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.		110570	1	84
				(2)	DITCH AT L.M. 1.85 STR. & APPRS. (S)			

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT
CONSTRUCTION PLANS FOR STATE HIGHWAY

DITCH AT L.M. 1.85 STR. & APPRS. (S)

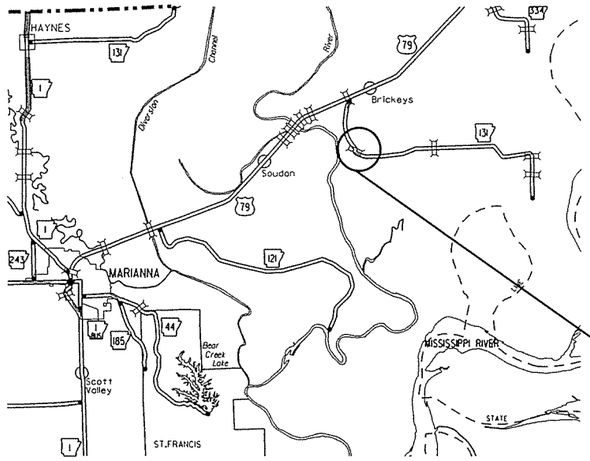
LEE COUNTY

ROUTE 131 SECTION 1

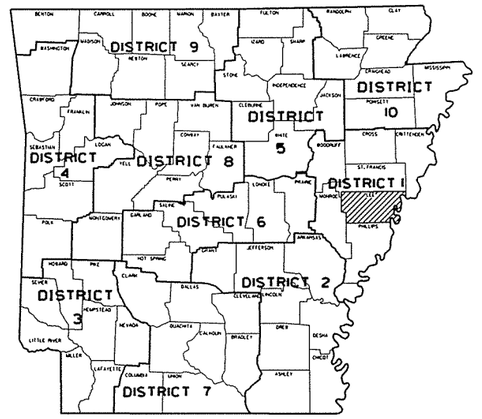
JOB 110570

FED. AID PROJ. STPR-0039(20)

NOT TO SCALE



VICINITY MAP



ARK. HWY. DIST. NO. 1

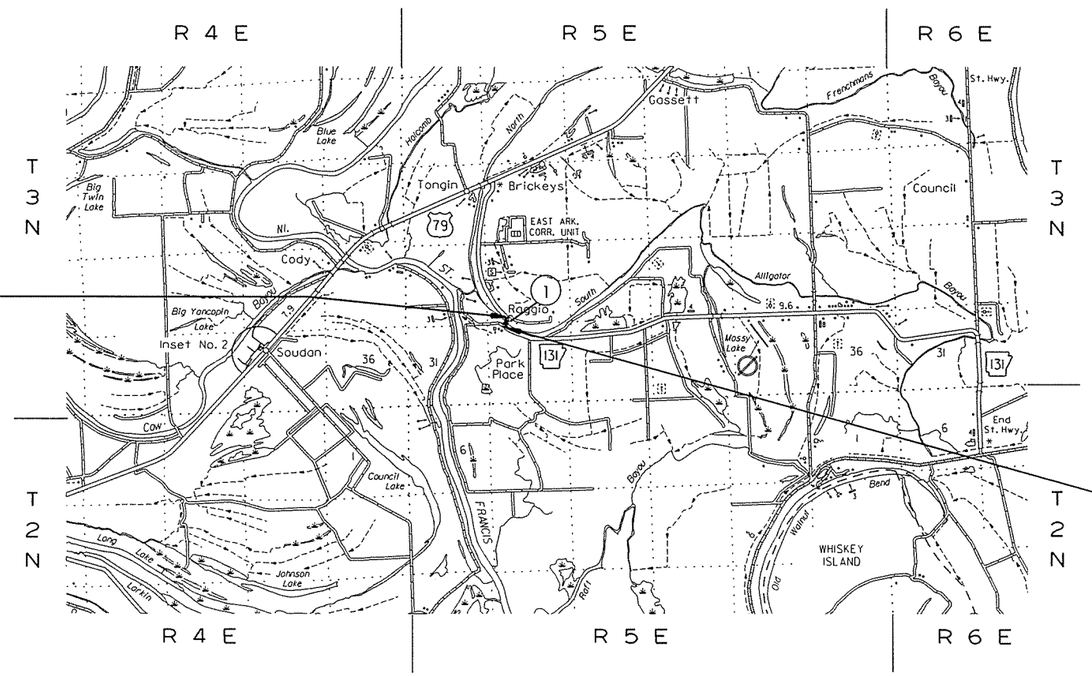
• DESIGN TRAFFIC DATA •

DESIGN YEAR	2035
2015 ADT	400
2035 ADT	500
2035 DHV	55
DIRECTIONAL DISTRIBUTION	0.60
TRUCKS	15%
DESIGN SPEED	50 MPH

BRIDGE DATA

(1) BR. END STA. 107+03.50
BRIDGE NO. 07303
30'-0" CLEAR ROADWAY
411'-0" TOTAL LENGTH
408'-0" CONTINUOUS COMPOSITE W-BEAM UNIT
(6 SPANS @ 68')
BRIDGE END STA. 111+14.50

STA. 100+04.92
BEGIN JOB 110570
LOG MILE 1.71



STA. 132+21.10
END JOB 110570

N

GROSS LENGTH OF PROJECT	3216.18	FEET	OR	0.609	MILES	
NET " " ROADWAY	2805.18	"	"	0.531	"	
NET " " BRIDGES	411.00	"	"	0.078	"	
NET " " PROJECT	3216.18	"	"	0.609	"	

P.E. 110570

BEGINNING:
LAT. = N 34°50'06"
LONG. = W 90°36'14"
MID POINT:
LAT. = N 34°49'53"
LONG. = W 90°36'10"
ENDING:
LAT. = N 34°49'46"
LONG. = W 90°35'51"

APPROVED

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

3-11-15

DEPUTY DIRECTOR
AND CHIEF ENGINEER

3/4/2015

R110570.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.		110570	2	84

(2) INDEX OF SHEETS, GOV. SPECS. & GEN. NOTES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-31-15

INDEX OF SHEETS

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
108-1	LIQUIDATED DAMAGES
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 110570	BIDDING REQUIREMENTS AND CONDITIONS
JOB 110570	BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB 110570	BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB 110570	CONSTRUCTION IN SPECIAL FLOOD HAZARD AREAS
JOB 110570	DISADVANTAGED BUSINESS ENTERPRISE BIDDER'S RESPONSIBILITIES
JOB 110570	DISPOSAL OF ILLEGAL DUMP MATERIAL
JOB 110570	EXTENSION FOR PIPE CULVERTS
JOB 110570	GEOSYNTHETIC INTERNAL REINFORCED EMBANKMENT CONSTRUCTION
JOB 110570	GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
JOB 110570	HIGH PERFORMANCE PAVEMENT MARKING
JOB 110570	MANDATORY ELECTRONIC CONTRACT
JOB 110570	NESTING SITES OF MIGRATORY BIRDS
JOB 110570	PARTNERING REQUIREMENTS
JOB 110570	PLASTIC PIPE
JOB 110570	PRE-BID ON SITE INVESTIGATION OF SOIL CONDITIONS
JOB 110570	SECTION 404 NATIONWIDE 14 PERMIT REQUIREMENTS
JOB 110570	SHORING FOR CULVERTS
JOB 110570	SOIL STABILIZATION
JOB 110570	STORM WATER POLLUTION PREVENTION PLAN
JOB 110570	SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB 110570	UTILITY ADJUSTMENTS
JOB 110570	VALUE ENGINEERING
JOB 110570	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. ALL LAND MONUMENTS LOCATED WITHIN THE CONSTRUCTION AREA SHALL BE PROTECTED IN ACCORDANCE WITH SECTION 107.12 OF THE STANDARD SPECIFICATIONS.
5. 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.
6. 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.
7. ALL FLEXIBLE BASE AND ASPHALTIC PAVEMENTS REMOVED SHALL BE PAID FOR UNDER THE ITEM NO. 210 UNCLASSIFIED EXCAVATION.
8. THE EXISTING ASPHALT PAVEMENT TO BE REMOVED FROM THE REMAINING PAVEMENT SHALL BE SEPARATED BY SAWING ALONG A NEAT LINE. AFTER SAWING, THE PAVEMENT TO BE REMOVED SHALL BE CAREFULLY REMOVED IN A MANNER THAT WILL NOT DAMAGE THE PAVEMENT THAT IS TO REMAIN. ANY DAMAGE OF THE ASPHALT PAVEMENT THAT IS TO REMAIN IN PLACE SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.

INDEX OF SHEETS, GOVERNING SPECIFICATIONS, AND GENERAL NOTES

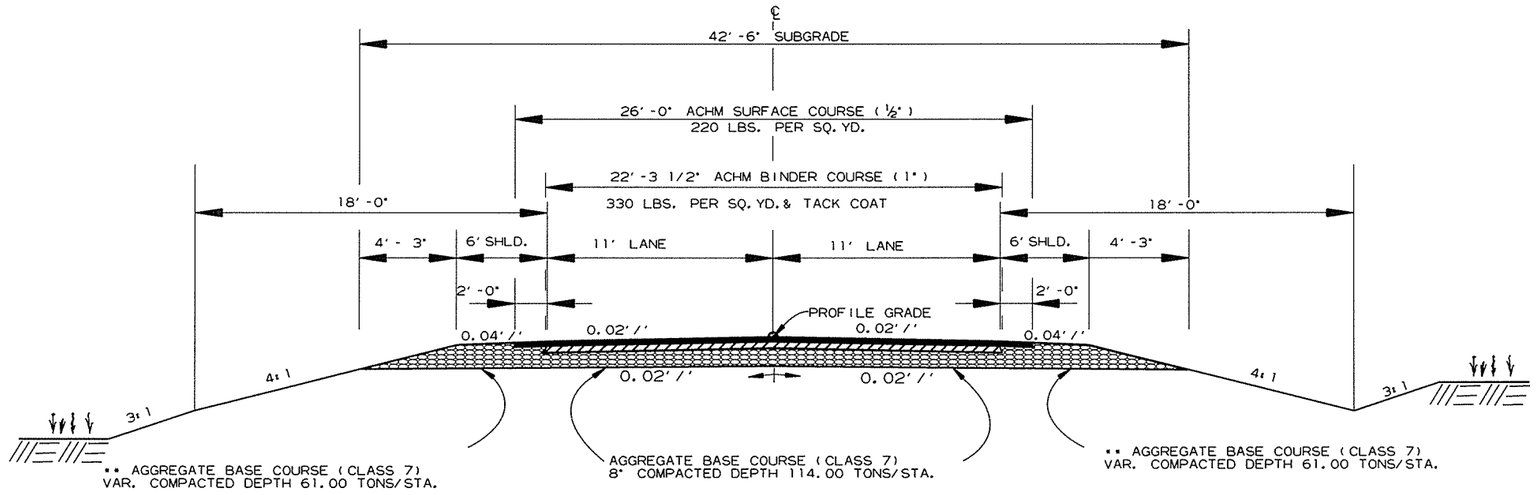
8/28/2015

R110570.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.		110570	3	84

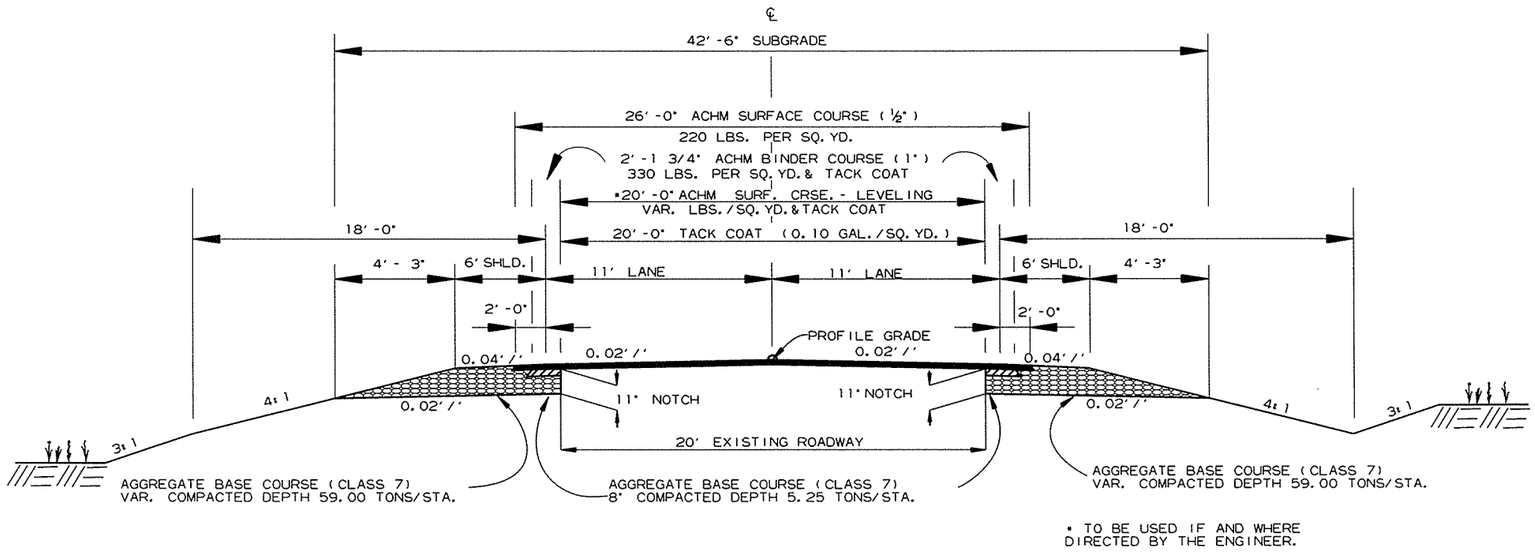
(2) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
4-6-15



TYPICAL SECTION OF IMPROVEMENT - FULL DEPTH

STA. 102+41.00 TO STA. 107+03.50
STA. 111+14.50 TO STA. 128+10.00



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

TYPICAL SECTION OF IMPROVEMENT - NOTCH & WIDENING

STA. 100+04.92 TO STA. 102+41.00
STA. 128+10.00 TO STA. 132+21.10

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 WILL BE CONSIDERED TO BE 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.

AFTER PLACING FINAL 2" OF SURFACE COURSE, THE EXISTING SLOPE SHALL BE REDRESSED AS DIRECTED BY THE ENGINEER PRIOR TO SEEDING IN ORDER TO MAINTAIN A UNIFORM SLOPE. PAYMENT FOR THIS WORK SHALL BE INCLUDED IN THE PRICE BID FOR VARIOUS CONTRACT ITEMS.

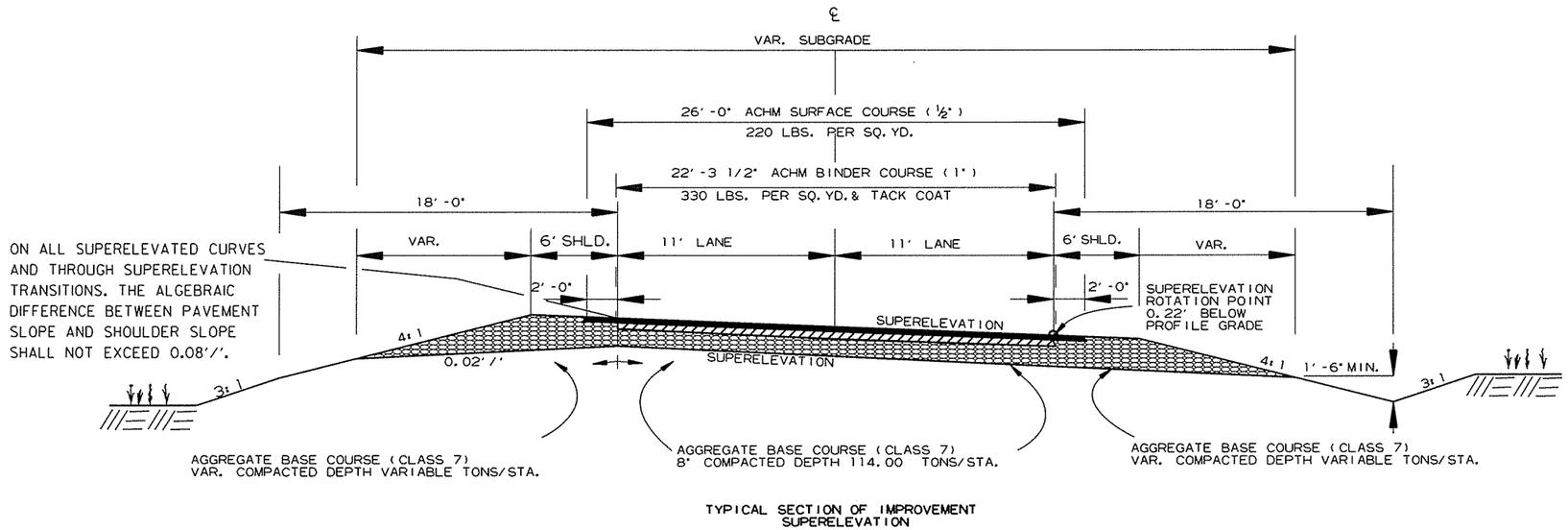
3/4/2015

R110570.DGN

TYPICAL SECTIONS OF IMPROVEMENT

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110570	4	84

(2) TYPICAL SECTIONS OF IMPROVEMENT



TYPICAL SECTION OF IMPROVEMENT
SUPERELEVATION

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.

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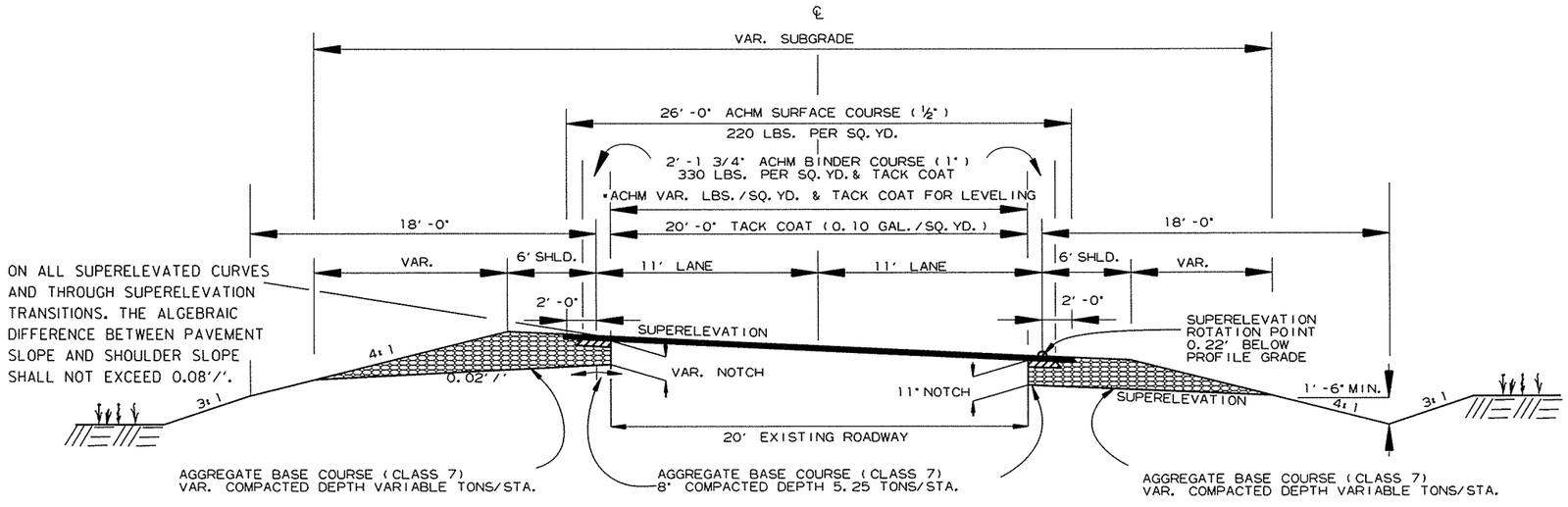


TYPICAL SECTION OF IMPROVEMENT
SUPERELEVATION

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

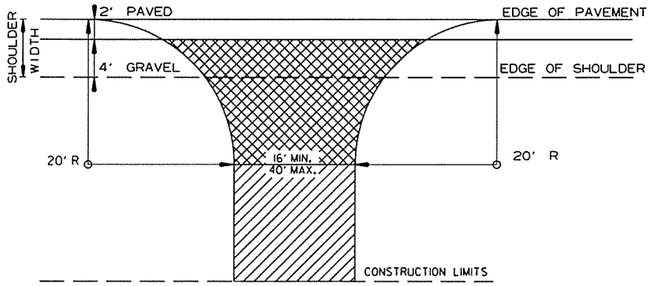
3/4/2015

R110570.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.		110570	5	84

(2) SPECIAL DETAILS

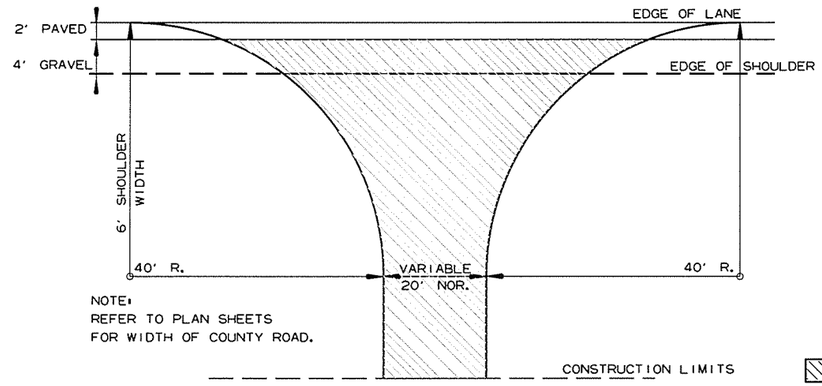


A. C. H. M. SURFACE COURSE (1/2") (220 LBS./SQ. YD.) & AGGREGATE BASE COURSE (CLASS 7) (7" COMPACTED DEPTH)

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

DETAIL FOR DRIVEWAY TURNOUTS

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

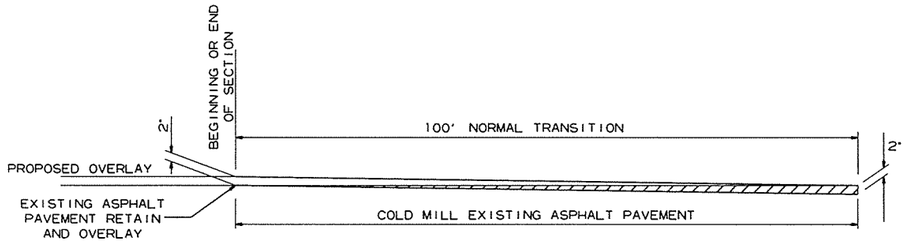


NOTE:
REFER TO PLAN SHEETS FOR WIDTH OF COUNTY ROAD.

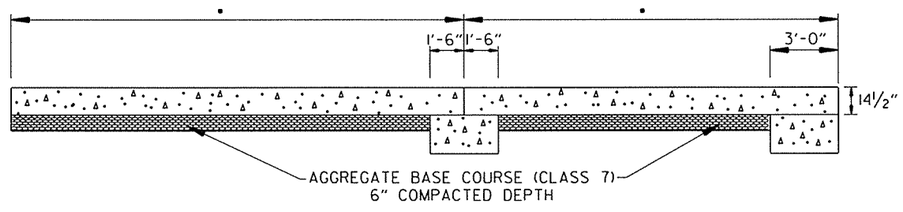
DETAIL FOR COUNTY ROAD TURNOUTS OPEN SHOULDER SECTION

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

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
3-10-15



DETAIL FOR TRANSITIONS



SPECIAL DETAIL OF APPROACH SLAB

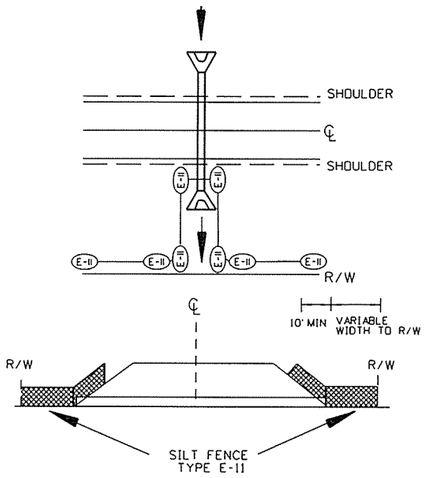
• REFER TO BRIDGE DRAWINGS

3/4/2015

R110570.DGN

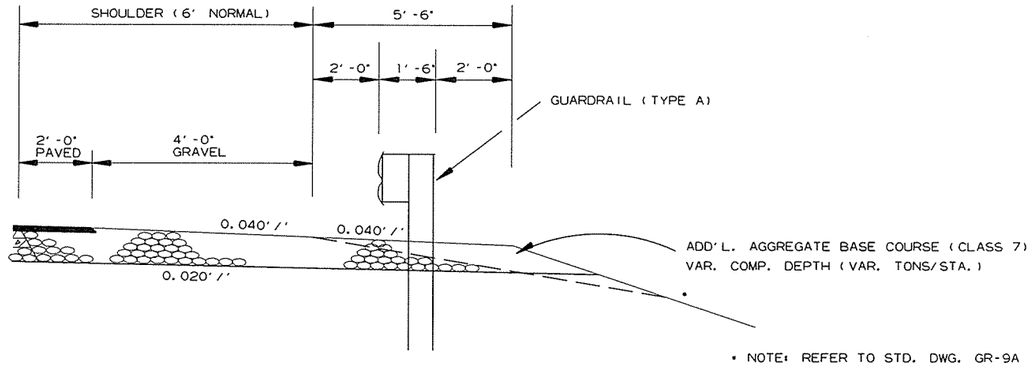
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110570	6	84

(2) SPECIAL DETAILS



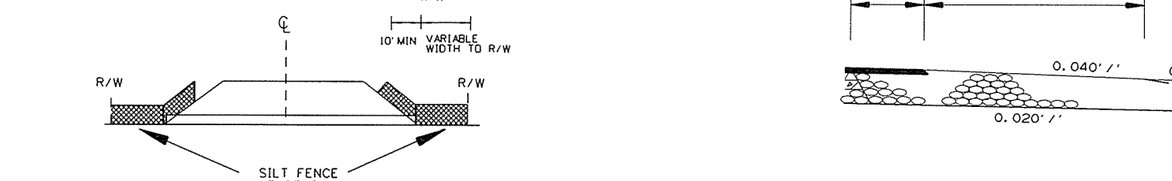
DETAIL OF SILT FENCE

AT CROSS DRAINS



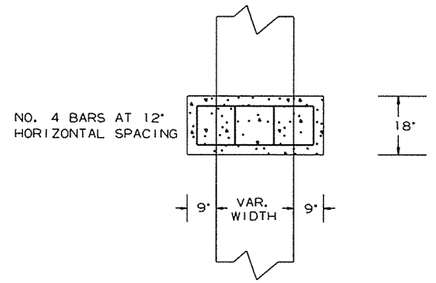
* NOTE: REFER TO STD. DWG. GR-9A AND CROSS SECTIONS FOR SLOPE REQUIREMENTS BEHIND GUARDRAIL.

WIDENING FOR GUARDRAIL



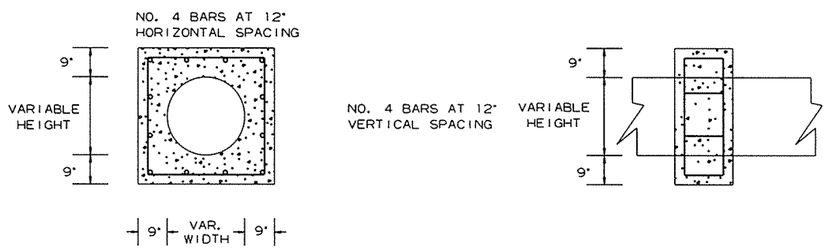
COMPACTED EMBANKMENT (SPECIAL)

STA. 106+00.00 - STA. 107+39.00, ELEVATION 188.1
STA. 110+98.00 - STA. 112+15.00, ELEVATION 187.7



TOP VIEW

MIN 3" COVER



FRONT VIEW SIDE VIEW

PIPE EXTENSION
REINFORCED CONCRETE COLLAR DETAIL

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
3-10-15

3/4/2015

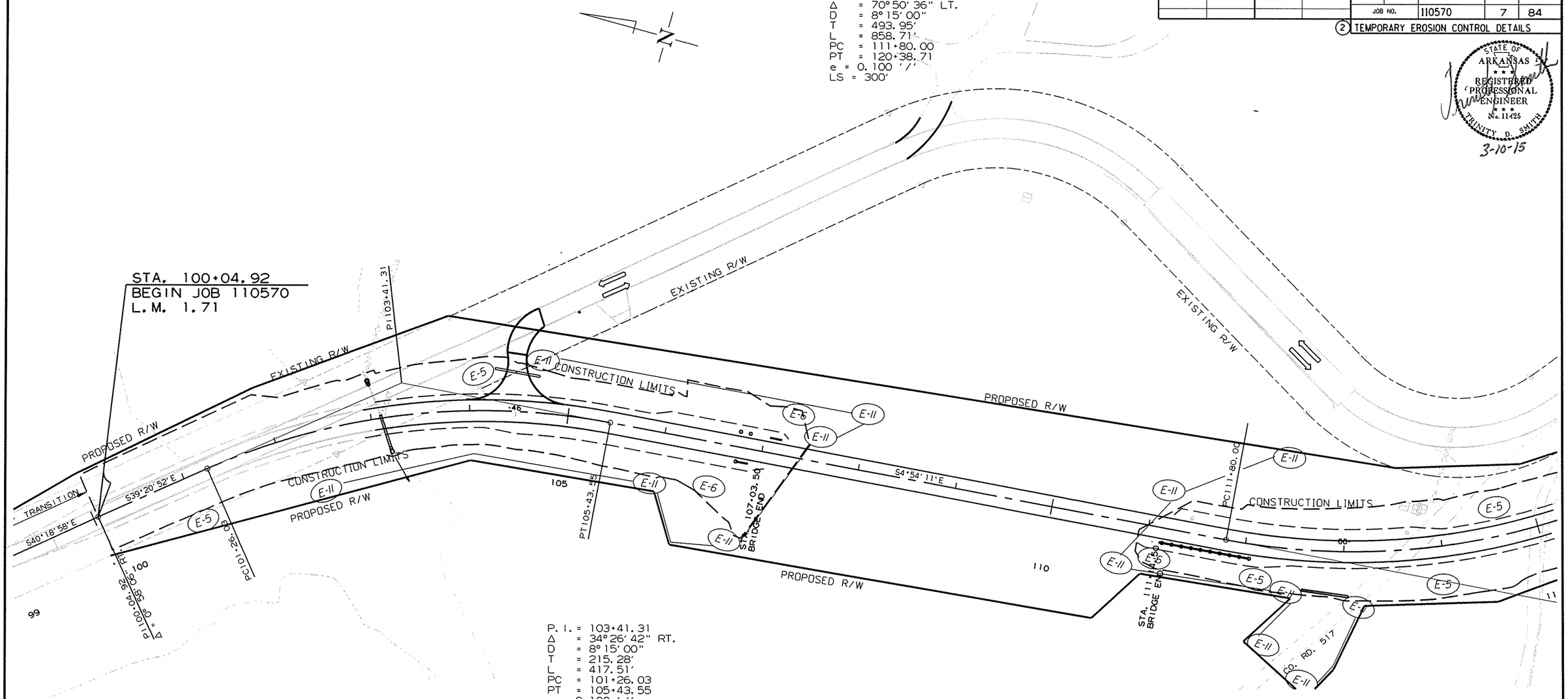
R110570.DGN

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.		110570	7	84

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
3-10-15

P. I. = 116+73.95
Δ = 70°50'36" LT.
D = 8°15'00"
T = 493.95'
L = 858.71'
PC = 111+80.00
PT = 120+38.71
e = 0.100 '/'
LS = 300'



P. I. = 103+41.31
Δ = 34°26'42" RT.
D = 8°15'00"
T = 215.28'
L = 417.51'
PC = 101+26.03
PT = 105+43.55
e = 0.100 '/'
LS = 300'

REVISIONS

DATE	REVISION

• MAINTAIN ALL EROSION CONTROL DEVICES UNTIL THE END OF JOB UNLESS OTHERWISE SPECIFIED.

STA.	STA.	SIDE	SAND BAG DITCH CHECKS (E-5) (BAG)	ROCK DITCH CHECKS (E-6) (CU.YD.)	SILT FENCE (E-11) (LIN.FT.)	STAGE
STA. 101+00		RT.	20			1,2
STA. 102+30	STA. 106+80	RT.			460	1,2
STA. 104+15		LT.	20			1,2
STA. 104+75	STA. 108+00	LT.			490	1,2
STA. 106+50		RT.		3		1,2
STA. 107+30		LT.		3		1,2
STA. 110+70	STA. 111+18	RT.			100	1,2
STA. 110+70	STA. 112+55	RT.			260	1,2
STA. 111+18		LT.			125	1,2
STA. 114+00		RT.	20			1,2
STA. 114+60		LT.	20			1,2
STA. 116+00		RT.	20			1,2
STA. 125+20		RT.	20			1,2

LEGEND

E-5	= SAND BAG DITCH CHECK
E-6	= ROCK DITCH CHECK
E-11	= SILT FENCE
E-14	= SEDIMENT BASIN

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED.

STAGE 1
TEMPORARY EROSION CONTROL DETAILS

3/4/2015

R110570.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110570	8	84

(2) TEMPORARY EROSION CONTROL DETAILS

STA.	STA.	SIDE	SAND BAG DITCH CHECKS (E-5) (BAG)	ROCK DITCH CHECKS (E-6) (CU.YD.)	SILT FENCE (E-11) (LIN.FT.)	STAGE
STA. 101+00		RT.	20			1,2
STA. 102+30	STA.106+80	RT.			460	1,2
STA. 104+15		LT.	20			1,2
STA. 104+75	STA. 108+00	LT.			490	1,2
STA. 106+50		RT.		3		1,2
STA. 107+30		LT.		3		1,2
STA. 110+70	STA. 111+18	RT.			100	1,2
STA. 110+70	STA. 112+55	RT.			260	1,2
STA. 111+18		LT.			125	1,2
STA. 114+00		RT.	20			1,2
STA. 114+60		LT.	20			1,2
STA. 116+00		RT.	20			1,2
STA. 125+20		RT.	20			1,2

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
3-10-15

FLOODPLAIN BOUNDARY

EXISTING R/W

P. I. = 116+73.95
Δ = 70° 50' 36" LT.
D = 8° 15' 00"
T = 493.95'
L = 858.71'
PC = 111+80.00
PT = 120+38.71
e = 0.100 '/'
LS = 300'

E-11

TION LIMITS

90'

E-5

E-5

CONSTRUCTION LIMITS

115 PROPOSED R/W

E-5

P.I 116+73.95

EXISTING R/W

PROPOSED R/W

P.I 120+38.71

EXISTING R/W

PROPOSED R/W

CONSTRUCTION LIMITS

S75°44'47"E

120

P.I 128+45.66

EXISTING R/W

CONSTRUCTION LIMITS

S75°44'47"E

S69

E-5

PROPOSED R/W

125

PC 125+29.76

P. I. = 128+45.66
Δ = 6° 18' 42" RT.
D = 1° 00' 00"
T = 315.91'
L = 631.17'
PC = 125+29.76
PT = 131+60.93
e = 0.021 '/'
LS = 250'

LEGEND

E-5	= SAND BAG DITCH CHECK
E-6	= ROCK DITCH CHECK
E-11	= SILT FENCE
E-14	= SEDIMENT BASIN

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED.

P.I 128+45.66

E-11

S69°26'05"E

E-5

POE 133+31.01

100' TRANSITION

S69°26'05"E

133

PT 131+60.93

130 PROPOSED R/W

STA. 132+21.10
END JOB 110570

P. I. = 128+45.66
Δ = 6° 18' 42" RT.
D = 1° 00' 00"
T = 315.91'
L = 631.17'
PC = 125+29.76
PT = 131+60.93
e = 0.021 '/'
LS = 250'

REVISIONS

DATE	REVISION

• MAINTAIN ALL EROSION CONTROL DEVICES UNTIL THE END OF JOB UNLESS OTHERWISE SPECIFIED.

STAGE 1
TEMPORARY EROSION CONTROL DETAILS

3/4/2015

R110570.DGN

REVISIONS

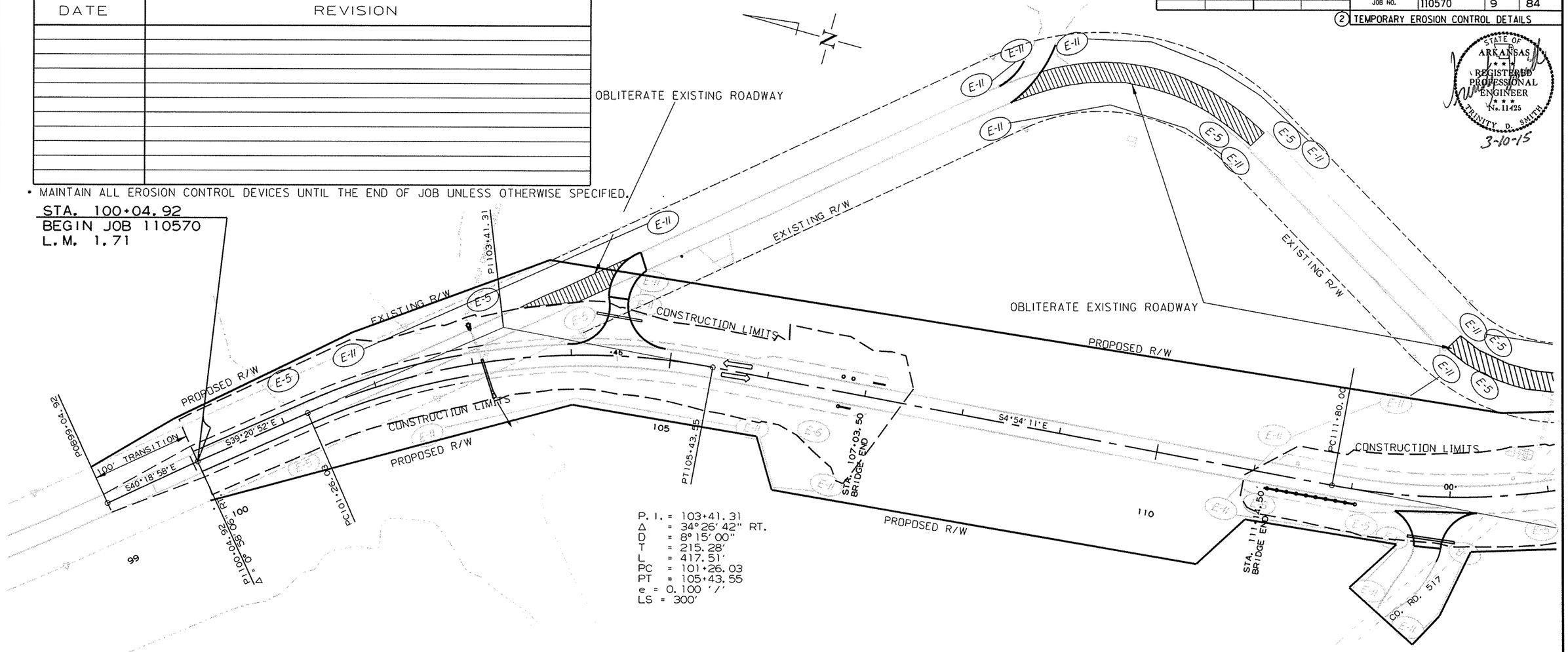
DATE	REVISION

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.		110570	9	84

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
3-10-15

- MAINTAIN ALL EROSION CONTROL DEVICES UNTIL THE END OF JOB UNLESS OTHERWISE SPECIFIED.



STA.	STA.	SIDE	SAND BAG DITCH CHECKS (E-5) (BAG)	ROCK DITCH CHECKS (E-6) (CU.YD.)	SILT FENCE (E-11) (LIN.FT.)	STAGE
STA. 101+00		RT.	20			1,2
STA. 101+10		LT.	20			2
STA. 101+80	STA. 104+80	LT.			300	2
STA. 102+30	STA. 106+80	RT.			460	1,2
STA. 103+15		LT.	20			2
STA. 104+15		LT.	20			1,2
STA. 104+75	STA. 108+00	LT.			490	1,2
STA. 106+50		RT.		3		1,2
STA. 107+50	STA. 108+00	LT.			50	2
STA. 107+30		LT.		3		1,2
STA. 107+80	STA. 110+30	LT.			295	2
STA. 108+25	STA. 111+15	LT.			320	2
STA. 110+00		LT.	20			2
STA. 110+70	STA. 111+18	RT.			100	1,2
STA. 110+70	STA. 112+55	RT.			260	1,2
STA. 110+70		LT.	20			2
STA. 111+18		LT.			125	1,2
STA. 112+50	STA. 112+80	LT.			30	2
STA. 113+15	STA. 114+90	LT.			130	2
STA. 113+35		LT.	40			2
STA. 114+00		RT.	20			1,2
STA. 114+60		LT.	20			1,2
STA. 114+90	STA. 128+70	LT.			1380	2
STA. 115+30	STA. 124+35	LT.			905	2
STA. 116+00		RT.	20			1,2
STA. 125+20		RT.	20			1,2

LEGEND

- (E-5) = SAND BAG DITCH CHECK
- (E-6) = ROCK DITCH CHECK
- (E-11) = SILT FENCE
- (E-14) = SEDIMENT BASIN

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED.

STAGE 2
TEMPORARY EROSION CONTROL DETAILS

3/4/2015

R110570.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110570	10	84

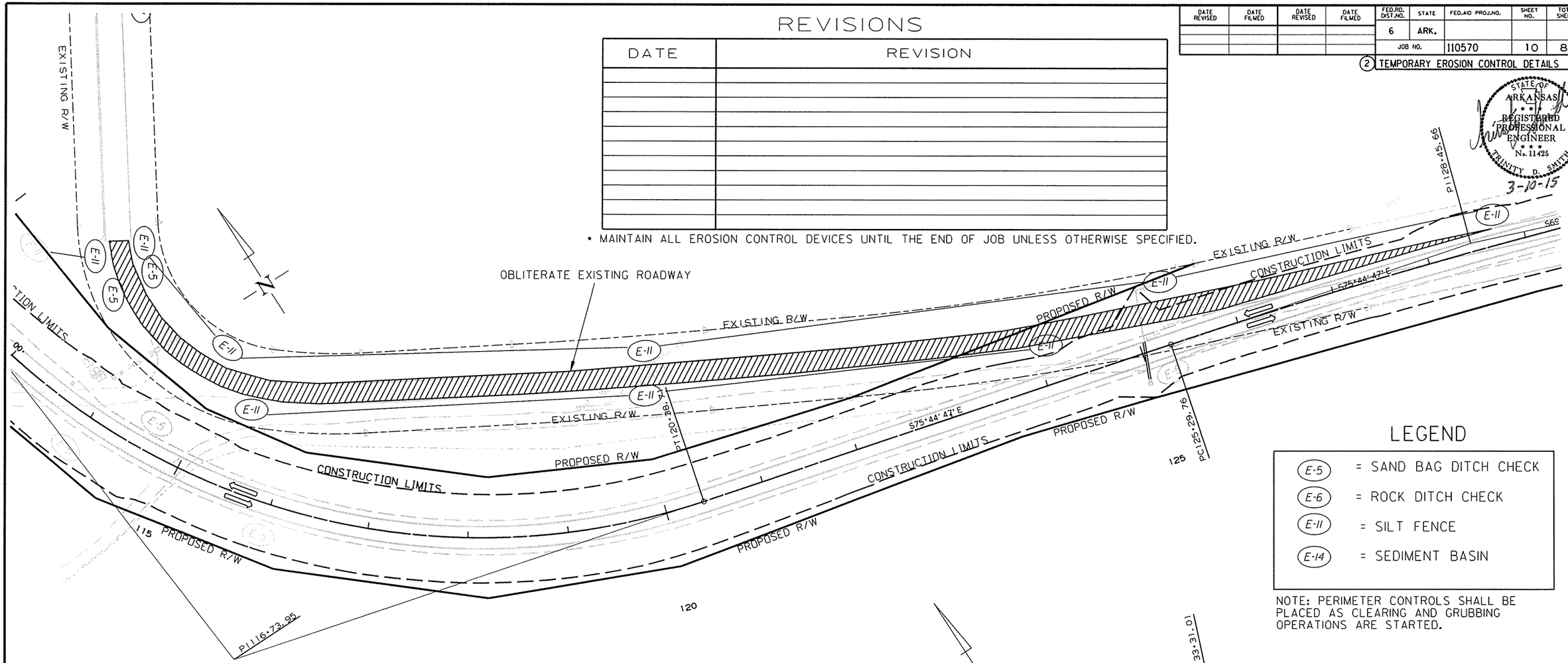
(2) TEMPORARY EROSION CONTROL DETAILS

REVISIONS

DATE	REVISION

• MAINTAIN ALL EROSION CONTROL DEVICES UNTIL THE END OF JOB UNLESS OTHERWISE SPECIFIED.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
3-10-15

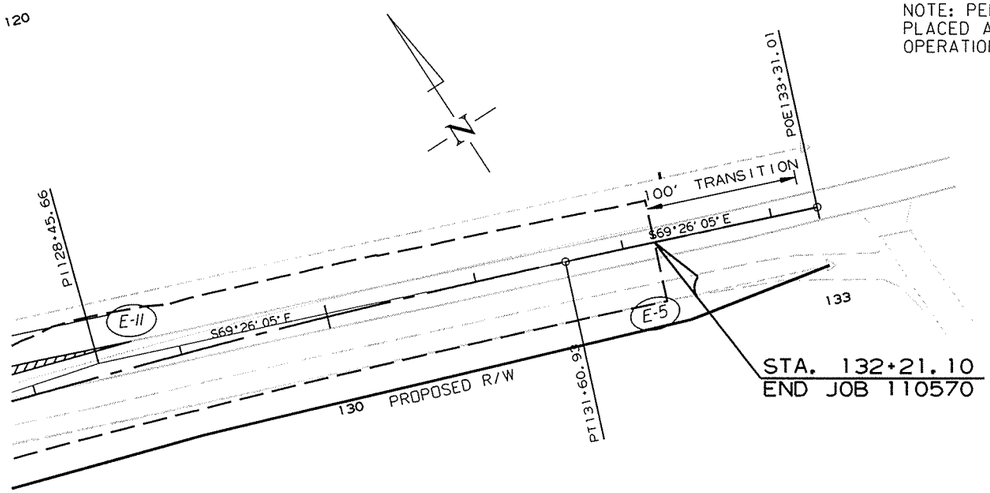


LEGEND

E-5	= SAND BAG DITCH CHECK
E-6	= ROCK DITCH CHECK
E-11	= SILT FENCE
E-14	= SEDIMENT BASIN

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED.

STA.	STA.	SIDE	SAND BAG DITCH CHECKS (E-5) (BAG)	ROCK DITCH CHECKS (E-6) (CU.YD.)	SILT FENCE (E-11) (LIN.FT.)	STAGE
STA. 101+00		RT.	20			1,2
STA. 101+10		LT.	20			2
STA. 101+80	STA. 104+80	LT.			300	2
STA. 102+30	STA. 106+80	RT.			460	1,2
STA. 103+15		LT.	20			2
STA. 104+15		LT.	20			1,2
STA. 104+75	STA. 108+00	LT.			490	1,2
STA. 106+50		RT.		3		1,2
STA. 107+50	STA. 108+00	LT.			50	2
STA. 107+30		LT.		3		1,2
STA. 107+80	STA. 110+30	LT.			295	2
STA. 108+25	STA. 111+15	LT.			320	2
STA. 110+00		LT.	20			2
STA. 110+70	STA. 111+18	RT.			100	1,2
STA. 110+70	STA. 112+55	RT.			260	1,2
STA. 110+70		LT.	20			2
STA. 111+18		LT.			125	1,2
STA. 112+50	STA. 112+80	LT.			30	2
STA. 113+15	STA. 114+90	LT.			130	2
STA. 113+35		LT.	40			2
STA. 114+00		RT.	20			1,2
STA. 114+60		LT.	20			1,2
STA. 114+90	STA. 128+70	LT.			1380	2
STA. 115+30	STA. 124+35	LT.			905	2
STA. 116+00		RT.	20			1,2
STA. 125+20		RT.	20			1,2



3/4/2015

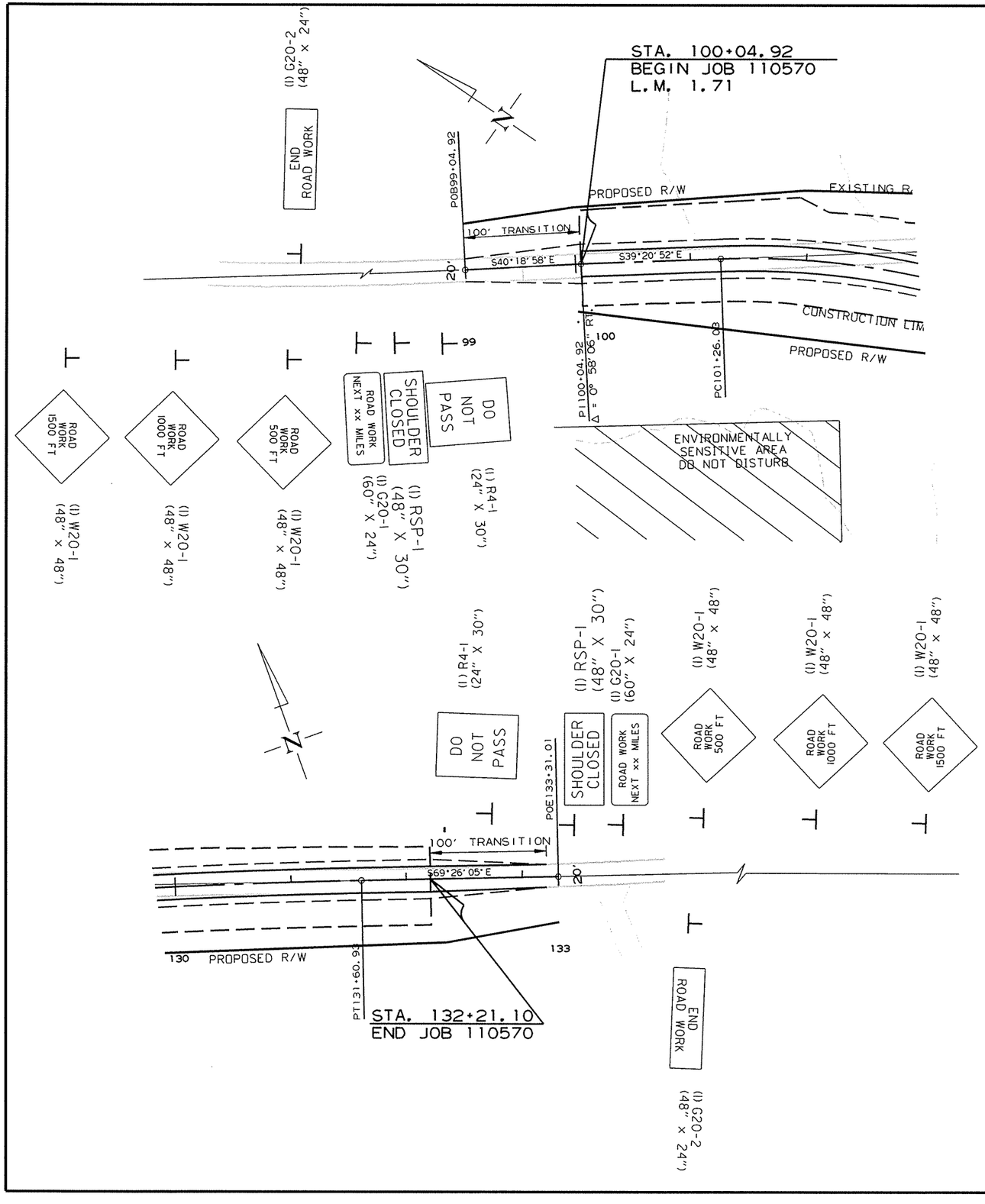
R110570.DGN

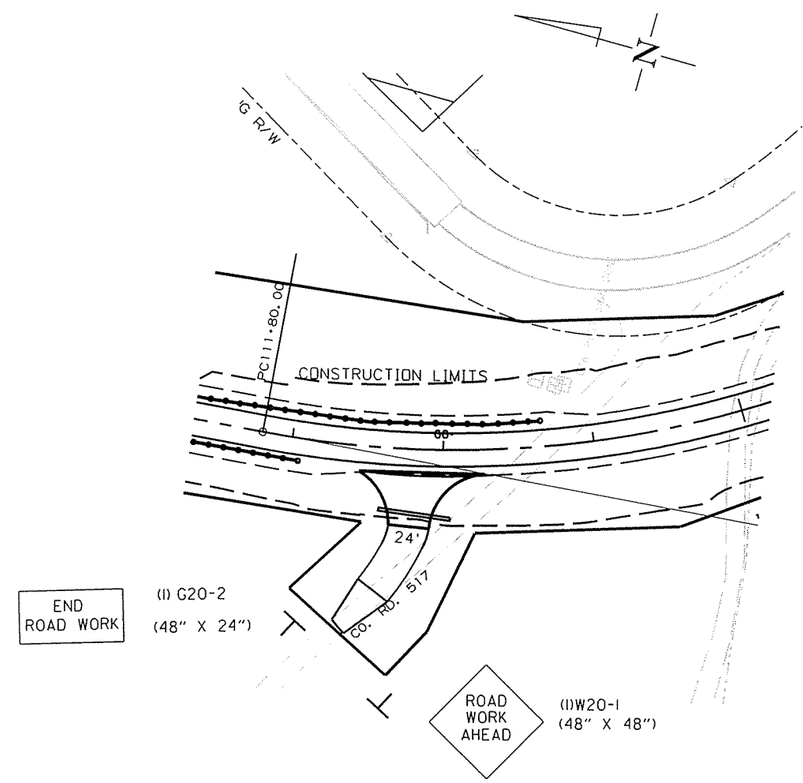
STAGE 2
TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110570	11	84

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
3-10-15





ADVANCE WARNING SIGNS
MAINTENANCE OF TRAFFIC DETAILS

3/6/2015

R110570.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.		110570	12	84

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
3-10-15

P. I. = 116+73.95
Δ = 70°50'36" LT.
D = 8°15'00"
T = 493.95'
L = 858.71'
PC = 111+80.00
PT = 120+38.71
e = 0.100 '/'
LS = 300'

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

2 TRAFFIC DRUMS @ PIPE CULVERT

3 TRAFFIC DRUMS @ DRWY.

STA. 100+04.92
BEGIN JOB 110570

EXISTING R/W

PI 103+41.31

PROPOSED R/W

CONSTRUCTION LIMITS

TRANSITION

S39°20'52"E

S0°18'58"E

PROPOSED R/W

5 VERTICAL PANELS @ 40' O.C.

3 TRAFFIC DRUMS @ 50' O.C.

PI 100+04.92

PC 101+26.03

PT 105+43.55

STA. 107+03.54 BRIDGE END

S4°54'11"E

PROPOSED R/W

EXISTING R/W

PC 111+80.00

CONSTRUCTION LIMITS

STA. 111+14.50 BRIDGE END

24'

CO. RD. 517

6 TRAFFIC DRUMS @ CO. RD. CONNECTION

TRAFFIC DRUMS @ EXIST. CO. RD. SEE SHEET 13

3 TRAFFIC DRUMS @ CO. RD.

(1) RII-2
(48" X 30")
ROAD CLOSED
8' BARR. TYP. III RT.
8' BARR. TYP. III LT.

P. I. = 103+41.31
Δ = 34°26'42" RT.
D = 8°15'00"
T = 215.28'
L = 417.51'
PC = 101+26.03
PT = 105+43.55
e = 0.100 '/'
LS = 300'

SEQUENCE:

STAGE 1.

MAINTAIN TRAFFIC ON EXISTING ROADWAY, CONSTRUCT BRIDGE AND NEW ROADWAY ALIGNMENT, CONSTRUCT DRIVEWAY/COUNTY ROADWAY UNDER TRAFFIC. PERFORM NOTCH AND WIDEN ON RT.

STAGE 2.

SHIFT TRAFFIC AND MAINTAIN ON NEW ROADWAY ALIGNMENT AND BRIDGE, COMPLETE NOTCH AND WIDEN, PIPE CULVERTS AND FINAL SLOPE GRADES. PERFORM FINAL SURFACING AND FINAL STRIPING.

STAGE 3.

REMOVE EXISTING BRIDGE STRUCTURE AND OLD ROADWAY AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

TOTAL
TRAFFIC DRUMS = 17 EACH
VERTICAL PANELS = 5 EACH

STAGE 1
MAINTENANCE OF TRAFFIC DETAILS

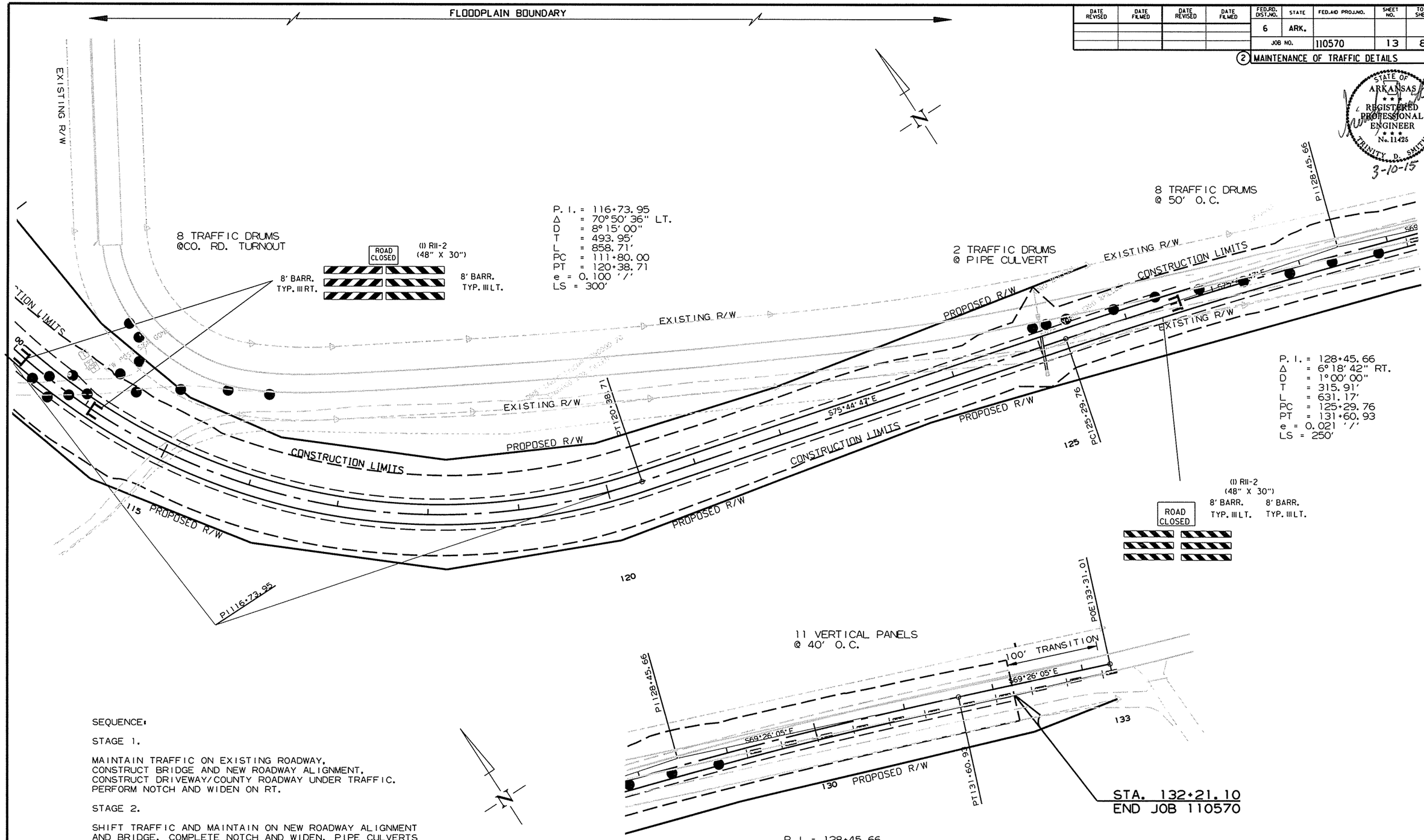
3/11/2015

R110570.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.		110570	13	84

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
3-10-15



SEQUENCE:

STAGE 1.

