DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RO. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		030415	1	131
				(2) LITTLE RIVER STR. & APPRS. (S)				

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT
CONSTRUCTION PLANS FOR STATE HIGHWAY

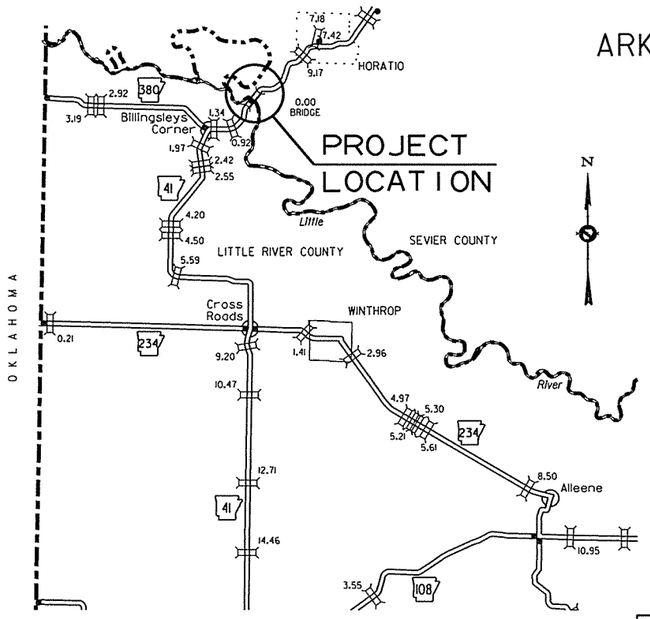
LITTLE RIVER
STR. & APPRS. (S)

LITTLE RIVER & SEVIER COUNTIES

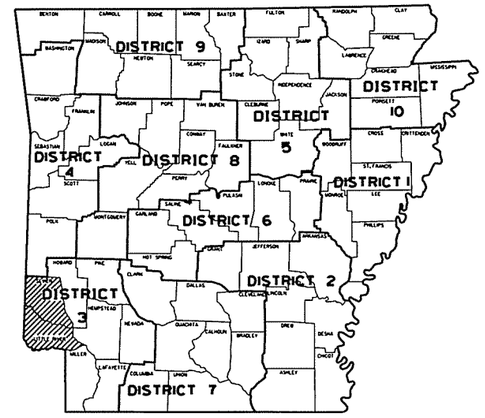
ROUTE 41 SECTIONS 2 & 1

JOB 030415

FED. AID PROJ. STPF-0041(31)



VICINITY MAP

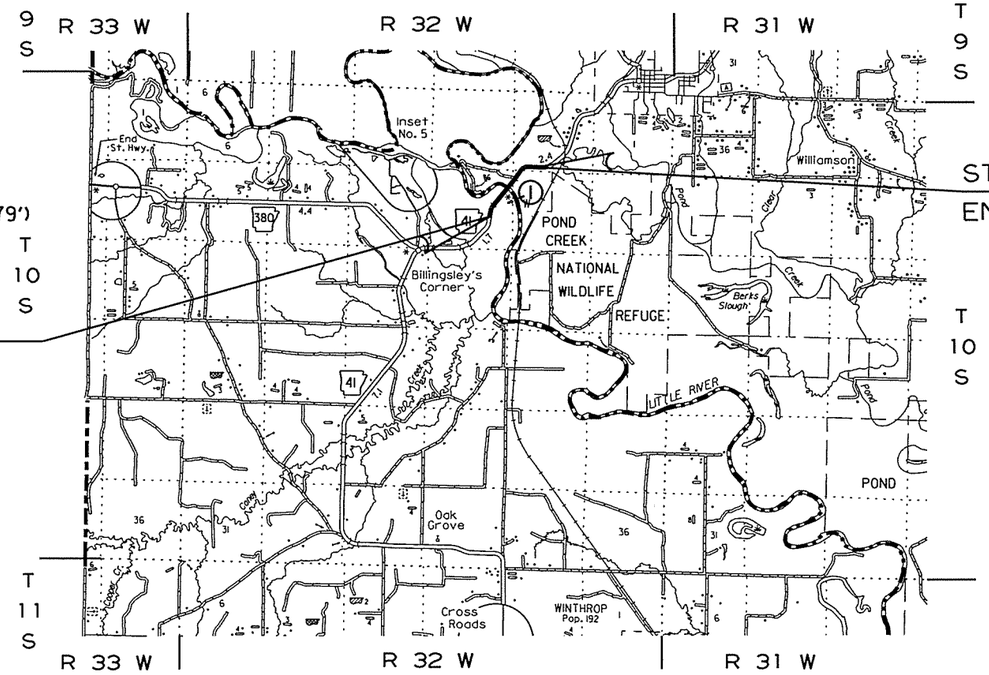


ARK. HWY. DIST. NO. 3

BRIDGE DATA

(1) BR. END STA. 309+64.90
BRIDGE NO. 07378
40'-00" CLEAR ROADWAY
1993'-2⅜" TOTAL LENGTH
237'-0" TYPE IV PRESTRESSED CONC. GIRDER (79'-79'-79')
237'-0" TYPE IV PRESTRESSED CONC. GIRDER (79'-79'-79')
237'-0" TYPE IV PRESTRESSED CONC. GIRDER (79'-79'-79')
237'-0" TYPE IV PRESTRESSED CONC. GIRDER (79'-79'-79')
237'-0" TYPE IV PRESTRESSED CONC. GIRDER (79'-79'-79')
490'-0" CONT. COMP. PLATE GIRDER (105'-140'-140'-105')
316'-0" TYPE IV PRESTRESSED CONC. GIRDER (79'-79'-79'-79')
BR. END STA. 329+58.10

NOT TO SCALE



STA. 301+00.00
BEGIN JOB 030415
LOG MILE 0.54

STA. 348+00.00
END JOB 030415

• DESIGN TRAFFIC DATA •

DESIGN YEAR	2036
2016 ADT	2600
2036 ADT	3100
2036 DHV	341
DIRECTIONAL DISTRIBUTION	0.60
TRUCKS	20%
DESIGN SPEED	60 MPH

APPROVED

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

2-16-16

DEPUTY DIRECTOR
AND CHIEF ENGINEER

BEGIN PROJECT	MIDPOINT	END PROJECT
LAT. = N 33°54'47"	LAT. = N 33°55'10"	LAT. = N 33°55'22"
LONG.= W 94°23'29"	LONG.= W 94°23'12"	LONG.= W 94°22'52"

GROSS LENGTH OF	PROJECT	4700.00	FEET	OR	0.890	MILES
NET " "	ROADWAY	2706.80	"	"	0.512	"
NET " "	BRIDGES	1993.20	"	"	0.378	"
NET " "	PROJECT	4700.00	"	"	0.890	"

P.E. JOB 030415

8/26/14

r030415.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.		030415	2	131

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

INDEX OF SHEETS

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

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-16-16

GOVERNING SPECIFICATIONS

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

NUMBER	TITLE
ERRATA	ERRATA FOR THE BOOK OF STANDARD SPECIFICATIONS
FHWA-1273	REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - NOTICE TO CONTRACTORS
FHWA-1273	SUPPLEMENT - SPECIFIC EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITIES (23 U.S.C. 140)
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - GOALS AND TIMETABLES
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - FEDERAL STANDARDS
FHWA-1273	SUPPLEMENT - TRAINING PROGRAM - JOB 030415
FHWA-1273	SUPPLEMENT - POSTERS AND NOTICES REQUIRED FOR FEDERAL-AID PROJECTS
FHWA-1273	SUPPLEMENT - WAGE RATE DETERMINATION
100-3	CONTRACTOR'S LICENSE
108-1	LIQUIDATED DAMAGES
400-1	TACK COATS
410-1	CONSTRUCTION REQUIREMENTS AND ACCEPTANCE OF ASPHALT CONCRETE PLANT MIX COURSES
604-1	RETROREFLECTIVE SHEETING FOR TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES
606-1	PIPE CULVERTS FOR SIDE DRAINS
620-1	MULCH COVER
JOB 030415	BIDDING REQUIREMENTS AND CONDITIONS
JOB 030415	BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB 030415	BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB 030415	CARGO PREFERENCE ACT REQUIREMENTS
JOB 030415	CONSTRUCTION IN SPECIAL FLOOD HAZARD AREAS
JOB 030415	DELAY IN RIGHT OF WAY OCCUPANCY
JOB 030415	DETAILS FOR BOATER SAFETY ON THE LITTLE RIVER
JOB 030415	DIRECT TENSION INDICATORS FOR HIGH STRENGTH BOLT ASSEMBLIES
JOB 030415	DISADVANTAGED BUSINESS ENTERPRISE BIDDER'S RESPONSIBILITIES
JOB 030415	DRILLED SHAFT FOUNDATIONS
JOB 030415	GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
JOB 030415	HIGH PERFORMANCE PAVEMENT MARKING
JOB 030415	MANDATORY ELECTRONIC CONTRACT
JOB 030415	NESTING SITES OF MIGRATORY BIRDS
JOB 030415	NONDESTRUCTIVE TESTING OF DRILLED SHAFTS
JOB 030415	PARTNERING REQUIREMENTS
JOB 030415	PLASTIC PIPE
JOB 030415	SHORING FOR CULVERTS
JOB 030415	SOIL STABILIZATION
JOB 030415	SPECIAL FACILITIES AT SITE
JOB 030415	SPLICING REINFORCING STEEL
JOB 030415	STORM WATER POLLUTION PREVENTION PLAN
JOB 300415	SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB 300415	THERMAL INTEGRITY PROFILING OF DRILLED SHAFTS
JOB 030415	UTILITY ADJUSTMENTS
JOB 030415	VALUE ENGINEERING
JOB 030415	VEGETATED BUFFER
JOB 030415	WARM MIX ASPHALT
JOB 030415	WATER POLLUTION CONTROL & RESTRAINING CONDITION
JOB 030415	WELLHEAD PROTECTION

GENERAL NOTES

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

2/10/2016

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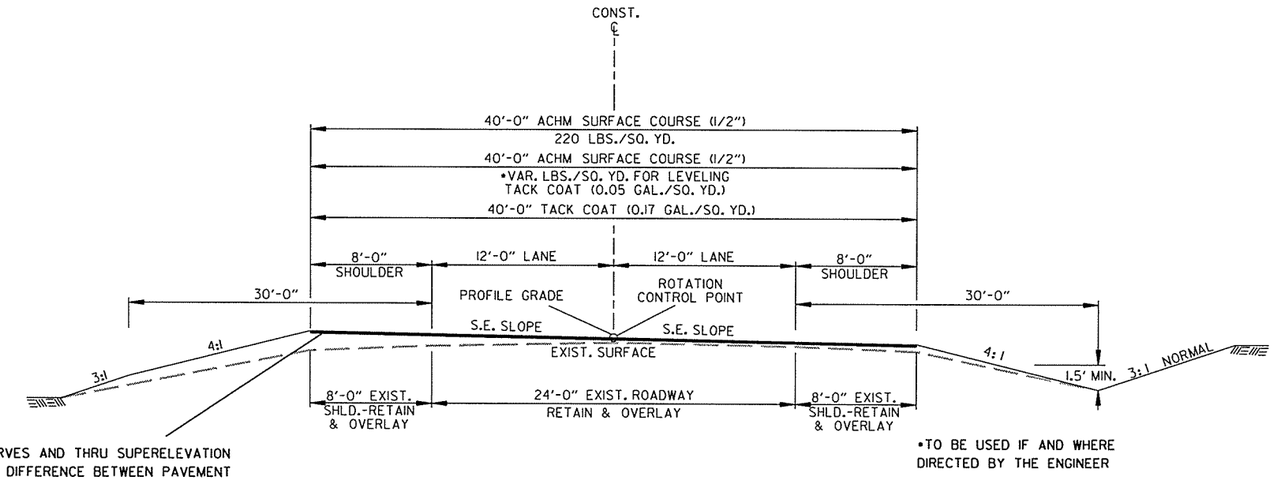
(2) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-16-16



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

•TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER

TYPICAL SECTION OF IMPROVEMENT
NOTCH & WIDEN SUPERELEVATION SECTION

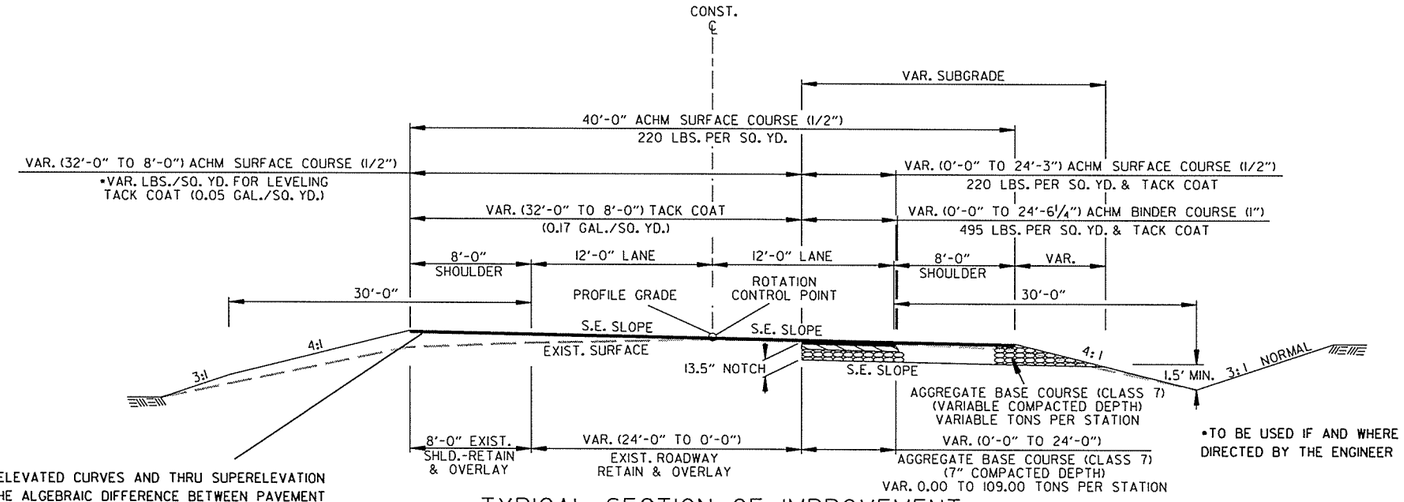
STA. 301+00.00 TO STA. 302+00.00
STA. 347+19.60 TO STA. 348+00.00

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

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

THE FINAL 2" OF SURFACE COURSE IS TO BE PLACED AFTER ALL OTHER COURSES HAVE BEEN LAID. LONGITUDINAL JOINTS SHALL BE AT 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. CALCULATIONS WILL NOT BE PAID FOR DIRECTLY, BUT PAYMENT WILL BE CONSIDERED INCLUDED IN THE VARIOUS PAY ITEMS.



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

•TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER

TYPICAL SECTION OF IMPROVEMENT
NOTCH & WIDEN SUPERELEVATION SECTION

STA. 302+00.00 TO STA. 304+79.66
STA. 344+70.30 TO STA. 347+19.60

10/21/2015

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TYPICAL SECTIONS OF IMPROVEMENT

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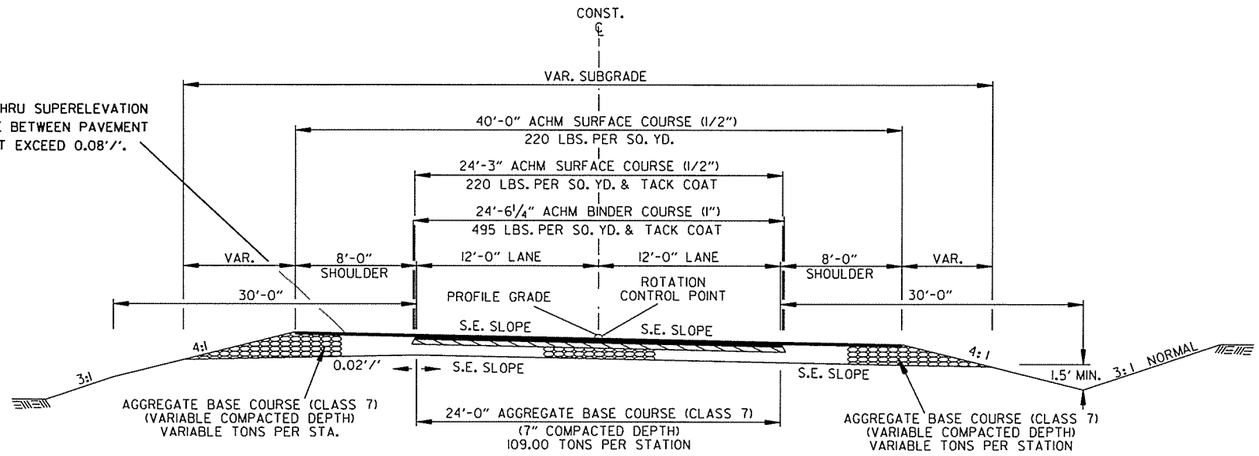
(2) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TIMOTHY D. SMITH
2-16-16

