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.		070344	1	137
				(2)	GURDON-OAK GROVE STRS. & APPRS. (S)			

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

CONSTRUCTION PLANS FOR STATE HIGHWAY

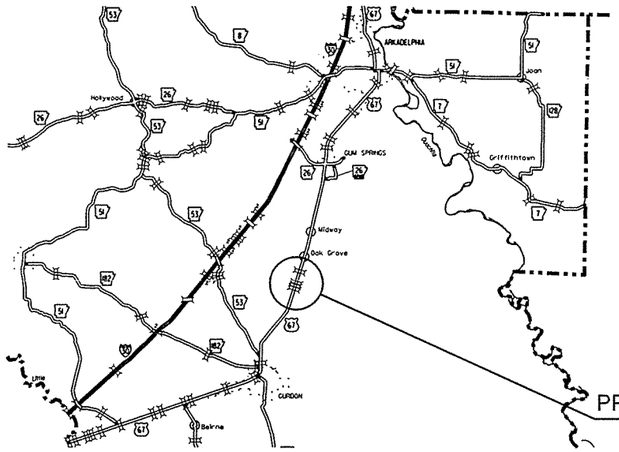
GURDON-OAK GROVE STRS. & APPRS. (S)

CLARK COUNTY

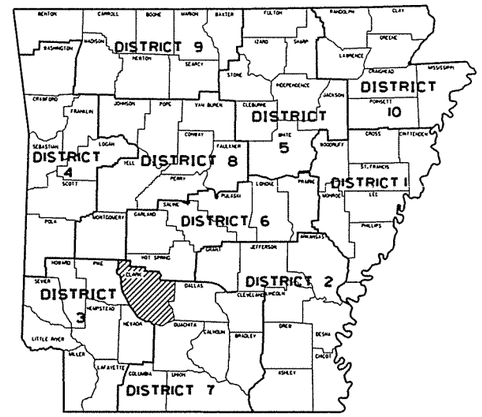
ROUTE 67 SECTION 5

JOB 070344

FED. AID PROJ. STPR-0010(33)



VICINITY MAP



ARK. HWY. DIST. NO. 7

NOT TO SCALE

BRIDGE DATA

(1) BR. END STA. 707+92.85
BRIDGE NO. 07326
40'-0" CLEAR ROADWAY
324'-0" TOTAL LENGTH
326'-3 11/16" CONT. COMP.
W-BEAM UNIT (72'-90'-90'-72)
BR. END STA. 711+19.15

(2) BR. END STA. 716+58.92
BRIDGE NO. 07327
40'-0" CLEAR ROADWAY
240'-2" TOTAL LENGTH
238'-0" CONT. COMP.
W-BEAM UNIT (52'-67'-67'-52')
BR. END STA. 718+99.08

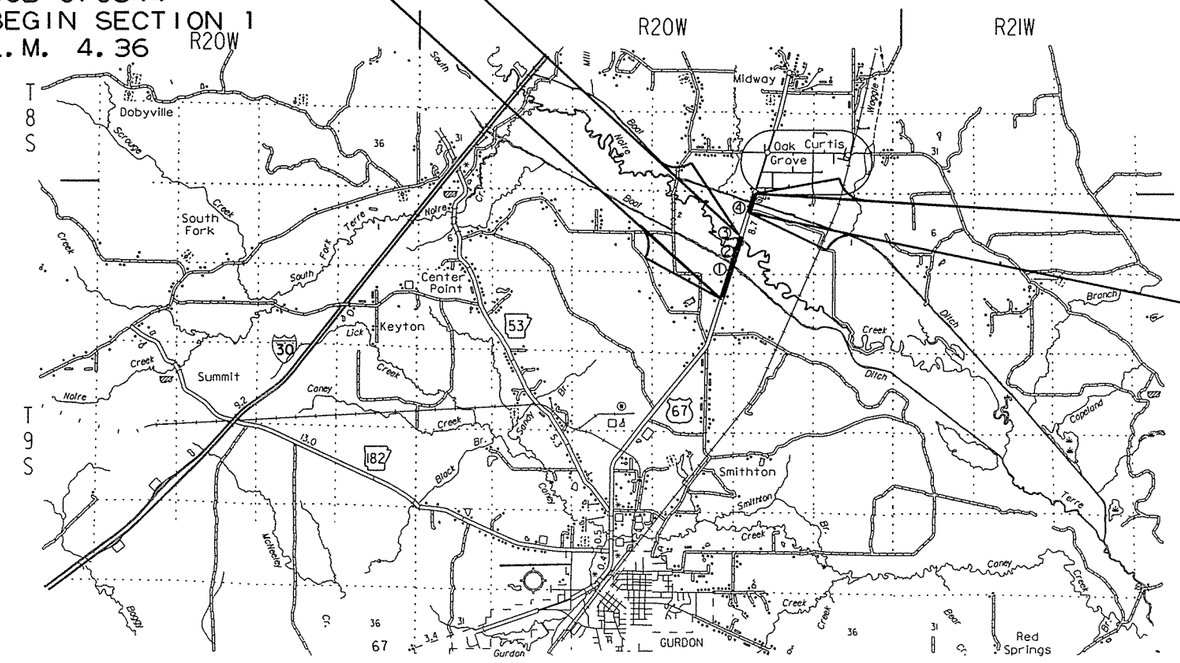
(3) BR. END STA. 724+04.85
BRIDGE NO. 07328
40'-0" CLEAR ROADWAY
207'-9 5/8" TOTAL LENGTH
205'-6" CONT. COMP.
W-BEAM UNIT (70'-65.5'-70')
BR. END STA. 726+12.65

(4) BR. END STA. 753+09.92
BRIDGE NO. 07329
40'-0" CLEAR ROADWAY
202'-2" TOTAL LENGTH
200'-0" CONT. COMP.
W-BEAM UNIT (63'-74'-63')
BR. END STA. 755+12.08

BEGINNING:		
LAT:	N33° 58'	35"
LONG:	W93° 07'	29"
MID POINT:		
LAT:	N33° 58'	53"
LONG:	W93° 07'	22"
ENDING:		
LAT:	N33° 59'	25"
LONG:	W93° 07'	09"

STA. 729+00.00 - END
SECTION 1

STA. 705+00.00 - BEGIN
JOB 070344
BEGIN SECTION 1
L.M. 4.36



• DESIGN TRAFFIC DATA •

DESIGN YEAR	2034
2014 ADT	4,000
2034 ADT	5,200
2034 DHV	572
DIRECTIONAL DISTRIBUTION	60%
TRUCKS	12%
DESIGN SPEED	60 MPH

STA. 758+00.00 - END
SECTION 2
JOB 070344
STA. 752+00.00 - BEGIN
SECTION 2
L.M. 5.26

GROSS LENGTH OF PROJECT	3000.00	FEET OR	0.568 MILES
NET " " ROADWAY	2023.58	"	0.383 "
NET " " BRIDGES	976.42	"	0.185 "
NET " " PROJECT	3000.00	"	0.568 "

P.E. 070344

N

APPROVED

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 4215
RALPH J. HALL

10-10-14

DEPUTY DIRECTOR AND CHIEF ENGINEER

9/12/2014

R070344.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.		070344	2	137

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

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
11-14-14

INDEX OF SHEETS

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2	INDEX OF SHEETS, GOVERNING SPECIFICATIONS, AND GENERAL NOTES			
3-4	TYPICAL SECTIONS OF IMPROVEMENT			
5-6	SPECIAL DETAILS			
7-15	TEMPORARY EROSION CONTROL DETAILS			
16-25	MAINTENANCE OF TRAFFIC DETAILS			
26-27	PERMANENT PAVEMENT MARKING DETAILS			
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49	LAYOUT OF BRIDGE OVER SOUTH BOAT DITCH SHEET 2 OF 2	07326	56064	
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98	STANDARD DETAILS FOR PERMANENT STEEL BRIDGE DECK FORMS FOR STEEL & CONCRETE GIRDERS SPANS		55005	02/27/14
99	STANDARD DETAILS FOR TYPE D BRIDGE NAME PLATE		55010	02/27/14
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128-137	CROSS SECTIONS			

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	SUPLLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - FEDERAL STANDARDS
FHWA-1273	SUPLLEMENT - TRAINING PROGRAM - JOB 070344
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
620-1	MULCH COVER
JOB 070344	BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB 070344	BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB 070344	CONSTRUCTION IN SPECIAL FLOOD HAZARD AREAS
JOB 070344	DRILLED SHAFT FOUNDATIONS
JOB 070344	GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
JOB 070344	HIGH PERFORMANCE PAVEMENT MARKING
JOB 070344	MANDATORY USE OF INTERNET BIDDING
JOB 070344	NESTING SITES OF MIGRATORY BIRDS
JOB 070344	NONDESTRUCTIVE TESTING OF DRILLED SHAFTS
JOB 070344	PARTNERING REQUIREMENTS
JOB 070344	PLASTIC PIPE
JOB 070344	PRE-BID ON SITE INVESTIGATION OF SOIL CONDITIONS
JOB 070344	REMOVAL AND DISPOSAL OF GUARDRAIL
JOB 070344	SECTION 404 NATIONWIDE 23 PERMIT REQUIREMENTS
JOB 070344	SHORING
JOB 070344	SOIL STABLIZATION
JOB 070344	STORM WATER POLLUTION PREVENTION PLAN
JOB 070344	SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB 070344	UTILITY ADJUSTMENTS
JOB 070344	VALUE ENGINEERING
JOB 070344	WARM MIX ASPHALT

GENERAL NOTES

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

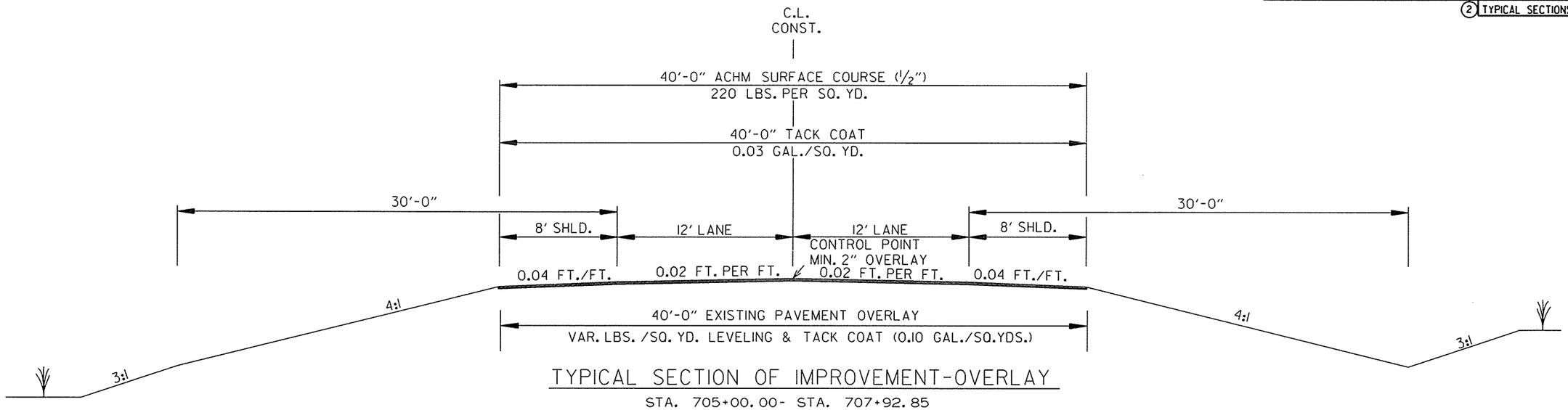
9/24/2014

R070344.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.		070344	3	137

(2) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-10-14



TYPICAL SECTION OF IMPROVEMENT-OVERLAY

STA. 705+00.00- STA. 707+92.85
STA. 711+19.15- STA. 716+58.92
STA. 718+99.08- STA. 724+04.85
STA. 726+12.65- STA. 729+00.00
STA. 752+00.00- STA. 753+09.92
STA. 755+12.08- STA. 758+00.00

NOTES:

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

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

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

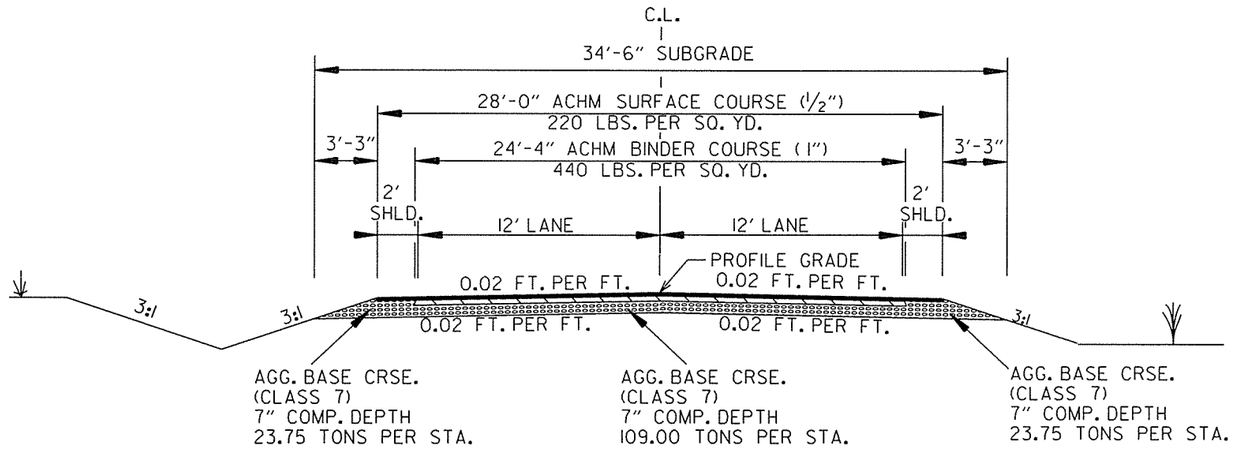
AFTER PLACING FINAL 2" OF SURFACE COURSE, THE EXISTING SLOPE SHALL BE REDRESSED AS DIRECTED BY THE ENGINEER PRIOR TO SEEDING IN ORDER TO MAINTAIN A UNIFORM SLOPE. PAYMENT FOR THIS WORK SHALL BE INCLUDED IN THE PRICE BID FOR VARIOUS CONTRACT ITEMS.

r070344.dgn 9/12/2014

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.		070344	4	137

(2) TYPICAL SECTIONS OF IMPROVEMENT



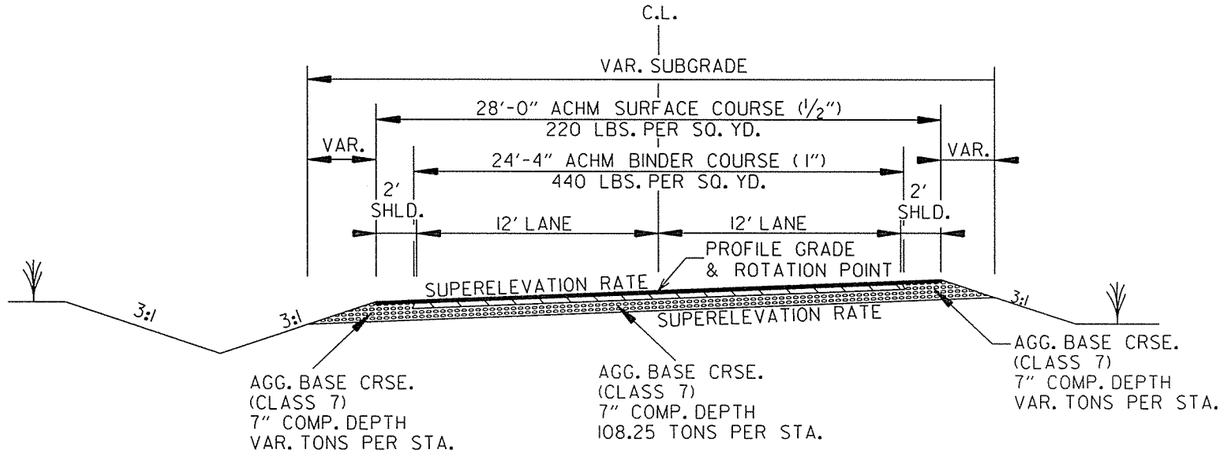
TYPICAL SECTION OF IMPROVEMENT
DETOUR RD.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-10-14

NOTES:

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

THE 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.



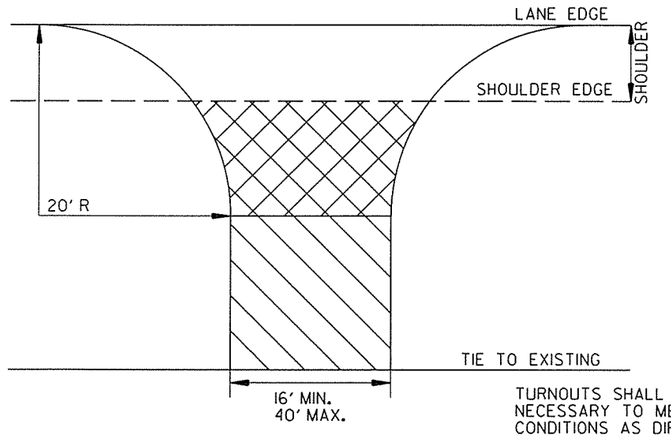
TYPICAL SECTION OF IMPROVEMENT
DETOUR RD. - SUPERELEVATION

r080379.dgn 9/12/2014

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.		070344	5	137

(2) SPECIAL DETAILS

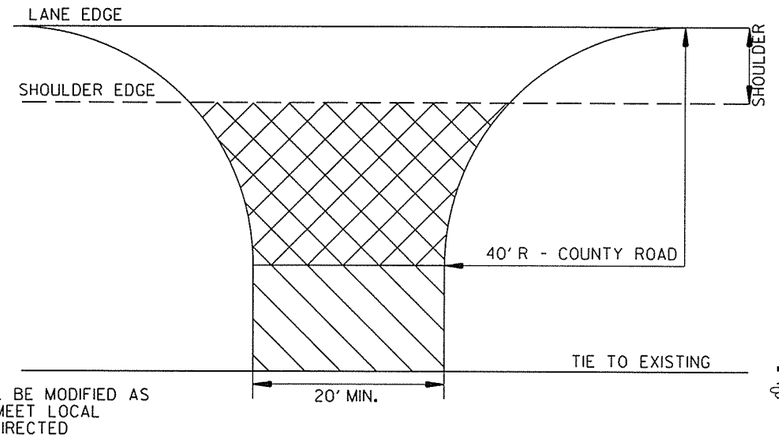


TURNOUTS SHALL BE MODIFIED AS NECESSARY TO MEET LOCAL CONDITIONS AS DIRECTED BY THE ENGINEER.

▨ A.C.H.M. SURFACE COURSE (1/2") (220 LBS./SQ. YD.) & AGGREGATE BASE COURSE (CLASS 7)(7" COMP. DEPTH) IF ASPHALT DRIVEWAY EXISTS OR 6" CONCRETE - IF CONCRETE DRIVEWAY EXISTS.

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

DETAIL FOR DRIVEWAY TURNOUTS (COLLECTORS)

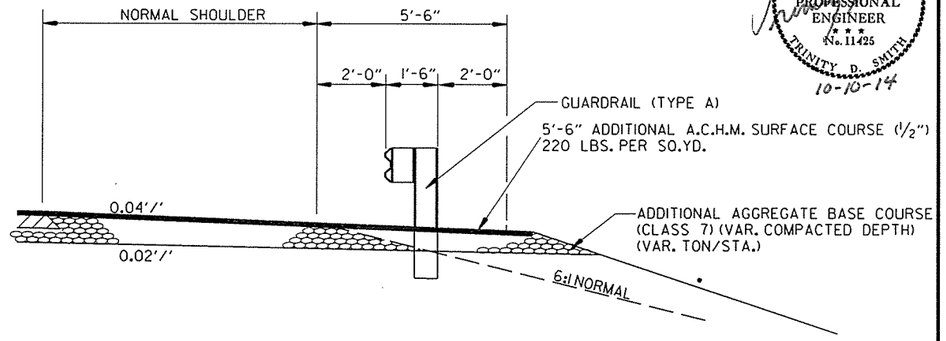


▨ A.C.H.M. SURFACE COURSE (1/2") (220 LBS./SQ. YD.) & AGGREGATE BASE COURSE (CLASS 7)(7" COMP. DEPTH).

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

NOTE: REFER TO PLAN SHEETS FOR WIDTHS OF COUNTY ROADS.

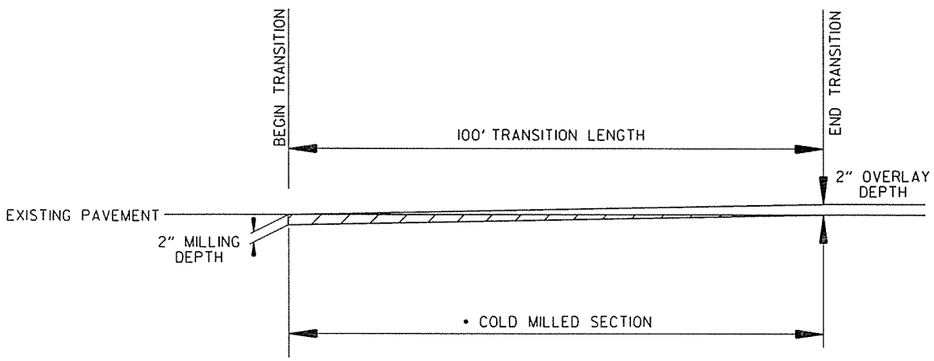
DETAIL FOR COUNTY ROAD TURNOUTS



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

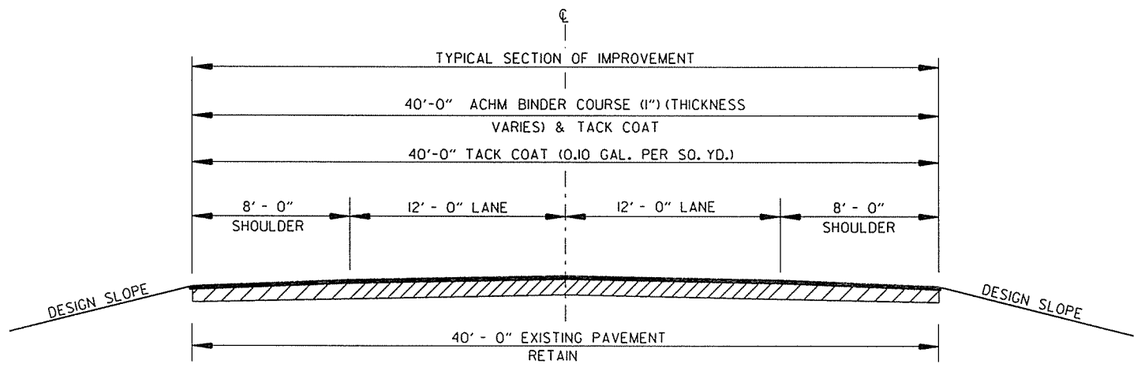
WIDENING FOR GUARDRAIL DETAIL

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-10-14



DETAIL SHOWING TAPER TO EXISTING PAVEMENT

• TO BE USED AS DIRECTED BY THE ENGINEER



METHOD OF RAISING GRADE

NOTES:
(1) THIS DETAIL TO BE USED ONLY WHERE DIRECTED BY THE ENGINEER.
(2) QUANTITIES FOR METHOD OF GRADE RAISE USING ASPHALT WERE CALCULATED ON THIS PROJECT AT LOCATIONS WHERE THE DISTANCE BETWEEN THE EXISTING ASPHALT ROADWAY AND THE PROPOSED SUBGRADE WAS ONE FOOT OR LESS.
(3) IN LOCATIONS WHERE THE DISTANCE BETWEEN THE PROPOSED SUBGRADE AND THE EXISTING ASPHALT ROADWAY IS MORE THAN ONE FOOT, SCARIFICATION OF THE EXISTING ASPHALT ROADWAY WILL BE REQUIRED AS STATED IN SECTION 210, SUBSECTION 210.09 OF THE STANDARD SPECIFICATIONS, EDITION OF 2014.

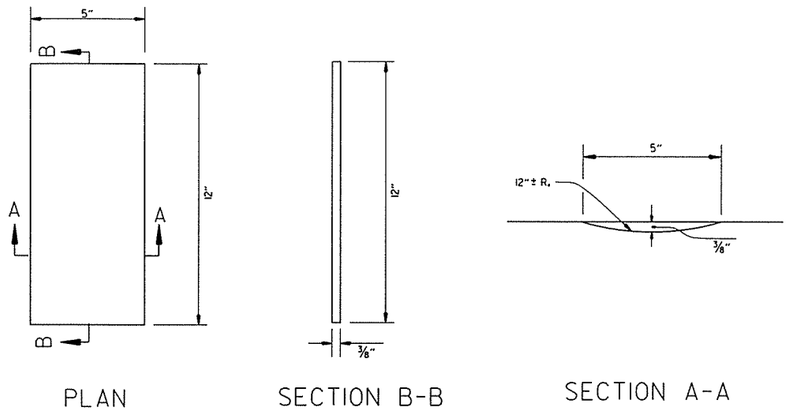
SPECIAL DETAILS

r080379.dgn 4/21/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070344	6	137

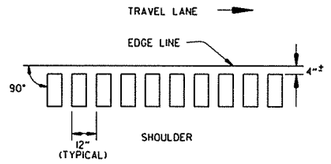
(2) SPECIAL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-10-14

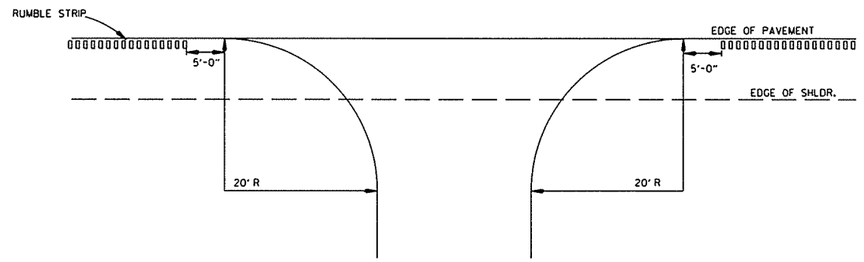


PLAN SECTION B-B SECTION A-A

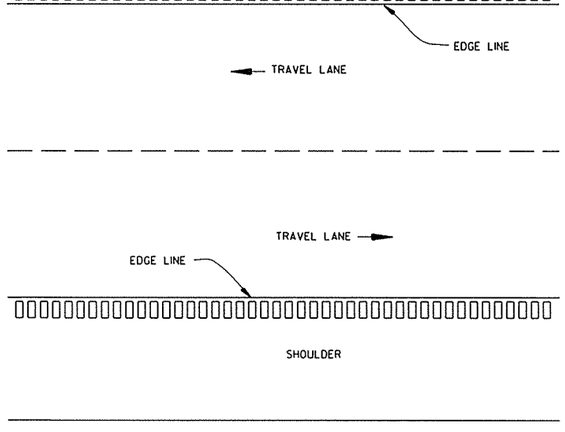
DETAILS OF RUMBLE STRIPS



LOCATION PLAN OF RUMBLE STRIPS
LEFT OR RIGHT SHOULDER



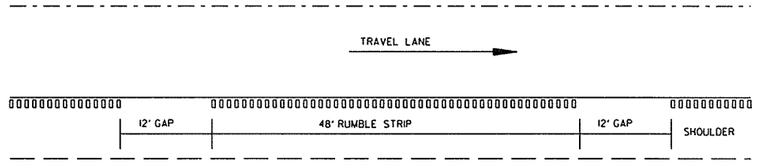
DETAIL FOR RUMBLE STRIP GAP
AT DRIVEWAY TURNOUTS



PLAN VIEW

GENERAL NOTES

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



DETAIL FOR GAP PATTERN RUMBLE STRIP

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

9/12/2014

R070344.DGN

SPECIAL DETAILS

EROSION CONTROL GENERAL NOTES

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

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

P.C. = 305+16.47
P.I. = 306+02.54
P.T. = 306+88.08
Δ = 11°09' 15.8" LT.
D = 6°30' 00.0"
T = 86.08'
L = 171.61'
e = 0.100'/'
Ls = 350.00

EROSION CONTROL QUANTITIES - STAGE 1

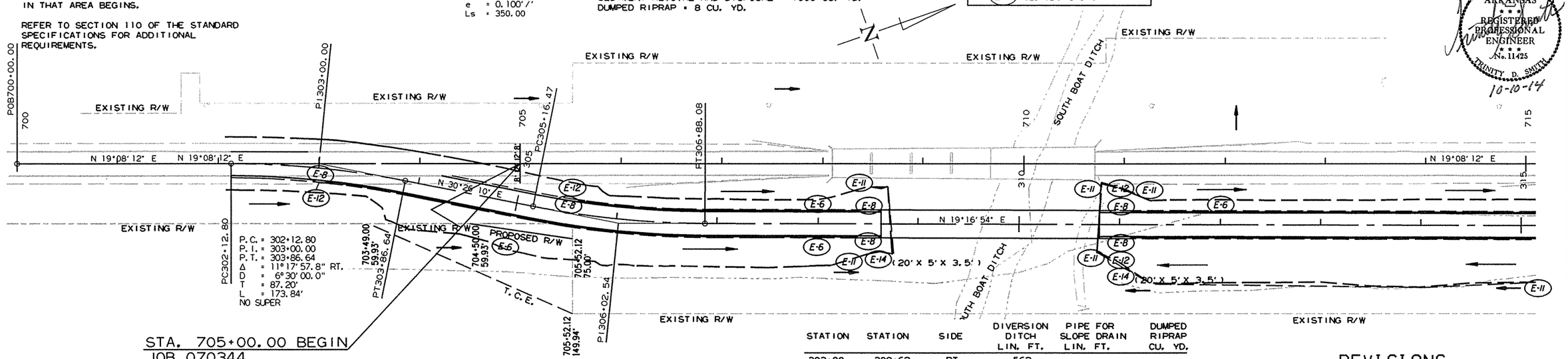
ROCK DITCH CHECKS (E-6) = 42 CU. YD.
DIVERSION DITCH (E-8) = 5046 LIN. FT.
SILT FENCE (E-11) = 2218 LIN. FT.
PIPE FOR SLOPE DRAIN (E-12) = 167 LIN. FT.
SEDIMENT BASIN (E-14) = 80 CU. YD.
OBLITERATION OF SEDIMENT BASIN = 80 CU. YD.
SEDIMENT REMOVAL AND DISPOSAL = 1000 CU. YD.
DUMPED RIPRAP = 8 CU. YD.

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

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070344	7	137

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-10-14



P.C. = 302+12.80
P.I. = 303+00.00
P.T. = 303+86.64
Δ = 11°17' 57.8" RT.
D = 6°30' 00.0"
T = 87.20'
L = 173.84'
NO SUPER

STA. 705+00.00 BEGIN
JOB 070344
BEGIN SECTION 1
L.M. 4.36

ROCK DITCH CHECK (E-6)	SIDE	CU. YD.
STA. 305+00	RT.	3
STA. 308+00	LT.	3
STA. 308+00	RT.	3
STA. 312+00	LT.	3
STA. 316+00	LT.	3
STA. 320+00	LT.	3
STA. 323+00	LT.	3
STA. 327+50	LT.	3

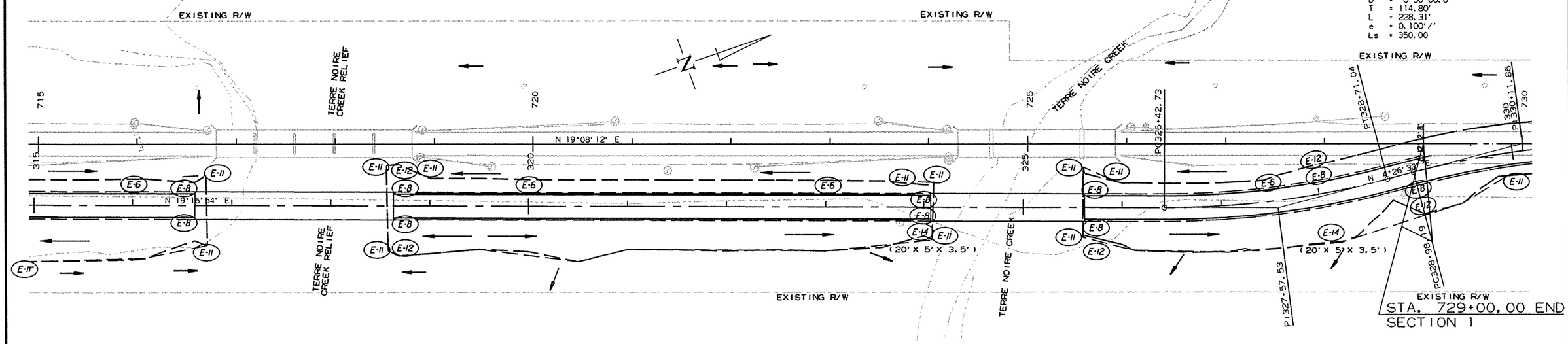
SILT FENCE (E-11)	SIDE	LIN. FT.
STA. 308+40 - STA. 308+73		120
STA. 310+78 - STA. 316+75	RT.	827
STA. 318+56 - STA. 324+10	RT.	760
STA. 325+60 - STA. 330+00	RT.	556

SEDIMENT BASIN (E-14)	SIDE	CU. YD.
STA. 308+40 - STA. 308+60	RT.	16
STA. 311+00 - STA. 311+20	RT.	16
STA. 323+80 - STA. 324+00	RT.	16
STA. 327+90 - STA. 328+10	RT.	16

STATION	STATION	SIDE	DIVERSION DITCH LIN. FT.	PIPE FOR SLOPE DRAIN LIN. FT.	DUMPED RIPRAP CU. YD.
303+00	308+62	RT.	562		
303+00		RT.		34	1
305+50	308+62	LT.	312		
305+50		LT.		11	1
311+00	316+60	LT.	560		
311+00	316+60	RT.	560		
311+00		LT.		10	1
311+00		RT.		47	1
318+75	324+00	LT.	525		
318+75	324+00	RT.	525		
318+75		LT.		15	1
318+75		RT.		36	1
325+70	328+00	LT.	230		
325+70	329+00	RT.	330		
325+70		LT.		11	1
325+70		RT.		36	1
328+00		LT.		5	1
329+00		RT.		32	1

REVISIONS

DATE	REVISION

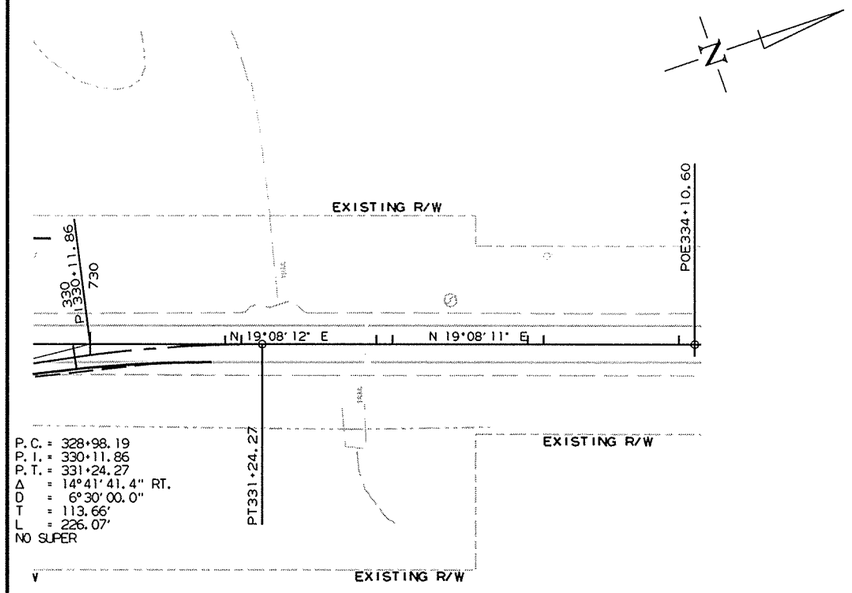


P.C. = 327+57.53
P.I. = 327+57.53
P.T. = 328+98.19
Δ = 14°50' 24.3" LT.
D = 6°30' 00.0"
T = 114.80'
L = 228.31'
e = 0.100'/'
Ls = 350.00

STA. 729+00.00 END
SECTION 1

STAGE 1
TEMPORARY EROSION CONTROL DETAILS

7/14/2014
R070344.DGN



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

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070344	8	137

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-10-14

REVISIONS

DATE	REVISION

STAGE 1
TEMPORARY EROSION CONTROL DETAILS

ZBORDER.CEL 11/8/2011

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

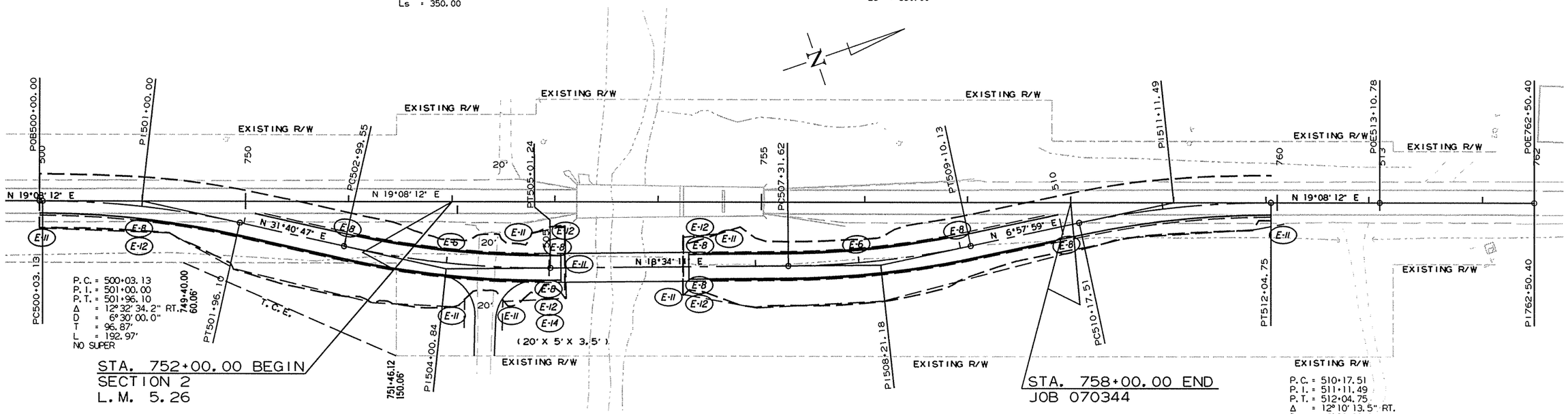
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070344	9	137

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-10-14

P. C. = 502+99.55
P. I. = 504+00.84
P. T. = 505+01.24
Δ = 13°06' 35.8" LT.
D = 6°30' 00.0"
T = 101.29'
L = 201.69'
e = 0.100'/'
Ls = 350.00

P. C. = 507+31.62
P. I. = 508+21.18
P. T. = 509+10.13
Δ = 11°36' 11.8" LT.
D = 6°30' 00.0"
T = 89.56'
L = 178.51'
e = 0.100'/'
Ls = 350.00



STA. 752+00.00 BEGIN
SECTION 2
L.M. 5.26

STA. 758+00.00 END
JOB 070344

SILT FENCE (E-11)	SIDE	LIN. FT.
STA. 500+00 - STA. 504+15	RT.	430
STA. 504+40 - STA. 505+15	RT.	192
STA. 506+30 - STA. 512+00	RT.	665

ROCK DITCH CHECK (E-6)	SIDE	CU. YD.
STA. 308+00	LT.	3
STA. 312+00	LT.	3
STA. 316+00	LT.	3
STA. 320+00	LT.	3
STA. 323+00	LT.	3
STA. 327+50	LT.	3

STATION	STATION	SIDE	DIVERSION DITCH LIN. FT.	PIPE FOR SLOPE DRAIN LIN. FT.	DUMPED RIPRAP CU. YD.
501+00	505+00	RT.	400		
501+00		RT.		34	1
503+00	505+00	LT.	200		
505+00		LT.		10	1
505+00		RT.		26	1
506+50	510+00	RT.	350		
506+50	509+00	LT.	250		
505+00		RT.		26	1
505+00		LT.		10	1

REVISIONS

DATE	REVISION

11/8/2011

ZBORDER.CEL

STAGE 1
TEMPORARY EROSION CONTROL DETAILS

EROSION CONTROL GENERAL NOTES

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

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

EROSION CONTROL QUANTITIES - STAGE 2

ROCK DITCH CHECKS (E-6) = 30 CU. YD.
SILT FENCE (E-11) = 2218 LIN. FT.
SEDIMENT BASIN (E-14) = 80 CU. YD.
OBLITERATION OF SEDIMENT BASIN = 80 CU. YD.
SEDIMENT REMOVAL AND DISPOSAL = 1000 CU. YD.
DUMPED RIPRAP = 8 CU. YD.

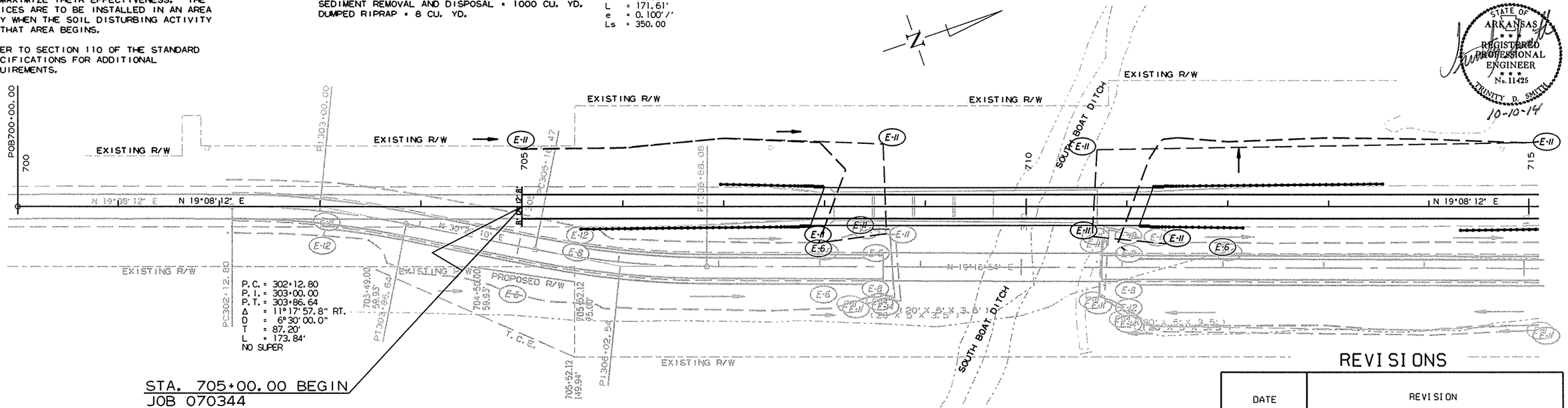
P.C. = 305+16.47
P.I. = 306+02.54
P.T. = 306+88.08
Δ = 11°09'15.8" LT.
D = 6°30'00.0"
T = 86.08'
L = 171.61'
e = 0.100'/'
Ls = 350.00

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

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070344	10	137

(2) TEMPORARY EROSION CONTROL DETAILS

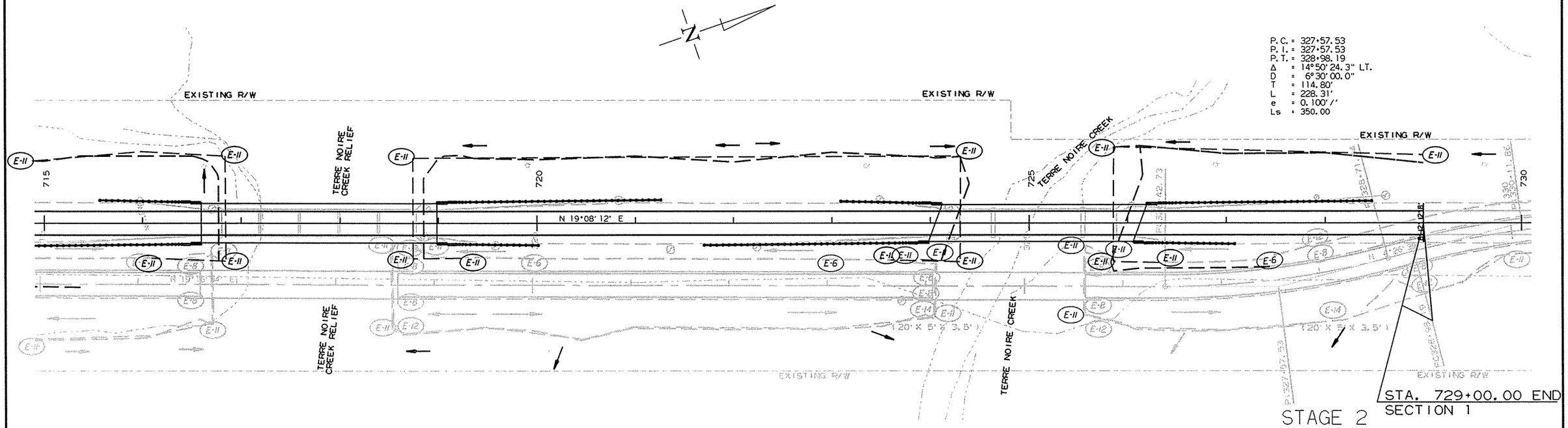
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-10-14



SILT FENCE (E-11)			SIDE	LIN.FT.
STA. 705+00	- STA.	708+60	LT.	520
STA. 710+70	- STA.	716+90	LT.	965
STA. 718+85	- STA.	724+30	LT.	900
STA. 725+90	- STA.	729+00	LT.	480

REVISIONS

DATE	REVISION



STAGE 2
TEMPORARY EROSION CONTROL DETAILS

7/14/2014

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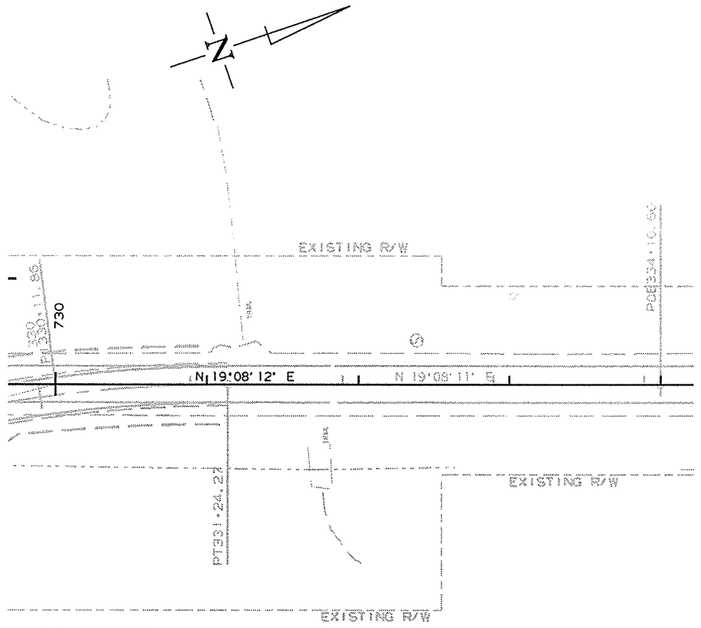

P.C. = 328+98.19
P.I. = 330+11.86
P.T. = 331+24.27
Δ = 14°41' 41.4" RT.
D = 6°30' 00.0"
T = 113.66'
L = 226.07'
NO SUPER

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

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070344	11	137

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-10-14

REVISIONS

DATE	REVISION

11/8/2011

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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.		070344	12	137

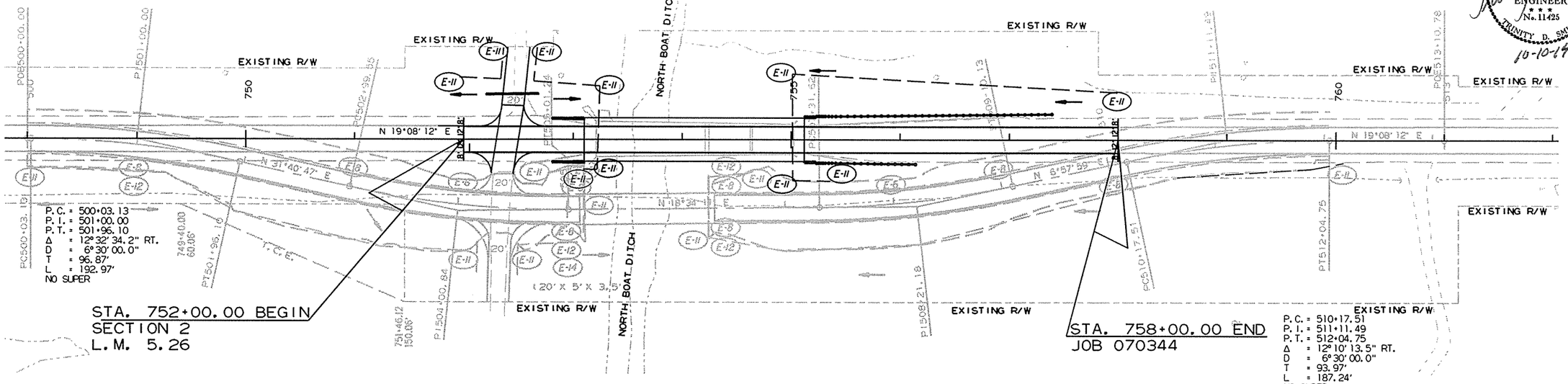
(2) TEMPORARY EROSION CONTROL DETAILS

P. C. = 502+99.55
P. I. = 504+00.84
P. T. = 505+01.24
Δ = 13°06' 35.8" LT.
D = 6°30' 00.0"
T = 101.29'
L = 201.69'
e = 0.100'/'
Ls = 350.00

P. C. = 507+31.62
P. I. = 508+21.18
P. T. = 509+10.13
Δ = 11°36' 11.8" LT.
D = 6°30' 00.0"
T = 89.56'
L = 178.51'
e = 0.100'/'
Ls = 350.00

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

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-10-14



SILT FENCE (E-11)			SIDE	LIN. FT.
STA. 500+00	- STA.	504+15	RT.	430
STA. 504+40	- STA.	505+15	RT.	192
STA. 506+30	- STA.	512+00	RT.	665

REVISIONS

DATE	REVISION

STAGE 2
TEMPORARY EROSION CONTROL DETAILS

11/8/2011

ZBORDER.CEL

EROSION CONTROL GENERAL NOTES

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

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

EROSION CONTROL QUANTITIES - STAGE 3

ROCK DITCH CHECKS (E-6) = 24 CU. YD.
SILT FENCE (E-11) = 200 LIN. FT.
SEDIMENT REMOVAL AND DISPOSAL = 100 CU. YD.

P. C. = 305+16.47
P. I. = 306+02.54
P. T. = 306+88.08
Δ = 11°09' 15.8" LT.
D = 6°30' 00.0"
T = 86.08'
L = 171.61'
e = 0.100'/'
Ls = 350.00

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

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070344	13	137

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
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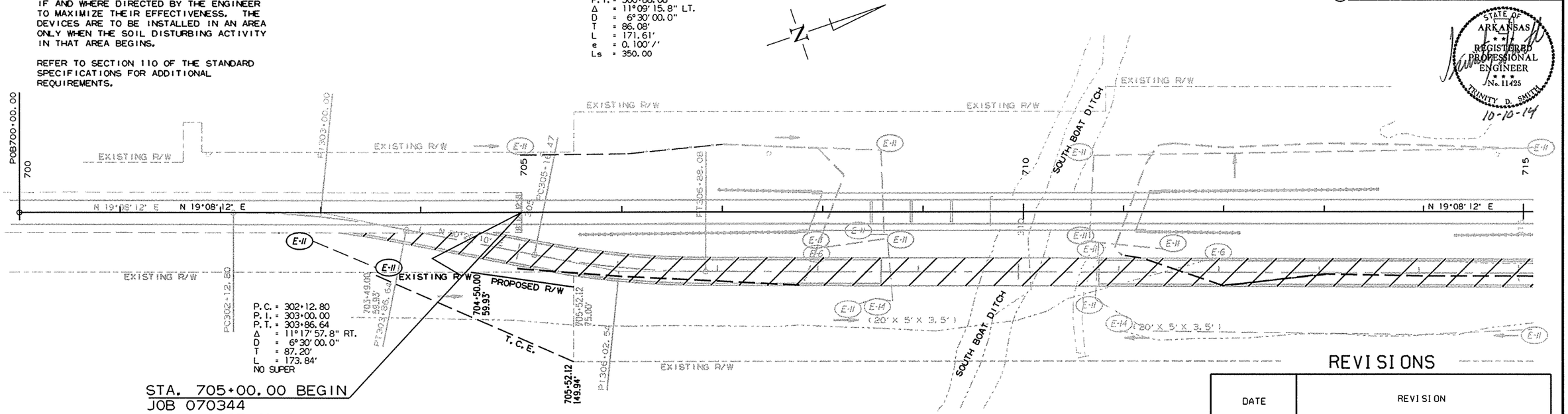
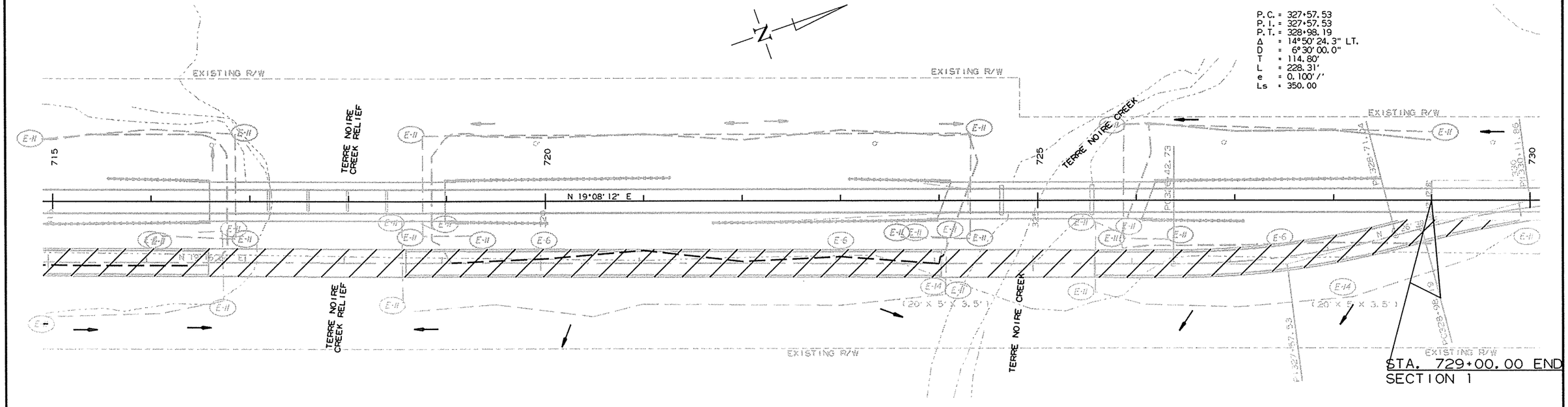
10-10-14



REVISIONS

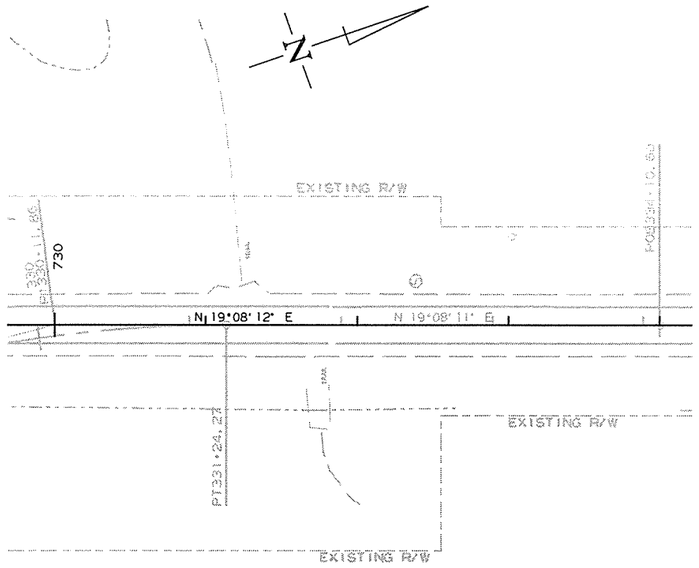
DATE	REVISION



7/14/2014

R070344.DGN

STAGE 3
TEMPORARY EROSION CONTROL DETAILS



P.C. = 328+98.19
P.I. = 330+11.86
P.T. = 331+24.27
Δ = 14°41' 41.4" RT.
D = 6°30' 00.0"
T = 113.66'
L = 226.07'
NO SUPER

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

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070344	14	137

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-10-14

REVISIONS

DATE	REVISION

STAGE 3
TEMPORARY EROSION CONTROL DETAILS

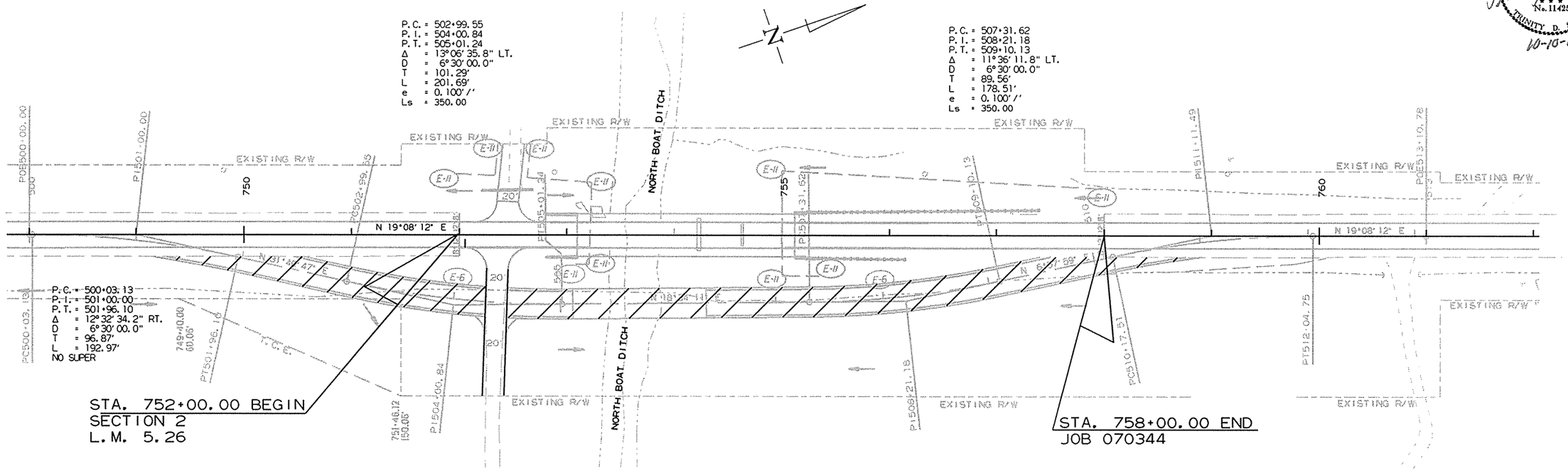
R070344.DGN 11/8/2011

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

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070344	15	137

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-10-14



REVISIONS

DATE	REVISION

STAGE 3
TEMPORARY EROSION CONTROL DETAILS

11/8/2011

ZBORDER.CEL

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070344	16	137

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-10-14

SHOULDER CLOSED

(16) RSP-1
(48" X 30")
IF AND WHERE DIRECTED
BY THE ENGINEER.
RETAIN THROUGH ALL STAGES.

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

POB 700+00.00
700
N 19°08'12" E
705
PI 705+12.12

(1) W20-1 (48" x 48") ROAD WORK 1500 FT
(1) W20-1 (48" x 48") ROAD WORK 1000 FT
(1) W20-1 (48" x 48") ROAD WORK 500 FT
(1) R4-1 (24" X 30") DO NOT PASS

STA. 705+00.00 BEGIN
JOB 070344
BEGIN SECTION 1
L.M. 4.36

(1) R4-1 (24" X 30") DO NOT PASS
(1) W20-1 (48" x 48") ROAD WORK 500 FT
(1) W20-1 (48" x 48") ROAD WORK 1000 FT
(1) W20-1 (48" x 48") ROAD WORK 1500 FT

760
762
POE 762+50.40
PI 762+50.40

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

STA. 758+00.00 END
JOB 070344
L.M. 5.37

8/14/2012

R070344.DGN

MAINTENANCE OF TRAFFIC DETAILS
ADVANCE WARNING SIGNS

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.		070344	17	137

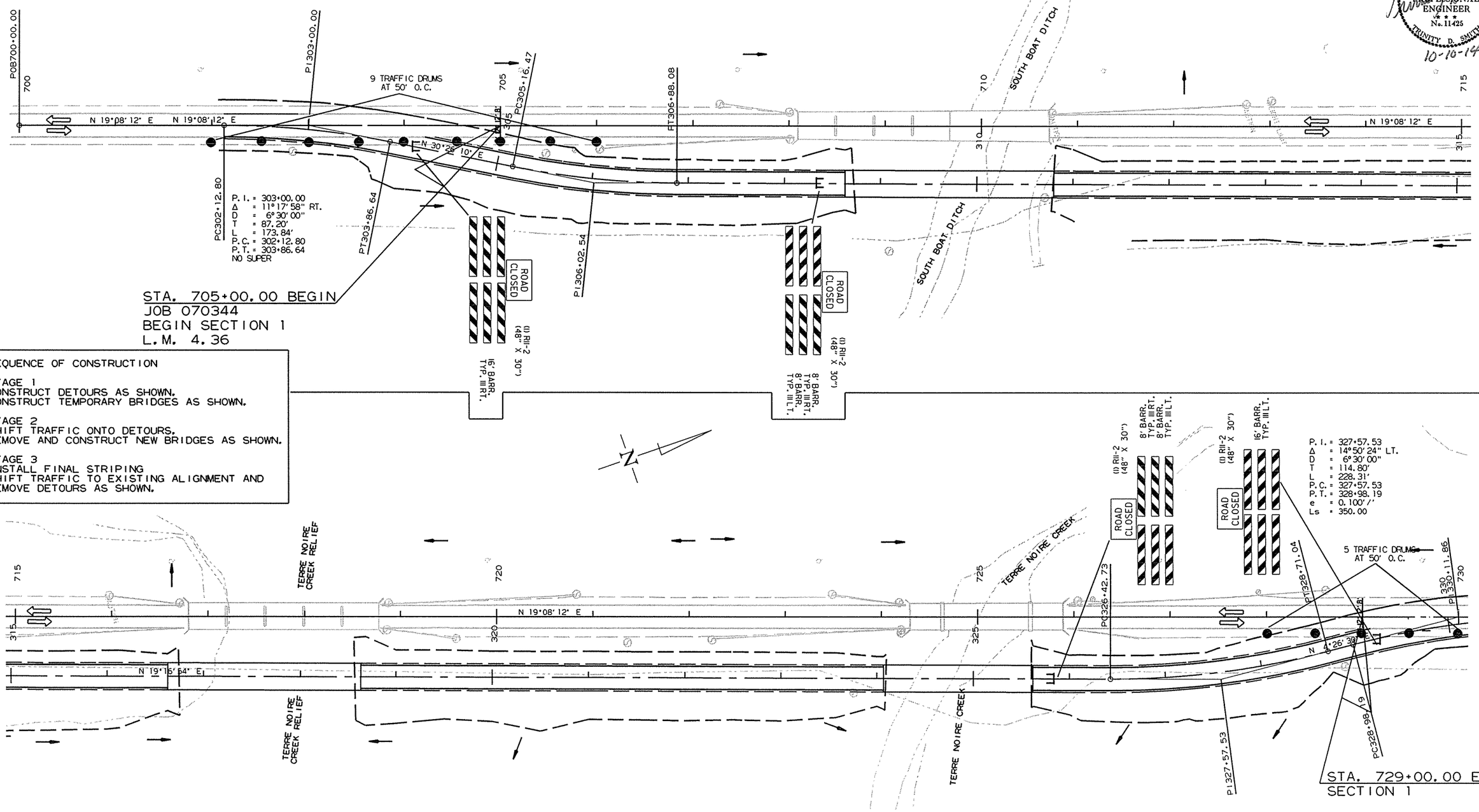
(2) MAINTENANCE OF TRAFFIC DETAILS

MAINTENANCE OF TRAFFIC - STAGE 1 QUANTITIES

SIGNS = 230 SQ. FT.
BARRICADES TY. III LT. = 64 LIN. FT.
BARRICADES TY. III RT. = 64 LIN. FT.
TRAFFIC DRUMS = 39 EACH
CONSTRUCTION PAVEMENT MARKING = 16116 LIN. FT.
RAISED PAVEMENT MARKERS (TY. II) (YEL./YEL.) = 101 EACH

P. I. = 306+02.54
Δ = 11°09' 16" LT.
D = 6°30' 00"
T = 86.08'
L = 171.61'
P. C. = 305+16.47
P. T. = 306+88.08
e = 0.100'/'
Ls = 350.00

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-10-14



SEQUENCE OF CONSTRUCTION

STAGE 1
CONSTRUCT DETOURS AS SHOWN.
CONSTRUCT TEMPORARY BRIDGES AS SHOWN.

STAGE 2
SHIFT TRAFFIC ONTO DETOURS.
REMOVE AND CONSTRUCT NEW BRIDGES AS SHOWN.

STAGE 3
INSTALL FINAL STRIPING
SHIFT TRAFFIC TO EXISTING ALIGNMENT AND REMOVE DETOURS AS SHOWN.

MAINTENANCE OF TRAFFIC DETAILS
STAGE 1

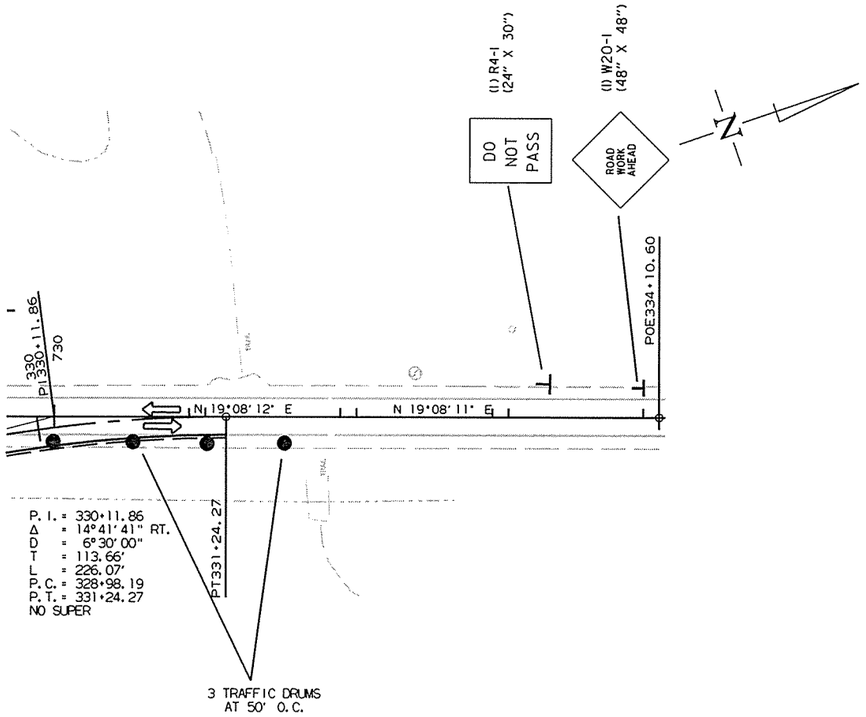
8/14/2012

R070344.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.		070344	18	137

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-16-14



SEQUENCE OF CONSTRUCTION

STAGE 1
CONSTRUCT DETOURS AS SHOWN.
CONSTRUCT TEMPORARY BRIDGES AS SHOWN.

STAGE 2
SHIFT TRAFFIC ONTO DETOURS.
REMOVE AND CONSTRUCT NEW BRIDGES AS SHOWN.

STAGE 3
INSTALL FINAL STRIPING
SHIFT TRAFFIC TO EXISTING ALIGNMENT AND
REMOVE DETOURS AS SHOWN.

R070344.DGN 8/14/2012

MAINTENANCE OF TRAFFIC DETAILS
STAGE 1

SEQUENCE OF CONSTRUCTION

STAGE 1
CONSTRUCT DETOURS AS SHOWN.
CONSTRUCT TEMPORARY BRIDGES AS SHOWN.

STAGE 2
SHIFT TRAFFIC ONTO DETOURS.
REMOVE AND CONSTRUCT NEW BRIDGES AS SHOWN.

STAGE 3
INSTALL FINAL STRIPING
SHIFT TRAFFIC TO EXISTING ALIGNMENT AND
REMOVE DETOURS AS SHOWN.

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.		070344	19	137

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-10-14

P. I. = 504+00.84
Δ = 13°06'36" LT.
D = 6°30'00"
T = 101.29'
L = 201.69'
P.C. = 502+99.55
P.T. = 505+01.24
e = 0.100'/'
Ls = 350.00

P. I. = 508+21.18
Δ = 11°36'12" LT.
D = 6°30'00"
T = 89.56'
L = 178.51'
P.C. = 507+31.62
P.T. = 509+10.13
e = 0.100'/'
Ls = 350.00

ROAD CLOSED
(1) R11-2 (48" X 30")

POB500+00.00
500
P.I. 501+00.00
7 TRAFFIC DRUMS AT 50' O.C.
750
16' BARR. TYP. III RT.
PC502+99.55
N 19°08'12" E
PT505+01.24
NORTH BOAT DITCH
755
PC507+31.62
PT509+10.13
510
P.I. 511+11.49
7 TRAFFIC DRUMS AT 50' O.C.
760
POE513+10.78
513
POE762+50.40
762
N 19°08'12" E
N 31°40'47" E
N 6°57'59" E
N 18°34'11" E
20'
505
PC500+03.13
PT501+96.10
P.I. = 501+00.00
Δ = 12°32'34" RT.
D = 6°30'00"
T = 96.87'
L = 192.97'
P.C. = 500+03.13
P.T. = 501+96.10
NO SUPER
P.I. 504+00.84
P.I. 508+21.18
PC510+17.51
PT512+04.75
P.I. 762+50.40
16' BARR. TYP. III LT.
P. I. = 511+11.49
Δ = 12°10'14" RT.
D = 6°30'00"
T = 93.97'
L = 187.24'
P.C. = 510+17.51
P.T. = 512+04.75
NO SUPER

ROAD WORK AHEAD
(1) W20-1 (48" X 48")
DO NOT PASS
(1) R4-1 (24" X 30")

STA. 752+00.00 BEGIN
SECTION 2
L.M. 5.26

8 TRAFFIC DRUMS AROUND CO. RD.

ROAD WORK AHEAD
(1) W20-1 (48" X 48")

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

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

STA. 758+00.00 END
JOB 070344

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

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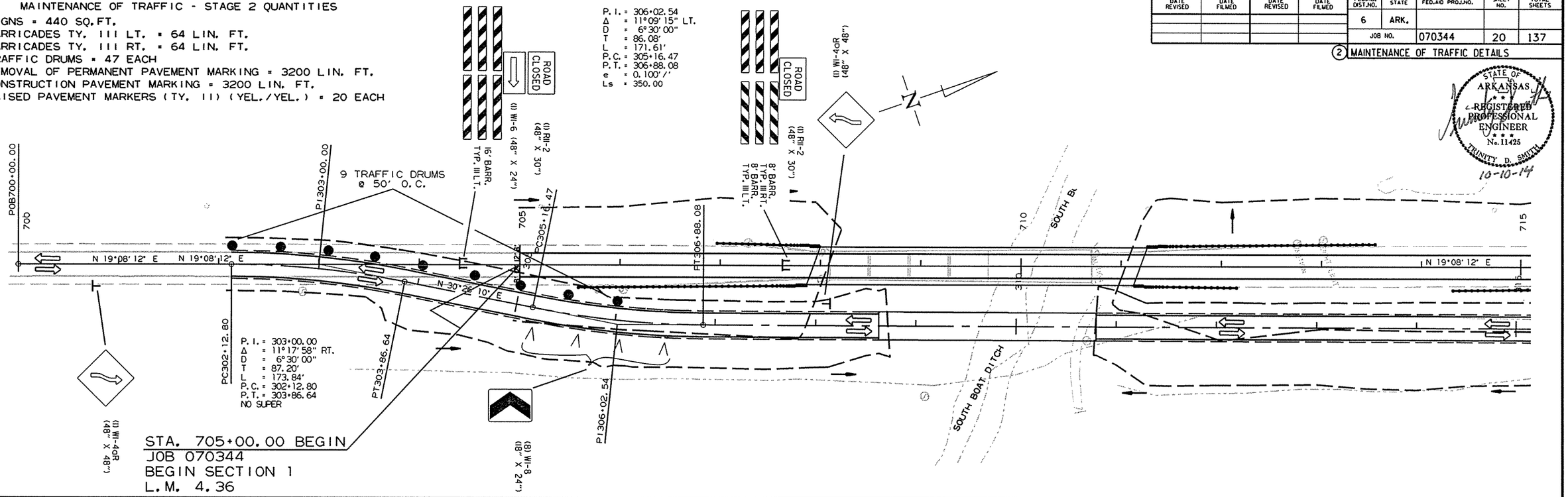
MAINTENANCE OF TRAFFIC DETAILS
STAGE 1

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070344	20	137

(2) MAINTENANCE OF TRAFFIC DETAILS

MAINTENANCE OF TRAFFIC - STAGE 2 QUANTITIES
SIGNS = 440 SQ. FT.
BARRICADES TY. III LT. = 64 LIN. FT.
BARRICADES TY. III RT. = 64 LIN. FT.
TRAFFIC DRUMS = 47 EACH
REMOVAL OF PERMANENT PAVEMENT MARKING = 3200 LIN. FT.
CONSTRUCTION PAVEMENT MARKING = 3200 LIN. FT.
RAISED PAVEMENT MARKERS (TY. II) (YEL./YEL.) = 20 EACH



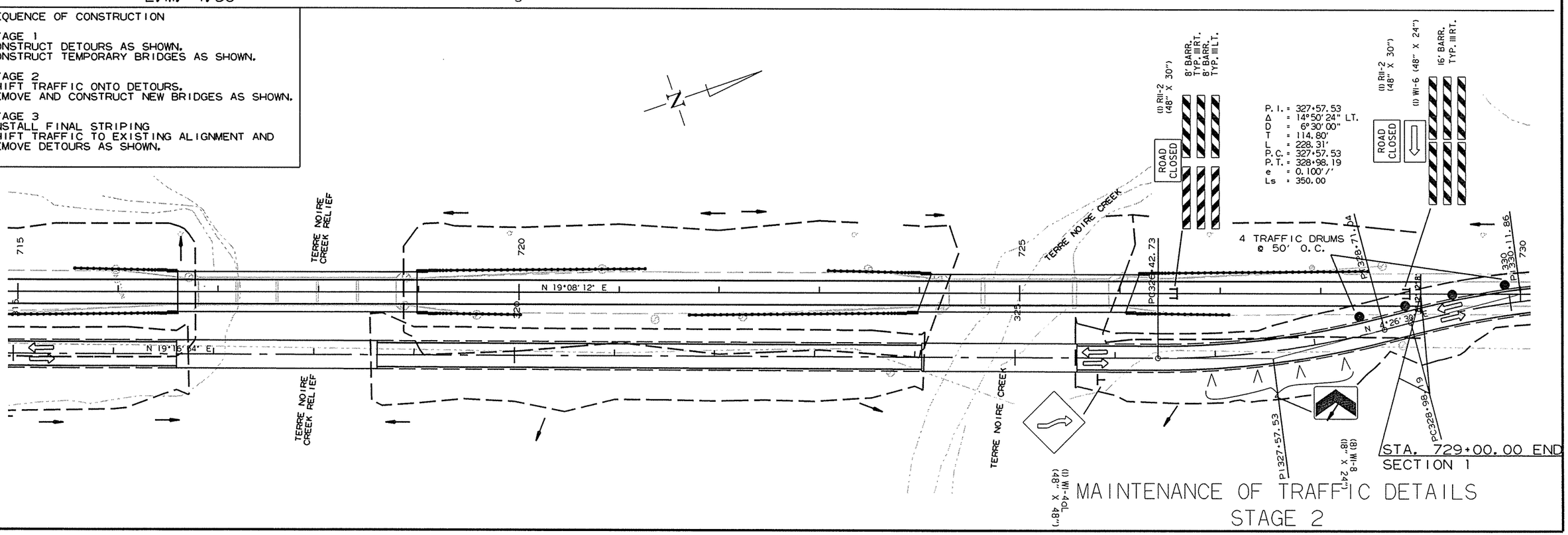
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-10-14

SEQUENCE OF CONSTRUCTION

STAGE 1
CONSTRUCT DETOURS AS SHOWN.
CONSTRUCT TEMPORARY BRIDGES AS SHOWN.

STAGE 2
SHIFT TRAFFIC ONTO DETOURS.
REMOVE AND CONSTRUCT NEW BRIDGES AS SHOWN.

STAGE 3
INSTALL FINAL STRIPING
SHIFT TRAFFIC TO EXISTING ALIGNMENT AND REMOVE DETOURS AS SHOWN.

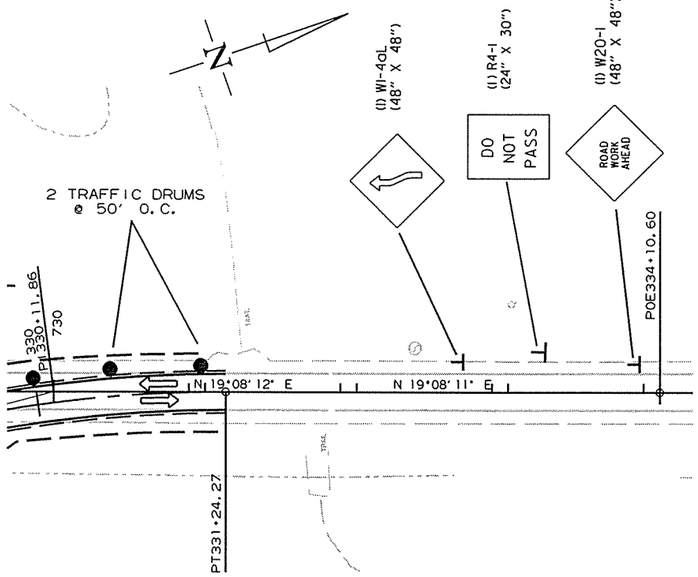


MAINTENANCE OF TRAFFIC DETAILS
STAGE 2

11/8/2011
ZBORDER.CEL

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070344	21	137

(2) MAINTENANCE OF TRAFFIC DETAILS



P. I. = 330+11.86
Δ = 14°41'41" RT.
D = 6°30'00"
T = 113.66'
L = 226.07'
P.C. = 328+98.19
P.T. = 331+24.27
NO SUPER

SEQUENCE OF CONSTRUCTION

STAGE 1
CONSTRUCT DETOURS AS SHOWN.
CONSTRUCT TEMPORARY BRIDGES AS SHOWN.

STAGE 2
SHIFT TRAFFIC ONTO DETOURS.
REMOVE AND CONSTRUCT NEW BRIDGES AS SHOWN.

STAGE 3
INSTALL FINAL STRIPING
SHIFT TRAFFIC TO EXISTING ALIGNMENT AND
REMOVE DETOURS AS SHOWN.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-10-14

8/14/2012

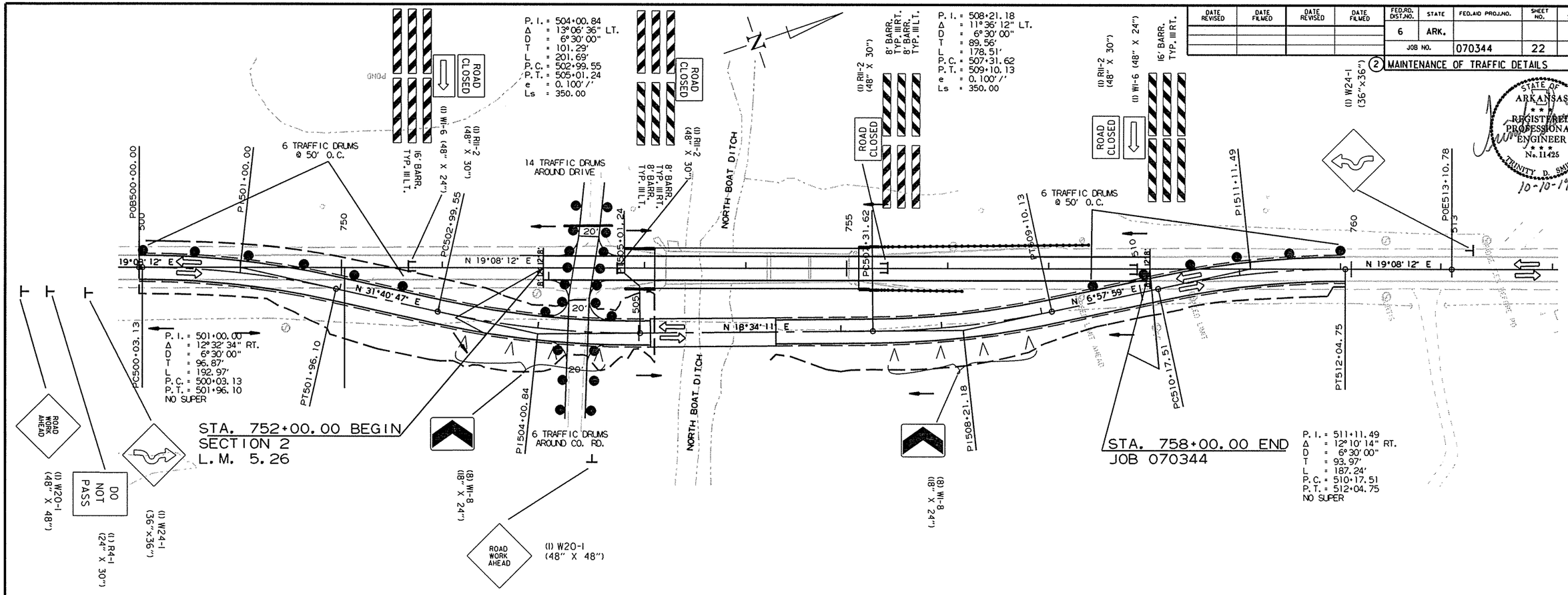
R070344.DGN

MAINTENANCE OF TRAFFIC DETAILS
STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070344	22	137

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-10-14



SEQUENCE OF CONSTRUCTION

STAGE 1
CONSTRUCT DETOURS AS SHOWN.
CONSTRUCT TEMPORARY BRIDGES AS SHOWN.

STAGE 2
SHIFT TRAFFIC ONTO DETOURS.
REMOVE AND CONSTRUCT NEW BRIDGES AS SHOWN.

STAGE 3
INSTALL FINAL STRIPING
SHIFT TRAFFIC TO EXISTING ALIGNMENT AND
REMOVE DETOURS AS SHOWN.

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R070344.DGN

MAINTENANCE OF TRAFFIC DETAILS
STAGE 2

MAINTENANCE OF TRAFFIC - STAGE 3 QUANTITIES

SIGNS = 262 SQ. FT.
BARRICADES TY. III LT. = 64 LIN. FT.
BARRICADES TY. III RT. = 64 LIN. FT.
TRAFFIC DRUMS = 31 EACH
REMOVAL OF CONSTRUCTION PAVEMENT MARKING = 3200 LIN. FT.

OBLITERATION AREA

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070344	23	137

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-10-14

P.I. = 306+02.54
Δ = 11°09' 16" LT.
D = 6°30' 00"
T = 86.08'
L = 171.61'
P.C. = 305+16.47
P.T. = 306+88.08
e = 0.100'/'
Ls = 350.00

POB700+00.00
P1303+00.00
7 TRAFFIC DRUMS @ 50' O.C.
PC305+16.47
PT306+88.08
SOUTH BOAT DITCH
N 19°08' 12" E
N 20°26' 10" E
PC302+12.80
PT303+86.64
P.I. = 303+00.00
Δ = 11°17' 58" RT.
D = 6°30' 00"
T = 87.20'
L = 173.84'
P.C. = 302+12.80
P.T. = 303+86.64
NO SUPER
P1306+02.54
ROAD CLOSED
(1) WI-6 (48" X 24")
16' BARR. TYP. III RT.
(1) RII-2 (48" X 30")
8' BARR. TYP. III LT.
8' BARR. TYP. III RT.
16' BARR. TYP. III LT.

STA. 705+00.00 BEGIN
JOB 070344
BEGIN SECTION 1
L.M. 4.36

SEQUENCE OF CONSTRUCTION

STAGE 1
CONSTRUCT DETOURS AS SHOWN.
CONSTRUCT TEMPORARY BRIDGES AS SHOWN.

STAGE 2
SHIFT TRAFFIC ONTO DETOURS.
REMOVE AND CONSTRUCT NEW BRIDGES AS SHOWN.

STAGE 3
INSTALL FINAL STRIPING
SHIFT TRAFFIC TO EXISTING ALIGNMENT AND REMOVE DETOURS AS SHOWN.

TERRE NOIRE CREEK RELIEF
TERRE NOIRE CREEK
N 19°08' 12" E
N 19°16' 54" E
P.I. = 327+57.53
Δ = 14°50' 24" LT.
D = 6°30' 00"
T = 114.80'
L = 228.31'
P.C. = 327+57.53
P.T. = 328+98.19
e = 0.100'/'
Ls = 350.00
PC326+42.73
PT328+71.04
P1327+57.53
PC328+98.19
P1330+11.86
4 TRAFFIC DRUMS @ 50' O.C.

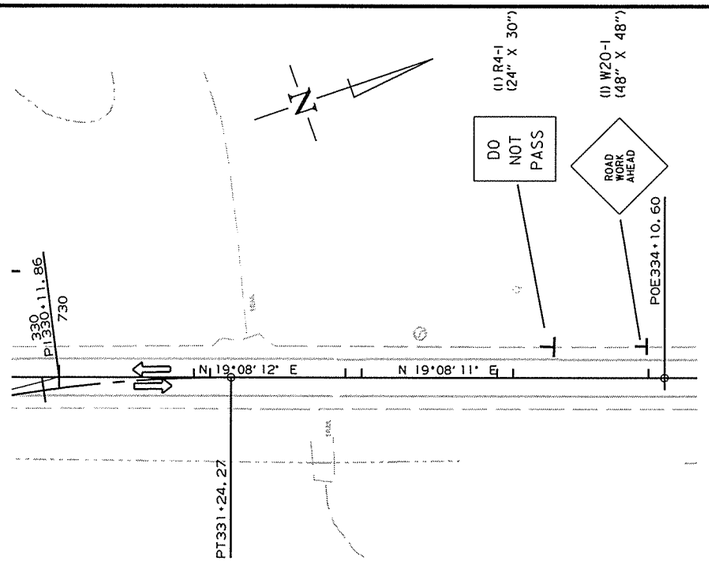
STA. 729+00.00 END
SECTION 1

MAINTENANCE OF TRAFFIC DETAILS
STAGE 3

8/14/2012
R070344.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.		070344	24	137

(2) MAINTENANCE OF TRAFFIC DETAILS



P. I. = 330+11.86
Δ = 14°41' 41" RT.
D = 6° 30' 00"
T = 113.66'
L = 226.07'
P. C. = 328+98.19
P. T. = 331+24.27
NO SUPER

SEQUENCE OF CONSTRUCTION

STAGE 1
CONSTRUCT DETOURS AS SHOWN.
CONSTRUCT TEMPORARY BRIDGES AS SHOWN.

STAGE 2
SHIFT TRAFFIC ONTO DETOURS.
REMOVE AND CONSTRUCT NEW BRIDGES AS SHOWN.

STAGE 3
INSTALL FINAL STRIPING
SHIFT TRAFFIC TO EXISTING ALIGNMENT AND
REMOVE DETOURS AS SHOWN.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-10-14

8/14/2012

R070344.DGN

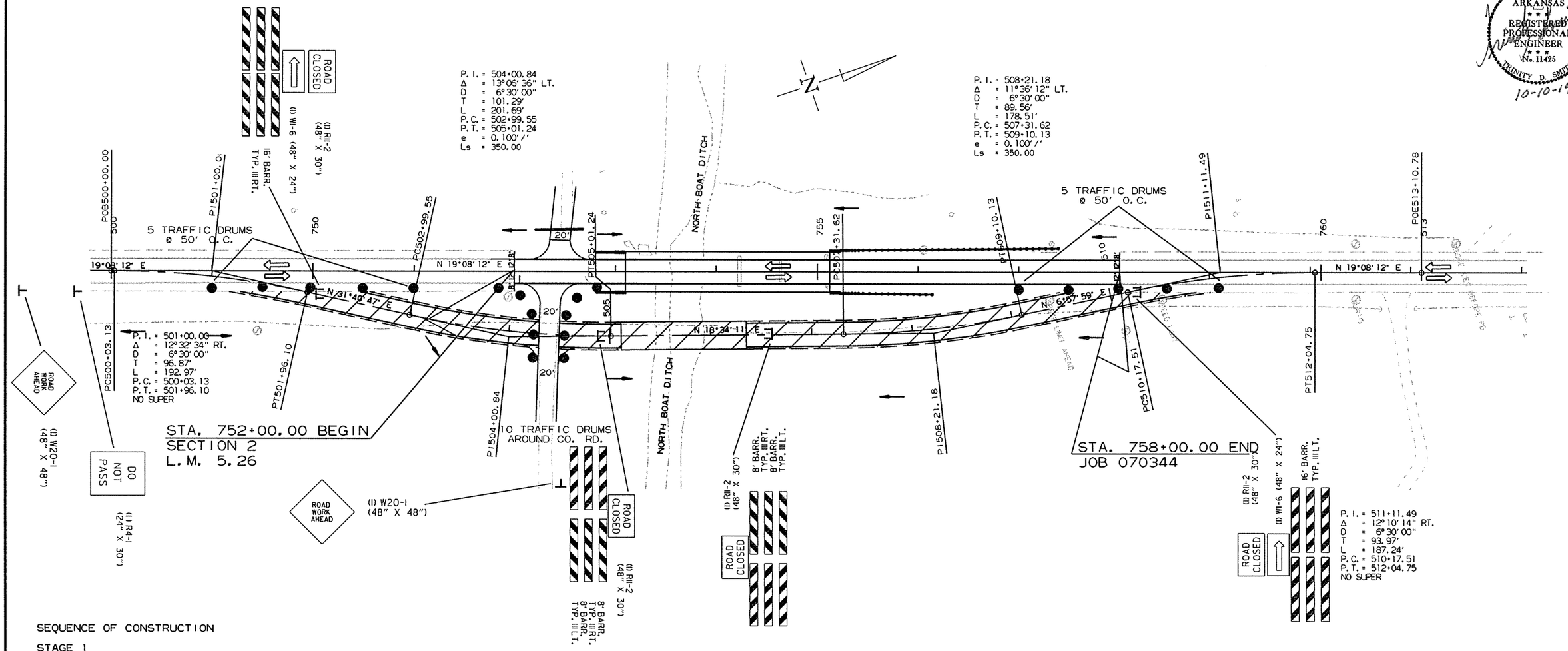
MAINTENANCE OF TRAFFIC DETAILS
STAGE 3

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070344	25	137

(2) MAINTENANCE OF TRAFFIC DETAILS

OBLITERATION AREA

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-10-14



SEQUENCE OF CONSTRUCTION

STAGE 1
CONSTRUCT DETOURS AS SHOWN.
CONSTRUCT TEMPORARY BRIDGES AS SHOWN.

STAGE 2
SHIFT TRAFFIC ONTO DETOURS.
REMOVE AND CONSTRUCT NEW BRIDGES AS SHOWN.

STAGE 3
INSTALL FINAL STRIPING
SHIFT TRAFFIC TO EXISTING ALIGNMENT AND
REMOVE DETOURS AS SHOWN.

PERMANENT PAVEMENT MARKING QUANTITIES

THERMOPLASTIC PAVEMENT MARKING YELLOW (4") = 6452 LIN. FT.
THERMOPLASTIC PAVEMENT MARKING WHITE (4") = 8400 LIN. FT.
HIGH PERFORMANCE CONTRAST MARKING TAPE 4" (YELLOW) = 1948 LIN. FT.
RAISED PAVEMENT MARKERS (TY. II) (YEL./YEL.) = 105 EACH

8/14/2012

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MAINTENANCE OF TRAFFIC DETAILS
STAGE 3

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070344	26	137

(2) PERMANENT PAVEMENT MARKING DETAILS

FINAL STRIPING

THERMOPLASTIC PAVEMENT MARKINGS RT. AND LT. EDGE LINES (WHITE) (4")	=	4800	LIN. FT.
* THERMOPLASTIC PAVEMENT MARKINGS DBL. CENTERLINE (YELLOW)(4")	=	3252	LIN. FT.
* HIGH PERFORMANCE PAVEMENT MARKING DBL. CENTERLINE (YELLOW) (4")	=	1549	LIN. FT.
RUMBLE STRIPS IN ASPHALT SHOULDER	=	2601	LIN. FT.
RAISED PAVEMENT MARKERS 40' O.C. (TYPE 2)	=	60	EACH

STATE OF ARKANSAS
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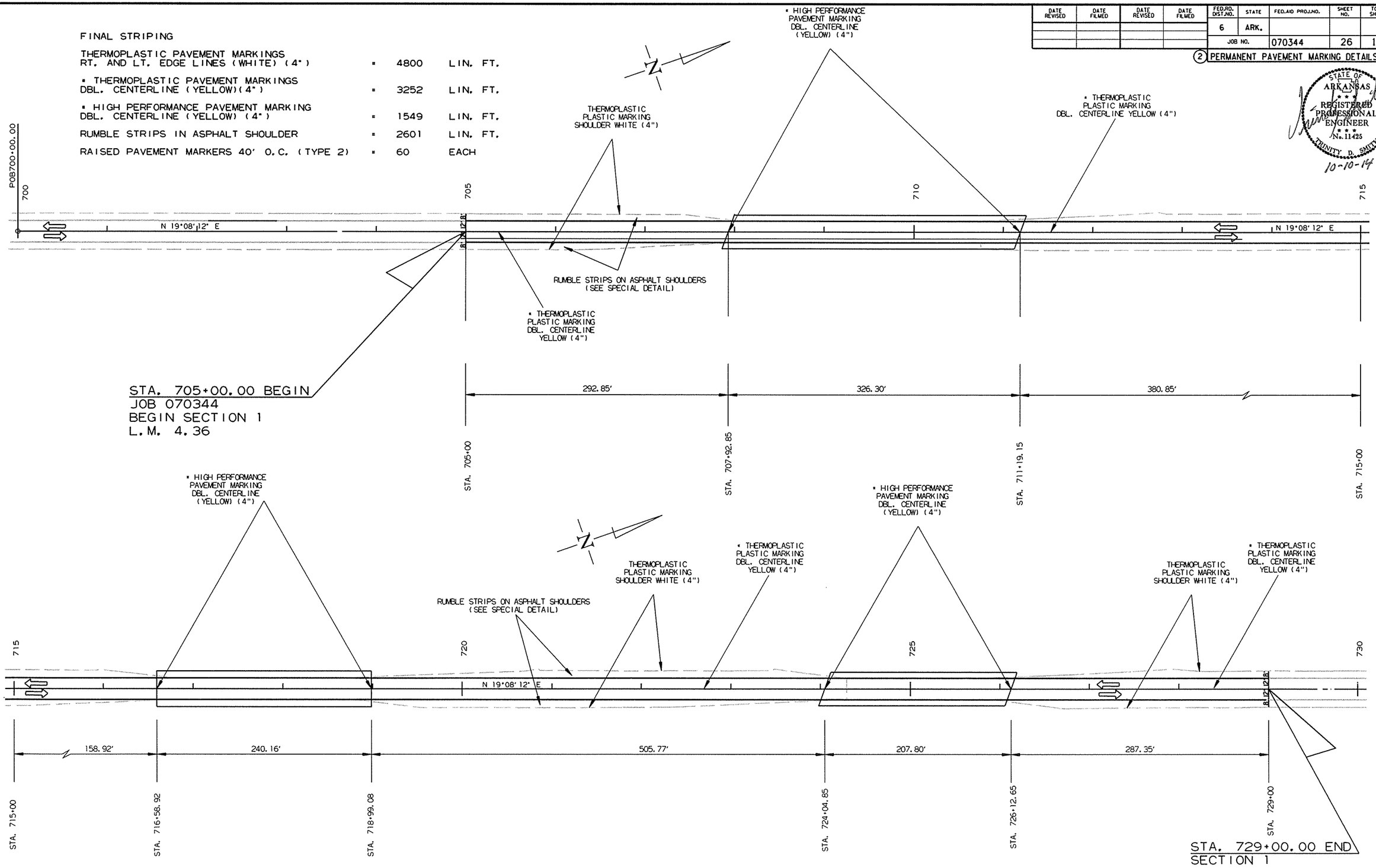
No. 11425
TRINITY D. SMITH
10-10-14



* 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.