MAINTAIN TRAFFIC ON EXISTING ROADWAY.
CONSTRUCT BRIDGE AND NEW ROADWAY ALIGNMENT.
CONSTRUCT DRIVEWAY/COUNTY ROADWAY UNDER TRAFFIC.
PERFORM NOTCH AND WIDEN ON RT.

STAGE 2.

SHIFT TRAFFIC AND MAINTAIN ON NEW ROADWAY ALIGNMENT AND BRIDGE. COMPLETE NOTCH AND WIDEN. PIPE CULVERTS AND FINAL SLOPE GRADES. PERFORM FINAL SURFACING AND FINAL STRIPING.

STAGE 3.

REMOVE EXISTING BRIDGE STRUCTURE AND OLD ROADWAY AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

P. I. = 128+45.66
Δ = 6° 18' 42" RT.
D = 1° 00' 00"
T = 315.91'
L = 631.17'
PC = 125+29.76
PT = 131+60.93
e = 0.021 '/'
LS = 250'

TOTAL
TRAFFIC DRUMS = 18 EACH
VERTICAL PANELS = 11 EACH

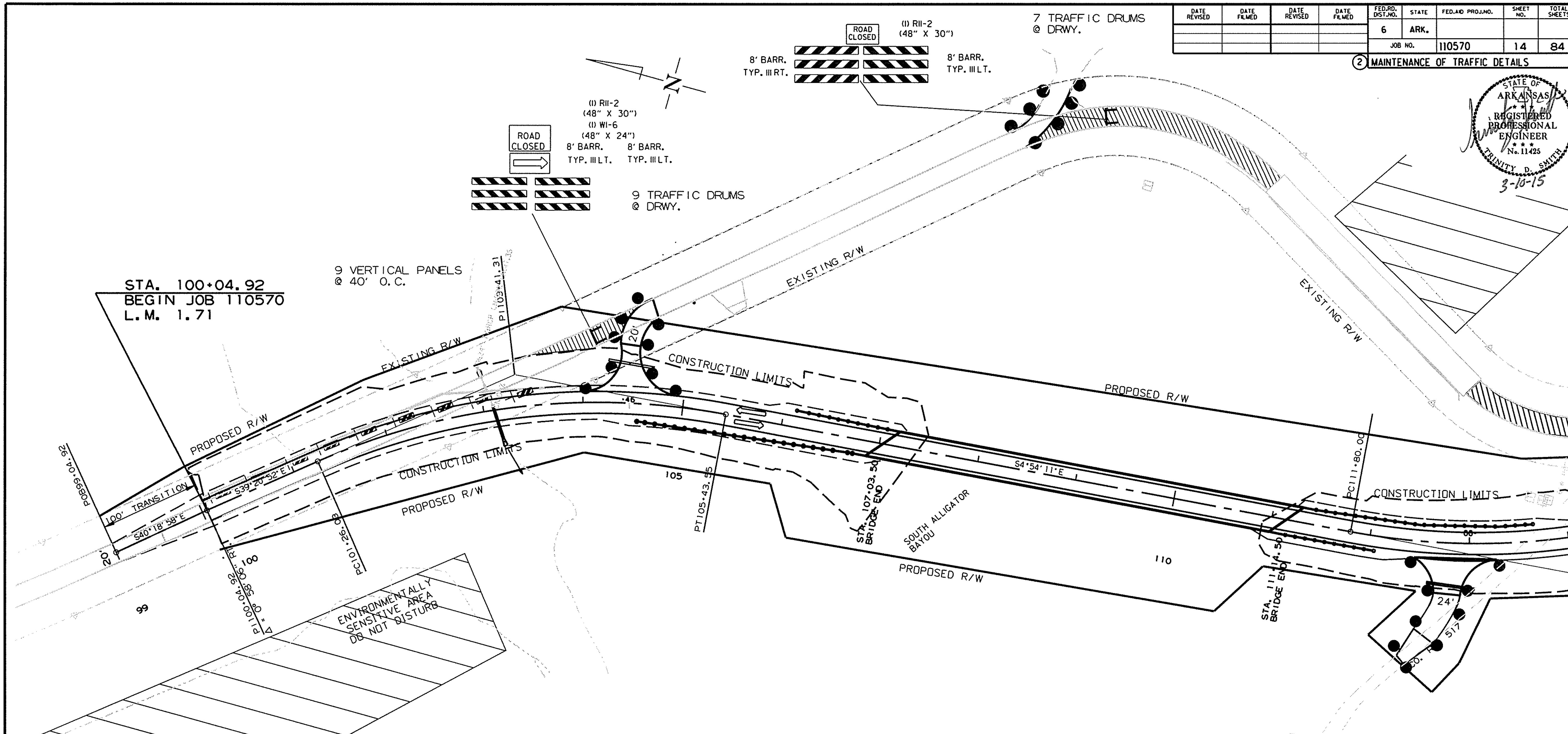
STAGE 1
MAINTENANCE OF TRAFFIC DETAILS

3/9/2015

R110570.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.		110570	14	84

(2) MAINTENANCE OF TRAFFIC DETAILS



P.I. = 103+41.31
Δ = 34°26'42" RT.
D = 8°15'00"
T = 215.28'
L = 417.51'
PC = 101+26.03
PT = 105+43.55
e = 0.100 '/'
LS = 300'

SEQUENCE:

STAGE 1.

MAINTAIN TRAFFIC ON EXISTING ROADWAY. CONSTRUCT BRIDGE AND NEW ROADWAY ALIGNMENT. CONSTRUCT DRIVEWAY/COUNTY ROADWAY UNDER TRAFFIC. PERFORM NOTCH AND WIDEN ON RT.

STAGE 2.

SHIFT TRAFFIC AND MAINTAIN ON NEW ROADWAY ALIGNMENT AND BRIDGE. COMPLETE NOTCH AND WIDEN, PIPE CULVERTS AND FINAL SLOPE GRADES. PERFORM FINAL SURFACING AND FINAL STRIPING.

STAGE 3.

REMOVE EXISTING BRIDGE STRUCTURE AND OLD ROADWAY AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

TOTAL
TRAFFIC DRUMS = 25 EACH
VERTICAL PANELS = 9 EACH

STAGE 2
MAINTENANCE OF TRAFFIC DETAILS

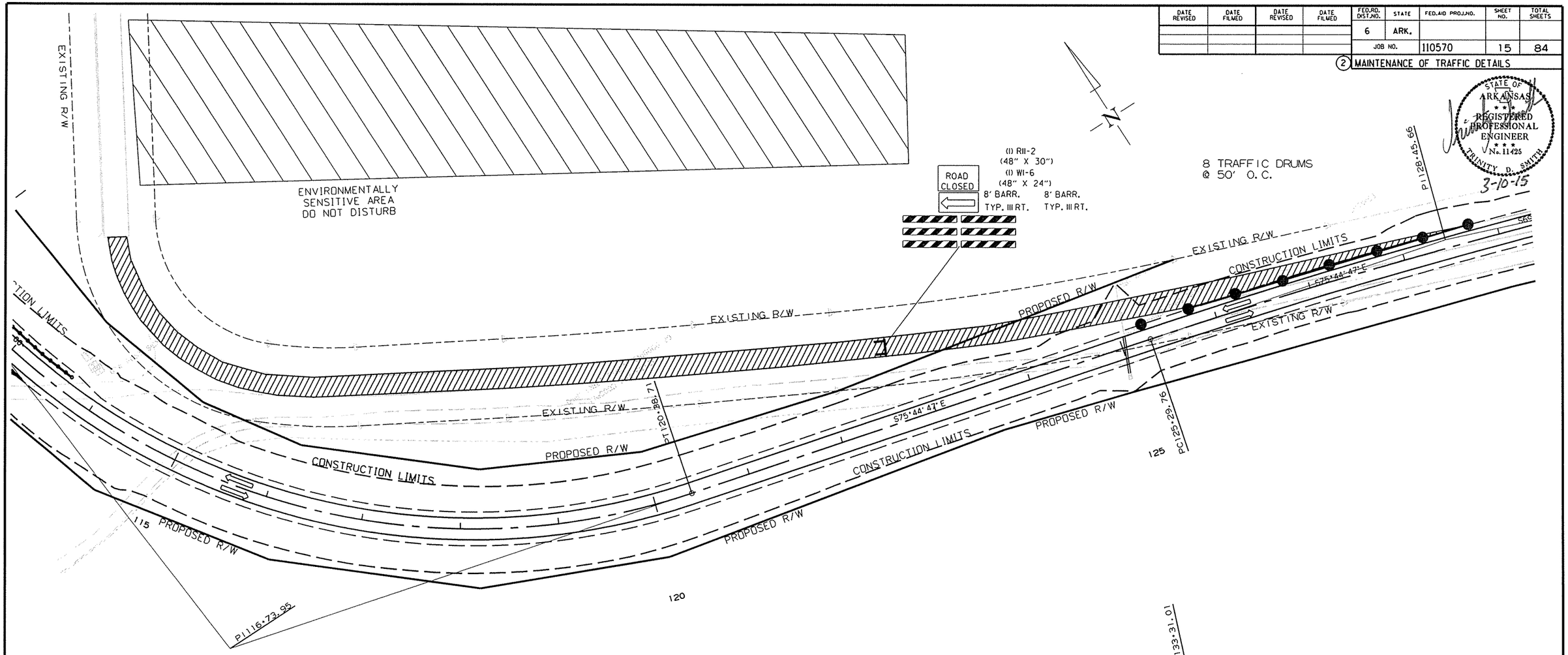
3/9/2015

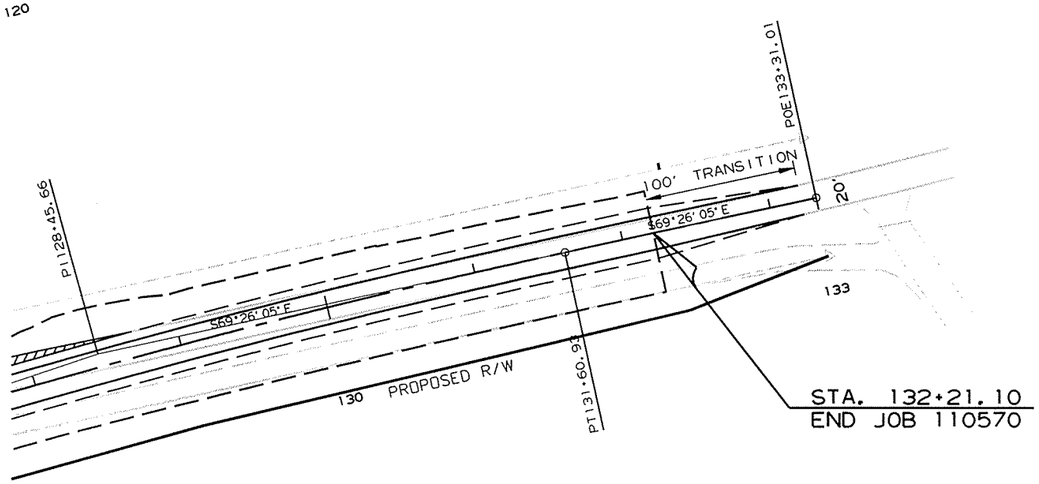
R110570.DGN

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.		110570	15	84

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
3-10-15





TOTAL
TRAFFIC DRUMS = 8 EACH

SEQUENCE:

STAGE 1.

MAINTAIN TRAFFIC ON EXISTING ROADWAY, CONSTRUCT BRIDGE AND NEW ROADWAY ALIGNMENT, CONSTRUCT DRIVEWAY AND COUNTY ROADWAY TURNOUTS UNDER TRAFFIC. PERFORM NOTCH AND WIDEN ON RT.

STAGE 2.

SHIFT TRAFFIC AND MAINTAIN ON NEW ROADWAY ALIGNMENT AND BRIDGE. COMPLETE NOTCH AND WIDEN. PIPE CULVERTS AND FINAL SLOPE GRADES. PERFORM FINAL SURFACING AND FINAL STRIPING.

STAGE 3.

REMOVE EXISTING BRIDGE STRUCTURE AND OLD ROADWAY AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

3/6/2015

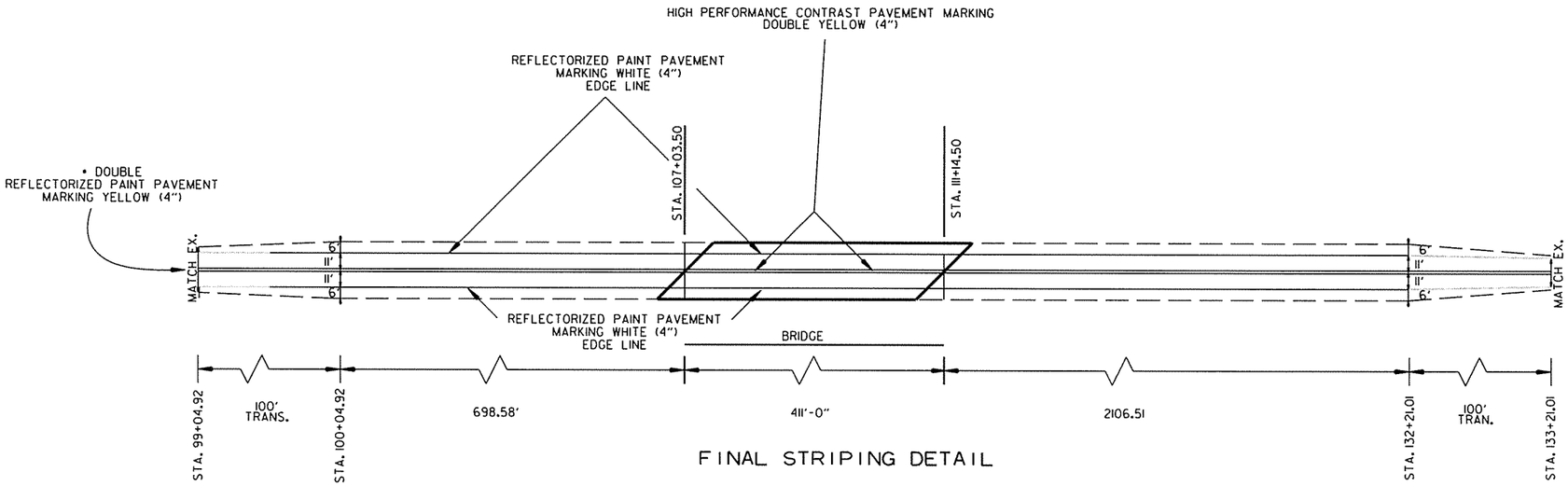
R110570.DGN

STAGE 2
MAINTENANCE OF TRAFFIC DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110570	16	84

(2) PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
3-10-15



FINAL STRIPING DETAIL

FINAL STRIPING: HWY. 131

REFLECTORIZED PAINT PAVEMENT MARKINGS

RT. AND LT. EDGE LINES WHITE (4") = 6832 LIN. FT.
DBL. CENTERLINE YELLOW (4") = 6010 LIN. FT.

HIGH PERFORMANCE CONTRAST PAVEMENT MARKINGS

DBL. CENTERLINE YELLOW (4") = 822 LIN. FT.

CONSTRUCTION PAVEMENT MARKINGS = 2046 LIN. FT.
REMOVAL OF PERMANENT PAVEMENT MARKINGS = 3348 LIN. FT.
REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS = 200 LIN. FT.

FINAL STRIPING: OLD ROADWAY DRIVEWAY

REFLECTORIZED PAINT PAVEMENT MARKINGS

RT. AND LT. EDGE LINES WHITE (4") = 150 LIN. FT.
DBL. CENTERLINE YELLOW (4") = 150 LIN. FT.

REMOVAL OF PERMANENT PAVEMENT MARKING = 200 LIN. FT.

*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.

3/4/2015

R110570.DGN

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.		110570	17	84

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
3-10-15

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

SIGN NUMBER	DESCRIPTION	SIGN SIZE	STAGE 1	STAGE 2	STAGE 3	END JOB	MAXIMUM NUMBER REQUIRED	TOTAL SIGNS REQUIRED		TRAFFIC DRUMS	VERTICAL PANELS	BARRICADES (TYPE III)		REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS	REMOVAL OF PERMANENT PAVEMENT MARKINGS	CONSTRUCTION PAVEMENT MARKINGS	REFLECTORIZED PAINT PAVEMENT MARKING		*HIGH PERFORMANCE CONTRAST PAVEMENT MARKING
												RIGHT	LEFT				WHITE (4")	YELLOW (4")	YELLOW (4")
			SQ.FT. - LIN.FT. - EACH					NO.	SQ.FT.	EACH	EACH	LIN. FT.		LIN. FT.			LIN.FT.		LIN. FT.
W20-1	ROAD WORK 1500 FT.	48"X48"	2	2	2	2	2	2	32.0										
W20-1	ROAD WORK 1000 FT.	48"X48"	2	2	2	2	2	2	32.0										
W20-1	ROAD WORK 500 FT.	48"X48"	2	2	2	2	2	2	32.0										
W20-1	ROAD WORK AHEAD	48"X48"	1	1	1	1	1	1	16.0										
G20-1	ROAD WORK NEXT X.X MILES	60"X24"	2	2	2	2	2	2	20.0										
G20-2	END ROAD WORK	48"X24"	3	3	3	3	3	3	24.0										
R11-2	ROAD CLOSED	48"X30"	3	3	3	3	3	3	30.0										
R4-1	DO NOT PASS	24"X30"	2	2	2	2	2	2	10.0										
RSP-1	SHOULDER CLOSED	48"X30"	2	2	2	2	2	2	20.0										
W1-6	ARROW	48"X24"	2	2	2	2	2	2	16.0										
	TRAFFIC DRUMS		35	33			35			35									
	VERTICAL PANELS		16	9			16				16								
	TYPE III BARRICADE-RT. (8')			4			4					32							
	TYPE III BARRICADE-LT. (8')			4			4						32						
	REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS													200					
	REMOVAL OF PERMANENT PAVEMENT MARKINGS														3548				
	CONSTRUCTION PAVEMENT MARKINGS															2046			
	REFLECTORIZED PAINT PAVEMENT MARKING WHITE (4")																6982		
	REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (4")																	6160	
	HIGH PERFORMANCE CONTRAST PAVEMENT MARKING YELLOW (4")																		822
TOTALS:									232.0	35	16	32	32	200	3548	2046	6982	6160	822

THIS IS A LOW TRAFFIC VOLUME ROAD AS DEFINED IN SECTION 604.03, STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, 2014 EDITION.

* THE 4" YELLOW STRIPING QUANTITIY 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.

2/25/2015

R110570.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.		110570	18	84

(2) QUANTITIES

ACHM PATCHING OF EXISTING ROADWAY

LOCATION	ACHM PATCHING OF EXISTING ROADWAY
	TON
ENTIRE PROJECT - IF	50
AND WHERE DIRECTED	
BY THE ENGINEER.	
TOTAL:	50

QUANTITY ESTIMATED.
SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

4" PIPE UNDERDRAINS

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

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

SOIL LOG

STATION	LOCATION	DEPTH	LIQUID LIMIT	PLASTICITY INDEX	AASHTO SOIL CLASS	COLOR
104+00	5' RT.	0-5	ND	NP	A-4(0)	BROWN
104+00	15' RT.	0-5	27	6	A-4(5)	BROWN
114+00	5' LT.	0-5	36	19	A-6(16)	BROWN
114+00	15' LT.	0-5	33	18	A-6(11)	BROWN
104+00	15'RT.	0-5	28	6	A-74(4)	BROWN

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

COLD MILLING ASPHALT PAVEMENT

STATION	STATION	DESCRIPTION	LENGTH	WIDTH	COLD MILLING ASPHALT PAVEMENT
			LIN. FT.		SQ. YD.
99+04	100+04	MAIN LANES	100	20	222
132+21	133+21	MAIN LANES	100	20	222
TOTAL:					444

CLEARING AND GRUBBING

STATION	STATION	CLEARING	GRUBBING
		STATION	
100+04	107+04	8	8
111+15	132+21	22	22
TOTALS:		30	30

BENCH MARKS

LOCATION	BENCH MARKS
	EACH
STA. 1111+14.50 BRIDGE END	1

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

SOIL STABILIZATION

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

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

ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC

LOCATION	ASPHALT CONC. PATCHING FOR MAINT. OF TRAFFIC	TACK COAT
	TON	GALLON
ENTIRE PROJECT - IF	20	40
AND WHERE DIRECTED		
BY THE ENGINEER.		
TOTALS:	20	40

BASIS OF ESTIMATE:
ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC = 25 TONS PER MI.
TACK COAT = 50 GAL. PER MI.
QUANTITIES ESTIMATED.
SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
3-10-15

2/25/2015

R110570.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.		110570	19	84

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
3-10-15

APPROACH SLABS

STATION	STATION	APPROACH SLABS (TYPE A) WIDTH = 22'-0"	REINF. STEEL - RDWY. (GRADE 60)	AGGREGATE BASE COURSE (CLASS 7)
		CU. YD.	POUNDS	TONS
106+73.50	107+03.50	27.30	2110	43.75
111+14.50	111+44.50	27.30	2110	43.75
TOTALS:		54.60	4220	87.50

SELECTED PIPE BEDDING

LOCATION	SELECTED PIPE BEDDING
	CU.YD.
ENTIRE PROJECT - TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.	50
TOTAL:	50

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

PERMANENT EROSION CONTROL

STATION	STATION	LOCATION	SEEDING	LIME	MULCH COVER	WATER	SECOND SEEDING APPLICATION
			ACRE	TON	ACRE	M. GAL.	ACRE
100+04.92	107+03.50	MAIN LANES	0.83	2	0.83	84.7	0.83
111+14.50	132+21.10	MAIN LANES	1.82	4	1.82	185.6	1.82
ENTIRE	PROJECT	COUNTY RD. 517	0.12		0.12	0.1	0.12
ENTIRE	PROJECT	OLD ROADWAY	0.63	1	0.63	64.3	0.63
* ENTIRE	PROJECT	IF AND WHERE DIRECTED	1.00	2	1.00	102.0	1.00
		BY THE ENGINEER					
TOTALS:			4.40	9	4.40	436.7	4.40

BASIS OF ESTIMATE:
LIME ..... 2 TONS PER ACRE SEEDING;
WATER ..... 102.0 M.GAL. PER ACRE SEEDING
*QUANTITIES ARE ESTIMATED. TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER. SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

GUARDRAIL

STATION	STATION	SIDE	GUARDRAIL (TYPE A)	TERMINAL ANCHOR POSTS (TYPE 1)	THRIE BEAM GUARDRAIL TERMINAL
			LIN. FT.	EACH	
104+57.35	106+88.50	RT.	200	1	1
106+12.35	107+15.50	LT.	75	1	1
110+99.50	112+05.65	RT.	75	1	1
111+29.50	113+60.65	LT.	200	1	1
TOTALS:			550	4	4

TEMPORARY EROSION CONTROL

STATION	STATION	LOCATION	WATTLE 20" (E-1)	SAND BAG DITCH CHECKS (E-5)	ROCK DITCH CHECKS (E-6)	SILT FENCE (E-11)	*SEDIMENT BASIN (E-14)	*OBLITERATION OF SEDIMENT BASIN	*SEDIMENT REMOVAL AND DISPOSAL	TEMPORARY SEEDING	MULCH COVER	WATER
			LIN. FT.	BAG	CU. YD.	LIN. FT.	CU. YD.	CU. YD.	CU. YD.	ACRE	ACRE	M.GAL.
100+04.92	132+21.10	MAIN LANES		240	6	4845	32	32		2.77	2.77	56.5
* ENTIRE	PROJECT	IF AND WHERE DIRECTED	225	20	3				100			
		BY THE ENGINEER										
TOTALS :			225	260	9	4845	32	32	100	2.77	2.77	56.5

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

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

*QUANTITIES ESTIMATED. TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER. SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

APPROACH GUTTERS

STATION	STATION	SIDE	APPROACH GUTTERS (TYPE A) W=4'-0"	REINFORCING STEEL - RDWY. (GRADE 60)
			CU. YD.	POUNDS
106+78.50	106+88.50	RT.	4.25	360
107+08.50	107+18.50	LT.	4.25	360
110+99.50	111+09.50	RT.	4.25	360
111+29.50	111+39+50	LT.	4.25	360
TOTALS:			17.00	1440

2/25/2015

R110570.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.		110570	20	84

(2) QUANTITIES

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 3-10-15

DRIVEWAYS & TURNOUTS- BASE & SURFACING

STATION	SIDE	LOCATION	DESCRIPTION	WIDTH	ACHM EXTENSION LENGTH	TURNOUT AREA	TOTAL DRIVEWAY AREA	AGGREGATE BASE COURSE (CLASS 7) (7" COMP. DEPTH)	ACHM SURFACE COURSE (1/2") (PG 64-22) (220 LB./SQ. YD.)	24" SIDE DRAIN
				LIN.FT.		SQ. YD.	SQ. YD.	TON	TON	LIN. FT.
104+46	LT.	MAIN LANES	DRIVEWAY	20	43	64	160	64.96	17.60	46
107+95	LT.	OLD ROADWAY	DRIVEWAY	20		97	97	39.38	10.67	
113+00	RT.	MAIN LANES	COUNTY RD. TURNOUT	24	82	72	291	118.15	7.92	56
TOTALS:							548	222.49	36.19	102

BASIS OF ESTIMATE:
VOLUME CONTROL: ACHM SURFACE COURSE (1/2"): MIN. AGGR. 94.8%, ASPHALT BINDER (PG 64-22) 5.2%

Nmax= 115 GYRATIONS FOR PG 64-22
NOTE: FOR R.C. CULVERTS INSTALLATIONS USE TYPE 3 BEDDING UNLESS OTHERWISE SPECIFIED.
NOTE : FOR C.M. PIPE CULVERTS USE TYPE 2 BEDDING UNLESS OTHERWISE SPECIFIED.

BASE AND SURFACING

STATION	STATION	LOCATION	LENGTH	AGGREGATE BASE COURSE (CLASS 7)		TACK COAT				ACHM BINDER COURSE (1")				ACHM SURFACE COURSE (1/2")			
						AVERAGE WIDTH	SQ. YD.	GAL. PER SQ.YD.	GALLON	AVERAGE WIDTH	SQ.YD.	LBS. PER SQ.YD.	(PG 64-22) TON	AVERAGE WIDTH	SQ.YD.	LBS. PER SQ.YD.	(PG 64-22) TON
			LIN.FT.	TONS/STA.	TON	LIN. FT.				LIN. FT.				LIN. FT.			
99+04.92	100+04.92	MAIN LANES TRANSITION	100.00	66.25	66.25	20.00	222.22	0.10	22.22	1.15	12.78	330	2.11	20.00	222.22	220	24.44
100+04.92	102+41.00	MAIN LANES - NOTCH & WIDEN	236.08	132.50	312.81	2.00	52.46	0.03	1.57	2.29	60.07	330	9.91	26.00	682.01	220	75.02
102+41.00	106+73.50	MAIN LANES - FULL DEPTH	432.50	236.00	1020.70	22.29	1071.16	0.03	32.13	22.29	1071.16	330	176.74	26.00	1249.44	220	137.44
111+44.50	128+10.00	MAIN LANES - FULL DEPTH	1665.50	236.00	3930.58	22.29	4124.89	0.03	123.75	22.29	4124.89	330	680.61	26.00	4811.44	220	529.26
128+10.00	132+21.10	MAIN LANES - NOTCH & WIDEN	411.10	132.50	544.71	2.00	91.36	0.03	2.74	2.29	104.60	330	17.26	26.00	1187.62	220	130.64
132+21.10	133+21.10	MAIN LANES TRANSITION	100.00	66.25	66.25	20.00	222.22	0.10	22.22	1.15	12.78	330	2.11	20.00	222.22	220	24.44
104+14.35	104+47.35	MAIN LANES - ADD'L - GUARDRAIL WIDENING TAPER RT.	33.00	27.63	9.12												
104+47.35	106+88.50	MAIN LANES - ADD'L - GUARDRAIL WIDENING RT.	241.15	55.25	133.24												
105+69.35	106+02.35	MAIN LANES - ADD'L - GUARDRAIL WIDENING TAPER LT.	33.00	27.63	9.12												
106+02.35	107+18.50	MAIN LANES - ADD'L - GUARDRAIL WIDENING LT.	116.15	55.25	64.17												
110+99.50	112+15.65	MAIN LANES - ADD'L - GUARDRAIL WIDENING RT.	116.15	55.25	64.17												
112+15.65	112+48.65	MAIN LANES - ADD'L - GUARDRAIL WIDENING TAPER RT.	33.00	27.63	9.12												
111+29.50	113+70.65	MAIN LANES - ADD'L - GUARDRAIL WIDENING LT.	241.15	55.25	133.24												
113+70.65	114+03.65	MAIN LANES - ADD'L - GUARDRAIL WIDENING TAPER LT.	33.00	27.63	9.12												
		.															
ENTIRE	PROJECT	MAIN LANES - LEVELING	500.00			20.00	1111.11	0.10	111.11					20.00	1111.11	220	122.22
ENTIRE	PROJECT	ADDITIONAL FOR TEMPOARY DRIVEWAYS			100.00												
ENTIRE	PROJECT	ADDITIONAL FOR SUPERELEVATION			685.00												
ENTIRE	PROJECT	MAIN LANES - METHOD OF RAISING GRADE	500.00			20.00	1111.11	0.10	111.11	20.00	1111.11	1210.00	672.22				
TOTALS:					7157.60		8006.53		426.85		6497.39		1560.96		9486.06		1043.46

VOLUME CONTROL: ACHM SURFACE COURSE (1/2"): MIN. AGGR. 94.8%, ASPHALT BINDER (PG 64-22) 5.2%
ACHM BINDER COURSE (1"): MIN. AGGR. 95.7%, ASPHALT BINDER (PG 64-22) 4.3%
Nmax= 115 GYRATIONS FOR PG 64-22

2/25/2015

R110570.DGN

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.		110570	21	84

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
4-6-15

REMOVAL AND DISPOSAL OF ITEMS

STATION	STATION	DESCRIPTION	SIDE	GUARDRAIL	PIPE CULVERT	DISPOSAL OF WASTE	REMOVAL & DISPOSAL OF TIRES
				LIN. FT.	EACH	CU.YD.	EACH
109+94	110+34	GUARDRAIL AT EX. BRIDGE END	RT.	40			
113+13	113+70	GUARDRAIL AT EX. BRIDGE END	LT.	57			
118+50	125+20	DEBRIS	LT.			10	2
125+02		18" X 25' PIPE CULVERT FIELD DRAIN	RT.		1		
125+05		24" X 38' R.C. PIPE CULVERT CROSS DRAIN	LT.		1		
TOTALS:				97	2	10	2

EARTHWORK

STATION	STATION	LOCATION	UNCLASSIFIED EXCAVATION	COMPACTED EMBANKMENT	* COMPACTED EMBANKMENT (SPECIAL)
			CU.YD.	CU. YD.	CU. YD.
100+04.92	107+39.00	MAIN LANES	326	3107	
110+98.00	132+21.10	MAIN LANES	3963	6434	
106+00.00	107+39.00	MAIN LANES - GEOGRID REINFORCEMENT			5220
110+98.00	112+15.00	MAIN LANES - GEOGRID REINFORCEMENT			1672
ENTIRE	PROJECT	OBLITERATION OLD ROADWAY	1535		
ENTIRE	PROJECT	CHANNEL EXCAVATION	2108		
ENTIRE	PROJECT	DRIVEWAYS		370	
ENTIRE	PROJECT	TEMPORARY DRIVEWAYS		50	
ENTIRE	PROJECT	TEMPORARY WORK ROADS		360	
TOTALS:			7932	10321	6892

*REFER TO SPECIAL PROVISION "COMPACTED EMBANKMENT (SPECIAL)".
*QUANTITY ESTIMATED. TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER. SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

PIPE CULVERT

STATION	DESCRIPTION	24" R.C. PIPE CULVERT (CLASS III)	24" R.C. PIPE CULVERT (CLASS IV)	24" R.C. F.E.S.	SOLID SODDING	WATER	STANDARD DRAWINGS NUMBERS
		LIN. FT.		EACH	SQ.YD.	M.GAL.	
103+10	EXTEND 24" X 49" R.C. PIPE CULVERT 32' RT. W/ F.E.S. LT. & RT.	40		2	16	0.2	FES-1, FES-2, PCC-1
125+05	EXTEND 24" X 54" R.C PIPE CULVERT 40' RT. W/ F.E.S. LT. & RT.		48	2	16	0.2	FES-1, FES-2, PCC-1
TOTALS:		40	48	4	32	0.4	

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

3/16/2015
R110570.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.		110570	22	84

① 07303 - QUANTITIES - 54889

SCHEDULE OF BRIDGE QUANTITIES - JOB NO. 110570

BRIDGE NO. / CODE NO. / NAME PLATE TITLE	UNIT OF STRUCTURE	ITEM NO.	205	801	802	802	803	804	804	805	805	805	807	808	809	812	816	816
		ITEM	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 1)	UNCLASSIFIED EXCAVATION FOR STRUCTURES - BRIDGE	CLASS S CONCRETE-BRIDGE	CLASS S(AE) CONCRETE-BRIDGE	CLASS 1 PROTECTIVE SURFACE TREATMENT	REINFORCING STEEL-BRIDGE (GRADE 60)	EPOXY COATED REINFORCING STEEL (GRADE 60)	① STEEL SHELL PILING (18" DIA.)	① STEEL SHELL PILING (24" DIA.)	PILE ENCASEMENT	STRUCTURAL STEEL IN BEAM SPANS (M 270, GRADE 50W)	ELASTOMERIC BEARINGS	ARMORED JOINT WITH NEOPRENE STRIP SEAL	BRIDGE NAME PLATE (TYPE D)	DUMPED RIPRAP	FILTER BLANKET
		UNIT	LUMP SUM	CU. YD.	CU. YD.	CU. YD.	GAL.	LB.	LB.	LIN. FT.	LIN. FT.	LIN. FT.	LB.	CU. IN.	LIN. FT.	EACH	CU. YD.	SQ. YD.
07303 X071 SOUTH ALLIGATOR BAYOU	END BENT NO. 1				41.50		0.3	4,344	490	275			770	2,142.0			287	538
	INTERIOR BENT NO. 2				21.22			2,440			325	30		1,392.0				
	INTERIOR BENT NO. 3				21.22			2,440			325	40		1,392.0				
	INTERIOR BENT NO. 4				21.22			2,440			375	38		1,392.0				
	INTERIOR BENT NO. 5				21.40			2,440			375	30		1,392.0				
	INTERIOR BENT NO. 6				22.60			2,578			375	33		1,392.0				
	END BENT NO. 7			30	42.84		0.3	4,344	490	275			770	2,142.0			252	494
	408'-0" CONT. COMP. W-BEAM UNIT					445.70	33.7	100,614					288,530		89	1		
	TOTALS FOR JOB NO. 110570		② 1	30	192.00	445.70	34.3	121,640	980	550	1,775	171	290,070	11,244.0	89	1	539	1,032

① STEEL SHELL PILES SHALL CONFORM TO ASTM A252, GRADE 3, Fy = 45 ksi. ONLY CONICAL OR VANED PILE TIPS SHALL BE PERMITTED FOR STEEL SHELL PILES IN BENTS 1 AND 7. FLAT PILE TIPS MAY BE USED AT INTERIOR BENTS.

② THE REMOVAL OF EXPOSED REMNANT PILING FROM PREVIOUS STRUCTURE SHALL BE INCLUDED IN THIS PAY ITEM.

AILEEN SCHUBEL
DESIGN SECTION SUPERVISOR

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
12-12-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SCHEDULE OF BRIDGE QUANTITIES
DITCH AT L.M. 1.85 STR. & APPRS. (S)
LEE COUNTY
ROUTE 131 SEC. 1
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: ACP DATE: 01/06/14 FILENAME: bll0570_ql.dgn
CHECKED BY: JYP DATE: 12/12/14 SCALE: NONE
DESIGNED BY: — DATE: —

BRIDGE NO. 07303 DRAWING NO. 54889

PRINT DATE: 12/11/2014

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
10/2/2015				6	ARK.			
				JOB NO.		110570	23	84

(2) QUANTITIES

SUMMARY OF QUANTITIES

ITEM NUMBER	ITEM		QUANTITY	UNIT
201	CLEARING		30	STATION
201	GRUBBING		30	STATION
202	REMOVAL AND DISPOSAL OF GUARDRAIL		97	LIN. FT.
202	REMOVAL AND DISPOSAL OF PIPE CULVERTS		2	EACH
SP	DISPOSAL OF WASTE		10	CU. YD.
SP	REMOVAL AND DISPOSAL OF TIRES		2	EACH
210	UNCLASSIFIED EXCAVATION		7932	CU.YD.
210	COMPACTED EMBANKMENT		10321	CU.YD.
SP& 210	COMPACTED EMBANKMENT (SPECIAL)		6892	CU. YD.
SP& 210	SOIL STABILIZATION		100	TON
303	AGGREGATE BASE COURSE (CLASS 7)		7468	TON
401	TACK COAT		467	GALLON
SP,SS& 406	MINERAL AGGREGATE IN ACHM BINDER COURSE (1")		1494	TON
SP,SS& 406	ASPHALT BINDER (PG 64-22) IN ACHM BINDER COURSE (1")		67	TON
SP,SS& 407	MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2")		1024	TON
SP,SS& 407	ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2")		56	TON
412	COLD MILLING ASPHALT PAVEMENT		444	SQ.YD.
SP& 414	ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC		20	TON
SP& 415	ACHM PATCHING OF EXISTING ROADWAY		50	TON
504	APPROACH GUTTERS		17.00	CU.YD.
504	APPROACH SLABS		54.60	CU.YD.
601	MOBILIZATION		1.00	LUMP SUM
SP& 602	FURNISHING FIELD OFFICE		1	EACH
603	MAINTENANCE OF TRAFFIC		1.00	LUMP SUM
SS& 604	SIGNS		232	SQ.FT.
SS& 604	BARRICADES		64	LIN.FT.
SS& 604	TRAFFIC DRUMS		35	EACH
SS& 604	VERTICAL PANELS		16	EACH
604	CONSTRUCTION PAVEMENT MARKINGS		2046	LIN. FT.
604	REMOVAL OF PERMANENT PAVEMENT MARKINGS		3548	LIN. FT.
604	REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS		200	LIN. FT.
606	24" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)		40	LIN. FT.
606	24" REINFORCED CONCRETE PIPE CULVERTS (CLASS IV)		48	LIN. FT.
606	24" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS		4	EACH
SP,SS&606	24" SIDE DRAIN		102	LIN.FT.
606	SELECTED PIPE BEDDING		50	CU.YD.
611	4" PIPE UNDERDRAINS		1000	LIN.FT.
611	UNDERDRAIN OUTLET PROTECTORS		8	EACH
617	GUARDRAIL (TYPE A)		550	LIN.FT.
617	TERMINAL ANCHOR POSTS (TYPE 1)		4	EACH
617	THRIE BEAM GUARDRAIL TERMINAL		4	EACH
620	LIME		9	TON
620	SEEDING		4.40	ACRE
SS& 620	MULCH COVER		7.17	ACRE
620	WATER		493.6	M.GAL.
621	TEMPORARY SEEDING		2.77	ACRE
621	SILT FENCE		4845	LIN.FT.
621	SAND BAG DITCH CHECKS		260	BAG
621	ROCK DITCH CHECKS		9	CU. YD.
621	WATTLE 20"		225	LIN. FT.
621	SEDIMENT BASIN		32	CU.YD.
621	SEDIMENT REMOVAL AND DISPOSAL		100	CU.YD.
621	OBLITERATION OF SEDIMENT BASIN		32	CU.YD.
623	SECOND SEEDING APPLICATION		4.40	ACRE
624	SOLID SODDING		32	SQ. YD.
635	ROADWAY CONSTRUCTION CONTROL		1.00	LUMP SUM
718	REFLECTORIZED PAINT PAVEMENT MARKING WHITE (4")		6982	LIN.FT.
718	REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (4")		6160	LIN.FT.
* SP& 719	INVERTED PROFILE THERMOPLASTIC CONTRAST PAVEMENT MARKING YELLOW (4")	(ALTERNATE NO.1)	822	LIN.FT.
* SP	HIGH PERFORMANCE CONTRAST MARKING TAPE YELLOW (4")	(ALTERNATE NO.2)	822	LIN.FT.
804	REINFORCING STEEL-ROADWAY (GRADE 60)		5660	POUND
	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		30	CU. YD.
802	CLASS S CONCRETE-BRIDGE		192.00	CU. YD.
802	CLASS S(AE) CONCRETE-BRIDGE		445.70	CU. YD.
803	CLASS 1 PROTECTIVE SURFACE TREATMENT		34.3	GALLON
804	REINFORCING STEEL-BRIDGE (GRADE 60)		121640	POUND
804	EPOXY COATED REINFORCING STEEL (GRADE 60)		980	POUND
805	STEEL SHELL PILING (18" DIAMETER)		550	LIN. FT.
805	STEEL SHELL PILING (24" DIAMETER)		1775	LIN. FT.
805	PILE ENCASEMENT		171	LIN. FT.
807	STRUCTURAL STEEL IN BEAM SPANS (M270-GR50W)		290070	POUND
808	ELASTOMERIC BEARINGS		11244.0	CU. IN.
809	ARMORED JOINT WITH NEOPRENE STRIP SEAL		89	LIN. FT.
812	BRIDGE NAME PLATE (TYPE D)		1	EACH
816	FILTER BLANKET		1032	SQ. YD.
816	DUMPED RIPRAP		539	CU.YD.

*DENOTES ALTERNATE BID ITEMS.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-2-15

REVISIONS

DATE	REVISION	SHEET NUMBER(S)
10/2/2015	REVISED SPECIAL PROVISION "NESTING SITES OF MIGRATORY BIRDS"	23

10/2/2015

R110570.DGN

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.		110570	24	84

(2) SURVEY CONTROL DETAILS

SURVEY CONTROL COORDINATES
Project Name: 110570
Date: 9/4/2013
Coordinate System: Arkansas State Plane Coordinates
Based on AHTD GPS PTS : *390011 - 390011A*
Projected to Ground Coordinates
Units: U.S. Survey Foot

COORDINATES LISTED BELOW ARE GROUND (Localized) COORDINATES !!!!

Point No	Northing	SY	Easting	SX	Elevation	SZ	Feature Code	Point Description
1	186063.6836	0.0186	1731012.688	0.0308	198.078	0.0131	CTL	PD:AHTD STD. MON. STAMPED PN:1
2	185265.5058	0.0453	1731627.4690	0.0651	197.67	0.014	CTL	PD:AHTD STD. MON. STAMPED PN:2
3	184822.2995	0.0646	1732005.1798	0.0871	195.60	0.014	CTL	PD:AHTD STD. MON. STAMPED PN:3
4	184209.2863	0.0571	1731855.9378	0.1206	196.41	0.014	CTL	PD:AHTD STD. MON. STAMPED PN:4
5	183808.8716	0.1023	1732625.7932	0.1444	195.90	0.015	CTL	PD:AHTD STD. MON. STAMPED PN:5
6	183465.6524	0.1577	1733445.9377	0.1660	198.99	0.015	CTL	PD:AHTD STD. MON. STAMPED PN:6
100	188488.2388	0.0001	1730150.9790	0.0001	197.00	0.000	GPS	PD:AHTD GPS MON 390011A
101	186944.9302	0.0001	1730566.8430	0.0001	198.42	0.000	GPS	PD:AHTD GPS MON 390011
900	-99999.0000	30.0000	-99999.0000	30.0000	198.71	0.000	BM	PD:USGS BM 13 RPS 1976
901	197160.2480	30.0000	1739059.9090	30.0000	196.29	0.005	TBM	PD:SQ. CUT IN HEADWALL
902	196029.4510	30.0000	1736263.0510	30.0000	196.64	0.007	TBM	PD:HEADWALL N SIDE ROAD
903	194876.2930	30.0000	1733545.6120	30.0000	199.09	0.009	TBM	PD:AHTD DISC 5/8" ROD
904	-99999.0000	30.0000	-99999.0000	30.0000	198.20	0.010	TBM	PD:CONC SLAB W/TEL PEDS
905	193636.3410	30.0000	1730467.7380	30.0000	201.34	0.011	TBM	PD:BRIDG SW CORNER
906	-99999.0000	30.0000	-99999.0000	30.0000	197.94	0.011	TBM	PD:5/8"REBAR W/ 2"CAP
909	-99999.0000	30.0000	-99999.0000	30.0000	195.54	0.014	TBM	PD:AHTD ALM MON 5/8" REBAR
910	-99999.0000	30.0000	-99999.0000	30.0000	200.63	0.014	TBM	PD:CH.SQ.IN NW HEADWALL
911	-99999.0000	30.0000	-99999.0000	30.0000	196.87	0.014	TBM	PD:CH.SQ.IN SE CORNER TEL PAD
912	-99999.0000	30.0000	-99999.0000	30.0000	190.19	0.015	TBM	PD:5/8"REBAR W/2"CAP
1000	183654.2745	0.1219	1732908.0553	0.1543	198.51	0.035	CTL	PD:1/2" REBAR
1001	183932.0652	0.0816	1732255.5881	0.1375	198.49	0.004	CTL	PD:1/2"REBAR
1002	184392.1827	0.0429	1731546.2217	0.1104	197.97	0.014	CTL	PD:80D NAIL
1003	185039.3645	0.0433	1731577.2781	0.0762	192.16	0.014	CTL	PD:1/2" REBAR
1004	185808.8674	0.0224	1731105.8939	0.0406	195.93	0.019	CTL	PD:1/2" REBAR
1005	186384.9034	0.0131	1730787.1013	0.0215	198.01	0.017	CTL	PD:1/2" REBAR
1006	186977.6814	0.0065	1730482.3846	0.0090	196.98	0.006	CTL	PD:1/2" REBAR
1007	187693.4721	0.0098	1730277.6800	0.0154	196.58	0.016	CTL	PD:1/2" REBAR

*Standard Primary Control Monument - Rebar and Cap - Standard - 5/8"x 24" Rebar with 2"Aluminum Cap stamped: "(include all common information here)" plus other markings indicated in the point description of the individual point. AHTD monuments will be stamped "Arkansas Hwy & Trans Dept" with "PN: ###" & "Job ######". Monuments that are set by Consultants will be stamped "Arkansas Hwy & Trans Dept" with "PN:###", "Job#######", & "PS####". The consultant Professional Surveyor in charge will stamp his/her PS license number on the cap.

**Standard GPS Control Point Monument - 5/8" x 48" Rebar with 2.5"Aluminum Cap stamped: "(include all common information here)" plus other markings indicated in the point description of the individual point. These monuments will be stamped "Ark. State Hwy Trans. Dept.", "GPS Survey", & "Point No. ######".

SX, SY, SZ – Represents the standard error estimate of the coordinate values of each point at the 67% confidence level (one sigma) based on the least squares analysis of the control network. See the AASHTO SDMS Technical Data Guide data tag definition for SX:, SY:, and SZ: for additional information. These values shall be used when control points are added and the entire network is reprocessed using least square analysis. A value of 0.001 is defined as fixed (no adjustment) in the least square analysis process. A value of 30 is defined as location by handheld GPS device or scaled from USGS Quadmap.

Reference Control points (1500 series) shall be used to re-establish horizontal datum if the primary control has been destroyed. These reference control points shall not be used for vertical control unless the elevation has been established from the project datum with 3-wire level techiniques.

All additional project control shall be occupied, measured, and adjusted with direct survey ties to at least two of the control points listed in the table above. New survey control shall not be independent of the survey control listed above. This includes horizontal coordinates and elevations.

Positional Accuracy:
- Horizontal - GPS (1.0 cm± 1PPM) — *PN: 100-101 (in the above example)*
- Horizontal - Primary (2.0cm± 20PPM): — *PN:1-6 (in the above example)*
- Horizontal - Secondary (3 cm ± 50PPM): — *PN:####### (in the above example)*
- Vertical - NGS 1st Order (±4mm x Vdist in km) — *PN:900-912 (in the above example)*
- Vertical - NGS 2nd Order (±6mm x Vdist in km) — *PN:### (in the above example)*
- Vertical - NGS 3rd Order (±8mm x Vdist in km) — *PN:#### (in the above example)*

Horizontal Datum: NAD 1983 (1997) State Plane Zone: 0301 - North Zone
The adjustment year is based on metadata in the SDMS Control file
A project CAF of: 1.000011472 has been used to compute the above coordinates.
The project CAF shall have a minimum precision of 9 digits right of the decimal.
This CAF is intended for use within the project limits only.
Grid Distance = Ground Distance X CAF
If Coordinates are listed as Ground:
To compute Grid Coordinates, multiply the Ground Coordinates by CAF about the origin of X=0 & Y=0
If Coordinates are listed as Grid:
To compute Ground Coordinates, divide the Grid Coordinates by CAF about the origin of X=0 & Y=0

Vertical Datum: NAVD 1988 based NGS BM:
A project Elevation Factor of: 0.9999905679 has been computed and incorporated in the above CAF.
This is based on the average elevation of the project: 197.19 Feet
3-Wire Leveling techniques have been used to establish elevations on
Points: 1-6, 100-101, 900-912 From NGS BM: 13 RPS 1976

Basis of Bearing: Grid Bearings based on AHTD GPS points: *390011 - 390011A*
Convergence Angle is: 00 48 40 RIGHT at PN: 100
LT: 34-50-35.02 N LG: 90-36-27.31 W
Grid Azimuth = Astronomical Azimuth - Convergence Angle

Note: Information in Italics is for clarification only. It is not to be part of the actual Control Table or Control Detail Sheets.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
3-10-15

ALIGNMENT: CONST NEW 50 MPH

POINT NO.	TYPE	STATION	NORTHING	EASTING
8000	PI	100+04.92	185604.4208	1731300.2813
8001	PC	101+26.03	185510.7639	1731377.0694
8002	PT	105+43.55	185129.7933	1731531.9625
8003	PC	111+80.00	184495.6631	1731586.3602
8004	PT	120+38.71	183881.9062	1732107.3193
8005	PC	125+29.76	183761.0050	1732583.2452
8006	PT	131+60.93	183572.2547	1733185.2009

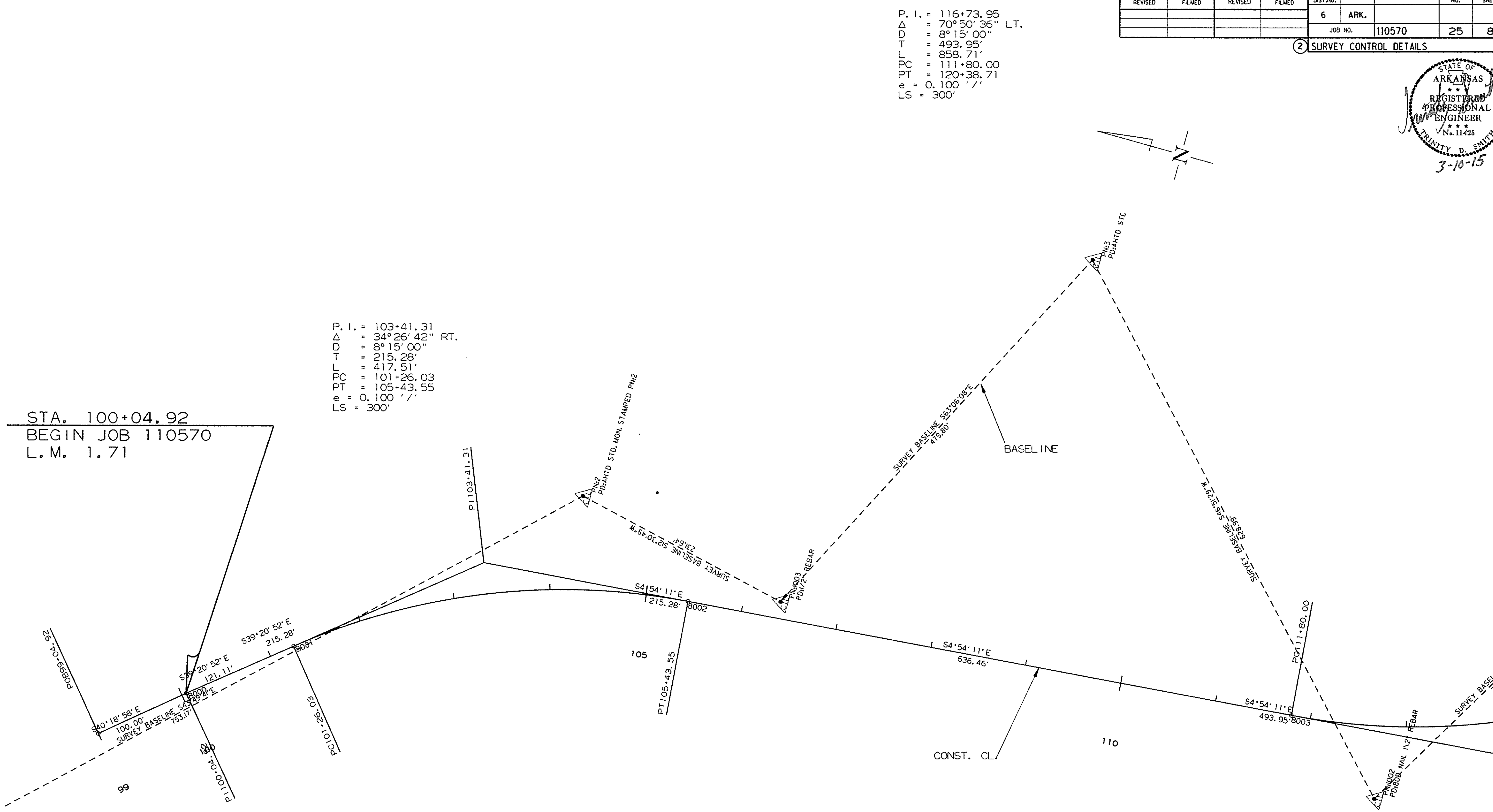
2/25/2015

R110570.DGN

SURVEY CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110570	25	84

(2) SURVEY CONTROL DETAILS



STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH
3-10-15

SURVEY CONTROL DETAILS

2/25/2015

R110570.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.		110570	26	84

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
3-10-15

SURVEY BASELINE 628.39'

PC 111+80.00

PNN002 PD:800 NAIL 1.2' REBAR

SURVEY BASELINE S59°26'13"E 359.68'

PN4 PD:AHTD STD. MON. STAMPED PN4

BASELINE

SURVEY BASELINE S55°15'09"E 486.38'

PNN001 PD1/2" REBAR

SURVEY BASELINE S71°35'39"E 390.16'

PN6 PD:AHTD STD. MON. STAMPED PN6

SURVEY BASELINE S61°17'25"E 321.82'

PNN003 PD1/2"

P I 128+45.66

PT 120+38.71

S75°44'47"E 491.04'

PNN500 PD:600

PNN501 PD:600

PNN502 PD:600

PNN503 PD:600

PNN504 PD:600

PNN505 PD:600

8004

8005

125

PC 125+29.76

115

S75°44'47"E 493.95'

120

P. I. = 116+73.95
Δ = 70°50'36" LT.
D = 8°15'00"
T = 493.95'
L = 858.71'
PC = 111+80.00
PT = 120+38.71
e = 0.100 '/'
LS = 300'

'116+73.95

CONST. CL.

P. I. = 128+45.66
Δ = 6°18'42" RT.
D = 1°00'00"
T = 315.91'
L = 631.17'
PC = 125+29.76
PT = 131+60.93
e = 0.021 '/'
LS = 250'

P I 128+45.66

S69°26'05"E 315.91'

8006

PT 131+60.93

PNN000 PD1/2" REBAR

130

CONST. CL.

P. I. = 128+45.66
Δ = 6°18'42" RT.
D = 1°00'00"
T = 315.91'
L = 631.17'
PC = 125+29.76
PT = 131+60.93
e = 0.021 '/'
LS = 250'

POE 133+31.01

S69°26'05"E 170.09'

133

PN6 PD:AHTD STD. MON. S

STA. 132+34.02
END - JOB 110570

SURVEY CONTROL DETAILS

2/25/2015

R110570.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.		110570	27	84

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
3-10-15

STA. 103+10 IN PLACE
24" X 49' R.C. PIPE CULVERT
W/ HEADWALLS LT. & RT.
REMOVE HEADWALLS AND EXTEND R.C. PIPE
32' RT. (CLASS III)(TYPE 3 BEDDING) W/FES LT. & RT.
Q25 = 23 CFS, D.A. = 9 ACRES
24" R.C. PIPE = 40 LIN.FT.
24" FES = 2 EA.

STA. 104+46 INSTALL
24" X 46' PIPE CULVERT
LT. SIDE DRAIN.
CONST. APPRS. = 135 CU.YD.

BR. END STA. 107+03.50
BRIDGE NO. 07303
30'-0" CLEAR ROADWAY
411'-0" TOTAL LENGTH
408'-0" CONTINUOUS COMPOSITE W-BEAM UNIT
(6 SPANS @ 68')
BRIDGE END STA. 111+14.50

STA. 105+34.75 IN PLACE
18" X 21' CM PIPE CULVERT
LT. SIDE DRAIN
RETAIN

P.I. = 103+41.31
Δ = 34°26'42" RT.
D = 8°15'00"
T = 215.28'
L = 417.51'
PC = 101+26.03
PT = 105+43.55
e = 0.100 '/'
LS = 300'

P.I. = 116+73.95
Δ = 70°50'36" LT.
D = 8°15'00"
T = 493.95'
L = 858.71'
PC = 111+80.00
PT = 120+38.71
e = 0.100 '/'
LS = 300'

STA. 107+62.55 TO STA. 110+50.69 IN PLACE
285' X 26' CLEAR ROADWAY BRIDGE NO. M1913
CONSISTING OF A PRECAST CONCRETE SPANS W/
TIMBER PILE BENTS REMOVE AS EXISTING
BRIDGE STRUCTURE (SITE NO. 1) = 1.00 LUMP SUM

		GUARDRAIL (TYPE A)	TERMINAL ANCHOR POST (TYPE 1)	THRIE BEAM GUARD RAIL TERMINAL
STA. 104+57.35 TO STA. 106+88.50	RT.	200 LIN. FT.	1 EACH	1 EACH
STA. 106+12.35 TO STA. 107+15.50	LT.	75 LIN. FT.	1 EACH	1 EACH
STA. 110+99.50 TO STA. 112+05.65	RT.	75 LIN. FT.	1 EACH	1 EACH
STA. 111+29.50 TO STA. 113+60.65	LT.	200 LIN. FT.	1 EACH	1 EACH

STA. 113+00 INSTALL
24" X 56' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPROACH = 275 CU.YDS.