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



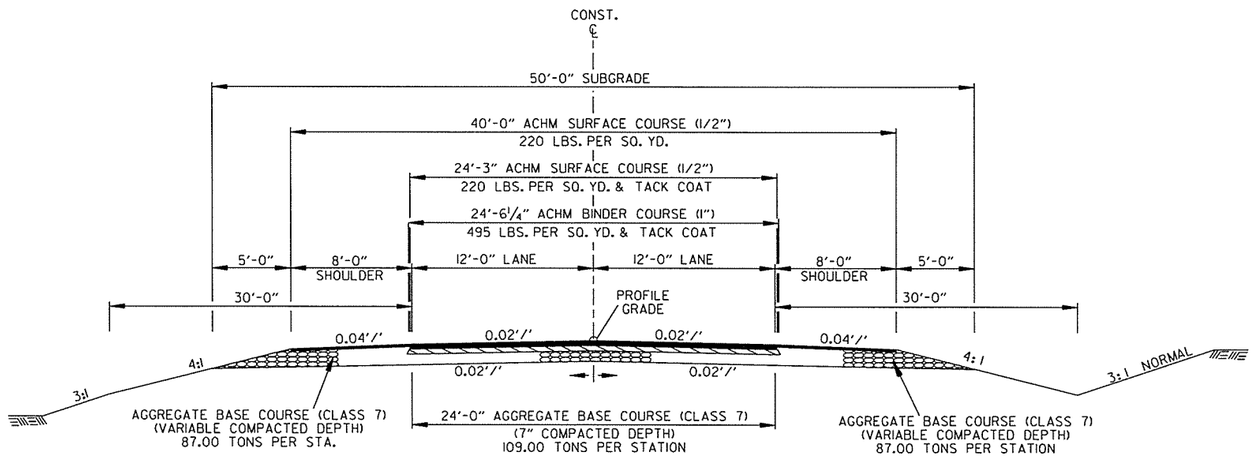
TYPICAL SECTION OF IMPROVEMENT
FULL DEPTH SUPERELEVATION SECTION

STA. 304+79.66 TO STA. 309+50.00
STA. 333+37.20 TO STA. 344+70.30

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

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

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



TYPICAL SECTION OF IMPROVEMENT
FULL DEPTH TANGENT

STA. 309+50.00 TO STA. 309+64.90
STA. 329+58.10 TO STA. 333+37.20

10/21/2015

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TYPICAL SECTIONS OF IMPROVEMENT

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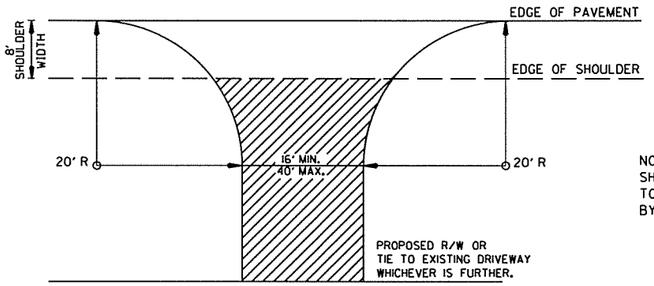
				6	ARK.			
				JOB NO.		030415	5	131

(2) SPECIAL DETAILS

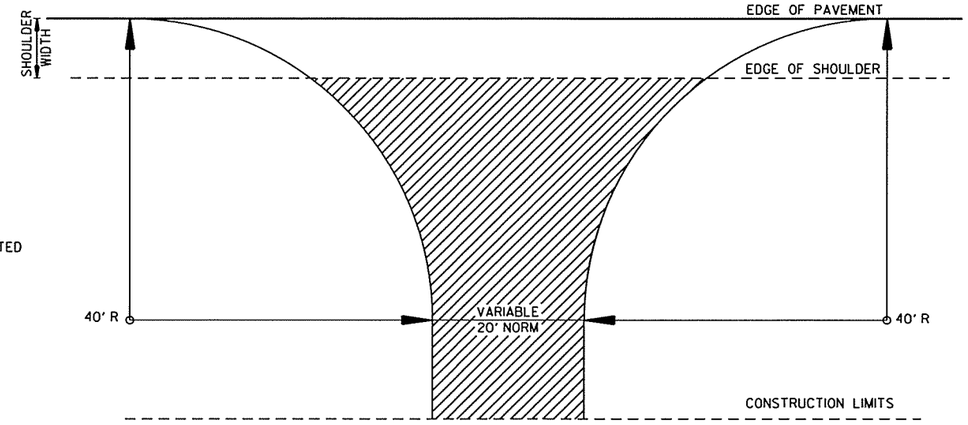
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-16-16



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

DETAIL FOR DRIVEWAY TURNOUTS

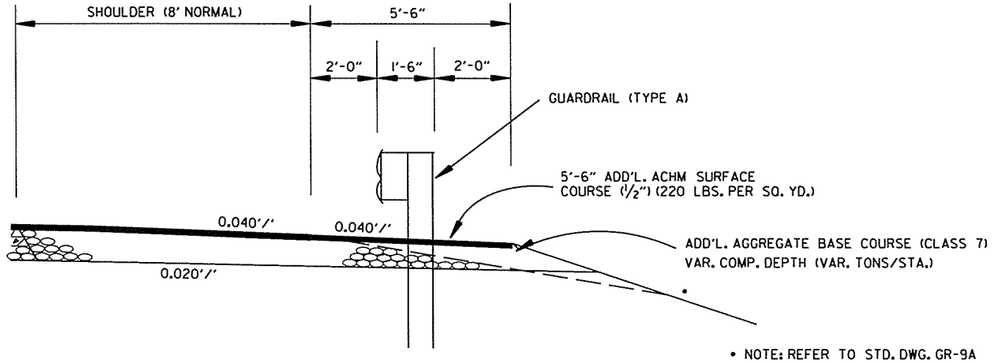
NOTE: TURNOUTS AND PRIVATE DRIVES SHALL BE MODIFIED WHERE NECESSARY TO MEET LOCAL CONDITIONS AS DIRECTED BY THE ENGINEER.



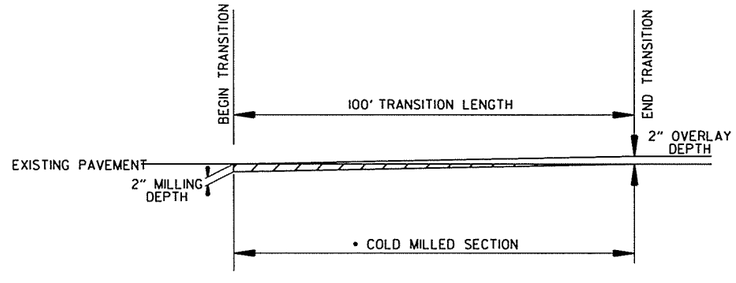
ASPHALT CONCRETE HOT MIX SURFACE COURSE (1/2") (220 LBS. PER SQ. YD.) AND AGGREGATE BASE COURSE (CLASS 7) (7" COMPACTED DEPTH) FOR COUNTY ROADS OR AGGREGATE BASE COURSE (CLASS 7) (9" COMPACTED DEPTH) FOR RIVER RD. DETOUR.

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

DETAIL FOR COUNTY ROAD TURNOUT & RIVER RD. DETOUR



WIDENING FOR GUARDRAIL



DETAIL SHOWING TRANSITION TO EXISTING PAVEMENT

• TO BE USED AS DIRECTED BY THE ENGINEER

1/29/2016

R030415.DGN

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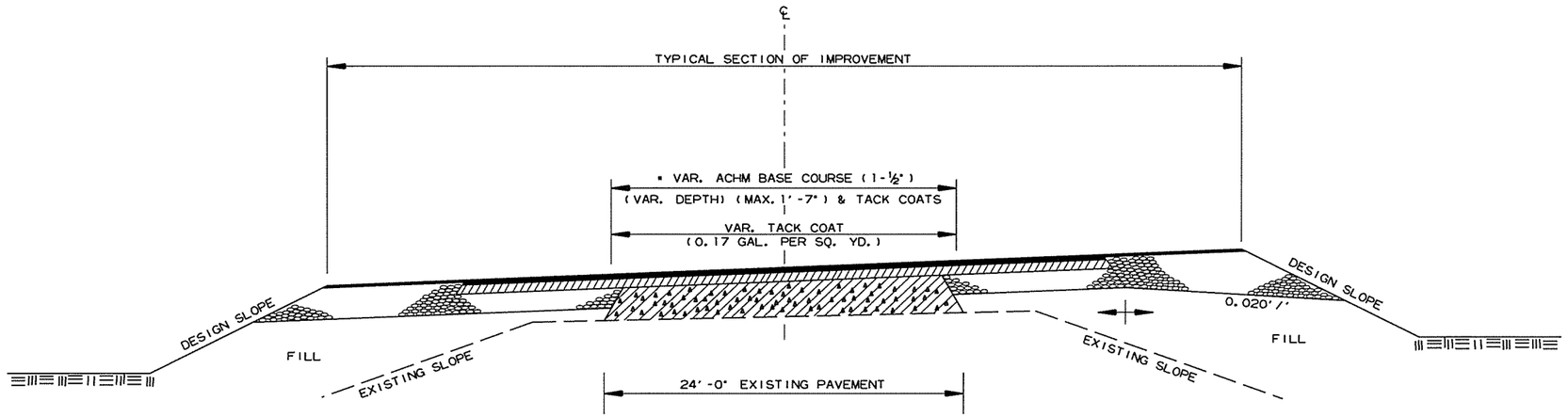
(2) SPECIAL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-16-16



* 7" AGGREGATE BASE COURSE (CLASS 7)
TO BE REPLACED WITH ACHM BASE COURSE (1-½")

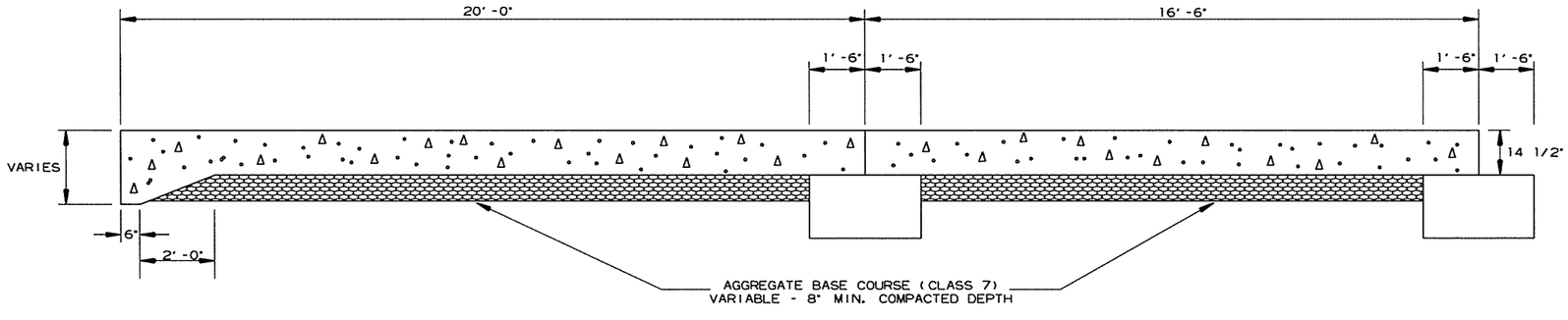
METHOD OF RAISING GRADE

NOTES:

(1) THIS DETAIL TO BE USED IF AND 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.



SECTION OF APPROACH SLAB

1/29/2016

R030415.DGN

SPECIAL DETAILS

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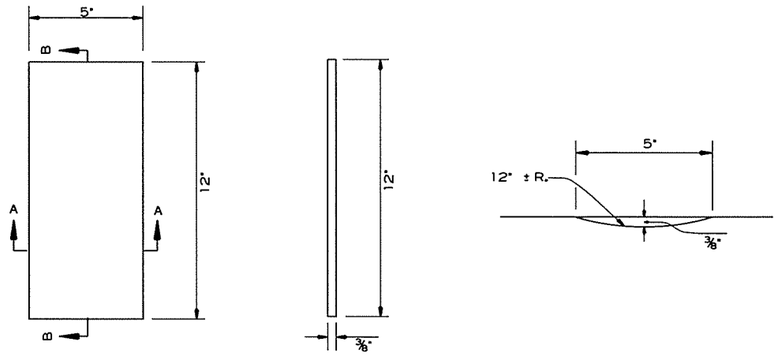
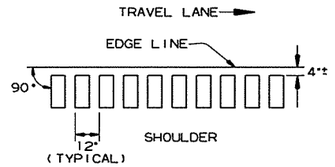
(2) SPECIAL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-16-16

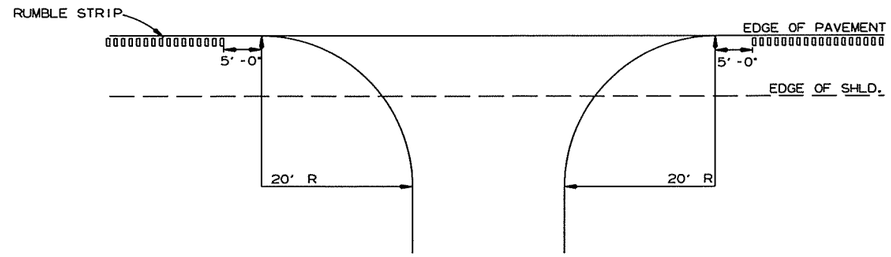


PLAN SECTION B-B SECTION A-A

DETAILS OF RUMBLE STRIPS



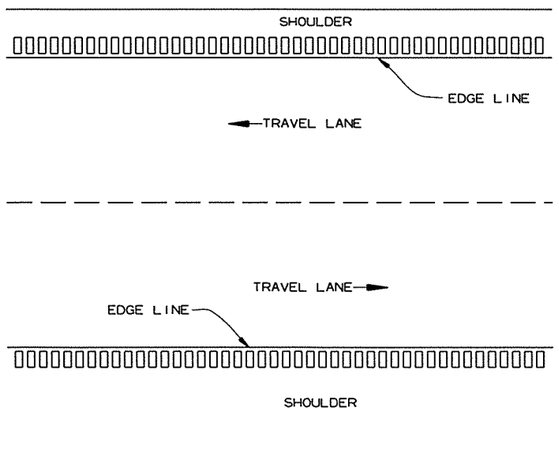
LOCATION PLAN OF RUMBLE STRIPS
LEFT OR RIGHT SHOULDER



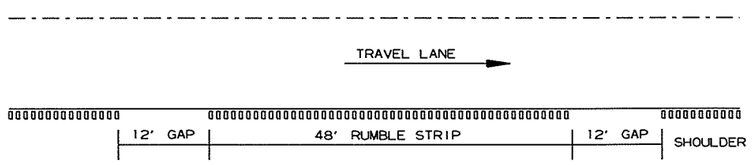
DETAIL FOR RUMBLE STRIP GAP
AT DRIVEWAY TURNOUTS

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.



PLAN VIEW



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

DETAIL FOR GAP PATTERN RUMBLE STRIP

1/29/2016

R030415.DGN

SPECIAL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
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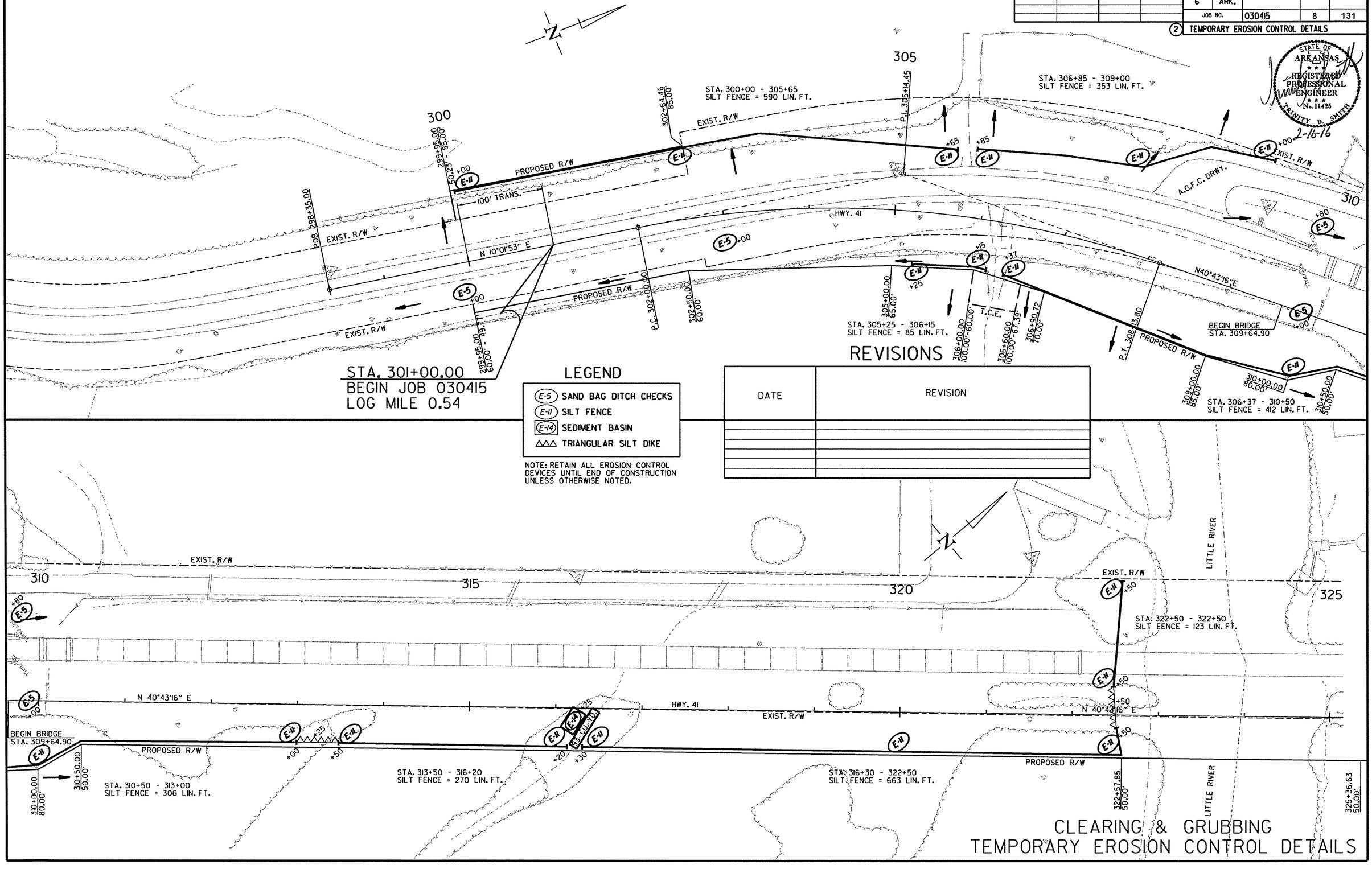
				JOB NO.		030415	8	131

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-16-16



STA. 301+00.00
BEGIN JOB 030415
LOG MILE 0.54

LEGEND

- (E-5) SAND BAG DITCH CHECKS
- (E-11) SILT FENCE
- (E-14) SEDIMENT BASIN
- △△△ TRIANGULAR SILT DIKE

NOTE: RETAIN ALL EROSION CONTROL DEVICES UNTIL END OF CONSTRUCTION UNLESS OTHERWISE NOTED.

