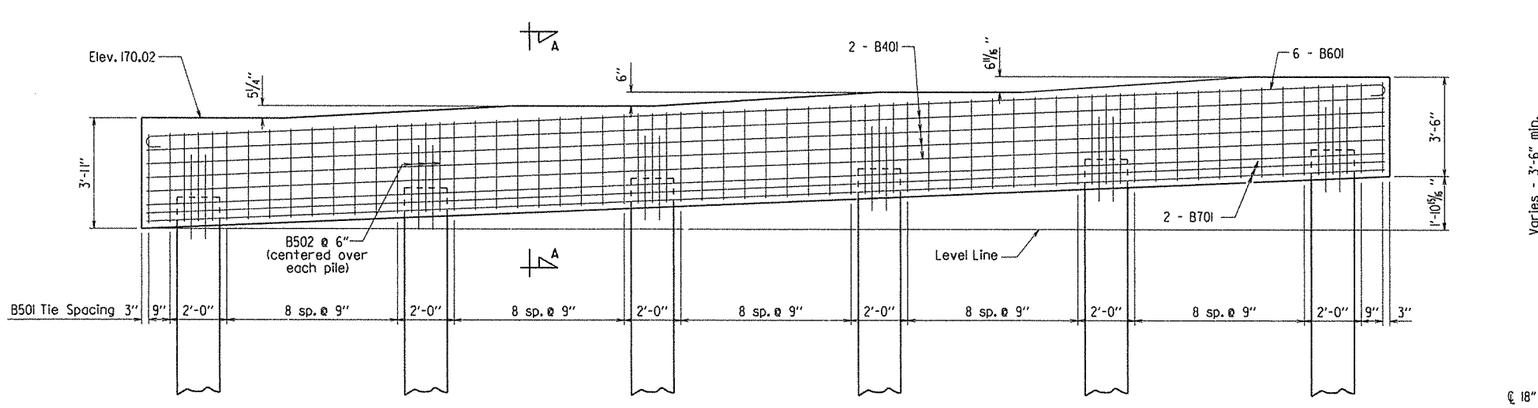
PLAN

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

BAR LIST

MARK	NO. REQ'D.	LENGTH	P.D.	BENDING DIAGRAMS
B401	8	43'-8"	Str.	Dimensions are out to out of bars.
B501	49	12'-2"	2 1/2"	
B502	18	8'-10"	2 1/2"	
B601	6	45'-0"	4 1/2"	
B701	6	43'-8"	Str.	
D601	24	3'-0"	Str.	

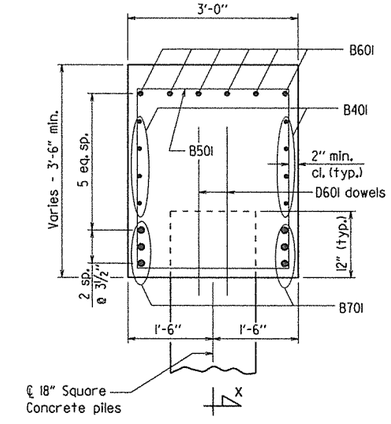




ELEVATION

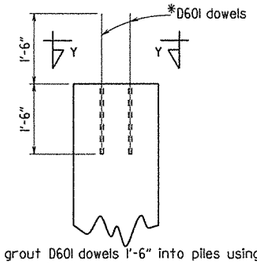
Looking Ahead

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



SECTION A-A

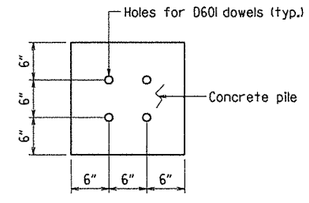
3/4" = 1'-0"



*Drill and grout D601 dowels 1'-6" into piles using an approved non-shrink grout or an epoxy grout listed on the QPL. Diameter of holes and installation procedure shall be as recommended by the grout manufacturer.

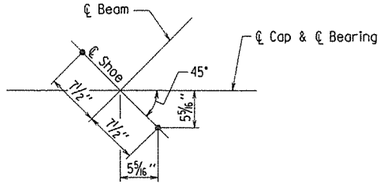
SECTION X-X

No Scale



VIEW Y-Y

No Scale



NOTE: For details of Type C-2 Shoes, see Dwg. No. 48275.

TYPICAL ANCHOR BOLT LAYOUT

No Scale

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.

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

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

For additional information, see Bridge Layout.

STATE OF ARKANSAS
Carl J. Pusellier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
7/11/13
CARL J. PUSELLIER

BRIDGE ENGINEER

DETAILS OF BENT NO. 3
WELLS BAYOU

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KWY DATE: 11-10-05 FILENAME: b020419xl_b3l.dgn

CHECKED BY: AMS DATE: 7/11/13 SCALE: as noted

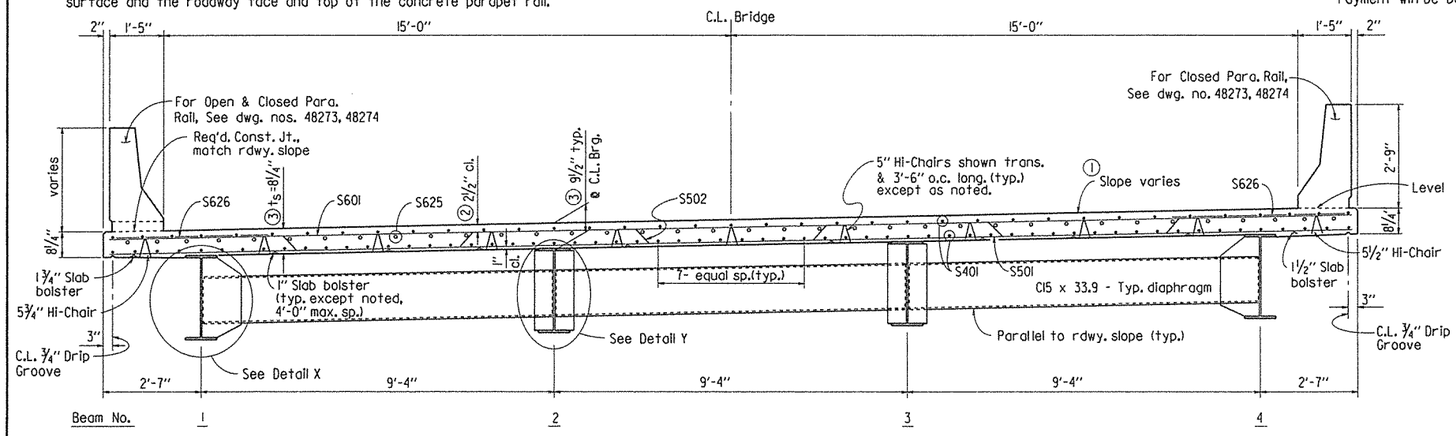
DESIGNED BY: JAC DATE: 10-28-05

BRIDGE NO. 07068 DRAWING NO. 48270

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.		020419	36	90
				(1) 07068		CONT. UNIT	48271	

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

Note: 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.



TYP. ROADWAY SECTION

½" = 1'-0"

Slab Reinforcing:

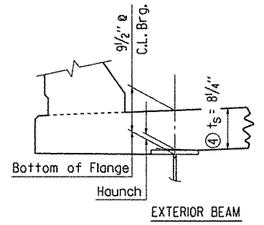
Longitudinal: S401 Top & Bottom (Placed as shown)
S625 Top (Placed as shown)

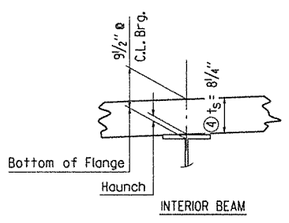
Transverse: S502 @ 14"o.c. bent up over beams — Alternate
S601 @ 14"o.c. in top, S501 @ 14"o.c. in bott. — Alternate
S626 @ 7" Top (in overhang)

(1) For Details of Superstructure transition, see Layout

(2) Tolerance: Minus = ¼"
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) See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE WHEN REMOVABLE DECK FORMING IS USED".





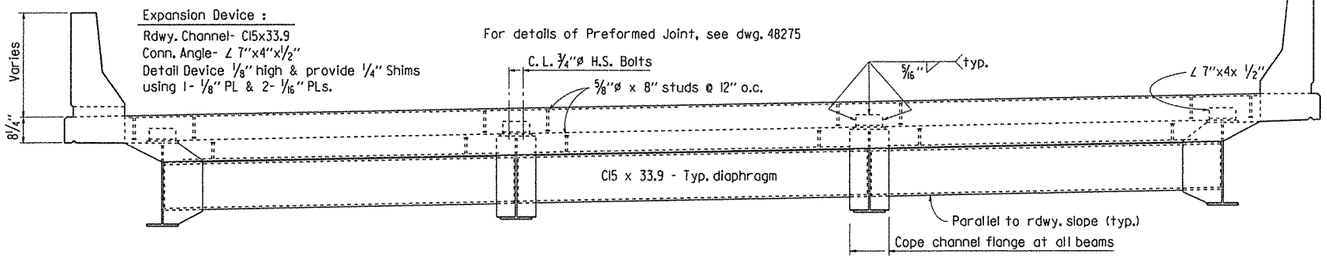
(4) Tolerance when removable deck forming is used is + ½" , - ¼". Haunch forming is required and shall be adjusted to maintain slab thickness tolerance.

Notes:
Haunch dimension may vary within the following limits to maintain the grade and slab thickness tolerance : Minimum - occurs when top flange contacts bottom reinforcing steel; Maximum - top flange thickness plus 1⅛". No increase in concrete and structural steel quantities will be made to maintain tolerances.

Tolerances shown are applicable only when removable deck forming is used. See Std. Dwg. No. 55005 for tolerances when permanent steel deck forms are used. Payment for concrete shall be based on removable deck forming.

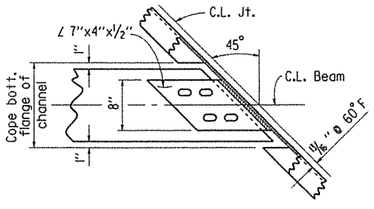
ADJUSTMENT FOR SLAB THICKNESS TOLERANCE WHEN REMOVABLE DECK FORMING IS USED

NTS



ROADWAY SECTION NEAR END OF UNIT

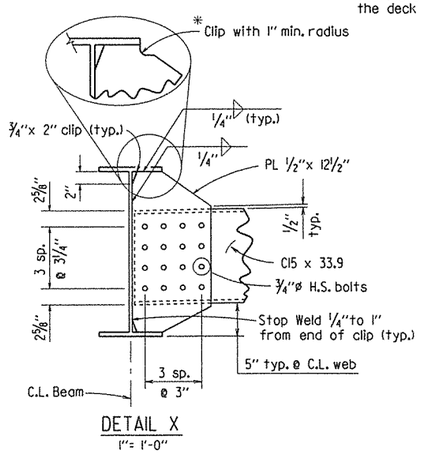
½" = 1'-0"



CHANNEL CONNECTION DETAIL

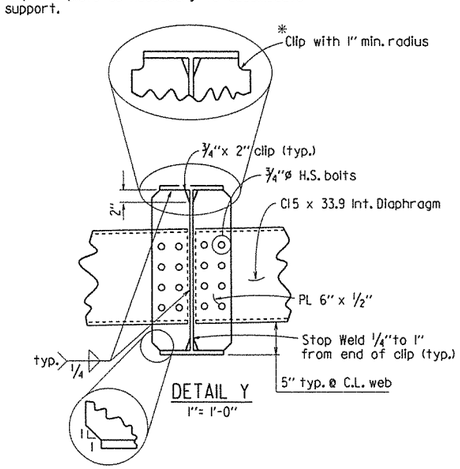
N.T.S

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



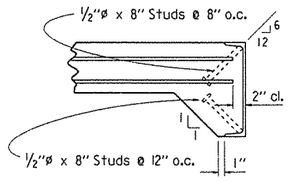
DETAIL X

1"= 1'-0"



DETAIL Y

1"= 1'-0"



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

DETAILS OF ALTERNATE ANCHORS AND PLACEMENT OF LONGITUDINAL REINFORCEMENT

NTS

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
4/9/14
CARL J. FUSELIER

BRIDGE ENGINEER

SHEET 1 OF 6

DETAILS OF 90'-0" CONTINUOUS W-BEAM UNIT WELLS BAYOU

ROUTE SEC.

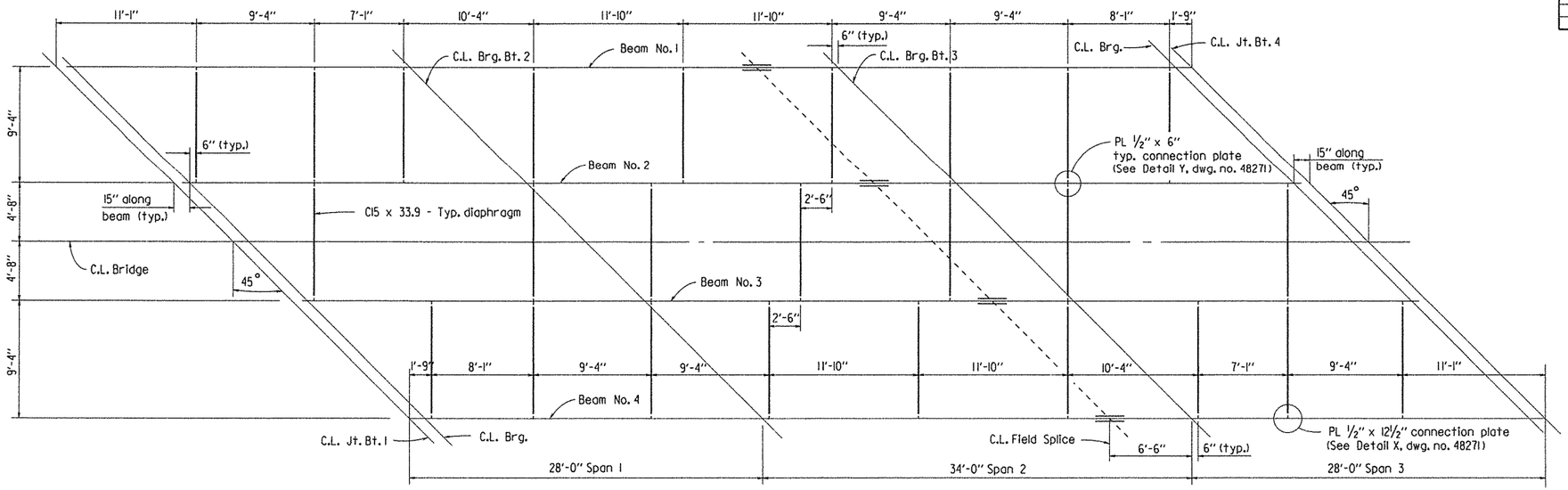
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: LM DATE: 10-12-05 FILENAME: b020419xl_sl.dgn
CHECKED BY: AMS DATE: 7/11/13 SCALE: ½" = 1'-0"
DESIGNED BY: JAC DATE: 8-20-05

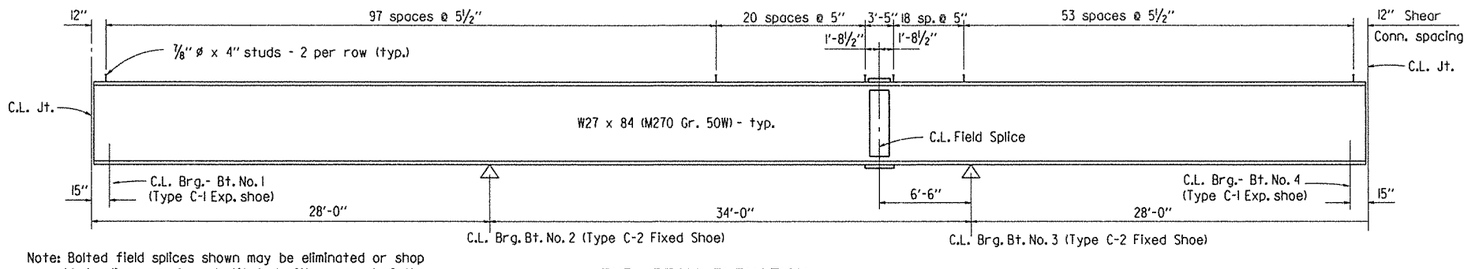
BRIDGE NO. 07068 DRAWING NO. 48271

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.		020419	37	90
				(1) 07068		CONT. UNIT		48272



FRAMING PLAN

1/8" = 1'-0"



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

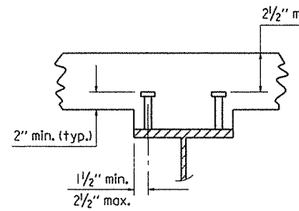
TYP. BEAM ELEVATION

NTS

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"	

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

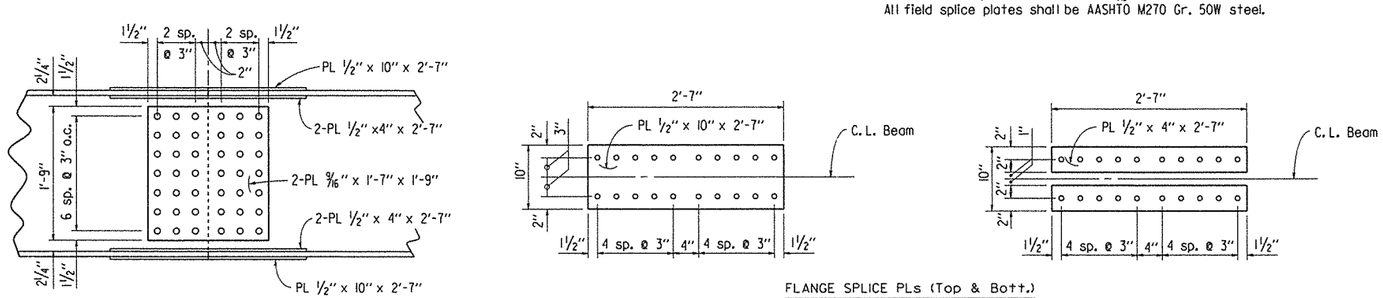


Stud Shear Connectors shown shall be 7/8"ø x 4" long, granular flux filled, solid fluxed or equal, and automatically end welded to the girder flange in accordance with the recommendations of the Manufacturer. 3/4"ø studs may be used in place of the 7/8"ø studs shown, at the ratio of 1.361 - 3/4"ø studs 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.

SHEAR CONNECTOR DETAIL

NTS

All field splice bolts shall be 7/8"ø Hi-str. bolts
All holes for splice bolts shall be 15/16"ø
All field splice plates shall be AASHTO M270 Gr. 50W steel.



FLANGE SPLICE PLs (Top & Bott.)

TYPICAL FIELD SPLICE DETAILS

1" = 1'-0"

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
7/11/13
CARL J. FUSELIER

BRIDGE ENGINEER

SHEET 2 OF 6

DETAILS OF 90'-0" CONTINUOUS W-BEAM UNIT WELLS BAYOU

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

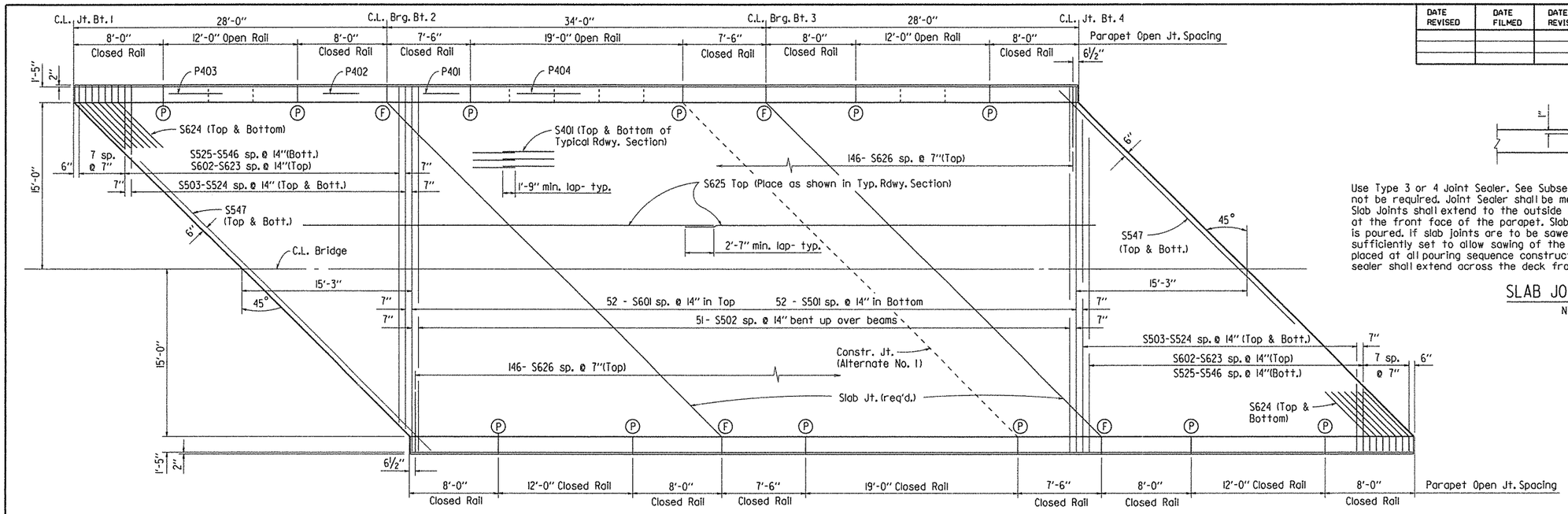
DRAWN BY: LM DATE: 10-14-05 FILENAME: b020419xl_s2.dgn

CHECKED BY: AMS DATE: 7/11/13 SCALE: As shown

DESIGNED BY: JAC DATE: 8-20-05

BRIDGE NO. 07068 DRAWING NO. 48272

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.		020419	38	90
				① 07068		CONT. UNIT 48273		



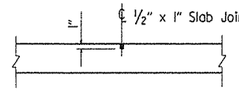
Ⓟ Partial depth parapet joint at this location

Ⓕ Full depth parapet joint at this location

PLAN

3/16" = 1'-0"

Notes:
For details of Open & Closed parapet rails, see dwg. 48274.
Required slab joints and pouring sequence construction joints shall align with open joints in parapet rail at the gutterline.



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

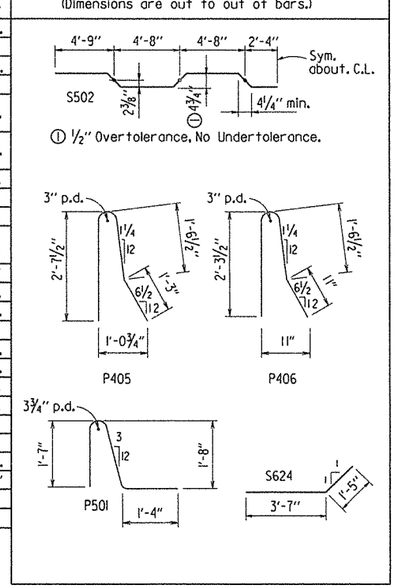
SLAB JOINT DETAIL

NTS

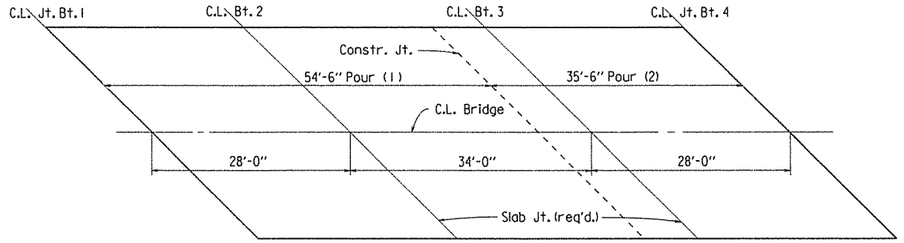
BAR LIST

Mark	No. Req'd.	Length	Pin Dia.
S401	291	31'-1"	Str.
S501	52	32'-10"	Str.
S502	51	33'-7"	3"
S503-S524	4 ea.	6'-3" to 30'-9"	Str.
S525-S546	2 ea.	5'-8" to 30'-2"	Str.
S547	4	44'-5"	Str.
S601	52	32'-10"	Str.
S602-S623	2 ea.	5'-8" to 30'-2"	Str.
S624	28	5'-0"	4½"
S625	72	46'-1"	Str.
S626	292	5'-6"	Str.
P401	28	7'-1"	Str.
P402	56	7'-7"	Str.
P403	28	11'-7"	Str.
P404	14	18'-7"	Str.
P405	328	5'-6"	2"
P406	32	4'-10"	2"
P407	48	4'-0"	Str.
P501	328	4'-10"	3¾"

Bending Diagrams (Dimensions are out to out of bars.)

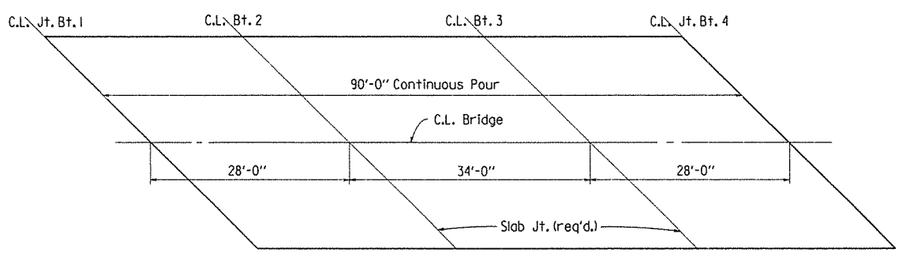


Note: Two straight #5 bars may be substituted for bar S502. Payment will be based on weight of S502.



Note: Pour (1) must be placed before Pour (2) can be placed. 72 hours shall elapse between the end of a pour and the start of the next pour.

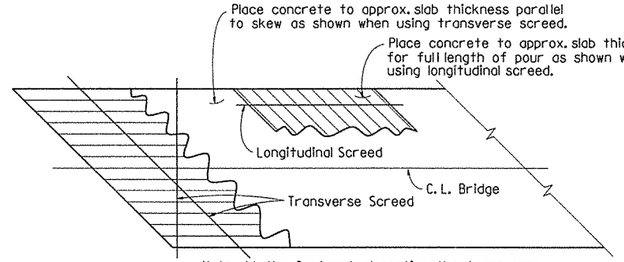
ALTERNATE NO. 1



ALTERNATE NO. 2

ALTERNATES FOR SLAB POURING SEQUENCE

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 Sequences shown.



Note: At the Contractor's option, the transverse screed may be placed parallel to the skew or perpendicular to C. L. Bridge.

CONCRETE PLACEMENT PROCEDURE

NTS

STATE OF ARKANSAS
Carl Fugler
REGISTERED PROFESSIONAL ENGINEER
No. 7510
4/7/14
CARL J. FUGLER

BRIDGE ENGINEER

SHEET 3 OF 6

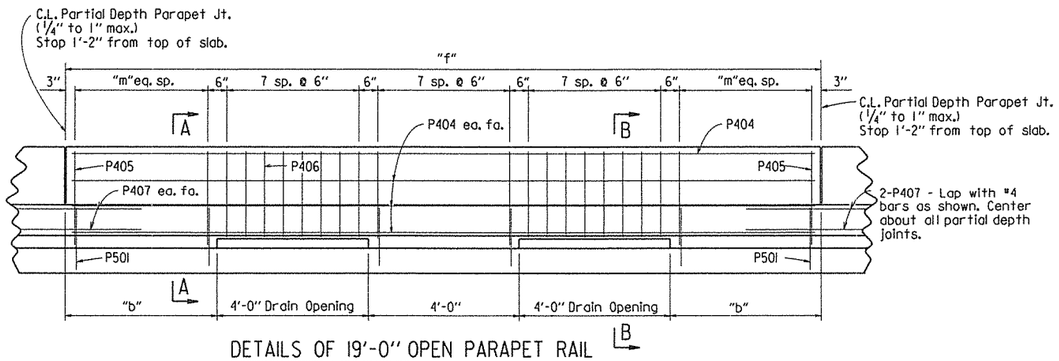
DETAILS OF 90'-0" CONTINUOUS W-BEAM UNIT
WELLS BAYOU
ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: LM DATE: 10-20-05 FILENAME: b020419x1_s3.dgn
CHECKED BY: AMS DATE: 7/11/13 SCALE: As Shown
DESIGNED BY: JAC DATE: 8-20-05

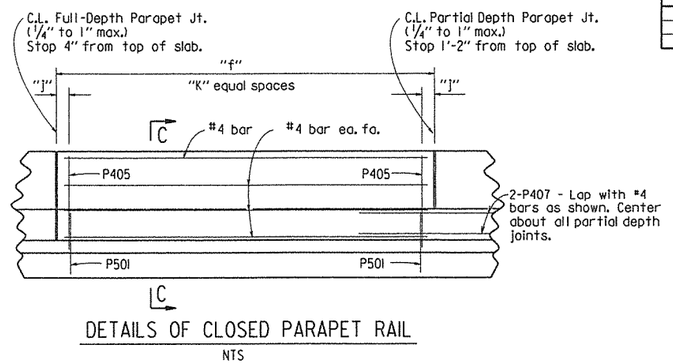
BRIDGE NO. 07068 DRAWING NO. 48273

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.		020419	39	90
				(1) 07068		CONT. UNIT		48274



DETAILS OF 19'-0" OPEN PARAPET RAIL

NTS



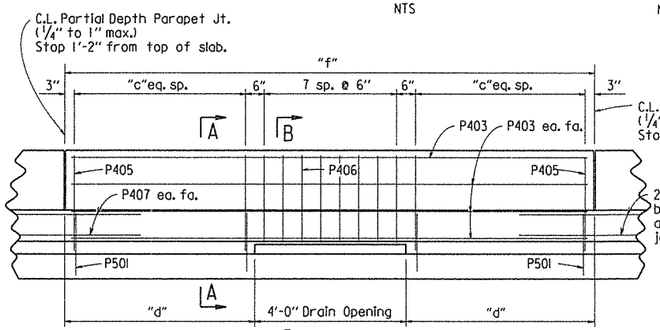
DETAILS OF CLOSED PARAPET RAIL

NTS

TABLE OF VARIABLES

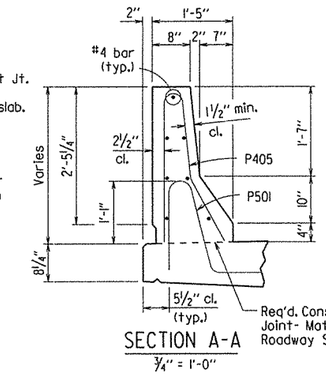
Parapet Joint Spacing	Closed Rail		Open Rail			
"f"	"J"	"k"	"m"	"b"	"c"	"d"
7'-6"	3"	14				
8'-0"	3"	15				
12'-0"	3"	23			7	4'-0"
19'-0"	3"	37	6	3'-6"		

NOTE: For location of full and partial depth parapet joints, see Dwg. No. 48273.



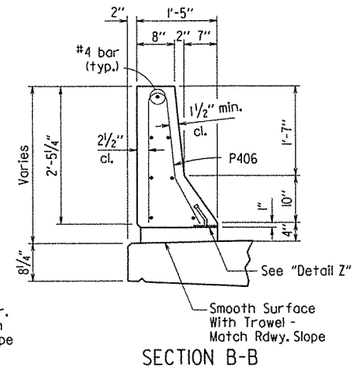
DETAILS OF 12'-0" OPEN PARAPET RAIL

NTS



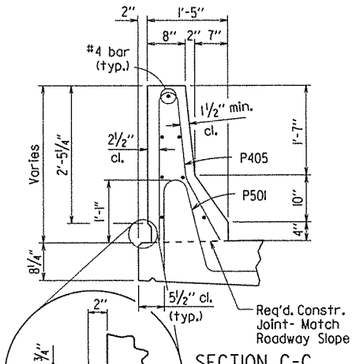
SECTION A-A

¾" = 1'-0"



SECTION B-B

¾" = 1'-0"

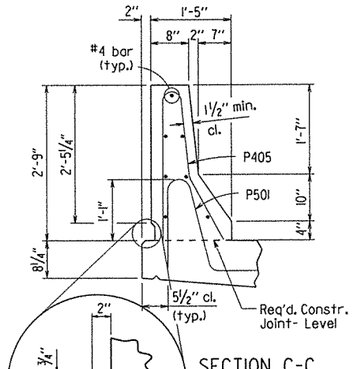


SECTION C-C

(Low side of rdwy.)

¾" = 1'-0"

TYP.

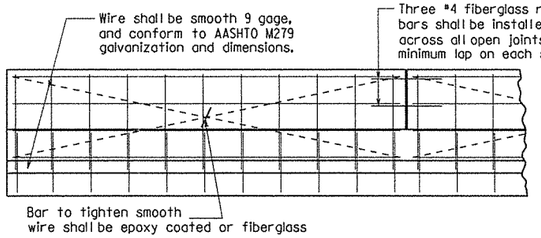


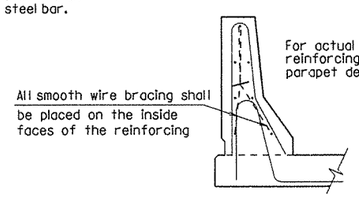
SECTION C-C

(High side of rdwy.)

¾" = 1'-0"

TYP.



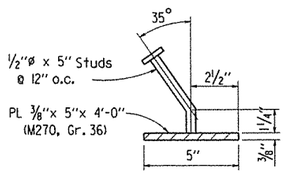


All panels shall be braced as shown to prevent racking. All open joints shall be sawed as soon as practical to a minimum width of ¼". To control cracking before sawing all joints must be grooved before the concrete is set. Sawing of the joints must be controlled so it will follow the grooved joint.

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 Class 2, Rubbed Finish.

DETAILS OF OPTIONAL SLIPFORMING OF CONCRETE PARAPET RAIL

Scale: ½" = 1'-0"



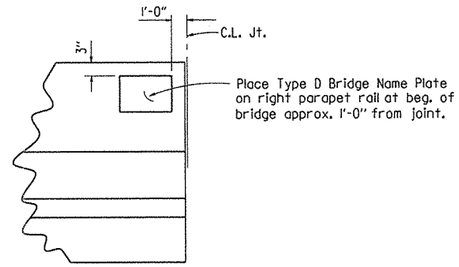
Note:

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

The surfaces of the ⅜" Plates which will not be in contact with concrete shall be painted 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 Beam Spans (M270, Gr. 50W).