STA. 100+04.92
BEGIN JOB 110570
L.M. 1.71

ENVIRONMENTALLY SENSITIVE AREA DO NOT DISTURB

SOUTH ALLIGATOR BAYOU

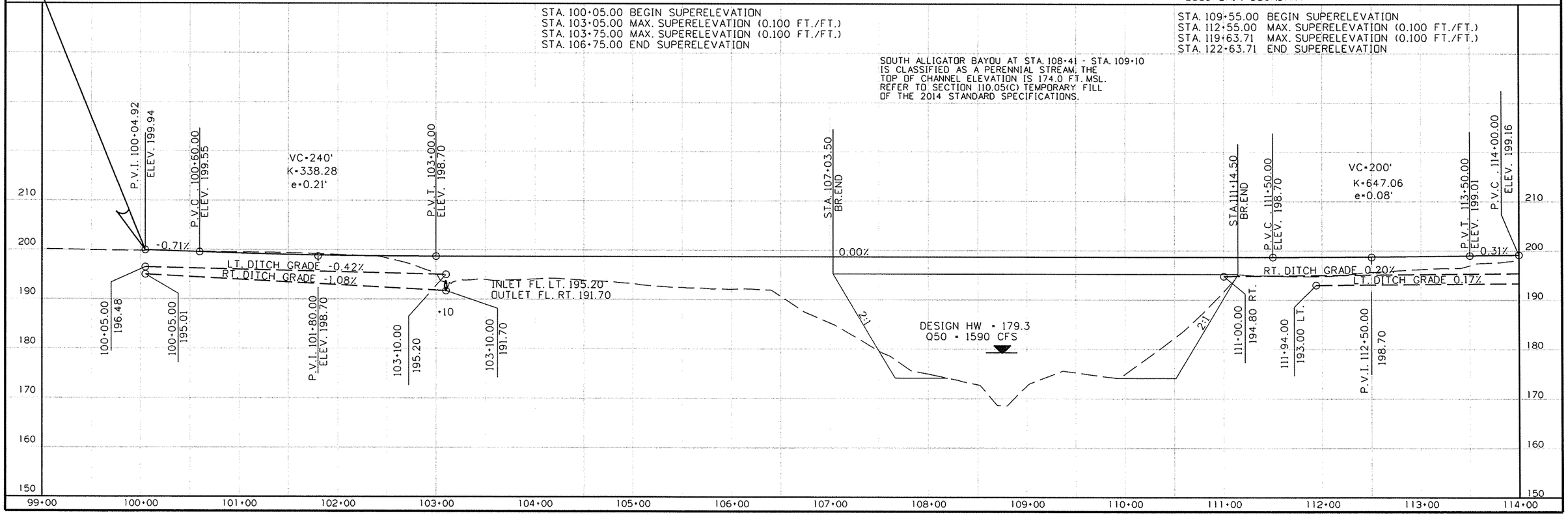
FLOODPLAIN BOUNDARY

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

STA. 100+05.00 BEGIN SUPERELEVATION
STA. 103+05.00 MAX. SUPERELEVATION (0.100 FT./FT.)
STA. 103+75.00 MAX. SUPERELEVATION (0.100 FT./FT.)
STA. 106+75.00 END SUPERELEVATION

STA. 109+55.00 BEGIN SUPERELEVATION
STA. 112+55.00 MAX. SUPERELEVATION (0.100 FT./FT.)
STA. 119+63.71 MAX. SUPERELEVATION (0.100 FT./FT.)
STA. 122+63.71 END SUPERELEVATION

SOUTH ALLIGATOR BAYOU AT STA. 108+41 - STA. 109+10
IS CLASSIFIED AS A PERENNIAL STREAM. THE
TOP OF CHANNEL ELEVATION IS 174.0 FT. MSL.
REFER TO SECTION 110.05(C) TEMPORARY FILL
OF THE 2014 STANDARD SPECIFICATIONS.

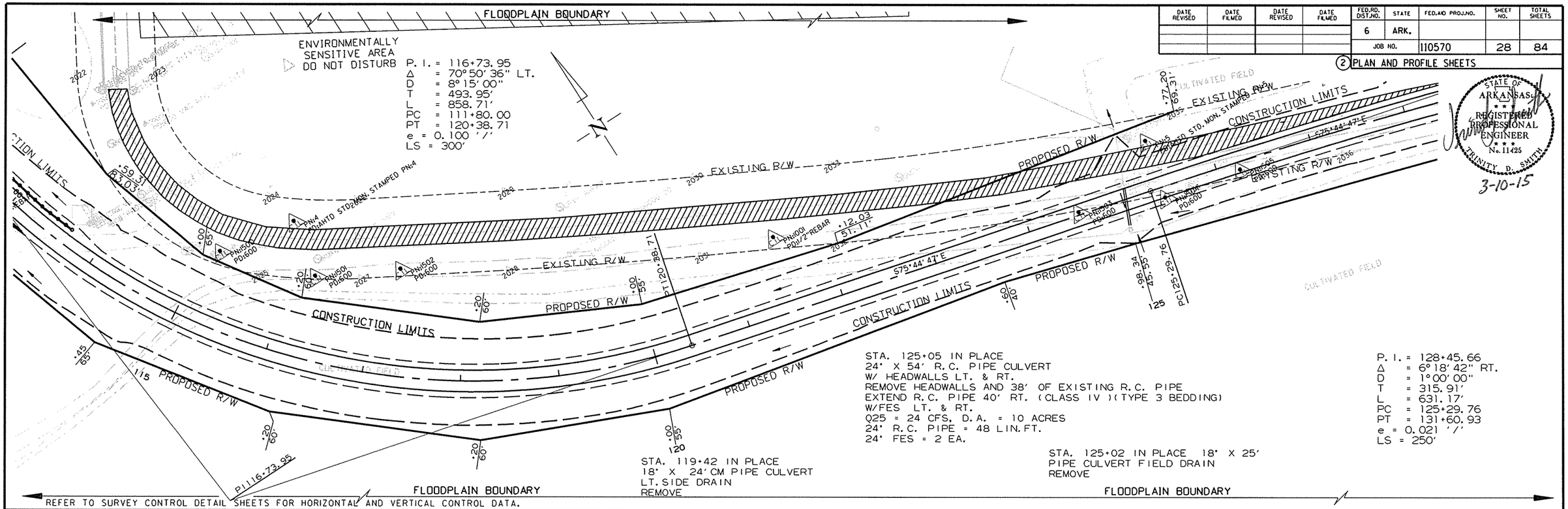


3/6/2015

R110570.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.		110570	28	84

(2) PLAN AND PROFILE SHEETS

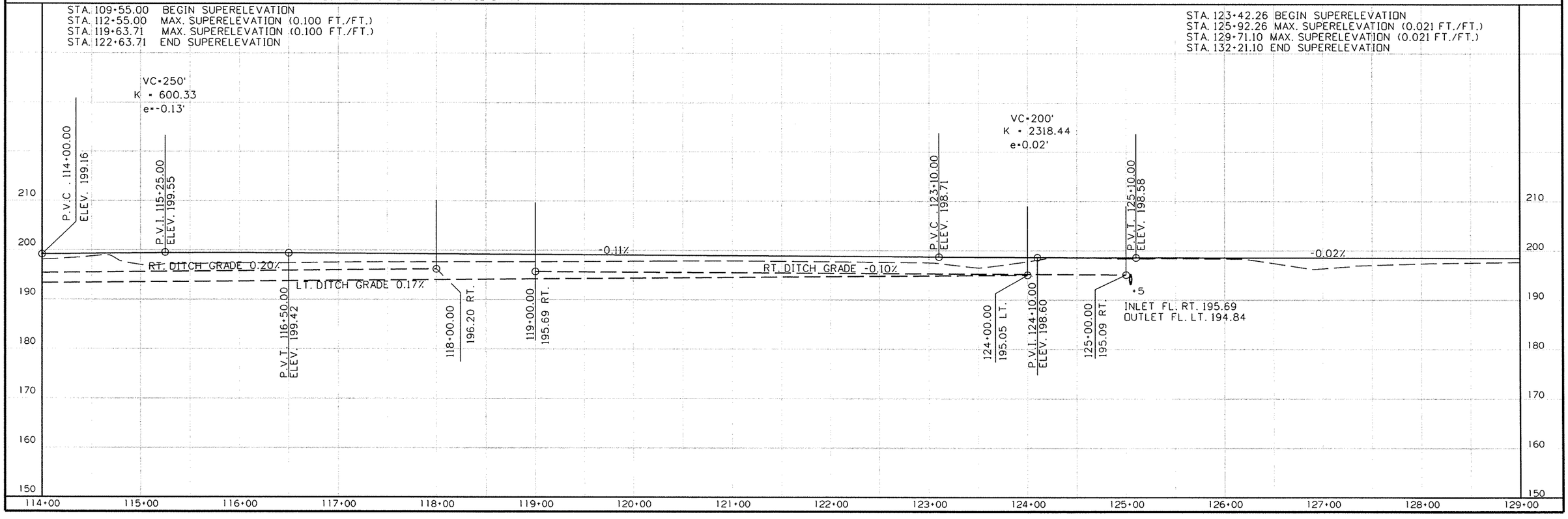


REFER TO SURVEY CONTROL DETAIL SHEETS FOR HORIZONTAL AND VERTICAL CONTROL DATA.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
3-10-15

STA. 109+55.00 BEGIN SUPERELEVATION
STA. 112+55.00 MAX. SUPERELEVATION (0.100 FT./FT.)
STA. 119+63.71 MAX. SUPERELEVATION (0.100 FT./FT.)
STA. 122+63.71 END SUPERELEVATION

STA. 123+42.26 BEGIN SUPERELEVATION
STA. 125+92.26 MAX. SUPERELEVATION (0.021 FT./FT.)
STA. 129+71.10 MAX. SUPERELEVATION (0.021 FT./FT.)
STA. 132+21.10 END SUPERELEVATION



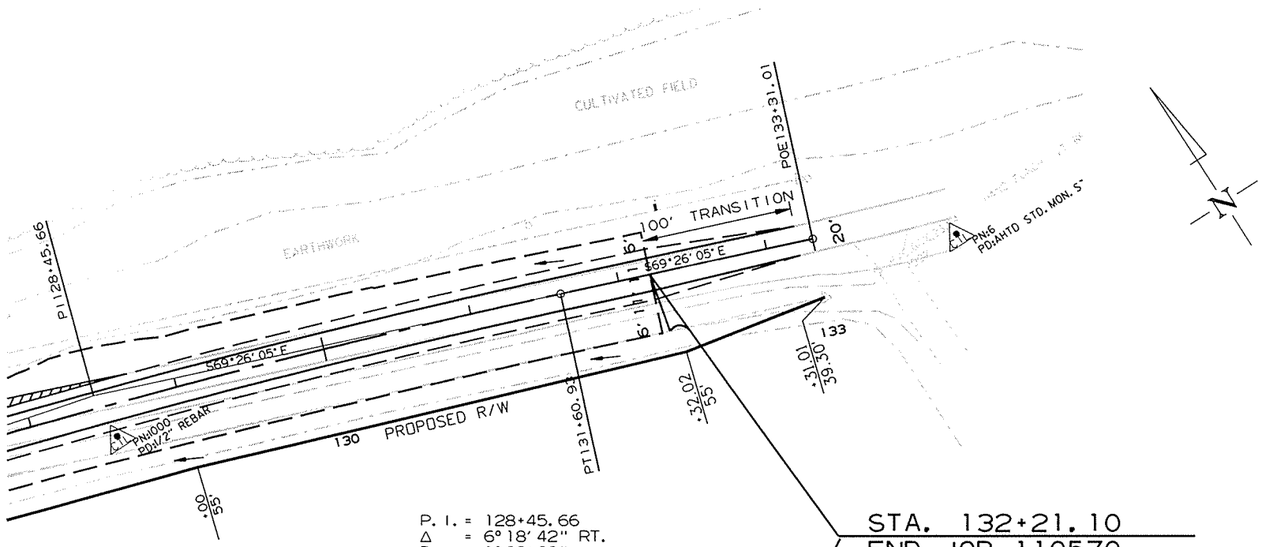
3/6/2015

R110570.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.		110570	29	84

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
3-10-15



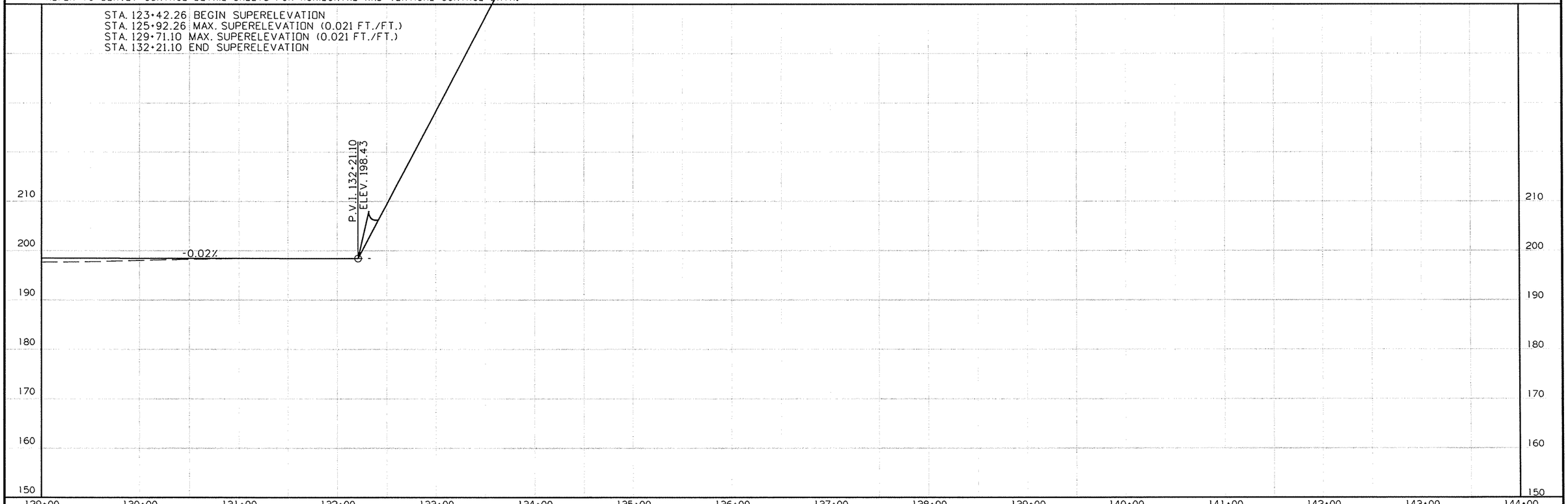
P. I. = 128+45.66
Δ = 6°18'42" RT.
D = 1°00'00"
T = 315.91'
L = 631.17'
PC = 125+29.76
PT = 131+60.93
e = 0.021 '/'
LS = 250'

STA. 132+21.10
END JOB 110570

FLOODPLAIN BOUNDARY — FLOODPLAIN BOUNDARY

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

STA. 123+42.26 BEGIN SUPERELEVATION
STA. 125+92.26 MAX. SUPERELEVATION (0.021 FT./FT.)
STA. 129+71.10 MAX. SUPERELEVATION (0.021 FT./FT.)
STA. 132+21.10 END SUPERELEVATION



3/6/2015

R110570.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.		110570	30	84

(2) PLAN SHEETS STA. 100+00 - STA. 114+00

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
3-10-15

STA. 100+04.92
BEGIN JOB 110570
L.M. 1.71

STA. 107+95 CONST.
DRWY. ON LT.
CONST. APPR. = 10 CU. YD.

OBLITERATE EXISTING ROADWAY

OBLITERATE EXISTING ROADWAY

PN3 PDJAHTD STD

PN2 PDJAHTD STD. MON. STAMPED PN.2

PI 103+41.31

EXISTING R/W

EXISTING R/W

EXISTING R/W

CONSTRUCTION LIMITS

PROPOSED R/W

OBLITERATE EXISTING ROADWAY

PROPOSED R/W

CONSTRUCTION LIMITS

PROPOSED R/W

PROPOSED R/W

PN3 PDJAHTD 1/2" REBAR

PT 105+43.55

STA. 107+03.50 BRIDGE END

SOUTH ALLIGATOR BAYOU

S4°54'11"E

PC 111+80.00

CONSTRUCTION LIMITS

STA. 111+14.50 BRIDGE END

PN4 PDJAHTD 1/2" REBAR

PN5 PDJAHTD 1/2" REBAR

CO. RD. 517

S39°20'52"E

S40°18'58"E

100' TRANSITION

P.O.B. 100+04.92

ENVIRONMENTALLY SENSITIVE AREA DO NOT DISTURB

ENVIRONMENTALLY SENSITIVE AREA DO NOT DISTURB

P. I. = 103+41.31
Δ = 34°26'42" RT.
D = 8°15'00"
T = 215.28'
L = 417.51'
PC = 101+26.03
PT = 105+43.55
e = 0.100 '/'
LS = 300'

P. I. = 116+73.95
Δ = 70°50'36" LT.
D = 8°15'00"
T = 493.95'
L = 858.71'
PC = 111+80.00
PT = 120+38.71
e = 0.100 '/'
LS = 300'

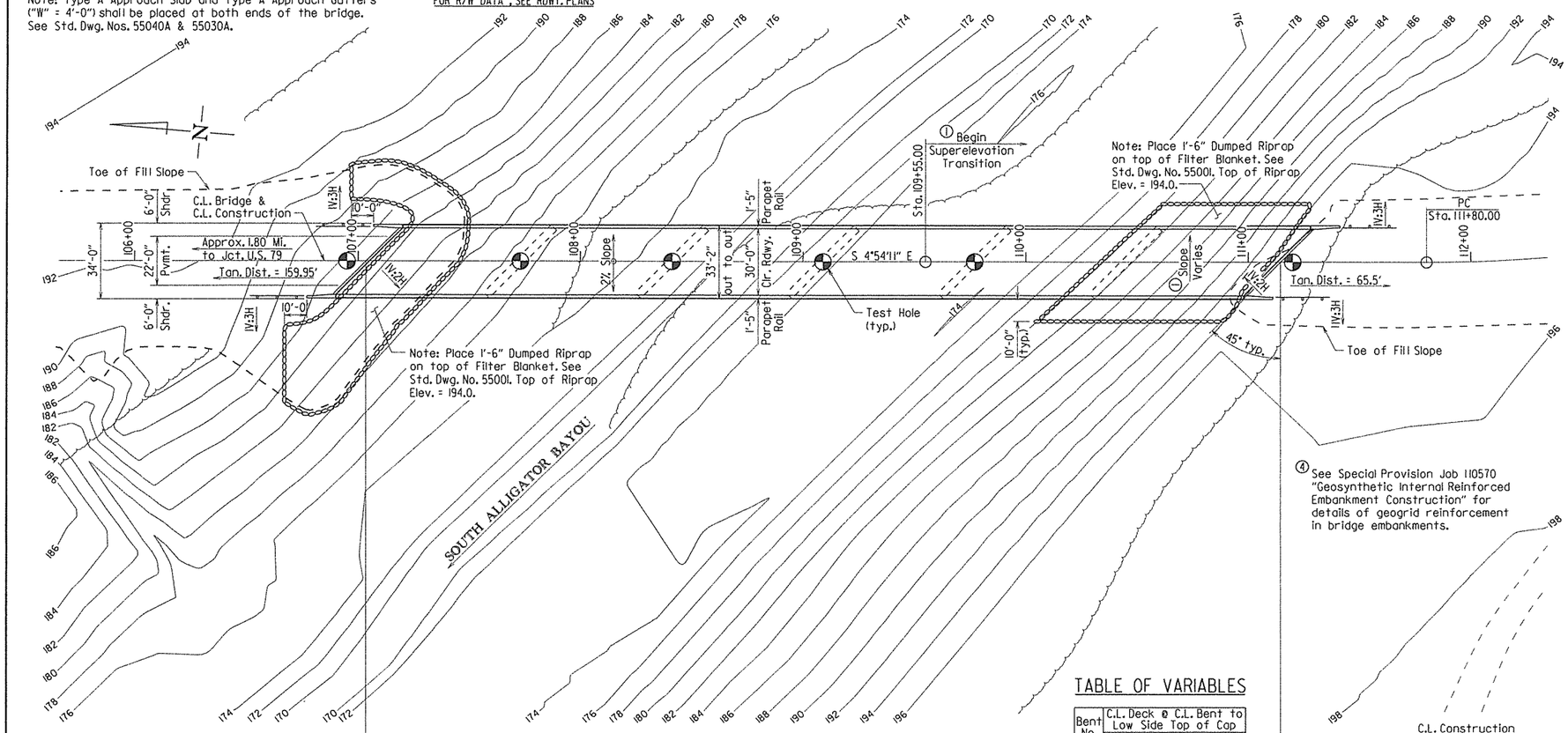
3/6/2015

R110570.DGN

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.		110570	31	84
				①	07303 -	LAYOUT	- 54890	

Note: Type A Approach Slab and Type A Approach Gutters ("W" = 4'-0") shall be placed at both ends of the bridge. See Std. Dwg. Nos. 55040A & 55030A.

FOR R/W DATA, SEE RDWY. PLANS



PLAN

Note:
Stations and elevations shown are along C.L. Construction & C.L. Bridge.

① For details of superelevation transition, see Dwg. No. 54891.

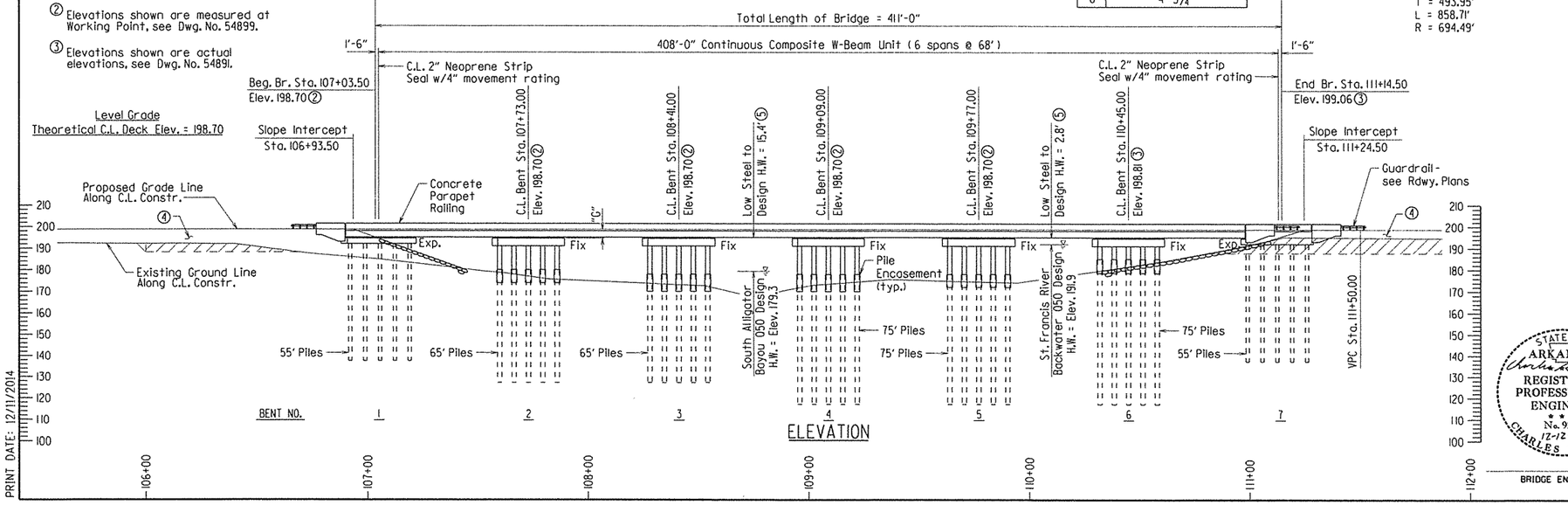
② Elevations shown are measured at Working Point, see Dwg. No. 54899.

③ Elevations shown are actual elevations, see Dwg. No. 54891.

⑤ Low Bridge chord elevation of 194.66 occurs 13'-6" Left of C.L. Construction Sta. 111+26.26

TABLE OF VARIABLES

Bent No.	C.L. Deck @ C.L. Bent to Low Side Top of Cap "G"
2	4'-3⅝"
3	4'-3¼"
4	4'-3½"
5	4'-3¼"
6	4'-5¼"



ELEVATION

PRINT DATE: 12/11/2014

GENERAL NOTES

BENCH MARK: BM #4, AHTD STD. Mon. Stamped, 131.84' Lt. of C.L. Construction Sta. 115+83.45, Elev. = 196.41.

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

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications, Sixth Edition, with 2013 Interim Revisions.

LIVE LOADING: HL93
SEISMIC PERFORMANCE ZONE: 4

MATERIALS AND STRENGTHS

Class S(AE) Concrete (superstructure)	f'c = 4,000 psi
Class S Concrete (substructure)	f'c = 3,500 psi
Reinforcing Steel (Gr. 60, AASHTO M 31 or M 322, Type A)	fy = 60,000 psi
Structural Steel (AASHTO M 270, Gr. 36)	Fy = 36,000 psi
Structural Steel (AASHTO M 270, Gr. 50W)	Fy = 50,000 psi

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

STEEL SHELL PILING: End bent piling shall be 18" diameter concrete filled steel shell piles and shall be driven to a minimum ultimate bearing capacity of 185 tons per pile. Piling in Bents 2 thru 6 shall be 24" diameter concrete filled steel shell piles and shall be driven to a minimum ultimate bearing capacity of 320 tons per pile. All piling shall be driven with an approved, air, steam or diesel hammer. Piling in end bents shall be driven after embankment to bottom of cap is in place. Piling in End Bents shall be driven to a minimum tip elevation of 140.0 or lower. Piling in Bents 2 thru 4 shall be driven to a minimum tip elevation of 128.0 or lower. Piling in Bents 5 and 6 shall be driven to a minimum tip elevation of 119.0 or lower.

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

Water jetting or other methods as approved by the Engineer may be required to achieve minimum penetration. This work shall not be paid for directly, but shall be considered incidental to the item "Steel Shell Piling".

DRIVING SYSTEM: The driving system approval and ultimate bearing capacity determination for piling shall be based on the requirements of Subsection 805.09(b) "Method B-Wave Equation Analysis (WEAP)". It is estimated that a minimum rated hammer energy of 35,000 ft.-lbs. per blow will be required to obtain the ultimate bearing capacity at the End Bents and a minimum rated hammer energy of 60,000 ft.-lbs. per blow will be required to obtain the ultimate bearing capacity at Bents 2 thru 6.

PILE ENCASEMENT: Pile encasement for Bents 2 thru 6 shall extend from 3' below natural ground TO Elevation 180.0 at Bent 2, to Elevation 178.0 at Bents 3, 4 and 5 and to Elevation 185.0 at Bent 6. Steel shell piling that extends above the ground and is not protected by pile encasement shall be painted in accordance with Subsection 805.02. See Std. Dwg. No. 55021 for additional information.

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	54892-54894
Int. Bents	54895-54897
Elastomeric Bearings	54898
408'-0" Continuous W-Beam Unit	54899-54906
Conc. Filled Steel Shell Piling	55021
Type A Approach Gutters	55030A
Type A Approach Slab	55040A

EXISTING BRIDGE: Existing Bridge No. M1913, (L.M. 1.85) is 26.2' wide and 285' long and consists of precast concrete spans supported by timber pile bents. The existing bridge is located approximately 365 feet upstream from the proposed new bridge.

REMOVAL AND SALVAGE: After the new bridge is open to traffic, existing Bridge No. M1913 shall be removed in accordance with Section 205. Exposed timber piling from a previous structure shall also be removed to a minimum depth of 2' below natural ground. All material from the existing bridge and remnant piling shall become the property of the Contractor.

MAINTENANCE OF TRAFFIC: See Roadway Plans.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
12-12-14
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BRIDGE ENGINEER

SHEET 1 OF 2
LAYOUT OF BRIDGE OVER SOUTH ALLIGATOR BAYOU DITCH AT L.M. 1.85 STR. & APPRS. (S) LEE COUNTY

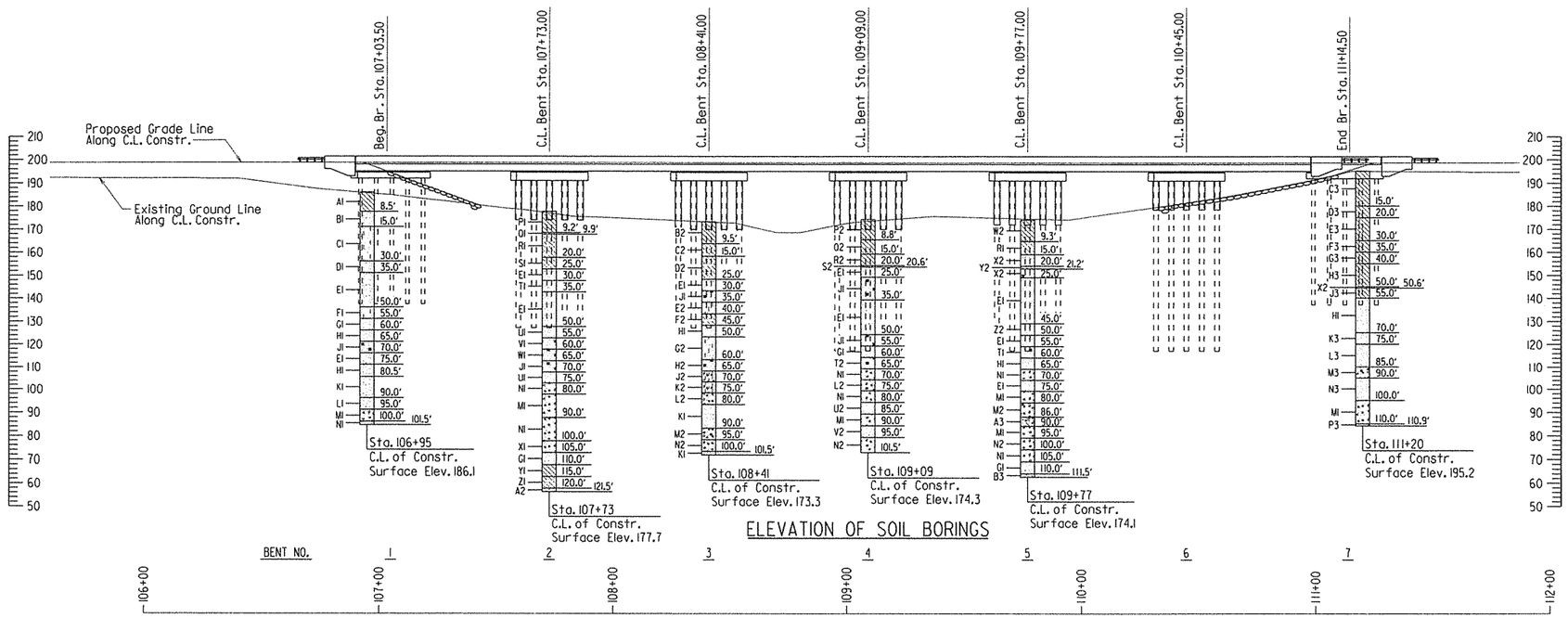
ROUTE 131 SEC. 1

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: JYP DATE: 8-8-13 FILENAME: bll0570_11.dgn
CHECKED BY: AHS DATE: 9/3/13 SCALE: 1" = 30'
DESIGNED BY: JYP DATE: 8-13

BRIDGE NO. 07303 DRAWING NO. 54890

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.		110570	32	84
				(1) 07303 -		LAYOUT		- 54891



ELEVATION OF SOIL BORINGS

"N" VALUES

Sta. 106+95 - C.L. of Constr.
4.0- 5.0, N=22
9.0- 10.0, N=22
15.5- 16.5, N=4
20.5- 21.5, N=2
25.5- 26.5, N=4
30.5- 31.5, N=11
35.5- 36.5, N=29
40.5- 41.5, N=25
45.5- 46.5, N=23
50.5- 51.5, N=43
55.5- 56.5, N=54
60.5- 61.5, N=32
65.5- 66.5, N=17
70.5- 71.5, N=14
75.5- 76.5, N=32
80.5- 81.5, N=44
85.5- 86.5, N=38
90.5- 91.5, N=70
95.5- 96.5, N=44
100.5-101.5, N=26

Sta. 107+73 - C.L. of Constr.
4.7- 5.7, N=9
9.7- 10.7, N=2
15.5- 16.5, N=0
20.5- 21.5, N=10
25.5- 26.5, N=26
30.5- 31.5, N=21
35.5- 36.5, N=13
40.5- 41.5, N=17
45.5- 46.5, N=27
50.5- 51.5, N=40
55.5- 56.5, N=8
60.5- 61.5, N=14
65.5- 66.5, N=14
70.5- 71.5, N=39
75.5- 76.5, N=21
80.5- 81.5, N=31
85.5- 86.5, N=35
90.5- 91.5, N=20
95.5- 96.5, N=22
100.5-101.5, N=36
105.5-106.5, N=52
110.5-111.5, N=40
115.5-116.2, N=105 (9")
120.5-121.5, N=81

Sta. 108+41 - C.L. of Constr.
5.0- 6.0, N=4
10.0- 11.0, N=2
15.5- 16.5, N=19
20.5- 21.5, N=16
25.5- 26.5, N=23
30.5- 31.5, N=18
35.5- 36.5, N=16
40.5- 41.5, N=21
45.5- 46.5, N=32
50.5- 51.5, N=32
55.5- 56.5, N=33
60.5- 61.5, N=32
65.5- 66.5, N=24
70.5- 71.5, N=32
75.5- 76.5, N=41
80.5- 81.5, N=50
85.5- 86.5, N=38
90.5- 91.5, N=30
95.5- 96.5, N=60
100.5-101.5, N=48

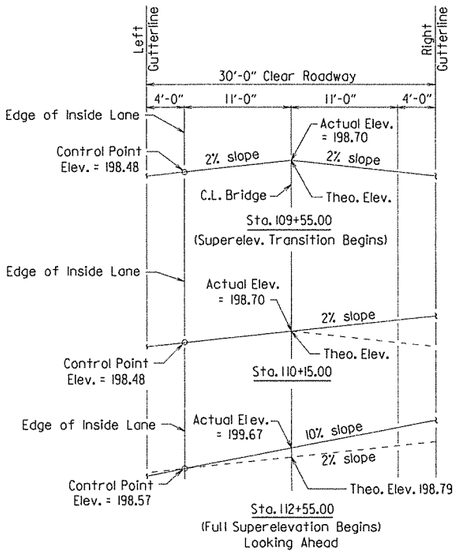
Sta. 109+09 - C.L. of Constr.
4.3- 5.3, N=4
9.3- 10.3, N=2
15.5- 16.5, N=0
20.5- 21.5, N=14
25.5- 26.5, N=12
30.5- 31.5, N=13
35.5- 36.5, N=17
40.5- 41.5, N=17
45.5- 46.5, N=25
50.5- 51.5, N=23
55.5- 56.5, N=53
60.5- 61.5, N=34
65.5- 66.5, N=30
70.5- 71.5, N=38
75.5- 76.5, N=26
80.5- 81.5, N=56
85.5- 86.5, N=31
90.5- 91.5, N=35
95.5- 96.5, N=51
100.5-101.5, N=52

Sta. 109+77 - C.L. of Constr.
4.8- 5.8, N=5
9.8- 10.8, N=4
15.5- 16.5, N=8
20.5- 21.5, N=5
25.5- 26.5, N=20
30.5- 31.5, N=15
35.5- 36.5, N=19
40.5- 41.5, N=19
45.5- 46.5, N=32
50.5- 51.5, N=19
55.5- 56.5, N=18
60.5- 61.5, N=35
65.5- 66.5, N=26
70.5- 71.5, N=25
75.5- 76.5, N=31
80.5- 81.5, N=25
85.5- 86.5, N=13
90.5- 91.5, N=42
95.5- 96.5, N=75
100.5-101.5, N=29
105.5-106.5, N=54
110.5-111.5, N=42

Sta. 111+20 - C.L. of Constr.
3.7- 4.7, N=9
8.7- 9.7, N=11
15.5- 16.5, N=6
20.5- 21.5, N=2
25.5- 26.5, N=3
30.5- 31.5, N=1
35.5- 36.5, N=4
40.5- 41.5, N=7
45.5- 46.5, N=5
50.5- 51.5, N=8
55.5- 56.5, N=45
60.5- 61.5, N=36
65.5- 66.5, N=39
70.5- 71.5, N=34
75.5- 76.5, N=26
80.5- 81.5, N=33
85.5- 86.5, N=8
90.5- 91.5, N=47
95.5- 96.5, N=52
100.5-101.5, N=41
105.5-106.5, N=37
110.5-110.9, N=60 (5")

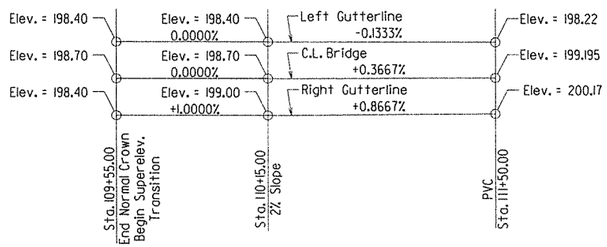
BORING LEGEND

A1-Moist, Very Stiff, Brown Clay with some Organic Matter
B1-Moist, Medium Dense, Brown Sand with Trace of Clay
C1-Wet, Very Loose, Gray Silty Sand
D1-Wet, Medium Dense, Gray Silty Sand
E1-Wet, Medium Dense, Gray Sand
F1-Wet, Dense, Gray Silty Sand
G1-Wet, Very Dense, Gray Sand
H1-Wet, Dense, Gray Sand
J1-Wet, Medium Dense, Gray Sand with Organic Matter
K1-Wet, Dense, Gray Sand with some Gravel
L1-Wet, Very Dense, Gray Sand with some Gravel
M1-Wet, Dense, Gray Sand with Gravel
N1-Wet, Medium Dense, Gray Sand with Gravel
P1-Moist, Stiff, Brown Clay with some Organic Matter
Q1-Wet, Soft, Brown and Gray Clay
R1-Wet, Very Loose, Gray Clayey Sand
S1-Wet, Loose, Gray Sand with Clay
T1-Wet, Medium Dense, Gray Sand with some Organic Matter
U1-Wet, Dense, Gray Sand with Trace of Organic Matter
V1-Wet, Loose, Gray Sand with Organic Matter
W1-Wet, Medium Dense, Gray Sand with Organic Matter and Trace of Clay
X1-Wet, Dense, Gray Sand with Gravel and Trace of Organic Matter
Y1-Moist, Hard, Gray Sandy Clay
Z1-Moist, Very Dense, Gray Sand with Clay and some Cemented Sand Seams
A2-Wet, Very Dense, Gray Silty Sand
B2-Moist, Soft, Brown and Gray Clay with some Organic Matter
C2-Wet, Very Loose, Gray and Brown Clayey Sand and some Organic Matter
D2-Wet, Medium Dense, Gray Sand with Clay
E2-Wet, Medium Dense, Gray Sand with Silt
F2-Wet, Medium Dense, Gray Sand with Clay Seam
G2-Wet, Dense, Gray Sand with Silt
H2-Wet, Dense, Gray Sand with Organic Matter
J2-Wet, Medium Dense, Gray Sand with Silt and Gravel
K2-Wet, Dense, Gray Sand with Silt and Gravel
L2-Wet, Dense, Gray Sand with Gravel and Organic Matter
M2-Wet, Medium Dense, Gray Sand with Gravel and Organic Matter
N2-Wet, Very Dense, Gray Sand with Gravel
P2-Moist, Soft, Gray Clay with some Organic Matter (Grassroots)
Q2-Moist, Soft, Gray Clay with some Organic Matter
R2-Wet, Very Soft, Gray Clay
S2-Wet, Soft, Gray Clay with Sand
T2-Wet, Dense, Gray Sand with Organic Matter and Trace of Gravel
U2-Wet, Very Dense, Gray Sand with Trace of Gravel
V2-Wet, Dense, Gray Sand with Trace of Gravel and Clay Seam
W2-Moist, Medium Stiff, Brown Clay with some Organic Matter
X2-Wet, Loose, Gray Sand
Y2-Wet, Soft, Gray Clay
Z2-Wet, Dense, Gray Sand with some Organic Matter
A3-Wet, Medium Dense, Gray Sand with Clay and Gravel
B3-Wet, Dense, Gray Clayey Sand with Trace of Shells
C3-Moist, Stiff, Brown to Brown and Gray Clay with some Organic Matter and Trace of Sand
D3-Wet, Medium Stiff, Brown Silty Clay with some Organic Matter
E3-Wet, Soft, Gray Clay with Silt
F3-Wet, Very Soft, Gray Clay with Silt
G3-Wet, Soft, Gray Clay with Silt and some Sand
H3-Wet, Medium Stiff, Gray Clay with Silt and some Sand
J3-Wet, Medium Stiff, Gray Clay with Sand
K3-Wet, Dense, Gray Sand with Trace of Gravel
L3-Wet, Medium Dense to Dense, Gray Sand with Trace of Clay
M3-Wet, Loose, Gray Sand with Gravel and Organic Matter
N3-Wet, Dense to Very Dense, Gray Sand
P3-Wet, Very Dense, Gray Sandy Gravel



SUPERELEVATION TRANSITION

No Scale



HYDRAULIC DATA

FLOOD DESCRIPTION	FREQUENCY	DISCHARGE	*NATURAL WATER SURFACE ELEVATION	WATER SURFACE ELEV. WITH BACKWATER
	YEARS	CFS	FEET	FEET
Design	50	1,590	179.3	179.3
Base	100	1,840	179.9	179.9
Extreme	500	2,510	181.3	181.3
Overtopping	>500	-	-	-

*Unconstricted water surface without structure or roadway approaches.

0100 backwater elevation for existing structure = 180.0
Proposed Low Bridge Chord Elev. = 194.66

Drainage area = 22.3 square miles
Historical H. W. Elev = 192.4

Note: Water surface elevations shown are for South Alligator Bayou. Maximum high water elevations are controlled by backwater from the St. Francis River. The 100-year backwater elevation from the St. Francis River is 194.5 at this location.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
12-12-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 2
LAYOUT OF BRIDGE OVER SOUTH ALLIGATOR BAYOU DITCH AT L.M. 1.85 STR. & APPRS. (S)
LEE COUNTY

ROUTE 131 SEC. 1

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: JYP DATE: 8-8-13 FILENAME: b110570_11.dgn
CHECKED BY: CRMS DATE: 9/3/13 SCALE: 1" = 30'
DESIGNED BY: JYP DATE: 8-13

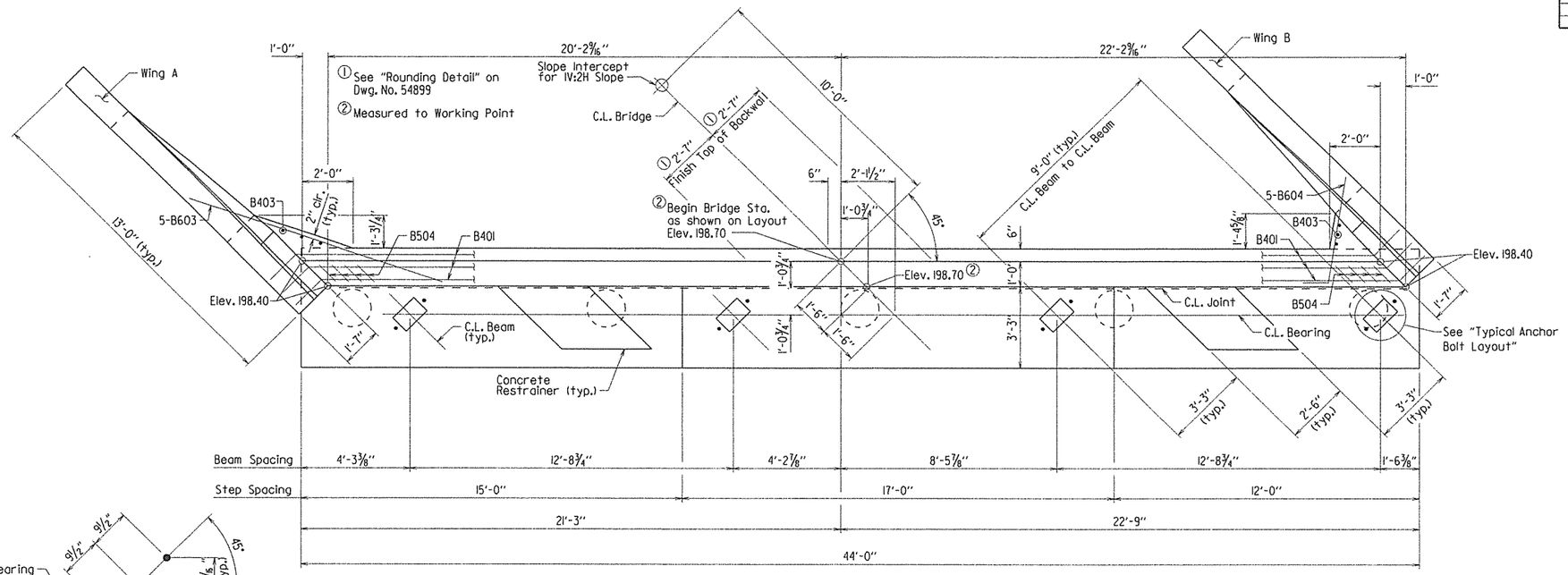
BRIDGE NO. 07303 DRAWING NO. 54891

PRINT DATE: 12/11/2014

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

For details of Wing & Rail, General Notes, Layout of Piles and Bar List, see Dwg. No. 54894.

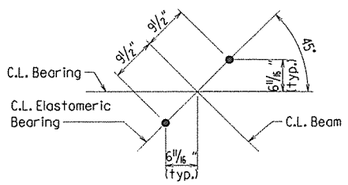
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110570	33	84
				①	07303 -	END BENTS	- 54892	



Adjust spacing of D601E bars as necessary to provide 3" clear from the longitudinal construction joint between the approach slab and gutters.

PLAN - BENT I

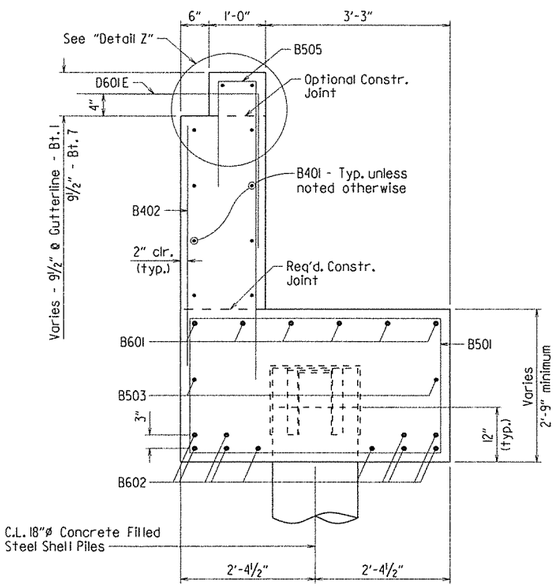
⅜" = 1'-0"



Note: For details of elastomeric bearings, see Dwg. No. 54898.

TYPICAL ANCHOR BOLT LAYOUT

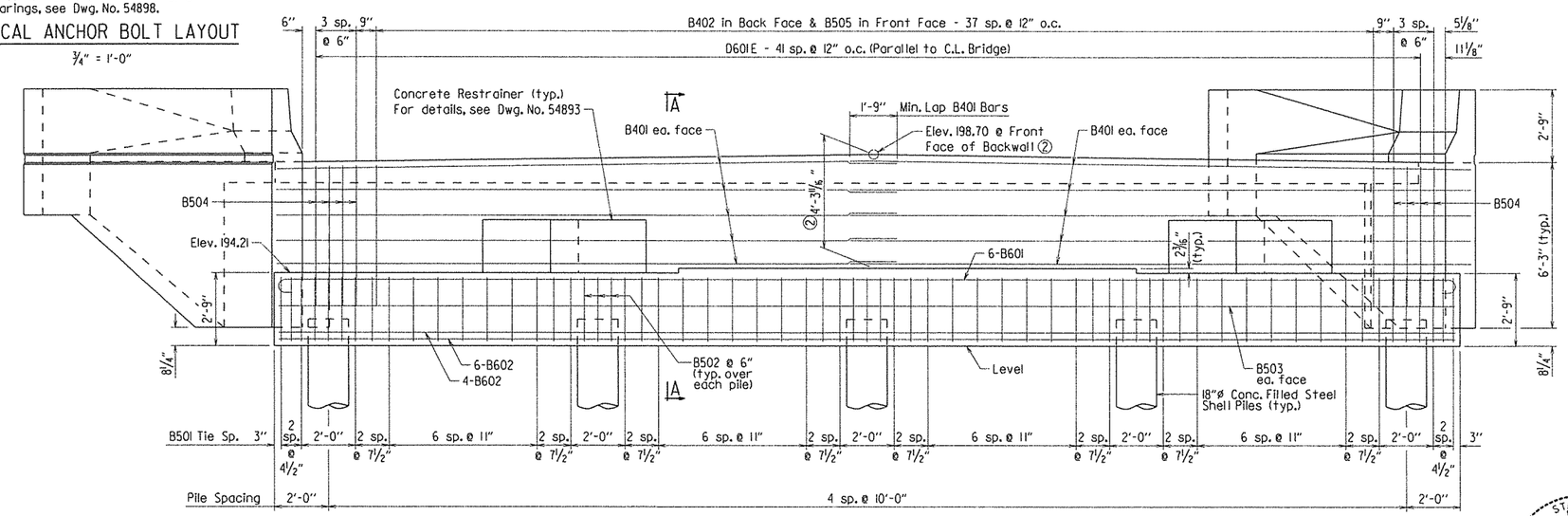
¾" = 1'-0"



Note: For details of piles and pile anchorage, see Std. Dwg. No. 55021.

SECTION A-A

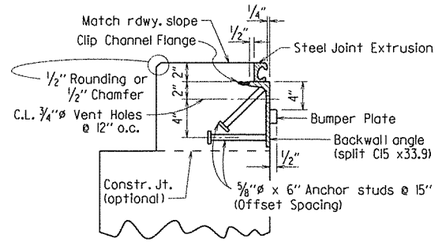
¾" = 1'-0"



ELEVATION - BENT I

Looking Back

⅜" = 1'-0"



Notes: For Details of Bumper PL, see Dwg. No. 54905.

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

DETAIL Z

No Scale

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. 54905, "Expansion Device Installation at End Bents", for additional information.

STATE OF ARKANSAS
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SHEET 1 OF 3
DETAILS OF END BENTS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: JYP DATE: 10-23-13 FILENAME: bii0570_bi.dgn

CHECKED BY: ACP DATE: 6-14-14 SCALE: AS NOTED

DESIGNED BY: JYP DATE: 9-13

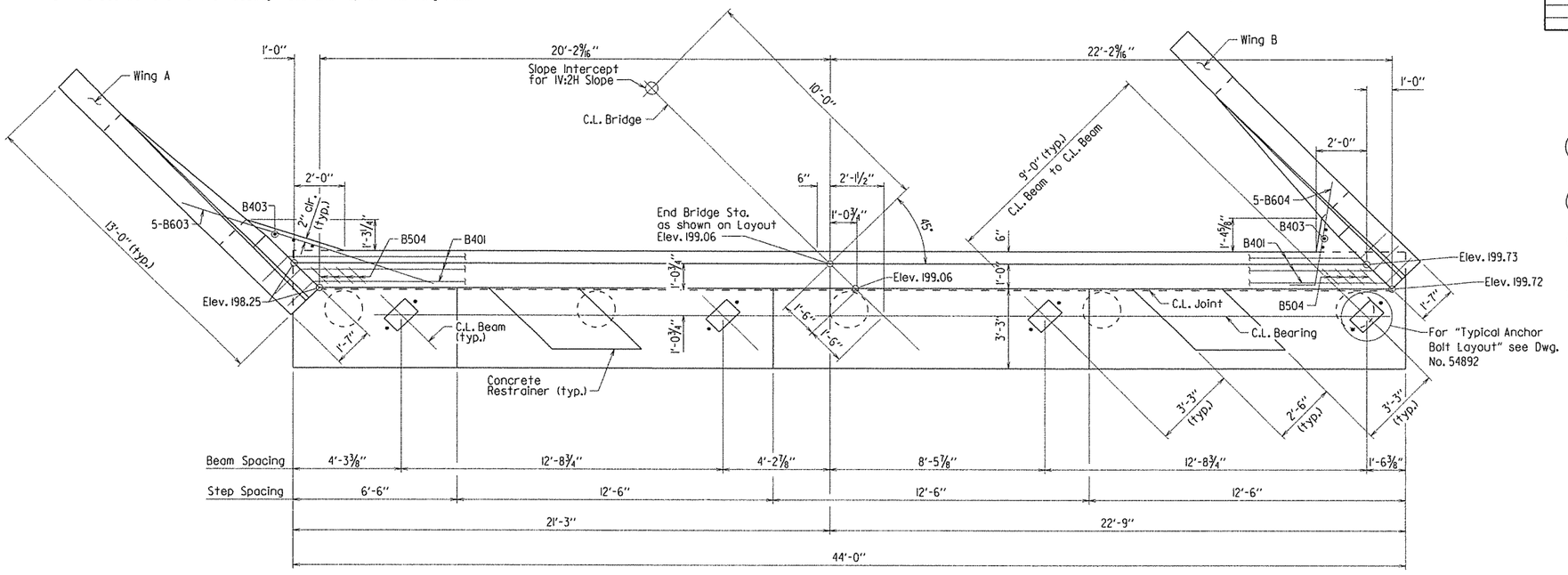
BRIDGE NO. 07303 DRAWING NO. 54892

PRINT DATE: 12/11/2014

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

For details of Wing & Rail, General Notes, Layout of Piles and Bar List, see Dwg. No. 54894.

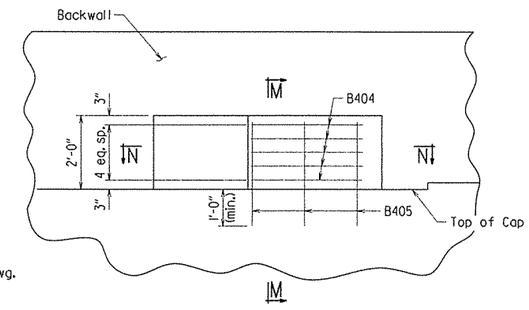
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110570	34	84
				(1)	07303 -	END BENTS	- 54893	



Adjust spacing of D601E bars as necessary to provide 3" clear from the longitudinal construction joint between the approach slab and gutters.

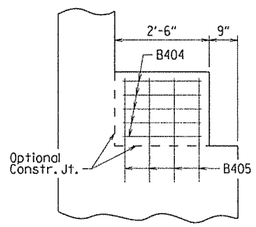
PLAN - BENT 7

3/8" = 1'-0"



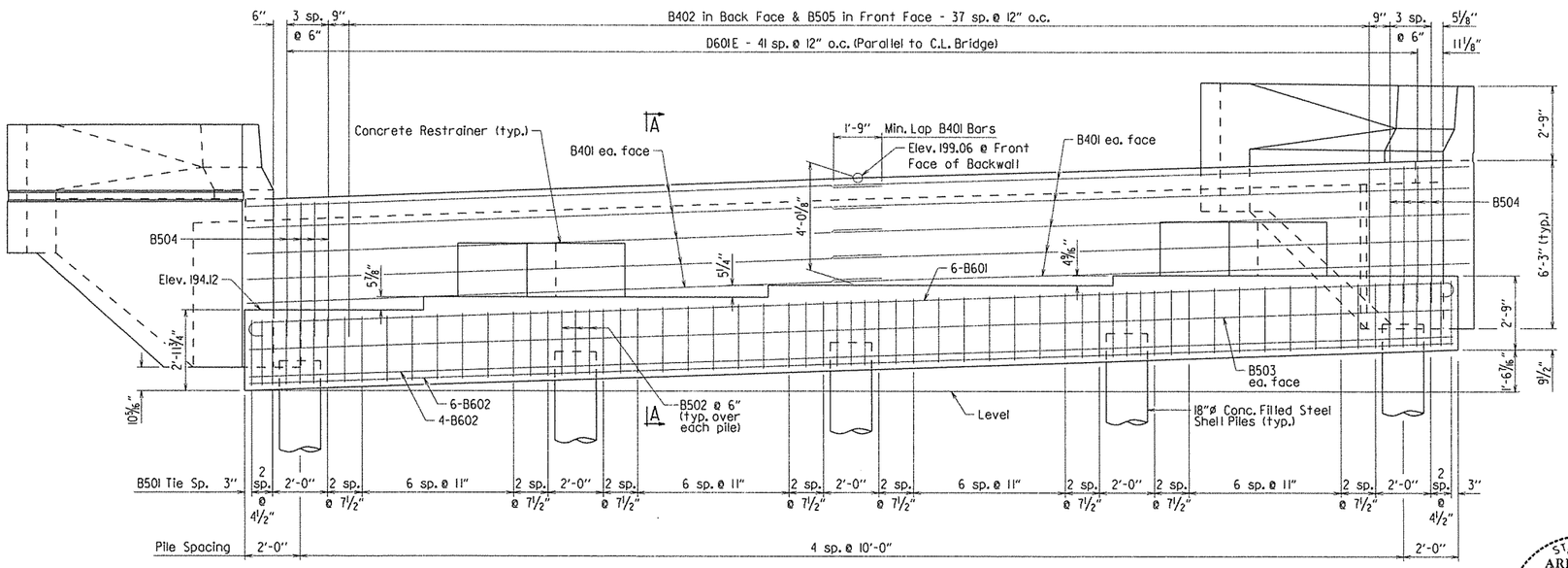
ELEVATION - CONCRETE RESTRAINER

1/2" = 1'-0"



SECTION M-M

1/2" = 1'-0"

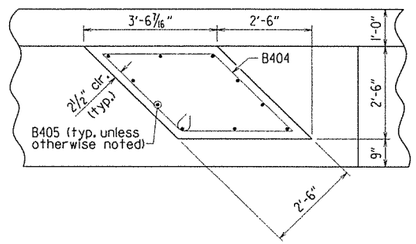


ELEVATION - BENT 7

Looking Ahead

3/8" = 1'-0"

Note: For "Section A-A" see Dwg. No. 54892.



SECTION N-N

1/2" = 1'-0"

Note: The profile of the backwall angle for Bent 7 shall be established based on the superelevation in conjunction with the skew.