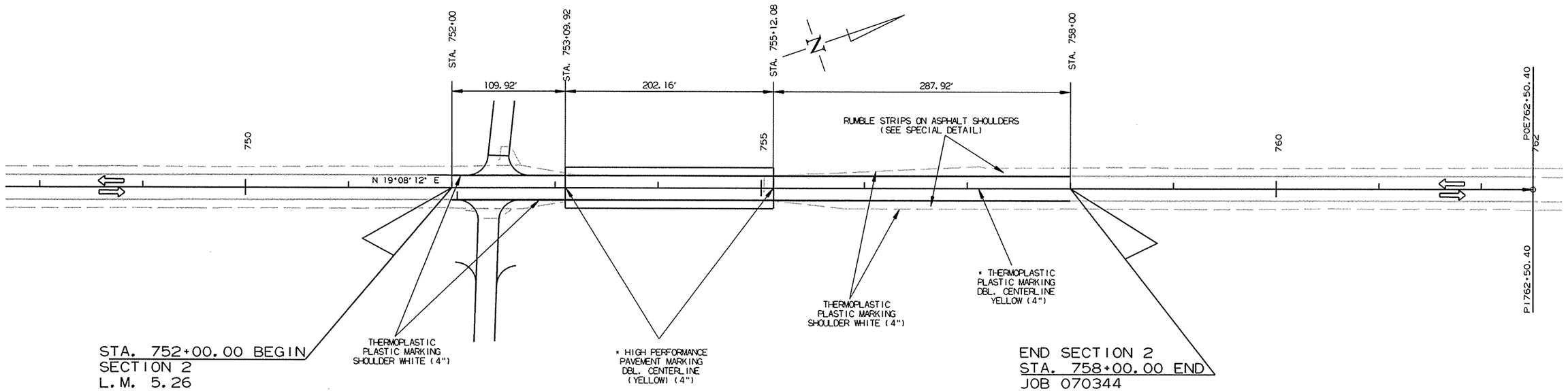
PERMANENT PAVEMENT MARKING DETAILS

R070344.DGN 7/17/2014

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.		070344	27	137

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-10-14



FINAL STRIPING

THERMOPLASTIC PAVEMENT MARKINGS RT. AND LT. EDGE LINES (WHITE) (4")	=	968 LIN. FT.
* THERMOPLASTIC PAVEMENT MARKINGS DBL. CENTERLINE (YELLOW)(4")	=	796 LIN. FT.
* HIGH PERFORMANCE PAVEMENT MARKING DBL. CENTERLINE (YELLOW) (4")	=	404 LIN. FT.
RUMBLE STRIPS IN ASPHALT SHOULDER	=	451 LIN. FT.
RAISED PAVEMENT MARKERS 40' O.C. (TYPE 2)	=	15 EACH

* 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.

7/17/2014

R070344.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.		070344	28	137

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-10-14

ADVANCE WARNING SIGNS AND DEVICES,CONSTRUCTION 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	BARRICADES (TYPE III)		REMOVAL OF PERM. PVMT. MARKINGS	REMOVAL OF CONST. PVMT. MARKINGS	CONSTRUCTION PAVEMENT MARKINGS	RAISED PAVEMENT MARKERS TYPE II	THERMOPLASTIC PAVEMENT MARKING		HIGH PERFORMANCE CONTRAST PAVEMENT MARKING TAPE
											RIGHT	LEFT				(YEL/YEL)	WHITE (4")	*YELLOW (4")	*YELLOW (4")
			SQ.FT. - LIN.FT. - EACH					NO.	SQ.FT.	EACH	LIN. FT.		LIN. FT.			EACH	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"	2	2	2	2	2	2	32.0										
G20-2	END ROAD WORK	48"X24"	2	2	2	2	2	2	16.0										
R11-2	ROAD CLOSED	48"X30"	8	8	8	8	8	8	80.0										
R4-1	DO NOT PASS	24"X30"	4	4	4	4	4	4	20.0										
RSP-1	SHOULDER CLOSED	48"X30"	4	4	4	4	4	4	40.0										
W1-4	CURVE	48"X48"		2		2	2	2	32.0										
W1-6	ARROW	48"X24"		4	4	4	4	4	32.0										
W1-8	CHEVRONS	18"X24"		8		8	8	8	24.0										
W24-1	CURVE	36"X36"		2		2	2	2	18.0										
	TRAFFIC DRUMS		39	47	31	47	47			47									
	TYPE III BARRICADE-RT. (8')		8	8	8	8	8				64								
	TYPE III BARRICADE-LT. (8')		8	8	8	8	8					64							
	REMOVAL OF PERMANENT PAVEMENT MARKING												3200						
	CONSTRUCTION PAVEMENT MARKINGS													3200	19316				
	RAISED PAVEMENT MARKERS TYPE II (YEL/YEL)															196			
	THERMOPLASTIC PAVEMENT MARKINGS-WHITE(4")																5768		
	THERMOPLASTIC PAVEMENT MARKINGS-YELLOW(4")																	4048	
	HIGH PERFORMANCE CONTRAST PAVEMENT MARKING YELLOW (4")																		1953
TOTALS:									390.0	47	64	64	3200	3200	19316	196	5768	4048	1953

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

* 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.

9/12/2014

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070344	29	137

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-10-14

CLEARING AND GRUBBING

STATION	STATION	CLEARING	GRUBBING
		STATION	
703+00	731+00	28	28
748+00	760+00	12	12
TOTALS:		40	40

SELECTED PIPE BEDDING

LOCATION	SELECTED PIPE BEDDING
	CU.YD.
ENTIRE PROJECT - TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.	4
TOTAL:	4

REMOVAL AND DISPOSAL OF GUARDRAIL

STATION	STATION	SIDE	REMOVAL & DISPOSAL OF GUARDRAIL
			LIN. FT.
706+02	708+02	RT.	200
707+30	708+05	LT.	75
710+73	712+73	LT.	200
714+74	716+75	RT.	201
716+00	716+75	LT.	75
718+81	719+56	RT.	75
718+81	720+81	LT.	200
722+24	724+25	RT.	201
723+50	724+25	LT.	75
725+92	728+61	LT.	269
725+92	726+68	RT.	76
752+68	753+19	RT.	51
752+68	753+19	LT.	51
755+05	755+81	RT.	76
755+05	757+06	LT.	201
TOTALS:			2026

BENCH MARKS

LOCATION	BENCH MARKS
	EACH
STA. 107+50 R.C. BOX CULVERT	1
STA. 207+18 R.C. BOX CULVERT	1
STA. 307+50 R.C. BOX CULVERT	1
STA. 415+44.29 BRIDGE	1

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

4" PIPE UNDERDRAINS

LOCATION	4" PIPE UNDERDRAINS	UNDERDRAIN OUTLET PROTECTORS
	LIN.FT.	EACH
ENTIRE PROJECT - IF AND WHERE	1600	12
DIRECTED BY THE ENGINEER		
TOTALS:	1600	12

NOTE: QUANTITIES ESTIMATED.

ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC

LOCATION	ASPHALT CONC. PATCHING FOR MAINT. OF TRAFFIC	TACK COAT
	TON	GALLON
ENTIRE PROJECT - IF	10	20
AND WHERE DIRECTED		
BY THE ENGINEER.		
TOTALS:	10	20

BASIS OF ESTIMATE:
ASPHALT PATCH = 25 TONS PER MI.
TACK COAT = 50 GAL. PER MI.
QUANTITIES ESTIMATED.
SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

SOIL STABILIZATION

LOCATION	SOIL STABILIZATION
	TON
ENTIRE PROJECT - IF AND WHERE	200
DIRECTED BY THE ENGINEER	
TOTAL:	200

QUANTITY ESTIMATED.
SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

SOIL LOG

STATION	LOCATION	DEPTH	LIQUID LIMIT	PLASTICITY INDEX	AASHTO SOIL CLASS	COLOR
704+00	5' RT.	0-5	45	30	A-7-6(20)	BR/GR
704+00	29' RT.	0-5	35	21	A-6(11)	BROWN
714+00	5' LT.	0-5	34	21	A-6(12)	BROWN
714+00	26' LT.	0-5	34	19	A-6(10)	BROWN
722+00	5' RT.	0-5	ND	NP	A-4(0)	GRAY
722+00	25' RT.	0-5	36	21	A-6(10)	BROWN
714+00	26' RT.	0-5	35	21	A-6(10)	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.

ACHM PATCHING OF EXISTING ROADWAY

LOCATION	ACHM PATCHING OF EXISTING ROADWAY
	TON
ENTIRE PROJECT - IF	100
AND WHERE DIRECTED	
BY THE ENGINEER.	
TOTAL:	100

QUANTITIES ESTIMATED.
SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

RUMBLE STRIPS IN ASPHALT SHOULDERS

LOCATION	RUMBLE STRIPS IN ASPHALT SHOULDERS
	LIN. FT.
ENTIRE PROJECT - IF AND WHERE	3842
DIRECTED BY THE ENGINEER	
TOTAL:	3842

SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.
QUANTITIES ESTIMATED.

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				6	ARK.			
				JOB NO.		070344	30	137

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-10-14

EROSION CONTROL ITEMS - PERMANENT

STATION	STATION	LOCATION	SEEDING	LIME	MULCH COVER	WATER	SECOND SEEDING APPLICATION
			ACRE	TON	ACRE	M. GAL.	ACRE
704+00	758+00	MAIN LANES	4.65	9	4.65	474.3	4.65
TOTALS:			4.65	9	4.65	474.3	4.65

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

TEMPORARY EROSION CONTROL

STATION	STATION	LOCATION	ROCK DITCH CHECKS (E-6)	DIVERSION DITCH (E-8)	SILT FENCE (E-11)	PIPE FOR SLOPE DRAIN (E-12)	SEDIMENT BASIN (E-14)	OBLITERATION OF SEDIMENT BASIN	*SEDIMENT REMOVAL AND DISPOSAL	DUMPED RIPRAP	TEMPORARY SEEDING	MULCH COVER	WATER
			CU.YD.	LIN. FT.		LIN. FT.	CU. YD.	CU. YD.	CU. YD.	CU. YD.	ACRE	ACRE	M.GAL.
ENTIRE	PROJECT	DETOUR LANES - STAGE 1	42	5046	2218	167	80	80	1000	8	2.17	2.17	44.3
ENTIRE	PROJECT	MAIN LANES - STAGE 2	30		2218		80	80	1000	8			
ENTIRE	PROJECT	DETOUR OBLITERATION - STAGE 3	24		200				100				
* ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED			15		540					5	0.50	0.50	10.2
TOTALS :			111	5046	5176	167	160	160	2100	21	2.67	2.67	54.5

BASIS OF ESTIMATE
WATER .....20.4 M.G. / ACRE OF TEMPORARY SEEDING
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.

9/12/2014

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				6	ARK.			
				JOB NO.		070344	31	137

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-10-14

APPROACH GUTTERS

STATION	STATION	SIDE	APPROACH GUTTERS (TYPE A) W=8'-0"	REINFORCING STEEL - RDWY. (GRADE 60)
			CU. YD.	POUNDS
707+55.57	707+85.57	RT.	7.55	665
707+70.13	708+00.13	LT.	7.55	665
707+11.87	711+41.87	RT.	7.55	665
711+26.43	711+56.43	LT.	7.55	665
716+28.92	716+58.92	LT.	7.55	665
716+28.92	716+58.92	RT.	7.55	665
718+99.08	719+29.08	RT.	7.55	665
718+99.08	719+29.08	LT.	7.55	665
723+67.69	723+97.69	RT.	7.55	665
723+82.26	724+12.26	LT.	7.55	665
726+05.25	726+35.25	RT.	7.55	665
726+19.81	726+49.81	LT.	7.55	665
752+79.92	753+09.92	LT.	7.55	665
752+79.93	753+09.93	RT.	7.55	665
755+12.08	755+42.08	RT.	7.55	665
755+12.08	755+42.08	LT.	7.55	665
TOTALS:			120.80	10640

EARTHWORK

STATION	STATION	LOCATION	UNCLASSIFIED EXCAVATION	COMPACTED EMBANKMENT
			CU.YD.	CU. YD.
704+00	759+00	DETOUR LANES - STAGE 1	1613	43010
704+00	759+00	MAIN LANES - STAGE 2	411	4988
704+00	759+00	DETOUR OBLITERATION - STAGE 3	44109	1518
707+92.85	711+19.50	SOUTH BOAT CREEK	1480	
716+58.92	718+99.08	TERRE NOIRE CREEK	720	
724+04.85	726+12.65	TERRE NOIRE CREEK	1070	
753+09.92	755+48.00	NORTH BOAT CREEK	400	
ENTIRE	PROJECT	DRIVEWAYS		195
ENTIRE	PROJECT	TEMPORARY DRIVEWAYS		100
TOTALS:			49803	49811

GUARDRAIL

STATION	STATION	SIDE	GUARDRAIL (TYPE A)	TERMINAL ANCHOR POSTS (TYPE 1)	THRIE BEAM GUARDRAIL TERMINAL	BRIDGE END TERMINAL
			LIN. FT.	EACH		
705+57.42	707+85.57	RT.	200	1	1	
706+96.98	708+00.13	LT.	75	1	1	
711+26.43	713+54.58	LT.	200	1	1	
711+11.87	712+15.02	RT.	75	1	1	
714+28.35	716+59.50	RT.	200	1	1	
716+08.35	716+59.50	LT.	75	1	1	
718+98.5	721+29.65	LT.	200	1	1	
718+98.5	720+04.65	RT.	75	1	1	
721+69.54	723+97.69	RT.	200	1	1	
723+09.01	724+12.25	LT.	75	1	1	
726+19.81	728+47.96	LT.	200	1	1	
726+05.25	727+08.40	RT.	75	1	1	
752+80.50	753+10.50	RT.				1
752+80.50	753+10.50	LT.				1
755+11.50	757+41.65	LT.	200	1	1	
755+11.50	756+16.65	RT.	75	1	1	
TOTALS:			1925	14	14	2

COLD MILLING ASPHALT PAVEMENT

STATION	STATION	DESCRIPTION	LENGTH	WIDTH	COLD MILLING ASPHALT PAVEMENT
			LIN. FT.		SQ. YD.
704+00	705+00	MAIN LANES	100.00	24	267
706+92.85	707+92.85	MAIN LANES	100.00	24	267
711+19.15	712+19.15	MAIN LANES	100.00	24	267
715+58.92	716+58.92	MAIN LANES	100.00	24	267
718+99.08	719+99.08	MAIN LANES	100.00	24	267
723+04.85	724+04.85	MAIN LANES	100.00	24	267
726+12.65	727+12.65	MAIN LANES	100.00	24	267
752+09.92	753+09.92	MAIN LANES	100.00	24	267
755+12.08	756+12.08	MAIN LANES	100.00	24	267
TOTAL:					2403

9/15/2014

R070344.DGN

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				6	ARK.			
				JOB NO.		070344	32	137

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-10-14

DRIVEWAYS

STATION	SIDE	LOCATION	DESCRIPTION	WIDTH	ACHM EXTENSION LENGTH	TURNOUT AREA	TOTAL DRIVEWAY AREA	AGGREGATE BASE CRSE. (CL.7) (7" COMP. DEPTH)	ACHM SURFACE CRSE. (1/2") (PG64-22) (220 LB./SQ. YD.)	18" SIDE DRAIN	12" TEMPORARY CULVERT
				LIN.FT.		SQ. YD.	SQ. YD.	TON	TON	LIN. FT.	
752+52	LT.	MAIN LANES	DRIVEWAY	16	54	55	151	61	6	48	
752+35	RT.	MAIN LANES	DRIVEWAY	20	102	64	291	118	7		
752+35	RT.	MAIN LANES	TEMPORARY DRIVEWAY	20		76	76	31	8		52
TOTALS:								210	21	48	52

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

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.			
705+00.00	707+92.85	MAIN LANES - OVERLAY	292.85			40.00	1301.56	0.10	130.16					40.00	1301.56	220	143.17
711+19.15	716+58.92	MAIN LANES - OVERLAY	539.77			40.00	2398.98	0.10	239.90					40.00	2398.98	220	263.89
718+99.08	724+04.85	MAIN LANES - OVERLAY	505.77			40.00	2247.87	0.10	224.79					40.00	2247.87	220	247.27
726+12.65	729+00.00	MAIN LANES - OVERLAY	287.35			40.00	1277.11	0.10	127.71					40.00	1277.11	220	140.48
752+00.00	753+09.92	MAIN LANES - OVERLAY	109.92			40.00	488.53	0.10	48.85					40.00	488.53	220	53.74
755+12.08	758+00.00	MAIN LANES - OVERLAY	287.92			40.00	1279.64	0.10	127.96					40.00	1279.64	220	140.76
303+00.00	331+50.00	DETOUR LANES - SITE 1	2850.00	156.50	4460.25	24.33	7704.50	0.03	231.14	24.33	7704.50	440	1694.99	28.00	8866.67	220	975.33
500+00.00	513+00.00	DETOUR LANES - SITE 2	1300.00	156.50	2034.50	24.33	3514.33	0.03	105.43	24.33	3514.33	440	773.15	28.00	4044.44	220	444.89
705+14.42	705+47.42	MAIN LANES - ADD'L - GUARDRAIL WIDENING TAPER RT.	33.00	12.75	4.21									5.50	20.17	220	2.22
705+47.42	707+85.57	MAIN LANES - ADD'L - GUARDRAIL WIDENING RT.	238.15	25.50	60.73									5.50	145.54	220	16.01
706+53.98	706+86.98	MAIN LANES - ADD'L - GUARDRAIL WIDENING TAPER LT.	33.00	12.75	4.21									5.50	20.17	220	2.22
706+86.98	708+00.13	MAIN LANES - ADD'L - GUARDRAIL WIDENING LT.	113.15	25.50	28.85									5.50	69.15	220	7.61
711+11.87	712+25.02	MAIN LANES - ADD'L - GUARDRAIL WIDENING RT.	113.15	25.50	28.85									5.50	69.15	220	7.61
712+25.02	712+58.02	MAIN LANES - ADD'L - GUARDRAIL WIDENING TAPER RT.	33.00	12.75	4.21									5.50	20.17	220	2.22
711+26.43	713+64.58	MAIN LANES - ADD'L - GUARDRAIL WIDENING LT.	238.15	25.50	60.73									5.50	145.54	220	16.01
713+64.58	713+97.58	MAIN LANES - ADD'L - GUARDRAIL WIDENING TAPER LT.	33.00	12.75	4.21									5.50	20.17	220	2.22
713+84.77	714+17.77	MAIN LANES - ADD'L - GUARDRAIL WIDENING TAPER RT.	33.00	12.75	4.21									5.50	20.17	220	2.22
714+17.77	716+58.92	MAIN LANES - ADD'L - GUARDRAIL WIDENING RT.	241.15	25.50	61.49									5.50	147.37	220	16.21
715+09.77	715+42.77	MAIN LANES - ADD'L - GUARDRAIL WIDENING TAPER LT.	33.00	12.75	4.21									5.50	20.17	220	2.22
715+42.77	716+58.92	MAIN LANES - ADD'L - GUARDRAIL WIDENING LT.	116.15	25.50	29.62									5.50	70.98	220	7.81
718+99.08	720+15.23	MAIN LANES - ADD'L - GUARDRAIL WIDENING RT.	116.15	25.50	29.62									5.50	70.98	220	7.81
712+25.02	712+58.02	MAIN LANES - ADD'L - GUARDRAIL WIDENING TAPER RT.	33.00	12.75	4.21									5.50	20.17	220	2.22
718+99.08	721+40.23	MAIN LANES - ADD'L - GUARDRAIL WIDENING LT.	241.15	25.50	61.49									5.50	147.37	220	16.21
721+40.23	721+73.23	MAIN LANES - ADD'L - GUARDRAIL WIDENING TAPER LT.	33.00	12.75	4.21									5.50	20.17	220	2.22
721+23.42	721+56.42	MAIN LANES - ADD'L - GUARDRAIL WIDENING TAPER RT.	33.00	12.75	4.21									5.50	20.17	220	2.22
721+56.42	723+97.57	MAIN LANES - ADD'L - GUARDRAIL WIDENING RT.	241.15	25.50	61.49									5.50	147.37	220	16.21
722+62.98	722+95.98	MAIN LANES - ADD'L - GUARDRAIL WIDENING TAPER LT.	33.00	12.75	4.21									5.50	20.17	220	2.22
722+95.98	724+12.13	MAIN LANES - ADD'L - GUARDRAIL WIDENING LT.	116.15	25.50	29.62									5.50	70.98	220	7.81
726+05.37	727+21.52	MAIN LANES - ADD'L - GUARDRAIL WIDENING RT.	116.15	25.50	29.62									5.50	70.98	220	7.81
727+21.52	727+54.52	MAIN LANES - ADD'L - GUARDRAIL WIDENING TAPER RT.	33.00	12.75	4.21									5.50	20.17	220	2.22
726+19.93	728+61.08	MAIN LANES - ADD'L - GUARDRAIL WIDENING LT.	241.15	25.50	61.49									5.50	147.37	220	16.21
728+61.08	728+94.08	MAIN LANES - ADD'L - GUARDRAIL WIDENING TAPER LT.	33.00	12.75	4.21									5.50	20.17	220	2.22
752+36.92	752+69.92	MAIN LANES - ADD'L - GUARDRAIL WIDENING TAPER RT.	33.00	12.75	4.21									5.50	20.17	220	2.22
752+69.92	753+09.92	MAIN LANES - ADD'L - GUARDRAIL WIDENING RT.	40.00	25.50	10.20									5.50	24.44	220	2.69
752+36.92	752+69.92	MAIN LANES - ADD'L - GUARDRAIL WIDENING TAPER LT.	33.00	12.75	4.21									5.50	20.17	220	2.22
752+69.92	753+09.92	MAIN LANES - ADD'L - GUARDRAIL WIDENING LT.	40.00	25.50	10.20									5.50	24.44	220	2.69
755+12.08	756+26.65	MAIN LANES - ADD'L - GUARDRAIL WIDENING RT.	114.57	25.50	29.22									5.50	70.02	220	7.70
756+26.65	756+59.65	MAIN LANES - ADD'L - GUARDRAIL WIDENING TAPER RT.	33.00	12.75	4.21									5.50	20.17	220	2.22
755+12.08	756+26.65	MAIN LANES - ADD'L - GUARDRAIL WIDENING LT.	114.57	25.50	29.22									5.50	70.02	220	7.70
756+26.65	756+59.65	MAIN LANES - ADD'L - GUARDRAIL WIDENING TAPER LT.	33.00	12.75	4.21									5.50	20.17	220	2.22
ENTIRE	PROJECT	ADDITIONAL FOR LEVELING	2023.58			24.00	5396.21	0.10	539.62					24.00	5396.21	220	593.58
715+00.00	716+59.50	ADDITIONAL FOR METHOD OF RAISING GRADE	159.50			40.00	708.89	0.03	21.27	40.00	708.89	880	311.91				
718+98.50	721+00.00	ADDITIONAL FOR METHOD OF RAISING GRADE	201.50			40.00	895.56	0.03	26.87	40.00	895.56	990	443.30				
TOTALS:					7184.55		27213.18		1823.70		12823.28		3223.35		29115.43		3202.73

VOLUME CONTROL:
Nmax= 115 GYRATIONS FOR PG 64-22

ACHM SURFACE COURSE (1/2"): MIN. AGGR. 94.6%, ASPHALT BINDER (PG 64-22) 5.4%
ACHM BINDER COURSE (1"): MIN. AGGR. 95.6%, ASPHALT BINDER (PG 64-22) 4.4%

9/12/2014

R070344.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.		070344	33	137

(1) 07326, 07327, 07328 & 07329 - QUANTITIES - 56061

SCHEDULE OF BRIDGE QUANTITIES - JOB NO. 070344

BRIDGE NO. / CODE NO. / NAME PLATE TITLE	UNIT OF STRUCTURE	ITEM NO.	205	603	801	802	802	803	804	804	805	805	805	805	807	808
		ITEM	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO.)	TEMPORARY BRIDGE STRUCTURE (24' ROADWAY WIDTH)	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) CONCRETE PILING (18'' SQ.)	(2) CONCRETE PILING (24'' SQ.)	(1) TEST PILE (18'' SQ.)	(2) TEST PILE (24'' SQ.)	STRUCTURAL STEEL IN BEAM SPANS (M 270, GRADE 50W)	ELASTOMERIC BEARINGS
		UNIT	LUMP SUM	LIN. FT.	CU. YD.	CU. YD.	CU. YD.	GAL.	LB.	LB.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LB.	CU. IN.
07326 X071 SOUTH BOAT DITCH	BENTS 1 & 5				40	72.83		0.5	6,722		400		110		1,630	
	BENT 2					19.29			2,355			375		80		
	BENT 3					39.27			6,947							
	BENT 4					45.81			7,966							
	324'-0" CONT. COMP. W-BM. UNIT						415.80	33.9		96,400					375,090	9,780.0
EXIST. BR. NO. 01477 (SITE NO. 1)			1													
TOTALS FOR BRIDGE NO. 07326				217	40	177.20	415.80	34.4	23,990	96,400	400	375	110	80	376,720	9,780.0
07327 X071 TERRE NOIRE CREEK RELIEF	BENTS 1 & 5				37	65.75		0.5	6,480		500				1,530	
	BENTS 2 - 4					54.95			4,780			1,050	135	80		
	238'-0" CONT. COMP. W-BM. UNIT						304.90	24.9		70,220					206,490	8,122.0
EXIST. BR. NO. 01478 (SITE NO. 2)			1													
TOTALS FOR BRIDGE NO. 07327				155	37	120.70	304.90	25.4	11,260	70,220	500	1,050	135	80	208,020	8,122.0
07328 X071 TERRE NOIRE CREEK	BENTS 1 & 4				37	71.22		0.5	6,677		580		155		1,630	
	BENTS 2 & 3					79.28			13,083							
	205'-6" CONT. COMP. W-BM. UNIT						262.80	21.5		61,140					201,220	6,503.0
EXIST. BR. NO. 01479 (SITE NO. 3)			1													
TOTALS FOR BRIDGE NO. 07328				155	37	150.50	262.80	22.0	19,760	61,140	580		155		202,850	6,503.0
07329 X071 NORTH BOAT DITCH	BENTS 1 & 4				30	65.69		0.5	6,480		440		120		1,530	
	BENT 2					42.00			6,820							
	BENT 3					18.31			1,590			300		80		
	200'-0" CONT. COMP. W-BM. UNIT						255.80	21.0		58,770					196,090	6,503.0
EXIST. BR. NO. 01480 (SITE NO. 4)			1													
TOTALS FOR BRIDGE NO. 07329				124	30	126.00	255.80	21.5	14,890	58,770	440	300	120	80	197,620	6,503.0
TOTALS FOR JOB NO. 070344				651	144	574.40	1,239.30	103.3	69,900	286,530	1,920	1,725	520	240	985,210	30,908.0

(1) PILES SHALL BE PRESTRESSED AND CONFORM TO STD. DWG. NO. 55022.

(2) PILES SHALL CONFORM TO DWG. NO. 56068.

BRYAN FREELING
DESIGN SECTION SUPERVISOR

STATE OF ARKANSAS
CHARLES R. ELLIS
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14

BRIDGE ENGINEER

SHEET 1 OF 2
SCHEDULE OF BRIDGE QUANTITIES
GURDON-OAK GROVE STRS. & APPRS. (S)
CLARK COUNTY

ROUTE 67 SEC. 5

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: ADN DATE: 3-25-14 FILENAME: b070344_qi.dgn
CHECKED BY: CSR DATE: 7/14/14 SCALE: NO SCALE
DESIGNED BY: -- DATE: --

BRIDGE NO. 07326, 07327, 07328 & 07329 DRAWING NO. 56061

PRINT DATE: 7/14/2014

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.		070344	34	134

(1) 07326, 07327, 07328 & 07329 - QUANTITIES - 56062

SCHEDULE OF BRIDGE QUANTITIES - JOB NO. 070344

BRIDGE NO. / CODE NO. / NAME PLATE TITLE	UNIT OF STRUCTURE	ITEM NO.	809	812	816	816	SP JOB 070344	SP JOB 070344	SP JOB 070344	SP JOB 070344
		ITEM	SILICONE JOINT SEALANT	BRIDGE NAME PLATE (TYPE D)	FILTER BLANKET	DUMPED RIPRAP	DRILLED SHAFT (72" DIA.)	PERMANENT STEEL CASING (72" DIA.)	CROSSHOLE SONIC LOGGING (72" DIA.)	CORING DRILLED SHAFT
		UNIT	LIN. FT.	EACH	SQ. YD.	CU. YD.	LIN. FT.	LIN. FT.	EACH	LIN. FT.
07326 X071 SOUTH BOAT DITCH	BENTS 1 & 5				531	295				
	BENT 2									
	BENT 3						110	42	2	55
	BENT 4						90	36	2	45
	324'-0" CONT. COMP. W-BM. UNIT		91	1						
EXIST. BR. NO. 01477 (SITE NO. 1)										
TOTALS FOR BRIDGE NO. 07326			91	1	531	295	200	78	4	100
07327 X071 TERRE NOIRE CREEK RELIEF	BENTS 1 & 5				655	362				
	BENTS 2 - 4									
	238'-0" CONT. COMP. W-BM. UNIT		86	1						
EXIST. BR. NO. 01478 (SITE NO. 2)										
TOTALS FOR BRIDGE NO. 07327			86	1	655	362				
07328 X071 TERRE NOIRE CREEK	BENTS 1 & 4				296	172				
	BENTS 2 & 3						196	84	4	49
	205'-6" CONT. COMP. W-BM. UNIT		91	1						
EXIST. BR. NO. 01479 (SITE NO. 3)										
TOTALS FOR BRIDGE NO. 07328			91	1	296	172	196	84	4	49
07329 X071 NORTH BOAT DITCH	BENTS 1 & 4				169	100				
	BENT 2						96	26	2	48
	BENT 3									
	200'-0" CONT. COMP. W-BM. UNIT		86	1						
EXIST. BR. NO. 01480 (SITE NO. 4)										
TOTALS FOR BRIDGE NO. 07329			86	1	169	100	96	26	2	48
TOTALS FOR JOB NO. 070344			354	4	1,651	929	492	188	10	197

BRYAN FREELING
DESIGN SECTION SUPERVISOR

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-19-14
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 2 OF 2
SCHEDULE OF BRIDGE QUANTITIES
GURDON-OAK GROVE STRS. & APPRS. (S)
CLARK COUNTY

ROUTE 67 SEC. 5

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: ADN DATE: 3-25-14 FILENAME: b070344_ql.dgn
CHECKED BY: CSR DATE: 7/14/14 SCALE: NO SCALE
DESIGNED BY: -- DATE: --

BRIDGE NO. 07326, 07327, 07328 & 07329 DRAWING NO. 56062

PRINT DATE: 7/14/2014

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.		070344	35	137

(2) SUMMARY OF QUANTITIES & REVISIONS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-10-14

SUMMARY OF QUANTITIES

ITEM NUMBER	ITEM		QUANTITY	UNIT
201	CLEARING		40	STATION
201	GRUBBING		40	STATION
SP& 202	REMOVAL AND DISPOSAL OF GUARDRAIL		2026	LIN.FT.
210	UNCLASSIFIED EXCAVATION		49803	CU.YD.
210	COMPACTED EMBANKMENT		49811	CU.YD.
SP& 210	SOIL STABILIZATION		200	TON
303	AGGREGATE BASE COURSE (CLASS 7)		7395	TON
401	TACK COAT		1844	GALLON
SP,SS& 406	MINERAL AGGREGATE IN ACHM BINDER COURSE (1")		3081	TON
SP,SS& 406	ASPHALT BINDER (PG 64-22) IN ACHM BINDER COURSE (1")		142	TON
SP,SS& 407	MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2")		3050	TON
SP,SS& 407	ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2")		174	TON
412	COLD MILLING ASPHALT PAVEMENT		2403	SQ.YD.
SP& 414	ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC		10	TON
SP& 415	ACHM PATCHING OF EXISTING ROADWAY		100	TON
504	APPROACH GUTTERS		120.80	CU.YD.
601	MOBILIZATION		1.00	LUMP SUM
SP& 602	FURNISHING FIELD OFFICE		1	EACH
603	MAINTENANCE OF TRAFFIC		1.00	LUMP SUM
603	12" TEMPORARY CULVERT		52	LIN.FT.
604	SIGNS		390	SQ.FT.
604	BARRICADES		128	LIN.FT.
604	TRAFFIC DRUMS		47	EACH
604	CONSTRUCTION PAVEMENT MARKINGS		19316	LIN.FT.
604	REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS		3200	LIN.FT.
604	REMOVAL OF PERMANENT PAVEMENT MARKINGS		3200	LIN.FT.
SP& 606	18" SIDE DRAIN		48	LIN.FT.
606	SELECTED PIPE BEDDING		4	CU.YD.
611	4" PIPE UNDERDRAINS		1600	LIN.FT.
611	UNDERDRAIN OUTLET PROTECTORS		12	EACH
617	GUARDRAIL (TYPE A)		1925	LIN.FT.
617	TERMINAL ANCHOR POSTS (TYPE 1)		14	EACH
617	THRIE BEAM GUARDRAIL TERMINAL		14	EACH
620	LIME		9	TON
620	SEEDING		4.65	ACRE
SS& 620	MULCH COVER		7.32	ACRE
620	WATER		528.8	M.GAL.
621	TEMPORARY SEEDING		2.67	ACRE
621	SILT FENCE		5176	LIN.FT.
621	ROCK DITCH CHECKS		111	CU.YD.
621	DIVERSION DITCH		5046	LIN.FT.
621	SEDIMENT REMOVAL AND DISPOSAL		2100	CU.YD.
621	SEDIMENT BASIN		160	CU.YD.
621	OBLITERATION OF SEDIMENT BASIN		160	CU.YD.
621	PIPE FOR SLOPE DRAIN		167	LIN. FT.
623	SECOND SEEDING APPLICATION		4.65	ACRE
635	ROADWAY CONSTRUCTION CONTROL		1.00	LUMP SUM
642	RUMBLE STRIPS IN ASPHALT SHOULDERS		3842	LIN.FT.
719	THERMOPLASTIC PAVEMENT MARKING WHITE (4")		5768	LIN.FT.
719	THERMOPLASTIC PAVEMENT MARKING YELLOW (4")		4048	LIN.FT.
* SP& 719	INVERTED PROFILE THERMOPLASTIC CONTRAST PAVEMENT MARKING YELLOW (4")	(ALTERNATE NO.1)	1953	LIN.FT.
* SP	HIGH PERFORMANCE CONTRAST MARKING TAPE YELLOW (4")	(ALTERNATE NO.2)	1953	LIN.FT.
721	RAISED PAVEMENT MARKERS (TYPE II)		196	EACH
734	BRIDGE END TERMINAL		2	EACH
804	REINFORCING STEEL-ROADWAY (GRADE 60)		10640	POUND
816	DUMPED RIPRAP		21	CU. YD.
	STRUCTURES OVER 20' SPAN			
205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 1)		1.00	LUMP SUM
205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 2)		1.00	LUMP SUM
205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 3)		1.00	LUMP SUM
205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 4)		1.00	LUMP SUM
603	TEMPORARY BRIDGE STRUCTURE (24' ROADWAY WIDTH)		651	LIN. FT.
636	BRIDGE CONSTRUCTION CONTROL		1.00	LUMP SUM
801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE		144	CU. YD.
802	CLASS S CONCRETE-BRIDGE		574.40	CU. YD.
802	CLASS S(AE) CONCRETE-BRIDGE		1239.30	CU. YD.
803	CLASS 1 PROTECTIVE SURFACE TREATMENT		103.3	GALLON
804	REINFORCING STEEL-BRIDGE (GRADE 60)		69900	POUND
804	EPOXY COATED REINFORCING STEEL (GRADE 60)		286530	POUND
805	CONCRETE PILING (18" SQUARE)		1920	LIN. FT.
805	CONCRETE PILING (24" SQUARE)		1725	LIN. FT.
805	TEST PILE (18" SQUARE)		520	LIN. FT.
805	TEST PILE (24" SQUARE)		240	LIN. FT.
807	STRUCTURAL STEEL IN BEAM SPANS (M270-GR50W)		985210	POUND
808	ELASTOMERIC BEARINGS		30908.0	CU. IN.
809	SILICONE JOINT SEALANT		354	LIN. FT.
812	BRIDGE NAME PLATE (TYPE D)		4	EACH
816	FILTER BLANKET		1651	SQ. YD.
816	DUMPED RIPRAP		929	CU.YD.
SP	DRILLED SHAFT (72"DIAMETER)		492	LIN. FT.
SP	PERMANENT STEEL CASING (72" DIAMETER)		188	LIN. FT.
SP	CROSSHOLE SONIC LOGGING (72" DIAMETER)		10	EACH
SP	CORING DRILLED SHAFT		197	LIN. FT.

*DENOTES ALTERNATE BID ITEMS.

REVISIONS

DATE	REVISION	SHEET NUMBER

9/15/2014

R070344.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.		070344	36	137

(2) SURVEY CONTROL DETAILS

SURVEY CONTROL COORDINATES

Project Name: s070344
Date: 11/17/2011
Coordinate System: ARKANSAS STATE PLANE - SOUTH ZONE BASED ON GPS CONTROL, PROJECTED TO GROUND.
Units: U.S. SURVEY FOOT

Point Name	Northing	Easting	Elev	Feature	Description
1	1789794.3528	971106.7322	188.725	CTL	*5/8" Rebar with 2" Aluminum Cap
2	1790565.6842	971326.3239	178.055	CTL	*5/8" Rebar with 2" Aluminum Cap
3	1791269.9995	971574.1983	181.830	CTL	*5/8" Rebar with 2" Aluminum Cap
4	1791564.6737	971673.9062	181.757	CTL	*5/8" Rebar with 2" Aluminum Cap
5	1792090.9399	971859.2755	180.851	CTL	*5/8" Rebar with 2" Aluminum Cap
6	1792801.1163	972104.2559	181.678	CTL	*5/8" Rebar with 2" Aluminum Cap
7	1793524.4035	972353.7337	178.498	CTL	*5/8" Rebar with 2" Aluminum Cap
8	1794195.0446	972587.0083	178.818	CTL	*5/8" Rebar with 2" Aluminum Cap, 22' W OF CL 67 53' SE OF CP
9	1794910.1508	972834.7475	178.188	CTL	*5/8" Rebar with 2" Aluminum Cap
10	1795526.6274	973048.6592	182.611	CTL	*5/8" Rebar with 2" Aluminum Cap
11	1796432.2823	973413.4238	196.907	CTL	*5/8" Rebar with 2" Aluminum Cap
12	1797269.4400	973703.1166	196.465	CTL	*5/8" Rebar with 2" Aluminum Cap
100	1779360.6647	964074.4591	218.140	GPS	*AHTD GPS "G 23
101	1781169.2480	965521.1472	232.175	GPS	*AHTD GPS "G 23 A
102	1787010.8834	970167.3862	197.715	GPS	*AHTD GPS 100019
103	1788991.4862	970757.8118	201.963	GPS	*AHTD GPS 100019A
104	1798573.4878	981580.8961	176.218	GPS	*AHTD GPS "100020
105	1798542.3236	979601.1301	195.090	GPS	*AHTD GPS "J 192 X
900	1782512.7660	966815.9965	233.418	TBM	*SQ. CUT IN S END HDWL
901	1784614.9148	968692.6972	230.639	TBM	*5/8" Rebar with 2" Aluminum Cap, 22.5' E OF CL OF 67
902	1791254.7800	971629.7926	183.181	TBM	*CHISELED SQ IN SW CNR. OF BRIDGE
903	1791456.0209	971716.2243	183.658	TBM	*CHSLD SQ IN NW CNR BRDGE, 67, GURDON
904	1792262.8340	971893.5221	182.108	TBM	*SQ/CUT IN NW CNR BRIDG, 67, GURDON
906	1795483.6487	973192.0301	183.729	TBM	*CHSLD SQ SE CNR BRIDGE, 67, GURDON
907	1795585.6518	973108.9347	183.762	TBM	*CHSLD SQ IN NW CNR OF, BRIDGE, 67
908	1796794.9659	973458.9880	195.924	TBM	*CHSLD SQ CNTR OF HW, 67, GURDON
909	1798898.4438	975250.2010	203.679	TBM	*CHSLD SQ HW, 67
910	1798765.4769	978195.8171	225.541	TBM	*W COR GRADER BLADE, CURTIS LANE, CURTIS

Note - Rebar and Cap - Standard -" Rebar with 2" Aluminum Cap stamped
*(standard markings common to all caps), or as indicated
(other markings indicated in the point description of the individual point).
USE CAF = 1.0 FOR STAKEOUT FOR THIS PROJECT
A PROJECT CAF OF 0.9999106660 HAS BEEN USED TO COMPUTE THE ABOVE GROUND COORDINATES.
THIS CAF IS INTENDED FOR USE WITHIN THE PROJECT LIMITS.
GRID DISTANCE = GROUND DISTANCE X CAF.
GRID COORDINATES ARE STORED UNDER FILE NAME. s070344gi.ct1
HORIZONTAL DATUM: NAD 83 (1997)
VERTICAL DATUM: NAVD 88 POSITIONAL ACCURACY THIRD ORDER, UNLESS SPECIFIED OTHERWISE AT A SPECIFIC POINT.

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

BASIS OF BEARING:
ARKANSAS STATE PLANE GRID BEARINGS - 0302-SOUTH ZONE
DETERMINED FROM GPS CONTROL POINTS: G 23A - 100020
CONVERGENCE ANGLE: 00 37 40.4 LEFT AT LT: 33-59-00.5 LG: 093-07-18.7
GRID AZIMUTH = ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-10-14

CONST

POINT NO.	TYPE	STATION	NORTHING	EASTING
8000	POB	700+00.00	1790508.9373	971330.9129
8001	POE	762+50.40	1796413.9298	973379.9439

DETOUR 1

POINT NO.	TYPE	STATION	NORTHING	EASTING
8000	POB	300+00.00	1790508.9373	971330.9129
8100	PC	302+12.80	1790709.9767	971400.6735
8102	PT	303+86.64	1790867.5432	971473.4343
8103	PC	305+16.47	1790979.4858	971539.2055
8105	PT	306+88.08	1791134.9459	971611.2324
8106	PC	326+42.73	1792979.9557	972256.6860
8108	PT	328+71.04	1793202.7655	972303.4839
8109	PC	328+98.19	1793229.8400	972305.5870
8111	PT	331+24.27	1793450.5396	972351.6496
8112	POE	334+10.60	1793721.0491	972445.5149

DETOUR 2

POINT NO.	TYPE	STATION	NORTHING	EASTING
8200	POB	500+00.00	1795043.6834	972904.4687
8201	PC	500+03.13	1795046.6400	972905.4947
8203	PT	501+96.10	1795220.5938	972988.1244
8204	PC	502+99.55	1795308.6317	973042.4544
8206	PT	505+01.24	1795490.8424	973127.9036
8207	PC	507+31.62	1795709.2265	973201.2692
8209	PT	509+10.13	1795883.0272	973240.6536
8210	PC	510+17.51	1795989.6176	973253.6777
8212	PT	512+04.75	1796171.6752	973295.8816
8213	POE	513+10.78	1796271.8438	973330.6401

9/12/2014

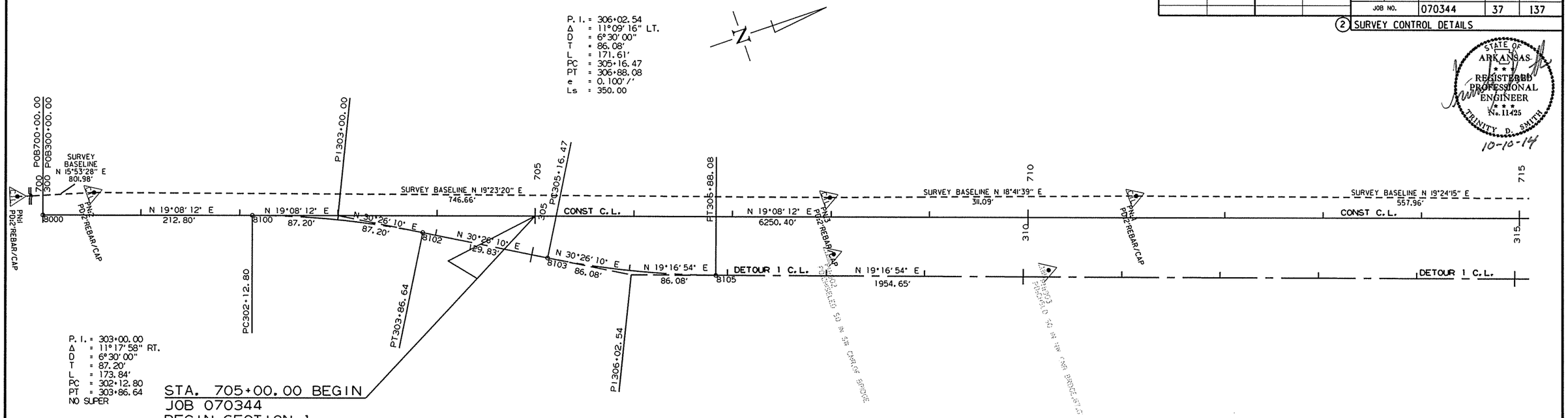
R070344.DGN

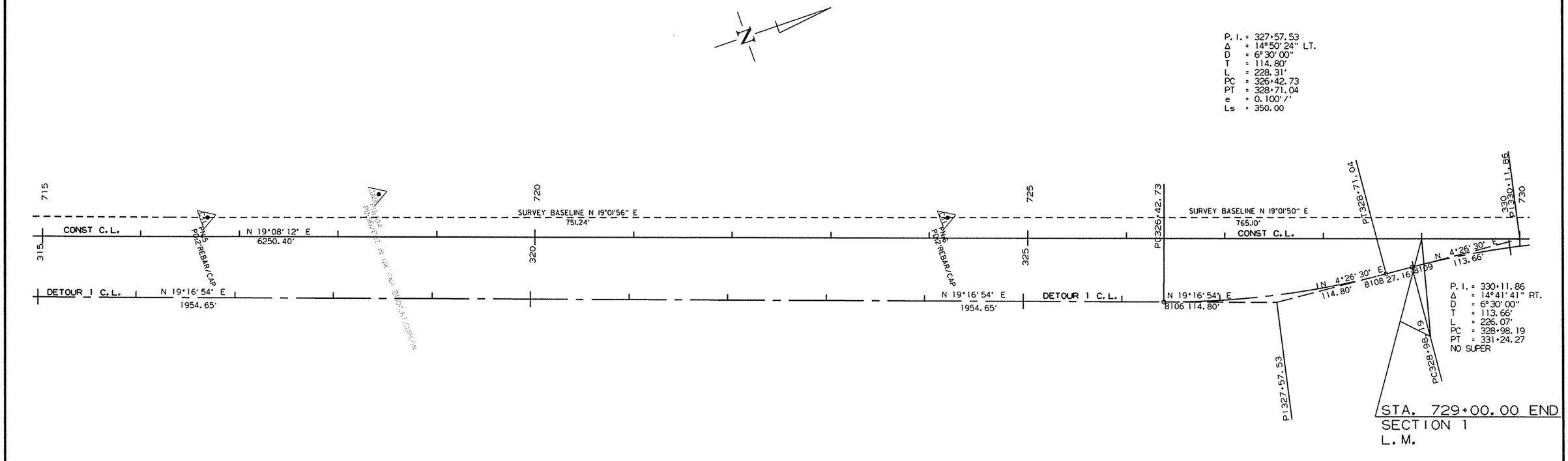
SURVEY CONTROL DETAILS

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.		070344	37	137

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-10-14





SURVEY CONTROL DETAILS

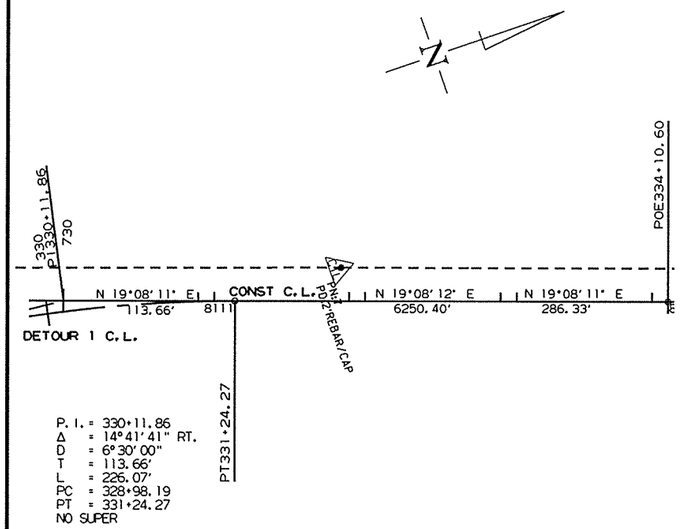
9/12/2014

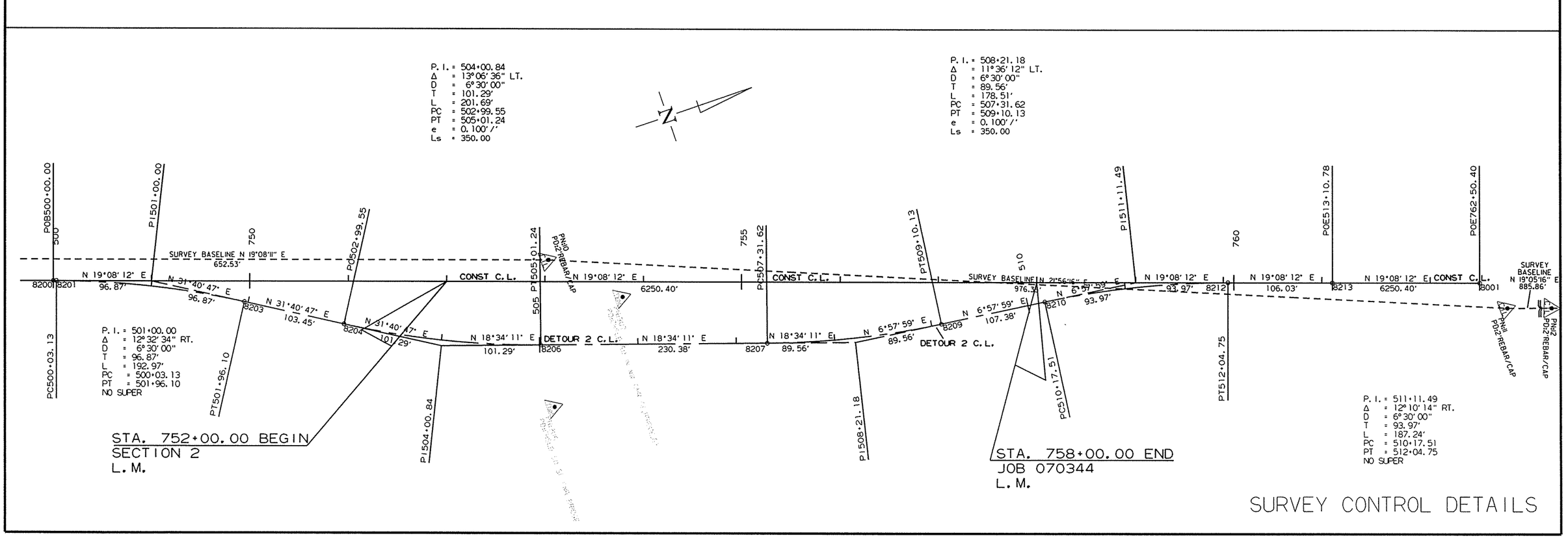
R070344.DGN

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.		070344	38	137

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-10-14





SURVEY CONTROL DETAILS

9/12/2014

R070344.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.		070344	39	137

(2) PLAN AND PROFILE SHEETS

SPECIAL FLOOD HAZARD AREA

BR. END STA. 707+92.85
BRIDGE NO. 07326
40'-0" CLEAR ROADWAY
324'-0" TOTAL LENGTH
326'-3 11/16" CONT. COMP.
W-BEAM UNIT (72'-90'-90'-72)
BR. END STA. 711+19.15

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-10-14

POB 700+00.00
PI 303+00.00
PC 305+10.47
R 1218.30
PT 306+88.08
PC 302+12.80
PT 303+86.64
703+49.00 59.93'
704+50.00 59.93'
705+52.12 75.00'
705+52.12 149.94'
PI 306+02.54
N 19°08'12" E
N 30°25'10" E
T.C.E.
EXISTING R/W
PROPOSED R/W
CONST. LIMITS
SOUTH BOAT DITCH

STA. 705+00.00 BEGIN
JOB 070344
BEGIN SECTION 1
L.M. 4.36

STA.	STA.		GUARDRAIL (TYPE A) LIN. FT.	THRIE BEAM GUARDRAIL TERMINAL (EA)	TERMINAL ANCHOR POSTS (TYPE 1) (EA)
705+57.42	707+85.57	RT.	200	1	1
706+96.98	708+00.13	LT.	75	1	1
711+26.43	713+54.58	LT.	200	1	1
711+11.87	712+15.02	RT.	75	1	1

STA. 708+09.38- STA. 710+70.68 IN PLACE
263' X 24' BRIDGE NO. 01477 AT LM 4.42 CONSISTING OF A
STEEL TRUSS-THRU (MAIN SPAN) WITH
CONCRETE TEE BEAM (APPR. SPANS)
REMOVE AS EXISTING BRIDGE STRUCTURE (SITE NO. 1). 1.00 LUMP SUM

SOUTH BOAT DITCH AT STA. 309+10 TO STA. 310+35
IS CLASSIFIED AS INTERMITTENT. THE TOP
OF CHANNEL ELEVATION IS 172.0 FT. MSL.
REFER TO SECTION 110.05(c) TEMPORARY FILL
OF THE 2014 STANDARD SPECIFICATIONS.

BRIDGE END
P.V.I. 707+92.85
ELEV. 183.35

BRIDGE END
P.V.I. 711+19.15
ELEV. 183.35

0.00%

DESIGN HW
Q50 = 177.5

1:2

2:1

BM: 902 CHISELED SQ IN SW CNR.
OF BRIDGE 37.86 RT. OF STA. 708+02.61
ELEVATION = 183.18

BM: 903 CHSLD SQ IN NW CNR BRIDGE, HWY. 67, GURDON
53.54 RT. OF STA. 710+21.06
ELEVATION = 183.66

220 210 200 190 180 170 160 150 140 130

700+00 701+00 702+00 703+00 704+00 705+00 706+00 707+00 708+00 709+00 710+00 711+00 712+00 713+00 714+00 715+00

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STA.	STA.		GUARDRAIL (TYPE A) LIN. FT.	THRIE BEAM GUARDRAIL TERMINAL (EA)	TERMINAL ANCHOR POSTS (TYPE 1) (EA)
714+28.35	716+59.50	RT.	200	1	1
716+08.35	716+59.50	LT.	75	1	1
718+98.50	721+29.65	LT.	200	1	1
718+98.50	720+04.65	RT.	75	1	1

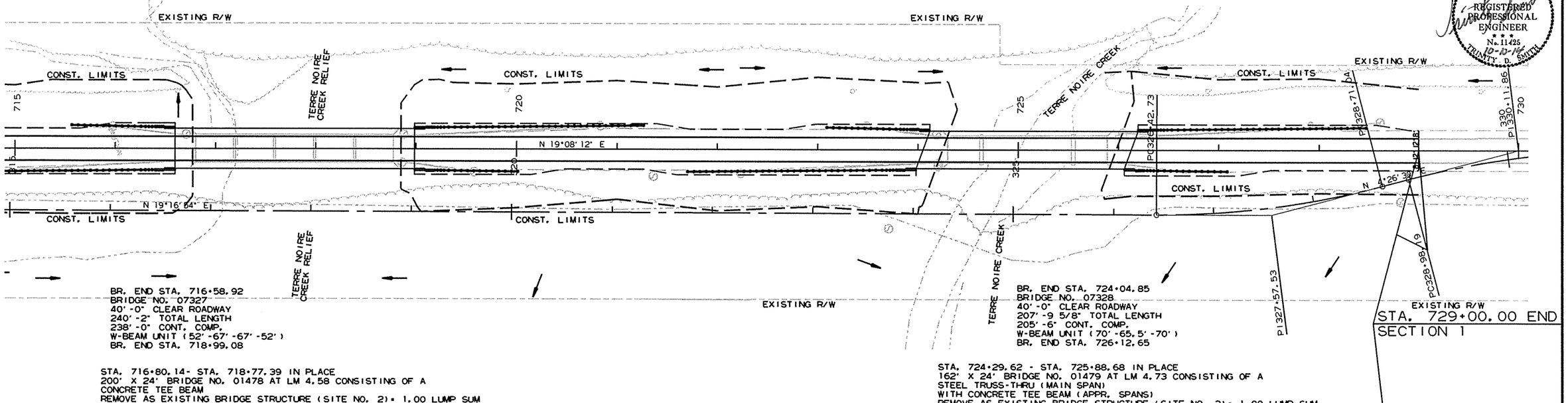
SPECIAL FLOOD HAZARD AREA

STA.	STA.		GUARDRAIL (TYPE A) LIN. FT.	THRIE BEAM GUARDRAIL TERMINAL (EA)	TERMINAL ANCHOR POSTS (TYPE 1) (EA)
721+69.54	723+97.69	RT.	200	1	1
723+09.10	724+12.25	LT.	75	1	1
726+19.81	728+47.96	LT.	200	1	1
726+05.25	727+08.40	RT.	75	1	1

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070344	40	137

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
10-10-16
TRINITY D. SMITH



BR. END STA. 716+58.92
BRIDGE NO. 07327
40'-0" CLEAR ROADWAY
240'-2" TOTAL LENGTH
238'-0" CONT. COMP.
W-BEAM UNIT (52'-67'-67'-52')
BR. END STA. 718+99.08

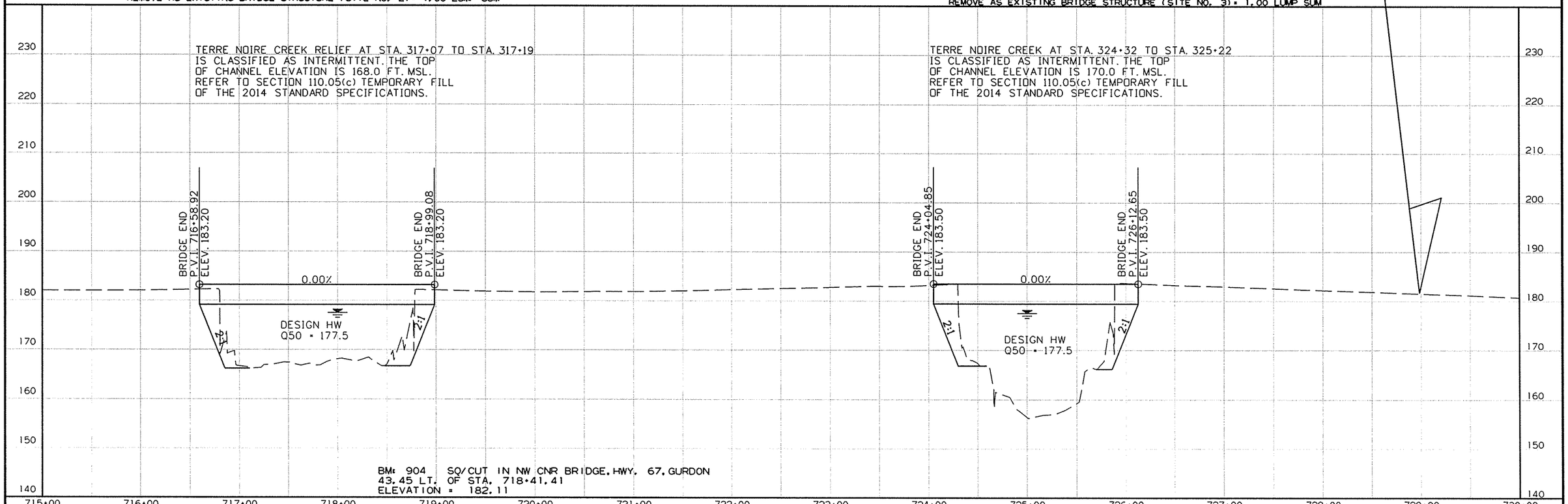
STA. 716+80.14 - STA. 718+77.39 IN PLACE
200' X 24' BRIDGE NO. 01478 AT LM 4.58 CONSISTING OF A
CONCRETE TEE BEAM
REMOVE AS EXISTING BRIDGE STRUCTURE (SITE NO. 2) = 1.00 LUMP SUM

BR. END STA. 724+04.85
BRIDGE NO. 07328
40'-0" CLEAR ROADWAY
207'-9 5/8" TOTAL LENGTH
205'-6" CONT. COMP.
W-BEAM UNIT (70'-65.5'-70')
BR. END STA. 726+12.65

STA. 724+29.62 - STA. 725+88.68 IN PLACE
162' X 24' BRIDGE NO. 01479 AT LM 4.73 CONSISTING OF A
STEEL TRUSS-THRU (MAIN SPAN)
WITH CONCRETE TEE BEAM (APPR. SPANS)
REMOVE AS EXISTING BRIDGE STRUCTURE (SITE NO. 3) = 1.00 LUMP SUM

TERRE NOIRE CREEK RELIEF AT STA. 317+07 TO STA. 317+19
IS CLASSIFIED AS INTERMITTENT. THE TOP
OF CHANNEL ELEVATION IS 168.0 FT. MSL.
REFER TO SECTION 110.05(c) TEMPORARY FILL
OF THE 2014 STANDARD SPECIFICATIONS.

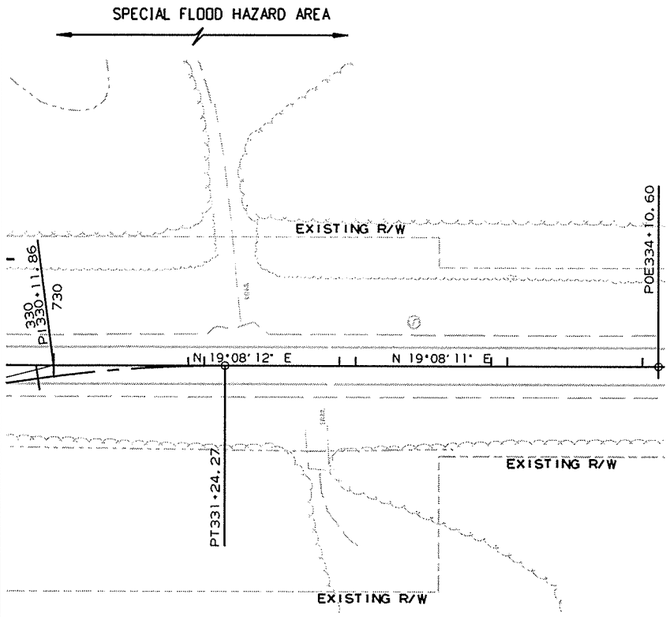
TERRE NOIRE CREEK AT STA. 324+32 TO STA. 325+22
IS CLASSIFIED AS INTERMITTENT. THE TOP
OF CHANNEL ELEVATION IS 170.0 FT. MSL.
REFER TO SECTION 110.05(c) TEMPORARY FILL
OF THE 2014 STANDARD SPECIFICATIONS.



BM: 904 SQ/CUT IN NW CNR BRIDGE, HWY. 67, GURDON
43.45 LT. OF STA. 718+41.41
ELEVATION = 182.11

8/14/2012

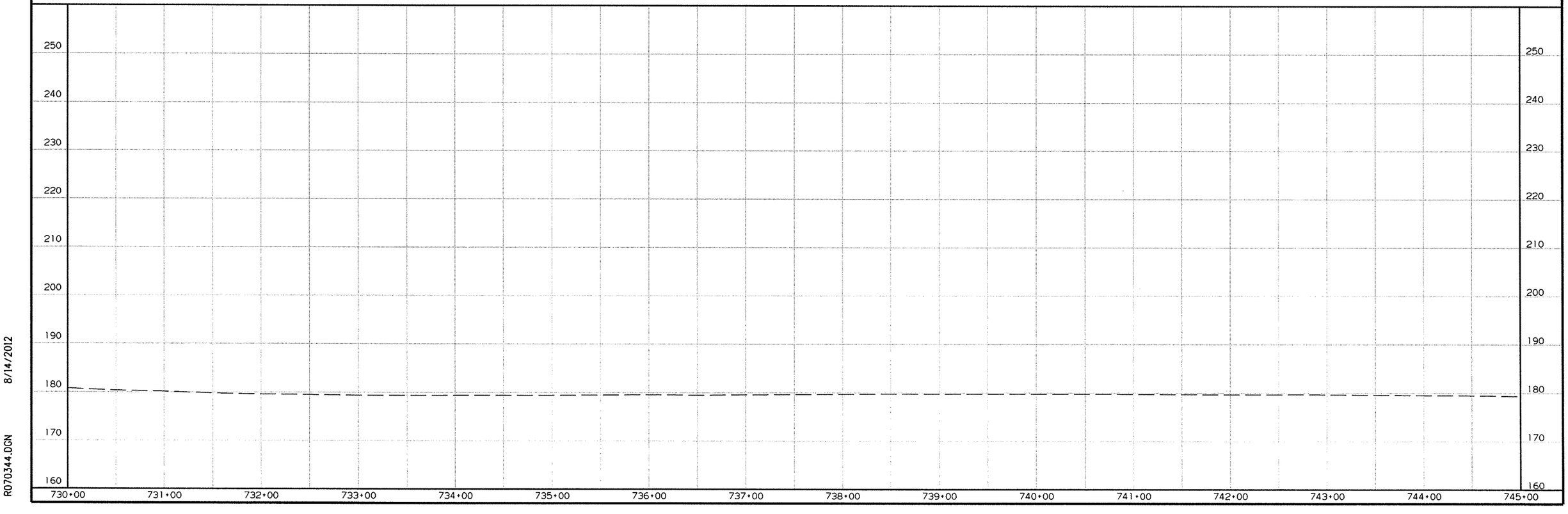
R070344.DGN



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.		070344	41	137

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-10-14



8/14/2012

R070344.DGN

STA.	STA.		GUARDRAIL (TYPE A) LIN. FT.	THRIE BEAM GUARDRAIL TERMINAL EACH	TERMINAL ANCHOR POSTS (TYPE 1) EACH	BRIDGE END TERMINAL EACH
752+80.50	753+10.50	RT.				1
752+80.50	753+10.50	LT.				1
755+11.50	757+41.65	LT.	200	1	1	
755+11.50	756+16.65	RT.	75	1	1	

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070344	42	137

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-10-14

SPECIAL FLOOD HAZARD AREA

STA. 752+52 INSTALL 18" X 48' SIDE DRAIN ON LT.
CONSTRUCT APPROACH = 115 CU. YD.

BR. END STA. 753+09.92
BRIDGE NO. 07329
40'-0" CLEAR ROADWAY
202'-2" TOTAL LENGTH
200'-0" CONT. COMP.
W-BEAM UNIT (63'-74'-63')
BR. END STA. 755+12.08

POB500+00.00
PC500+03.13
P1501+00.00
PT501+96.16
PC502+99.55
PT502+01.24
P1504+00.84
PC505+31.62
PT509+10.13
PC510+17.51
PT511+11.49
PT512+04.75
PT508+12.18
P1508+21.18
749+40.00 60.06'
751+46.12 150.06'
N 19°08' 12" E
N 31°40' 47" E
N 18°34' 11" E
N 6°57' 59" E
81.18
505
510
500
750
755
760
20'
CONST. LIMITS
EXISTING R/W
NORTH BOAT DITCH
CENTER POINT
T.C.E.

STA. 752+00.00 BEGIN
SECTION 2
L.M. 5.26

STA. 758+00.00 END
JOB 070344

STA. 753+21.08 - STA. 755+02.12 IN PLACE
183' X 24' BRIDGE NO. 01480 AT LM 5.28 CONSISTING OF A
STEEL TRUSS-THRU (MAIN SPAN)
WITH CONCRETE TEE BEAM (APPR. SPANS)
REMOVE AS EXISTING BRIDGE STRUCTURE (SITE NO. 4) = 1.00 LUMP SUM

NORTH BOAT DITCH AT STA. 505+21 TO STA. 506+12
IS CLASSIFIED AS INTERMITTENT. THE TOP
OF CHANNEL ELEVATION IS 174.0 FT. MSL.
REFER TO SECTION 110.05(c) TEMPORARY FILL
OF THE 2014 STANDARD SPECIFICATIONS.

BRIDGE END
P.V.I. 753+09.92
ELEV. 184.08

BRIDGE END
P.V.I. 755+12.08
ELEV. 184.08

0.00%

1:2

2:1

DESIGN HW
Q50 = 177.5

230
220
210
200
190
180
170
160
150
140

745+00 746+00 747+00 748+00 749+00 750+00 751+00 752+00 753+00 754+00 755+00 756+00 757+00 758+00 759+00 760+00

BM: 906 CHSLD SQ SE CNR BRIDGE, HWY. 67, GURDON
127.44 RT. OF STA. 753+09.92
ELEVATION = 183.73

BM: 907 CHSLD SQ IN NW CNR OF BRIDGE, HWY. 67
15.5 RT. OF STA. 753+79.05
ELEVATION = 183.76

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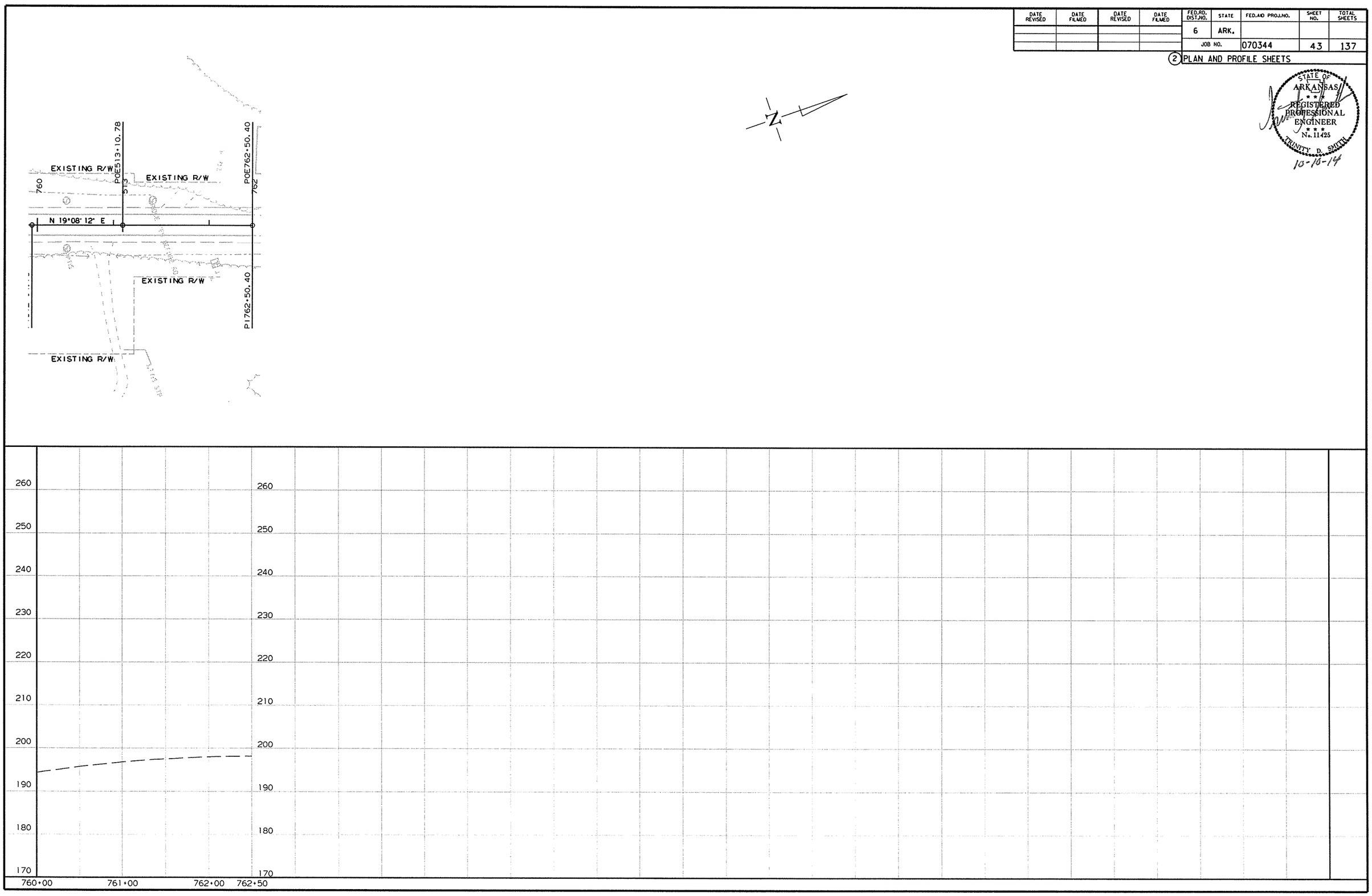
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070344	43	137

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-16-14



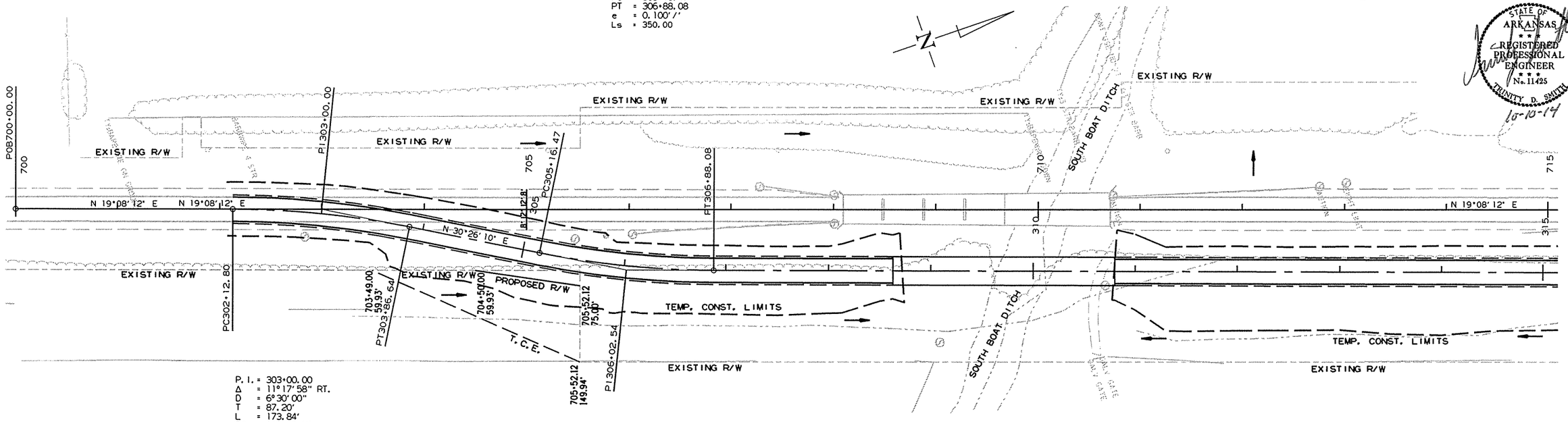
R070344.DGN 8/14/2012

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.		070344	44	137

(2) PLAN AND PROFILE SHEETS

P. I. = 306+02.54
Δ = 11°09' 16" LT.
D = 6°30' 00"
T = 86.08'
L = 171.61'
PC = 305+16.47
PT = 306+88.08
e = 0.100'/'
Ls = 350.00

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-10-14



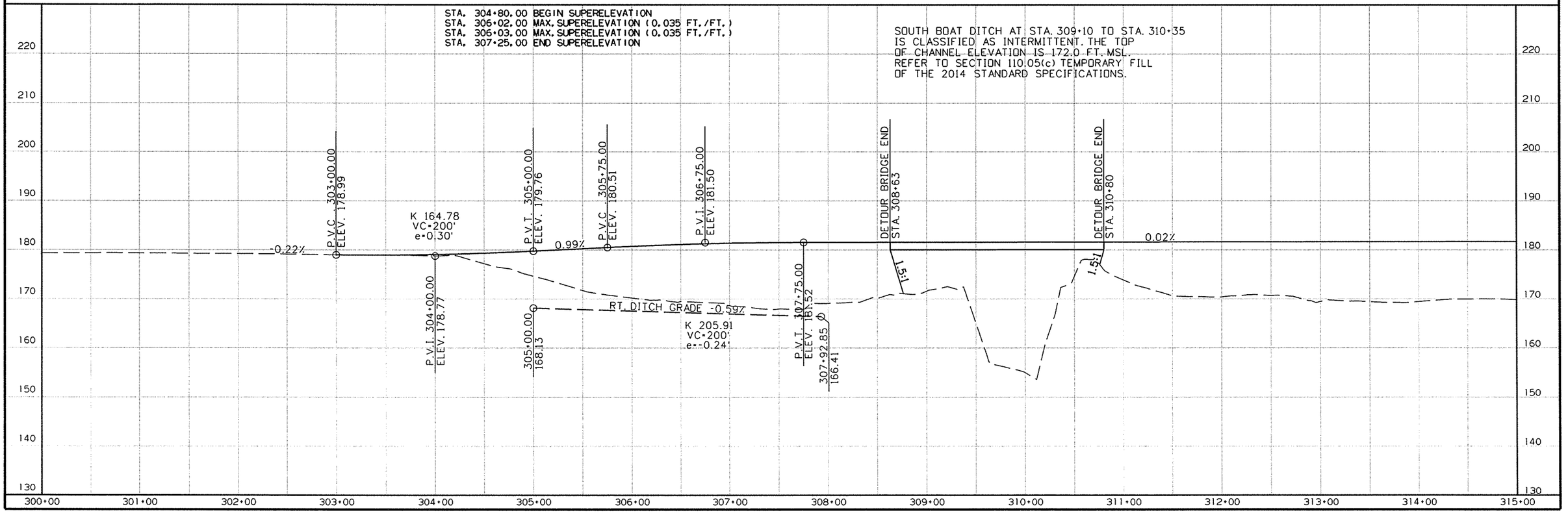
P. I. = 303+00.00
Δ = 11°17' 58" RT.
D = 6°30' 00"
T = 87.20'
L = 173.84'
PC = 302+12.80
PT = 303+86.64
NO SUPER

STA. 308+63 - STA. 310+80 CONSTRUCT
217' X 24' TEMPORARY BRIDGE

DETOUR

STA. 304+80.00 BEGIN SUPERELEVATION
STA. 306+02.00 MAX. SUPERELEVATION (0.035 FT./FT.)
STA. 306+03.00 MAX. SUPERELEVATION (0.035 FT./FT.)
STA. 307+25.00 END SUPERELEVATION

SOUTH BOAT DITCH AT STA. 309+10 TO STA. 310+35 IS CLASSIFIED AS INTERMITTENT. THE TOP OF CHANNEL ELEVATION IS 172.0 FT. MSL. REFER TO SECTION 110.05(c) TEMPORARY FILL OF THE 2014 STANDARD SPECIFICATIONS.



8/14/2012

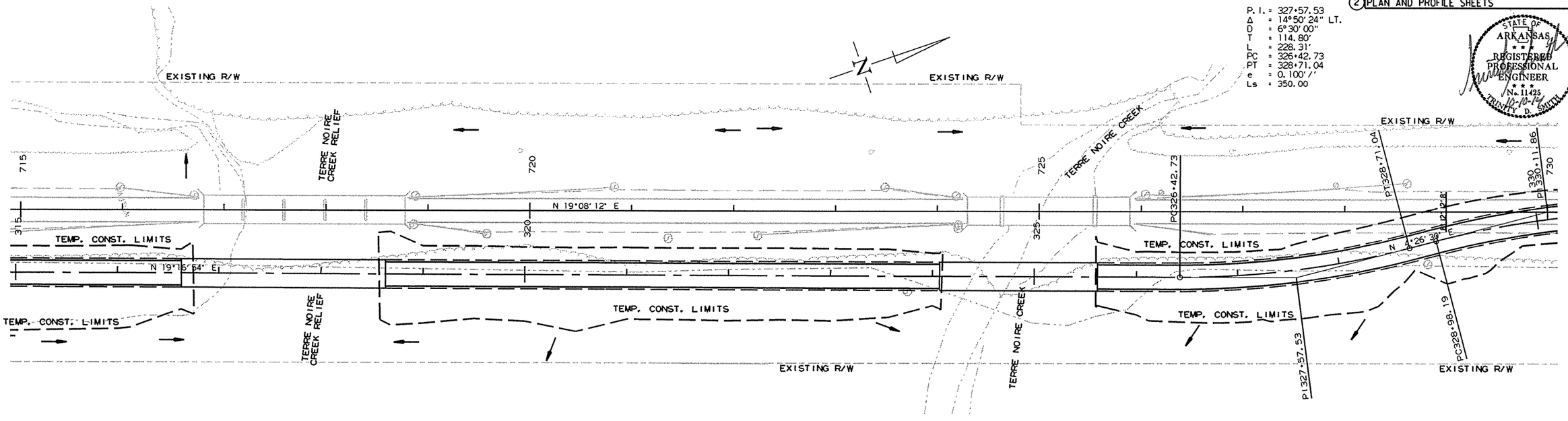
R070344.DGN

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.		070344	45	137

(2) PLAN AND PLOT SHEETS

P. I. = 327+57.53
Δ = 14°50'24" LT.
D = 6°30'00"
T = 114.80'
L = 228.31'
PC = 326+42.73
PT = 328+71.04
e = 0.100'/'
Ls = 350.00

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
10-10-12
TRINITY D. SMITH



STA. 316+63 - STA. 318+18 CONSTRUCT
155' X 24' TEMPORARY BRIDGE

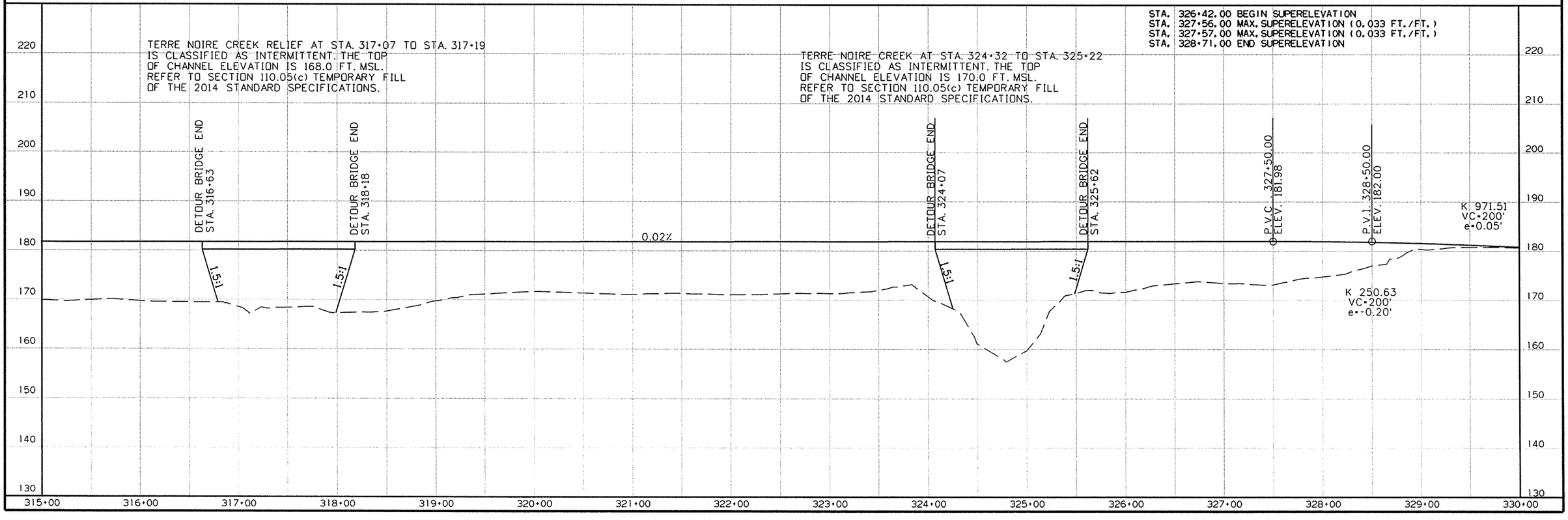
STA. 324+07 - STA. 325+62 CONSTRUCT
155' X 24' TEMPORARY BRIDGE

DETOUR

STA. 326+42.00 BEGIN SUPERELEVATION
STA. 327+56.00 MAX. SUPERELEVATION (0.033 FT./FT.)
STA. 327+57.00 MAX. SUPERELEVATION (0.033 FT./FT.)
STA. 328+71.00 END SUPERELEVATION

TERRE NOIRE CREEK RELIEF AT STA. 317+07 TO STA. 317+19 IS CLASSIFIED AS INTERMITTENT. THE TOP OF CHANNEL ELEVATION IS 168.0 FT. MSL. REFER TO SECTION 110.05(c) TEMPORARY FILL OF THE 2014 STANDARD SPECIFICATIONS.

TERRE NOIRE CREEK AT STA. 324+32 TO STA. 325+22 IS CLASSIFIED AS INTERMITTENT. THE TOP OF CHANNEL ELEVATION IS 170.0 FT. MSL. REFER TO SECTION 110.05(c) TEMPORARY FILL OF THE 2014 STANDARD SPECIFICATIONS.



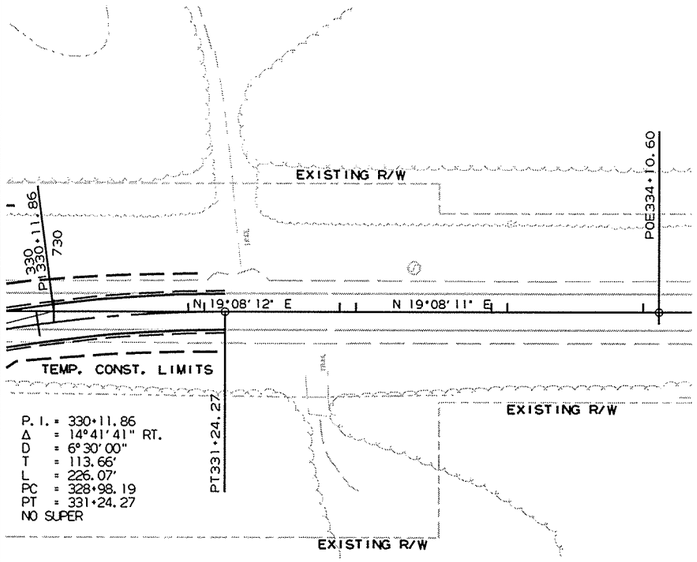
8/14/2012

R070344.DGN

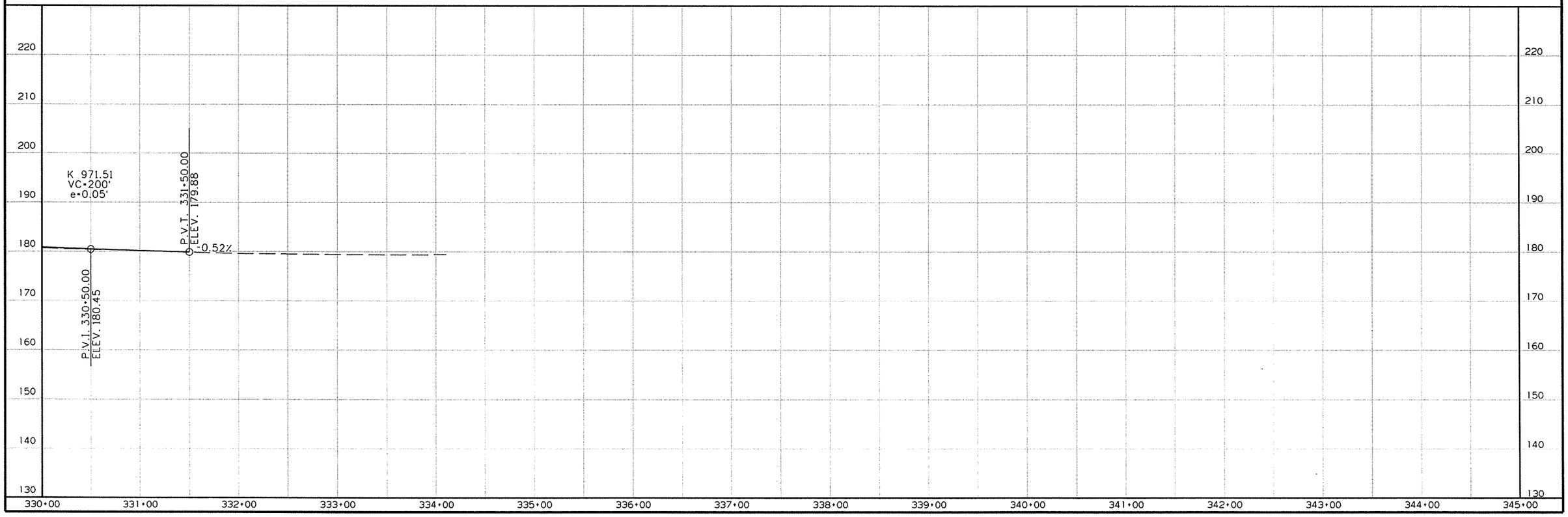
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070344	46	137

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-10-14



DETOUR



8/14/2012

R070344.DGN

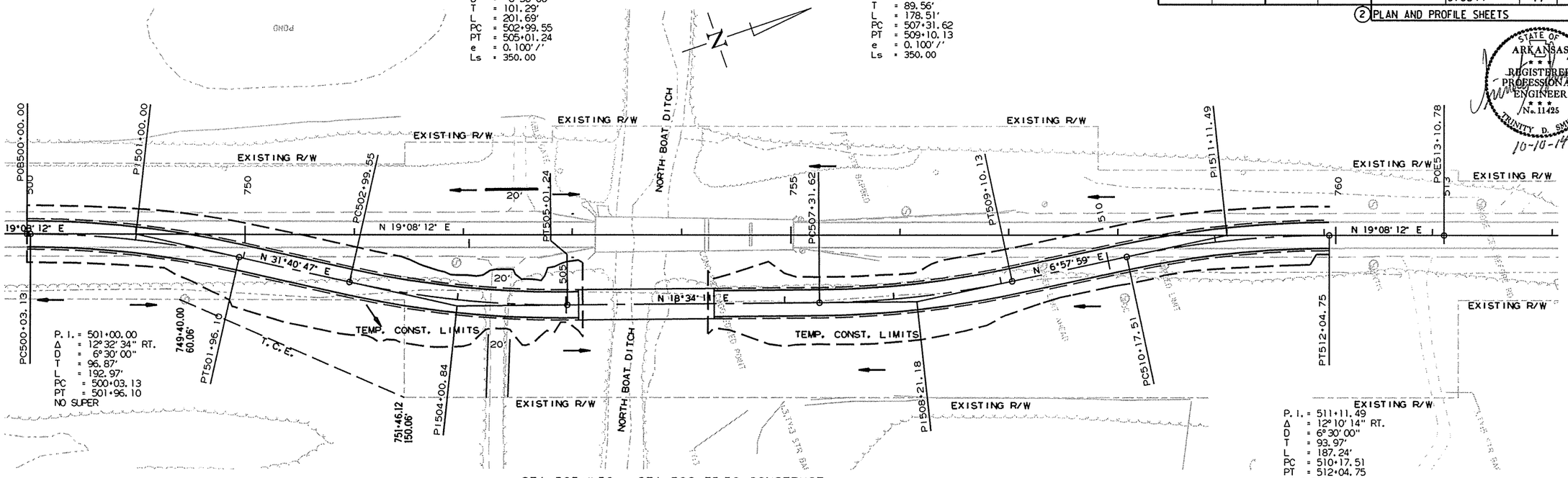
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070344	47	137

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-10-14

P. I. = 504+00.84
Δ = 13°06' 36" LT.
D = 6°30' 00"
T = 101.29'
L = 201.69'
PC = 502+99.55
PT = 505+01.24
e = 0.100'/'
Ls = 350.00

P. I. = 508+21.18
Δ = 11°36' 12" LT.
D = 6°30' 00"
T = 89.56'
L = 178.51'
PC = 507+31.62
PT = 509+10.13
e = 0.100'/'
Ls = 350.00



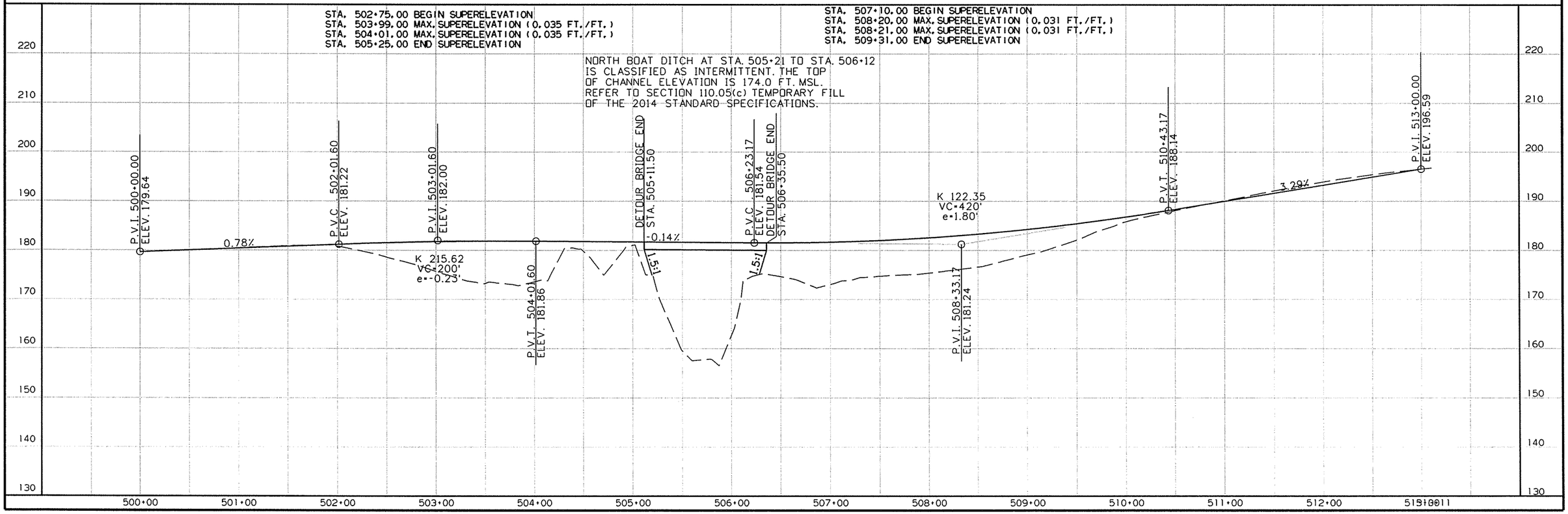
STA. 505+11.50 - STA. 506+35.50 CONSTRUCT
124' X 24' TEMPORARY BRIDGE

DETOUR

STA. 502+75.00 BEGIN SUPERELEVATION
STA. 503+99.00 MAX. SUPERELEVATION (0.035 FT./FT.)
STA. 504+01.00 MAX. SUPERELEVATION (0.035 FT./FT.)
STA. 505+25.00 END SUPERELEVATION

STA. 507+10.00 BEGIN SUPERELEVATION
STA. 508+20.00 MAX. SUPERELEVATION (0.031 FT./FT.)
STA. 508+21.00 MAX. SUPERELEVATION (0.031 FT./FT.)
STA. 509+31.00 END SUPERELEVATION

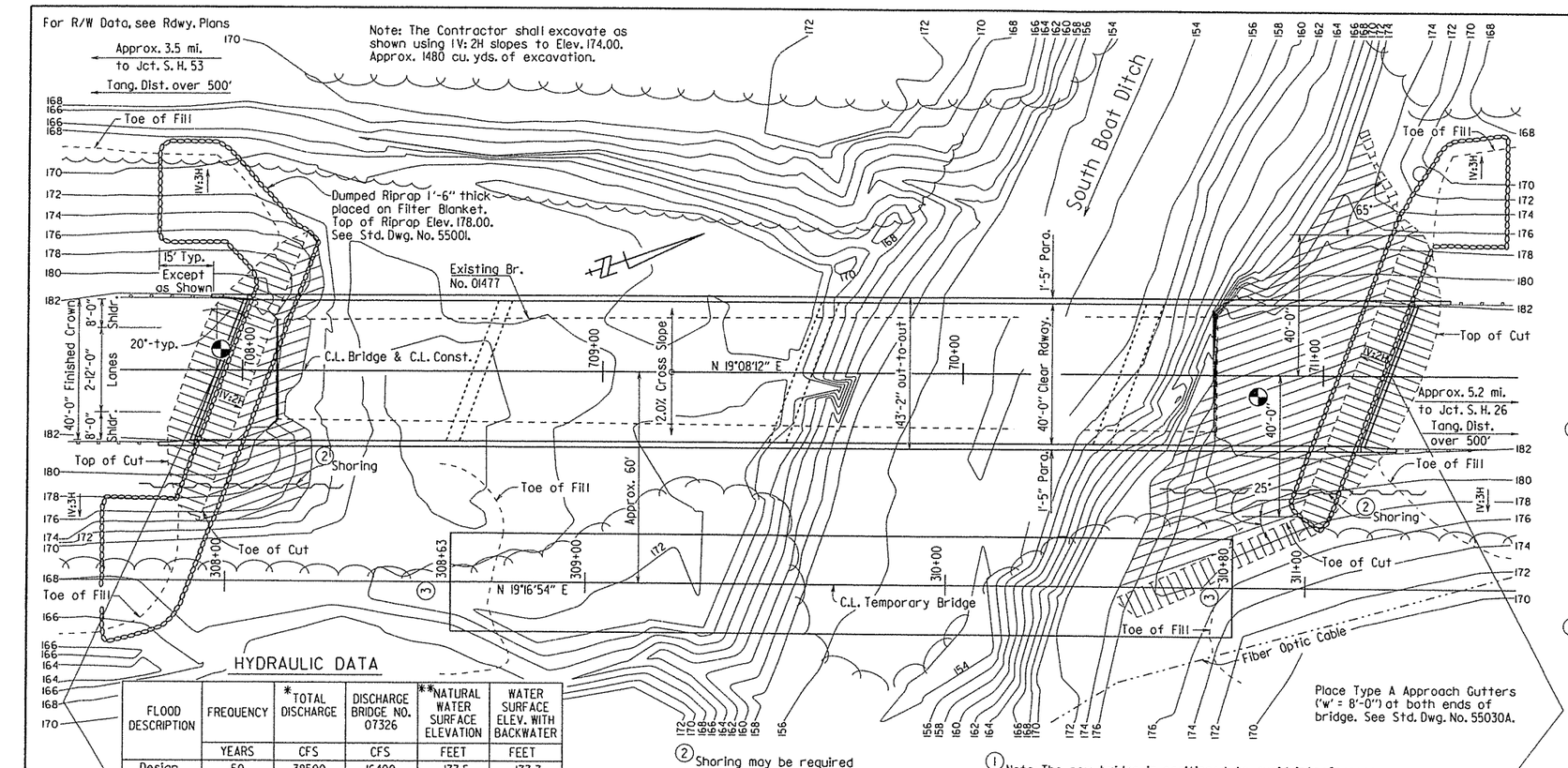
NORTH BOAT DITCH AT STA. 505+21 TO STA. 506+12 IS CLASSIFIED AS INTERMITTENT. THE TOP OF CHANNEL ELEVATION IS 174.0 FT. MSL. REFER TO SECTION 110.05(c) TEMPORARY FILL OF THE 2014 STANDARD SPECIFICATIONS.