REVISIONS

DATE	REVISION

11/12/2015

R030415.DGN

CLEARING & GRUBBING 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.		030415	9	131

2 TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11435
9-16-15
TRINITY D. SMITH

EXIST. R/W
RIVER RD.
325
330
335
340
345
HWY. 41
N 40°43'16" E
S 83°17'02" E
END BRIDGE STA. 329+58.10
PROPOSED R/W
RIVERVIEW DR.
EXIST. R/W

STA. 325+25 - 325+25
SILT FENCE = 69 LIN. FT.

STA. 325+25 - 329+45
SILT FENCE = 503 LIN. FT.

STA. 328+80 - 340+00
SILT FENCE = 1280 LIN. FT.

STA. 328+90 - 329+50
SILT FENCE = 168 LIN. FT.

STA. 329+30 - 329+60
SILT FENCE = 1084 LIN. FT.

STA. 340+00 - 343+50
SILT FENCE = 422 LIN. FT.

STA. 343+80 - 348+00
SILT FENCE = 577 LIN. FT.

STA. 340+10 - 342+85
SILT FENCE = 262 LIN. FT.

STA. 343+05 - 348+00
SILT FENCE = 477 LIN. FT.

93 CU. YD.
16 CU. YD.
100' TRANS.
P.I. 342+08.93
P.I. 347+19.60
POE 348+13.09
P.C. 335+99.10

LEGEND

- E-5 SAND BAG DITCH CHECKS
- E-11 SILT FENCE
- E-14 SEDIMENT BASIN
- △△△ TRIANGULAR SILT DIKE

NOTE: RETAIN ALL EROSION CONTROL DEVICES UNTIL END OF CONSTRUCTION UNLESS OTHERWISE NOTED.

REVISIONS

DATE	REVISION

11/12/2015

R030415.DGN

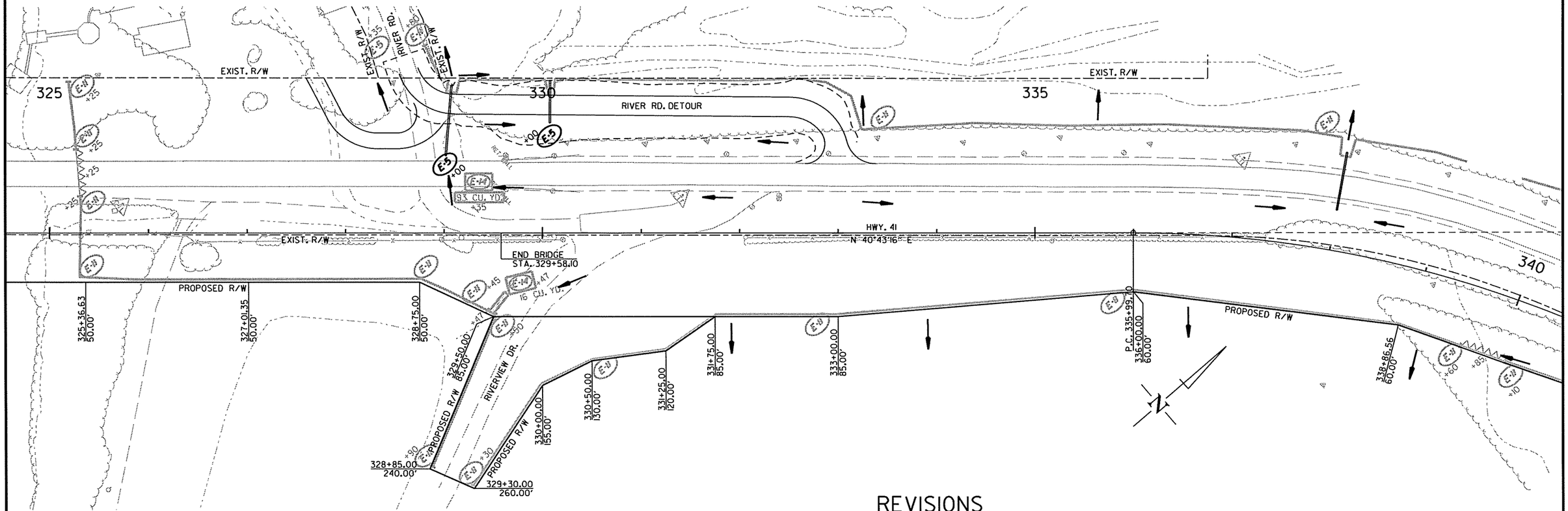
STA. 348+00.00
END JOB 030415

CLEARING & GRUBBING
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.		030415	10	131

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-16-16



LEGEND

- (E-5) SAND BAG DITCH CHECKS
- (E-11) SILT FENCE
- (E-14) SEDIMENT BASIN
- △△△ TRIANGULAR SILT DIKE

NOTE: RETAIN ALL EROSION CONTROL DEVICES UNTIL END OF CONSTRUCTION UNLESS OTHERWISE NOTED.

REVISIONS

DATE	REVISION

11/12/2015

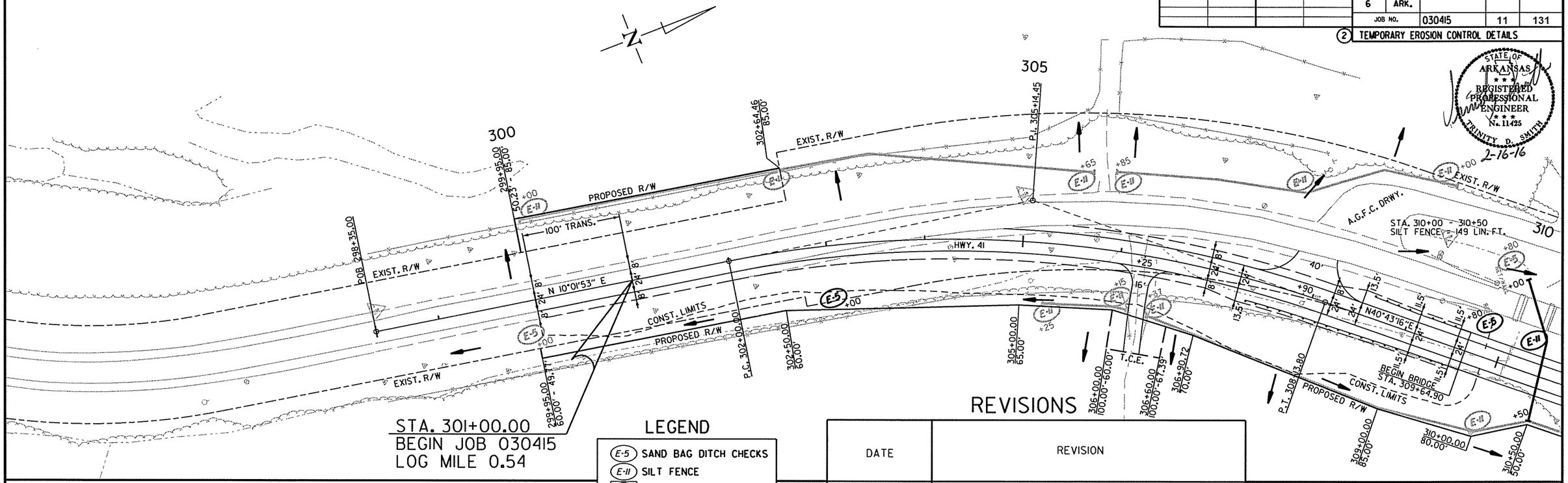
R030415.DGN

STAGE I
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.		030415	11	131

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-16-16



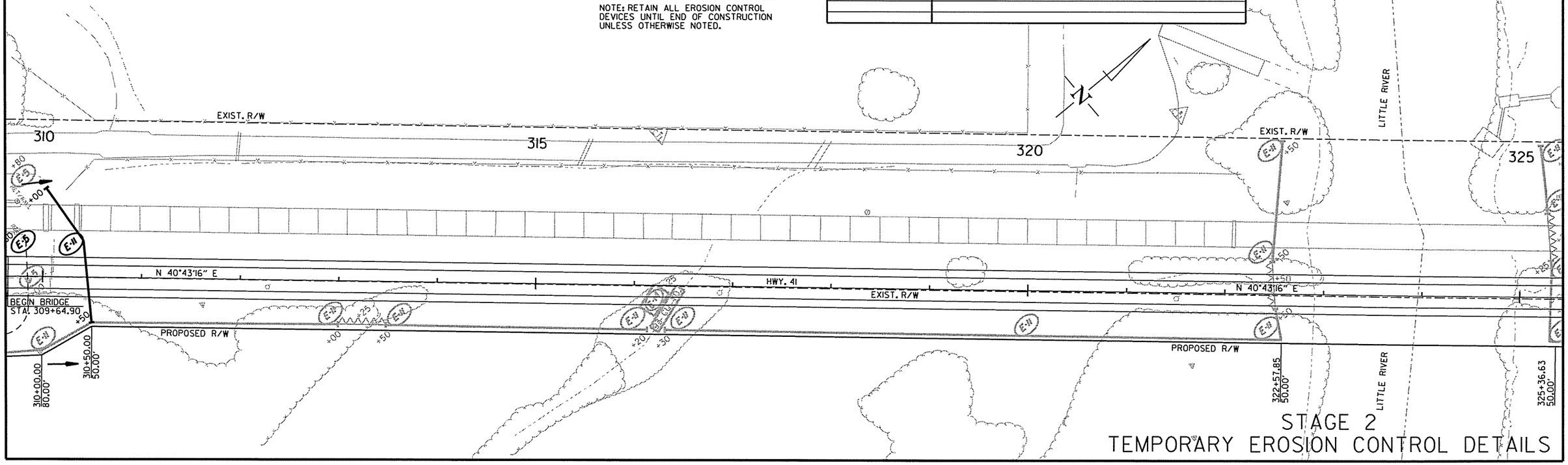
LEGEND

- (E-5) SAND BAG DITCH CHECKS
- (E-11) SILT FENCE
- (E-14) SEDIMENT BASIN
- △△△ TRIANGULAR SILT DIKE

NOTE: RETAIN ALL EROSION CONTROL DEVICES UNTIL END OF CONSTRUCTION UNLESS OTHERWISE NOTED.

REVISIONS

DATE	REVISION



11/12/2015

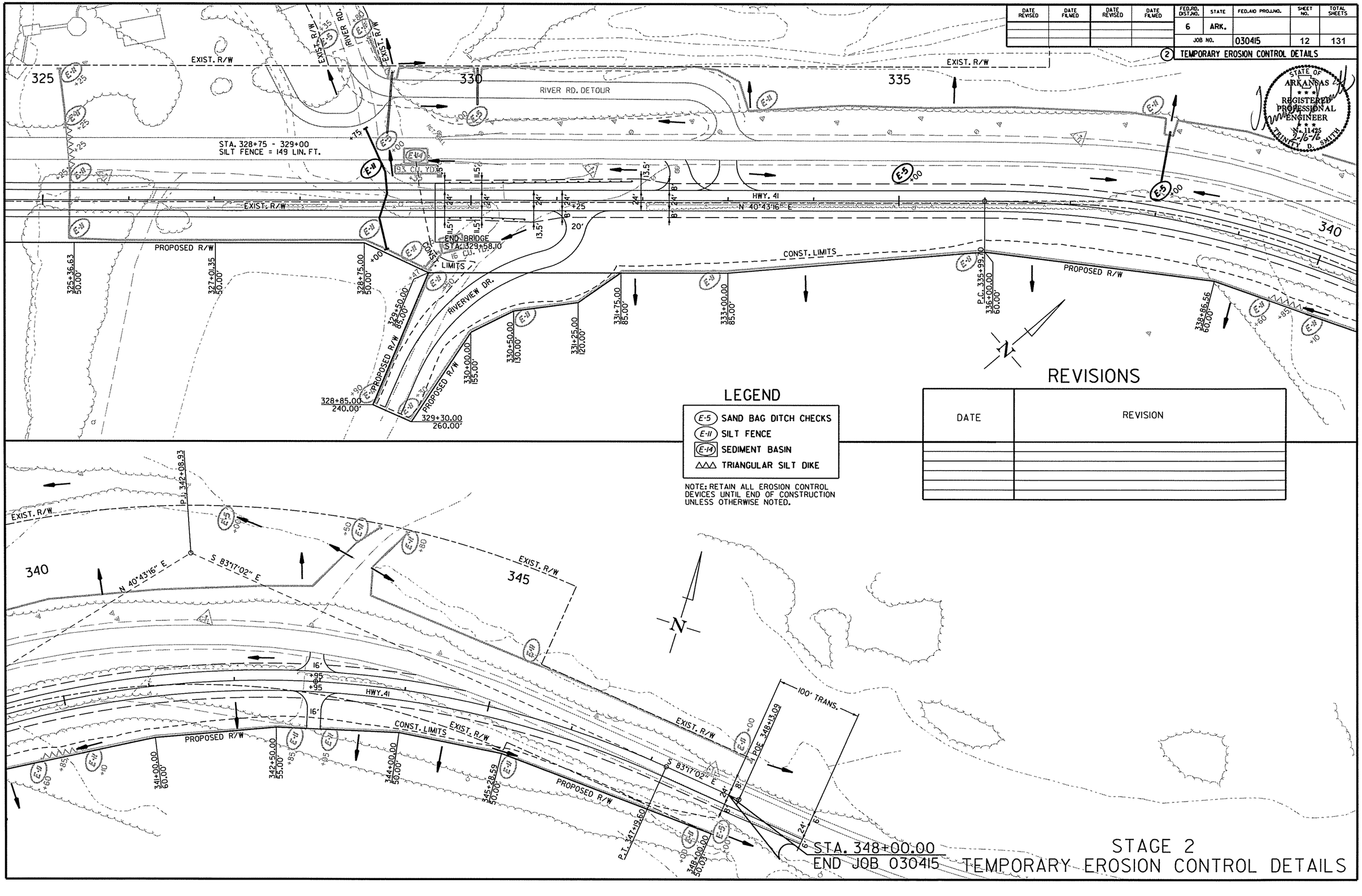
R030415.DGN

STAGE 2
TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		030415	12	131

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
2-16-16
TRINITY D. SMITH



LEGEND

- (E-5) SAND BAG DITCH CHECKS
- (E-11) SILT FENCE
- (E-14) SEDIMENT BASIN
- △△△ TRIANGULAR SILT DIKE

NOTE: RETAIN ALL EROSION CONTROL DEVICES UNTIL END OF CONSTRUCTION UNLESS OTHERWISE NOTED.

REVISIONS

DATE	REVISION

11/12/2015

R030415.DGN

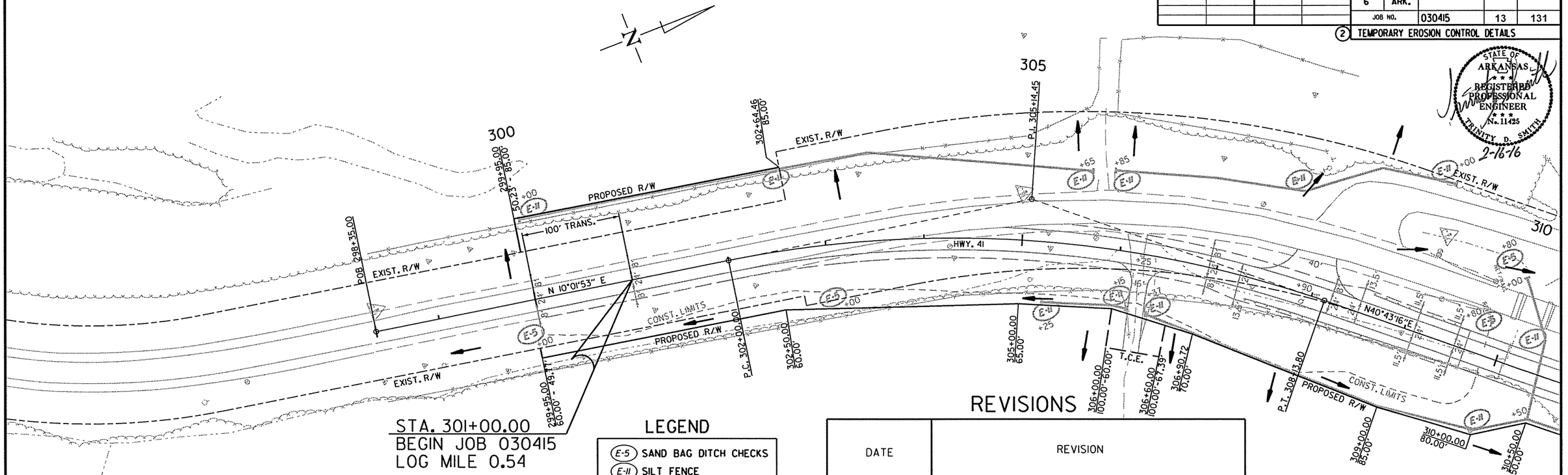
STA. 348+00.00
END JOB 030415

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.		030415	13	131

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-16-16



LEGEND

- (E-5) SAND BAG DITCH CHECKS
- (E-11) SILT FENCE
- (E-14) SEDIMENT BASIN
- △△△ TRIANGULAR SILT DIKE

NOTE: RETAIN ALL EROSION CONTROL DEVICES UNTIL END OF CONSTRUCTION UNLESS OTHERWISE NOTED.

REVISIONS

DATE	REVISION

11/12/2015

R030415.DGN

STAGE 3
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.		030415	14	131

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
2-16-16
TRINITY D. SMITH

EXIST. R/W
325
330
335
RIVER RD. DETOUR
HWY. 41
N 40°43'16" E
93 CU. YD.
END BRIDGE STA. 329+58.10
15 CU. YD.
CONST. LIMITS
RIVERVIEW DR.
PROPOSED R/W
325+36.63 50.00'
327+01.35 50.00'
328+75.00 50.00'
329+50.00 85.00'
330+00.00 155.00'
330+50.00 150.00'
331+25.00 120.00'
331+75.00 85.00'
333+00.00 85.00'
P.C. 335+99.10 336+00.00 60.00'
338+86.56 60.00'

LEGEND

- (E-5) SAND BAG DITCH CHECKS
- (E-11) SILT FENCE
- (E-14) SEDIMENT BASIN
- TRIANGULAR SILT DIKE

NOTE: RETAIN ALL EROSION CONTROL DEVICES UNTIL END OF CONSTRUCTION UNLESS OTHERWISE NOTED.