STATE OF ARKANSAS
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REGISTERED PROFESSIONAL ENGINEER
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12-12-14
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BRIDGE ENGINEER

SHEET 2 OF 3
DETAILS OF END BENTS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: JYP DATE: 10-23-13 FILENAME: b110570_b1.dgn

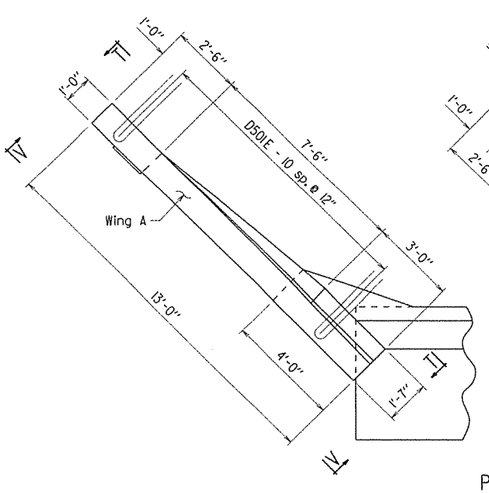
CHECKED BY: ACP DATE: 6-10-14 SCALE: AS NOTED

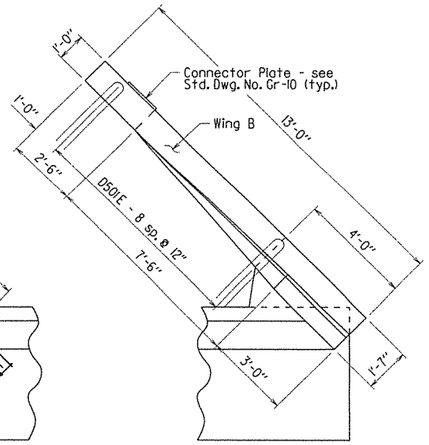
DESIGNED BY: JYP DATE: 9.13

BRIDGE NO. 07303 DRAWING NO. 54893

PRINT DATE: 12/11/2014

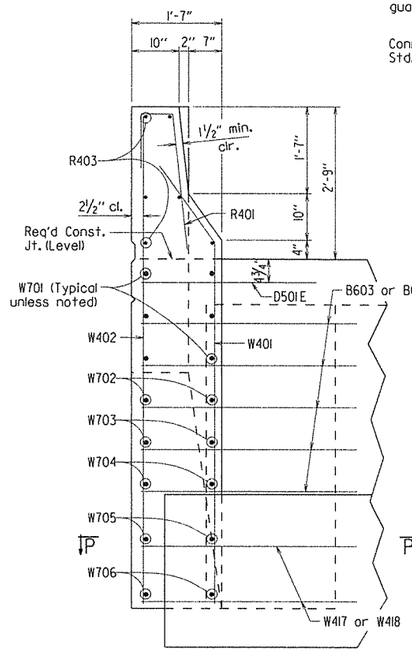
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110570	35	84
				(1)	07303 -	END BENTS	- 54894	





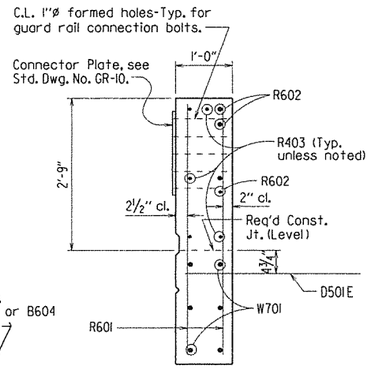
PLAN OF RAIL

3/8" = 1'-0"



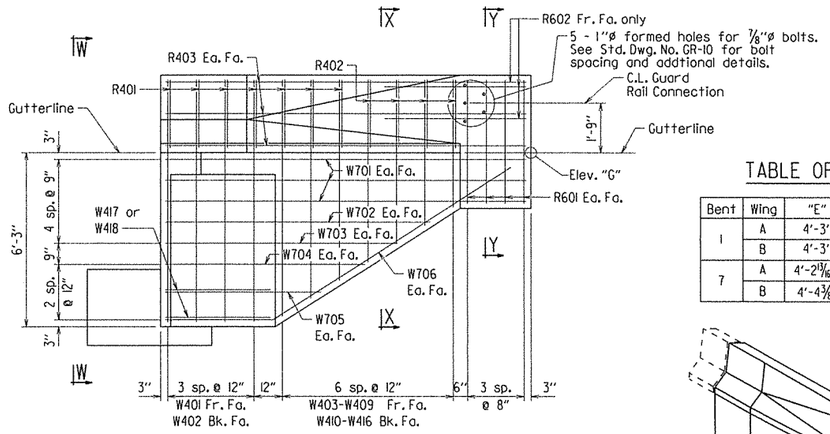
VIEW W-W

¾" = 1'-0"



SECTION Y-Y

¾" = 1'-0"

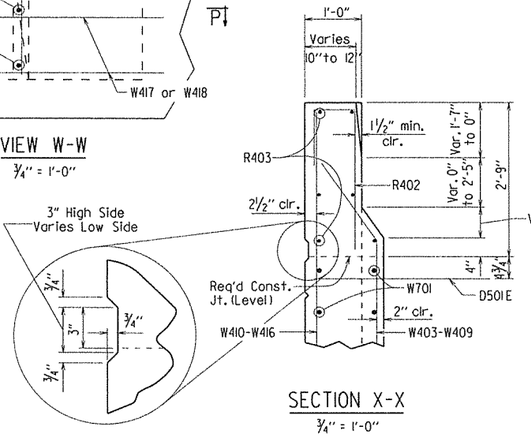


VIEW T-T

⅜" = 1'-0"

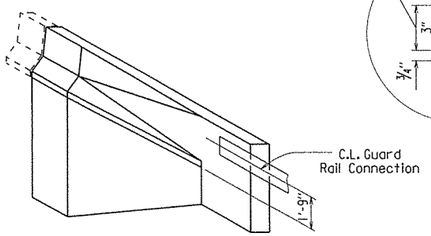
TABLE OF VARIABLES

Bent	Wing	"E"	"F"	Elev. "G"
1	A	4'-3"	8¼"	198.40
	B	4'-3"	8¼"	198.40
7	A	4'-2 13/16"	10 5/16"	198.23
	B	4'-4⅜"	9½"	199.83



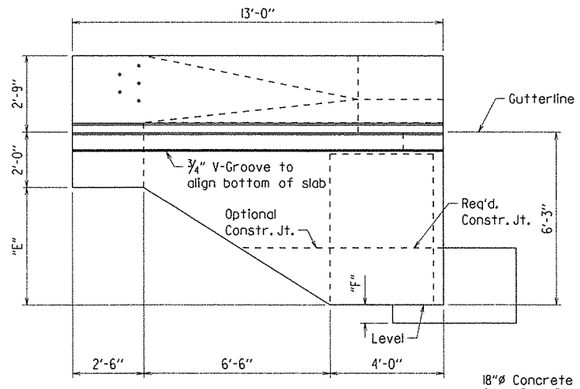
SECTION X-X

¾" = 1'-0"



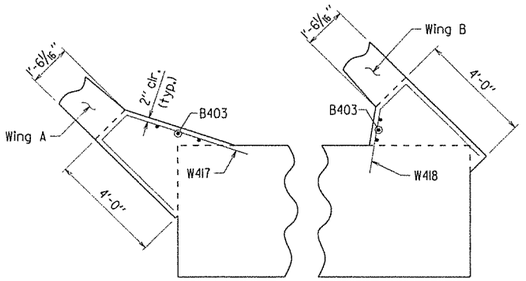
THREE DIMENSIONAL VIEW OF RAIL

No Scale



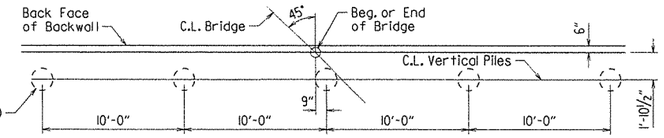
VIEW V-V

⅜" = 1'-0"



SECTION P-P

⅜" = 1'-0"



LAYOUT OF PILES

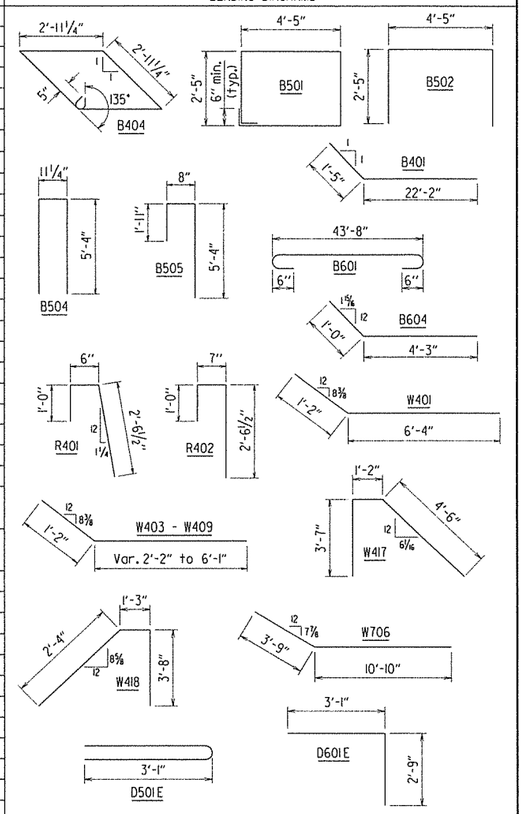
No Scale

Note: For details of piles and pile anchorage, see Std. Dwg. No. 55021.

BAR LIST - PER BENT

MARK	NO. REQ'D.	LENGTH	P.D.
B401	20	23'-7"	2"
B402	38	5'-2"	Str.
B403	6	5'-11"	Str.
B404	10	12'-3"	3"
B405	20	2'-10"	Str.
B501	50	14'-2"	2½"
B502	15	9'-0"	2½"
B503	2	43'-8"	Str.
B504	8	11'-5"	2½"
B505	38	7'-9"	2½"
B601	6	45'-0"	4½"
B602	10	43'-8"	Str.
B603	5	10'-5"	Str.
B604	5	5'-3"	4½"
R401	14	3'-11"	2"
R402	8	4'-0"	2"
R403	12	12'-8"	Str.
R601	16	4'-5"	Str.
R602	6	5'-0"	Str.
W401	8	7'-6"	2"
W402	8	8'-8"	Str.
W403-W409	2 each	Var. 3'-4" to 7'-3"	2"
W410-W416	2 each	Var. 4'-6" to 8'-5"	Str.
W417	2	9'-2"	2"
W418	2	7'-2"	2"
W701	12	12'-8"	Str.
W702	4	9'-3"	Str.
W703	4	8'-1"	Str.
W704	4	6'-11"	Str.
W705	4	5'-5"	Str.
W706	4	14'-7"	5¼"
D501E	20	6'-4"	3¾"
D601E	42	5'-8"	4½"

BENDING DIAGRAMS



(Dimensions are out to out of bars)

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

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 ¾" unless otherwise noted.

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

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

Structural steel in end bents shall be AASHTO M 270, Gr. 50W and shall be paid for as "Structural Steel in Beam Spans (M 270, Gr. 50W)".

For additional information, see Layout.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
12-12-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 3 OF 3

DETAILS OF END BENTS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

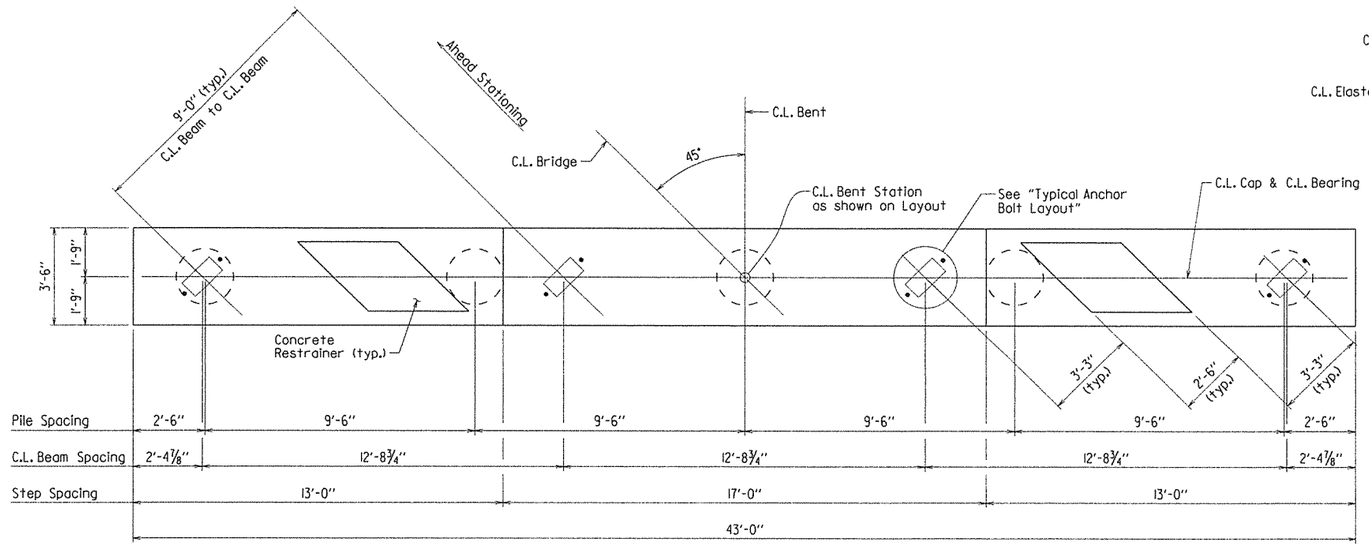
DRAWN BY: JYP DATE: 10-23-13 FILENAME: bll0570_bi.dgn

CHECKED BY: ACP DATE: 12-16-14 SCALE: AS NOTED

DESIGNED BY: JYP DATE: 9-13

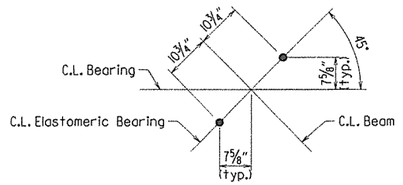
BRIDGE NO. 07303 DRAWING NO. 54894

PRINT DATE: 12/11/2014



PLAN

3/8" = 1'-0"



Note: For details of elastomeric bearings, see Dwg. No. 54898.

TYPICAL ANCHOR BOLT LAYOUT

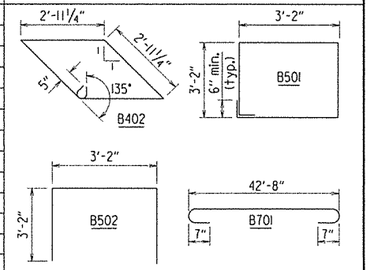
No Scale

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.		110570	36	84
				(1)	07303 -	INT. BENTS	- 54895	

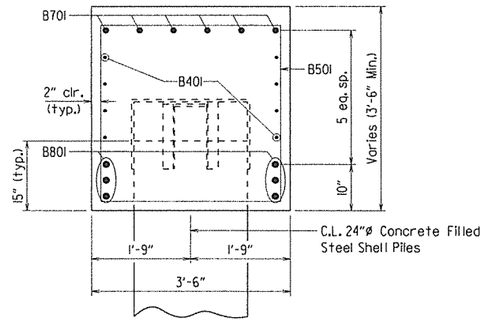
BAR LIST - PER BENT

MARK	NO. REQ'D.	LENGTH	P.D.
B401	16	22'-3"	Str.
B402	6	12'-3"	3"
B403	24	2'-10"	Str.
B501	50	13'-2"	2 1/2"
B502	20	9'-3"	2 1/2"
B701	6	44'-4"	5 1/4"
B801	6	42'-8"	Str.

BENDING DIAGRAMS



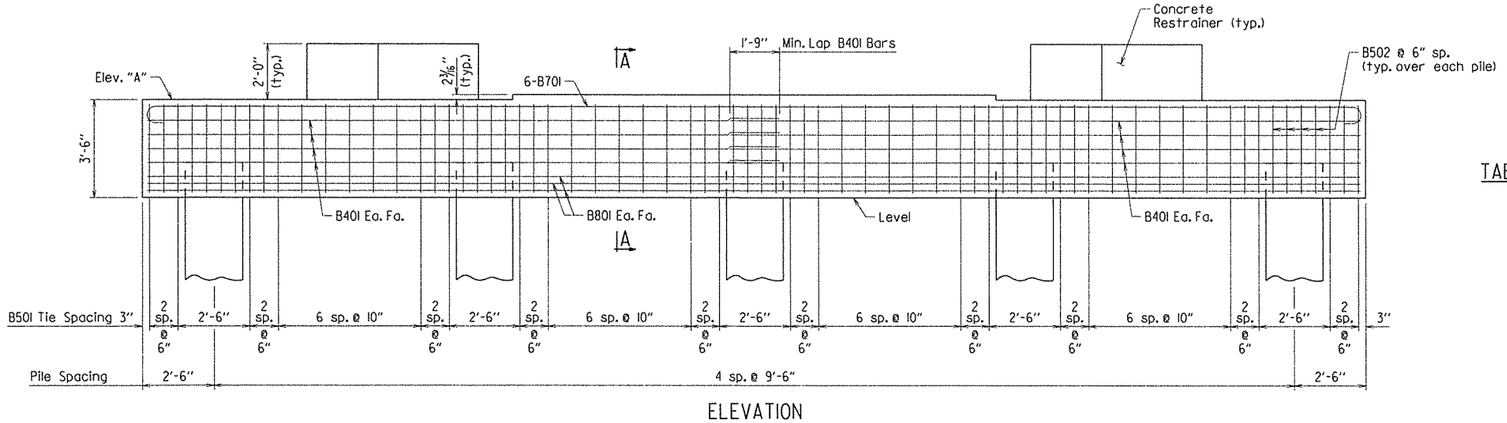
(Dimensions are out to out of bars)



Note: For details of piles and pile anchorage, see Std. Dwg. No. 55021.

SECTION A-A

3/4" = 1'-0"



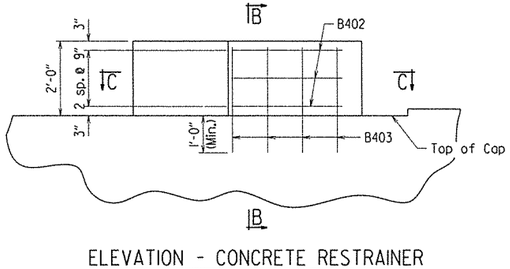
ELEVATION

Looking Ahead

3/8" = 1'-0"

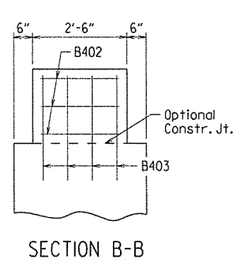
TABLE OF VARIABLES

Bent	Elev. "A"
2	194.40
3	194.43
4	194.41



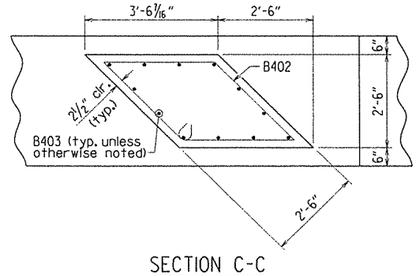
ELEVATION - CONCRETE RESTRAINER

1/2" = 1'-0"



SECTION B-B

1/2" = 1'-0"



SECTION 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.

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

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

For additional information, see Layout.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
12-12-14
CHARLES R. ELLIS

BRIDGE ENGINEER

DETAILS OF INTERMEDIATE BENTS 2, 3 AND 4

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: JYP DATE: 10-23-13 FILENAME: bii0570_b2.dgn

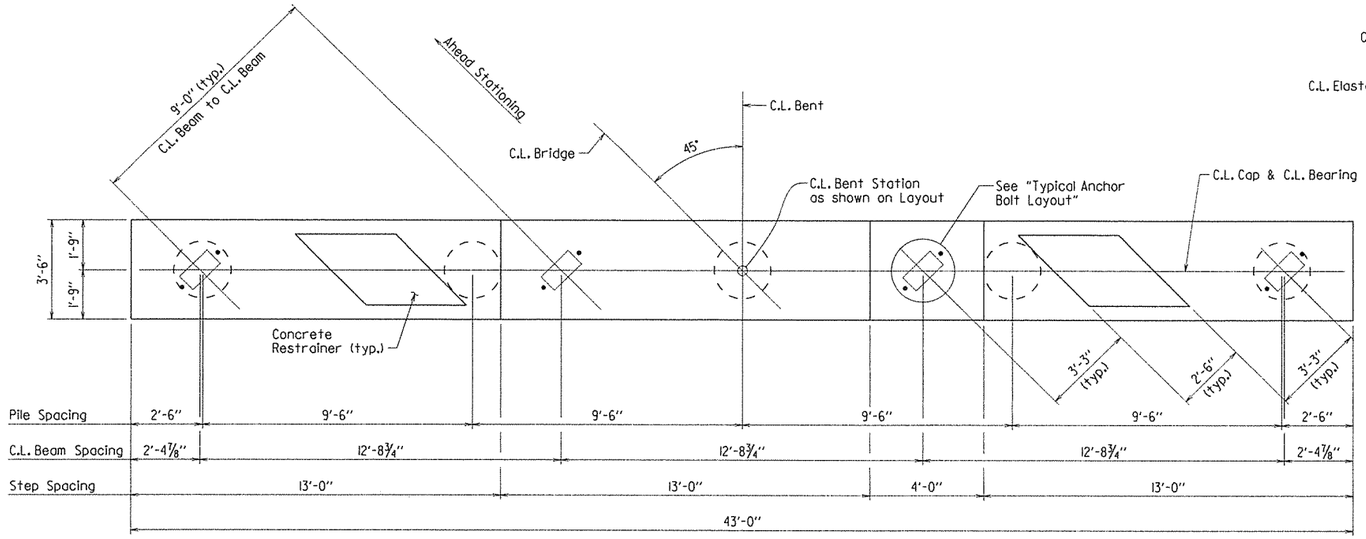
CHECKED BY: ACP DATE: 10-10-14 SCALE: AS NOTED

DESIGNED BY: JYP DATE: 9-13

BRIDGE NO. 07303 DRAWING NO. 54895

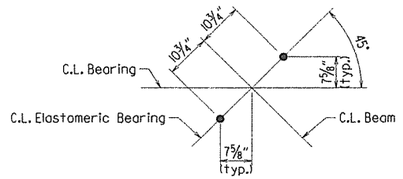
PRINT DATE: 12/11/2014

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.		110570	37	84
				(1)	07303 -	INT. BENTS	- 54896	



PLAN

3/8" = 1'-0"



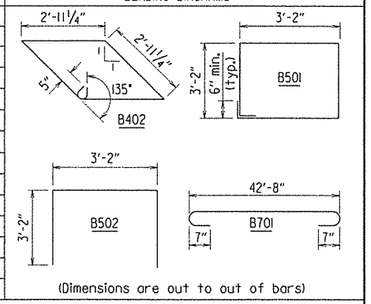
Note: For details of elastomeric bearings, see Dwg. No. 54898.

TYPICAL ANCHOR BOLT LAYOUT

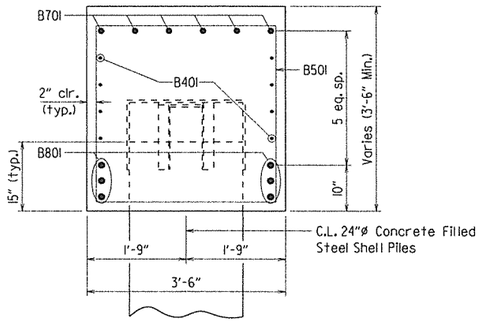
No Scale

BAR LIST

MARK	NO. REQ'D.	LENGTH	P.D.	BENDING DIAGRAMS
B401	16	22'-3"	Str.	
B402	6	12'-3"	3"	
B403	24	2'-10"	Str.	
B501	50	13'-2"	2 1/2"	
B502	20	9'-3"	2 1/2"	
B701	6	44'-4"	5 1/4"	
B801	6	42'-8"	Str.	



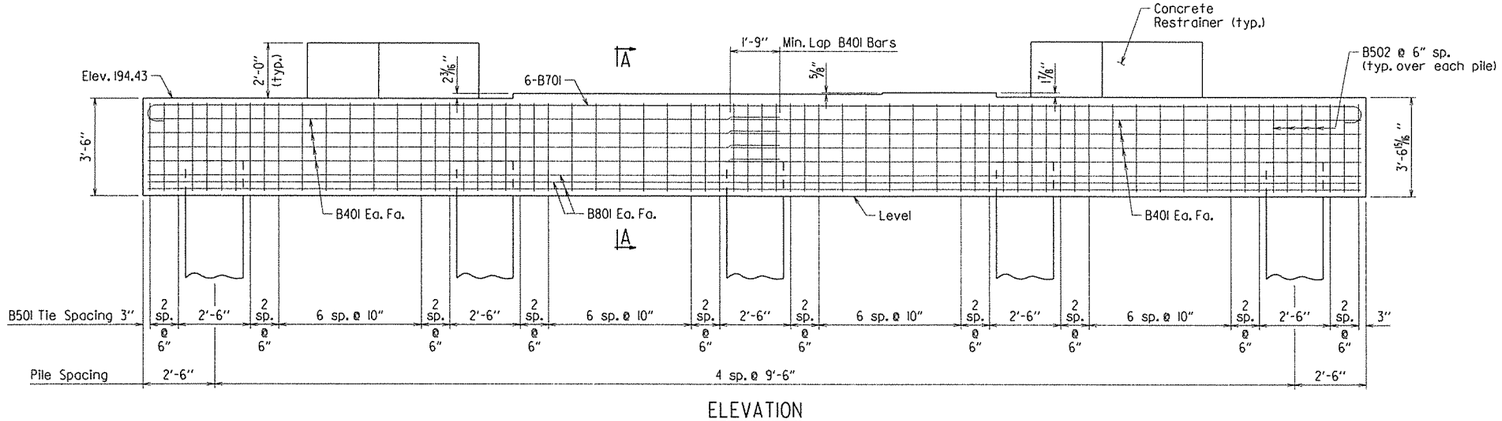
(Dimensions are out to out of bars)



Note: For details of piles and pile anchorage, see Std. Dwg. No. 55021.

SECTION A-A

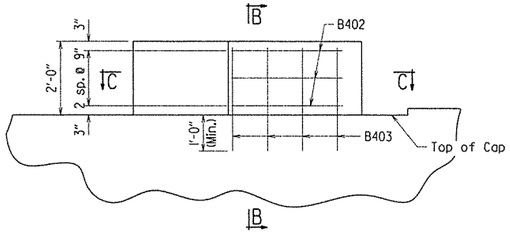
3/4" = 1'-0"



ELEVATION

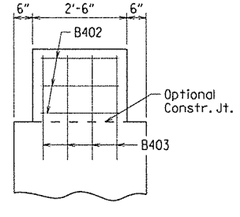
Looking Ahead

3/8" = 1'-0"



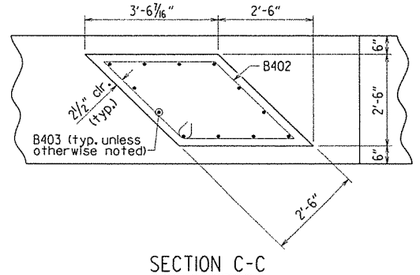
ELEVATION - CONCRETE RESTRAINER

1/2" = 1'-0"



SECTION B-B

1/2" = 1'-0"



SECTION 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.

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

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

For additional information, see Layout.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
12-12-14
CHARLES R. ELLIS

BRIDGE ENGINEER

DETAILS OF INTERMEDIATE BENT 5

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

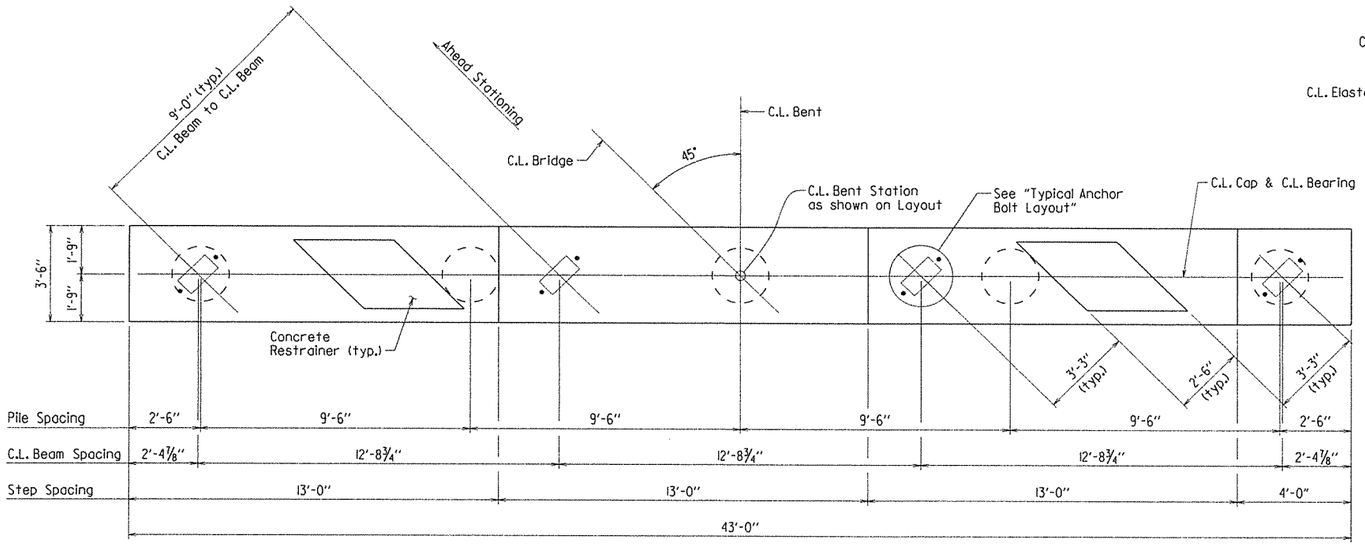
LITTLE ROCK, ARK.

DRAWN BY: JYP DATE: 10-23-13 FILENAME: bii0570_b2.dgn
CHECKED BY: ACP DATE: 12-12-14 SCALE: AS NOTED
DESIGNED BY: JYP DATE: 9-13

BRIDGE NO. 07303 DRAWING NO. 54896

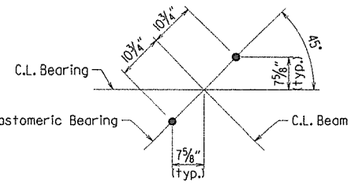
PRINT DATE: 12/11/2014

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.		110570	38	84
				(1) 07303 -		INT. BENTS	- 54897	



PLAN

⅜" = 1'-0"



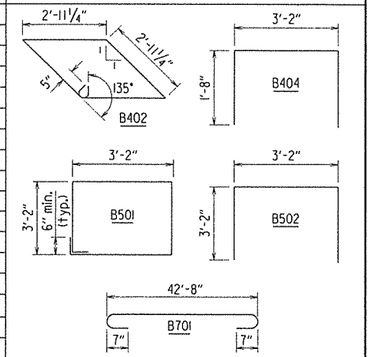
Note: For details of elastomeric bearings, see Dwg. No. 54898.

TYPICAL ANCHOR BOLT LAYOUT

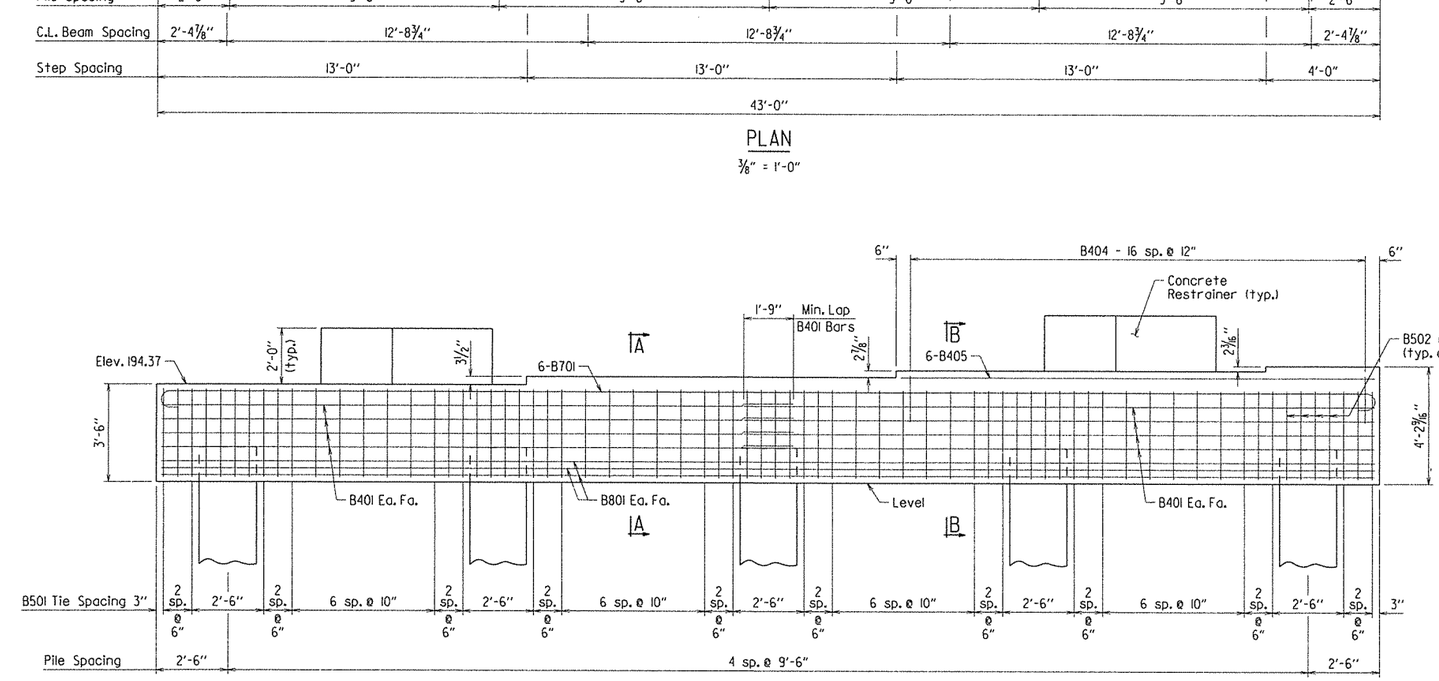
No Scale

BAR LIST

MARK	NO. REQ'D.	LENGTH	P.D.	BENDING DIAGRAMS
B401	16	22'-3"	Str.	
B402	6	12'-3"	3"	
B403	24	2'-10"	Str.	
B404	17	6'-4"	2"	
B405	6	16'-8"	Str.	
B501	50	13'-2"	2½"	
B502	20	9'-3"	2½"	
B701	6	44'-4"	5¼"	
B801	6	42'-8"	Str.	



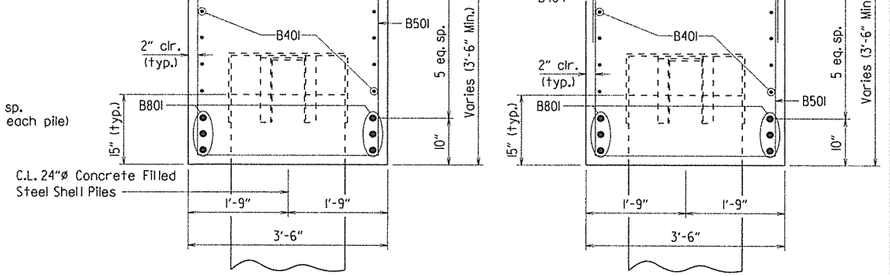
(Dimensions are out to out of bars)



ELEVATION

Looking Ahead

⅜" = 1'-0"



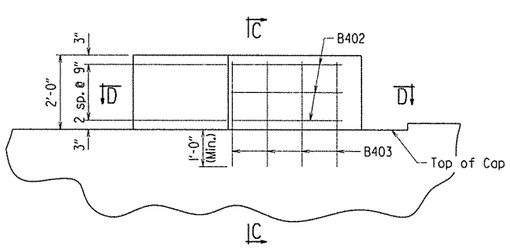
Note: For details of piles and pile anchorage, see Std. Dwg. No. 55021.

SECTION A-A

¾" = 1'-0"

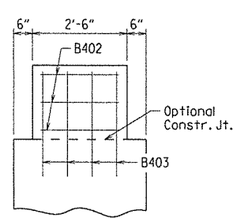
SECTION B-B

¾" = 1'-0"



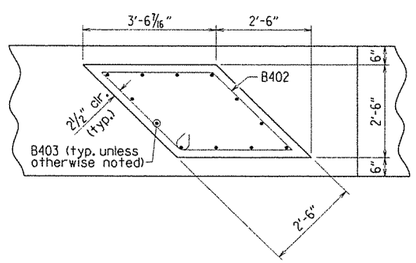
ELEVATION - CONCRETE RESTRAINER

½" = 1'-0"



SECTION C-C

½" = 1'-0"



SECTION D-D

½" = 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 ¾" unless otherwise noted.

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

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

For additional information, see Layout.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
12-12-14
CHARLES R. ELLIS

BRIDGE ENGINEER

DETAILS OF INTERMEDIATE BENT 6

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: JYP DATE: 10-23-13
CHECKED BY: ACP DATE: 12-10-14
DESIGNED BY: JYP DATE: 9-13

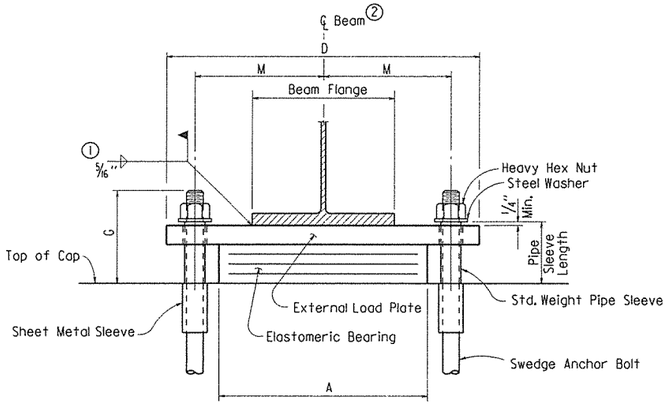
FILENAME: b110570_b2.dgn
SCALE: AS NOTED

BRIDGE NO. 07303 DRAWING NO. 54897

PRINT DATE: 12/11/2014

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.		110570	39	84

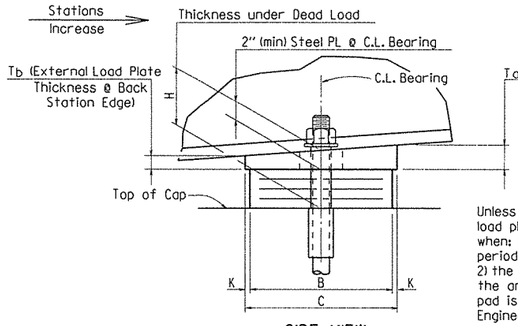
(1) 07303 - ELASTOMERIC BRGS - 54898



FRONT VIEW

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

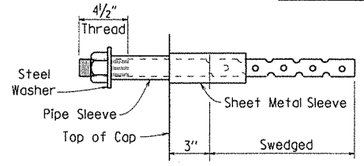
(2) C.L. Elastomeric pad shall be aligned with C.L. Beam.



SIDE VIEW

Note: The direction of bevel of the external load plate may not be accurately depicted with respect to Ta and Tb values shown in Table of Fabricator Variables.

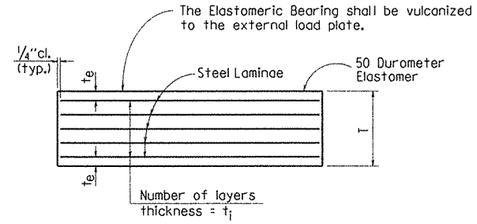
Unless otherwise approved by the Engineer, welding of the external load plate at expansion bearings to the girder will be allowed only when: 1) the approximate average air temperature during the 24 hour period immediately preceding welding is between 40° F and 80° F; and 2) the slots in the external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



ANCHOR BOLT DETAIL

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

If Anchor Bolts are to be drilled and grouted in place, the Galvanized Sheet Metal Sleeves shall be cast in place as shown. Sleeves shall be dry packed with styrofoam, urethane foam or approved equal prior to pouring of concrete. After pouring of the cap and prior to erection of Structural Steel, the dry pack shall be removed and holes for the anchor bolts shall be accurately drilled into the masonry. Bolts placed in drilled holes shall be accurately set and fixed using a QPL approved epoxy or non-shrink grout that completely fills the holes. Galvanized Sheet Metal Sleeves will not be paid for directly, but will be considered subsidiary to the item "Structural Steel in Beam Spans (M 270, Gr. 50W)".

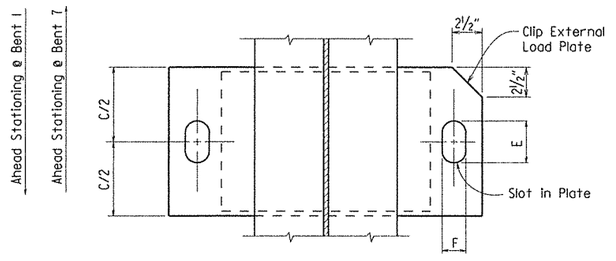


t_e = thickness of elastomer cover on top and bottom of pad

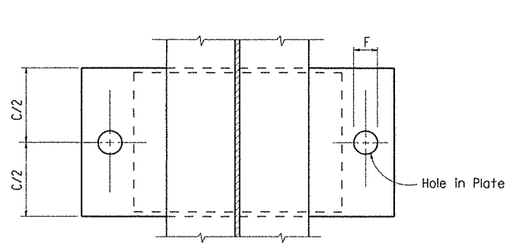
t_i = thickness of elastomer between steel laminae

N = number of elastomer layers of thickness t_i

ELASTOMERIC BEARING



PLAN VIEW @ BENT NOS. 1 & 7



PLAN VIEW @ BENT NOS. 2, 3, 4, 5 & 6

TABLE FOR EXTERNAL LOAD PL THICKNESS

BENT	BEAM	NO. of BEARINGS	T_a	T_b
5	1 & 2	2	2.00"	2.00"
5	3	1	2.02"	1.98"
5	4	1	2.06"	1.94"
6	1	1	1.99"	2.01"
6	2	1	2.01"	1.99"
6	3	1	2.03"	1.97"
6	4	1	2.05"	1.95"
7	1	1	2.00"	2.00"
7	2	1	2.01"	1.99"
7	3	1	2.03"	1.97"
7	4	1	2.04"	1.96"

Note: Beams are numbered left to right looking ahead station.

TABLE OF FABRICATOR VARIABLES

*Maximum Design Load = Service I Limit State

BRIDGE NO.	LOCATION: BENT NO(S).	LOCATION: BEAM OR GIRDER NO.	BEARING TYPE	NO. of BEARINGS EACH BENT	*MAXIMUM DESIGN LOAD (KIPS)	ELASTOMERIC PAD: G	ELASTOMERIC PAD: H	ELASTOMERIC PAD: A	ELASTOMERIC PAD: B	ELASTOMERIC PAD: N	ELASTOMERIC PAD: t_i	ELASTOMERIC PAD: t_e	ELASTOMERIC PAD: NO. & THICKNESS OF STEEL LAMINAE	ELASTOMERIC PAD: T	EXTERNAL LOAD PLATE: C	EXTERNAL LOAD PLATE: D	EXTERNAL LOAD PLATE: E	EXTERNAL LOAD PLATE: F	EXTERNAL LOAD PLATE: K	EXTERNAL LOAD PLATE: M	EXTERNAL LOAD PLATE: T_a	EXTERNAL LOAD PLATE: T_b	ANCHOR BOLT: ANCHOR BOLT (ø x L)	ANCHOR BOLT: GRADE	ANCHOR BOLT: PIPE SLEEVE SIZE (ø x L)	ANCHOR BOLT: SHEET METAL SLEEVE SIZE (ø x L)	ANCHOR BOLT: STEEL WASHER SIZE (O.D.)
07303	1	All	Exp	4	133	9 1/8"	6 1/8"	14"	9"	6	1/2"	1/4"	7 @ 12 Ga.	4 1/4"	10"	25"	6 1/8"	2 5/8"	1/2"	9 1/2"	2.00"	2.00"	1 1/4"x29"	55	2 " x 6 3/8"	4" x 6"	3 3/8"
	2	All	Fix	4	236	7 1/8"	3 13/16 "	16"	12"	2	1/2"	1/4"	3 @ 12 Ga.	1 13/16 "	13"	28"	—	3 1/8"	1/2"	10 3/4"	2.00"	2.00"	2"x29"	55	2 1/2" x 4 1/8"	4" x 9"	3 3/4"
	3	All	Fix	4	215	7 1/8"	3 13/16 "	16"	12"	2	1/2"	1/4"	3 @ 12 Ga.	1 13/16 "	13"	28"	—	3 1/8"	1/2"	10 3/4"	2.00"	2.00"	2"x29"	55	2 1/2" x 4 1/8"	4" x 9"	3 3/4"
	4	All	Fix	4	224	7 1/8"	3 13/16 "	16"	12"	2	1/2"	1/4"	3 @ 12 Ga.	1 13/16 "	13"	28"	—	3 1/8"	1/2"	10 3/4"	2.00"	2.00"	2"x29"	55	2 1/2" x 4 1/8"	4" x 9"	3 3/4"
	5	All	Fix	4	215	7 1/8"	3 13/16 "	16"	12"	2	1/2"	1/4"	3 @ 12 Ga.	1 13/16 "	13"	28"	—	3 1/8"	1/2"	10 3/4"	See Table		2"x29"	55	2 1/2" x 4 1/8"	4" x 9"	3 3/4"
	6	All	Fix	4	236	7 1/8"	3 13/16 "	16"	12"	2	1/2"	1/4"	3 @ 12 Ga.	1 13/16 "	13"	28"	—	3 1/8"	1/2"	10 3/4"	See Table		2"x29"	55	2 1/2" x 4 1/8"	4" x 12"	3 3/4"
	7	All	Exp	4	133	9 1/8"	6 1/8"	14"	9"	6	1/2"	1/4"	7 @ 12 Ga.	4 1/4"	10"	25"	5 5/8"	2 5/8"	1/2"	9 1/2"	See Table		1 3/4"x29"	55	2 " x 6 3/8"	4" x 6"	3 3/8"

GENERAL NOTES

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

External load plates shall conform to AASHTO M 270, Grade 50W. Pipe sleeves shall be ASTM A53, Grade B, and shall be galvanized to conform to AASHTO M 232, Class C or AASHTO M 298, Class 50.

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

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

Pipe Sleeves, Anchor Bolts, Washers and Nuts shall be paid for at the unit price bid for "Structural Steel in Beam Spans (M270, Gr. 50W)".

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

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12-12-14
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DETAILS OF ELASTOMERIC BEARINGS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: JYP DATE: 10-15-13 FILENAME: bll0570_el.dgn

CHECKED BY: ACP DATE: 6-10-14 SCALE: NONE

DESIGNED BY: JYP DATE: 9-13

BRIDGE NO. 07303 DRAWING NO. 54898

PRINT DATE: 12/11/2014

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.		110570	40	84
				(1)	07303 - 408' CONT. UNIT - 54899			

Slab Reinforcing:

Longitudinal: S402 as shown
S601 & S602 as shown centered over int. supports, see "Reinforcing Plan & Pouring Sequence", Dwg. No. 54902.

Transverse: S502 @ 12" o.c. bent up over beams ——— Alternate
S501 @ 12" o.c. in top, S401 @ 12" o.c. in bottom
S503 @ 6" in top of overhangs (bundled with #5 bars)

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

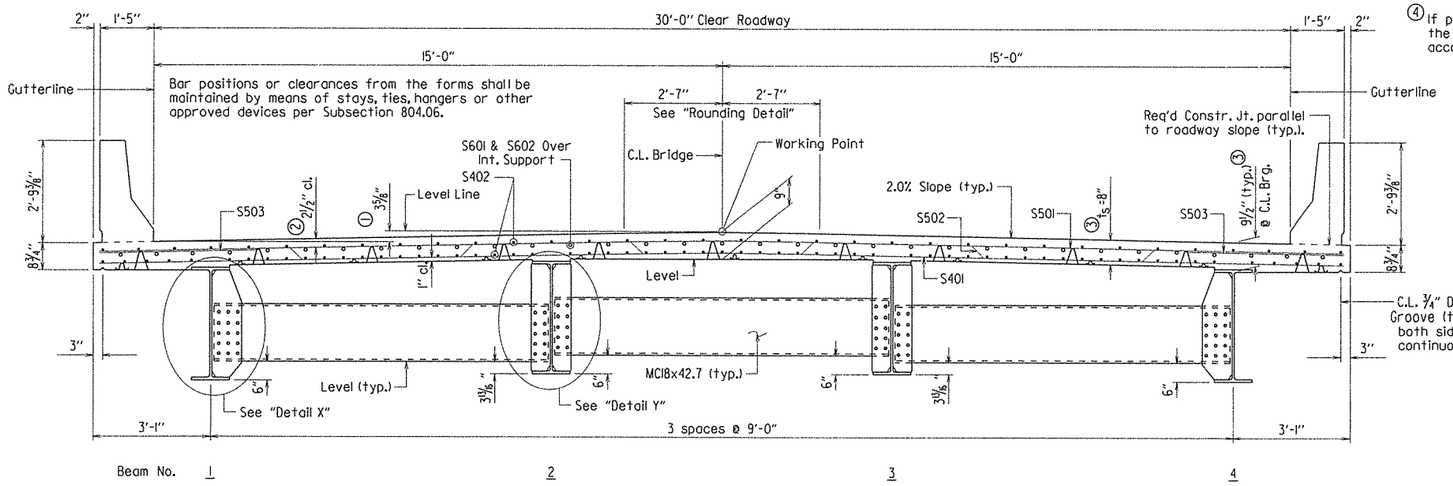
Note: Class I Protective Surface Treatment shall be applied to the Roadway Surface and the Face and Top of Concrete Parapet Rail.

(1) Working point to gutterline.

(2) Tolerance: Minus = 1/4"; Plus equal to the amount of slab thickening used to meet slab thickness tolerance. See "Adjustment for Slab Thickness Tolerance".

(3) See "Adjustment for Slab Thickness Tolerance".

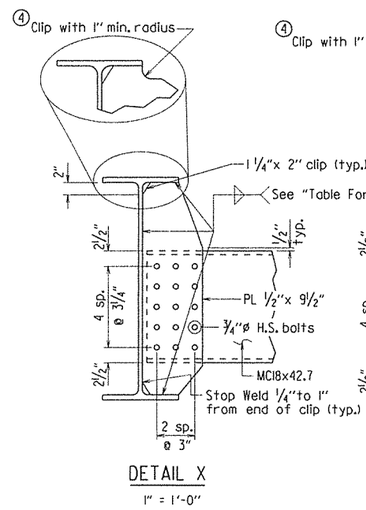
(4) If permanent steel bridge deck forms are used, the Fabricator shall clip plates as necessary to accomodate the deck form supports.



TYPICAL ROADWAY SECTION

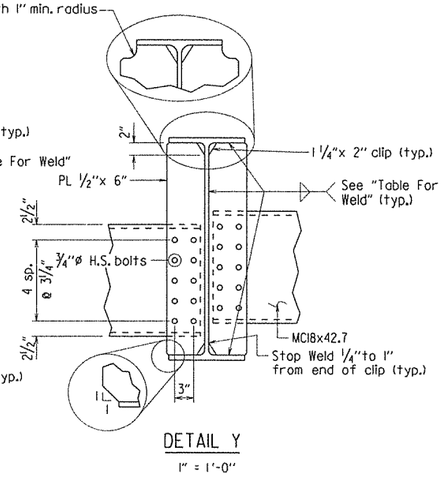
LOOKING AHEAD
(5) BEGINNING OF UNIT TO STA. 109+55.00
1/2" = 1'-0"

(5) See Dwg. No. 54900 for "Roadway Cross-Slope Transition".



DETAIL X

1" = 1'-0"



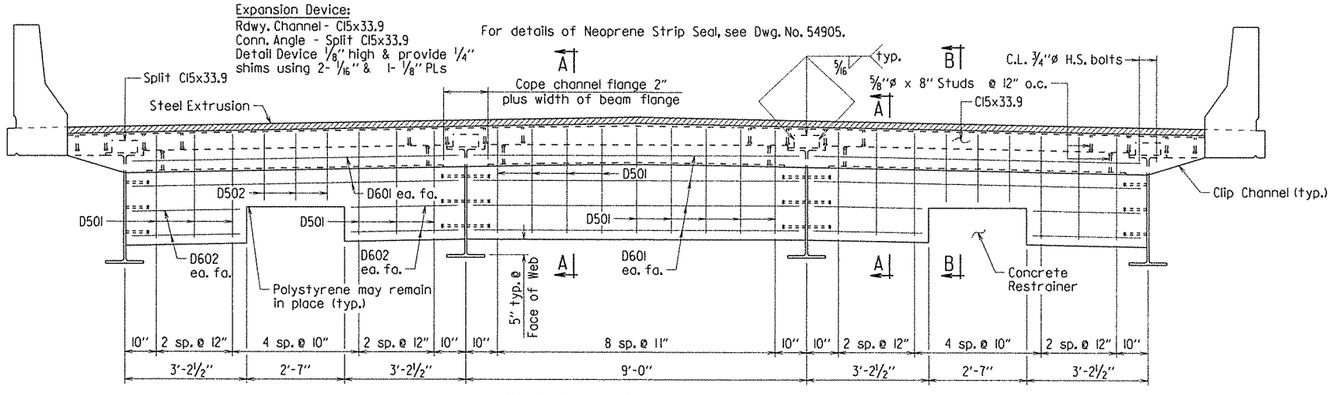
DETAIL Y

1" = 1'-0"

*t_s = slab thickness as shown in "Typical Roadway Section"

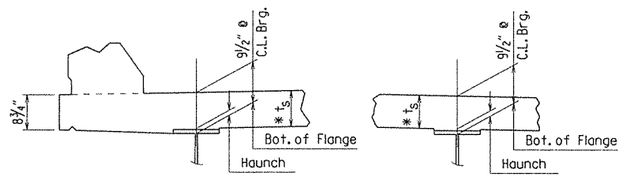
Expansion Device:
Rdwy. Channel - CI5x33.9
Conn. Angle - Split CI5x33.9
Detail Device 1/8" high & provide 1/4" shims using 2- 1/16" & 1- 1/8" PLs

For details of Neoprene Strip Seal, see Dwg. No. 54905.



ROADWAY SECTION NEAR JOINT

BENT 1 SHOWN, BENT 7 SIMILAR
1/2" = 1'-0"



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

ADJUSTMENT FOR SLAB THICKNESS TOLERANCE

No Scale

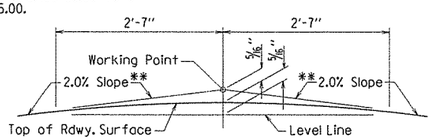
NOTES:
Haunch dimension may vary within the following limits to maintain the grade and slab thickness tolerance: Minimum occurs when top flange contacts bottom reinforcing steel; Maximum = top flange thickness plus 1¾". No increase in concrete and structural steel quantities will be made to maintain 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.

For "Section A-A" and "Section B-B" see Dwg. No. 54900.

Note: 1/2" polystyrene shall be used as a bond breaker between the concrete restrainer and the concrete diaphragm and may remain in place. Polystyrene will not be paid for directly, but will be considered subsidiary to Class S(AE) Concrete-Bridge.

** Values shown are for 2% Peaked Crown. Dimension for Working Point to Top of Roadway Surface varies from 5/16" at Sta. 109+55.00 to 0" at Sta. 110+15.00.



NOTE: Working Point matches Theoretical Roadway Grade.

ROUNDING DETAIL

No Scale

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.

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SHEET 1 OF 8
DETAILS OF
408'-0" CONTINUOUS W-BEAM UNIT
SOUTH ALLIGATOR BAYOU

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: JYP DATE: 10-4-13 FILENAME: bll0570_sl.dgn
CHECKED BY: ACP DATE: 6-11-14 SCALE: As Noted
DESIGNED BY: JYP DATE: 9-13

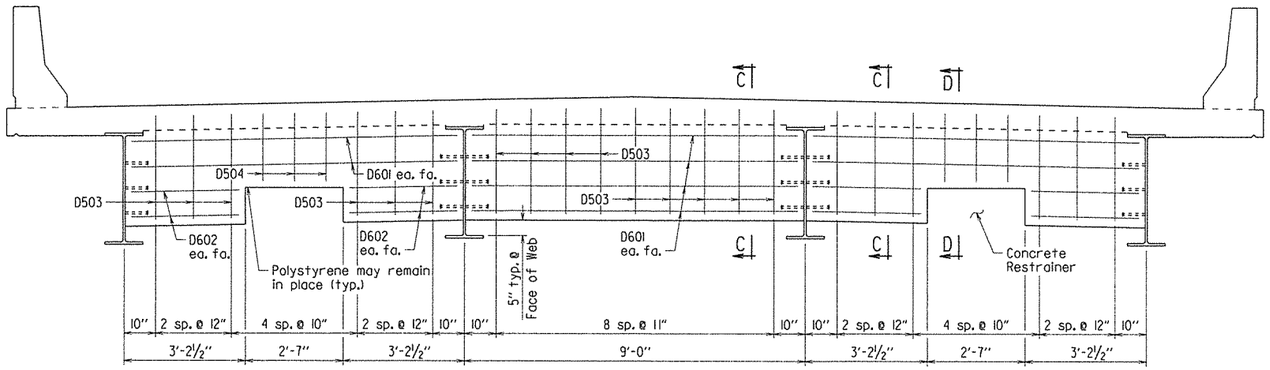
BRIDGE NO. 07303 DRAWING NO. 54899

PRINT DATE: 12/11/2014

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.		110570	4	84
				①	07303 - 408' CONT. UNIT - 54900			

Note: For dimensions and reinforcing not shown, see "Typical Roadway Section" on Dwg. No. 54899.

Note: ½" polystyrene shall be used as a bond breaker between the concrete restrainer and the concrete diaphragm and may remain in place. Polystyrene will not be paid for directly, but will be considered subsidiary to Class S(AE) Concrete-Bridge.

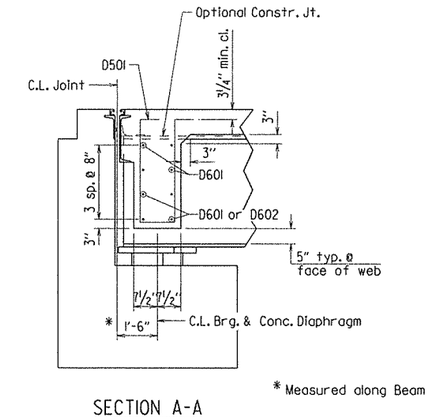


ROADWAY SECTION AT INTERIOR BENTS

BENTS 2, 3 & 4 SHOWN, BENTS 5 & 6 SIMILAR
½" = 1'-0"

Notes:
Forms for concrete diaphragms shall be removable.

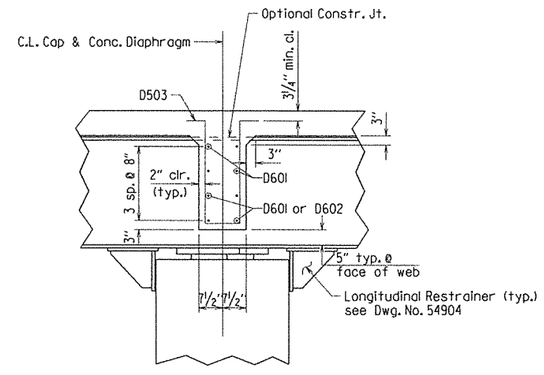
Concrete Diaphragms shall be vertical.