8/14/2012

R070344.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.		070344	48	131
				(1) 07326 -		LAYOUT		- 56063



HYDRAULIC DATA

FLOOD DESCRIPTION	FREQUENCY	*TOTAL DISCHARGE	DISCHARGE BRIDGE NO. 07326	**NATURAL WATER SURFACE ELEVATION	WATER SURFACE ELEV. WITH BACKWATER
	YEARS	CFS	CFS	FEET	FEET
Design	50	38500	16400	177.5	177.7
Base	100	43700	18250	178.1	178.4
Extreme	500	56550	19200	179.6	180.3
Overtopping	160	47550	17950	178.6	178.9

* Total discharge through this bridge and Bridge Nos. 07327, 07328, and 07329 over Terre Noire Creek Relief, Terre Noire Creek, and North Boat Ditch.

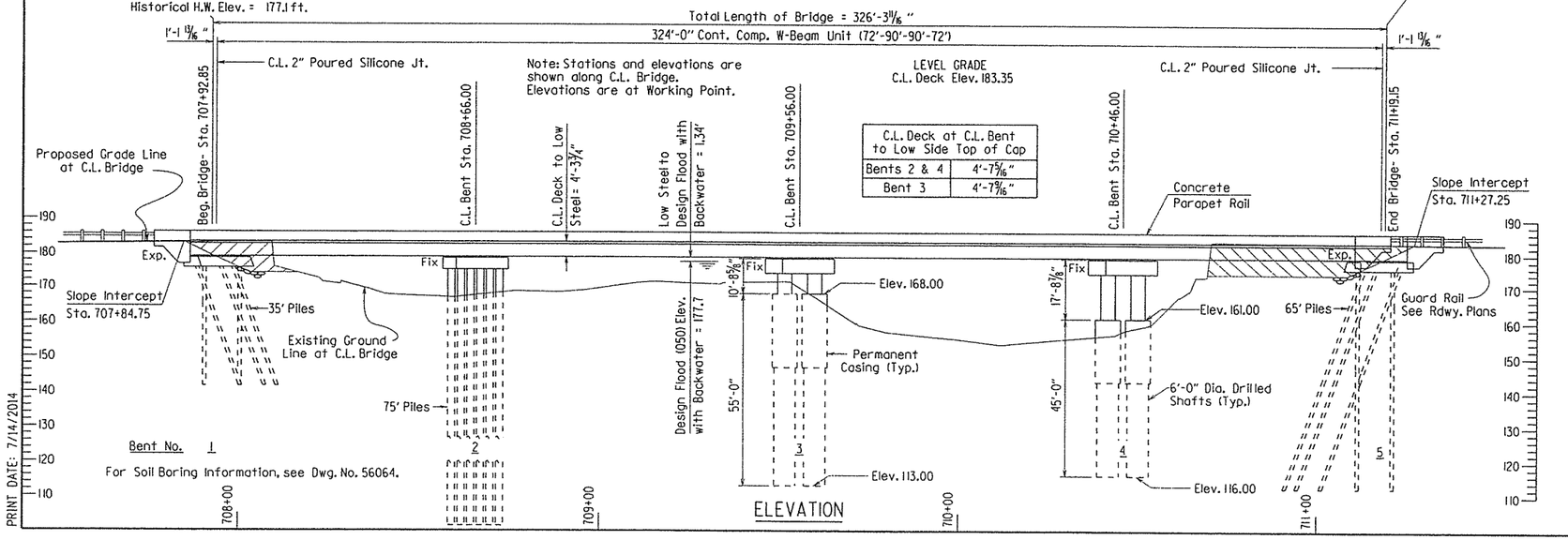
** Unconstricted water surface without structure or roadway approaches. 0100 backwater elev. for existing structure = 178.2 ft.
Proposed low bridge chord elev. = 179.04 ft.
Drainage area = 250 square miles.
Historical H.W. Elev. = 177.1 ft.

(2) Shoring may be required during construction. Payment for this work, if required, shall be considered subsidiary to the pay item "Unclassified Excavation for Structures - Bridge." See SP Job No. 070344 "Shoring".

(1) Note: The new bridge is positioned to avoid interference with the existing substructure. The contractor shall verify measurements before driving any piling or drilling any shafts. Any adjustments necessary to fit the new bridge to the existing conditions shall be submitted for the Engineer's approval.

(3) Approx. Beg. and End Detour Bridge Stations

PLAN



ELEVATION

PRINT DATE: 7/14/2014

GENERAL NOTES

BENCH MARK: 903, Chiseled Square in the Northwest Corner of Bridge No. 01477, Elev. 183.66.

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 Specification unless otherwise noted in the Plans.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications (Sixth Edition, 2012).

LIVE LOADING: HL-93 SEISMIC ZONE: 1

MATERIALS AND STRENGTHS:

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

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

(1) CONCRETE PILING: Piling for Bents 1 & 5 shall be 18" square prestressed concrete piles and shall be driven to a minimum ultimate bearing capacity of 235 tons per pile. Piling for Bent 2 shall be 24" prestressed concrete piles and shall be driven to a minimum ultimate bearing capacity of 375 tons. All piling shall be driven with an approved air, steam, or diesel hammer. Piling in end bents shall be driven after embankment to bottom of cap is in place.

Length of piling shown are assumed for estimating quantities only. Actual lengths to be determined in the field. Drive one 40' test pile at Bent 1, one 80' test pile at Bent 2, and one 70' test pile at Bent 5.

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 59,700 ft. lbs. per blow will be required to obtain the ultimate bearing capacity at Bent Nos. 1 & 5. It is estimated that a minimum rated hammer energy of 90,200 ft. lbs. per blow will be required to obtain the ultimate bearing capacity at Bent No. 2.

(1) DRILLED SHAFTS: All drilled shafts shall be founded a minimum of 20 feet at Bent 3 and 15 feet at Bent 4 into material designated as Hard, Dark Gray Clay. No adjustment in plan tip elevation shall be made without prior approval from the Engineer. Methods of construction of the drilled shafts shall be in accordance with Special Provision Job No. 070344 "Drilled Shaft Foundations".

CROSSHOLE SONIC LOGGING: Nondestructive testing shall be performed on each drilled shaft in accordance with Special Provision Job No. 070344 "Nondestructive Testing of Drilled Shafts".

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	56065-56066
Int. Bents	56067,56069-56070
324' Cont. Comp. W-Beam Unit	56071-56076
Elastomeric Bearings	56077
18" Prestressed Concrete Piles	55022
24" Prestressed Concrete Piles	56068
Type A Approach Gutters	55030A

EXISTING BRIDGE: Existing bridge no. 01477 at Site 1 (log mile 4.42) is 25.2' wide and 263' long and consists of four 40' reinforced concrete deck girder spans and a 100' steel truss span supported by concrete bents with timber pile footings. The existing bridge is located at the site of the proposed new bridge.

REMOVAL AND SALVAGE: After the temporary bridge is open to traffic, existing bridge no. 01477 shall be removed in accordance with Section 205. In addition, the Contractor shall remove the existing concrete riprap as directed by the Engineer. Payment for this work will be subsidiary to the item 205 "Removal of Existing Bridge Structure". This material and all material from the existing bridge shall become the property of the Contractor.

TEMPORARY BRIDGE: Construct a minimum 217' long temporary bridge approximately 60' downstream from centerline construction with a minimum deck elevation of 180.60. See roadway plans for actual detour grade and alignment. The temporary bridge shall have a minimum span length of 31' over the main channel, a minimum clear roadway width of 24', and a minimum live load capacity of H15. See Section 603 and drawing numbers 55054 through 55056 for standard temporary bridge details. A timber deck will not be allowed in the construction of the temporary bridge structure. If timber piling and pine timber are used on this temporary bridge structure, the materials shall be treated with a preservative according to the Standard Specifications.

MAINTENANCE OF TRAFFIC: See Roadway Plans.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 1 OF 2
LAYOUT OF BRIDGE OVER SOUTH BOAT DITCH
GURDON-OAK GROVE STRS. & APPRS. (S)
CLARK COUNTY

ROUTE 67 SEC. 5

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: ADN DATE: 04/13/12
CHECKED BY: CSR DATE: 6/16/14
DESIGNED BY: ADN DATE: 3-12
FILENAME: b070344xl_ll.dgn
SCALE: 1" = 20'

BRIDGE NO. 07326 DRAWING NO. 56063

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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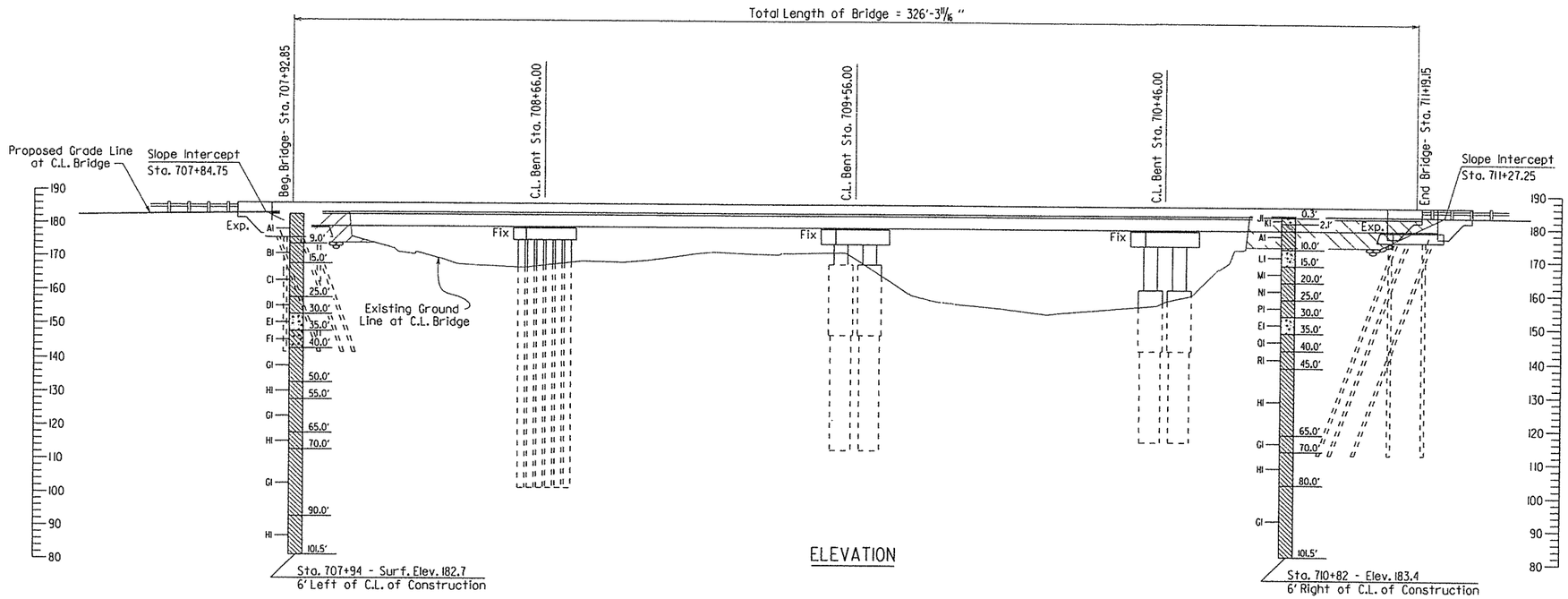
				JOB NO.		070344	49	137
				(1) 07326 -		LAYOUT		- 56064



BORING LEGEND

A1-Moist, Medium Stiff, Gray Clay
B1-Moist, Stiff, Gray Clay with Sand
C1-Moist, Medium Stiff, Gray and Brown Clay
D1-Moist, Medium Stiff, Gray Clay with some Sand
E1-Wet, Medium Dense, Gray Sand with Gravel
F1-Wet, Very Dense, Gray Gravel with Clay
G1-Moist, Hard, Dark Gray Calcareous Clay
H1-Moist, Hard, Dark Gray Calcareous Clay with Shells
J1-Asphalt Pavement (0-0.3')
K1-Concrete Pavement (0.3' - 2.1')
L1-Wet, Very Loose, Gray Sand with Gravel
M1-Wet, Medium Stiff, Gray Sandy Clay with Trace of Gravel
N1-Wet, Medium Stiff, Gray and Brown Sandy Clay with Trace of Organic Matter (Wood)
P1-Moist, Stiff, Gray Clay with some Sand
O1-Moist, Very Stiff, Dark Gray Calcareous Clay
R1-Moist, Very Hard, Dark Gray Calcareous Clay

"N" VALUES

Sta. 707+94 - 6' Left of C.L. of Construction

4.5- 5.5, N=5
9.5- 10.5, N=11
15.5- 16.5, N=5
20.5- 21.5, N=6
25.5- 26.5, N=8
30.5- 31.5, N=20
35.5- 36.5, N=70
40.5- 41.5, N=50
45.5- 46.5, N=37
50.5- 51.5, N=50
55.5- 56.5, N=39
60.5- 61.5, N=38
65.5- 66.5, N=44
70.5- 71.5, N=40
75.5- 76.5, N=42
80.5- 81.5, N=38
85.5- 86.5, N=42
90.5- 91.5, N=44
95.5- 96.5, N=45
100.5-101.5, N=44

Sta. 710+82 - 6' Right of C.L. of Construction

10.5- 11.5, N=4
15.5- 16.5, N=6
20.5- 21.5, N=5
25.5- 26.5, N=9
30.5- 31.5, N=20
35.5- 36.5, N=30
40.5- 41.5, N=62
45.5- 46.5, N=38
50.5- 51.5, N=39
55.5- 56.5, N=46
60.5- 61.5, N=40
65.5- 66.5, N=48
70.5- 71.5, N=49
75.5- 76.5, N=45
80.5- 81.5, N=49
85.5- 86.5, N=43
90.5- 91.5, N=42
95.5- 96.5, N=45
100.5-101.5, N=43

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 2 OF 2
LAYOUT OF BRIDGE OVER
SOUTH BOAT DITCH
GURDON-OAK GROVE STRS. & APPRS. (S)
CLARK COUNTY

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

DRAWN BY: ADN DATE: 04/13/12
CHECKED BY: C.S.E. DATE: 6/15/14
DESIGNED BY: ADN DATE: 3-12
FILENAME: b070344x1_11.dgn
SCALE: 1" = 20'

BRIDGE NO. 07326 DRAWING NO. 56064

PRINT DATE: 7/14/2014

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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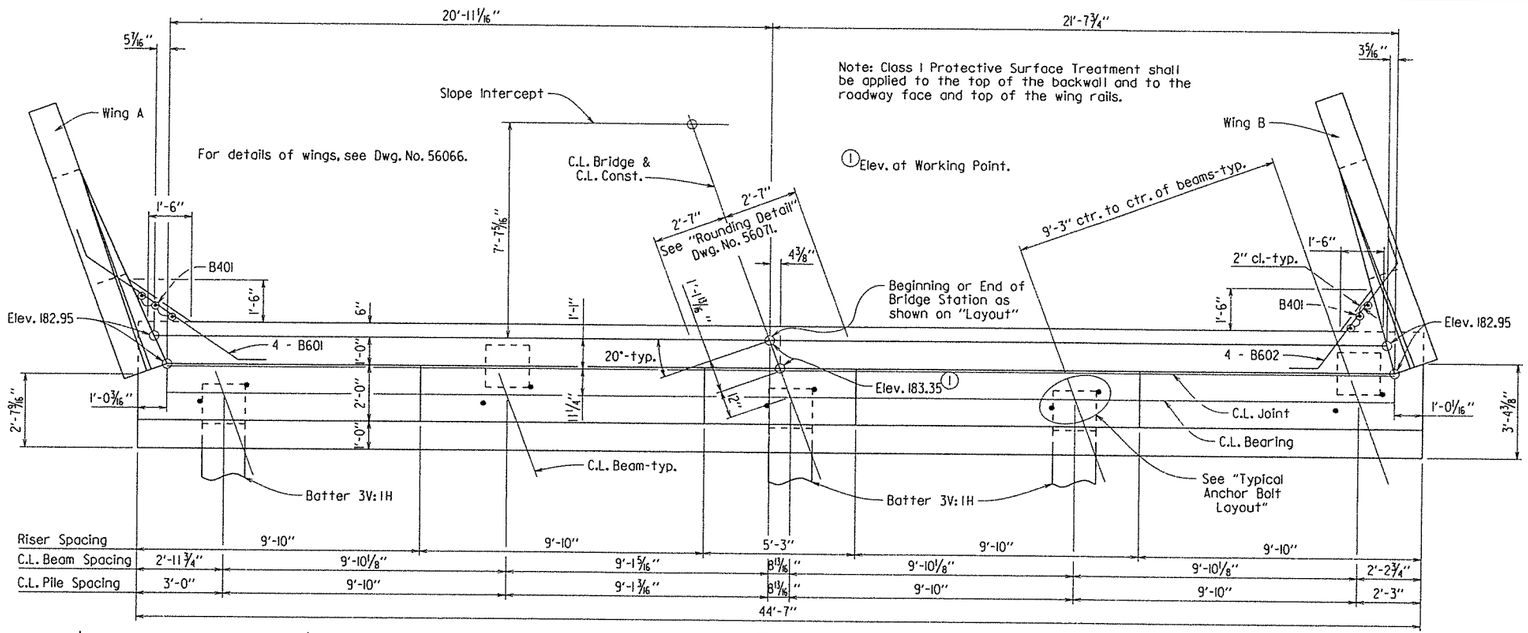
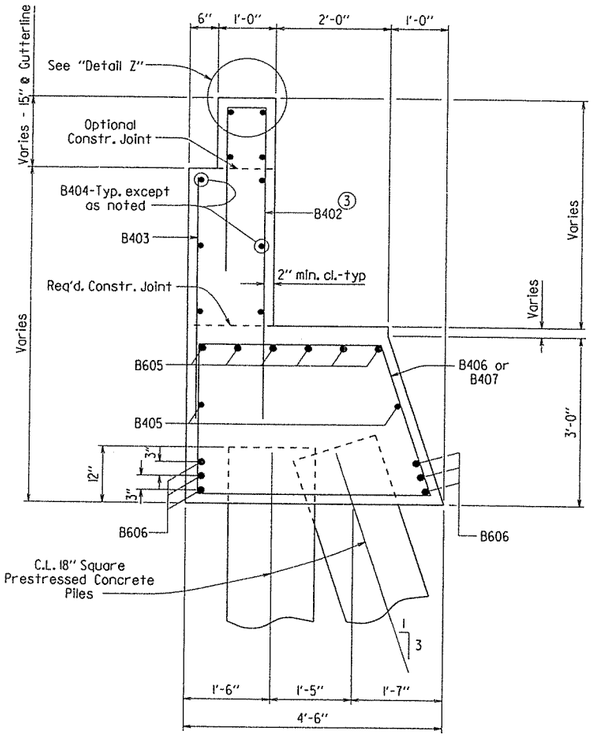


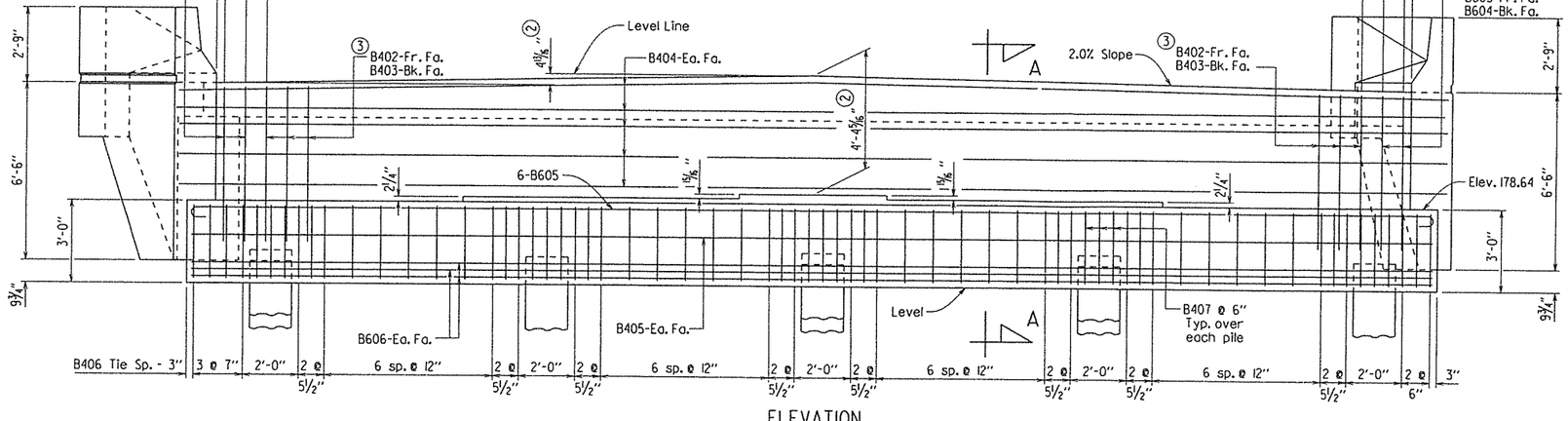
PLAN

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

(2) Measured to Working Point

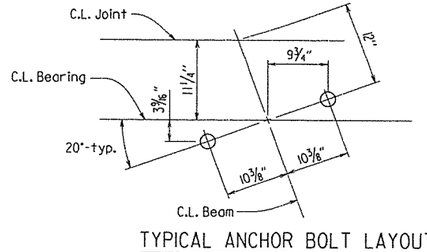
(3) Placed Parallel to C.L. Bridge





ELEVATION

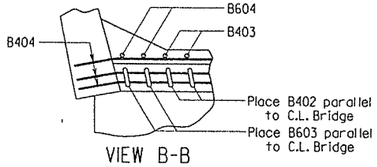
Bent 1 - Looking Back
Bent 5 - Looking Ahead
Scale: 3/8" = 1'-0"



TYPICAL ANCHOR BOLT LAYOUT

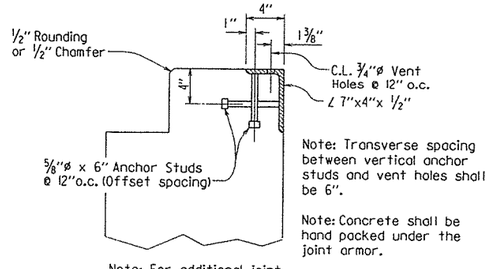
No Scale

For Details of Elastomeric Bearings, see Dwg. No. 56077.



VIEW B-B

No Scale



Note: For additional joint details, see Dwg. No. 56076.

DETAIL Z

No Scale

SECTION A-A

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

GENERAL NOTES

All concrete shall be Class "S" and shall be poured in the dry. All exposed corners to be chamfered 3/4" unless otherwise noted.

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

No portion of the backwall shall be poured until the beams are in place. Refer to "Expansion Device Installation at End Bents" note, Dwg. No. 56076.

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

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

For additional information, see Layout.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 1 OF 2
DETAILS OF END BENTS
SOUTH BOAT DITCH

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: ADN DATE: 2-12-14
CHECKED BY: C.R.E. DATE: 7/11/14
DESIGNED BY: ADN DATE: 11-13

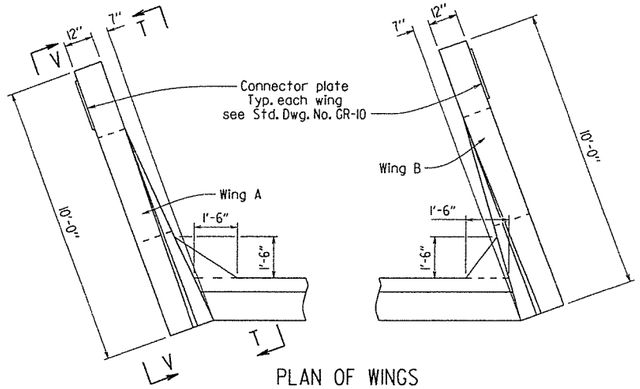
FILENAME: b070344x1_bl.dgn
SCALE: AS NOTED

BRIDGE NO. 07326

DRAWING NO. 56065

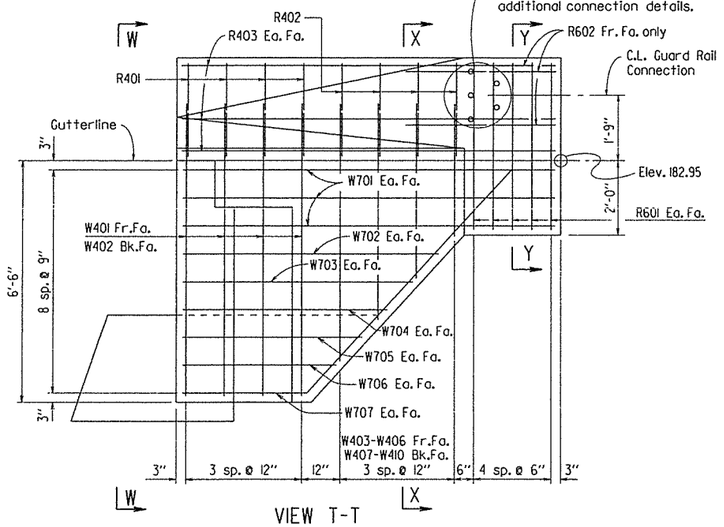
PRINT DATE: 7/14/2014

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.		070344	51	137
				(1) 07326 -		END BENTS		- 56066



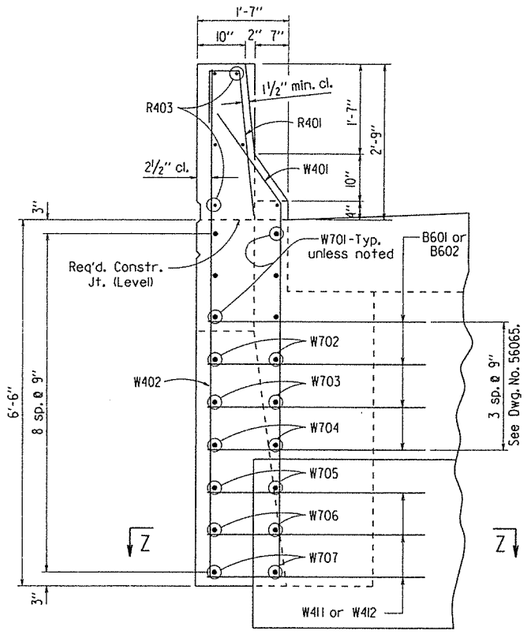
PLAN OF WINGS

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



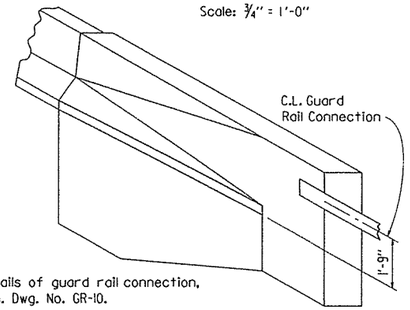
VIEW T-T

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



VIEW W-W

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



For details of guard rail connection,
See Std. Dwg. No. GR-10.

THREE DIMENSIONAL VIEW OF RAIL

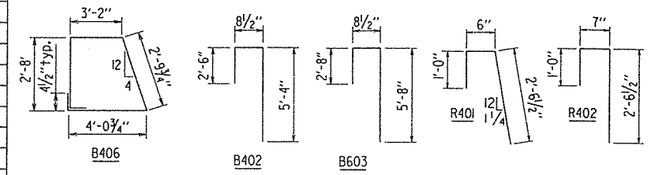
No Scale

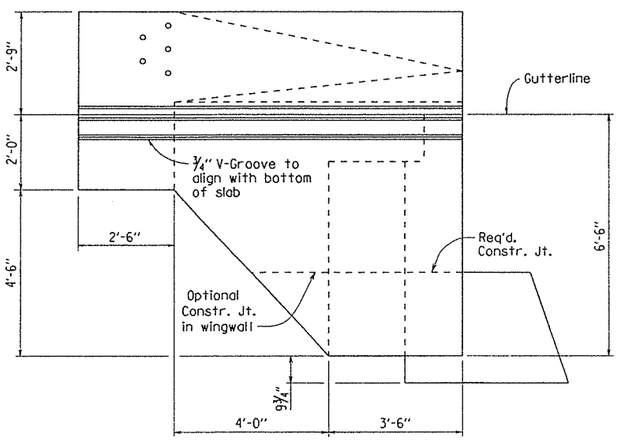
BAR LIST - PER BENT

MARK	NO. REQ'D.	LENGTH	P.D.
B401	6	4'-11"	Str.
B402	53	8'-5"	2"
B403	53	3'-11"	Str.
B404	10	45'-5"	3"
B405	2	44'-3"	Str.
B406	51	13'-1"	2"
B407	15	8'-6"	2"
R401	8	3'-11"	2"
R402	8	4'-0"	2"
R403	12	9'-8"	Str.
W401	8	8'-7"	2"
W402	8	8'-11"	Str.
W403-W406	2 each	Var. 3'-5" to 6'-10"	2"
W407-W410	2 each	Var. 4'-7" to 8'-0"	Str.
W411	3	8'-10"	2"
W412	3	7'-6"	2"
B601	4	8'-6"	4½"
B602	4	6'-8"	4½"
B603	4	8'-9"	4½"
B604	4	4'-5"	Str.
B605	6	45'-7"	4½"
B606	6	44'-3"	Str.
R601	20	4'-5"	Str.
R602	6	5'-0"	Str.
W701	12	9'-8"	Str.
W702	4	6'-8"	Str.
W703	4	6'-0"	Str.
W704	4	5'-4"	Str.
W705	4	4'-8"	Str.
W706	4	4'-0"	Str.
W707	4	11'-2"	5¼"

BENDING DIAGRAMS

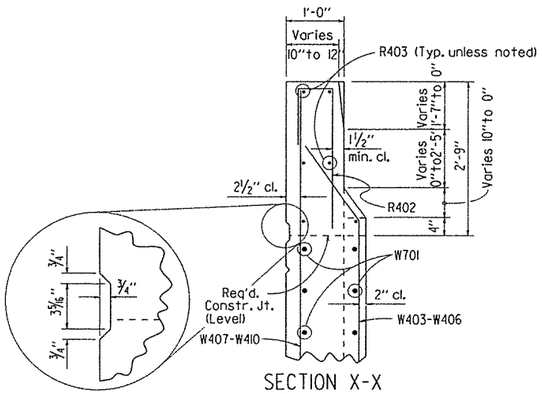
Dimensions are out to out of bars.





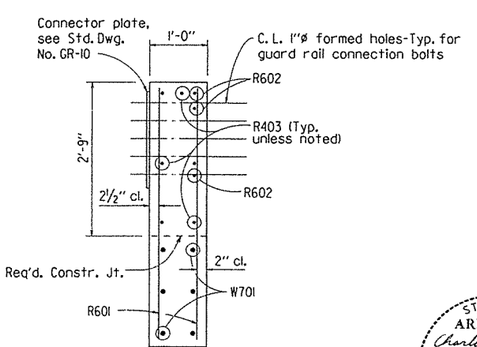
VIEW V-V

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



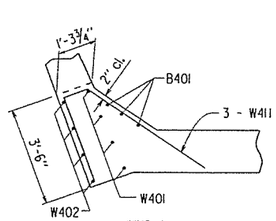
SECTION X-X

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

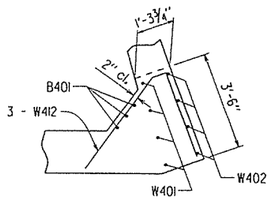


SECTION Y-Y

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



WING A



WING B

SECTION Z-Z

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

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 2
DETAILS OF END BENTS
SOUTH BOAT DITCH

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: ADN DATE: 2-13-14
CHECKED BY: CRE DATE: 7/14/14
DESIGNED BY: ADN DATE: 11-13

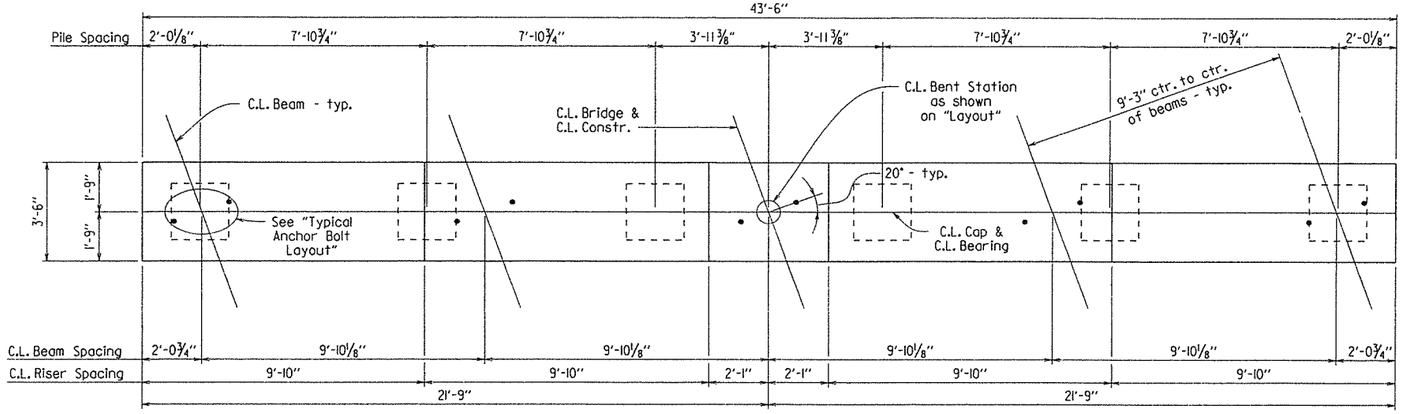
FILENAME: b070344x1_b1.dgn
SCALE: AS NOTED

BRIDGE NO. 07326

DRAWING NO. 56066

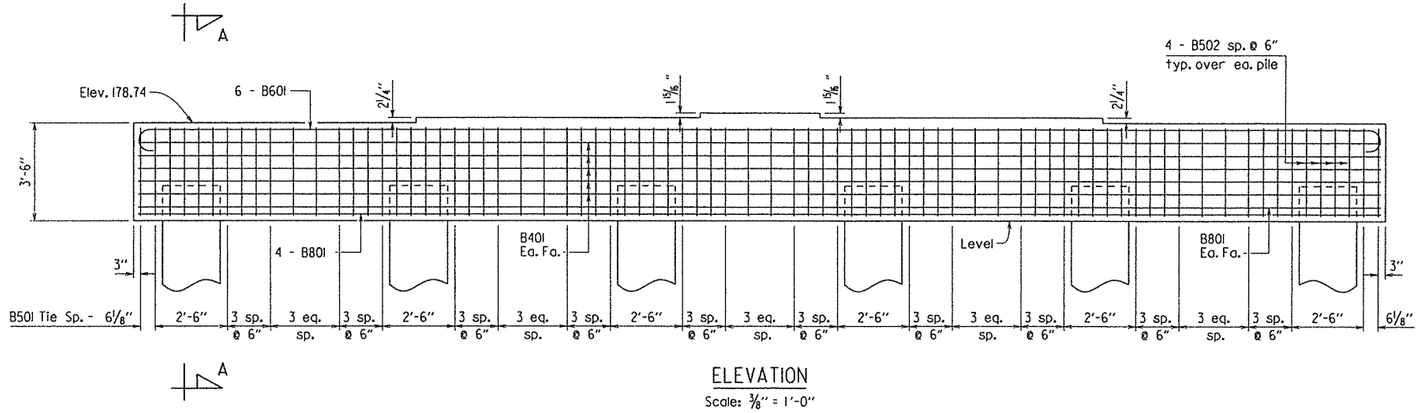
PRINT DATE: 7/14/2014

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.		070344	52	137
				(1)	07326 -	INT. BENTS	- 56067	



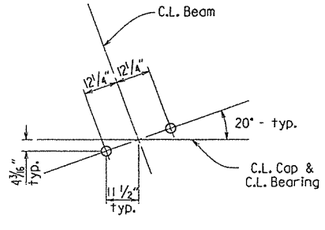
PLAN

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



ELEVATION

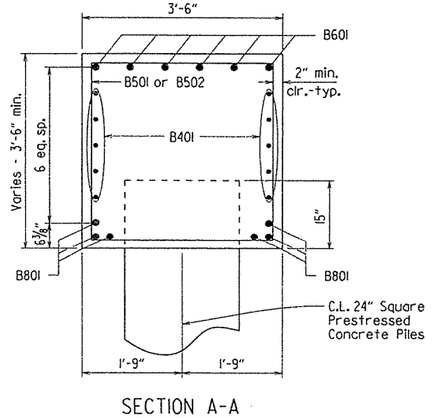
Scale: 3/8" = 1'-0"



TYPICAL ANCHOR BOLT LAYOUT

Not to Scale

For Details of Elastomeric Bearings, see Dwg. No. 56077.

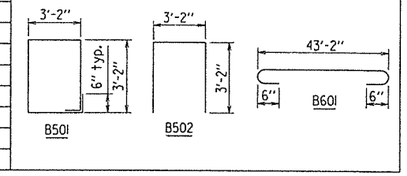


SECTION A-A

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

BAR LIST

MARK	NO. REQ'D.	LENGTH	P.D.	BENDING DIAGRAMS
B401	10	43'-2"	Str.	Dimensions are out to out of bars.
B501	54	13'-2"	2 1/2"	
B502	24	9'-3"	2 1/2"	
B601	6	44'-6"	4 1/2"	
B801	6	43'-2"	Str.	



GENERAL NOTES

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

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

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

For additional information see layout.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS

BRIDGE ENGINEER

DETAILS OF BENT 2 SOUTH BOAT DITCH

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: ADN DATE: 2-19-14 FILENAME: b070344xl_b2.dgn

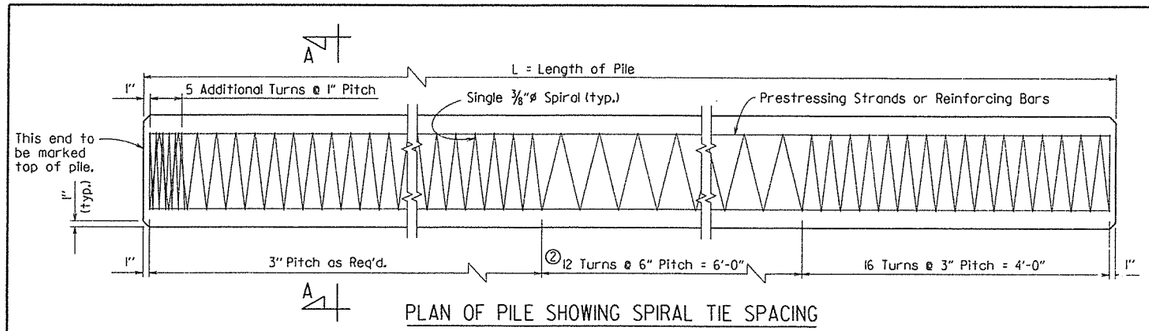
CHECKED BY: CSR DATE: 2/14/14 SCALE: AS NOTED

DESIGNED BY: ADN DATE: 5-14

BRIDGE NO. 07326 DRAWING NO. 56067

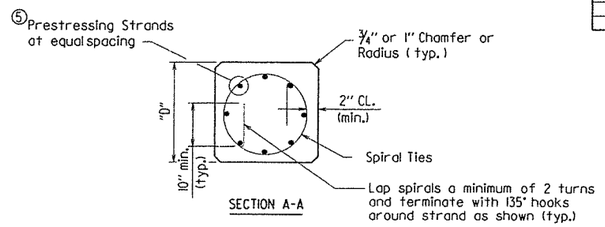
PRINT DATE: 7/14/2014

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.		070344	53	137
				① 07326, 07327, & 07329		-CONCRETE PILES- 56068		



PLAN OF PILE SHOWING SPIRAL TIE SPACING

NOTE: Strand location shall be symmetrical about the axis of the pile. Circular spiral ties are required for all piles.



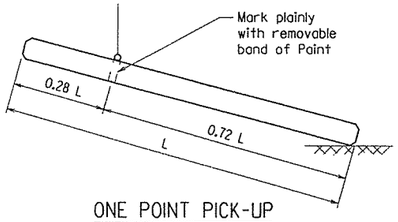
⑤ See table "Prestressed Concrete Pile Properties" for actual number of strands per pile size.

PRESTRESSED CONCRETE PILE PROPERTIES

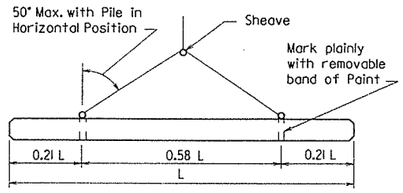
	Grade	Strand Diameter	① No. of Strands per Size "D" 24" Sq.	Minimum Ultimate Tensile Strength Per Strand (Lbs.)	Initial Prestressing Force Per Strand (Lbs.)
Low Relaxation	250	7/16"	24	27,000	20,300
		1/2"	18	36,000	27,000
	270	7/16"	21	31,000	23,300
		1/2"	16	41,300	31,000

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

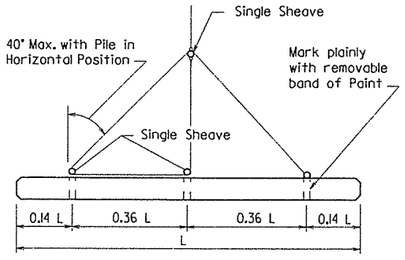
"B" — 0.75 Low Relaxation



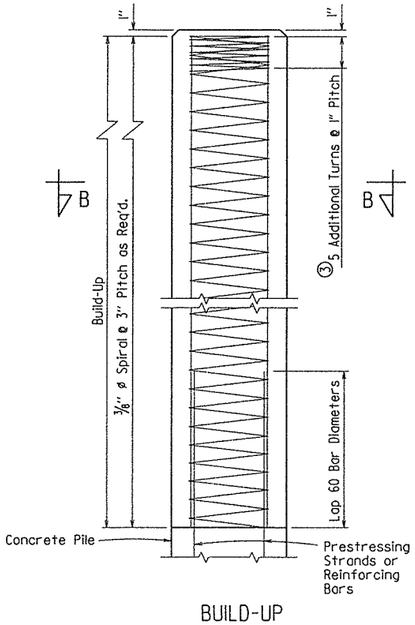
ONE POINT PICK-UP



TWO POINT PICK-UP

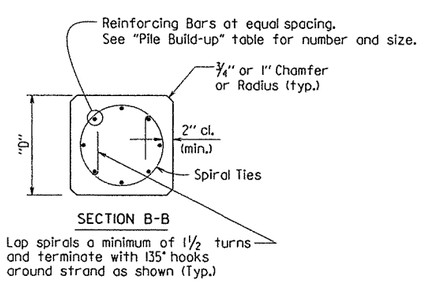


THREE POINT PICK-UP



BUILD-UP

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



SECTION B-B

Lap spirals a minimum of 1½ turns and terminate with 135° hooks around strand as shown (Typ.)

BUILD-UP PILE REINFORCING

Pile Size	No. Req'd.	Bar Size
24" Sq.	12	# 9

PILE BUILD-UP

MAXIMUM PICKUP LENGTHS "L"

Type of Pick-Up	Prestressed 24" Sq.
One Point	69'
Two Point	104'
Three Point	138'

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, 2012.)

SEISMIC PERFORMANCE ZONES: 1 & 2

The Contractor shall use prestressed piles ONLY. Piles will be measured and paid for at the contract unit price bid for "Concrete Piling".

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

COARSE AGGREGATE: Maximum size of coarse aggregate shall be ¾".

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

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

REINFORCING STEEL: Reinforcing Steel for pile build-up shall conform to AASHTO M 31 or M 53.

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

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

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

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

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

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

INSTALLATION, MEASUREMENT AND PAYMENT: See Section 805 "Piling" of the Standard Specifications.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS

BRIDGE ENGINEER

DETAILS OF 24" SQUARE PRESTRESSED CONCRETE PILES

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: ADN DATE: 3-25-14
CHECKED BY: CSE DATE: 7/14/14
DESIGNED BY: STD. DATE:

FILENAME: b070344_piling.dgn
SCALE: NO SCALE

BRIDGE NO. 07326, 07327, & 07329 DRAWING NO. 56068

PRINT DATE: 7/14/2014

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.		070344	54	137
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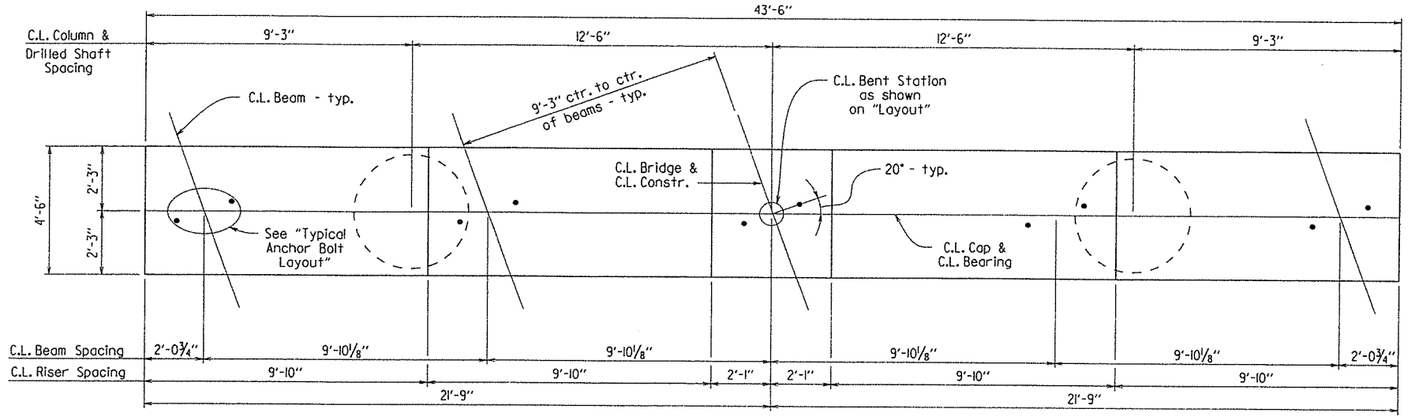
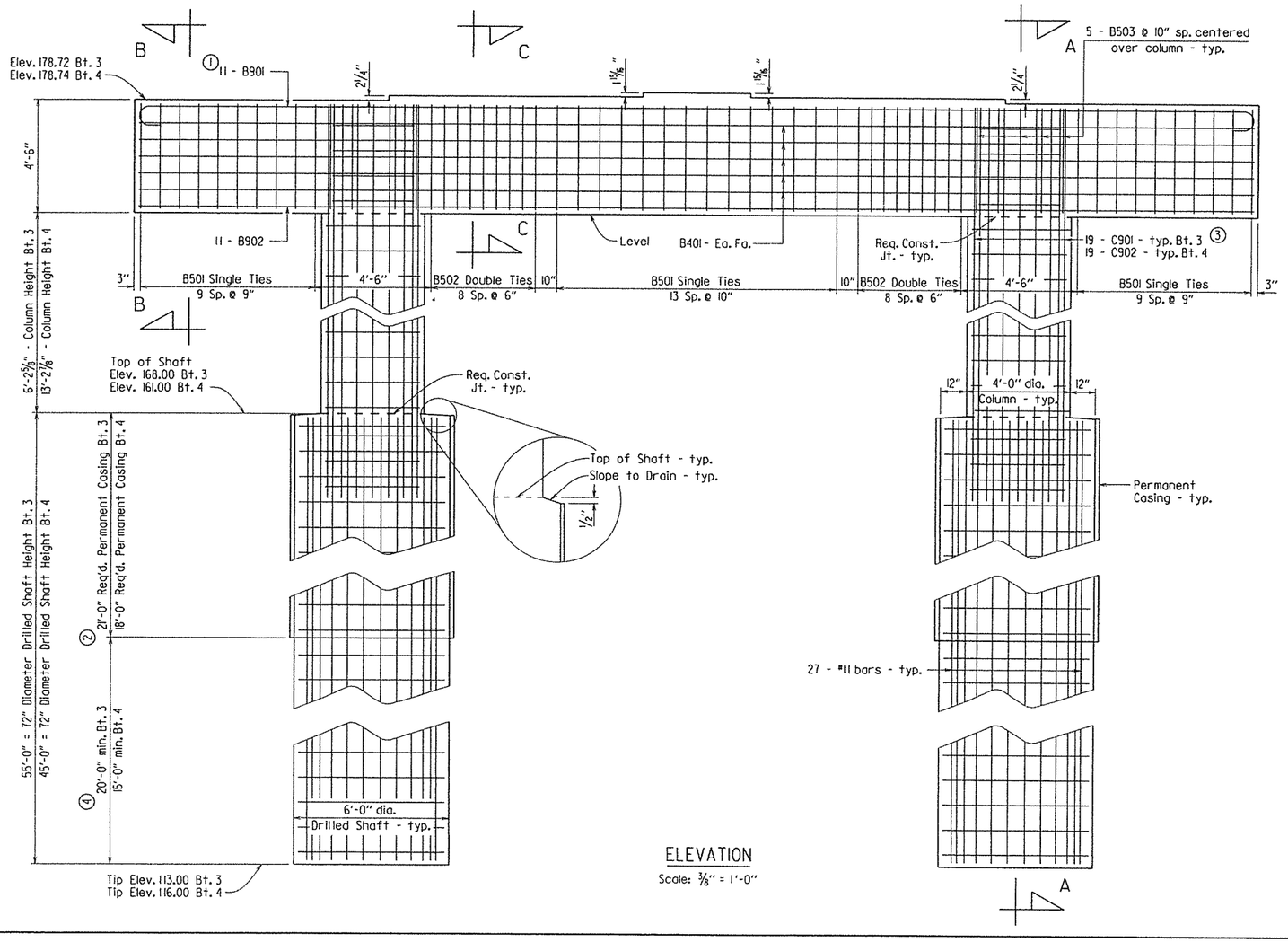


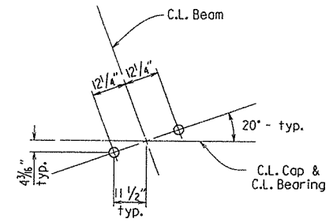
PLAN

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



ELEVATION

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



TYPICAL ANCHOR BOLT LAYOUT

Not to Scale

For Details of Elastomeric Bearings, see Dwg. No. 56077.

Note: For additional details of reinforcing in columns and drilled shafts, see Dwg. No. 56070.

For Details of Sections A-A, B-B, and C-C, see Dwg. No. 56070.

① Reinforcing bars in top of cap shall be properly placed to avoid interference with anchor bolts or sheet metal sleeves.

② Length of Permanent Casing shown is for estimating quantities only. Actual lengths are to be determined in the field. See Special Provision Job No. 070344 "Drilled Shaft Foundations." Permanent casing shall extend to material designated as HARD DARK CLAY on the Boring Legend.

③ The column reinforcing cage, consisting of bars C401 and C901 or C902, may be placed before or after concrete placement in the shaft is complete. Vibration of concrete in the top 10 feet of the shaft will be needed to ensure the consolidation of the concrete around the reinforcing steel and to insert the column reinforcing cage. The Contractor will be responsible for obtaining satisfactory results.

④ Minimum penetration below bottom of permanent casing.

STATE OF ARKANSAS
Charles R. Ellis
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No. 9235
7-14-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 1 OF 2
DETAILS OF BENTS 3 AND 4
SOUTH BOAT DITCH

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: ADN DATE: 2-10-14
CHECKED BY: CJR DATE: 2/14/14
DESIGNED BY: ADN DATE: 7-1-14

FILENAME: b070344x1_b3.dgn
SCALE: AS NOTED

BRIDGE NO. 07326

DRAWING NO. 56069

PRINT DATE: 7/14/2014

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.		070344	55	137
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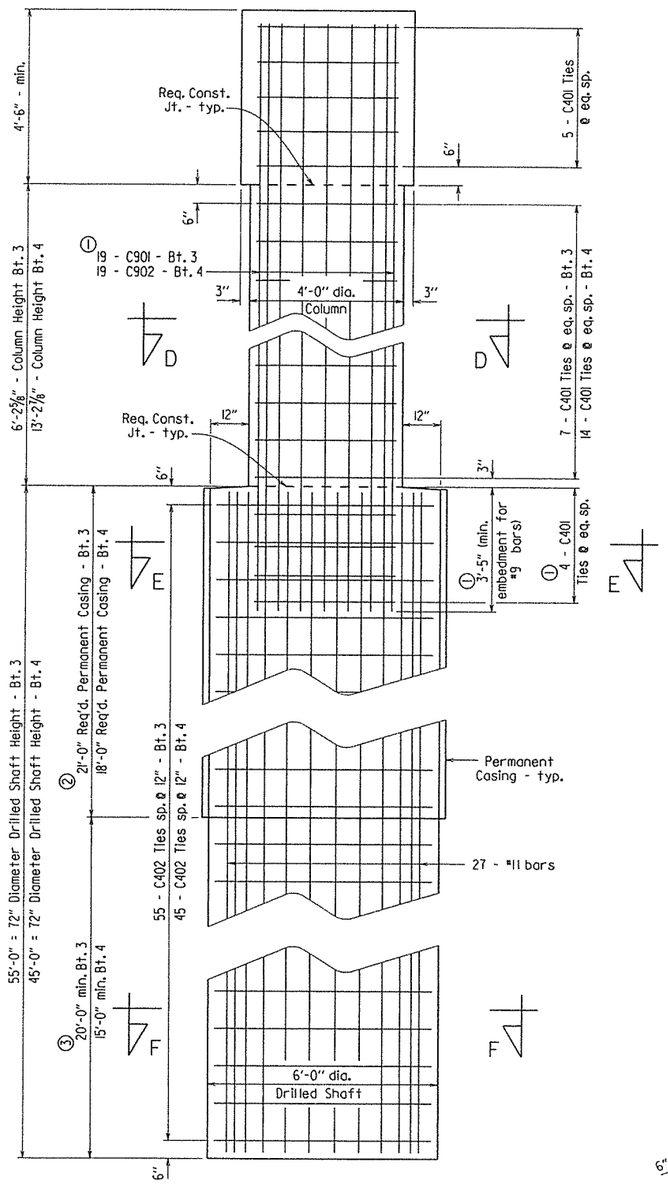
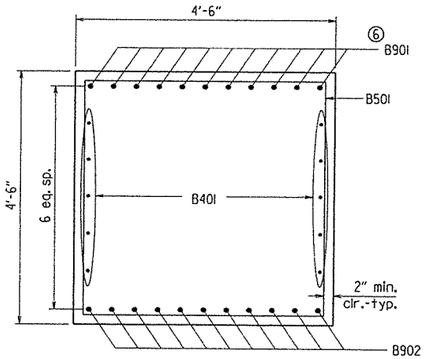


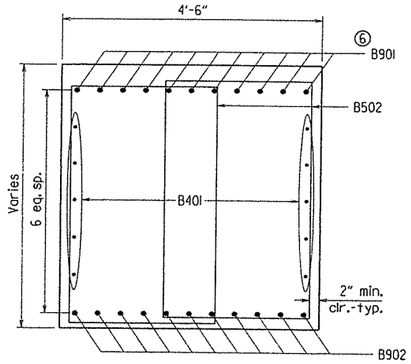
SECTION A-A

Scale: ½" = 1'-0"



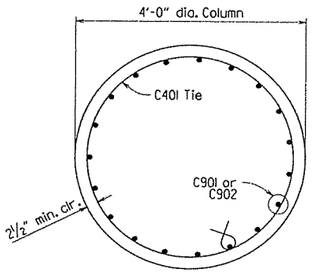
SECTION B-B

Scale: ¾" = 1'-0"



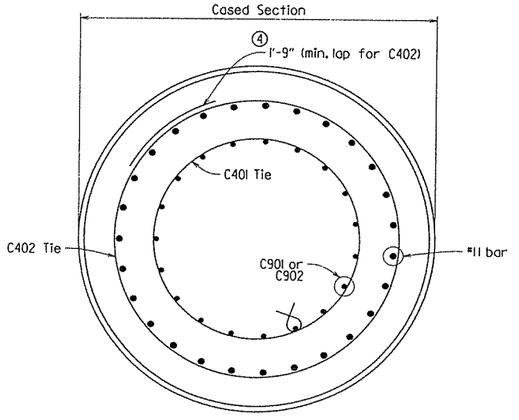
SECTION C-C

Scale: ¾" = 1'-0"



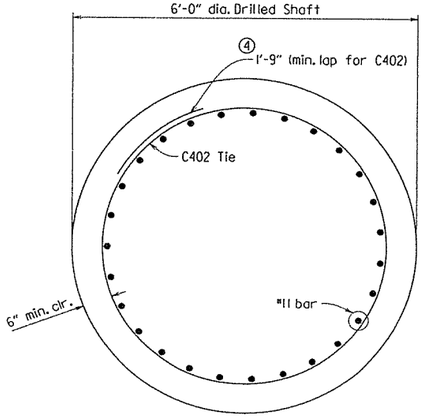
SECTION D-D

Scale: ¾" = 1'-0"



SECTION E-E

Scale: ¾" = 1'-0"



SECTION F-F

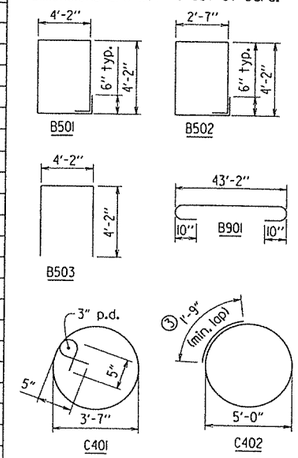
Scale: ¾" = 1'-0"

BAR LIST

	MARK	NO. REQ'D. Bent 3	NO. REQ'D. Bent 4	LENGTH	P.D.
	B401	10	10	43'-2"	Str.
	C401	32	46	12'-4"	3"
⑤	C402	110	90	17'-6"	3"
	B501	34	34	17'-2"	2½"
	B502	36	36	14'-0"	2½"
	B503	10	10	12'-4"	2½"
	B901	11	11	45'-8"	9"
	B902	11	11	43'-2"	Str.
	C901	38	--	14'-0"	Str.
	C902	--	38	21'-0"	Str.
⑤	#11 bars	54	--	54'-8"	Str.
⑤	#11 bars	--	54	44'-8"	Str.

BENDING DIAGRAMS

Dimensions are out to out of bars.



④ Laps of adjacent ties shall be oriented 180 degrees.

⑤ Non-pay item - Subsidiary to SP Job No. 070344 "Drilled Shaft Foundations".

⑥ Reinforcing bars in top of cap shall be properly placed to avoid interference with anchor bolts or sheet metal sleeves.

GENERAL NOTES

Concrete in the cap and column shall be Class S with a minimum 28 day compressive strength, f'c = 3500 psi., and shall be poured in the dry. Concrete in the drilled shaft shall be Class S as modified by SP Job No. 070344 "Drilled Shaft Foundations". 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 M31 or M322, Type A, with mill test reports.

For additional information see layout.

Drilled shafts shall conform to SP Job No. 070344 "Drilled Shaft Foundations".

① The column reinforcing cage, consisting of bars C401 and C901 or C902, may be placed before or after concrete placement in the shaft is complete. Vibration of concrete in the top 10 feet of the shaft will be needed to ensure the consolidation of the concrete around the reinforcing steel and to insert the column reinforcing cage. The Contractor will be responsible for obtaining satisfactory results.

② Length of Permanent Casing shown is for estimating quantities only. Actual lengths are to be determined in the field. See Special Provision Job No. 070344 "Drilled Shaft Foundations." Permanent casing shall extend to material designated as HARD DARK CLAY on the Boring Legend.

③ Minimum penetration below bottom of permanent casing.

STATE OF ARKANSAS
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REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
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BRIDGE ENGINEER

SHEET 2 OF 2
DETAILS OF BENTS 3 AND 4
SOUTH BOAT DITCH

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: ADN DATE: 2-10-14 FILENAME: b070344xl_b3.dgn

CHECKED BY: CSR DATE: 7/14/14 SCALE: AS NOTED

DESIGNED BY: ADN DATE: 1-14

BRIDGE NO. 07326 DRAWING NO. 56070

PRINT DATE: 7/14/2014

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.		070344	56	137
				(1) 07326 -		324 FT. UNIT	- 56071	

SLAB REINFORCING

Transverse: S501E @ 12" in top; S402E @ 12" o.c. in bottom — Alternate
S502E @ 12" o.c. bent up over beams
S503E bundled with #5 bars in top at both gutterlines

Longitudinal: S401E as shown
S601E & S602E as shown over int. supports

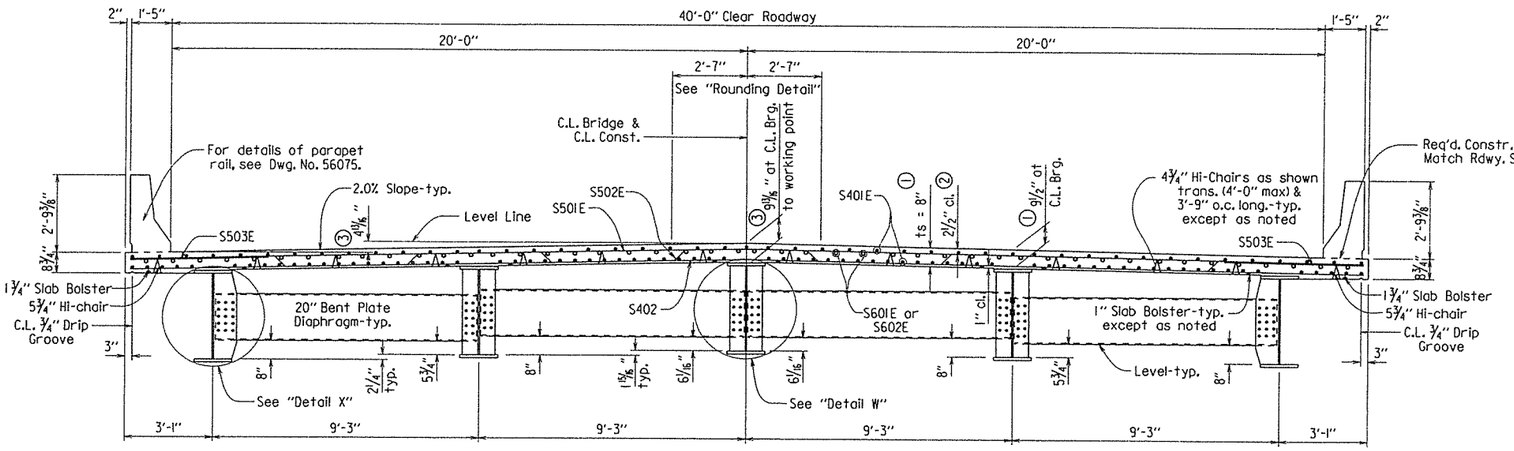
NOTE: Class 1 Protective Surface Treatment shall be applied to the Roadway Surface and to the Face & Top of the Concrete Parapet Rail.

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

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

(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) Working point to gutterline, see "Rounding Detail".



TYPICAL ROADWAY SECTION

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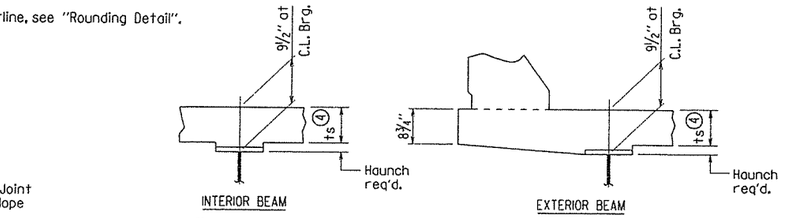


(4) Tolerance when removable deck forming is used is +½", -¼". Haunch forming is required and shall be adjusted to maintain slab thickness tolerance.

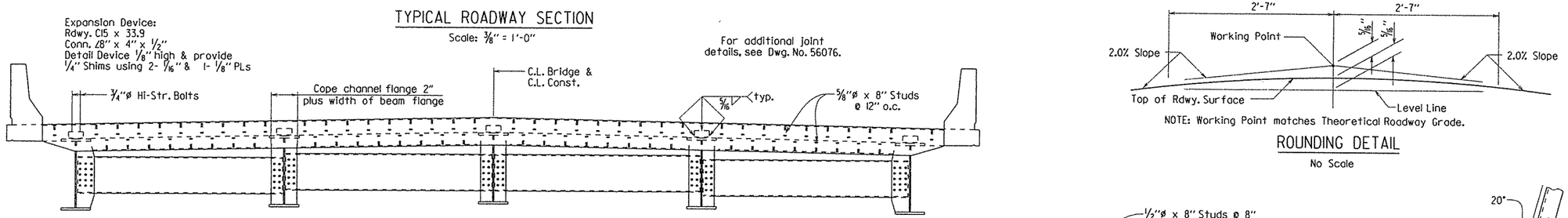
Note: ts = slab thickness as shown in "Typical Roadway Section".

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

ADJUSTMENT FOR SLAB THICKNESS TOLERANCE

No Scale



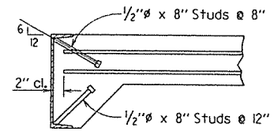
TYPICAL SECTION THRU JOINT

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

NOTE: Working Point matches Theoretical Roadway Grade.

ROUNDING DETAIL

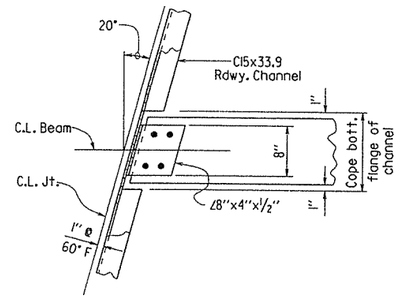
No Scale



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

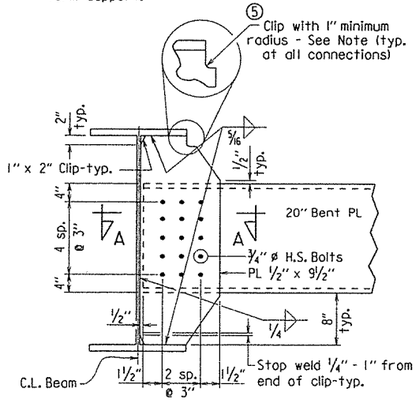
No Scale



CHANNEL CONNECTION DETAIL

No Scale

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



DETAIL X

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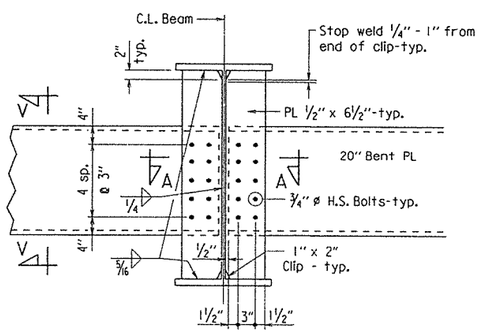
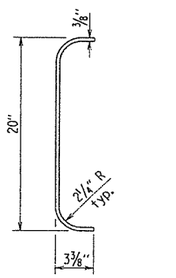


DETAIL W

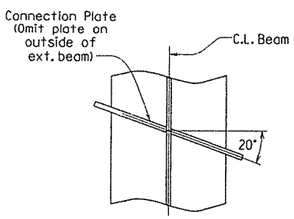
No Scale



Typical cross-section for all 20" bent plate diaphragms.

SECTION V-V

No Scale



SECTION A-A

No Scale

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 1 OF 5
DETAILS OF 324'-0" CONTINUOUS COMPOSITE W-BEAM UNIT
SOUTH BOAT DITCH

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: ADN DATE: 3-6-14 FILENAME: b070344x1_sl.dgn
CHECKED BY: CSR DATE: 7/14/14 SCALE: AS NOTED
DESIGNED BY: ADN DATE: 3-12

BRIDGE NO. 07326 DRAWING NO. 56071

PRINT DATE: 7/14/2014

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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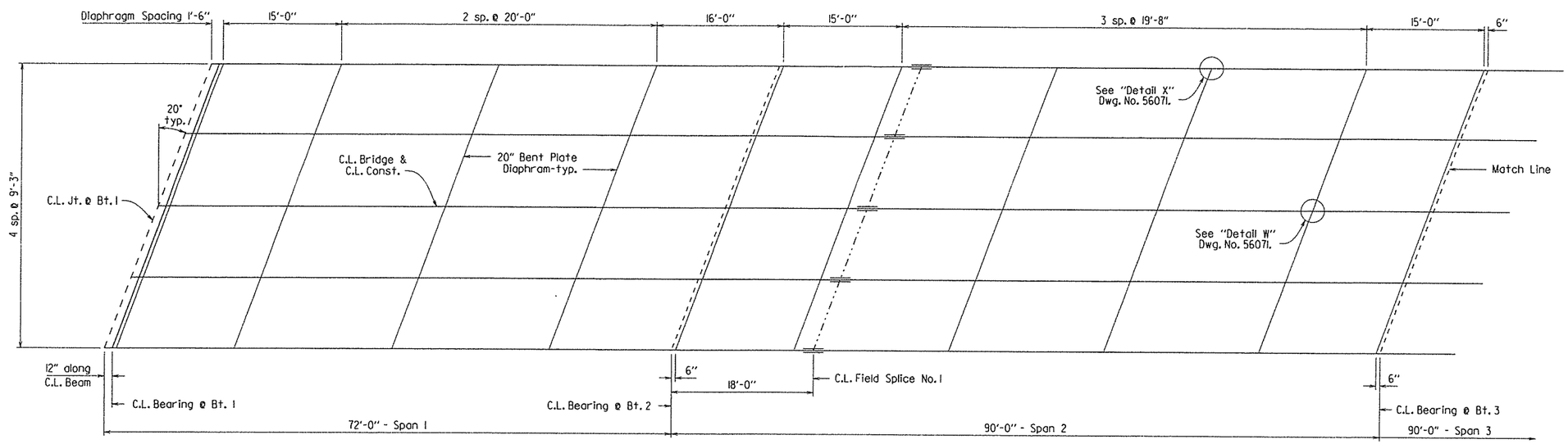
				JOB NO.		070344	57	137
				(1) 07326 -		324 FT. UNIT	- 56072	

AHEAD STATIONING



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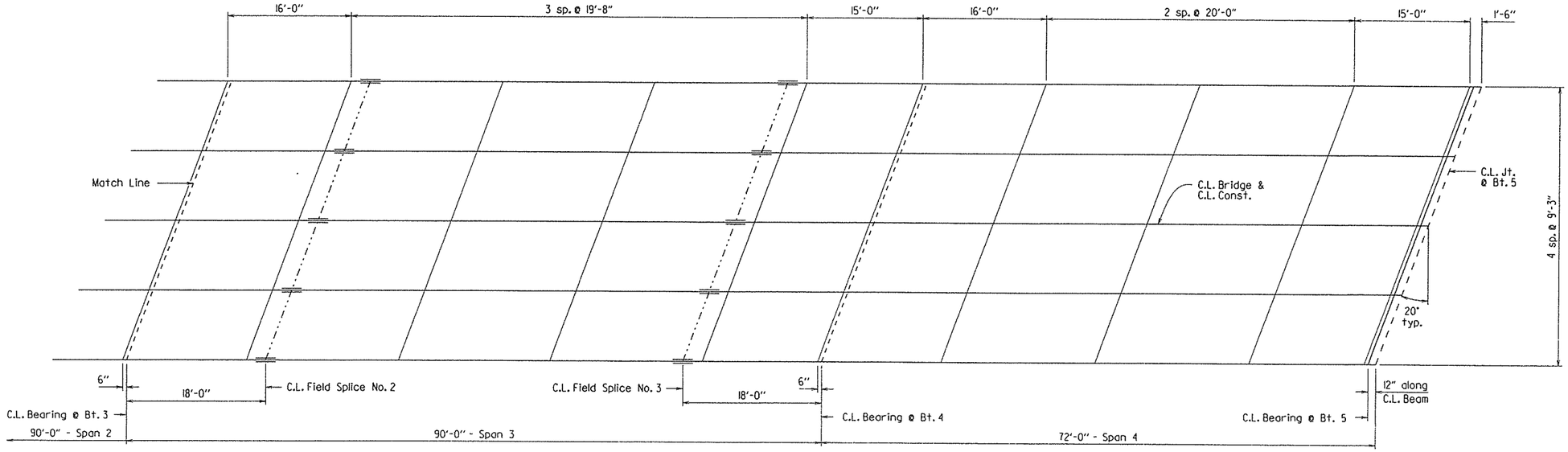


FRAMING PLAN
Scale: 1/8" = 1'-0"

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 2 OF 5
DETAILS OF 324'-0" CONTINUOUS COMPOSITE W-BEAM UNIT
SOUTH BOAT DITCH

ROUTE SEC.

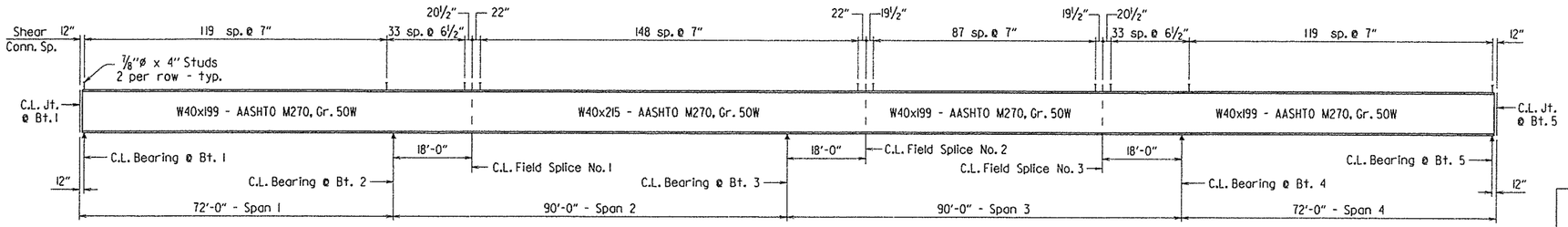
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: ADN DATE: 3-10-14
CHECKED BY: CRE DATE: 6/18/14
DESIGNED BY: ADN DATE: 5-1-2
FILENAME: b070344xl_sl.dgn
SCALE: AS NOTED

BRIDGE NO. 07326 DRAWING NO. 56072

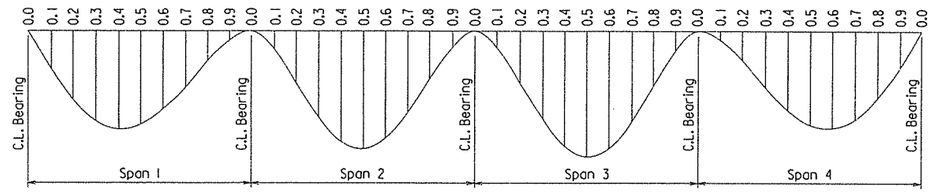
PRINT DATE: 7/14/2014

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.		070344	58	137
				①	07326 -	324 FT. UNIT	- 56073	



BEAM ELEVATION
No Scale

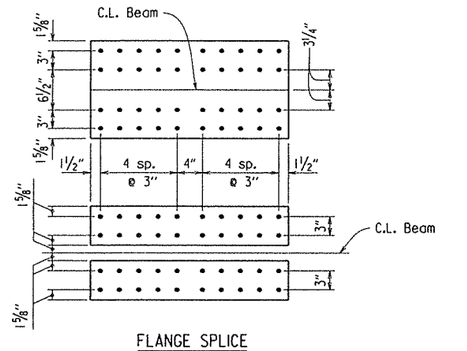
Note: Bolted field splices may be eliminated or shop welded splices may be substituted with the approval of the Engineer. Payment will be made on the basis of plan quantities.



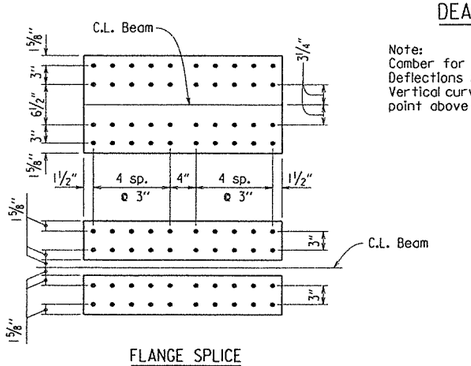
DEAD LOAD DEFLECTIONS DIAGRAM (TYP.)

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

	Point of Deflection	Structural Steel		Structural Steel + Slab		Structural Steel + Slab + Parapet	
		Ext. Bms.	Int. Bms.	Ext. Bms.	Int. Bms.	Ext. Bms.	Int. Bms.
Span 1	0	0	0	0	0	0	0
	0.1	0.041	0.043	0.206	0.233	0.224	0.250
	0.2	0.076	0.079	0.380	0.430	0.413	0.461
	0.3	0.099	0.104	0.497	0.564	0.540	0.605
	0.4	0.108	0.114	0.546	0.620	0.594	0.665
	0.5	0.103	0.108	0.525	0.595	0.571	0.638
	0.6	0.086	0.090	0.441	0.500	0.479	0.536
	0.7	0.060	0.063	0.313	0.355	0.340	0.381
	0.8	0.031	0.032	0.169	0.191	0.184	0.205
	0.9	0.007	0.008	0.047	0.055	0.051	0.059
Span 2	0	0	0	0	0	0	0
	0.1	0.024	0.025	0.095	0.107	0.103	0.113
	0.2	0.068	0.070	0.284	0.319	0.309	0.343
	0.3	0.112	0.116	0.475	0.536	0.517	0.576
	0.4	0.143	0.149	0.611	0.690	0.665	0.741
	0.5	0.153	0.159	0.655	0.739	0.713	0.794
	0.6	0.141	0.146	0.599	0.675	0.652	0.725
	0.7	0.108	0.112	0.454	0.513	0.494	0.550
	0.8	0.064	0.066	0.261	0.294	0.284	0.316
	0.9	0.022	0.022	0.082	0.091	0.089	0.098
Span 3	0	0	0	0	0	0	0
	0.1	0.015	0.016	0.088	0.100	0.096	0.108
	0.2	0.052	0.055	0.277	0.315	0.302	0.339
	0.3	0.093	0.098	0.482	0.547	0.525	0.588
	0.4	0.125	0.131	0.636	0.722	0.693	0.776
	0.5	0.138	0.145	0.697	0.790	0.759	0.849
	0.6	0.129	0.135	0.649	0.735	0.706	0.790
	0.7	0.100	0.105	0.503	0.571	0.548	0.613
	0.8	0.059	0.062	0.299	0.339	0.326	0.364
	0.9	0.020	0.021	0.101	0.114	0.110	0.124
Span 4	0	0	0	0	0	0	0
	0.1	0.010	0.01	0.044	0.050	0.048	0.054
	0.2	0.035	0.036	0.163	0.183	0.177	0.196
	0.3	0.065	0.068	0.305	0.346	0.331	0.371
	0.4	0.091	0.096	0.433	0.491	0.471	0.527
	0.5	0.109	0.114	0.517	0.586	0.562	0.629
	0.6	0.113	0.118	0.539	0.610	0.586	0.654
	0.7	0.103	0.108	0.491	0.557	0.534	0.598
	0.8	0.079	0.082	0.376	0.425	0.409	0.456
	0.9	0.043	0.045	0.204	0.231	0.222	0.248
	0	0	0	0	0	0	0



FLANGE SPLICE



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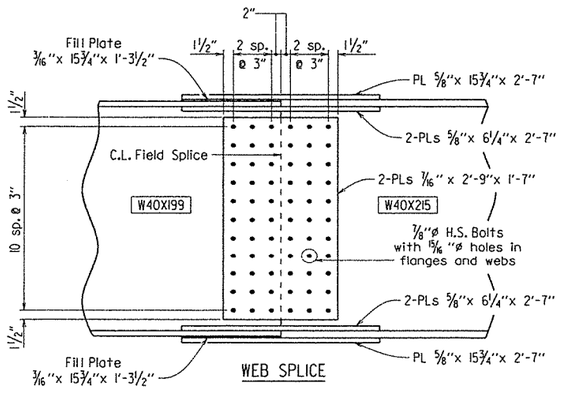
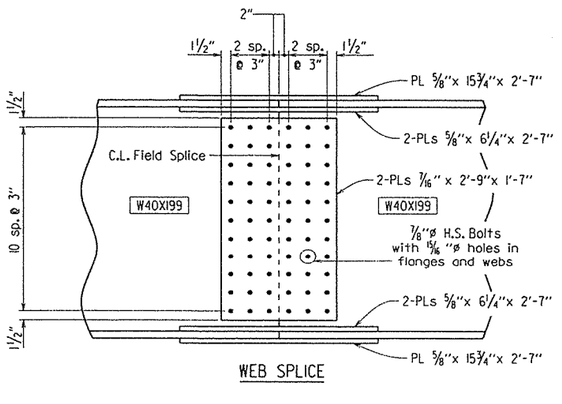


WEB SPLICE

Note: All field splice plates shall be AASHTO M270, Gr. 50W

FIELD SPLICE NOS. 1 & 2 DETAILS
No Scale



WEB SPLICE

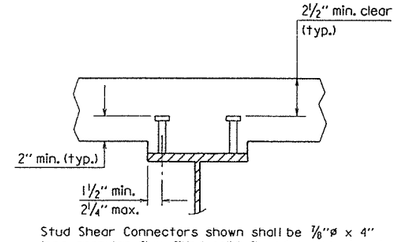
Note: All field splice plates shall be AASHTO M270, Gr. 50W

FIELD SPLICE NO. 3 DETAILS
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 ¾" Inclusive	¼"	
Over ¾"	5/16"	

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



Stud Shear Connectors shown shall be 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. Maximum stud spacing = 24".

SHEAR CONNECTOR DETAIL
No Scale

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SHEET 3 OF 5
DETAILS OF 324'-0" CONTINUOUS COMPOSITE W-BEAM UNIT SOUTH BOAT DITCH

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: ADN DATE: 3-11-14 FILENAME: b070344x1_sl.dgn
CHECKED BY: CJR DATE: 7/14/14 SCALE: AS NOTED
DESIGNED BY: ADN DATE: 3-12

BRIDGE NO. 07326 DRAWING NO. 56073

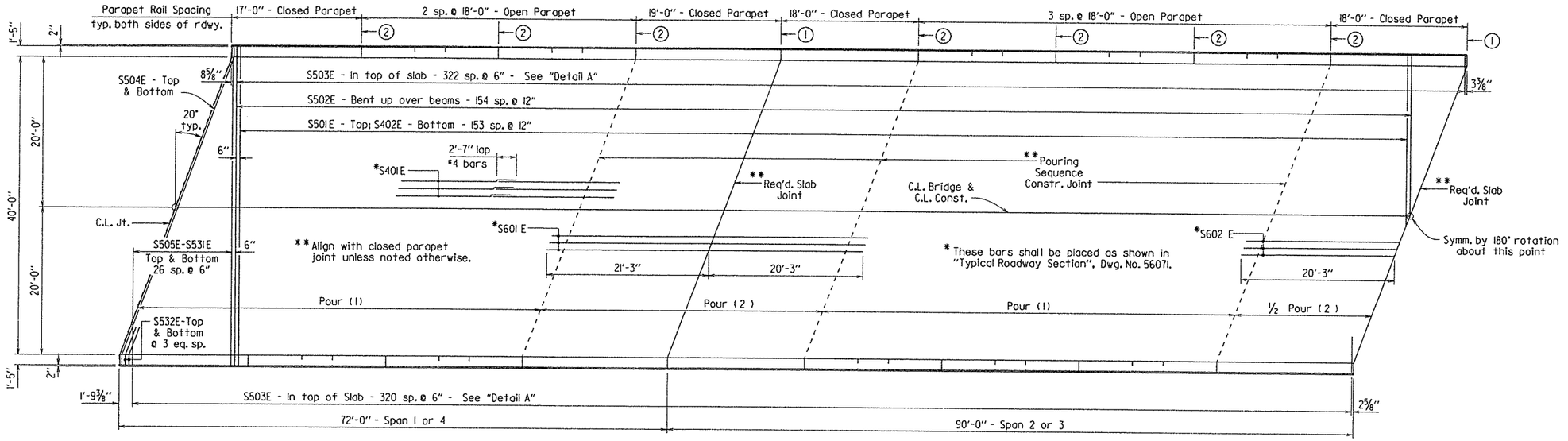
PRINT DATE: 7/14/2014

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.		070344	54	137
① 07326 -		324 FT. UNIT	- 56074	

① C.L. Full-Depth Parapet Joint (1/4" to 1" max.). Stop 4" from top of slab. See Dwg. No. 56075.

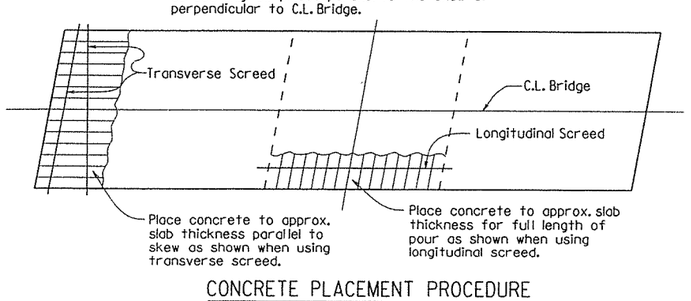
② C.L. Partial-Depth Parapet Joint (1/4" to 1" max.). Stop 1'-2" from top of slab. See Dwg. No. 56075.



REINFORCING PLAN AND POURING SEQUENCE

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

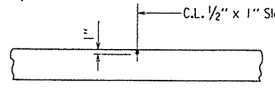
Note: At the Contractor's option, the transverse screed may be placed parallel to the skew or perpendicular to C.L. Bridge.



CONCRETE PLACEMENT PROCEDURE

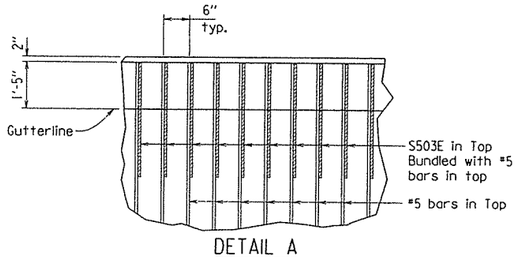
No Scale

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. Slab joints shall be installed before the parapet railing is poured. If slab joints are to be sawed, they shall be sawed as soon as the concrete has sufficiently set to allow sawing of the joint without damage to the slab. Slab joints shall be placed at all pouring sequence construction joints and required slab joint locations. The joint sealer shall extend across the deck slab (gutterline to gutterline). Slab joints shall align with parapet open joints.



SLAB JOINT DETAIL

No Scale



DETAIL A

No Scale

Pours with the same number may be placed simultaneously or separately. All Pours (1) must be placed before Pours (2) can be placed. 48 hours shall elapse between the end of a pour and the start of the next pour. 72 hours shall elapse between the end of a pour and the start of an adjacent pour. Any 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 deviation from the pouring sequence shown.

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7-14-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 4 OF 5
DETAILS OF 324'-0" CONTINUOUS COMPOSITE W-BEAM UNIT SOUTH BOAT DITCH

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

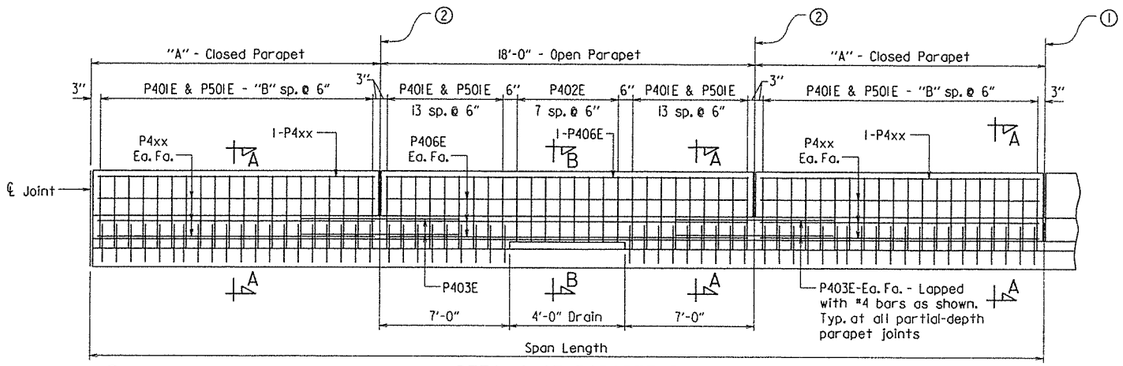
DRAWN BY: ADN DATE: 3-12-14
CHECKED BY: CRE DATE: 6/18/14
DESIGNED BY: ADN DATE: 5-12

FILENAME: b070344x1_sl.dgn
SCALE: AS NOTED

BRIDGE NO. 07326 DRAWING NO. 56074

PRINT DATE: 7/14/2014

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.		070344	160	137
				① 07326 -		324 FT. UNIT		- 56075



① C.L. Full-Depth Parapet Joint (1/4" to 1" max.) as shown in "Reinforcing Plan And Pouring Sequence", Dwg. No. 56074. Stop 4" from top of slab.

DETAILS OF PARAPET RAIL

No Scale

② C.L. Partial-Depth Parapet Joint (1/4" to 1" max.) as shown in "Reinforcing Plan And Pouring Sequence", Dwg. No. 56074. Stop 1'-2" from top of slab.

TABLE OF PARAPET RAIL VARIABLES

"A" Closed Parapet	"B"	P4xx Bar
17'-0"	33	P404E
19'-0"	37	P405E
18'-0"	35	P406E

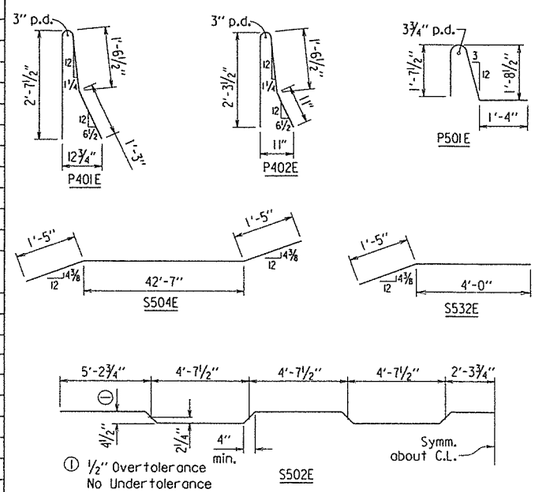
Note: For location of Open and Closed Parapet panels, see "Reinforcing Plan And Pouring Sequence", Dwg. No. 56074.