DETAIL Z

N.T.S



VIEW SHOWING LOCATION OF NAME PLATE

NTS

STATE OF ARKANSAS
Carl J. Puseller
REGISTERED PROFESSIONAL ENGINEER
No. 7510
CARL J. PUSELLER
7/11/13

BRIDGE ENGINEER

SHEET 4 OF 6

DETAILS OF 90'-0" CONTINUOUS W-BEAM UNIT WELLS BAYOU

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

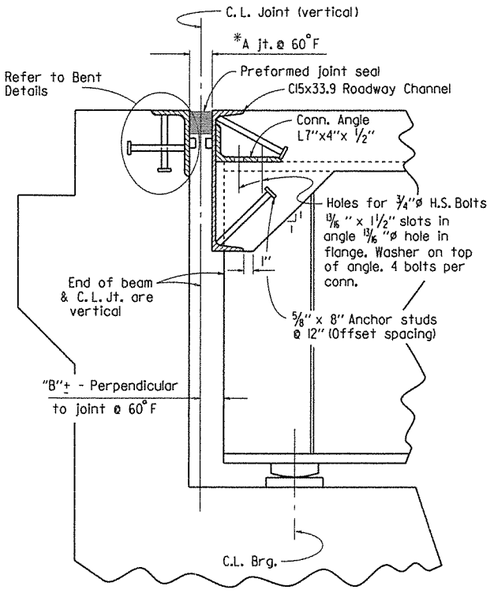
DRAWN BY: LM DATE: 10-25-05 FILENAME: b020419xl_s4.dgn

CHECKED BY: AMS DATE: 7/11/13 SCALE: As shown

DESIGNED BY: JAC DATE: 8-20-05

BRIDGE NO. 07068 DRAWING NO. 48274

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.		020419	40	90
				(1) 07068		CONT. UNIT 48275		

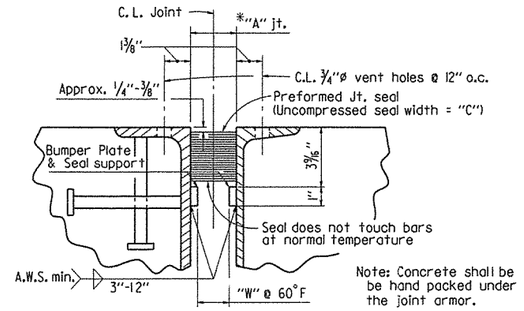


JOINT AT END BENT

1 1/2" = 1'-0"

Note: Section taken normal to C.L. Joint

* See Table A for installation temperatures other than 60°F

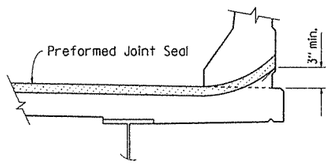


Note: Concrete shall be be hand packed under the joint armor.

Note: The Seal shall be in one piece (without splices) for the full length of the joint.

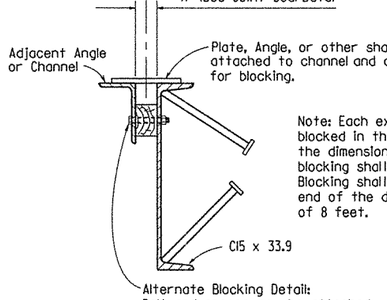
DETAIL OF PREFORMED JOINT SEAL & SUPPORT

3" = 1'-0"



JOINT SEAL PLACEMENT AT CURB

NTS



Note: Each expansion joint device shall be blocked in the Shop by the Fabricator to the dimension "A" shown for 60 F and the blocking 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

NTS

EXPANSION DEVICE INSTALLATION AT END BENTS:

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

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

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

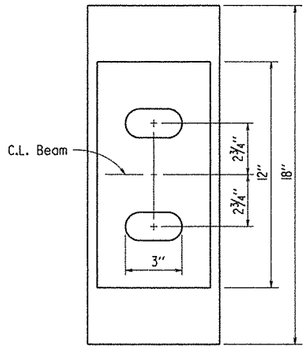
TABLE A

* "A" width perpendicular to joint at 24 hour average temperature of:		
40°F	60°F	80°F
1 11/16"	1 5/8"	1 9/16"

PREFORMED JOINT SEAL DATA

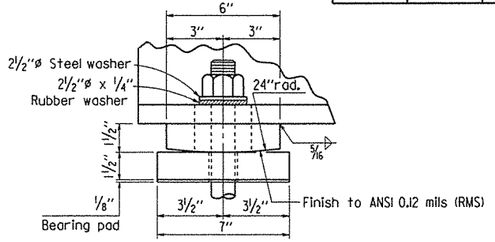
"A" width perpendicular to joint @ 60°F	"B" Perpendicular to joint	"C" Uncompressed Seal width	"W" Width between plates	Bumper Plate Size
1 5/8"	± 2 1/8"	2 1/2"	5/8"	1"x 1/2"

Note: 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. The temperature limitations recommended by the lubricant - adhesive manufacturer shall be observed.



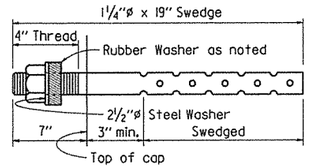
PLAN VIEW

3" = 1'-0"



TYPE "C-1" EXP. SHOE

Note: Plates for Type "C-1" shoe must be M270, Gr. 50W.
EXPANSION SHOE: 3"x 1 1/2" slot in Sole Plate & Beam Flange; 1 1/2"ø holes in Masonry Plate.

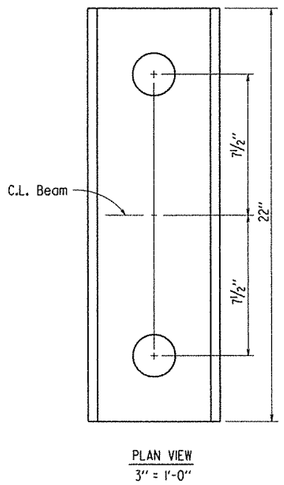


ANCHOR BOLT DETAIL (C-1 SHOE ONLY)

N.T.S.

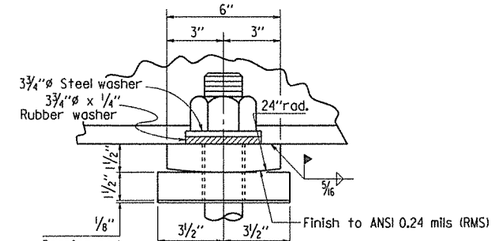
Note: Anchor bolt, Nut and Washer to be according to Subsection 807.07. Indentations shall be circular with rounded bottoms and staggered as shown above. Rubber washer shall be closed cell expanded rubber meeting the requirements of ASTM D1056-85 2B2 E2, and shall be considered subsidiary to the item of Structural Steel.

Anchor Bolts shall be Grade 55.



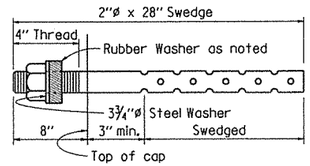
PLAN VIEW

3" = 1'-0"



TYPE "C-2" FIX SHOE

Note: Plates for Type "C-2" shoes must be M270, Gr. 50W.
FIXED SHOE: 2 1/2"ø holes in Sole Plate & Masonry Plate.



ANCHOR BOLT DETAIL (C-2 SHOE ONLY)

N.T.S.

Note: Anchor bolt, Nut and Washer to be according to Subsection 807.07. Indentations shall be circular with rounded bottoms and staggered as shown above. Rubber washer shall be closed cell expanded rubber meeting the requirements of ASTM D1056-85 2B2 E2, and shall be considered subsidiary to the item of Structural Steel.

Anchor Bolts shall be Grade 55.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7510
CARL J. FUSELIER
7/11/13

BRIDGE ENGINEER

SHEET 5 OF 6

DETAILS OF 90'-0" CONTINUOUS W-BEAM UNIT

WELLS BAYOU

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: LM DATE: 10-26-05 FILENAME: b020419xl_s5.dgn

CHECKED BY: AMS DATE: 7/11/13 SCALE: As shown

DESIGNED BY: JAC DATE: 8-20-05

BRIDGE NO. 07068 DRAWING NO. 48275

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.		020419	41	90
				(1) 07068		CONT. UNIT		48276

GENERAL NOTES

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2014 edition) with applicable supplemental specifications and special provisions.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications, (2004 Edition)

MATERIALS AND STRENGTHS:

Class S(AE) Concrete	f'c = 4,000 psi
Reinforcing Steel (Gr. 60, AASHTO M31 or M322, Type A)	fy = 60,000 psi
Structural Steel (AASHTO M 270, Gr. 50W)	Fy = 50,000 psi
Structural Steel (AASHTO M 270, Gr. 36)	Fy = 36,000 psi

CONCRETE :
Concrete shall be poured in the dry and all exposed corners to be chamfered ¾" unless otherwise noted. All concrete shall be Class S(AE) with a minimum 28 day compressive strength f'c = 4,000 psi.

The superstructure details shown are for use when removable deck forming is used and are the basis for measurement of Class S(AE) Concrete. See Standard Drawing No. 55005 for allowable modifications and for tolerances when Permanent Steel Bridge Deck Forms are used.

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

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

REINFORCING STEEL :
All reinforcing steel shall conform to AASHTO M31 or M322, Type A, Grade 60. The reinforcing steel is to be accurately located in the forms and firmly held in place by steel wire supports, sufficient in number and size to prevent displacement during the course of construction. The wire supports will not be paid for directly, but will be considered subsidiary to the item "Reinforcing Steel - Bridge".

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

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

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

Beams and field splice plates are considered main load carrying members and shall meet the Longitudinal Charpy V-Notch Test specified in Subsection 807.05.

All beams shall be blocked in their true position in the shop with the webs horizontal. The camber, length of sections, distance between bearings and openings of joints shall be measured with the beams in their true position and this information shall become part of the permanent records for this job. The component parts shall be match marked in this assembly and these marks shall be shown on the erection diagram. All beam dimensions are based on a temperature of 60 degrees F. A tolerance of ¼" +/- is allowed for camber.

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

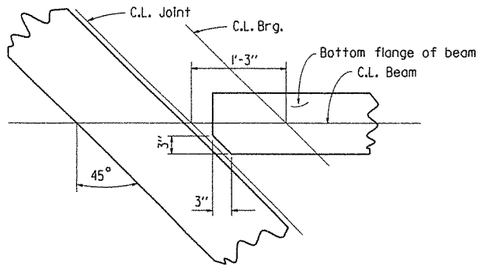
All welding that is to be done during fabrication of structural steel, including temporary welds, shall be detailed on the shop drawings and submitted for approval. If additional welds are required, whether permanent or temporary, a formal request with detailed drawings shall be submitted to the Engineer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

Field connections shall be bolted with high-strength bolts and shall be ¾" ø bolts unless otherwise noted. Bolts shall be placed with heads on the outside face of the exterior beam webs and on the bottom of the beam flanges. Holes for ¾" ø high-strength bolts may be 15/16" ø diameter if a washer is supplied for use under both the nut and head of the bolt.

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

Bearings shall be seated in accordance with Subsection 807.66. This work and material are to be considered as subsidiary and will not be paid for directly.

Note: Clip Bottom flange of each beam as shown.



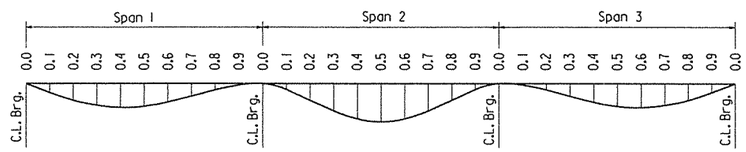
PLAN OF BEARING AT END BENTS

¾" = 1'-0"

TABLE OF DEAD LOAD DEFLECTIONS-INCHES

Span	Point of Deflection	Structural Steel		Structural Steel +Slab		Str. Steel +Slab+Rail	
		Ext. Bms.	Int. Bms.	Ext. Bms.	Int. Bms.	Ext. Bms.	Int. Bms.
1	0	0	0	0	0	0	0
	0.1	0.002	0.002	0.017	0.023	0.019	0.024
	0.2	0.003	0.004	0.032	0.042	0.035	0.045
	0.3	0.005	0.005	0.042	0.055	0.046	0.058
	0.4	0.005	0.006	0.046	0.060	0.050	0.064
	0.5	0.005	0.006	0.043	0.057	0.047	0.061
	0.6	0.004	0.005	0.036	0.047	0.039	0.050
	0.7	0.003	0.003	0.025	0.032	0.027	0.034
	0.8	0.001	0.002	0.012	0.016	0.013	0.017
	0.9	0	0	0.003	0.004	0.003	0.004
2	0	0	0	0	0	0	0
	0.1	0.001	0.002	0.011	0.015	0.012	0.016
	0.2	0.004	0.004	0.032	0.042	0.035	0.045
	0.3	0.006	0.007	0.053	0.069	0.058	0.073
	0.4	0.008	0.009	0.068	0.089	0.074	0.094
	0.5	0.008	0.010	0.073	0.096	0.079	0.102
	0.6	0.008	0.009	0.068	0.089	0.074	0.094
	0.7	0.006	0.007	0.053	0.069	0.058	0.073
	0.8	0.004	0.004	0.032	0.042	0.035	0.045
	0.9	0.001	0.002	0.011	0.015	0.012	0.016
3	0	0	0	0	0	0	0
	0.1	0	0	0.003	0.004	0.003	0.004
	0.2	0.001	0.002	0.012	0.016	0.013	0.017
	0.3	0.003	0.003	0.025	0.032	0.027	0.034
	0.4	0.004	0.005	0.036	0.047	0.039	0.050
	0.5	0.005	0.006	0.043	0.057	0.047	0.061
	0.6	0.005	0.006	0.046	0.060	0.050	0.064
	0.7	0.005	0.005	0.042	0.055	0.046	0.058
	0.8	0.003	0.004	0.032	0.042	0.035	0.045
	0.9	0.002	0.002	0.017	0.023	0.019	0.024
	0	0	0	0	0	0	0

Note: Camber for Dead Load Deflection ± ¼" tolerance.
Deflections shown are along C.L. Beam from a chord from C.L. Bearing to C.L. Bearing. Negative sign (-) indicates point above chord.



DEAD LOAD DEFLECTION DIAGRAM

No Scale

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7510
4/7/14
CARL J. FUSELIER

BRIDGE ENGINEER

SHEET 6 OF 6

DETAILS OF 90'-0" CONTINUOUS W-BEAM UNIT WELLS BAYOU

ROUTE SEC.

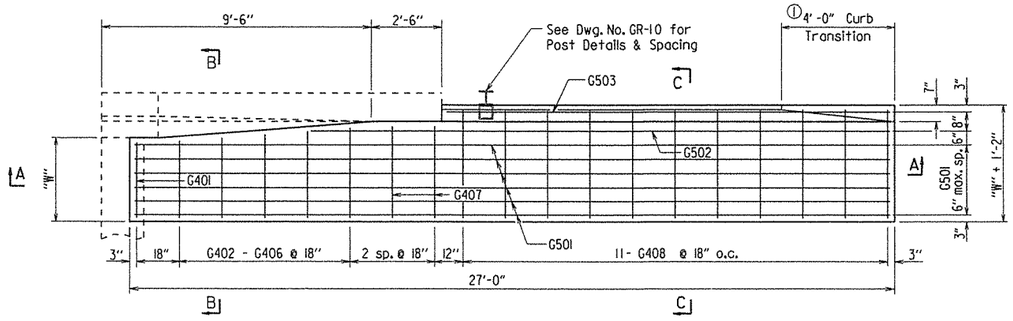
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: LM DATE: 10-28-05 FILENAME: b020419xl_s6.dgn
CHECKED BY: AMS DATE: 7/11/13 SCALE: As shown
DESIGNED BY: JAC DATE: 8-20-05

BRIDGE NO. 07068 DRAWING NO. 48276

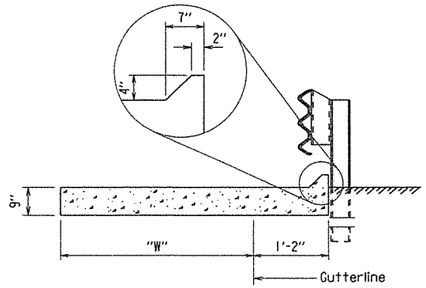
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4-10-2003				6	ARK.			
				JOB NO.		020419	42	90
				①	07068	TYPE SPECIAL GUTTERS	48277	



HALF PLAN OF APPROACH GUTTERS FOR SQUARE BRIDGE

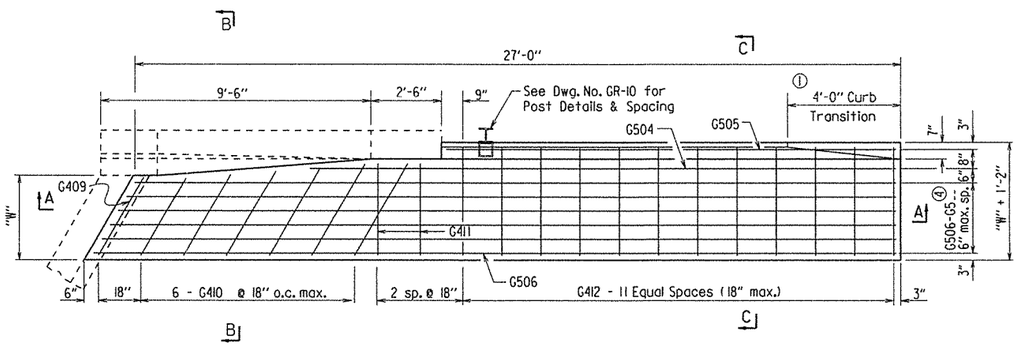
① Construct gutter curb with height-transition as shown if drop inlet is not placed at end of gutter.

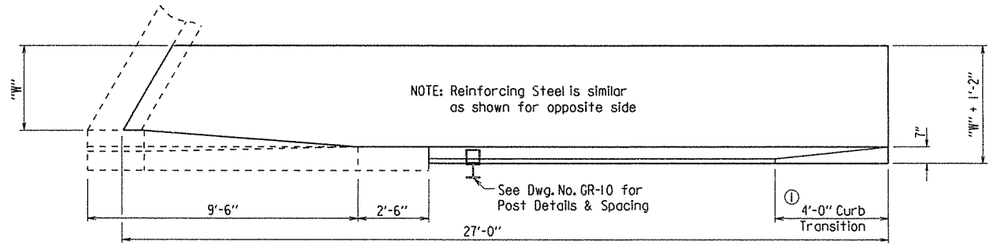
Construct gutter curb full height (no height-transition) if drop inlet is placed at end of gutter. Curb height transition placed on drop inlet. See drop inlet details.



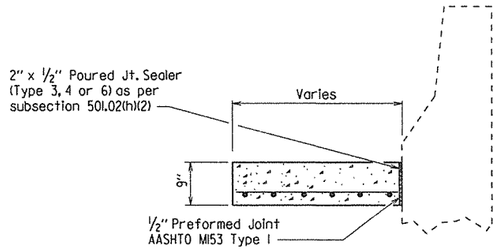
SECTION C - C

N.T.S.



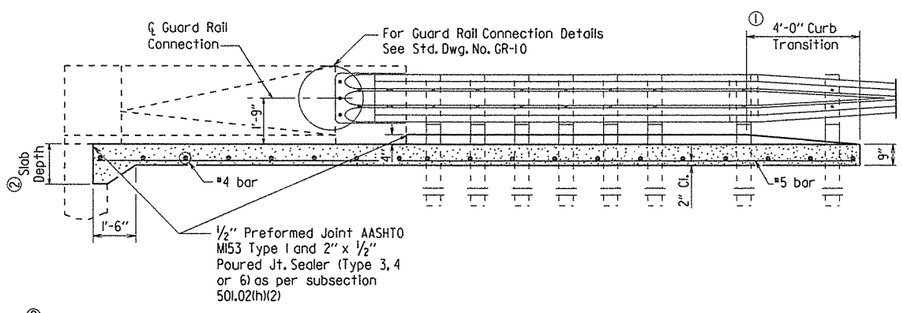


PLAN OF APPROACH GUTTERS FOR SKEWED BRIDGE



SECTION B - B

N.T.S.



② Slab Depth Varies - See Span and Bent Details

SECTION A - A

QUANTITIES FOR ONE SQUARE APPROACH GUTTER

"W" Width (ft.)	Reinforcing Steel (lbs.)	Concrete (cubic yards)
3	249	3.00
4	317	3.77
6	454	5.32
8	591	6.87

BAR LIST
TYPE SPECIAL GUTTER

Mark	No. Required for Width "W" 3'-0"	4'-0"	6'-0"	8'-0"	Length	Square or Skewed
G401	1	1	1	1	"W" - 4"	Square
G402 - G406	1 each	1 each	1 each	1 each	"W" - 3" to "W" + 3"	Square
G407	2	2	2	2	"W" + 3"	Square
G408	11	11	11	11	"W" + 10"	Square
G409	1	1	1	1	③	Skewed
⑤ G410	6	6	6	6	③	Skewed
G411	2	2	2	2	"W" + 3"	Skewed
G412	12	12	12	12	"W" + 10"	Skewed
G501	6	8	12	16	26'-8"	Square
G502	1	1	1	1	20'-6"	Square
G503	1	1	1	1	15'-8"	Square
G504	1	1	1	1	③	Skewed
G505	1	1	1	1	③	Skewed
G506-G5__ ④	1 each	1 each	1 each	1 each	③	Skewed

③ Bar Lengths vary with Skew.

④ G511 for "W" = 3'-0"
G513 for "W" = 4'-0"
G517 for "W" = 6-0"
G521 for "W" = 8'-0"

⑤ Additional G410 Bars required when skew angle exceeds: 17° for W = 8'; 22° for W = 6'; and 31° for W = 4'.

GENERAL NOTES

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

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

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

STATE OF ARKANSAS
Carl L. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
7/11/13
CARL L. FUSELIER

BRIDGE ENGINEER

DETAILS OF TYPE SPECIAL APPROACH GUTTERS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: AMS. DATE: 11/04/05 FILENAME: B020419_AG.DGN

CHECKED BY: AMS DATE: 7/11/13 SCALE: 3/8" = 1'-0"

DESIGNED BY: STD DATE:

BRIDGE NO. 07068 DRAWING NO. 48277

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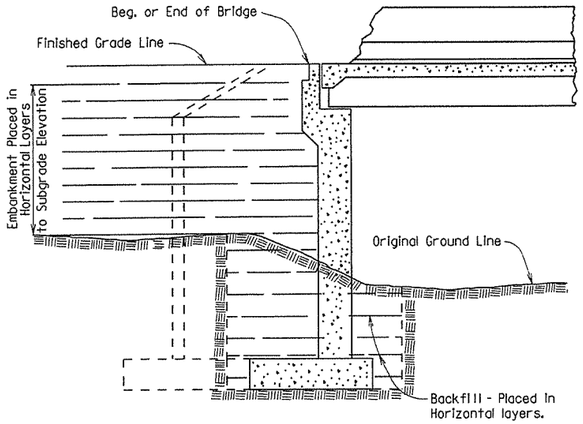
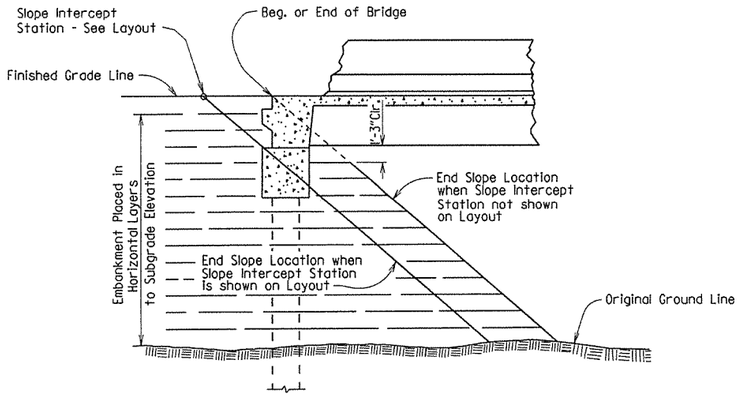
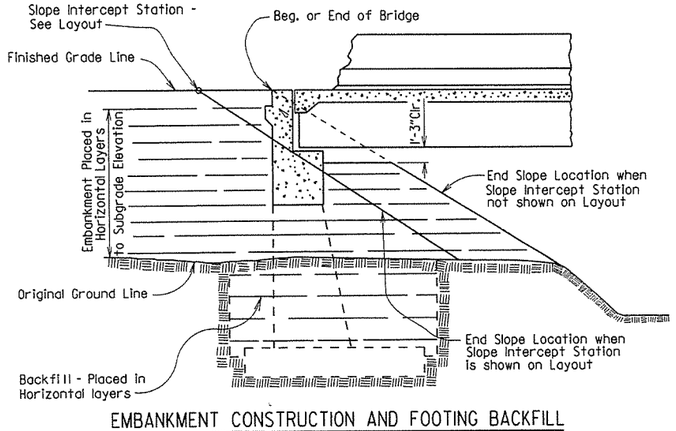
				JOB NO.				
				①	EMBANKMENT & BACKFILL		55000	



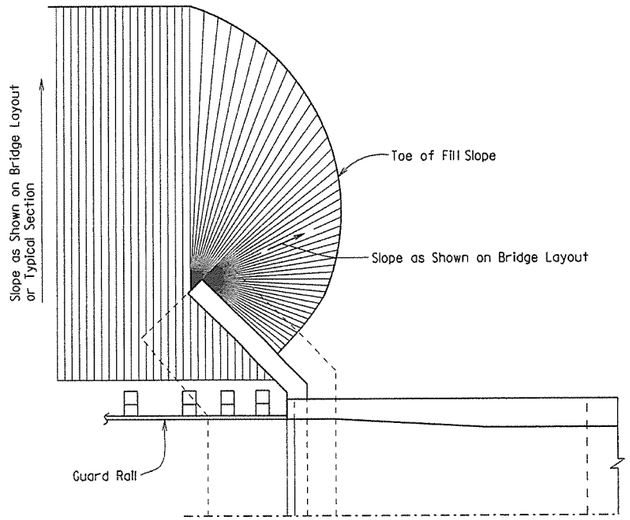
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT VERTICAL WALL ABUTMENTS



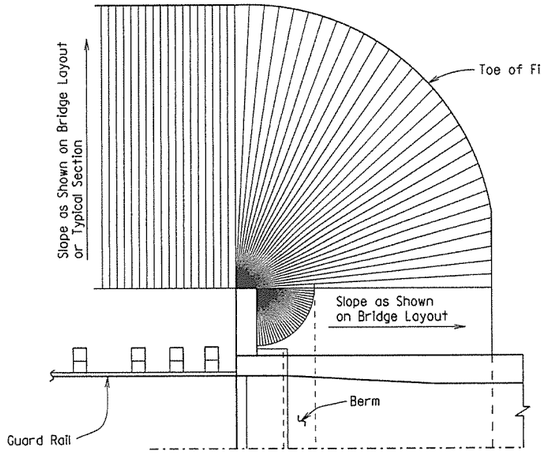
EMBANKMENT CONSTRUCTION AT SPILL-THROUGH PILE END BENTS



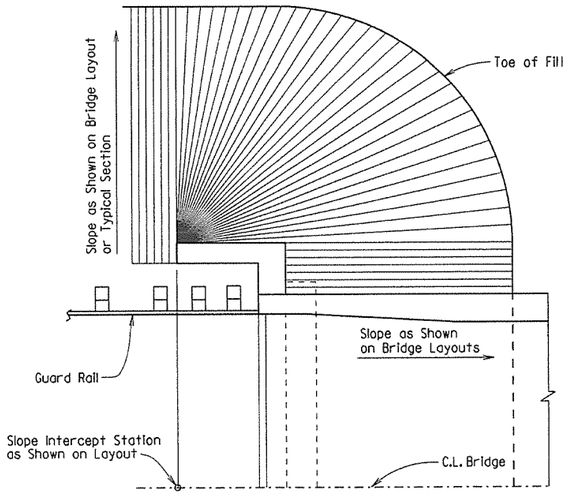
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT SPILL-THROUGH END BENTS



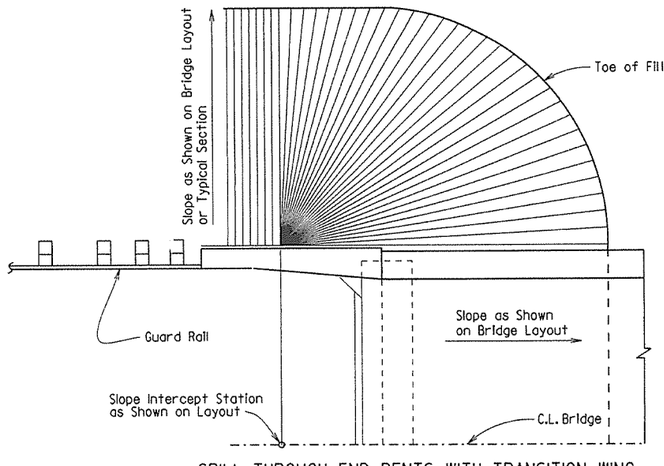
VERTICAL WALL ABUTMENTS



SPILL-THROUGH END BENTS WITH STUB WING



SPILL-THROUGH END BENTS WITH TURNBACK WING



SPILL-THROUGH END BENTS WITH TRANSITION WING

METHOD OF DETERMINING FILL SLOPE LOCATION AT BRIDGE ENDS

GENERAL NOTES

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

STANDARD DETAILS FOR EMBANKMENT CONSTRUCTION AND BACKFILL AT BRIDGE ENDS

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

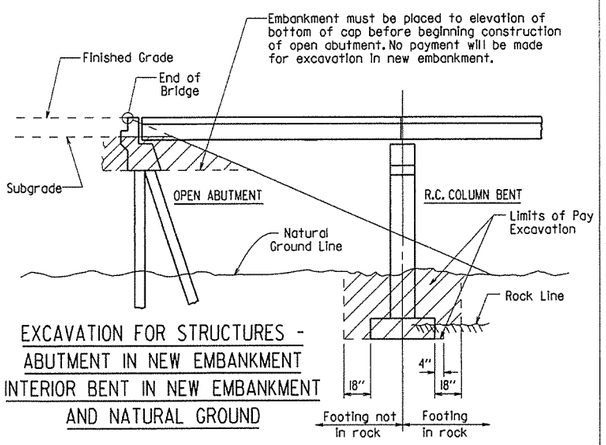
DRAWN BY: KDH DATE: 2-27-2014 FILENAME: b55000.dgn

CHECKED BY: BEF DATE: 2-27-2014 SCALE: NO SCALE

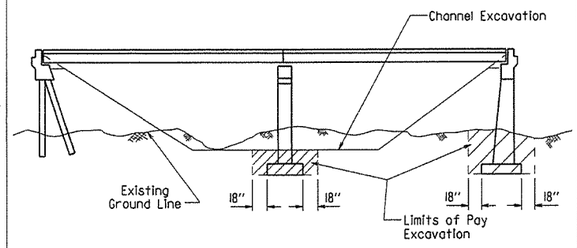
DESIGNED BY: STD. DATE: -

DRAWING NO. 55000

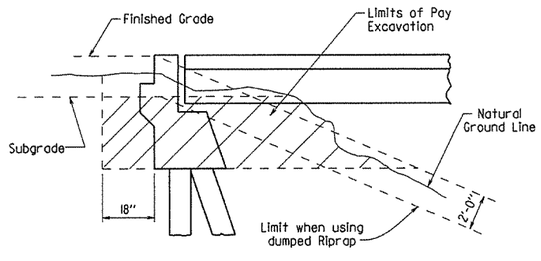
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		44	
				JOB NO.				
				(1)	RIPRAP & EXCAV. 55001			



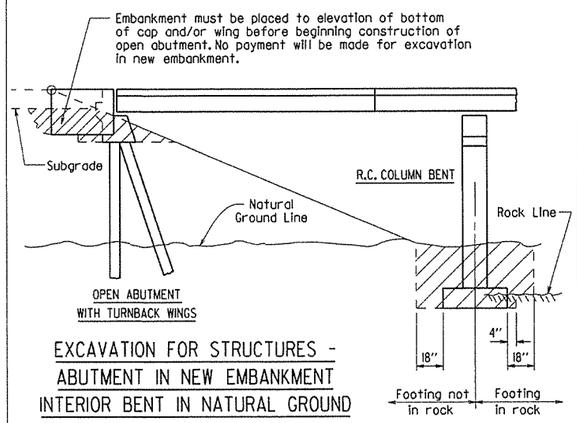
EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NEW EMBANKMENT AND NATURAL GROUND



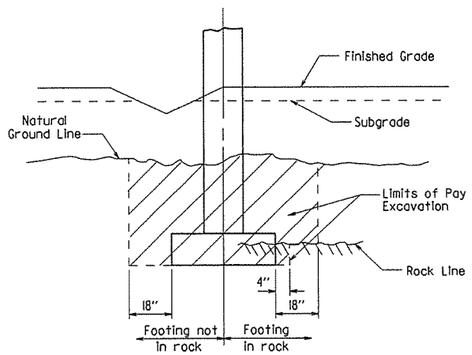
EXCAVATION FOR STRUCTURES - BRIDGE LOCATION WITH DESIGNATED CHANNEL CHANGE



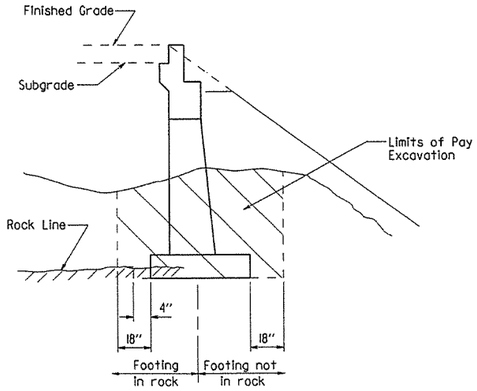
EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND



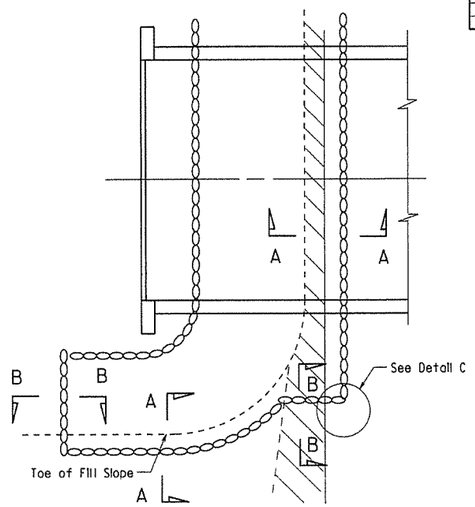
EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NATURAL GROUND



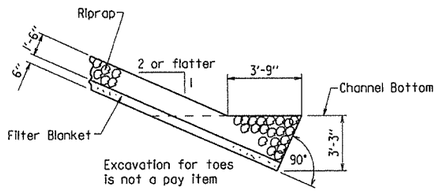
EXCAVATION FOR STRUCTURES - BENT IN ROADWAY FILL SECTION AND NATURAL GROUND



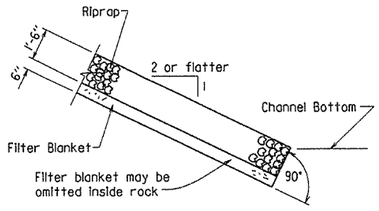
EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND AND NEW EMBANKMENT



PLAN OF DUMPED RIPRAP



SECTION A-A
(Toe Excavation in Soil)

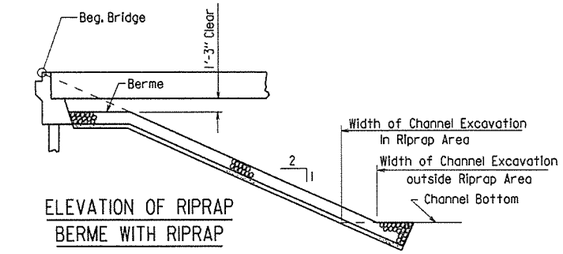


SECTION A-A
(Toe Excavation in Rock)

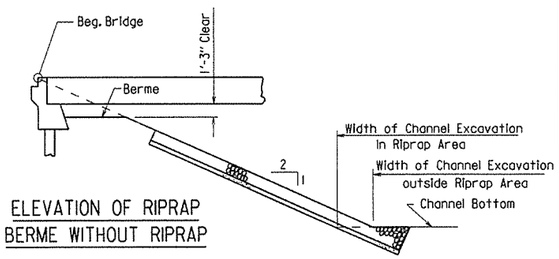
Note : Use this type of toe when rock is encountered which is in a stable condition.