* Measured along Beam

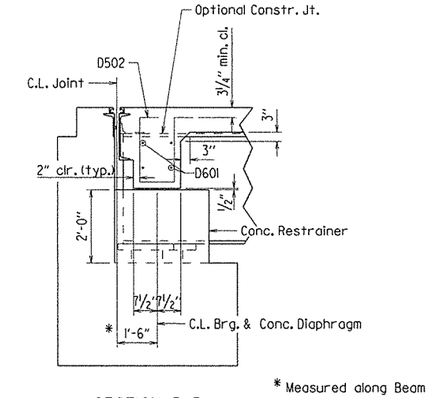
SECTION A-A

Section taken normal to conc. diaphragm
½" = 1'-0"



SECTION C-C

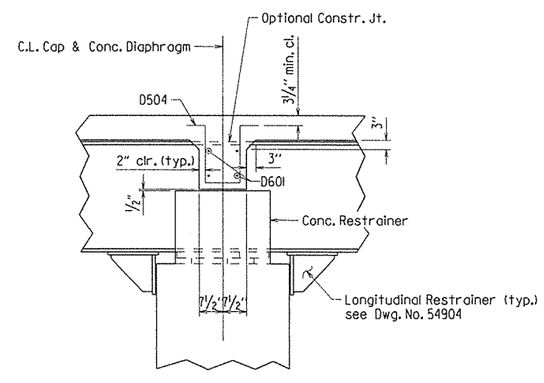
Section taken normal to conc. diaphragm
½" = 1'-0"



* Measured along Beam

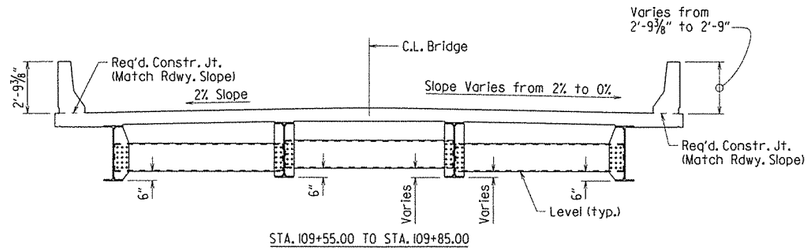
SECTION B-B

Section taken normal to conc. diaphragm
½" = 1'-0"

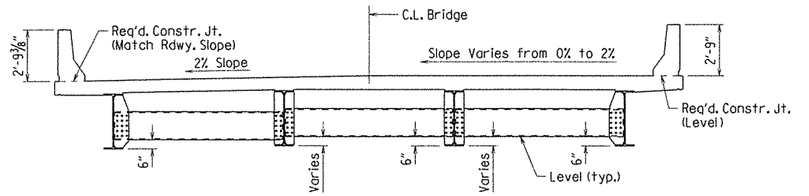


SECTION D-D

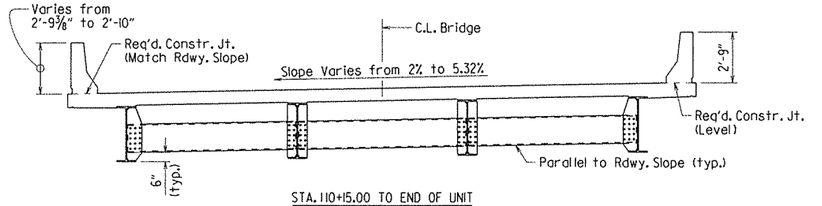
Section taken normal to conc. diaphragm
½" = 1'-0"



STA. 109+55.00 TO STA. 109+85.00



STA. 109+85.00 TO STA. 110+15.00



STA. 110+15.00 TO END OF UNIT

Notes:
See Layout for Method of Superelevation Transition.

For details not otherwise shown, see "Typical Roadway Section", "Roadway Section Near Joint" or "Roadway Section at Interior Bents" as applicable.

ROADWAY CROSS-SLOPE TRANSITION

Looking Ahead
No Scale

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SHEET 2 OF 8
DETAILS OF 408'-0" CONTINUOUS W-BEAM UNIT SOUTH ALLIGATOR BAYOU

ROUTE SEC.

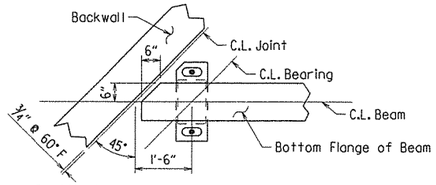
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: JYP DATE: 10-4-13
CHECKED BY: ACP DATE: 6-11-14
DESIGNED BY: JYP DATE: 9-13
FILENAME: b110570_sl.dgn
SCALE: As Noted

BRIDGE NO. 07303 DRAWING NO. 54900

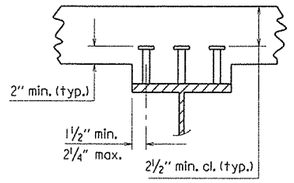
PRINT DATE: 12/11/2014

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.		110570	42	84
				(1)	07303 - 408' CONT. UNIT - 54901			



PLAN OF BEARING AT END BENT

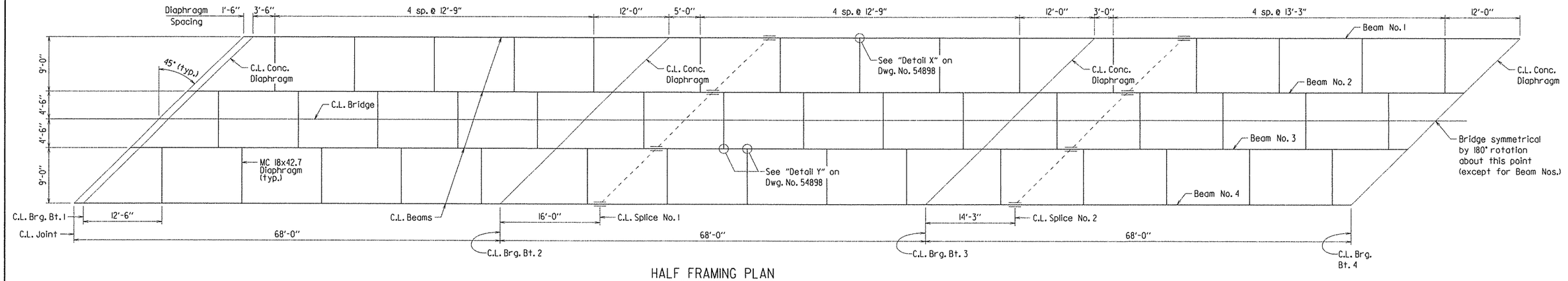
No Scale



Stud Shear Connectors shown shall be ⅞"ø x 4" long, granular flux filled, solid fluxed or equal, and automatically end welded to the beam flange in accordance with the recommendations of the Manufacturer. ¾"ø studs may be used in place of the ⅞"ø studs shown, at the ratio of 1.361 - ¾"ø studs in place of one ⅞"ø stud. ⅞"ø studs will be used as basis for measurement of structural steel in shear connectors.

SHEAR CONNECTOR DETAIL

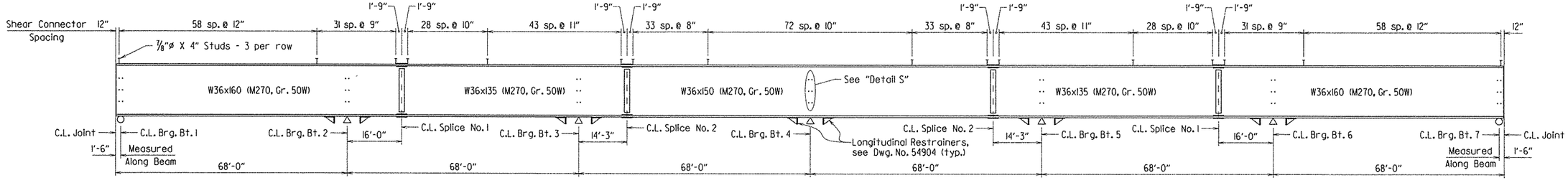
No Scale



HALF FRAMING PLAN

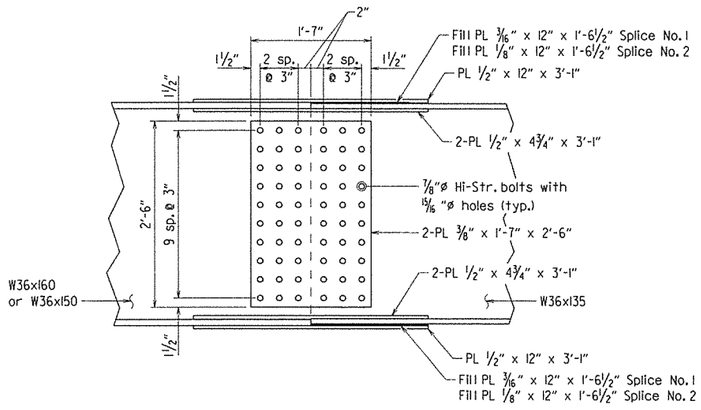
⅛" = 1'-0"

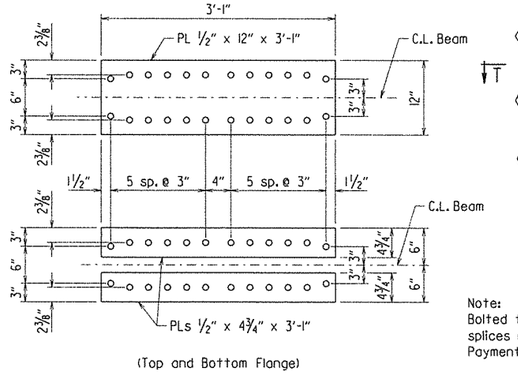
Note: Prior to pouring concrete diaphragms, remove mill scale from surfaces to be in contact with concrete with a wire brush.



BEAM ELEVATION

No Scale

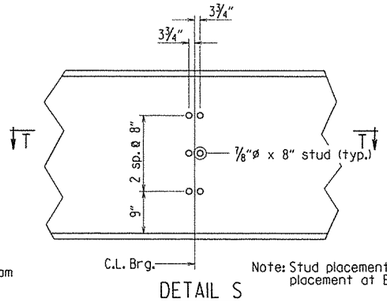




(Top and Bottom Flange)

DETAILS OF BOLTED FIELD SPLICES

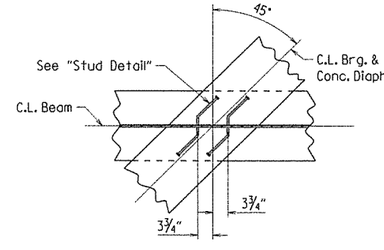
1" = 1'-0"



DETAIL S

No Scale

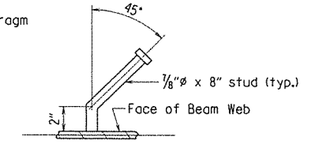
Note: Stud placement at Int Bents shown, placement at End Bents similar.



SECTION T-T

(Shown @ Interior Beam)

No Scale



STUD DETAIL

No Scale

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.

All field splice bolts shall be ⅞"ø Hi-str. bolts.
All holes for splice bolts shall be 15/16 "ø.
All field splice plates shall be AASHTO M 270 Gr. 50W.

STATE OF ARKANSAS
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REGISTERED PROFESSIONAL ENGINEER
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12-12-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 3 OF 8

DETAILS OF

408'-0" CONTINUOUS W-BEAM UNIT

SOUTH ALLIGATOR BAYOU

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: JYP DATE: 10-4-13
CHECKED BY: ACP DATE: 6-11-14
DESIGNED BY: JYP DATE: 9-13

FILENAME: b110570_si.dgn
SCALE: As Noted

BRIDGE NO. 07303 DRAWING NO. 54901

PRINT DATE: 12/11/2014

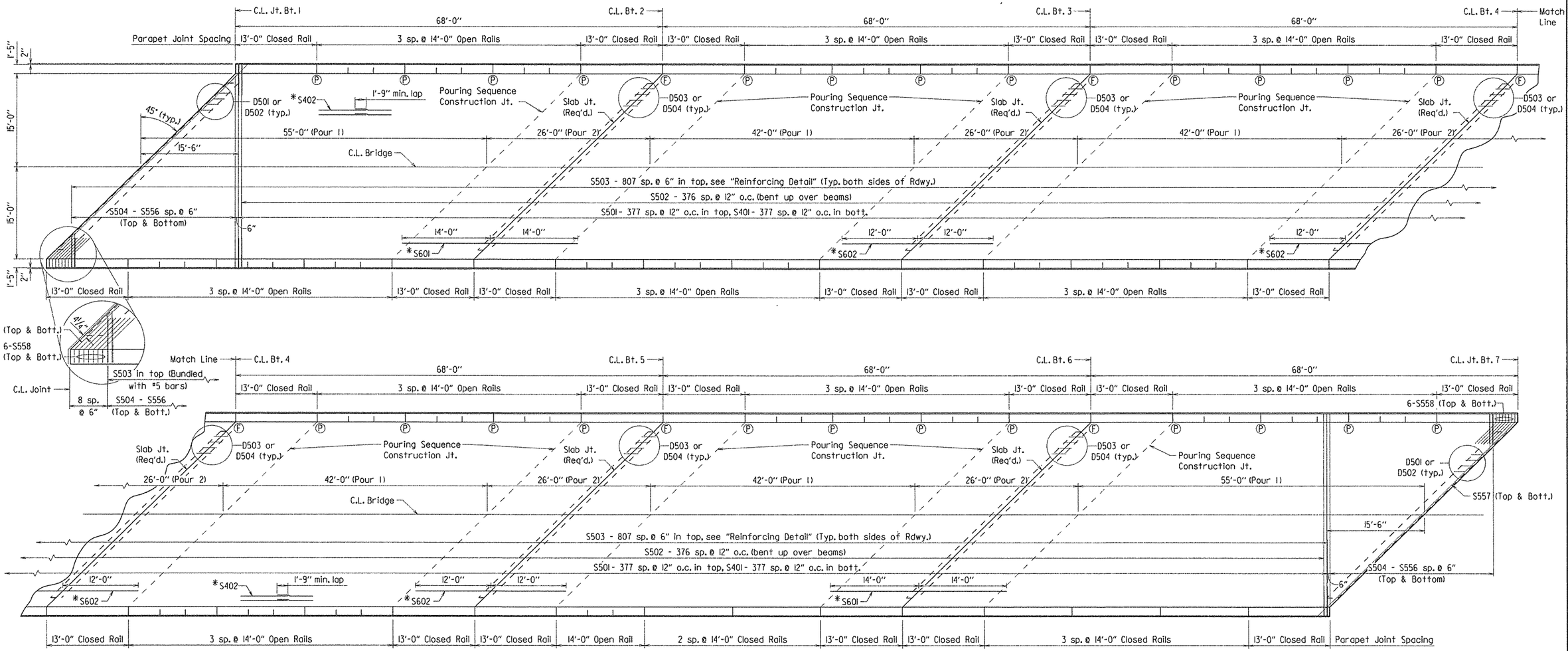
Notes: Pours with the same number may be placed simultaneously or separately. All Pours (1) must be placed before Pours (2) can be placed. 48 hours shall elapse between the end of a pour and the start of the next pour. 72 hours shall elapse between adjacent pours. If concrete diaphragms are poured separately, a minimum of 48 hours shall elapse between the diaphragm pour and the slab pour.

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

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

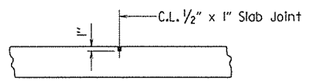
*Place reinforcing as shown in "Typical Roadway Section", see Dwg. No. 54899.

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.		110570	43	84
				(1)	07303 - 408' CONT. UNIT - 54902			



REINFORCING PLAN AND POURING SEQUENCE

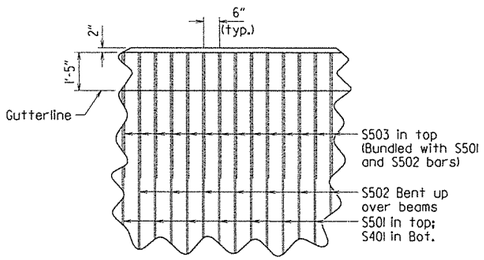
1/8" = 1'-0"



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

No Scale



REINFORCING DETAIL

No Scale

Notes:
Required slab joints and pouring sequence construction joints shall align with open joints in parapet rail at the gutterline.

Locations of full and partial depth parapet joints shown are typical for both sides of roadway.

(P) Partial depth parapet joint at this location

(F) Full depth parapet joint at this location

See Dwg. No. 54903 for Parapet Reinforcing Details and Dwg. No. 54906 for Bar List.

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SHEET 4 OF 8
DETAILS OF 408'-0" CONTINUOUS W-BEAM UNIT SOUTH ALLIGATOR BAYOU

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: JYP DATE: 10-4-13 FILENAME: bll0570_sl.dgn

CHECKED BY: ACP DATE: 6-11-14 SCALE: As Noted

DESIGNED BY: JYP DATE: 9-13

BRIDGE NO. 07303 DRAWING NO. 54902

PRINT DATE: 12/11/2014

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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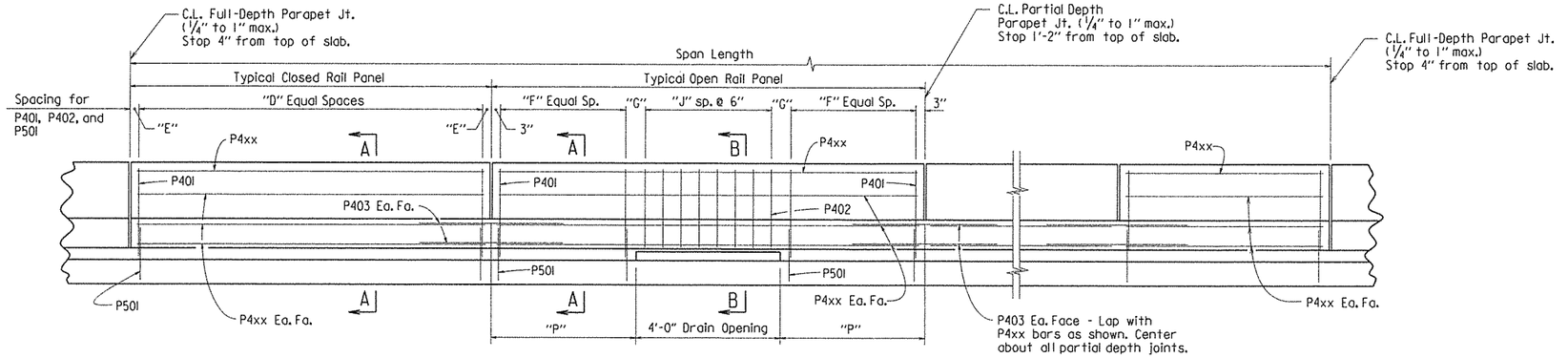
				JOB NO.		110570	44	84
				(1)		07303 - 408' CONT. UNIT - 54903		



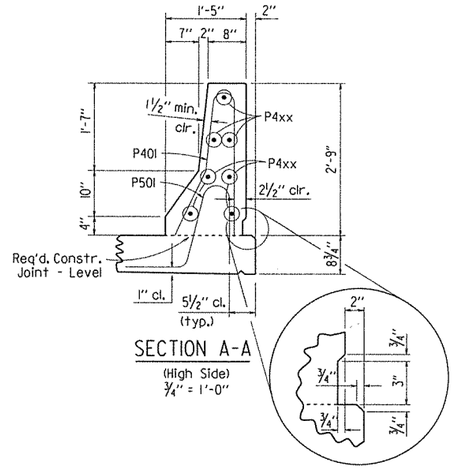
ELEVATION - CONCRETE PARAPET RAIL

1/2" = 1'-0"

Note:
For location of full and partial depth parapet joints, See Dwg. No. 54092.

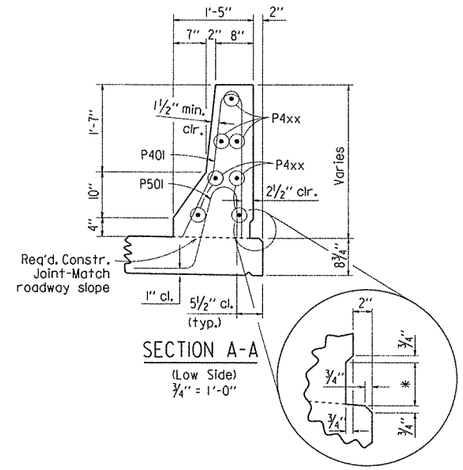
TABLE OF VARIABLES

Closed Rail Panels				Open Rail Panels					
Panel Length	"D"	"E"	P4xx Bar	Panel Length	"F"	"G"	"J"	"P"	P4xx Bar
13'-0"	25	3"	P404	14'-0"	9	6"	7	5'-0"	P405
14'-0"	27	3"	P405						



SECTION A-A

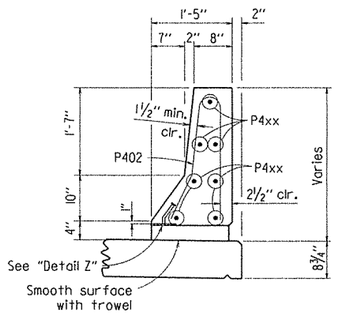
(High Side)
3/4" = 1'-0"



SECTION A-A

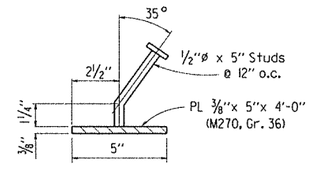
(Low Side)
3/4" = 1'-0"

*3 3/8" for 2% cross-slope
Varies elsewhere



SECTION B-B

3/4" = 1'-0"

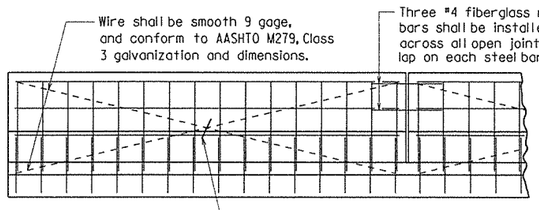


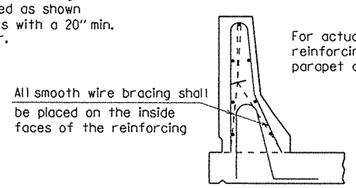
Note:
Parapet Studs shall be 5" long, granular flux filled, solid fluxed, or equal, and automatically end welded to the plate. Studs and plate shall meet the requirements of Section 807. Studs and plate shall be measured and paid for as Structural Steel in Beam Spans (M270, Gr. 50W).

The surfaces of the 3/8" 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

No Scale



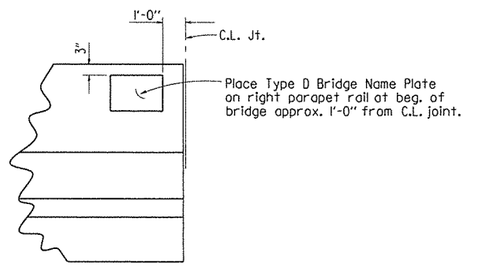


All panels shall be braced as required to prevent racking. All open joints shall be sawed as soon as practical to a minimum width of 1/4". To control cracking before sawing, all joints must be grooved before the concrete is set. Sawing of the joints must be controlled so it will follow the grooved joint.

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

No Scale



VIEW SHOWING LOCATION OF NAME PLATE

No Scale

STATE OF ARKANSAS
Charles Ro Ellis
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No. 9235
12-12-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 5 OF 8
DETAILS OF
408'-0" CONTINUOUS W-BEAM UNIT
SOUTH ALLIGATOR BAYOU

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: JYP DATE: 10-4-13
CHECKED BY: ACP DATE: 6-11-14
DESIGNED BY: JHP DATE: 9-13

FILENAME: bll0570_sl.dgn
SCALE: As Noted

BRIDGE NO. 07303 DRAWING NO. 54903

PRINT DATE: 12/11/2014

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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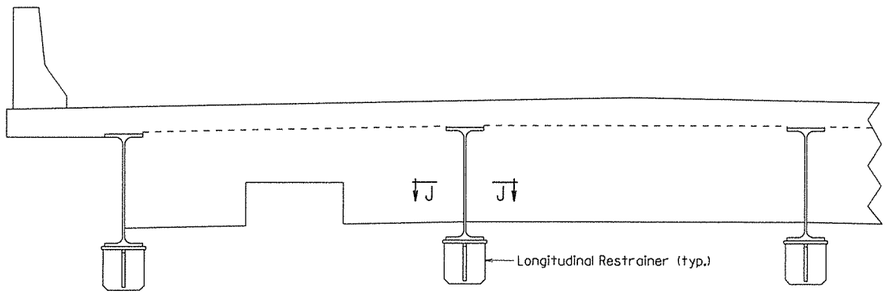
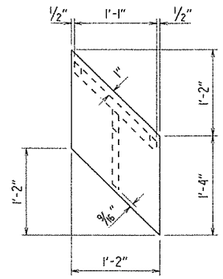
				JOB NO.		110570	45	84
				(1)	07303 - 408' CONT. UNIT - 54904			



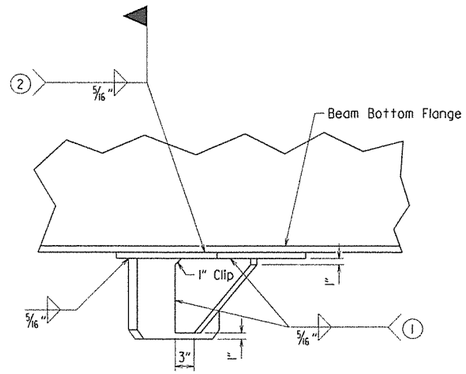
SKETCH OF LONGITUDINAL RESTRAINER DEVICES AT INTERMEDIATE BENTS

1/2" = 1'-0"



PLAN OF LONGITUDINAL RESTRAINER

1" = 1'-0"

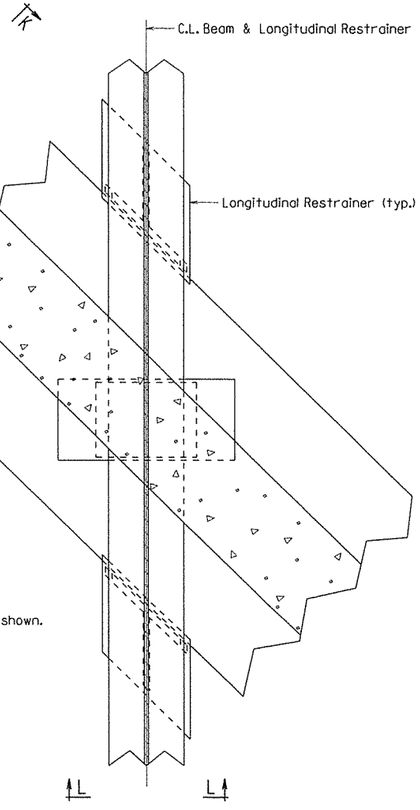


VIEW M-M

1" = 1'-0"

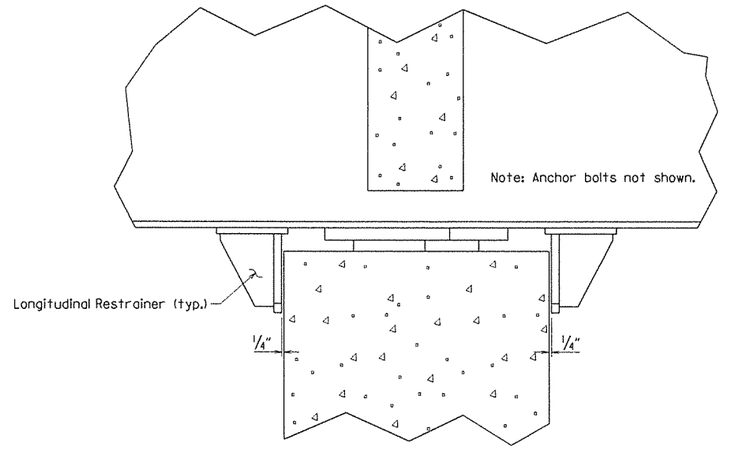
(1) Stop weld 1/2" from end of clip.

(2) Longitudinal restrainer shall not be welded to beam until deck has been poured.



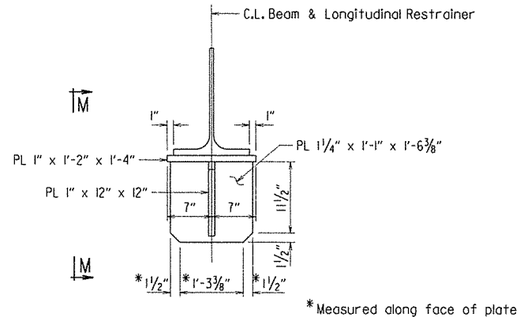
VIEW J-J

1" = 1'-0"



VIEW K-K

1" = 1'-0"



*Measured along face of plate

VIEW L-L

1" = 1'-0"

Note: All Plates shall be Grade 50W.

STATE OF ARKANSAS
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SHEET 6 OF 8
DETAILS OF 408'-0" CONTINUOUS W-BEAM UNIT SOUTH ALLIGATOR BAYOU

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: JYP DATE: 10-4-13
CHECKED BY: ACP DATE: 6-11-14
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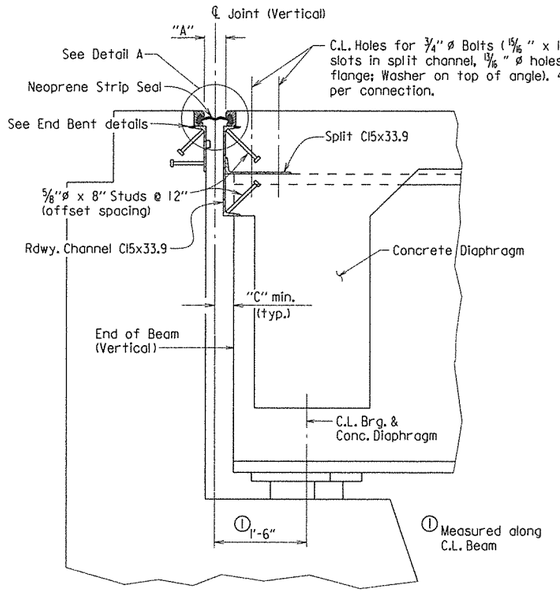
FILENAME: bll0570_sl.dgn
SCALE: As Noted

BRIDGE NO. 07303 DRAWING NO. 54904

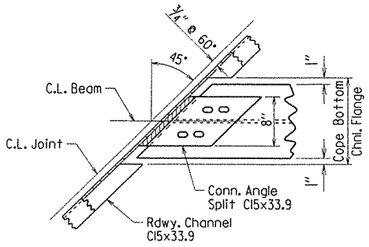
PRINT DATE: 12/12/2014

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.		110570	46	84
				①	07303 - 408' CONT. UNIT - 54905			

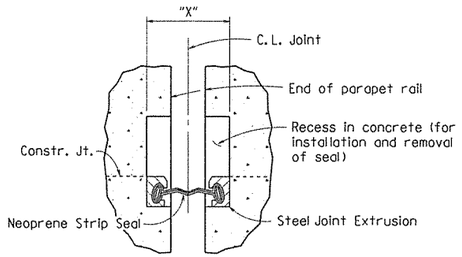


Note: Section thru Joint is taken perpendicular to C.L. Joint.

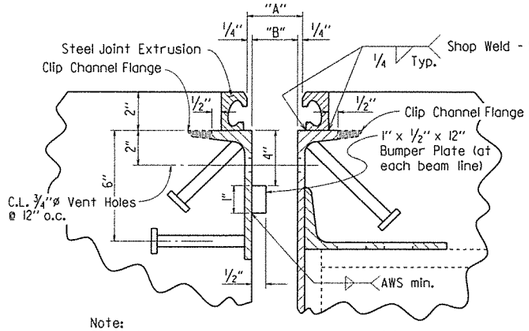
SECTION THRU JOINT AT END BENTS



CHANNEL CONNECTION DETAIL

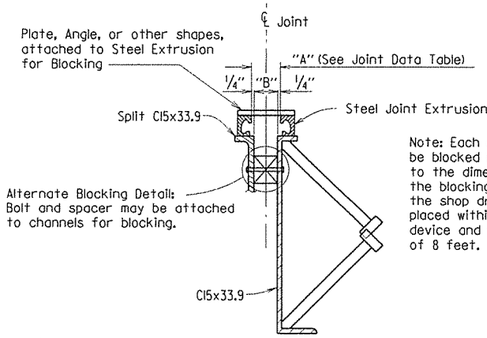


SECTION D-D



Note:
Concrete shall be hand packed under the joint armor. Care shall be taken to ensure that concrete completely fills the areas below the top channel flanges in the backwall and in the span.

DETAIL A



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 details shall be shown on the shop drawings. Blocking shall be placed within 2 feet of each end of the device and with a maximum spacing of 8 feet.

DETAILS FOR BLOCKING EXPANSION JOINT DEVICE

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 placing the deck concrete adjacent to the bent. Immediately prior to pouring the backwall concrete, the blocking shall be removed, and the opening adjusted for temperature and grade.

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 and grade.

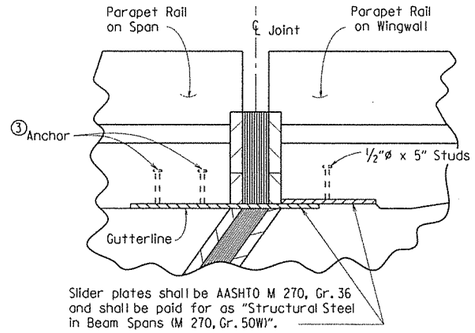
GENERAL NOTES FOR NEOPRENE STRIP SEAL JOINTS:

The expansion device shall provide for the movement rating(s) shown in the "STRIP SEAL JOINT DATA" table. The expansion joint shall be capable of sealing the deck surface and parapet area to prevent moisture and other contaminants from descending through the joint.

Details of proposed slider plate assembly shall be submitted to and approved by the Engineer prior to the fabrication of any structural steel at the expansion device.

All structural steel shall be AASHTO M 270, Grade 50W except as noted and shall be paid for as "Structural Steel in Beam Spans (M 270, Gr. 50W)". Grade 50W steel shall not be painted and exposed surfaces shall be cleaned in accordance with Subsection 807.84(e). Grade 36 steel in slider plates shall be cleaned and painted in accordance with Section 638. Painting will not be paid for directly, but will be considered subsidiary to "Structural Steel in Beam Spans (M 270, Gr. 50W)".

The steel extrusion and neoprene strip seal shall be paid for in accordance with Section 809.

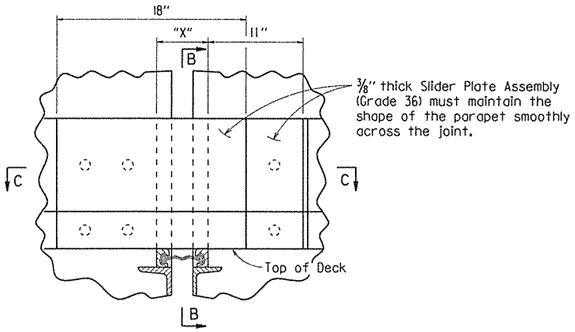


Slider plates shall be AASHTO M 270, Gr. 36 and shall be paid for as "Structural Steel in Beam Spans (M 270, Gr. 50W)".

SECTION C-C

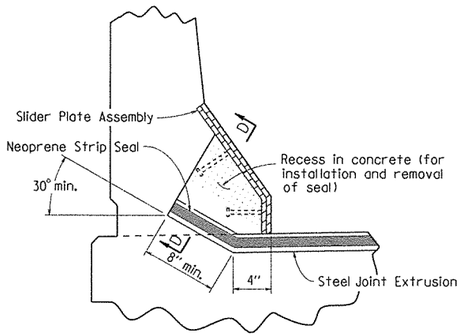
③ The method of attachment of the slider plate assembly must be such that it may be removed to provide for future replacement of the neoprene seal. Anchors will not be paid for directly, but shall be considered subsidiary to "Structural Steel in Beam Spans (M 270, Gr. 50W)".

Method of installation and fabrication shall be determined by the Manufacturer.



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

DETAIL OF NEOPRENE STRIP SEAL AT CURB



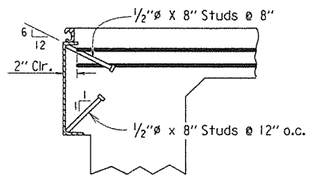
Note: Details of Joint turn-up in curb and parapet are general and show basic design controls only.

SECTION B-B

STRIP SEAL JOINT DATA

Bent No(s).	Movement Rating (inch)	"A" Width Perpendicular to Joint at 24 Hour Average Temperature② of:			"B" Width Perpendicular to Joint at 24 Hour Average Temperature② of:			"C" (min.) Perpendicular to Joint at 24 Hour Average Temperature of 60° F
		40° F	60° F	80° F	40° F	60° F	80° F	
1	4"	2¼"	2"	1¾"	1¾"	1½"	1¼"	2" +/-
7	4"	2 3/16"	2"	1 13/16"	1 11/16"	1½"	1 5/16"	2" +/-

② 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.



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

STATE OF ARKANSAS
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SHEET 7 OF 8
DETAILS OF 408'-0" CONTINUOUS W-BEAM UNIT SOUTH ALLIGATOR BAYOU

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: JYP DATE: 10-4-13 FILENAME: bll0570_sl.dgn
CHECKED BY: AGP DATE: 6-11-14 SCALE: No Scale
DESIGNED BY: JYP DATE: 9-13

BRIDGE NO. 07303 DRAWING NO. 54905

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				6	ARK.			
				JOB NO.		110570	47	84
				①		07303 - 408' CONT. UNIT - 54906		

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, Sixth Edition, with 2013 Interim Revisions.

MATERIALS AND STRENGTHS:

Class S(AE) Concrete	f'c = 4,000 psi
Reinforcing Steel (Gr. 60, AASHTO M 31 or M 322, Type A)	fy = 60,000 psi
Structural Steel (M 270, Gr. 50W)	Fy = 50,000 psi
Structural Steel (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. Any railing pours made before the entire slab has been placed and cured must be approved by the Engineer.

Removable forms shall be used for concrete diaphragms. Concrete diaphragms may be poured separately from deck. If concrete diaphragms are poured separately, a minimum of 48 hours shall elapse between the diaphragm pour and the slab pour.

REINFORCING STEEL :
All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi) conforming to AASHTO M 31 or M 322, Type A, with mill test reports. 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 consisdered subsidiary to the item "Reinforcing Steel (Grade 60)".

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. 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 shown in the plans, and no additional compensation will be made for any adjustments due to substitutions.

Beams and field splice plates are considered main load carrying members and shall meet the Longitudinal Charpy V-Notch Test specified in Subsection 807.05. This work and material will not be paid for directly, but shall be considered subsidiary to the item "Structural Steel in Beam Spans (M 270, Gr. 50W)".

All beams shall be assembled in the shop as specified in Subsection 807.54 and blocked in their true position with webs horizontal. The camber, length of sections, distance between bearings, and openings of joints shall be measured and this information shall become part of the permanent records. 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 for main members shall be cut and fabricated so that the primary direction of rolling is parallel to the direction of the main tensile and/or compressive stresses.

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.

Steel 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 unless otherwise noted.

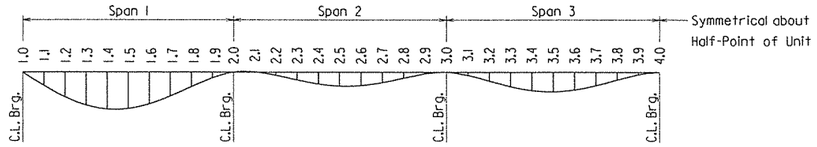
All shear connectors shall be granular flux filled, solid fluxed, or equal and shall be automatically end welded in accordance with recommendotions of the Manufacturer.

PRINT DATE: 12/11/2014

TABLE OF DEAD LOAD DEFLECTIONS - INCHES

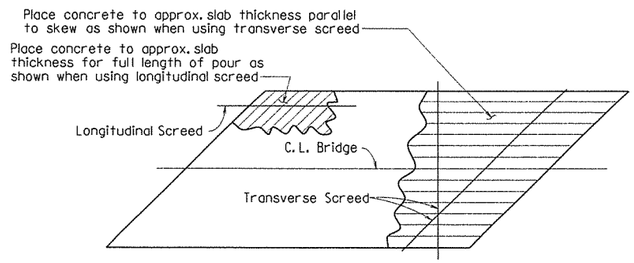
Span	Point of Deflection	Structural Steel		Structural Steel + Slab		Structural Steel + Slab + Parapet	
		Exterior	Interior	Exterior	Interior	Exterior	Interior
1	1.0	0	0	0	0	0	0
	1.1	0.050	0.054	0.285	0.337	0.313	0.364
	1.2	0.092	0.101	0.528	0.625	0.580	0.674
	1.3	0.123	0.134	0.700	0.828	0.769	0.893
	1.4	0.138	0.150	0.783	0.926	0.86	0.999
	1.5	0.137	0.149	0.772	0.912	0.848	0.984
	1.6	0.120	0.131	0.674	0.797	0.74	0.860
	1.7	0.092	0.100	0.510	0.602	0.56	0.650
	1.8	0.057	0.062	0.311	0.367	0.341	0.396
	1.9	0.023	0.025	0.122	0.143	0.134	0.154
	2.0	0	0	0	0	0	0
2	2.1	-0.005	-0.005	-0.007	-0.008	-0.008	-0.009
	2.2	0.003	0.004	0.064	0.077	0.070	0.083
	2.3	0.016	0.019	0.163	0.195	0.178	0.210
	2.4	0.028	0.032	0.250	0.298	0.274	0.32
	2.5	0.035	0.040	0.294	0.351	0.322	0.377
	2.6	0.034	0.039	0.283	0.338	0.310	0.363
	2.7	0.026	0.030	0.220	0.263	0.241	0.283
	2.8	0.014	0.016	0.125	0.149	0.137	0.160
	2.9	0.002	0.003	0.033	0.040	0.036	0.043
3	3.0	0	0	0	0	0	0
	3.1	0.013	0.014	0.067	0.080	0.073	0.086
	3.2	0.033	0.036	0.189	0.223	0.207	0.240
	3.3	0.053	0.057	0.308	0.365	0.337	0.393
	3.4	0.066	0.072	0.390	0.462	0.427	0.497
	3.5	0.069	0.076	0.415	0.491	0.454	0.528
	3.6	0.063	0.069	0.377	0.447	0.413	0.481
	3.7	0.047	0.052	0.286	0.338	0.313	0.364
	3.8	0.027	0.030	0.165	0.195	0.181	0.210
	3.9	0.009	0.009	0.052	0.061	0.057	0.066
	4.0	0	0	0	0	0	0

Symmetrical about Half-Point of Unit



DEAD LOAD DEFLECTION DIAGRAM

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 upward deflection. Any corrections necessary for superelevation transition are not included.

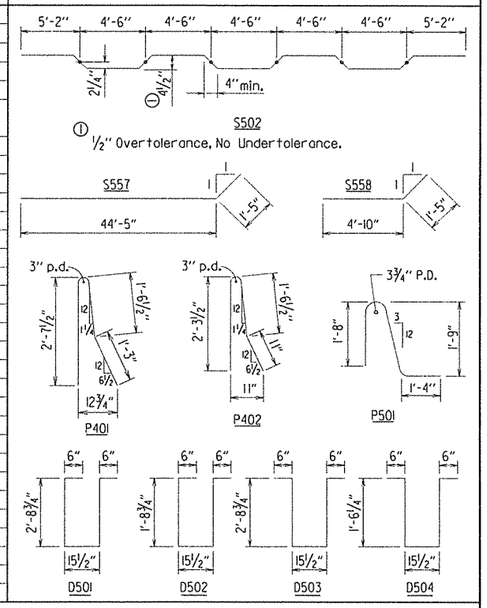


Note: At the Contractor's option, the transverse screed may be placed parallel to the skew or perpendicular to C.L. Bridge.

CONCRETE PLACEMENT PROCEDURE

BAR LIST

Mark	No. Req'd.	Length	Pin Dia.	Bending Diagrams (Dimensions are out to out of bars.)
S401	378	32'-10"	Str.	
S402	1045	38'-8"	Str.	
S501	378	32'-10"	Str.	
S502	377	33'-6"	3"	
S503	1,616	4'-10"	Str.	
S504-S556	4 ea.	5'-1" to 31'-1"	Str.	
S557	4	45'-10"	3¾"	
S558	24	6'-3"	3¾"	
S601	66	28'-0"	Str.	
S602	99	24'-0"	Str.	
P401	1,384	5'-6"	3"	
P402	248	4'-10"	3"	
P403	192	4'-0"	Str.	
P404	168	12'-8"	Str.	
P405	252	13'-8"	Str.	
P501	1,384	4'-10"	3¾"	
D501	42	7'-4"	2½"	
D502	12	5'-4"	2½"	
D503	105	7'-4"	2½"	
D504	30	4'-11"	2½"	
D601	112	8'-8"	Str.	
D602	112	2'-10"	Str.	



STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
12-12-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 8 OF 8
DETAILS OF 408'-0" CONTINUOUS W-BEAM UNIT SOUTH ALLIGATOR BAYOU

ROUTE SEC.

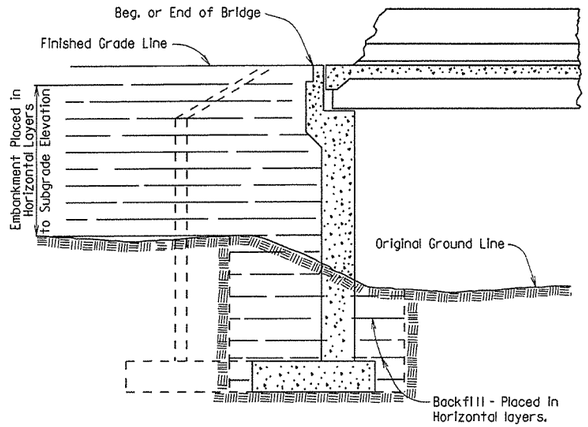
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: JYP DATE: 10-4-13
CHECKED BY: ACP DATE: 6-11-14
DESIGNED BY: JYP DATE: 9-13

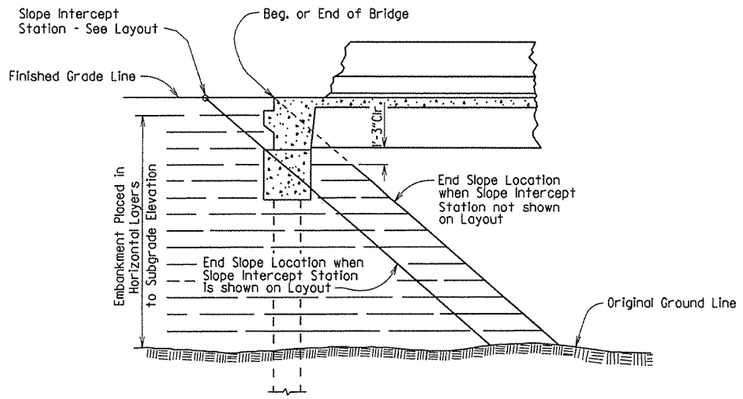
FILENAME: bll0570_sl.dgn
SCALE: No Scale

BRIDGE NO. 07303 DRAWING NO. 54906

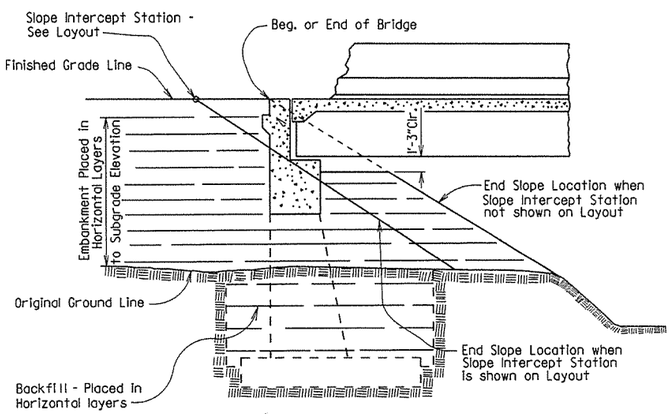
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		49	
				JOB NO.				
				①	EMBANKMENT & BACKFILL		55000	



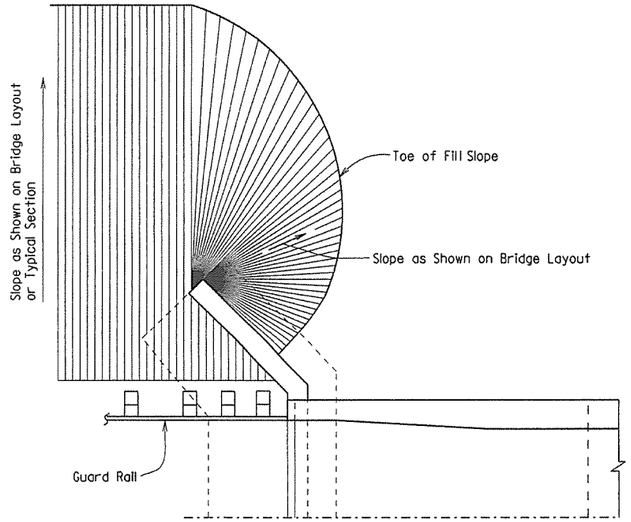
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT VERTICAL WALL ABUTMENTS



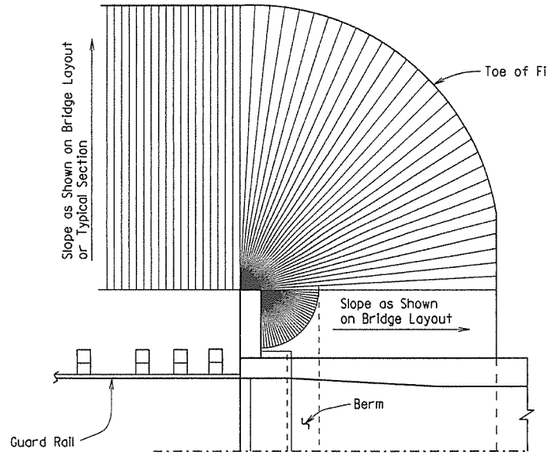
EMBANKMENT CONSTRUCTION AT SPILL-THROUGH PILE END BENTS



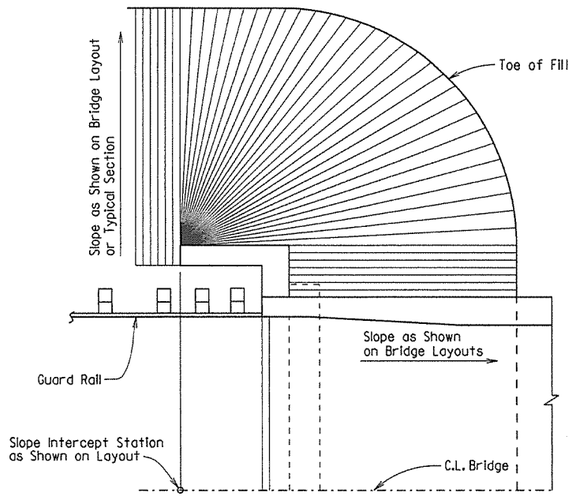
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT SPILL-THROUGH END BENTS



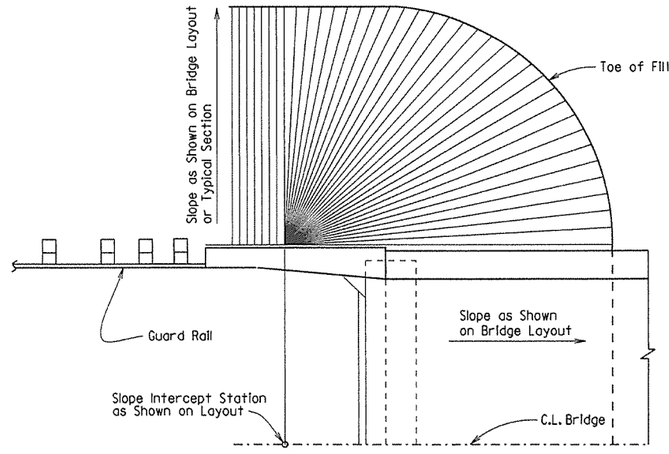
VERTICAL WALL ABUTMENTS



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

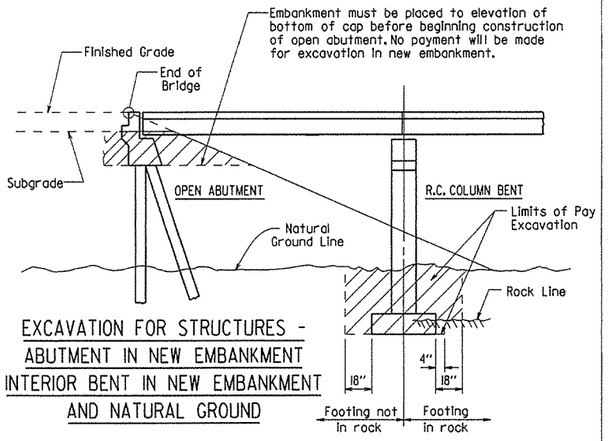
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

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

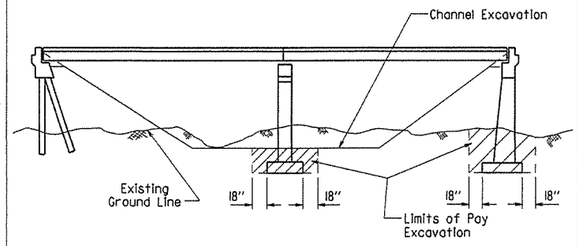
DRAWING NO. 55000

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

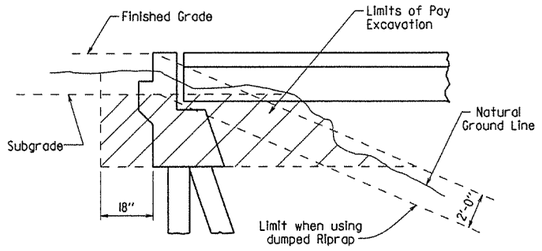
① RIPRAP & EXCAV. 55001



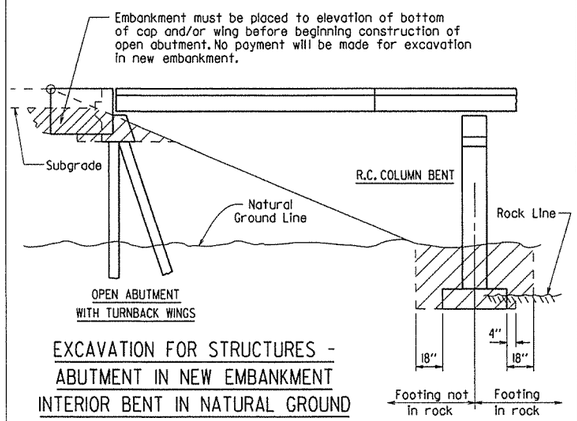
EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NEW EMBANKMENT AND NATURAL GROUND



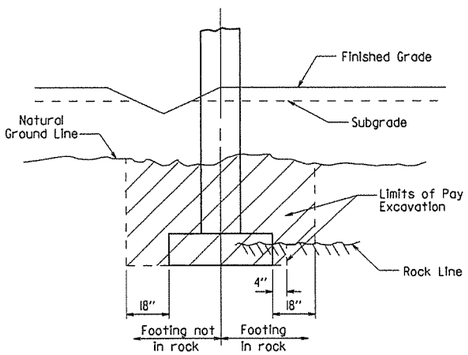
EXCAVATION FOR STRUCTURES - BRIDGE LOCATION WITH DESIGNATED CHANNEL CHANGE



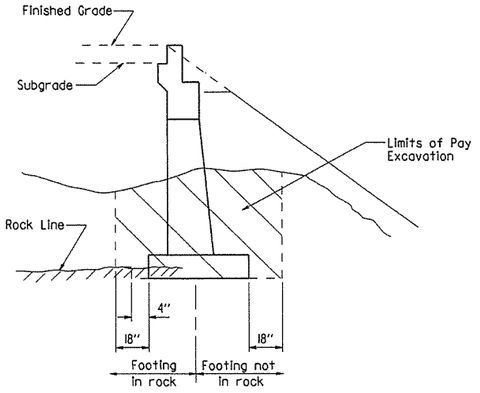
EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND



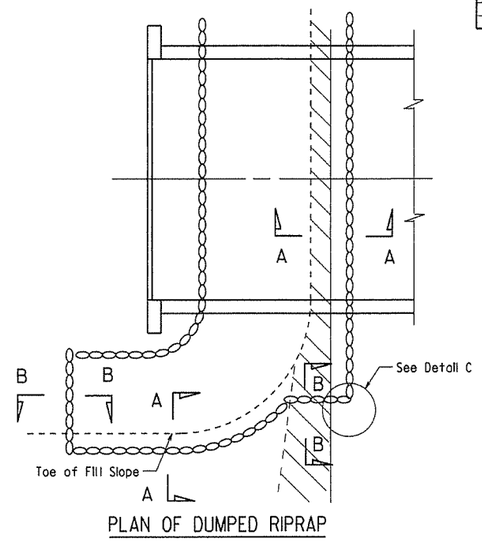
EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NATURAL GROUND



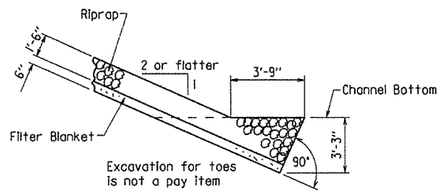
EXCAVATION FOR STRUCTURES - BENT IN ROADWAY FILL SECTION AND NATURAL GROUND



EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND AND NEW EMBANKMENT

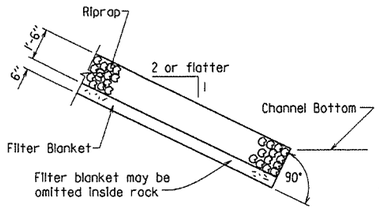


PLAN OF DUMPED RIPRAP



SECTION A-A

(Toe Excavation in Soil)



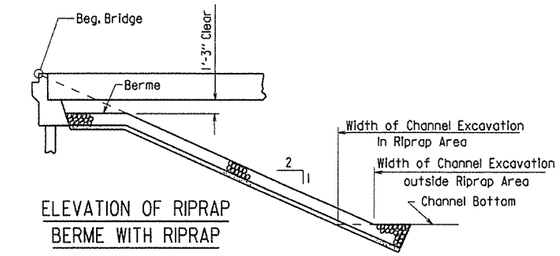
SECTION A-A

(Toe Excavation in Rock)

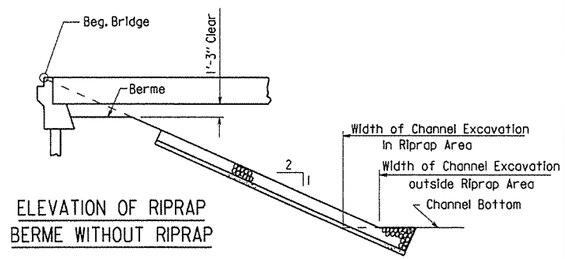
Note : Use this type of toe when rock is encountered which is in a stable condition.

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.

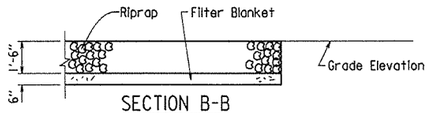
Note : Details for computing excavation for structures are included for information as to how plan quantities were calculated and for use when adjusting quantities when changing footing elevation.