REVISIONS

DATE	REVISION

P.I. 342+06.93
340
345
N 40°43'16" E
S 83°17'02" E
EXIST. R/W
HWY. 41
CONST. LIMITS
PROPOSED R/W
341+00.00 60.00'
342+50.00 55.00'
344+00.00 50.00'
345+28.59 50.00'
P.I. 347+19.60
348+00.00 50.09'
100' TRANS.
POE 348+13.09
S 83°17'02" E

STA. 348+00.00
END JOB 030415

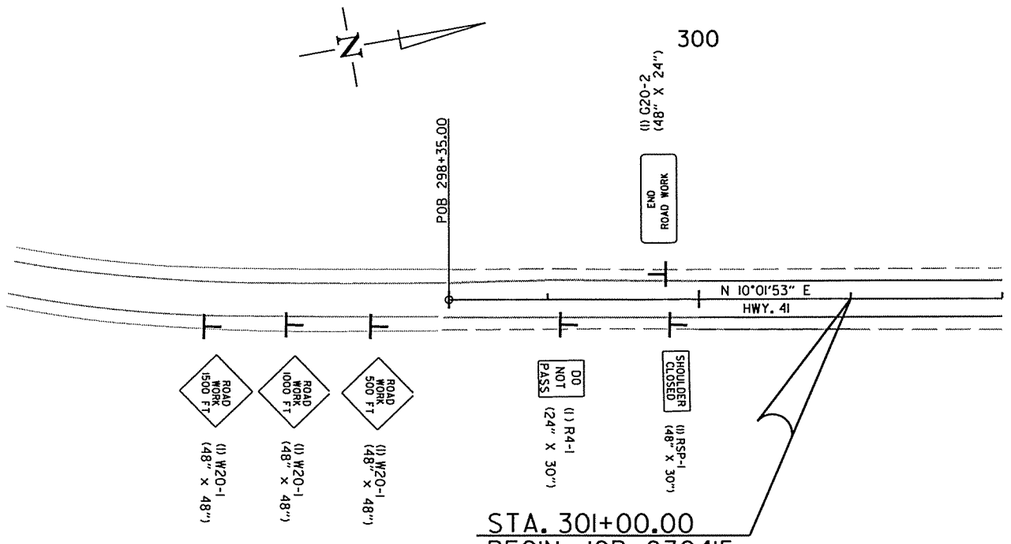
STAGE 3
TEMPORARY EROSION CONTROL DETAILS

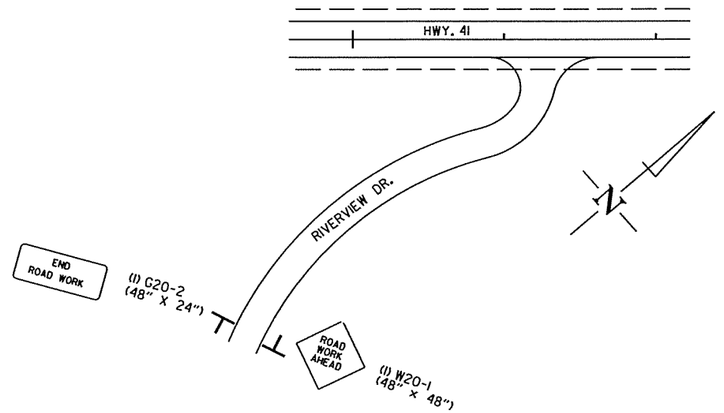
11/12/2015
R030415.DGN

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.		030415	15	131

(2) MAINTENANCE OF TRAFFIC DETAILS

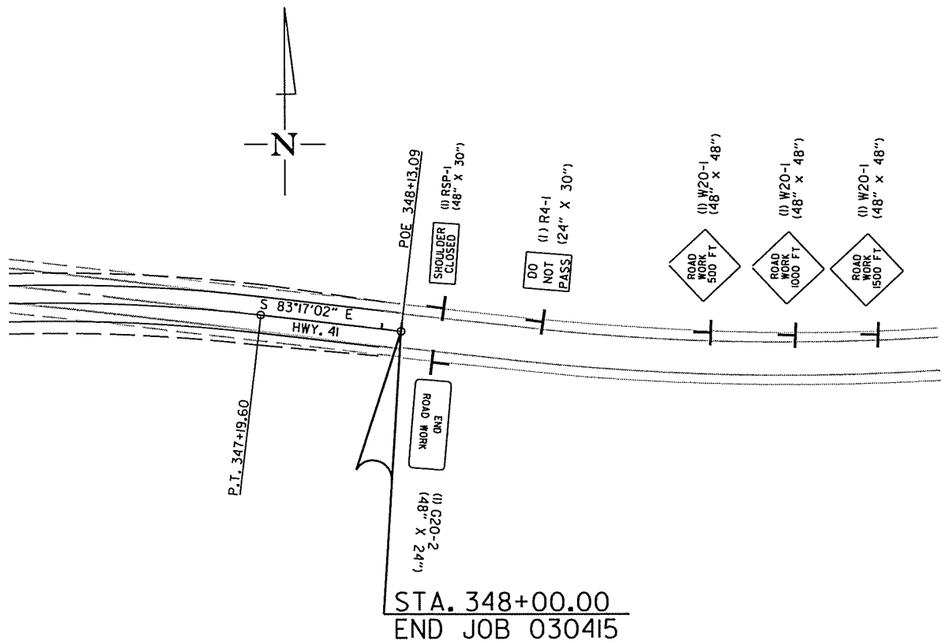
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-16-16





ADVANCE WARNING SIGNS FOR COUNTY ROADS

(3 LOCATIONS: A.F.G.C. DRWY., RIVERVIEW DR., & RIVER RD.)



MAINTENANCE OF TRAFFIC DETAILS

11/12/2015

R030415.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.		030415	16	131

(2) MAINTENANCE OF TRAFFIC DETAILS

SEQUENCE OF CONSTRUCTION:

STAGE 1:
MAINTAIN TRAFFIC ON EXISTING ROADWAY
CONSTRUCT RIVER RD. DETOUR

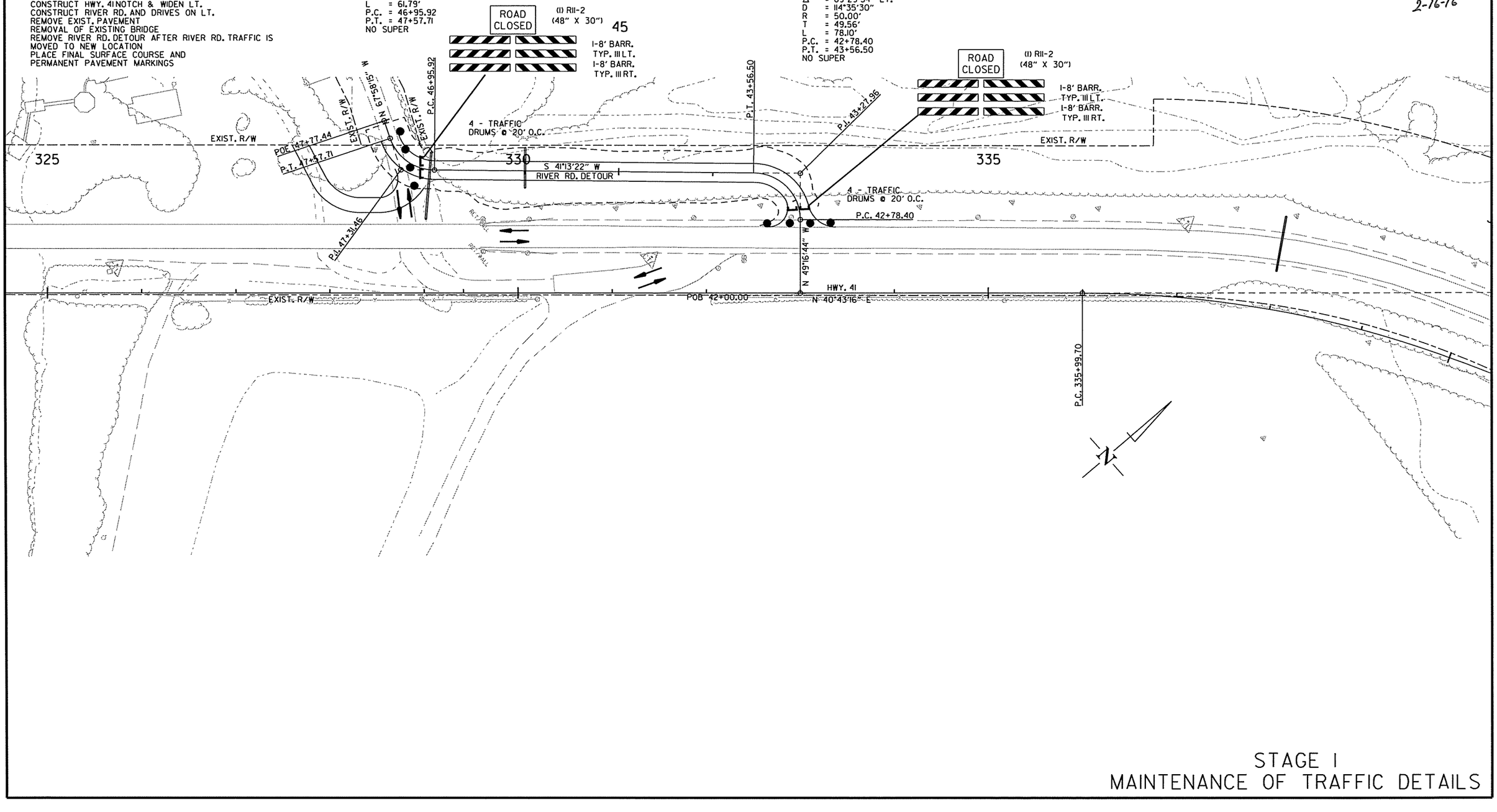
STAGE 2:
MOVE RIVER RD. TRAFFIC TO DETOUR
MAINTAIN ALL OTHER TRAFFIC ON EXISTING ROADWAY
CONSTRUCT LEVELING & GRADE RAISE
CONSTRUCT HWY. 41 NOTCH & WIDENING RT. & NEW LOCATION
CONSTRUCT BRIDGE
CONSTRUCT TURNOUTS ON RT.

STAGE 3:
MOVE HWY. 41 TRAFFIC TO NEW LOCATION
MAINTAIN RIVER RD. TRAFFIC ON DETOUR
CONSTRUCT HWY. 41 NOTCH & WIDEN LT.
CONSTRUCT RIVER RD. AND DRIVES ON LT.
REMOVE EXIST. PAVEMENT
REMOVAL OF EXISTING BRIDGE
REMOVE RIVER RD. DETOUR AFTER RIVER RD. TRAFFIC IS MOVED TO NEW LOCATION
PLACE FINAL SURFACE COURSE AND PERMANENT PAVEMENT MARKINGS

STA. 46+00 INSTALL
18" X 44' TEMP. PIPE CULVERT

RIVER RD. DETOUR
P.I. = 47+31.46
Δ = 70°48'23" RT.
D = 114°35'30"
R = 50.00'
T = 35.54'
L = 61.79'
P.C. = 46+95.92
P.T. = 47+57.71
NO SUPER

RIVER RD. DETOUR
P.I. = 43+27.96
Δ = 89°29'54" LT.
D = 114°35'30"
R = 50.00'
T = 49.56'
L = 78.10'
P.C. = 42+78.40
P.T. = 43+56.50
NO SUPER



STAGE 1
MAINTENANCE OF TRAFFIC DETAILS

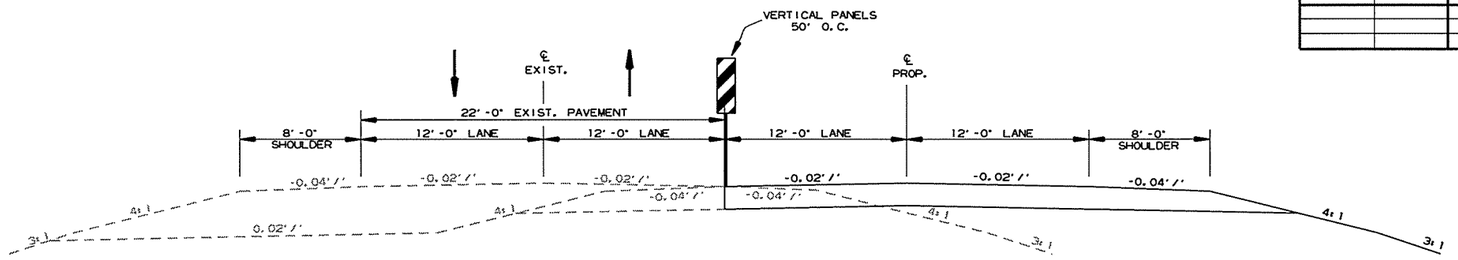
R030415.DGN 11/12/2015

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-16-16

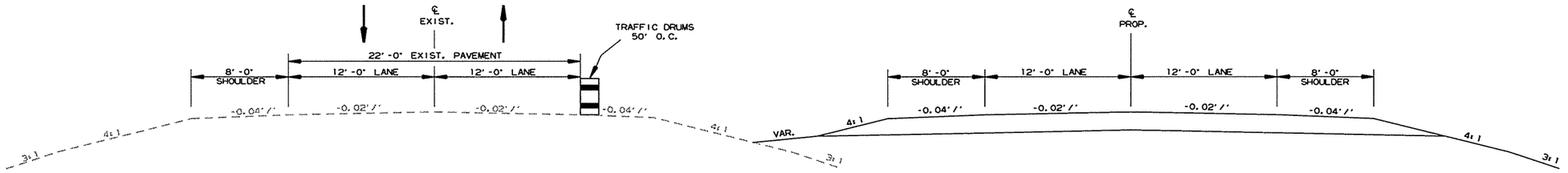
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		030415	17	131

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-16-16



NOTCH & WIDEN
STAGE 2
STA. 301+00.00 - STA. 304+79.66
STA. 344+70.30 - STA. 348+00.00



FULL DEPTH
STAGE 2
STA. 304+79.66 - STA. 344+70.30

SEQUENCE OF CONSTRUCTION:

STAGE 1:
MAINTAIN TRAFFIC ON EXISTING ROADWAY
CONSTRUCT RIVER RD. DETOUR

STAGE 2:
MOVE RIVER RD. TRAFFIC TO DETOUR
MAINTAIN ALL OTHER TRAFFIC ON EXISTING ROADWAY
CONSTRUCT LEVELING & GRADE RAISE
CONSTRUCT HWY. 41 NOTCH & WIDENING RT. & NEW LOCATION
CONSTRUCT BRIDGE
CONSTRUCT TURNOUTS ON RT.

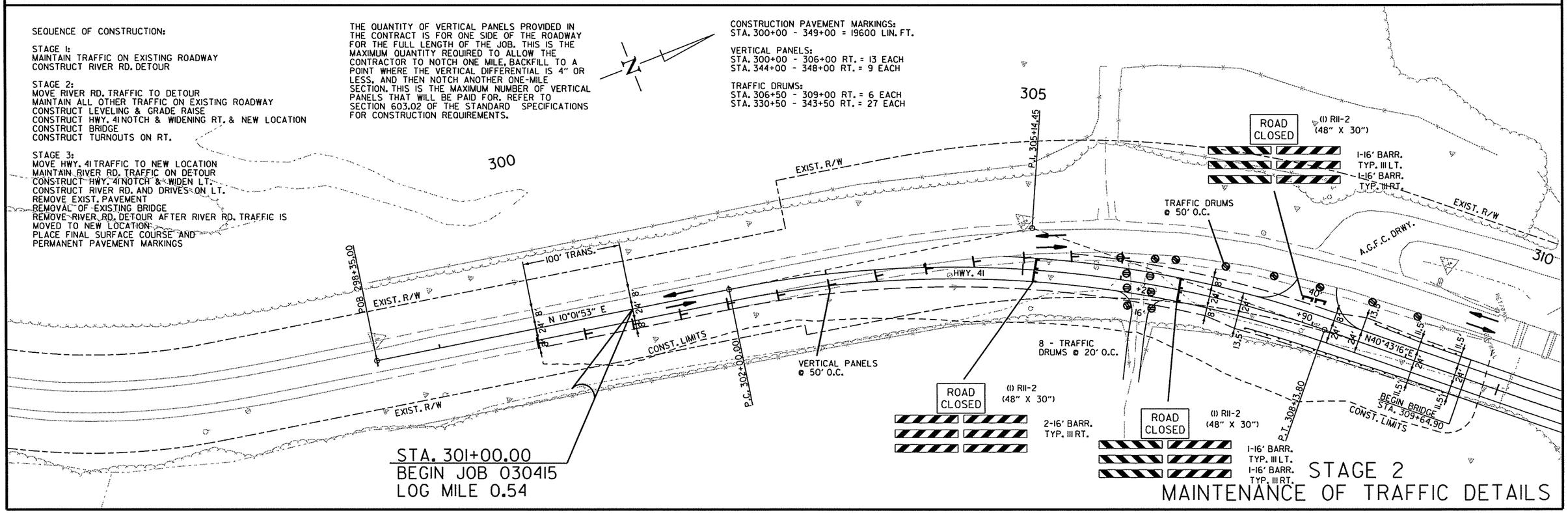
STAGE 3:
MOVE HWY. 41 TRAFFIC TO NEW LOCATION
MAINTAIN RIVER RD. TRAFFIC ON DETOUR
CONSTRUCT HWY. 41 NOTCH & WIDEN LT.
CONSTRUCT RIVER RD. AND DRIVES ON LT.
REMOVE EXIST. PAVEMENT
REMOVAL OF EXISTING BRIDGE
REMOVE RIVER RD. DETOUR AFTER RIVER RD. TRAFFIC IS MOVED TO NEW LOCATION
PLACE FINAL SURFACE COURSE AND PERMANENT PAVEMENT MARKINGS

THE QUANTITY OF VERTICAL PANELS PROVIDED IN THE CONTRACT IS FOR ONE SIDE OF THE ROADWAY FOR THE FULL LENGTH OF THE JOB. THIS IS THE MAXIMUM QUANTITY REQUIRED TO ALLOW THE CONTRACTOR TO NOTCH ONE MILE, BACKFILL TO A POINT WHERE THE VERTICAL DIFFERENTIAL IS 4" OR LESS, AND THEN NOTCH ANOTHER ONE-MILE SECTION. THIS IS THE MAXIMUM NUMBER OF VERTICAL PANELS THAT WILL BE PAID FOR. REFER TO SECTION 603.02 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION REQUIREMENTS.