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.

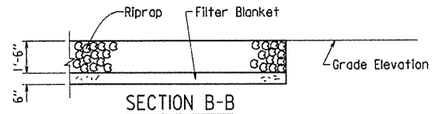
Note : Details for computing excavation for structures are included for information as to how plan quantities were calculated and for use when adjusting quantities when changing footing elevation.



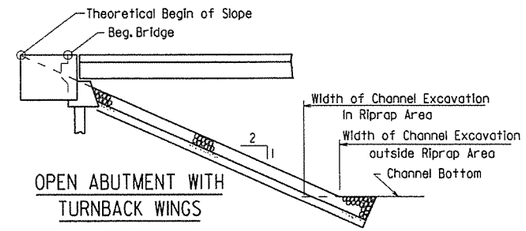
ELEVATION OF RIPRAP BERME WITH RIPRAP



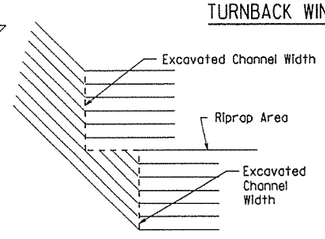
ELEVATION OF RIPRAP BERME WITHOUT RIPRAP



SECTION B-B



OPEN ABUTMENT WITH TURNBACK WINGS



DETAIL C

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

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

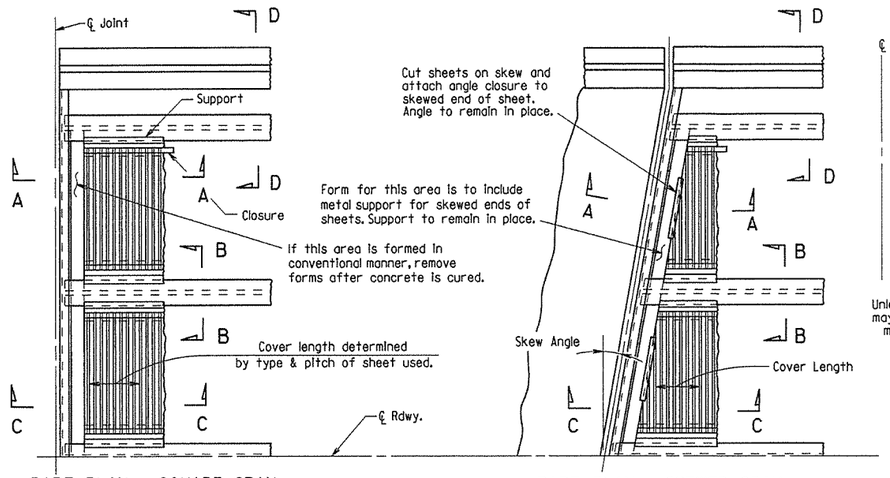
DRAWN BY: KDH DATE: 2-27-2014 FILENAME: b55001.dgn

CHECKED BY: BEF DATE: 2-27-2014 SCALE: NO SCALE

DESIGNED BY: STD. DATE:

DRAWING NO. 55001

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		45	
				JOB NO.				
				①	BRIDGE DECK FORMS		55005	

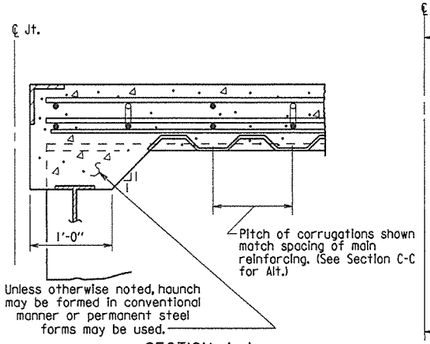


PART PLAN - SQUARE SPAN

3/8" = 1'-0"

PART PLAN - SKEWED SPAN

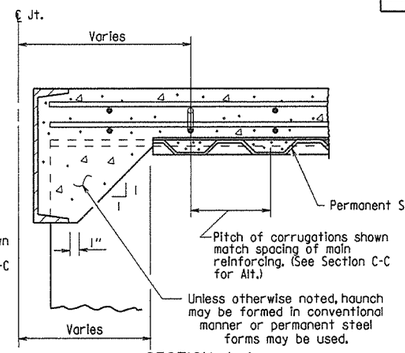
3/8" = 1'-0"



SECTION A-A

N.T.S.

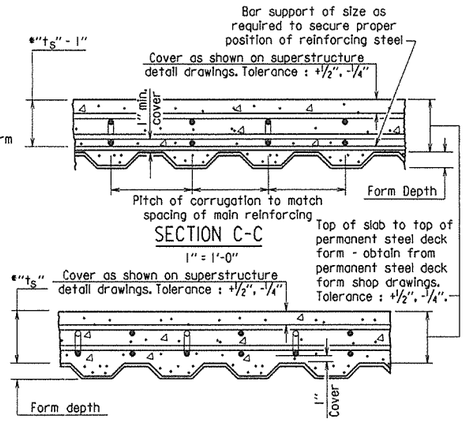
(Angle at end of span)



SECTION A-A

N.T.S.

(Channel at end of span)



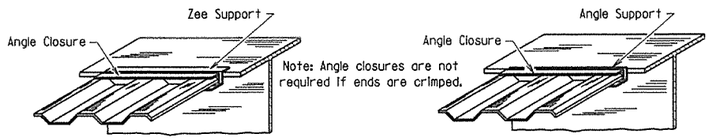
SECTION C-C

1" = 1'-0"

SECTION C-C - ALTERNATE

1" = 1'-0"

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



SKETCH OF PERMISSIBLE SUPPORTS

N.T.S.

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

GENERAL NOTES

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

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

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

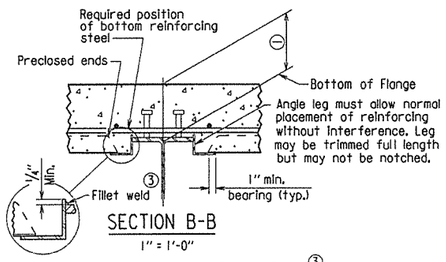
Form sheets shall be fastened to supporting members and to each other with galvanized metal screws sufficient in size and number to provide a secure attachment. Alternate methods of attachment must be approved by the Engineer.

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

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

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

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

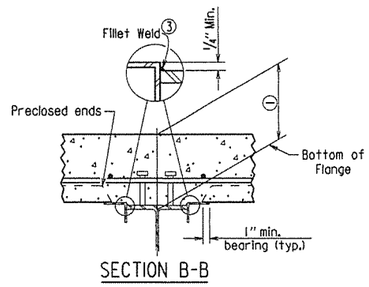


SECTION B-B

1" = 1'-0"

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

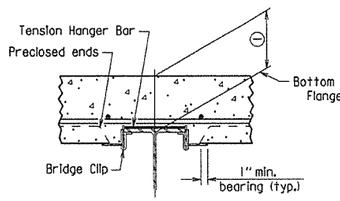
③ Minimum weld: 1/8" x 1' @ 18". More weld may be required; maximum length per weld = 1 1/2" (typ.)



SECTION B-B

1" = 1'-0"

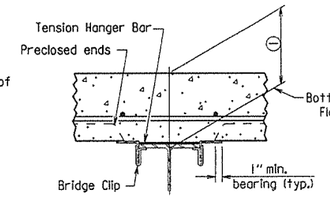
(Showing permissible support for tension flange where shear connectors are used and for all compression flanges)



SECTION B-B

1" = 1'-0"

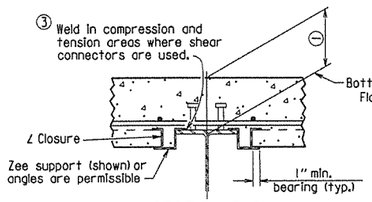
(Showing permissible support for tension flange where shear connectors are not used)



SECTION B-B

1" = 1'-0"

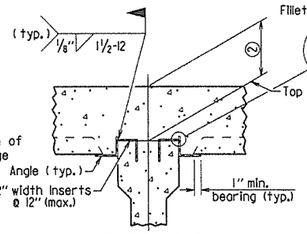
(Showing permissible support for tension flange where shear connectors are not used)



SECTION B-B

1" = 1'-0"

(Showing ∠ Closure)

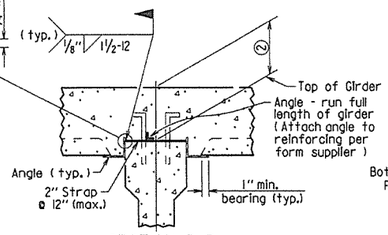


SECTION B-B

(FOR CONCRETE GIRDERS)

1" = 1'-0"

(Showing support by Insert cast in girder)

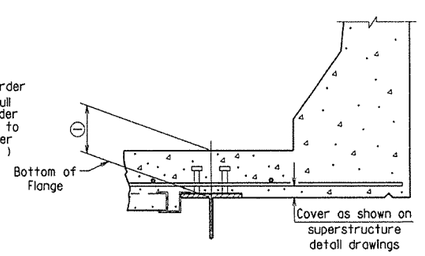


SECTION B-B

(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.

STANDARD DETAILS FOR PERMANENT STEEL BRIDGE DECK FORMS FOR STEEL & CONCRETE GIRDER SPANS

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY:	KDH	DATE:	2-27-2014	FILENAME:	b55005.dgn
CHECKED BY:	BEF	DATE:	2-27-2014	SCALE:	NONE
DESIGNED BY:	STD.	DATE:	—		

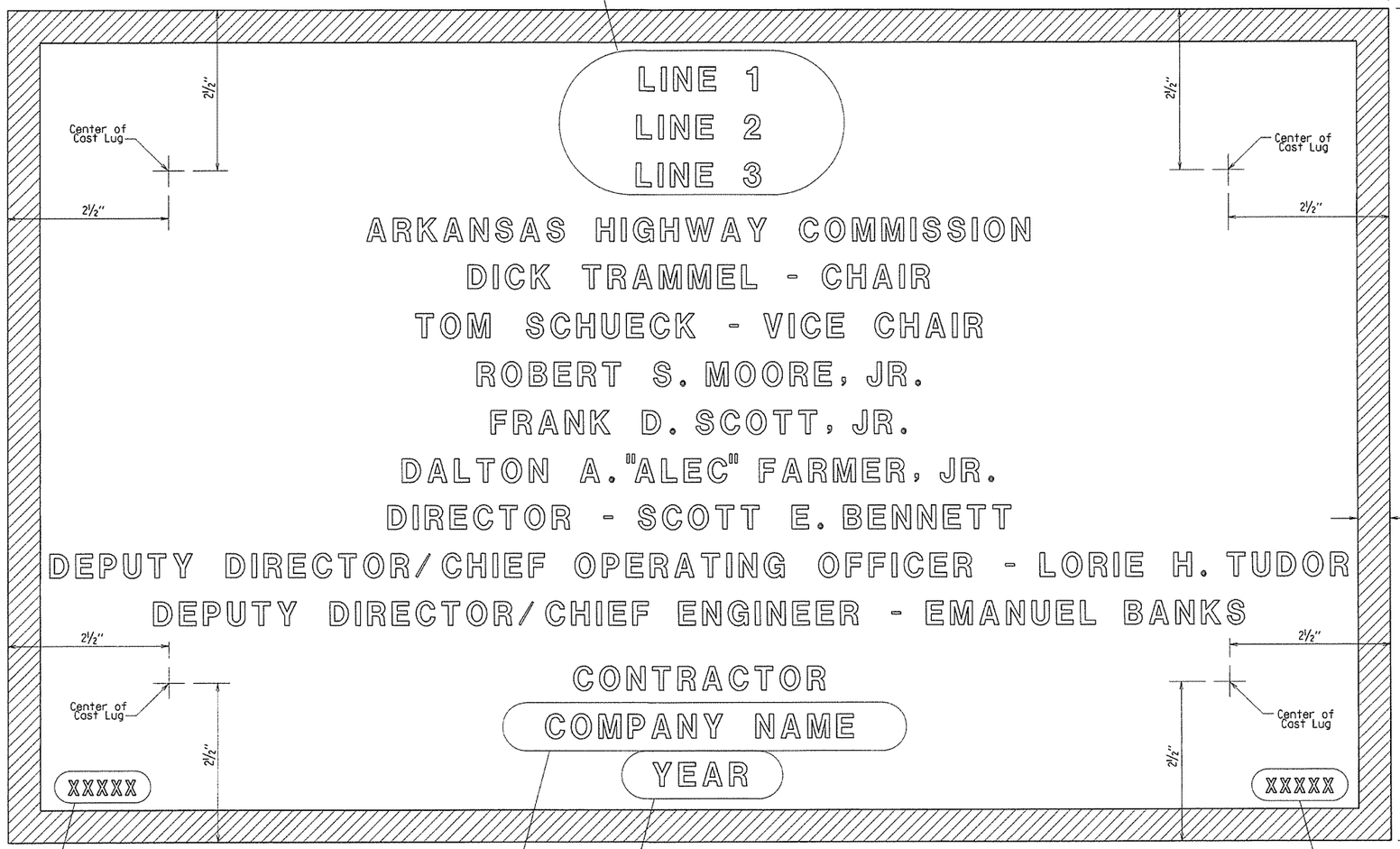
DRAWING NO. 55005

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
12-1-14				6	ARK.		46	
1-14-15				JOB NO.				

1 TYPE D NAME PLATE 55010

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	



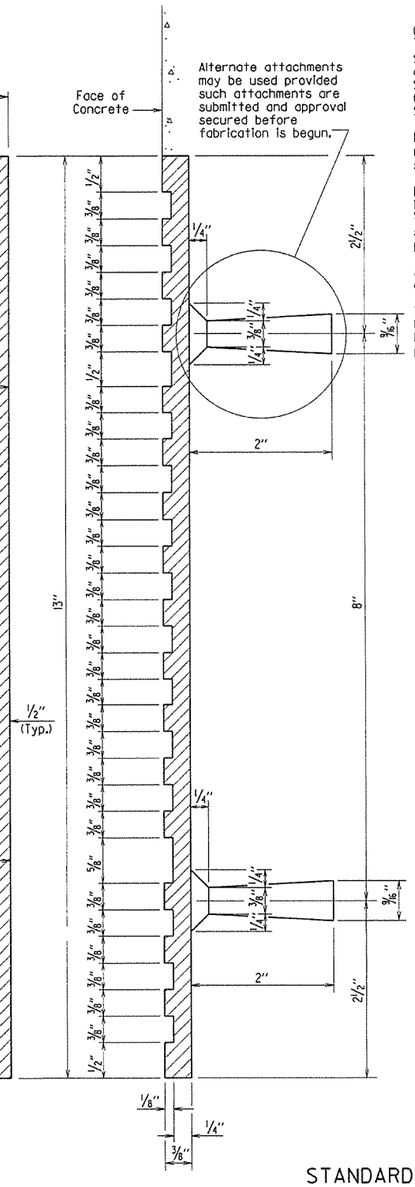
Place the design live loading here using 1/8" raised letters and numerals 1/4" high. Examples : HS 20
HL-93

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

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

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, (2014 Edition) with applicable Supplemental Specifications and Special Provisions.

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

Body of plate shall be ¼" thick and shall include four tapering cone lugs ⅜" to ⅝"x 2" long. The border and all lettering shall be raised ⅛" 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.

2 Revised Chair and Vice Chair Added New Commissioner
1-14-15 KDH Checked By: CRE

1 Revised Deputy Director/ Chief Engineer Added Deputy Director/ Chief Operating Officer
12-1-14 KDH Checked By: CRE

STANDARD DETAILS FOR
TYPE D BRIDGE NAME PLATE

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

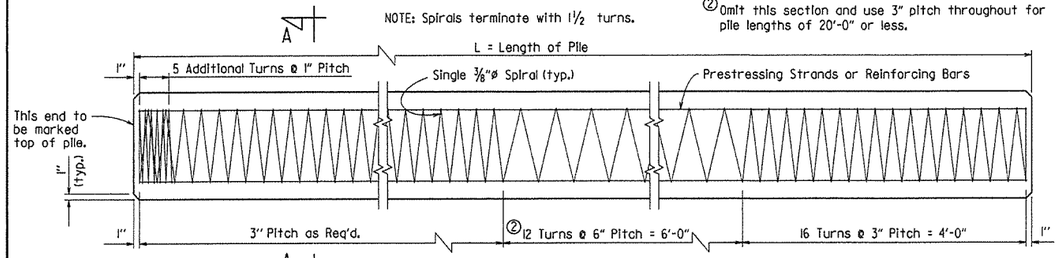
DRAWN BY: KDH DATE: 2-27-2014 FILENAME: b55010.dgn
CHECKED BY: BEF DATE: 2-27-2014 SCALE: NO SCALE
DESIGNED BY: STD. DATE: —

DRAWING NO. 55010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		47	
				JOB NO.				
				①	CONC. PILES	55022		

NOTE: Spirals terminate with 1½ turns.

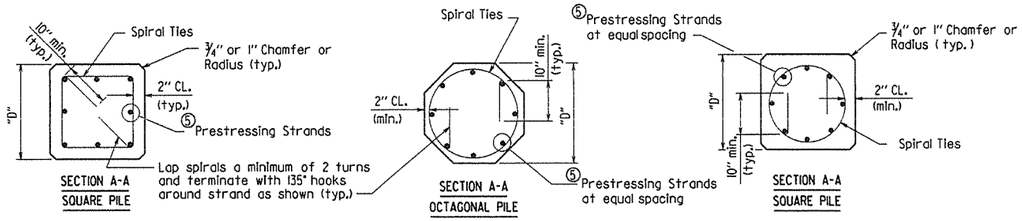
②Omit this section and use 3" pitch throughout for pile lengths of 20'-0" or less.



PLAN OF PILE SHOWING SPIRAL TIE SPACING

For anchorage of pile to bent, see Bent Details.

NOTE: Strand location shall be symmetrical about the axis of the pile with no more than one strand difference between any two adjacent sides. Circular spiral ties are required for odd number of strands.



PRESTRESSED CONCRETE PILES

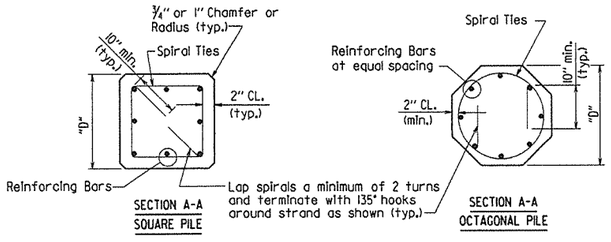
①Number based on initial pre-stress force of "B" x Ultimate Tensile Stress, Prestress Losses and min. 700 psi Unit Prestress on concrete after Losses.

"B" — 0.75 Low Relaxation; 0.70 Stress-Relieved

⑤See table "Prestressed Concrete Pile Properties" for actual number of strands per pile size.

PRESTRESSED CONCRETE PILE PROPERTIES

	Grade	Strand Diameter	①Number of Strands per Size "D" 16" Oct.	18" Oct.	④14" Sq.	16" Sq.	18" Sq.	Minimum Ultimate Tensile Strength Per Strand (Lbs.)	Initial Prestressing Force Per Strand (Lbs.)
Stress-Relieved	250	7/16"	11	13	10	13	16	27,000	18,900
		½"	8	10	8	10	12	36,000	25,200
	270	7/16"	9	11	8	12	14	31,000	21,700
		½"	7	9	6	8	10	41,300	28,900
Low Relaxation	250	7/16"	9	11	8	11	14	27,000	20,200
		½"	7	9	6	8	10	36,000	27,000
	270	7/16"	8	10	7	9	12	31,000	23,300
		½"	6	8	6	7	9	41,300	31,000

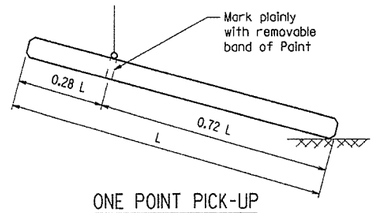


NON-PRESTRESSED PILE REINFORCING

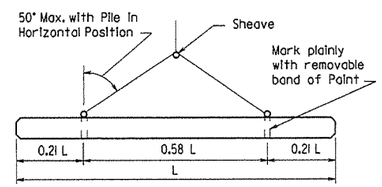
Pile Size	No. Req'd.	Bar Size
16" Oct.	8	# 7
18" Oct.	8	# 7
④14" Sq.	8	# 7
16" Sq.	8	# 7
18" Sq.	8	# 8

④14" sq. piles to be used in Seismic Performance Zone I only.

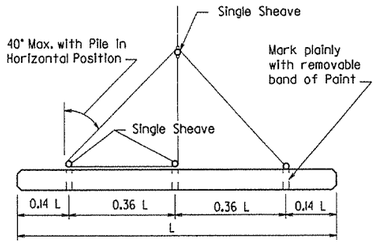
NON-PRESTRESSED CONCRETE PILES



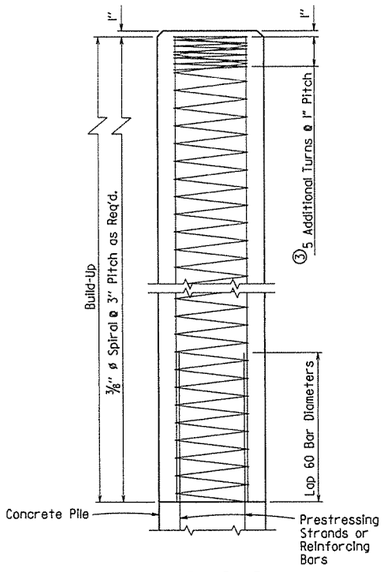
ONE POINT PICK-UP



TWO POINT PICK-UP



THREE POINT PICK-UP



BUILD-UP

③The five additional turns of spiral reinforcing may be omitted for build-up without additional driving.

MAXIMUM PICKUP LENGTHS "L"

Type of Pick-Up	Prestressed		Non-Prestressed	Prestressed			Non-Prestressed		
	16" Oct.	18" Oct.	16" or 18" Oct.	④14" Sq.	16" Sq.	18" Sq.	④14" Sq.	16" Sq.	18" Sq.
One Point	52'	55'	46'	55'	59'	63'	52'	51'	55'
Two Point	75'	80'	67'	79'	84'	90'	75'	74'	79'
Three Point	105'	112'	93'	110'	117'	126'	104'	103'	111'

GENERAL NOTES:

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

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications, current Edition with Interim Specifications.

SEISMIC PERFORMANCE ZONES: 1 & 2

Unless otherwise noted, the Contractor may use prestressed piles or non-prestressed piles. Either type will be measured and paid for at the contract unit price bid for "Concrete Piling".

SPIRAL REINFORCING: Spiral reinforcing shall be steel wire meeting the requirements of AASHTO M 32 or M 225 or shall be plain round steel bars meeting the requirements of Grade 60, AASHTO M31 or M322, Type A.

MANUFACTURE, TRANSPORTATION AND STORAGE: Shipment of piles from the plant site or pile driving will not be permitted until the required minimum compressive strength is reached, and in no case less than 10 days after pouring the concrete. Prestressed piles may be removed from the casting bed to nearby storage any time after transfer of stress. See Section 802 "Concrete for Structures" for additional information.

Unless otherwise approved by the Engineer, all protruding or exposed pile lifting or transporting devices above the finished ground shall be removed after pile driving is complete. Removal shall be a minimum of 1" below the surface of the pile and the cavity shall be filled with a non-shrink grout listed on the Department's QPL.

FORMS: For forming exterior of piles, the use of steel forms on concrete-founded casting beds is required unless otherwise approved by the Engineer. Side forms may have a maximum drift on each side not exceeding ¼" per foot.

TOLERANCES: Pile ends shall be plane surfaces perpendicular to the longitudinal axis of pile with a maximum tolerance of ⅛" per foot transversely.

The maximum sweep (deviation from straightness measured from end to end of the pile, while not subject to bending forces) shall not exceed ⅛" in 10 feet.

BUILD-UPS: To provide for build-ups of piles where authorized by the Engineer, concrete shall be cut back to expose the reinforcing steel for a distance sufficient to provide a lap of 60 diameters of the reinforcing bars required for build-up. Reinforcing for build-ups shall be the reinforcing shown for non-prestressed piles.

INSTALLATION, MEASUREMENT AND PAYMENT: See Section 805 "Piling".

ADDITIONAL NOTES FOR PRESTRESSED PILES ONLY:

CONCRETE: Concrete in prestressed piles shall be Class S(AE) and shall have a minimum compressive strength (f'c) of 5,000 psi at 28 days. Compressive strength at transfer of the prestressing force shall be not less than 4,000 psi. Concrete in build-ups shall have a minimum compressive strength of 4,000 psi and shall be cured for a minimum of 10 days.

PRESTRESSING REINFORCING: Seven-wire stress-relieved or low relaxation strands shall conform to the general requirements of AASHTO M 203. Broken wires within individual strands will be permitted up to 2% of the total number of wires in each pile, providing that there is not more than one broken wire per strand. Two or more broken wires per strand will be cause for replacement of the strand, even though the two broken wires are within the 2% limitation.

ADDITIONAL NOTES FOR NON-PRESTRESSED PILES ONLY:

All concrete shall be Class S(AE) and shall have a minimum compressive strength (f'c) of 4,000 psi at 28 days.

All longitudinal reinforcing bars shall be deformed bars and shall conform to the requirements of Grade 60, AASHTO M31 or M322, Type A.

This document was originally issued and sealed by Carl J. Fuselier, PE No. 7510, on February 27, 2014. This copy is not a signed and sealed document.

STATE OF ARKANSAS ★★★ REGISTERED PROFESSIONAL ENGINEER ★★★ No. 7510 CARL J. FUSELIER

BRIDGE ENGINEER

STANDARD DETAILS FOR CONCRETE PILES

ARKANSAS STATE HIGHWAY COMMISSION

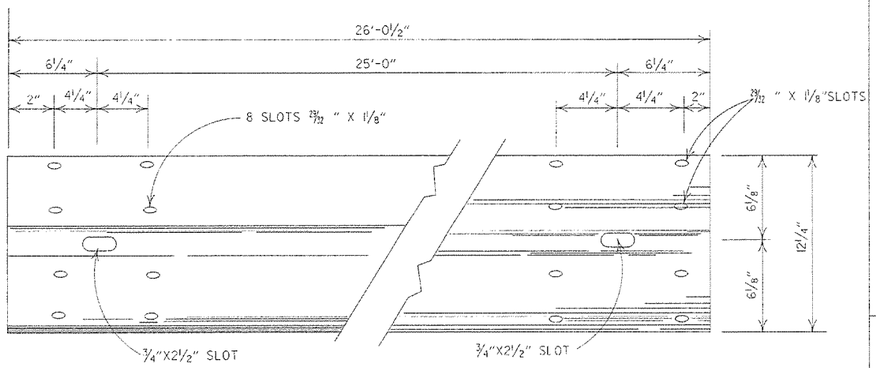
LITTLE ROCK, ARK.

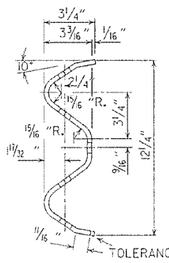
DRAWN BY: KDH DATE: 2-27-2014 FILENAME: b55022.dgn

CHECKED BY: BEF DATE: 2-27-2014 SCALE: NO SCALE

DESIGNED BY: STD. DATE: ——

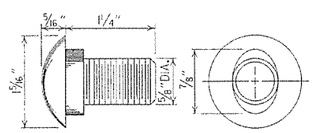
DRAWING NO. 55022



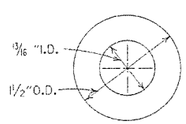


DETAILS OF W-BEAM GUARD RAIL

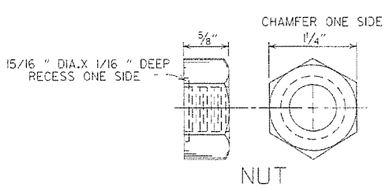
RAIL SECTION OF CLOSELY SIMILAR DIMENSIONS AND COMPARABLE STRENGTH MAY BE SUBSTITUTED IF APPROVED BY THE ENGINEER.



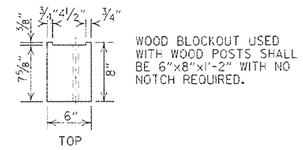
SPLICE BOLT
POST BOLT - SAME EXCEPT LENGTH



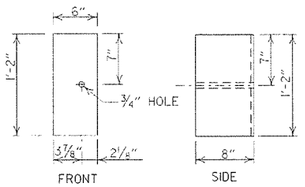
CUT STEEL WASHER



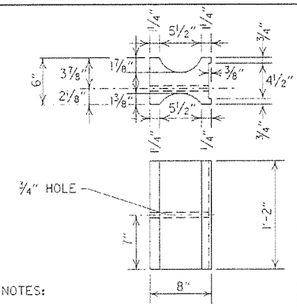
NUT



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



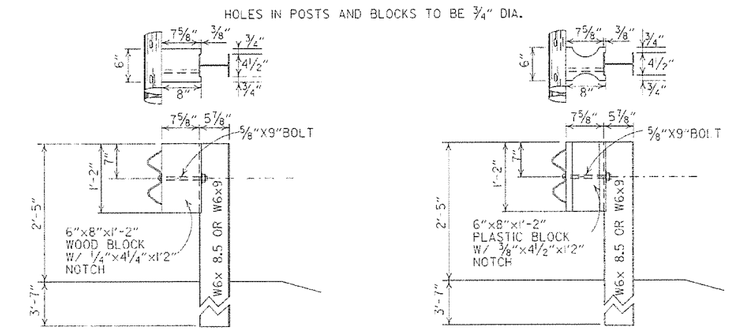
WOOD BLOCKOUT (W-BEAM)



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.

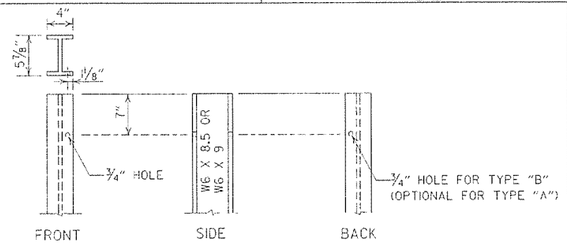
PLASTIC BLOCKOUT (W-BEAM)



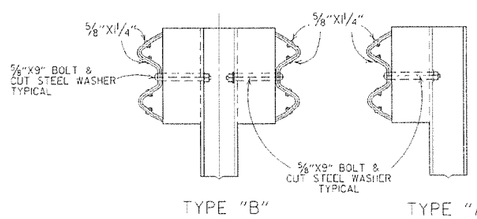
WOOD BLOCKOUT CONNECTIONS

PLASTIC BLOCKOUT CONNECTIONS

DETAILS OF STEEL LINE POST CONNECTIONS (W-BEAM)



STEEL POST



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 ¾" BEYOND IT.

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

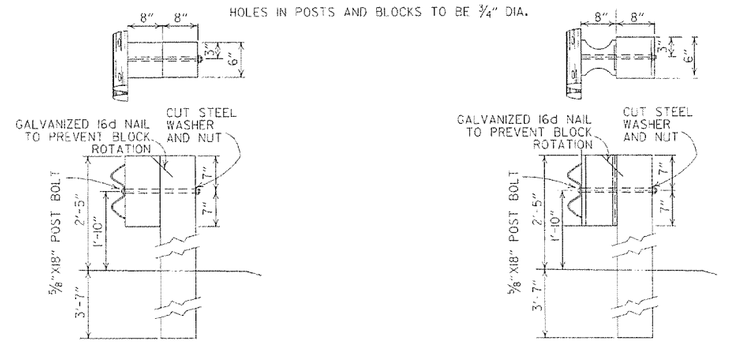
W-BEAM GUARD RAIL REPRESENTING INTERMEDIATE SECTIONS WILL BE MEASURED ALONG THE ROADWAY FACE FROM CENTERLINE OF POST TO CENTERLINE OF POST.

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.



WOOD BLOCKOUT CONNECTIONS

PLASTIC BLOCKOUT CONNECTIONS

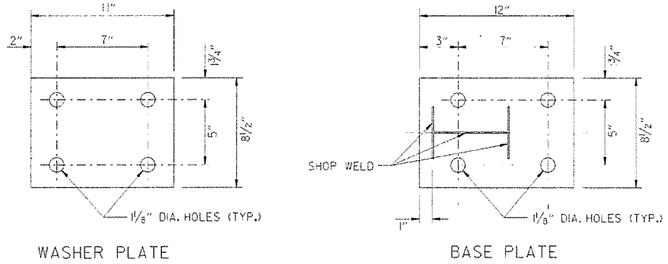
DETAILS OF WOOD LINE POST CONNECTIONS (W-BEAM)

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	
9-22-02	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 A.I.T. 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

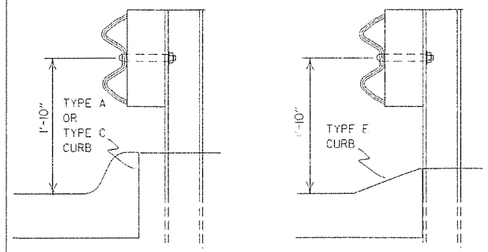
GUARD RAIL DETAILS

STANDARD DRAWING GR-8



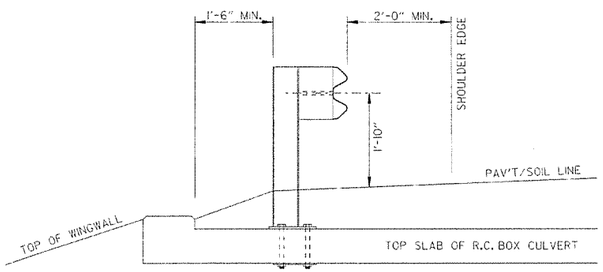
WASHER PLATE BASE PLATE

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

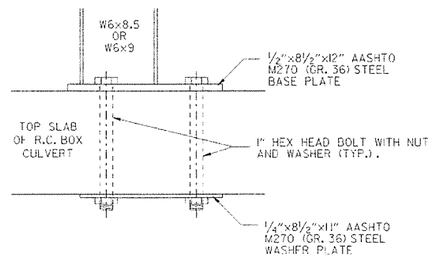


DETAIL OF GUARD RAIL PLACEMENT BEHIND CURB (W-BEAM)

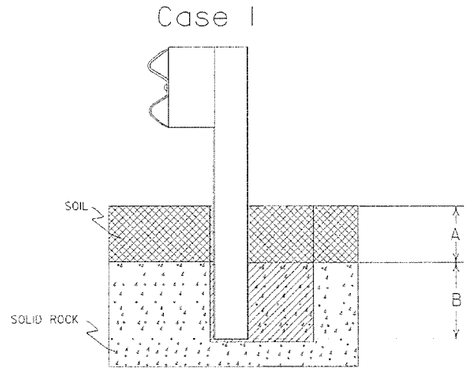
FOR DESIGN SPEEDS OF 50 MPH OR LESS ALL CURB FACES, AS SHOWN ON STD. DRWG. CG-1, MAY BE USED. FOR DESIGN SPEEDS OF 55 MPH OR MORE TYPE "E" CURB FACE SHALL BE USED.