BAR LIST

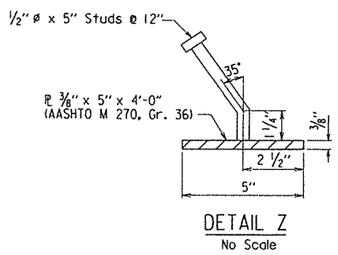
MARK	NO. REQ'D.	LENGTH	P.D.
S401E	1089	38'-3"	Str.
S402E	308	42'-10"	Str.
P401E	1136	5'-6"	2"
P402E	160	4'-10"	2"
P403E	112	5'-6"	Str.
P404E	28	16'-8"	Str.
P405E	28	18'-8"	Str.
P406E	196	17'-8"	Str.
S501E	308	42'-10"	Str.
S502E	309	43'-8"	3"
S503E	1288	5'-0"	Str.
S504E	4	45'-5"	3 3/4"
S505E-S531E	4 ea.	Var. 5'-7" to 41'-3"	Str.
S532E	8	5'-5"	3 3/4"
P501E	1136	4'-10"	3 3/4"
S601E	92	41'-6"	Str.
S602E	46	40'-6"	Str.

BENDING DIAGRAMS

Dimensions are out to out of bars.



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

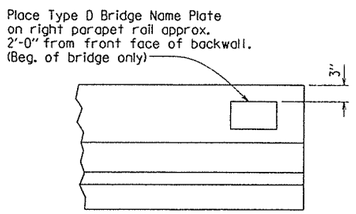


DETAIL Z

No Scale

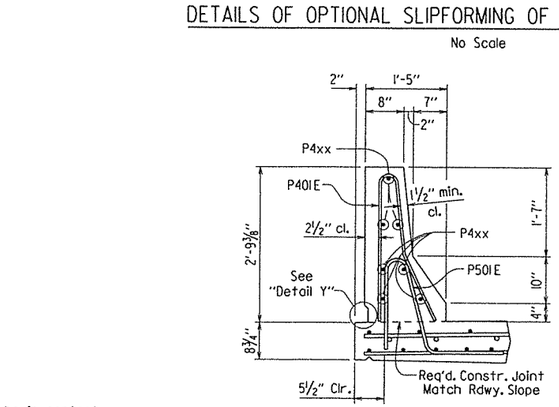
Note:
The surfaces of the 3/8" plates which will not be in contact with concrete shall be painted with aluminum epoxy paint in accordance with Section 638, or as approved by the Engineer. Only one coat is required and shall be applied in the fabricator's shop. Painting will not be paid for directly,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

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



NAME PLATE DETAIL

No Scale



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

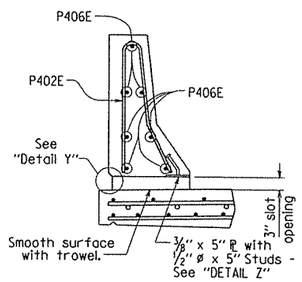
The extruded parapet shall conform to the horizontal and vertical lines shown on the plans or as directed by the Engineer and shall present a smooth, uniform appearance and texture. Exposed surface may be given a light brush finish or a Class 3, Textured Coating Finish, in place of the Class 2, Rubbed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

DETAILS OF OPTIONAL SLIPFORMING OF CONCRETE PARAPET RAIL

No Scale

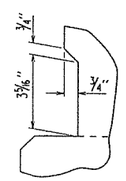
SECTION A-A

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



SECTION B-B

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



DETAIL Y

No Scale

STATE OF ARKANSAS
Charles R. Ellis
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7-14-14
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BRIDGE ENGINEER

SHEET 5 OF 5
DETAILS OF 324'-0" CONTINUOUS COMPOSITE W-BEAM UNIT SOUTH BOAT DITCH

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: ADN DATE: 3-12-14
CHECKED BY: CSR DATE: 6/18/14
DESIGNED BY: ADN DATE: 5-7-2

FILENAME: b070344xl_sl.dgn
SCALE: AS NOTED

BRIDGE NO. 07326 DRAWING NO. 56075

PRINT DATE: 7/14/2014

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.		070344	61	137
				① 07326, 07327, 07328 & 07329		COMMON DETAILS - W-BEAM UNITS	- 56076	

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

DESIGN SPECIFICATION: AASHTO LRFD Bridge Design Specifications (Sixth Edition, 2012).

MATERIAL AND STRENGTHS:

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

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

The superstructure details shown are for use when removable deck forming is used and are the basis for measurement of Class S(AE) Concrete. See Standard Drawing No. 55005 for allowable modifications and for tolerances when Permanent Steel Bridge Deck Forms are used. Concrete in bridge superstructure shall be placed, consolidated and screeded off for the entire pour before any concrete has taken its initial set. This may require the use of a retarding agent.

The concrete deck shall be given a tine finish in accordance with Subsection 802.19 for Class 5 Tined Bridge Roadway Surface Finish. Movement of the finishing machine across new concrete shall be on planks placed on the surface and shall be prohibited for 72 hours after finishing the pour. Sufficient concrete must be placed ahead of the strike-off to fully load the beam. If a longitudinal strike-off is used, a vertical camber adjustment must be made in the strike-off to account for the future dead load deflection due to the railing. A minimum of 72 hours shall elapse between completion of the slab and the pouring of the parapet railing. Any railing pours made before the entire slab has been placed and cured must be approved by the Engineer.

REINFORCING STEEL:
All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi) conforming to AASHTO M31 or M322, 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 considered subsidiary to the item "Reinforcing Steel-Bridge (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) unless otherwise noted. Structural steel completely embedded in concrete may be AASHTO M 270, Gr. 36 or Gr. 50 unless otherwise noted.

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

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

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

All beams shall be blocked in their true position in the shop with the webs horizontal in groups as specified in Subsection 807.54(b)(2). The camber, length of sections, distance between bearings and openings of joints shall be measured with the beams in their true position and this information shall become part of the permanent records for this job. The component parts shall be match marked in this assembly and these marks shall be shown on the erection diagram. All beam dimensions are based on a temperature of 60 degrees F. A tolerance of ¼" +/- is allowed for camber.

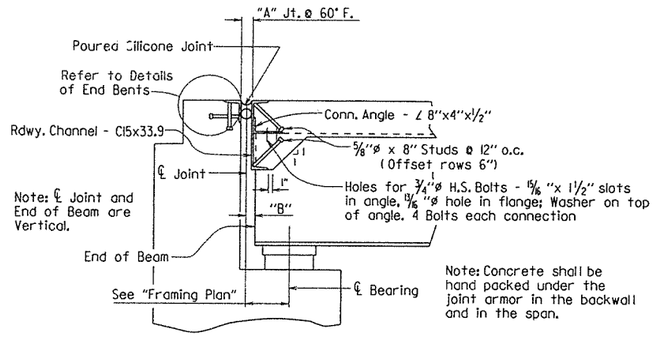
Flange field splice plates shall be cut and fabricated so that the primary direction of rolling is parallel to the direction of the main tensile and/or compressive stresses.

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

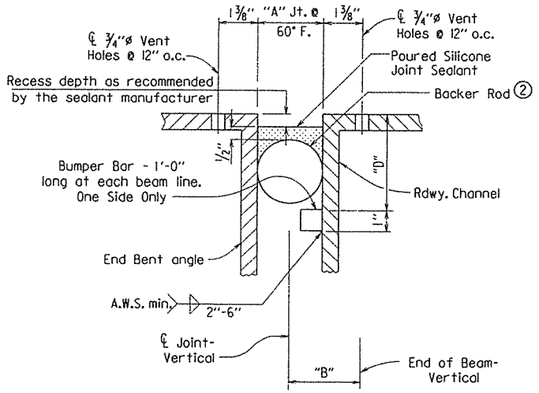
Field connections shall be bolted with high-strength bolts and shall be ¾" ø bolts unless otherwise noted. Open Holes shall be 11/16 " ø unless otherwise noted. Holes for ¾" ø high-strength bolts may be 15/16 " ø if a washer is supplied for use under both the nut and head of the bolt. Bolts shall be placed with heads on the outside face of the exterior beam webs and on the bottom of the beam flanges.

Unless otherwise noted, 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.

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



JOINT AT END BENTS
Perpendicular to ℄ Joint
No Scale



DETAIL OF POURED SILICONE JOINT SEAL
No Scale

EXPANSION DEVICE INSTALLATION AT END BENTS

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

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

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

SILICONE JOINT DATA

"A" Width Perpendicular to Joint at 24 Hour Average Temperature ① Of:			"B" Perpendicular to Joint at 60°F	Bumper Bar Size	"D"
40°F	60°F	80°F			
2¼"	2"	1¾"	± 2¼"	1" x 1"	5"

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

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

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

② BACKER ROD NOTE:

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

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

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

DETAILS FOR BLOCKING EXPANSION JOINT DEVICE
No Scale

JOINT SEAL PLACEMENT AT CURB
No Scale

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS

BRIDGE ENGINEER

COMMON DETAILS OF CONTINUOUS W-BEAM UNITS

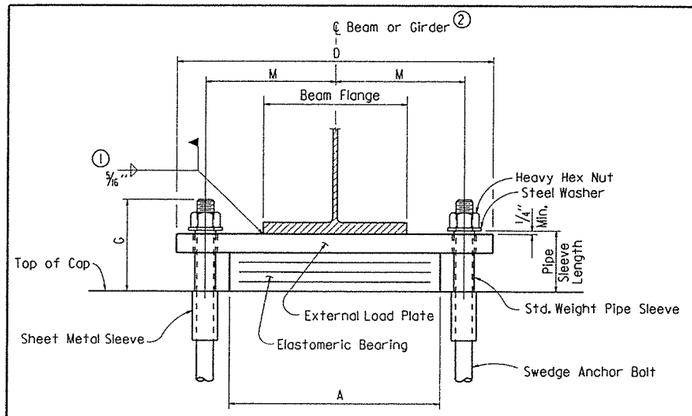
ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: ADN DATE: 3-12-14 FILENAME: b070344_gen.dgn
CHECKED BY: CER DATE: 7/14/14 SCALE: AS NOTED
DESIGNED BY: ADN DATE: 5-12

BRIDGE NO. 07326, 07327, 07328 & 07329 DRAWING NO. 56076

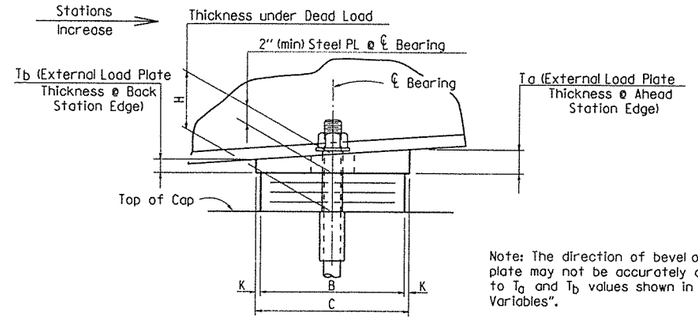
PRINT DATE: 7/14/2014



FRONT VIEW

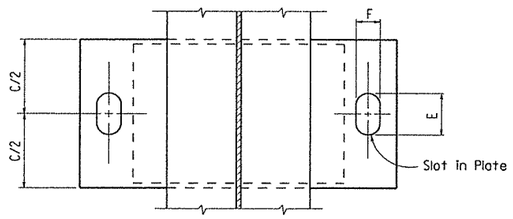
① Care shall be taken to ensure that the external load plate is in full and complete contact with the beam or girder flange before welding begins.

② ℄ Elastomeric pad shall be aligned with ℄ Beam.

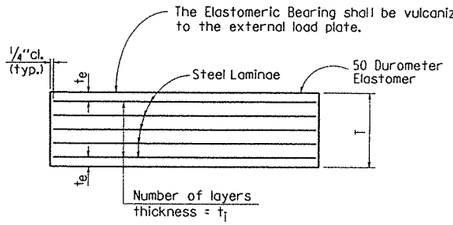


SIDE VIEW

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



PLAN VIEW



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

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

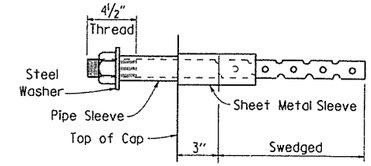
TABLE OF FABRICATOR VARIABLES

BRIDGE NO.	LOCATION: BENT NO(S).	LOCATION: BEAM NO.	BEARING TYPE	NO. of BEARINGS EACH BENT	*MAXIMUM DESIGN LOAD (KIPS)	G	H	ELASTOMERIC PAD: A	B	N	t_i	t_e	NO. & THICKNESS OF STEEL LAMINAE	T	EXTERNAL LOAD PLATE: C	D	E	F	K	M	T_a	T_b	ANCHOR BOLT: ANCHOR BOLT (ø x L)	GRADE	PIPE SLEEVE SIZE (ø x L)	SHEET METAL SLEEVE SIZE (ø x L)	STEEL WASHER SIZE (O.D.)
07326	1 & 5	All	Exp.	5	124	7 3/4"	5"	16"	8"	4	1/2"	1/4"	5 @ 12 Gauge	3"	9"	26 1/4"	4 7/8"	2 1/4"	1/2"	10 3/8"	2"	2"	1 1/2" x 25"	55	1 1/2" x 5 1/4"	3" x 6"	3"
	2-4	All	Fix	5	283	7 1/2"	3 13/16"	19"	11 1/2"	2	1/2"	1/4"	3 @ 12 Gauge	1 13/16"	12 1/2"	31"	3 1/8"	3 1/8"	1/2"	12 1/4"	2"	2"	2 1/4" x 32"	55	2 1/2" x 4 1/4"	4" x 6"	4"
07327	1 & 5	All	Exp.	5	96	7 3/4"	5"	13"	8"	4	1/2"	1/4"	5 @ 12 Gauge	3"	9"	23"	4 1/4"	2 1/4"	1/2"	8 3/4"	2"	2"	1 1/2" x 25"	55	1 1/2" x 5 1/4"	3" x 6"	3"
	2-4	All	Fix	5	216	7 1/4"	3 13/16"	16"	11 1/2"	2	1/2"	1/4"	3 @ 12 Gauge	1 13/16"	12 1/2"	28"	3 1/8"	3 1/8"	1/2"	10 3/4"	2"	2"	2" x 29"	55	2 1/2" x 4 1/4"	4" x 6"	3 3/4"
07328	1 & 4	All	Exp.	5	124	7 1/4"	4 3/8"	15 1/2"	8"	3	1/2"	1/4"	4 @ 12 Gauge	2 7/16"	9"	25 1/2"	4"	2 1/4"	1/2"	10"	2"	2"	1 1/2" x 24"	55	1 1/2" x 4 3/4"	3" x 6"	3"
	2 & 3	All	Fix	5	231	7 1/4"	3 13/16"	16"	12"	2	1/2"	1/4"	3 @ 12 Gauge	1 13/16"	13"	28"	3 1/8"	3 1/8"	1/2"	10 3/4"	2"	2"	2" x 29"	55	2 1/2" x 4 1/4"	4" x 6"	3 3/4"
07329	1 & 4	All	Exp.	5	109	7 1/4"	4 3/8"	15 1/2"	8"	3	1/2"	1/4"	4 @ 12 Gauge	2 7/16"	9"	25 1/2"	3 1/8"	2 1/4"	1/2"	10"	2"	2"	1 1/2" x 24"	55	1 1/2" x 4 3/4"	3" x 6"	3"
	2 & 3	All	Fix	5	232	7 1/4"	3 13/16"	16"	12"	2	1/2"	1/4"	3 @ 12 Gauge	1 13/16"	13"	28"	3 1/8"	3 1/8"	1/2"	10 3/4"	2"	2"	2" x 29"	55	2 1/2" x 4 1/4"	4" x 6"	3 3/4"

*Maximum Design Load = Service I Limit State

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.		070344	62	137

① 07326, 07327, 07328 & 07329 - ELASTO. BRGS. - 56077



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)"

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)". External load plates will not be measured or paid for for separately but will be considered included in the unit bid price for "Elastomeric Bearings".

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.

Tabular Data by : ADN Date: 11-19-13

Checked by : CSR Date: 11/14/14

Designed by : ADW Date: 5-12

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS

BRIDGE ENGINEER

DETAILS OF ELASTOMERIC BEARINGS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: MJT DATE: Nov.12.96 FILENAME: b070344_el.dgn

CHECKED BY: AMS DATE: Jul.7.05 SCALE: NONE

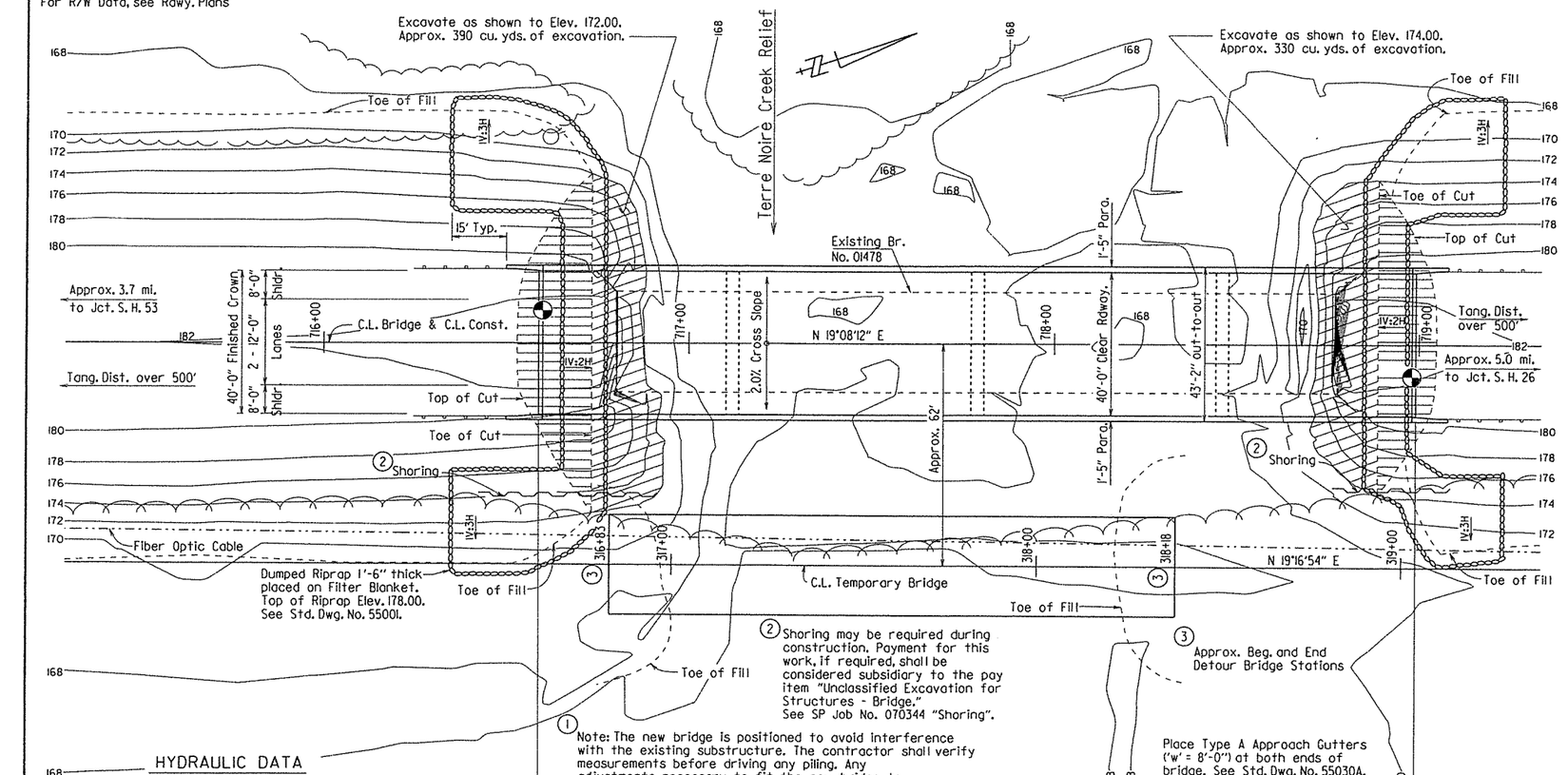
DESIGNED BY: Std. DATE:

BRIDGE NO. 07326, 07327, 07328 & 07329 DRAWING NO. 56077

PRINT DATE: 7/14/2014

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.		070344	63	137
				(1) 07327 -		LAYOUT	- 56078	

For R/W Data, see Rdwy. Plans



HYDRAULIC DATA

FLOOD DESCRIPTION	FREQUENCY	*TOTAL DISCHARGE	DISCHARGE BRIDGE NO. 07327	**NATURAL WATER SURFACE ELEVATION	WATER SURFACE ELEV. WITH BACKWATER
	YEARS	CFS	CFS	FEET	FEET
Design	50	38500	8800	177.5	177.7
Base	100	43700	10600	178.1	178.4
Extreme	500	56550	13400	179.6	180.3
Overtopping	160	47550	11800	178.6	178.9

* Total discharge through this bridge and Bridge Nos. 07326, 07328, and 07329 over South Boat Ditch, Terre Noire Creek, and North Boat Ditch.
** Unconstricted water surface without structure or roadway approaches.
0100 backwater elev. for existing structure = 178.2 ft.
Proposed low bridge chord elev. = 179.17 ft.
Drainage area = 250 square miles.
Historical H.W. Elev. = 177.1 ft.

For Soil Boring Information, see Dwg. No. 56079.

PRINT DATE: 7/14/2014

GENERAL NOTES

BENCH MARK: 904, Square Cut in Northwest Corner of Bridge No. 01478, Elev. 182.11.

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 Specification unless otherwise noted in the Plans.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications (Sixth Edition, 2012).

LIVE LOADING: HL-93 SEISMIC ZONE: 1

MATERIALS AND STRENGTHS:

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

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

(1) CONCRETE PILING: Piling for Bents 1 & 5 shall be 18" square prestressed concrete piles and shall be driven to a minimum ultimate bearing capacity of 205 tons per pile. Piling for Bents 2, 3, & 4 shall be 24" prestressed concrete piles and shall be driven to a minimum ultimate bearing capacity of 375 tons. All piling shall be driven with an approved air, steam, or diesel hammer. Piling in end bents shall be driven after embankment to bottom of cap is in place.

Length of piling shown are assumed for estimating quantities only. Actual lengths to be determined in the field. Drive one 70' test pile at Bent 1, one 80' test pile at Bent 3, and one 65' test pile at Bent 5.

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 51,200 ft. lbs. per blow will be required to obtain the ultimate bearing capacity at Bent Nos. 1 & 5. It is estimated that a minimum rated hammer energy of 90,200 ft. lbs. per blow will be required to obtain the ultimate bearing capacity at Bent Nos. 2, 3 & 4.

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	56080-56081
Int. Bents	56082
238' Cont. Comp. W-Beam Unit	56076, 56083-56087
Elastomeric Bearings	56077
18" Prestressed Concrete Piles	55022
24" Prestressed Concrete Piles	56068
Type A Approach Gutters	55030A

EXISTING BRIDGE: Existing bridge no. 01478 at Site 2 (log mile 4.58) is 27' wide and 200' long and consists of five 40' reinforced concrete deck girder spans. The deck is supported by concrete bents with timber pile footings. The existing bridge is located at the site of the proposed new bridge.

REMOVAL AND SALVAGE: After the temporary bridge is open to traffic, existing bridge no. 01478 shall be removed in accordance with Section 205. All material from the existing bridge shall become the property of the Contractor.

TEMPORARY BRIDGE: Construct a minimum 155' long temporary bridge approximately 62' downstream from centerline of the proposed bridge with a minimum deck elevation of 180.60. See Roadway Plans for actual detour grade and alignment. The temporary bridge shall have a minimum span length of 31' over the main channel, a minimum roadway width of 24' and a minimum live load capacity of H15. See Section 603 and Std. Dwg. Nos. 55054 through 55056 for standard temporary bridge details. A timber deck will not be allowed in the construction of the temporary bridge structure. If timber piling and pine timber are used on this temporary bridge structure, the materials shall be treated with a preservative according to the Standard Specifications.

MAINTENANCE OF TRAFFIC: See Roadway Plans.

STATE OF ARKANSAS
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REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 1 OF 2
LAYOUT OF BRIDGE OVER TERRE NOIRE CREEK RELIEF
GURDON-OAK GROVE STRS. & APPRS. (S)
CLARK COUNTY

ROUTE 67 SEC. 5

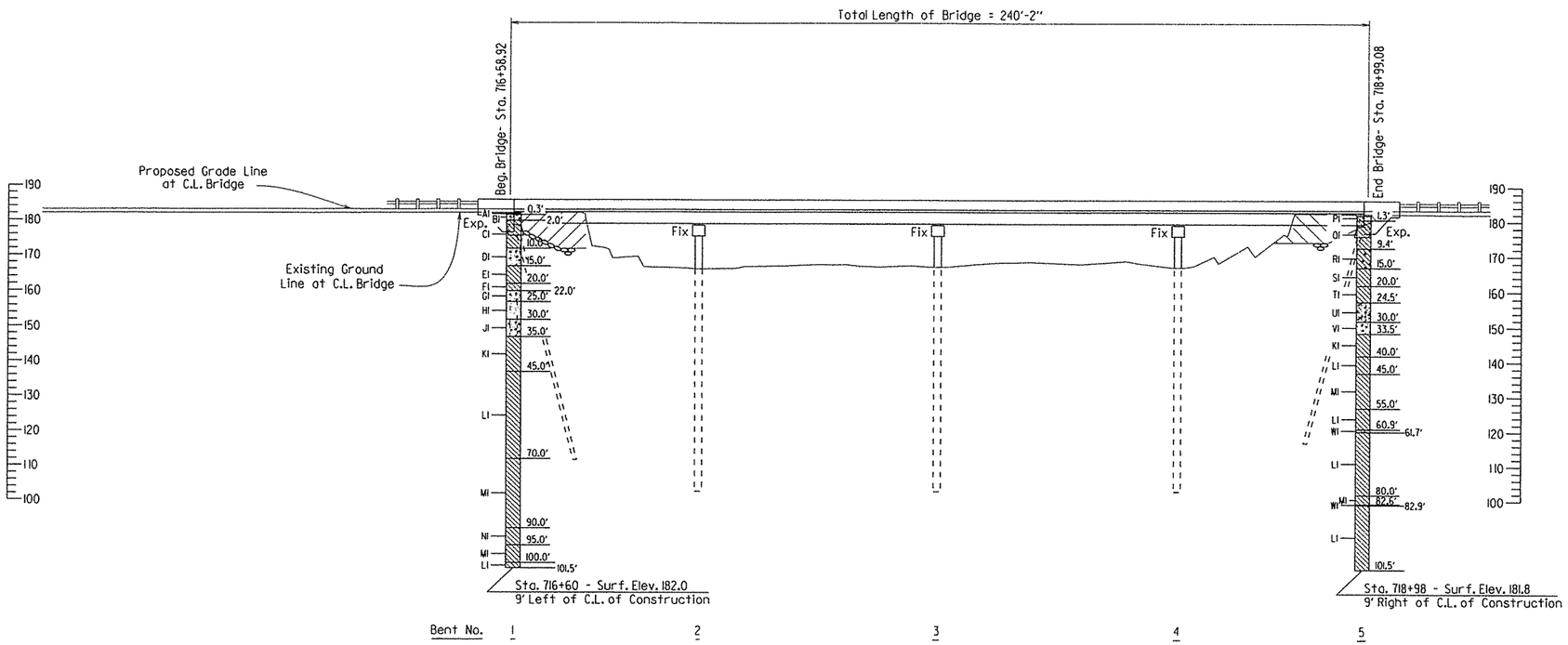
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

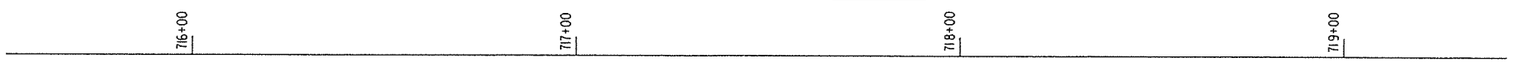
DRAWN BY: ADN DATE: 04/13/12 FILENAME: b070344x2_11.dgn
CHECKED BY: CJR DATE: 6/18/14 SCALE: 1" = 20'
DESIGNED BY: ADN DATE: 3-1-12

BRIDGE NO. 07327 DRAWING NO. 56078

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.		070344	64	137
				(1) 07327 -		LAYOUT	- 56079	



ELEVATION



BORING LEGEND

A1-Asphalt Pavement (0-0.3')
B1-Concrete Pavement (0.3' - 2.0')
C1-Moist, Soft, Gray Clay
D1-Moist, Very Loose, Gray and Brown Sand with Gravel and some Organic Matter
E1-Moist, Soft, Gray and Brown Clay
F1-Moist, Medium Stiff, Brown and Gray to Gray Clay with Sand
G1-Wet, Loose, Gray Sand with Gravel
H1-Wet, Loose, Gray Silty Sand
J1-Wet, Medium Dense, Gray Silty Sand with Gravel
K1-Moist, Very Stiff, Dark Gray Calcareous Clay with Shells
L1-Moist, Hard, Dark Gray Calcareous Clay with Shells
M1-Moist, Hard, Dark Gray Calcareous Clay
N1-Moist, Very Stiff, Dark Gray Calcareous Clay
P1-Asphalt Pavement (0-1.3')
O1-Moist, Soft, Gray Clay with Sand
R1-Wet, Soft, Gray Clay with Organic Matter
S1-Wet, Soft, Brown and Gray Clay
T1-Moist, Medium Stiff, Gray and Brown Clay
U1-Wet, Loose, Gray Clayey Sand with Small Gravel
V1-Wet, Medium Dense, Gray Sand with Gravel
W1-Moist, Very Hard, Dark Gray Calcareous Clay with Cemented Sand Seams

"N" VALUES

Sta. 716+60 - 9' Left of C.L. of Construction

10.5- 11.5, N=4
15.5- 16.5, N=3
20.5- 21.5, N=5
25.5- 26.5, N=8
30.5- 31.5, N=18
35.5- 36.5, N=18
40.5- 41.5, N=22
45.5- 46.5, N=39
50.5- 51.5, N=44
55.5- 56.5, N=42
60.5- 61.5, N=44
65.5- 66.5, N=44
70.5- 71.5, N=43
75.5- 76.5, N=45
80.5- 81.5, N=45
85.5- 86.5, N=47
90.5- 91.5, N=29
95.5- 96.5, N=49
100.5-101.5, N=41

Sta. 718+98 - 9' Right of C.L. of Construction

4.9- 5.9, N=3
9.9- 10.9, N=3
15.5- 16.5, N=3
20.5- 21.5, N=7
25.5- 26.5, N=6
30.5- 31.5, N=28
35.5- 36.5, N=24
40.5- 41.5, N=34
45.5- 46.5, N=40
50.5- 51.5, N=36
55.5- 56.5, N=40
60.5- 60.9, N=60(5'')
65.5- 66.5, N=38
70.5- 71.5, N=40
75.5- 76.5, N=40
80.5- 81.5, N=42
85.5- 86.5, N=43
90.5- 91.5, N=41
95.5- 96.5, N=40
100.5-101.5, N=43

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 2
LAYOUT OF BRIDGE OVER
TERRE NOIRE CREEK RELIEF
GURDON-OAK GROVE STRS. & APPRS. (S)
CLARK COUNTY

ROUTE 67 SEC. 5

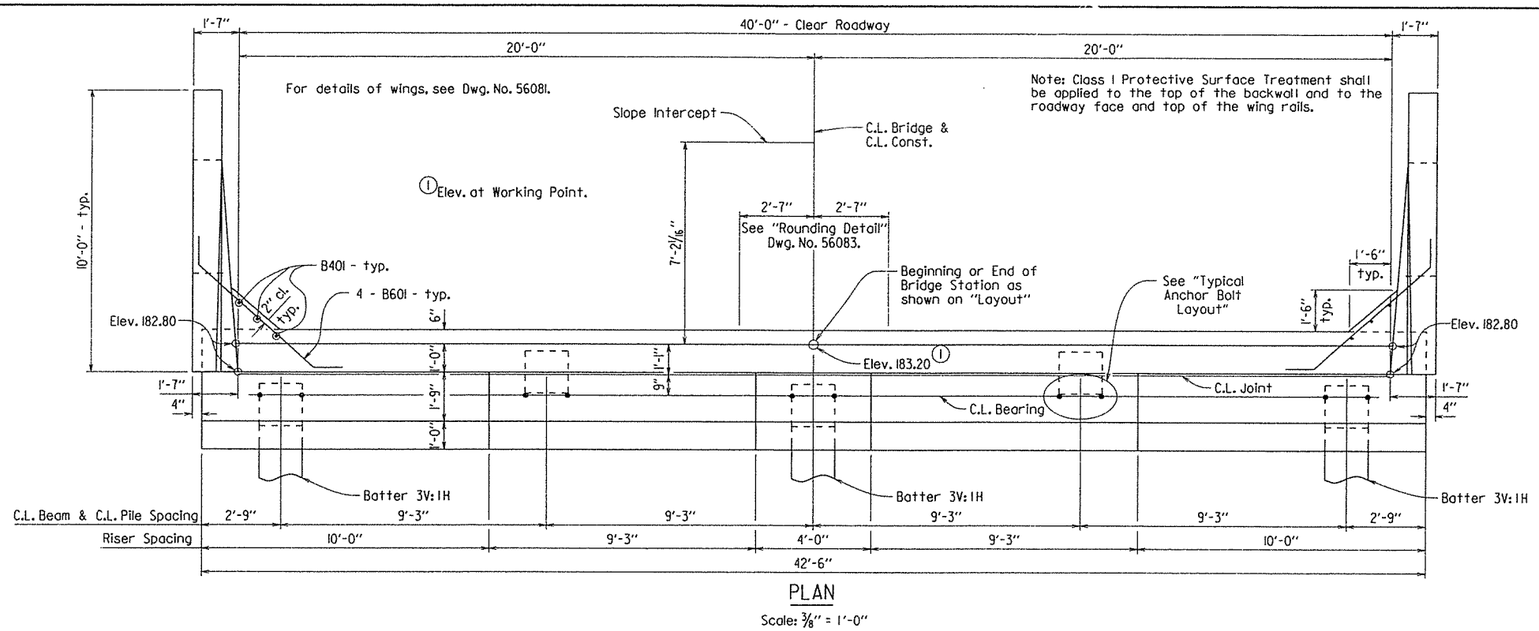
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: ADN DATE: 04/13/12
CHECKED BY: CSR DATE: 6/18/14
DESIGNED BY: ADN DATE: 3-12
FILENAME: b070344_x2_ll.dgn
SCALE: 1" = 20'

BRIDGE NO. 07327
DRAWING NO. 56079

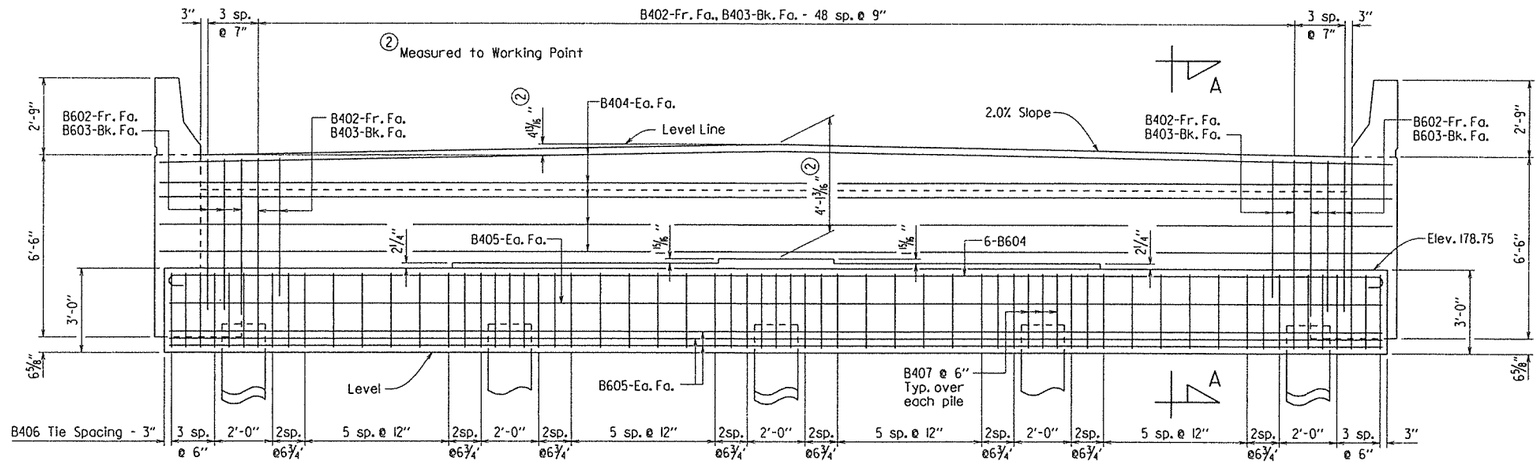
PRINT DATE: 7/14/2014

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.		070344	65	137
				① 07327 -		END BENTS	- 56080	



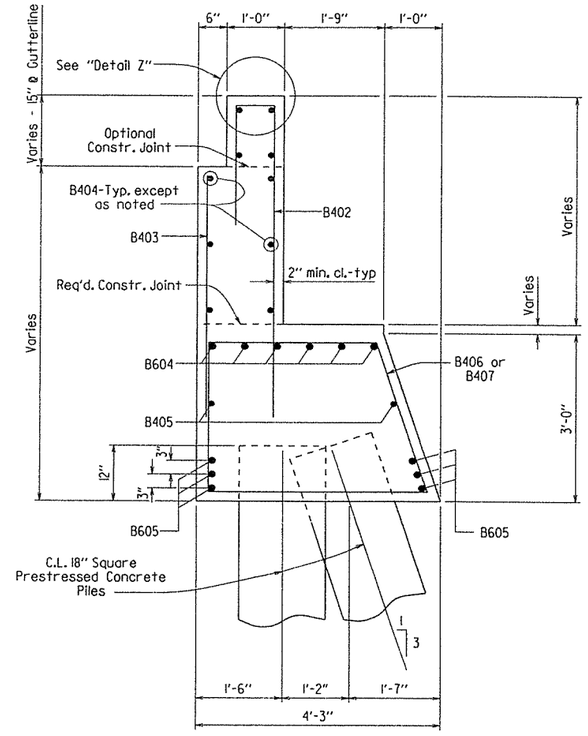
PLAN

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



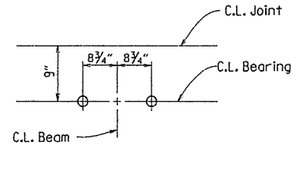
ELEVATION

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



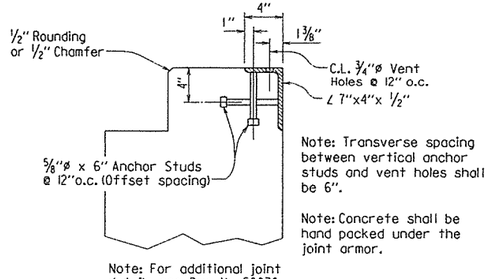
SECTION A-A

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



TYPICAL ANCHOR BOLT LAYOUT

No Scale
For Details of Elastomeric Bearings, see Dwg. No. 56077.



DETAIL Z

No Scale

GENERAL NOTES

All concrete shall be Class "S" and shall be poured in the dry. All exposed corners to be chamfered 3/4" unless otherwise noted.

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

No portion of the backwall shall be poured until the beams are in place. Refer to "Expansion Device Installation at End Bents" note, Dwg. No. 56076.

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

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

For additional information, see Layout.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 1 OF 2
DETAILS OF END BENTS
TERRE NOIRE CREEK RELIEF

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

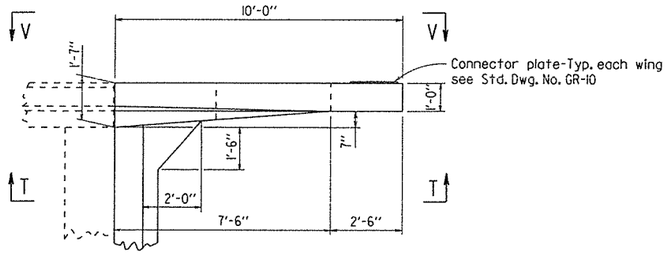
DRAWN BY: ADN DATE: 2-25-14
CHECKED BY: CSR DATE: 6/18/14
DESIGNED BY: ADN DATE: 11-13

FILENAME: b070344x2_bl.dgn
SCALE: AS NOTED

BRIDGE NO. 07327 DRAWING NO. 56080

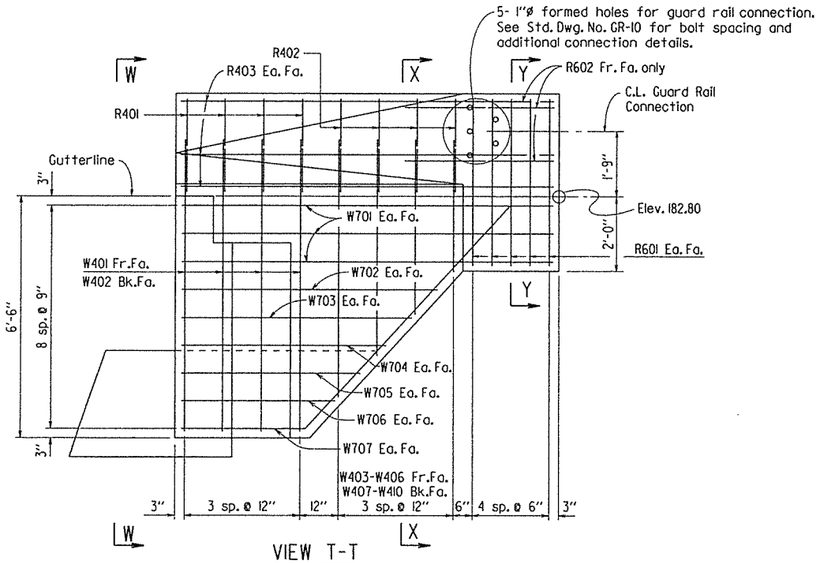
PRINT DATE: 7/14/2014

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.		070344	66	137
				①	07327 -	END BENTS	- 5608	



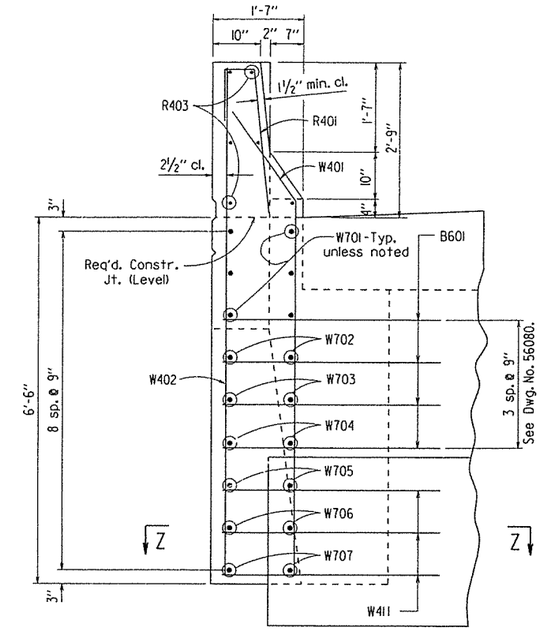
PLAN OF RAIL

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



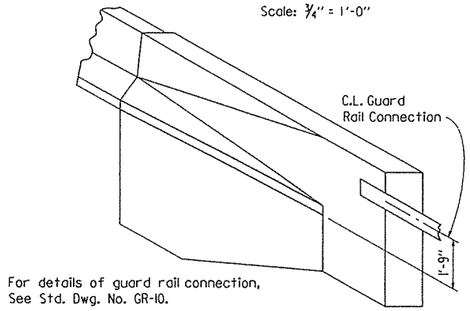
VIEW T-T

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



VIEW W-W

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



For details of guard rail connection, See Std. Dwg. No. GR-10.

THREE DIMENSIONAL VIEW OF RAIL

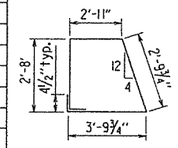
No Scale

BAR LIST - PER BENT

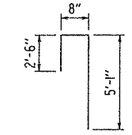
MARK	NO. REQ'D.	LENGTH	P.D.
B401	6	4'-11"	Str.
B402	49	8'-1"	2"
B403	49	3'-8"	Str.
B404	10	42'-10"	Str.
B405	2	42'-2"	Str.
B406	48	12'-7"	2"
B407	15	8'-3"	2"
R401	8	3'-11"	2"
R402	8	4'-0"	2"
R403	12	9'-8"	Str.
W401	8	8'-7"	2"
W402	8	8'-11"	Str.
W403-W406	2 each	Var. 3'-5" to 6'-10"	2"
W407-W410	2 each	Var. 4'-7" to 8'-0"	Str.
W411	6	8'-4"	2"
B601	8	7'-5"	4½"
B602	6	8'-6"	4½"
B603	6	4'-2"	Str.
B604	6	43'-6"	4½"
B605	6	42'-2"	Str.
R601	20	4'-5"	Str.
R602	6	5'-0"	Str.
W701	12	9'-8"	Str.
W702	4	6'-8"	Str.
W703	4	6'-0"	Str.
W704	4	5'-4"	Str.
W705	4	4'-8"	Str.
W706	4	4'-0"	Str.
W707	4	11'-2"	5¼"

BENDING DIAGRAMS

Dimensions are out to out of bars.



B406



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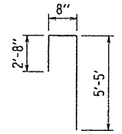

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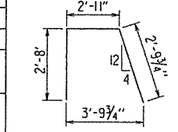

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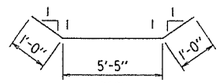

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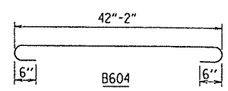

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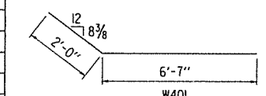
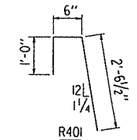
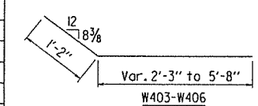


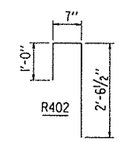
W401



R401



W403-W406



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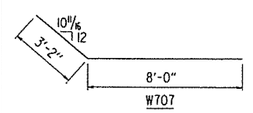

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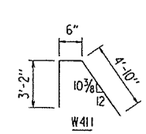

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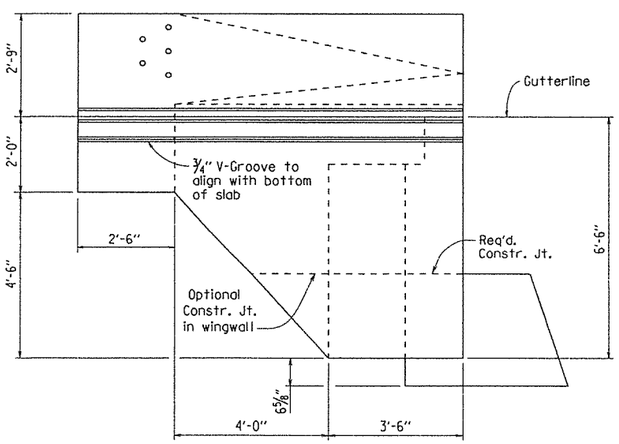
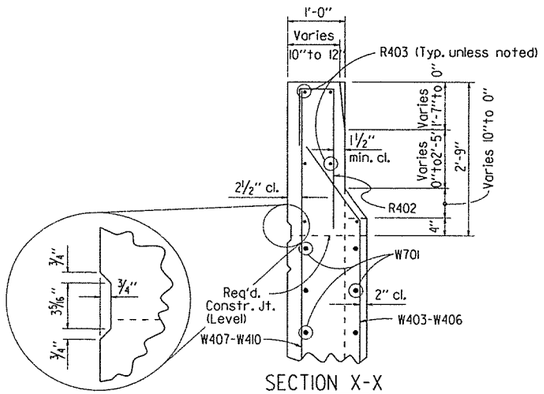


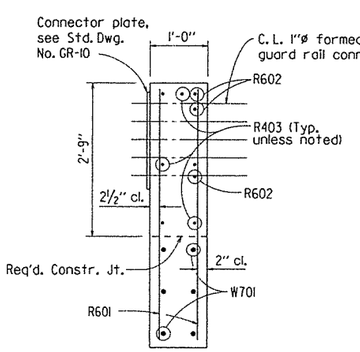
VIEW V-V

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



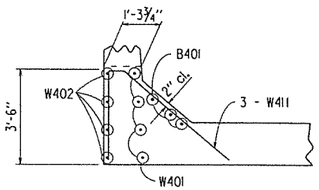
SECTION X-X

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



SECTION Y-Y

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



SECTION Z-Z

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

STATE OF ARKANSAS
Charles R. Ellis
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No. 9235
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BRIDGE ENGINEER

SHEET 2 OF 2
DETAILS OF END BENTS
TERRE NOIRE CREEK RELIEF

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: ADN DATE: 2-25-14 FILENAME: b070344x2_bl.dgn

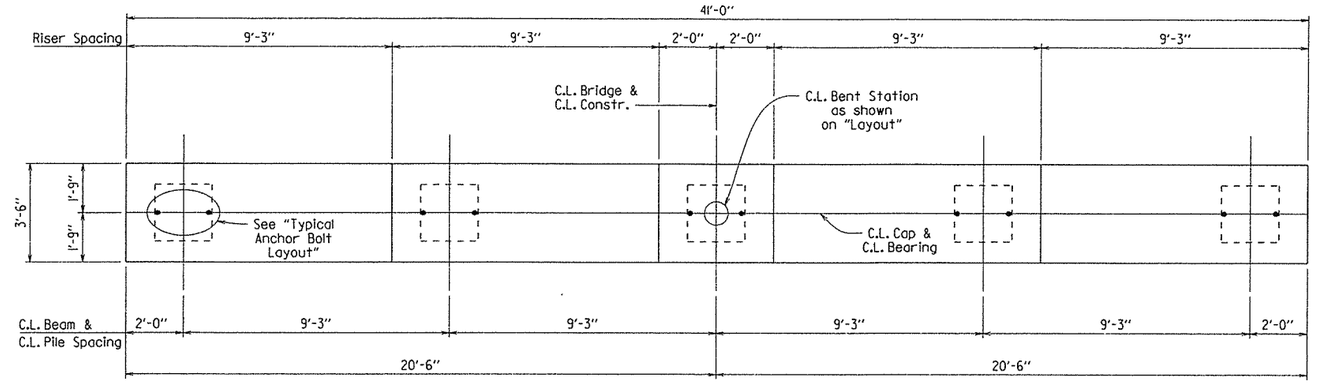
CHECKED BY: CJR DATE: 3/14/14 SCALE: AS NOTED

DESIGNED BY: ADN DATE: 01-13

BRIDGE NO. 07327 DRAWING NO. 56081

PRINT DATE: 7/14/2014

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.		070344	67	137
				(1) 07327 -		INT. BENTS	- 56082	

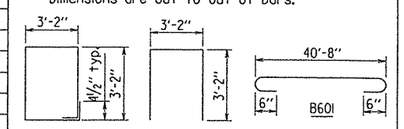


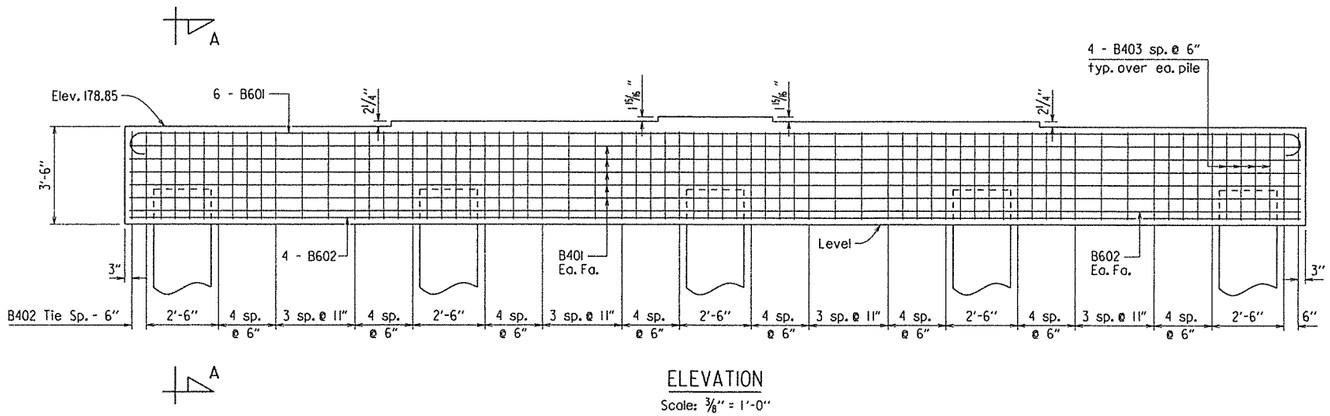
PLAN

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

BAR LIST - PER BENT

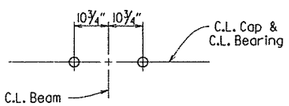
MARK	NO. REQ'D.	LENGTH	P.D.	BENDING DIAGRAMS
B401	10	40'-8"	Str.	Dimensions are out to out of bars.
B402	52	13'-0"	2"	
B403	20	9'-4"	2"	
B601	6	42'-0"	4½"	
B602	6	40'-8"	Str.	





ELEVATION

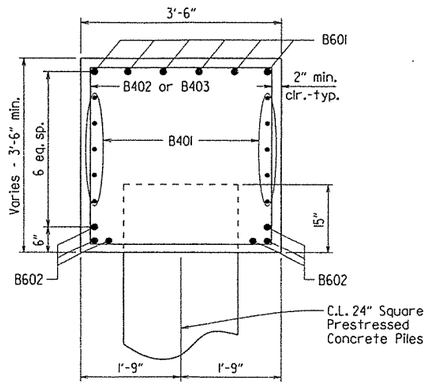
Scale: 3/8" = 1'-0"



TYPICAL ANCHOR BOLT LAYOUT

Not to Scale

For Details of Elastomeric Bearings, see Dwg. No. 56077.



SECTION A-A

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

GENERAL NOTES

All concrete shall be Class "S" with a minimum 28 day compressive strength, f'c = 3500 psi., and shall be poured in the dry. All exposed corners to be chamfered ¾" unless otherwise noted.

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

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

For additional information see layout.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
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BRIDGE ENGINEER

DETAILS OF INTERMEDIATE BENTS TERRE NOIRE CREEK RELIEF

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: ADN DATE: 2-19-14 FILENAME: b070344x2_b2.dgn

CHECKED BY: CSR DATE: 7/14/14 SCALE: AS NOTED

DESIGNED BY: ADN DATE: 12-13

BRIDGE NO. 07327 DRAWING NO. 56082

PRINT DATE: 7/14/2014

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.		070344	68	137
				(1) 07327 -		238 FT. UNIT	- 56083	

SLAB REINFORCING

Transverse: S501E @ 12" in top; S402E @ 12" o.c. in bottom — Alternate
S502E @ 12" o.c. bent up over beams —
S503E bundled with #5 bars in top at both gutterlines

Longitudinal: S401E as shown
S601E & 602E as shown over int. supports

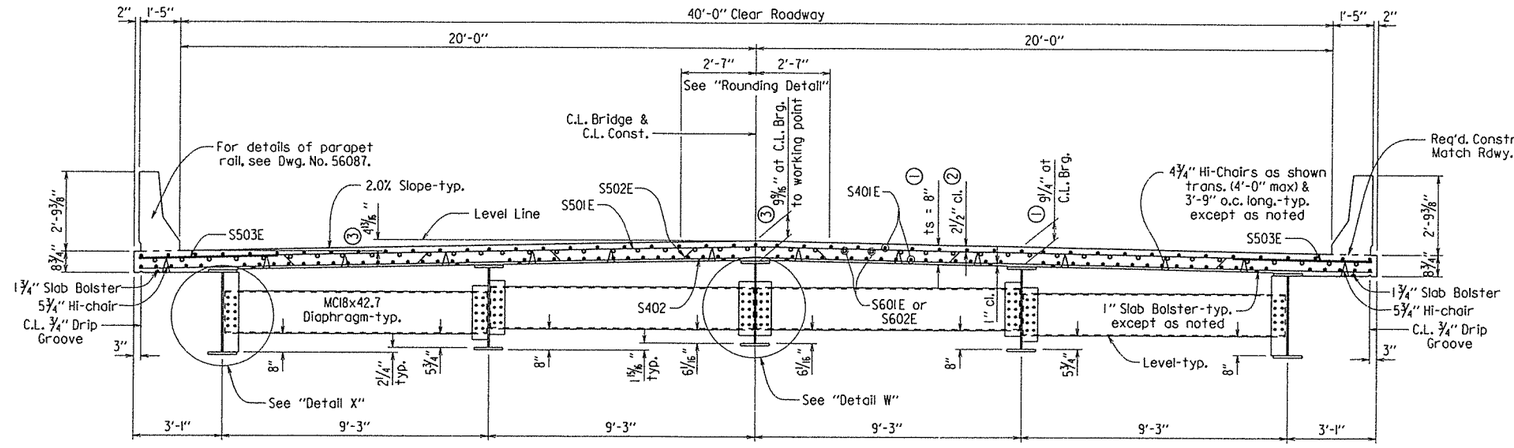
NOTE: Class I Protective Surface Treatment shall be applied to the Roadway Surface and to the Face & Top of the Concrete Parapet Rail.

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

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

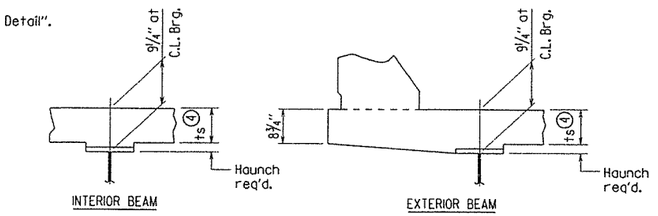
(2) Tolerance: Minus = 1/4"; Plus equal to the amount of slab thickening used to meet slab thickness tolerance. See "Adjustment for Slab Thickness Tolerance".

(3) Working point to gutterline, see "Rounding Detail".



TYPICAL ROADWAY SECTION

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



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

Note: ts = slab thickness as shown in "Typical Roadway Section".

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

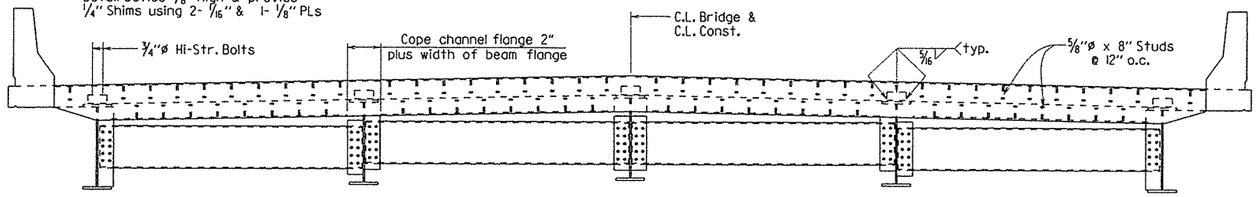
Tolerances shown are applicable only when removable deck forming is used. See Std. Dwg. No. 55005 for tolerances when permanent steel deck forms are used. Payment for concrete shall be based on removable deck forming.

ADJUSTMENT FOR SLAB THICKNESS TOLERANCE

No Scale

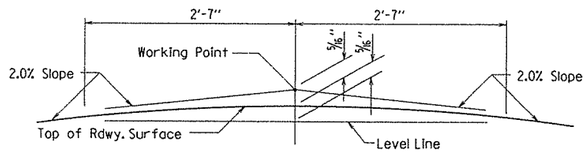
Expansion Device:
Rdwy. C15 x 33.9
Conn. ∠8" x 4" x ½"
Detail Device ⅛" high & provide ¼" Shims using 2- 7/16" & 1- ⅛" PLs

For additional joint details, see Dwg. No. 56076.



TYPICAL SECTION THRU JOINT

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

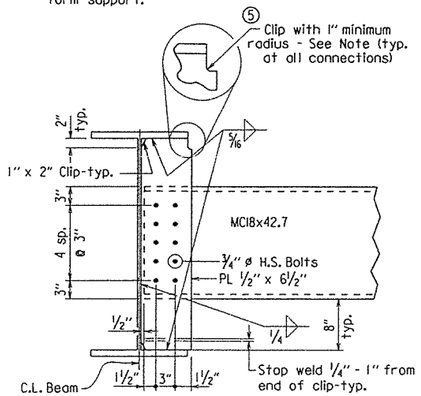


NOTE: Working Point matches Theoretical Roadway Grade.

ROUNDING DETAIL

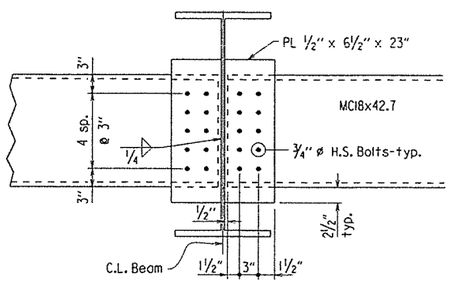
No Scale

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



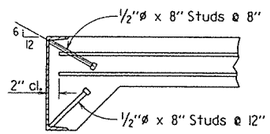
DETAIL X

No Scale



DETAIL W

No Scale



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

No Scale

STATE OF ARKANSAS
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No. 9235
7-14-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 1 OF 5
DETAILS OF 238'-0" CONTINUOUS COMPOSITE W-BEAM UNIT
TERRE NOIRE CREEK RELIEF

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: ADN DATE: 3-17-14
CHECKED BY: CSR DATE: 3/17/14
DESIGNED BY: ADN DATE: 5-12

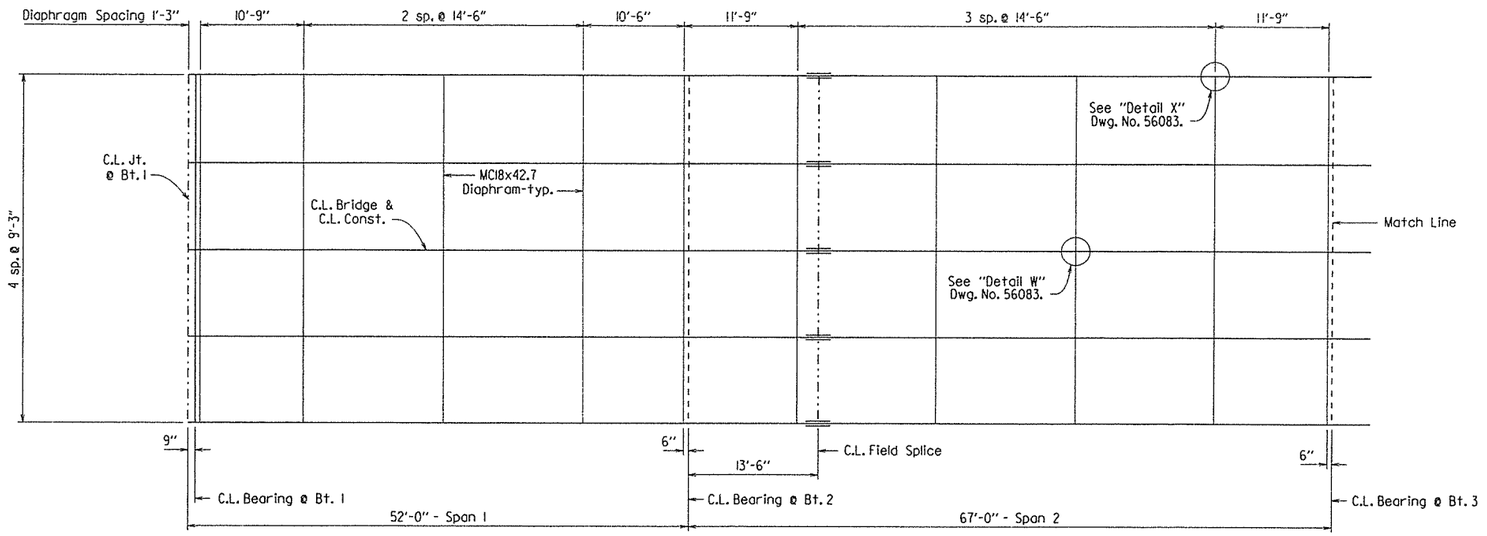
FILENAME: b070344x2_sl.dgn
SCALE: AS NOTED

BRIDGE NO. 07327 DRAWING NO. 56083

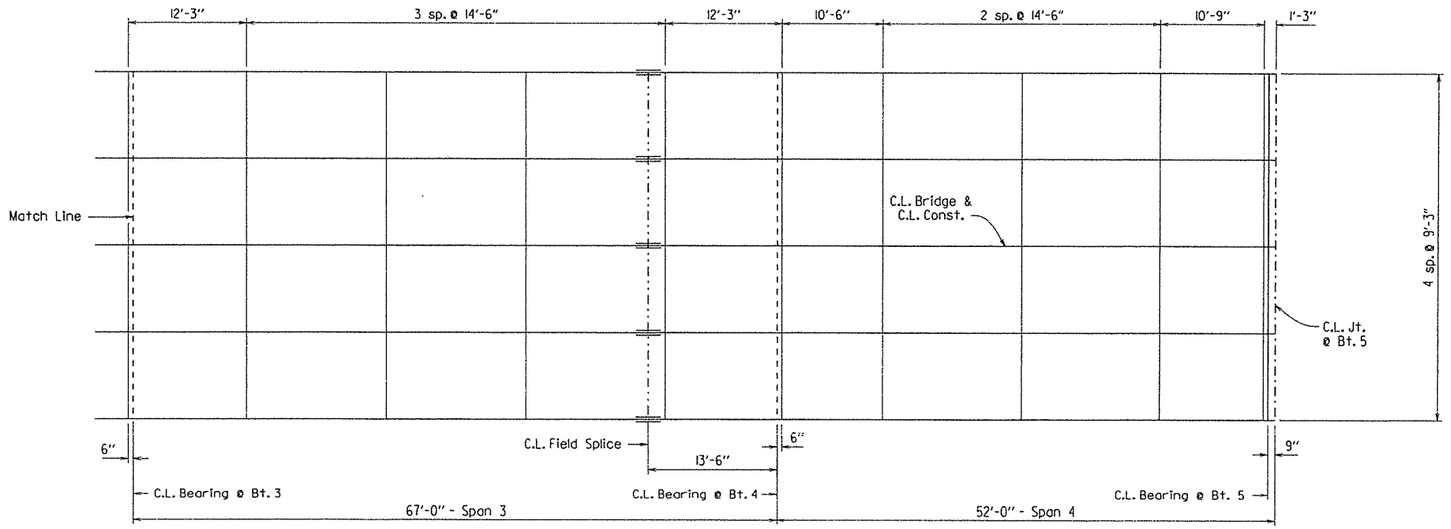
PRINT DATE: 7/15/2014

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.		070344	69	137
				①	07327 -	238 FT. UNIT	- 56084	

AHEAD STATIONING



AHEAD STATIONING



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

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 5
DETAILS OF 238'-0" CONTINUOUS COMPOSITE W-BEAM UNIT
TERRE NOIRE CREEK RELIEF

ROUTE SEC.

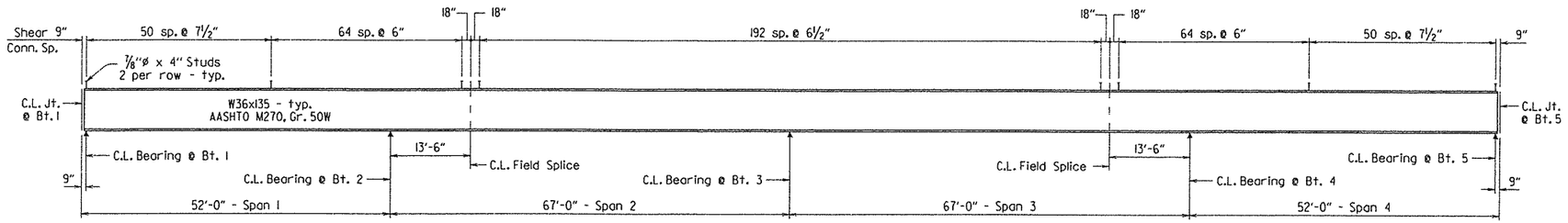
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: ADN DATE: 3-18-14
CHECKED BY: CRE DATE: 6/18/14
DESIGNED BY: ADN DATE: 3-12
FILENAME: b070344x2_sl.dgn
SCALE: AS NOTED

BRIDGE NO. 07327 DRAWING NO. 56084

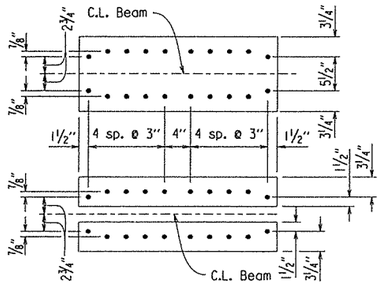
PRINT DATE: 7/14/2014

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.		070344	70	137
				(1)	07327 -	238 FT. UNIT	- 56085	

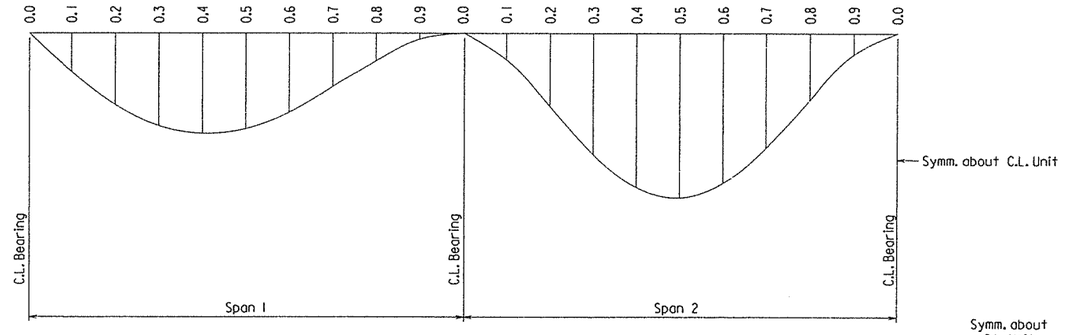


BEAM ELEVATION
No Scale

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



FLANGE SPLICE

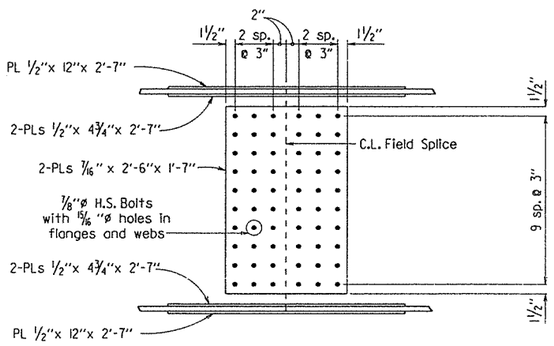


DEAD LOAD DEFLECTIONS DIAGRAM (TYP.)

Note:
Camber for Dead Load Deflection plus Vertical curve ± ¼" tolerance. Deflections shown are from a chord from C.L. Bearing to C.L. Bearing. Vertical curve corrections not included. Negative sign (-) indicates point above chord.

	Point of Deflection	Structural Steel		Structural Steel + Slab		Structural Steel + Slab + Parapet	
		Ext. Bms.	Int. Bms.	Ext. Bms.	Int. Bms.	Ext. Bms.	Int. Bms.
Span 1	0	0	0	0	0	0	0
	0.1	0.015	0.017	0.096	0.109	0.103	0.116
	0.2	0.028	0.031	0.176	0.201	0.189	0.214
	0.3	0.037	0.041	0.229	0.262	0.246	0.279
	0.4	0.040	0.044	0.250	0.286	0.268	0.304
	0.5	0.038	0.042	0.237	0.271	0.254	0.288
	0.6	0.031	0.035	0.196	0.224	0.210	0.238
	0.7	0.022	0.024	0.134	0.153	0.144	0.163
	0.8	0.011	0.012	0.067	0.077	0.072	0.082
	0.9	0.002	0.003	0.014	0.016	0.015	0.017
	0	0	0	0	0	0	0
Span 2	0.1	0.010	0.012	0.065	0.075	0.070	0.080
	0.2	0.029	0.032	0.182	0.209	0.195	0.222
	0.3	0.048	0.053	0.300	0.343	0.322	0.365
	0.4	0.062	0.068	0.383	0.438	0.411	0.466
	0.5	0.066	0.072	0.410	0.469	0.440	0.499
	0.6	0.060	0.066	0.374	0.428	0.401	0.455
	0.7	0.046	0.050	0.284	0.325	0.305	0.346
	0.8	0.026	0.029	0.164	0.188	0.176	0.200
	0.9	0.008	0.009	0.052	0.059	0.056	0.063
	0	0	0	0	0	0	0

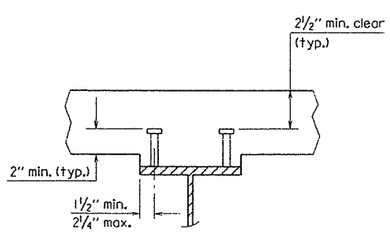
Symm. about C.L. Unit



WEB SPLICE

Note: All field splice plates shall be AASHTO M270, Gr. 50W

FIELD SPLICE DETAILS
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. Maximum stud spacing = 24".

SHEAR CONNECTOR 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 ¾" Inclusive	¼"	
Over ¾"	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.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 3 OF 5
DETAILS OF 238'-0" CONTINUOUS COMPOSITE W-BEAM UNIT TERRE NOIRE CREEK RELIEF

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: ADN DATE: 3-18-14 FILENAME: b070344x2_sl.dgn
CHECKED BY: CRE DATE: 7/14/14 SCALE: AS NOTED
DESIGNED BY: ADN DATE: 5-12

BRIDGE NO. 07327 DRAWING NO. 56085

PRINT DATE: 7/14/2014

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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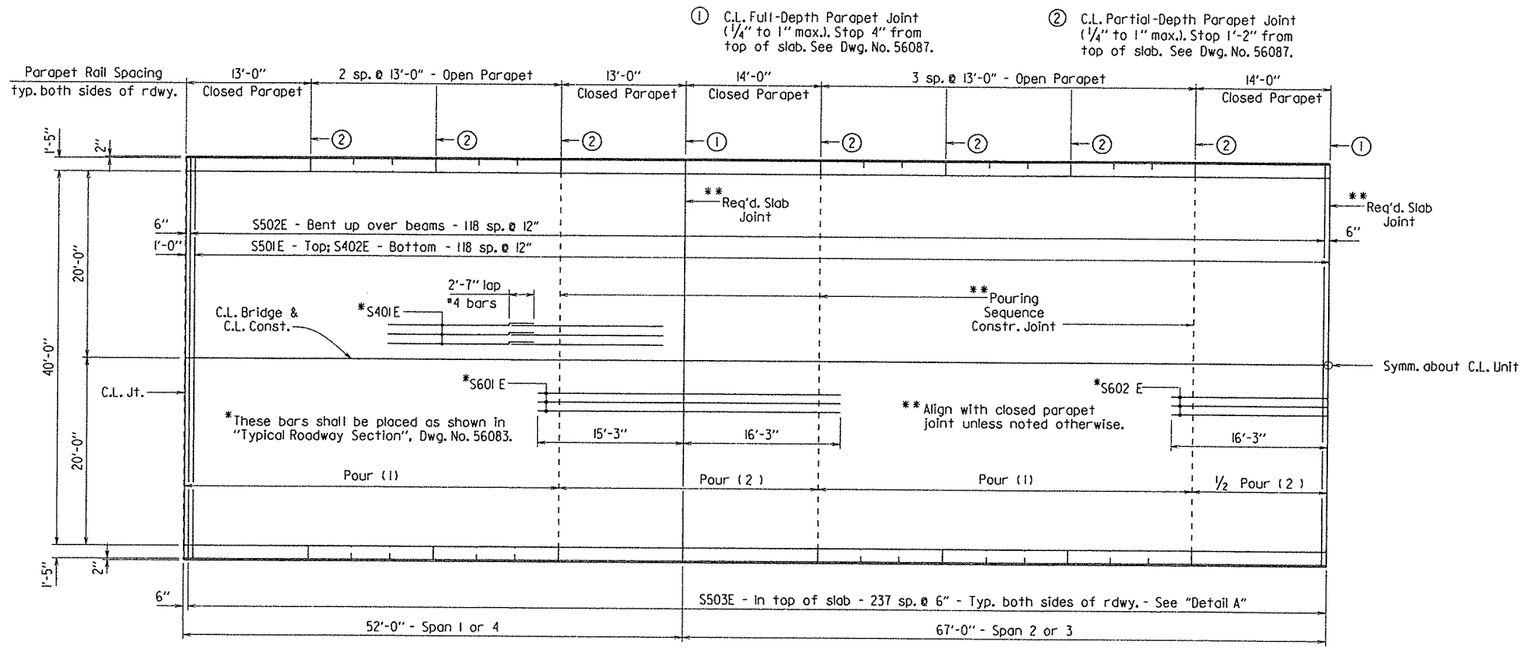
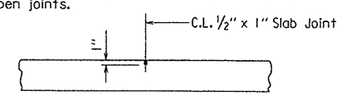
				JOB NO.		070344	71	137
				(1)	07327 -	238 FT. UNIT	- 56086	



REINFORCING PLAN AND POURING SEQUENCE

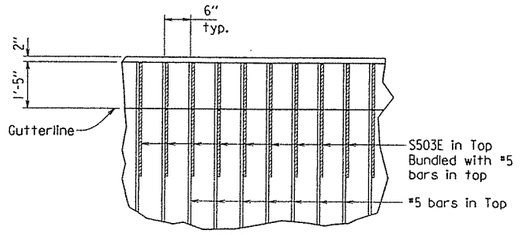
Scale: 1/8" = 1'-0"

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 SIAE) Concrete-Bridge. Slab joints shall extend to the outside edge of the deck slab. Slab joints shall be installed before the parapet railing is poured. If slab joints are to be sawed, they shall be sawed as soon as the concrete has sufficiently set to allow sawing of the joint without damage to the slab. Slab joints shall be placed at all pouring sequence construction joints and required slab joint locations. The joint sealer shall extend across the deck slab (gutterline to gutterline). Slab joints shall align with parapet open joints.



SLAB JOINT DETAIL

No Scale



DETAIL A

No Scale

Pours with the same number may be placed simultaneously or separately. All Pours (1) must be placed before Pours (2) can be placed. 48 hours shall elapse between the end of a pour and the start of the next pour. 72 hours shall elapse between the end of a pour and the start of an adjacent pour. Any 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 deviation from the pouring sequence shown.

STATE OF ARKANSAS
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REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 4 OF 5
DETAILS OF 238'-0" CONTINUOUS COMPOSITE W-BEAM UNIT TERRE NOIRE CREEK RELIEF

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: ADN DATE: 3-19-14
CHECKED BY: CJR DATE: 6/18/14
DESIGNED BY: ADN DATE: 5-12
FILENAME: b070344x2_sl.dgn
SCALE: AS NOTED

BRIDGE NO. 07327 DRAWING NO. 56086

PRINT DATE: 7/14/2014

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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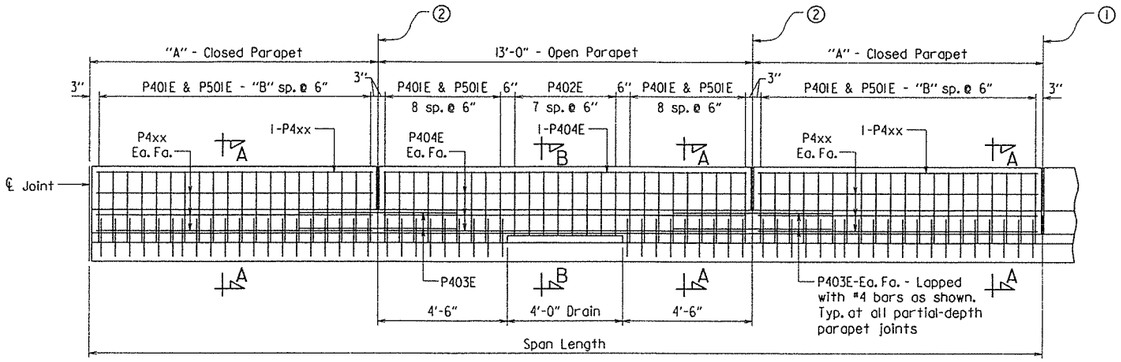
				JOB NO.		070344	72	137
				① 07327 -		238 FT. UNIT	- 56087	



① C.L. Full-Depth Parapet Joint (1/4" to 1" max.) as shown in "Reinforcing Plan And Pouring Sequence", Dwg. No. 56086. Stop 4" from top of slab.

② C.L. Partial-Depth Parapet Joint (1/4" to 1" max.) as shown in "Reinforcing Plan And Pouring Sequence", Dwg. No. 56086. Stop 1'-2" from top of slab.

DETAILS OF PARAPET RAIL

No Scale

TABLE OF PARAPET RAIL VARIABLES

"A" Closed Parapet	"B"	P4xx Bar
13'-0"	25	P404E
14'-0"	27	P405E

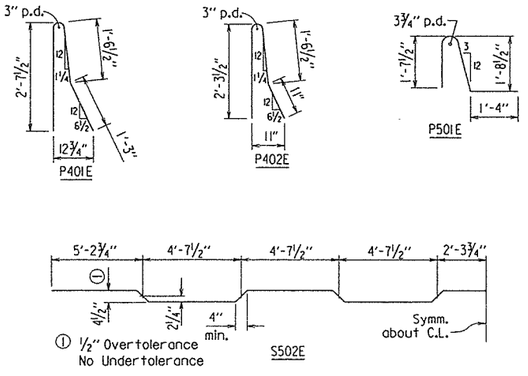
Note: For location of Open and Closed Parapet panels, see "Reinforcing Plan And Pouring Sequence", Dwg. No. 56086.

BAR LIST

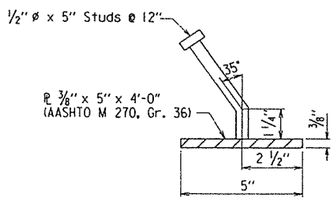
MARK	NO. REQ'D.	LENGTH	P.D.
S401E	847	36'-2"	Str.
S402E	237	42'-10"	Str.
P401E	792	5'-6"	2"
P402E	160	4'-10"	2"
P403E	112	5'-6"	Str.
P404E	196	12'-8"	Str.
P405E	56	13'-8"	Str.
S501E	237	42'-10"	Str.
S502E	238	43'-8"	3"
S503E	950	5'-0"	Str.
P501E	792	4'-10"	3 3/4"
S601E	92	31'-6"	Str.
S602E	46	32'-6"	Str.

BENDING DIAGRAMS

Dimensions are out to out of bars.



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

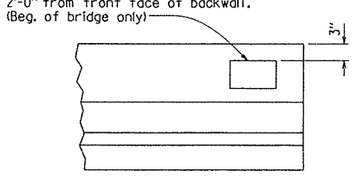


DETAIL Z

No Scale

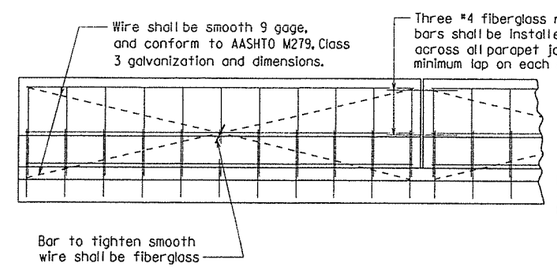
Note:
The surfaces of the 3/8" plates which will not be in contact with concrete shall be painted with aluminum epoxy paint in accordance with Section 638, or as approved by the Engineer. Only one coat is required and shall be applied in the fabricator's shop. Painting will not be paid for directly,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

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



NAME PLATE DETAIL

No Scale

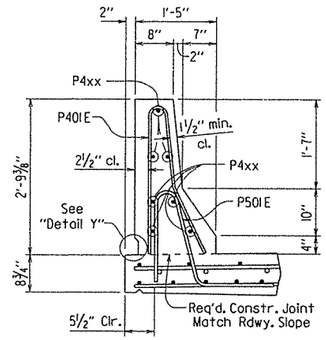


All panels shall be braced as required to prevent racking. All parapet joints shall be sawed as soon as practical to a minimum width of 1/4". To control cracking before sawing, all joints must be grooved before the concrete is set. Sawing of the joints must be controlled so it will follow the grooved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

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

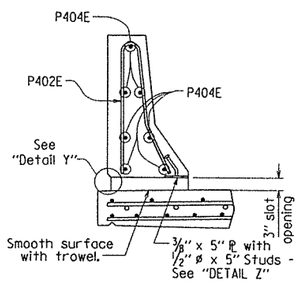
DETAILS OF OPTIONAL SLIPFORMING OF CONCRETE PARAPET RAIL

No Scale



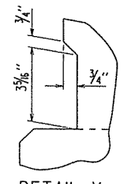
SECTION A-A

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



SECTION B-B

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



DETAIL Y

No Scale

STATE OF ARKANSAS
Charles R. Ellis
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No. 9235
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CHARLES R. ELLIS

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SHEET 5 OF 5
DETAILS OF 238'-0" CONTINUOUS COMPOSITE W-BEAM UNIT TERRE NOIRE CREEK RELIEF

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

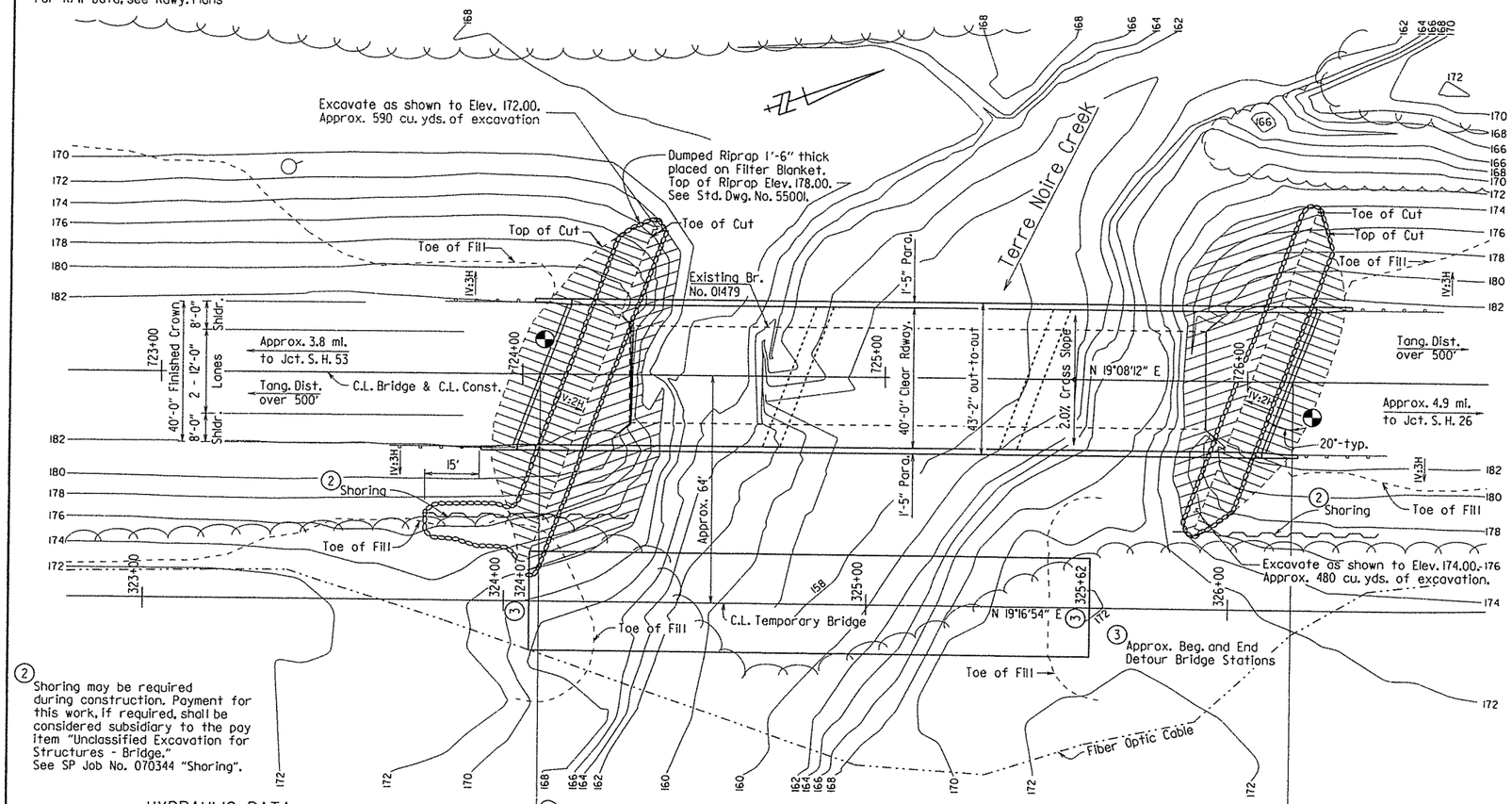
LITTLE ROCK, ARK.

DRAWN BY: ADN DATE: 3-19-14 FILENAME: b070344x2_sl.dgn
CHECKED BY: CJR DATE: 4/8/14 SCALE: AS NOTED
DESIGNED BY: ADN DATE: 5-12

BRIDGE NO. 07327 DRAWING NO. 56087

PRINT DATE: 7/14/2014

For R/W Data, see Rdwy. Plans



(2) Shoring may be required during construction. Payment for this work, if required, shall be considered subsidiary to the pay item "Unclassified Excavation for Structures - Bridge." See SP Job No. 070344 "Shoring".

(1) Note: The new bridge is positioned to avoid interference with the existing substructure. The contractor shall verify measurements before driving any piling or drilling any shafts. Any adjustments necessary to fit the new bridge to the existing conditions shall be submitted for the Engineer's approval.

Place Type A Approach Gutters ('w' = 8'-0") at both ends of bridge. See Std. Dwg. No. 55030A.

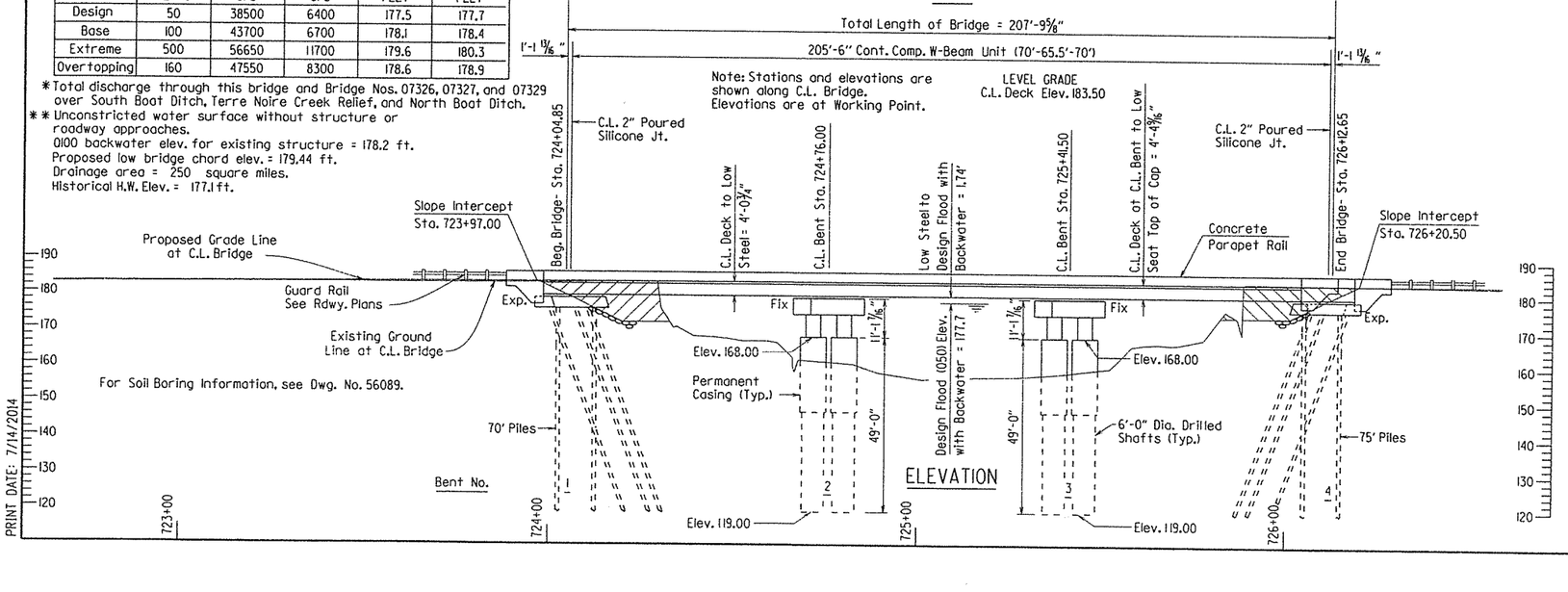
HYDRAULIC DATA

FLOOD DESCRIPTION	FREQUENCY	*TOTAL DISCHARGE	DISCHARGE BRIDGE NO. 07328	**NATURAL WATER SURFACE ELEVATION	WATER SURFACE ELEV. WITH BACKWATER
	YEARS	CFS	CFS	FEET	FEET
Design	50	38500	6400	177.5	177.7
Base	100	43700	6700	178.1	178.4
Extreme	500	56650	11700	179.6	180.3
Overtopping	160	47550	8300	178.6	178.9

*Total discharge through this bridge and Bridge Nos. 07326, 07327, and 07329 over South Boat Ditch, Terre Noire Creek Relief, and North Boat Ditch.

**Unconstricted water surface without structure or roadway approaches.
Q100 backwater elev. for existing structure = 178.2 ft.
Proposed low bridge chord elev. = 179.44 ft.
Drainage area = 250 square miles.
Historical H.W. Elev. = 177.1 ft.

PLAN



For Soil Boring Information, see Dwg. No. 56089.

ELEVATION

PRINT DATE: 7/14/2014

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.		070344	73	137
				(1) 07328	-	LAYOUT	-	56088

GENERAL NOTES

BENCH MARK: 904. Square Cut in the Northwest Corner of Bridge No. 01478, Elev. 182.11.

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 Specification unless otherwise noted in the Plans.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications (Sixth Edition, 2012).

LIVE LOADING: HL-93 SEISMIC ZONE: 1

MATERIALS AND STRENGTHS:

Class S(AE) Concrete (superstructure)	f'c = 4,000 psi
Class S Concrete (substructure)	f'c = 3,500 psi
Reinforcing Steel (Grade 60, AASHTO M31 or 322, Type A)	fy = 60,000 psi
Structural Steel (AASHTO M270, Gr. 36)	Fy = 36,000 psi
Structural Steel (AASHTO M270, Gr. 50W)	Fy = 50,000 psi

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

(1) CONCRETE PILING: Piling for Bents 1 & 4 shall be 18" square prestressed concrete piles and shall be driven to a minimum ultimate bearing capacity of 235 tons per pile. All piling shall be driven with an approved air, steam, or diesel hammer. Piling shall be driven after embankment to bottom of cap is in place.

Length of piling shown are assumed for estimating quanitites only. Actual lengths to be determined in the field. Drive one 75' test pile at Bent 1 and one 80' test pile at Bent 4.

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 59,700 ft.lbs. per blow will be required to obtain the ultimate bearing capacity at Bent Nos. 1 & 4.

(1) DRILLED SHAFTS: All drilled shafts shall be founded a minimum of 15 feet into into material designated as Hard, Dark Gray Clay. No adjustment in plan tip elevation shall be made without prior approval from the Engineer. Methods of construction of the drilled shafts shall be in accordance with Special Provision Job No. 070344 "Drilled Shaft Foundations".

CROSSHOLE SONIC LOGGING: Nondestructive testing shall be performed on each drilled shaft in accordance with Special Provision Job No. 070344 "Nondestructive Testing of Drilled Shafts".