CONSTRUCTION PAVEMENT MARKINGS:
STA. 300+00 - 349+00 = 19600 LIN. FT.

VERTICAL PANELS:
STA. 300+00 - 306+00 RT. = 13 EACH
STA. 344+00 - 348+00 RT. = 9 EACH

TRAFFIC DRUMS:
STA. 306+50 - 309+00 RT. = 6 EACH
STA. 330+50 - 343+50 RT. = 27 EACH



STAGE 2
MAINTENANCE OF TRAFFIC DETAILS

11/12/2015
R030415.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.		030415	18	131

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11435
TRINITY L. SMITH
11-6-15

EXIST. R/W
RIVER RD.
EXIST. R/W
325
330
335
ROAD CLOSED
(1) RII-2 (48" X 30")
2-8' BARR. TYP. III RT.
8 - TRAFFIC DRUMS @ 20' O.C.
1-8' BARR. TYP. III LT.
1-8' BARR. TYP. III RT.
STA. 338+00 INSTALL 18" X 61' TEMP. PIPE CULVERT
TRAFFIC DRUMS @ 50' O.C.
POB 20+00.00
HWY. 41
N 40°43'16" E
P.C. 20+20.00
END BRIDGE STA. 329+58.10
CONST. LIMITS
(1) WI-6 (48" X 24")
2-8' BARR. TYP. III LT.
RIVERVIEW DR.
10 - TRAFFIC DRUMS @ 20' O.C.
P.I. 20+58.90
PRC 20+86.12
P.I. 22+03.10
P.T. 23+03.67
POE 23+63.46
(2) RII-2 (48" X 30")
2-16' BARR. TYP. III LT.
2-16' BARR. TYP. III RT.
P.C. 335+99.70
1-8' BARR. TYP. III LT.
1-8' BARR. TYP. III RT.
RIVERVIEW DR.
P.I. = 22+03.10
Δ = 52°12'49" LT.
D = 24°00'00"
T = 116.99'
L = 217.56'
PRC = 20+86.12
P.T. = 23+03.67
NO SUPER
RIVERVIEW DR.
P.I. = 20+58.90
Δ = 75°45'46" RT.
D = 114°35'30"
R = 50.00'
T = 38.90'
L = 66.12'
P.C. = 20+20.00
PRC = 20+86.12
NO SUPER
N

P.I. 342+08.93
EXIST. R/W
340
N 40°43'16" E
S 83°17'02" E
345
TRAFFIC DRUMS @ 50' O.C.
ROAD CLOSED
(1) RII-2 (48" X 30")
2-16' BARR. TYP. III LT.
16'
+95
HWY. 41
8 - TRAFFIC DRUMS @ 20' O.C.
CONST. LIMITS
VERTICAL PANELS @ 50' O.C.
P.T. 347+19.60
100' TRANS.
POE 348+13.09
STA. 348+00.00
END JOB 030415

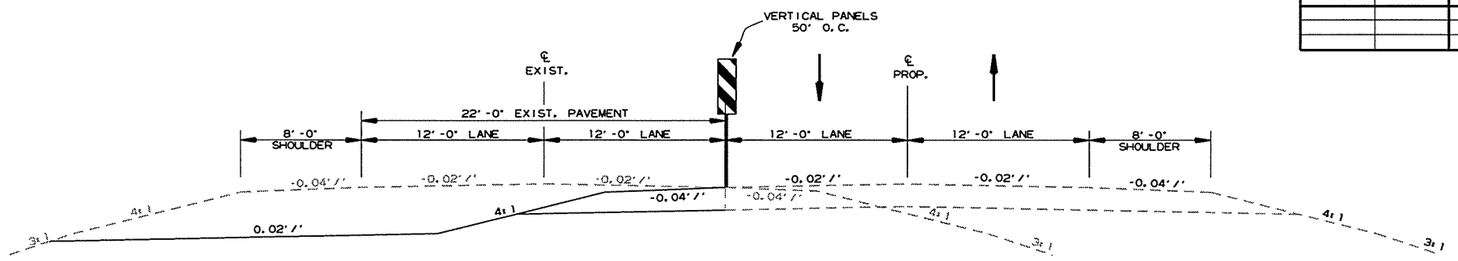
STAGE 2
MAINTENANCE OF TRAFFIC DETAILS

11/12/2015
R030415.DGN

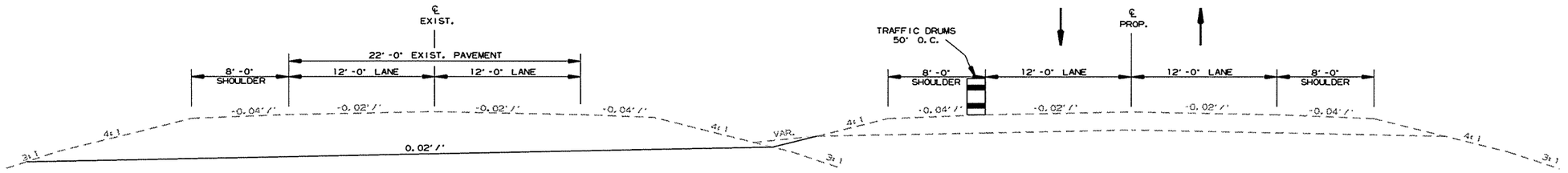
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		030415	19	131

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-16-16



NOTCH & WIDEN
STAGE 3
STA. 301+00.00 - STA. 304+79.66
STA. 344+70.30 - STA. 348+00.00



FULL DEPTH
STAGE 3
STA. 304+79.66 - STA. 344+70.30

SEQUENCE OF CONSTRUCTION:

STAGE 1:
MAINTAIN TRAFFIC ON EXISTING ROADWAY
CONSTRUCT RIVER RD. DETOUR

STAGE 2:
MOVE RIVER RD. TRAFFIC TO DETOUR
MAINTAIN ALL OTHER TRAFFIC ON EXISTING ROADWAY
CONSTRUCT LEVELING & GRADE RAISE
CONSTRUCT HWY. 41 NOTCH & WIDENING RT. & NEW LOCATION
CONSTRUCT BRIDGE
CONSTRUCT TURNOUTS ON RT.

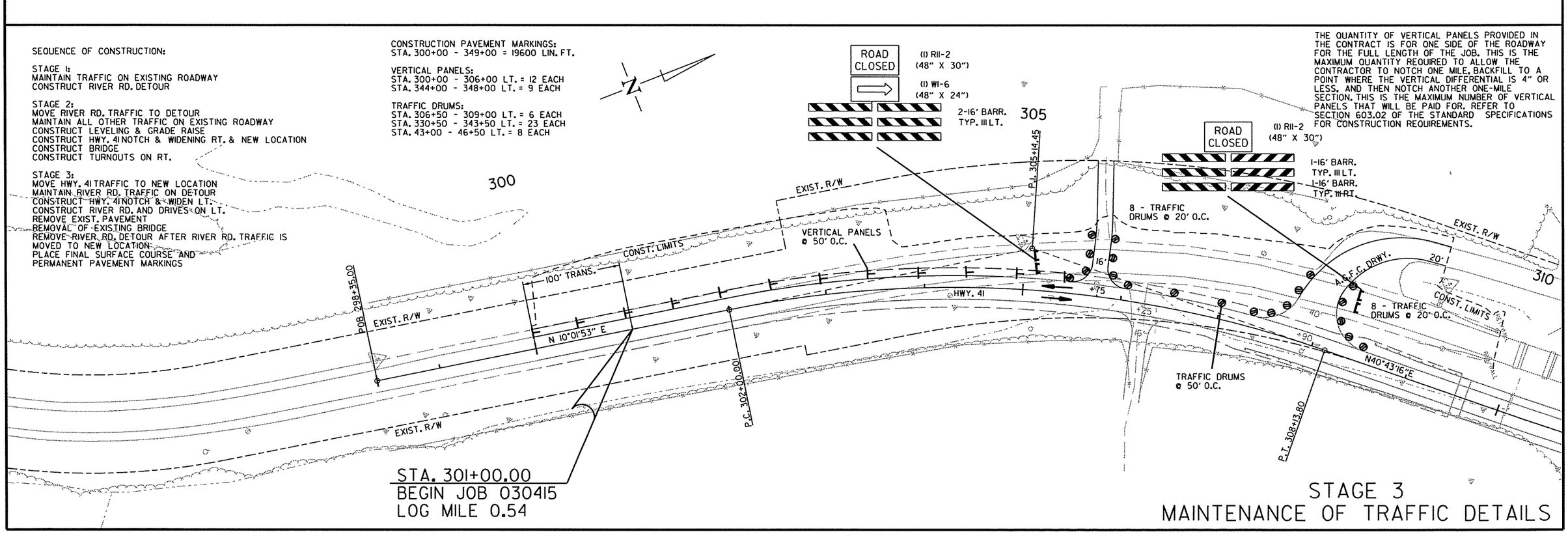
STAGE 3:
MOVE HWY. 41 TRAFFIC TO NEW LOCATION
MAINTAIN RIVER RD. TRAFFIC ON DETOUR
CONSTRUCT HWY. 41 NOTCH & WIDEN LT.
CONSTRUCT RIVER RD. AND DRIVES ON LT.
REMOVE EXIST. PAVEMENT
REMOVAL OF EXISTING BRIDGE
REMOVE RIVER RD. DETOUR AFTER RIVER RD. TRAFFIC IS MOVED TO NEW LOCATION
PLACE FINAL SURFACE COURSE AND PERMANENT PAVEMENT MARKINGS

CONSTRUCTION PAVEMENT MARKINGS:
STA. 300+00 - 349+00 = 19600 LIN. FT.

VERTICAL PANELS:
STA. 300+00 - 306+00 LT. = 12 EACH
STA. 344+00 - 348+00 LT. = 9 EACH

TRAFFIC DRUMS:
STA. 306+50 - 309+00 LT. = 6 EACH
STA. 330+50 - 343+50 LT. = 23 EACH
STA. 43+00 - 46+50 LT. = 8 EACH

THE QUANTITY OF VERTICAL PANELS PROVIDED IN THE CONTRACT IS FOR ONE SIDE OF THE ROADWAY FOR THE FULL LENGTH OF THE JOB. THIS IS THE MAXIMUM QUANTITY REQUIRED TO ALLOW THE CONTRACTOR TO NOTCH ONE MILE, BACKFILL TO A POINT WHERE THE VERTICAL DIFFERENTIAL IS 4" OR LESS, AND THEN NOTCH ANOTHER ONE-MILE SECTION. THIS IS THE MAXIMUM NUMBER OF VERTICAL PANELS THAT WILL BE PAID FOR. REFER TO SECTION 603.02 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION REQUIREMENTS.



STA. 301+00.00
BEGIN JOB 030415
LOG MILE 0.54

STAGE 3
MAINTENANCE OF TRAFFIC DETAILS

11/12/2015

R030415.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.		030415	20	131

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11435
2/6/16
TRINITY D. SMITH

EXIST. R/W
325
RIVER RD.
P.I. = 3+97.20
Δ = 71°18'29" RT.
D = 38°11'50"
R = 150.00'
T = 107.60'
L = 186.68'
P.C. = 2+89.60
P.T. = 4+76.28
NO SUPER
8 - TRAFFIC DRUMS @ 20' O.C.
EXIST. R/W
POE 4+91.68
P.T. 4+76.28
P.I. 3+97.20
P.C. 2+89.60
S 40°43'16" W
RIVER RD.
330
TRAFFIC DRUMS @ 50' O.C.
P.T. 0+96.13
P.I. 0+67.77
RIVER RD.
P.I. = 0+67.77
Δ = 85°00'00" LT.
D = 114°35'30"
R = 50.00'
T = 45.82'
L = 74.18'
P.C. = 0+21.95
P.T. = 0+96.13
NO SUPER
EXIST. R/W
335
CONST. LIMITS
TRAFFIC DRUMS @ 50' O.C.
8 - TRAFFIC DRUMS @ 20' O.C.
P.C. 0+21.95
N 40°43'16" W
20'
+50
HWY. 41
EXIST. R/W
+25
POB 0+00.00
N 40°43'16" E
340
END BRIDGE STA. 329+58.10
20'
RIVERVIEW DR.
P.C. 335+99.70
ROAD CLOSED
(2) RII-2 (48" X 30")
2-8' BARR. TYP. III LT.
2-8' BARR. TYP. III RT.
ROAD CLOSED
(2) RII-2 (48" X 30")
2-16' BARR. TYP. III LT.
2-16' BARR. TYP. III RT.
N

P.I. 342+08.93
EXIST. R/W
340
N 40°43'16" E
S 83°17'02" E
8 - TRAFFIC DRUMS 20' O.C.
EXIST. R/W
345
TRAFFIC DRUMS @ 50' O.C.
VERTICAL PANELS @ 50' O.C.
CONST. LIMITS
16'
+95
HWY. 41
16'
6 - TRAFFIC DRUMS 20' O.C.
EXIST. R/W
100' TRANS.
POE 348+13.09
EXIST. R/W
S 83°17'02" E
P.T. 347+19.60
ROAD CLOSED
(1) RII-2 (48" X 30")
(1) WI-6 (48" X 24")
2-16' BARR. TYP. III RT.
N
STA. 348+00.00
END JOB 030415

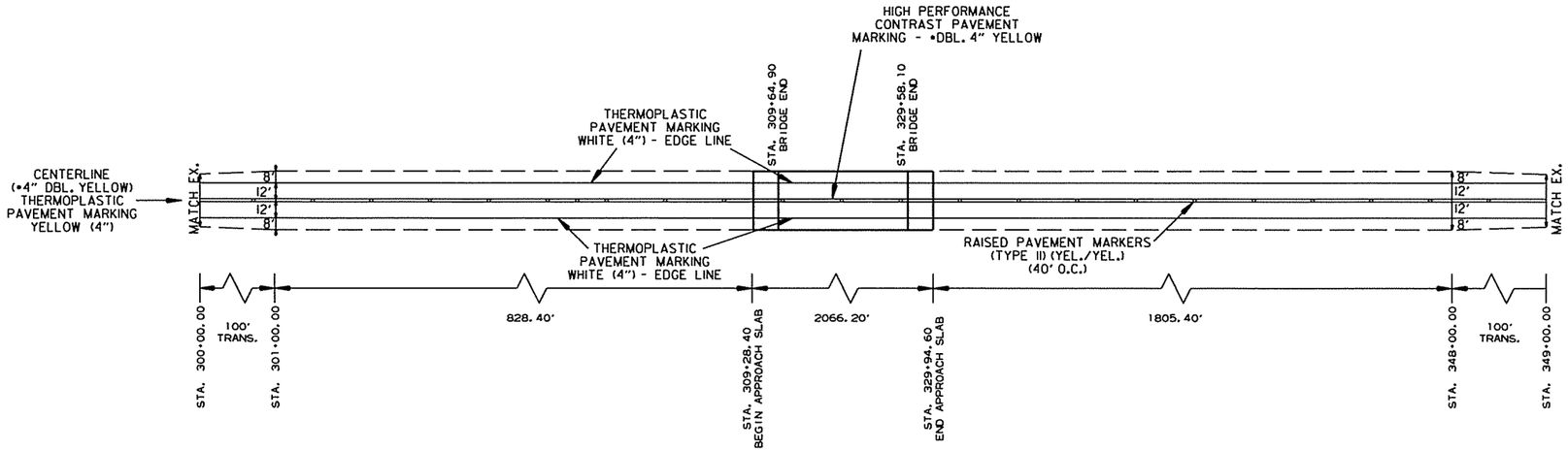
STAGE 3
MAINTENANCE OF TRAFFIC DETAILS

11/12/2015
R030415.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.		030415	21	131

(2) PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-16-16



PERMANENT PAVEMENT MARKINGS:

THERMOPLASTIC PAVEMENT MARKING:
RT. AND LT. EDGE LINES = 9800 LIN. FT. 4" WHITE
DBL. CENTERLINE = 5668 LIN. FT. 4" YELLOW

HIGH PERFORMANCE CONTRAST MARKING
DBL. CENTERLINE = 4132 LIN. FT. 4" YELLOW

RAISED PAVEMENT MARKERS:
TYPE II (YEL./YEL.) 40' O.C. ON CENTERLINE = 123 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.