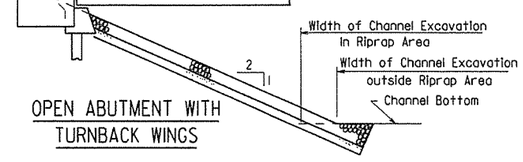
ELEVATION OF RIPRAP BERME WITH RIPRAP



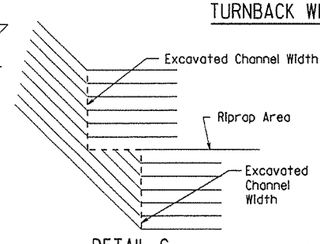
ELEVATION OF RIPRAP BERME WITHOUT RIPRAP



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.

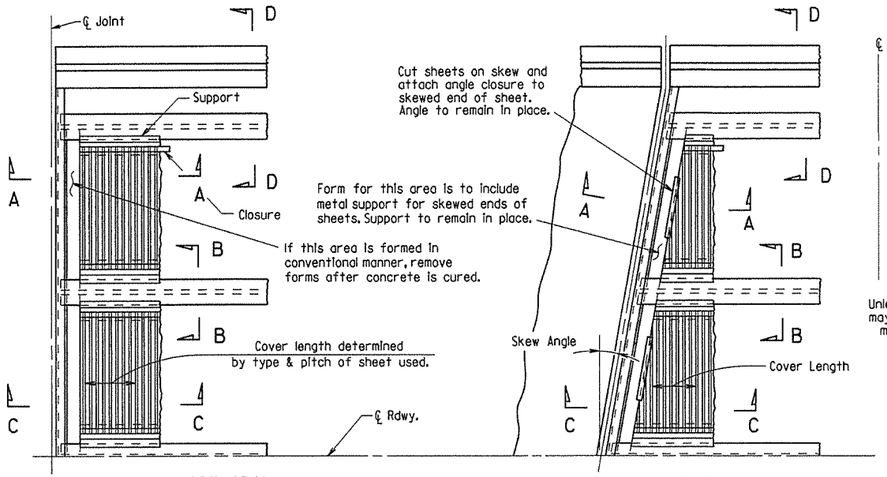
DRAWN BY: KDH DATE: 2-27-2014 FILENAME: b5500l.dgn

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.		50	
				JOB NO.				
				①	BRIDGE DECK FORMS		55005	

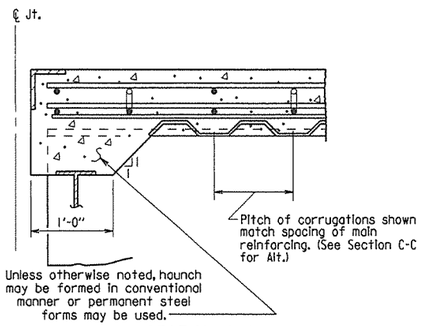


PART PLAN - SQUARE SPAN

3/8" = 1'-0"

PART PLAN - SKEWED SPAN

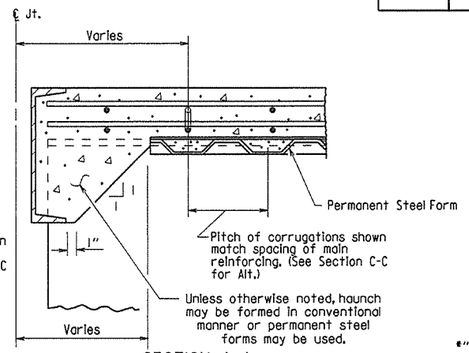
3/8" = 1'-0"



SECTION A-A

N.T.S.

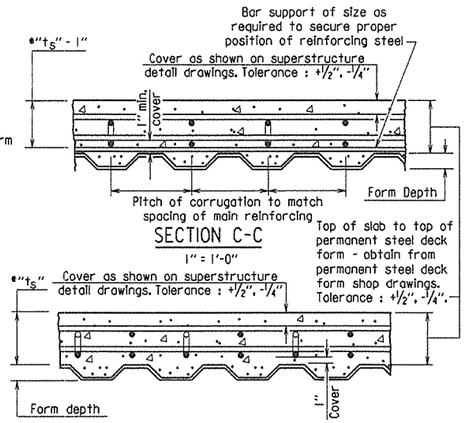
(Angle at end of span)



SECTION A-A

N.T.S.

(Channel at end of span)



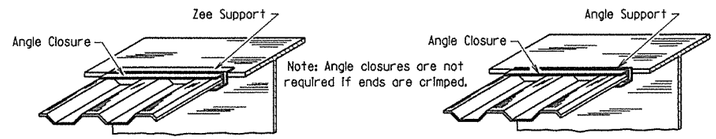
SECTION C-C

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.

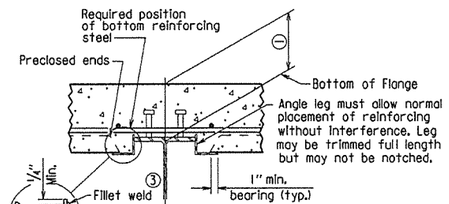
Form sheets shall be fastened to supporting members and to each other with galvanized metal screws sufficient in size and number to provide a secure attachment. Alternate methods of attachment must be approved by the Engineer.

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.

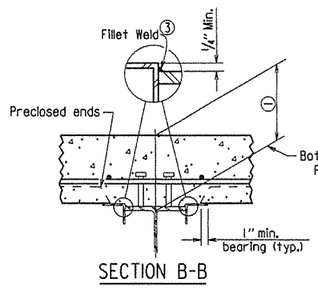


SECTION B-B

1" = 1'-0"

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

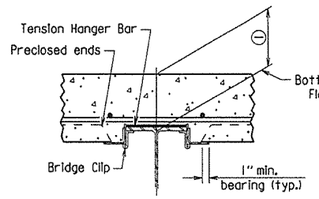
③ Minimum weld: 1/8" x 1' ℄ 18". More weld may be required; maximum length per weld = 1 1/2" (typ.)



SECTION B-B

1" = 1'-0"

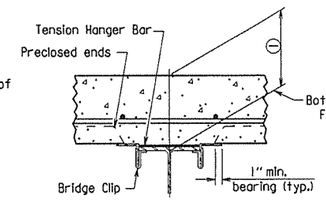
(Showing permissible support for tension flange where shear connectors are used and for all compression flanges)



SECTION B-B

1" = 1'-0"

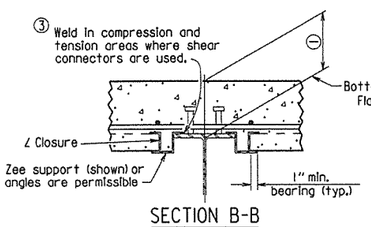
(Showing permissible support for tension flange where shear connectors are not used)



SECTION B-B

1" = 1'-0"

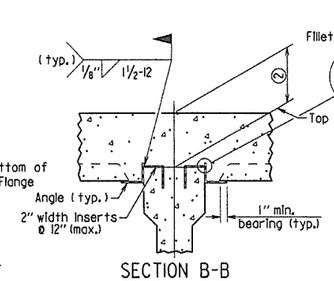
(Showing permissible support for tension flange where shear connectors are not used)



SECTION B-B

1" = 1'-0"

(Showing ∠ Closure)

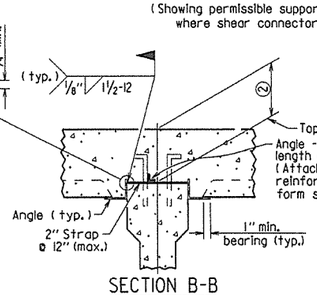


SECTION B-B

(FOR CONCRETE GIRDERS)

1" = 1'-0"

(Showing support by insert cast in girder)

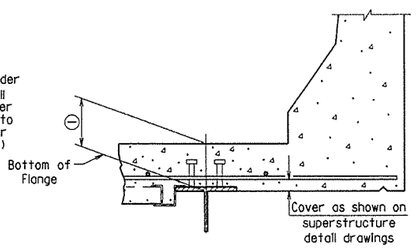


SECTION B-B

(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: —

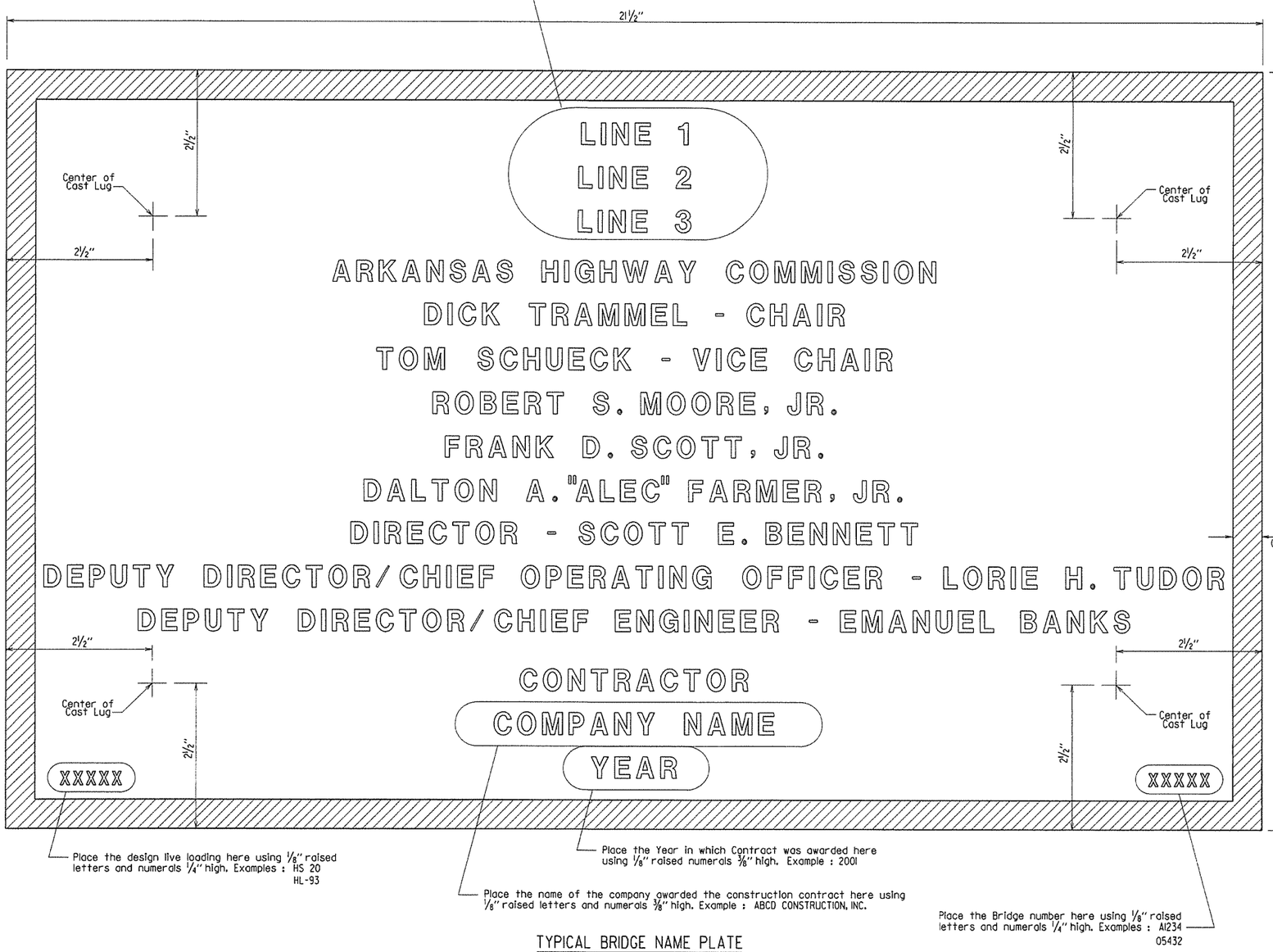
DRAWING NO. 55005

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.		57	
1-14-15				JOB NO.				

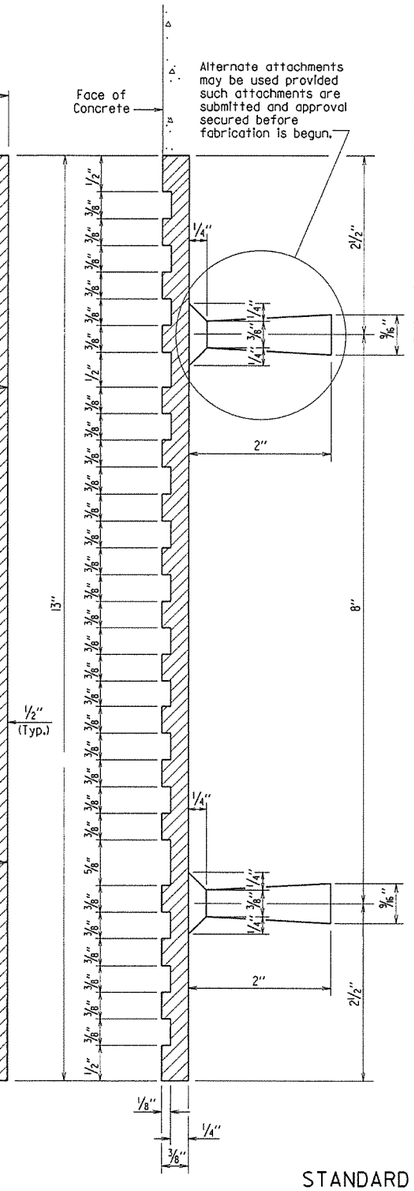
① TYPE D NAME PLATE 55010

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	



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 1/4" thick and shall include four tapering cone lugs 3/8" to 3/16"x 2" long. The border and all lettering shall be raised 1/8" above the face of plate and shall be polished.

All lettering shall be plain gothic, square cut and not tapered.

The number of plates required and the location and name on the plate for each bridge shall be as designated on the plans.

⚠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

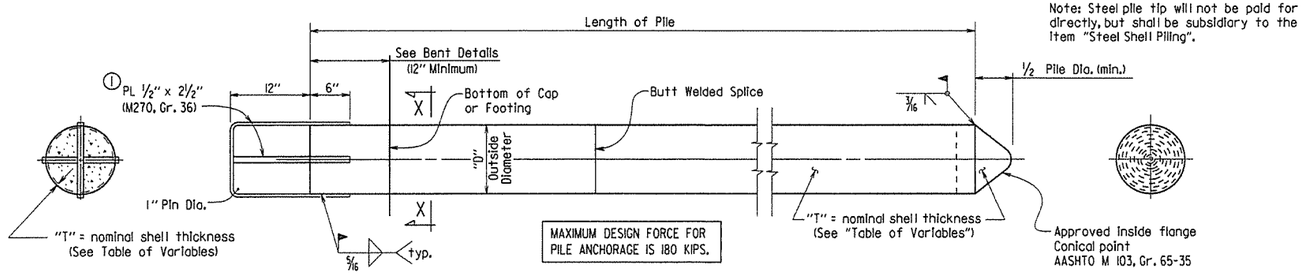
STANDARD DETAILS FOR TYPE D BRIDGE NAME PLATE

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.		52	
				JOB NO.				
				①	STEEL SHELL PILES		55021	

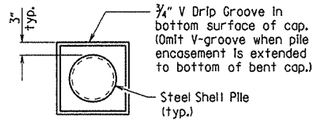


Note: Steel pile tip will not be paid for directly, but shall be subsidiary to the item "Steel Shell Piling".

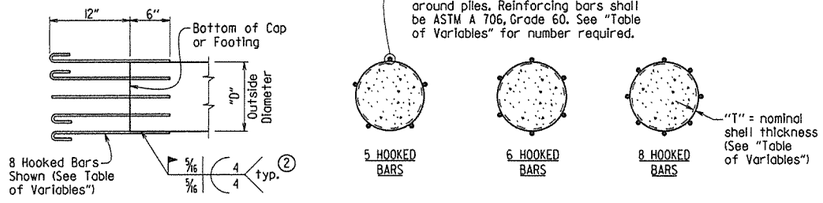
CONCRETE FILLED STEEL SHELL PILE

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

② Welding shall comply with ANSI/AWS D1.4 Structural Welding Code-Reinforcing Steel and applicable portions of ANSI/AWS D1.5 Bridge Welding Code.

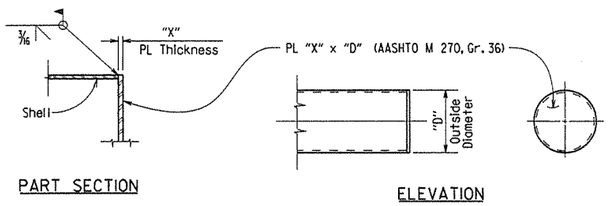


VIEW X-X



ALTERNATE PILE ANCHORAGE DETAIL

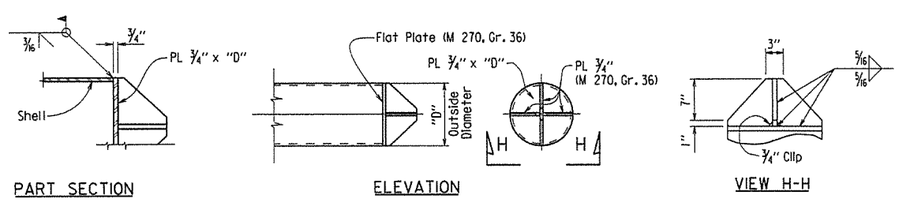
Note: Hooked bars shall be oriented to provide the required concrete clearances shown in the plans.



PART SECTION ELEVATION

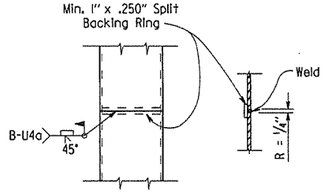
ALTERNATE FLAT TIP DETAIL

Note: The alternate flat tip detail shall not be used on steel shell piling to be driven through embankments constructed with internal geosynthetic reinforcement.

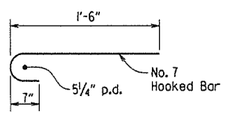


PART SECTION ELEVATION VIEW H-H

ALTERNATE VANED TIP DETAIL



TYPICAL SPLICE DETAILS



HOOKED BAR DETAIL

TABLE OF VARIABLES

OUTSIDE DIAMETER "D"	NOMINAL SHELL THICKNESS "T"	PLATE THICKNESS "X"	NO. OF HOOKED BARS FOR ALTERNATE PILE ANCHORAGE
14"	0.50"	¾"	5
16"	0.50"	1"	5
18"	0.50"	1¼"	6
20"	0.50"	1½"	6
24"	0.50"	1¾"	8

GENERAL NOTES FOR CONCRETE FILLED STEEL SHEEL PILES:

Steel shells shall conform ASTM A252, Grade 3 (Fy = 45,000 psi.)

Concrete used for filling of steel shell shall be Class S with a minimum 28-day compressive strength, f'c = 3,500 psi. and shall be poured in the dry.

Steel shell piling that extends above the ground and is not protected by pile encasement shall be painted in accordance with Subsection 805.02.

See Bridge Layout for size and estimated length of steel shell piles and for driving information.

Concrete, structural steel, reinforcing steel (including welding), and painting shall not be paid for directly, but shall be considered subsidiary to the item "Steel Shell Piling".

GENERAL NOTES FOR PILE ENCASEMENTS:

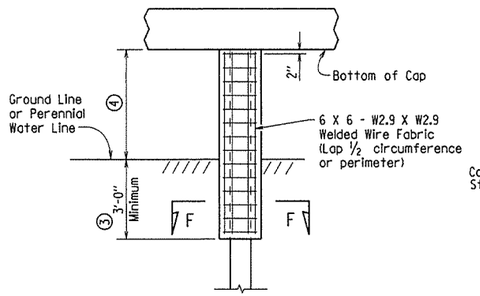
See Bridge Layout for additional notes and required location of pile encasements.

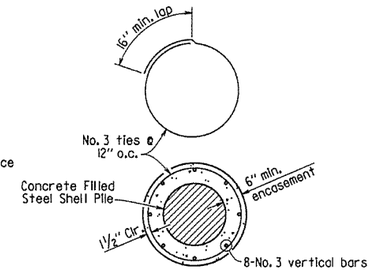
Concrete shall be Class S with a minimum 28-day compressive strength, f'c = 3,500 psi. If concrete cannot be placed in the dry, Seal Concrete may be used from top to bottom of encasement.

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

Welded wire fabric shall conform to AASHTO M 55 or M 221.

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





SECTION F-F (REINF. ALTERNATE)

PILE ENCASEMENT DETAIL FOR STEEL SHELL PILES

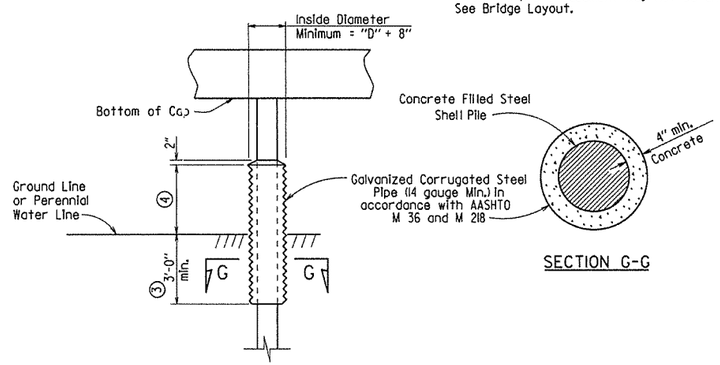
⑤ (Shown with Encasement to Bottom of Cap)

③ Unless otherwise noted on Bridge Layout.

④ See Bridge Layout for height of pile encasement (3'-0" Minimum).

⑤ Pile encasement, when not extended to bottom of cap, shall have 2" concrete taper for water runoff as shown in the detail for partial height encasement.

⑥ Alternate pile encasement may not be allowed. See Bridge Layout.



SECTION G-G

⑥ ALTERNATE PILE ENCASEMENT DETAIL FOR STEEL SHELL PILES

(Shown with Partial Height Encasement)

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 FILLED STEEL SHELL PILES AND PILE ENCASEMENTS

ARKANSAS STATE HIGHWAY COMMISSION

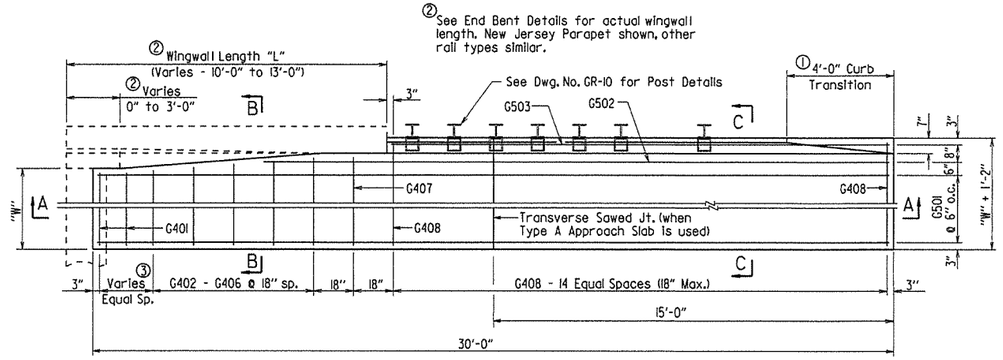
LITTLE ROCK, ARK.

DRAWN BY: A.M.S. DATE: 2/27/2014 FILENAME: b55021.dgn
CHECKED BY: B.E.F. DATE: 2/27/2014 SCALE: NO SCALE
DESIGNED BY: STD. DATE: —

DRAWING NO. 55021

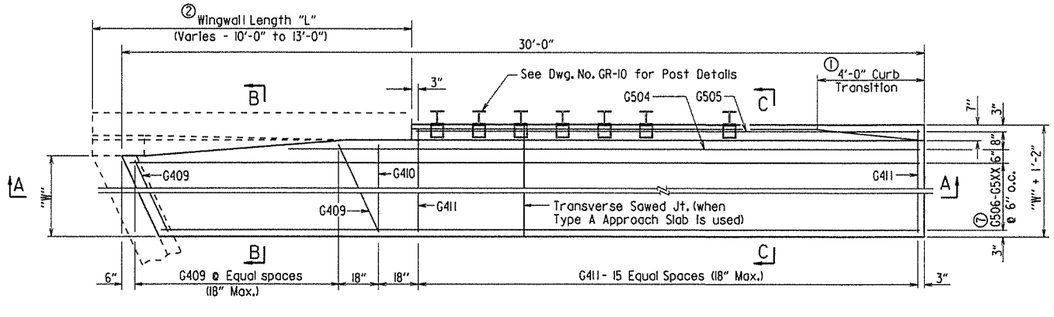
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		53	
				JOB NO.				

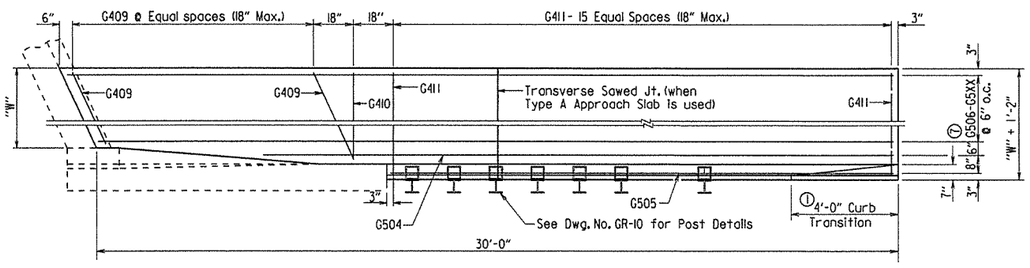
① TYPE A GUTTERS 55030A



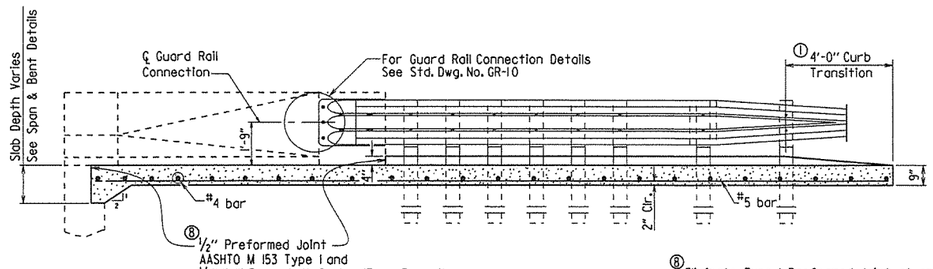
③ Number of G401 bars vary with wingwall length - See Bar List

HALF PLAN OF APPROACH GUTTERS FOR SQUARE BRIDGE





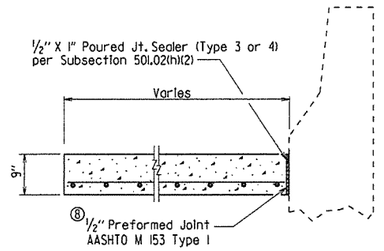
PLAN OF APPROACH GUTTERS FOR SKEWED BRIDGE



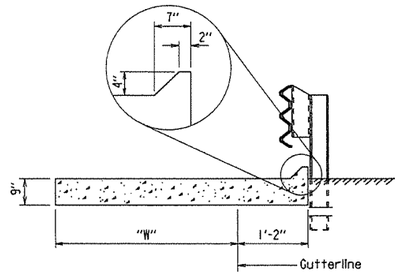
SECTION A-A

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 B-B
N.T.S.



SECTION C-C
N.T.S.

⑧ Eliminate Type I Preformed Joint at end bent backwall and at face of wingwalls when gutters used with Type A Approach Slabs. Poured joint sealer is required, however backer rod shall be eliminated.

Note:
All longitudinal lines within the limits of horizontal curves shall be on curves concentric to C.L. Bridge. Adjustment to longitudinal bar lengths may be required. Transverse reinforcing shall be placed on radial lines to C.L. Bridge.

BAR LIST FOR ONE TYPE A GUTTER

	Mark	No. Req'd. for Width "W" 3'-0"	4'-0"	6'-0"	8'-0"	Length
Square Bridge	G401	④	④	④	④	"W"- 4"
	G402-G406	1 each	1 each	1 each	1 each	"W"-3" to "W"+2"
	G407	1	1	1	1	"W"+3"
	G408	15	15	15	15	"W"+ 10"
	G501	6	8	12	16	29'-8"
	G502	1	1	1	1	(35'-5") - "L"
	G503	1	1	1	1	30'-8"-"L"
Skewed Bridge	G409	⑥	⑥	⑥	⑥	⑤
	G410	1	1	1	1	"W"+3"
	G411	16	16	16	16	"W"+ 10"
	G504	1	1	1	1	⑤
	G505	1	1	1	1	⑤
	G506 - G5XX ⑦	1 each	1 each	1 each	1 each	⑤

④ 0 for "L" = 10'
1 for "L" = 11'
2 for "L" = 12'
2 for "L" = 13'

⑦ G511 for "W" = 3'
G513 for "W" = 4'
G517 for "W" = 6'
G521 for "W" = 8'

⑤ Bar Lengths vary with Skew and Wingwall Length.

⑥ No. Req'd. varies with Skew and Wingwall length.

QUANTITIES FOR ONE SQUARE APPROACH GUTTER

(FOR INFORMATION ONLY)

"W" Width (ft.)	Reinforcing Steel (Lbs.)	Concrete (Cu. Yds.)
3	285	3.40
4	360	4.25
6	515	5.90
8	665	7.55

Quantities are based on "L" = 10'-0".

GENERAL NOTES

All concrete shall be Class S or Class S(AE) or mixture used for Portland Cement Concrete Pavement and shall be poured in the dry.

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

Approach Gutters will be measured and paid for in accordance with Section 504.

STANDARD DETAILS FOR TYPE A APPROACH GUTTERS

ARKANSAS STATE HIGHWAY COMMISSION

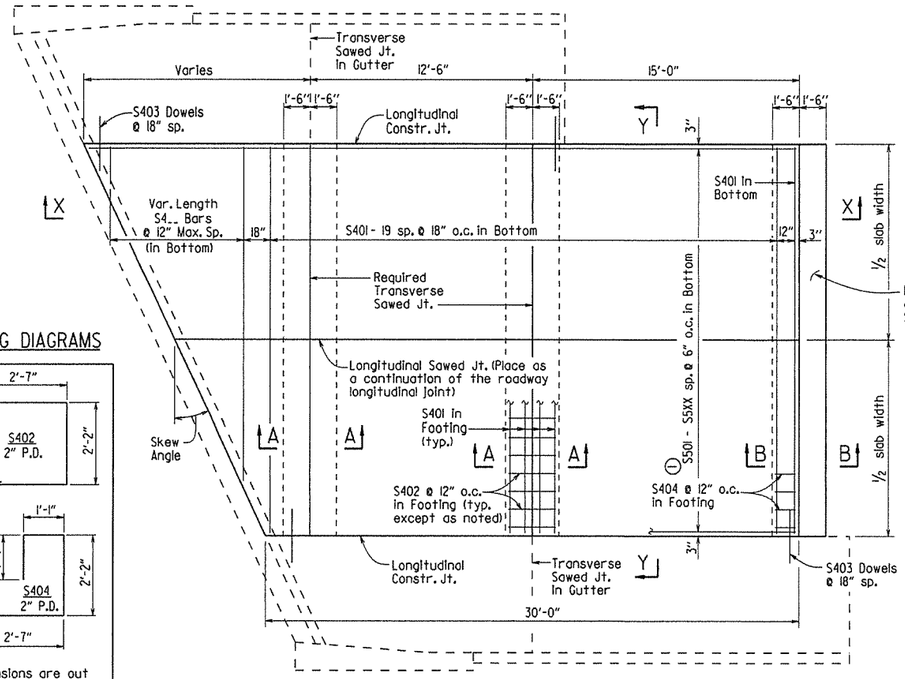
LITTLE ROCK, ARK.

DRAWN BY: A.M.S. DATE: 2/27/2014 FILENAME: b55030a.dgn
CHECKED BY: K.W.Y. DATE: 2/27/2014 SCALE: ⅜" = 1'-0" or As Shown
DESIGNED BY: STD. DATE:

DRAWING NO. 55030A

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		54	
				JOB NO.				

TYPE A APPROACH SLAB 55040A



PLAN - SKEWED APPROACH SLAB WITH APPROACH GUTTERS

¼" = 1'-0"

Notes:
The surface finish for Approach Slabs shall match that used on the bridge deck.

All longitudinal lines within the limits of horizontal curves shall be on curves concentric to C.L. Bridge. Adjustment to longitudinal bar lengths may be required. Transverse reinforcing shall be placed on radial lines to C.L. Bridge.

① S5XX = S540 for 20'-0" Width
= S544 for 22'-0" Width
= S548 for 24'-0" Width
= S572 for 36'-0" Width

BENDING DIAGRAMS

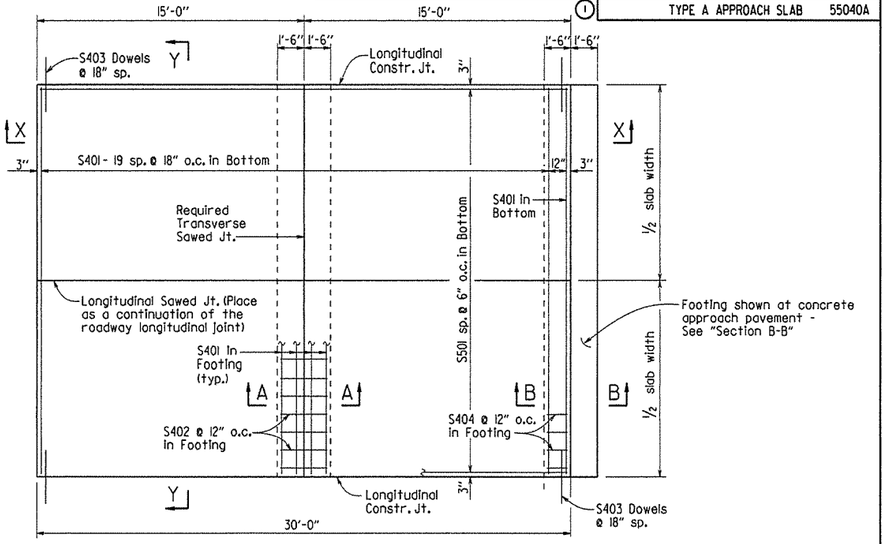
Dimensions are out to out of bar.

BAR LIST

(Square & Skewed Approach Slabs)

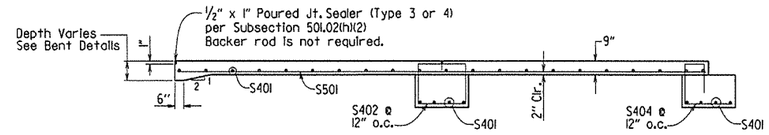
	Mark	Square No. Req'd.	Square Length	Skewed No. Req'd.	Skewed Length
20'-0" Slab Width	S401	29	19'-8"	33	19'-8"
	S402	20	9'-10"	40	9'-10"
	S403	40	3'-0"	*	3'-0"
	S404	20	7'-2"	20	7'-2"
	S4__	—	—	1 Ea.	19.7' - 1.25'/(tan skew angle) to 2'-0" Min.
	S501	40	29'-8"	—	—
	S501 - S540	—	—	1 Ea.	29.6' + 0.25'(tan skew angle) to 29.6' + 19.75'(tan skew angle)
22'-0" Slab Width	S401	29	21'-8"	33	21'-8"
	S402	22	9'-10"	44	9'-10"
	S403	40	3'-0"	*	3'-0"
	S404	22	7'-2"	22	7'-2"
	S4__	—	—	1 Ea.	21.7' - 1.25'/(tan skew angle) to 2'-0" Min.
	S501	44	29'-8"	—	—
	S501 - S544	—	—	1 Ea.	29.6' + 0.25'(tan skew angle) to 29.6' + 21.75'(tan skew angle)
24'-0" Slab Width	S401	29	23'-8"	33	23'-8"
	S402	24	9'-10"	48	9'-10"
	S403	40	3'-0"	*	3'-0"
	S404	24	7'-2"	24	7'-2"
	S4__	—	—	1 Ea.	23.7' - 1.25'/(tan skew angle) to 2'-0" Min.
	S501	48	29'-8"	—	—
	S501 - S548	—	—	1 Ea.	29.6' + 0.25'(tan skew angle) to 29.6' + 23.75'(tan skew angle)
36'-0" Slab Width	S401	29	35'-8"	33	35'-8"
	S402	36	9'-10"	72	9'-10"
	S403	40	3'-0"	*	3'-0"
	S404	36	7'-2"	36	7'-2"
	S4__	—	—	1 Ea.	35.7' - 1.25'/(tan skew angle) to 2'-0" Min.
	S501	72	29'-8"	—	—
	S501 - S572	—	—	1 Ea.	29.6' + 0.25'(tan skew angle) to 29.6' + 35.75'(tan skew angle)

*Varies with skew angle



PLAN - SQUARE APPROACH SLAB

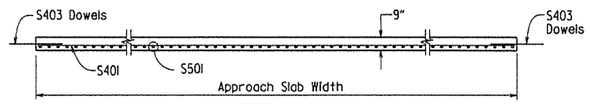
¼" = 1'-0"



SECTION X-X

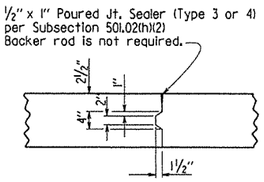
SQUARE APPROACH SLAB SHOWN

¼" = 1'-0"



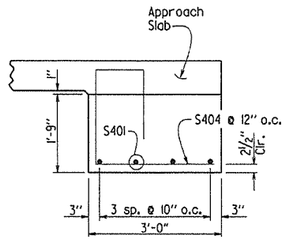
SECTION Y-Y

N.T.S.



DETAILS OF LONGITUDINAL CONSTRUCTION JOINT

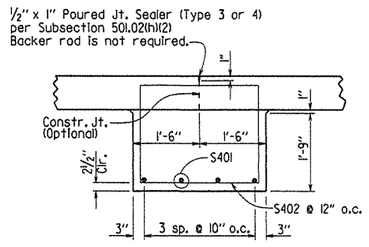
1" = 1'-0"



SECTION B-B

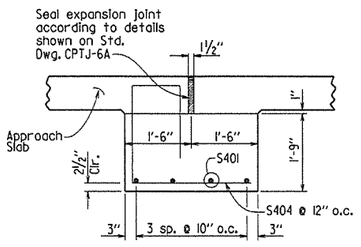
AT ASPHALT APPROACH PAVEMENT

N.T.S.



SECTION A-A

N.T.S.



SECTION B-B

AT CONCRETE APPROACH PAVEMENT

N.T.S.

TABLE OF QUANTITIES FOR ONE SQUARE APPROACH SLAB

(FOR INFORMATION ONLY)

Slab Width	Reinforcing Steel (Lbs.)	Concrete (Cu. Yds.)
20'-0"	1925	24.85
22'-0"	2110	27.30
24'-0"	2300	29.90
36'-0"	3410	44.85

GENERAL NOTES

This drawing shall be used for Approach Slabs in Seismic Performance Zones 2, 3 & 4 and for the maximum skew angles shown below:

20'-0" Slab Width: Maximum Skew Angle = 45°
22'-0" Slab Width: Maximum Skew Angle = 45°
24'-0" Slab Width: Maximum Skew Angle = 40°
36'-0" Slab Width: Maximum Skew Angle = 30°

All concrete shall be Class S (AE) with a minimum 28 day compressive strength f'c = 4,000 psi and shall be poured in the dry.

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

Approach Slabs will be measured and paid for in accordance with Section 504.

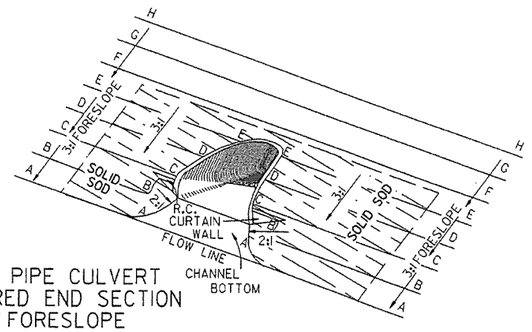
STANDARD DETAILS FOR TYPE A APPROACH SLAB

ARKANSAS STATE HIGHWAY COMMISSION

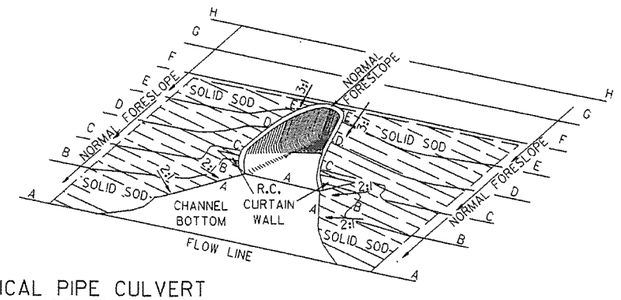
LITTLE ROCK, ARK.

DRAWN BY: A.M.S. DATE: 2/27/2014 FILENAME: b55040a.dgn
CHECKED BY: K.W.Y. DATE: 2/27/2014 SCALE: AS SHOWN
DESIGNED BY: STD. DATE:

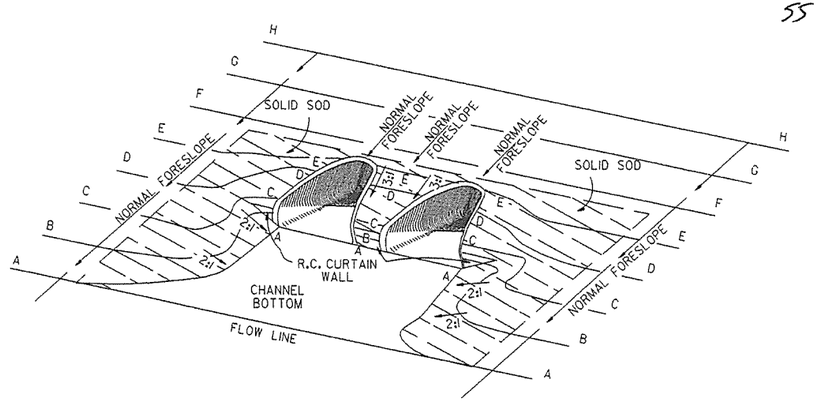
DRAWING NO. 55040A



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



TYPICAL PIPE CULVERT
WITH FLARED END SECTION
& FLATTENED ADJACENT SLOPES



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

R.C. CURTAIN WALL
DIMENSIONS & QUANTITIES

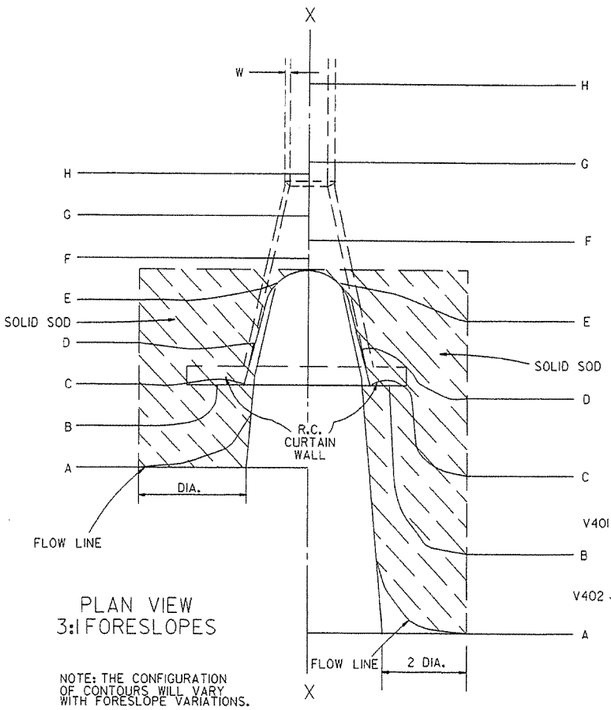
PIPE DIA.	H_1	L_1	L	L (DBL.)/2	SINGLE R.C.P.C.		DOUBLE R.C.P.C.	
					CONC.	REINF. STEEL	CONC.	REINF. STEEL
					CU. YDS.	LBS.	CU. YDS.	LBS.
18"	11½"	3'-5"	8'-0"	6'-3"	0.31	27.7	0.45	39.5
24"	1'-0½"	4'-6"	9'-6"	7'-6"	0.37	33.4	0.53	48.0
30"	1'-3½"	5'-7"	11'-0"	9'-0"	0.45	39.0	0.67	59.0
36"	1'-7"	6'-8"	13'-0"	10'-6"	0.58	52.6	0.83	73.9
42"	2'-1½"	7'-3"	15'-6"	12'-0"	0.82	77.1	1.10	100.7
48"	2'-5"	7'-10"	17'-0"	13'-0"	0.98	94.9	1.27	120.4
54"	2'-9½"	8'-5"	18'-6"	14'-0"	1.16	115.8	1.47	143.7
60"	3'-4"	9'-0"	20'-6"	15'-6"	1.47	149.7	1.84	180.3
72"	4'-5"	10'-2"	25'-6"	18'-6"	2.31	232.6	2.73	271.0

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

REINFORCING STEEL SCHEDULE

PIPE DIA.	SINGLE R.C. PIPE CULVERT								DOUBLE R.C. PIPE CULVERT									
	H401		H402		V401		V402		H401		H402		H403		V401		V402	
	L	NO.	L	NO.	L	NO.	L	NO.	L	NO.	L	NO.	L	NO.	L	NO.	L	NO.
18"	7'-8"	2	1'-11½"	4	1'-7½"	8	8"	8	12'-2"	2	1'-11½"	4	8"	2	1'-7½"	10	8"	14
24"	9'-2"	2	2'-2"	4	1'-8½"	10	8"	9	14'-8"	2	2'-2"	4	8"	2	1'-8½"	12	8"	18
30"	10'-8"	2	2'-4½"	4	1'-11½"	10	8"	12	17'-8"	2	2'-4½"	4	8"	2	1'-11½"	14	8"	22
36"	12'-8"	2	2'-10"	6	2'-3"	12	8"	14	20'-8"	2	2'-10"	6	8"	3	2'-3"	14	8"	28
42"	15'-2"	2	3'-9½"	8	2'-9½"	16	8"	15	23'-8"	2	3'-9½"	8	8"	4	2'-9½"	18	8"	30
48"	16'-8"	2	4'-3"	10	3'-1"	18	8"	16	25'-8"	2	4'-3"	10	8"	5	3'-1"	20	8"	32
54"	18'-2"	2	4'-8½"	12	3'-5½"	20	8"	17	27'-8"	2	4'-9"	12	8"	6	3'-5½"	22	8"	34
60"	20'-2"	2	5'-5"	14	4'-0"	24	8"	18	30'-8"	2	5'-5"	14	8"	7	4'-0"	26	8"	36
72"	25'-2"	2	7'-4"	18	5'-1"	30	8"	20	36'-8"	2	7'-4"	18	8"	9	5'-1"	33	8"	40

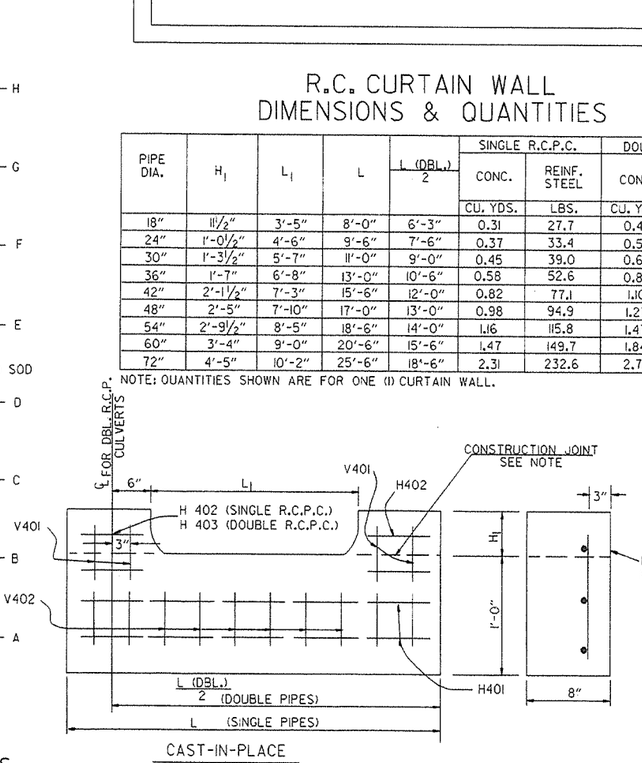
ALL REINFORCING STEEL #4 BARS @ 6" O.C.



PLAN VIEW
3:1 FORESLOPES

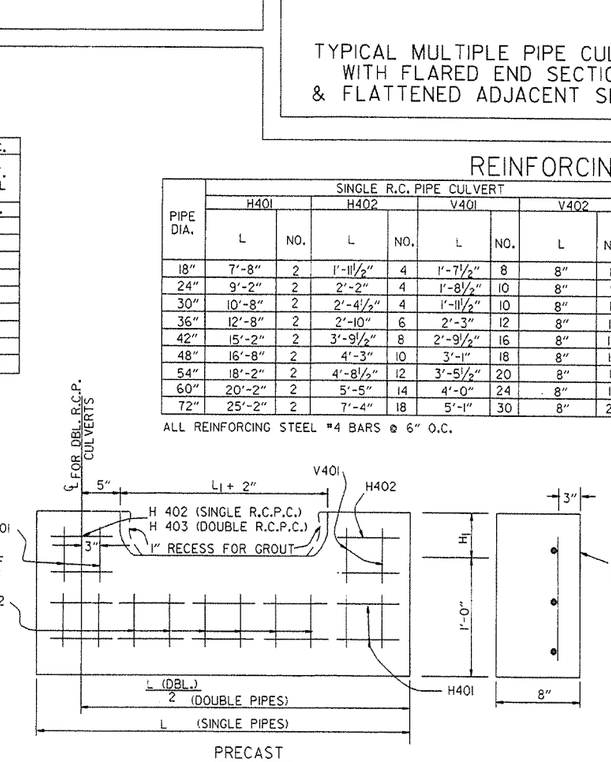
NOTE: THE CONFIGURATION OF CONTOURS WILL VARY WITH FORESLOPE VARIATIONS.

PLAN VIEW
FLATTENED FORESLOPES



CAST-IN-PLACE

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



PRECAST

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

R.C. CURTAIN WALL DETAILS

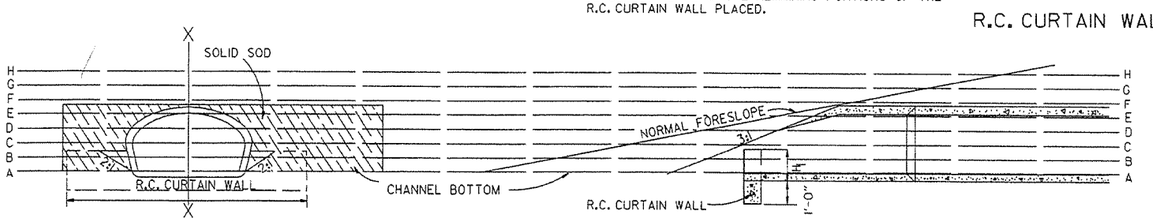
SOLID SODDING

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

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

GENERAL NOTES

1. A CAST-IN-PLACE OR PRECAST CURTAIN WALL MAY BE USED. PAYMENT FOR THE CURTAIN WALL SHALL BE CONSIDERED TO BE INCLUDED IN THE UNIT PRICE BID EACH FOR FLARED END SECTIONS OF THE SEVERAL SIZES, WHICH PRICE SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIALS INCLUDING REINFORCING STEEL AND CONCRETE: FOR FORMS, MIXING AND PLACING; FOR EXCAVATION AND BACKFILL, AND FOR ALL LABOR, TOOLS, EQUIPMENT AND INCIDENTALS NECESSARY TO COMPLETE THE WORK.
2. ALL EXPOSED EDGES SHALL BE CHAMFERED ¾".
3. CONCRETE FOR CURTAIN WALL SHALL MEET THE REQUIREMENTS FOR CLASS A OR S CONCRETE AS PROVIDED IN SECTION 802 OF THE STANDARD SPECIFICATIONS OR FOR PAVING CONCRETE AS PROVIDED IN SECTION 501 OF THE STANDARD SPECIFICATIONS.
4. WELDED WIRE MESH 3 x 3 W10 x W10 MAY BE USED IN LIEU OF REINFORCING BARS.



END VIEW

SECTIONAL VIEW "X-X"

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

ARKANSAS STATE HIGHWAY COMMISSION

FLARED END SECTION

STANDARD DRAWING FES-1

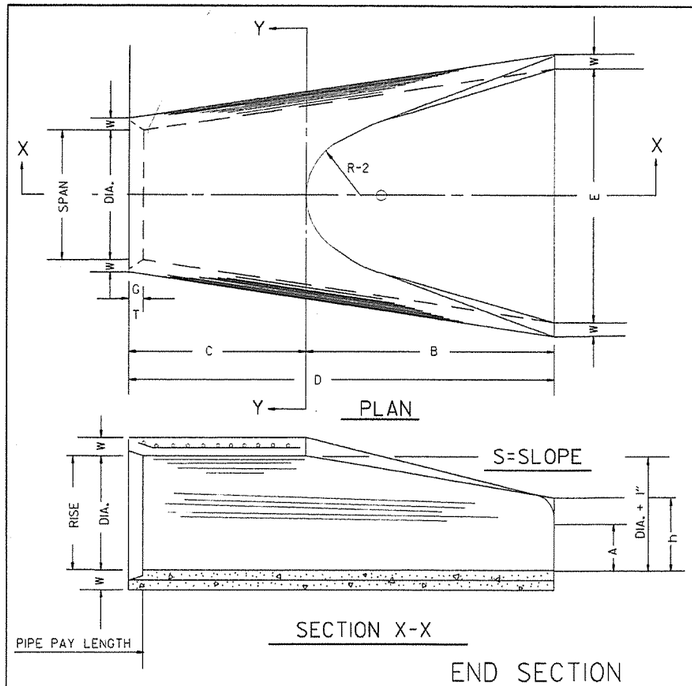
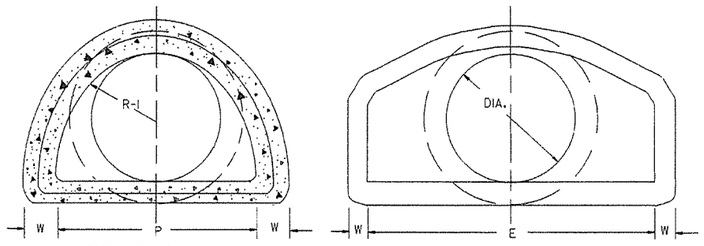


TABLE OF DIMENSIONS

DIA.	WALL	A	B	C	D	E	S	DIA. − 1"	P	R-1	R-2	G-T	WT.	h
18"	2½"	9"	2'-3"	3'-10"	6'-1"	3'-0"	3:1	19"	29"	15½"	12"	2"	1000	1'-0½"
24"	3"	9½"	3'-7½"	2'-6"	6'-1½"	4'-0"	3:1	25"	33⅜"	16¹¹⁄₁₆"	14"	2½"	1600	1'-1½"
30"	3½"	1'-0"	4'-6"	1'-7¾"	6'-1¾"	5'-0"	3:1	31"	37"	18½"	15"	3¼"	1940	1'-4⅝"
36"	4"	1'-3"	5'-3"	2'-10¾"	8'-1¾"	6'-0"	3:1	37"	47¹¹⁄₁₆"	24⅝"	20"	3½"	4100	1'-8"
42"	4½"	1'-9"	5'-3"	2'-11"	8'-2"	6'-6"	3:1	43"	53⅛"	27½"	22"	3½"	5380	2'-2½"
48"	5"	2'-0"	6'-0"	2'-2"	8'-2"	7'-0"	3:1	49"	56½"	28½"	22"	3½"	6550	2'-6"
54"	5½"	2'-4"	6'-6"	1'-10"	8'-4"	7'-6"	3:1	55"	65½"	33⅜"	24"	4"	8750	2'-10½"
60"	6"	2'-10"	6'-6"	1'-10"	8'-4"	8'-0"	3:1	61"	72½"	36¹¹⁄₁₆"	24"	4"	9270	3'-5"
72"	7"	3'-10"	6'-6"	1'-10"	8'-4"	9'-0"	3:1	73"	77¹¹⁄₁₆"	38⅝"	24"	5"	13250	4'-6"



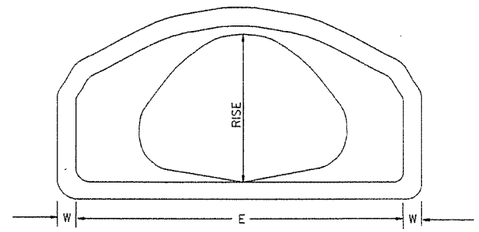
NOTE: TONGUE END ON UPSTREAM SECTION
GROOVE END ON DOWNSTREAM SECTION

END SECTION FOR REINFORCED CONCRETE PIPE CULVERTS

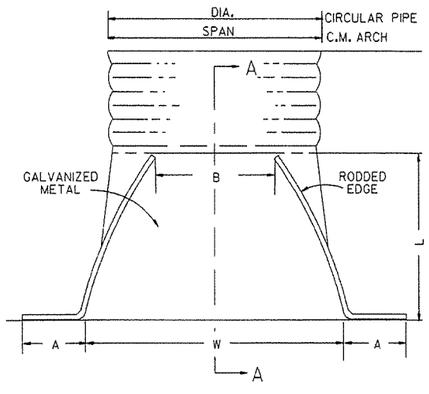
ARCH PIPE

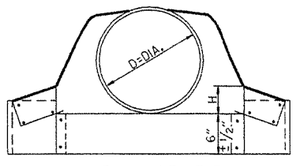
EQUIV. DIA.	• SPAN AASHTO M 206	• SPAN AHD NOMINAL	• RISE AASHTO M 206	• RISE AHD NOMINAL	W	A	B	C	D	E	P	R2	G-T	S
	INCHES													
15	18	18	11	11	2"	4"	2'-0"	4'-0"	6'-0"	3'-0"	29"	12"	1½"	2½:1
18	22	22	13½	14	2½"	5"	2'-0"	4'-1"	6'-1"	3'-6"	32⅛"	13"	2½"	2½:1
21	26	26	15½	16	2¾"	7"	2'-3"	3'-10"	6'-1"	4'-0"	34⅛"	14"	2½"	2½:1
24	28½	29	18	18	3"	9"	2'-3"	3'-10"	6'-1"	5'-0"	36¹³⁄₁₆"	15"	2½"	2½:1
30	36¼	36	22½	23	3½"	10"	3'-1"	3'-0½"	6'-1½"	6'-0"	47¹³⁄₁₆"	20"	3"	2½:1
36	43¾	44	26⅝	27	4"	10½"	4'-0"	2'-1½"	6'-1½"	6'-6"	54⅜"	22"	3½"	2½:1
42	51⅛	51	31⅝	31	4½"	11½"	4'-7"	1-10¼"	6'-5¼"	7'-2"	59½"	23"	3¾"	2½:1
48	58½	59	36	36	5"	1'-3"	5'-3"	2'-10¾"	8'-1¾"	7'-10"	70⅝"	24"	4¼"	2½:1
54	65	65	40	40	5½"	1'-7"	5'-3"	2'-11"	8'-2"	8'-6"	72¹⁄₁₆"	24"	4¾"	2¼:1
60	73	73	45	45	6"	1'-10"	5'-6"	2'-8"	8'-2"	9'-0"	77¹³⁄₁₆"	24"	5"	2¼:1

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

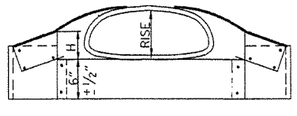


END VIEW
CONCRETE ARCH PIPE





CIRCULAR PIPE



C.M. ARCH PIPE

CIRCULAR PIPE

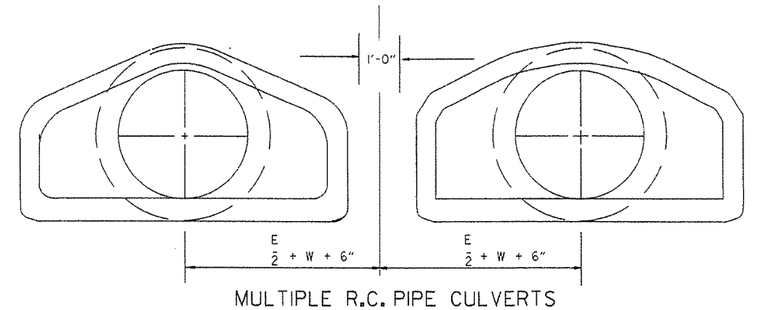
D. DIA.	GAUGE	A 1" ±	B. MAX.	H 1" ±	L 1½" ±	W 2" ±	S
		INCHES					
12	16	6	6	6	21	24	2½:1
15	16	7	8	6	26	30	2½:1
18	16	8	10	6	31	36	2½:1
21	16	9	12	6	36	42	2½:1
24	16	10	13	6	41	48	2½:1
30	14	12	16	8	51	60	2½:1
36	14	14	19	9	60	72	2½:1
42	12	16	22	11	69	84	2½:1
48	12	18	27	12	78	90	2½:1
54	12	18	30	12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

C.M. ARCH PIPE

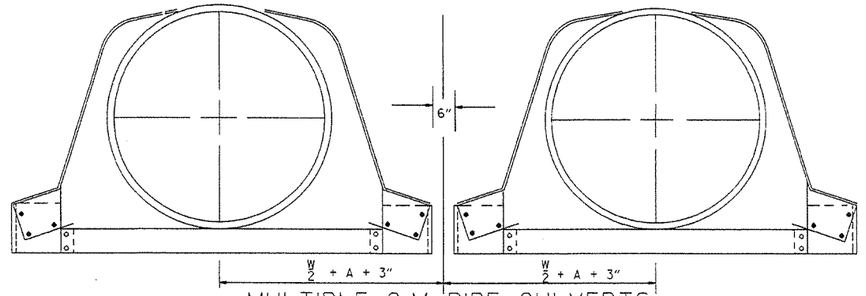
EQUIV. DIA.	SPAN	RISE	A 1" ±	B MAX.	H 1" ±	L 1½" ±	W 2" ±	S	GAUGE
	INCHES								
15"	17	13	7	9	6	19	30	2½:1	16
18"	21	15	7	10	6	23	36	2½:1	16
21"	24	18	8	12	6	28	42	2½:1	16
24"	28	20	9	14	6	32	48	2½:1	16
30"	35	24	10	16	6	39	60	2½:1	14
36"	42	29	12	18	8	46	75	2½:1	14
42"	49	33	13	21	9	53	85	2½:1	12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

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

END SECTIONS FOR CORRUGATED METAL PIPE CULVERTS



MULTIPLE R.C. PIPE CULVERTS



MULTIPLE C.M. PIPE CULVERTS

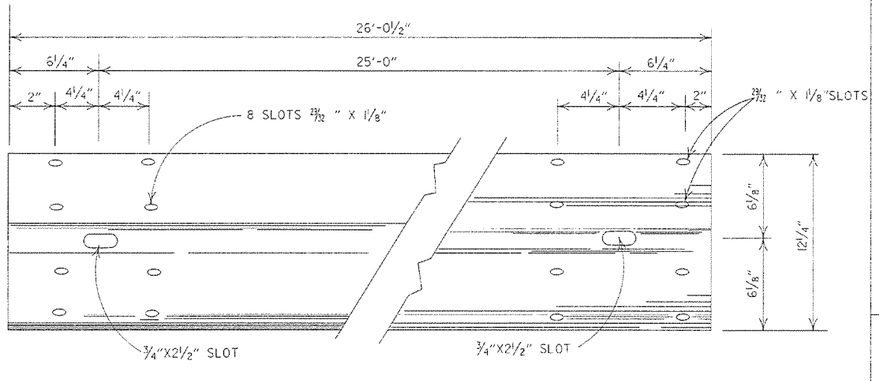
DATE	REVISION	FILMED
10-18-96	REVISED ASTM REF. TO AASHTO	10-18-96
5-15-80	REVISED DISTANCE BETWEEN MULTIPLE R.C.P. F.E.S.	664-5-15-80
7-14-78	C.M. ARCH SIZES TO CONFORM WITH AASHTO SIZES	752-7-14-78
8-22-75	ADDED MULTIPLE PIPE CULVERTS	517-8-22-75
12-5-74	REMOVED NOTE RE REINF. FOR R.C. F.E.S.	500-12-5-74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

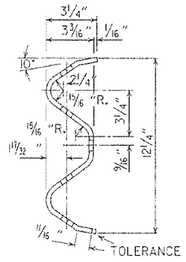
ARKANSAS STATE HIGHWAY COMMISION

FLARED END SECTION

STANDARD DRAWING FES-2

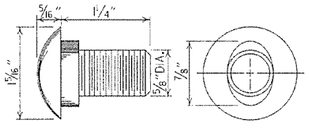
stdfes2.dgn



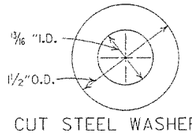


DETAILS OF W-BEAM GUARD RAIL

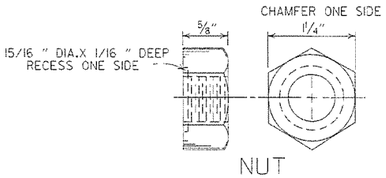
RAIL SECTION OF CLOSELY SIMILAR DIMENSIONS AND COMPARABLE STRENGTH MAY BE SUBSTITUTED IF APPROVED BY THE ENGINEER.