SECTION A-A

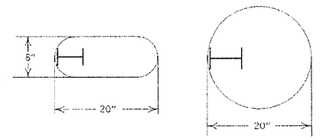


DETAIL OF CONNECTION



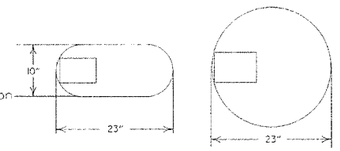
Plan View Steel Posts

Either hole configuration acceptable



Plan View Wood Posts

Either hole configuration acceptable



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

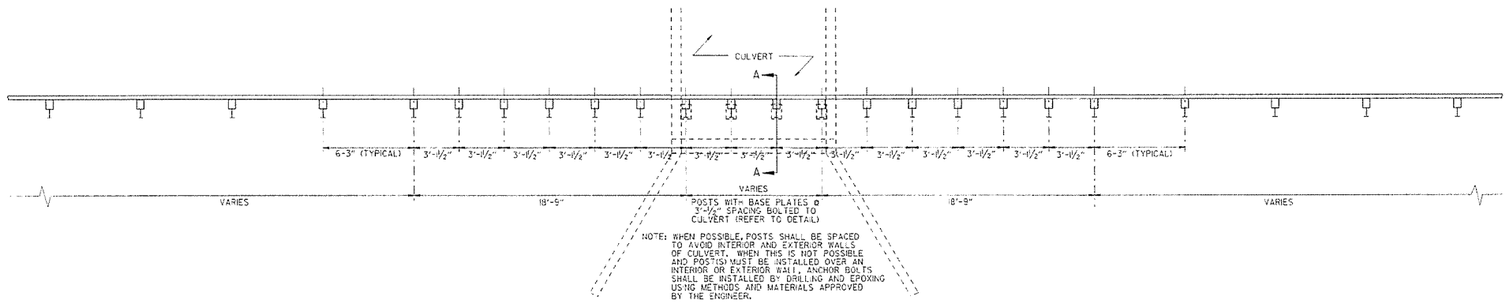
Zone A:
Backfill according to Section 617.03(a).

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

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

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

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



PLAN LAYOUT OF TYPE A GUARD RAIL AT LOW-FILL CULVERTS

NOTE: THIS DETAIL IS TO BE USED ONLY WHEN THE COVER OVER THE CULVERT DOES NOT PERMIT FULL EMBEDMENT OF GUARD RAIL POSTS AS SHOWN ON STD. DWG. GR-8.

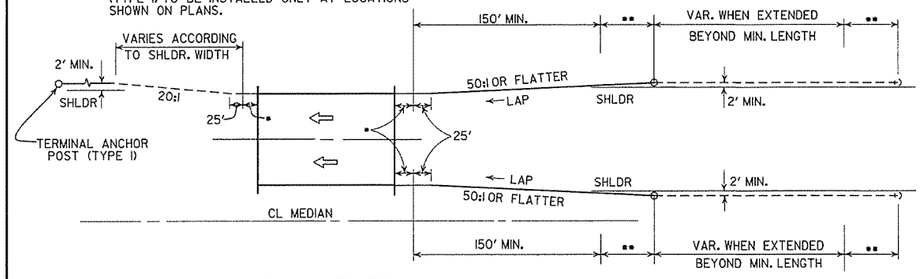
DATE	REVISION	DATE FILM
7-14-10	RAISED HEIGHT OF GUARD RAIL 1"	
4-12-07	REVISED DETAIL OF GUARD RAIL PLACEMENT BEHIND CURB	
11-10-05	ADDED GUARD RAIL PLACEMENT BEHIND CURB; REVISED DETAIL OF CONNECTION	
11-18-04	REVISED POST PLACEMENT IN ROCK & CULVERT CONNECTION DETAILS. ADDED DETAIL FOR GUARD RAIL PLACEMENT AT LOW-FILL CULVERTS	
3-30-00	REMOVED CONCRETE INSERT ANCHOR	
8-12-98	CHANGED STEEL SPACER BLOCK TO WOOD BLOCKOUT, ADD. DET. OF GUARD RAIL CONNECTION TO R.C. BOX CULVT. DELETED DET. OF STEEL LINE POST CONN.& ADDED DET. OF GUARD RAIL PLACE. BEHIND CURB & DET. OF POST PLACE. IN SOLID ROCK	
4-3-96	PLACED ARROWS AT CUT STEEL WASHERS	4-3-96
10-18-96	REV. ASTM REF. TO AASHTO	
11-22-95	ADDED OPTIONAL HOLES	
6-2-94	REVISED ALTERNATE POST SIZE	
8-5-93	REVISED STEEL POST SIZE	
10-1-92	REDRAWN & REVISED	10-1-92
8-2-90	DEL. WASHER ON ANCHOR ASSEMBLY	8-2-90
7-15-88	CONFORMED TO 1988 SPECS	
3-4-88	REVISED ANCHOR NOTE	
10-30-87	REVISED ANCHOR ASSEMBLY	712-10-30-87
10-30-87	REVISED PLACEMENT BEHIND CURB	547-10-30-87
10-9-87	REDRAWN & REVISED	803-10-9-87

ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

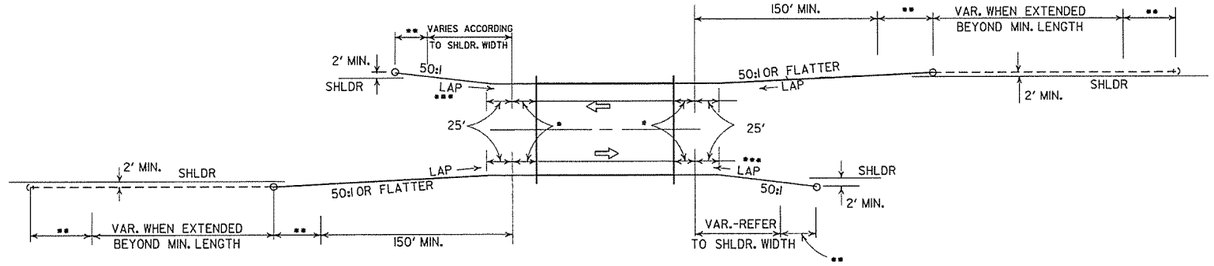
STANDARD DRAWING GR-8A

NOTE: GUARD RAIL WITH GUARD RAIL TERMINAL (TYPE I) TO BE INSTALLED ONLY AT LOCATIONS SHOWN ON PLANS.



ONE-WAY TRAFFIC

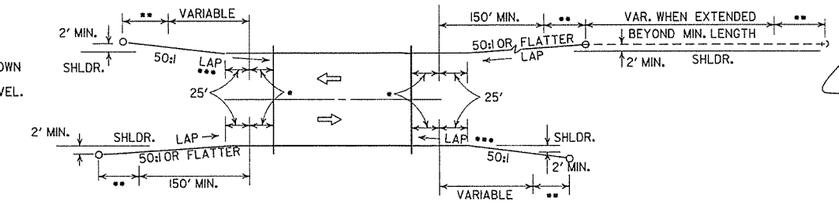
••• LAP OF GUARD RAIL SHALL BE AS SHOWN FOR A DISTANCE OF UP TO 200', CHANGE TO LAP IN DIRECTION OF TRAVEL.



TWO-WAY TRAFFIC

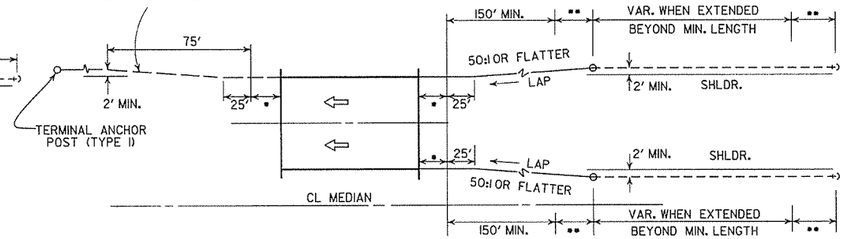
METHODS OF INSTALLATION OF GUARD RAIL AT LESS THAN FULL SHOULDER WIDTH BRIDGES USING GUARD RAIL TERMINAL (TYPE 2)

••• 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

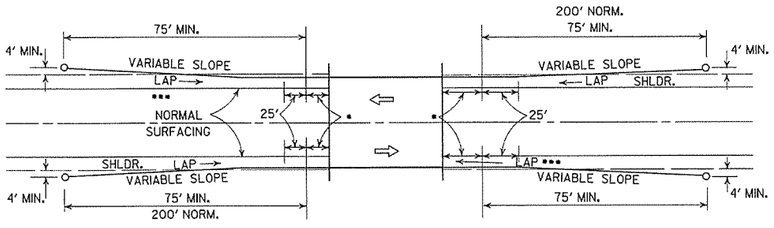
NOTE: GUARD RAIL WITH GUARD RAIL TERMINAL (TYPE I) TO BE INSTALLED ONLY AT LOCATIONS SHOWN ON PLANS.



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

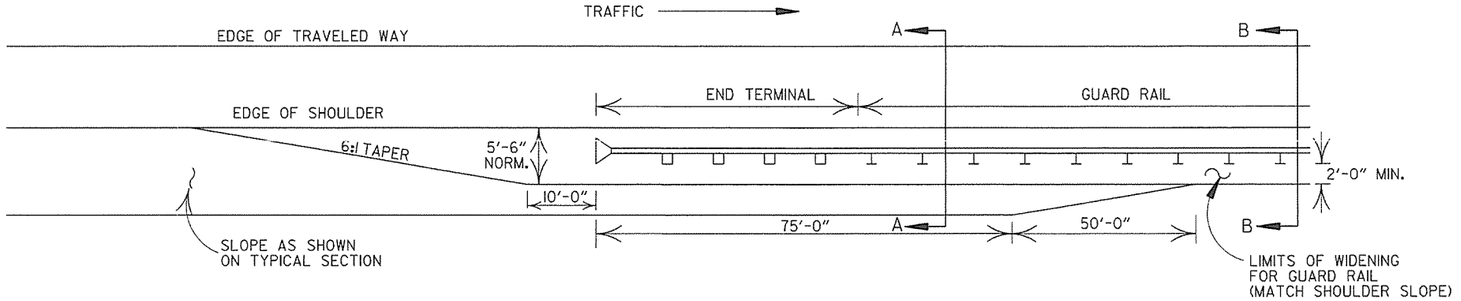
- • THRIE BEAM GUARD RAIL TERMINAL
- •• GUARD RAIL TERMINAL (TYPE 2)

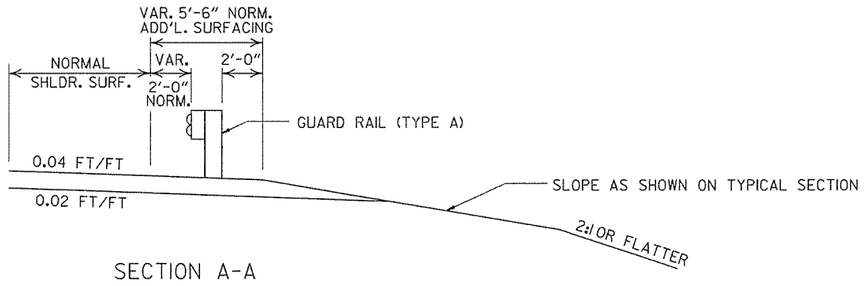
DATE	REVISION	DATE FILM
4-17-08	REVISED LAYOUTS	
11-10-05	REMOVED GUARD RAIL NOTES AND DETAILS	
11-16-01	DELETED NOTE-METHOD OF INSTALLATION OF GUARD RAIL USING GUARD RAIL TERM. (TY. I)	
1-12-00	ADDED CONSTRUCTION NOTE	1-12-00
6-26-97	REVISED LAYOUT	
10-1-92	REDRAWN & REVISED	10-1-92
	ADDED NOTE	
10-9-87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

ARKANSAS STATE HIGHWAY COMMISSION

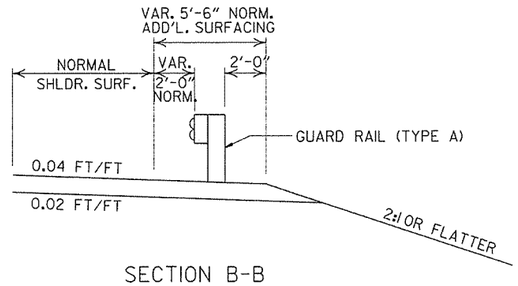
GUARD RAIL DETAILS

STANDARD DRAWING GR-9





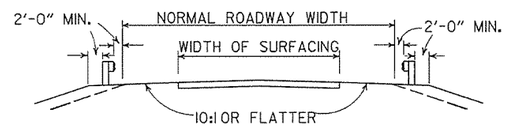
SECTION A-A



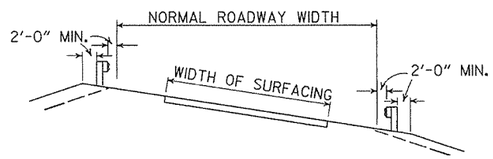
SECTION B-B

DETAILS OF WIDENING FOR GUARD RAIL

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

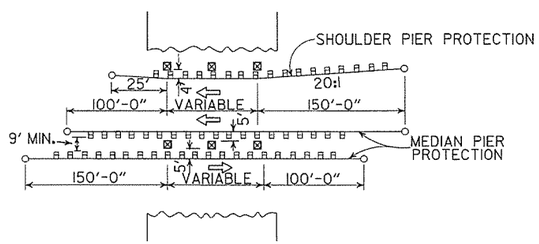


SECTION ON TANGENT



SECTION ON CURVE

DETAILS SHOWING POSITION OF GUARD RAIL ON HIGHWAY



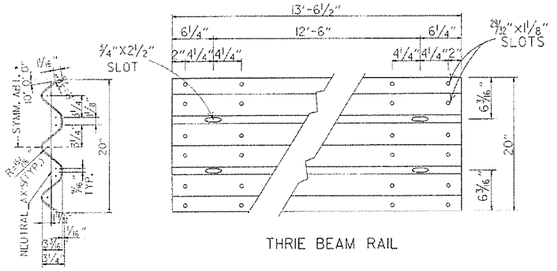
METHOD OF INSTALLATION OF GUARD RAIL AT FIXED OBSTACLE

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

ARKANSAS STATE HIGHWAY COMMISSION

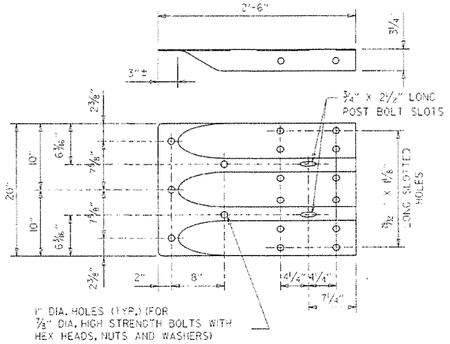
GUARD RAIL DETAILS

STANDARD DRAWING GR-9A

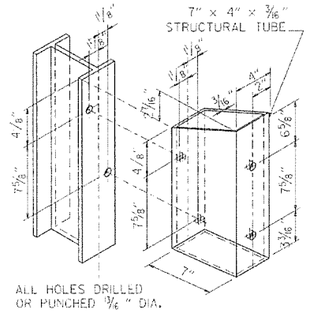


THRIE BEAM RAIL

SECTION THRU THRIE BEAM RAIL



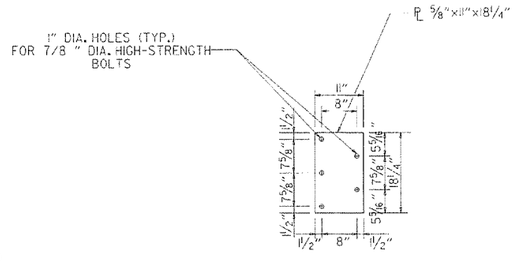
SPECIAL END SHOE



ALL HOLES DRILLED OR PUNCHED ⅜" DIA.

STRUCTURAL STEEL TUBING BLOCKOUT DETAIL

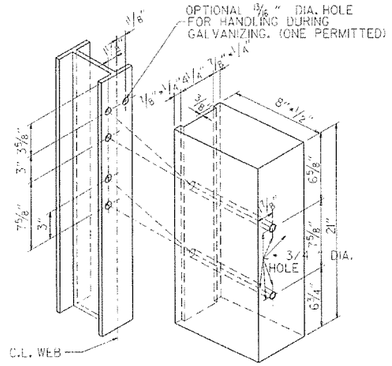
ATTACH BLOCKOUT TO POST USING ⅝" DIA. HEX HEAD BOLTS WITH 1½" O.D. CUT STEEL WASHERS AND NUT.



CONNECTOR PLATE

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

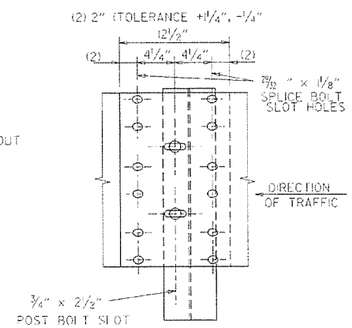
NOTE:
SEE STANDARD DRAWING GR-10A FOR GUARD RAIL POST EMBEDMENT DEPTHS.



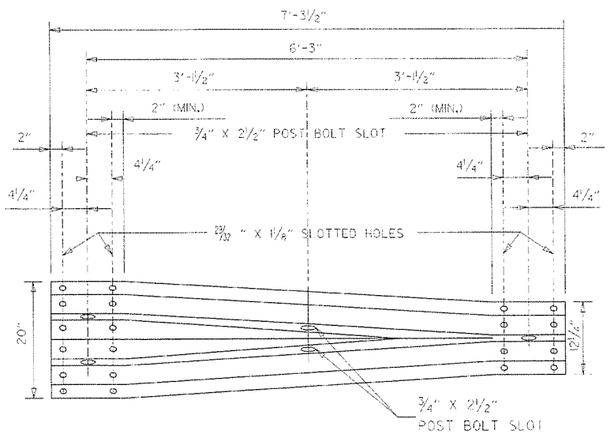
ALL HOLES ⅜" DIAMETER EXCEPT AS NOTED

HOLE PUNCHING DETAIL
FOR STEEL POST & WOOD
OR PLASTIC BLOCKOUTS

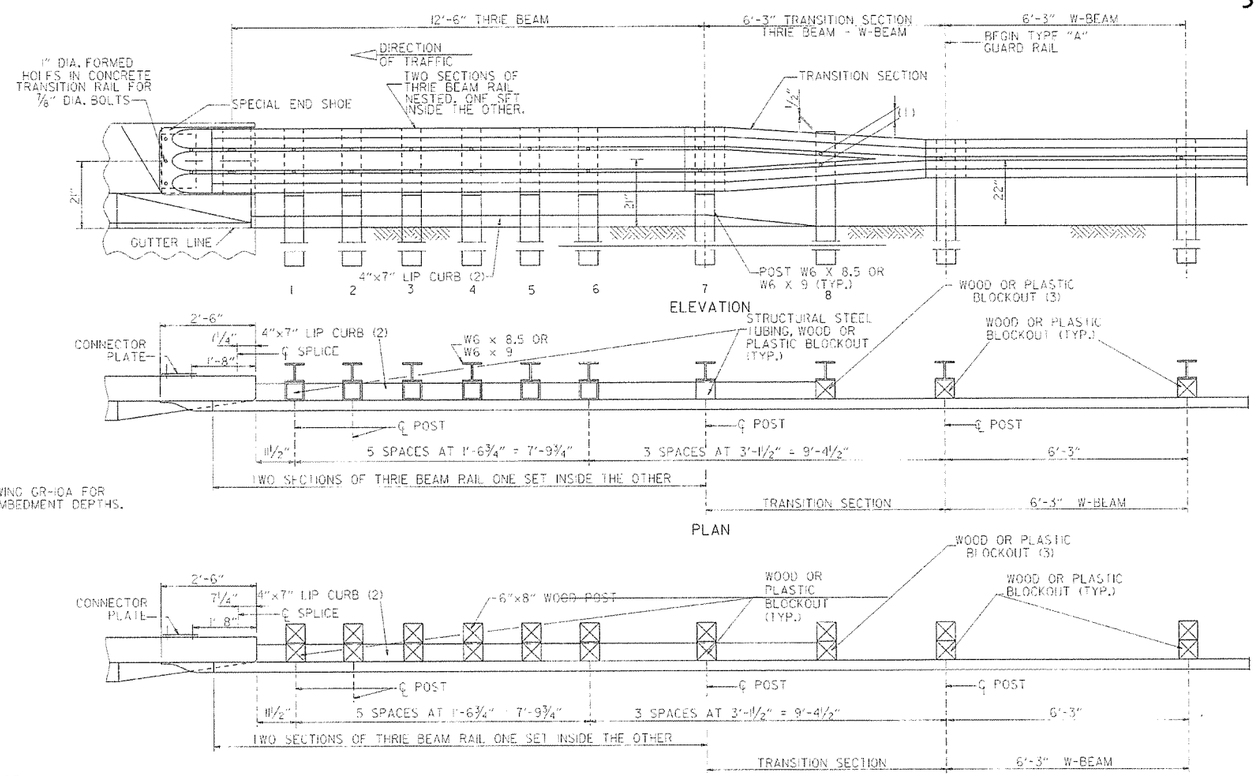
NOTE: BLOCKS SHALL BE THE SAME TYPE THROUGHOUT THE PROJECT LIMITS.



THRIE BEAM RAIL
SPLICE AT POST



TRANSITION SECTION



(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 ƒ) 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.

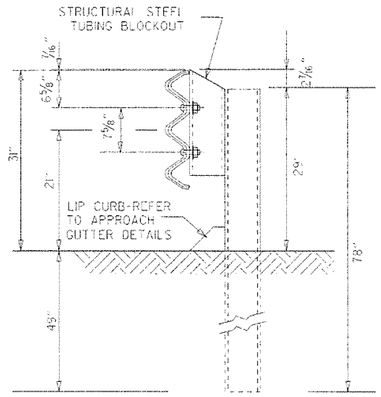
THRIE BEAM POSTS SHALL BE SAME MATERIAL AS W BEAM POSTS FOR ENTIRE JOB.

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	

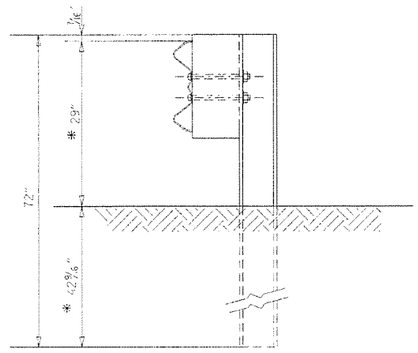
ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR-10

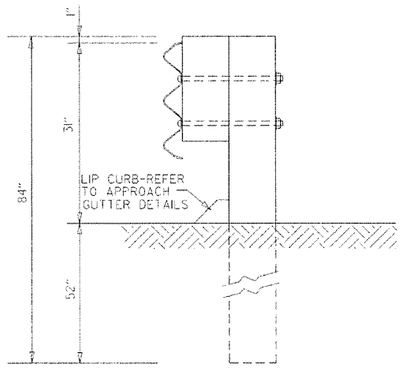


THRIE BEAM RAIL WITH STEEL TUBING BLOCKOUT
AND STEEL POST
POSTS 1-7

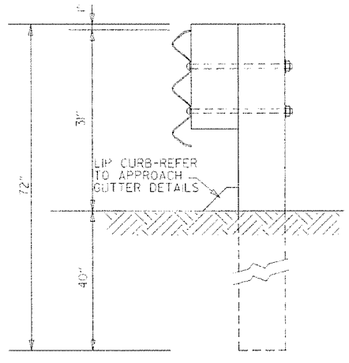


W-BEAM TO THRIE BEAM TRANSITION RAIL
WITH WOOD OR PLASTIC BLOCKOUT AND STEEL POST
POST 8

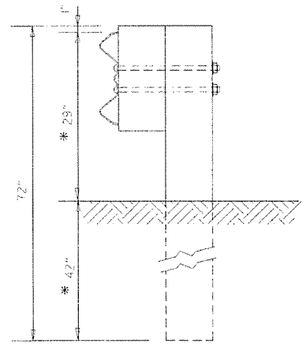
* NOTE:
THESE DIMENSIONS WILL NEED TO BE ADJUSTED IN THE FIELD TO MAKE THE TRANSITION FROM 21" MID POINT OF THRIE BEAM TO 22" MID POINT OF W-BEAM.



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.

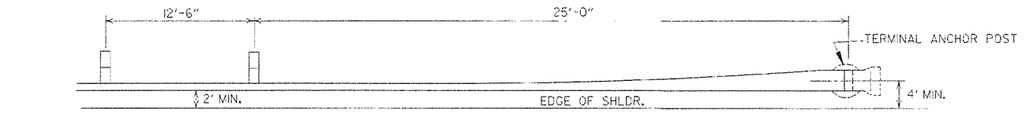
WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7f (1400 f) OR NO. 1 (1350 f) SOUTHERN PINE.

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	

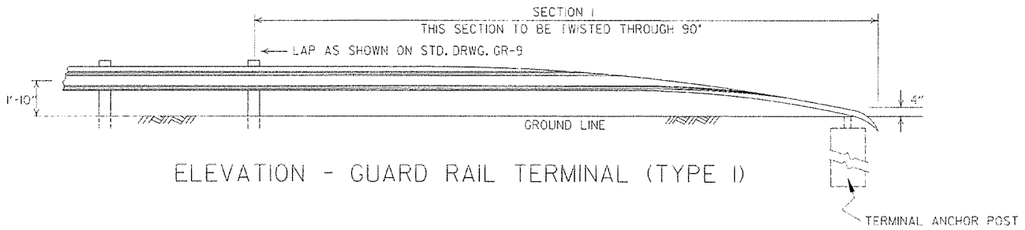
ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR-10A

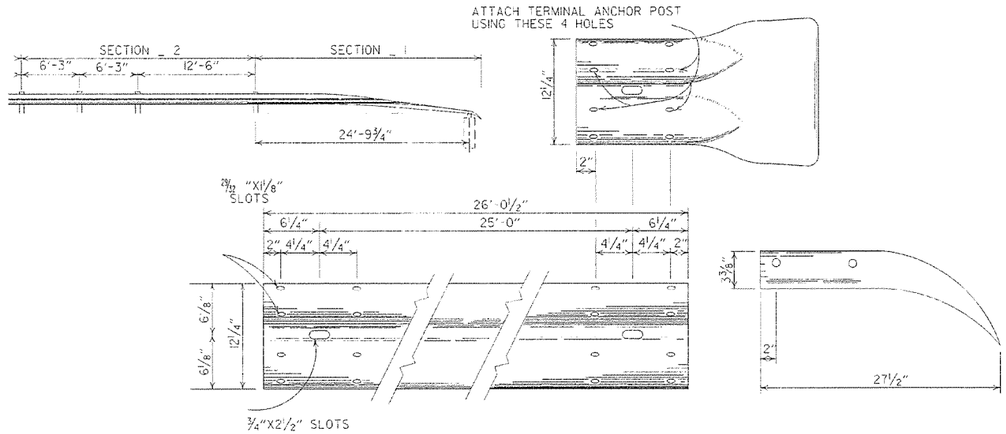


PLAN - GUARD RAIL TERMINAL (TYPE I)



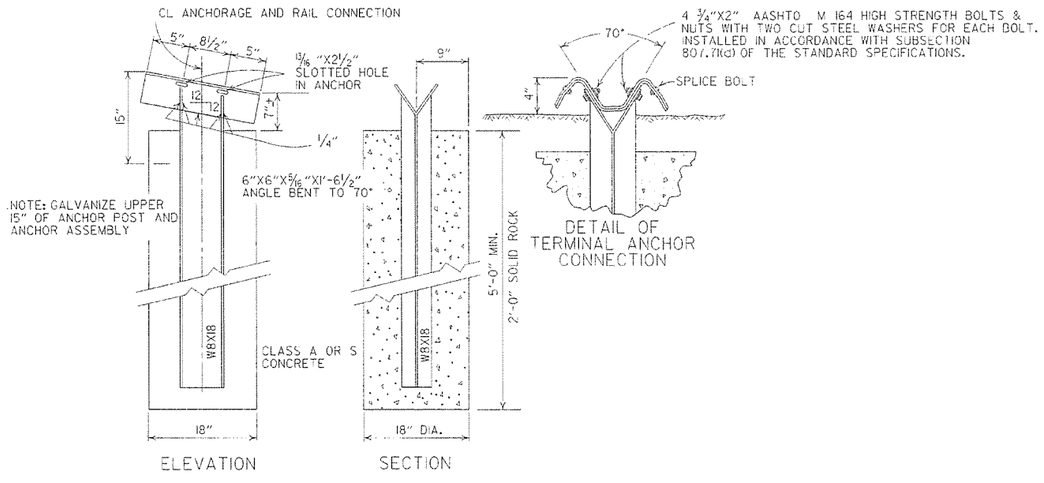
ELEVATION - GUARD RAIL TERMINAL (TYPE I)

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



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.

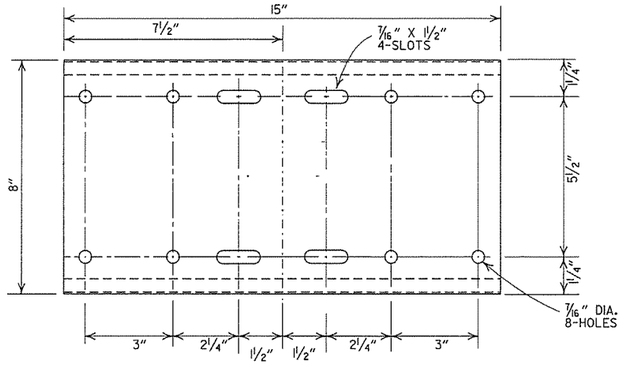
DETAIL OF TERMINAL ANCHOR POST (TYPE I)

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	DIVERSION TERMINAL DETAIL	
11-11-92	ADDED NOTE FOR PAYMENT	11-11-92
10-1-92	DRAWN & ISSUED	10-1-92

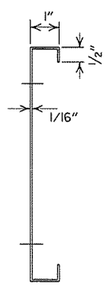
ARKANSAS STATE HIGHWAY COMMISSION

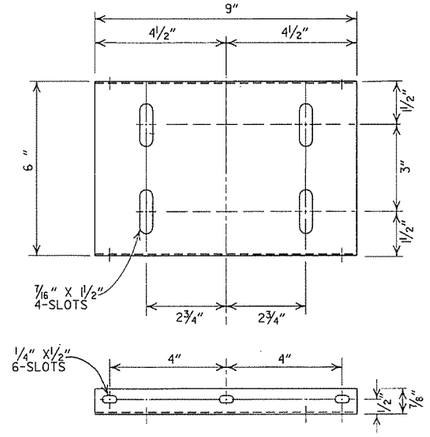
GUARD RAIL DETAILS

STANDARD DRAWING GRT-1

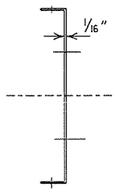


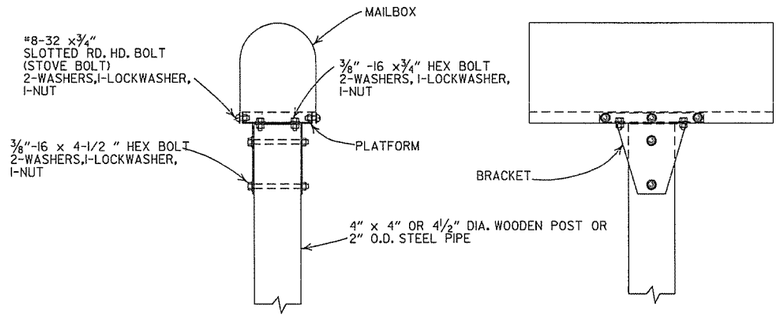
SHELF



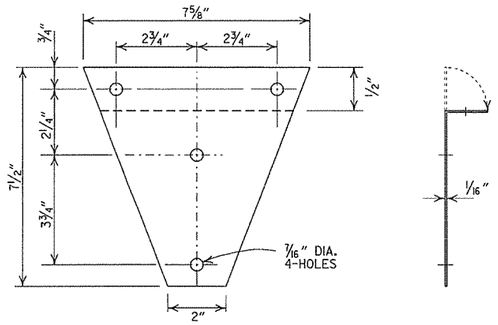


PLATFORM





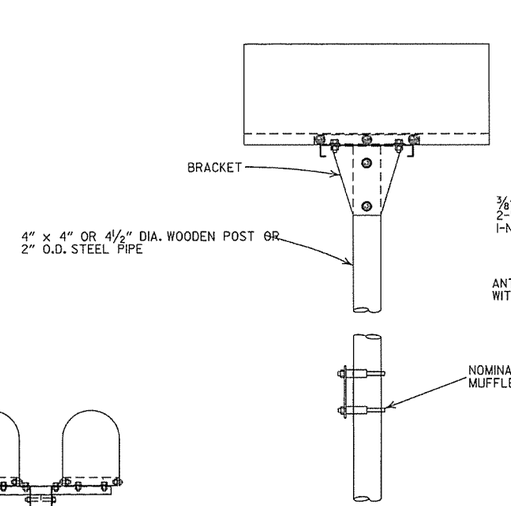
SINGLE INSTALLATION



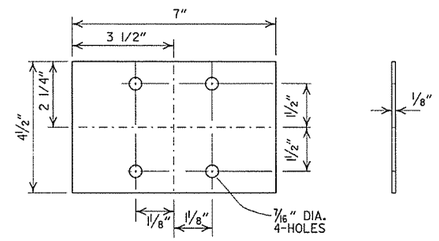
BRACKET

GENERAL NOTES

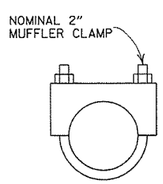
1. MAILBOX POSTS MAY BE WOOD OR METAL. WOOD POSTS SHALL BE PRESSURE TREATED FOR GROUND CONTACT IN ACCORDANCE WITH SECTION 637.02 OF THE STANDARD SPECIFICATIONS.
2. ANTI-TWIST PLATES SHALL BE USED ONLY ON METAL POSTS.
3. MAILBOX SHELF, BRACKET & PLATFORM SHALL BE GALVANIZED OR PAINTED STEEL, HOWEVER TREATED WOOD MAY BE USED WITH WOODEN POSTS. THE WOODEN SHELF, BRACKET & PLATFORM SHALL BE A MINIMUM OF ¾" THICK AND SHALL BE ASSEMBLED WITH BOLTS OF THE APPROPRIATE LENGTH WITH SIX 8 X¾" FLATHEAD WOOD SCREWS USED TO ATTACH THE MAILBOX TO THE PLATFORM.
4. THE MAILBOX SHELF AND PLATFORM THAT IS SHOWN IS FOR STANDARD SIZE MAILBOXES. THE SHELF AND PLATFORM SIZE SHALL BE MODIFIED TO FIT MAILBOXES OF A DIFFERENT SIZE.
5. METAL PIPE FOR MAILBOX SUPPORT SHALL BE 2" OUTSIDE DIAMETER STEEL WITH A WALL THICKNESS OF 0.145" AND A WEIGHT OF 2.72 LBS PER FT. OUTSIDE DIAMETER AND WEIGHT SHALL HAVE A TOLERANCE OF +/- 5% ACCORDING TO AASHTO M 181.
6. MAILBOX SUPPORT SYSTEM DIFFERING FROM THOSE SHOWN MAY BE USED, PROVIDED THEY ARE ON THE AHTD QUALIFIED PRODUCTS LIST FOR MAILBOX SUPPORTS.