1/19/2016

R030415.DGN

PERMANENT PAVEMENT MARKING DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		030415	22	131

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-16-16

ADVANCE WARNING SIGNS AND DEVICES

SIGN NUMBER	DESCRIPTION	SIGN SIZE	STAGE 1	STAGE 2	STAGE 3	MAXIMUM NUMBER REQUIRED	TOTAL SIGNS REQUIRED		VERTICAL PANELS	TRAFFIC DRUMS	BARRICADES (TYPE III)	
											RIGHT	LEFT
			LIN. FT. - EACH				NO.	SQ. FT.	EACH		LIN. FT.	
W20-1	ROAD WORK 1500 FT.	48"x48"	2	2	2	2	2	32.0				
W20-1	ROAD WORK 1000 FT.	48"x48"	2	2	2	2	2	32.0				
W20-1	ROAD WORK 500 FT.	48"x48"	2	2	2	2	2	32.0				
W20-1	ROAD WORK AHEAD	48"x48"	3	3	3	3	3	48.0				
G20-2	END ROAD WORK	48"x24"	5	5	5	5	5	40.0				
R11-2	ROAD CLOSED	48"x30"	2	9	7	9	9	90.0				
W1-6	LARGE ARROW	48"x24"		1	2	2	2	16.0				
R4-1	DO NOT PASS	24"x30"	2	2	2	2	2	10.0				
RSP-1	SHOULDER CLOSED	48"x30"		2	2	2	2	20.0				
SP	WARNING! BRIDGE CONSTRUCTION FOLLOW MARKED NAVIGATION CHANNEL SLOW NO WAKE	60"x36"	2	2	2	2	2	30.0				
SP	WARNING! BRIDGE CONSTRUCTION AT HWY. 41 FOLLOW MARKED NAVIGATION CHANNEL	60"x36"	2	2	2	2	2	30.0				
	VERTICAL PANELS			22	21	22			22			
	TRAFFIC DRUMS		8	75	78	78				78		
	TYPE III BARRICADE-RT. (8')		2	2	2	2					16	
	TYPE III BARRICADE-LT. (8')		2	4	2	4						32
	TYPE III BARRICADE-RT. (16')			6	5	6					96	
	TYPE III BARRICADE-LT. (16')			6	5	6						96
TOTALS:								**380.0**	**22**	**78**	**112**	**128**

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

THE QUANTITY OF VERTICAL PANELS PROVIDED IN THE CONTRACT IS FOR ONE SIDE OF THE ROADWAY FOR THE FULL LENGTH OF THE JOB. THIS IS THE MAXIMUM QUANTITY REQUIRED TO ALLOW THE CONTRACTOR TO NOTCH ONE MILE, BACKFILL TO A POINT WHERE THE VERTICAL DIFFERENTIAL IS 4" OR LESS, AND THEN NOTCH ANOTHER ONE-MILE SECTION. THIS IS THE MAXIMUM NUMBER OF VERTICAL PANELS THAT WILL BE PAID FOR. REFER TO SECTION 603.02 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION REQUIREMENTS.

CONSTRUCTION PAVEMENT MARKINGS AND PERMANENT PAVEMENT MARKINGS

DESCRIPTION	STAGE 1	STAGE 2	STAGE 3	END OF JOB	CONSTRUCTION PAVEMENT MARKINGS	RAISED PAVEMENT MARKERS	THERMOPLASTIC PAVEMENT MARKING		HIGH PERFORMANCE CONTRAST PAVEMENT MARKING
						TYPE II	4"		4"
						(YEL/YEL)	WHITE	YELLOW	YELLOW
	LIN. FT. - EACH				LIN. FT.	EACH	LIN. FT.		LIN. FT.
CONSTRUCTION PAVEMENT MARKINGS		19600	19600		39200				
RAISED PAVEMENT MARKERS TYPE II (YEL/YEL)				123		123			
THERMOPLASTIC PAVEMENT MARKING WHITE (4")				9800			9800		
THERMOPLASTIC PAVEMENT MARKING YELLOW (4")				5668				5668	
HIGH PERFORMANCE CONTRAST PAVEMENT MARKING YELLOW (4")				4132					4132
TOTALS:					**39200**	**123**	**9800**	**5668**	**4132**

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

NOTE: 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.

NOTE: NO PERMANENT PAVEMENT MARKINGS SHALL BE PLACED UNTIL A MINIMUM OF 3 DAYS AFTER ALL MAIN LANE PAVING HAS BEEN COMPLETED. IN ADDITION, NO PERMANENT PAVEMENT MARKINGS SHALL BE PLACED DURING THE TIME PERIOD FROM DECEMBER 21 TO MARCH 15, INCLUSIVE.

1/19/2016

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QUANTITIES

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		030415	23	131

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-16-16

CLEARING AND GRUBBING

STATION	STATION	LOCATION	CLEARING	GRUBBING
			STATION	
300+00	314+00	HWY. 41	14	14
315+00	317+00	HWY. 41	2	2
319+00	323+00	HWY. 41	4	4
324+00	348+00	HWY. 41	24	24
TOTALS:			44	44

REMOVAL AND DISPOSAL OF GUARDRAIL

STATION	STATION	DESCRIPTION	GUARDRAIL
			LIN. FT.
308+99	309+76	GUARDRAIL (BOTH SIDES OF EXIST. ROAD)	154
329+60	330+38	GUARDRAIL (BOTH SIDES OF EXIST. ROAD)	154
TOTAL:			308

NOTE: THE QUANTITY SHOWN ABOVE FOR THE REMOVAL AND DISPOSAL OF GUARDRAIL SHALL INCLUDE THE REMOVAL AND DISPOSAL OF ALL GUARDRAIL TERMINALS AND TERMINAL ANCHOR POSTS.

REMOVAL AND DISPOSAL OF FENCE

STATION	STATION	LOCATION	FENCE
			LIN. FT.
299+95	302+64	HWY. 41 ON LT.	275
303+67	306+18	HWY. 41 ON RT.	260
306+38	310+09	HWY. 41 ON RT.	404
326+16	330+20	HWY. 41 ON RT.	405
332+08	336+99	HWY. 41 ON RT.	491
336+99	337+36	HWY. 41 ON LT.	38
TOTAL:			1873

PAVEMENT REPAIR OVER CULVERTS (ASPHALT)

STATION	LOCATION	WIDTH	LENGTH	TON
		FEET		
338+00	HWY. 41 ON LT.	7.92	61	50
TOTAL:				50

AVG. DEPTH = 17"

RUMBLE STRIPS IN ASPHALT SHOULDERS

STATION	STATION	LOCATION	* RUMBLE STRIPS IN ASPHALT SHOULDERS
			LIN.FT.
301+00	309+28	HWY. 41 LT. & RT.	1400
329+95	348+00	HWY. 41 LT. & RT.	3316
TOTAL:			4716

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

EARTHWORK

STATION	STATION	LOCATION / DESCRIPTION	UNCLASSIFIED EXCAVATION	COMPACTED EMBANKMENT	* SOIL STABILIZATION
			CU. YD.		TON
ENTIRE	PROJECT	STAGE 2-MAIN LANES	174	42294	
ENTIRE	PROJECT	STAGE 3-MAIN LANES	11578	2286	
ENTIRE	PROJECT	APPROACHES		515	
307+90		A.G.F.C. DRWY.	394	201	
331+25		RIVERVIEW DR.	28	2068	
332+50		RIVER RD. (STAGE 3)	3442	7	
333+00		RIVER RD. DETOUR (STAGE 1)	1258	597	
333+00		RIVER RD. DETOUR OBLITERATE (STAGE 3)	596	837	
* ENTIRE	PROJECT	TO BE USED IF AND WHERE			100
		DIRECTED BY THE ENGINEER			
TOTALS:			17470	48805	100

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

SOIL LOG

STATION	LATITUDE			LONGITUDE			LOCATION	DEPTH	LIQUID LIMIT	PLASTICITY INDEX	AASHTO CLASSIFICATION	COLOR
	DEG	MIN	SEC	DEG	MIN	SEC		FEET				
302+00	33	54	49.70	94	23	28.40	5' RT.	0-5	27	12	A-6(5)	BROWN
302+00	33	54	49.70	94	23	28.20	15' RT.	0-5	26	11	A-6(6)	BROWN
302+00	33	54	49.60	94	23	28.10	34' RT.	0-5	64	46	A-7-6(41)	BROWN
310+00	33	54	57.00	94	23	25.00	12' RT.	0-5	25	11	A-6(4)	BROWN
318+00	33	55	3.20	94	23	19.20	CENTERLINE	0-5	24	7	A-4(4)	BROWN
329+00	33	55	12.30	94	23	10.10	CENTERLINE	0-5	25	8	A-4(4)	BROWN
337+00	33	55	17.70	94	23	4.80	CENTERLINE	0-5	27	8	A-4(6)	BROWN
348+00	33	55	22.30	94	22	53.50	5' LT.	0-5	ND	NP	A-4(0)	BROWN
348+00	33	55	22.40	94	22	53.50	15' LT.	0-5	ND	NP	A-2-4(0)	BR / GR
348+00	33	55	22.50	94	22	53.50	25' LT.	0-5	23	8	A-4-(0)	BROWN

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

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QUANTITIES

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		030415	24	131

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-16-16

DRIVEWAYS & TURNOUTS

STATION	SIDE	LOCATION	WIDTH	ACHM SURFACE COURSE (1/2") 220 LBS. PER SQ. YD. (PG 64-22)		AGGREGATE BASE COURSE (CLASS 7)	SIDE DRAINS 18"	STANDARD DRAWINGS
			FEET	SQ. YD.	TON	TON	LIN. FT.	
305+75	LT.	HWY. 41 MAIN LANES	16	216.73	23.84	88.50		
306+25	RT.	HWY. 41 MAIN LANES	16	142.06	15.63	58.01		
342+95	LT.	HWY. 41 MAIN LANES	16	351.84	38.70	143.67		
342+95	RT.	HWY. 41 MAIN LANES	16	92.29	10.15	37.69		
4+00		RIVER RD.					70	PCC-1, PCM-1, PCP-1, PCP-2
4+16	LT.	RIVER RD.	16	277.17	30.49	113.18		
* ENTIRE PROJECT TEMPORARY DRIVES						100.00		
TOTALS:				**1080.09**	**118.81**	**541.05**	**70**	

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....94.8% MIN. AGGR.....5.2% ASPHALT BINDER
MAXIMUM NUMBER OF GYRATIONS = 115 FOR PG 64-22

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

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

4" PIPE UNDERDRAIN

STATION	STATION	LOCATIONS	4" PIPE UNDERDRAINS	UNDERDRAIN OUTLET PROTECTORS
			LIN. FT.	EACH
* ENTIRE PROJECT TO BE USED IF AND			1000	8
WHERE DIRECTED BY THE ENGINEER				
TOTALS:			**1000**	**8**

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

FENCING

STATION	STATION	LOCATION	WIRE FENCE (TYPE D-1)	* 16'-0" GATES
			LIN. FT.	EACH
299+95	302+64	HWY. 41 ON LT.	280	
303+67	306+18	HWY. 41 ON RT.	236	1
306+35	309+65	HWY. 41 ON RT.	355	
309+65	310+23	HWY. 41 ON LT.	90	
326+17		HWY. 41 ON RT.		1
326+25	329+90	HWY. 41 ON RT.	446	
331+70	338+87	HWY. 41 ON RT.	702	
TOTALS:			**2109**	**2**

* DENOTES ALTERNATE BID ITEM.

ACHM PATCHING OF EXISTING ROADWAY

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

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

STRUCTURES

STATION	DESCRIPTION	TEMP. CULVERT 18"
		LIN. FT.
338+00	TEMP. CROSS DRAIN - EXIST. MAIN LANES	61
46+00	TEMP. CROSS DRAIN - RIVER RD. DETOUR	44
TOTAL:		**105**

ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC

LOCATION	TON	TACK COAT
		GALLON
* ENTIRE PROJECT - TO BE USED IF AND WHERE	25	50
DIRECTED BY THE ENGINEER		
TOTALS:	**25**	**50**

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

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

CONCRETE DITCH PAVING

STATION	STATION	LOCATION	LENGTH	"W"	CONC. DITCH PAVING (TYPE B)	SOLID SODDING	WATER
			LIN. FT.	FEET	SQ. YD.	SQ. YD.	M. GAL.
* ENTIRE PROJECT		IF AND WHERE DIRECTED BY THE ENGINEER	200.00	6.00	133.33	88.89	1.12
TOTALS:					**133.33**	**88.89**	**1.12**

BASIS OF ESTIMATE:
WATER.....12.6 GAL. / SQ. YD. OF SOLID SODDING.

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

COLD MILLING ASPHALT PAVEMENT

STATION	STATION	LOCATION	AVG. WIDTH	COLD MILLING ASPHALT PAVEMENT
			FEET	SQ. YD.
300+00.00	301+00.00	MAIN LANES	24.00	266.67
348+00.00	349+00.00	MAIN LANES	24.00	266.67
TOTAL:				**533.34**

NOTE: AVERAGE MILLING DEPTH 1".

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QUANTITIES

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		030415	25	131

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-16-16

EROSION CONTROL

STATION	STATION	LOCATION	PERMANENT EROSION CONTROL					TEMPORARY EROSION CONTROL								
			SEEDING	LIME	MULCH COVER	WATER	SECOND SEEDING APPLICATION	TEMPORARY SEEDING	MULCH COVER	WATER	TRIANGULAR SILT DIKE	SAND BAG DITCH CHECKS (E-5)	SILT FENCE (E-11)	SEDIMENT BASIN (E-14)	OBLITERATION OF SEDIMENT BASIN	*SEDIMENT REMOVAL & DISPOSAL
			ACRE	TON	ACRE	M.GAL.	ACRE	ACRE	ACRE	M.GAL.	LIN. FT.	BAG	LIN. FT.	CU.YD.	CU.YD.	CU. YD.
299+00	349+00	ENTIRE PROJECT	6.60	13.20	6.60	673.2	6.60	2.28	2.28	46.5	120	308	7942	201	201	509
*ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.								6.60	6.60	134.6	60	44	1500	3600	3600	3660
TOTALS:			**6.60**	**13.20**	**6.60**	**673.2**	**6.60**	**8.88**	**8.88**	**181.1**	**180**	**352**	**9442**	**3801**	**3801**	**4169**

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

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

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

EROSION CONTROL MATTING

STATION	STATION	LOCATION	CLASS 3
			SQ. YD.
*ENTIRE PROJECT		TO BE USED IF AND WHERE	1250.00
		DIRECTED BY THE ENGINEER	
TOTAL:			**1250.00**

NOTE: AVERAGE WIDTH = 8'-0"

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

BENCH MARKS

STATION	LOCATION	BENCH MARKS
		EACH
309+64	BEGINNING OF BRIDGE	1
329+58	END OF BRIDGE	1
TOTAL:		**2**

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

APPROACH GUTTERS AND SLABS

STATION	STATION	LOCATION	APPROACH GUTTERS (TYPE C)	APPROACH SLABS	REINFORCING STEEL - RDWY. (GR. 60)	AGGREGATE BASE CRS. (CLASS 7)
			CU.YD.	CU.YD.	POUND	TON
309+28.40	309+64.90	LT. SIDE	14.80		810	
309+28.40	309+64.90	RT. SIDE	14.80		810	
309+28.40	309+64.90	MAIN LANES		49.15	5980	28.4
329+58.10	329+94.60	LT. SIDE	14.80		810	
329+58.10	329+94.60	RT. SIDE	14.80		810	
329+58.10	329+94.60	MAIN LANES		49.15	5980	28.4
TOTALS:			**59.20**	**98.30**	**15200**	**56.8**

NOTE: USE T =15.5" FOR 8' SHOULDER.

GUARDRAIL

STATION	STATION	LOCATION	GUARDRAIL (TYPE A)	THRIE BEAM GUARDRAIL TERMINAL	GUARDRAIL TERMINAL (TYPE 2)
			LIN. FT.	EACH	
307+34.75	309+53.50	RT.SIDE	150	1	1
308+59.75	309+53.50	LT. SIDE	75	1	1
329+80.50	330+74.25	RT. SIDE	75	1	1
329+80.50	331+99.25	LT. SIDE	150	1	1
TOTALS:			**450**	**4**	**4**

SELECTED PIPE BEDDING

LOCATION	SELECTED PIPE BEDDING
	CU.YD.
* ENTIRE PROJECT TO BE USED IF	
AND WHERE DIRECTED BY THE	25
ENGINEER	
TOTAL:	**25**