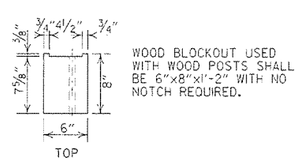
SPLICE BOLT
POST BOLT - SAME EXCEPT LENGTH



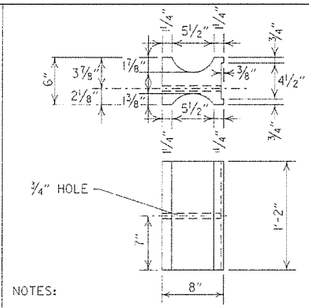
CUT STEEL WASHER



NUT



WOOD BLOCKOUT (W-BEAM)

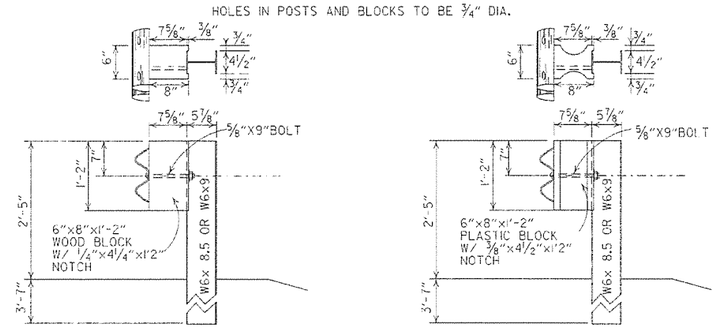


NOTES:

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)

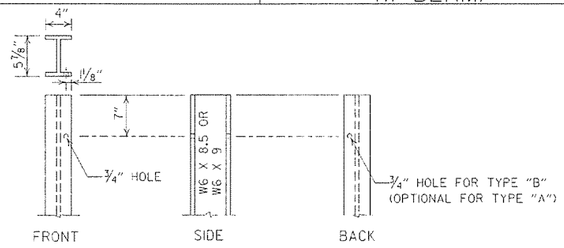
HOLES IN POSTS AND BLOCKS TO BE 3/4" DIA.



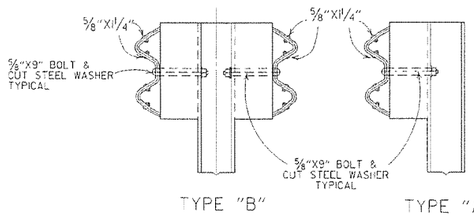
WOOD BLOCKOUT CONNECTIONS

PLASTIC BLOCKOUT CONNECTIONS

DETAILS OF STEEL LINE POST CONNECTIONS (W-BEAM)



STEEL POST



TYPE "B" TYPE "A"

DETAILS OF STEEL LINE POST CONNECTIONS (W-BEAM)

-GENERAL NOTES-

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

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

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

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

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

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

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

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

WOOD BLOCKOUT CONNECTIONS

PLASTIC BLOCKOUT CONNECTIONS

DETAILS OF WOOD LINE POST CONNECTIONS (W-BEAM)

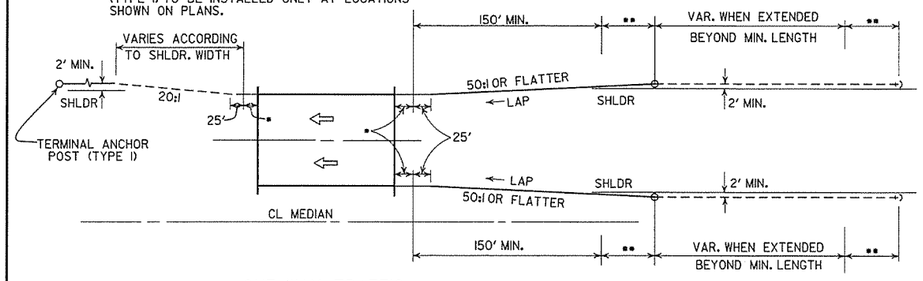
DATE	REVISION	DATE FILM
7-14-10	RAISED HEIGHT OF GUARD RAIL 1"	
01-15-09	ADDED REFERENCE TO MASH	
4-10-03	REVISED GENERAL NOTES	
8-22-02	REVISED DIMENSION ON WOOD & PLASTIC BLOCKOUT CONNECTIONS & ON STEEL POST	
11-16-01	REVISED WOOD BLOCKOUT & DETAILS OF WOOD LINE POST CONNECTIONS	
3-30-00	REMOVED GUARD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

ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

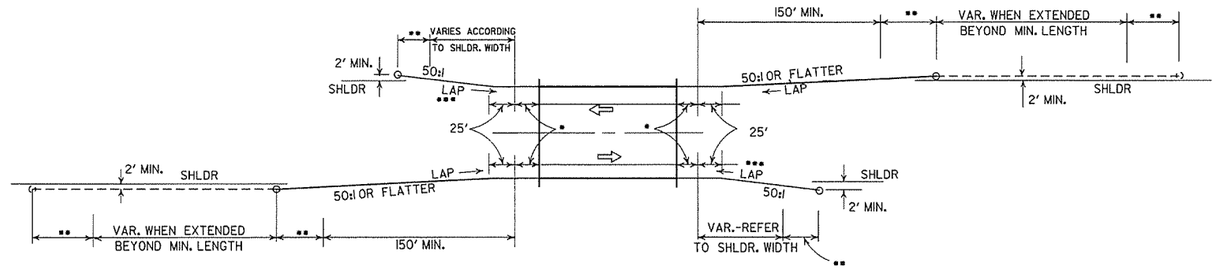
STANDARD DRAWING GR-8

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



ONE-WAY TRAFFIC

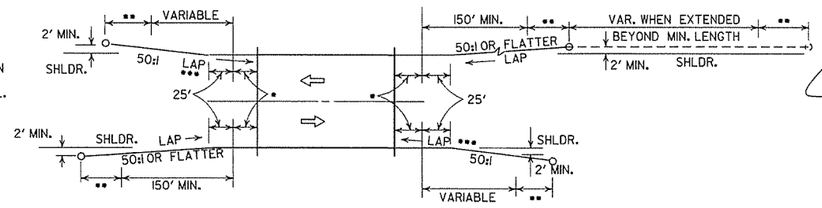
••• LAP OF GUARD RAIL SHALL BE AS SHOWN FOR A DISTANCE OF UP TO 200', CHANGE TO LAP IN DIRECTION OF TRAVEL.



TWO-WAY TRAFFIC

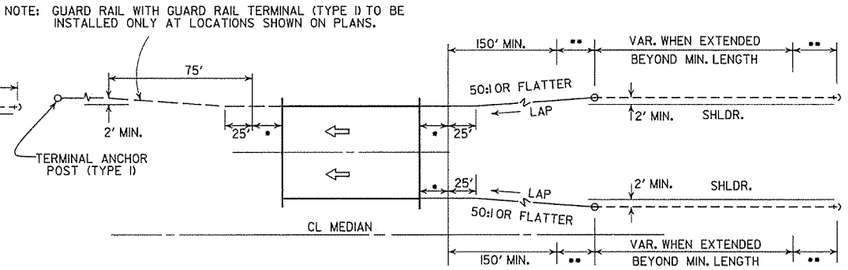
METHODS OF INSTALLATION OF GUARD RAIL AT LESS THAN FULL SHOULDER WIDTH BRIDGES USING GUARD RAIL TERMINAL (TYPE 2)

••• 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

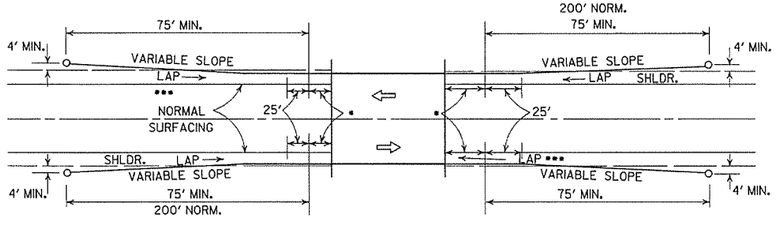
NOTE: GUARD RAIL WITH GUARD RAIL TERMINAL (TYPE I) TO BE INSTALLED ONLY AT LOCATIONS SHOWN ON PLANS.



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

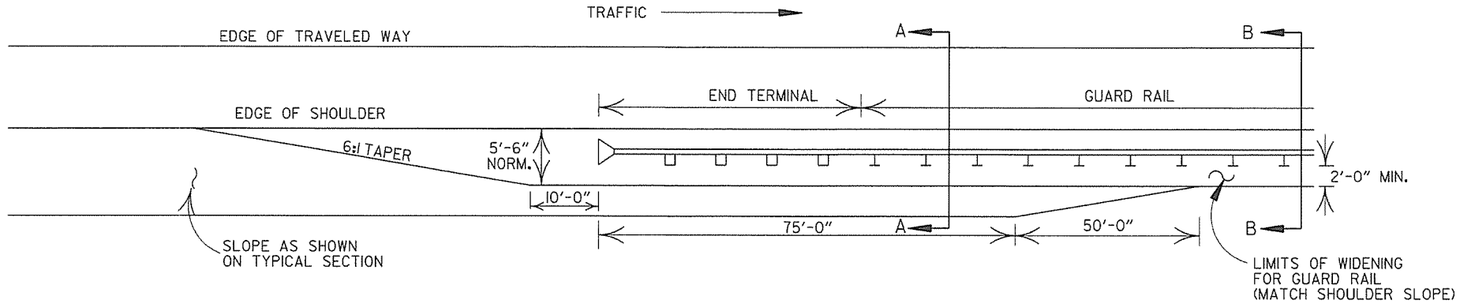
- • THRIE BEAM GUARD RAIL TERMINAL
- •• GUARD RAIL TERMINAL (TYPE 2)

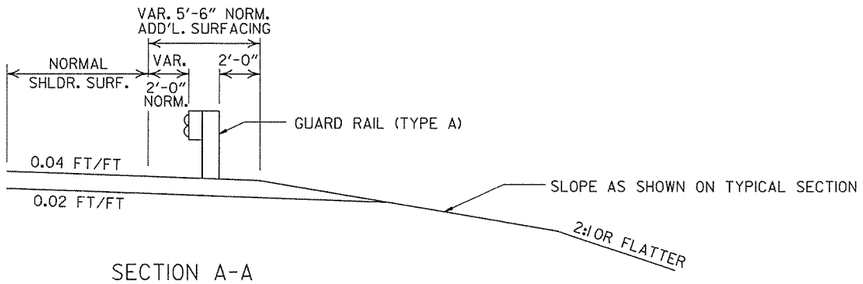
DATE	REVISION	DATE FILM
4-17-08	REVISED LAYOUTS	
11-10-05	REMOVED GUARD RAIL NOTES AND DETAILS	
11-16-01	DELETED NOTE-METHOD OF INSTALLATION OF GUARD RAIL USING GUARD RAIL TERM. (TY. I)	
1-12-00	ADDED CONSTRUCTION NOTE	1-12-00
6-26-97	REVISED LAYOUT	
10-1-92	REDRAWN & REVISED	10-1-92
	ADDED NOTE	
10-9-87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

ARKANSAS STATE HIGHWAY COMMISSION

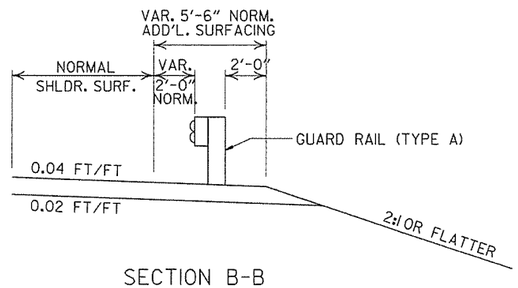
GUARD RAIL DETAILS

STANDARD DRAWING GR-9





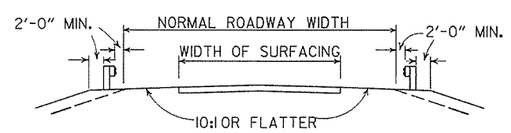
SECTION A-A



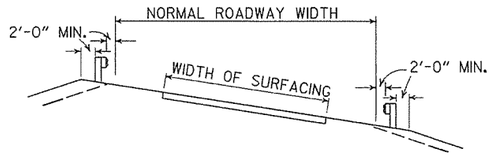
SECTION B-B

DETAILS OF WIDENING FOR GUARD RAIL

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

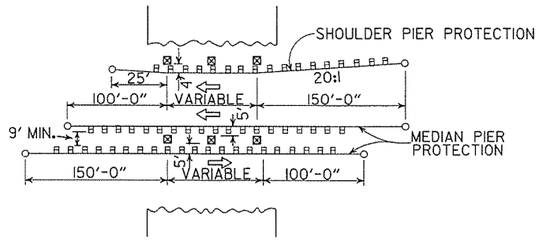


SECTION ON TANGENT



SECTION ON CURVE

DETAILS SHOWING POSITION OF GUARD RAIL ON HIGHWAY



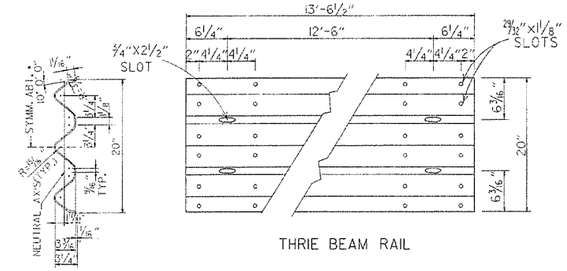
METHOD OF INSTALLATION OF GUARD RAIL AT FIXED OBSTACLE

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

ARKANSAS STATE HIGHWAY COMMISSION

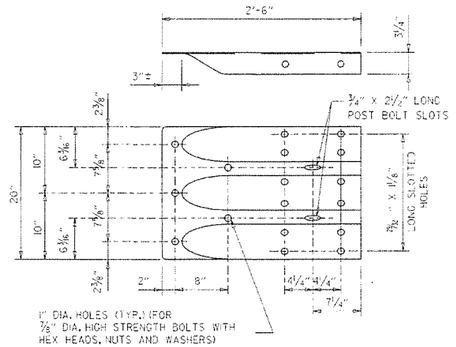
GUARD RAIL DETAILS

STANDARD DRAWING GR-9A

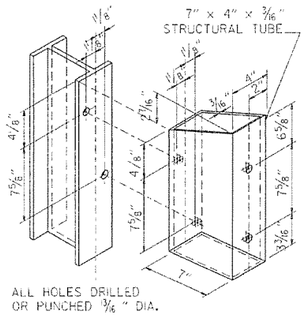


THRIE BEAM RAIL

SECTION THRU
THRIE BEAM RAIL



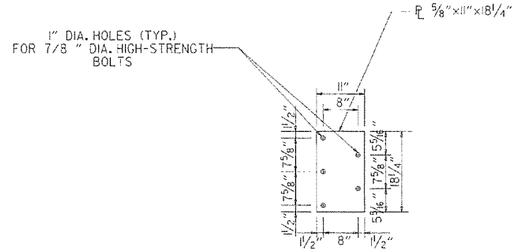
SPECIAL END SHOE



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

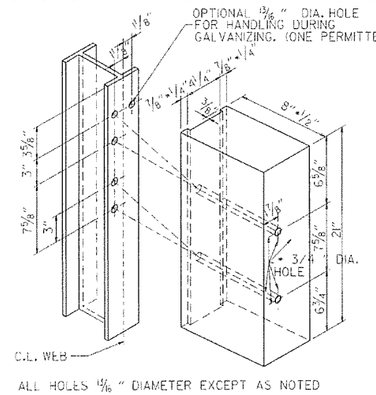
ALL HOLES DRILLED OR PUNCHED ⅜" DIA.

STRUCTURAL STEEL TUBING BLOCKOUT DETAIL



CONNECTOR PLATE

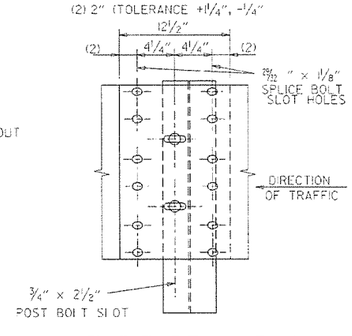
CONNECTOR PLATE SHALL BE AASHTO M270, GR. 36 AND SHALL BE GALVANIZED AFTER FABRICATION. GALVANIZING SHALL CONFORM TO SUBSECTION 807.19 OF THE STANDARD SPECIFICATIONS. CONNECTOR PLATE TO BE BOLTED TO SPECIAL END SHOE USING ⅞" DIA. HIGH STRENGTH BOLTS, WITH THE HEADS PLACED ON THE TRAFFIC FACE. WASHERS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



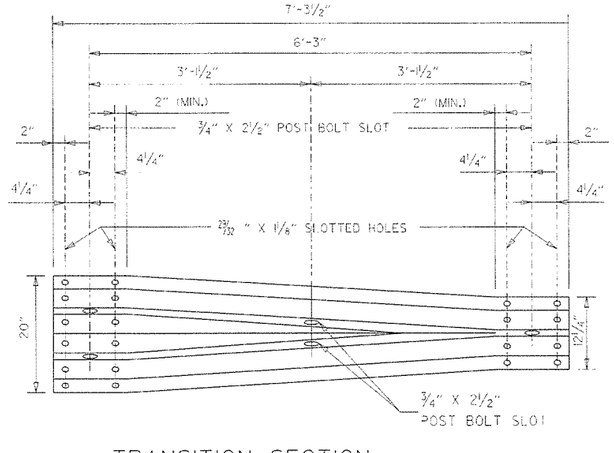
ALL HOLES 13/16" DIAMETER EXCEPT AS NOTED

HOLE PUNCHING DETAIL
FOR STEEL POST & WOOD
OR PLASTIC BLOCKOUTS

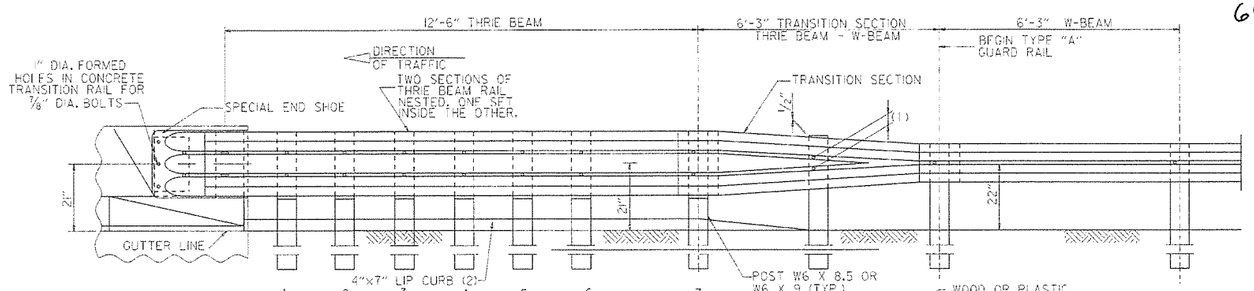
NOTE: BLOCKS SHALL BE THE SAME TYPE THROUGHOUT THE PROJECT LIMITS.



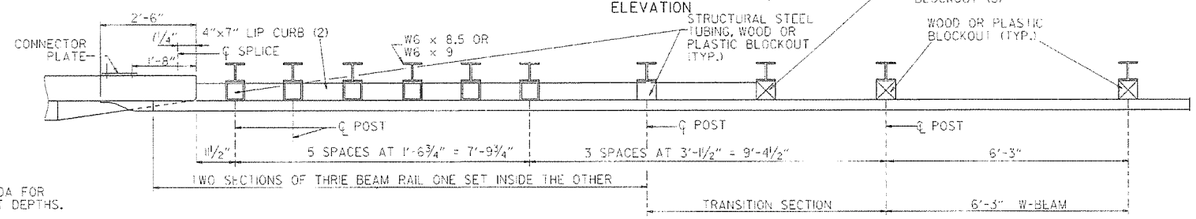
THRIE BEAM RAIL
SPLICE AT POST



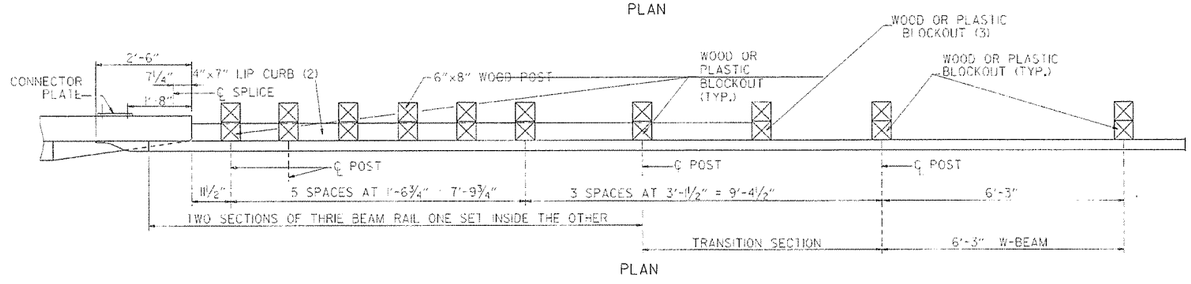
TRANSITION SECTION



ELEVATION



PLAN



PLAN

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

THRIE BEAM GUARD RAIL CONNECTION AT BRIDGE ENDS

GENERAL NOTES:

THE THRIE BEAM RAIL, SPECIAL END SHOE, AND THE TRANSITION SECTION SHALL BE MADE OF STEEL AND SHALL BE 12 GAGE. ZINC COATING SHALL BE TYPE I.

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

ALL BOLTS SHALL BE SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND NO MORE THAN ¾" BEYOND IT.

ALL LAP SPLICES, INCLUDING SPECIAL END SHOES, SHALL BE MADE IN THE DIRECTION SHOWN ON STANDARD DRAWINGS GR-9 & GR-11.

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

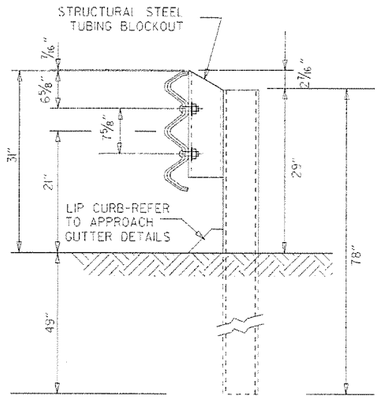
THRIE BEAM POSTS SHALL BE SAME MATERIAL AS W BEAM POSTS FOR ENTIRE JOB.

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	

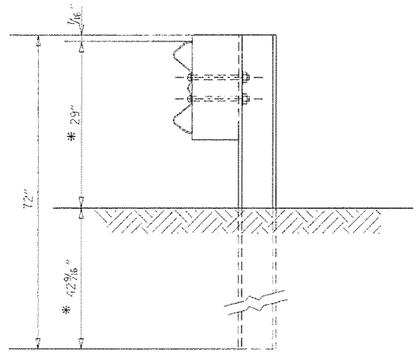
ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR-10

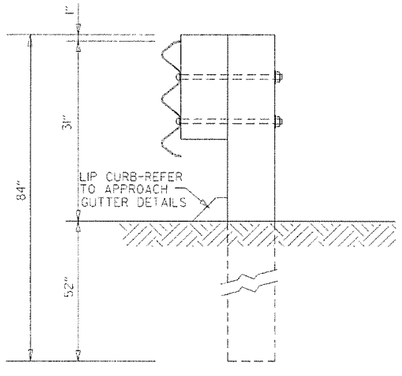


THRIE BEAM RAIL WITH STEEL TUBING BLOCKOUT
AND STEEL POST
POSTS 1-7

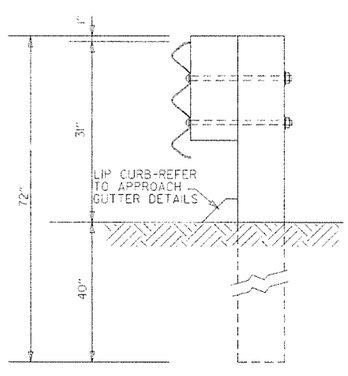


W-BEAM TO THRIE BEAM TRANSITION RAIL
WITH WOOD OR PLASTIC BLOCKOUT AND STEEL POST
POST 8

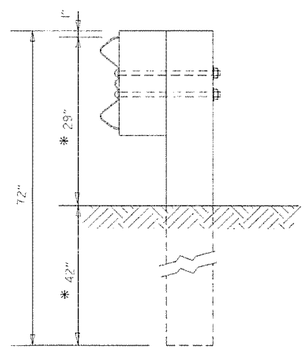
* NOTE:
THESE DIMENSIONS WILL NEED TO BE ADJUSTED IN THE FIELD TO MAKE THE TRANSITION FROM 21" MID POINT OF THRIE BEAM TO 22" MID POINT OF W-BEAM.



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.

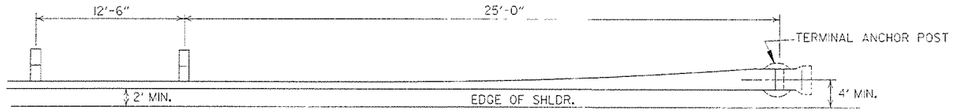
WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7 f (1400 f) OR NO. 1 1350 f SOUTHERN PINE.

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	

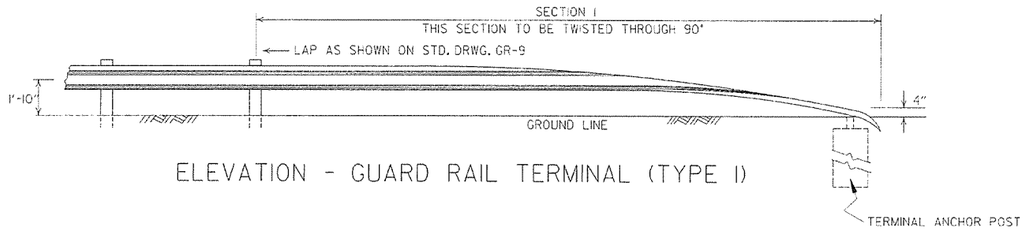
ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR-10A

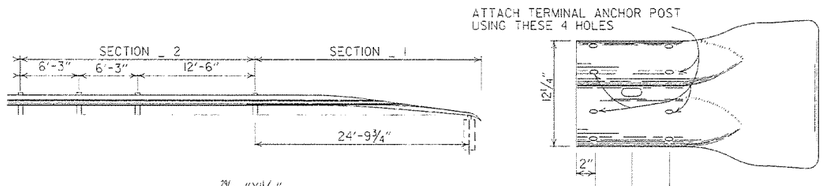


PLAN - GUARD RAIL TERMINAL (TYPE I)



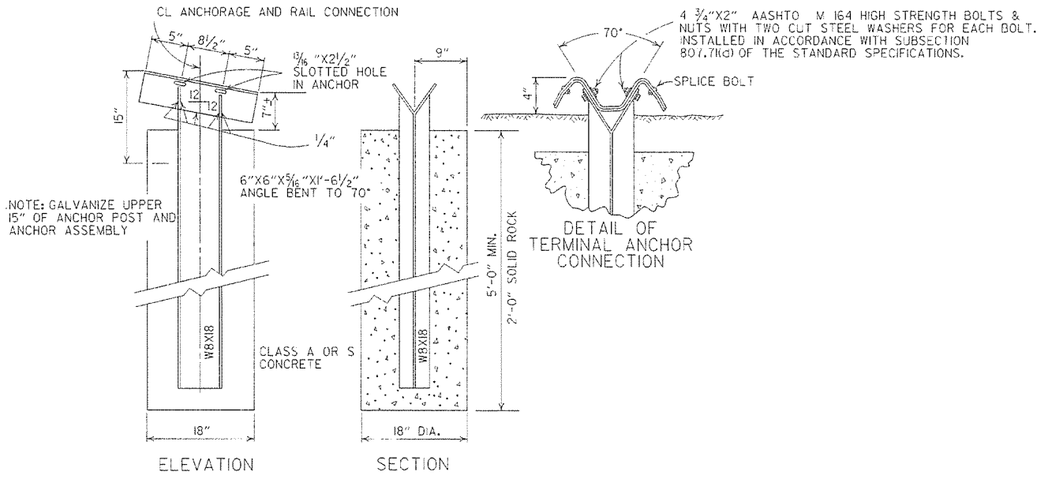
ELEVATION - GUARD RAIL TERMINAL (TYPE I)

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



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

ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GRT-1

REINFORCED CONCRETE ARCH PIPE DIMENSIONS

EQUIV. DIA.	SPAN		RISE	
	AASHTO M 206	AHTD NOMINAL	AASHTO M 206	AHTD NOMINAL
INCHES	INCHES			
15	18	18	11	11
18	22	22	13½	14
21	26	26	15½	16
24	28½	29	18	18
30	36¼	36	22½	23
36	43⅜	44	26⅝	27
42	51⅛	51	31⅞	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)(1).

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

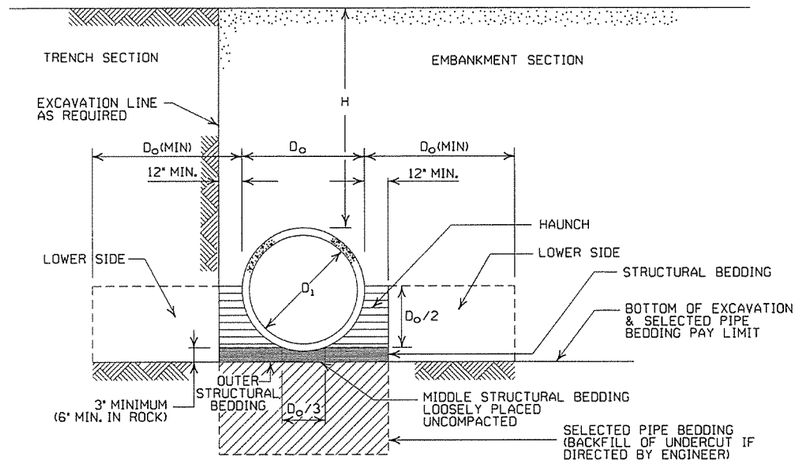
- LEGEND -

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

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

* SM-3 WILL NOT BE ALLOWED.

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



EMBANKMENT AND TRENCH INSTALLATIONS

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

GENERAL NOTES

1. CONCRETE PIPE CULVERT CONSTRUCTION SHALL CONFORM TO ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (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

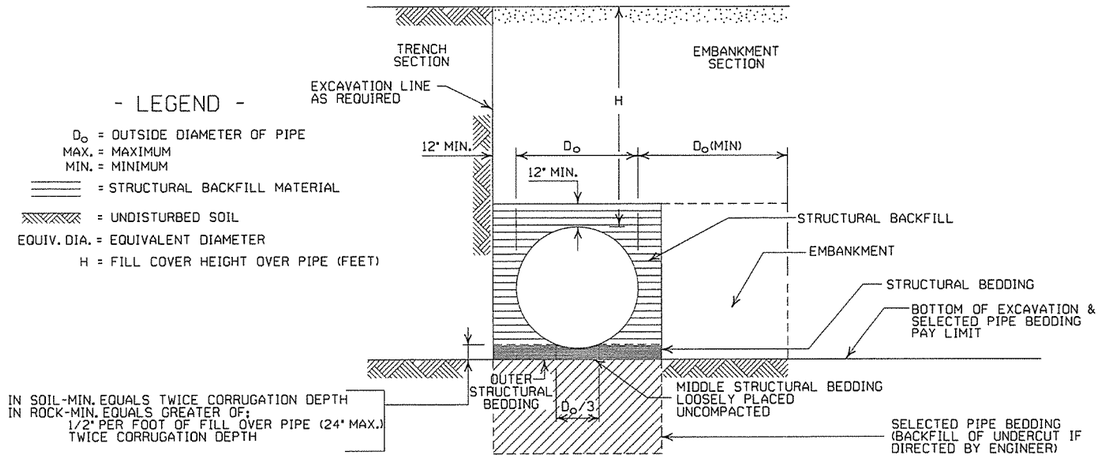
③ SM-3 WILL NOT BE ALLOWED.

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

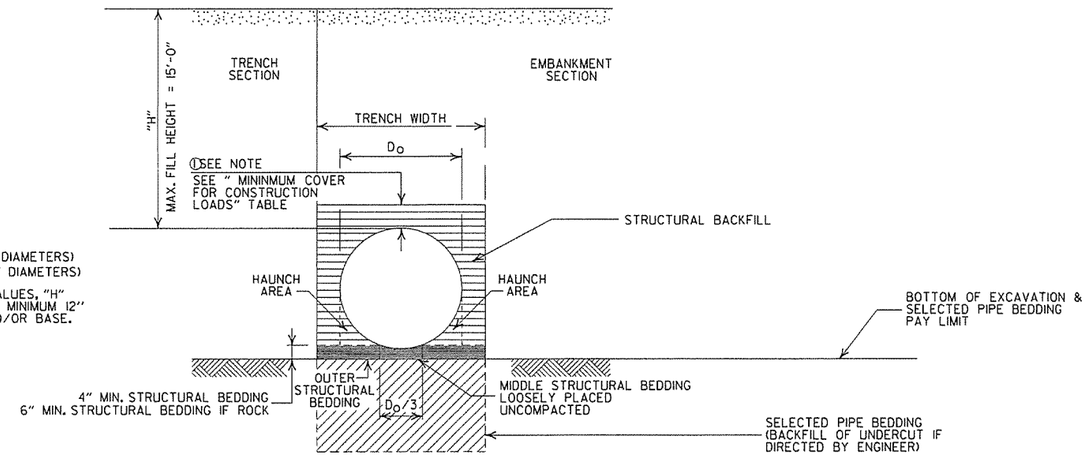
STRUCTURAL BACKFILL AND STRUCTURAL BEDDING MATERIAL WILL NOT BE PAID FOR SEPARATELY, BUT COMPENSATION WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID PER LINEAR FOOT OF HDPE PIPE.

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

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

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

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



TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

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

MULTIPLE INSTALLATION OF HIGH DENSITY POLYETHYLENE PIPES

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

MINIMUM COVER FOR CONSTRUCTION LOADS

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

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

CONSTRUCTION SEQUENCE

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

GENERAL NOTES

1. PIPE SHALL CONFORM TO AASHTO M294, TYPE S. INSTALLATION SHALL 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 1 INCH. STRUCTURAL BACKFILL MATERIAL SHALL BE FREE OF ORGANIC MATERIAL, STONES LARGER THAN 1.50 INCH IN GREATEST DIMENSION, OR FROZEN LUMPS.

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

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

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

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

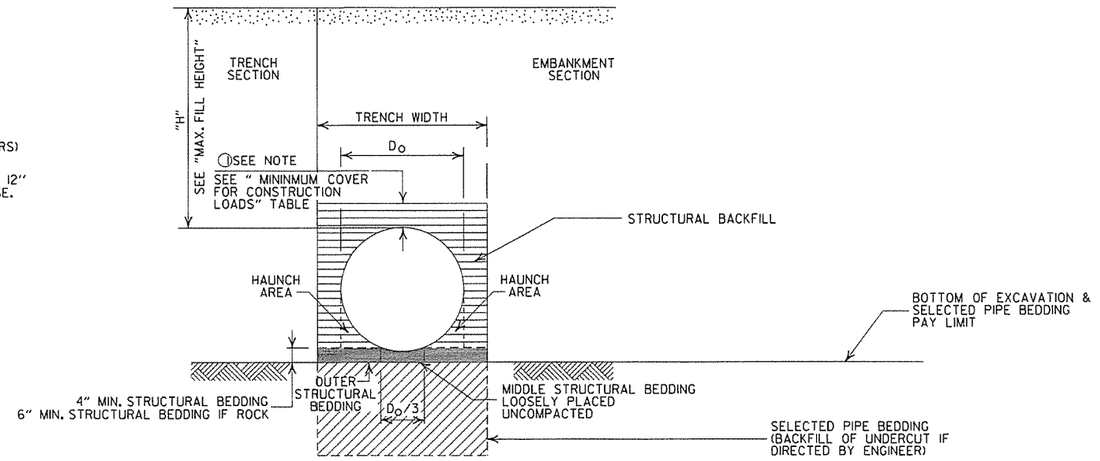
PIPE DIAMETER	"H"
18"	45'-0"
24"	45'-0"
30"	40'-0"
36"	40'-0"

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

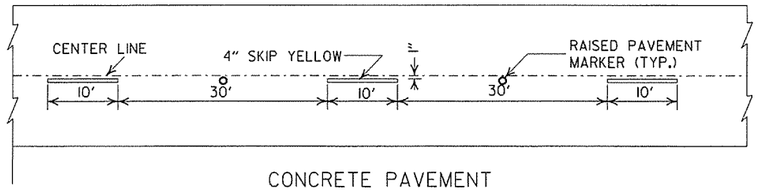
= UNDISTURBED SOIL

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	

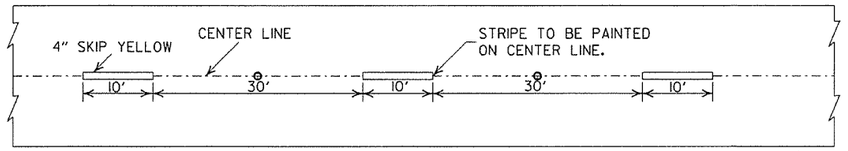
ARKANSAS STATE HIGHWAY COMMISSION

PLASTIC PIPE CULVERT (PVC F949)

STANDARD DRAWING PCP-2

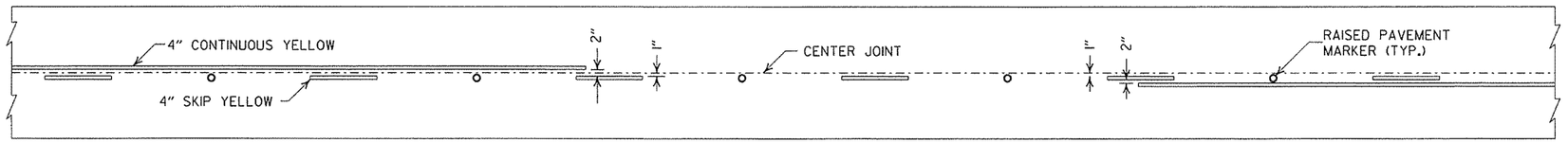


CONCRETE PAVEMENT

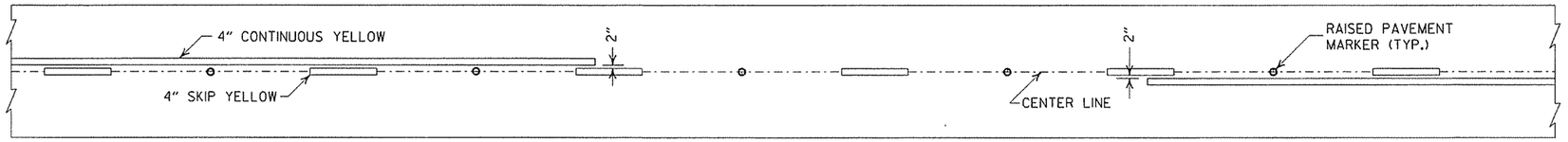


ASPHALT PAVEMENT

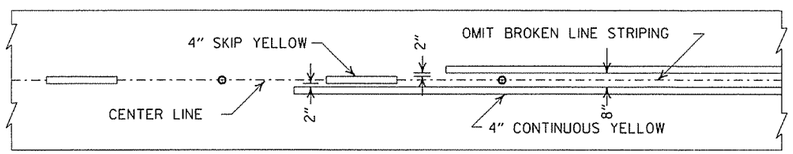
BROKEN LINE STRIPING



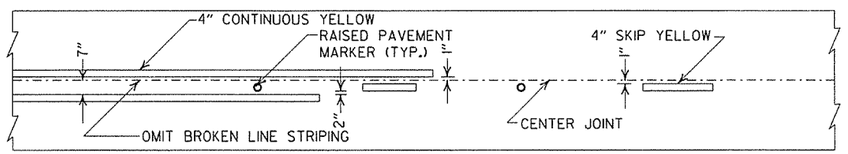
SOLID LINE STRIPING ON CONCRETE PAVEMENT



SOLID LINE STRIPING ON ASPHALT PAVEMENT

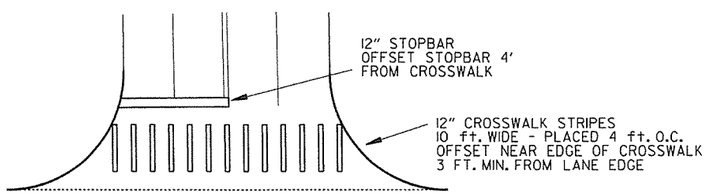


ASPHALT PAVEMENT



CONCRETE PAVEMENT

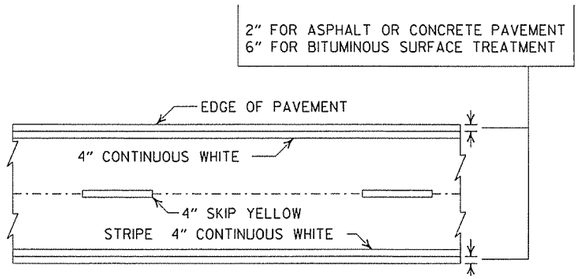
STRIPING AT ADJACENT NO PASSING LANES



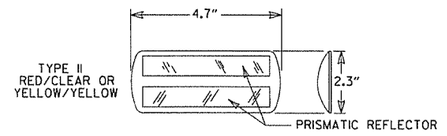
CROSSWALK AND STOPBAR DETAILS

NOTES:

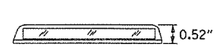
1. ALL LINES SHALL HAVE A WIDTH OF 4 INCHES.
2. THE THICKNESS AND RATE OF PAINT APPLICATION SHALL BE AS SPECIFIED IN SECTION 718 OF THE STANDARD SPECIFICATIONS.
3. THIS DRAWING SHALL BE USED IN CONJUNCTION WITH THE LATEST REVISED ADDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES."
4. RAISED 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

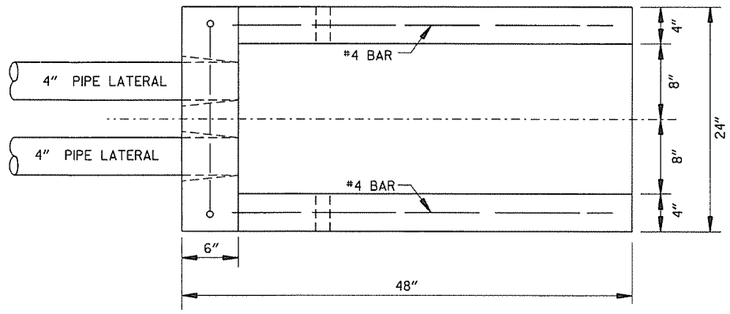
PAVEMENT MARKING DETAILS

STANDARD DRAWING PM-1

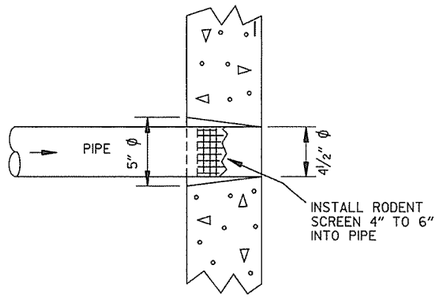
NOTE:
1. GRANULAR BACKFILL TO BE SUBSIDIARY TO PIPE UNDERDRAIN.

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

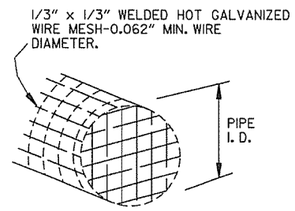
3. GRANULAR MATERIAL SHALL BE WRAPPED WITH GEOTEXTILE FABRIC. LAP FABRIC 12" OR THE WIDTH OF THE TRENCH AT THE TOP.



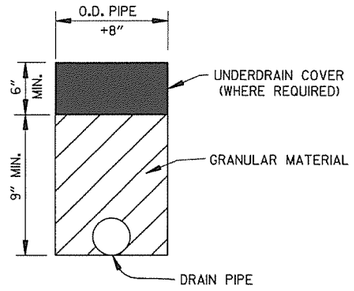
PLAN VIEW

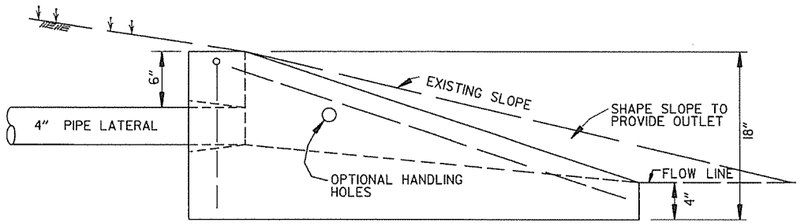


DETAIL OF HOLE FOR 4" PIPE

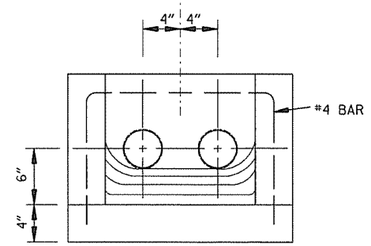


DETAIL OF RODENT SCREEN

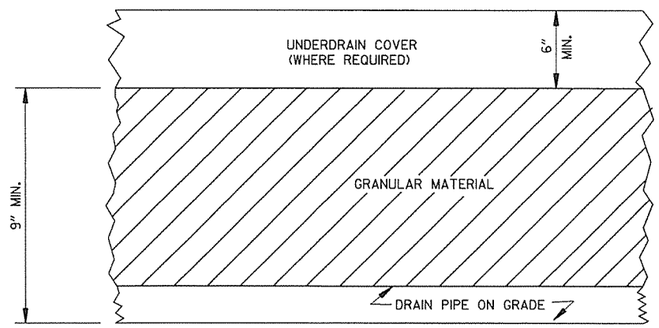




SIDE VIEW

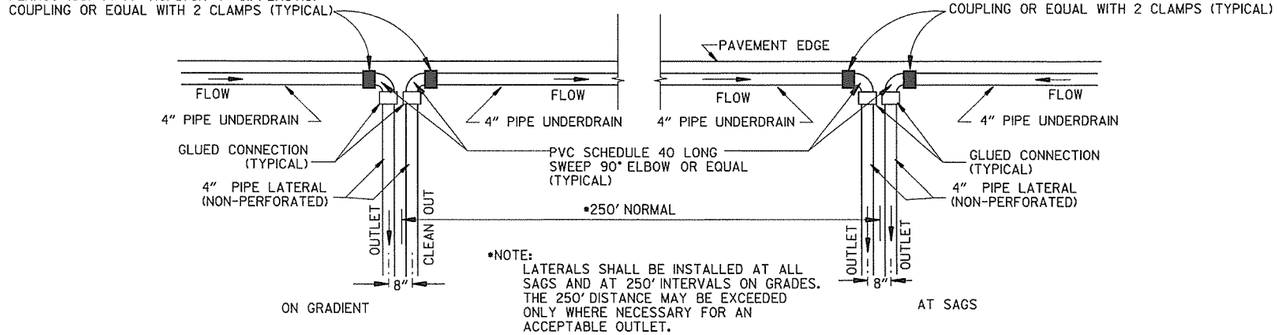


FRONT VIEW



DETAILS OF PIPE UNDERDRAIN

UNDERDRAIN OUTLET PROTECTORS



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

DETAIL OF PIPE UNDERDRAIN LATERALS WHEN PLACED ALONG PAVEMENT EDGE

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

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

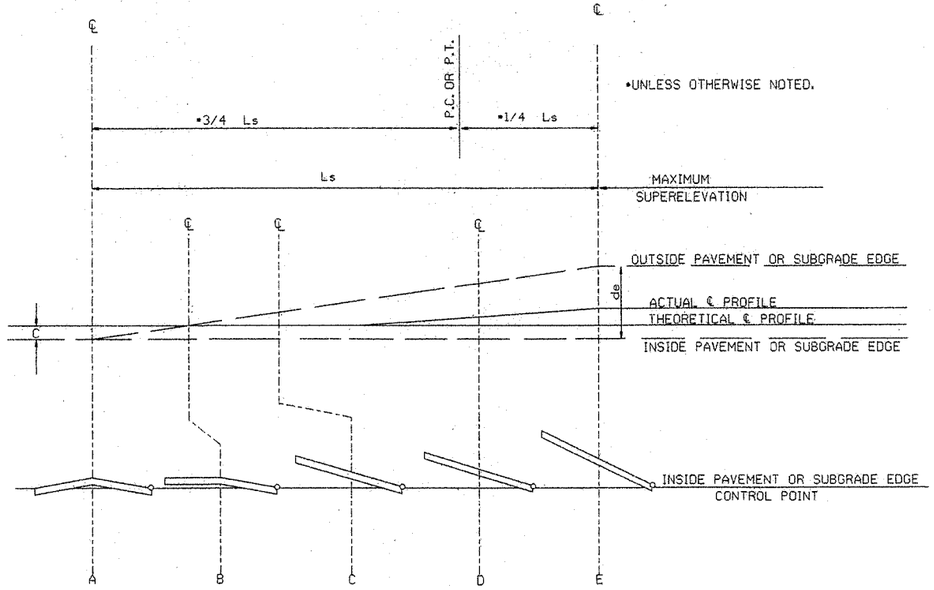
SUPERELEVATION TABLE FOR TWO - WAY TRAFFIC

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.			N.C.			N.C.			N.C.		
0° 45'	N.C.			N.C.			R.C.			0.022			0.023			0.028		
1° 00'	N.C.			N.C.			0.021			0.026			0.030			0.037	275	300
1° 15'	N.C.			R.C.			0.026			0.032			0.037	250	300	0.046		
1° 30'	N.C.			0.021			0.031	200		0.037	225		0.043			0.054		
1° 45'	N.C.			0.025	175		0.036			0.043		300	0.049			0.062		
2° 00'	R.C.			0.028			0.040			0.048			0.055			0.070		
2° 15'	R.C.			0.031			0.045		250	0.053			0.061			0.078	300	350
2° 30'	0.021			0.034			0.049			0.058			0.067			0.085	315	
2° 45'	0.023			0.037		200	0.053			0.063			0.072			0.091	335	
3° 00'	0.025	150		0.040			0.057			0.067	230		0.077	260		0.096	350	400
3° 15'	0.027			0.043			0.061			0.072	245		0.082	275		0.098	360	
3° 30'	0.029			0.046			0.065	205		0.076	255		0.086	285		0.100	360	
3° 45'	0.031		200	0.049			0.069	215		0.080	265		0.090	295	350			
4° 00'	0.033			0.051			0.072	225		0.083	270		0.093	305				
4° 30'	0.037			0.056			0.078	240		0.087	280	350	0.096	315				
5° 00'	0.040			0.061			0.083	250		0.091	295		0.098	320				
5° 30'	0.043			0.066	185		0.088	260	300	0.094	300							
6° 00'	0.046			0.070	190		0.092	270		0.096	305							
6° 30'	0.050			0.074	200		0.095	280		0.100	315							
7° 00'	0.053			0.078	210		0.098	285										
7° 30'	0.056			0.081	215		0.099	290										
8° 00'	0.058			0.084	220	250	0.100	290										
8° 30'	0.061			0.087	225													
9° 00'	0.063			0.089	230													
10° 00'	0.068	160		0.094	235													
11° 00'	0.072	170		0.097	250													
12° 00'	0.076	175		0.099	250													
13° 00'	0.080	180		0.100	250													
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.

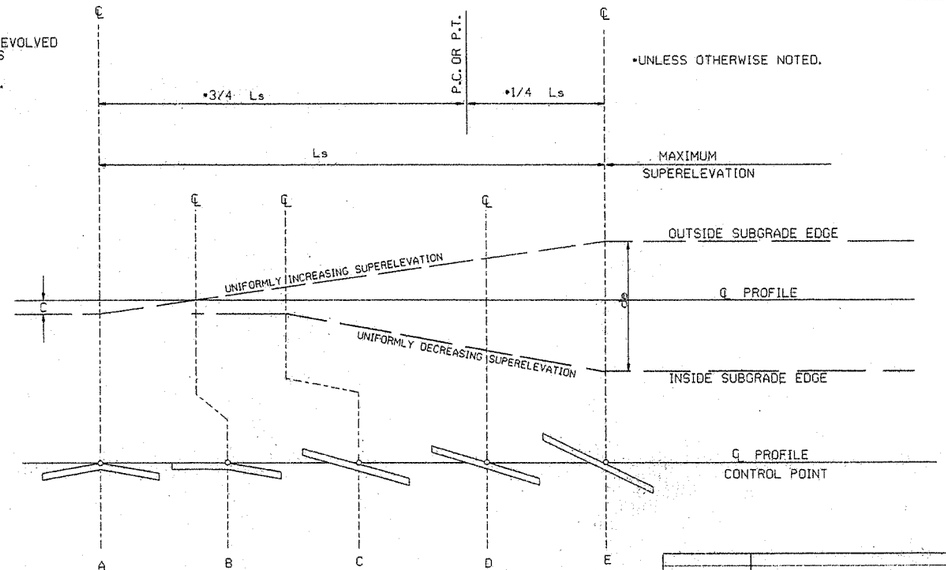
GENERAL NOTES

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

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

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

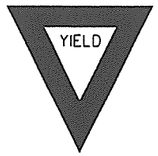
STANDARD DRAWING SE-2

FILE STDSE2.DGN

R1-1

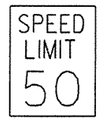
STANDARD 30"X30"
EXPRESSWAY 36"X36"
SPECIAL 48"X48"

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"

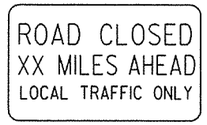
R5-1

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

RII-2

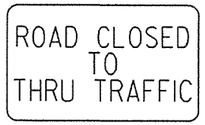
48"X30"

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"

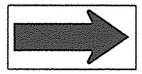
WI-3

STD. 48"X48"

WI-4

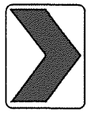
STD. 48"X48"

WI-6



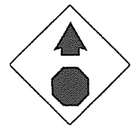
STD. 48"X24"
SPECIAL 60"X30"

WI-8



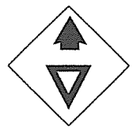
STD. 18"X24"
SPECIAL 24"X30"
EXPWY. 30"X36"
FWY. 36"X48"

W3-1



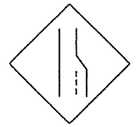
STD. 36"X36"
SPECIAL 48"X48"

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"

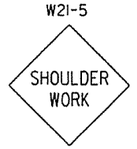
W20-7a

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"

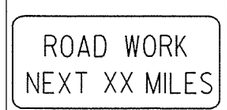
W8-11

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

FINES DOUBLE
IN WORK ZONES •

WHEN WORKERS
ARE PRESENT ••

36"X60"

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

ADVANCE DISTANCES
(XXXX)

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

GENERAL NOTES:

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

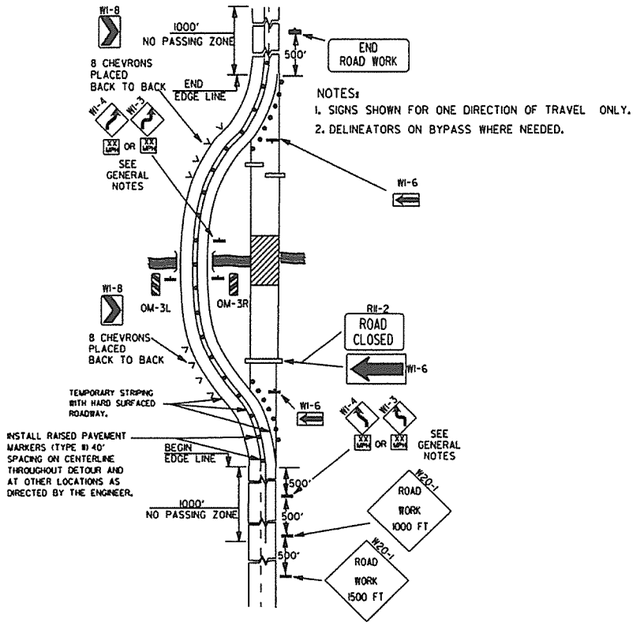
• NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE REQUIREMENTS SHOWN IN NOTES 4 & 5, BUT MEET THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH), WILL BE ACCEPTED. COMPLIANCE WITH THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY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

DATE	REVISION	FILMED
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	
1-18-98	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	G-8-95
2-2-95	REVISED PER PART VI, MUTCD SEPT. 3, 1993	
8-15-9	DRAWN AND PLACED IN USE	

ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-1



(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. SIGNS SHOWN FOR ONE DIRECTION OF TRAVEL ONLY.
2. DELINEATORS ON BYPASS WHERE NEEDED.