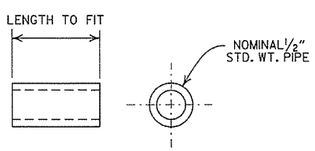
DOUBLE INSTALLATION



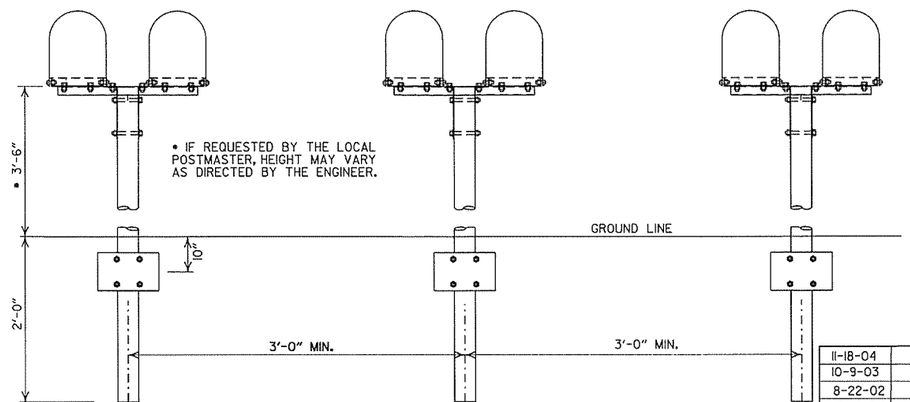
ANTI-TWIST PLATE



CLAMP



SPACER



SPACING FOR MULTIPLE POST INSTALLATION

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

ARKANSAS STATE HIGHWAY COMMISSION

MAILBOX DETAILS

STANDARD DRAWING MB-1

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	87⅛	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)(ii).

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.

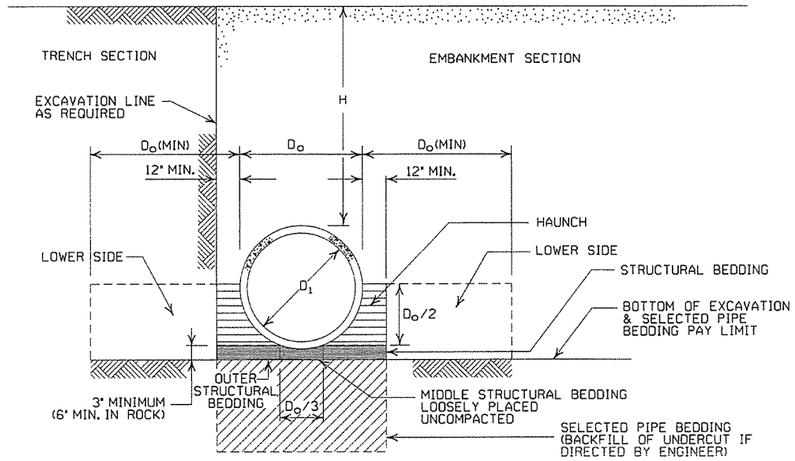
- LEGEND -

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

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

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

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

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

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	
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

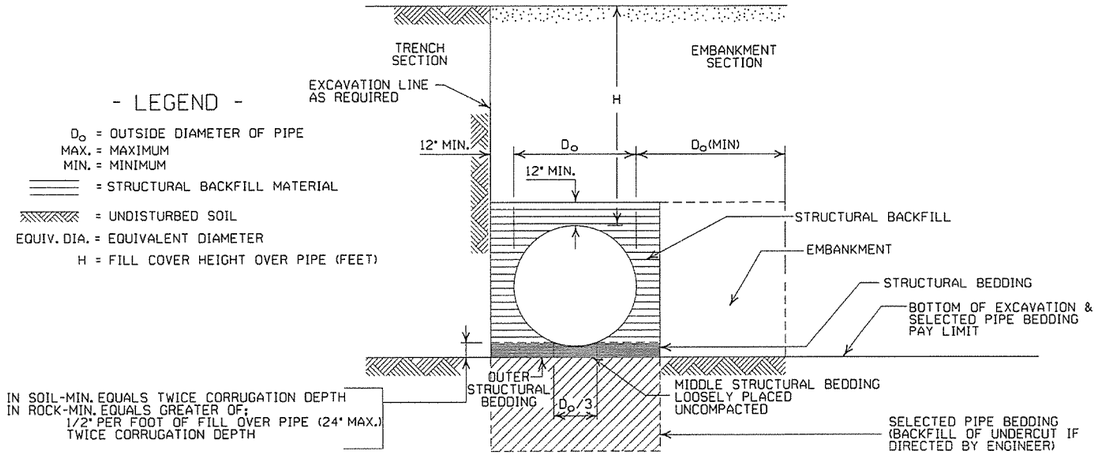
③ SM-3 WILL NOT BE ALLOWED.

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. INSTALALTION TYPE 1 SHALL BE USED FOR CORRUGATED STEEL OR ALUMINUM PIPE ARCHES WITH 2⅔" X ½" CORRUGATION.
4. INSTALLATION TYPE 1 OR 2 MAY BE USED FOR CORRUGATED STEEL OR ALUMINUM PIPE ARCHES WITH 3" X 1" OR 5" X 1" CORRUGATION.

GENERAL NOTES

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

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

ARKANSAS STATE HIGHWAY COMMISSION

METAL PIPE CULVERT FILL HEIGHTS & BEDDING

STANDARD DRAWING PCM-1

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

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

SM3 WILL NOT BE ALLOWED.

•• STRUCTURAL BEDDING MATERIAL SHALL HAVE A MAXIMUM PARTICLE SIZE OF 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.

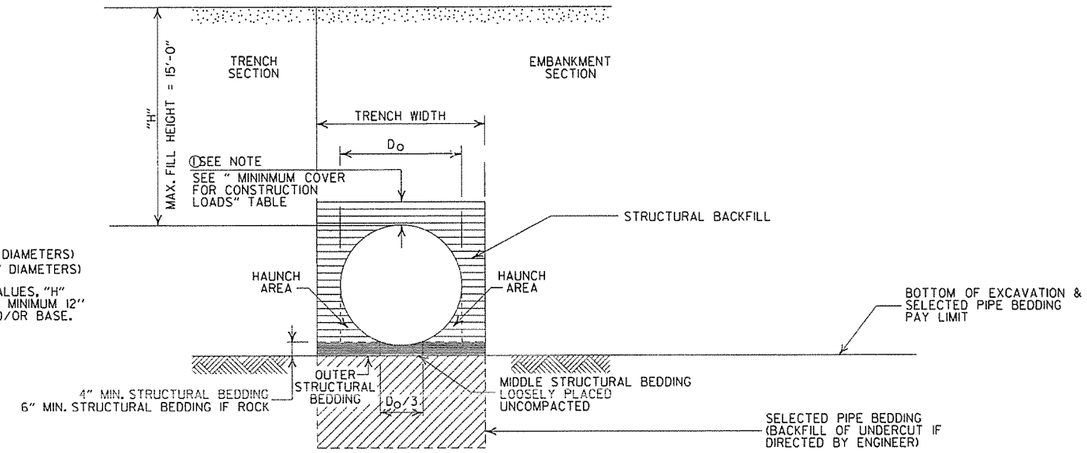
MULTIPLE INSTALLATION OF HIGH DENSITY POLYETHYLENE PIPES

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"	"H" >OR= 10'-0"
18"	4'-6"	4'-6"
24"	5'-0"	6'-0"
30"	5'-6"	7'-6"
36"	6'-0"	9'-0"
42"	7'-0"	10'-6"
48"	8'-0"	12'-0"

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



TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

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

MINIMUM COVER FOR CONSTRUCTION LOADS

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

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

CONSTRUCTION SEQUENCE

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

GENERAL NOTES

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

- LEGEND -

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

= STRUCTURAL BACKFILL MATERIAL

= UNDISTURBED SOIL

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

ARKANSAS STATE HIGHWAY COMMISSION

PLASTIC PIPE CULVERT (HIGH DENSITY POLYETHYLENE)

STANDARD DRAWING PCP-1

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

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

SM3 WILL NOT BE ALLOWED.

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

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

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

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

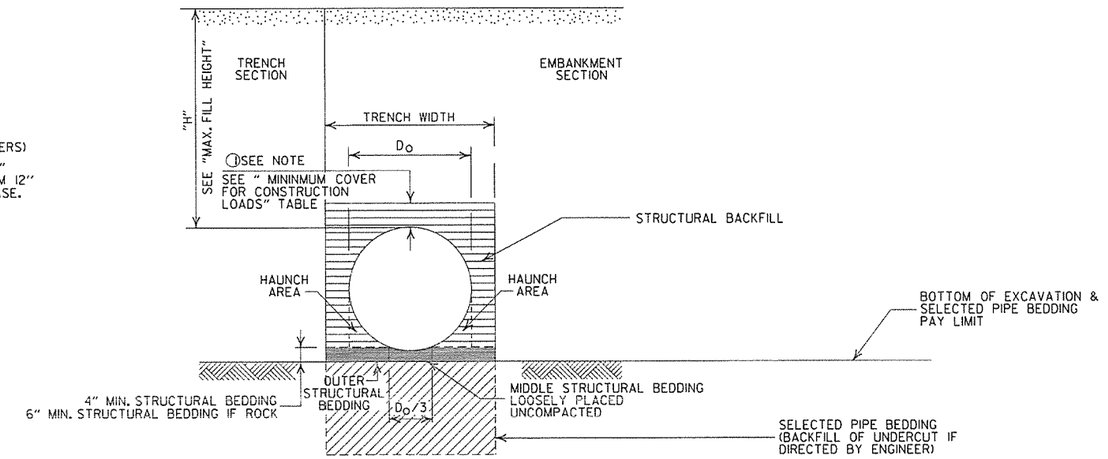
PIPE DIAMETER	"H"
18"	45'-0"
24"	45'-0"
30"	40'-0"
36"	40'-0"

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

- LEGEND -

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

= STRUCTURAL BACKFILL MATERIAL

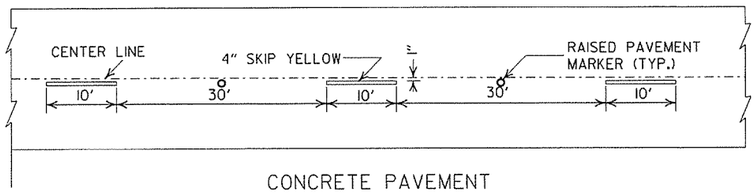
= UNDISTURBED SOIL

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

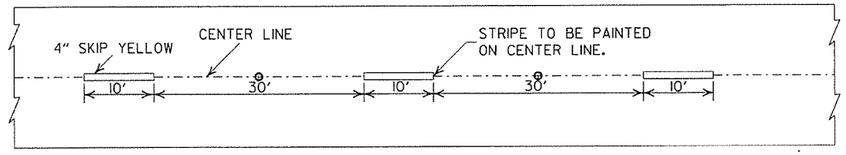
ARKANSAS STATE HIGHWAY COMMISSION

PLASTIC PIPE CULVERT (PVC F949)

STANDARD DRAWING PCP-2

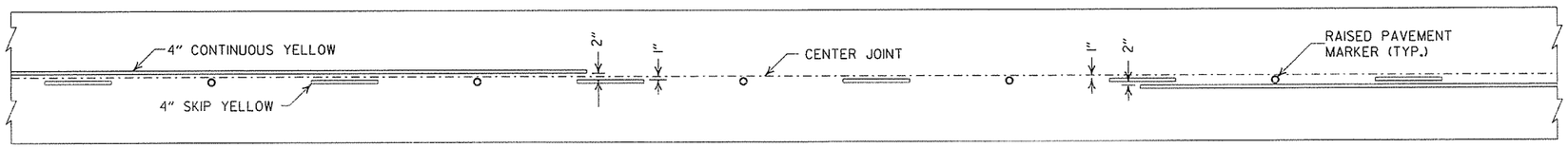


CONCRETE PAVEMENT

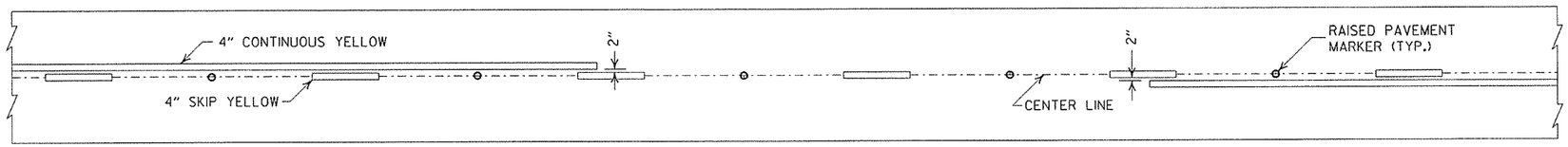


ASPHALT PAVEMENT

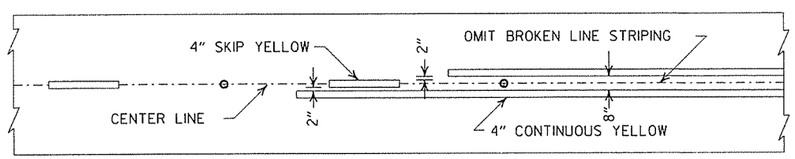
BROKEN LINE STRIPING



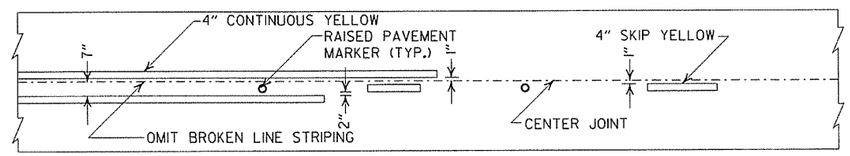
SOLID LINE STRIPING ON CONCRETE PAVEMENT



SOLID LINE STRIPING ON ASPHALT PAVEMENT

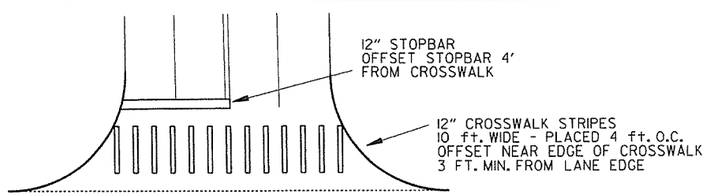


ASPHALT PAVEMENT



CONCRETE PAVEMENT

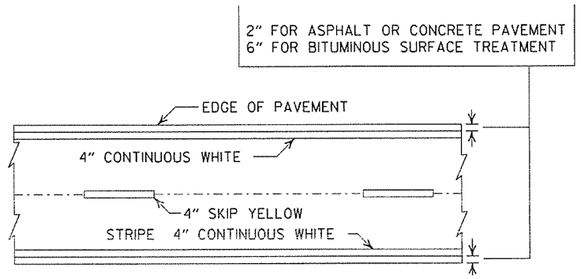
STRIPING AT ADJACENT NO PASSING LANES



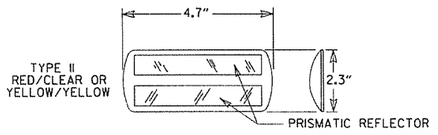
CROSSWALK AND STOPBAR DETAILS

NOTES:

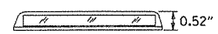
1. ALL LINES SHALL HAVE A WIDTH OF 4 INCHES.
2. THE THICKNESS AND RATE OF PAINT APPLICATION SHALL BE AS SPECIFIED IN SECTION 718 OF THE STANDARD SPECIFICATIONS.
3. THIS DRAWING SHALL BE USED IN CONJUNCTION WITH THE LATEST REVISED ADDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES."
4. RAISED 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	FILMED
9-12-13	REVISED DETAIL OF STANDARD RAISED PAVEMENT MARKERS	
11-17-10	REVISED GENERAL NOTES & REMOVED PLOWABLE PVMT MRKRS	
11-18-04	REVISED NOTE 2 & GENERAL NOTES	
8-22-02	ADDED CROSSWALK & STOPBAR DTLS.	
7-02-98	ADDED DETAILS OF STD. RAISED PAV'T. MARKERS	
4-26-96	REV. NOTES 3&4; ADDED R.P.M.	
9-30-80	DRAWN	1-9-30-80

ARKANSAS STATE HIGHWAY COMMISSION

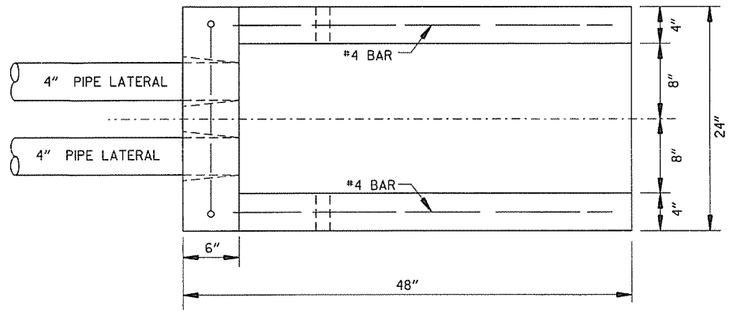
PAVEMENT MARKING DETAILS

STANDARD DRAWING PM-1

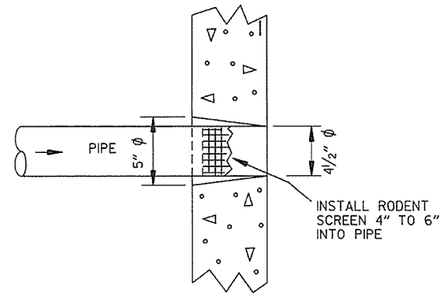
NOTE:
1. GRANULAR BACKFILL TO BE SUBSIDIARY TO PIPE UNDERDRAIN.

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

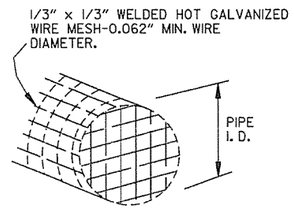
3. GRANULAR MATERIAL SHALL BE WRAPPED WITH GEOTEXTILE FABRIC. LAP FABRIC 12" OR THE WIDTH OF THE TRENCH AT THE TOP.



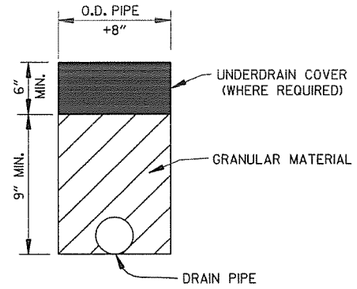
PLAN VIEW

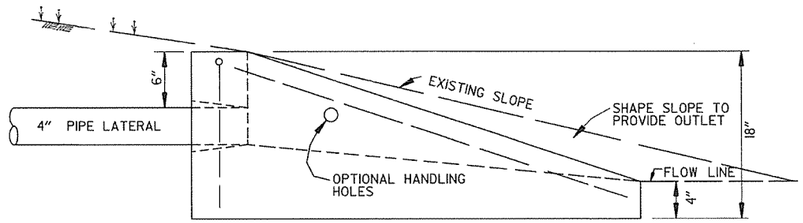


DETAIL OF HOLE FOR 4" PIPE

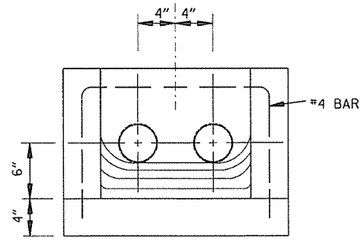


DETAIL OF RODENT SCREEN

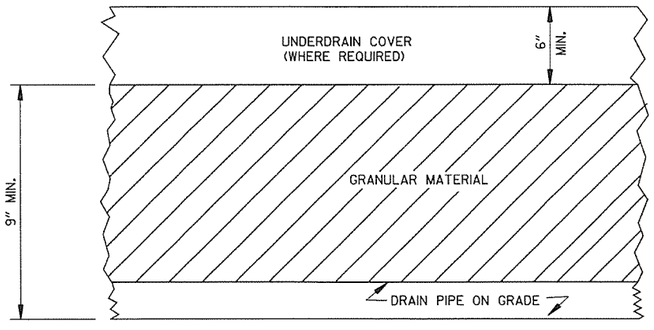




SIDE VIEW

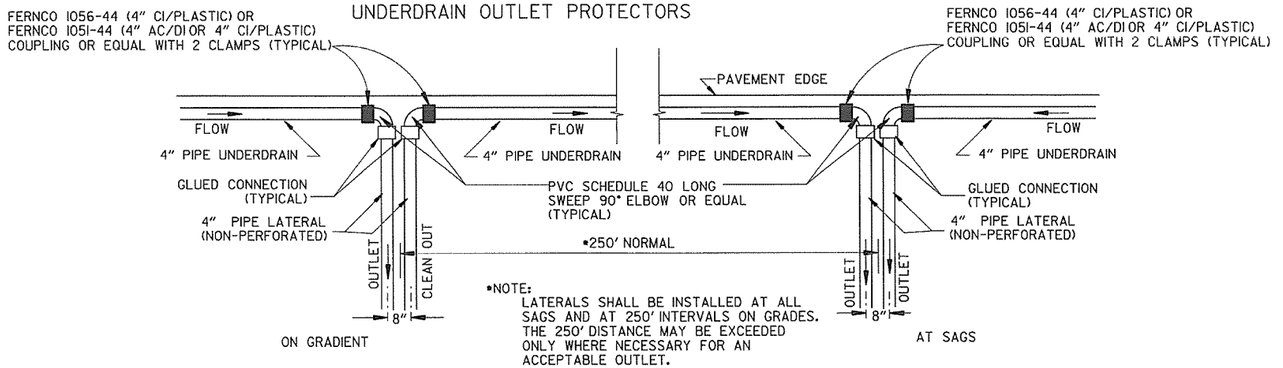


FRONT VIEW



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

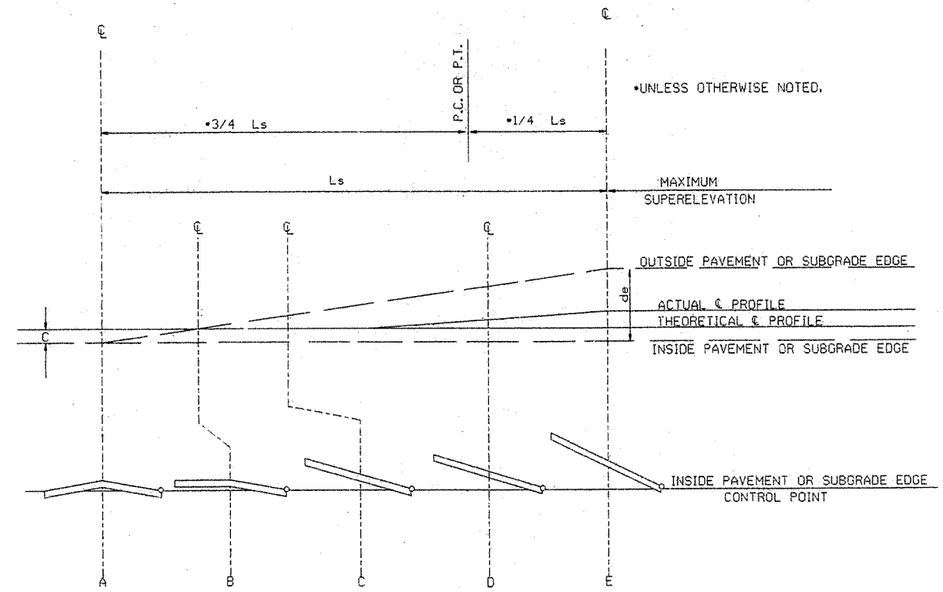
SUPERELEVATION TABLE FOR TWO - WAY TRAFFIC

DEGREE OF CURVE	30 MPH e	30 MPH Ls (FT) MINIMUM	30 MPH Ls (FT) DESIRABLE	40 MPH e	40 MPH Ls (FT) MINIMUM	40 MPH Ls (FT) DESIRABLE	50 MPH e	50 MPH Ls (FT) MINIMUM	50 MPH Ls (FT) DESIRABLE	55 MPH e	55 MPH Ls (FT) MINIMUM	55 MPH Ls (FT) DESIRABLE	60 MPH e	60 MPH Ls (FT) MINIMUM	60 MPH Ls (FT) DESIRABLE	70 MPH e	70 MPH Ls (FT) MINIMUM	70 MPH Ls (FT) DESIRABLE
0° 15′	N.C.			N.C.			N.C.			N.C.			N.C.			N.C.		
0° 30′	N.C.			N.C.			N.C.			0.022			0.023			N.C.		
0° 45′	N.C.			N.C.			R.C.			0.026			0.030			0.028		
1° 00′	N.C.			R.C.			0.021			0.032			0.037			0.037	275	300
1° 15′	N.C.			0.021			0.026			0.037			0.043			0.046		
1° 30′	N.C.			0.025			0.031	200		0.043	225		0.049	250		0.054		
1° 45′	N.C.			0.028	175		0.036			0.048			0.055			0.062		
2° 00′	R.C.			0.031			0.040			0.053			0.061			0.070		
2° 15′	R.C.			0.034			0.045		250	0.058			0.067			0.078	300	350
2° 30′	0.021			0.037		200	0.049			0.063			0.072			0.085	315	
2° 45′	0.023			0.040			0.053			0.067	230		0.077	260		0.091	335	
3° 00′	0.025			0.043			0.057			0.072	245		0.082	275		0.096	350	
3° 15′	0.027			0.046			0.061			0.076	255		0.086	285		0.098	360	400
3° 30′	0.029			0.049			0.065	205		0.080	265		0.090	296		0.100	360	
3° 45′	0.031			0.051			0.069	215		0.083	270		0.093	305	350			
4° 00′	0.033			0.056			0.072	225		0.087	280		0.096	315				
4° 30′	0.037			0.061			0.078	240		0.091	295		0.098	320				
5° 00′	0.040			0.066	185		0.083	250		0.094	300	350						
5° 30′	0.043			0.070	190		0.088	260		0.096	305							
6° 00′	0.046			0.074	200		0.092	270		0.100	315							
6° 30′	0.050			0.078	210		0.095	280	300									
7° 00′	0.053			0.081	215		0.098	285										
7° 30′	0.056			0.084	220		0.099	290										
8° 00′	0.058			0.087	225	250	0.100	290										
8° 30′	0.061			0.089	230													
9° 00′	0.063			0.094	235													
10° 00′	0.068	160		0.097	250													
11° 00′	0.072	170		0.099	250													
12° 00′	0.076	175		0.100	250													
13° 00′	0.080	180																
14° 00′	0.083	190																
15° 00′	0.086	195																
16° 00′	0.089	200																
17° 00′	0.091	200																
18° 00′	0.093	205																
19° 00′	0.095	210																
20° 00′	0.097	215	250															
21° 00′	0.098	215																
22° 00′	0.099	215																
23° 00′	0.099	215																
24° 00′	0.100	220																

D MAX = 24° 45′ | D MAX = 13° 15′ | D MAX = 8° 15′ | D MAX = 6° 30′ | D MAX = 5° 15′ | D MAX = 3° 30′

ABBREVIATIONS

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



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

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

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

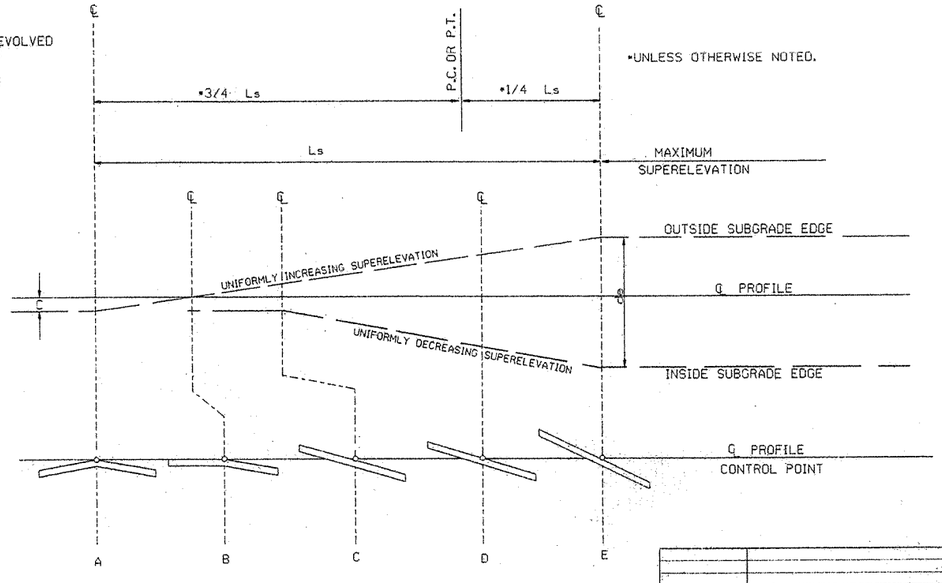
GENERAL NOTES

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

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

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

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



STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND CENTER LINE

DATE	REVISION	DATE FILMED
10-18-96	ADDED FORMULA	10-18-96
01-09-87	ISSUED	534-1-9-87

ARKANSAS STATE HIGHWAY COMMISSION

TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC

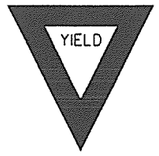
STANDARD DRAWING SE-2

FILE STDSE2.DGN

R1-1

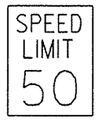
STANDARD 30"X30"
EXPRESSWAY 36"X36"
SPECIAL 48"X48"

R1-2



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

R2-1



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

W3-5

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

W3-5a

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

R4-1

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

R4-2

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

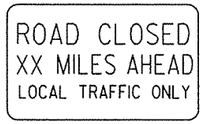
R5-1

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

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"

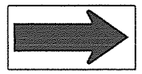
WI-3

STD. 48"X48"

WI-4

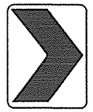
STD. 48"X48"

WI-6



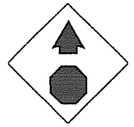
STD. 48"X24"
SPECIAL 60"X30"

WI-8



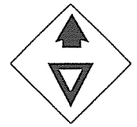
STD. 18"X24"
SPECIAL 24"X30"
EXPWY. 30"X36"
FWY. 36"X48"

W3-1



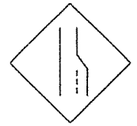
STD. 36"X36"
SPECIAL 48"X48"

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"

WI3-1

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"

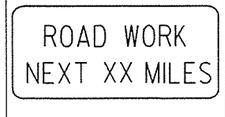
W8-11

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

W8-9

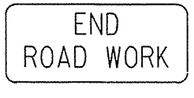
STD. 36"X36"
FWY. 48"X48"

G20-1



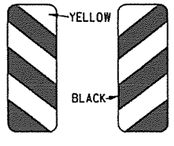
60"X24"

G20-2



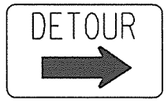
48"X24"

OM-3L OM-3R



12"X36"

M4-9

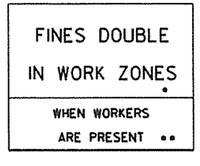


STD. 30"X24"
SPECIAL 48"X36"
SPECIAL 60"X48"

M4-10

48"X18"

R55-1



36"X60"

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

ADVANCE DISTANCES
(XXXX)

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

GENERAL NOTES:

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

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

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

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

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

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

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

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

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

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

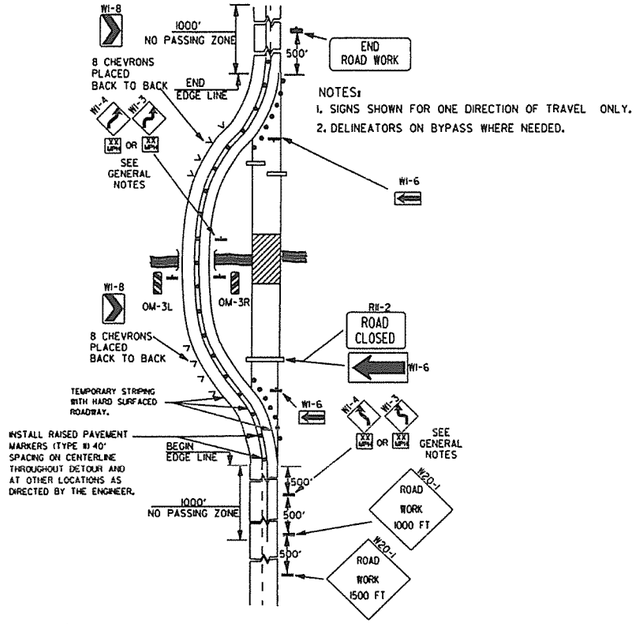
• NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE REQUIREMENTS SHOWN IN NOTES 4 & 5, BUT MEET THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH), WILL BE ACCEPTED. COMPLIANCE WITH THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY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

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

ARKANSAS STATE HIGHWAY COMMISSION

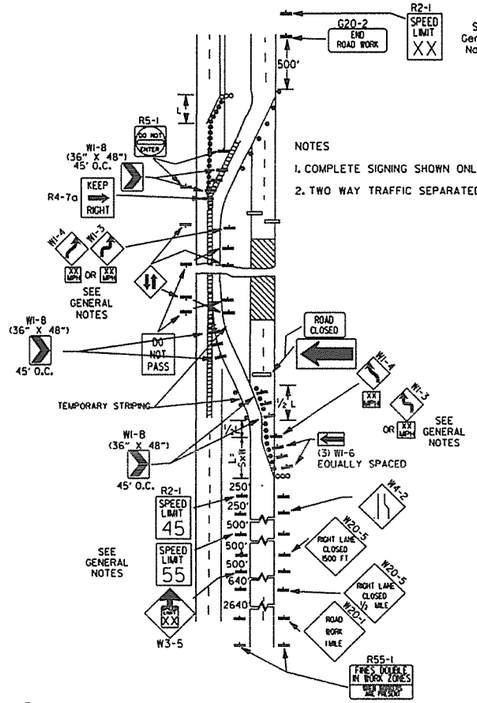
STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-1



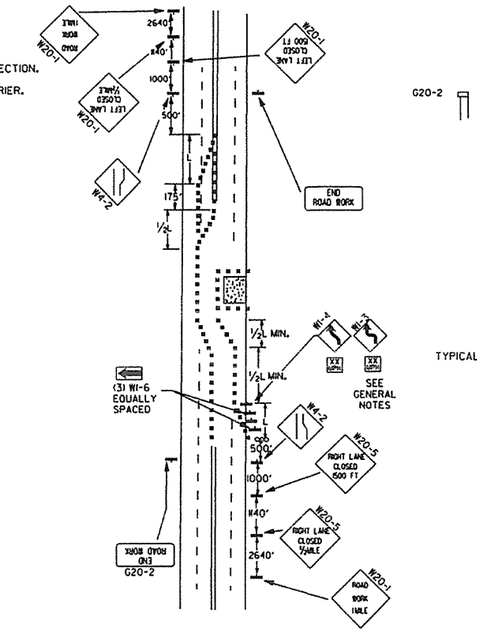
NOTES:
1. SIGNS SHOWN FOR ONE DIRECTION OF TRAVEL ONLY.
2. DELINEATORS ON BYPASS WHERE NEEDED.