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

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QUANTITIES

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		030415	26	131

(2) QUANTITIES

BASE AND SURFACING

STATION	STATION	LOCATION	LENGTH	AGGREGATE BASE COURSE (CLASS 7)		TACK COAT				ACHM BASE COURSE (1 1/2")				ACHM BINDER COURSE (1")				ACHM SURFACE COURSE (1/2")							
				TON / STATION	TON	AVG. WID.	SQ.YD.	GALLONS / SQ.YD.	GALLON	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 64-22	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 64-22	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 64-22	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 64-22	TOTAL PG 64-22
			FEET			FEET				FEET			TON	FEET			TON	FEET			TON	FEET			TON	TON
MAIN LANES																										
300+00.00	301+00.00	TIE TO EXISTING	100.00			24.00	266.67	0.17	45.33													24.00	266.67	220.00	29.33	29.33
301+00.00	302+00.00	MAIN LANES	100.00			40.00	444.44	0.05	22.22													40.00	444.44	220.00	48.89	48.89
302+00.00	304+79.66	TRANSITION FROM EXISTING TO NEW LOCATION	279.66	VAR.	395.72	VAR.	757.57	0.05	37.88					VAR.	380.96	495.00	94.29	VAR.	376.92	220.00	41.46	40.00	1242.93	220.00	136.72	178.18
304+79.66	309+28.40	MAIN LANES	448.74	283.00	1269.93	48.77	2431.67	0.05	121.58					24.52	1222.57	495.00	302.59	24.25	1209.11	220.00	133.00	40.00	1994.40	220.00	219.38	352.38
329+94.60	344+70.30	MAIN LANES	1475.70	283.00	4176.23	48.77	7996.65	0.05	399.83					24.52	4020.46	495.00	995.06	24.25	3976.19	220.00	437.38	40.00	6558.67	220.00	721.45	1158.83
344+70.30	347+00.00	TRANSITION FROM NEW LOCATION TO EXISTING	229.70	VAR.	325.03	VAR.	622.49	0.05	31.12					VAR.	312.90	495.00	77.44	VAR.	309.58	220.00	34.05	40.00	1020.89	220.00	112.30	146.35
347+00.00	348+00.00	MAIN LANES	100.00			40.00	444.44	0.05	22.22													40.00	444.44	220.00	48.89	48.89
348+00.00	349+00.00	TIE TO EXISTING	100.00			24.00	266.67	0.17	45.33													24.00	266.67	220.00	29.33	29.33
ADDITIONAL FOR GUARDRAIL WIDENING																										
306+91.75	307+24.75	GUARDRAIL WIDENING TAPER RT.	33.00	17.38	5.74																	2.75	10.08	220.00	1.11	1.11
307+24.75	307+34.75	GUARDRAIL WIDENING RT.	10.00	34.76	3.48																	5.50	6.11	220.00	0.67	0.67
307+34.75	309+09.75	GUARDRAIL WIDENING RT.	175.00	28.25	49.44																	4.50	87.50	220.00	9.63	9.63
308+16.75	308+49.75	GUARDRAIL WIDENING TAPER LT.	33.00	17.38	5.74																	2.75	10.08	220.00	1.11	1.11
308+49.75	308+59.75	GUARDRAIL WIDENING LT.	10.00	34.76	3.48																	5.50	6.11	220.00	0.67	0.67
308+59.75	309+09.75	GUARDRAIL WIDENING LT.	50.00	28.25	14.13																	4.50	25.00	220.00	2.75	2.75
309+09.75	309+53.50	GUARDRAIL WIDENING RT.	43.75	21.75	9.52																	3.50	17.01	220.00	1.87	1.87
309+09.75	309+53.50	GUARDRAIL WIDENING LT.	43.75	21.75	9.52																	3.50	17.01	220.00	1.87	1.87
329+80.50	330+24.25	GUARDRAIL WIDENING RT.	43.75	21.75	9.52																	3.50	17.01	220.00	1.87	1.87
329+80.50	330+24.25	GUARDRAIL WIDENING LT.	43.75	21.75	9.52																	3.50	17.01	220.00	1.87	1.87
330+24.25	330+74.25	GUARDRAIL WIDENING RT.	50.00	28.25	14.13																	4.50	25.00	220.00	2.75	2.75
330+24.25	331+99.25	GUARDRAIL WIDENING LT.	175.00	28.50	49.88																	4.50	87.50	220.00	9.63	9.63
330+74.25	330+84.25	GUARDRAIL WIDENING LT.	10.00	34.76	3.48																	5.50	6.11	220.00	0.67	0.67
330+74.25	331+07.25	GUARDRAIL WIDENING TAPER RT.	33.00	17.38	5.74																	2.75	10.08	220.00	1.11	1.11
331+99.25	332+09.25	GUARDRAIL WIDENING RT.	10.00	34.76	3.48																	5.50	6.11	220.00	0.67	0.67
332+09.25	332+42.25	GUARDRAIL WIDENING TAPER LT.	33.00	17.38	5.74																	2.75	10.08	220.00	1.11	1.11
ADDITIONAL FOR LEVELING																										
301+00.00	304+79.66	ADDITIONAL FOR LEVELING	379.66			VAR.	732.65	0.17	124.55									VAR.	732.65	220.00	80.59					80.59
344+70.30	348+00.00	ADDITIONAL FOR LEVELING	329.70			VAR.	605.29	0.17	102.90									VAR.	605.29	220.00	66.58					66.58
ADDITIONAL FOR GRADE RAISE																										
301+00.00	304+79.66	ADDITIONAL FOR GRADE RAISE	379.66			VAR.	732.65	0.17	124.55	VAR.	1060.27	660.00	349.89	VAR.	913.74	495.00	226.15									
344+70.30	348+00.00	ADDITIONAL FOR GRADE RAISE	329.70			VAR.	605.29	0.17	102.90	VAR.	323.57	660.00	106.78	VAR.	645.27	495.00	159.70									
ADDITIONAL FOR SUPERELEVATION																										
300+00.00	303+50.00	SUPERELEVATION TRANSITION	350.00	34.38	120.33																					
303+50.00	306+00.00	MAX SUPERELEVATION	250.00	68.75	171.88																					
306+00.00	309+50.00	SUPERELEVATION TRANSITION	350.00	34.38	120.33																					
333+37.20	336+87.20	SUPERELEVATION TRANSITION	350.00	34.38	120.33																					
336+87.20	344+50.00	MAX SUPERELEVATION	762.80	68.75	524.43																					
344+50.00	348+00.00	SUPERELEVATION TRANSITION	350.00	34.38	120.33																					
ADDITIONAL FOR SIDE SLOPE CHANGES																										
303+00.00	305+00.00	TRANSITION FROM 4:1 TO 6:1 ON LT.	200.00	6.00	12.00																					
305+00.00	309+64.52	6:1 SLOPE ON LT.	464.52	12.00	55.74																					
331+25.00	331+88.00	TRANSITION FROM 4:1 TO 6:1 ON LT.	63.00	6.00	3.78																					
331+88.00	332+00.00	6:1 SLOPE ON LT.	12.00	12.00	1.44																					
332+00.00	332+31.00	TRANSITION FROM 6:1 TO 7:1 ON LT.	31.00	15.25	4.73																					
332+31.00	332+50.00	7:1 SLOPE ON LT.	19.00	18.50	3.52																					
332+50.00	333+00.00	TRANSITION FROM 7:1 TO 10:1 ON LT.	50.00	29.00	14.50																					
333+00.00	334+00.00	TRANSITION FROM 10:1 TO 7:1 ON LT.	100.00	29.00	29.00																					
334+00.00	345+00.00	7:1 SLOPE ON LT.	1100.00	18.50	203.50																					
345+00.00	346+00.00	TRANSITION FROM 7:1 TO 4:1 ON LT.	100.00	9.25	9.25																					
A.G.F.C. DRWY., COUNTY ROADS, AND DETOUR																										
10+20.00	12+00.00	A.F.G.C. DRWY.	180.00	VAR.	236.84																	VAR.	577.65	220.00	63.54	63.54
20+20.00	23+50.00	RIVERVIEW DR.	330.00	VAR.	365.50																	VAR.	744.13	220.00	81.85	81.85
0+20.00	4+90.00	RIVER RD.	470.00	VAR.	521.52																	VAR.	1061.77	220.00	116.79	116.79
42+20.00	47+75.00	RIVER RD. DETOUR	555.00	VAR.	473.75																					
TOTALS:					**9482.15**		**15906.48**		**1180.41**		**1383.84**		**456.67**		**7495.90**		**1855.23**		**7209.74**		**793.06**		**14980.46**		**1647.83**	**2440.89**

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....94.8% MIN. AGGR.....5.2% ASPHALT BINDER
ACHM BINDER COURSE (1").....95.6% MIN. AGGR.....4.4% ASPHALT BINDER
ACHM BASE COURSE (1 1/2").....96.0% MIN. AGGR.....4.0% ASPHALT BINDER
MAXIMUM NUMBER OF GYRATIONS = 115 FOR PG 64-22

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-16-16

1/19/2016

R030415.DGN

QUANTITIES

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
3-21-16				6	ARK.			
				JOB NO.		030415	27	131
				① 07378 - QUANTITIES -			58062	

SCHEDULE OF BRIDGE QUANTITIES - JOB NO. 030415

BRIDGE NO.	BRIDGE NAME PLATE TITLE	UNIT OF STRUCTURE / ITEM NO. / ITEM / UNIT	205 REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO.) LUMP SUM	801 UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE CU. YD.	802 CLASS S CONCRETE -BRIDGE CU. YD.	802 CLASS S(AE) CONCRETE -BRIDGE CU. YD.	802 PRESTRESSED CONCRETE GIRDERS (TYPE IV) LIN. FT.	803 CLASS I PROTECTIVE SURFACE TREATMENT GAL.	804 REINFORCING STEEL -BRIDGE (GR. 60) LB.	804 EPOXY COATED REINFORCING STEEL (GRADE 60) LB.	805 ① CONCRETE PILING (18" SQ.) LIN. FT.	805 ② STEEL PILING (HP 12X53) LIN. FT.	805 ① TEST PILE (18" SQ.) LIN. FT.	SP & 807 STRUCTURAL STEEL IN PLATE GIRDER SPANS (M 270, GR. 50W) LB.	808 ELASTOMERIC BEARINGS CU. IN.	809 ARMORED JOINT WITH NEOPRENE STRIP SEAL LIN. FT.	812 BRIDGE NAME PLATE (TYPE D) EA.	816 FILTER BLANKET SQ. YD.	816 DUMPED RIPRAP CU. YD.	SP JOB 030415 DRILLED SHAFT (120" DIA.) LIN. FT.	SP JOB 030415 PERMANENT STEEL CASING (132" DIA.) LIN. FT.	SP JOB 030415 CROSSHOLE SONIC LOGGING (120" DIA.) EA.	SP JOB 030415 CORING DRILLED SHAFT LIN. FT.
07378	LITTLE RIVER	BENT NOS. 1 & 24			77.90			0.6	8,908		360	350	65	1,224				374.1	212.0				
		BENT NOS. 2 THRU 7		764	512.90				85,790			3,780											
		BENT NOS. 8 THRU 15		1,027	681.10				113,910		7,100		110										
		BENT NOS. 16 & 20		345	170.60				22,605		1,800												
		BENT NO. 17			80.80				18,543											110	40	1	110
		BENT NO. 18			99.40				22,185											125	30	1	125
		BENT NO. 19		700	69.60				16,357											110	40	1	110
		BENT NOS. 21, 22, & 23		378	244.40				40,864		2,650		55										
		5 - 237'-0" CONT. PRESTRESSED CONC. GIRDER UNIT (NOS. 1 THRU 5)				1,735.00	5,848.4	124.1	23,845	348,727				33,107	49,481	215.8	1						
		1 - 490'-0" CONT. COMP. PLATE GIRDER UNIT (NO. 6)				637.00		51.3		150,061				⚠ ~~632,398~~ ~~583,118~~	20,526								
		1 - 316'-0" CONT. PRESTRESSED CONC. GIRDER UNIT (NO. 7)				461.30	1,558.3	33.1	6,223	93,982				12,351	13,195	43.2							
		EXISTING BRIDGE NO. 03312 (SITE NO. 1)	1																				
		TOTAL FOR JOB NO. 030415	1	3,214	1,936.70	2,833.30	7,406.7	209.1	359,230	592,770	11,910	4,130	230	⚠ ~~679,080~~ ~~556,168~~	83,202	259.0	1	374.1	212.0	345	110	3	345

① All concrete piling shall be prestressed conforming to Std. Dwg. No. 55022.

② Steel piling is required to be Grade 50 and have special pile tips which will not be paid for directly, but will be considered subsidiary to the item "Steel Piling (HP12X53)".

JEFF COVAY
DESIGN SECTION SUPERVISOR

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
3-21-16
CHARLES R. ELLIS
BRIDGE ENGINEER

⚠ Revised Structural Steel Quantity. 3-21-16 JAC
Chk'd. by: PGT Date: 3-21-16

SCHEDULE OF BRIDGE QUANTITIES
LITTLE RIVER STR. & APPRS. (S)
LITTLE RIVER & SEVIER COUNTIES

ROUTE 41 SEC. 2
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: JAC DATE: 12-09-15 FILENAME: b030415_qi.dgn
CHECKED BY: PGT DATE: 01-21-16 SCALE: No Scale
DESIGNED BY: Std. DATE: —

BRIDGE NO. 07378 DRAWING NO. 58062

PRINT DATE: 18-MAR-2016

SUMMARY OF QUANTITIES

ITEM NUMBER	ITEM		QUANTITY	UNIT
SP & 201	CLEARING		44	STATION
SP & 201	GRUBBING		44	STATION
202	REMOVAL AND DISPOSAL OF FENCE		1873	LIN. FT.
202	REMOVAL AND DISPOSAL OF GUARDRAIL		308	LIN. FT.
210	UNCLASSIFIED EXCAVATION		17470	CU. YD.
210	COMPACTED EMBANKMENT		48805	CU. YD.
SP & 210	SOIL STABILIZATION		100	TON
303	AGGREGATE BASE COURSE (CLASS 7)		10080	TON
SS & 401	TACK COAT		1230	GAL.
SP & 405	MINERAL AGGREGATE IN ACHM BASE COURSE (1 1/2")		439	TON
SP & 405	ASPHALT BINDER (PG 64-22) IN ACHM BASE COURSE (1 1/2")		18	TON
SP, SS, & 406	MINERAL AGGREGATE IN ACHM BINDER COURSE (1")		1773	TON
SP, SS, & 406	ASPHALT BINDER (PG 64-22) IN ACHM BINDER COURSE (1")		82	TON
SP, SS, & 407	MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2")		2427	TON
SP, SS, & 407	ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2")		133	TON
412	COLD MILLING ASPHALT PAVEMENT		533	SQ. YD.
SP & 414	ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC		25	TON
SP & 415	ACHM PATCHING OF EXISTING ROADWAY		25	TON
504	APPROACH SLABS		98.30	CU. YD.
504	APPROACH GUTTERS		59.20	CU. YD.
601	MOBILIZATION		1.00	LUMP SUM
SP & 602	FURNISHING FIELD OFFICE		1	EACH
603	MAINTENANCE OF TRAFFIC		1.00	LUMP SUM
603	18" TEMPORARY CULVERT		105	LIN. FT.
SP, SS, & 604	SIGNS		380	SQ. FT.
SS & 604	BARRICADES		240	LIN. FT.
SS & 604	TRAFFIC DRUMS		78	EACH
604	CONSTRUCTION PAVEMENT MARKINGS		39200	LIN. FT.
SS & 604	VERTICAL PANELS		22	EACH
605	CONCRETE DITCH PAVING (TYPE B)		133	SQ. YD.
SP, SS, & 606	18" SIDE DRAIN		70	LIN. FT.
606	SELECTED PIPE BEDDING		25	CU. YD.
611	UNDERDRAIN OUTLET PROTECTORS		8	EACH
611	4" PIPE UNDERDRAINS		1000	LIN. FT.
615	PAVEMENT REPAIR OVER CULVERTS (ASPHALT)		50	TON
617	GUARDRAIL (TYPE A)		450	LIN. FT.
617	GUARDRAIL TERMINAL (TYPE 2)		4	EACH
617	THRIE BEAM GUARDRAIL TERMINAL		4	EACH
619	WIRE FENCE (TYPE D-1)		2109	LIN. FT.
* 619	16' STEEL GATES	(ALTERNATE NO. 1)	2	EACH
* 619	16' ALUMINUM GATES	(ALTERNATE NO. 2)	2	EACH
620	LIME		13	TON
620	SEEDING		6.60	ACRE
SS & 620	MULCH COVER		15.48	ACRE
620	WATER		855.4	M.GAL.
621	TEMPORARY SEEDING		8.88	ACRE
621	SILT FENCE		9442	LIN. FT.
621	SAND BAG DITCH CHECKS		352	BAG
621	SEDIMENT BASIN		3801	CU. YD.
621	OBLITERATION OF SEDIMENT BASIN		3801	CU. YD.
621	SEDIMENT REMOVAL AND DISPOSAL		4169	CU. YD.
621	TRIANGULAR SILT DIKE		180	LIN. FT.
623	SECOND SEEDING APPLICATION		6.60	ACRE
624	SOLID SODDING		89	SQ. YD.
626	EROSION CONTROL MATTING (CLASS 3)		1250	SQ. YD.
635	ROADWAY CONSTRUCTION CONTROL		1.00	LUMP SUM
642	RUMBLE STRIPS IN ASPHALT SHOULDERS		4716	LIN. FT.
719	THERMOPLASTIC PAVEMENT MARKING WHITE (4")		9800	LIN. FT.
719	THERMOPLASTIC PAVEMENT MARKING YELLOW (4")		5668	LIN. FT.
* SP & 719	INVERTED PROFILE THERMOPLASTIC CONTRAST PAVEMENT MARKING YELLOW (4")	(ALTERNATE NO. 1)	4132	LIN. FT.
* SP	HIGH PERFORMANCE CONTRAST MARKING TAPE YELLOW (4")	(ALTERNATE NO. 2)	4132	LIN. FT.
721	RAISED PAVEMENT MARKERS (TYPE II)		123	EACH
804	REINFORCING STEEL-ROADWAY (GRADE 60)		15200	POUND
	STRUCTURES OVER 20' SPAN			
205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 1)		1.00	LUMP SUM
SP & 636	BRIDGE CONSTRUCTION CONTROL		1.00	LUMP SUM
801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE		3214	CU. YD.
802	CLASS S CONCRETE-BRIDGE		1936.70	CU. YD.
802	CLASS S(AE) CONCRETE-BRIDGE		2833.30	CU. YD.
802	PRESTRESSED CONCRETE GIRDERS (TYPE IV)		7406.7	LIN. FT.
803	CLASS 1 PROTECTIVE SURFACE TREATMENT		209.1	GAL.
804	REINFORCING STEEL-BRIDGE (GRADE 60)		359230	POUND
804	EPOXY COATED REINFORCING STEEL (GRADE 60)		592770	POUND
805	STEEL PILING (HP 12X53)		4130	LIN. FT.
SP	CORING DRILLED SHAFT		345	LIN. FT.
SP	DRILLED SHAFT (120" DIAMETER)		345	LIN. FT.
SP	PERMANENT STEEL CASING (132" DIAMETER)		110	LIN. FT.
805	CONCRETE PILING (18" SQUARE)		11910	LIN. FT.
805	TEST PILE (18" SQUARE)		230	LIN. FT.
SP	CROSSHOLE SONIC LOGGING (120" DIAMETER)		3	EACH
SP & 807	STRUCTURAL STEEL IN PLATE GIRDER SPANS (M270-GR50W)		679080	POUND
808	ELASTOMERIC BEARINGS		83202	CU. IN.
809	ARMORED JOINT WITH NEOPRENE STRIP SEAL		259.0	LIN. FT.
812	BRIDGE NAME PLATE (TYPE D)		1	EACH
816	FILTER BLANKET		374.1	SQ. YD.
816	DUMPED RIPRAP		212.0	CU. YD.

* DENOTES ALTERNATE BID ITEMS.