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	56090-56091
Int. Bents	56092-56093
205'-6" Cont. Comp. W-Beam Unit	56076, 56094-56098
Elastomeric Bearings	56077
18" Prestressed Concrete Piles	55022
Type A Approach Gutters	55030A

EXISTING BRIDGE: Existing bridge no. 01479 at Site 3 (log mile 4.73) is 25.2' wide and 162' long and consists of two 35' reinforced concrete deck girder spans and a 90' steel truss span supported by concrete bents with timber pile footings. The existing bridge is located at the site of the proposed new bridge.

REMOVAL AND SALVAGE: After the temporary bridge is open to traffic, existing bridge no. 01479 shall be removed in accordance with Section 205. In addition, the Contractor shall remove the remnants of timber piling left in place from a previous structure(s) as directed by the Engineer. Payment for this work will be subsidiary to the item 205 "Removal of Existing Bridge Structure". This material and all material from the existing bridge shall become the property of the Contractor.

TEMPORARY BRIDGE: Construct a minimum 155' long temporary bridge approximately 64' downstream from centerline construction with a minimum deck elevation of 180.60. See roadway plans for actual detour grade and alignment. The temporary bridge shall have a minimum span length of 31' over the main channel, a minimum clear roadway width of 24', and a minimum live load capacity of HI5. See Section 603 and drawing numbers 55054 through 55056 for standard temporary bridge details. A timber deck will not be allowed in the construction of the temporary bridge structure. If timber piling and pine timber are used on this temporary bridge structure, the materials shall be treated with a preservative according to the Standard Specifications.

MAINTENANCE OF TRAFFIC: See Roadway Plans.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 1 OF 2
LAYOUT OF BRIDGE OVER TERRE NOIRE CREEK GURDON-OAK GROVE STRS. & APPRS. (S) CLARK COUNTY

ROUTE 67 SEC. 5

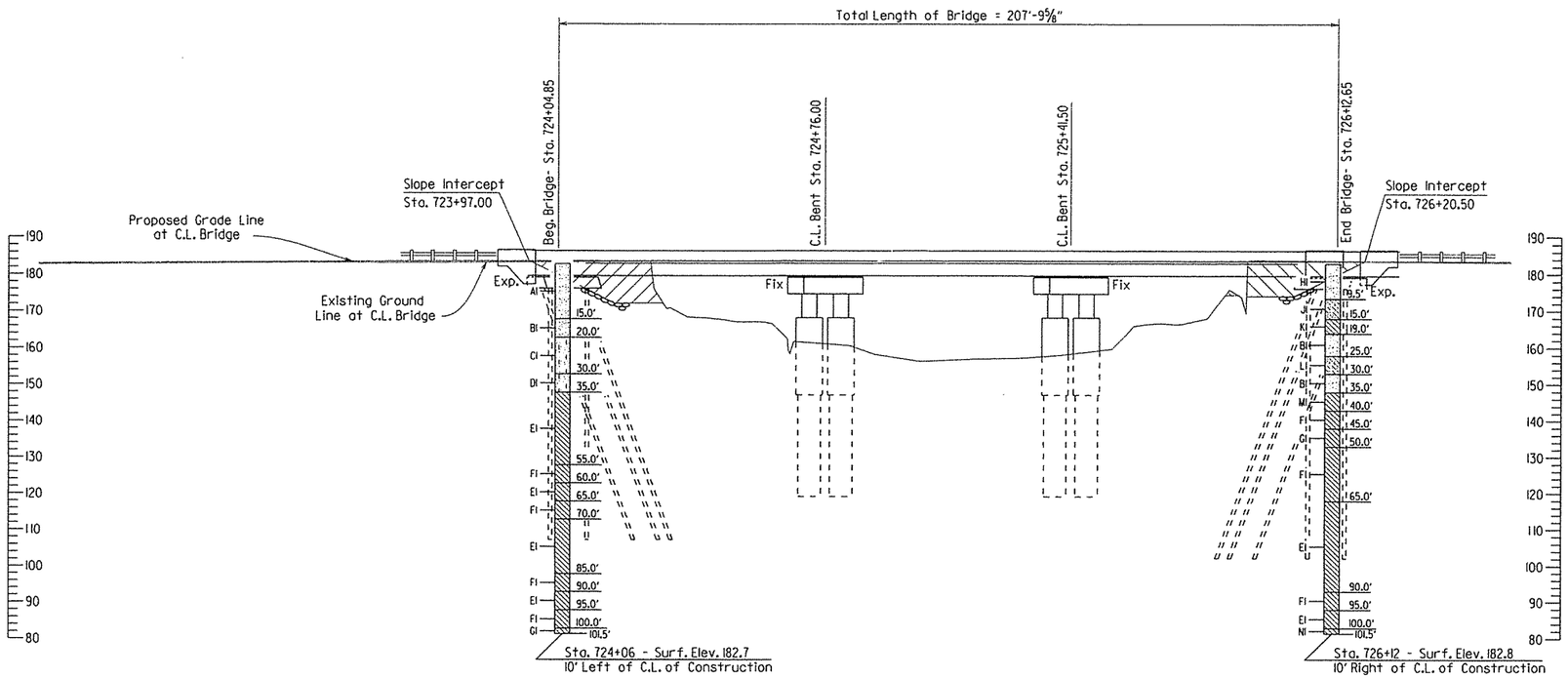
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: ADN DATE: 04/13/12
CHECKED BY: CSK DATE: 6/18/14
DESIGNED BY: ADN DATE: 3-12
FILENAME: b070344x3_11.dgn
SCALE: 1" = 20'

BRIDGE NO. 07328 DRAWING NO. 56088

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.		070344	74	137
				(1)	07328	- LAYOUT -	56089	



ELEVATION

BORING LEGEND

A1-Dry, Loose, Brown and Gray Sand
B1-Wet, Loose, Gray Sand
C1-Wet, Loose, Gray Silty Sand
D1-Wet, Medium Dense, Gray Silty Sand
E1-Moist, Hard, Dark Gray Calcareous Clay
F1-Moist, Hard, Dark Gray Calcareous Clay with Trace of Shells
G1-Moist, Hard, Dark Gray Calcareous Clay with Shells
H1-Dry, Loose, Gray Sand with some Clay
J1-Dry, Loose, Gray Sand with Clay
K1-Moist, Soft, Gray and Brown Sandy Clay
L1-Wet, Medium Dense, Gray Sand with Clay
M1-Wet, Hard, Dark Gray Clay
N1-Moist, Hard, Dark Gray Calcareous Clay with Sand Partings and Trace of Shells

"N" VALUES

Sta. 724+06 - 10' Left of C.L. of Construction

4.9-	5.9, N=6
9.9-	10.9, N=5
15.5-	16.5, N=5
20.5-	21.5, N=6
25.5-	26.5, N=6
30.5-	31.5, N=19
35.5-	36.5, N=49
40.5-	41.5, N=41
45.5-	46.5, N=41
50.5-	51.5, N=41
55.5-	56.5, N=41
60.5-	61.5, N=44
65.5-	66.5, N=47
70.5-	71.5, N=48
75.5-	76.5, N=48
80.5-	81.5, N=48
85.5-	86.5, N=44
90.5-	91.5, N=40
95.5-	96.5, N=43
100.5-	101.5, N=44

Sta. 726+12 - 10' Right of C.L. of Construction

5.0-	6.0, N=6
10.0-	11.0, N=5
15.5-	16.5, N=4
20.5-	21.5, N=6
25.5-	26.5, N=15
30.5-	31.5, N=5
35.5-	36.5, N=47
40.5-	41.5, N=43
45.5-	46.5, N=41
50.5-	51.5, N=40
55.5-	56.5, N=46
60.5-	61.5, N=47
65.5-	66.5, N=43
70.5-	71.5, N=41
75.5-	76.5, N=44
80.5-	81.5, N=43
85.5-	86.5, N=39
90.5-	91.5, N=41
95.5-	96.5, N=43
100.5-	101.5, N=44

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 2 OF 2
LAYOUT OF BRIDGE OVER
TERRE NOIRE CREEK
GURDON-OAK GROVE STRS. & APPRS. (S)
CLARK COUNTY

ROUTE SEC.

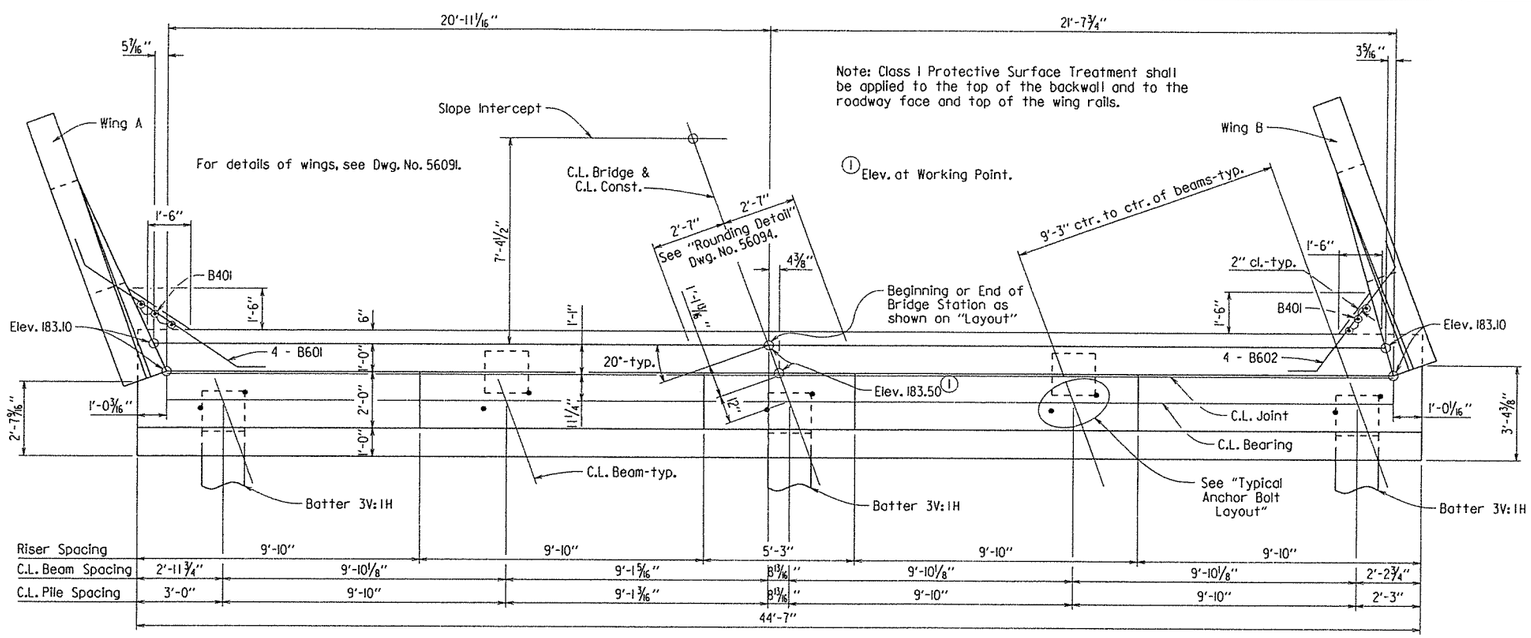
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: ADN DATE: 04/13/12
CHECKED BY: CSK DATE: 6/5/14
DESIGNED BY: ADN DATE: 7-12
FILENAME: b070344x3_11.dgn
SCALE: 1" = 20'

BRIDGE NO. 07328 DRAWING NO. 56089

PRINT DATE: 7/14/2014

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.		070344	75	137
				(1) 07328 -		END BENTS		- 56090

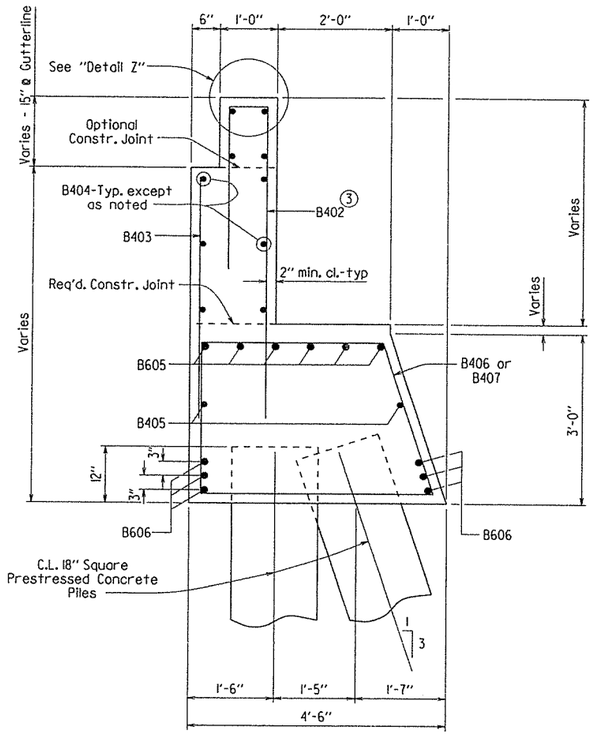


PLAN

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

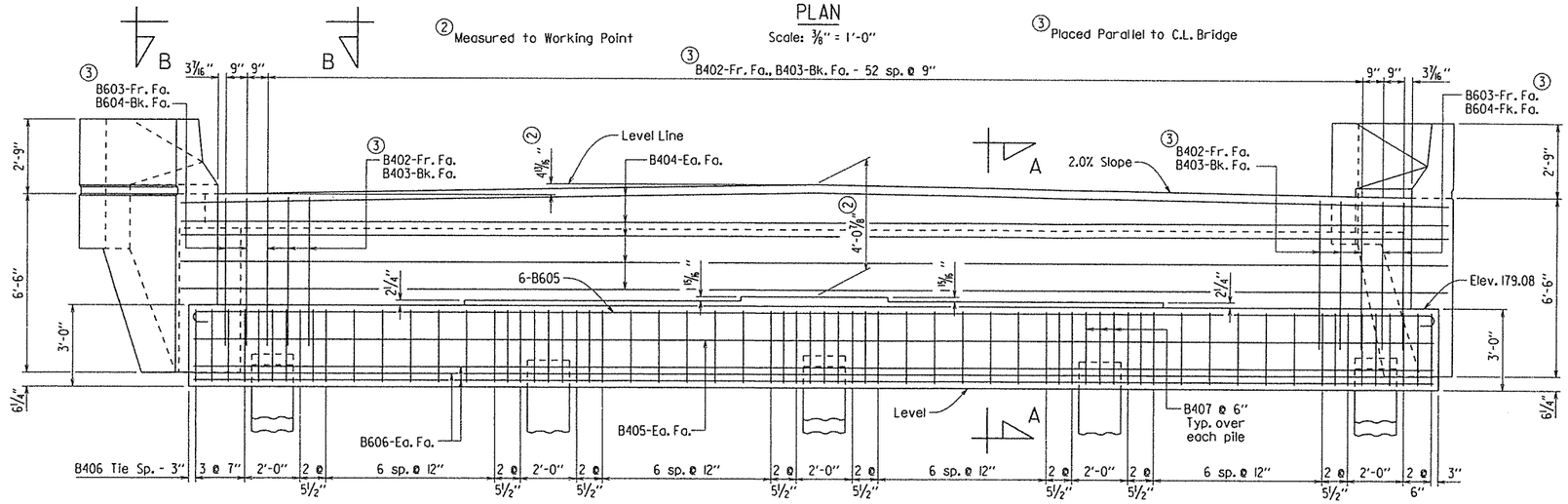
(2) Measured to Working Point

(3) Placed Parallel to C.L. Bridge



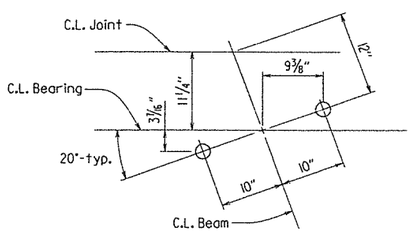
SECTION A-A

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



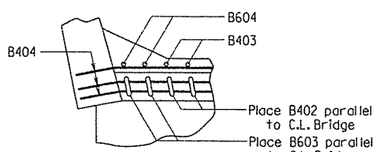
ELEVATION

Bent 1 - Looking Back
Bent 4 - Looking Ahead
Scale: 3/8" = 1'-0"



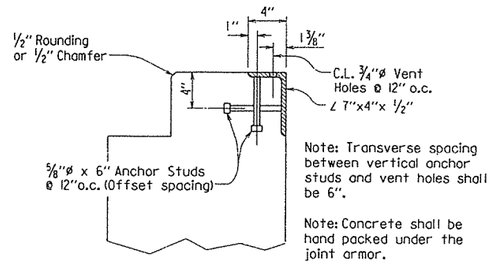
TYPICAL ANCHOR BOLT LAYOUT

No Scale
For Details of Elastomeric Bearings, see Dwg. No. 56077.



VIEW B-B

No Scale



Note: Transverse spacing between vertical anchor studs and vent holes shall be 6".

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

Note: For additional joint details, see Dwg. No. 56076.

DETAIL Z

No Scale

GENERAL NOTES

All concrete shall be Class "S" and shall be poured in the dry. All exposed corners to be chamfered 3/4" unless otherwise noted.

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

No portion of the backwall shall be poured until the beams are in place. Refer to "Expansion Device Installation at End Bents" note, Dwg. No. 56076.

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

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

For additional information, see Layout.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 1 OF 2
DETAILS OF END BENTS
TERRE NOIRE CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

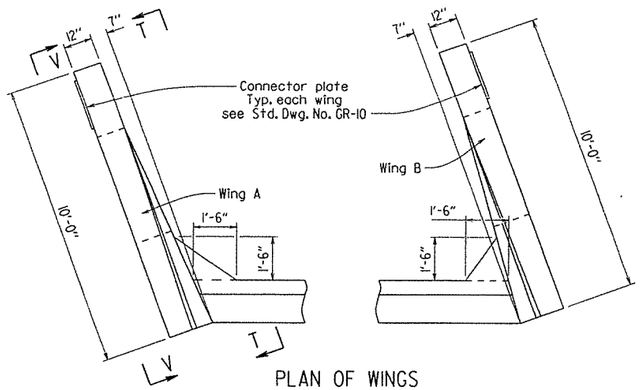
DRAWN BY: ADN DATE: 2-12-14
CHECKED BY: CSR DATE: 6/18/14
DESIGNED BY: ADN DATE: 11-13

FILENAME: b070344x3_bl.dgn
SCALE: AS NOTED

BRIDGE NO. 07328 DRAWING NO. 56090

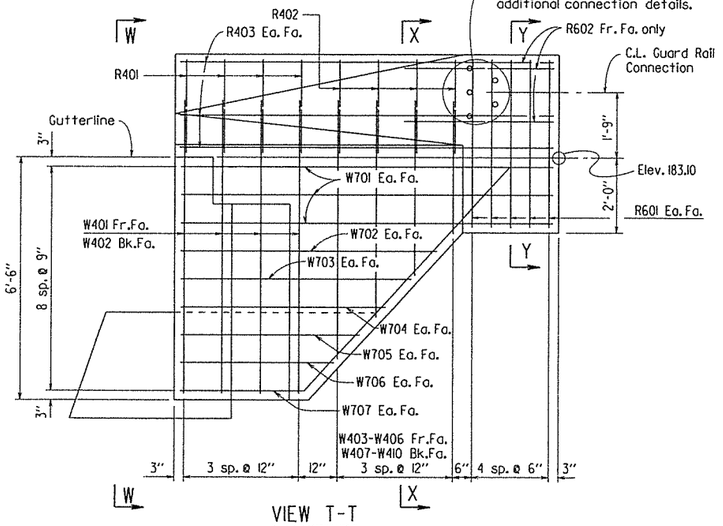
PRINT DATE: 7/14/2014

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.		070344	76	137
				(1) 07328 -		END BENTS		- 56091



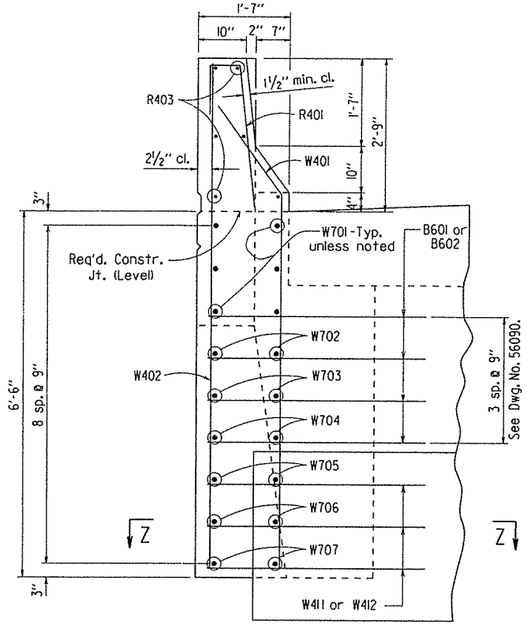
PLAN OF WINGS

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



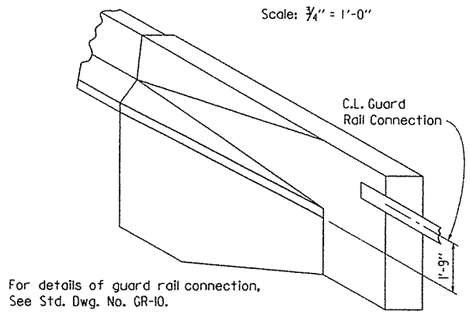
VIEW T-T

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



VIEW W-W

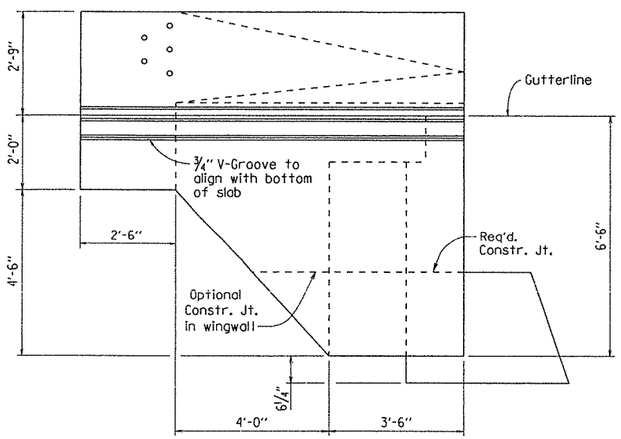
Scale: 3/4" = 1'-0"



For details of guard rail connection,
See Std. Dwg. No. GR-10.

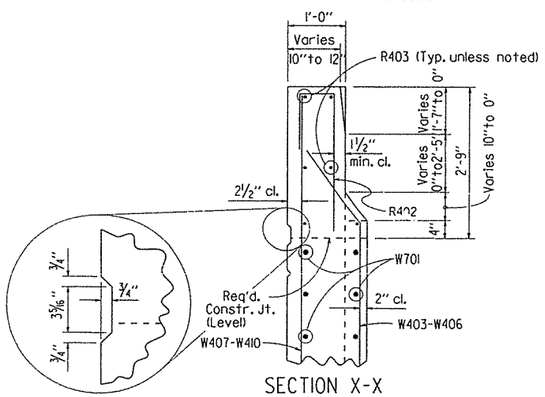
THREE DIMENSIONAL VIEW OF RAIL

No Scale



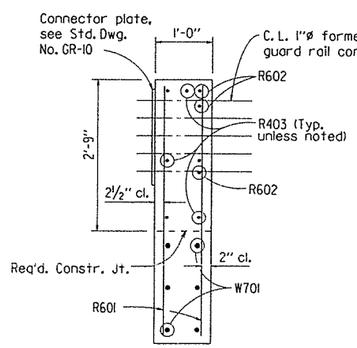
VIEW V-V

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



SECTION X-X

Scale: ¾" = 1'-0"



SECTION Y-Y

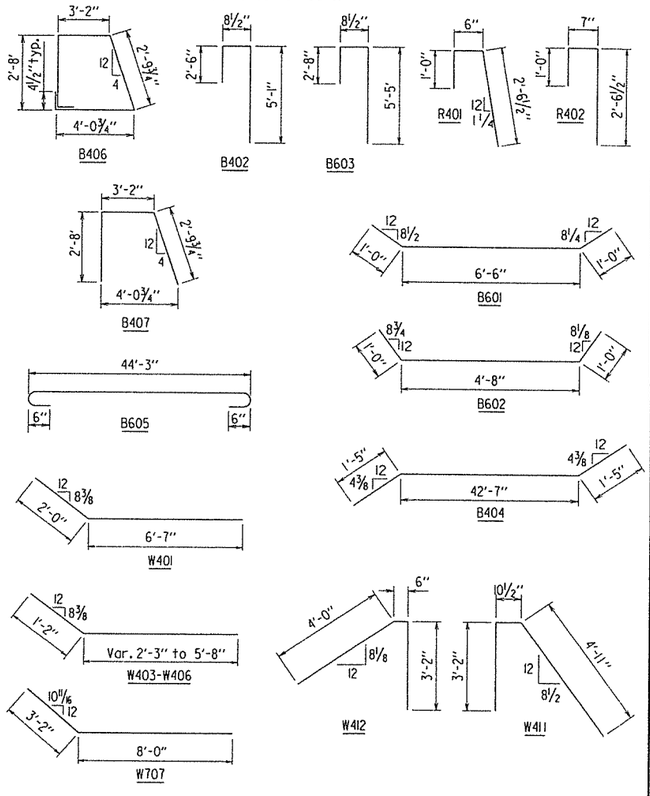
Scale: ¾"= 1'-0"

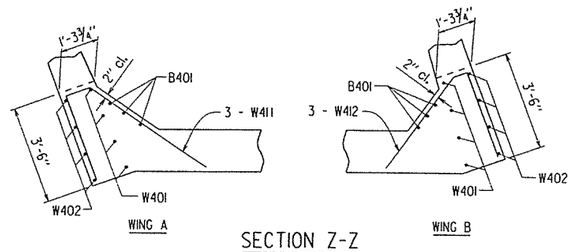
BAR LIST - PER BENT

MARK	NO. REQ'D.	LENGTH	P.D.
B401	6	4'-11"	Str.
B402	53	8'-1"	2"
B403	53	3'-8"	Str.
B404	10	45'-5"	3"
B405	2	44'-3"	Str.
B406	51	13'-1"	2"
B407	15	8'-6"	2"
R401	8	3'-11"	2"
R402	8	4'-0"	2"
R403	12	9'-8"	Str.
W401	8	8'-7"	2"
W402	8	8'-11"	Str.
W403-W406	2 each	Var. 3'-5" to 6'-10"	2"
W407-W410	2 each	Var. 4'-7" to 8'-0"	Str.
W411	3	8'-10"	2"
W412	3	7'-6"	2"
B601	4	8'-6"	4½"
B602	4	6'-8"	4½"
B603	4	8'-9"	4½"
B604	4	4'-2"	Str.
B605	6	45'-7"	4½"
B606	6	44'-3"	Str.
R601	20	4'-5"	Str.
R602	6	5'-0"	Str.
W701	12	9'-8"	Str.
W702	4	6'-8"	Str.
W703	4	6'-0"	Str.
W704	4	5'-4"	Str.
W705	4	4'-8"	Str.
W706	4	4'-0"	Str.
W707	4	11'-2"	5¼"

BENDING DIAGRAMS

Dimensions are out to out of bars.





SECTION Z-Z

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

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 2
DETAILS OF END BENTS
TERRE NOIRE CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

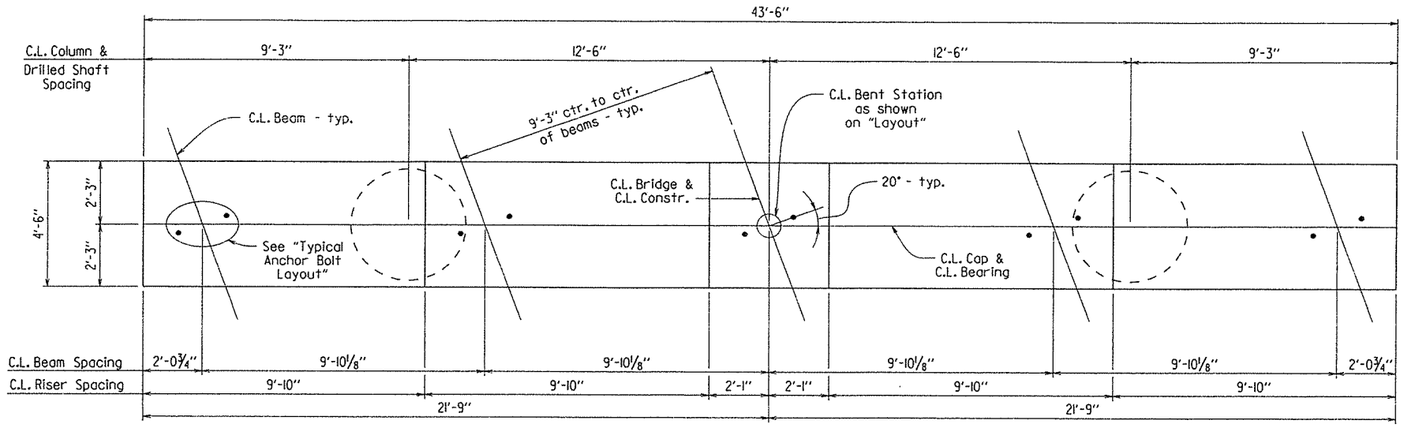
DRAWN BY: ADN DATE: 2-13-14
CHECKED BY: CSR DATE: 7/14/14
DESIGNED BY: ADN DATE: 11-13

FILENAME: b070344x3_bl.dgn
SCALE: AS NOTED

BRIDGE NO. 07328 DRAWING NO. 56091

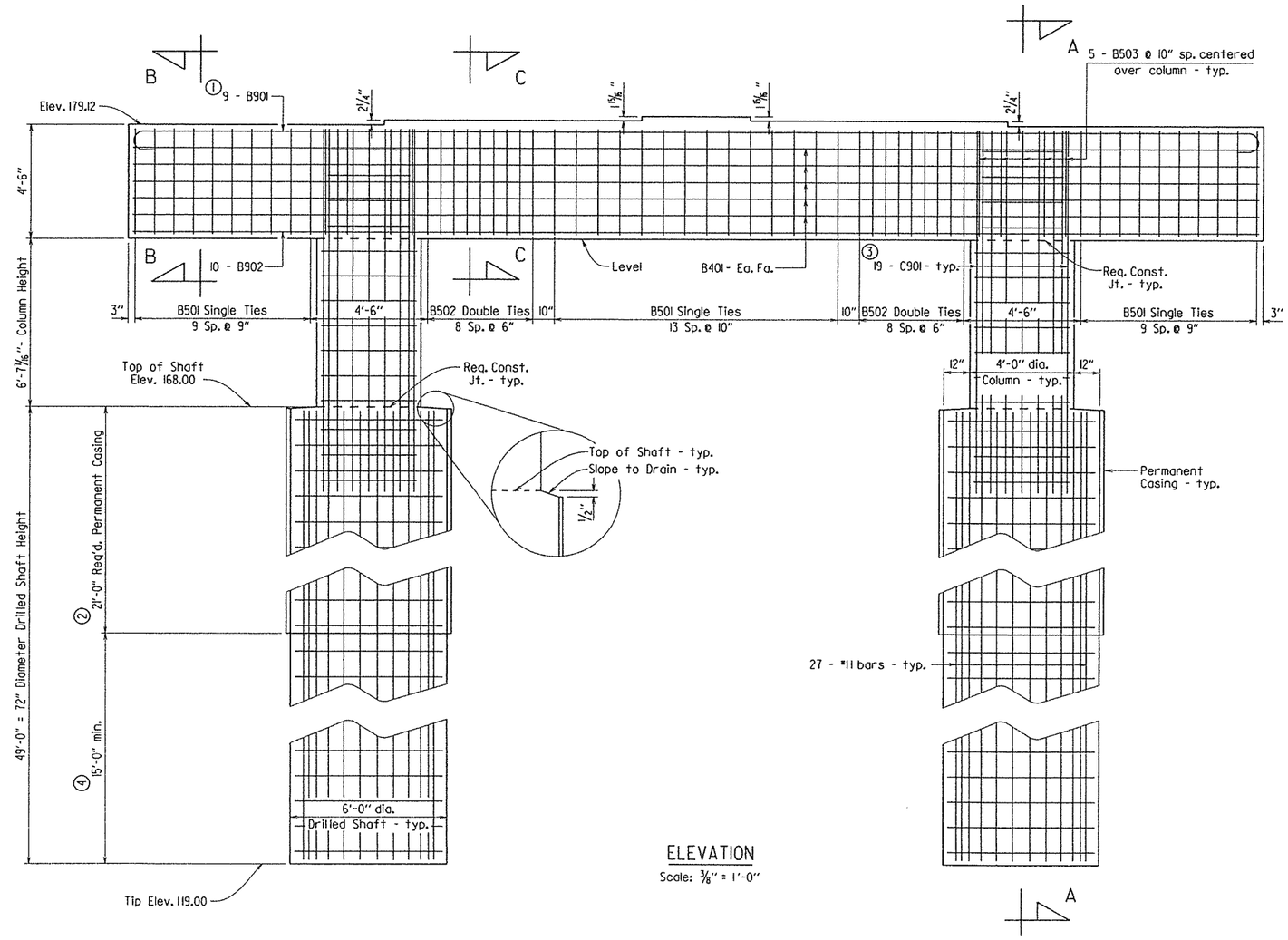
PRINT DATE: 7/14/2014

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.		070344	77	137
				①	07328 -	INT. BENTS	- 56092	



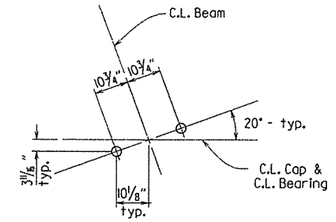
PLAN

Scale: ⅜" = 1'-0"



ELEVATION

Scale: ⅜" = 1'-0"



TYPICAL ANCHOR BOLT LAYOUT

Not to Scale
For Details of Elastomeric Bearings, see Dwg. No. 56077.

Note: For additional details of reinforcing in columns and drilled shafts, see Dwg. No. 56093.

For Details of Sections A-A, B-B, and C-C, see Dwg. No. 56093.

① Reinforcing bars in top of cap shall be properly placed to avoid interference with anchor bolts or sheet metal sleeves.

② Length of Permanent Casing shown is for estimating quantities only. Actual lengths are to be determined in the field. See Special Provision Job No. 070344 "Drilled Shaft Foundations." Permanent casing shall extend to material designated as HARD DARK CLAY on the Boring Legend.

③ The column reinforcing cage, consisting of bars C401 and C901, may be placed before or after concrete placement in the shaft is complete. Vibration of concrete in the top 10 feet of the shaft will be needed to ensure the consolidation of the concrete around the reinforcing steel and to insert the column reinforcing cage. The Contractor will be responsible for obtaining satisfactory results.

④ Minimum penetration below bottom of permanent casing.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
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BRIDGE ENGINEER

SHEET 1 OF 2
DETAILS OF INTERMEDIATE BENTS
TERRE NOIRE CREEK

ROUTE SEC.

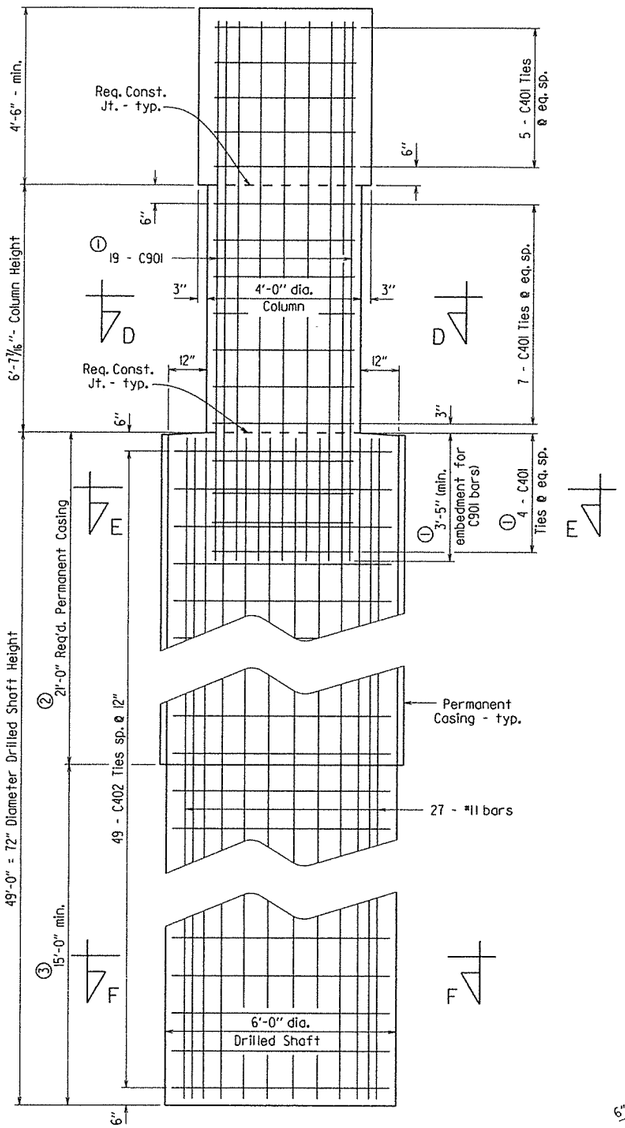
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: ADN DATE: 2-10-14 FILENAME: b070344x3_b2.dgn
CHECKED BY: CSR DATE: 6/8/14 SCALE: AS NOTED
DESIGNED BY: ADN DATE: 1-14

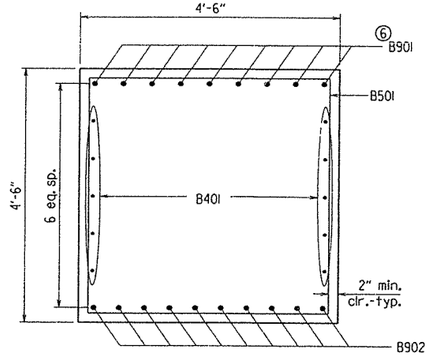
BRIDGE NO. 07328 DRAWING NO. 56092

PRINT DATE: 7/14/2014

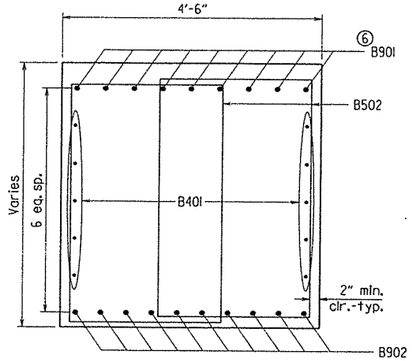
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070344	78	137
				①	07328 -	INT. BENTS	- 56093	



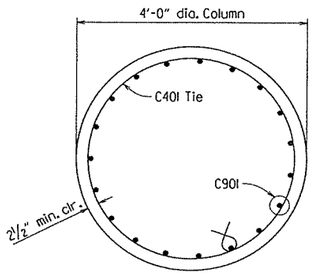
SECTION A-A
Scale: ½" = 1'-0"



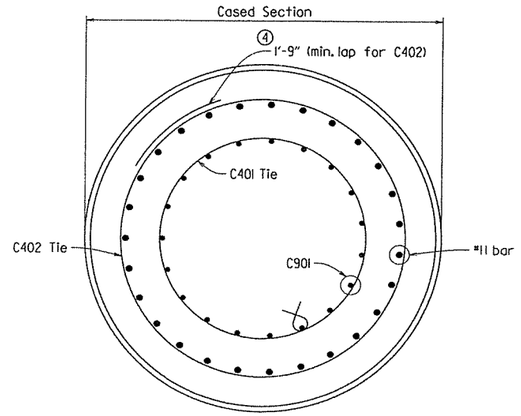
SECTION B-B
Scale: ¾" = 1'-0"



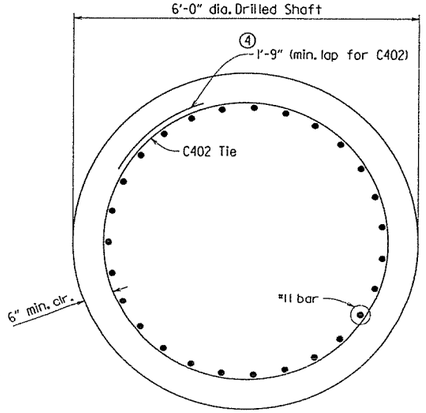
SECTION C-C
Scale: ¾" = 1'-0"



SECTION D-D
Scale: ¾" = 1'-0"



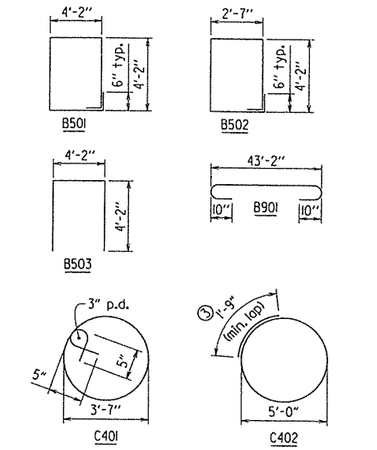
SECTION E-E
Scale: ¾" = 1'-0"



SECTION F-F
Scale: ¾" = 1'-0"

BAR LIST - PER BENT

	MARK	NO. REQ'D.	LENGTH	P.D.	BENDING DIAGRAMS
	B401	10	43'-2"	Str.	Dimensions are out to out of bars.
	C401	32	12'-4"	3"	
⑤	C402	98	17'-6"	3"	
	B501	34	17'-2"	2½"	
	B502	36	14'-0"	2½"	
	B503	10	12'-4"	2½"	
	B901	9	45'-8"	9"	
	B902	10	43'-2"	Str.	
	C901	38	14'-5"	Str.	
⑤	#11 bars	54	48'-8"	Str.	



④ Laps of adjacent ties shall be oriented 180 degrees.

⑤ Non-pay item - Subsidiary to SP Job No. 070344 "Drilled Shaft Foundations".

⑥ Reinforcing bars in top of cap shall be properly placed to avoid interference with anchor bolts or sheet metal sleeves.

GENERAL NOTES

Concrete in the cap and column shall be Class S with a minimum 28 day compressive strength, f'c = 3500 psi., and shall be poured in the dry. Concrete in the drilled shaft shall be Class S as modified by SP Job No. 070344 "Drilled Shaft Foundations". 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 M31 or M322, Type A, with mill test reports.

For additional information see layout.

Drilled shafts shall conform to SP Job No. 070344 "Drilled Shaft Foundations".

① The column reinforcing cage, consisting of bars C401 and C901, may be placed before or after concrete placement in the shaft is complete. Vibration of concrete in the top 10 feet of the shaft will be needed to ensure the consolidation of the concrete around the reinforcing steel and to insert the column reinforcing cage. The Contractor will be responsible for obtaining satisfactory results.

② Length of Permanent Casing shown is for estimating quantities only. Actual lengths are to be determined in the field. See Special Provision Job No. 070344 "Drilled Shaft Foundations." Permanent casing shall extend to material designated as HARD DARK CLAY on the Boring Legend.

③ Minimum penetration below bottom of permanent casing.

STATE OF ARKANSAS
Charles R. Ellis
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7-14-14
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SHEET 2 OF 2
DETAILS OF INTERMEDIATE BENTS TERRE NOIRE CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: ADN DATE: 2-10-14
CHECKED BY: CRE DATE: 6/18/14
DESIGNED BY: ADN DATE: 1-14
FILENAME: b070344x3_b2.dgn
SCALE: AS NOTED

BRIDGE NO. 07328 DRAWING NO. 56093

PRINT DATE: 7/14/2014

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.		070344	79	137
				①	07328 - 205.5 FT. UNIT - 56094			

SLAB REINFORCING

Transverse: S501E @ 12" in top; S402E @ 12" o.c. in bottom — Alternate
S502E @ 12" o.c. bent up over beams —
S503E bundled with #5 bars in top at both gutterlines

Longitudinal: S401E as shown
S601E as shown over int. supports

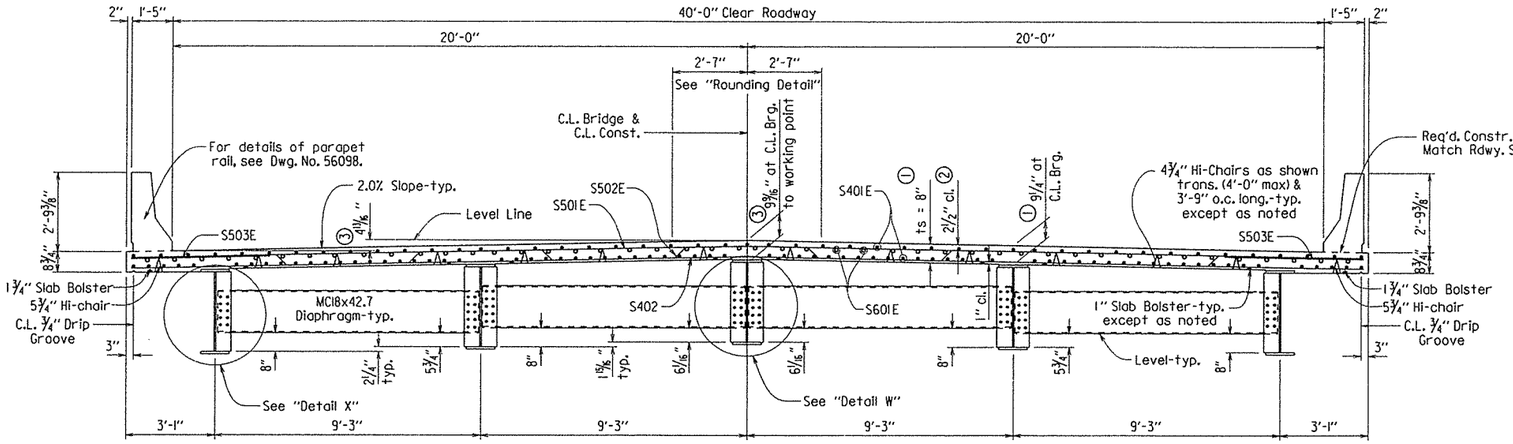
NOTE: Class I Protective Surface Treatment shall be applied to the Roadway Surface and to the Face & Top of the Concrete Parapet Rail.

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

① See "Adjustment for Slab Thickness Tolerance".

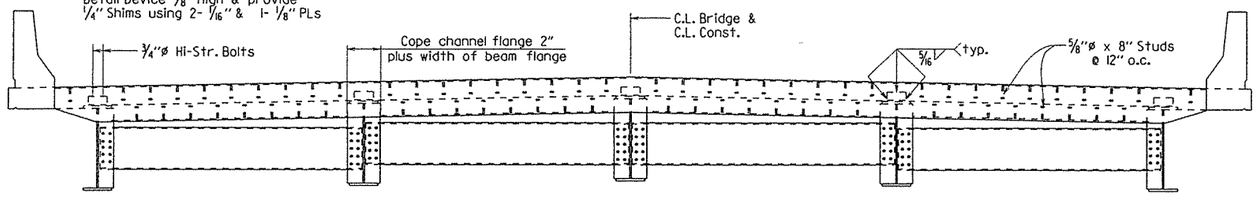
② Tolerance: Minus = 1/4"; Plus equal to the amount of slab thickening used to meet slab thickness tolerance. See "Adjustment for Slab Thickness Tolerance".

③ Working point to gutterline, see "Rounding Detail".



TYPICAL ROADWAY SECTION

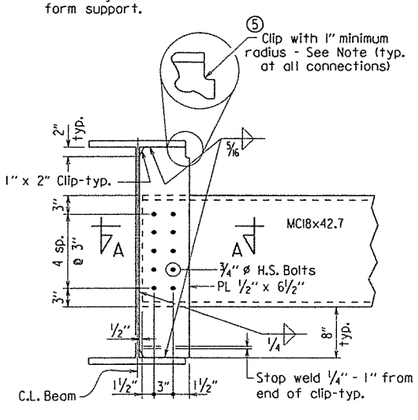
Scale: 3/8" = 1'-0"



TYPICAL SECTION THRU JOINT

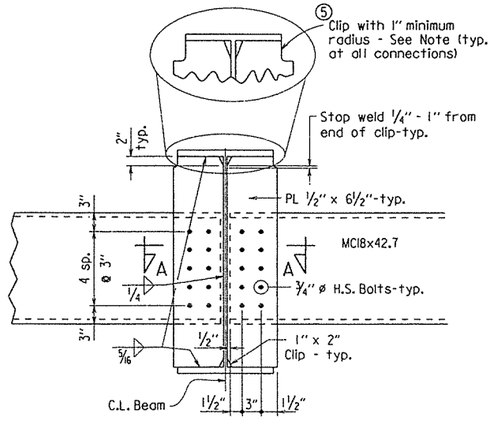
Scale: 3/8" = 1'-0"

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



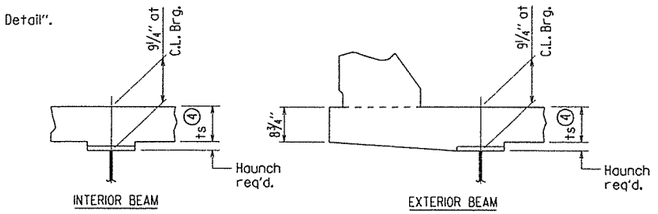
DETAIL X

No Scale



DETAIL W

No Scale



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

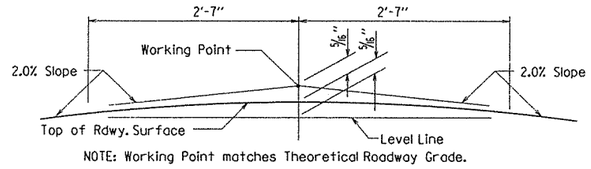
Note: ts = slab thickness as shown in "Typical Roadway Section".

Haunch dimension may vary within the following limits to maintain the grade and slab thickness tolerance : Minimum - occurs when top flange contacts bottom reinforcing steel; Maximum - top flange thickness plus 1 3/4". No increase in concrete and structural steel quantities will be made to maintain tolerances.

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

ADJUSTMENT FOR SLAB THICKNESS TOLERANCE

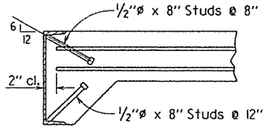
No Scale



NOTE: Working Point matches Theoretical Roadway Grade.

ROUNDING DETAIL

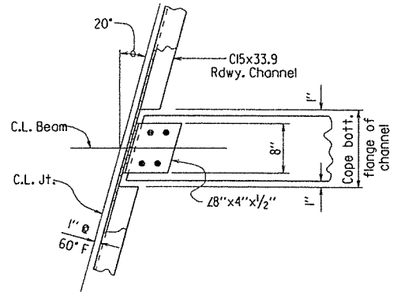
No Scale



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

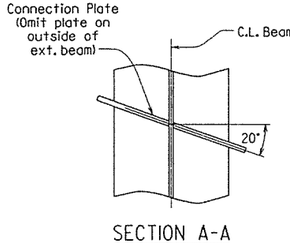
DETAILS OF ALTERNATE ANCHORS

No Scale



CHANNEL CONNECTION DETAIL

No Scale



SECTION A-A

No Scale

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 1 OF 5
DETAILS OF 205'-6" CONTINUOUS COMPOSITE W-BEAM UNIT TERRE NOIRE CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

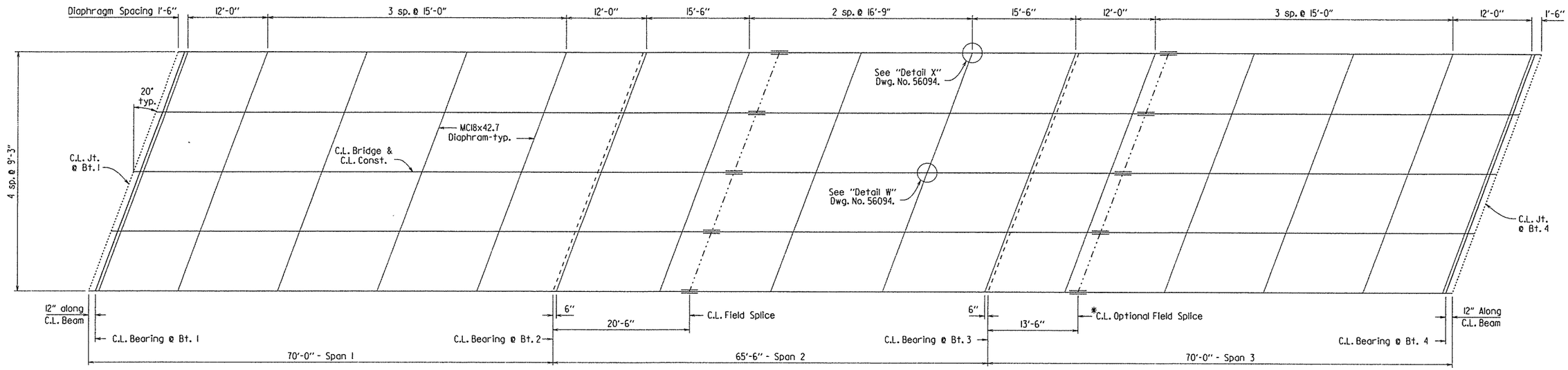
DRAWN BY: ADN DATE: 3-17-14 FILENAME: b070344x3_sl.dgn
CHECKED BY: ESK DATE: 7/14/14 SCALE: AS NOTED
DESIGNED BY: ADK DATE: 5-12

BRIDGE NO. 07328 DRAWING NO. 56094

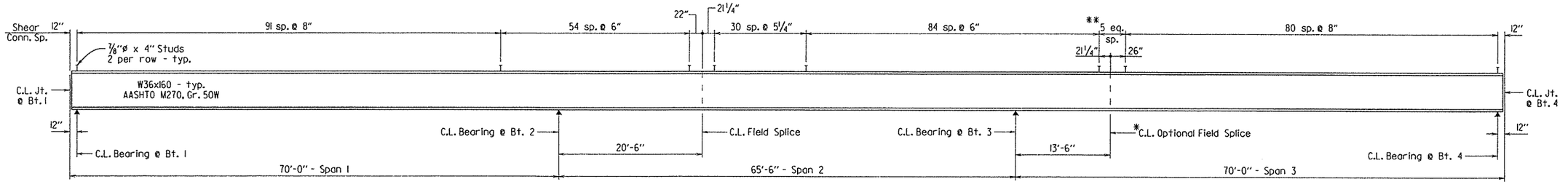
PRINT DATE: 7/14/2014

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.		070344	8D	137
				(1)	07328 - 205.5 FT. UNIT - 56095			

AHEAD STATIONING



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



BEAM ELEVATION
No Scale

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

*At the Contractor's option, a field splice may be provided at this location. No additional payment will be made for the optional field splice.

**If the optional field splice is used, eliminate the shear connectors at this location.

STATE OF ARKANSAS
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7-14-14
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SHEET 2 OF 5
DETAILS OF 205'-6" CONTINUOUS COMPOSITE W-BEAM UNIT
TERRE NOIRE CREEK

ROUTE SEC.

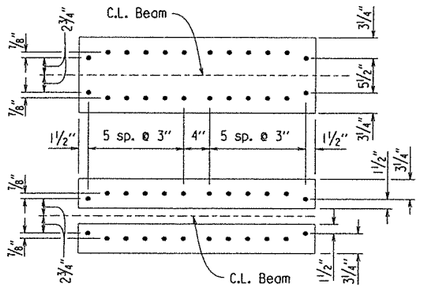
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: ADN DATE: 3-17-14
CHECKED BY: CSR DATE: 7/14/14
DESIGNED BY: ADN DATE: 5-12
FILENAME: b070344x3_sl.dgn
SCALE: AS NOTED

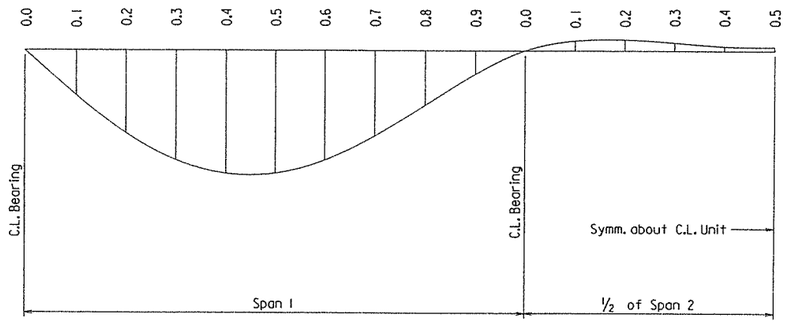
BRIDGE NO. 07328 DRAWING NO. 56095

PRINT DATE: 7/14/2014

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.		070344	81	137
				① 07328 - 205.5 FT. UNIT - 56096				



FLANGE SPLICE

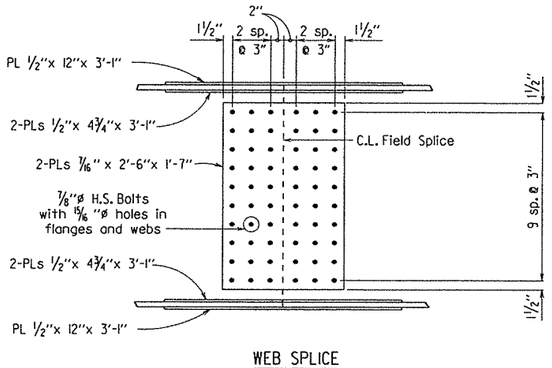


DEAD LOAD DEFLECTIONS DIAGRAM (TYP.)

Note:
Camber for Dead Load Deflection plus Vertical curve ±¼" tolerance.
Deflections shown are from a chord from C.L. Bearing to C.L. Bearing.
Vertical curve corrections not included. Negative sign (-) indicates point above chord.

	Point of Deflection	Structural Steel		Structural Steel + Slab		Structural Steel + Slab + Parapet	
		Ext. Bms.	Int. Bms.	Ext. Bms.	Int. Bms.	Ext. Bms.	Int. Bms.
Span 1	0	0	0	0	0	0	0
	0.1	0.062	0.068	0.342	0.391	0.370	0.418
	0.2	0.116	0.126	0.638	0.727	0.690	0.777
	0.3	0.154	0.169	0.850	0.970	0.920	1.036
	0.4	0.174	0.191	0.960	1.096	1.039	1.171
	0.5	0.174	0.191	0.960	1.096	1.039	1.171
	0.6	0.155	0.170	0.856	0.977	0.926	1.044
	0.7	0.121	0.132	0.668	0.761	0.723	0.813
	0.8	0.078	0.085	0.429	0.489	0.464	0.522
	0.9	0.034	0.037	0.186	0.212	0.201	0.226
½-Span 2	0	0	0	0	0	0	0
	0.1	-0.014	-0.015	-0.077	-0.087	-0.083	-0.093
	0.2	-0.015	-0.017	-0.084	-0.097	-0.091	-0.104
	0.3	-0.011	-0.012	-0.062	-0.071	-0.067	-0.076
	0.4	-0.007	-0.008	-0.038	-0.044	-0.041	-0.047
	0.5	-0.005	-0.006	-0.028	-0.033	-0.030	-0.035

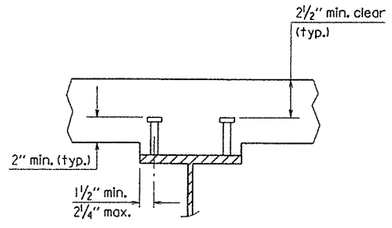
Symm. about C.L. Unit



WEB SPLICE

Note: All field splice plates shall be AASHTO M270, Gr. 50W

FIELD SPLICE DETAILS
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. Maximum stud spacing = 24".

SHEAR CONNECTOR 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 ¾" Inclusive	¼"	
Over ¾"	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.

STATE OF ARKANSAS
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SHEET 3 OF 5
DETAILS OF 205'-6" CONTINUOUS COMPOSITE W-BEAM UNIT
TERRE NOIRE CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: ADN DATE: 3-17-14
CHECKED BY: CRE DATE: 7/14/14
DESIGNED BY: ADN DATE: 5-12
FILENAME: b070344x3_sl.dgn
SCALE: AS NOTED

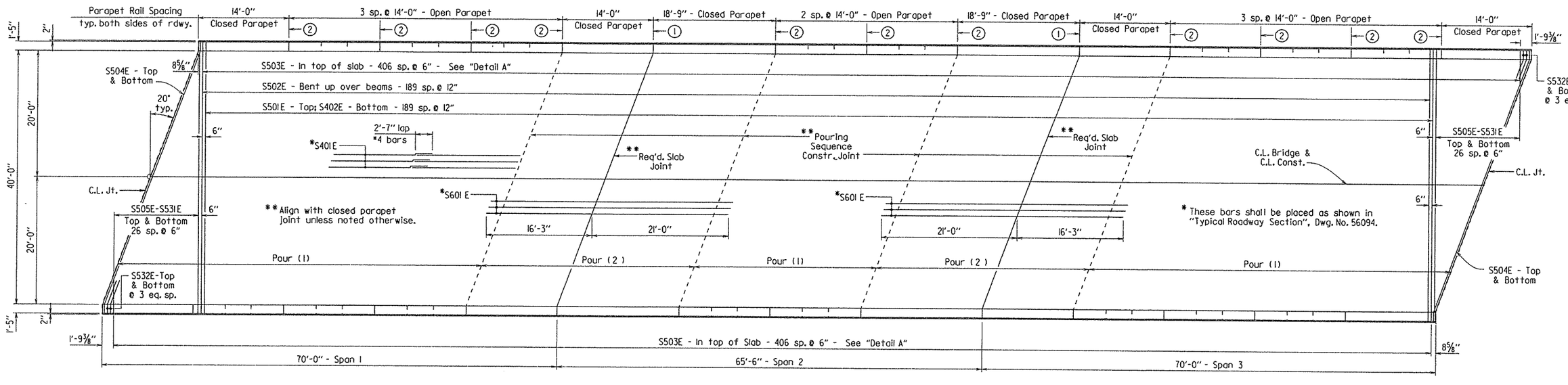
BRIDGE NO. 07328 DRAWING NO. 56096

PRINT DATE: 7/14/2014

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.		070344	82	137
				(1)	07328 - 205.5 FT. UNIT - 56097			

(1) C.L. Full-Depth Parapet Joint (1/4" to 1" max.). Stop 4" from top of slab. See Dwg. No. 56098.

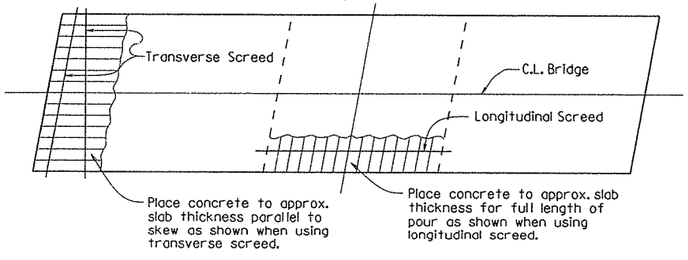
(2) C.L. Partial-Depth Parapet Joint (1/2" to 1" max.). Stop 1'-2" from top of slab. See Dwg. No. 56098.



REINFORCING PLAN AND POURING SEQUENCE

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

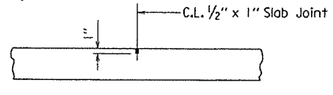
Note: At the Contractor's option, the transverse screed may be placed parallel to the skew or perpendicular to C.L. Bridge.



CONCRETE PLACEMENT PROCEDURE

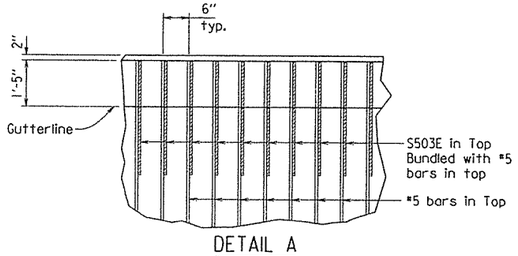
No Scale

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. Slab joints shall be installed before the parapet railing is poured. If slab joints are to be sawed, they shall be sawed as soon as the concrete has sufficiently set to allow sawing of the joint without damage to the slab. Slab joints shall be placed at all pouring sequence construction joints and required slab joint locations. The joint sealer shall extend across the deck slab (gutterline to gutterline). Slab joints shall align with parapet open joints.



SLAB JOINT DETAIL

No Scale



DETAIL A

No Scale

Pours with the same number may be placed simultaneously or separately. All Pours (1) must be placed before Pours (2) can be placed. 48 hours shall elapse between the end of a pour and the start of the next pour. 72 hours shall elapse between the end of a pour and the start of an adjacent pour. Any rolling pours made before the entire slab unit has been placed must be approved by the Engineer. The Contractor must obtain approval from the Engineer for any deviation from the pouring sequence shown.

STATE OF ARKANSAS
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No. 9235
7-14-14
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BRIDGE ENGINEER

SHEET 4 OF 5
DETAILS OF 205'-6" CONTINUOUS COMPOSITE W-BEAM UNIT
TERRE NOIRE CREEK

ROUTE SEC.

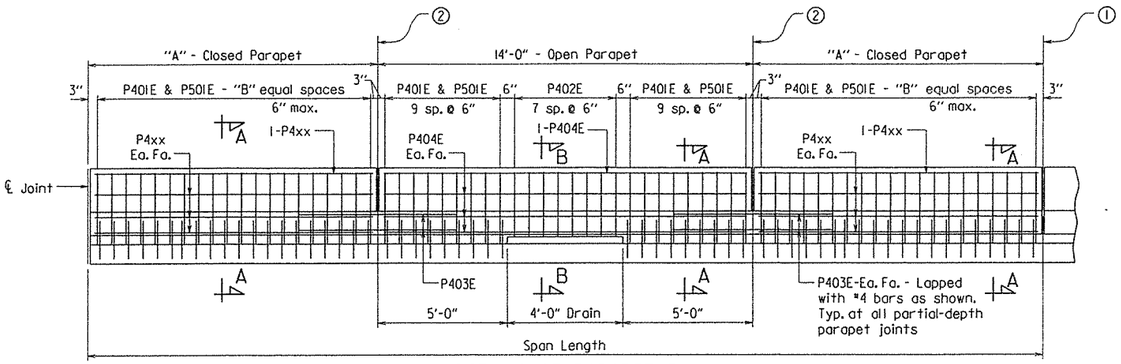
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: ADN DATE: 3-18-14 FILENAME: b070344x3_sl.dgn
CHECKED BY: CSR DATE: 4/18/14 SCALE: AS NOTED
DESIGNED BY: ADN DATE: 5-12

BRIDGE NO. 07328 DRAWING NO. 56097

PRINT DATE: 7/14/2014

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.		070344	83	137
				①	07328 -	205.5 FT. UNIT	- 56098	



DETAILS OF PARAPET RAIL

No Scale

① C.L. Full-Depth Parapet Joint (1/4" to 1" max.) as shown in "Reinforcing Plan And Pouring Sequence", Dwg. No. 56097. Stop 4" from top of slab.

② C.L. Partial-Depth Parapet Joint (1/4" to 1" max.) as shown in "Reinforcing Plan And Pouring Sequence", Dwg. No. 56097. Stop 1'-2" from top of slab.

TABLE OF PARAPET RAIL VARIABLES

"A" Closed Parapet	"B"	P4xx Bar
14'-0"	27	P404E
18'-9"	37	P405E

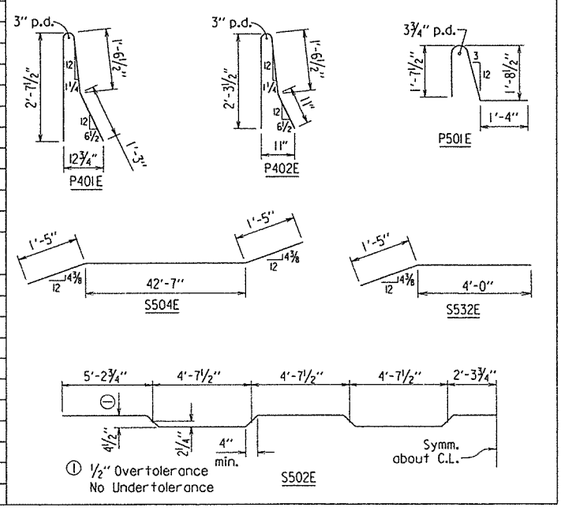
Note: For location of Open and Closed Parapet panels, see "Reinforcing Plan And Pouring Sequence", Dwg. No. 56097.

BAR LIST

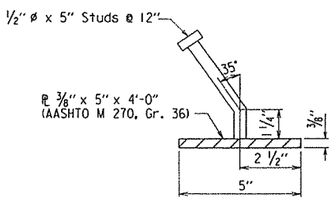
MARK	NO. REQ'D.	LENGTH	P.D.
S401E	726	36'-4"	Str.
S402E	190	42'-10"	Str.
P401E	696	5'-6"	2"
P402E	128	4'-10"	2"
P403E	88	5'-6"	Str.
P404E	168	13'-8"	Str.
P405E	28	18'-5"	Str.
S501E	190	42'-10"	Str.
S502E	190	43'-8"	3"
S503E	814	5'-0"	Str.
S504E	4	45'-5"	3¾"
S505E-S531E	4 ea.	Var. 5'-7" to 41'-3"	Str.
S532E	8	5'-5"	3¾"
P501E	696	4'-10"	3¾"
S601E	92	37'-3"	Str.

BENDING DIAGRAMS

Dimensions are out to out of bars.



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

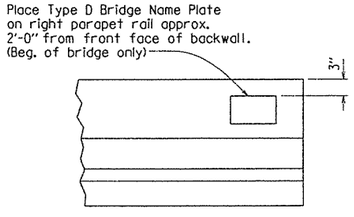


DETAIL Z

No Scale

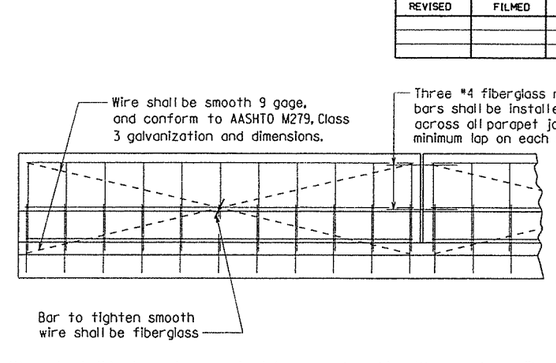
Note:
The surfaces of the ⅜" plates which will not be in contact with concrete shall be painted with aluminum epoxy paint in accordance with Section 638, or as approved by the Engineer. Only one coat is required and shall be applied in the fabricator's shop. Painting will not be paid for directly, but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

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



NAME PLATE DETAIL

No Scale

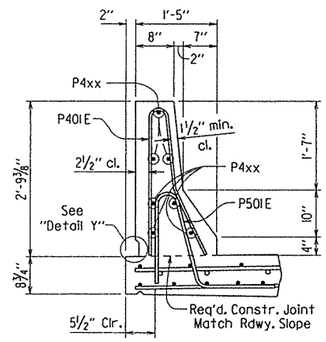


All panels shall be braced as required to prevent racking. All parapet joints shall be sawed as soon as practical to a minimum width of 1/4". To control cracking before sawing, all joints must be grooved before the concrete is set. Sawing of the joints must be controlled so it will follow the grooved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

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

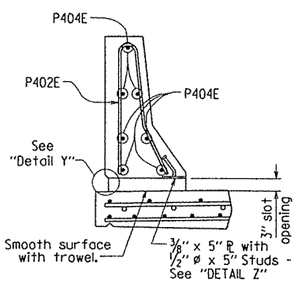
DETAILS OF OPTIONAL SLIPFORMING OF CONCRETE PARAPET RAIL

No Scale



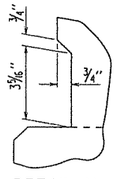
SECTION A-A

Scale: ¾" = 1'-0"



SECTION B-B

Scale: ¾" = 1'-0"



DETAIL Y

No Scale

STATE OF ARKANSAS
Charles R. Ellis
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No. 9235
7-14-14
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BRIDGE ENGINEER

SHEET 5 OF 5
DETAILS OF 205'-6" CONTINUOUS COMPOSITE W-BEAM UNIT TERRE NOIRE CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: ADN DATE: 3-18-14 FILENAME: b070344x3_sl.dgn

CHECKED BY: CSR DATE: 6/13/14 SCALE: AS NOTED

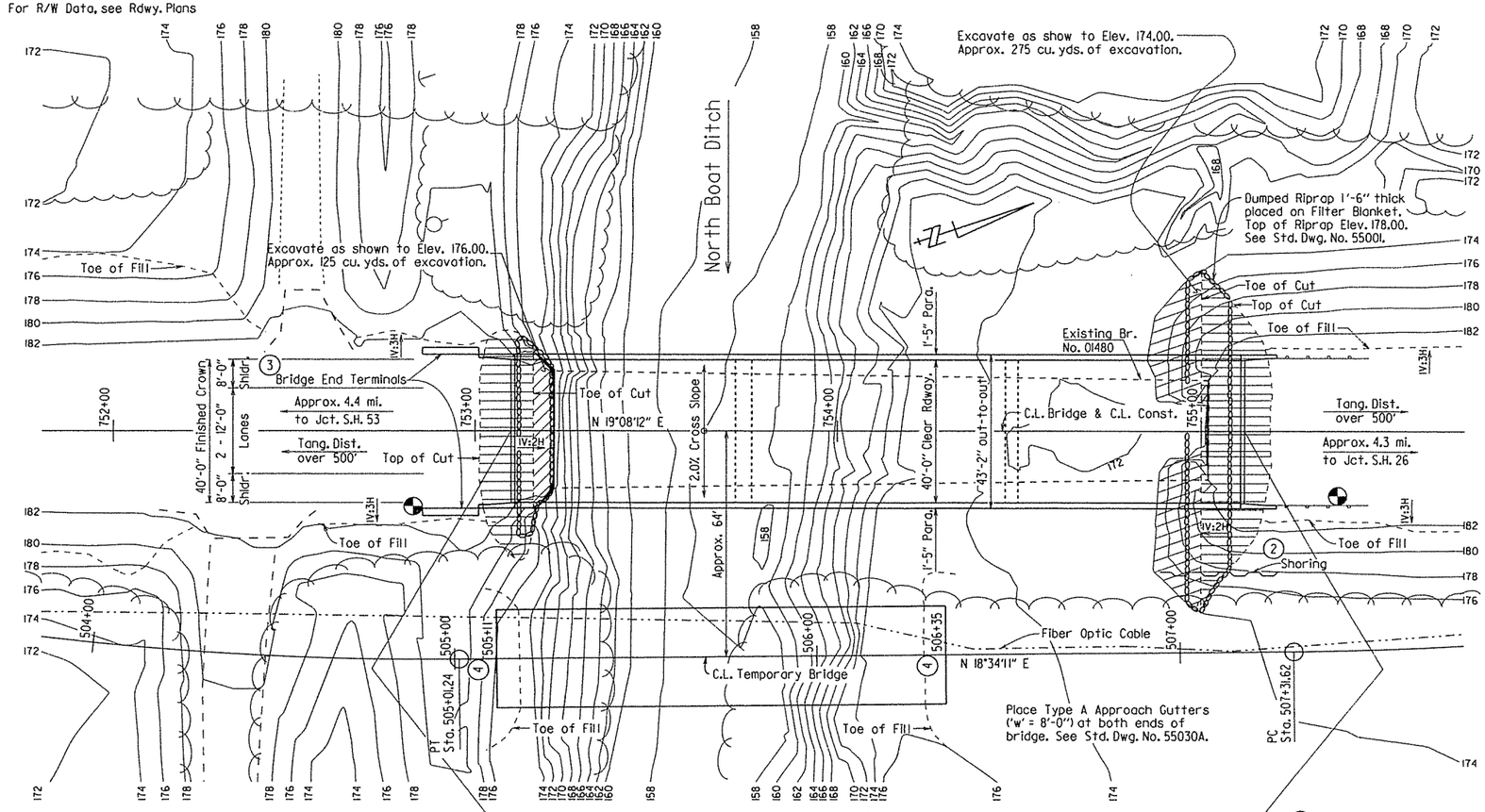
DESIGNED BY: ADN DATE: 5-12

BRIDGE NO. 07328 DRAWING NO. 56098

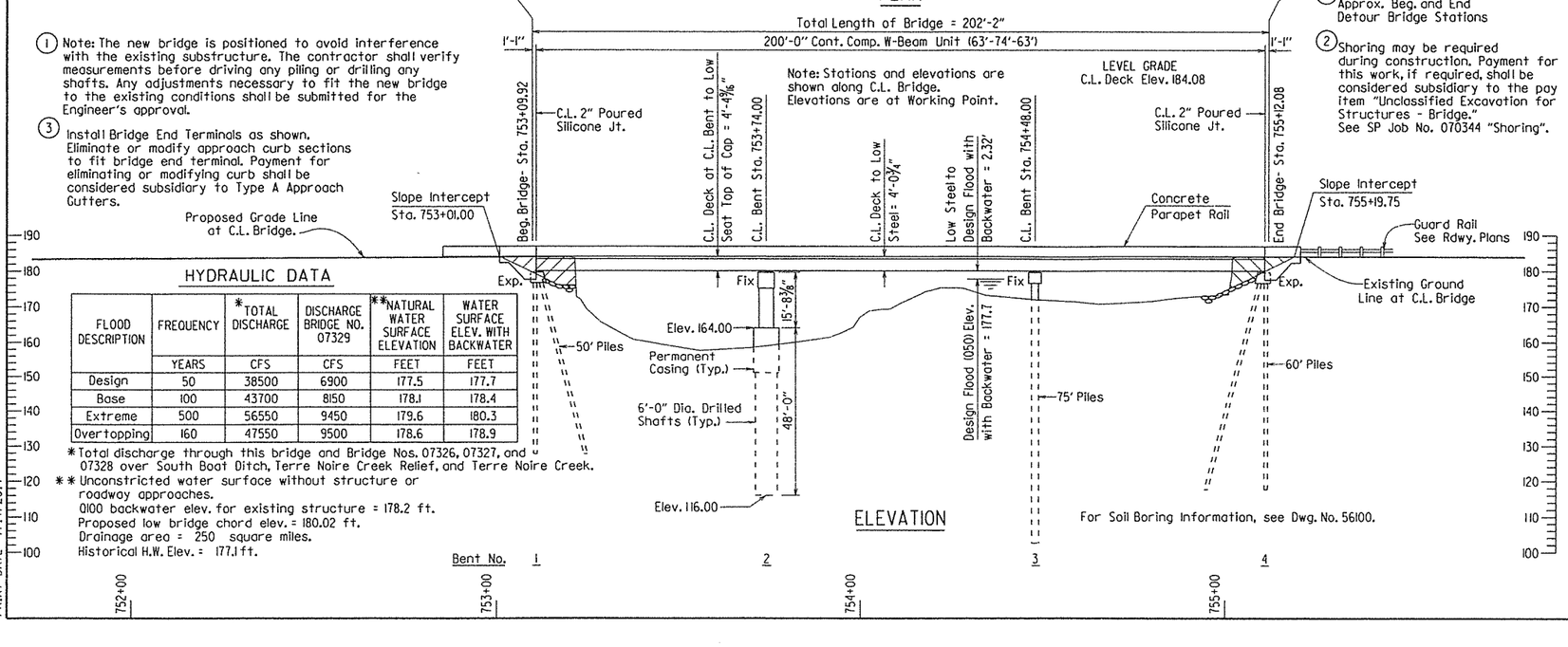
PRINT DATE: 7/14/2014

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.		070344	84137	
				(1) 07329 -		LAYOUT		- 56099

For R/W Data, see Rdwy. Plans



PLAN



ELEVATION

(1) Note: The new bridge is positioned to avoid interference with the existing substructure. The contractor shall verify measurements before driving any piling or drilling any shafts. Any adjustments necessary to fit the new bridge to the existing conditions shall be submitted for the Engineer's approval.

(3) Install Bridge End Terminals as shown. Eliminate or modify approach curb sections to fit bridge end terminal. Payment for eliminating or modifying curb shall be considered subsidiary to Type A Approach Gutters.

(4) Approx. Beg. and End Detour Bridge Stations

(2) Shoring may be required during construction. Payment for this work, if required, shall be considered subsidiary to the pay item "Unclassified Excavation for Structures - Bridge." See SP Job No. 070344 "Shoring".

HYDRAULIC DATA

FLOOD DESCRIPTION	FREQUENCY	*TOTAL DISCHARGE	DISCHARGE BRIDGE NO. 07329	**NATURAL WATER SURFACE ELEVATION	WATER SURFACE ELEV. WITH BACKWATER
	YEARS	CFS	CFS	FEET	FEET
Design	50	38500	6900	177.5	177.7
Base	100	43700	8150	178.1	178.4
Extreme	500	56550	9450	179.6	180.3
Overtopping	160	47550	9500	178.6	178.9

*Total discharge through this bridge and Bridge Nos. 07326, 07327, and 07328 over South Boat Ditch, Terre Noire Creek Relief, and Terre Noire Creek.

** Unconstricted water surface without structure or roadway approaches.
0100 backwater elev. for existing structure = 178.2 ft.
Proposed low bridge chord elev. = 180.02 ft.
Drainage area = 250 square miles.
Historical H.W. Elev. = 177.1 ft.

For Soil Boring Information, see Dwg. No. 56100.

PRINT DATE: 7/14/2014

GENERAL NOTES

BENCH MARK: 907, Chiseled Square in the Northwest Corner of Bridge No. 01480, Elev. 183.76.

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 Specification unless otherwise noted in the Plans.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications (Sixth Edition, 2012).

LIVE LOADING: HL-93 SEISMIC ZONE: 1

MATERIALS AND STRENGTHS:

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

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

(1) CONCRETE PILING: Piling for Bents 1 & 4 shall be 18" square prestressed concrete piles and shall be driven to a minimum ultimate bearing capacity of 205 tons per pile. Piling for Bent 3 shall be 24" prestressed concrete piles and shall be driven to a minimum ultimate bearing capacity of 375 tons. All piling shall be driven with an approved air, steam, or diesel hammer. Piling in end bents shall be driven after embankment to bottom of cap is in place.

Length of piling shown are assumed for estimating quantities only. Actual lengths to be determined in the field. Drive one 55' test pile at Bent 1, one 80' test pile at Bent 3, and one 65' test pile at Bent 4.

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 51,200 ft.lbs. per blow will be required to obtain the ultimate bearing capacity at Bent Nos. 1 & 4. It is estimated that a minimum rated hammer energy of 90,200 ft. lbs. per blow will be required to obtain the ultimate bearing capacity at Bent No. 3.

(1) DRILLED SHAFTS: All drilled shafts shall be founded a minimum of 10 feet into material designated as Hard, Dark Gray Clay. No adjustment in plan tip elevation shall be made without prior approval from the Engineer. Methods of construction of the drilled shafts shall be in accordance with Special Provision Job No. 070344 "Drilled Shaft Foundations".

CROSSHOLE SONIC LOGGING: Nondestructive testing shall be performed on each drilled shaft in accordance with Special Provision Job No. 070344 "Nondestructive Testing of Drilled Shafts".

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	56101-56102
Int. Bents	56103-56105
200' Cont. Comp. W-Beam Unit	56076, 56106-56110
Elastomeric Bearings	56077
18" Prestressed Concrete Piles	55022
24" Prestressed Concrete Piles	56068
Type A Approach Gutters	55030A

EXISTING BRIDGE: Existing bridge no. 01480 at Site 4 (log mile 5.28) is 25.2' wide and 183' long and consists of two 40' reinforced concrete deck girder spans and a 100' steel truss span supported by bents 1 and 2 on spread footings, and bents 3 and 4 on timber pile footings. The existing bridge is located at the site of the proposed new bridge.

REMOVAL AND SALVAGE: After the temporary bridge is open to traffic, existing bridge no. 01480 shall be removed in accordance with Section 205. In addition, the Contractor shall remove the existing concrete riprap as directed by the Engineer. Payment for this work will be subsidiary to the item 205 "Removal of Existing Bridge Structure". This material and all material from the existing bridge shall become the property of the Contractor.

TEMPORARY BRIDGE: Construct a minimum 124' long temporary bridge approximately 64' downstream from centerline construction with a minimum deck elevation of 180.60. See roadway plans for actual detour grade and alignment. The temporary bridge shall have a minimum span length of 31' over the main channel, a minimum clear roadway width of 24', and a minimum live load capacity of HI5. See Section 603 and drawing numbers 55054 through 55056 for standard temporary bridge details. A timber deck will not be allowed in the construction of the temporary bridge structure. If timber piling and pine timber are used on this temporary bridge structure, the materials shall be treated with a preservative according to the Standard Specifications.

MAINTENANCE OF TRAFFIC: See Roadway Plans.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 1 OF 2
LAYOUT OF BRIDGE OVER NORTH BOAT DITCH
GURDON-OAK GROVE STRS. & APPRS. (S)
CLARK COUNTY

ROUTE 67 SEC. 5

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: ADN DATE: 04/13/12 FILENAME: b070344x4_1l.dgn
CHECKED BY: CSR DATE: 6/6/14 SCALE: 1" = 20'
DESIGNED BY: ADN DATE: 5-12

BRIDGE NO. 07329 DRAWING NO. 56099

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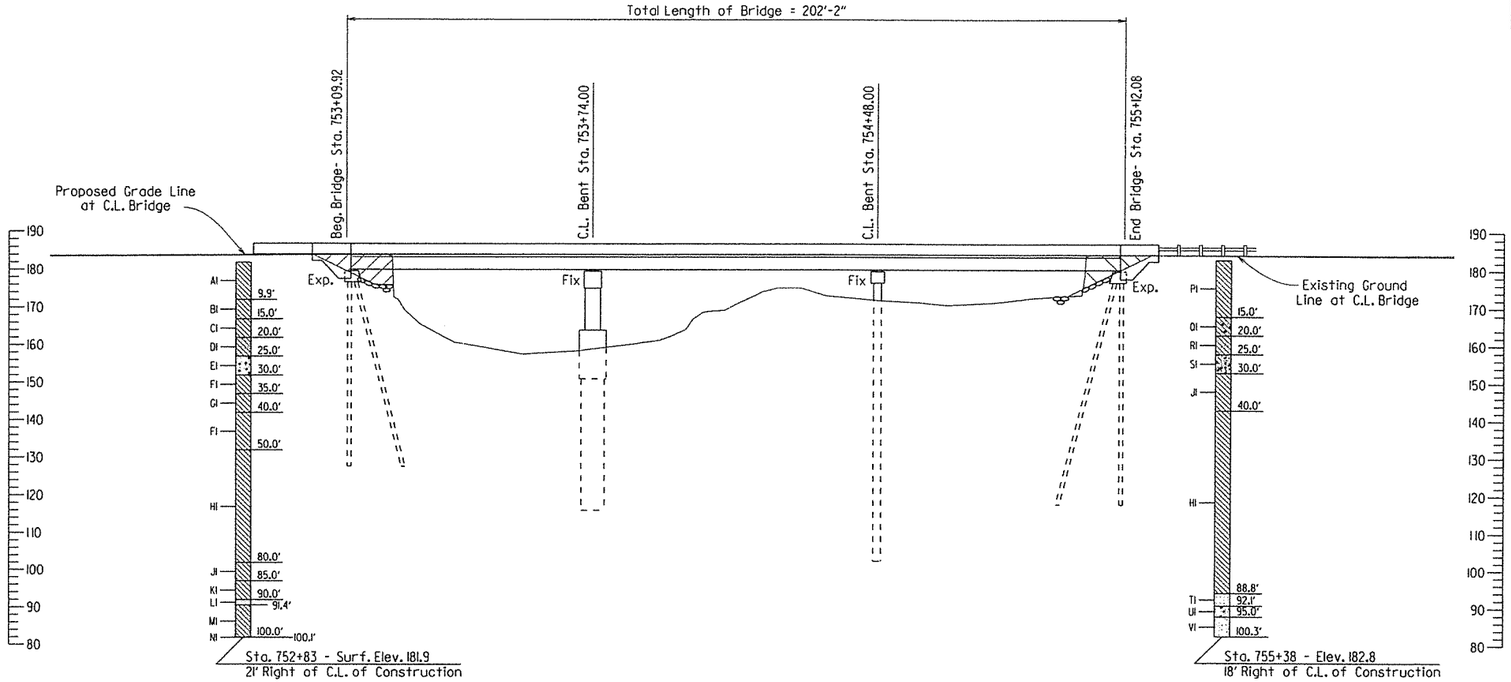
				JOB NO.		070344	85	137
				07329 -		LAYOUT		- 56100



Bent No. 1 2 3 4

ELEVATION

753+00 754+00 755+00 755+00

BORING LEGEND

AI-Moist, Medium Stiff, Gray and Brown Clay
BI-Wet, Soft, Gray and Brown Clay
CI-Moist, Stiff, Gray and Brown Clay
DI-Moist, Stiff, Gray and Reddish Brown Clay with Sand
EI-Wet, Dense, Brown and Gray Sand with Gravel
FI-Moist, Very Stiff, Dark Gray Calcareous Clay
GI-Moist, Very Stiff, Dark Gray Calcareous Clay with Trace of Shells
HI-Moist, Hard, Dark Gray Calcareous Clay
JI-Moist, Hard, Dark Gray Calcareous Clay with Trace of Shells
KI-Moist, Hard, Dark Gray Calcareous Clay with Shells
LI-Hard, Brown Poorly-Cemented Sand with Moist, Gray Clay Seams
MI-Moist, Very Hard, Gray Clay with Sand Seams
NI-Very Dense, Gray Cemented Sand
PI-Moist, Soft, Gray and Brown Clay with some Sand
QI-Wet, Soft, Gray and Brown Sandy Clay with Organic Matter (Wood)
RI-Moist, Medium Stiff, Gray and Brown Clay with Sand
SI-Wet, Medium Dense, Gray Sand with Clay Seams and Gravel
TI-Hard, Gray Poorly-Cemented Sand
UI-Moist, Very Dense, Gray Sand with Cemented Sand Seams and some Clay
VI-Moist, Very Dense, Gray Sand

"N" VALUES

Sta. 752+83 - 21' Right of C.L. of Construction

5.4- 6.4, N=7
10.4- 11.4, N=3
15.5- 16.5, N=10
20.5- 21.5, N=9
25.5- 26.5, N=34
30.5- 31.5, N=27
35.5- 36.5, N=29
40.5- 41.5, N=28
45.5- 46.5, N=27
50.5- 51.5, N=39
55.5- 56.5, N=39
60.5- 61.5, N=41
65.5- 66.5, N=43
70.5- 71.5, N=40
75.5- 76.5, N=45
80.5- 81.5, N=37
85.5- 86.5, N=38
90.0- 90.4, N=60(5")
95.5- 96.5, N=85
100.0-100.0, N=60(0.5")

Sta. 755+38 - 18' Right of C.L. of Construction

4.9- 5.9, N=4
9.9- 10.9, N=3
15.5- 16.5, N=3
20.5- 21.5, N=8
25.5- 26.5, N=17
30.5- 31.5, N=33
35.5- 36.5, N=40
40.5- 41.5, N=36
45.5- 46.5, N=43
50.5- 51.5, N=41
55.5- 56.5, N=43
60.5- 61.5, N=44
65.5- 66.5, N=45
70.5- 71.5, N=41
75.5- 76.5, N=42
80.5- 81.5, N=42
85.5- 86.5, N=43
90.0- 90.0, N=60(.01")
95.0- 95.4, N=60(5")
100.0-100.2, N=60(3")

STATE OF ARKANSAS
Charles R. Ellis
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7-14-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 2
LAYOUT OF BRIDGE OVER
NORTH BOAT DITCH
GURDON-OAK GROVE STRS. & APPRS. (S)
CLARK COUNTY

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: ADN DATE: 04/13/12
CHECKED BY: C-SE DATE: 6/18/14
DESIGNED BY: ADN DATE: 3-12

FILENAME: b070344x4_11.dgn
SCALE: 1" = 20'

BRIDGE NO. 07329 DRAWING NO. 56100

PRINT DATE: 7/14/2014

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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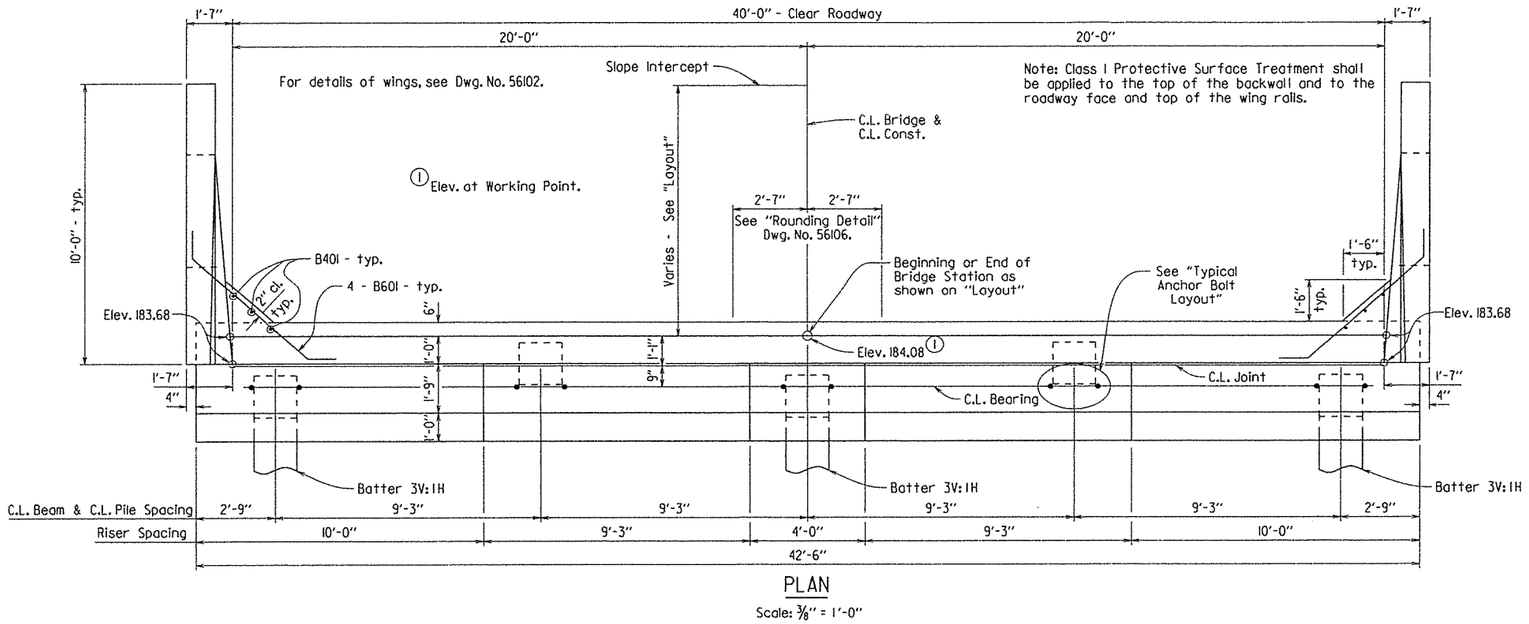
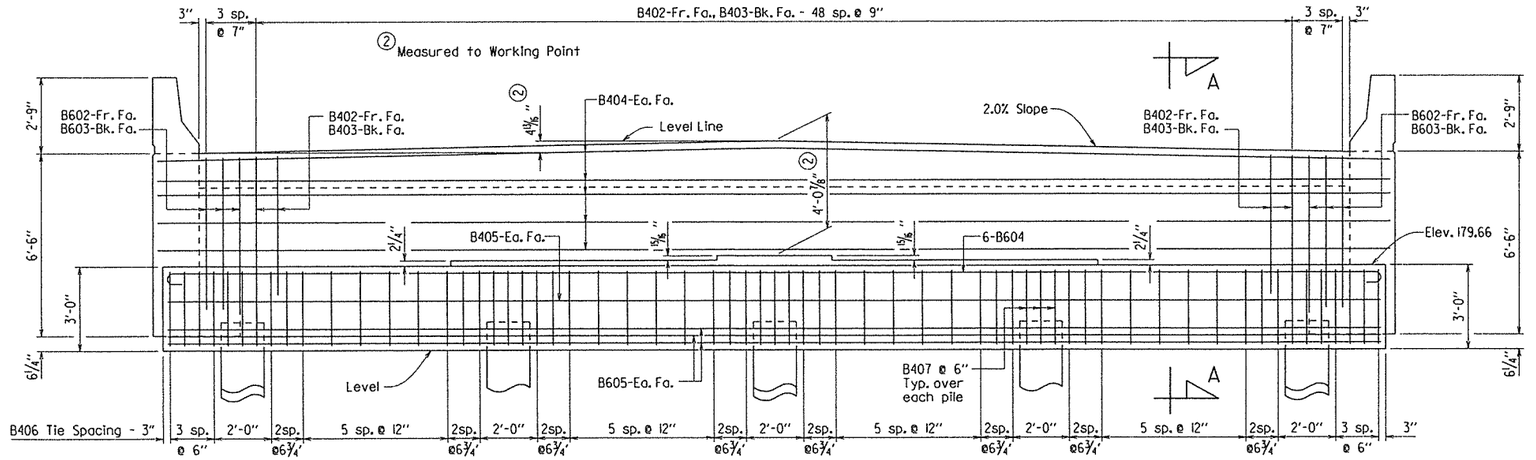
				JOB NO.		070344	86	137
				①	07329 -	END BENTS		- 56101



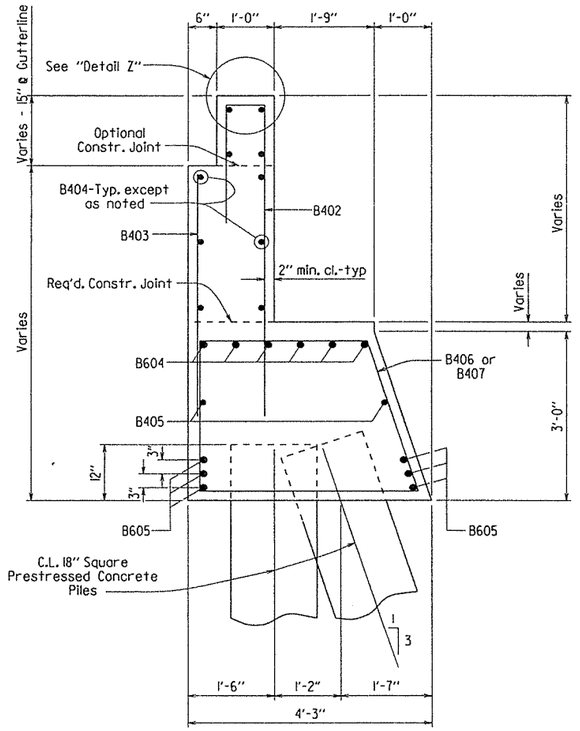
PLAN

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



ELEVATION

Looking Back - Bent 1
Looking Ahead - Bent 4
Scale: 3/8" = 1'-0"



SECTION A-A

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

GENERAL NOTES

All concrete shall be Class "S" and shall be poured in the dry. All exposed corners to be chamfered 3/4" unless otherwise noted.