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

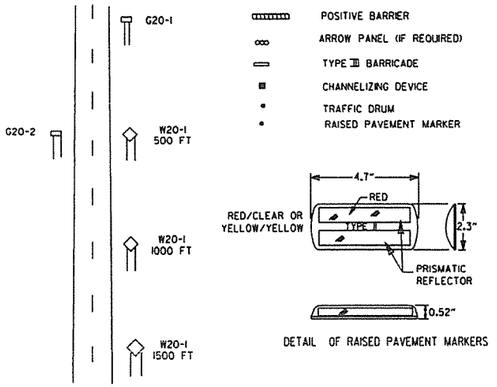


NOTES
1. COMPLETE SIGNING SHOWN ONLY IN CROSSOVER DIRECTION.
2. TWO WAY TRAFFIC SEPARATED WITH POSITIVE BARRIER.

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

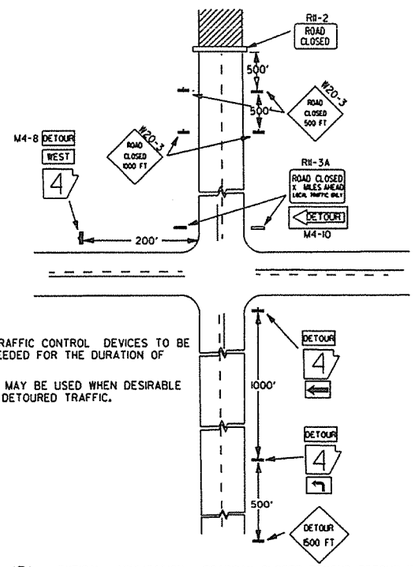


(C) TYPICAL APPLICATION - 4-LANE UNDIVIDED ROADWAY WHERE HALF OF THE ROADWAY IS CLOSED.



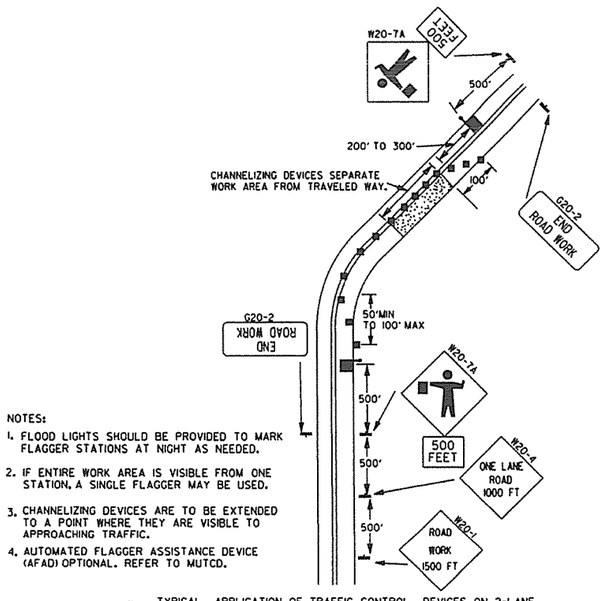
TYPICAL ADVANCE WARNING SIGN PLACEMENT

DETAIL OF RAISED PAVEMENT MARKERS



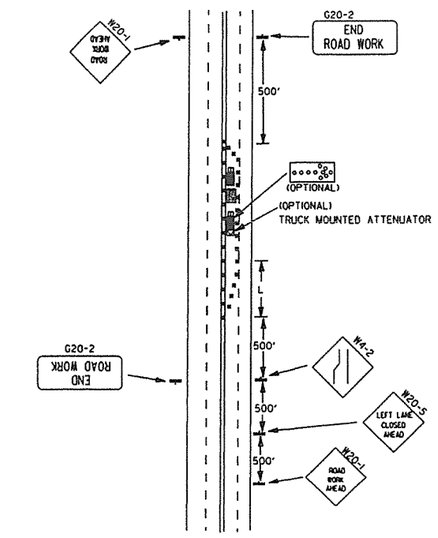
NOTES:
1. REGULATORY TRAFFIC CONTROL DEVICES TO BE MODIFIED AS NEEDED FOR THE DURATION OF THE DETOUR.
2. STREET NAMES MAY BE USED WHEN DESIRABLE FOR DIRECTING DETOURED TRAFFIC.

(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:

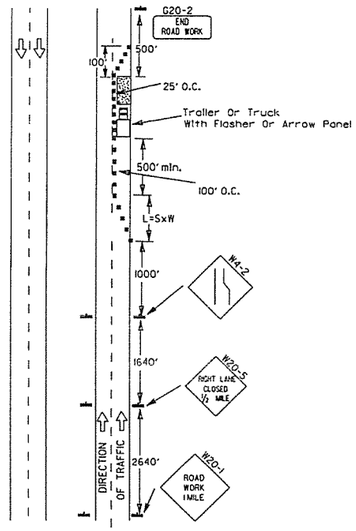
1. ADVISORY SPEED POSTED ON W1-3 OR W1-4 CURVE WARNING SIGNS TO BE DETERMINED AT SITE. USE W1-4 WHEN SPEED IS GREATER THAN 30MPH AND W1-3 WHEN 30MPH OR LESS.
2. WHEN THE EXISTING SPEED LIMIT IS 55MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 45MPH, THE R2-1(55) SHALL BE OMITTED AND THE W3-5 SHALL BE INSTALLED AT THAT LOCATION. ADDITIONAL R2-1 45MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1MILE INTERVALS. AT THE END OF THE WORK AREA A R2-1(XX) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
3. WHEN THE EXISTING SPEED LIMIT IS 65MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 55MPH, THE R2-1(45) SHALL BE OMITTED. ADDITIONAL R2-1 55MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1MILE INTERVALS. AT THE END OF THE WORK AREA A R2-1(XX) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
4. THE MAXIMUM SPACING BETWEEN CHANNELIZING DEVICES IN A TAPER SHOULD BE APPROXIMATELY EQUAL IN FEET TO THE SPEED LIMIT. BEYOND THE TAPER, MAXIMUM SPACING SHALL BE TWO TIMES THE SPEED LIMIT, OR AS DIRECTED BY THE ENGINEER.
5. WARNING LIGHTS AND/OR FLAGS MAY BE MOUNTED TO SIGNS OR CHANNELIZING DEVICES AT NIGHT AS NEEDED.
6. PAVEMENT MARKINGS NO LONGER APPLICABLE WHICH MIGHT CREATE CONFUSION IN THE MINDS OF VEHICLE OPERATORS SHALL BE REMOVED OR OBLITERATED AS SOON AS PRACTICABLE.
7. TRAILER MOUNTED DEVICES SUCH AS ARROW PANELS AND PORTABLE CHANGEABLE MESSAGE SIGNS SHALL BE DELINEATED BY AFFIXING CONSPICUITY MATERIAL IN A CONTINUOUS LINE ON THE FACE OF THE TRAILER. WHEN PLACED ON OR ADJACENT TO THE SHOULDER AND NOT BEHIND A POSITIVE BARRIER, THESE DEVICES SHALL BE DELINEATED BY PLACING FIVE (5) TRAFFIC DRUMS, EQUALLY SPACED ALONG THE TRAFFIC SIDE OF THE DEVICE.
8. DIMENSIONS SHOWN FOR RAISED PAVEMENT MARKERS ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR MARKERS WITH THE APPROVAL OF THE ENGINEER. REQUESTING APPROVAL FOR SIMILAR MARKERS MAY BE MADE BY REFERRING TO THE AHTD QUALIFIED PRODUCTS LIST.

DATE	REVISION	FILMED
9-2-15	REVISED NOTE 2, ADDED NOTE 8, REVISED DRAWING (A) & REPLACED R2-5A WITH W3-5	
9-12-13	REVISED DETAIL OF RAISED PAVEMENT MARKERS	
3-8-10	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	

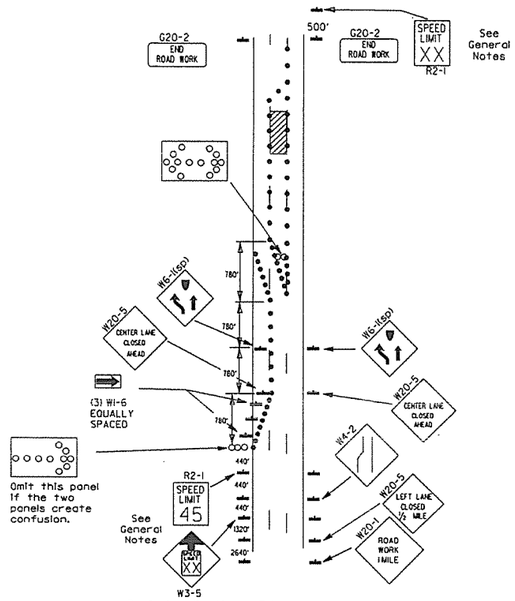
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

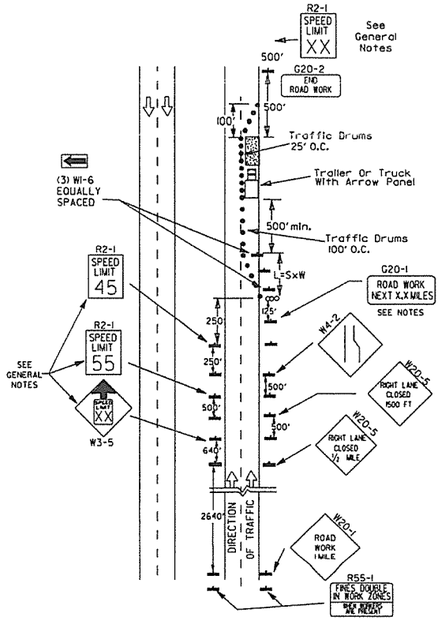
STANDARD DRAWING TC-2



(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.

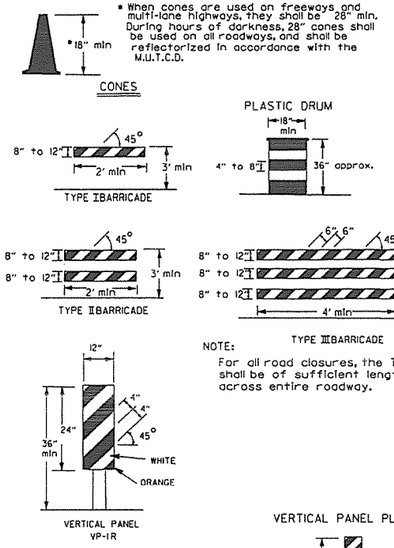
KEY:

- ○○○ 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 W3-5 shall be installed at that location. Additional R2-1 45mph speed limit signs shall be installed at a maximum of 1mile intervals. At the end of the work area a R2-1(XX) shall be installed to match original speed limit.
3. When the existing speed limit is 65mph and the plans require a speed limit of 55mph, the R2-1(45) shall be omitted. Additional R2-1 55mph speed limit signs shall be installed at a maximum of 1mile intervals. At the end of the work area a R2-1(XX) shall be installed to match original speed limit.
4. The maximum spacing between channelizing devices in a taper should be approximately equal in feet to the speed limit. Beyond the taper, maximum spacing shall be two times the speed limit or as directed by the Engineer.
5. Warning lights and/or flags may be mounted to signs or channelizing devices at night as needed.
6. Pavement markings no longer applicable which might create confusion in the minds of vehicle operators shall be removed or obliterated as soon as practicable.
7. The G20-1 sign will be required on jobs of over two miles in length. When the lane closure is not at the beginning of the project, the G20-1 sign shall be erected 125' in advance of the job limit. Additional W20-1 (1 MILE) signs are not required in advance of lane closures that begin inside the project limits.
8. Flaggers shall use STOP/SLOW paddles for controlling traffic through work zones. Flags may be used only for emergency situations.
9. All plastic drums and cones shall meet the requirements of 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.

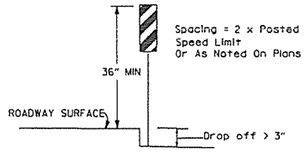
Channelizing devices

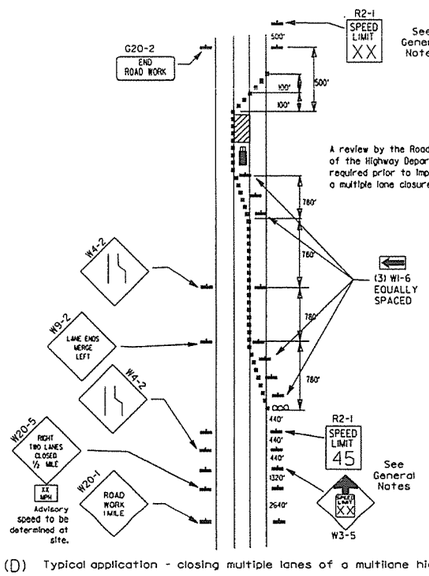


* When cones are used on freeways and multi-lane highways, they shall be 28" min. During hours of darkness, 28" cones shall be used on all roadways, and shall be reflectorized in accordance with the M.U.T.C.D.

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

VERTICAL PANEL PLACEMENT





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

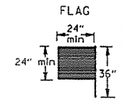
TRAFFIC CONTROL DEVICES FOR VERTICAL PAVEMENT DIFFERENTIALS

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-1and 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.

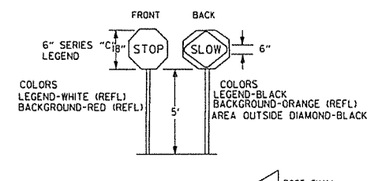
When the shoulder area is used as part of the traveled lane and there is insufficient width to place drums on the remaining shoulder width, then vertical panels shall be used.

FLAG

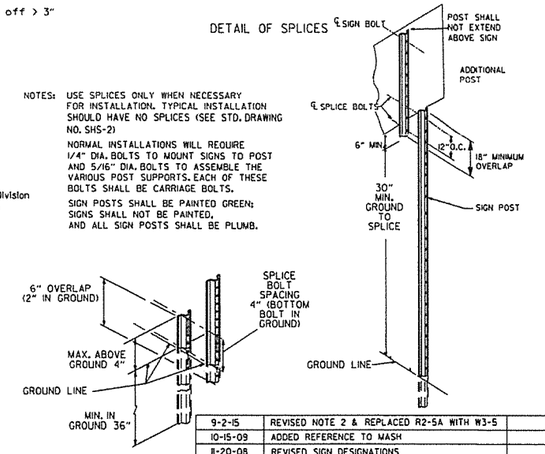


Flag shall be of good grade red material

STOP SLOW PADDLE



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

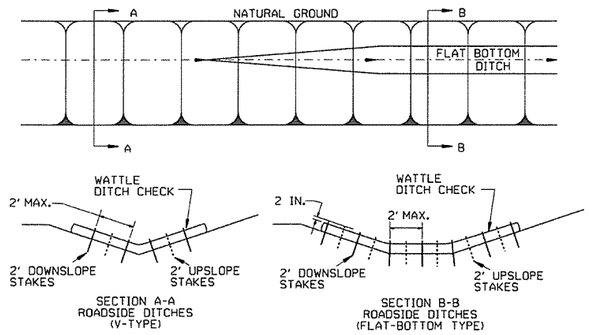
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

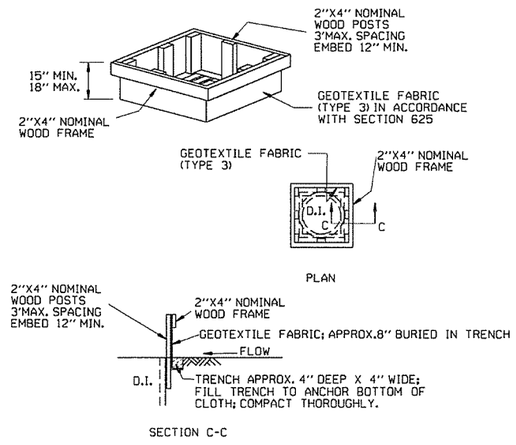
STANDARD DRAWING TC-3

GENERAL NOTES

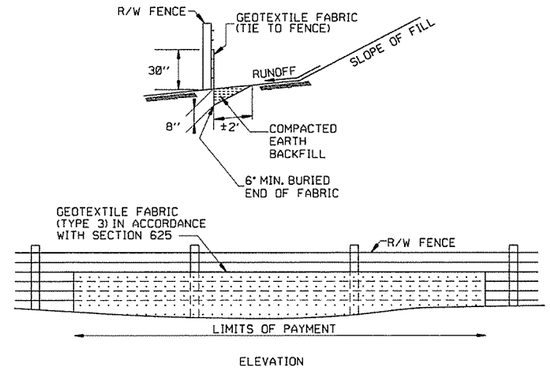
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.



WATTLE DITCH CHECK (E-1)



DROP INLET SILT FENCE (E-7)



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

GENERAL NOTES

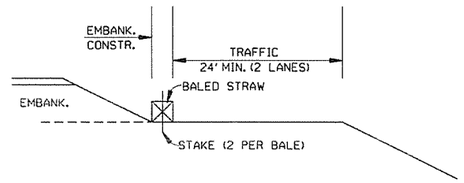
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST, OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

GENERAL NOTES

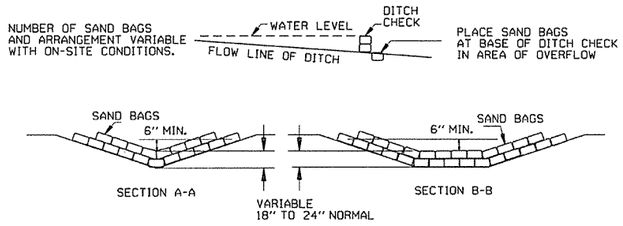
1. STRAW BALES SHALL BE INSTALLED SO THAT THE BINDINGS ARE ORIENTED AROUND THE SIDES RATHER THAN ALONG THE TOPS AND BOTTOMS OF THE BALES. THE BALES SHALL BE A MINIMUM OF 30 INCHES IN LENGTH.

2. NO GAPS SHALL BE LEFT BETWEEN BALES.

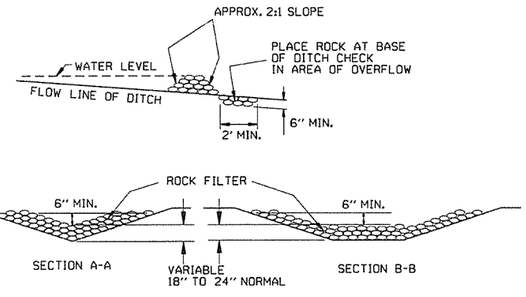
3. BALED STRAW FILTER BARRIERS COMPLETED AND ACCEPTED WILL BE MEASURED BY THE BALE IN PLACE AS AUTHORIZED BY THE ENGINEER AND WILL BE PAID FOR AT THE CONTRACT UNIT PRICE BID PER BALE FOR BALED STRAW DITCH CHECKS.



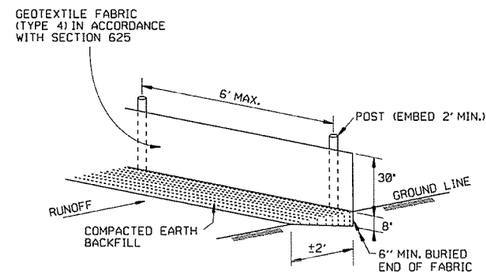
BALED STRAW FILTER BARRIER (E-2)



SAND BAG DITCH CHECK (E-5)



ROCK DITCH CHECK (E-6)



SILT FENCE (E-11)

GENERAL NOTES

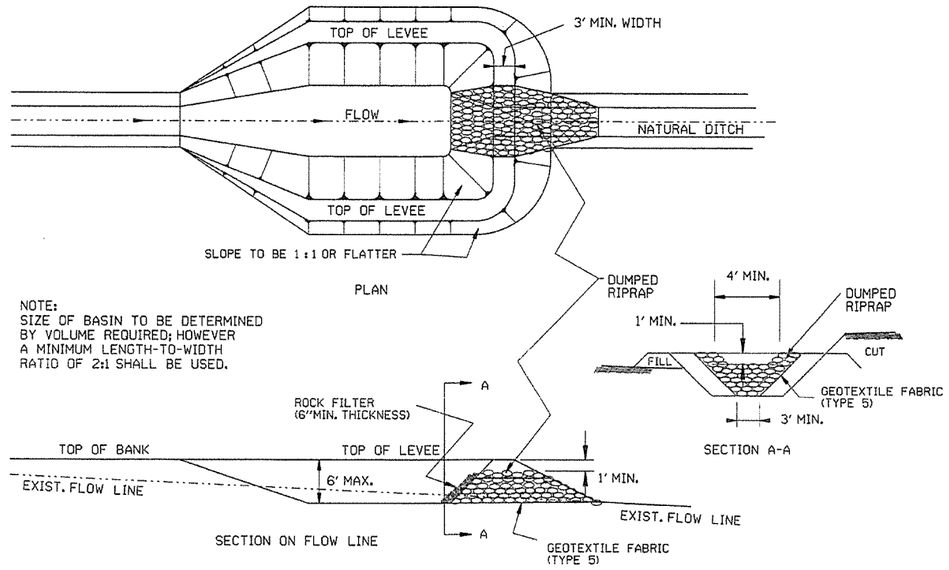
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

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

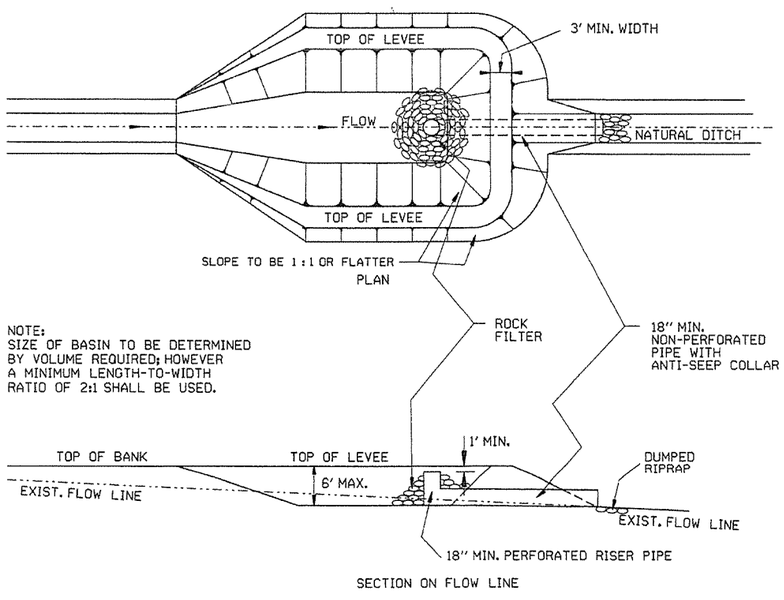
ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

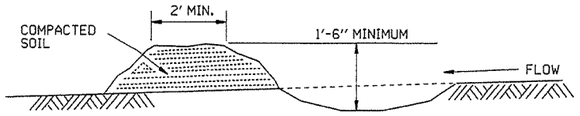
STANDARD DRAWING TEC-1



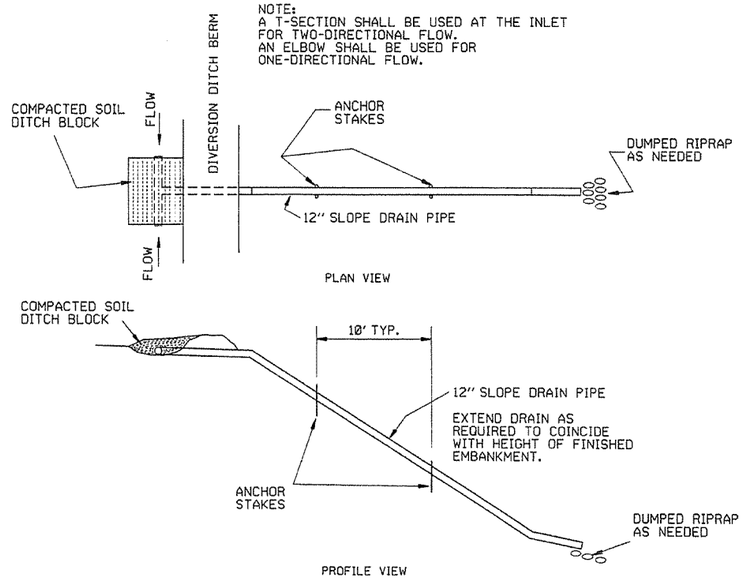
SEDIMENT BASIN WITH RIPRAP OUTLET (E-9)



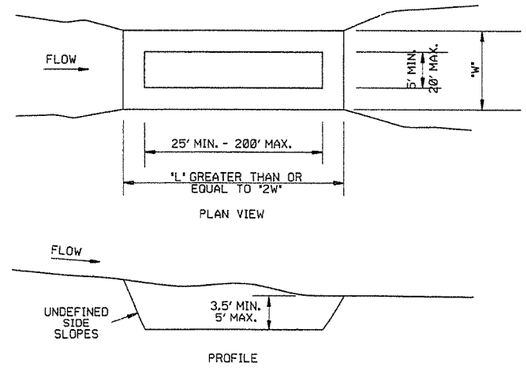
SEDIMENT BASIN WITH PIPE OUTLET (E-10)



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

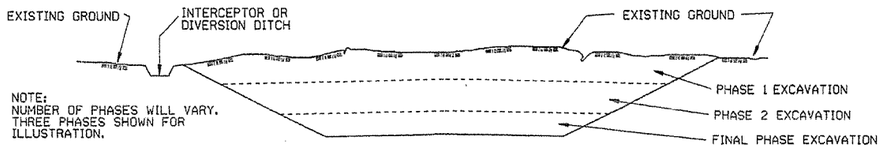
STANDARD DRAWING TEC-2

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



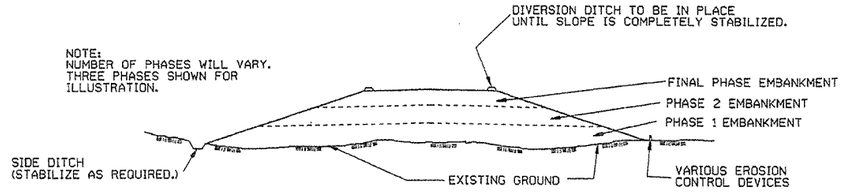
GENERAL NOTE

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

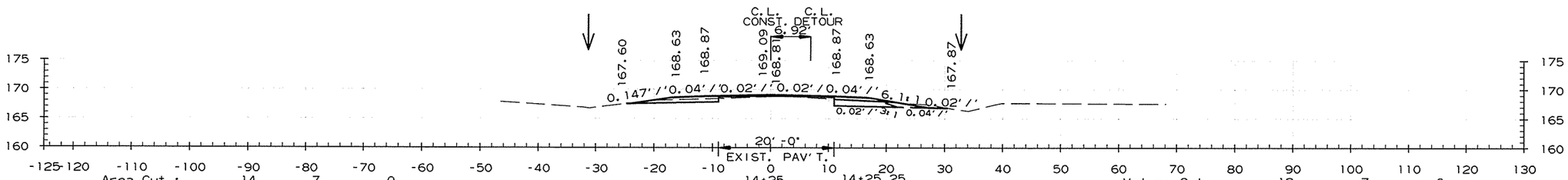
1. CONSTRUCT DIVERSION DITCHES, DITCH CHECKS, SEDIMENT BASINS, SILT FENCES, OR OTHER EROSION CONTROL DEVICES AS SPECIFIED.
2. PLACE PHASE 1 EMBANKMENT WITH PERMANENT OR TEMPORARY SEEDING. PROVIDE DIVERSION DITCHES AND SLOPE DRAINS IF EMBANKMENT CONSTRUCTION IS TO BE TEMPORARILY ABANDONED FOR A PERIOD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



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.		020419	69	90

② CROSS SECTIONS

EARTHWORK
STAGE 1 STAGE 2 STAGE 3

C.L. CONST. STATION C.L. DETOUR STATION

EARTHWORK
STAGE 1 STAGE 2 STAGE 3

STA. 14+25

	STAGE 1	STAGE 2	STAGE 3
Area Cut :	14	7	0
Area Fill:	0	0	3
Volume Cut :	12	7	0
Volume Fill:	0	0	3

STA. 14+00

	STAGE 1	STAGE 2	STAGE 3
Area Cut :	13	8	0
Area Fill:	0	0	4
Volume Cut :	11	7	0
Volume Fill:	0	0	4

STA. 13+75

	STAGE 1	STAGE 2	STAGE 3
Area Cut :	10	8	0
Area Fill:	0	0	4
Volume Cut :	5	8	2
Volume Fill:	0	0	2

STA. 13+50

	STAGE 1	STAGE 2	STAGE 3
Area Cut :	0	8	4
Area Fill:	0	0	0
Volume Cut :	0	4	2
Volume Fill:	0	0	0

STA. 13+25

	STAGE 1	STAGE 2	STAGE 3
Area Cut :	0	0	0
Area Fill:	0	0	0
Volume Cut :	0	0	0
Volume Fill:	0	0	0