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

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

(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:

$L = S \times W$ FOR SPEEDS OF 45MPH OR MORE.

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

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

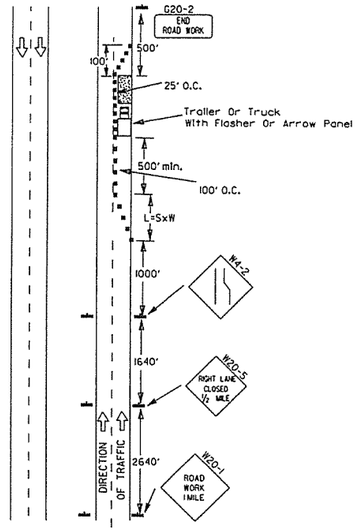
GENERAL NOTES:
1. ADVISORY SPEED POSTED ON W1-3 OR W1-4 CURVE WARNING SIGNS TO BE DETERMINED AT SITE. USE W1-4 WHEN SPEED IS GREATER THAN 30MPH AND W1-3 WHEN 30MPH OR LESS.
2. WHEN THE EXISTING SPEED LIMIT IS 55MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 45MPH, THE R2-1(55) SHALL BE OMITTED AND THE W3-5 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 R3-5	
9-12-13	REVISED DETAIL OF RAISED PAVEMENT MARKERS	
3-11-10	ADDED (AFAD)	
11-20-08	REVISED SIGN DESIGNATIONS	
11-18-04	ADDED GENERAL NOTE	
10-18-96	ADDED R55-1	
4-26-96	CORRECTED (G) 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	

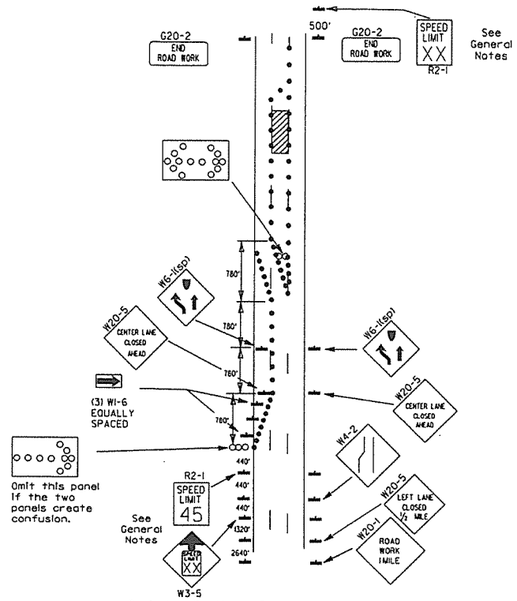
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

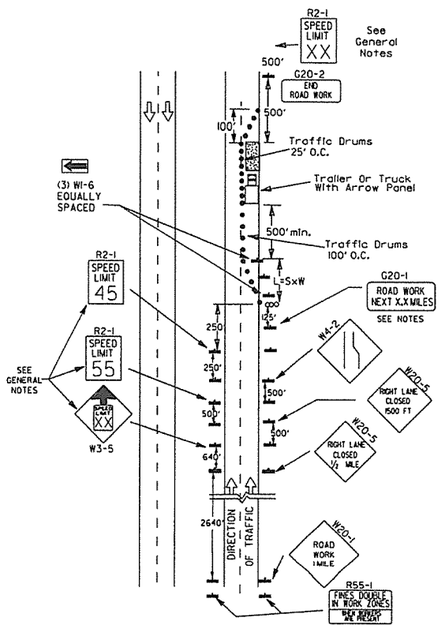
STANDARD DRAWING TC-2



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

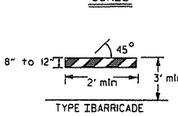
KEY:

- ooo Arrow Panel (If Required)
- ■ Channelizing Device
- ● Traffic drum

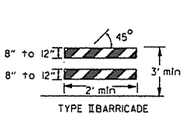
GENERAL NOTES:

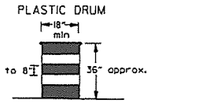
1. A speed limit reduction may be implemented ONLY when designated in the plan or when recommended by the Roadway Design Division.
2. When the existing speed limit is 55mph and the plans require a speed limit of 45mph, the R2-1(55) shall be omitted and the W3-5 shall be installed at that location. Additional 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.

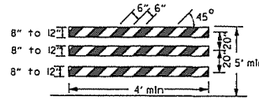
Channelizing devices

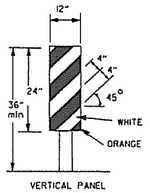


• When cones are used on freeways and multi-lane highways, they shall be 28" min. During hours of darkness, 28" cones shall be reflectorized in accordance with the M.U.T.C.D.









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

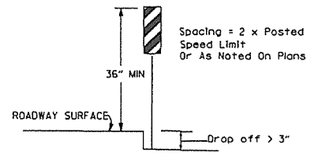
TRAFFIC CONTROL DEVICES FOR VERTICAL PAVEMENT DIFFERENTIALS

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

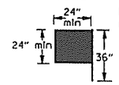
• When shown on the plans concrete barrier will be used.

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.

VERTICAL PANEL PLACEMENT

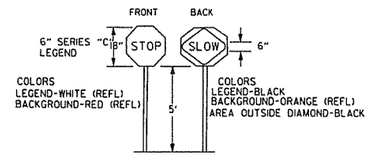


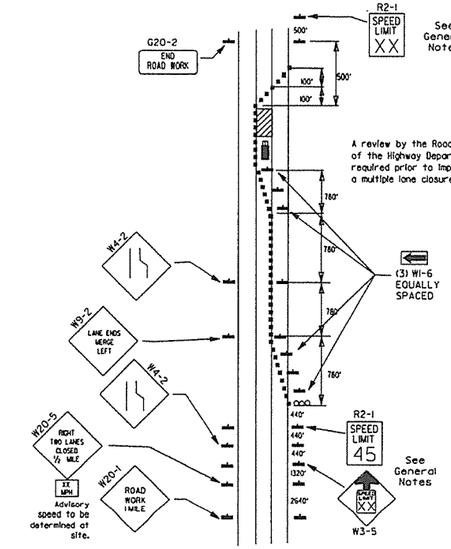
FLAG



Flag shall be of good grade red material

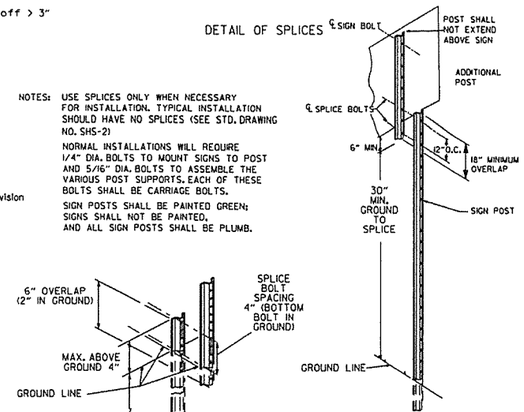
STOP SLOW PADDLE





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

DETAIL OF SPLICES



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

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

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

DATE	REVISION	FILMED
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	

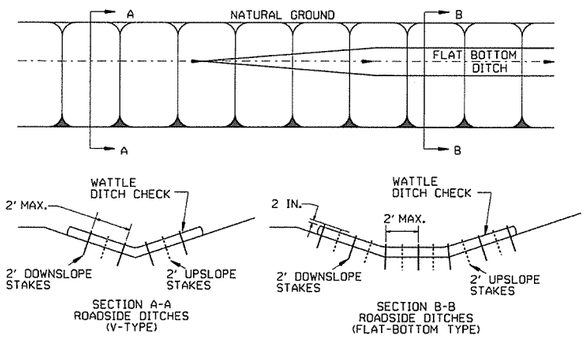
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

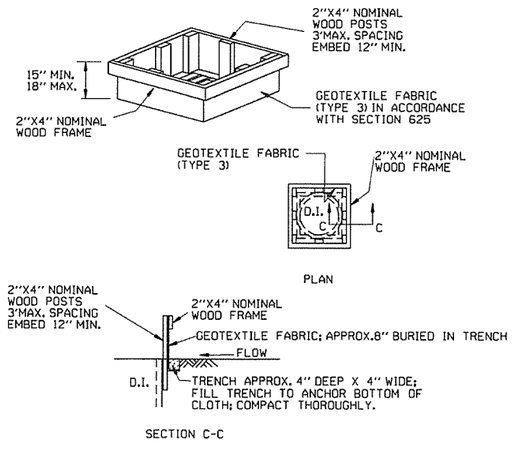
STANDARD DRAWING TC-3

GENERAL NOTES

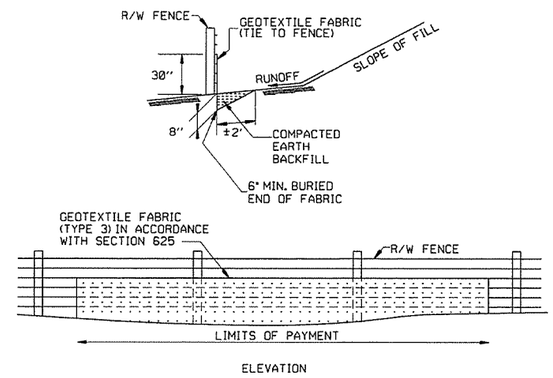
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.



WATTLE DITCH CHECK (E-1)



DROP INLET SILT FENCE (E-7)



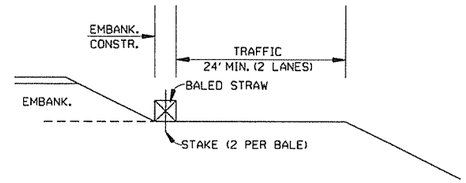
SILT FENCE ON R/W FENCE (E-4)

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.

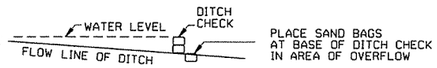
GENERAL NOTES

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.

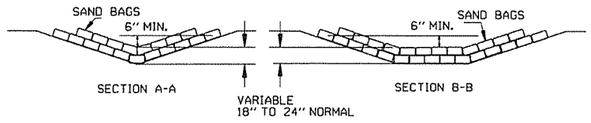


BALED STRAW FILTER BARRIER (E-2)

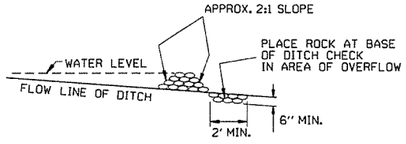
NUMBER OF SAND BAGS AND ARRANGEMENT VARIABLE WITH ON-SITE CONDITIONS.

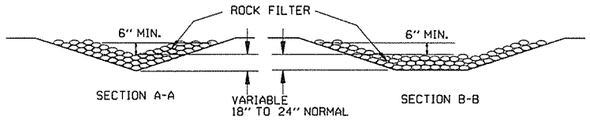


PLACE SAND BAGS AT BASE OF DITCH CHECK IN AREA OF OVERFLOW

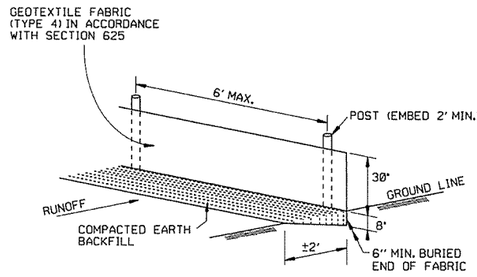


SAND BAG DITCH CHECK (E-5)





ROCK DITCH CHECK (E-6)



SILT FENCE (E-11)

GENERAL NOTES

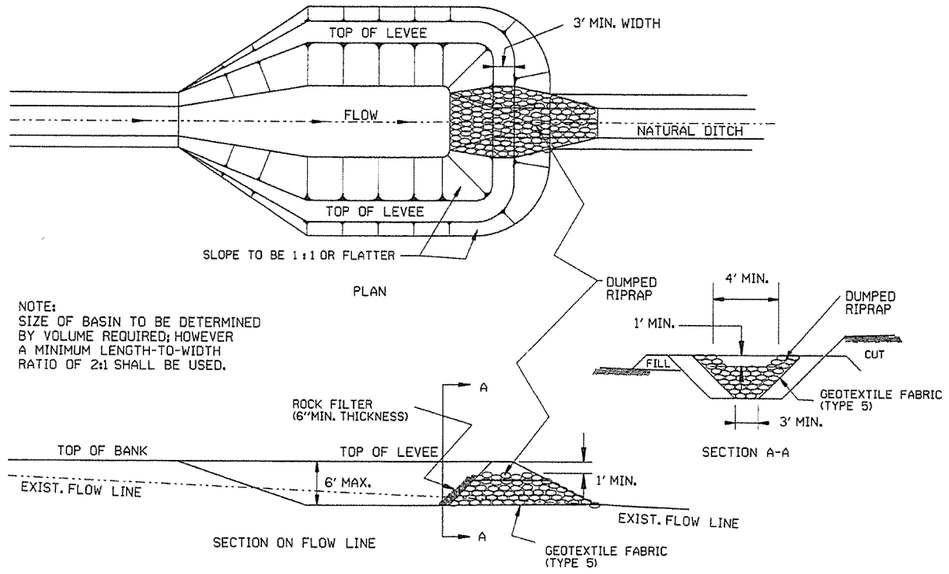
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

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

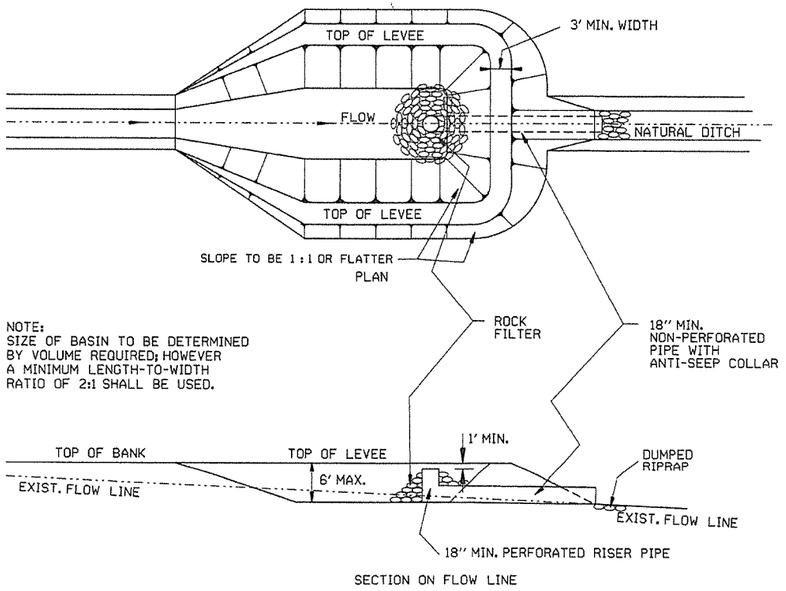
ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

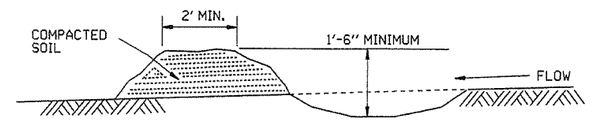
STANDARD DRAWING TEC-1



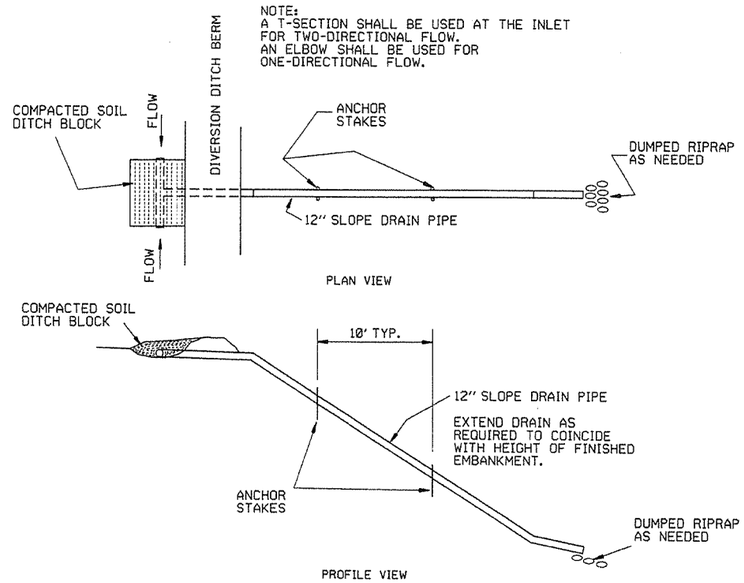
SEDIMENT BASIN WITH RIPRAP OUTLET (E-9)



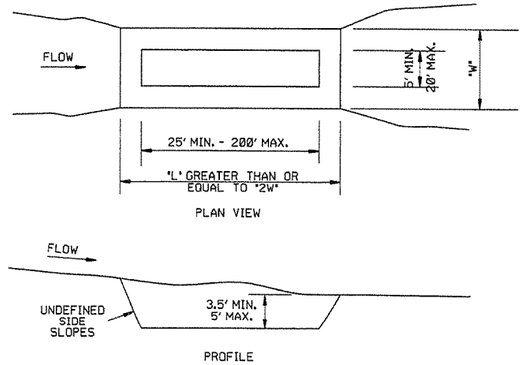
SEDIMENT BASIN WITH PIPE OUTLET (E-10)



DIVERSION DITCH (E-8)



SLOPE DRAIN (E-12)



SEDIMENT BASIN (E-14)

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

ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

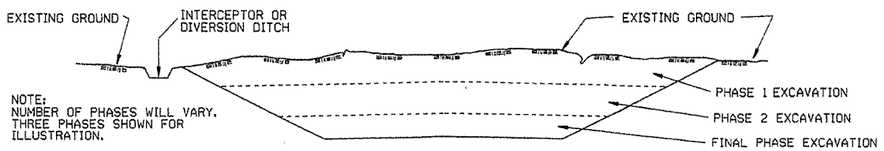
STANDARD DRAWING TEC-2

CLEARING AND GRUBBING

CONSTRUCTION SEQUENCE

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

EXCAVATION



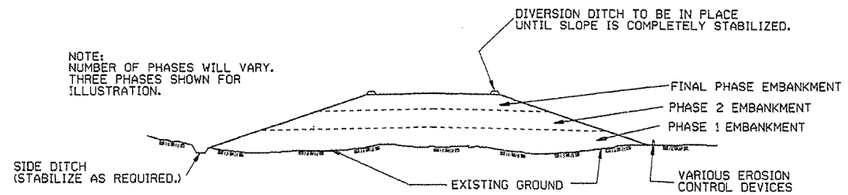
GENERAL NOTE

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

CONSTRUCTION SEQUENCE

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

EMBANKMENT



GENERAL NOTE

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

CONSTRUCTION SEQUENCE

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

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

ARKANSAS STATE HIGHWAY COMMISSION

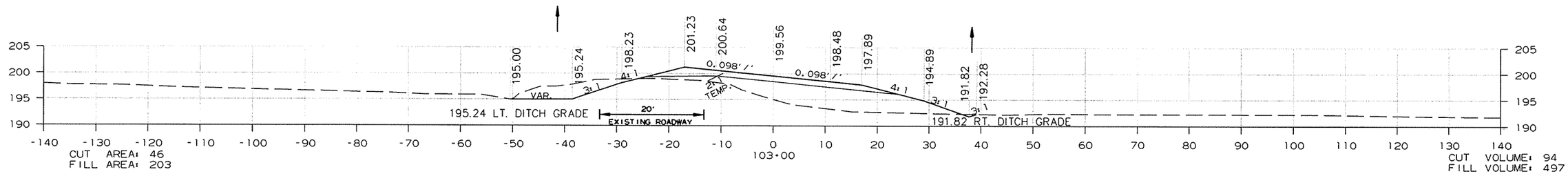
TEMPORARY EROSION CONTROL DEVICES

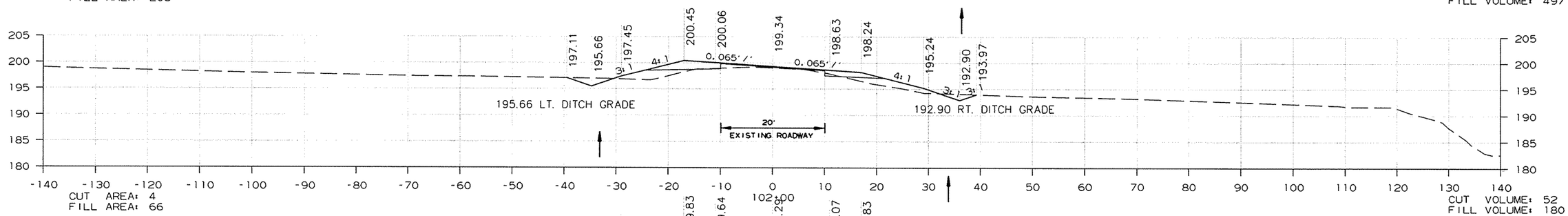
STANDARD DRAWING TEC-3

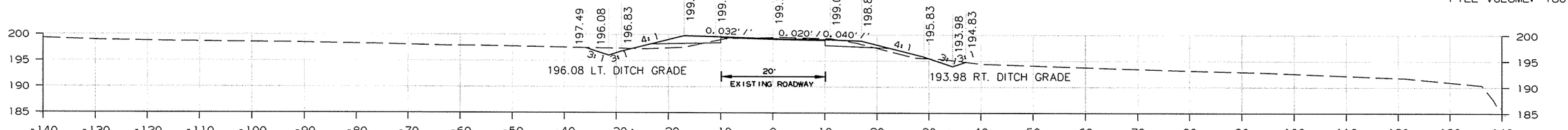
stdtec3.dgn

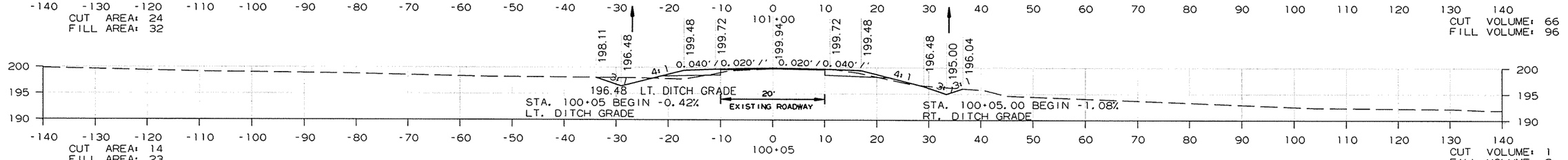
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110570	76	84

(2) CROSS SECTIONS

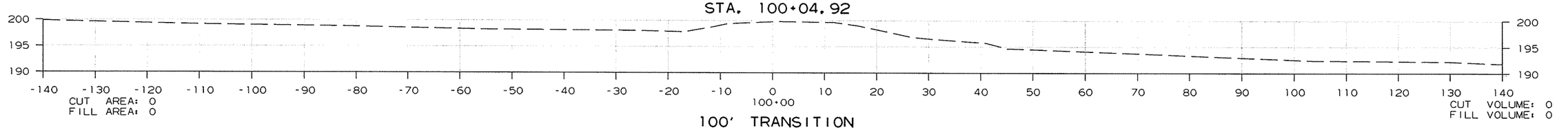








BEGIN JOB 110570
STA. 100+04.92



100' TRANSITION
STA. 99+04.92 TO STA. 100+04.92

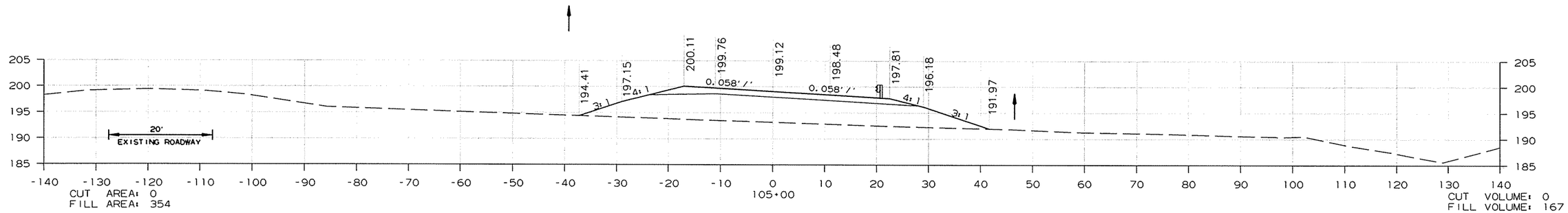
CROSS SECTION STA. 100+00 TO STA. 103+00

2/26/2015

R110570.DGN

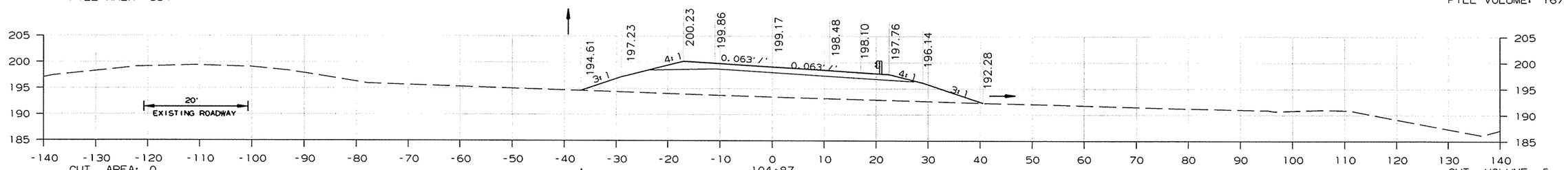
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110570	77	84

(2) CROSS SECTIONS



CUT AREA: 0
FILL AREA: 354

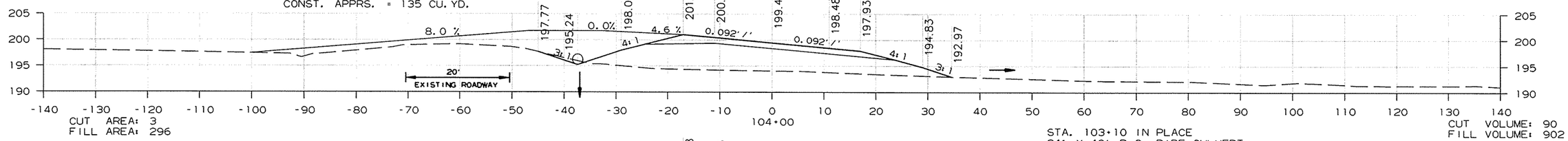
CUT VOLUME: 0
FILL VOLUME: 167



CUT AREA: 0
FILL AREA: 338

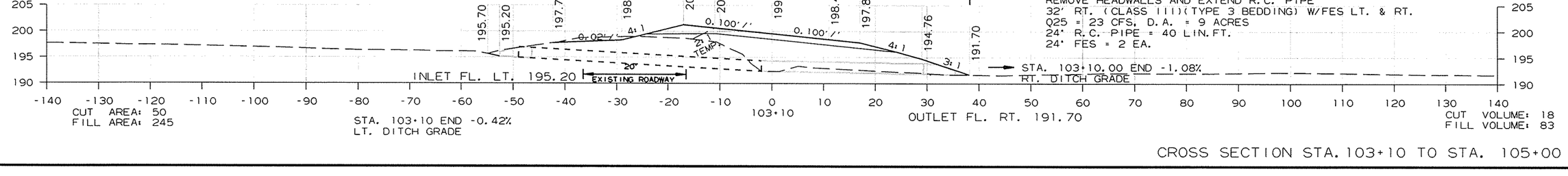
STA. 104+46 INSTALL
24" X 46' PIPE CULVERT
LT. SIDE DRAIN.
CONST. APPRS. = 135 CU. YD.

CUT VOLUME: 5
FILL VOLUME: 1022



CUT AREA: 3
FILL AREA: 296

CUT VOLUME: 90
FILL VOLUME: 902



CUT AREA: 50
FILL AREA: 245

STA. 103+10 END -0.42%
LT. DITCH GRADE

STA. 103+10 IN PLACE
24" X 49' R.C. PIPE CULVERT
W/ HEADWALLS LT. & RT.
REMOVE HEADWALLS AND EXTEND R.C. PIPE
32' RT. (CLASS III)(TYPE 3 BEDDING) W/FES LT. & RT.
Q25 = 23 CFS, D.A. = 9 ACRES
24" R.C. PIPE = 40 LIN.FT.
24" FES = 2 EA.

STA. 103+10.00 END -1.08%
RT. DITCH GRADE

OUTLET FL. RT. 191.70

CUT VOLUME: 18
FILL VOLUME: 83

CROSS SECTION STA. 103+10 TO STA. 105+00

2/26/2015

R110570.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.		110570	78	84

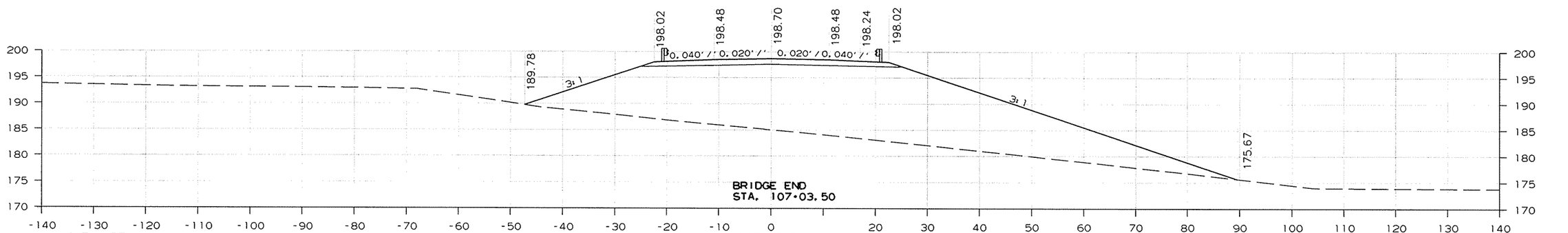
(2) CROSS SECTIONS

STA. 107+39 TO TOE

BR. END STA. 107+03.50
BRIDGE NO. 07303
30'-0" CLEAR ROADWAY
411'-0" TOTAL LENGTH
408'-0" CONTINUOUS COMPOSITE W-BEAM UNIT
(6 SPANS @ 68')
BRIDGE END STA. 111+14.50

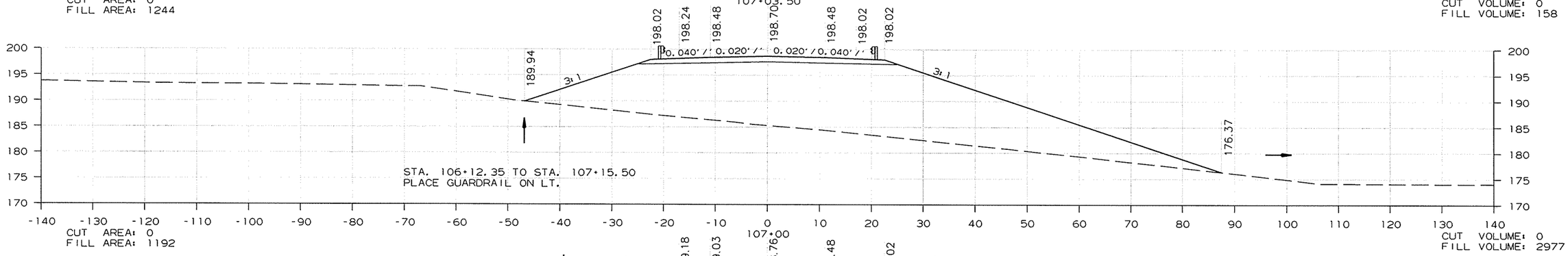
CUT AREA: 0
FILL AREA: 0

CUT VOLUME: 0
FILL VOLUME: 818



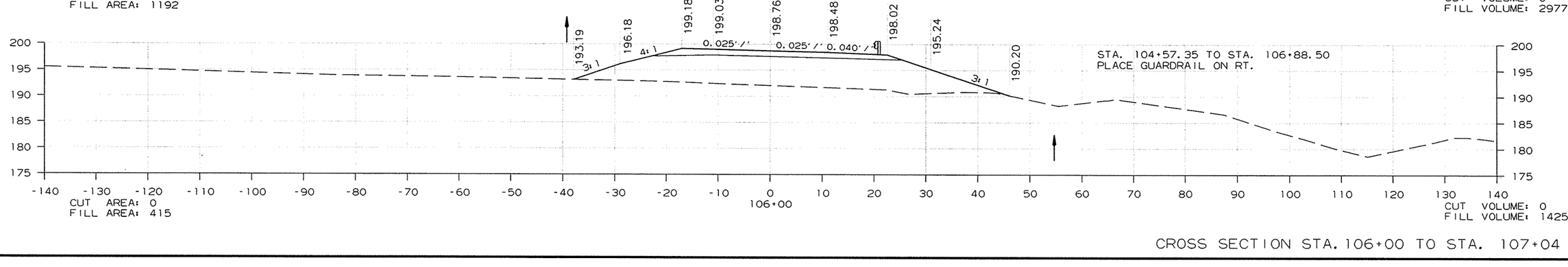
CUT AREA: 0
FILL AREA: 1244

CUT VOLUME: 0
FILL VOLUME: 158



CUT AREA: 0
FILL AREA: 1192

CUT VOLUME: 0
FILL VOLUME: 2977



CUT AREA: 0
FILL AREA: 415

CUT VOLUME: 0
FILL VOLUME: 1425

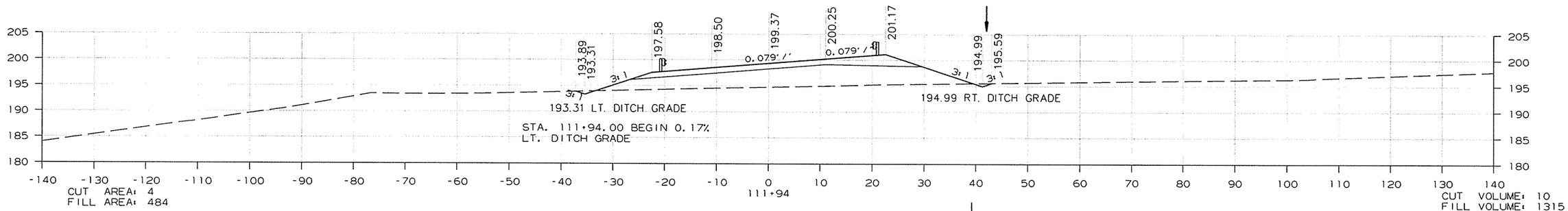
CROSS SECTION STA. 106+00 TO STA. 107+04

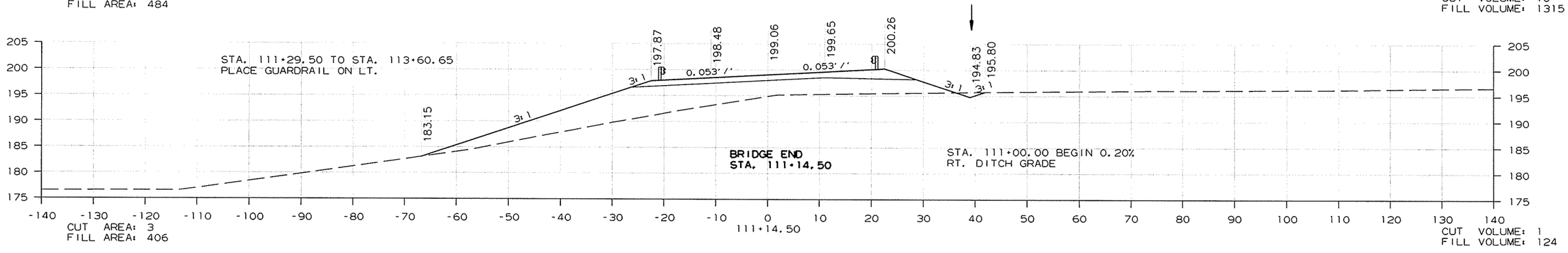
2/26/2015

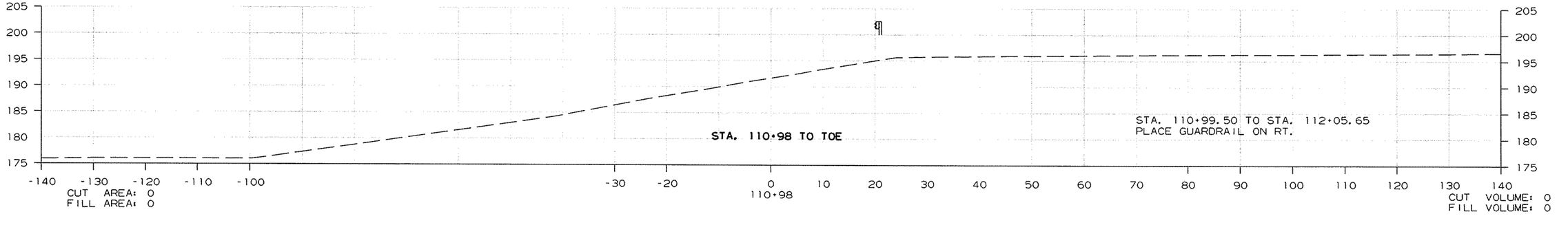
R110570.DGN

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.		110570	79	84

(2) CROSS SECTIONS







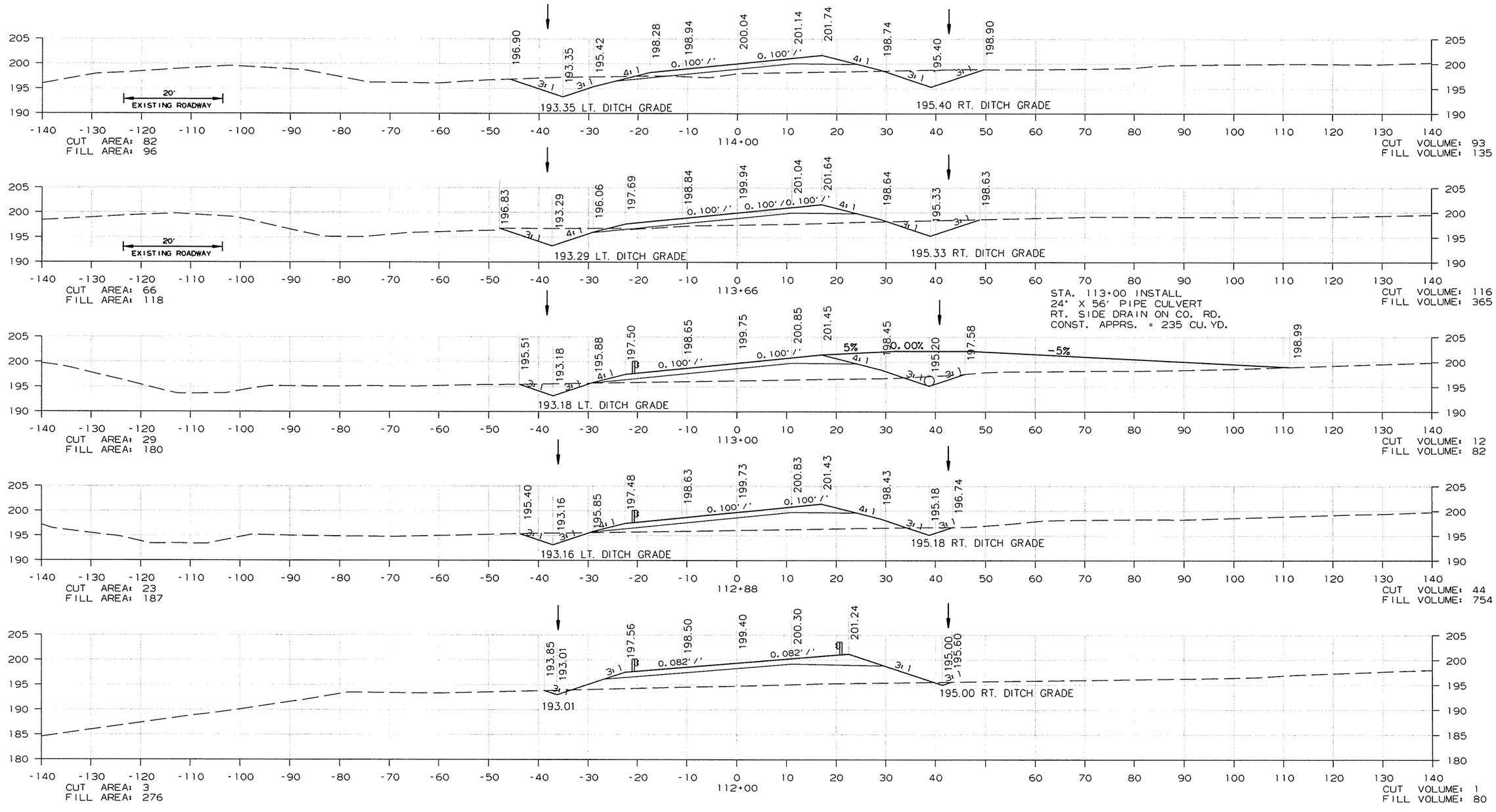
CROSS SECTION STA. 110+98 TO STA. 111+94

2/26/2015

R110570.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.		110570	80	84

(2) CROSS SECTIONS



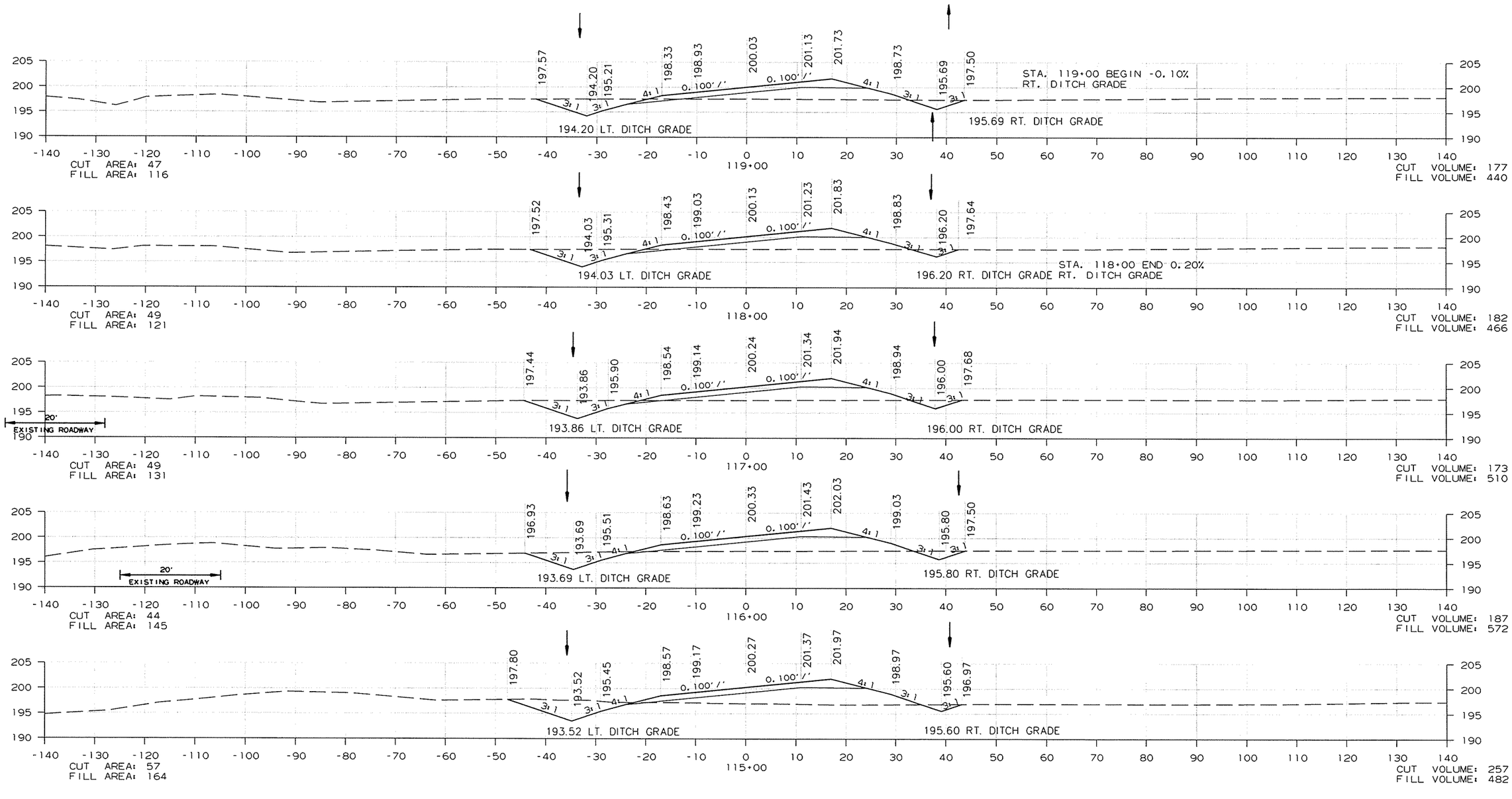
CROSS SECTION STA. 112+00 TO STA. 114+00

2/26/2015

R110570.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.		110570	81	84

(2) CROSS SECTIONS



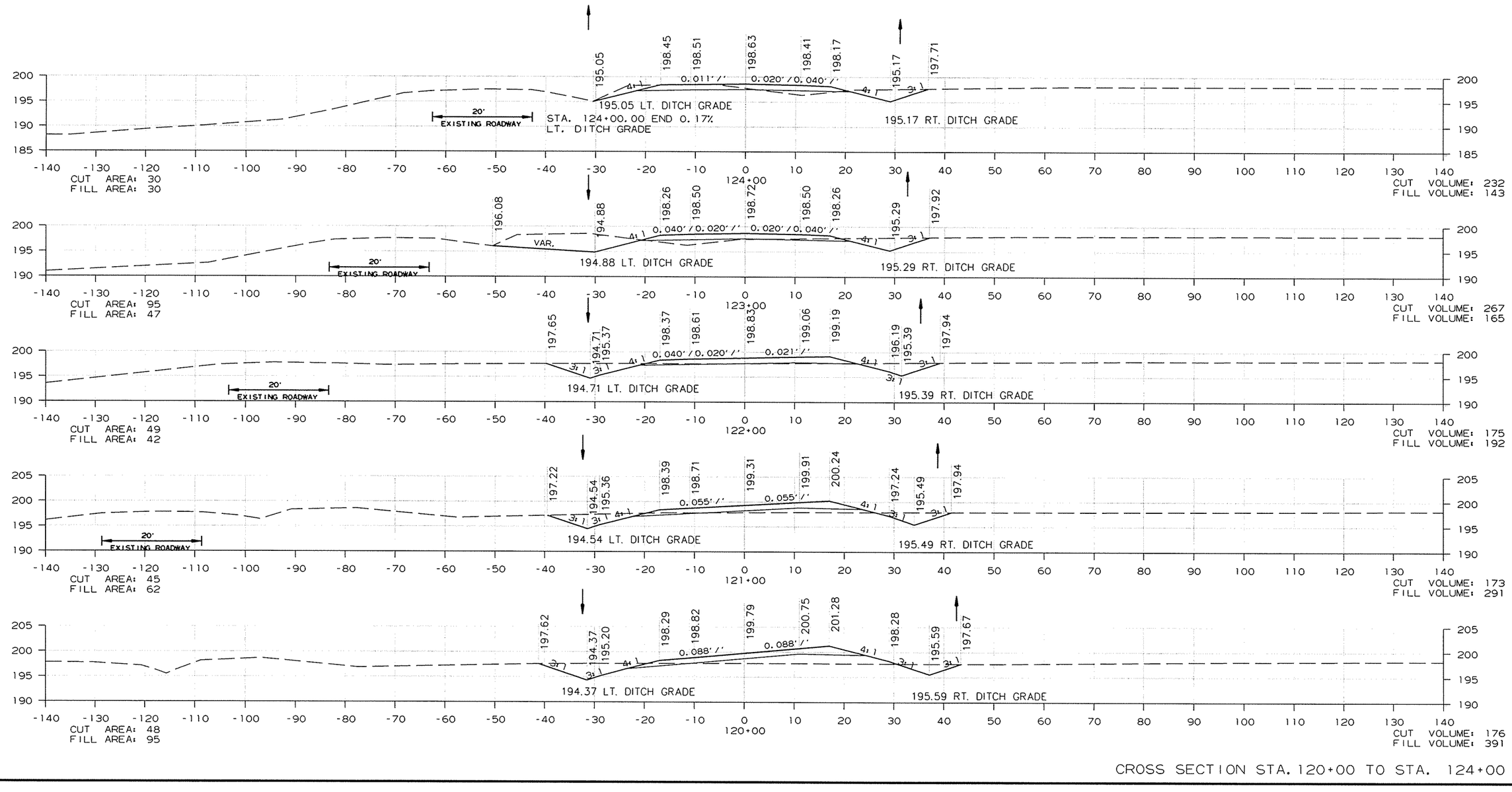
CROSS SECTION STA. 115+00 TO STA. 119+00

2/26/2015

R110570.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.		110570	82	84

(2) CROSS SECTIONS



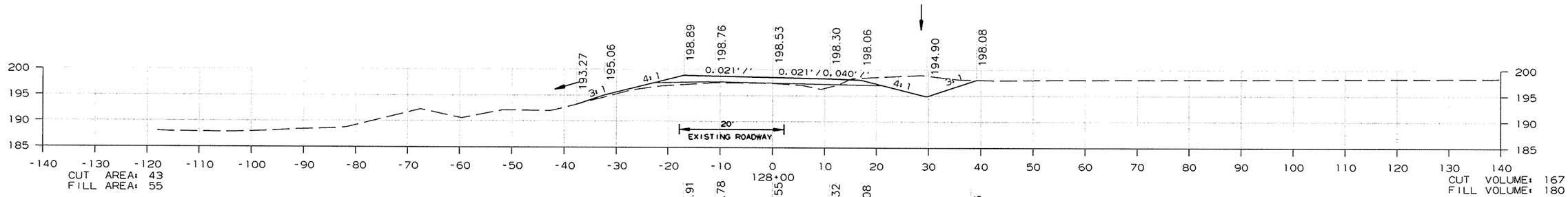
CROSS SECTION STA. 120+00 TO STA. 124+00

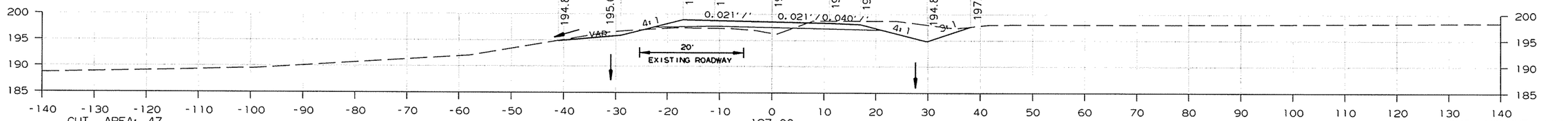
2/26/2015

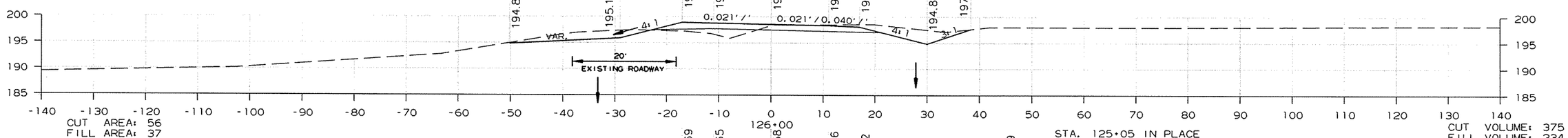
RI10570.DGN

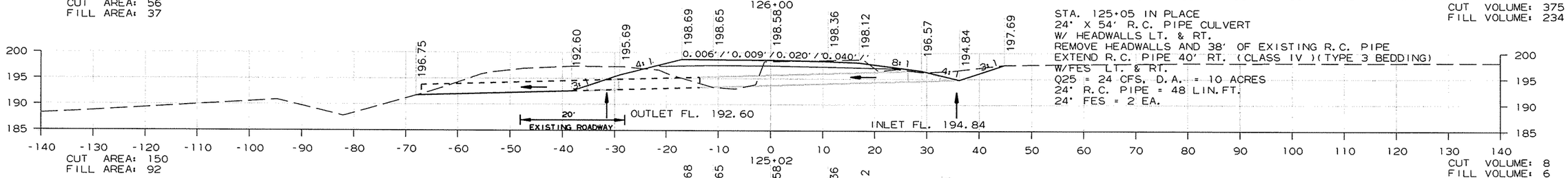
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110570	83	84

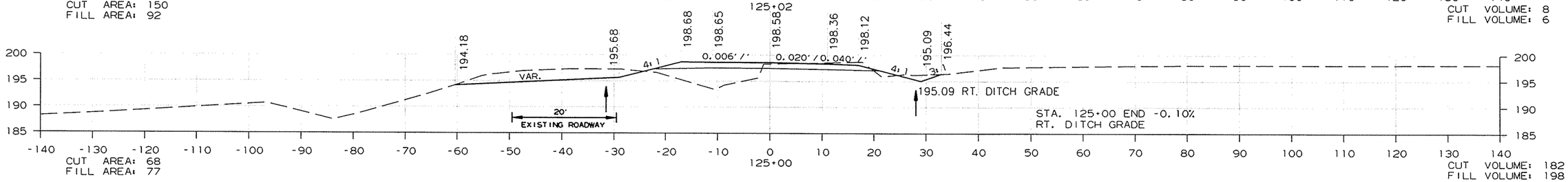
(2) CROSS SECTIONS











CROSS SECTION STA. 125+00 TO STA. 128+00

2/26/2015

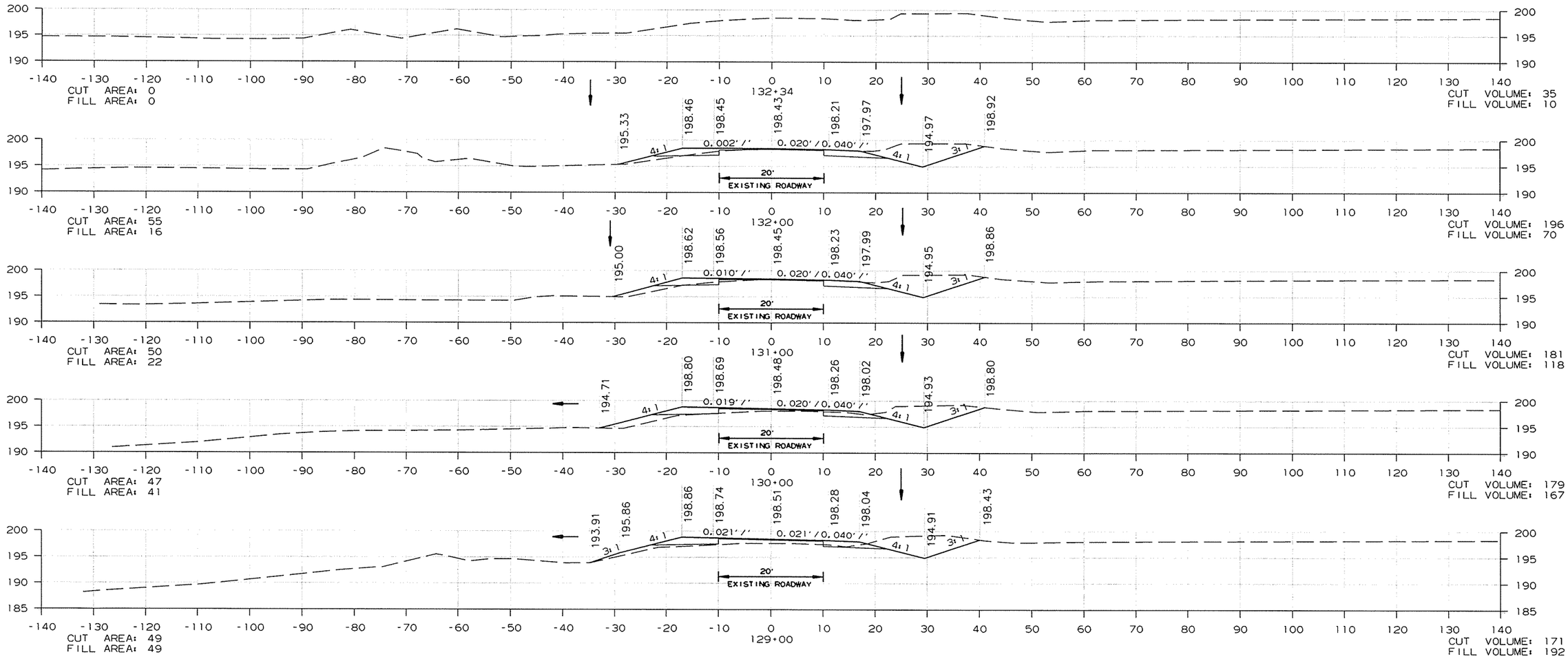
R110570.DGN

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.		110570	84	84

(2) CROSS SECTIONS

100' TRANSITION
STA. 132+21.10 TO STA. 133+21.10

END JOB 110570
STA. 132+21.10



CROSS SECTION STA. 129+00 TO STA. 132+34

2/26/2015

R110570.DGN