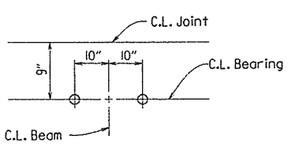
All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi) conforming to AASHTO M31 or M322, Type A, with mill test reports.

No portion of the backwall shall be poured until the beams are in place. Refer to "Expansion Device Installation at End Bents" note, Dwg. No. 56076.

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

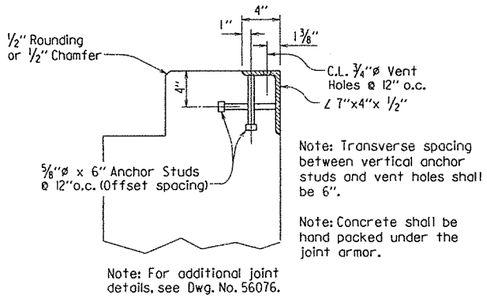
If anchor bolts are drilled into cap, top reinforcing bars shall be placed to avoid damage.

For additional information, see Layout.



TYPICAL ANCHOR BOLT LAYOUT

No Scale
For Details of Elastomeric Bearings, see Dwg. No. 56077.



Note: For additional joint details, see Dwg. No. 56076.

DETAIL Z

No Scale

STATE OF ARKANSAS
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SHEET 1 OF 2
DETAILS OF END BENTS
NORTH BOAT DITCH

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: ADN DATE: 2-25-14 FILENAME: b070344x4_bl.dgn
CHECKED BY: C.S.K. DATE: 6/18/14 SCALE: AS NOTED
DESIGNED BY: ADN DATE: 11-13

BRIDGE NO. 07329 DRAWING NO. 56101

PRINT DATE: 7/14/2014

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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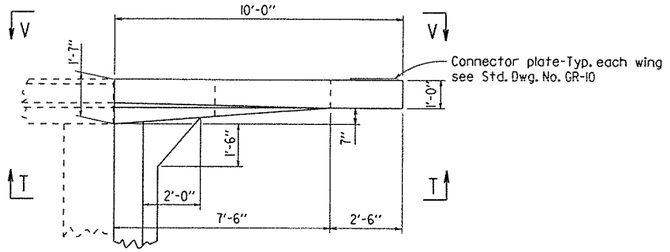
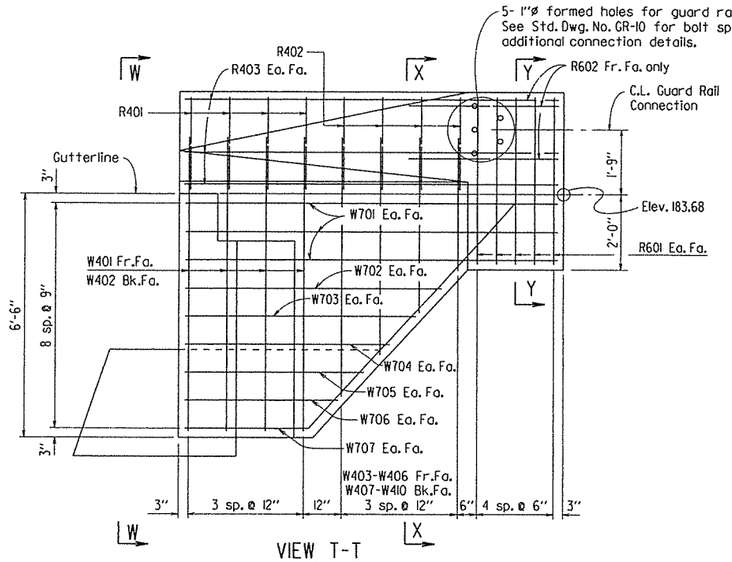
				JOB NO.		070344	87	137
				(1) 07329 -		END BENTS	- 56102	



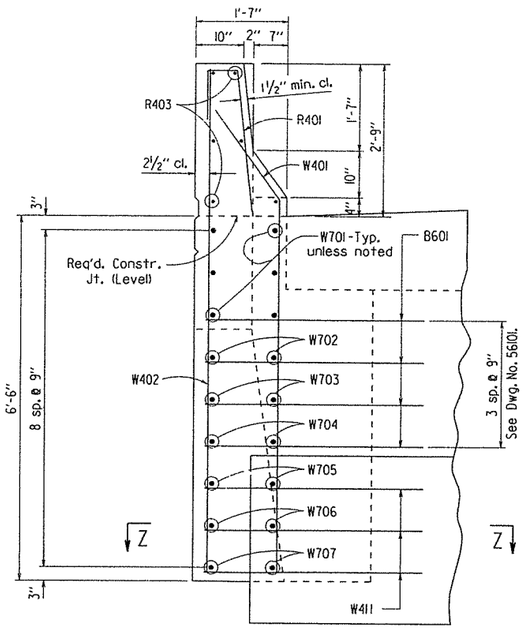
PLAN OF RAIL

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



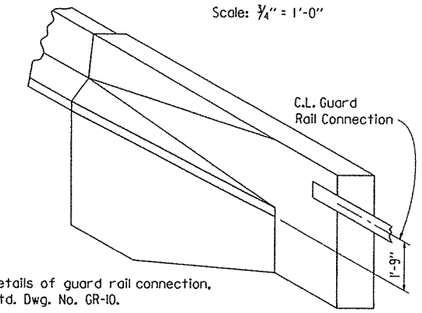
VIEW T-T

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



VIEW W-W

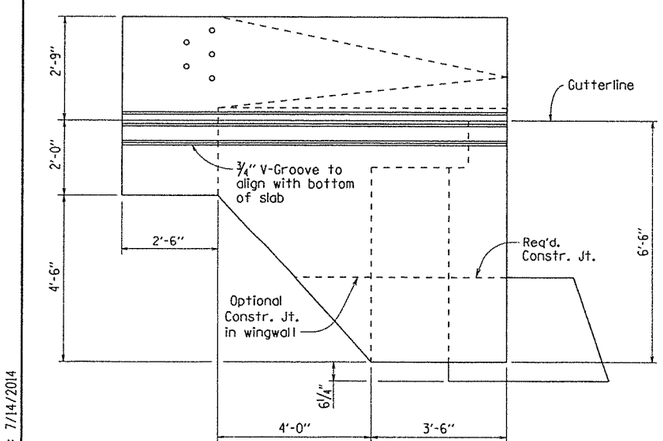
Scale: 3/4" = 1'-0"



For details of guard rail connection, See Std. Dwg. No. GR-10.

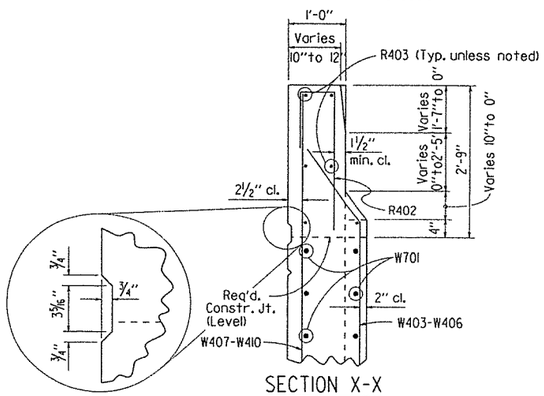
THREE DIMENSIONAL VIEW OF RAIL

No Scale



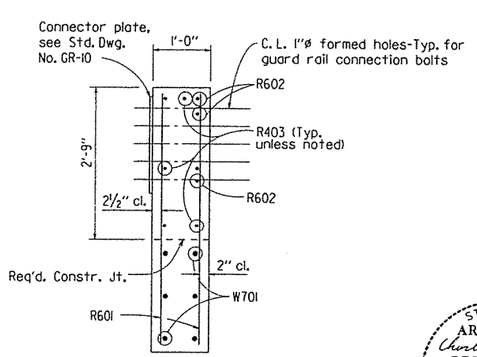
VIEW V-V

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



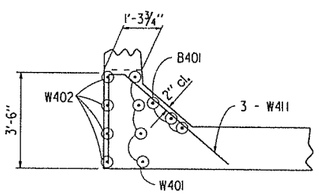
SECTION X-X

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



SECTION Y-Y

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



SECTION Z-Z

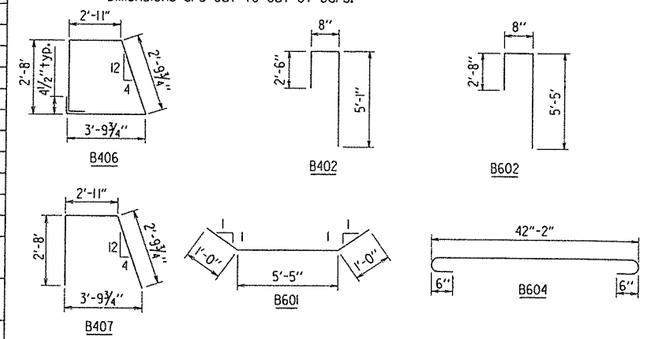
Scale: 3/8" = 1'-0"

BAR LIST - PER BENT

MARK	NO. REQ'D.	LENGTH	P.D.
B401	6	4'-11"	Str.
B402	49	8'-1"	2"
B403	49	3'-8"	Str.
B404	10	42'-10"	Str.
B405	2	42'-2"	Str.
B406	48	12'-7"	2"
B407	15	8'-3"	2"
R401	8	3'-11"	2"
R402	8	4'-0"	2"
R403	12	9'-8"	Str.
W401	8	8'-7"	2"
W402	8	8'-11"	Str.
W403-W406	2 each	Var. 3'-5" to 6'-10"	2"
W407-W410	2 each	Var. 4'-7" to 8'-0"	Str.
W411	6	8'-4"	2"
B601	8	7'-5"	4½"
B602	6	8'-6"	4½"
B603	6	4'-2"	Str.
B604	6	43'-6"	4½"
B605	6	42'-2"	Str.
R601	20	4'-5"	Str.
R602	6	5'-0"	Str.
W701	12	9'-8"	Str.
W702	4	6'-8"	Str.
W703	4	6'-0"	Str.
W704	4	5'-4"	Str.
W705	4	4'-8"	Str.
W706	4	4'-0"	Str.
W707	4	11'-2"	5¼"

BENDING DIAGRAMS

Dimensions are out to out of bars.



STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 2
DETAILS OF END BENTS
NORTH BOAT DITCH

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: ADN DATE: 2-25-14 FILENAME: b070344x4_bl.dgn

CHECKED BY: C.S.E. DATE: 2/14/14 SCALE: AS NOTED

DESIGNED BY: ADN DATE: 11-13

BRIDGE NO. 07329 DRAWING NO. 56102

PRINT DATE: 7/14/2014

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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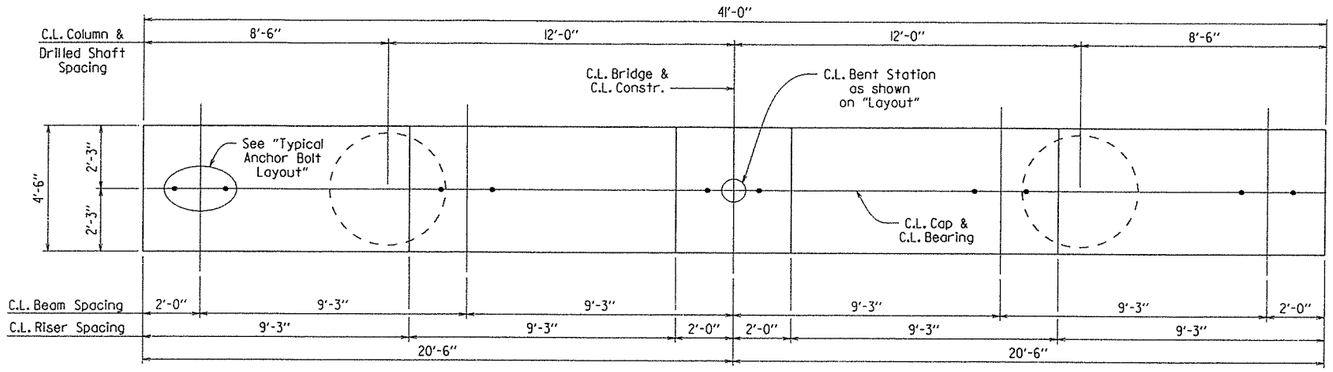
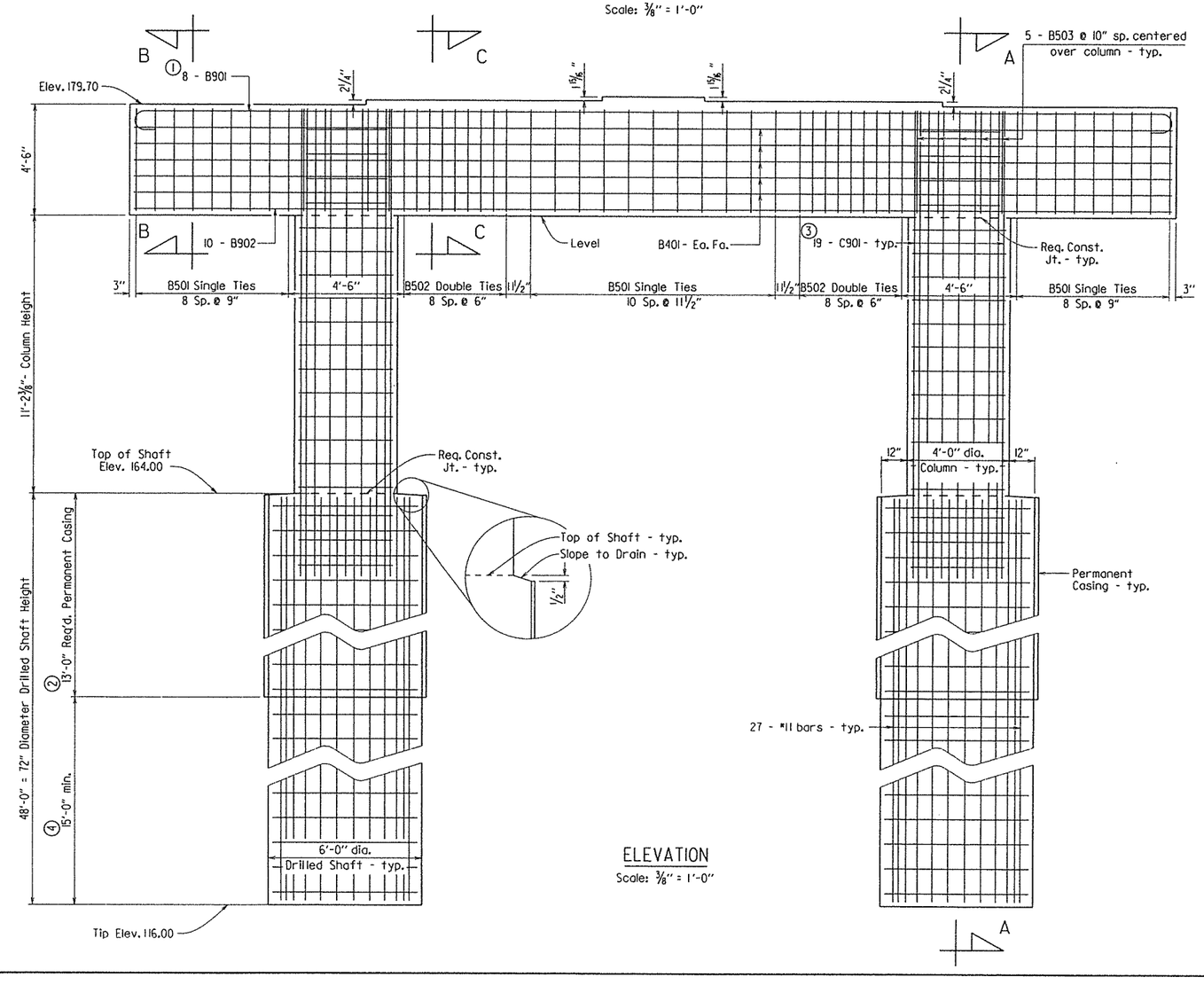
				JOB NO.		070344	38	137
				①	07329 -	INT. BENTS	- 56103	



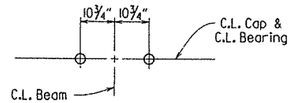
PLAN

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



ELEVATION

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



TYPICAL ANCHOR BOLT LAYOUT

Not to Scale

For Details of Elastomeric Bearings, see Dwg. No. 56077.

Note: For additional details of reinforcing in columns and drilled shafts, see Dwg. No. 56104.

For Details of Sections A-A, B-B, and C-C, see Dwg. No. 56104.

① Reinforcing bars in top of cap shall be properly placed to avoid interference with anchor bolts or sheet metal sleeves.

② Length of Permanent Casing shown is for estimating quantities only. Actual lengths are to be determined in the field. See Special Provision Job No. 070344 "Drilled Shaft Foundations." Permanent casing shall extend to material designated as HARD DARK CLAY on the Boring Legend.

③ The column reinforcing cage, consisting of bars C401 and C901, may be placed before or after concrete placement in the shaft is complete. Vibration of concrete in the top 10 feet of the shaft will be needed to ensure the consolidation of the concrete around the reinforcing steel and to insert the column reinforcing cage. The Contractor will be responsible for obtaining satisfactory results.

④ Minimum penetration below bottom of permanent casing.

STATE OF ARKANSAS
Charles R. Ellis
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7-14-14
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SHEET 1 OF 2
DETAILS OF BENT 2
NORTH BOAT DITCH

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: ADN DATE: 2-19-14
CHECKED BY: CSR DATE: 6/18/14
DESIGNED BY: ADN DATE: 1-14

FILENAME: b070344x4_b2.dgn
SCALE: AS NOTED

BRIDGE NO. 07329 DRAWING NO. 56103

PRINT DATE: 7/14/2014

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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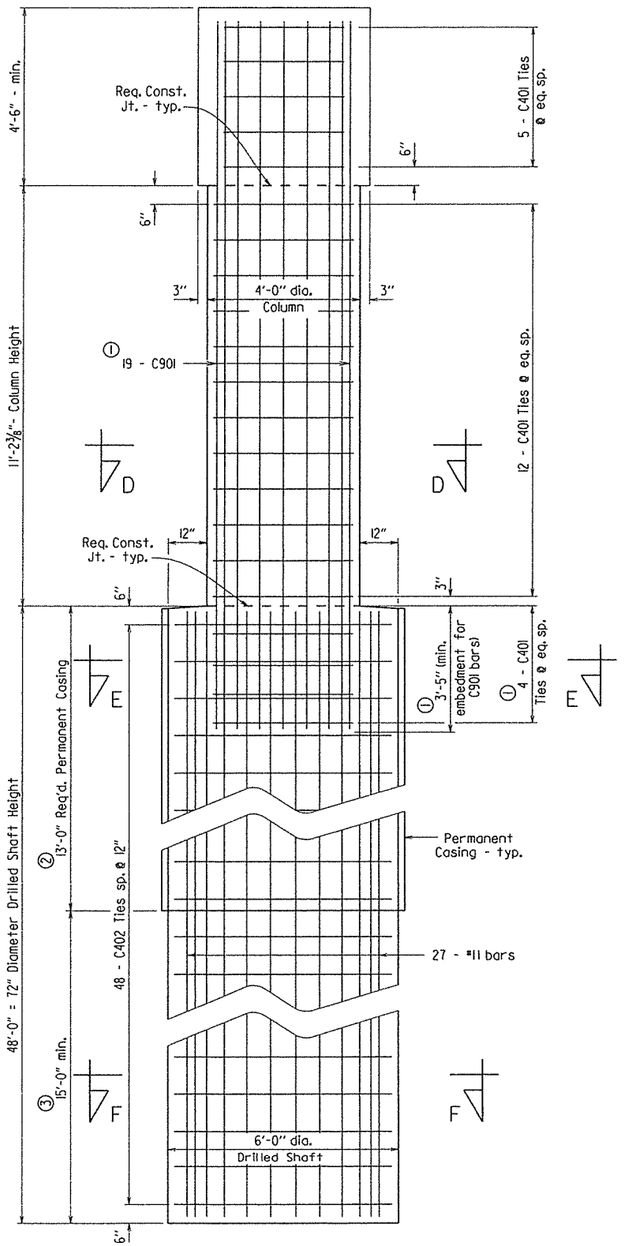
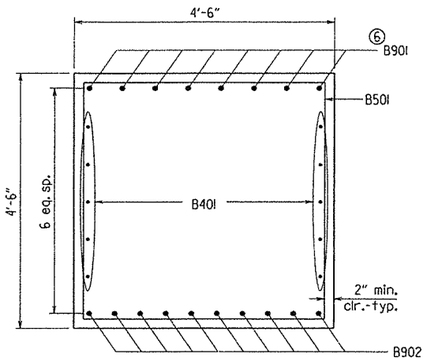


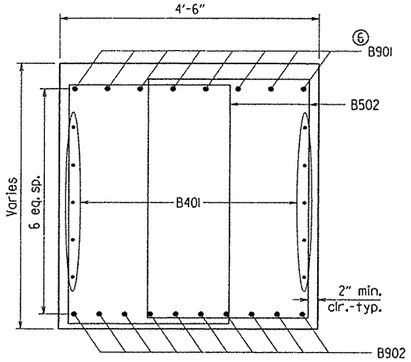
SECTION A-A

Scale: ½" = 1'-0"



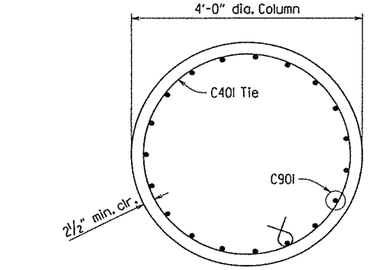
SECTION B-B

Scale: ¾" = 1'-0"



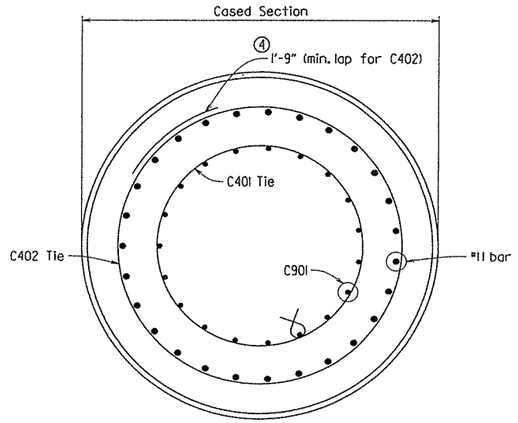
SECTION C-C

Scale: ¾" = 1'-0"



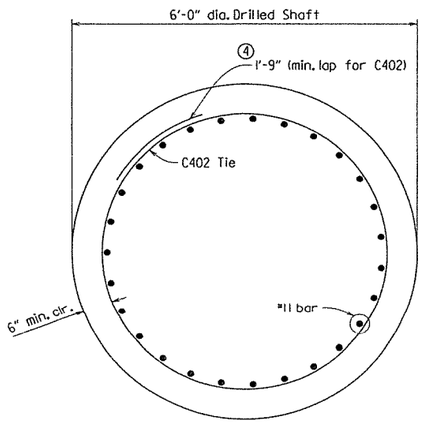
SECTION D-D

Scale: ¾" = 1'-0"



SECTION E-E

Scale: ¾" = 1'-0"



SECTION F-F

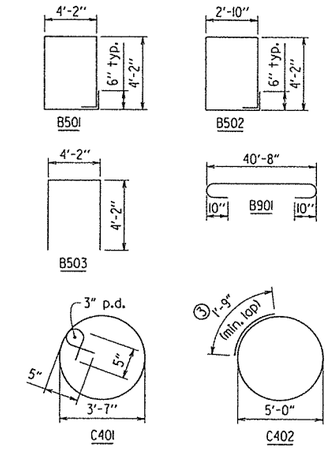
Scale: ¾" = 1'-0"

BAR LIST - PER BENT

	MARK	NO. REQ'D.	LENGTH	P.D.
	B401	10	40'-8"	Str.
	C401	42	12'-4"	3"
⑤	C402	96	17'-6"	3"
	B501	29	17'-2"	2½"
	B502	36	14'-6"	2½"
	B503	10	12'-4"	2½"
	B901	8	43'-2"	9"
	B902	10	40'-8"	Str.
	C901	38	19'-0"	Str.
⑤	#11 bars	54	47'-8"	Str.

BENDING DIAGRAMS

Dimensions are out to out of bars.



④ Laps of adjacent ties shall be oriented 180 degrees.

⑤ Non-pay Item - Subsidiary to SP Job No. 070344 "Drilled Shaft Foundations".

⑥ Reinforcing bars in top of cap shall be properly placed to avoid interference with anchor bolts or sheet metal sleeves.

GENERAL NOTES

Concrete in the cap and column shall be Class S with a minimum 28 day compressive strength, f'c = 3500 psi., and shall be poured in the dry. Concrete in the drilled shaft shall be Class S as modified by SP Job No. 070344 "Drilled Shaft Foundations". 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 M31 or M322, Type A, with mill test reports.

For additional information see layout.

Drilled shafts shall conform to SP Job No. 070344 "Drilled Shaft Foundations".

① The column reinforcing cage, consisting of bars C401 and C901, may be placed before or after concrete placement in the shaft is complete. Vibration of concrete in the top 10 feet of the shaft will be needed to ensure the consolidation of the concrete around the reinforcing steel and to insert the column reinforcing cage. The Contractor will be responsible for obtaining satisfactory results.

② Length of Permanent Casing shown is for estimating quantities only. Actual lengths are to be determined in the field. See Special Provision Job No. 070344 "Drilled Shaft Foundations." Permanent casing shall extend to material designated as HARD DARK CLAY on the Boring Legend.

③ Minimum penetration below bottom of permanent casing.

STATE OF ARKANSAS
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SHEEET 2 OF 2
DETAILS OF BENT 2
NORTH BOAT DITCH

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

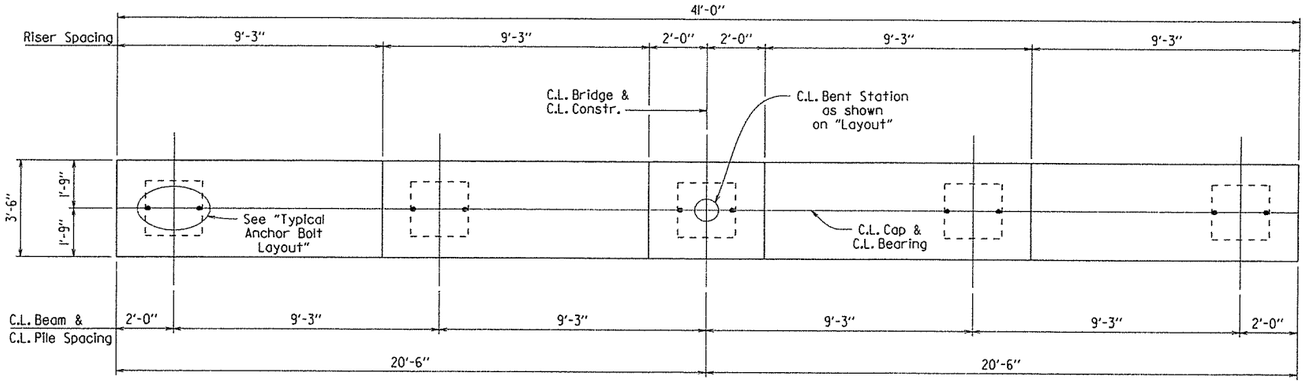
LITTLE ROCK, ARK.

DRAWN BY: ADN DATE: 2-19-14 FILENAME: b070344x4_b2.dgn
CHECKED BY: CSK DATE: 6/18/14 SCALE: AS NOTED
DESIGNED BY: ADN DATE: 7-1-14

BRIDGE NO. 07329 DRAWING NO. 56104

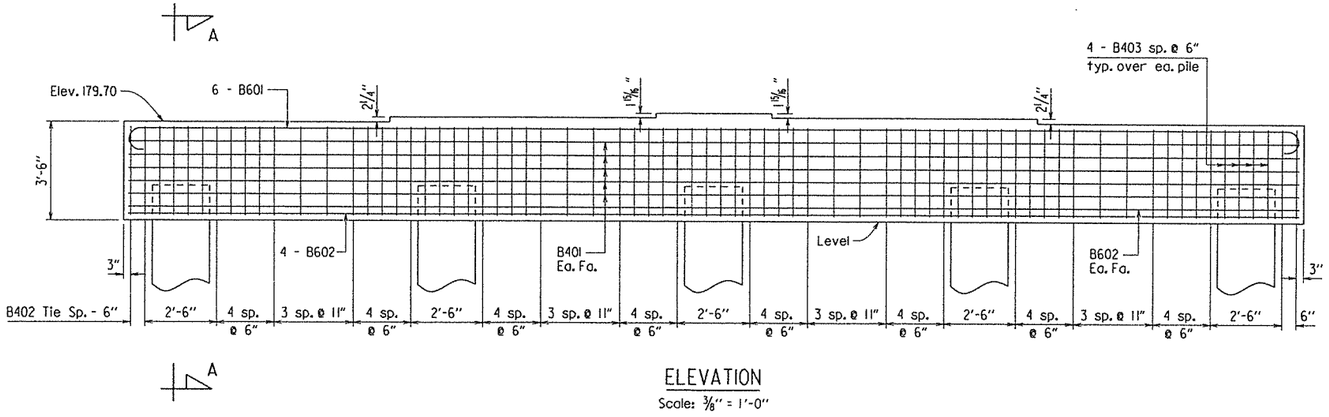
PRINT DATE: 7/14/2014

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.		070344	90	137
				(1)	07329 - INT. BENTS - 56105			



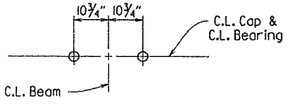
PLAN

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



ELEVATION

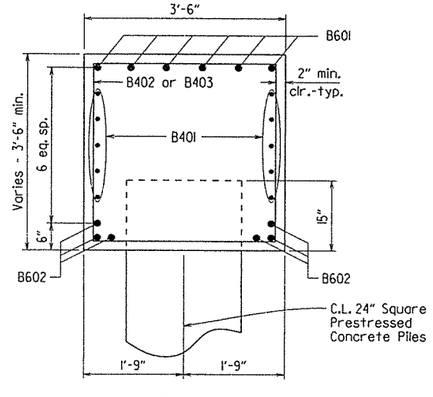
Scale: 3/8" = 1'-0"



TYPICAL ANCHOR BOLT LAYOUT

Not to Scale

For Details of Elastomeric Bearings, see Dwg. No. 56077.

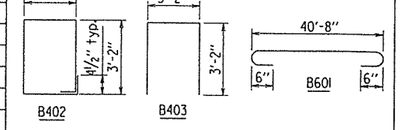


SECTION A-A

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

BAR LIST

MARK	NO. REQ'D.	LENGTH	P.D.	BENDING DIAGRAMS
B401	10	40'-8"	Str.	Dimensions are out to out of bars.
B402	52	13'-0"	2"	
B403	20	9'-4"	2"	
B601	6	42'-0"	4½"	
B602	6	40'-8"	Str.	



GENERAL NOTES

All concrete shall be Class "S" with a minimum 28 day compressive strength, f'c = 3500 psi., and shall be poured in the dry. All exposed corners to be chamfered ¾" unless otherwise noted.

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

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

For additional information see layout.

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DETAILS OF BENT 3
NORTH BOAT DITCH

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: ADN DATE: 2-19-14
CHECKED BY: CSR DATE: 2/19/14
DESIGNED BY: ADN DATE: 12-13

FILENAME: b070344x4_b3.dgn
SCALE: AS NOTED

BRIDGE NO. 07329 DRAWING NO. 56105

PRINT DATE: 7/14/2014

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.		070344	91	137
				(1) 07329 -		200 FT. UNIT	- 56106	

SLAB REINFORCING

Transverse: S501E @ 12" in top; S402E @ 12" o.c. in bottom — Alternate
S502E @ 12" o.c. bent up over beams
S503E bundled with #5 bars in top at both gutterlines

Longitudinal: S401E as shown
S601E as shown over int. supports

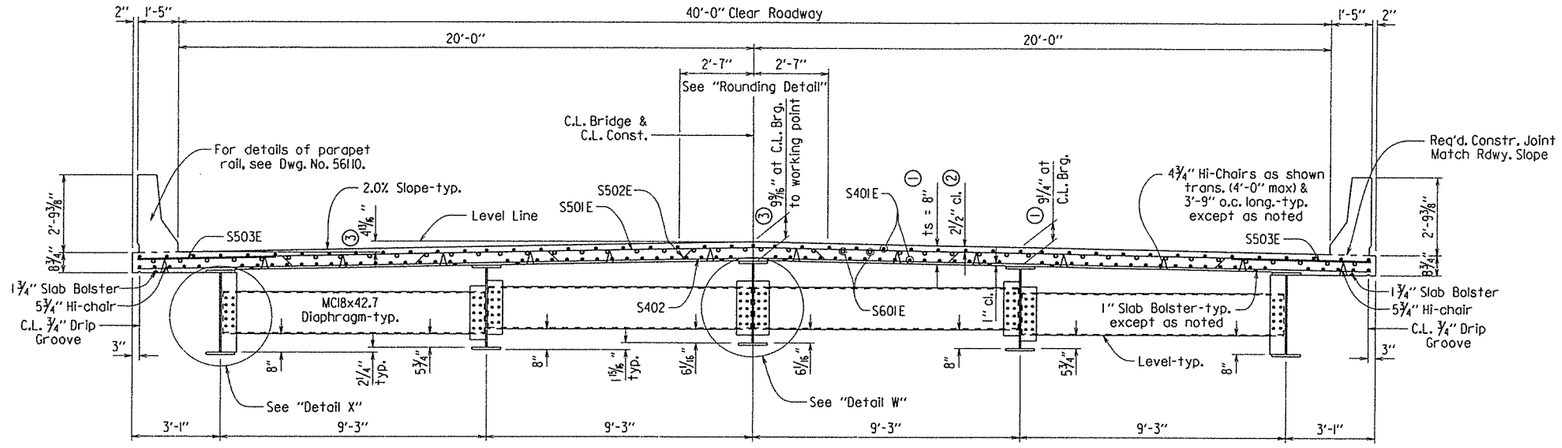
NOTE: Class I Protective Surface Treatment shall be applied to the Roadway Surface and to the Face & Top of the Concrete Parapet Rail.

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

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

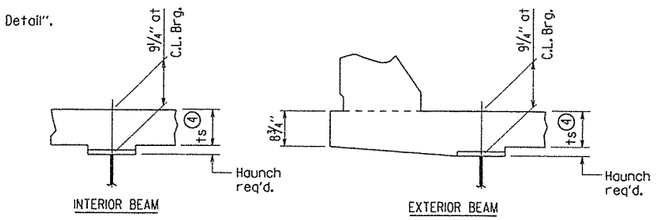
(2) Tolerance: Minus = 1/4"; Plus equal to the amount of slab thickening used to meet slab thickness tolerance. See "Adjustment for Slab Thickness Tolerance".

(3) Working point to gutterline, see "Rounding Detail".



TYPICAL ROADWAY SECTION

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



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

Note: ts = slab thickness as shown in "Typical Roadway Section".

Haunch dimension may vary within the following limits to maintain the grade and slab thickness tolerance : Minimum - occurs when top flange contacts bottom reinforcing steel; Maximum - top flange thickness plus 1 3/4". No increase in concrete and structural steel quantities will be made to maintain tolerances.

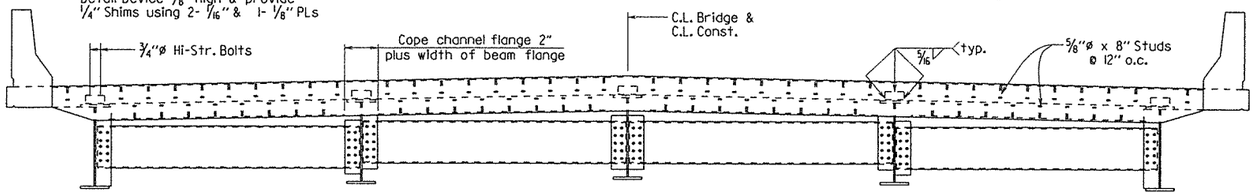
Tolerances shown are applicable only when removable deck forming is used. See Std. Dwg. No. 55005 for tolerances when permanent steel deck forms are used. Payment for concrete shall be based on removable deck forming.

ADJUSTMENT FOR SLAB THICKNESS TOLERANCE

No Scale

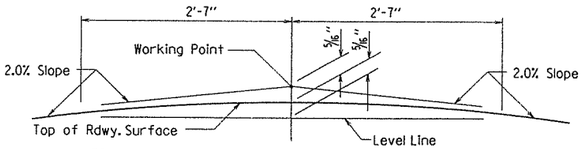
Expansion Device:
Rdwy. C15 x 33.9
Conn. ∠8" x 4" x 1/2"
Detail Device 1/8" high & provide 1/4" Shims using 2- 7/16" & 1- 1/8" PLs

For additional joint details, see Dwg. No. 56076.



TYPICAL SECTION THRU JOINT

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

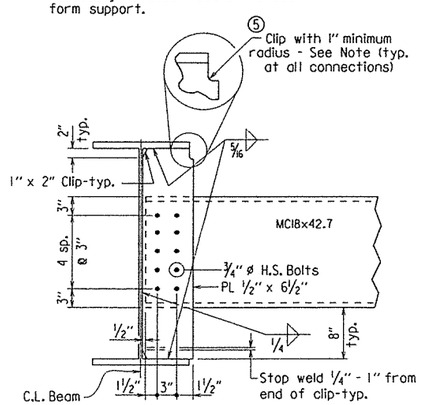


NOTE: Working Point matches Theoretical Roadway Grade.

ROUNDING DETAIL

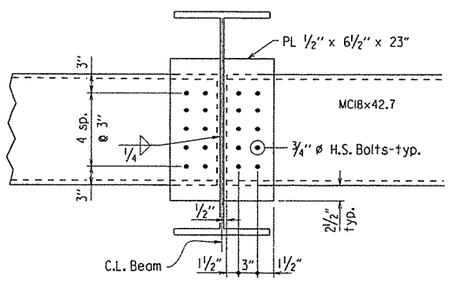
No Scale

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



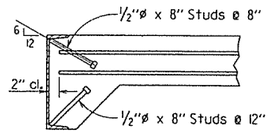
DETAIL X

No Scale



DETAIL W

No Scale



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

DETAILS OF ALTERNATE ANCHORS

No Scale

STATE OF ARKANSAS
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SHEET 1 OF 5
DETAILS OF 200'-0" CONTINUOUS COMPOSITE W-BEAM UNIT
NORTH BOAT DITCH

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: ADN DATE: 3-17-14
CHECKED BY: CRE DATE: 7/15/14
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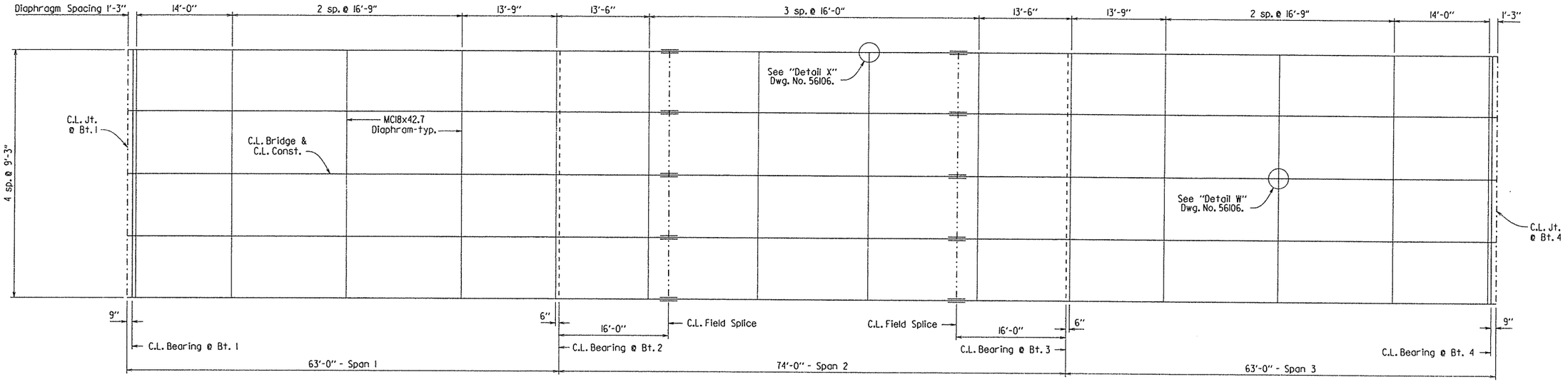
FILENAME: b070344x4_sl.dgn
SCALE: AS NOTED

BRIDGE NO. 07329 DRAWING NO. 56106

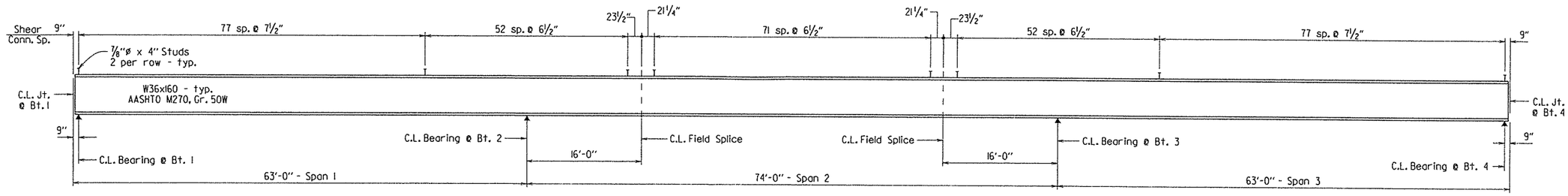
PRINT DATE: 7/15/2014

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.		070344	92	137
				(1)	07329 -	200 FT. UNIT	- 56107	

AHEAD STATIONING



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



BEAM ELEVATION
No Scale

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

STATE OF ARKANSAS
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SHEET 2 OF 5
DETAILS OF 200'-0" CONTINUOUS COMPOSITE W-BEAM UNIT
NORTH BOAT DITCH

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

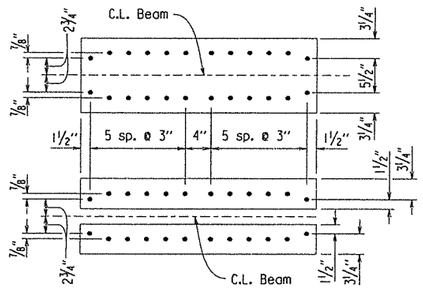
DRAWN BY: ADN DATE: 3-18-14
CHECKED BY: CRE DATE: 6/6/14
DESIGNED BY: ADN DATE: 5-12

FILENAME: b070344x4_sl.dgn
SCALE: AS NOTED

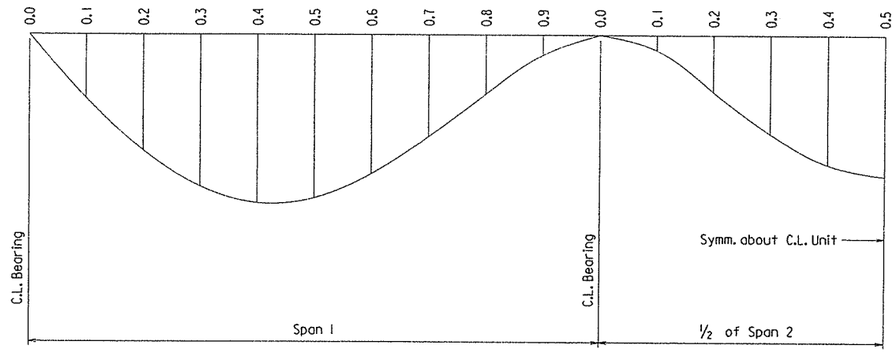
BRIDGE NO. 07329 DRAWING NO. 56107

PRINT DATE: 7/14/2014

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.		070344	93	137
				①	07329 -	200 FT. UNIT	- 56108	

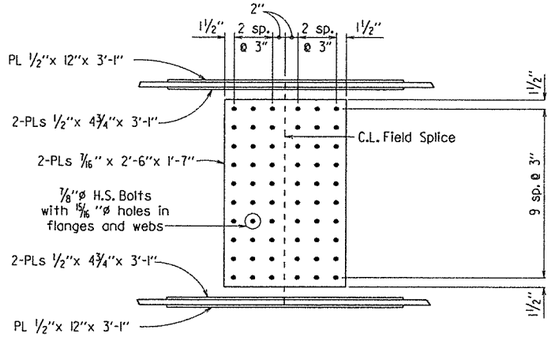


FLANGE SPLICE



Symm. about C.L. Unit →

	Point of Deflection	Structural Steel		Structural Steel + Slab		Structural Steel + Slab + Parapet	
		Ext. Bms.	Int. Bms.	Ext. Bms.	Int. Bms.	Ext. Bms.	Int. Bms.
Span 1	0	0	0	0	0	0	0
	0.1	0.034	0.037	0.190	0.216	0.206	0.231
	0.2	0.063	0.068	0.350	0.399	0.379	0.426
	0.3	0.083	0.090	0.461	0.525	0.499	0.561
	0.4	0.092	0.099	0.511	0.581	0.553	0.621
	0.5	0.089	0.096	0.496	0.565	0.537	0.604
	0.6	0.076	0.082	0.424	0.483	0.459	0.516
	0.7	0.056	0.060	0.309	0.352	0.334	0.376
	0.8	0.032	0.034	0.177	0.201	0.192	0.215
	0.9	0.011	0.012	0.059	0.068	0.064	0.073
½-Span 2	0	0	0	0	0	0	0
	0.1	0.008	0.009	0.046	0.052	0.050	0.056
	0.2	0.030	0.032	0.165	0.188	0.179	0.201
	0.3	0.053	0.057	0.295	0.336	0.319	0.359
	0.4	0.071	0.076	0.392	0.446	0.424	0.476
	0.5	0.077	0.083	0.427	0.486	0.462	0.519



WEB SPLICE

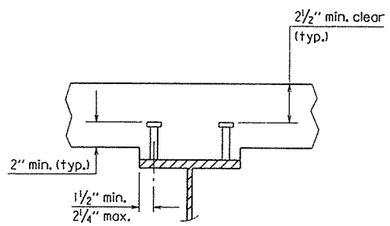
Note: All field splice plates shall be AASHTO M270, Gr. 50W

FIELD SPLICE DETAILS

No Scale

DEAD LOAD DEFLECTIONS DIAGRAM (TYP.)

Note:
Camber for Dead Load Deflection plus Vertical curve ± ¼" tolerance. Deflections shown are from a chord from C.L. Bearing to C.L. Bearing. Vertical curve corrections not included. Negative sign (-) indicates point above chord.



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. Maximum stud spacing = 24".

SHEAR CONNECTOR 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 ¾" Inclusive	¼"	
Over ¾"	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 3 OF 5
DETAILS OF 200'-0" CONTINUOUS COMPOSITE W-BEAM UNIT NORTH BOAT DITCH

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: ADN DATE: 3-19-14
CHECKED BY: CSR DATE: 7/14/14
DESIGNED BY: ADN DATE: 5-12

FILENAME: b070344x4_sl.dgn
SCALE: AS NOTED

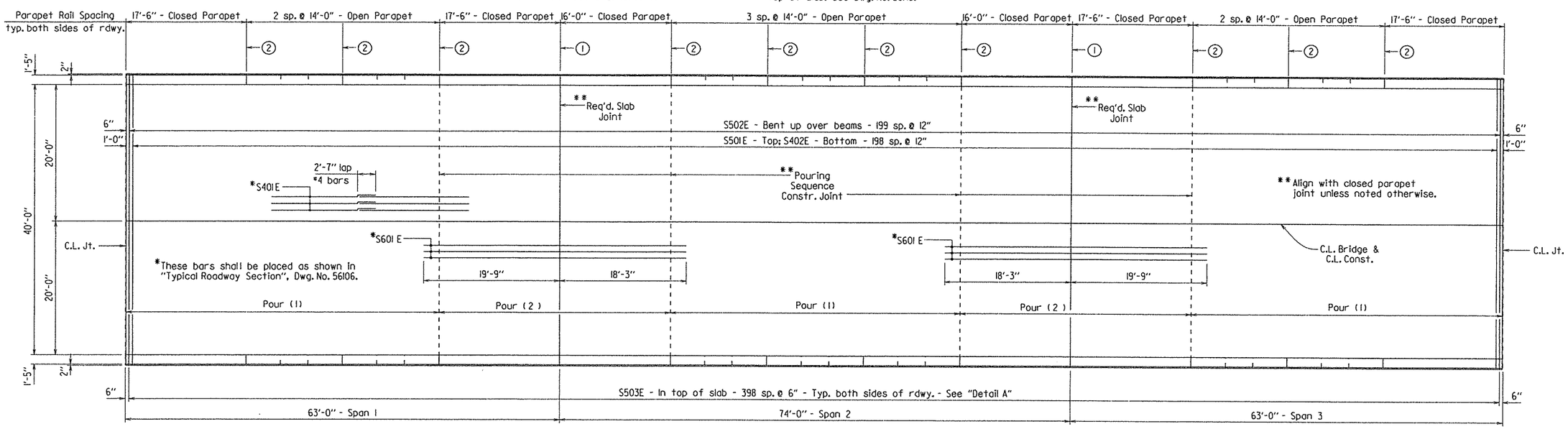
BRIDGE NO. 07329 DRAWING NO. 56108

PRINT DATE: 7/14/2014

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.		070344	94	137
				①	07329 -	200 FT. UNIT	- 56109	

① C.L. Full-Depth Parapet Joint (1/4" to 1" max.). Stop 4" from top of slab. See Dwg. No. 56110.

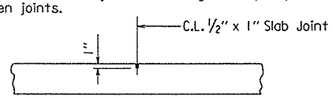
② C.L. Partial-Depth Parapet Joint (1/4" to 1" max.). Stop 1'-2" from top of slab. See Dwg. No. 56110.



REINFORCING PLAN AND POURING SEQUENCE

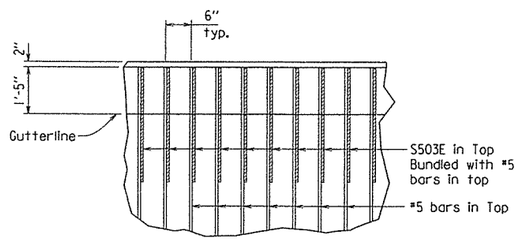
Scale: 1/8" = 1'-0"

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. Slab joints shall be installed before the parapet railing is poured. If slab joints are to be sawed, they shall be sawed as soon as the concrete has sufficiently set to allow sawing of the joint without damage to the slab. Slab joints shall be placed at all pouring sequence construction joints and required slab joint locations. The joint sealer shall extend across the deck slab (gutterline to gutterline). Slab joints shall align with parapet open joints.



SLAB JOINT DETAIL

No Scale



DETAIL A

No Scale

Pours with the same number may be placed simultaneously or separately. All Pours (1) must be placed before Pours (2) can be placed. 48 hours shall elapse between the end of a pour and the start of the next pour. 72 hours shall elapse between the end of a pour and the start of an adjacent pour. Any 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 deviation from the pouring sequence shown.

STATE OF ARKANSAS
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SHEET 4 OF 5
DETAILS OF 200'-0" CONTINUOUS COMPOSITE W-BEAM UNIT NORTH BOAT DITCH

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

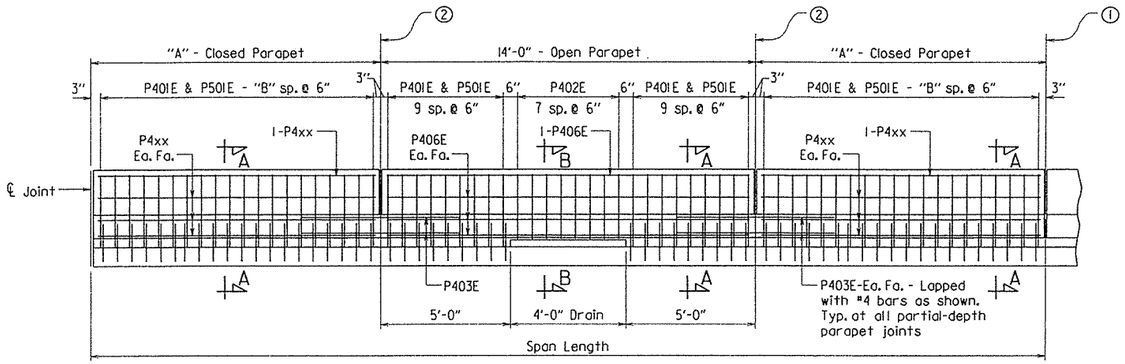
DRAWN BY: ADN DATE: 3-19-14
CHECKED BY: CSK DATE: 6/18/14
DESIGNED BY: ADN DATE: 5-12

FILENAME: b070344x4_sl.dgn
SCALE: AS NOTED

BRIDGE NO. 07329 DRAWING NO. 56109

PRINT DATE: 7/14/2014

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.		070344	95	137
				① 07329 -		200 FT. UNIT	- 56110	



① C.L. Full-Depth Parapet Joint (1/4" to 1" max.) as shown in "Reinforcing Plan And Pouring Sequence", Dwg. No. 56109. Stop 4" from top of slab.

DETAILS OF PARAPET RAIL

No Scale

② C.L. Partial-Depth Parapet Joint (1/4" to 1" max.) as shown in "Reinforcing Plan And Pouring Sequence", Dwg. No. 56109. Stop 1'-2" from top of slab.

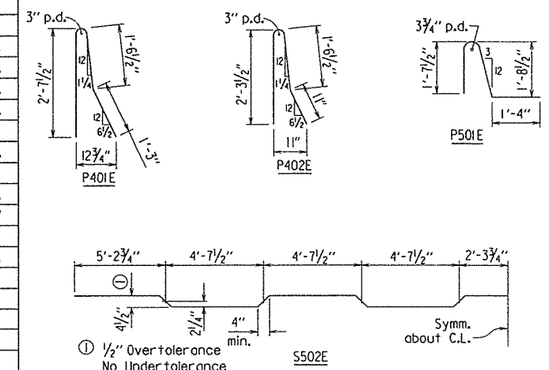
TABLE OF PARAPET RAIL VARIABLES

"A" Closed Parapet	"B"	P4xx Bar
17'-6"	34	P404E
16'-0"	31	P405E

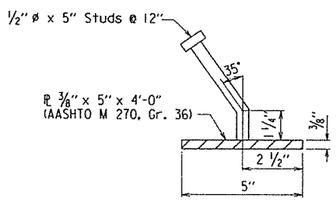
Note: For location of Open and Closed Parapet panels, see "Reinforcing Plan And Pouring Sequence", Dwg. No. 56109.

BAR LIST

MARK	NO. REQ'D.	LENGTH	P.D.	BENDING DIAGRAMS
S401E	726	35'-5"	Str.	Dimensions are out to out of bars.
S402E	199	42'-10"	Str.	
P401E	688	5'-6"	2"	
P402E	112	4'-10"	2"	
P403E	80	5'-6"	Str.	
P404E	56	17'-2"	Str.	
P405E	28	15'-8"	Str.	
P406E	98	13'-8"	Str.	
S501E	199	42'-10"	Str.	
S502E	200	43'-8"	3"	
S503E	798	5'-0"	Str.	
P501E	688	4'-10"	3¾"	
S601E	92	38'-0"	Str.	



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

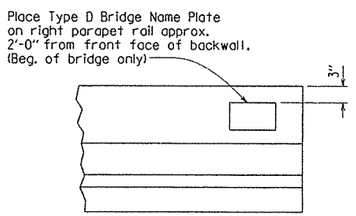


DETAIL Z

No Scale

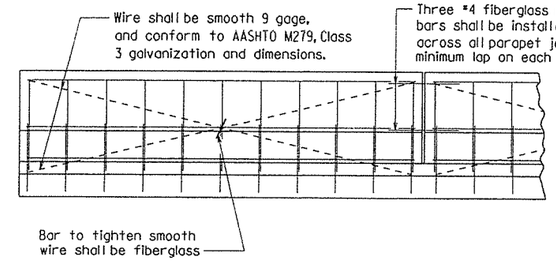
Note:
The surfaces of the ⅜" plates which will not be in contact with concrete shall be painted with aluminum epoxy paint in accordance with Section 638, or as approved by the Engineer. Only one coat is required and shall be applied in the fabricator's shop. Painting will not be paid for directly, but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

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



NAME PLATE DETAIL

No Scale

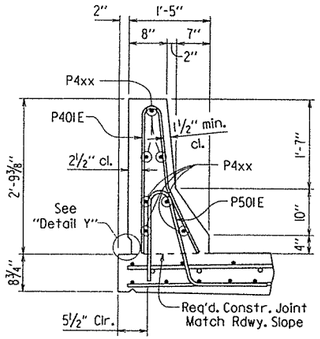


All panels shall be braced as required to prevent racking. All parapet joints shall be sawed as soon as practical to a minimum width of ¼". To control cracking before sawing, all joints must be grooved before the concrete is set. Sawing of the joints must be controlled so it will follow the grooved joint.

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

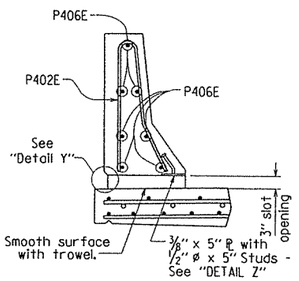
DETAILS OF OPTIONAL SLIPFORMING OF CONCRETE PARAPET RAIL

No Scale



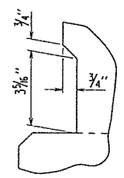
SECTION A-A

Scale: ¾" = 1'-0"



SECTION B-B

Scale: ¾" = 1'-0"



DETAIL Y

No Scale

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 5 OF 5
DETAILS OF 200'-0" CONTINUOUS COMPOSITE W-BEAM UNIT NORTH BOAT DITCH

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

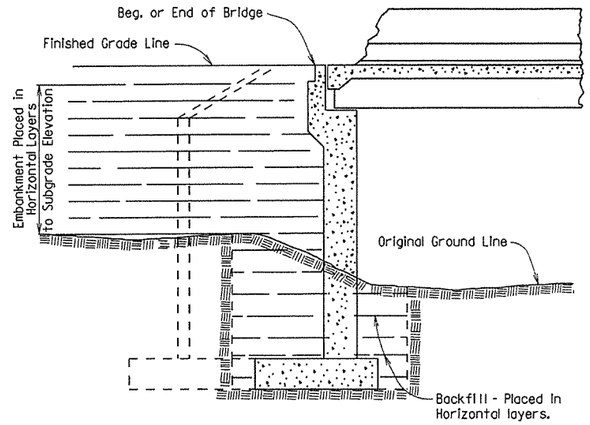
DRAWN BY: ADN DATE: 3-19-14 FILENAME: b070344x4_sl.dgn
CHECKED BY: CSR DATE: 6/18/14 SCALE: AS NOTED
DESIGNED BY: ADN DATE: 5-12-

BRIDGE NO. 07329 DRAWING NO. 56110

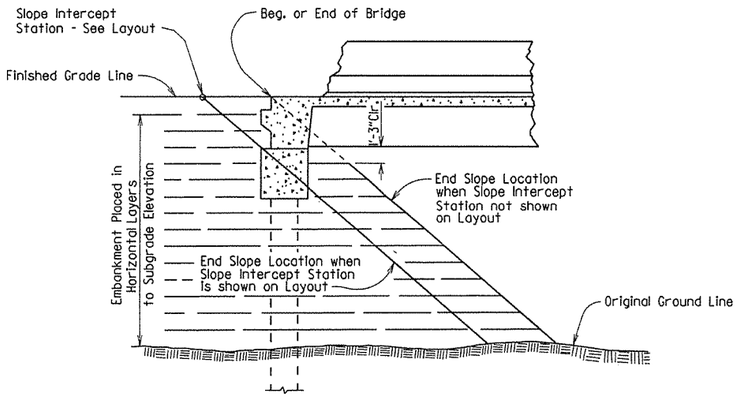
PRINT DATE: 7/14/2014

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		96	
				JOB NO.				

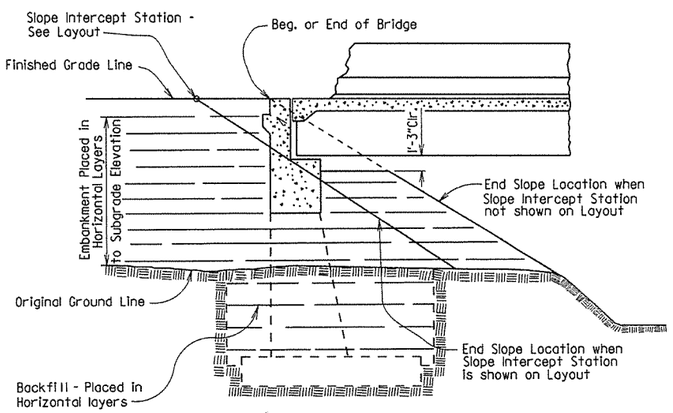
① EMBANKMENT & BACKFILL 55000



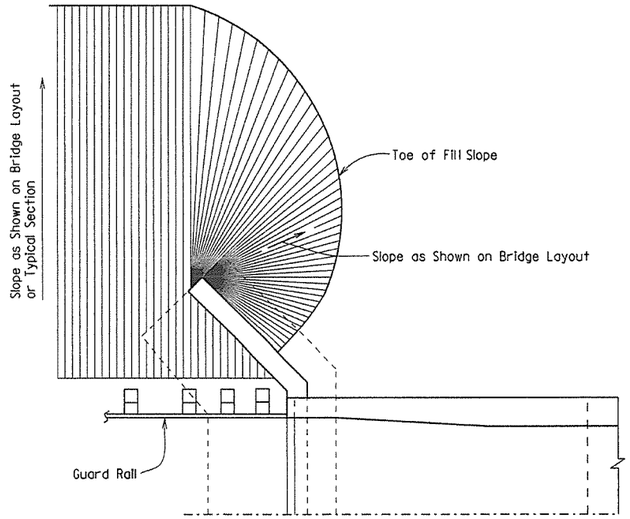
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT VERTICAL WALL ABUTMENTS



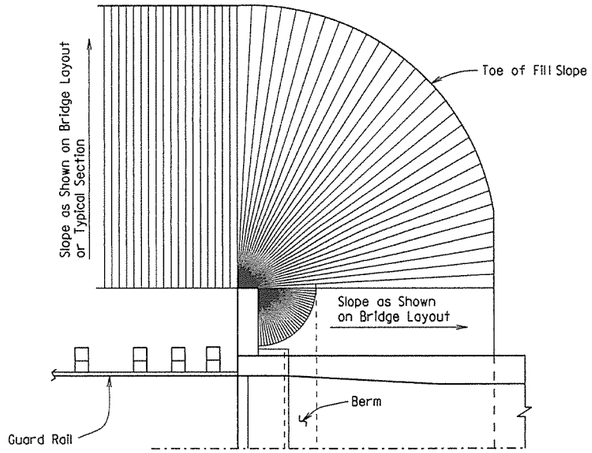
EMBANKMENT CONSTRUCTION AT SPILL-THROUGH PILE END BENTS



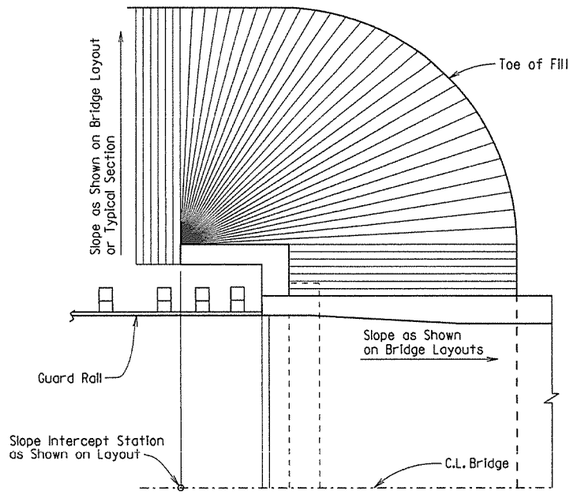
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT SPILL-THROUGH END BENTS



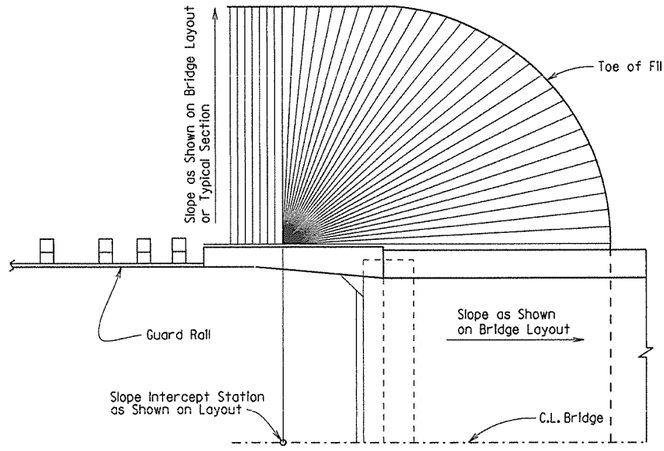
VERTICAL WALL ABUTMENTS



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.

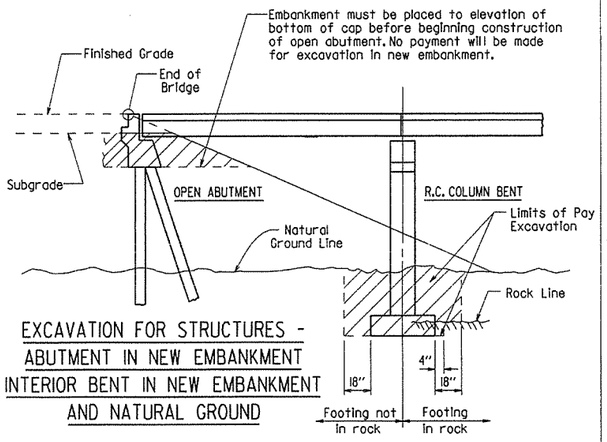
STANDARD DETAILS FOR EMBANKMENT CONSTRUCTION AND BACKFILL AT BRIDGE ENDS

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

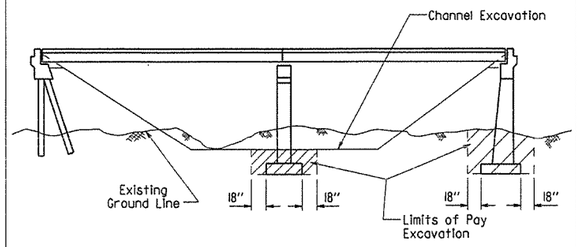
DRAWN BY: KDH DATE: 2-27-2014 FILENAME: b55000.dgn
CHECKED BY: BEF DATE: 2-27-2014 SCALE: NO SCALE
DESIGNED BY: STD. DATE: -

DRAWING NO. 55000

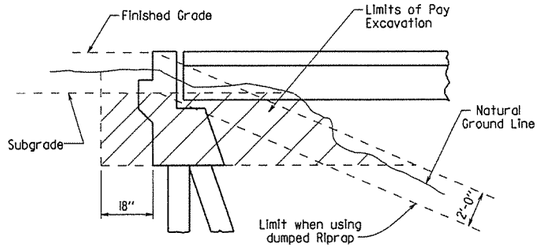
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		97	
				JOB NO.				
				①	RIPRAP & EXCAV. 55001			



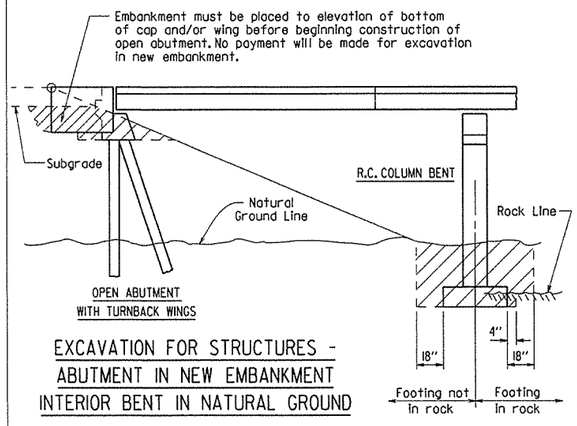
EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NEW EMBANKMENT AND NATURAL GROUND



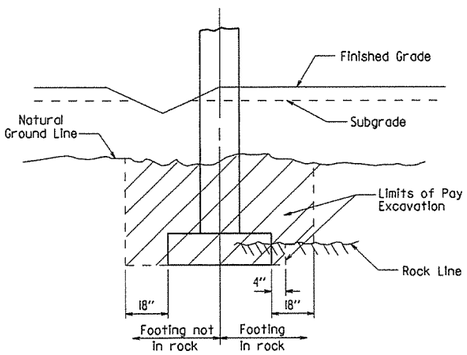
EXCAVATION FOR STRUCTURES - BRIDGE LOCATION WITH DESIGNATED CHANNEL CHANGE



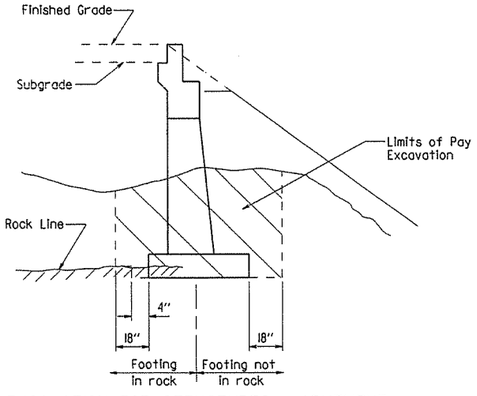
EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND



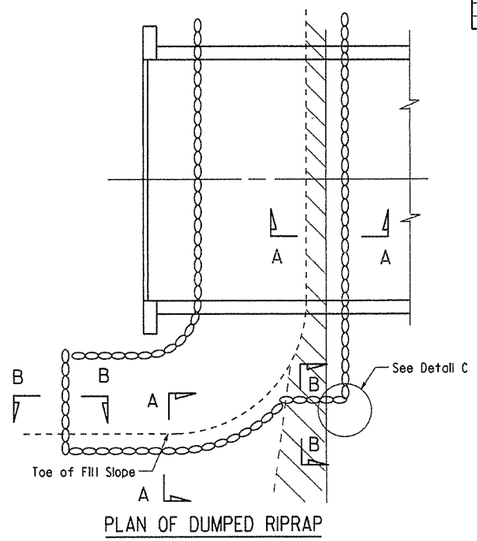
EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NATURAL GROUND



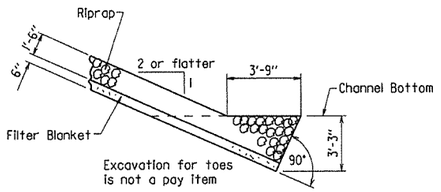
EXCAVATION FOR STRUCTURES - BENT IN ROADWAY FILL SECTION AND NATURAL GROUND



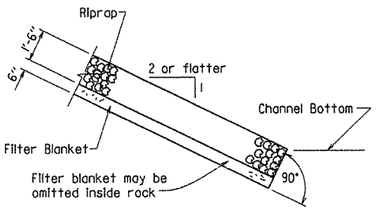
EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND AND NEW EMBANKMENT



PLAN OF DUMPED RIPRAP



SECTION A-A
(Toe Excavation in Soil)

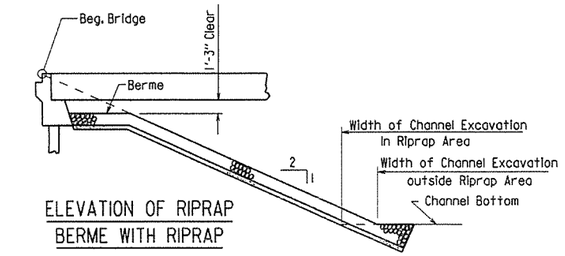


SECTION A-A
(Toe Excavation in Rock)

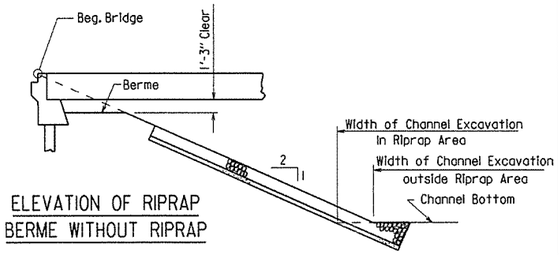
Note : Use this type of toe when rock is encountered which is in a stable condition.

Note : In lieu of an aggregate filter blanket, a synthetic fiber geotextile fabric complying with the requirements of Subsection 816.02(e) may be used.

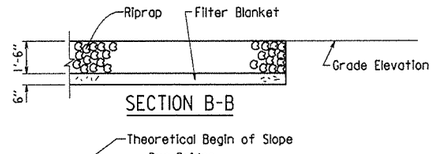
Note : Details for computing excavation for structures are included for information as to how plan quantities were calculated and for use when adjusting quantities when changing footing elevation.



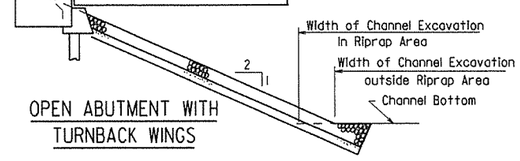
ELEVATION OF RIPRAP BERME WITH RIPRAP



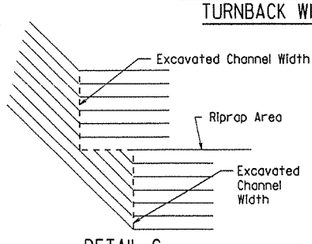
ELEVATION OF RIPRAP BERME WITHOUT RIPRAP



SECTION B-B



OPEN ABUTMENT WITH TURNBACK WINGS



DETAIL C

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

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

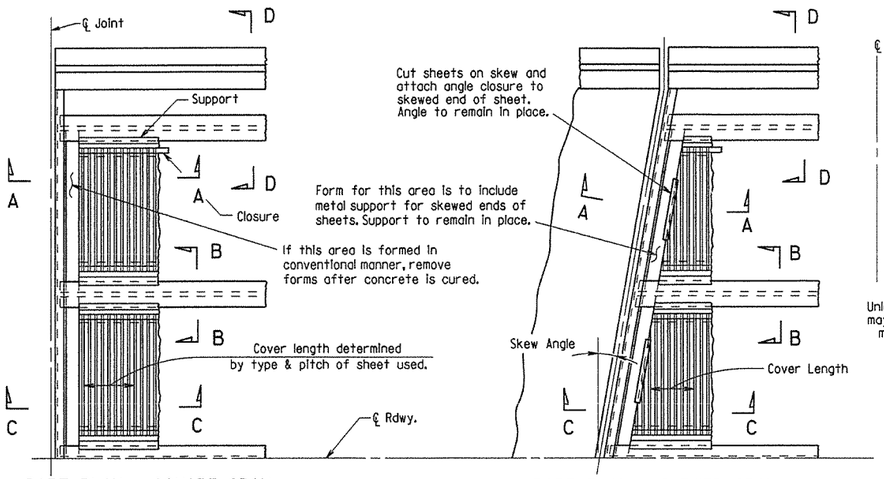
DRAWN BY: KDH DATE: 2-27-2014 FILENAME: b55001.dgn

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

DESIGNED BY: STD. DATE:

DRAWING NO. 55001

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		93	
				JOB NO.				
				①	BRIDGE DECK FORMS		55005	

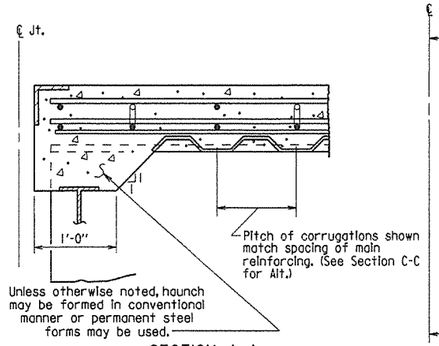


PART PLAN - SQUARE SPAN

3/8" = 1'-0"

PART PLAN - SKEWED SPAN

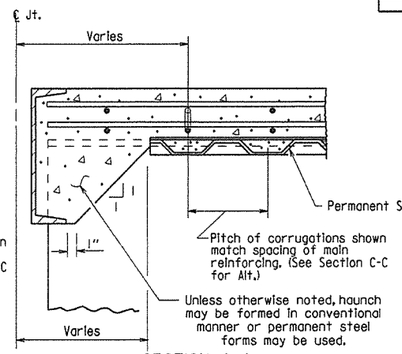
3/8" = 1'-0"



SECTION A-A

N.T.S.

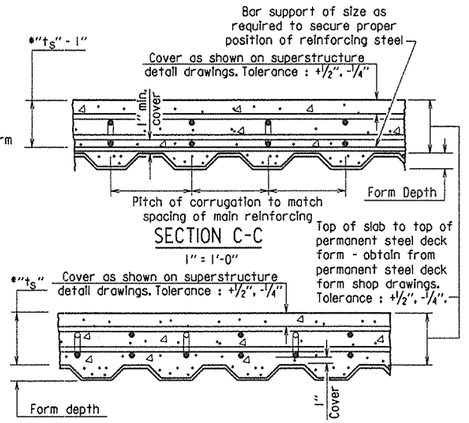
(Angle at end of span)



SECTION A-A

N.T.S.

(Channel at end of span)



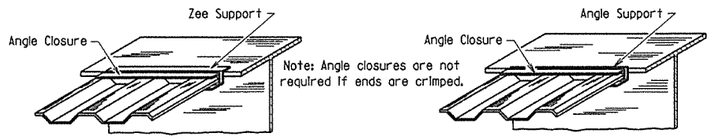
SECTION C-C

1" = 1'-0"

SECTION C-C - ALTERNATE

1" = 1'-0"

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



Note: Angle closures are not required if ends are crimped.

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.

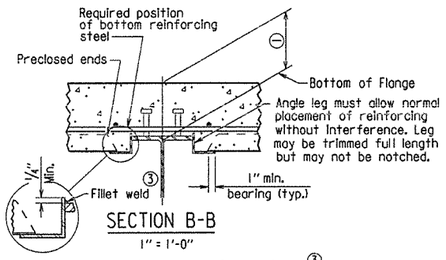
Form sheets shall be fastened to supporting members and to each other with galvanized metal screws sufficient in size and number to provide a secure attachment. Alternate methods of attachment must be approved by the Engineer.

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.

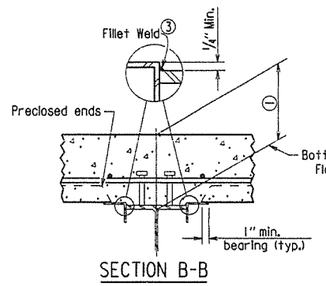
Specifications: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2014 Edition), with applicable Supplemental Specifications and Special Provisions.



SECTION B-B

1" = 1'-0"

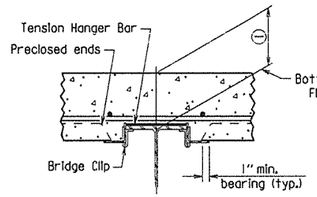
(Showing permissible support for tension flange where shear connectors are used, and for all compression flanges)



SECTION B-B

1" = 1'-0"

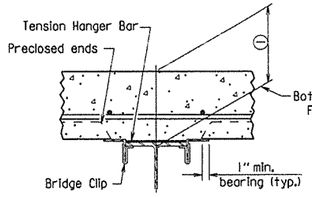
(Showing permissible support for tension flange where shear connectors are used and for all compression flanges)



SECTION B-B

1" = 1'-0"

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

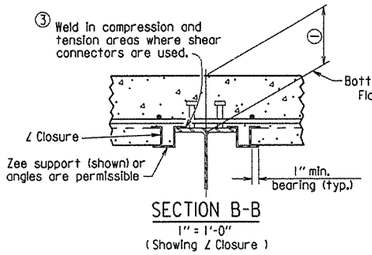


SECTION B-B

1" = 1'-0"

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

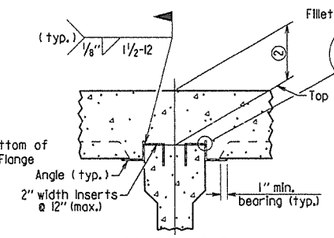
③ Minimum weld: 1/8" x 1' @ 18". More weld may be required; maximum length per weld = 11/2" (typ.)



SECTION B-B

1" = 1'-0"

(Showing ∠ Closure)

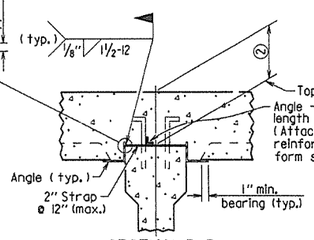


SECTION B-B

(FOR CONCRETE GIRDERS)

1" = 1'-0"

(Showing support by insert cast in girder)

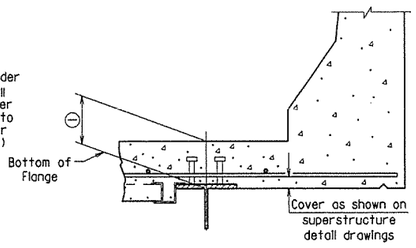


SECTION B-B

(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 + 13/4" + 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: —

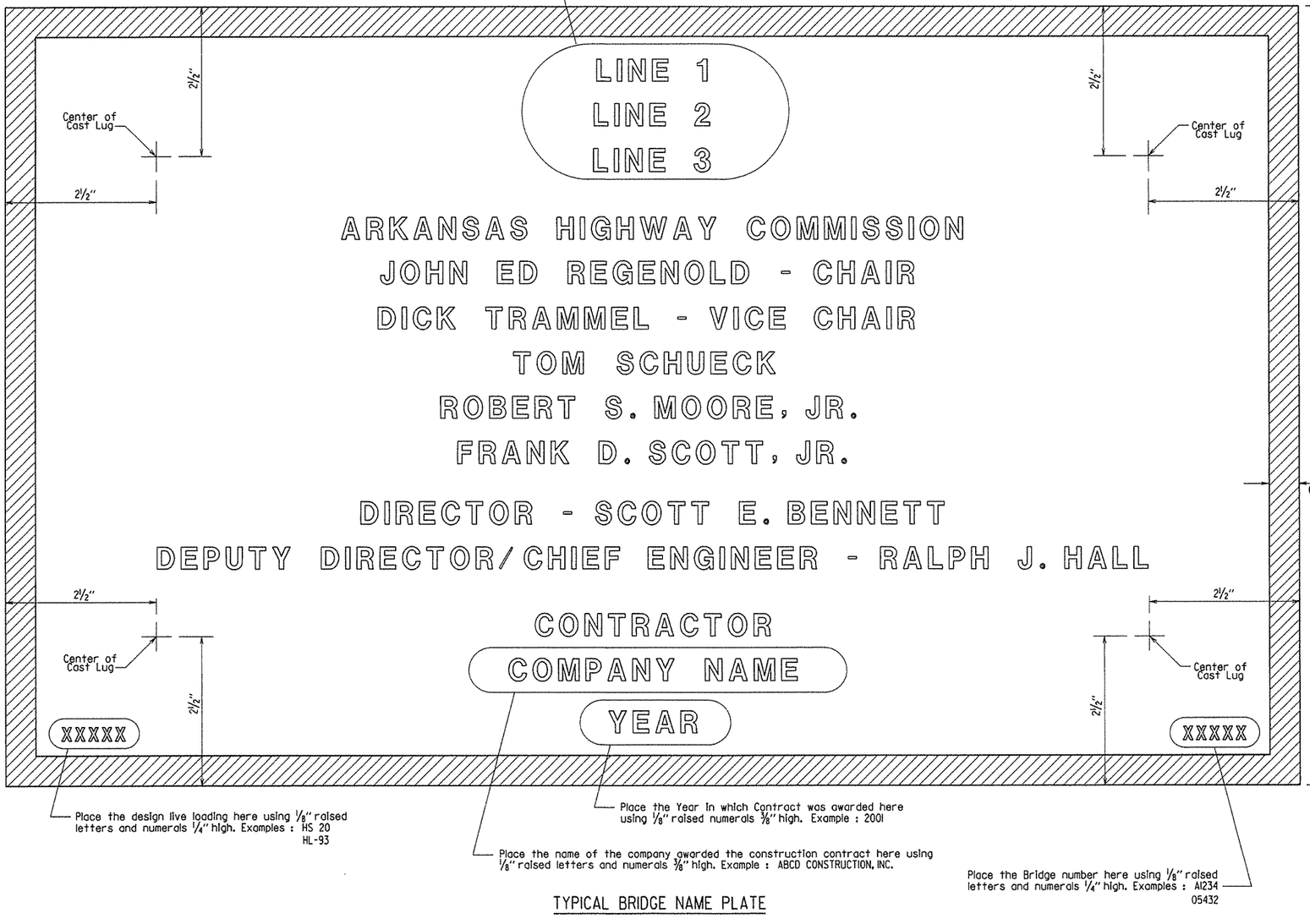
DRAWING NO. 55005

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		99	
				JOB NO.				

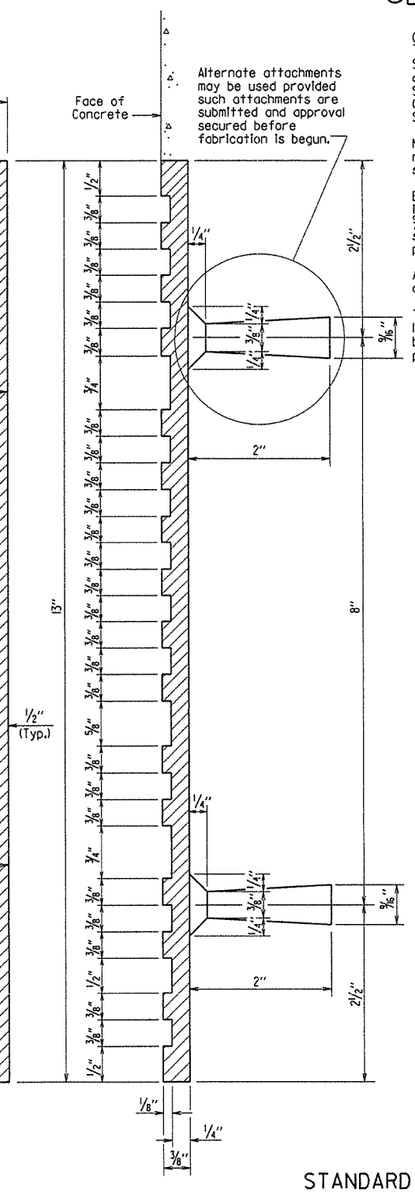
① TYPE D NAME PLATE 55010

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

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

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

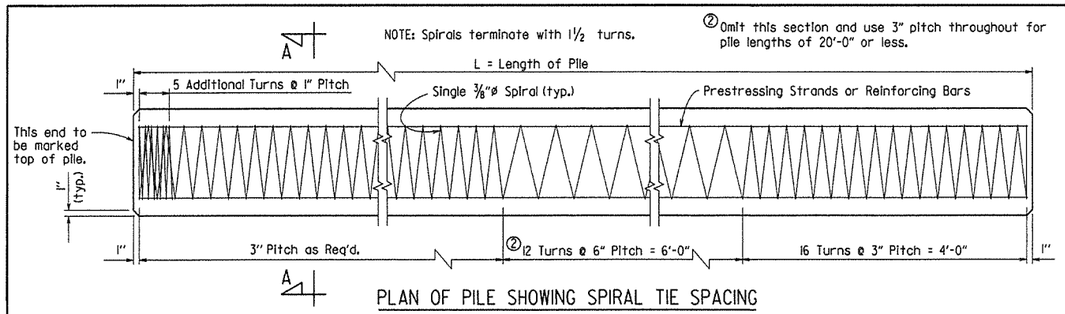
STANDARD DETAILS FOR
TYPE D BRIDGE NAME PLATE

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

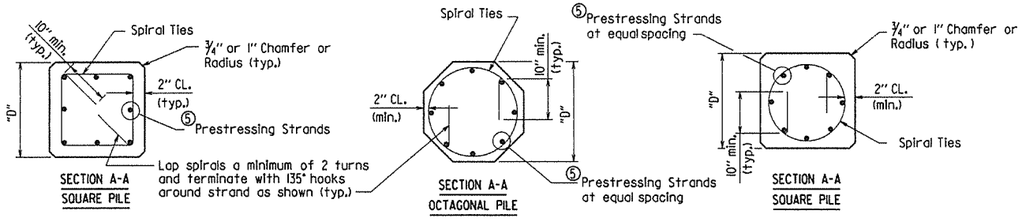
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		100	
				JOB NO.				
				①	CONC. PILES	55022		



PLAN OF PILE SHOWING SPIRAL TIE SPACING

For anchorage of pile to bent, see Bent Details.

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



PRESTRESSED CONCRETE PILES

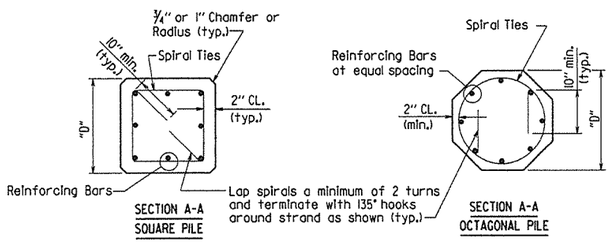
① Number based on initial pre-stress force of "B" x Ultimate Tensile Stress, Prestress Losses and min. 700 psi Unit Prestress on concrete after Losses.

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

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

PRESTRESSED CONCRETE PILE PROPERTIES

	Grade	Strand Diameter	① Number of Strands per Size "D"					Minimum Ultimate Tensile Strength Per Strand (Lbs.)	Initial Prestressing Force Per Strand (Lbs.)
			16" Oct.	18" Oct.	④ 14" Sq.	16" Sq.	18" Sq.		
Stress-Relieved	250	7/16"	11	13	10	13	16	27,000	18,900
		½"	8	10	8	10	12	36,000	25,200
	270	7/16"	9	11	8	12	14	31,000	21,700
		½"	7	9	6	8	10	41,300	28,900
Low Relaxation	250	7/16"	9	11	8	11	14	27,000	20,200
		½"	7	9	6	8	10	36,000	27,000
	270	7/16"	8	10	7	9	12	31,000	23,300
		½"	6	8	6	7	9	41,300	31,000

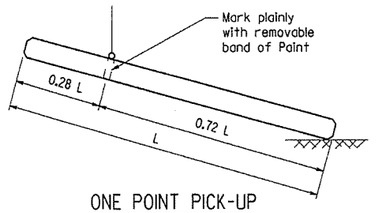


NON-PRESTRESSED PILE REINFORCING

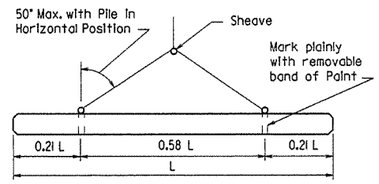
Pile Size	No. Req'd.	Bar Size
16" Oct.	8	# 7
18" Oct.	8	# 7
④ 14" Sq.	8	# 7
16" Sq.	8	# 7
18" Sq.	8	# 8

④ 14" sq. piles to be used in Seismic Performance Zone 1 only.