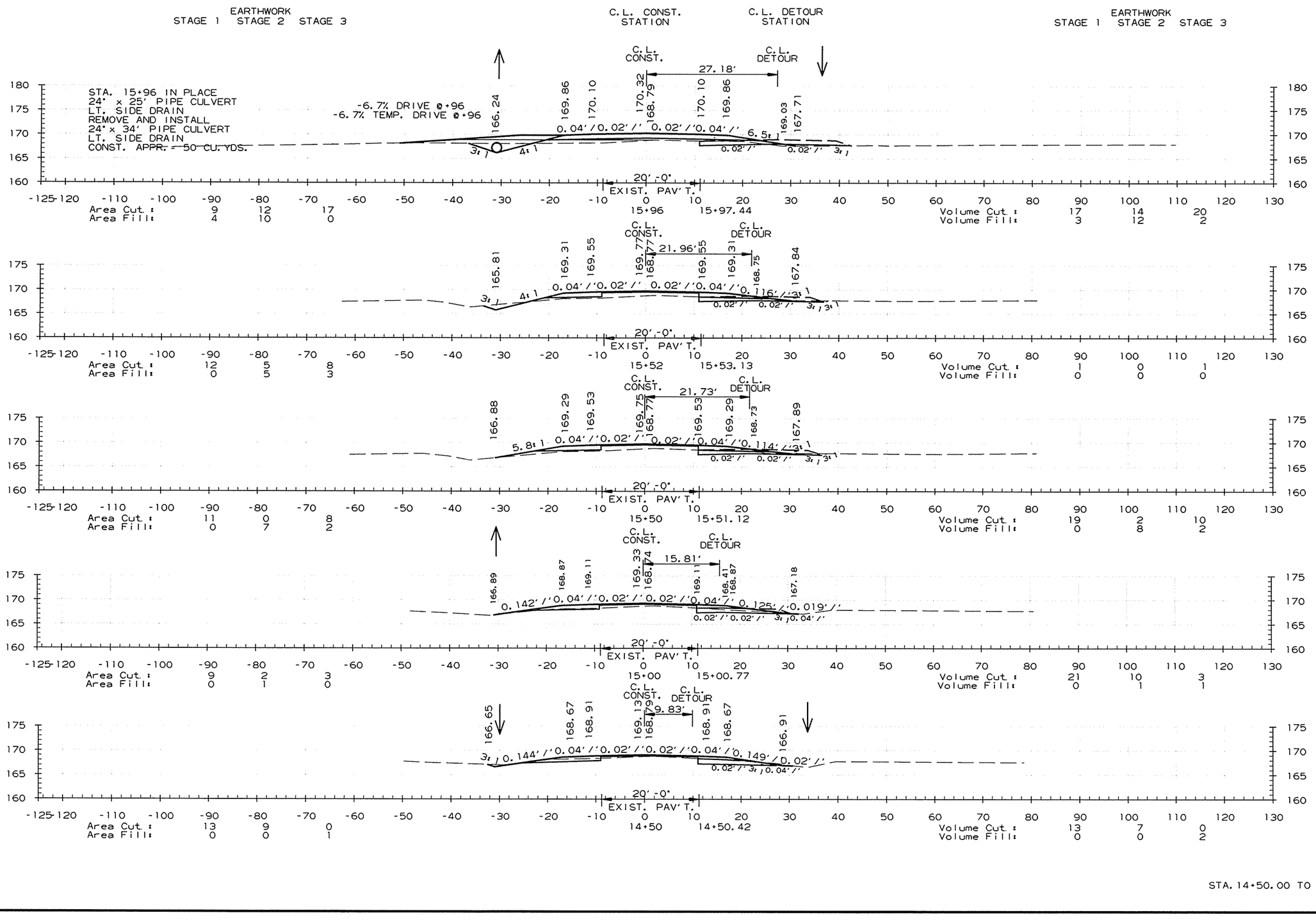
STA. 13+25.00 TO STA. 14+25.00

6/10/2013

r020419_crs.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.		020419	70	90

(2) CROSS SECTIONS



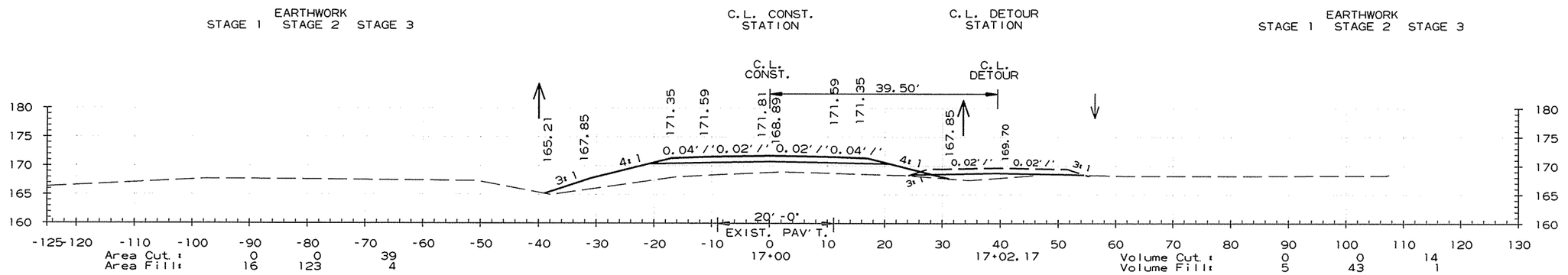
STA. 14+50.00 TO STA. 15+96.00

6/10/2013

r020419_crs.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.		020419	71	90

(2) CROSS SECTIONS



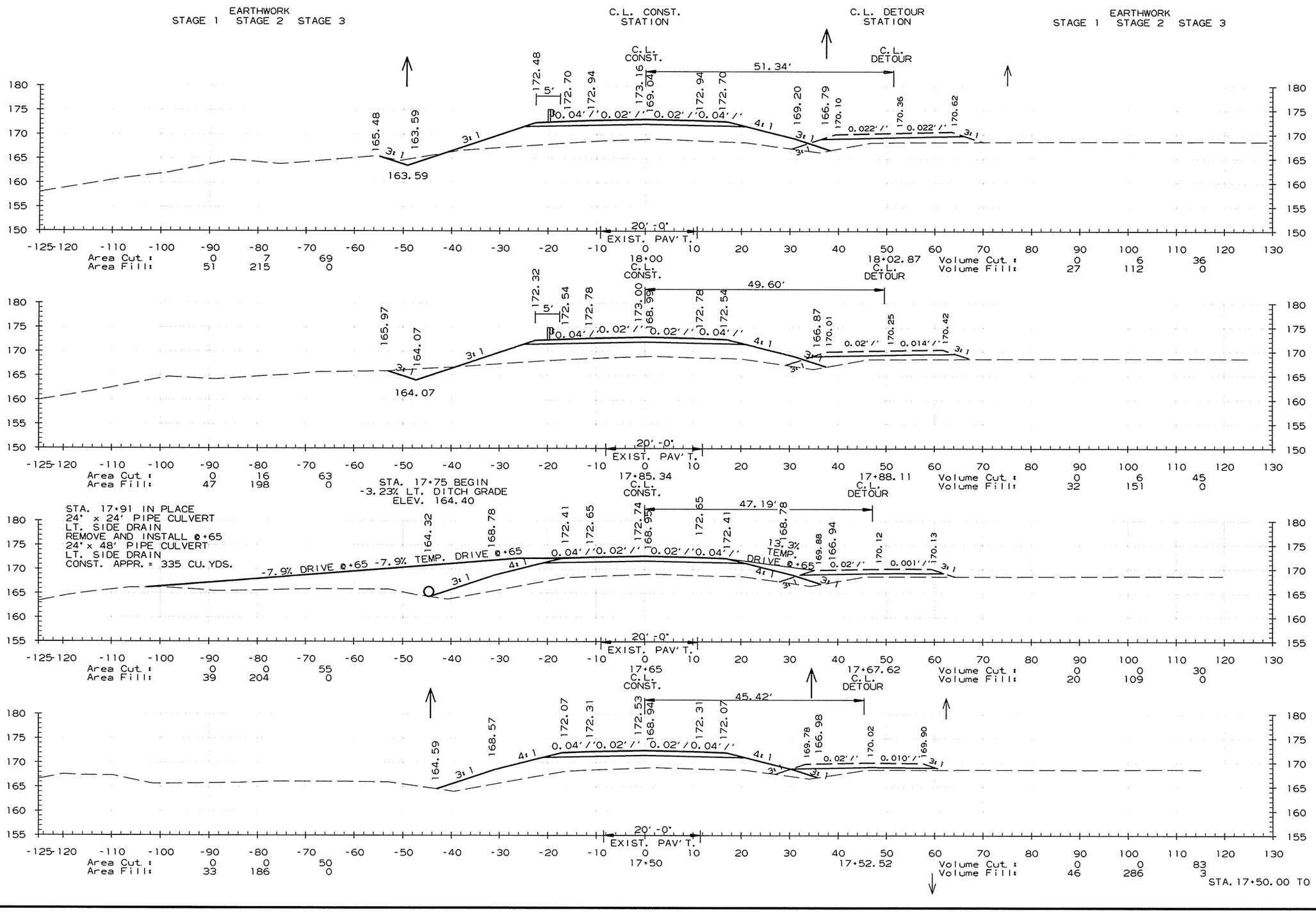
STA. 16+00.00 TO STA. 17+00.00

6/10/2013

r020419_crs.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.		020419	72	90

(2) CROSS SECTIONS



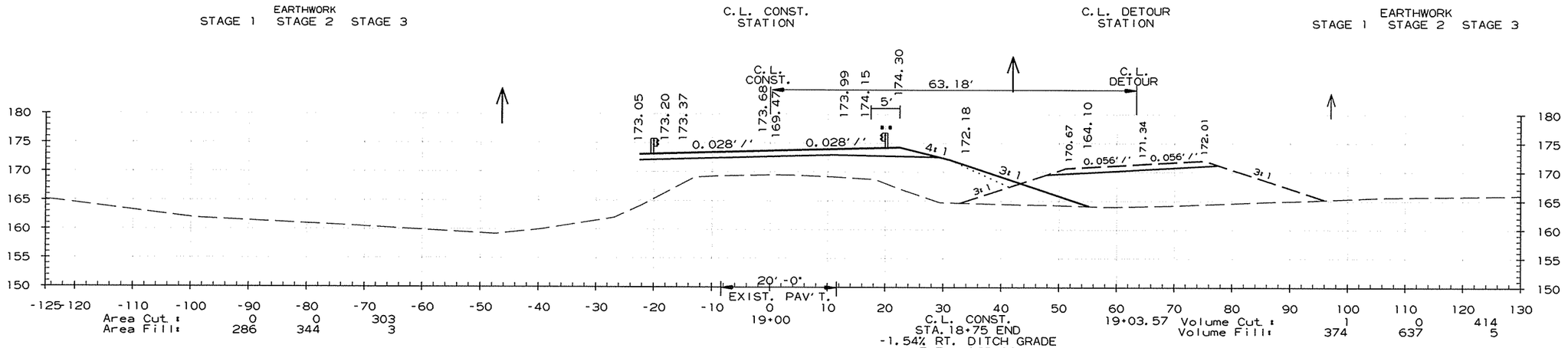
6/10/2013

r020419_crs.dgn

** INSTALL BRIDGE END TERMINAL AS SHOWN. ELIMINATE OR MODIFY APPROACH CURB SECTIONS TO FIT BRIDGE END TERMINAL. PAYMENT FOR ELIMINATING OR MODIFYING THESE CURBS SHALL BE CONSIDERED SUBSIDIARY TO APPROACH GUTTERS (TYPE SPECIAL).

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.		020419	73	90

(2) CROSS SECTIONS



STA. 18+15.34 TO STA. 19+00.00

6/10/2013

r020419_crs.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.		020419	74	90

(2) CROSS SECTIONS

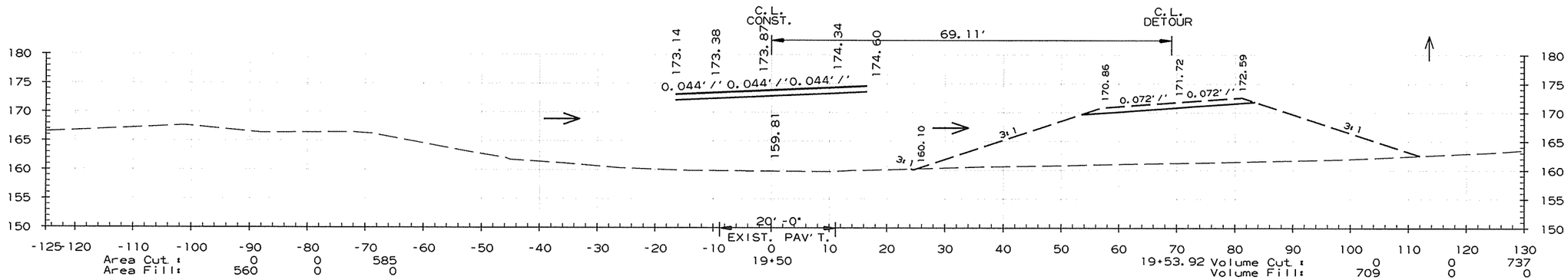
** INSTALL BRIDGE END TERMINAL AS SHOWN. ELIMINATE OR MODIFY APPROACH CURB SECTIONS TO FIT BRIDGE END TERMINAL. PAYMENT FOR ELIMINATING OR MODIFYING THESE CURBS SHALL BE CONSIDERED SUBSIDIARY TO APPROACH GUTTERS (TYPE SPECIAL).

EARTHWORK
STAGE 1 STAGE 2 STAGE 3

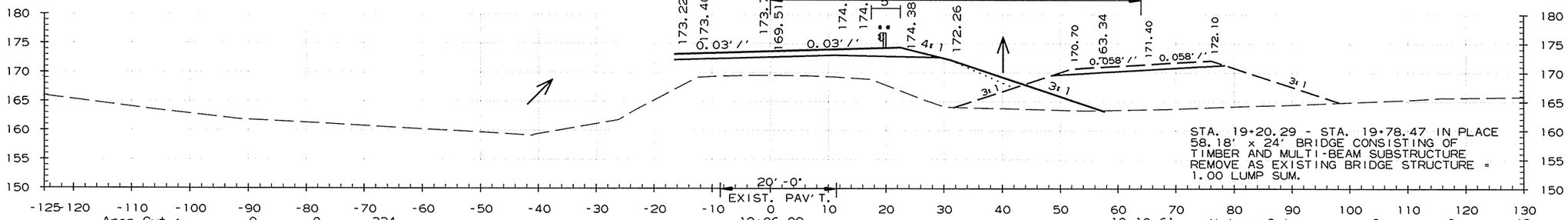
C.L. CONST. STATION

C.L. DETOUR STATION

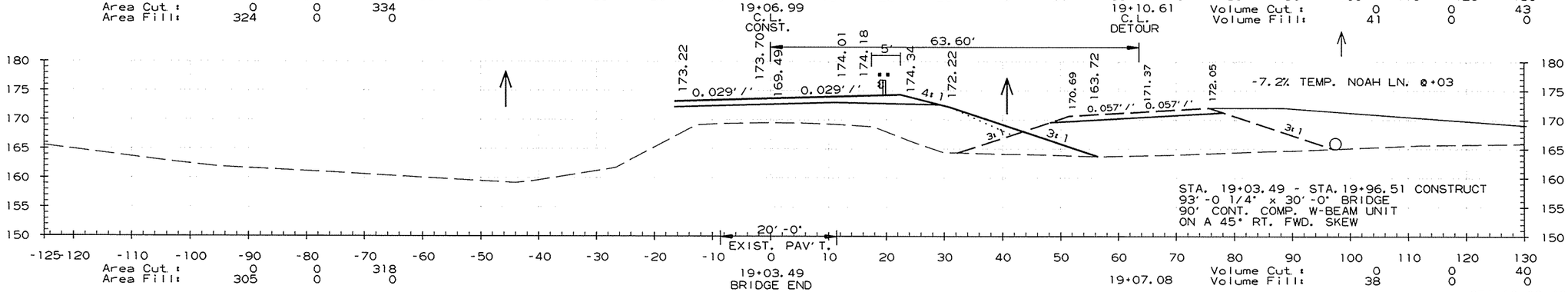
EARTHWORK
STAGE 1 STAGE 2 STAGE 3



Area Cut :	0	0	585	19+50		19+53.92	Volume Cut :	0	0	737
Area Fill:	560	0	0				Volume Fill:	709	0	0
Area Cut :	0	0	463	19+29.17 TOE OF SLOPE		19+32.94	Volume Cut :	0	0	330
Area Fill:	445	0	0				Volume Fill:	318	195	2



Area Cut :	0	0	334	19+06.99		19+10.61	Volume Cut :	0	0	43
Area Fill:	324	0	0	C.L. CONST.		C.L. DETOUR	Volume Fill:	41	0	0



Area Cut :	0	0	318	19+03.49 BRIDGE END		19+07.08	Volume Cut :	0	0	40
Area Fill:	305	0	0				Volume Fill:	38	0	0

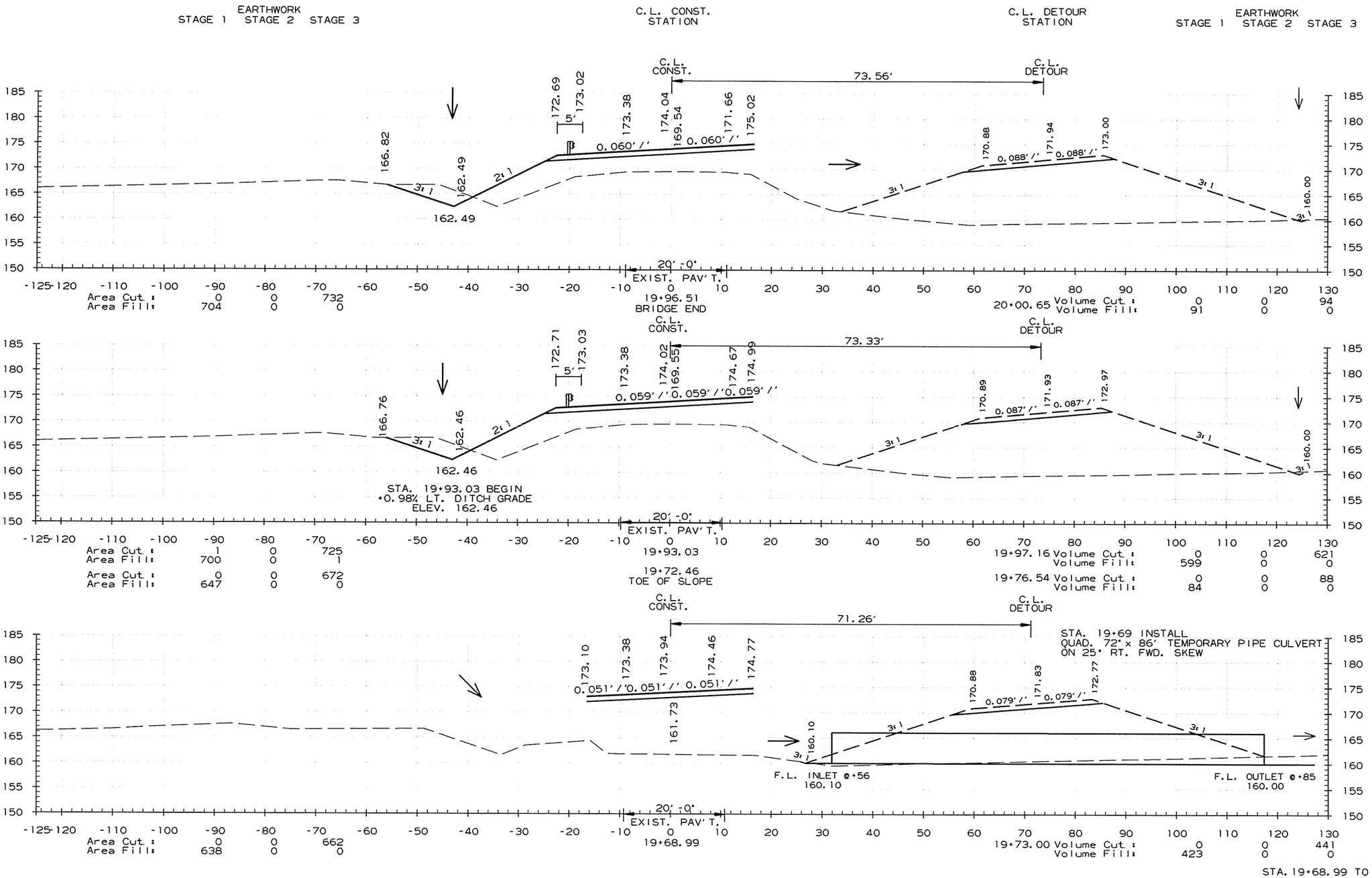
STA. 19+03.49 TO STA. 19+50

6/10/2013

r020419_crs.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.		020419	75	90

(2) CROSS SECTIONS

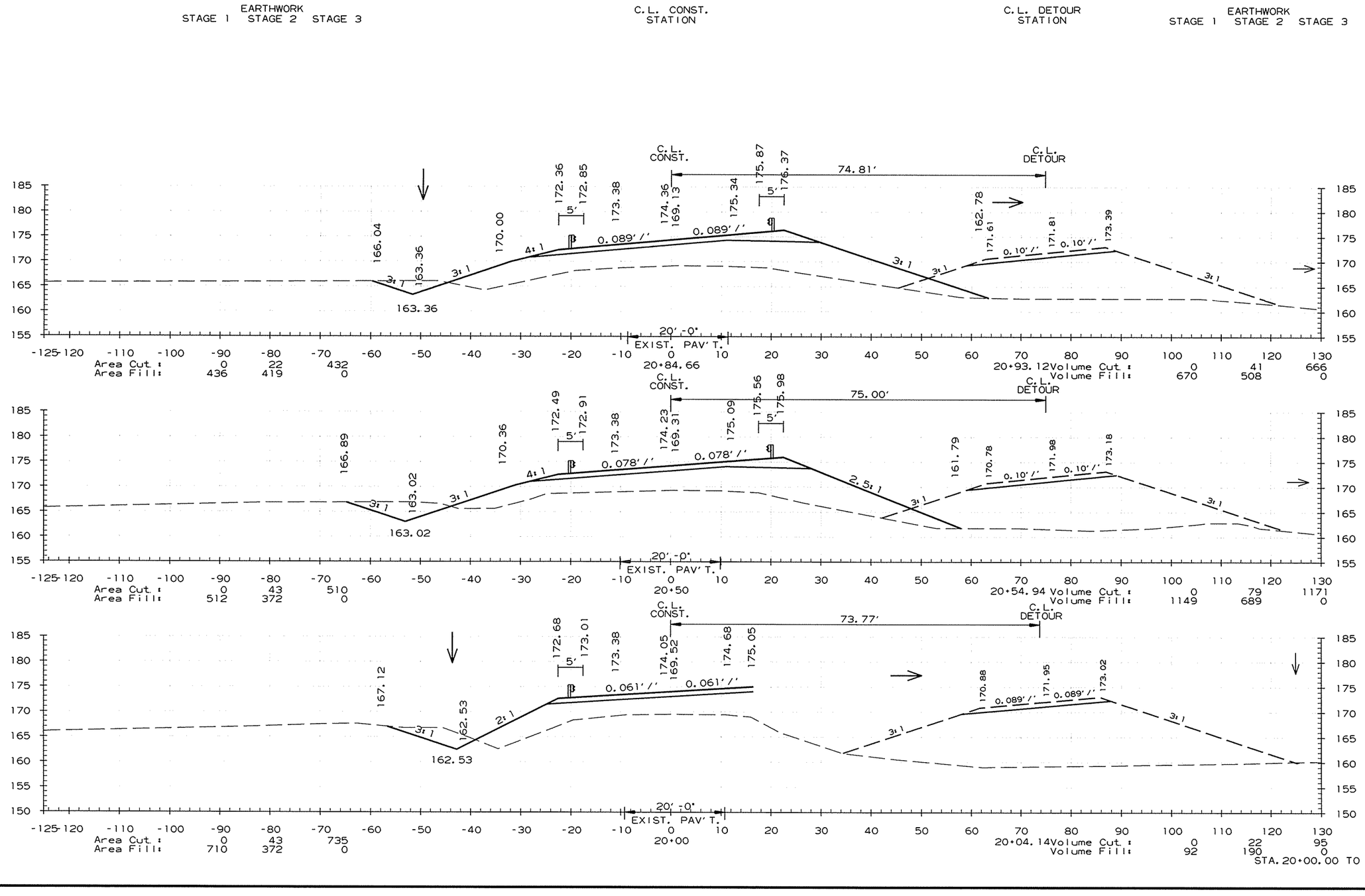


6/10/2013

r020419_crs.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.		020419	76	90

(2) CROSS SECTIONS



STA. 20+00.00 TO STA. 20+84.66

6/10/2013

r020419_crs.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.		020419	77	90

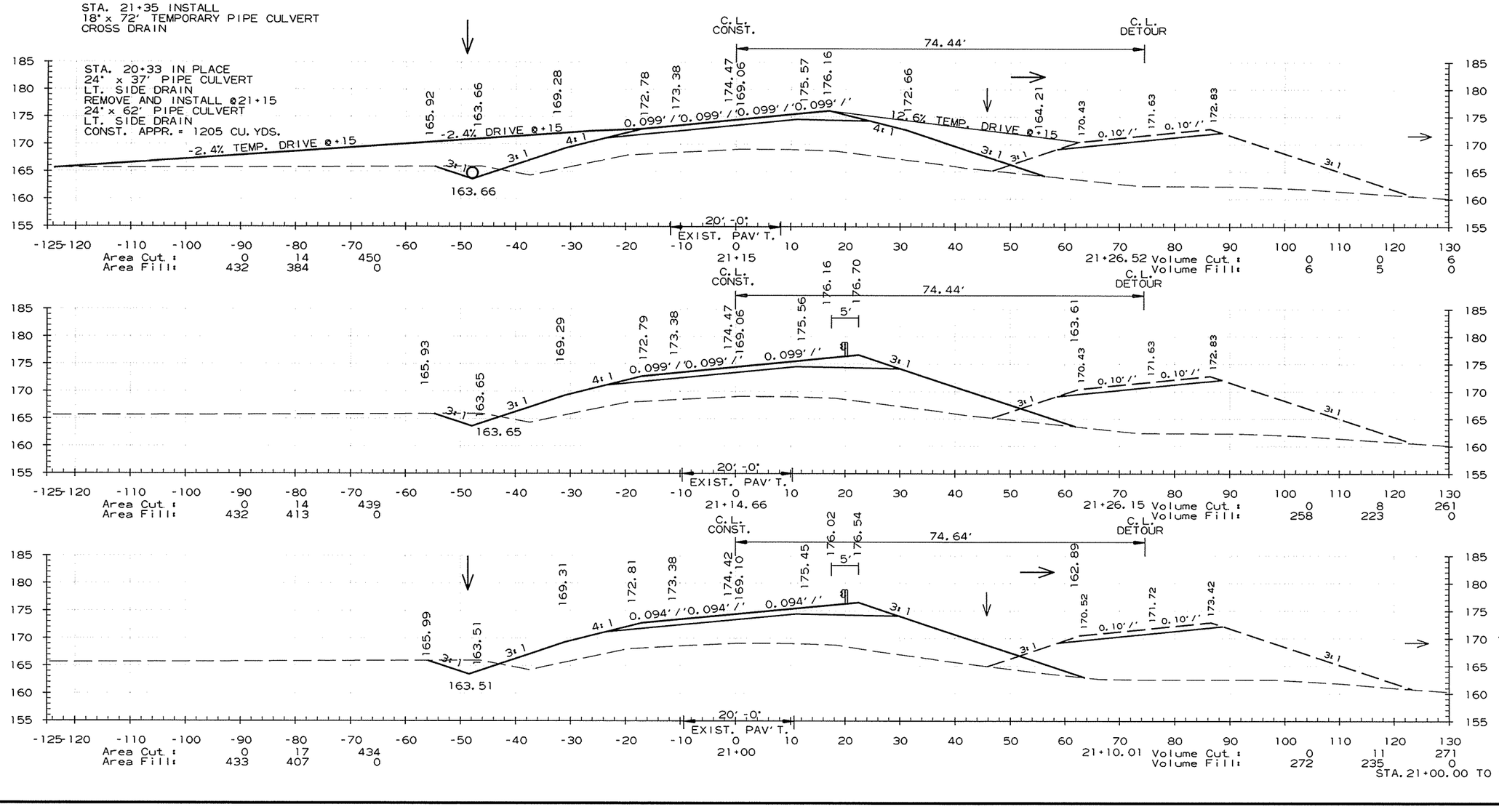
(2) CROSS SECTIONS

EARTHWORK
STAGE 1 STAGE 2 STAGE 3

C.L. CONST.
STATION

C.L. DETOUR
STATION

EARTHWORK
STAGE 1 STAGE 2 STAGE 3



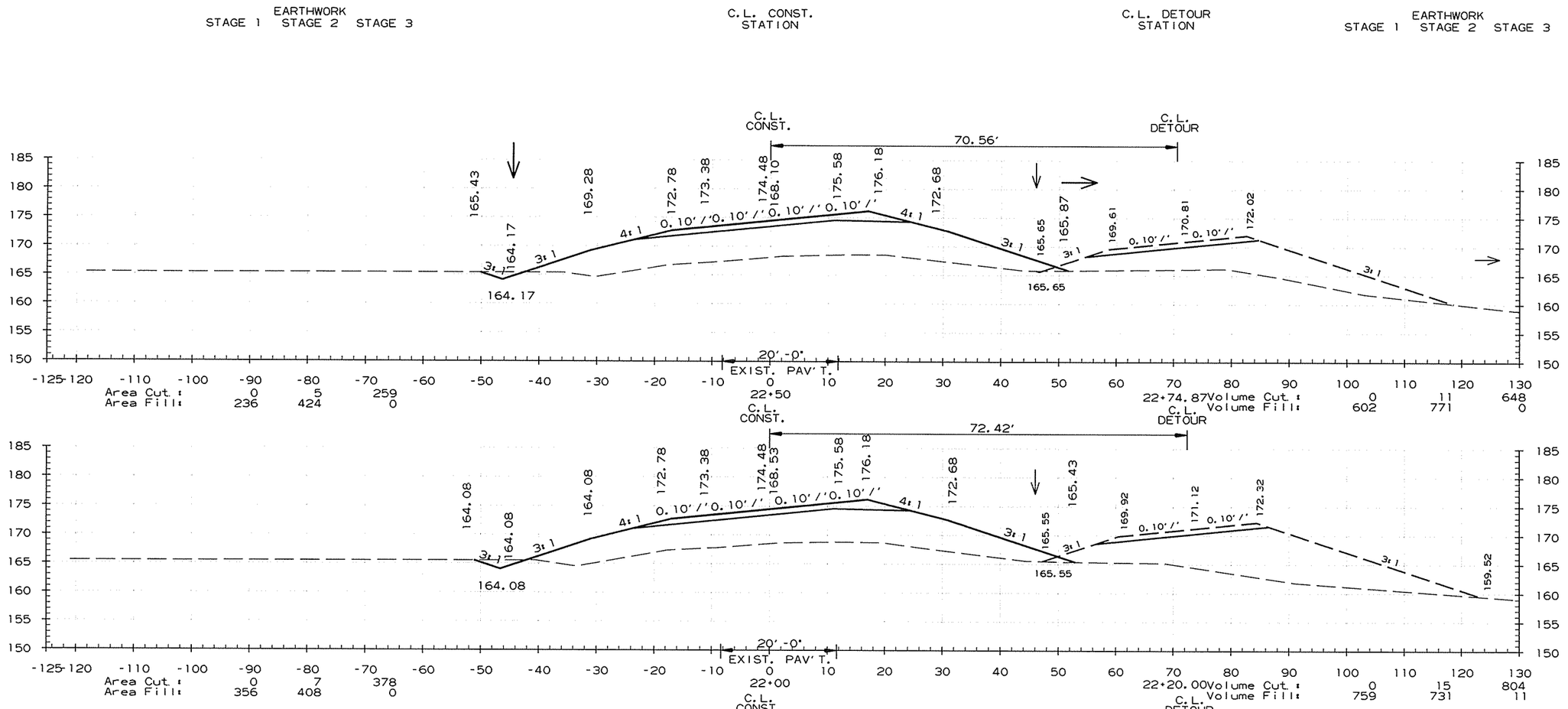
STA. 21+00.00 TO STA. 21+15.00

6/10/2013

r020419_crs.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.		020419	78	90

(2) CROSS SECTIONS



r020419_crs.dgn 6/10/2013

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020419	79	90

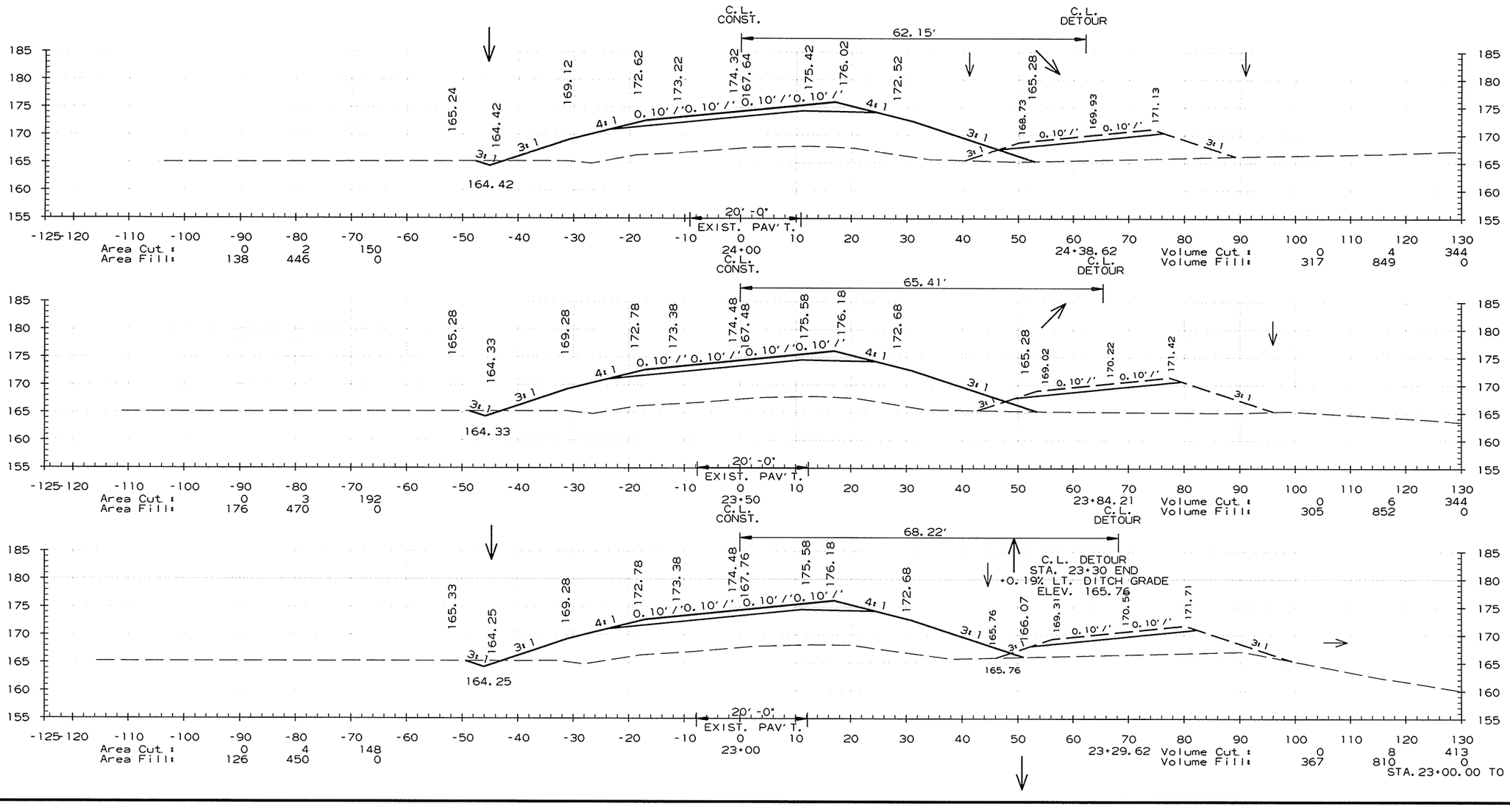
(2) CROSS SECTIONS

EARTHWORK
STAGE 1 STAGE 2 STAGE 3

C.L. CONST.
STATION

C.L. DETOUR
STATION

EARTHWORK
STAGE 1 STAGE 2 STAGE 3



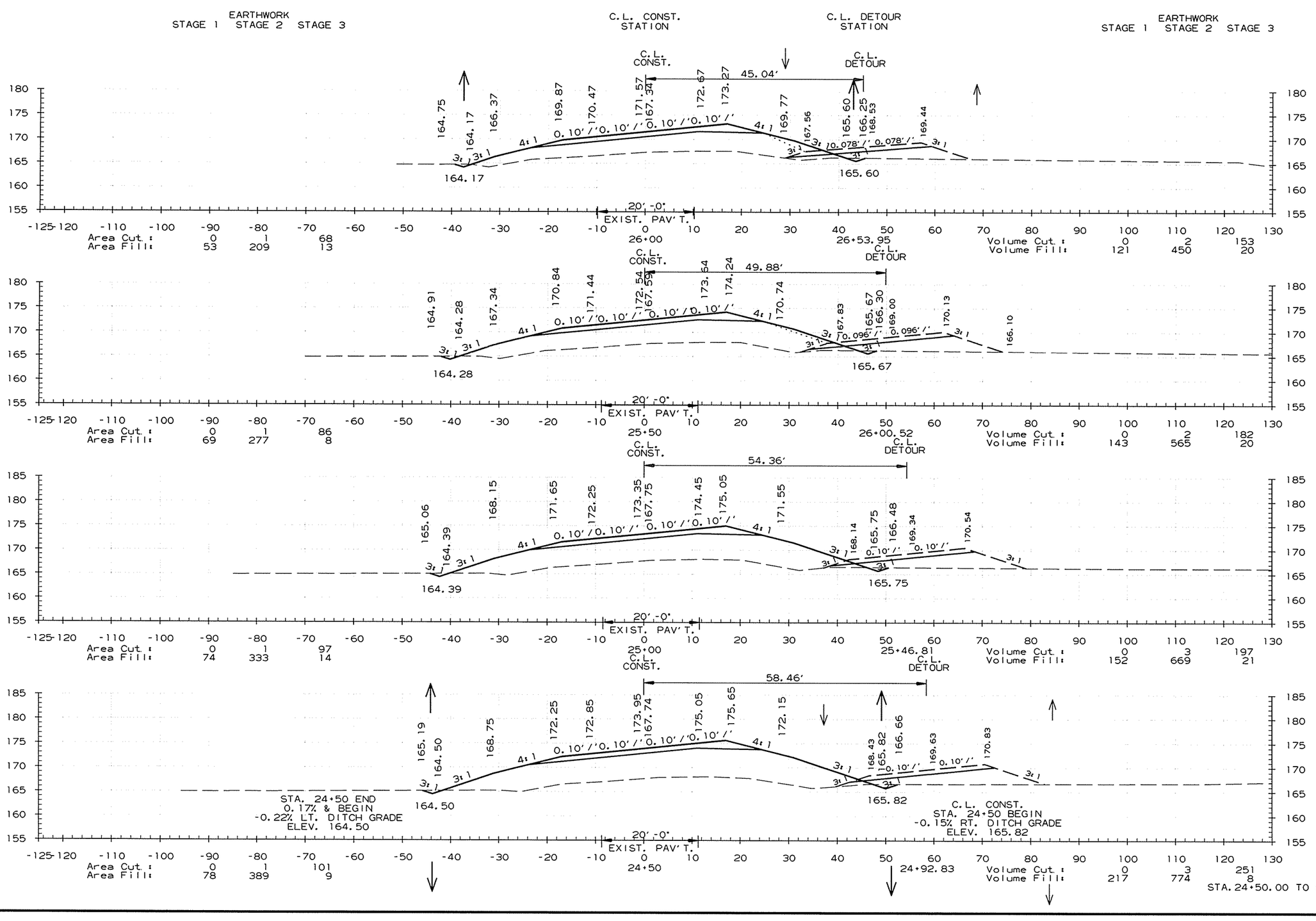
STA. 23+00.00 TO STA. 24+00.00

6/10/2013

r020419_crs.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.		020419	80	90

(2) CROSS SECTIONS



6/10/2013

r020419_crs.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.		020419	81	90

(2) CROSS SECTIONS

EARTHWORK
STAGE 1 STAGE 2 STAGE 3

C.L. CONST. STATION

C.L. DETOUR STATION

EARTHWORK
STAGE 1 STAGE 2 STAGE 3

STA. 26+50.00 TO STA. 27+92.00

6/10/2013

r020419_crs.dgn

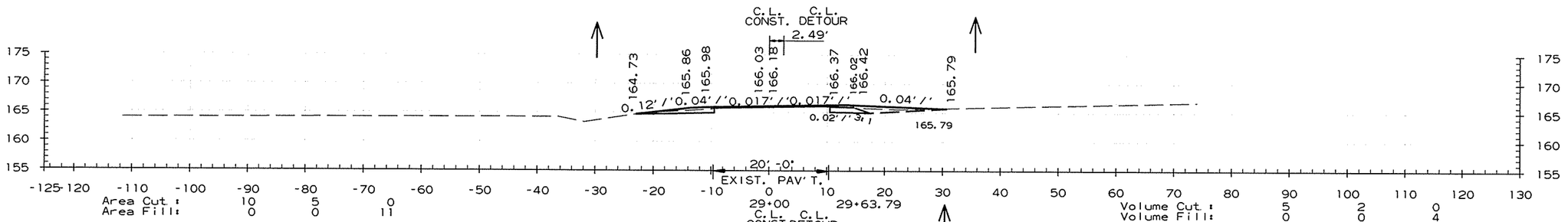
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020419	82	90