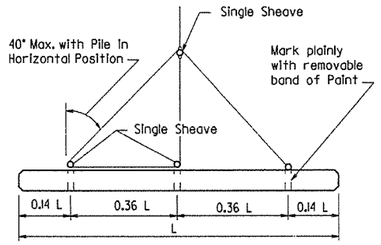
NON-PRESTRESSED CONCRETE PILES



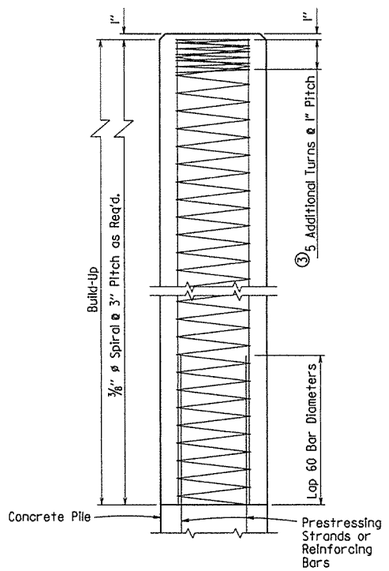
ONE POINT PICK-UP



TWO POINT PICK-UP



THREE POINT PICK-UP



BUILD-UP

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

MAXIMUM PICKUP LENGTHS "L"

Type of Pick-Up	Prestressed		Non-Prestressed	Prestressed			Non-Prestressed		
	16" Oct.	18" Oct.	16" or 18" Oct.	④ 14" Sq.	16" Sq.	18" Sq.	④ 14" Sq.	16" Sq.	18" Sq.
One Point	52'	55'	46'	55'	59'	63'	52'	51'	55'
Two Point	75'	80'	67'	79'	84'	90'	75'	74'	79'
Three Point	105'	112'	93'	110'	117'	126'	104'	103'	111'

GENERAL NOTES:

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

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

SEISMIC PERFORMANCE ZONES: 1 & 2

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

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

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

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

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

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

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

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

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

ADDITIONAL NOTES FOR PRESTRESSED PILES ONLY:

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

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

ADDITIONAL NOTES FOR NON-PRESTRESSED PILES ONLY:

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

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

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

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

BRIDGE ENGINEER

STANDARD DETAILS FOR CONCRETE PILES

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

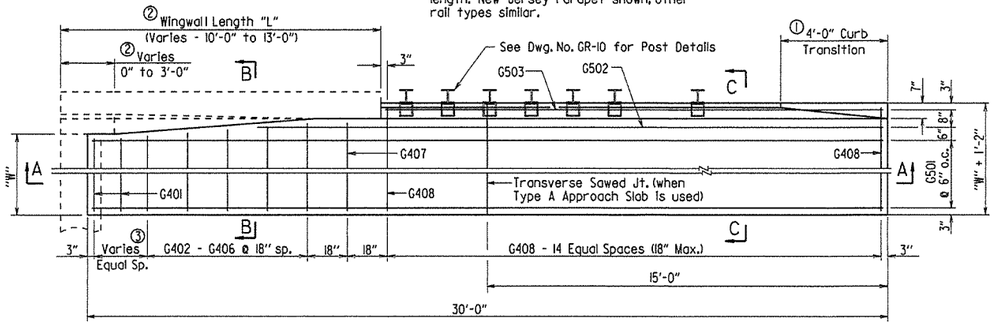
DRAWN BY: KDH DATE: 2-27-2014 FILENAME: b55022.dgn
CHECKED BY: BEF DATE: 2-27-2014 SCALE: NO SCALE
DESIGNED BY: STD. DATE: ——

DRAWING NO. 55022

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

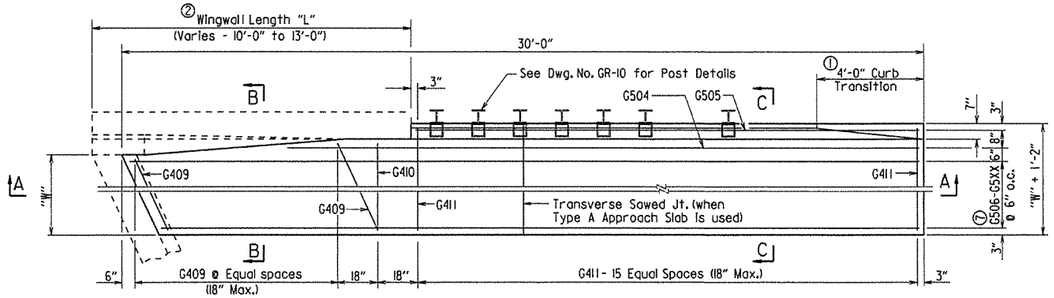
① TYPE A GUTTERS 55030A

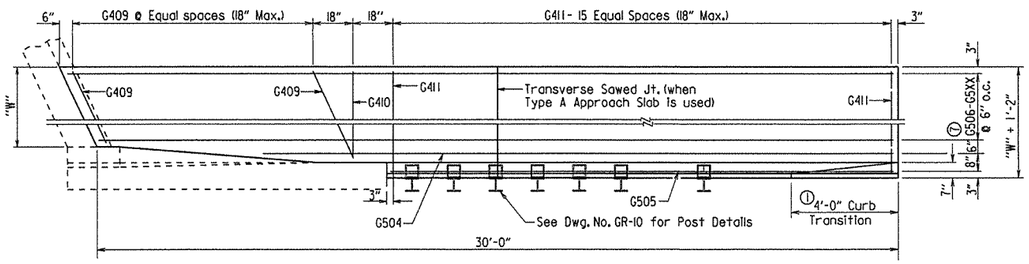
② See End Bent Details for actual wingwall length. New Jersey Parapet shown, other rail types similar.



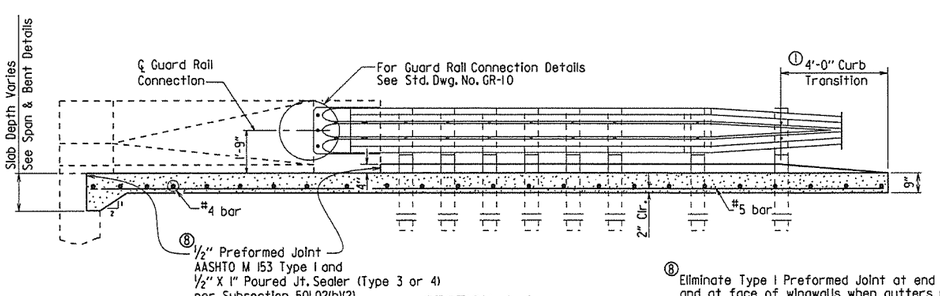
③ Number of G401 bars vary with wingwall length - See Bar List

HALF PLAN OF APPROACH GUTTERS FOR SQUARE BRIDGE





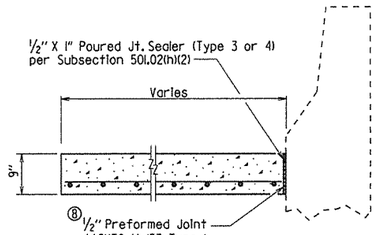
PLAN OF APPROACH GUTTERS FOR SKEWED BRIDGE



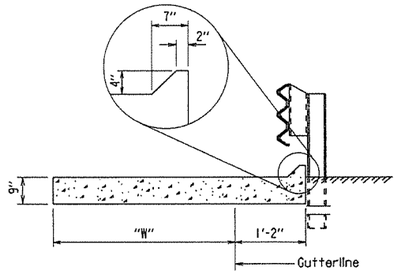
SECTION A-A

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.

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.

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.

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

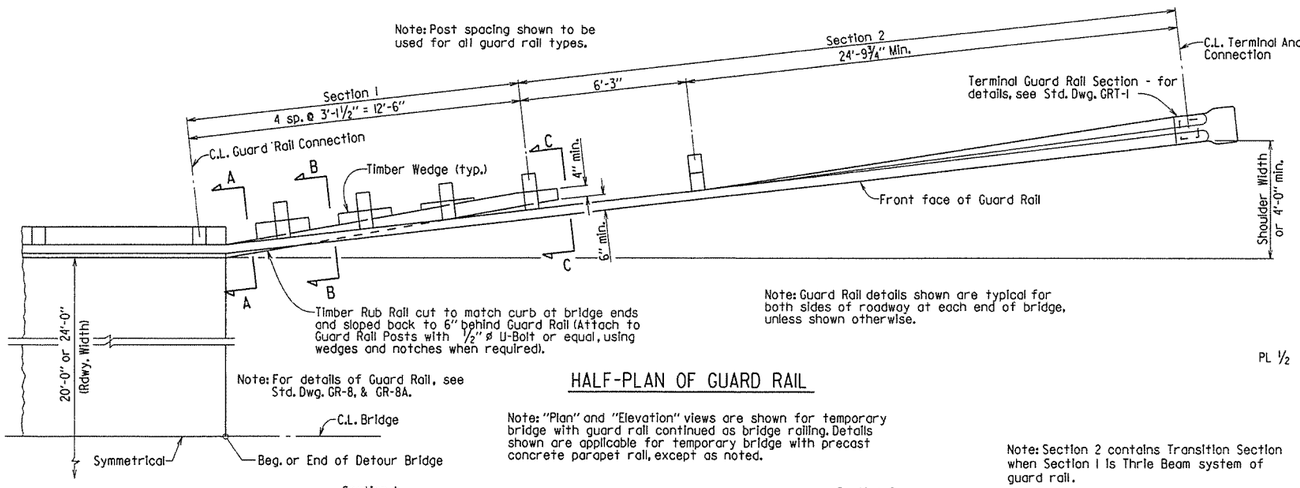
LITTLE ROCK, ARK.

DRAWN BY: A.M.S. DATE: 2/27/2014 FILENAME: b55030a.dgn
CHECKED BY: K.W.Y. DATE: 2/27/2014 SCALE: 3/8" = 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.		102	
				JOB NO.				
						TEMP. BRIDGE	55054	

Note: Post spacing shown to be used for all guard rail types.

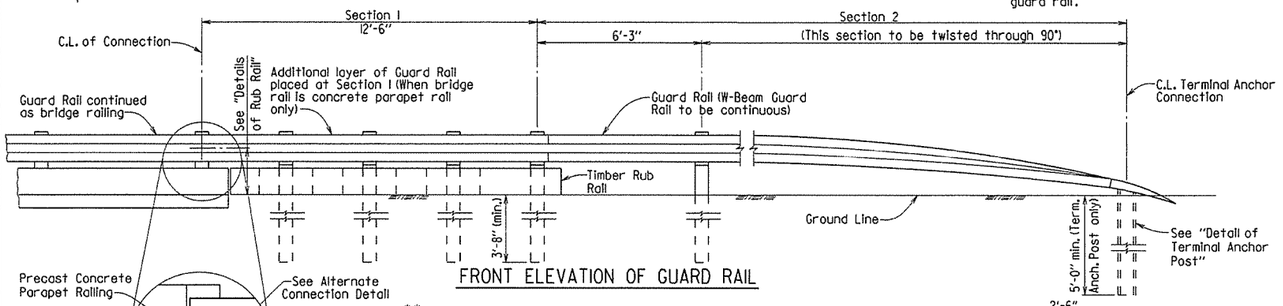


Note: Guard Rail details shown are typical for both sides of roadway at each end of bridge, unless shown otherwise.

HALF-PLAN OF GUARD RAIL

Note: "Plan" and "Elevation" views are shown for temporary bridge with guard rail continued as bridge railing. Details shown are applicable for temporary bridge with precast concrete parapet rail, except as noted.

Note: Section 2 contains Transition Section when Section 1 is Thrie Beam system of guard rail.

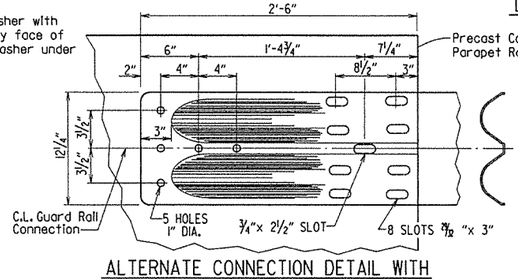


FRONT ELEVATION OF GUARD RAIL

Note: For details of Thrie Beam system of guard rail, see Std. Dwg. GR-10 & GR-10A. Thrie Beam rail and five bolt connection as shown on GR-10 are required when precast rail has five cast holes for guard rail connection.

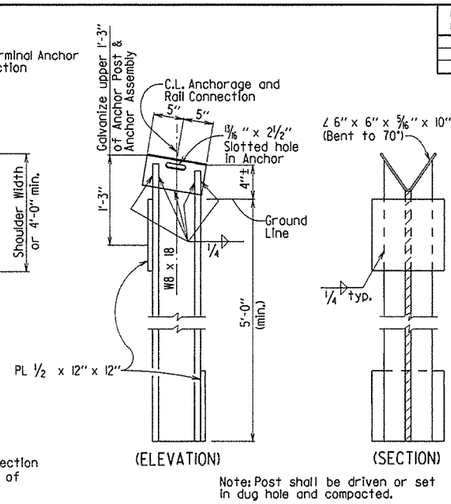
W-BEAM GUARD RAIL CONNECTION AT CONCRETE PARAPET RAIL

Note: This guard rail connection will only be allowed on precast concrete parapet rail units with a 12½" x 14" x 3⅜" notch at the end of the unit for connection of guard rails.



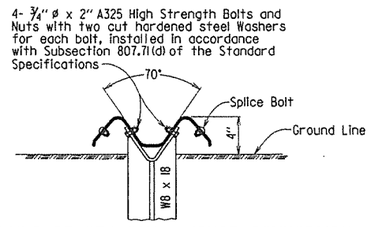
ALTERNATE CONNECTION DETAIL WITH SPECIAL END SHOE FOR W-BEAM GUARD RAIL CONNECTION AT CONCRETE PARAPET RAIL

Note: Special End Shoe and four ⅞" ø x 2½" H.S. Bolts are required when concrete insert anchor assembly is present in precast rail unit.



Note: Post shall be driven or set in dug hole and compacted.

DETAILS OF TERMINAL ANCHOR POST



DETAILS OF TERMINAL ANCHOR CONNECTION

GENERAL NOTES

Bridge End Protection is required on both sides of roadway at both ends of temporary bridge. The end protection system shall consist of a minimum of two end sections (Section 1 and Section 2). If additional guard rail is used, it shall be placed in Section 2 and shall have a maximum post spacing of 6'-3".

If W-Beam Guard Rail is also used as Bridge Rail, it shall be continuous from terminal anchor post to terminal anchor post with splices as shown on Std. Drwg. GR-8.

A doubled guard rail beam section (One W-Beam Rail section or one Thrie Beam Rail section nested inside the other) shall be required for Section 1 if the guard rail is not continued as bridge rail, but connects directly to a precast concrete parapet bridge rail end.

Rub rails shown in Section 1 are representative of members required to transition the curb or wheel guard section to a minimum distance behind the face of guard rail.

Timber rub rail, regardless of species, must be of equal or better strength than no. 2 southern pine or douglas fir, graded by the standard grading rules. All timber widths and thicknesses are shown as nominal.

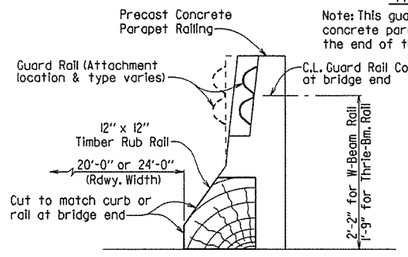
Except as noted, bolts shall conform to the requirements of ASTM A 307 and minimum dimensions as shown. Malleable or cast iron washers to be used under all bolt heads and nuts bearing on timber. High strength bolts shall conform to Section 807.

Guard rail as described in Subsection 617.01 of the Standard Specifications and these plans shall be constructed in accordance with Subsection 617.03. Subsection 617.02 is modified to allow the use of materials consistent with the requirements of Section 603.

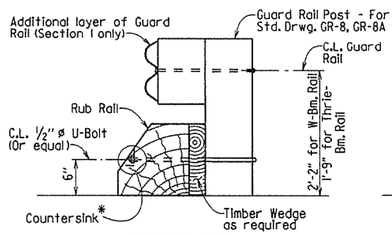
Payment: The bridge end protection system completed and accepted will not be paid for directly, but shall be included in the contract unit price bid per linear foot for temporary bridge structure, which price shall be full compensation for furnishing materials and erecting guard rail, line posts, blockouts, rub rails, terminal anchor posts, etc.; and for all labor, tools, equipment and incidentals necessary to complete the work.

GUARD RAIL CONNECTION COMBINATIONS

BRIDGE RAIL TYPE	GUARD RAIL AND CONNECTION TYPE
Guard Rail continued as bridge railing	W-Beam Guard Rail. See Std. Drwg. GR-8 for splice details.
Concrete Parapet with 12½" x 14" x 3⅜" notch and two cast in holes	W-Beam Guard Rail fastened with two high-strength bolts as shown; blunt end on guard rail. Guard Rail doubled at Section 1.
Concrete Parapet with Concrete Insert Anchor assembly (4-Bolt embedded Anchor) flush with rail face	W-Beam Guard Rail fastened with four high-strength bolts; Special End Shoe. Guard Rail doubled at Section 1.
Concrete Parapet with 5 cast in holes	Thrie Beam Guard Rail; five high-strength through bolts with back-up plate; special end shoe as shown on Std. Dwg. GR-10. Guard Rail doubled at Section 1. Section 2 contains transitional rail and W-Beam Guard Rail.

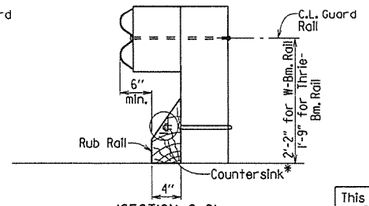


(SECTION A-A)



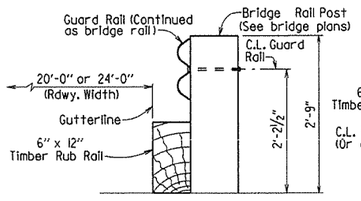
(SECTION B-B)

DETAILS OF RUB RAIL (CONC. PARAPET BRIDGE RAIL)

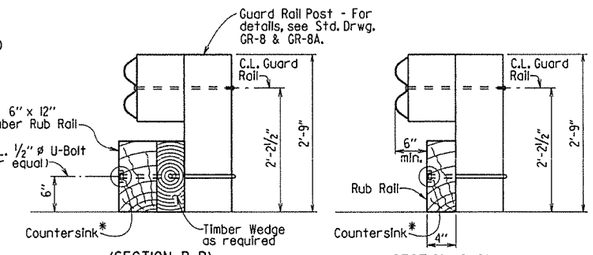


(SECTION C-C)

* U-Bolt Assembly, or equal, shall not project beyond rdwy. face of Rub Rail at any location.



(SECTION A-A)



(SECTION B-B) (SECTION C-C)

DETAILS OF RUB RAIL (CONTINUOUS W-BEAM RAIL)

STANDARD DETAILS FOR TEMPORARY BRIDGE STRUCTURE BRIDGE END PROTECTION SYSTEM

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

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

BRIDGE ENGINEER

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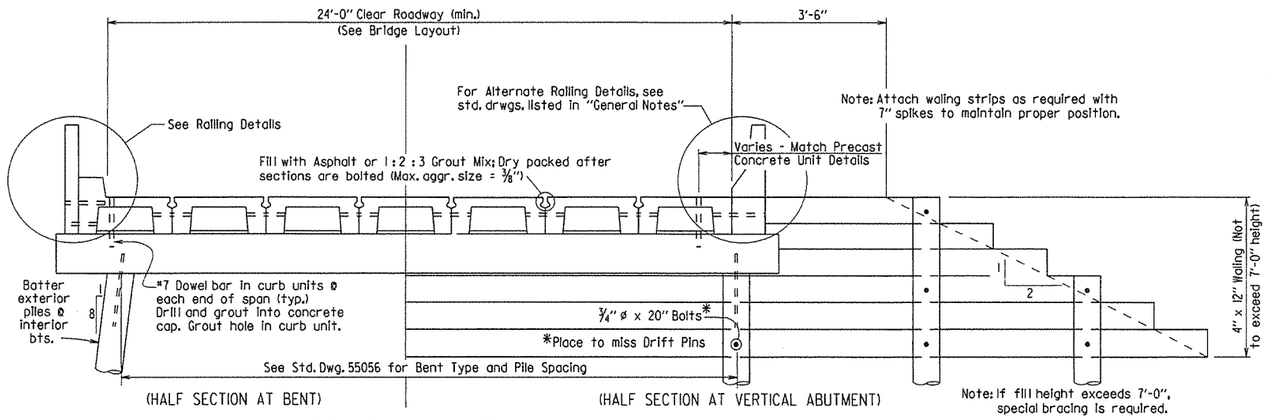
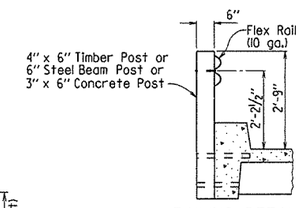
DRAWN BY: JYP DATE: 4-17-14
CHECKED BY: AMS DATE: 4-17-14
DESIGNED BY: STD. DATE: —
FILENAME: b55054.dgn
SCALE: No Scale

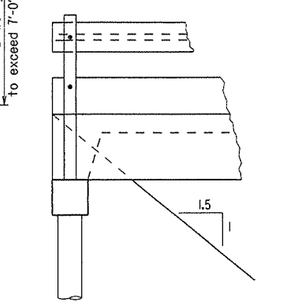
DRAWING NO. 55054



TYPICAL ROADWAY SECTION

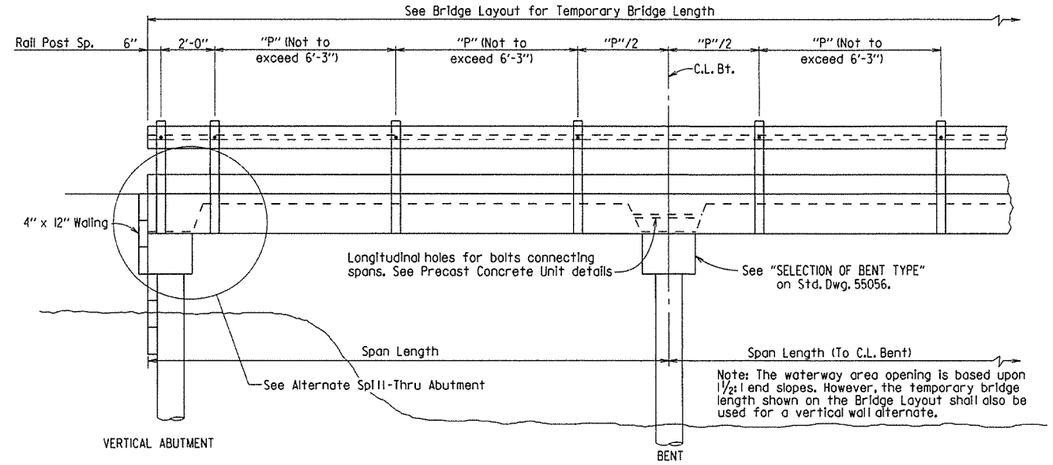


RAILING DETAILS

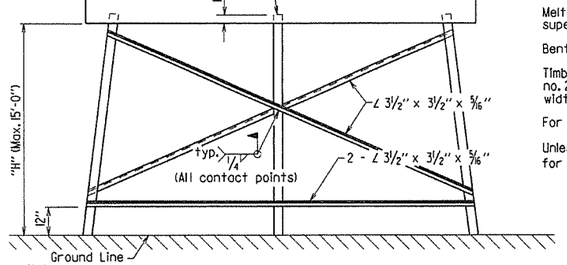


Note: Piles for Alternate Abutment to be driven after embankment is in place.

ALTERNATE SPILL-THRU ABUTMENT



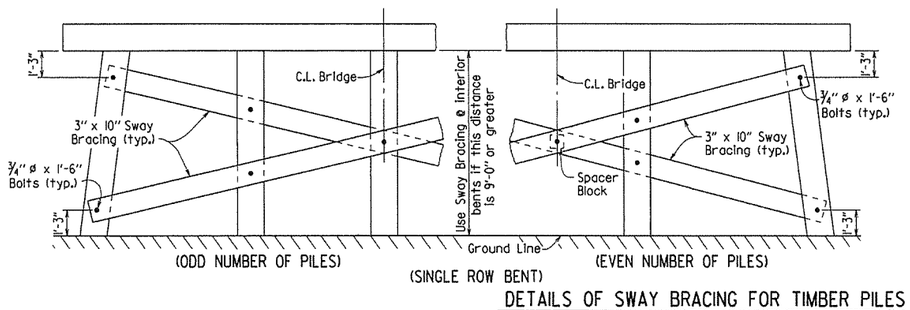
LONGITUDINAL SECTION



Note:
All bracing shall be cut and welded in the field. Each brace shall be furnished in one piece. Payment for any bracing required shall be considered incidental to Item 603 "Temporary Bridge Structure".

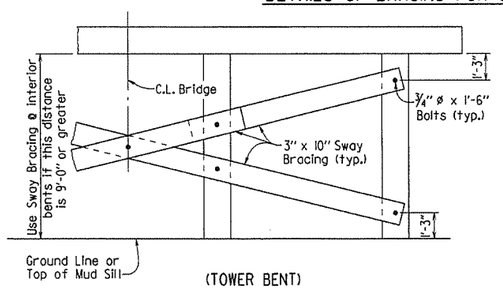
Omit bottom bracing when "H" is less than 10'. Omit all bracing when "H" is less than 5'. When "H" exceeds 15', additional X-bracing is required to provide a maximum unbraced pile length of 14'.

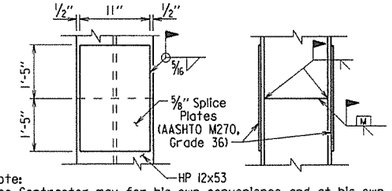
DETAILS OF BRACING FOR STEEL PILES



DETAILS OF SWAY BRACING FOR TIMBER PILES

Note: Sway Bracing, if required, shall be used on both lines of piles for Tower Bents.





Note:
The Contractor may for his own convenience and at his own expense provide as many as three splices per pile for steel bearing piling. Minimum spacing between splices shall be 5 ft. A proprietary steel pile splicer sufficient to develop the full strength of the section may be substituted for the details shown. Pile splicers shall be installed in accordance with manufacturer's recommendations.

PILE SPLICE DETAIL

SHEET 1 OF 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		103	
				JOB NO.				
						TEMP. BRIDGE	55055	

GENERAL NOTES

DESIGN SPECIFICATIONS: AASHTO Standard Specifications for Highway Bridges, 2002 Edition, with current interim specifications.

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

SEISMIC PERFORMANCE ZONE: I

DESIGN LIVE LOADS: H 15-44 (No Overload).

DESIGN DEAD LOADS: 50 lbs. per cu. ft. for lumber
150 lbs. per cu. ft. for concrete

Precast Concrete Units shall comply with the requirements of AHTD standard drawings and special provisions. Drawings for old style units are within the drawing series 5291 thru 5307 and 14800 thru 14899. New style units (Current Design) are within the drawing series 15190 thru 15400.

Load Factor Design is used for the new style precast concrete units. Allowable Stress Design is used for the old style precast concrete units and timber components. The allowable unit stresses used assume normal duration of loading for stress grades of sawn lumber and are as follows:
fb=1200 psi
fv=85 psi

Concrete shall be Class S with a minimum 28 day compressive strength f'c = 3500 psi unless otherwise noted.

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

Structural Steel shall be AASHTO M 270, Grade 36 unless otherwise noted.

Timber piling shall comply with Section 818 of the Standard Specifications and shall be driven to a minimum bearing capacity of 20 tons per pile. Steel piling shall be HP12x53 and shall be driven to a minimum bearing capacity of 44 tons per pile.

Malleable or cast iron washers shall be used under all bolt heads and nuts bearing on timber. Standard washers shall be provided under all bolt heads and nuts in connection with concrete.

Bolts shall conform to the requirements of ASTM A 307. ASTM A 307 Threaded Rods may be used in lieu of bolts. Minimum dimensions are shown for bolts, dowels, and drift pins.

Grout placed around Drift Pins in piles shall be allowed to cure for 72 hours before caps are used to support the superstructure. Grout to consist of one part portland cement to two parts sand.

Melted sulfur may be used in lieu of grout placed around drift pins. The superstructure may be placed as soon as the sulfur has hardened.

Bent caps to be handled from points approximately 5' from the ends.

Timber material, regardless of species, must be of equal or better strength than no. 2 southern pine or douglas fir, graded by the standard grading rules. All timber widths and thicknesses are shown as nominal.

For additional notes concerning "Bridge End Protection System", see Std. Dwg. 55054.

Unless otherwise noted, the Temporary Bridge Structure shall comply with and be paid for in accordance with Section 603.

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

BRIDGE ENGINEER

STANDARD DETAILS FOR TEMPORARY BRIDGE STRUCTURE PRECAST CONCRETE SPANS 24' ROADWAY WIDTH

ROUTE SEC.

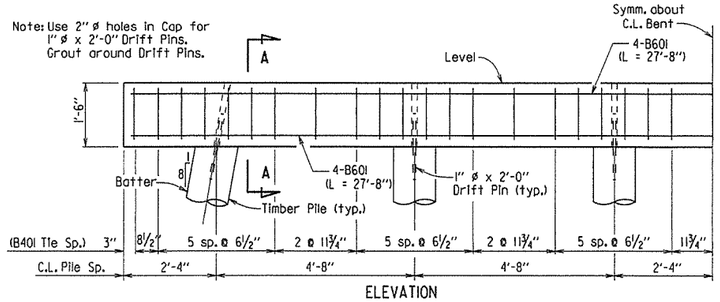
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: JYP DATE: 4-17-14 FILENAME: b55055.dgn
CHECKED BY: AMS DATE: 4-17-14 SCALE: No Scale
DESIGNED BY: STD. DATE: —

DRAWING NO. 55055

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		104	
				JOB NO.				
				①		TEMP. BRIDGE	55056	

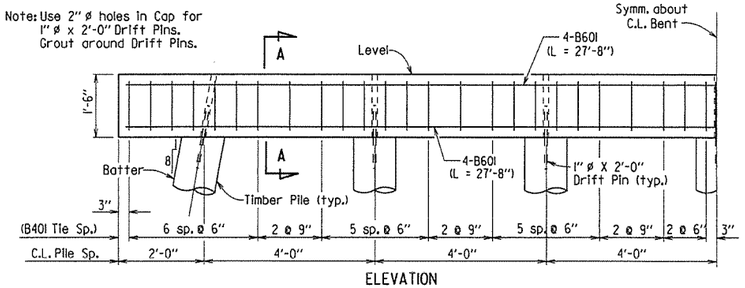
Note: Reinforcing steel in cap shall be placed to not interfere with dowel bars.



ELEVATION

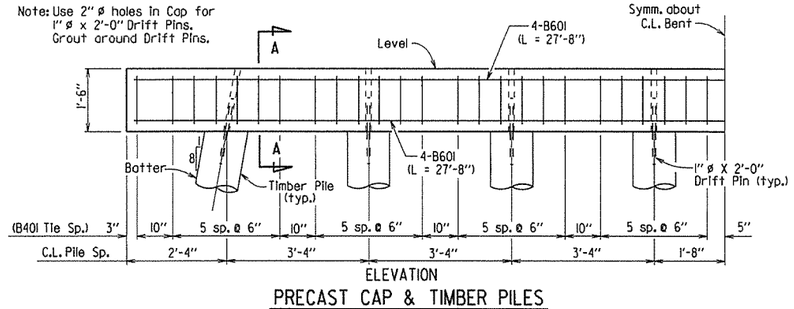
PRECAST CAP & TIMBER PILES
("SI" + "S2" ≤ 38')

"S" = Span Length



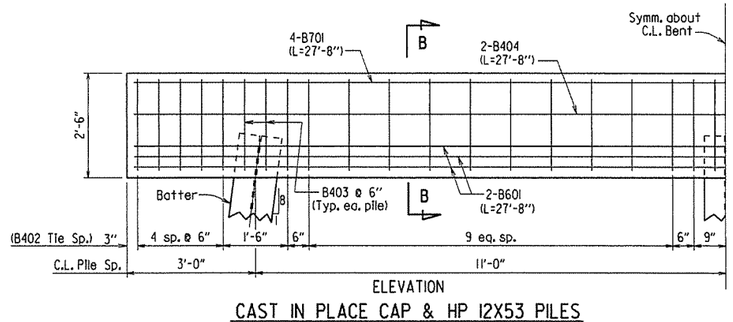
ELEVATION

PRECAST CAP & TIMBER PILES
(38' < "SI" + "S2" ≤ 50')



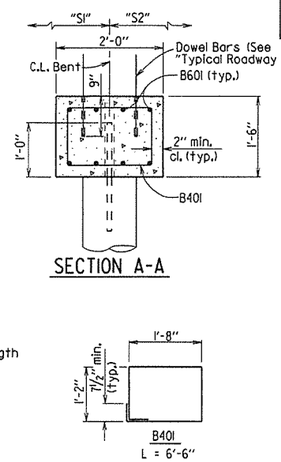
ELEVATION

PRECAST CAP & TIMBER PILES
(50' < "SI" + "S2" ≤ 62')



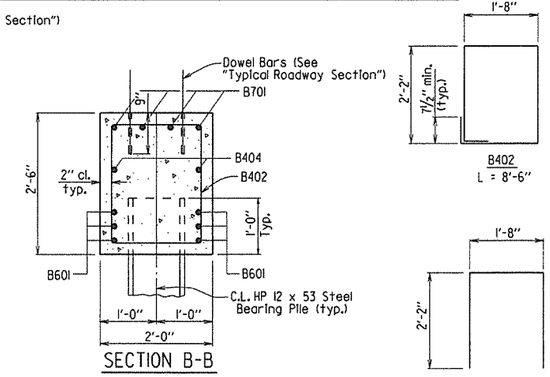
ELEVATION

CAST IN PLACE CAP & HP 12X53 PILES

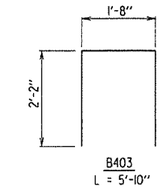


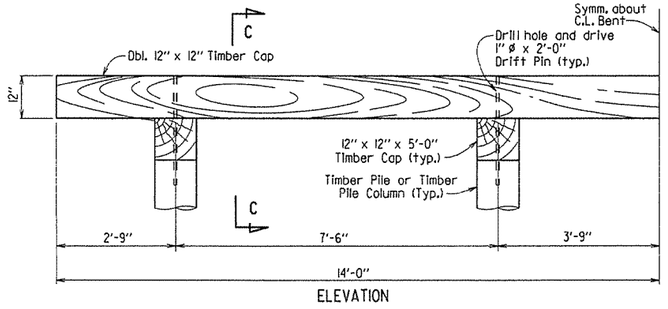
SECTION A-A

NOTE: THE ENDS OF ALL PRECAST SPANS SHALL BE FIXED TO THE CAP USING 1 DOWEL BAR IN EACH OF THE CURB UNITS.



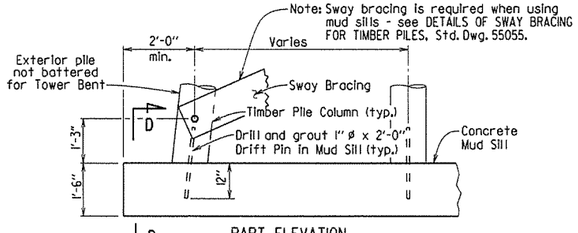
SECTION B-B





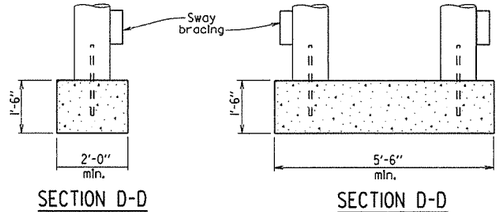
ELEVATION

TOWER BENT - TIMBER CAP & PILES



PART ELEVATION

MUD SILL DETAILS



SECTION D-D
(When bottom of cap to top of mud sill is 10' or less)

SECTION D-D
(When bottom of cap to top of mud sill is greater than 10')

SECTION C-C

SELECTION OF BENT TYPES

These temporary bridge drawings provide the following bent types:
- Driven timber piles with precast concrete cap.
- Driven steel HP 12x53 piles with cast in place concrete cap.
- Tower bent with driven timber piles and timber cap.
- Mud sill with timber pile columns and precast concrete cap.
- Tower bent with mud sill and timber pile columns and timber cap.

Guidelines to be used in determining the appropriate bent type are:

1) Driven piles may be used at intermediate bents if a pile penetration of at least 15' below the ground line can be obtained. At end bents, a pile penetration of at least 5' below the bottom of cap is required. Pile penetration measurements at end bents can include embankment, but fill material may not be placed around intermediate bent piles in order to meet the 15' requirement.

2) If driven timber piles are used at intermediate bents and the distance from the bottom of cap to ground line exceeds 15' at any intermediate bent, tower bents must be used at the minimum rate of one tower bent for every 160' of total bridge length. Tower bent(s), when required, shall be placed at the bent location(s) having the greatest distance from bottom of cap to ground line.

3) If piles cannot be practically driven at a bent, mud sills shall be used. All soft and yielding material shall be removed from the bearing area before placing the sill concrete.

4) Timber piles shall be used as columns in mud sills. The column spacing shall be the same as that used for driven timber pile bents for the appropriate span lengths involved.

5) If a mud sill is to be used and the distance from the bottom of cap to ground line is more than 10', a tower bent with mud sill must be used at that location.

6) A timber cap may be used only if tower bents are used.

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

BRIDGE ENGINEER

SHEET 2 OF 2

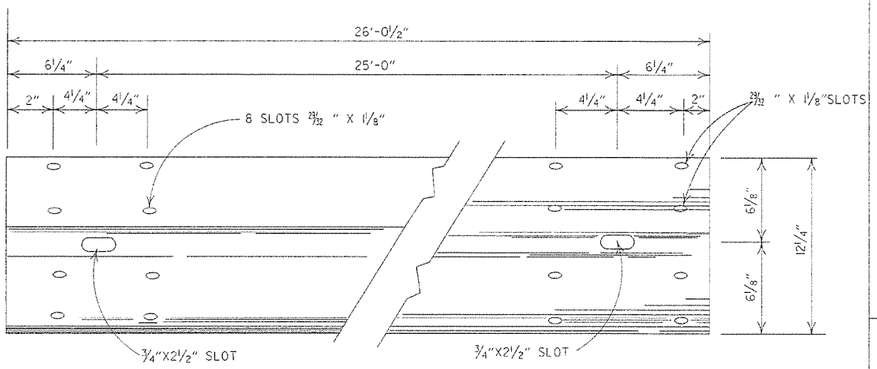
STANDARD DETAILS FOR TEMPORARY BRIDGE STRUCTURE PRECAST CONCRETE SPANS 24' ROADWAY WIDTH

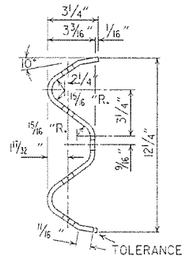
ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: JYP DATE: 4-17-14 FILENAME: b55055.dgn
CHECKED BY: AMS DATE: 4-17-14 SCALE: No Scale
DESIGNED BY: STD. DATE: —

DRAWING NO. 55056

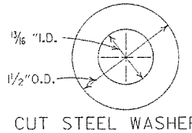




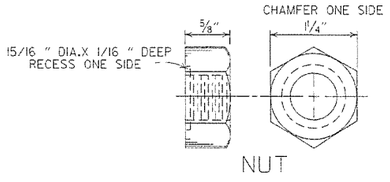
DETAILS OF W-BEAM GUARD RAIL

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

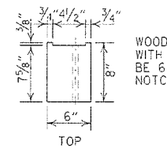
SPLICE BOLT
POST BOLT - SAME EXCEPT LENGTH



CUT STEEL WASHER

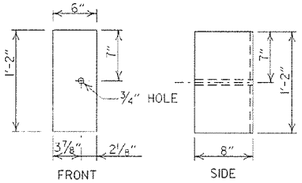


NUT

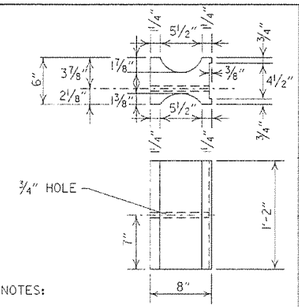


WOOD BLOCKOUT USED WITH WOOD POSTS SHALL BE 6"x8"x1'-2" WITH NO NOTCH REQUIRED.

TOP



WOOD BLOCKOUT (W-BEAM)

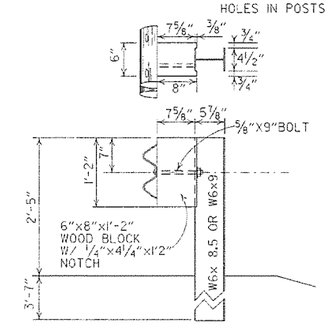


NOTES:

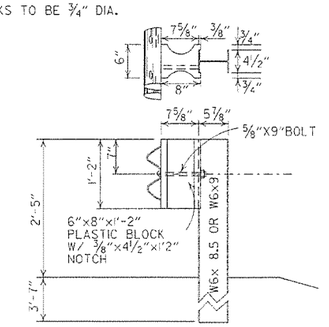
1. SIMILAR SHAPED PLASTIC BLOCKOUTS MAY BE USED AS LONG AS THEY MEET NCHRP-350 TEST LEVEL 3 SPECIFICATIONS OR REQUIREMENTS FOR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).
2. DIMENSIONS ARE SUBJECT TO MANUFACTURERS TOLERANCES.

PLASTIC BLOCKOUT (W-BEAM)

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

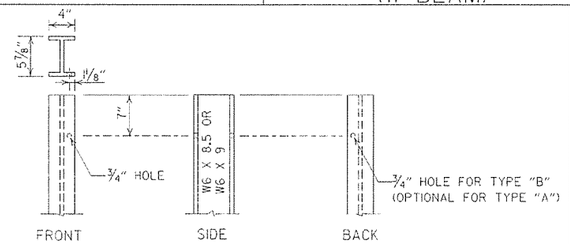


WOOD BLOCKOUT CONNECTIONS

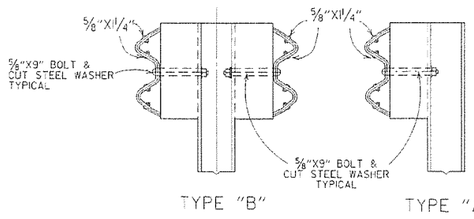


PLASTIC BLOCKOUT CONNECTIONS

DETAILS OF STEEL LINE POST CONNECTIONS (W-BEAM)



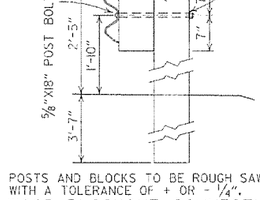
STEEL POST



TYPE "B" TYPE "A"

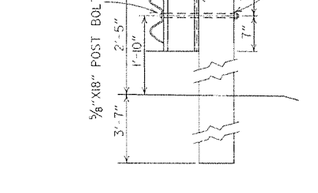
DETAILS OF STEEL LINE POST CONNECTIONS (W-BEAM)

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



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

WOOD BLOCKOUT CONNECTIONS



PLASTIC BLOCKOUT CONNECTIONS

DETAILS OF WOOD LINE POST CONNECTIONS (W-BEAM)

-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.

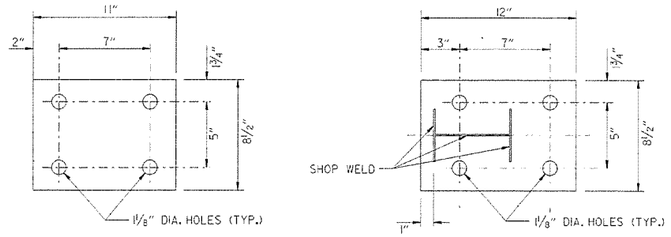
CONTRACTOR SHALL HAVE THE OPTION OF USING WOOD BLOCKOUTS FOR W-BEAM GUARD RAIL OR PLASTIC BLOCKOUTS, AS LONG AS BLOCKOUT USED MEETS NCHRP-350 TEST LEVEL 3 SPECIFICATIONS OR REQUIREMENTS FOR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) FOR W-BEAM GUARD RAIL.

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

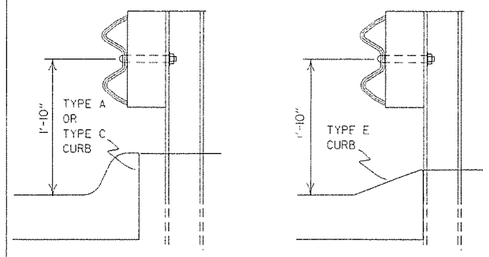
STANDARD DRAWING GR-8



WASHER PLATE

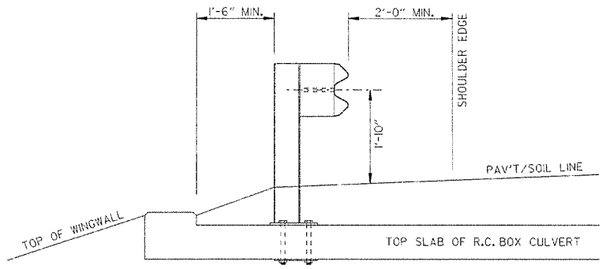
BASE PLATE

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

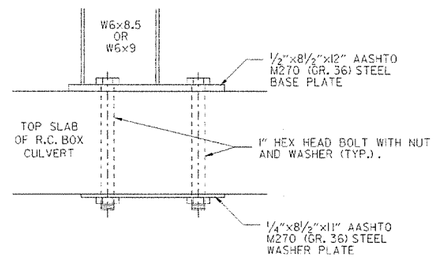


DETAIL OF GUARD RAIL PLACEMENT BEHIND CURB (W-BEAM)

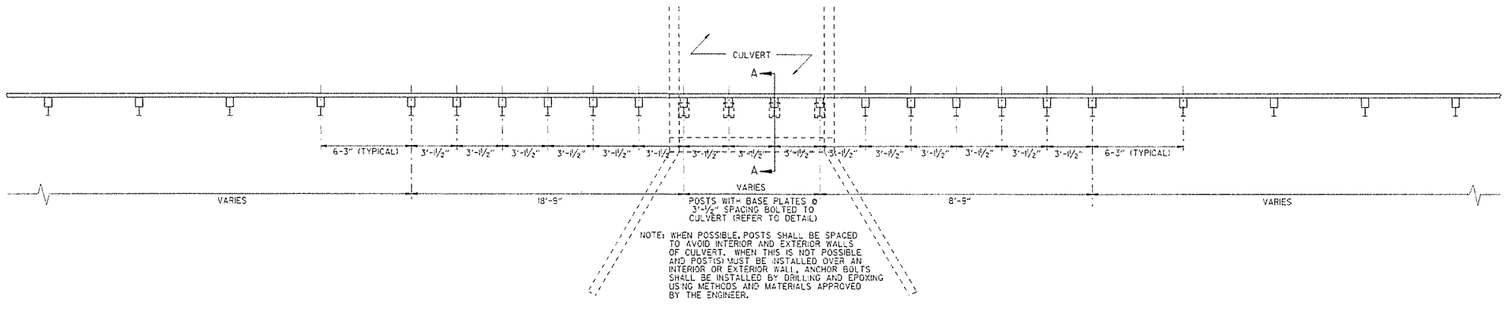
FOR DESIGN SPEEDS OF 50 MPH OR LESS ALL CURB FACES, AS SHOWN ON STD. DRWG. CG-1, MAY BE USED. FOR DESIGN SPEEDS OF 55 MPH OR MORE TYPE "E" CURB FACE SHALL BE USED.



SECTION A-A



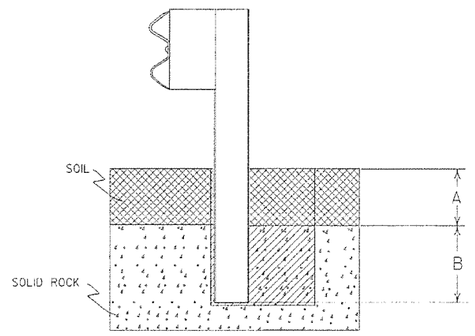
DETAIL OF CONNECTION



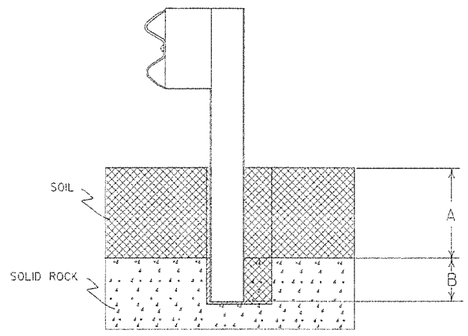
PLAN LAYOUT OF TYPE A GUARD RAIL AT LOW-FILL CULVERTS

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

Case 1

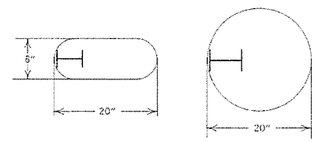


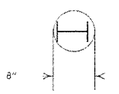
Case 2



Plan View Steel Posts

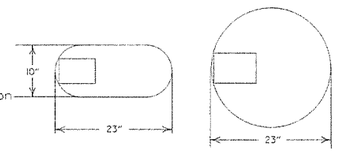
Either hole configuration acceptable

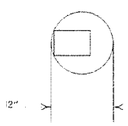




Plan View Wood Posts

Either hole configuration acceptable





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

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

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

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

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

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

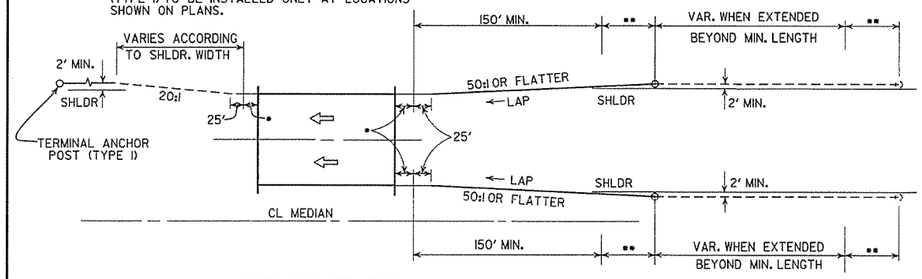
DATE	REVISION	DATE FILM
7-14-10	RAISED HEIGHT OF GUARD RAIL 1"	
4-12-07	REVISED DETAIL OF GUARD RAIL PLACEMENT BEHIND CURB	
11-10-05	ADDED GUARD RAIL PLACEMENT BEHIND CURB; REVISED DETAIL OF CONNECTION	
11-18-04	REVISED POST PLACEMENT IN ROCK & CULVERT CONNECTION DETAILS. ADDED DETAIL FOR GUARD RAIL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

ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

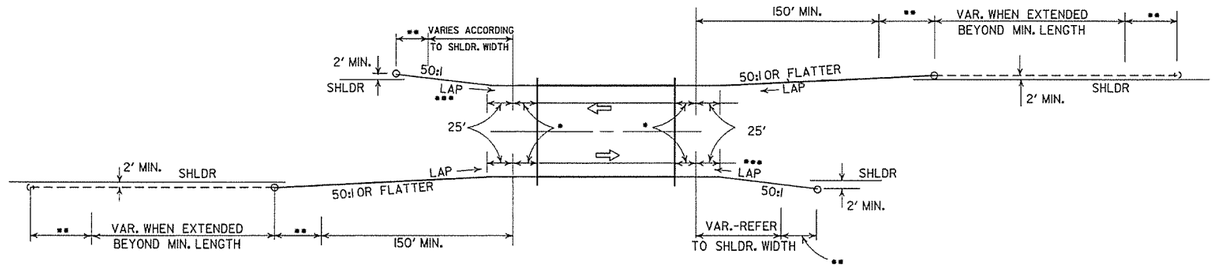
STANDARD DRAWING GR-8A

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



ONE-WAY TRAFFIC

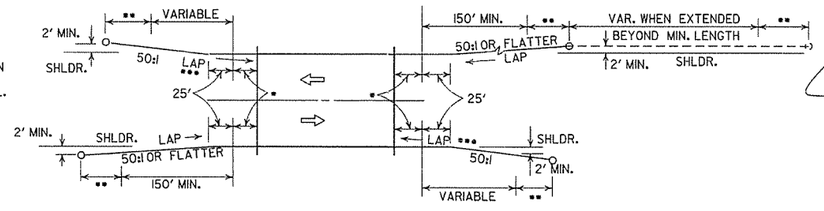
••• LAP OF GUARD RAIL SHALL BE AS SHOWN FOR A DISTANCE OF UP TO 200', CHANGE TO LAP IN DIRECTION OF TRAVEL.



TWO-WAY TRAFFIC

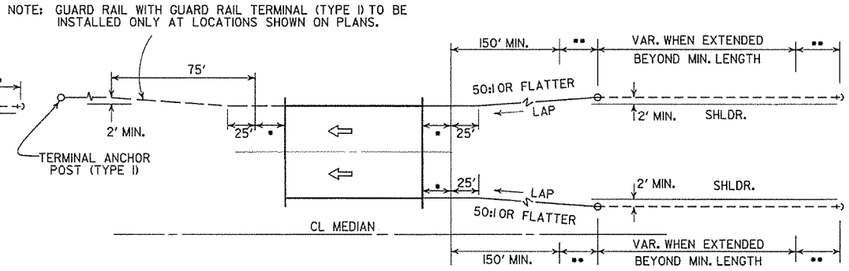
METHODS OF INSTALLATION OF GUARD RAIL AT LESS THAN FULL SHOULDER WIDTH BRIDGES USING GUARD RAIL TERMINAL (TYPE 2)

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



TWO-WAY TRAFFIC

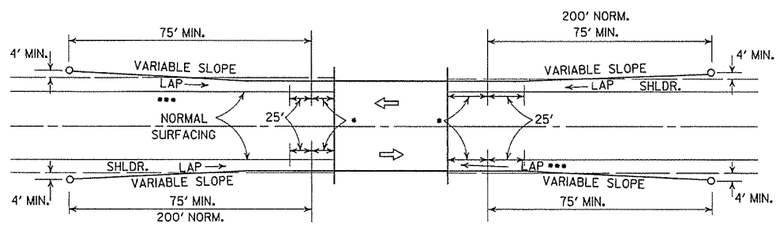
NOTE: GUARD RAIL WITH GUARD RAIL TERMINAL (TYPE I) TO BE INSTALLED ONLY AT LOCATIONS SHOWN ON PLANS.



ONE-WAY TRAFFIC

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

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



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

LEGEND

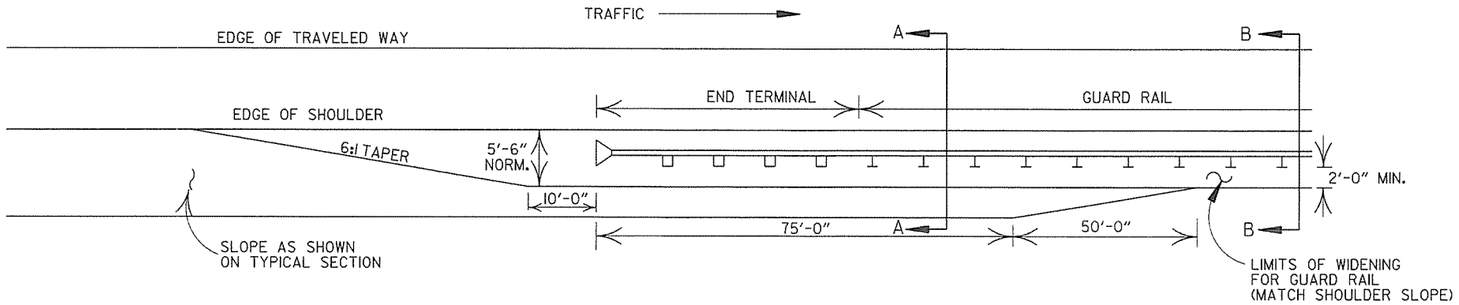
- • THRIE BEAM GUARD RAIL TERMINAL
- •• GUARD RAIL TERMINAL (TYPE 2)

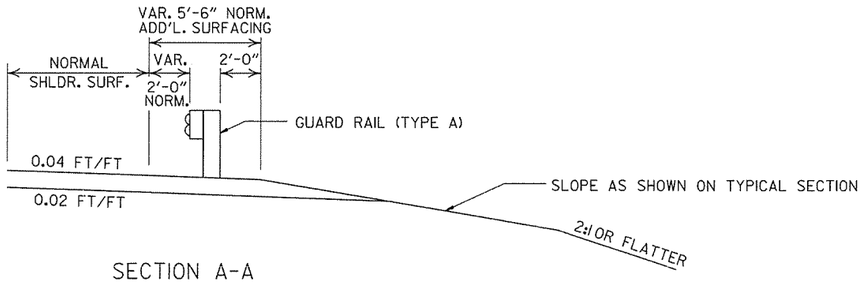
DATE	REVISION	DATE FILM
4-17-08	REVISED LAYOUTS	
11-10-05	REMOVED GUARD RAIL NOTES AND DETAILS	
11-16-01	DELETED NOTE-METHOD OF INSTALLATION OF GUARD RAIL USING GUARD RAIL TERM. (TY. I)	
1-12-00	ADDED CONSTRUCTION NOTE	1-12-00
6-26-97	REVISED LAYOUT	
10-1-92	REDRAWN & REVISED	10-1-92
	ADDED NOTE	
10-9-87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

ARKANSAS STATE HIGHWAY COMMISSION

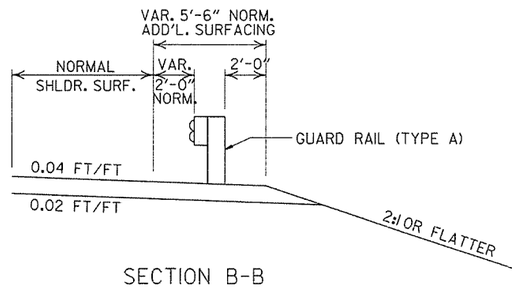
GUARD RAIL DETAILS

STANDARD DRAWING GR-9





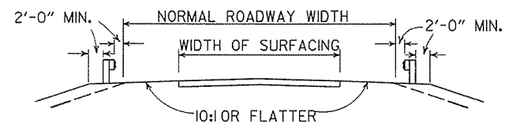
SECTION A-A



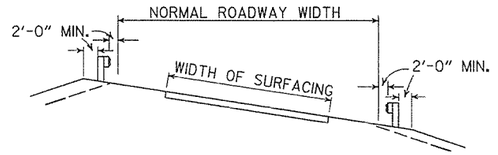
SECTION B-B

DETAILS OF WIDENING FOR GUARD RAIL

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

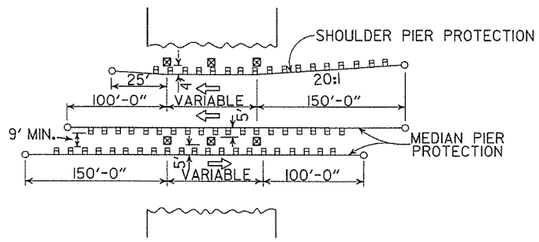


SECTION ON TANGENT



SECTION ON CURVE

DETAILS SHOWING POSITION OF GUARD RAIL ON HIGHWAY



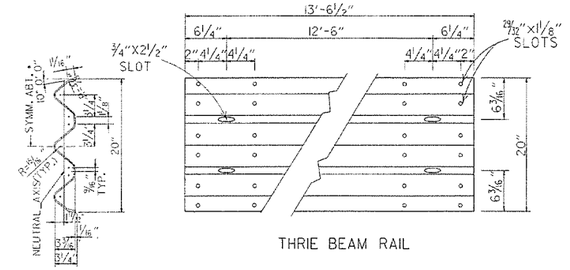
METHOD OF INSTALLATION OF GUARD RAIL AT FIXED OBSTACLE

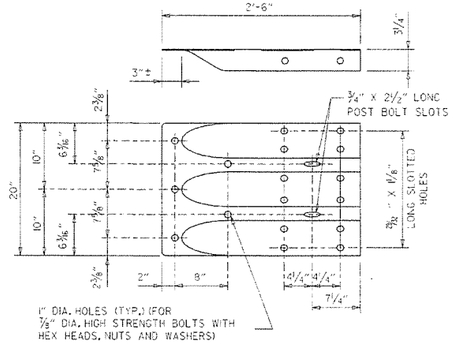
DATE	REVISION	DATE FILM
4-17-08	MINOR REVISION	
11-10-05	DRAWN	

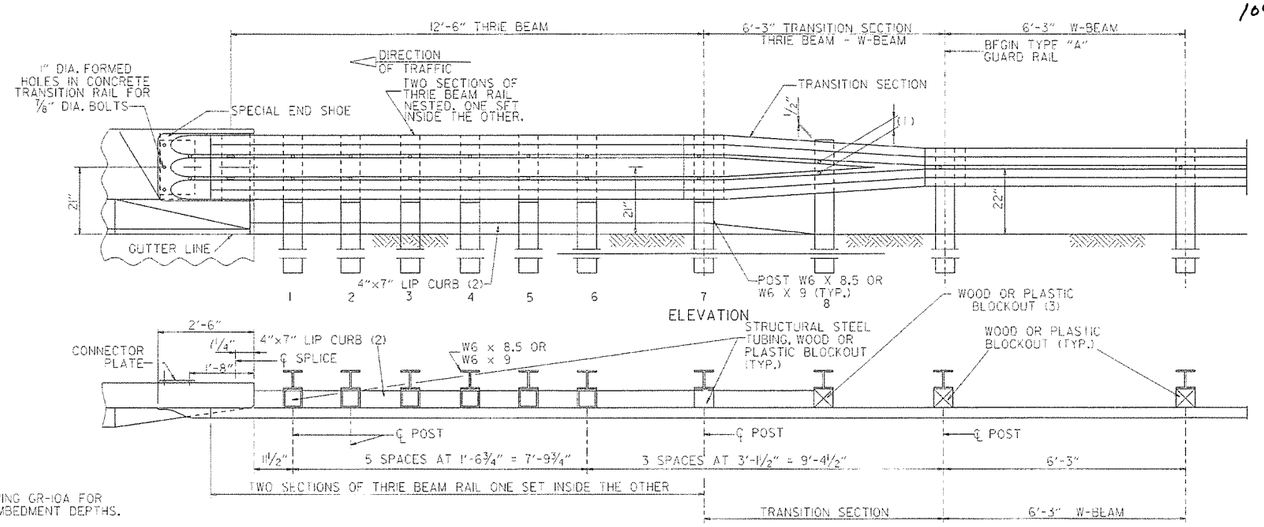
ARKANSAS STATE HIGHWAY COMMISSION

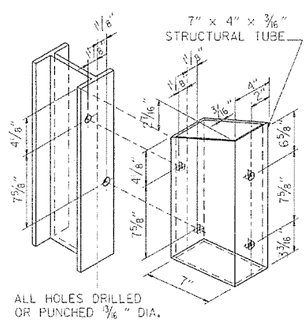
GUARD RAIL DETAILS

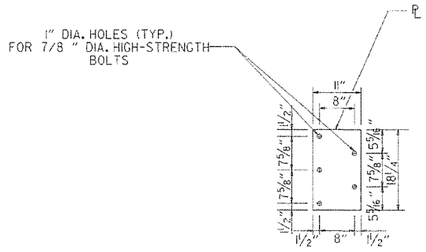
STANDARD DRAWING GR-9A



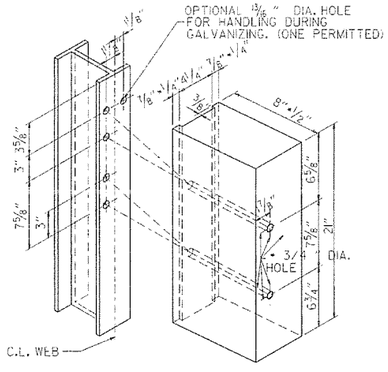








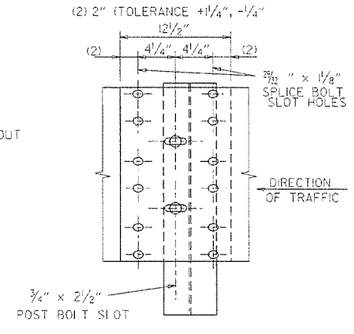
NOTE:
SEE STANDARD DRAWING GR-10A FOR GUARD RAIL POST EMBEDMENT DEPTHS.

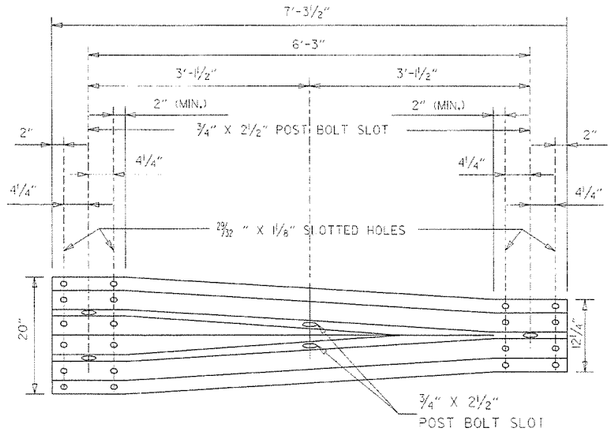


NOTE: BLOCKS SHALL BE THE SAME TYPE THROUGHOUT THE PROJECT LIMITS.

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.





(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 II.

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

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

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

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

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

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

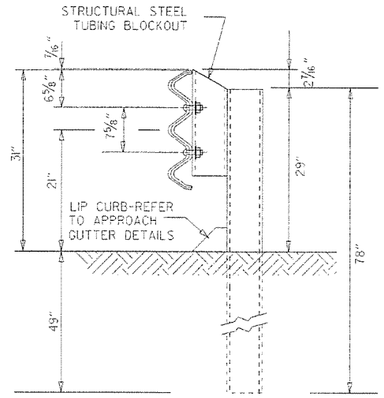
THRIE BEAM POSTS SHALL BE SAME MATERIAL AS W-BEAM POSTS FOR ENTIRE JOB.

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

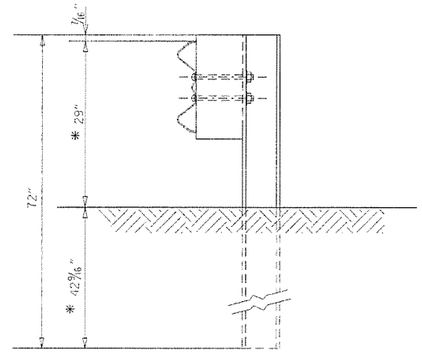
ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR-10

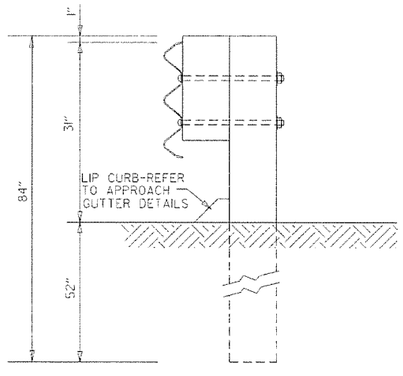


THRIE BEAM RAIL WITH STEEL TUBING BLOCKOUT
AND STEEL POST
POSTS 1-7

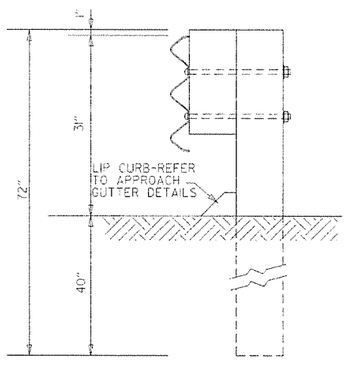


W-BEAM TO THRIE BEAM TRANSITION RAIL
WITH WOOD OR PLASTIC BLOCKOUT AND STEEL POST
POST 8

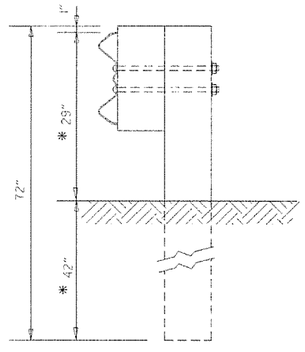
* NOTE:
THESE DIMENSIONS WILL NEED TO BE ADJUSTED IN THE FIELD TO MAKE THE TRANSITION FROM 21" MID POINT OF THRIE BEAM TO 22" MID POINT OF W-BEAM.



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



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



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

GENERAL NOTES:

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

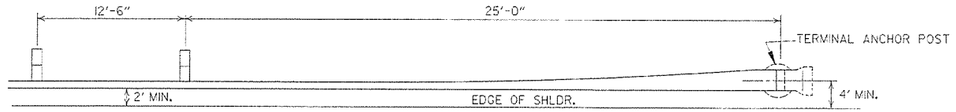
WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7f (1400 f) OR NO. 1 1350 f SOUTHERN PINE.

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

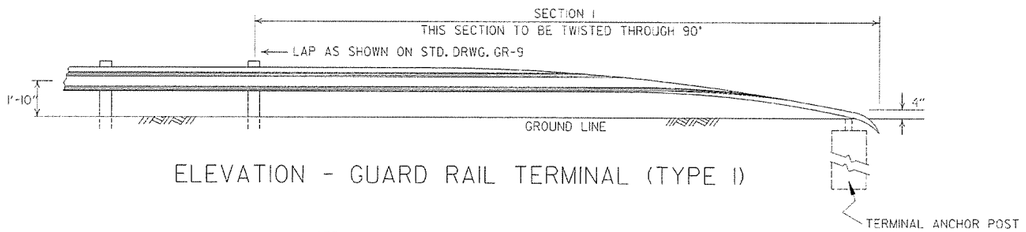
ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR-10A

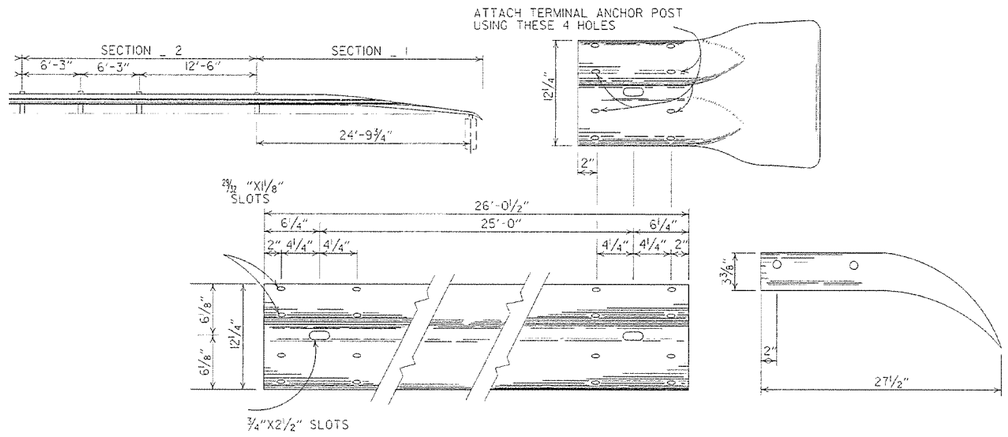


PLAN - GUARD RAIL TERMINAL (TYPE I)



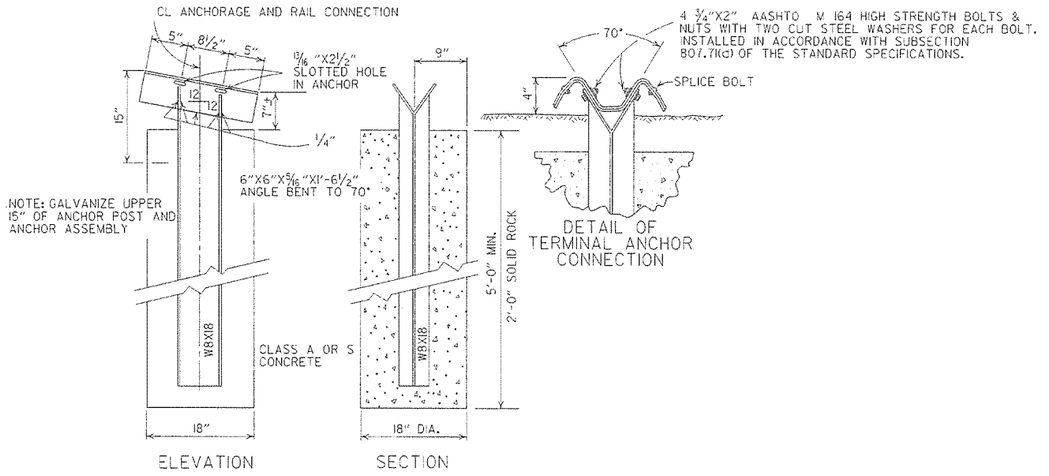
ELEVATION - GUARD RAIL TERMINAL (TYPE I)

NOTE:
SECTIONS I 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 I

TERMINAL SECTION



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

DETAIL OF TERMINAL ANCHOR POST (TYPE I)

DATE	REVISION	DATE FILM
7-14-10	RAISED HEIGHT OF GUARD RAIL 1"	
6-26-97	REVISED LAP NOTE	
10-18-96	REVISED ASTM REF. TO AASHTO	
11-3-94	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	31⅝	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.

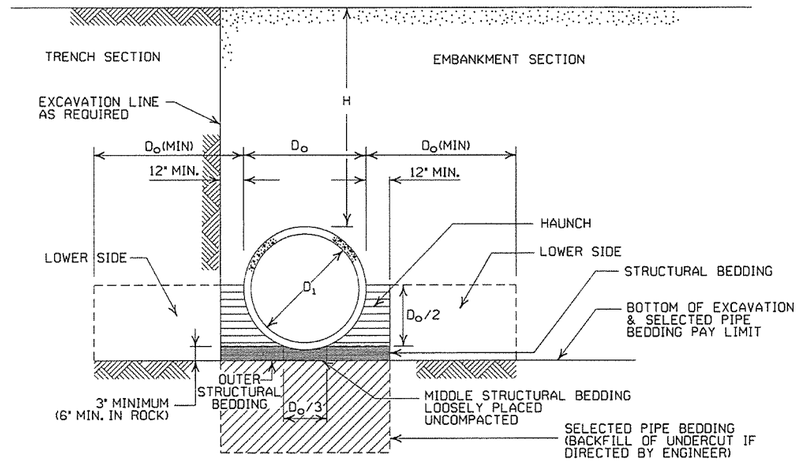
- LEGEND -

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)	①MINUMUM 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

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

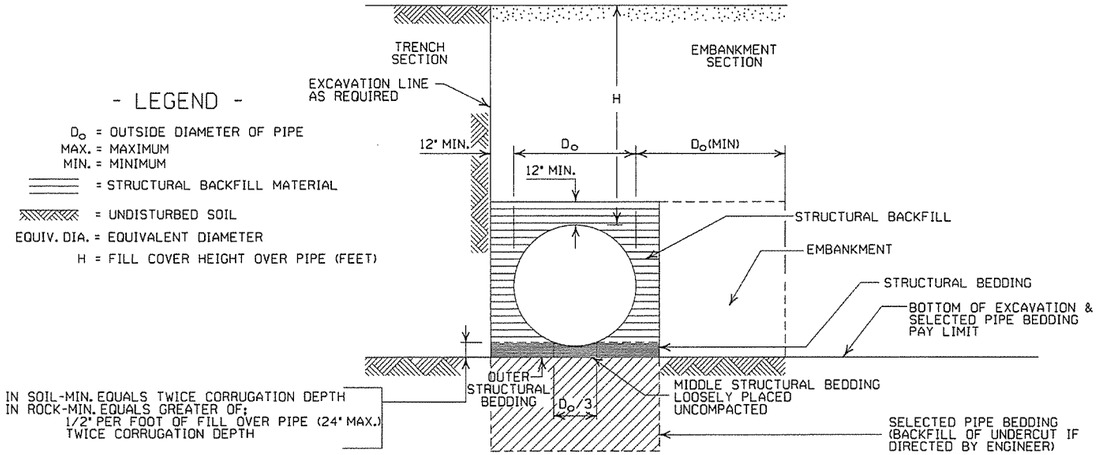
METAL THICKNESS IN INCHES			GAUGE NUMBER
STEEL			
ZINC COATED	UNCOATED	ALUMINUM	
0.064	0.0598	0.060	16
0.079	0.0747	0.075	14
0.109	0.1046	0.105	12
0.138	0.1345	0.135	10
0.168	0.1644	0.164	8

CORRUGATED METAL PIPE ARCHES

EQUIV. DIA. (INCHES)	PIPE DIMENSION SPAN X RISE (INCHES)	MINUMUM CORNER RADIUS (INCHES)	STEEL MIN. THICKNESS REQUIRED INCHES	STEEL ① MIN. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 1	STEEL MAX. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 1	ALUMINUM MIN. THICKNESS REQUIRED INCHES	ALUMINUM ① MIN. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 1	ALUMINUM 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	

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.



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."

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.

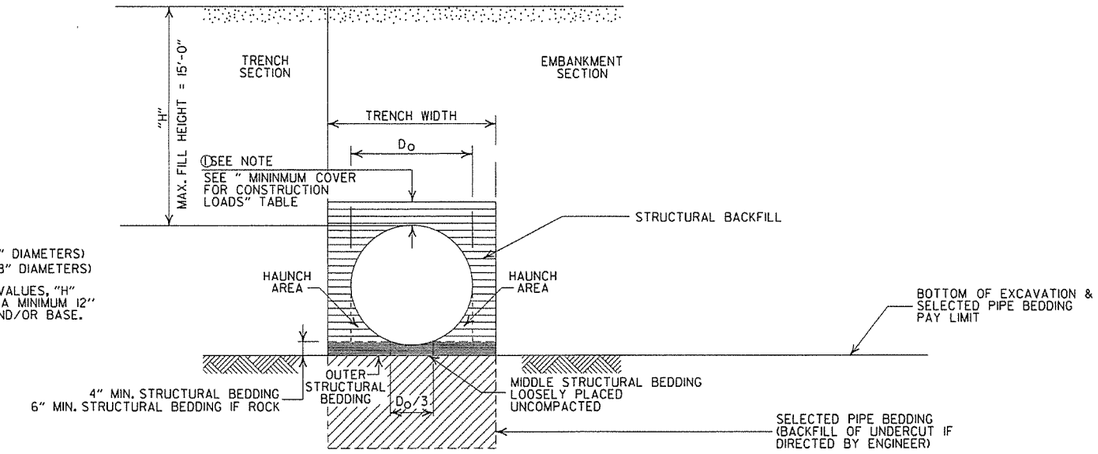
STRUCTURAL BACKFILL AND STRUCTURAL BEDDING MATERIAL WILL NOT BE PAID FOR SEPARATELY, BUT COMPENSATION WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID PER LINEAR FOOT OF HDPE PIPE.

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

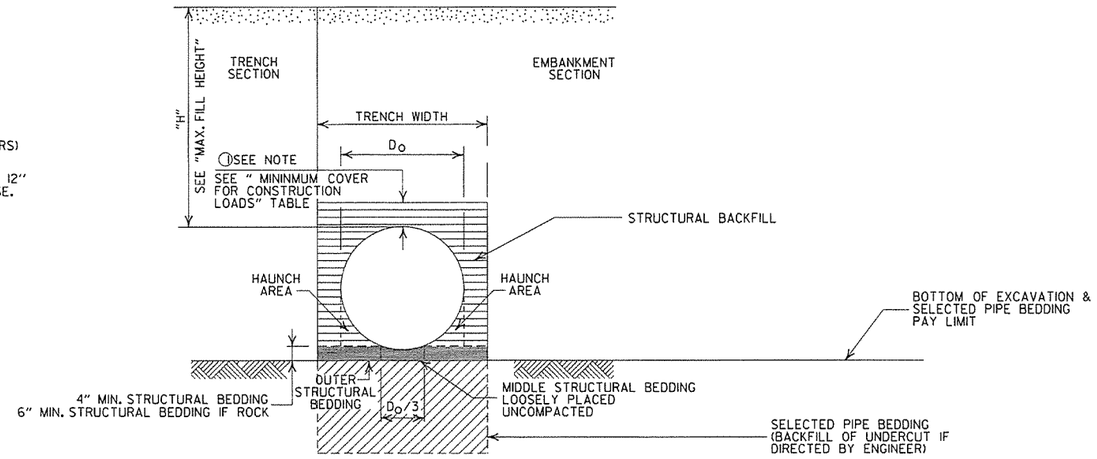
PIPE DIAMETER	"H"
18"	45'-0"
24"	45'-0"
30"	40'-0"
36"	40'-0"

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

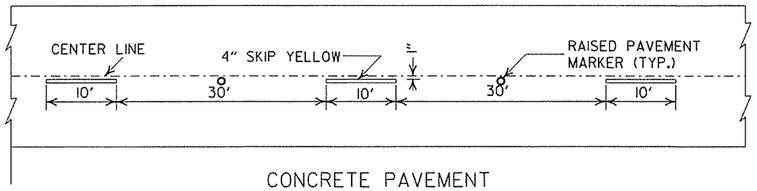
= UNDISTURBED SOIL

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	

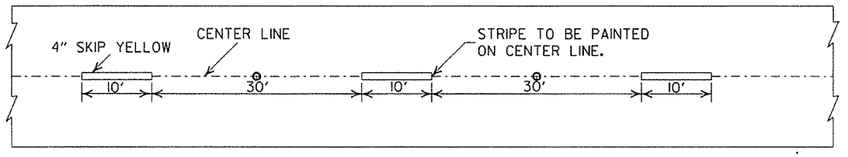
ARKANSAS STATE HIGHWAY COMMISSION

PLASTIC PIPE CULVERT (PVC F949)

STANDARD DRAWING PCP-2

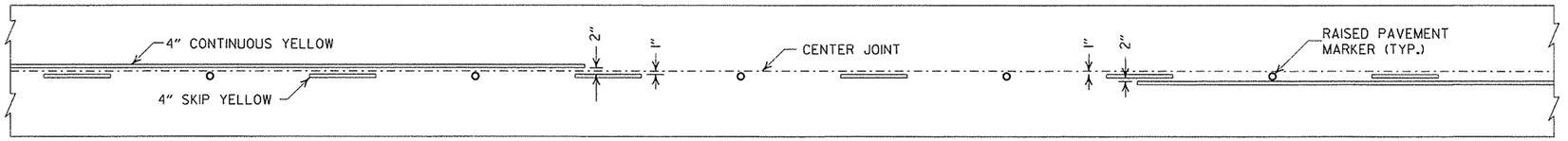


CONCRETE PAVEMENT

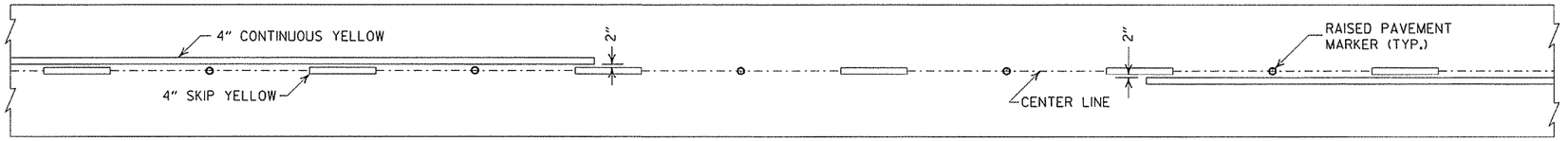


ASPHALT PAVEMENT

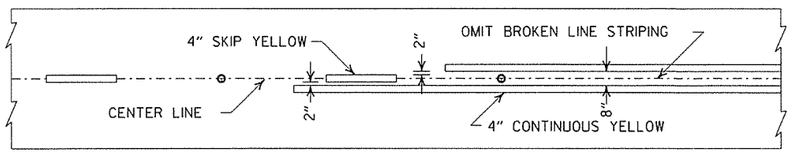
BROKEN LINE STRIPING



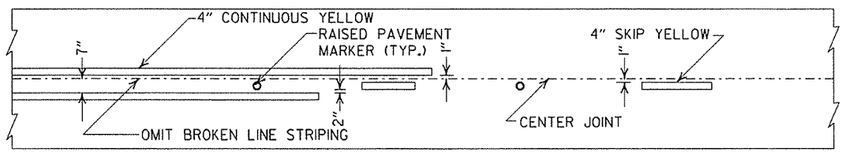
SOLID LINE STRIPING ON CONCRETE PAVEMENT



SOLID LINE STRIPING ON ASPHALT PAVEMENT

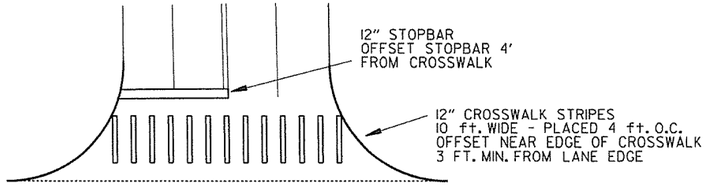


ASPHALT PAVEMENT



CONCRETE PAVEMENT

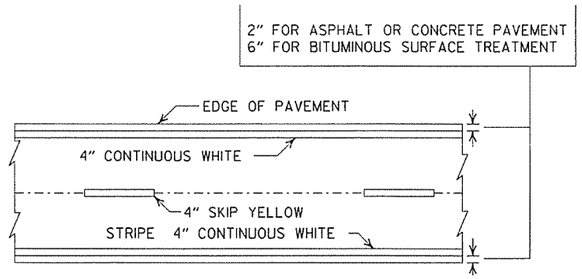
STRIPING AT ADJACENT NO PASSING LANES



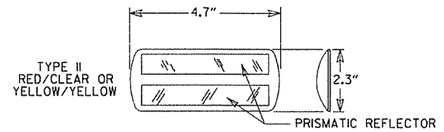
CROSSWALK AND STOPBAR DETAILS

NOTES:

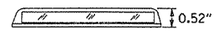
1. ALL LINES SHALL HAVE A WIDTH OF 4 INCHES.
2. THE THICKNESS AND RATE OF PAINT APPLICATION SHALL BE AS SPECIFIED IN SECTION 718 OF THE STANDARD SPECIFICATIONS.
3. THIS DRAWING SHALL BE USED IN CONJUNCTION WITH THE LATEST REVISED ADDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES."
4. RAISED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

ARKANSAS STATE HIGHWAY COMMISSION

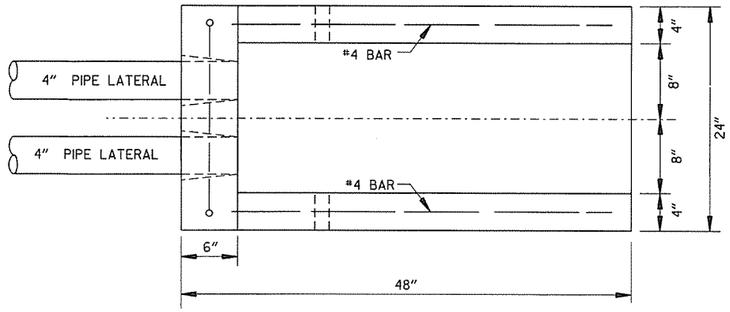
PAVEMENT MARKING DETAILS

STANDARD DRAWING PM-1

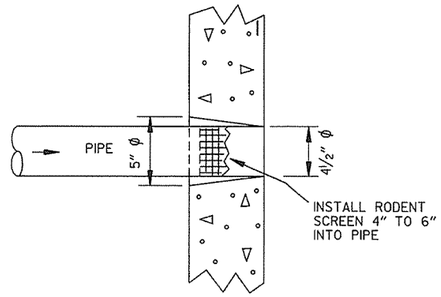
NOTE:
1. GRANULAR BACKFILL TO BE SUBSIDIARY TO PIPE UNDERDRAIN.

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

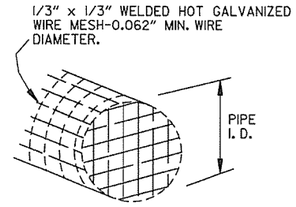
3. GRANULAR MATERIAL SHALL BE WRAPPED WITH GEOTEXTILE FABRIC. LAP FABRIC 12" OR THE WIDTH OF THE TRENCH AT THE TOP.



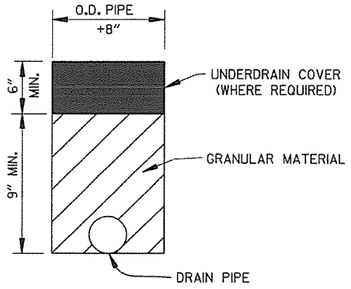
PLAN VIEW

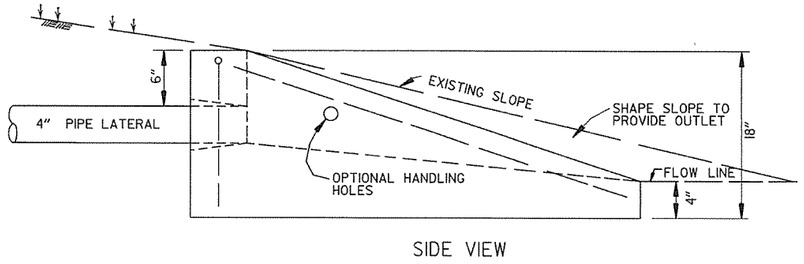


DETAIL OF HOLE FOR 4" PIPE

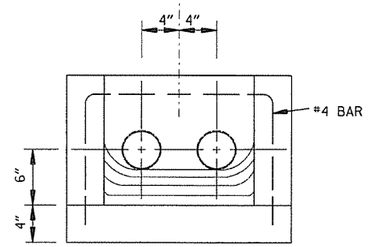


DETAIL OF RODENT SCREEN

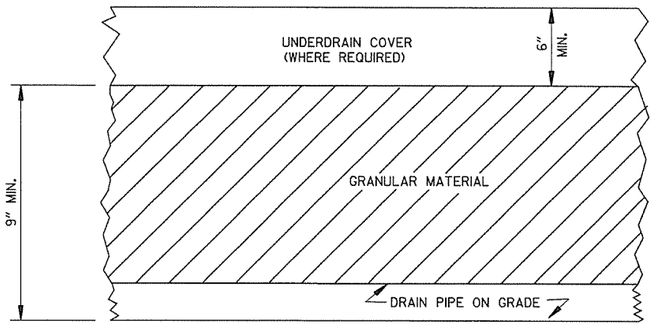




SIDE VIEW

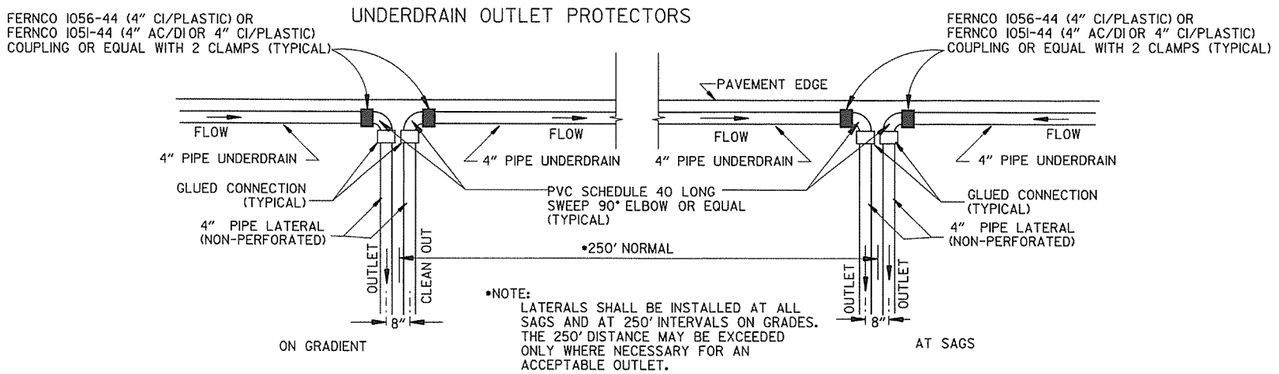


FRONT VIEW



DETAILS OF PIPE UNDERDRAIN

UNDERDRAIN OUTLET PROTECTORS



DETAIL OF PIPE UNDERDRAIN LATERALS WHEN PLACED ALONG PAVEMENT EDGE

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

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

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF PIPE UNDERDRAIN

STANDARD DRAWING PU-1

7-20-95 INSTD.PUI

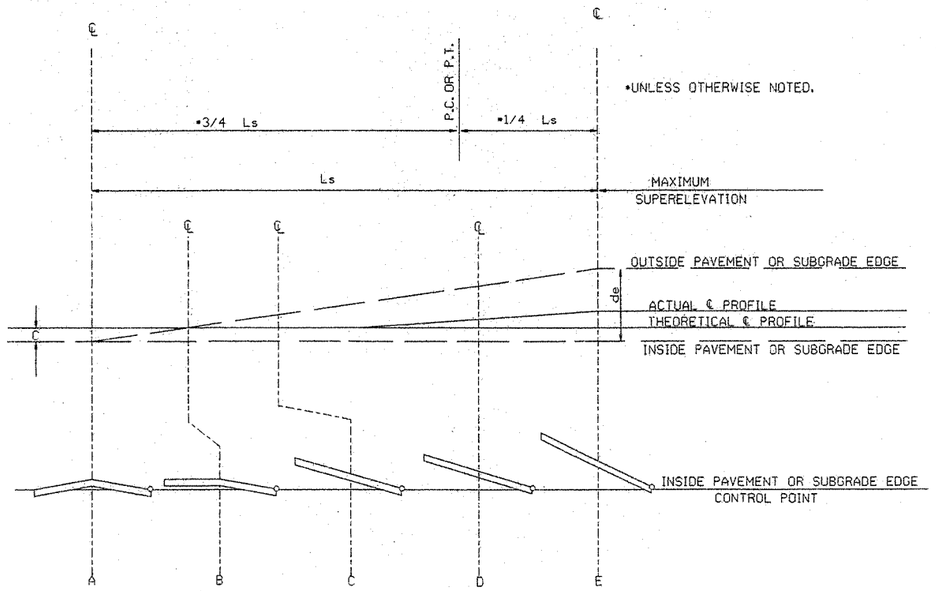
SUPERELEVATION TABLE FOR TWO - WAY TRAFFIC

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			0.046		
1° 30′	N.C.			0.021			0.031	200		0.037	225		0.043	250		0.054		
1° 45′	N.C.			0.025	175		0.036			0.043		300	0.049		300	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			0.040			0.057			0.067	230		0.077	260		0.096	350	
3° 15′	0.027	150		0.043			0.061			0.072	245		0.082	275		0.098	360	400
3° 30′	0.029		200	0.046			0.065	205		0.076	255		0.086	285		0.100	360	
3° 45′	0.031			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		0.096	315				
5° 00′	0.040			0.061			0.083	250		0.091	295	350	0.098	320				
5° 30′	0.043			0.066	185		0.088	260		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	300	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′	0.088	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.)



•UNLESS OTHERWISE NOTED.

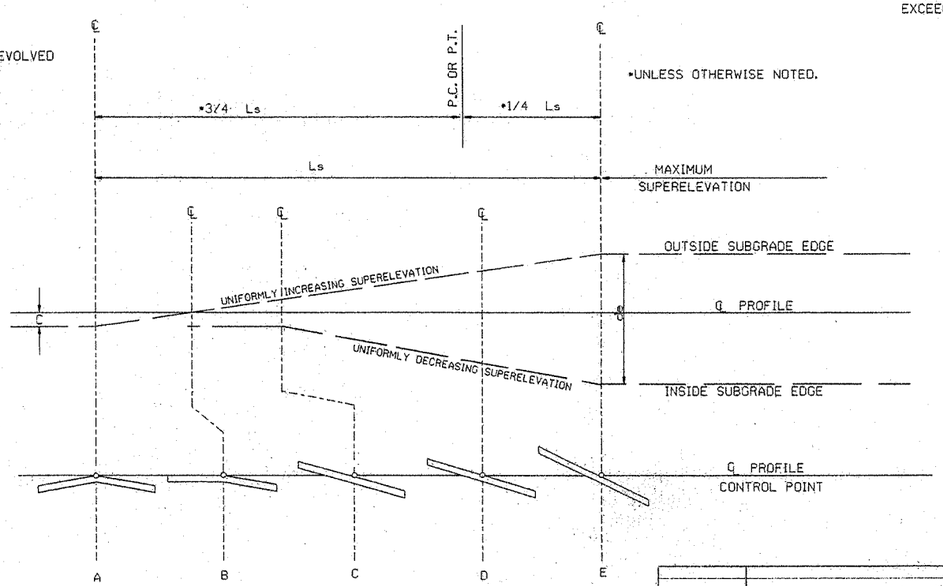
STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND INNER SUBGRADE POINT OR INNER PAVEMENT EDGE

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%



•UNLESS OTHERWISE NOTED.

STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND CENTER LINE

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

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

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

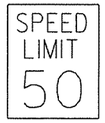
R1-1

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

R1-2

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

R2-1



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

R2-5A

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

R2-5C

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

R4-1

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

R4-2

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

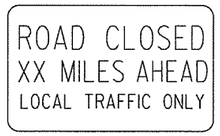
R5-1

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

RII-2

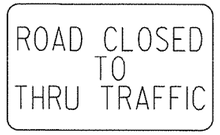
48"X30"

RII-3A



60"X30"

RII-4

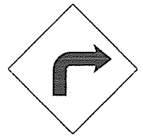


60"X30"

RSP-1

48"X30"

WI-1



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

WI-2

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

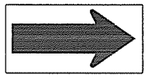
WI-3

STD. 48"X48"

WI-4

STD. 48"X48"

WI-6

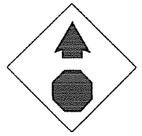


STD. 48"X24"
SPECIAL 60"X30"

WI-8

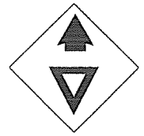
STD. 18"X24"
SPECIAL 24"X30"
EXPWY. 30"X36"
FWY. 36"X48"

W3-1



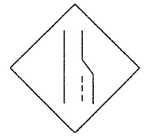
STD. 36"X36"
SPECIAL 48"X48"

W3-2



STD. 36"X36"
SPECIAL 48"X48"

W4-2



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

W5-1

STD. 36"X36"
SPECIAL 48"X48"

W6-3

EXPWY. 36"X36"
SPECIAL 48"X48"

W8-7

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

W9-2

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

WI3-1

STD. 24"X24"

W20-1

STD. 48"X48"

W20-2

STD. 48"X48"

W20-3

STD. 48"X48"

W20-4

STD. 48"X48"

W20-5

STD. 48"X48"

W20-7a

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

W21-2

STD. 30"X30"
SPECIAL 36"X36"

W21-5

STD. 30"X30"
SPECIAL 36"X36"

W24-1

STD. 36"X36"

WI-4b

STD. 48"X48"

R56-1

STD. 18"X18"

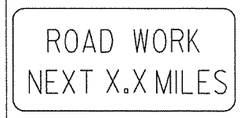
W8-11

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

W8-9

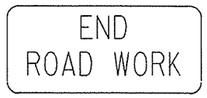
STD. 36"X36"
FWY. 48"X48"

G20-1



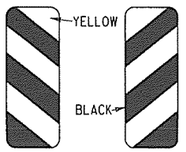
60"X24"

G20-2



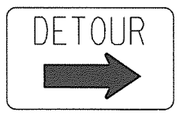
48"X24"

OM-3L OM-3R



12"X36"

M4-9

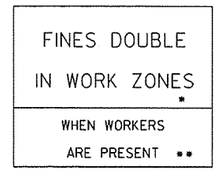


STD. 30"X24"
SPECIAL 48"X36"
SPECIAL 60"X48"

M4-10

48"X18"

R55-1



36"X60"

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

ADVANCE DISTANCES
(XXXX)

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

GENERAL NOTES:

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

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

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

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

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

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

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

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

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

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

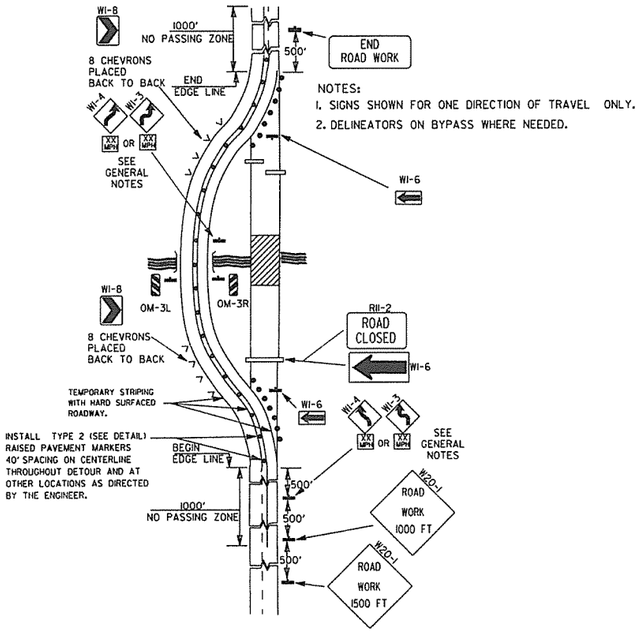
• NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE REQUIREMENTS SHOWN IN NOTES 4 & 5, BUT MEET THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH), WILL BE ACCEPTED. COMPLIANCE WITH THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY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

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

ARKANSAS STATE HIGHWAY COMMISSION

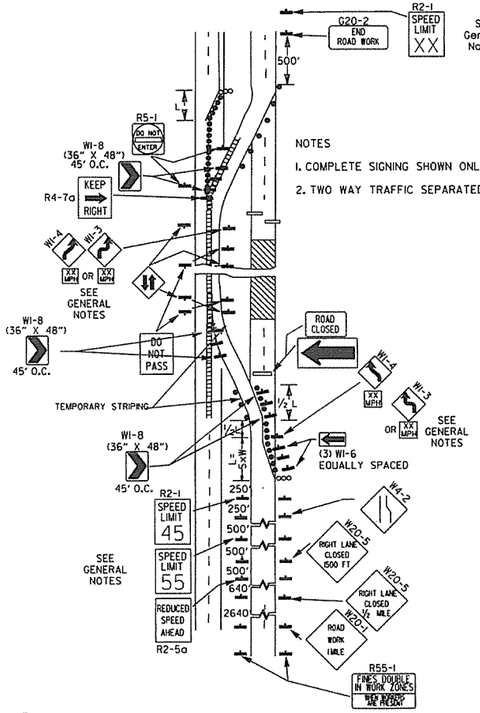
STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-1



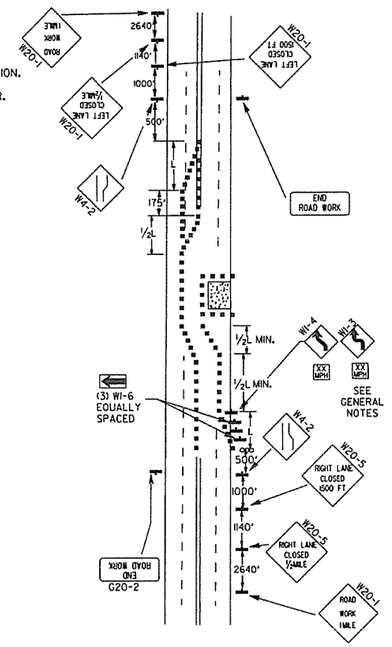
NOTES:
1. SIGNS SHOWN FOR ONE DIRECTION OF TRAVEL ONLY.
2. DELINEATORS ON BYPASS WHERE NEEDED.

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

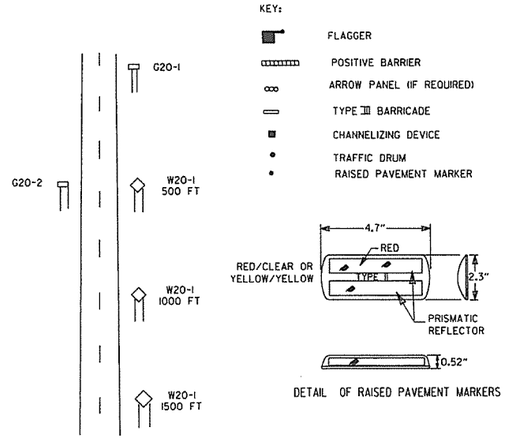


NOTES
1. COMPLETE SIGNING SHOWN ONLY IN CROSSOVER DIRECTION.
2. TWO WAY TRAFFIC SEPARATED WITH POSITIVE BARRIER.

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

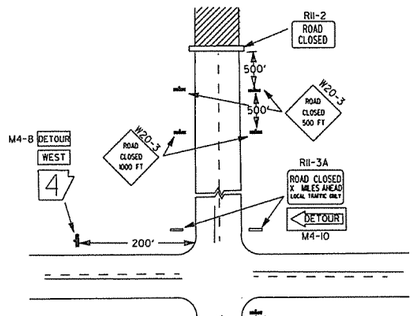


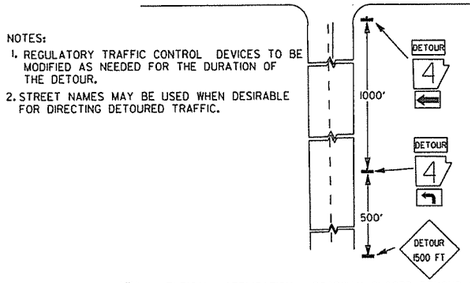
(C) TYPICAL APPLICATION - 4-LANE UNDIVIDED ROADWAY WHERE HALF OF THE ROADWAY IS CLOSED.



DETAIL OF RAISED PAVEMENT MARKERS

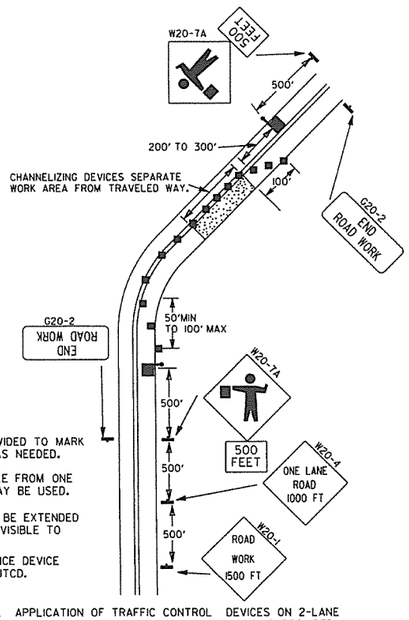
TYPICAL ADVANCE WARNING SIGN PLACEMENT





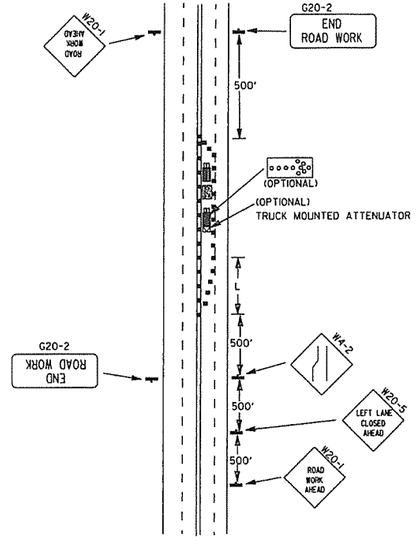
NOTES:
1. REGULATORY TRAFFIC CONTROL DEVICES TO BE MODIFIED AS NEEDED FOR THE DURATION OF THE DETOUR.
2. STREET NAMES MAY BE USED WHEN DESIRABLE FOR DIRECTING DETOURED TRAFFIC.

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



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

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



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

TAPER FORMULAE:

L=SXW FOR SPEEDS OF 45MPH OR MORE.

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

WHERE:

L= MINIMUM LENGTH OF TAPER.

S= NUMERICAL VALUE OF POSTED SPEED LIMIT PRIOR TO WORK OR 85TH PERCENTILE SPEED.

W= WIDTH OF OFFSET.

GENERAL NOTES:

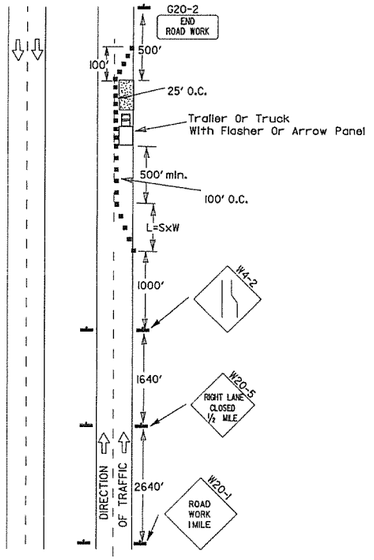
1. ADVISORY SPEED POSTED ON W1-3 OR W1-4 CURVE WARNING SIGNS TO BE DETERMINED AT SITE. USE W1-4 WHEN SPEED IS GREATER THAN 30MPH AND W1-3 WHEN 30MPH OR LESS.
2. WHEN THE EXISTING SPEED LIMIT IS 55MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 45MPH, THE R2-1(55) SHALL BE OMITTED AND THE R2-5A SHALL BE INSTALLED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

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

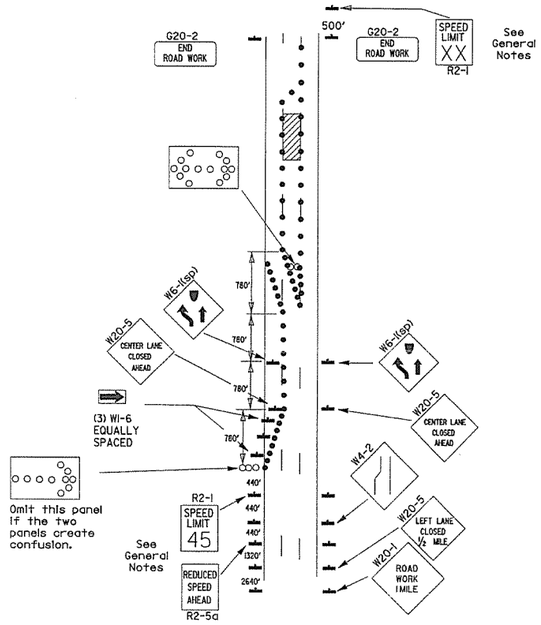
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

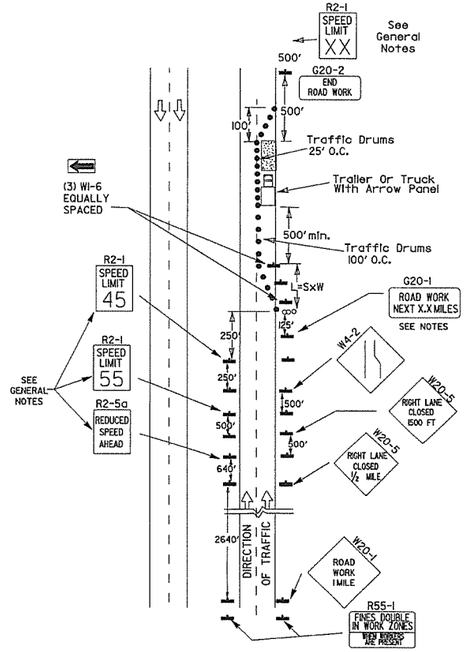
STANDARD DRAWING TC-2



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



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



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

KEY:

○○○ Arrow Panel (If Required)

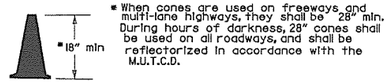
■ Channelizing Device

● Traffic drum

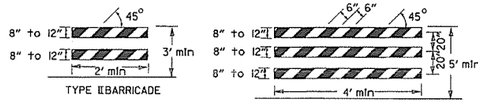
GENERAL NOTES:

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

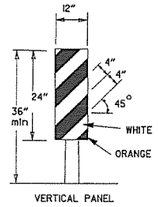
Channelizing devices



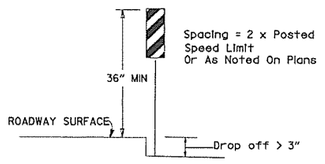
* When cones are used on freeways and multi-lane highways, they shall be 28" min. During hours of darkness, 28" cones shall be used on all roadways, and shall be reflectorized in accordance with the M.U.T.C.D.



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



VERTICAL PANEL PLACEMENT



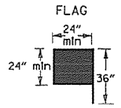
TRAFFIC CONTROL DEVICES
FOR
VERTICAL PAVEMENT DIFFERENTIALS

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

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

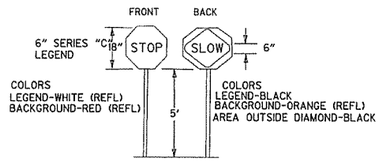
When the shoulder area is used as part of the traveled lane and there is insufficient width to place drums on the remaining shoulder width, then vertical panels shall be used.

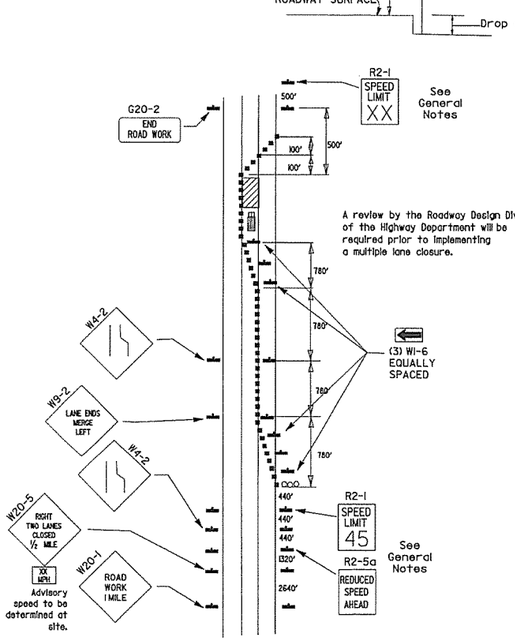
FLAG



Flag shall be of good grade red material

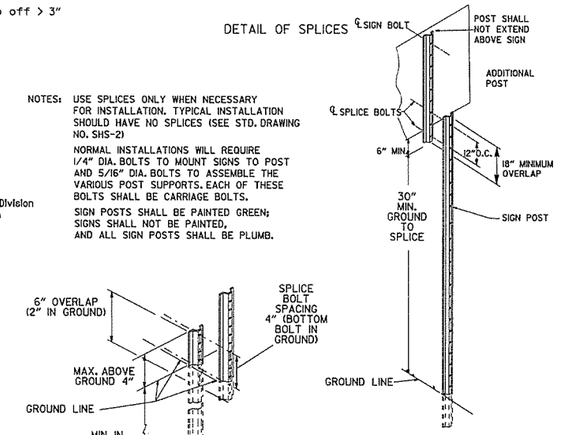
STOP SLOW PADDLE





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

DETAIL OF SPLICES



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

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

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

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

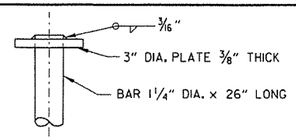
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

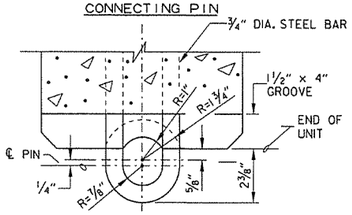
STANDARD DRAWING TC-3

REINFORCING BAR TABLE PER BARRIER UNIT

MARK	LOCATION	BAR SIZE	(NO. BARS)	SKETCH
H-1	HORIZONTAL IN BARRIER TIED INSIDE V-1 BARS	#5	(6)	19'-3"
H-2	CENTERED ABOVE DRAIN SLOTS LONG. & TRANSVERSELY	#5	(6)	6'-6"
H-3	TIED ABOVE H-1 BARS TO SUPPORT H-2, TIED TO V-1	#4	(2)	1'-6"
S-1	OVER LIFT HOLES	#4	(2)	2'-5", LIFTING HOLE, 90°, 3 3/8" R
S-2	HORIZ. AROUND SLOTS BETWEEN V-1'S @ DRAIN SLOTS	#4	(2)	1 1/2" R, SLOTS, 1" MIN. CLEAR TO BAR, 7", 5'-1" BAR W/(4) 1 1/2" R BENDS & MIN. 1'-0" OVERLAP, 1'-6"
V-1	VERTICAL IN BARRIER(3) EACH END & (2) AT EACH DRAIN SLOTS	#5	(16)	TOTAL LENGTH 4'-9", 2 3/16" R, 12°, 9 1/2", 2'-1 3/8", 4 3/8"

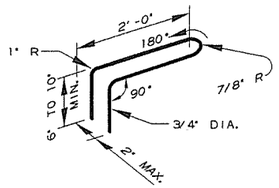


CONNECTING PIN

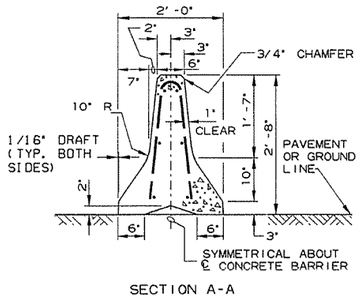


SECTION E-E

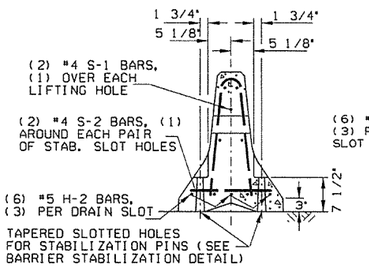
CONNECTION DETAILS



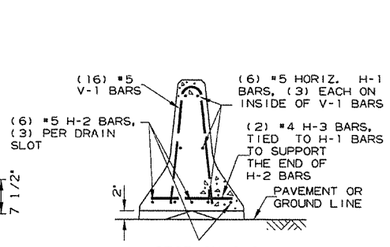
CONNECTION LOOP



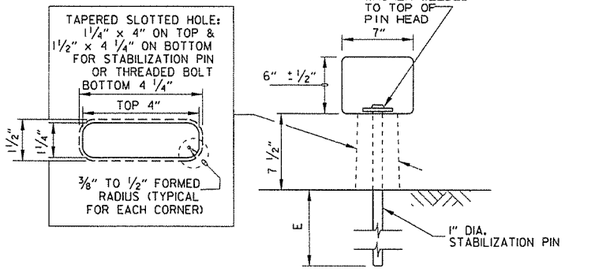
SECTION A-A



SECTION B-B



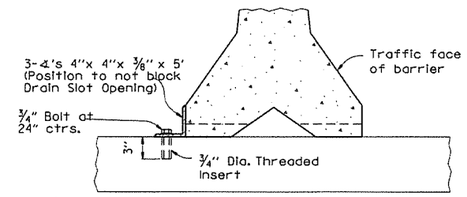
SECTION C-C



BARRIER STABILIZATION DETAIL

ROADWAY SECTION

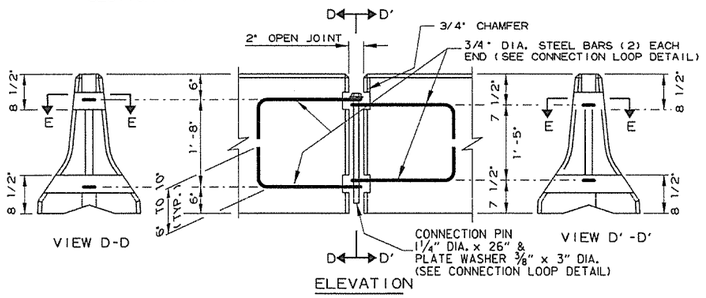
(E) 4" - Concrete Pavement
8" - Asphalt Pavement
12" - Shoulder Areas



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

BARRIER STABILIZATION DETAIL

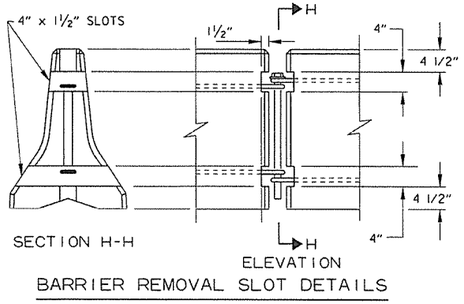
BRIDGE DECKS



VIEW D-D

VIEW D'-D'

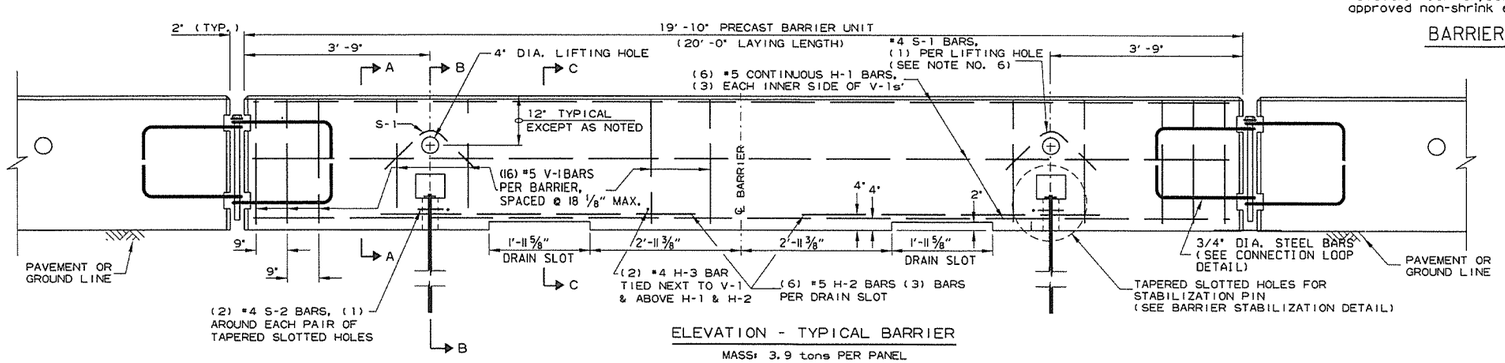
ELEVATION



SECTION H-H

ELEVATION

BARRIER REMOVAL SLOT DETAILS



ELEVATION - TYPICAL BARRIER

MASS: 3.9 tons PER PANEL

General Notes

(1) The contractor shall furnish the Precast Concrete Barrier Units and shall be responsible for the manufacture, shipment, storage, placement and removal. At the completion of the project, the precast units will remain the property of the contractor.

(2) Materials shall meet the following minimum requirements:
Concrete: 2500 psi compressive strength at 28 days.
Reinforcing Steel: AASHTO M 31 or M 53, Grade 60
Structural Steel: AASHTO-M270 Grade 36 shall be used for the Connection Pin, Connection Loops, and Stabilization Pins. A One Piece Pin with a 3" rounded top may be used in place of the detailed Connection Pin.
Delineators: Delineators shall be mounted at 10' spacing on top of precast barrier.

In applications where barrier wall is within 6 feet of a traffic lane, additional delineators shall be placed on the barrier at 10' spacing approximately one (1) foot from the top of the barrier. Delineators shall be on the AHTD Qualified Products List for Construction Concrete Barrier Markers.
Delineator color shall be in accordance with the Manual on Uniform Traffic Control Devices.
Payment for delineators shall be considered included in the price bid per Lin. Ft. for "Furnishing and Installing Precast Concrete Barrier". The contractor shall certify to the Engineer that the material and the design used in the precast barrier units meets the requirements as shown on this standard drawing.

(3) Other Precast Concrete Barriers that have been crash tested and approved by the Federal Highway Administration to meet the requirements of NCHRP-350 test level 3 or Manual For Assessing Safety Hardware (MASH) will be accepted in lieu of the barrier shown. Drain slots shall be provided as needed or as directed by the Engineer. The Contractor shall furnish a certification of NCHRP Report 350 or Manual For Assessing Safety Hardware (MASH) compliance for any other types of precast barrier to be used. The certification shall state that the precast concrete barrier meets the requirements of NCHRP Report 350 or Manual For Assessing Safety Hardware (MASH) and include a copy of the Federal Highway Administration's (FHWA) approval letter with all attachments. Precast concrete barrier units shall be fabricated and installed in accordance with crash testing and documentation provided in the FHWA approval letter. Mixing of shapes will not be allowed in a continuous line of units.

(4) Dowel holes in pavement or bridge slabs that are to remain in place shall be filled. Holes in concrete pavement and bridge slabs shall be filled with an approved non-shrink epoxy grout. Holes in asphalt pavement shall be filled with an approved asphalt joint filler. Payment for drilling and filling holes to be included in the price for various barrier items.

(5) Attach Units To Roadway Surface with Stabilization Pins and to Deck Slabs using bolts when required.

(6) A 4" White PVC Sleeve may be used to form the Lifting Hole and if used the Sleeve is to be left in place.

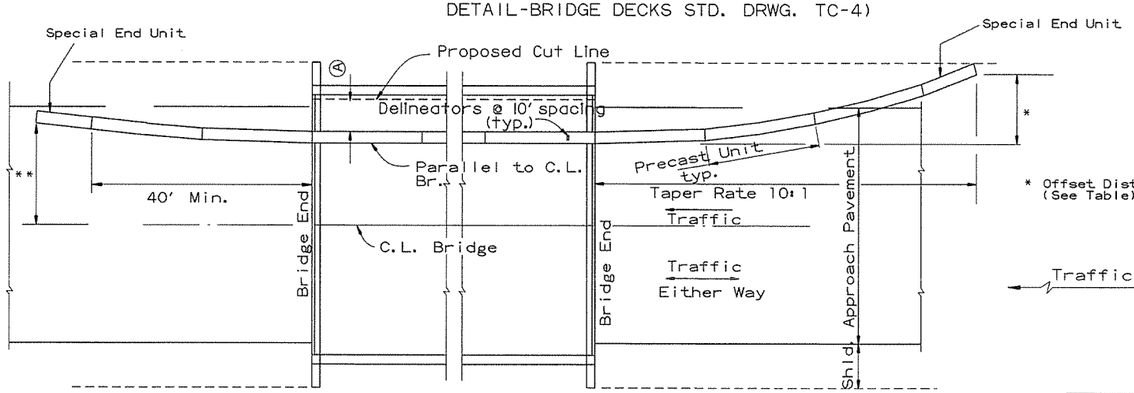
DATE	REVISION	FILMED
2-27-14	REVISED BARRIER STABILIZATION DETAIL	
10-15-09	ADDED REFERENCE TO MASH	
8-5-09	REV. NOTE 3 CONCERNING DRAIN SLOTS	
11-29-07	REVISED NOTE 3	
5-25-06	DELETED GENERAL NOTE 7	
11-18-04	REVISED BARRIER STABILIZATION DETAIL BRIDGE DECKS	
4-10-03	REVISED GENERAL NOTE 2	
8-22-02	ISSUED NEW DRAWING	

ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION - TEMPORARY PRECAST BARRIER

STANDARD DRAWING TC-4

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

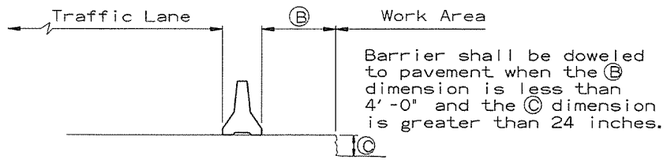


BARRIER PLACEMENT ALONG BRIDGE WITH OFFSET

No Scale

** Offset Distance for Two Way Traffic Only

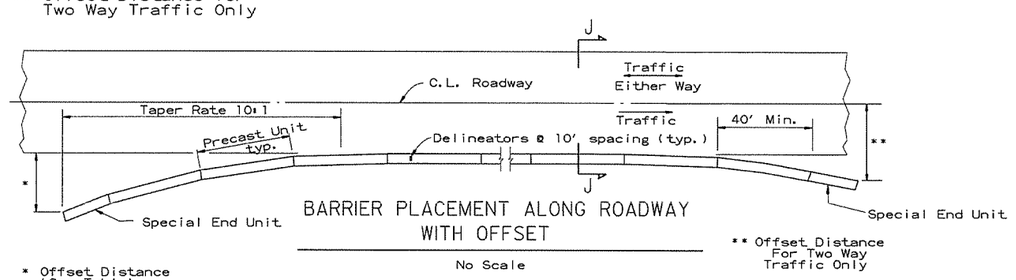
* Offset Distance (See Table)



Barrier shall be doweled to pavement when the Ⓑ dimension is less than 4'-0" and the Ⓒ dimension is greater than 24 inches.

SECTION J-J

No Scale



BARRIER PLACEMENT ALONG ROADWAY WITH OFFSET

No Scale

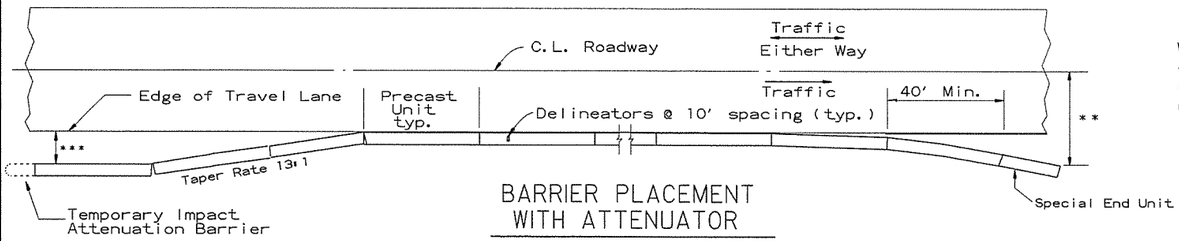
** Offset Distance For Two Way Traffic Only

* Offset Distance (See Table)

Offset Distance Table

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

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

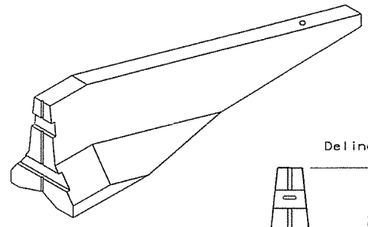


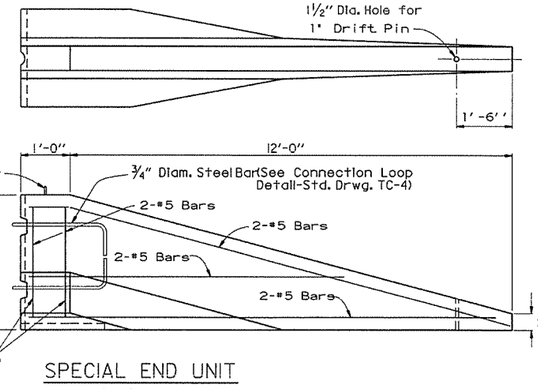
BARRIER PLACEMENT WITH ATTENUATOR

No Scale

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

** Offset Distance For Two Way Traffic Only





SPECIAL END UNIT

No Scale

General Notes

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

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

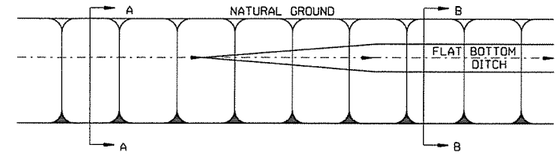
ARKANSAS STATE HIGHWAY COMMISSION

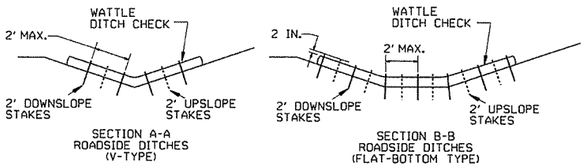
STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION - TEMPORARY PRECAST BARRIER

STANDARD DRAWING TC-5

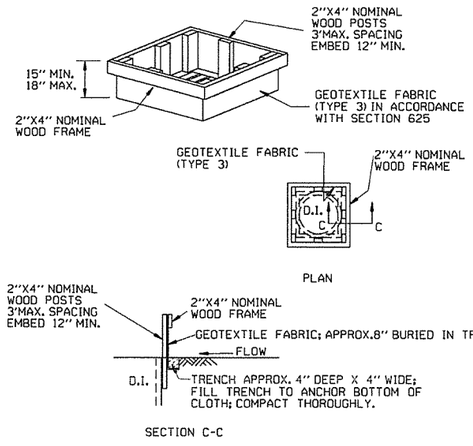
GENERAL NOTES

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

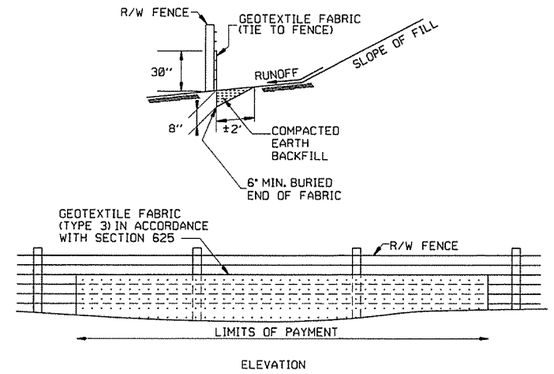




WATTLE DITCH CHECK (E-1)



DROP INLET SILT FENCE (E-7)



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

GENERAL NOTES

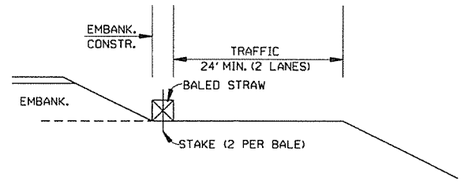
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST, OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

GENERAL NOTES

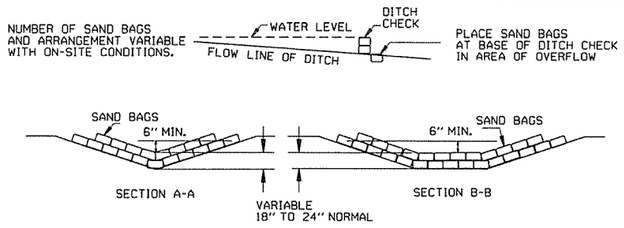
1. STRAW BALES SHALL BE INSTALLED SO THAT THE BINDINGS ARE ORIENTED AROUND THE SIDES RATHER THAN ALONG THE TOPS AND BOTTOMS OF THE BALES. THE BALES SHALL BE A MINIMUM OF 30 INCHES IN LENGTH.

2. NO GAPS SHALL BE LEFT BETWEEN BALES.

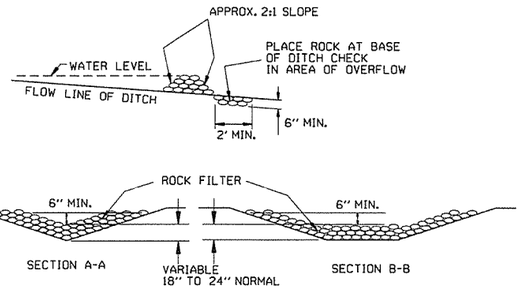
3. BALED STRAW FILTER BARRIERS COMPLETED AND ACCEPTED WILL BE MEASURED BY THE BALE IN PLACE AS AUTHORIZED BY THE ENGINEER AND WILL BE PAID FOR AT THE CONTRACT UNIT PRICE BID PER BALE FOR BALED STRAW DITCH CHECKS.



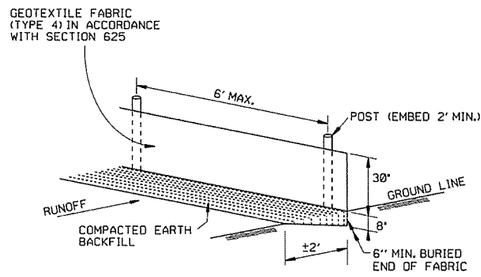
BALED STRAW FILTER BARRIER (E-2)



SAND BAG DITCH CHECK (E-5)



ROCK DITCH CHECK (E-6)



SILT FENCE (E-11)

GENERAL NOTES

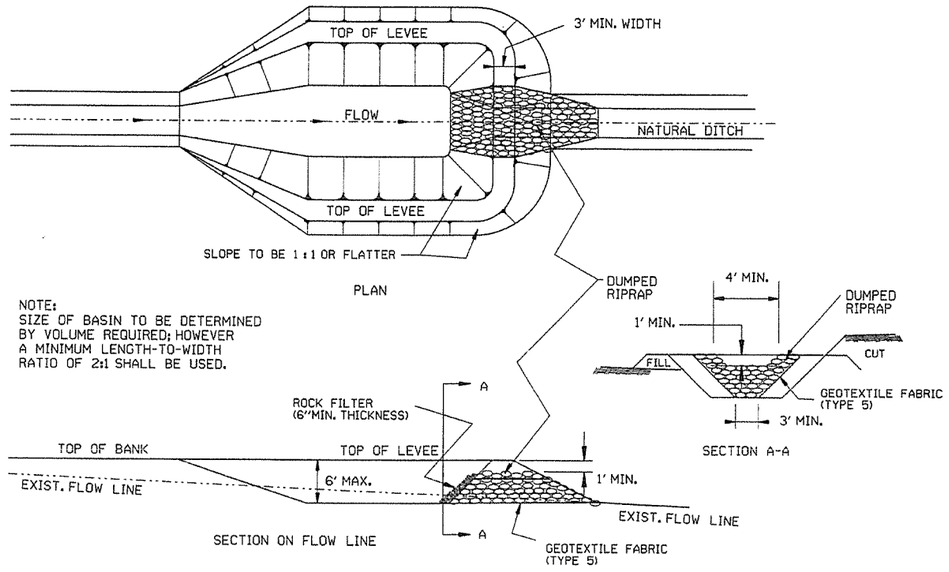
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

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

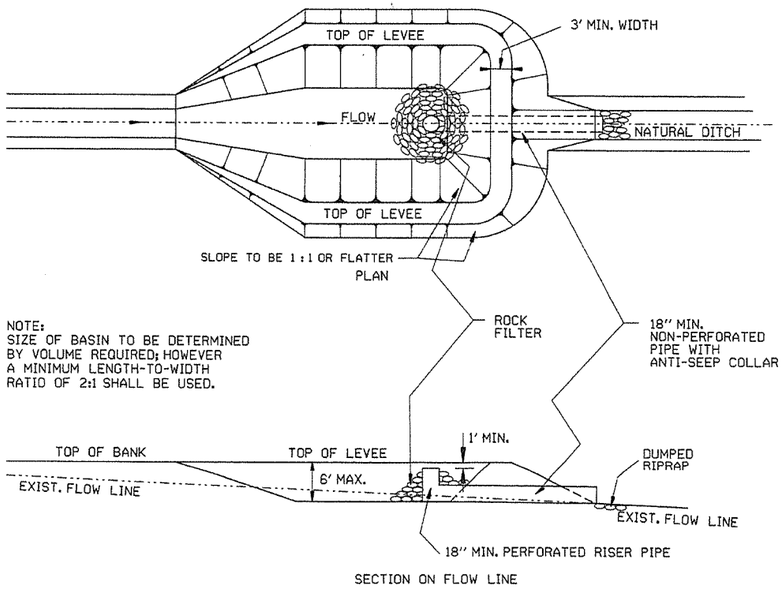
ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

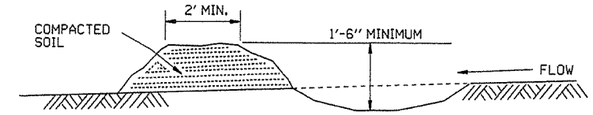
STANDARD DRAWING TEC-1



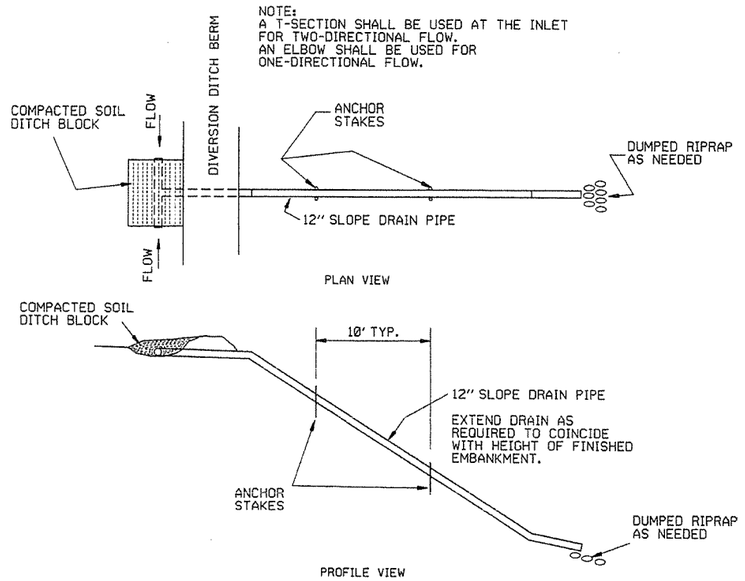
SEDIMENT BASIN WITH RIPRAP OUTLET (E-9)



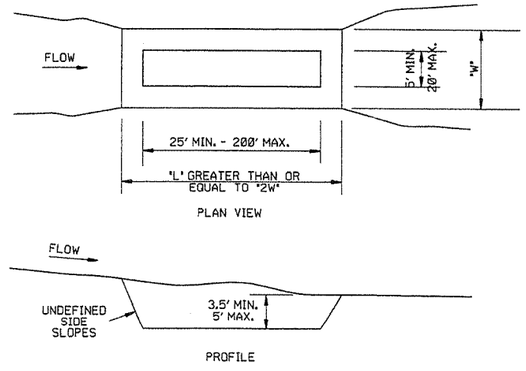
SEDIMENT BASIN WITH PIPE OUTLET (E-10)



DIVERSION DITCH (E-8)



SLOPE DRAIN (E-12)



SEDIMENT BASIN (E-14)

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

ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

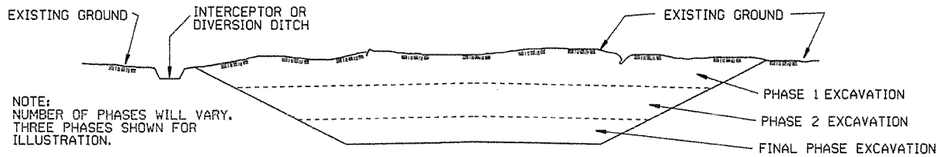
STANDARD DRAWING TEC-2

CLEARING AND GRUBBING

CONSTRUCTION SEQUENCE

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

EXCAVATION



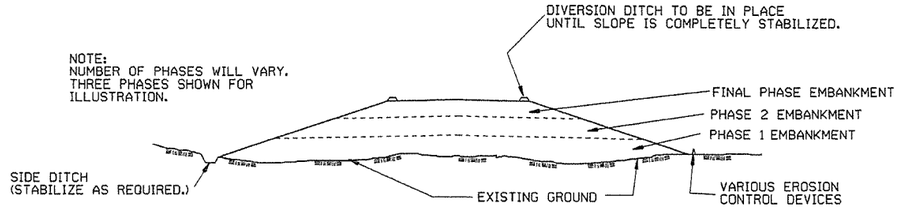
GENERAL NOTE

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

CONSTRUCTION SEQUENCE

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

EMBANKMENT



GENERAL NOTE

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

CONSTRUCTION SEQUENCE

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

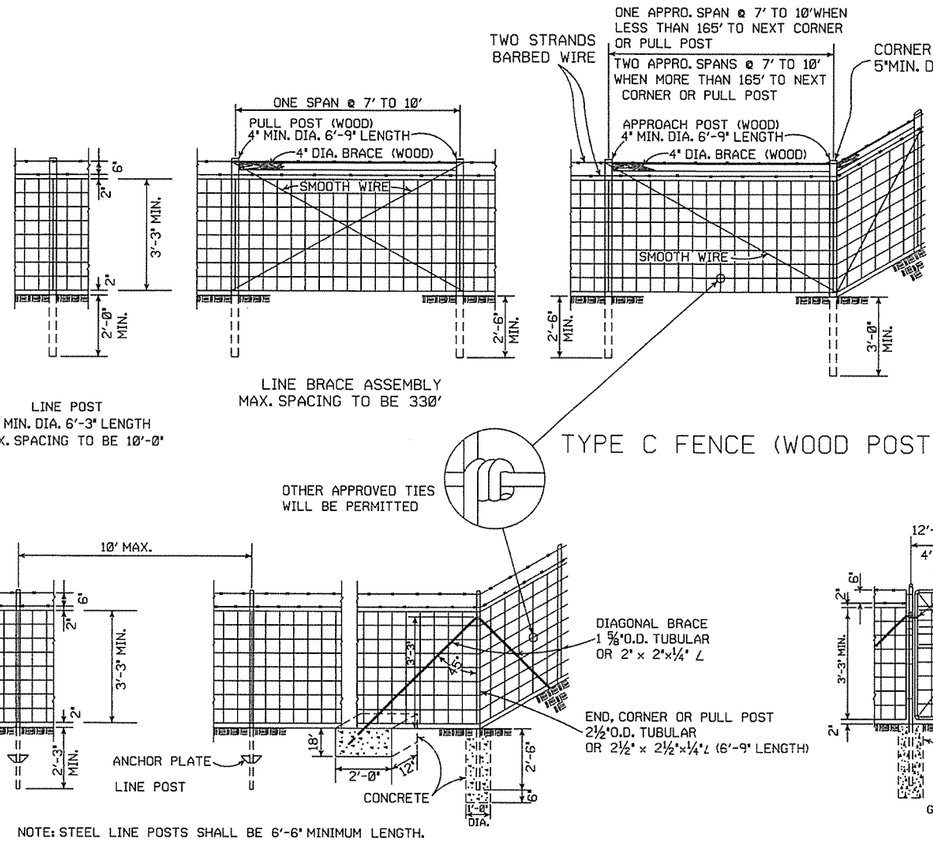
DATE	REVISION	FILMED
11-03-94	CORRECTED SPELLING	
6-2-94	Drawn & Issued	6-2-94

ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

STANDARD DRAWING TEC-3

stdtec3.dgn



GENERAL NOTES:

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

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

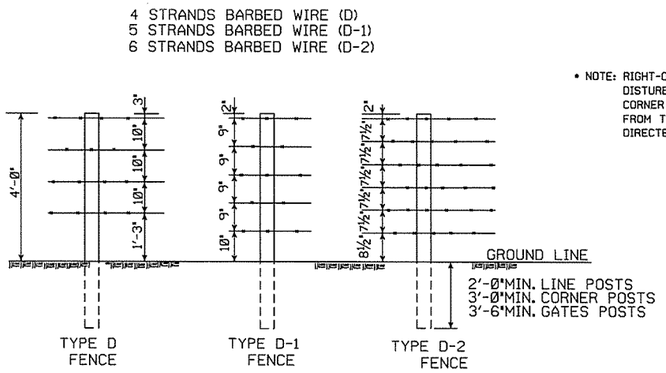
DRIVEWAY GATES, EITHER SINGLE 12' TO 16' OR DOUBLE 6' TO 8' OPENING OF THE SAME TYPE AS THE PEDESTRIAN GATE, SHALL BE INSTALLED ON THE RIGHT SIDE OF EACH THROUGH LANE ROAD AT LARGE CULVERTS OR BRIDGE CROSS FENCE, FOR USE OF MAINTENANCE EQUIPMENT. LOCATION OF GATES TO BE SHOWN ON PLANS OR AS DESIGNATED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

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

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

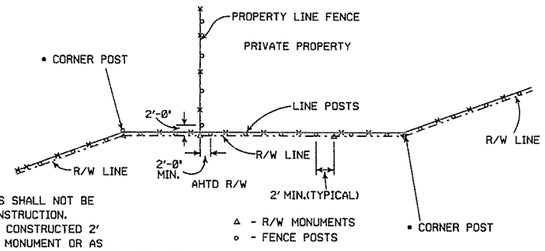
SPLICE FOR WOVEN WIRE BETWEEN PULL POST SHALL BE BY THE "WESTERN UNION METHOD" AS DESCRIBED AS FOLLOWS: THE VERTICAL WIRES FOR EACH END OF THE FENCE FABRIC SHALL BE PLACED SIDE BY SIDE AND THE PROJECTING HORIZONTAL WIRES SHALL BE WRAPPED A MINIMUM OF 4 TIMES AROUND THE HORIZONTAL WIRES OF THE FIRST WEB.

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



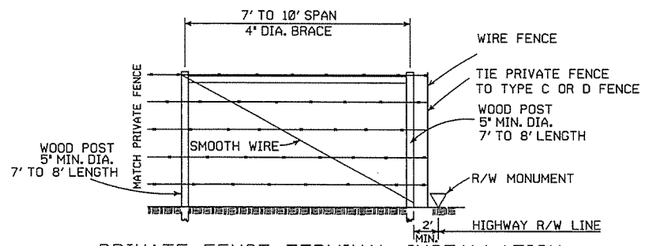
NOTE: SPACING AND SIZE (EXCEPT LENGTH) OF POSTS, APPROACH SPANS, PULL POST ASSEMBLIES, AND CORNER BRACING FOR TYPE D FENCE SHALL CONFORM TO TYPE C FENCE. USE GALVANIZED STAPLES ON WOOD POSTS AND APPROVED FASTENERS ON STEEL POSTS.

TYPE C FENCE (STEEL POSTS)

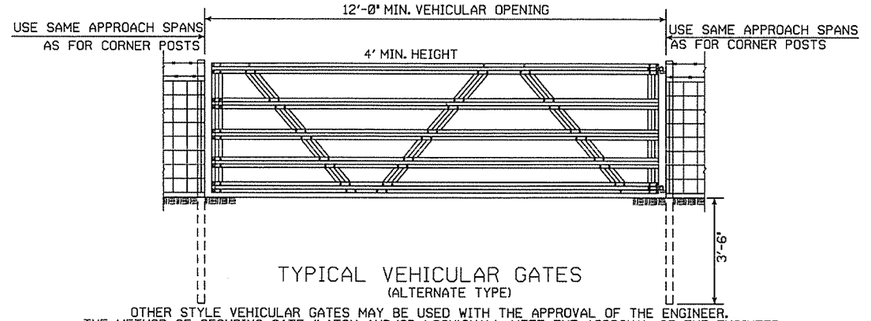


• NOTE: RIGHT-OF-WAY MONUMENTS SHALL NOT BE DISTURBED BY FENCE CONSTRUCTION. CORNER POSTS SHALL BE CONSTRUCTED 2' FROM THE RIGHT-OF-WAY MONUMENT OR AS DIRECTED BY THE ENGINEER.

RIGHT-OF-WAY FENCE LOCATION



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



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

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

ARKANSAS STATE HIGHWAY COMMISSION

WIRE FENCE TYPE C AND D

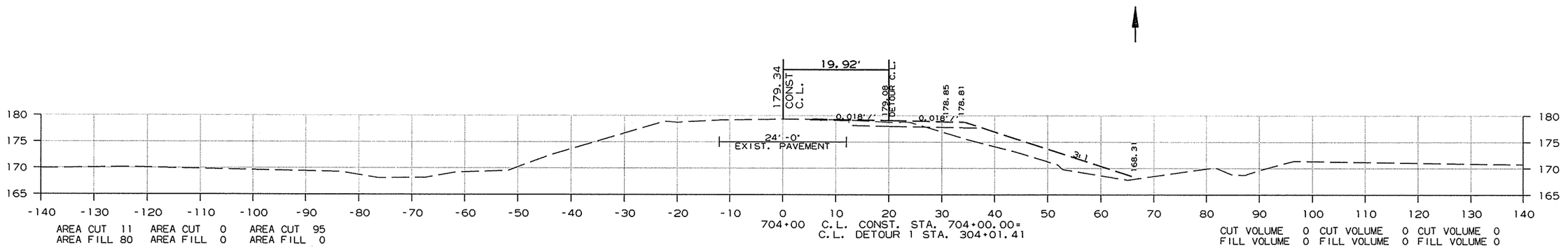
STANDARD DRAWING WF-4

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070344	128	137

(2) CROSS SECTIONS

DET. CONST. MAIN LANES DET. OBLIT.

DET. CONST. MAIN LANES DET. OBLIT.



CROSS SECTION STA. 704+00 TO STA. 704+00

R070344.DGN 9/12/2014

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.		070344	129	137

(2) CROSS SECTIONS

DET. CONST. MAIN LANES DET. OBLIT.

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

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

710+68.28 - TOE OF SLOPE

708+17.46 - TOE OF SLOPE

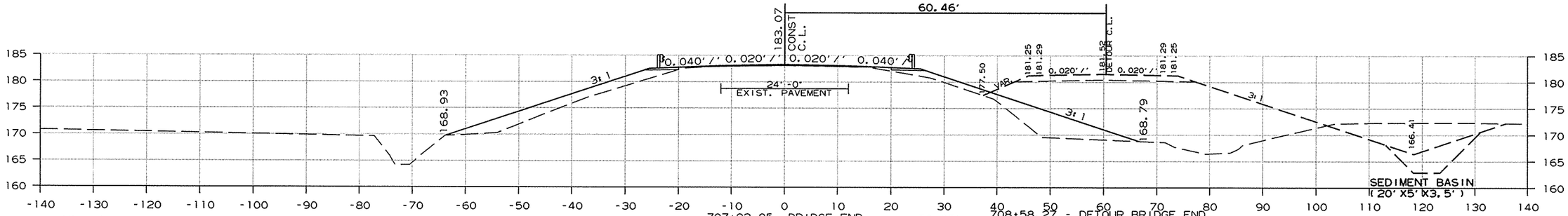
710+70.78 - DETOUR TOE OF SLOPE

708+71.67 - DETOUR TOE OF SLOPE

DET. CONST. MAIN LANES DET. OBLIT.

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

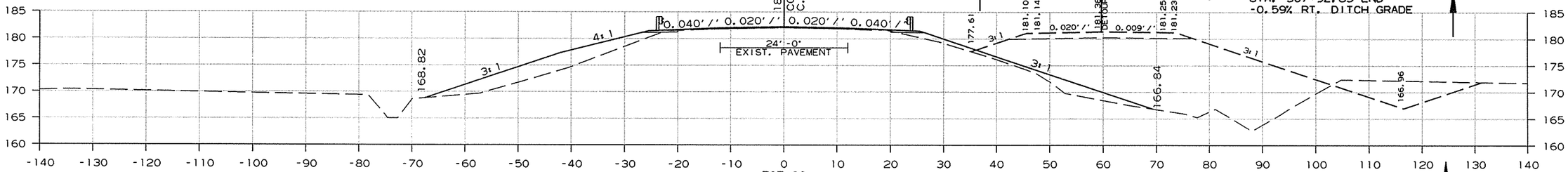
CUT VOLUME 27 CUT VOLUME 0 CUT VOLUME 137
FILL VOLUME 148 FILL VOLUME 42 FILL VOLUME 27



AREA CUT 103 AREA CUT 0 AREA CUT 527
AREA FILL 572 AREA FILL 93 AREA FILL 103

CUT VOLUME 538 CUT VOLUME 3 CUT VOLUME 3412
FILL VOLUME 3552 FILL VOLUME 348 FILL VOLUME 538

STA. 307+92.85 END
-0.59% RT. DITCH GRADE

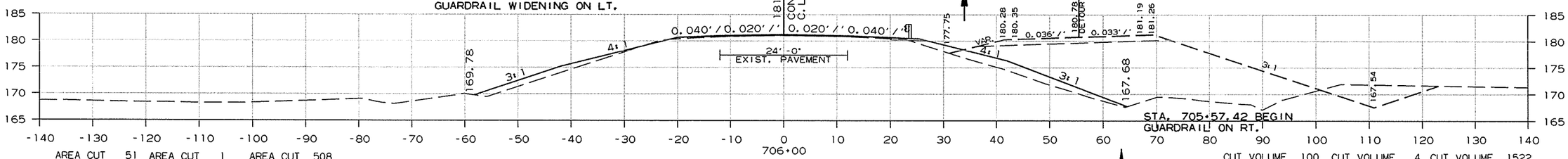


AREA CUT 80 AREA CUT 1 AREA CUT 638
AREA FILL 641 AREA FILL 108 AREA FILL 80

STA. 706+96.98 BEGIN
GUARDRAIL ON LT.

STA. 706+53.98 BEGIN
GUARDRAIL WIDENING ON LT.

CUT VOLUME 244 CUT VOLUME 4 CUT VOLUME 2122
FILL VOLUME 2130 FILL VOLUME 267 FILL VOLUME 244

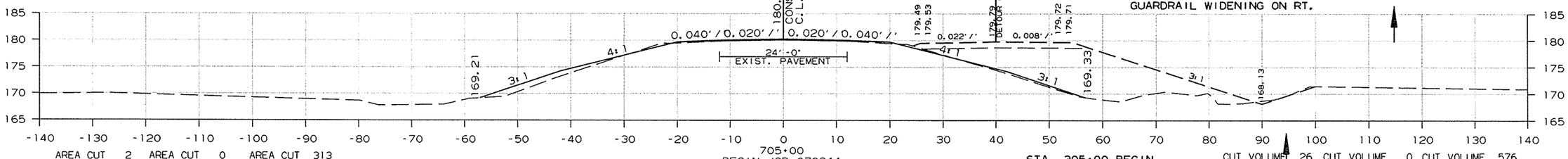


AREA CUT 51 AREA CUT 1 AREA CUT 508
AREA FILL 508 AREA FILL 35 AREA FILL 51

STA. 705+57.42 BEGIN
GUARDRAIL ON RT.

CUT VOLUME 100 CUT VOLUME 4 CUT VOLUME 1522
FILL VOLUME 1470 FILL VOLUME 104 FILL VOLUME 100

STA. 705+14.42 BEGIN
GUARDRAIL WIDENING ON RT.



AREA CUT 2 AREA CUT 0 AREA CUT 313
AREA FILL 286 AREA FILL 21 AREA FILL 2

STA. 305+00 BEGIN
-0.59% RT. DITCH GRADE

CUT VOLUME 26 CUT VOLUME 0 CUT VOLUME 576
FILL VOLUME 678 FILL VOLUME 41 FILL VOLUME 4

CROSS SECTION STA. 705+00 TO STA. 707+92.85

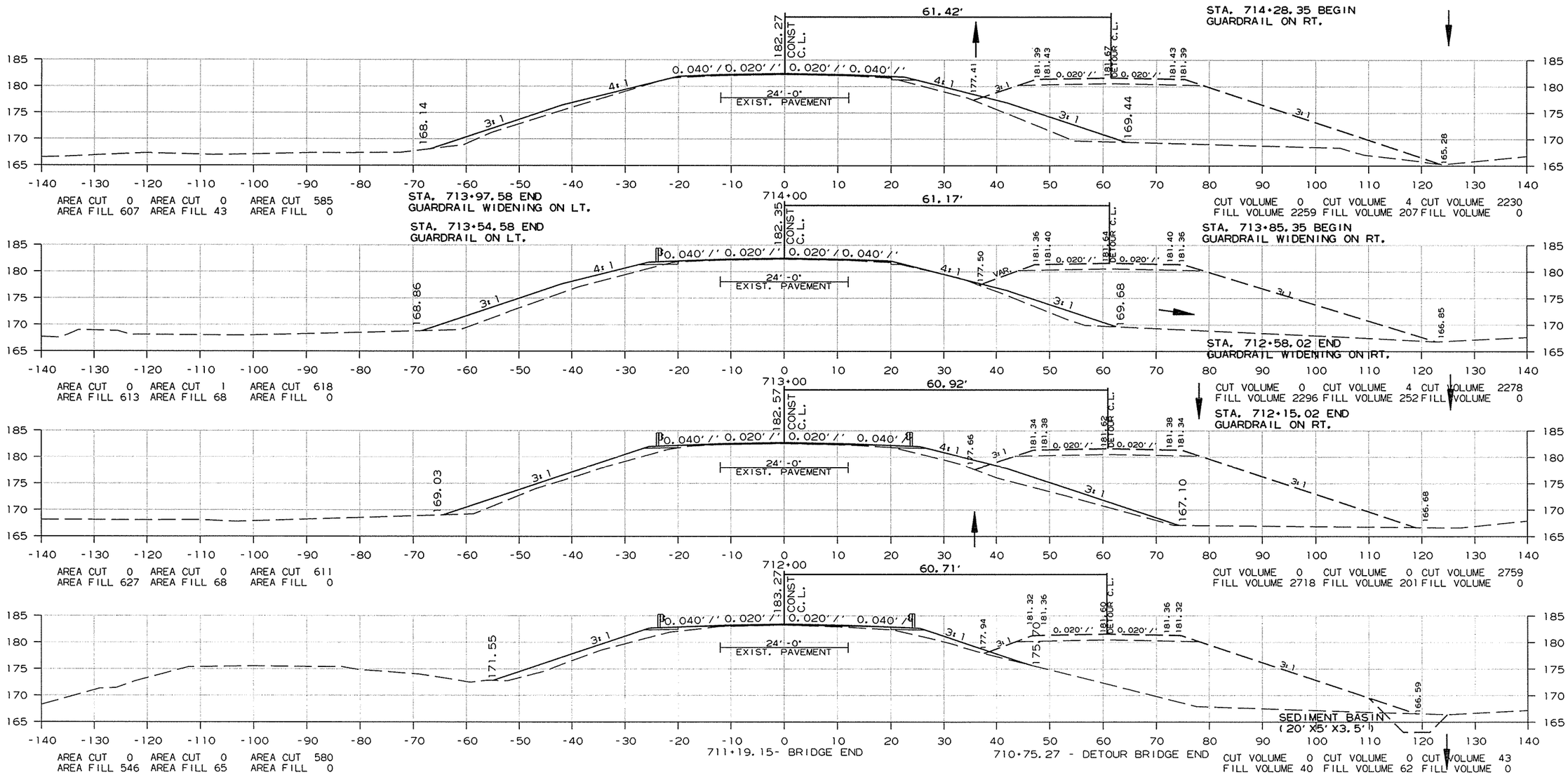
9/12/2014

R070344.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.		070344	130	137

(2) CROSS SECTIONS

DET. CONST. MAIN LANES DET. OBLIT.



DET. CONST. MAIN LANES DET. OBLIT.

STA. 714+28.35 BEGIN
GUARDRAIL ON RT.

CUT VOLUME 0 CUT VOLUME 4 CUT VOLUME 2230
FILL VOLUME 2259 FILL VOLUME 207 FILL VOLUME 0

STA. 713+85.35 BEGIN
GUARDRAIL WIDENING ON RT.

STA. 712+58.02 END
GUARDRAIL WIDENING ON RT.

CUT VOLUME 0 CUT VOLUME 4 CUT VOLUME 2278
FILL VOLUME 2296 FILL VOLUME 252 FILL VOLUME 0

STA. 712+15.02 END
GUARDRAIL ON RT.

CUT VOLUME 0 CUT VOLUME 0 CUT VOLUME 2759
FILL VOLUME 2718 FILL VOLUME 201 FILL VOLUME 0

CUT VOLUME 0 CUT VOLUME 0 CUT VOLUME 43
FILL VOLUME 40 FILL VOLUME 62 FILL VOLUME 0

CROSS SECTION STA. 711+19.15 TO STA. 714+00

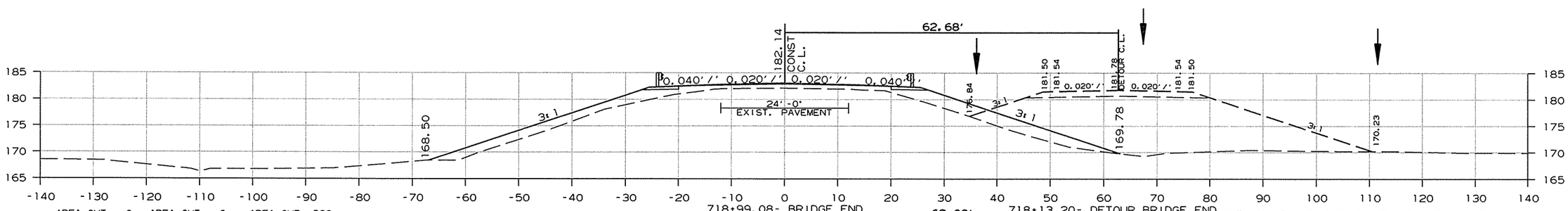
9/12/2014

R070344.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.		070344	131	137

(2) CROSS SECTIONS

DET. CONST. MAIN LANES DET. OBLIT.



718+99.08- BRIDGE END

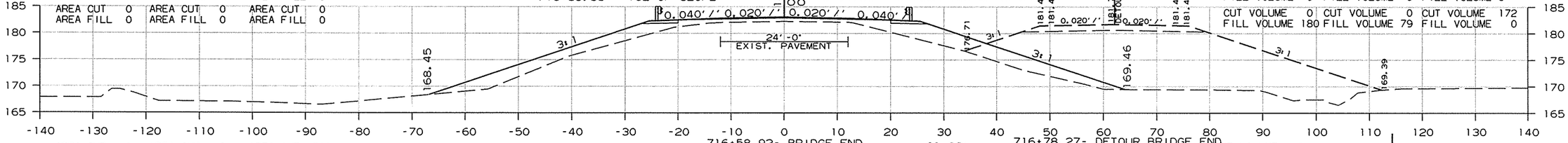
718+13.20- DETOUR BRIDGE END

AREA CUT 0 AREA CUT 0 AREA CUT 523
AREA FILL 537 AREA FILL 141 AREA FILL 0
AREA CUT 0 AREA CUT 0 AREA CUT 0
AREA FILL 0 AREA FILL 0 AREA FILL 0
AREA CUT 0 AREA CUT 0 AREA CUT 0
AREA FILL 0 AREA FILL 0 AREA FILL 0

CUT VOLUME 0 CUT VOLUME 0 CUT VOLUME 184
FILL VOLUME 189 FILL VOLUME 66 FILL VOLUME 0
CUT VOLUME 0 CUT VOLUME 0 CUT VOLUME 0
FILL VOLUME 0 FILL VOLUME 0 FILL VOLUME 0

718+73.63 - TOE OF SLOPE
716+85.33 - TOE OF SLOPE

717+93.82 - DETOUR TOE OF SLOPE
716+94.36 - DETOUR TOE OF SLOPE



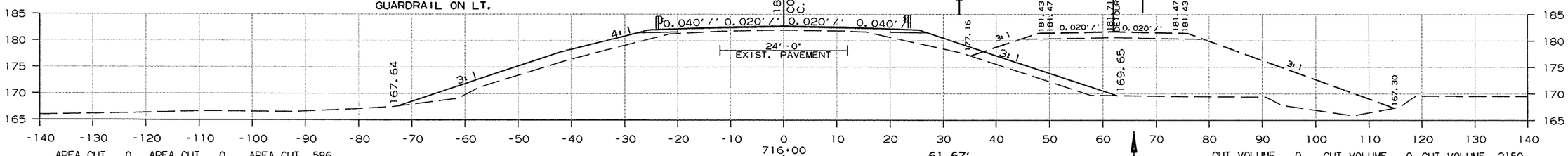
716+58.92- BRIDGE END

716+78.27- DETOUR BRIDGE END

AREA CUT 0 AREA CUT 0 AREA CUT 581
AREA FILL 607 AREA FILL 163 AREA FILL 0

CUT VOLUME 0 CUT VOLUME 0 CUT VOLUME 1687
FILL VOLUME 1730 FILL VOLUME 330 FILL VOLUME 0

STA. 716+08.35 BEGIN
GUARDRAIL ON LT.

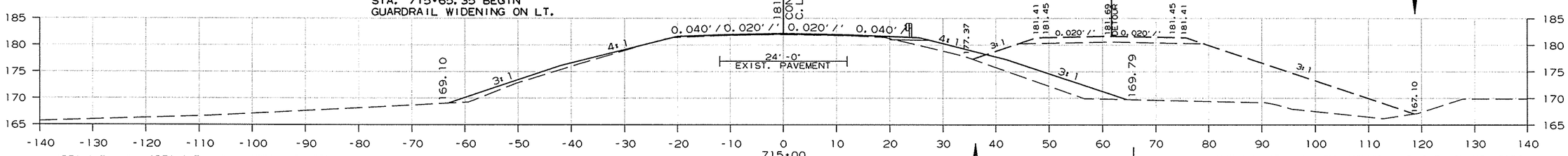


716+00

AREA CUT 0 AREA CUT 0 AREA CUT 586
AREA FILL 590 AREA FILL 138 AREA FILL 0

CUT VOLUME 0 CUT VOLUME 0 CUT VOLUME 2159
FILL VOLUME 2204 FILL VOLUME 330 FILL VOLUME 0

STA. 715+65.35 BEGIN
GUARDRAIL WIDENING ON LT.



715+00

AREA CUT 0 AREA CUT 0 AREA CUT 579
AREA FILL 597 AREA FILL 39 AREA FILL 0

CUT VOLUME 0 CUT VOLUME 0 CUT VOLUME 2156
FILL VOLUME 2233 FILL VOLUME 152 FILL VOLUME 0

CROSS SECTION STA. 715+00 TO STA. 718+99.08

9/12/2014

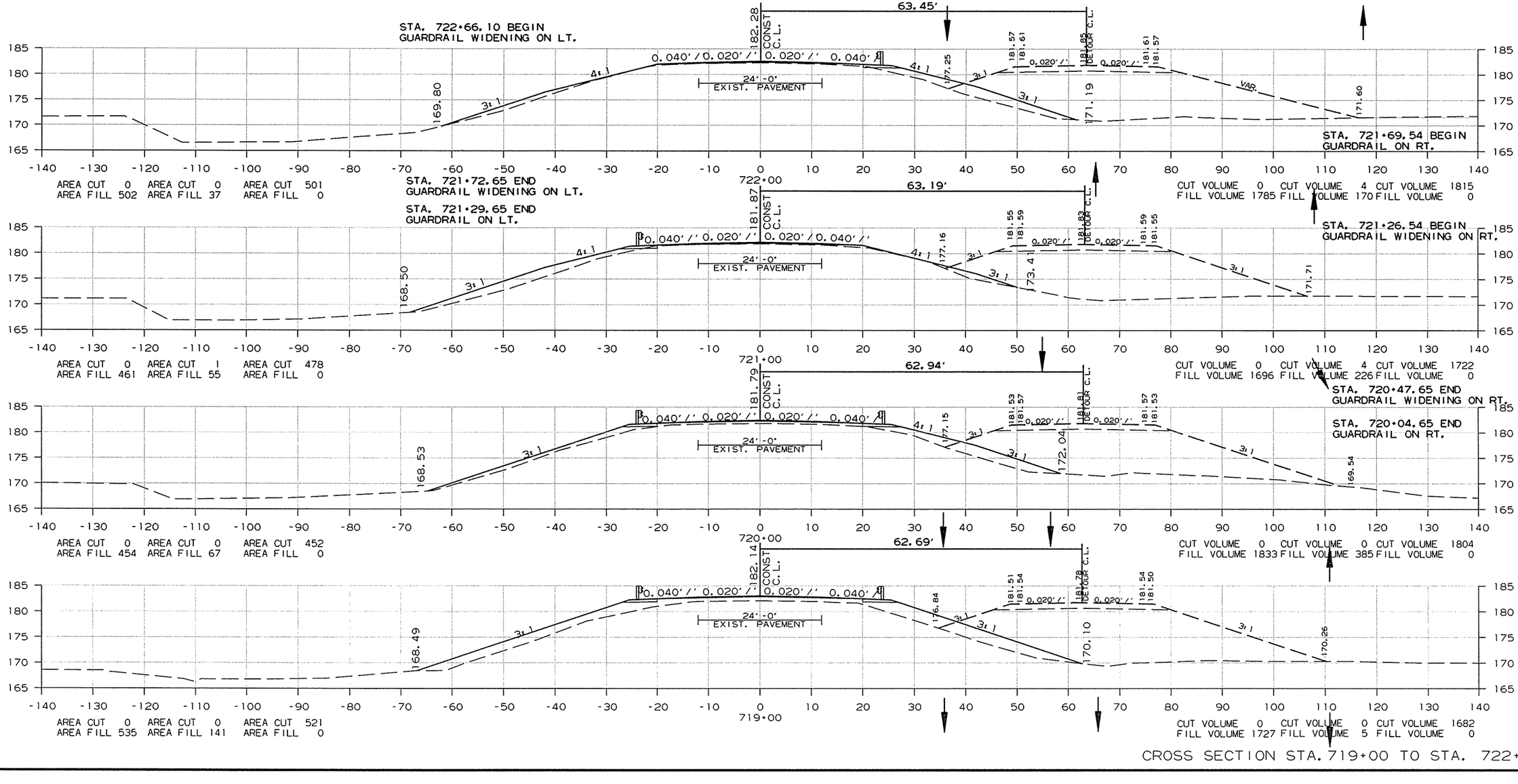
R070344.DGN

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.		070344	132	137

(2) CROSS SECTIONS

DET. CONST. MAIN LANES DET. OBLIT.

DET. CONST. MAIN LANES DET. OBLIT.



CROSS SECTION STA. 719+00 TO STA. 722+00

9/12/2014

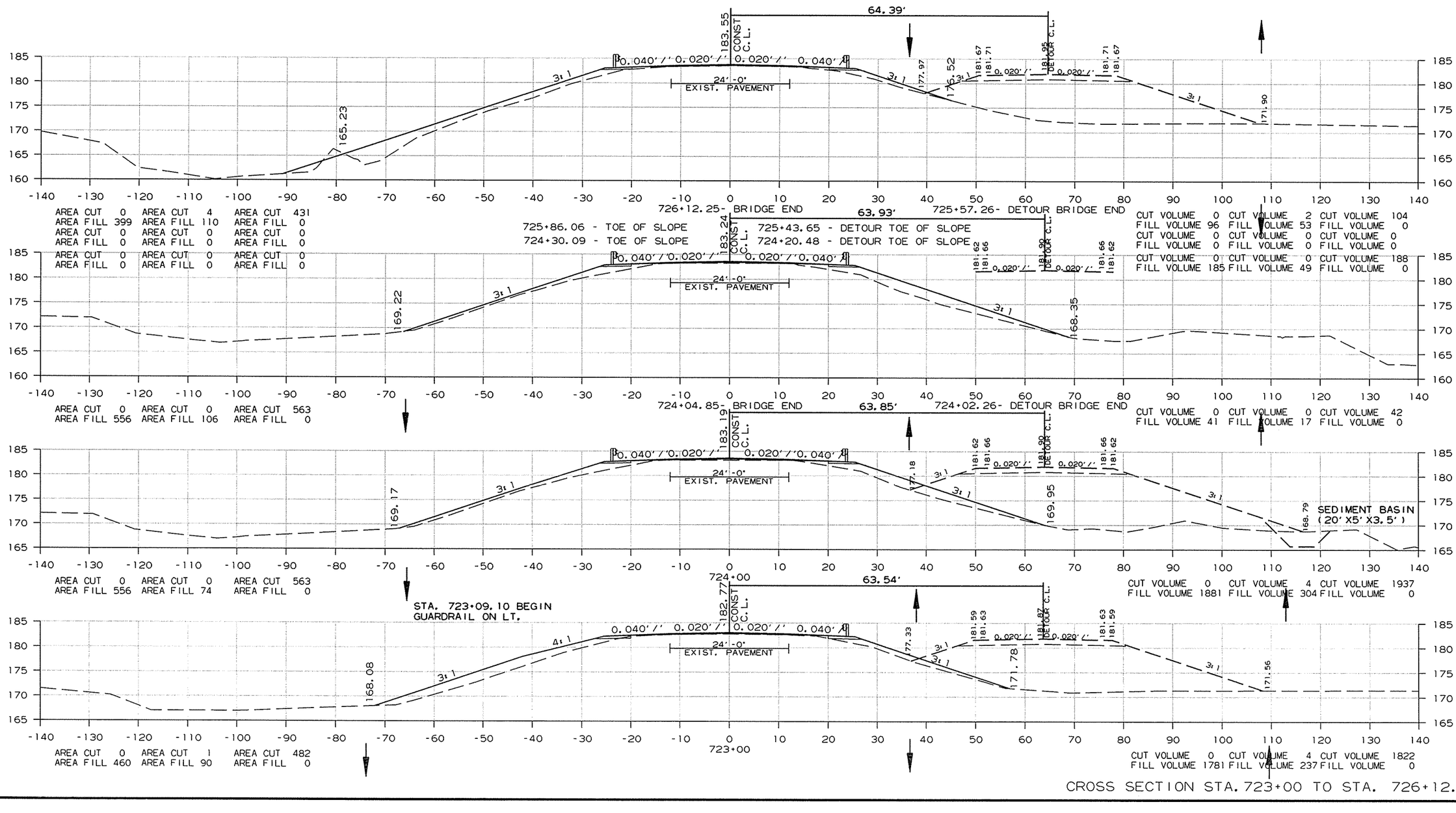
R070344.DGN

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.		070344	133	137

(2) CROSS SECTIONS

DET. CONST. MAIN LANES DET. OBLIT.

DET. CONST. MAIN LANES DET. OBLIT.



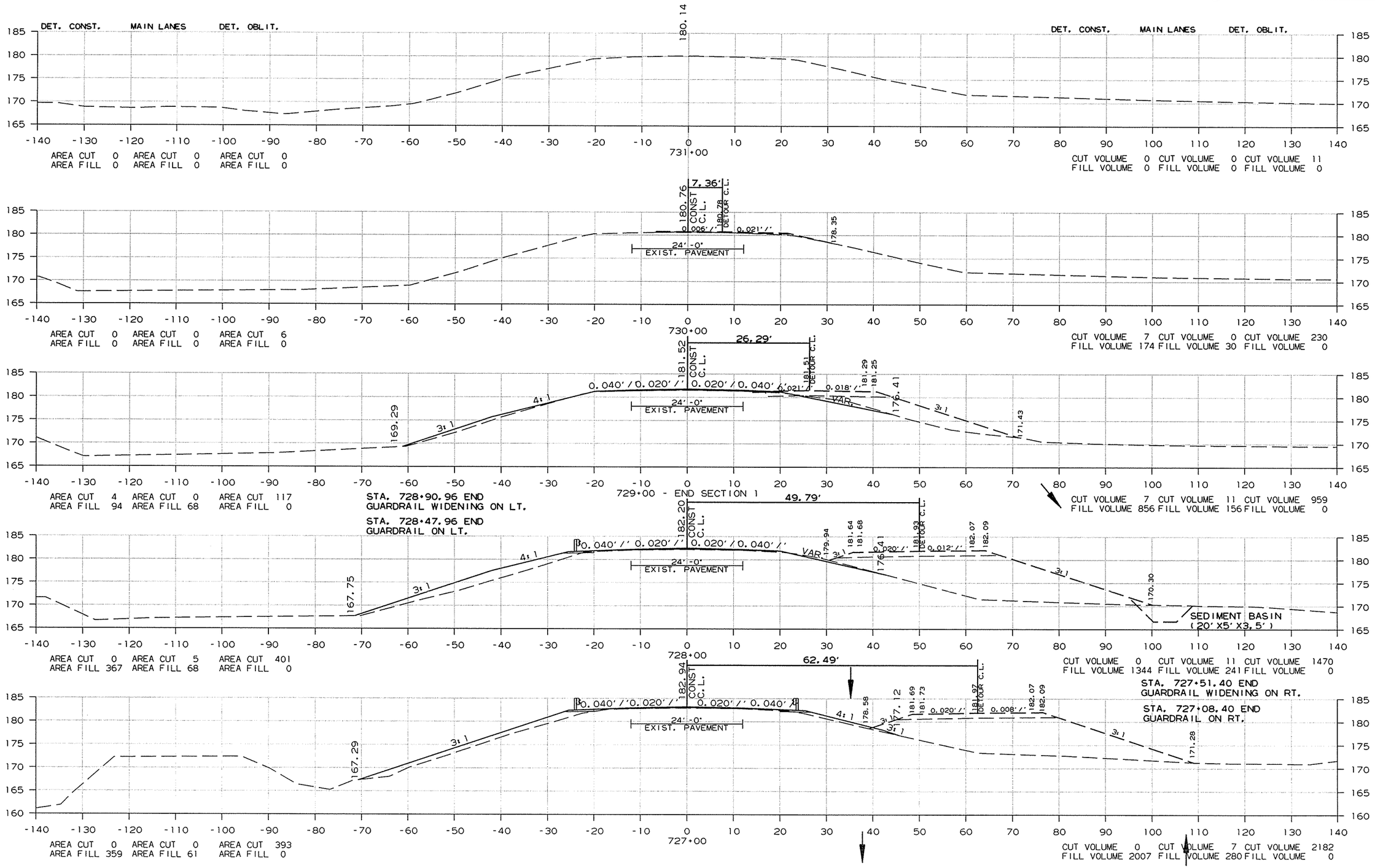
CROSS SECTION STA. 723+00 TO STA. 726+12.25

9/12/2014

R070344.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.		070344	134	137

(2) CROSS SECTIONS



CROSS SECTION STA. 727+00 TO STA. 731+00

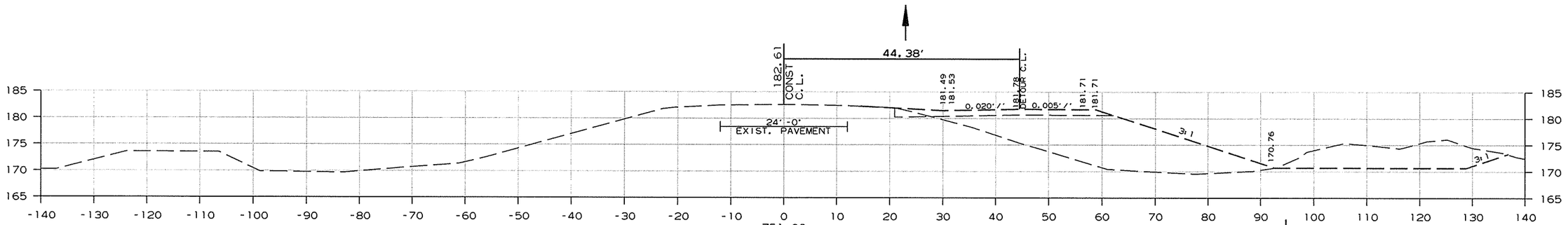
9/12/2014

R070344.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.		070344	135	137

(2) CROSS SECTIONS

DET. CONST. MAIN LANES DET. OBLIT.



AREA CUT 160 AREA CUT 0 AREA CUT 395
AREA FILL 355 AREA FILL 0 AREA FILL 154

CUT VOLUME 304 CUT VOLUME 0 CUT VOLUME 896
FILL VOLUME 789 FILL VOLUME 0 FILL VOLUME 285

AREA CUT 3 AREA CUT 0 AREA CUT 88
AREA FILL 70 AREA FILL 0 AREA FILL 0

CUT VOLUME 7 CUT VOLUME 0 CUT VOLUME 163
FILL VOLUME 130 FILL VOLUME 0 FILL VOLUME 0

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

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

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

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

9/12/2014

R070344.DGN

CROSS SECTION STA. 748+00 TO STA. 751+00

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070344	136	137

(2) CROSS SECTIONS

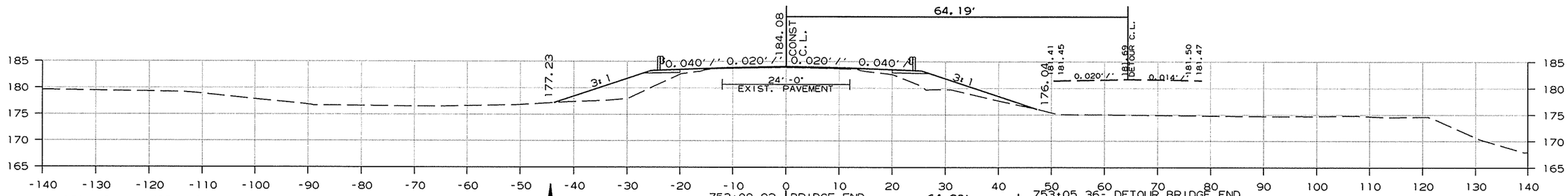
DET. CONST. MAIN LANES DET. OBLIT.

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

753+22.04 - TOE OF SLOPE 753+13.30 - DETOUR TOE OF SLOPE

DET. CONST. MAIN LANES DET. OBLIT.

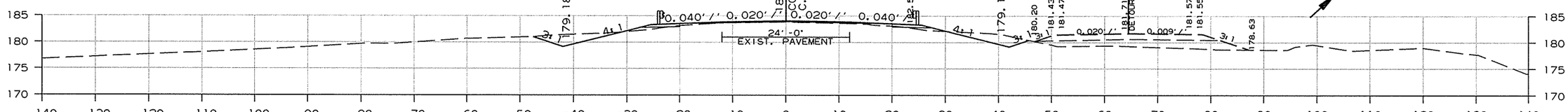
CUT VOLUME 0 CUT VOLUME 0 CUT VOLUME 12
FILL VOLUME 7 FILL VOLUME 21 FILL VOLUME 0



AREA CUT 0 AREA CUT 0 AREA CUT 84
AREA FILL 50 AREA FILL 95 AREA FILL 0

753+09.92 BRIDGE END 64.30' 753+05.36 - DETOUR BRIDGE END

CUT VOLUME 0 CUT VOLUME 7 CUT VOLUME 16
FILL VOLUME 9 FILL VOLUME 19 FILL VOLUME 0

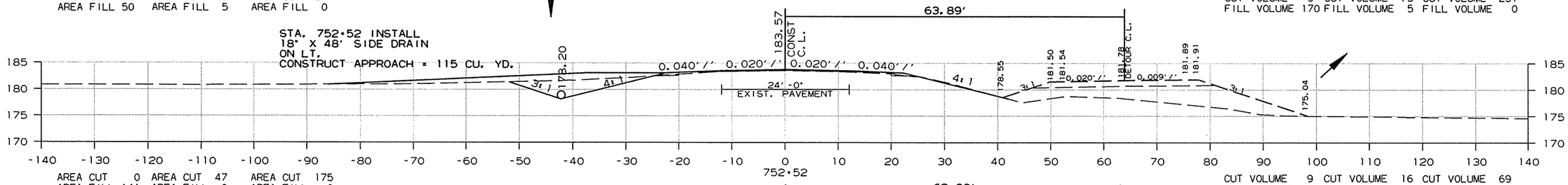


753+00

AREA CUT 0 AREA CUT 36 AREA CUT 84
AREA FILL 50 AREA FILL 5 AREA FILL 0

CUT VOLUME 0 CUT VOLUME 75 CUT VOLUME 231
FILL VOLUME 170 FILL VOLUME 5 FILL VOLUME 0

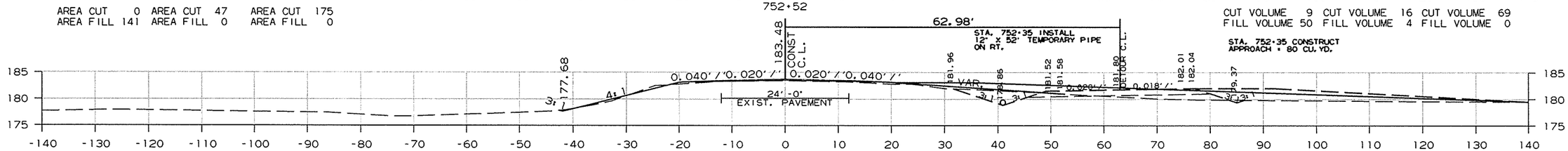
STA. 752+52 INSTALL
18" X 48' SIDE DRAIN
ON LT.
CONSTRUCT APPROACH = 115 CU. YD.



752+52

AREA CUT 0 AREA CUT 47 AREA CUT 175
AREA FILL 141 AREA FILL 0 AREA FILL 0

CUT VOLUME 9 CUT VOLUME 16 CUT VOLUME 69
FILL VOLUME 50 FILL VOLUME 4 FILL VOLUME 0



AREA CUT 28 AREA CUT 3 AREA CUT 43
AREA FILL 16 AREA FILL 13 AREA FILL 28

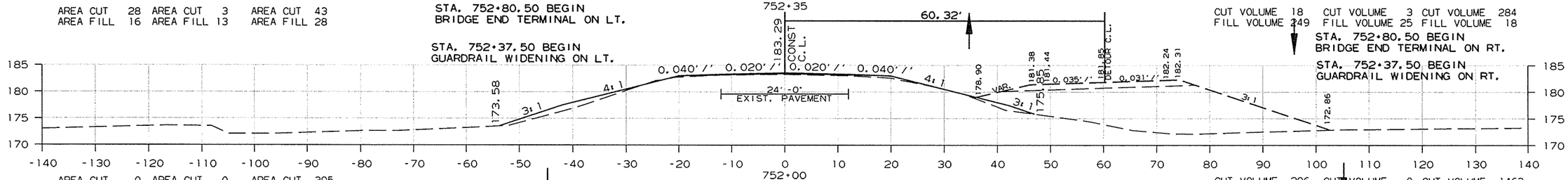
CUT VOLUME 18 CUT VOLUME 3 CUT VOLUME 284
FILL VOLUME 249 FILL VOLUME 25 FILL VOLUME 18

STA. 752+80.50 BEGIN
BRIDGE END TERMINAL ON LT.

STA. 752+37.50 BEGIN
GUARDRAIL WIDENING ON LT.

STA. 752+80.50 BEGIN
BRIDGE END TERMINAL ON RT.

STA. 752+37.50 BEGIN
GUARDRAIL WIDENING ON RT.



752+00
BEGIN SECTION 2

AREA CUT 0 AREA CUT 0 AREA CUT 395
AREA FILL 367 AREA FILL 24 AREA FILL 0

CUT VOLUME 296 CUT VOLUME 0 CUT VOLUME 1463
FILL VOLUME 1337 FILL VOLUME 44 FILL VOLUME 285

CROSS SECTION STA. 752+00 TO STA. 753+09.92

9/12/2014

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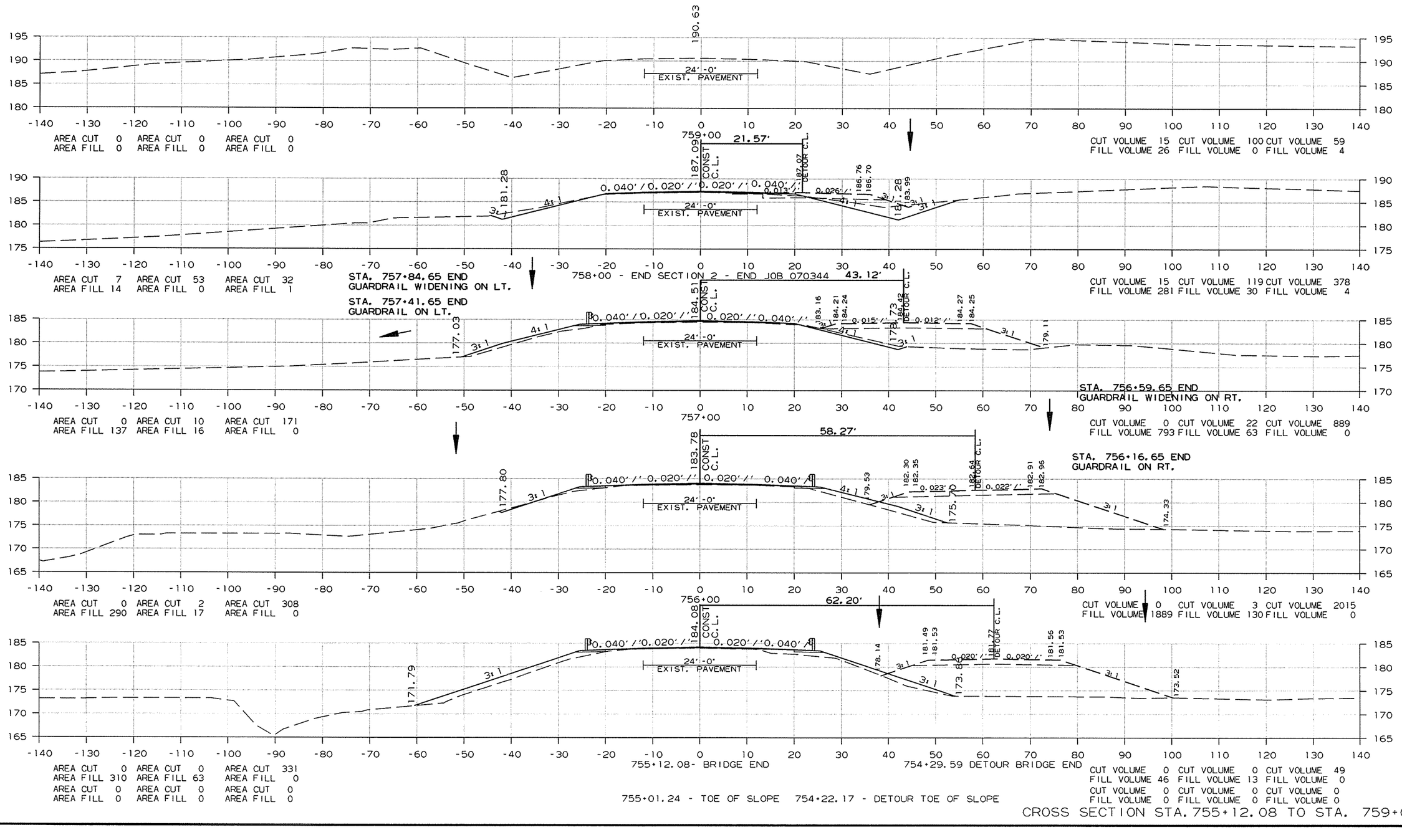
				JOB NO.		070344	137	137

(2) CROSS SECTIONS

DET. CONST. MAIN LANES DET. OBLIT.

DET. CONST. MAIN LANES DET. OBLIT.



CROSS SECTION STA. 755+12.08 TO STA. 759+00

9/12/2014

R070344.DGN