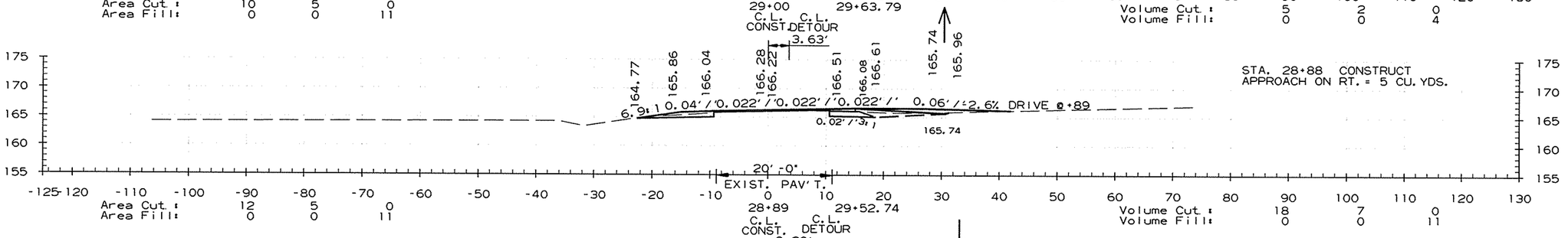
(2) CROSS SECTIONS

EARTHWORK
STAGE 1 STAGE 2 STAGE 3

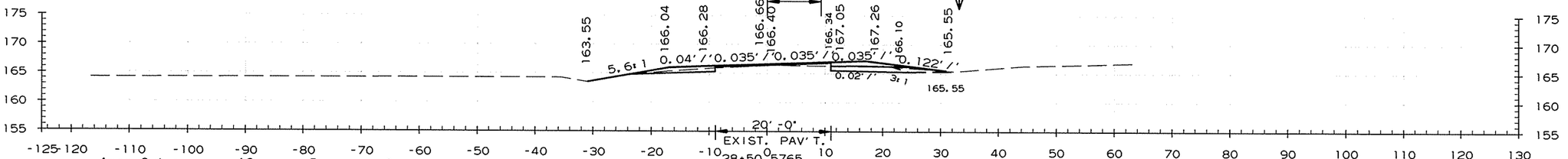
C.L. CONST. STATION C.L. DETOUR STATION

EARTHWORK
STAGE 1 STAGE 2 STAGE 3

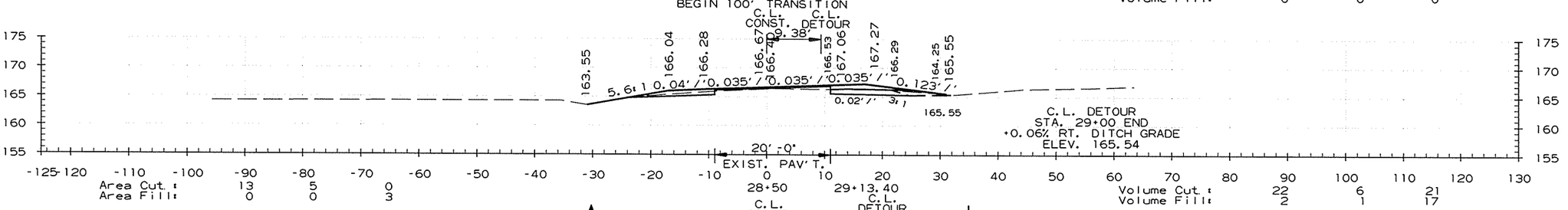




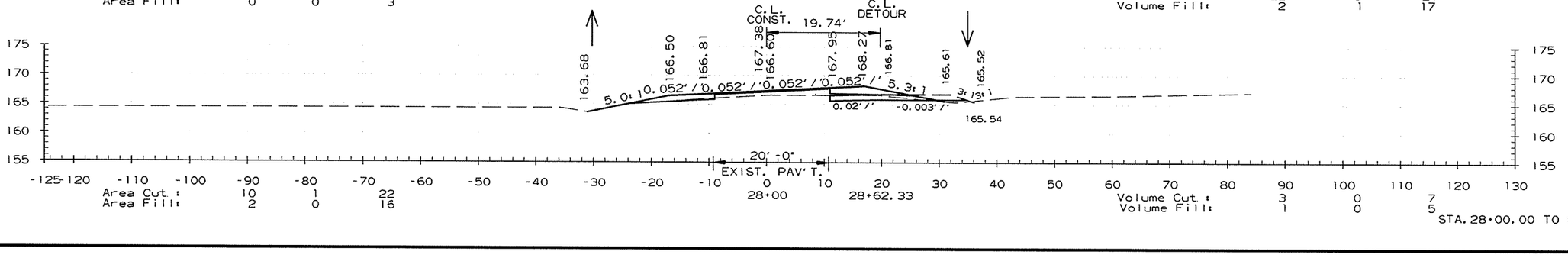
STA. 28+88 CONSTRUCT
APPROACH ON RT. = 5 CU. YDS.



BEGIN 100' TRANSITION



C.L. DETOUR
STA. 29+00 END
+0.06% RT. DITCH GRADE
ELEV. 165.54



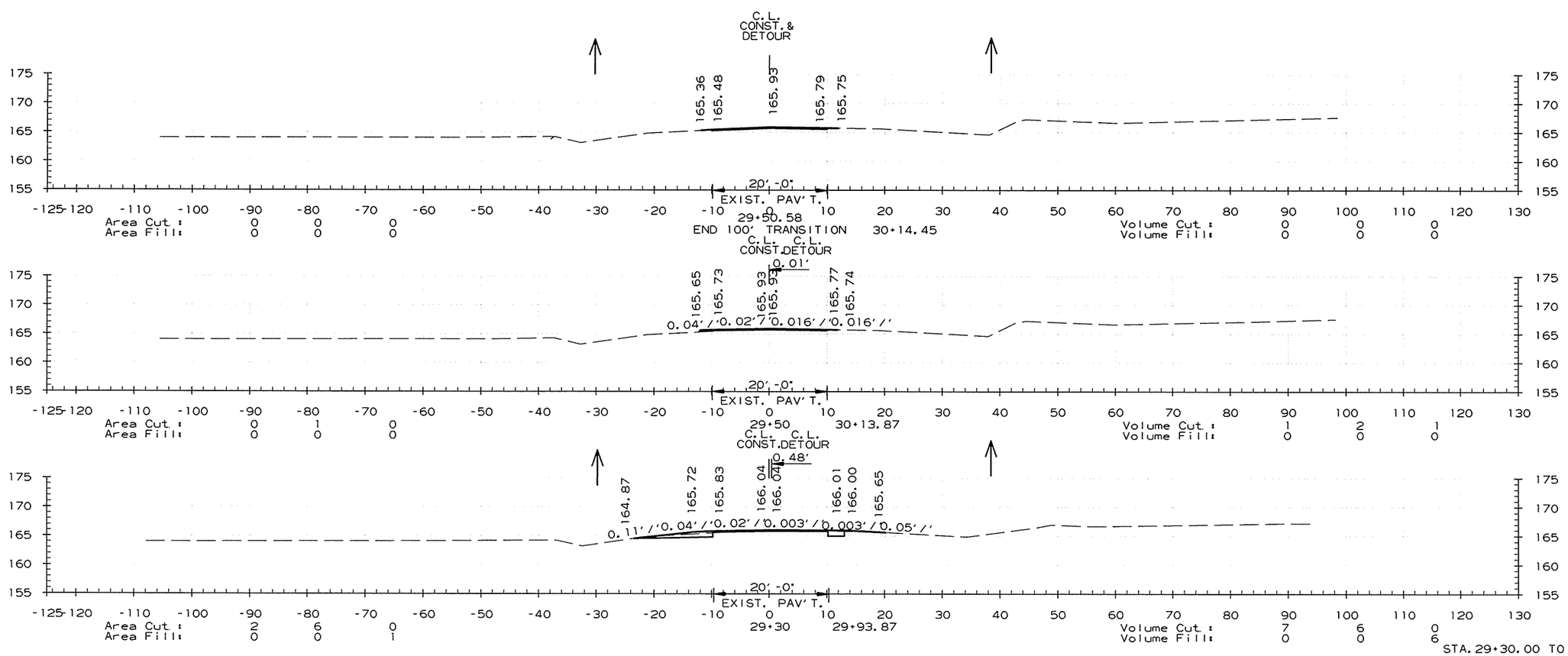
STA. 28+00.00 TO STA. 29+00.00

6/10/2013

r020419_crs.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.		020419	83	90

(2) CROSS SECTIONS

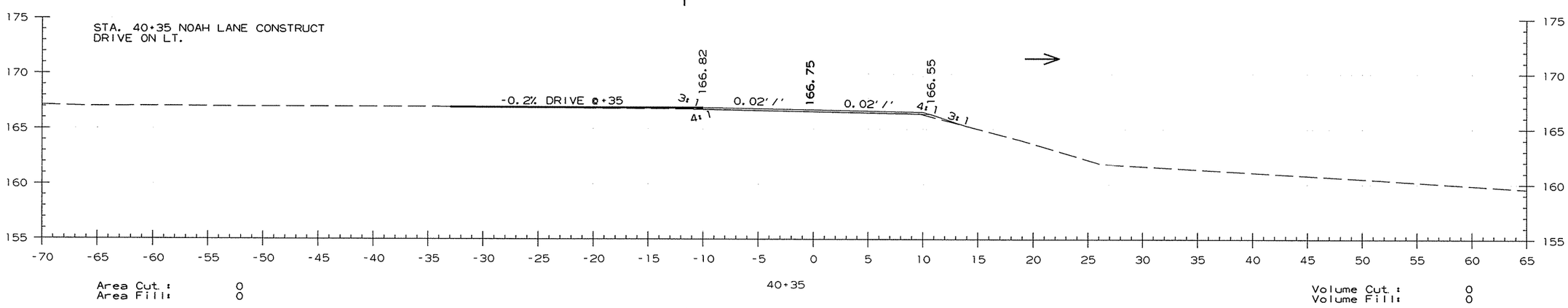


STA. 29+30.00 TO STA. 29+50.58

r020419_crs.dgn 6/10/2013

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020419	84	90

(2) CROSS SECTIONS



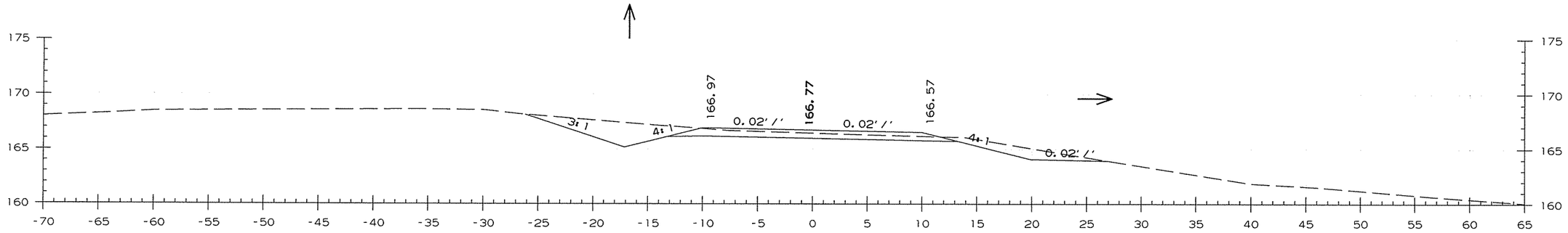
STA. 40+00.00 TO STA. 40+35.00

6/10/2013

r020419_crs.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.		020419	85	90

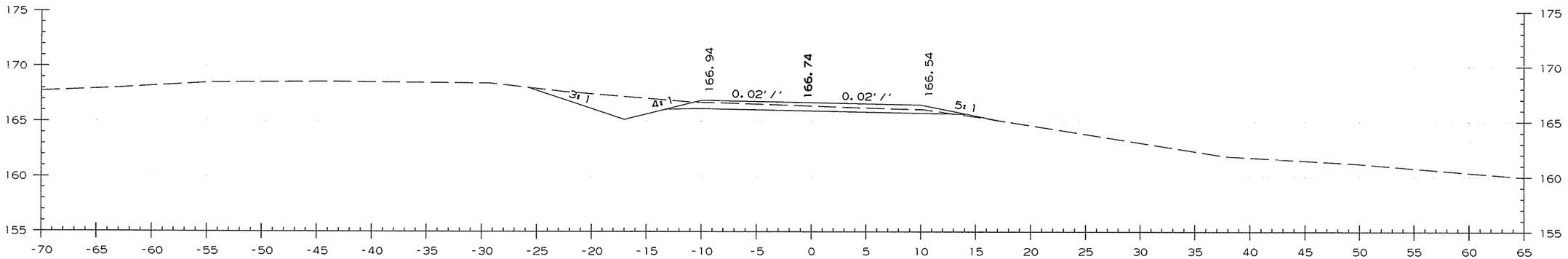
(2) CROSS SECTIONS



Area Cut : 38
Area Fill: 0

40+79

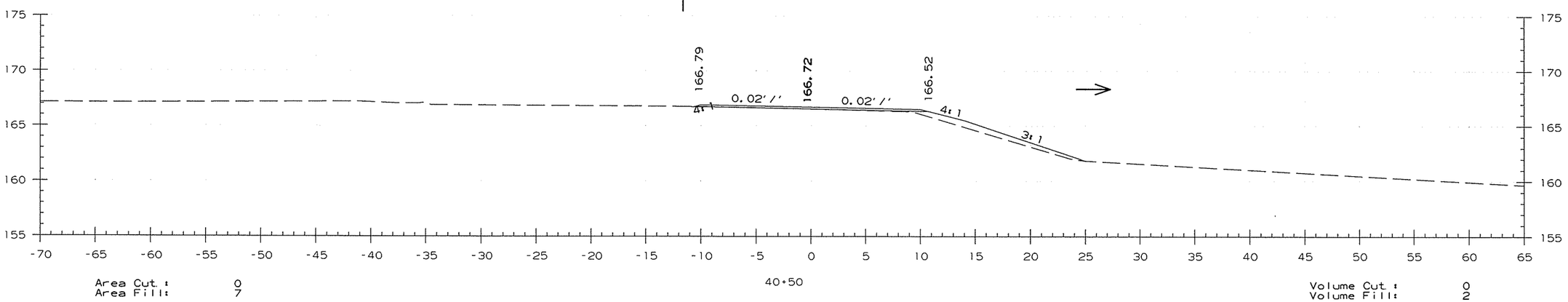
Volume Cut : 6
Volume Fill: 0



Area Cut : 26
Area Fill: 0

40+74

Volume Cut : 11
Volume Fill: 3



Area Cut : 0
Area Fill: 7

40+50

Volume Cut : 0
Volume Fill: 2

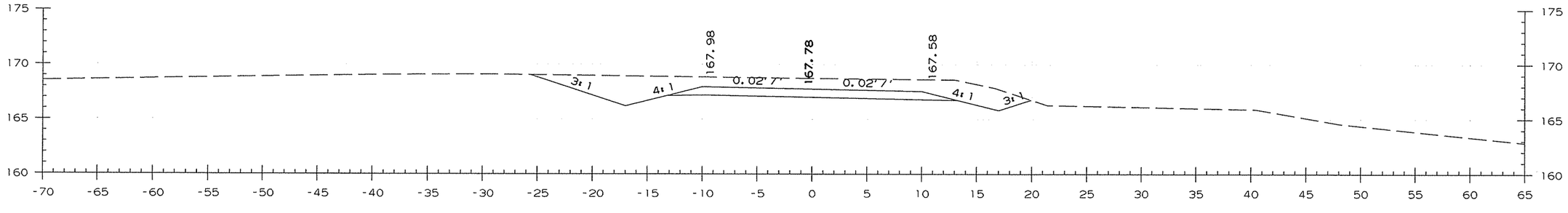
STA. 40+50.00 TO STA. 40+79.00

6/10/2013

r020419_crs.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.		020419	86	90

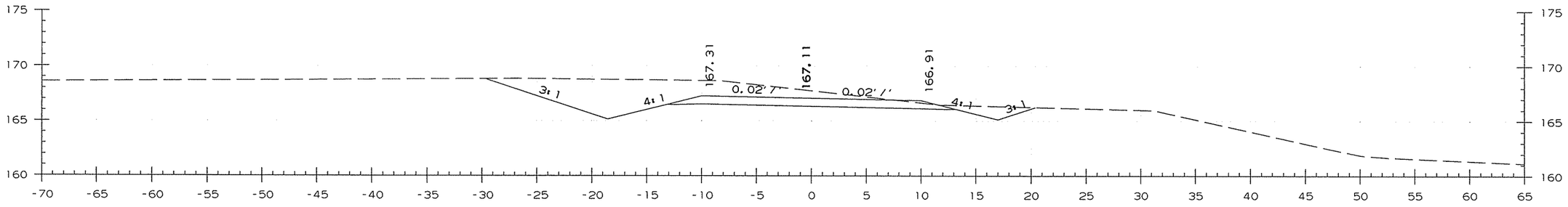
(2) CROSS SECTIONS



Area Cut : 76
Area Fill: 0

41+50

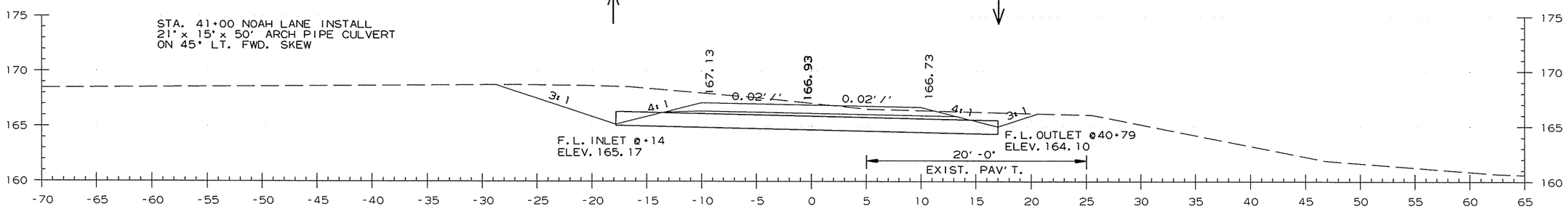
Volume Cut : 102
Volume Fill: 0



Area Cut : 78
Area Fill: 0

41+14

Volume Cut : 37
Volume Fill: 0



Area Cut : 64
Area Fill: 0

41+00

Volume Cut : 40
Volume Fill: 0

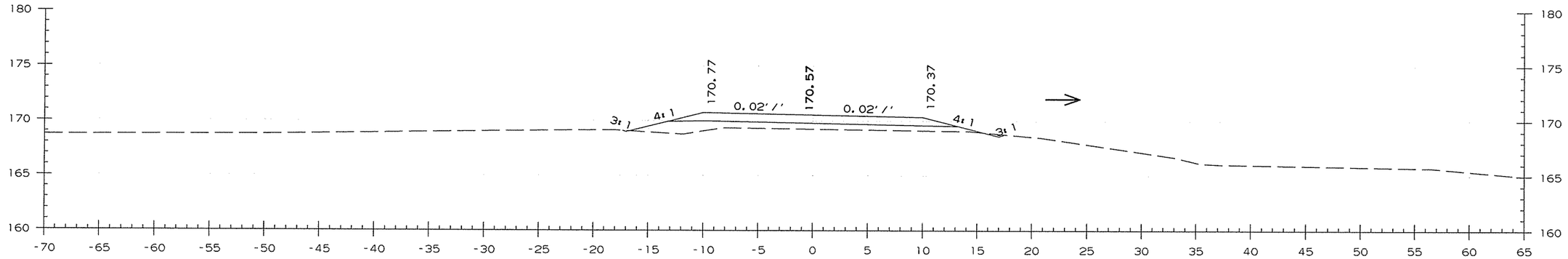
STA. 41+00.00 TO STA. 41+50.00

6/10/2013

r020419_crs.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.		020419	87	90

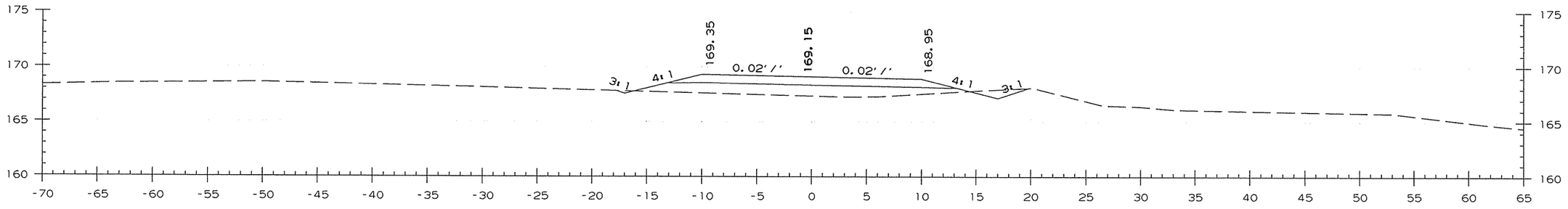
(2) CROSS SECTIONS



Area Cut : 0
Area Fill: 19

42+50

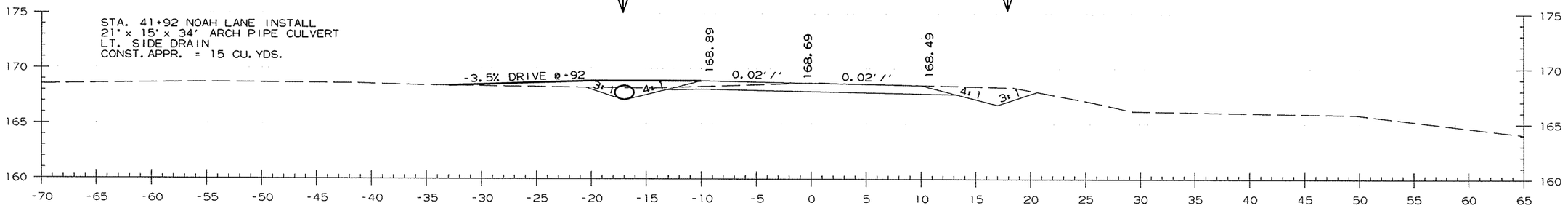
Volume Cut : 2
Volume Fill: 40



Area Cut : 2
Area Fill: 25

42+00

Volume Cut : 9
Volume Fill: 7



Area Cut : 28
Area Fill: 0

41+84

Volume Cut : 66
Volume Fill: 0

STA. 41+84.00 TO STA. 42+50.00

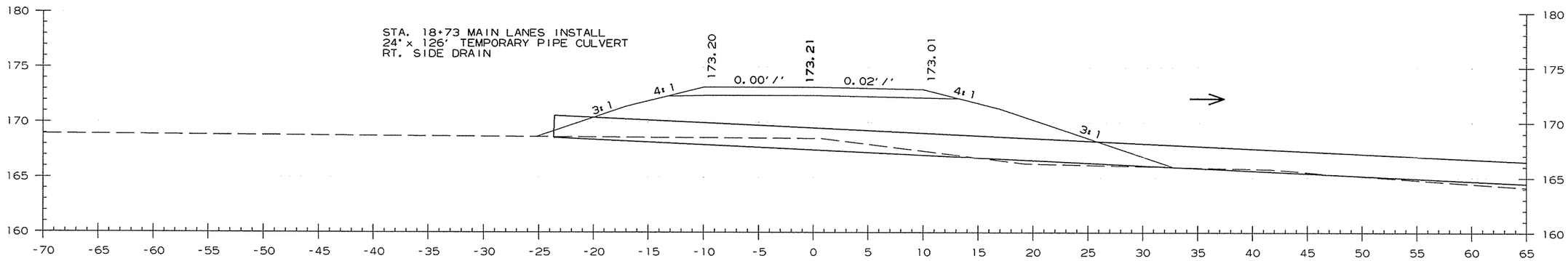
6/10/2013

r020419_crs.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.		020419	88	90

(2) CROSS SECTIONS

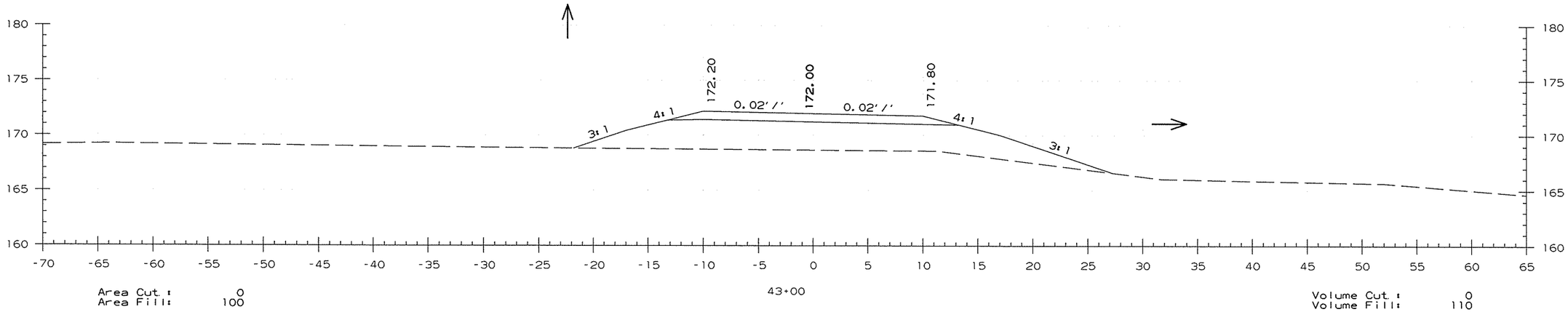
STA. 18+73 MAIN LANES INSTALL
24" x 126' TEMPORARY PIPE CULVERT
RT. SIDE DRAIN



Area Cut : 0
Area Fill: 191

43+50

Volume Cut : 0
Volume Fill: 270



Area Cut : 0
Area Fill: 100

43+00

Volume Cut : 0
Volume Fill: 110

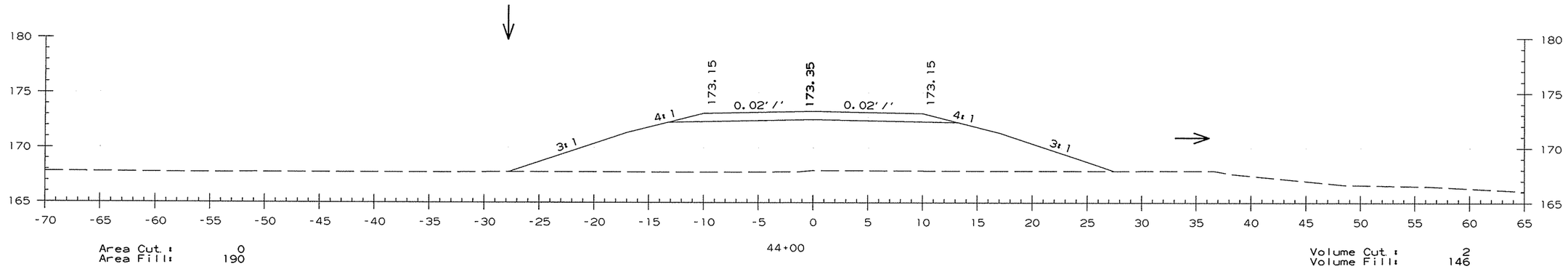
STA. 43+00.00 TO STA. 43+50.00

6/10/2013

r020419_crs.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.		020419	89	90

(2) CROSS SECTIONS

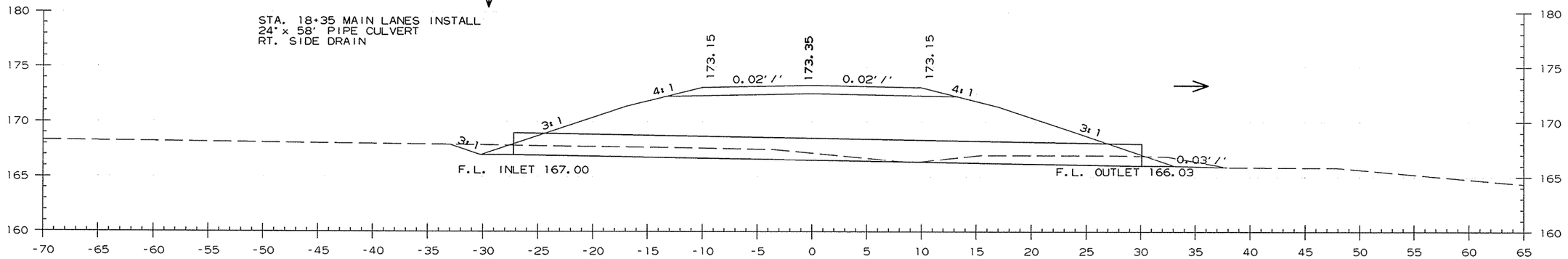


Area Cut : 0
Area Fill: 190

44+00

Volume Cut : 2
Volume Fill: 146

STA. 18+35 MAIN LANES INSTALL
24" x 58' PIPE CULVERT
RT. SIDE DRAIN



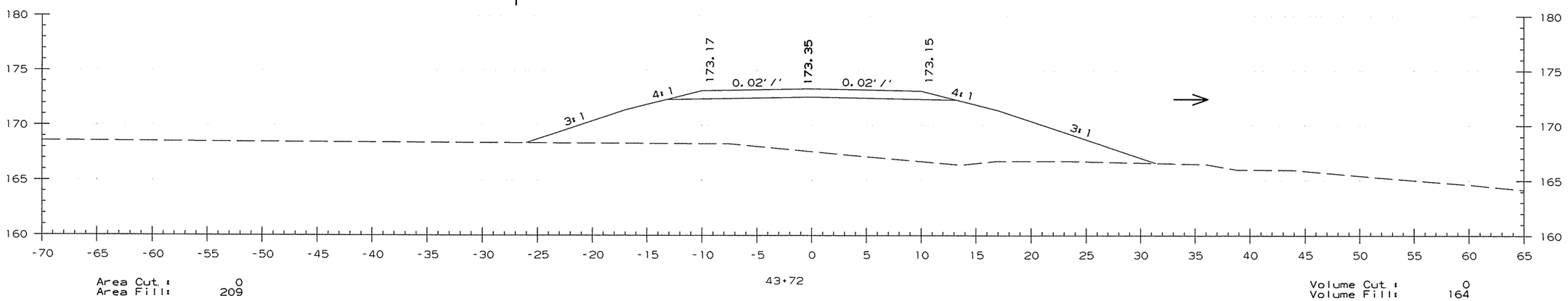
F.L. INLET 167.00

F.L. OUTLET 166.03

Area Cut : 5
Area Fill: 225

43+81

Volume Cut : 1
Volume Fill: 71



Area Cut : 0
Area Fill: 209

43+72

Volume Cut : 0
Volume Fill: 164

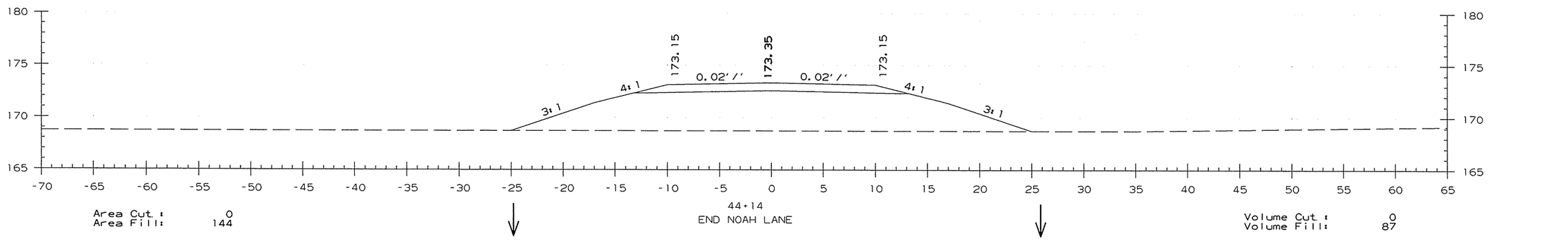
STA. 43+72.00 TO STA. 44+00.00

6/10/2013

r020419_crs.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.		020419	90	90

(2) CROSS SECTIONS



STA. 44+14.00 TO STA. 44+14.00

6/10/2013

r020419_crs.dgn