REVISIONS

DATE	REVISION	SHEET NUMBER
2/29/16	REVISED THE DRILLED SHAFT FOUNDATIONS SP	28
3/18/2016	REVISED THE DRILLED SHAFT FOUNDATIONS SP	28
3/21/2016	REVISED "STRUCTURAL STEEL IN PLATE GIRDER SPANS (M 270, GR. 50W) QUANTITY	27, 28

SUMMARY OF QUANTITIES AND REVISIONS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED
2-29-16			
3-18-16			
3-21-16			

(2) SUMMARY OF QUANTITIES AND REVISIONS

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.		28	131
JOB NO.	030415			

STATE OF ARKANSAS — REGISTERED PROFESSIONAL ENGINEER — JAMES D. SMITH — No. 11485 — 3-21-16

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.		030415	29	131

(2) SURVEY CONTROL DETAILS

SURVEY CONTROL COORDINATES
Project Name: 030415
Date: 1/27/2016
Coordinate System: Arkansas State Plane Coordinates
Based on AHTD GPS PTS *410008, 410008A, 660026, & 660026A*
Projected to Ground Coordinates
Units: U.S. Survey Foot

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

Point No.	Northing	SY	Easting	SX	Elevation	SZ	Feature Code	Point Description
1	1775646.8814	0.0150	587275.2326	0.0170	313.33	0.000	CTL	5/8" REBAR AND CAP
2	1776219.2331	0.0185	587703.0364	0.0202	300.25	0.001	CTL	5/8" REBAR AND CAP
3	1776637.4155	0.0340	588025.4256	0.0310	302.29	0.006	CTL	5/8" REBAR AND CAP
4	1776856.1032	0.0370	588416.8965	0.0330	303.76	0.005	CTL	5/8" REBAR AND CAP
5	1777292.1522	0.0191	588780.7368	0.0187	315.75	0.000	CTL	5/8" REBAR AND CAP
6	1777749.0963	0.0173	589123.9602	0.0158	314.52	0.001	CTL	5/8" REBAR AND CAP
7	1778009.9989	0.0251	589545.4212	0.0207	314.24	0.001	CTL	5/8" REBAR AND CAP
8	1778019.7450	0.0463	590164.2028	0.0212	308.50	0.001	CTL	5/8" REBAR AND CAP
9	1775261.4539	0.0170	587076.5911	0.0234	313.96	0.001	CTL	5/8" REBAR AND CAP
10	1774604.5718	0.0197	586947.1096	0.0434	311.83	0.001	CTL	5/8" REBAR AND CAP
100	1772722.6675	0.0001	582081.8614	0.0001	310.78	0.005	GPS	AHTD GPS 410008
101	1770765.7266	0.0001	581139.5027	0.0001	313.95	0.007	GPS	AHTD GPS 410008A
102	1780410.5541	0.0001	592736.9077	0.0001	357.80	0.011	GPS	AHTD GPS 660026
103	1779310.2011	0.0001	592410.9197	0.0001	310.89	0.010	GPS	AHTD GPS 660026A

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

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

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

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

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

Positional Accuracy:
Horizontal - GPS (1.0 cm± 1PPM) *PN: 100-103*
Horizontal - Primary (2.0cm± 20PPM): *PN:1-10*
Horizontal - Secondary (3 cm ± 50PPM): *PN:N/A*
Vertical - NGS 1st Order (±4mm x √dist in km) *PN:N/A*
Vertical - NGS 2nd Order (±6mm x √dist in km) *PN:N/A*
Vertical - NGS 3rd Order (±8mm x √dist in km) *PN:N/A*

Horizontal Datum: NAD 1983 (1997) State Plane Zone: 0302 - South Zone
The adjustment year is based on metadata in the SDMS Control file
A project CAF of: 0.999905491 has been used to compute the above coordinates.
The project CAF shall have a minimum precision of 9 digits right of the decimal.
This CAF is intended for use within the project limits only.
Grid Distance = Ground Distance X CAF
If Coordinates are listed as Ground:
To compute Grid Coordinates, multiply the Ground Coordinates by CAF about the origin of X=0 & Y=0
If Coordinates are listed as Grid:
To compute Ground Coordinates, divide the Grid Coordinates by CAF about the origin of X=0 & Y=0

Vertical Datum: NAVD 1988 based NGS BM:
A project Elevation Factor of: 0.9999849948 has been computed and incorporated in the above CAF.
This is based on the average elevation of the project: 313.70 Feet
3-Wire Leveling techniques have been used to establish elevations on
Points: 1-10, 100-103 From NGS BM E 303, F 303, & G 303

Basis of Bearing: Grid Bearings based on AHTD GPS points: *(List AHTD GPS points used)*
Convergence Angle is: 01 20 08.98 LEFT at PN: 4
LT: 33-55-10 N LG: 094-23-12 W
Grid Azimuth = Astronomical Azimuth - Convergence Angle

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

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-16-16

HWY. 41

POINT NAME	TYPE	STATION	NORTHING	EASTING
8000	POB	298+35.00	1774594.9791	586967.3995
8001	P.C.	302+00.00	1774954.3993	587030.9772
8003	P.T.	308+13.80	1775502.3690	587290.8937
8004	P.C.	335+99.70	1777613.7859	589108.3586
8006	P.T.	347+19.60	1778004.2673	590110.8527
8007	POE	348+13.09	1777993.3337	590203.7023

A.G.F.C. DRWY.

POINT NAME	TYPE	STATION	NORTHING	EASTING
8010	POB	10+00.00	1775484.1718	587275.5560
8011	P.C.	10+28.75	1775502.4706	587253.3825
8013	P.T.	11+82.53	1775640.6719	587237.8486
8014	POE	12+37.92	1775684.5325	587271.6782

RIVERVIEW DR.

POINT NAME	TYPE	STATION	NORTHING	EASTING
8020	POB	20+00.00	1777254.0118	588798.6724
8021	P.C.	20+20.00	1777240.9642	588813.8302
8023	P.R.C.	20+86.12	1777180.7722	588825.9642
8025	P.C.	23+03.67	1776970.6705	588824.5807
8026	POE	23+63.46	1776916.8085	588850.5369

RIVER RD.

POINT NAME	TYPE	STATION	NORTHING	EASTING
8030	POB	0+00.00	1777348.7484	588880.2197
8031	P.C.	0+21.95	1777361.5635	588862.3996
8033	P.T.	0+96.13	1777353.5891	588795.3129
8034	P.C.	2+89.60	1777206.9599	588669.0975
8036	P.T.	4+76.28	1777165.7678	588499.1518
8037	POE	4+91.68	1777171.5460	588484.8711

RIVER RD. DETOUR

POINT NAME	TYPE	STATION	NORTHING	EASTING
8040	POB	42+00.00	1777386.6431	588912.8387
8041	P.C.	42+78.40	1777437.7884	588853.4213
8043	P.T.	43+56.50	1777432.8432	588783.1947
8044	P.C.	46+95.92	1777177.5467	588559.5204
8046	P.T.	47+57.71	1777164.1465	588503.1588
8037	POE	47+77.44	1777171.5460	588484.8711

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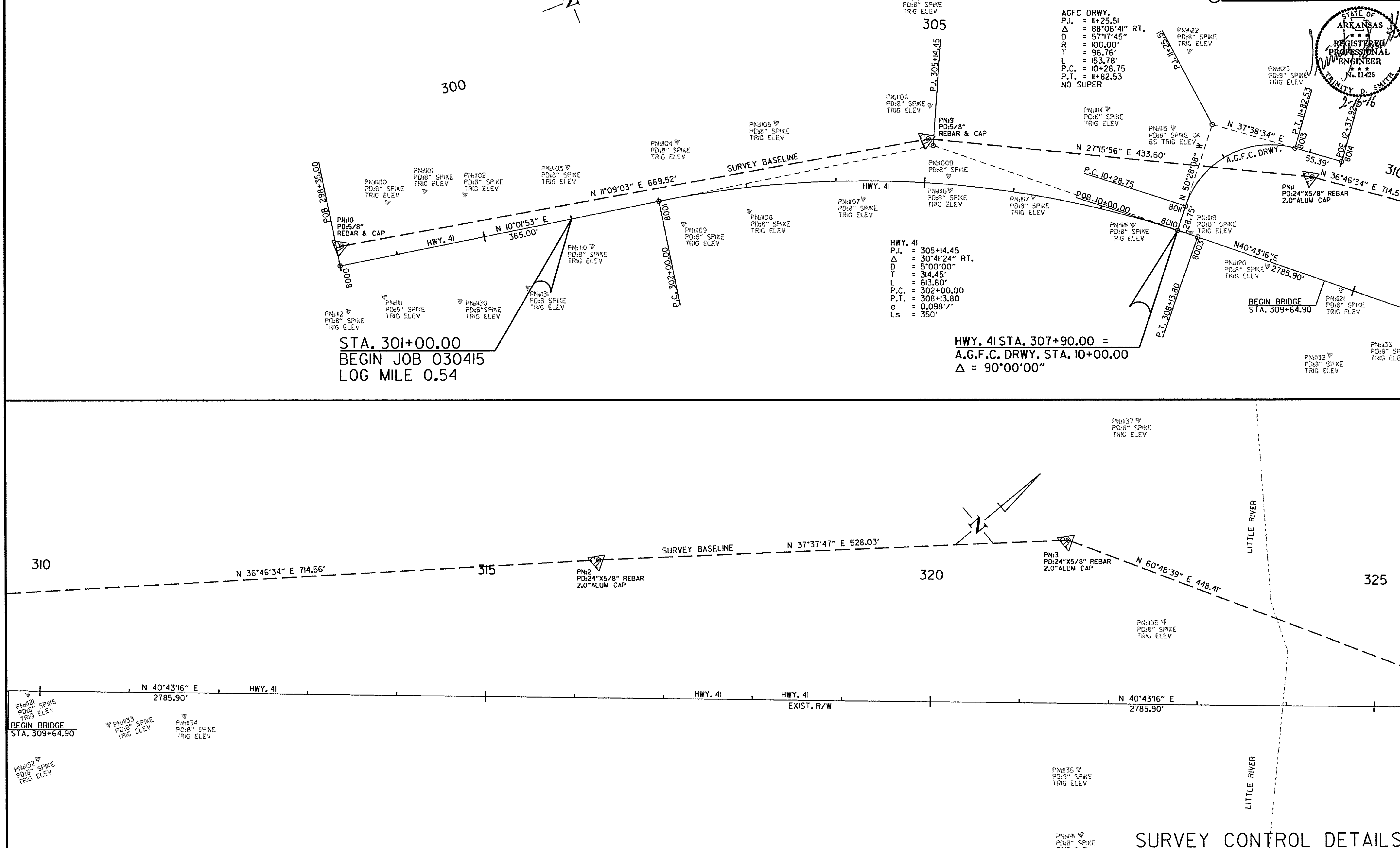
SURVEY CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		030415	30	131

(2) SURVEY CONTROL DETAILS



AGFC DRWY.
P.I. = 11+25.51
Δ = 88°06'41" RT.
D = 57°17'45"
R = 100.00'
T = 96.76'
L = 153.78'
P.C. = 10+28.75
P.T. = 11+82.53
NO SUPER
STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH
2-16-16
300
305
310
SURVEY BASELINE
N 11°09'03" E 669.52'
N 27°15'56" E 433.60'
N 36°46'34" E 714.56'
N 37°38'34" E
N 50°28'08" W
N 10°01'53" E 365.00'
N40°43'16"E 2785.90'
P.O.B. 298+35.00
P.I. 305+14.45
P.C. 302+00.00
P.T. 308+13.80
P.C. 10+28.75
POB 10+00.00
P.I. 11+25.51
P.T. 11+82.53
POE 12+37.92
A.G.F.C. DRWY.
55.39'
28.75'
PN:10 PD:5/8" REBAR & CAP
PN:9 PD:5/8" REBAR & CAP
PN:1 PD:24"X5/8" REBAR 2.0"ALUM CAP
HWY. 41
HWY. 41
P.I. = 305+14.45
Δ = 30°41'24" RT.
D = 5°00'00"
T = 314.45'
L = 613.80'
P.C. = 302+00.00
P.T. = 308+13.80
e = 0.098'/'
Ls = 350'
STA. 301+00.00
BEGIN JOB 030415
LOG MILE 0.54
HWY. 41 STA. 307+90.00 =
A.G.F.C. DRWY. STA. 10+00.00
Δ = 90°00'00"
BEGIN BRIDGE
STA. 309+64.90
8000
8001
8003
8010
8011
8013
8014
PN:1100 PD:8" SPIKE TRIG ELEV
PN:1101 PD:8" SPIKE TRIG ELEV
PN:1102 PD:8" SPIKE TRIG ELEV
PN:1103 PD:8" SPIKE TRIG ELEV
PN:1104 PD:8" SPIKE TRIG ELEV
PN:1105 PD:8" SPIKE TRIG ELEV
PN:1106 PD:8" SPIKE TRIG ELEV
PN:1107 PD:8" SPIKE TRIG ELEV
PN:1108 PD:8" SPIKE TRIG ELEV
PN:1109 PD:8" SPIKE TRIG ELEV
PN:1110 PD:8" SPIKE TRIG ELEV
PN:1111 PD:8" SPIKE TRIG ELEV
PN:1112 PD:8" SPIKE TRIG ELEV
PN:1113 PD:8" SPIKE TRIG ELEV
PN:1114 PD:8" SPIKE TRIG ELEV
PN:1115 PD:8" SPIKE CK BS TRIG ELEV
PN:1116 PD:8" SPIKE TRIG ELEV
PN:1117 PD:8" SPIKE TRIG ELEV
PN:1118 PD:8" SPIKE TRIG ELEV
PN:1119 PD:8" SPIKE TRIG ELEV
PN:1120 PD:8" SPIKE TRIG ELEV
PN:1121 PD:8" SPIKE TRIG ELEV
PN:1122 PD:8" SPIKE TRIG ELEV
PN:1123 PD:8" SPIKE TRIG ELEV
PN:1130 PD:8"SPIKE TRIG ELEV
PN:1131 PD:8 SPIKE TRIG ELEV
PN:1132 PD:8" SPIKE TRIG ELEV
PN:1133 PD:8" SPIKE TRIG ELEV
PN:1000 PD:8" SPIKE
310
315
320
325
N 36°46'34" E 714.56'
SURVEY BASELINE
N 37°37'47" E 528.03'
N 60°48'39" E 448.41'
PN:2 PD:24"X5/8" REBAR 2.0"ALUM CAP
PN:3 PD:24"X5/8" REBAR 2.0"ALUM CAP
LITTLE RIVER
LITTLE RIVER
N 40°43'16" E 2785.90'
HWY. 41
HWY. 41
HWY. 41
EXIST. R/W
N 40°43'16" E 2785.90'
BEGIN BRIDGE
STA. 309+64.90
PN:1121 PD:8" SPIKE TRIG ELEV
PN:1132 PD:8" SPIKE TRIG ELEV
PN:1133 PD:8" SPIKE TRIG ELEV
PN:1134 PD:8" SPIKE TRIG ELEV
PN:1135 PD:8" SPIKE TRIG ELEV
PN:1136 PD:8" SPIKE TRIG ELEV
PN:1137 PD:8" SPIKE TRIG ELEV
PN:1141 PD:8" SPIKE TRIG ELEV

SURVEY CONTROL DETAILS

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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.		030415	31	131

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-16-16

325

PN:1145 PD:8" SPIKE TRIG ELEV

330

335

340

345

RIVER RD.
P.I. = 3+97.20
Δ = 71°18'29" RT.
D = 38°11'50"
R = 150.00'
T = 107.60'
L = 186.68'
P.C. = 2+89.60
P.T. = 4+76.28
NO SUPER

RIVER RD. DETOUR
P.I. = 47+31.46
Δ = 70°48'23" RT.
D = 114°35'30"
R = 50.00'
T = 35.54'
L = 61.79'
P.C. = 46+95.92
P.T. = 47+57.71
NO SUPER

RIVER RD. DETOUR
P.I. = 43+27.96
Δ = 89°29'54" LT.
D = 114°35'30"
R = 50.00'
T = 49.56'
L = 78.10'
P.C. = 42+78.40
P.T. = 43+56.50
NO SUPER

RIVER RD.
P.I. = 0+67.77
Δ = 85°00'00" LT.
D = 114°35'30"
R = 50.00'
T = 45.82'
L = 74.18'
P.C. = 0+21.95
P.T. = 0+96.13
NO SUPER

RIVERVIEW DR.
P.I. = 22+03.10
Δ = 52°12'49" LT.
D = 24°00'00"
T = 116.99'
L = 217.56'
PRC = 20+86.12
P.T. = 23+03.67
NO SUPER

RIVERVIEW DR.
P.I. = 20+58.90
Δ = 75°45'46" RT.
D = 114°35'30"
R = 50.00'
T = 38.90'
L = 66.12'
P.C. = 20+20.00
PRC = 20+86.12
NO SUPER

HWY. 41
P.I. = 342+08.93
Δ = 55°59'41" RT.
D = 5°00'00"
T = 609.23'
L = 1119.90'
P.C. = 335+99.70
P.T. = 347+19.60
e = 0.098'/'
Ls = 350'

HWY. 41 STA. 333+00.00 =
RIVER RD. DETOUR STA. 42+00.00
Δ = 90°00'00"

HWY. 41 STA. 332+50.00 =
RIVER RD. STA. 0+00.00
Δ = 85°00'00"

HWY. 41 STA. 331+25.00 =
RIVERVIEW DR. STA. 20+00.00
Δ = 85°00'00"

STA. 348+00.00
END JOB 030415

SURVEY BASELINE

PN:4 PD:24"X5/8" REBAR 2.0"ALUM CAP
PN:5 PD:24"X5/8" REBAR 2.0"ALUM CAP
PN:6 PD:24"X5/8" REBAR 2.0"ALUM CAP
PN:7 PD:5/8" REBAR & CAP
PN:8 PD:5/8" REBAR & CAP

N 60°48'39" E 448.41'
N 39°50'30" E 567.91'
N 36°54'40" E 571.49'
N 58°14'27" E 495.68'
S 41°13'22" W 339.42'
S 40°43'16" W 193.47'
N 54°16'44" W 21.95'
N 49°16'44" W 78.40'
S 49°16'44" E 20.00'
N 40°43'16" E 2785.90'
S 83°17'02" E 93.49'
N 89°05'52" E 618.86'
N 67°58'15" W 15.41'
N 67°58'15" W 19.73'
S 25°43'46" E 59.79'

POB 0+00.00
POB 20+00.00
POB 42+00.00
P.C. 0+21.95
P.T. 0+96.13
P.I. 0+67.77
P.C. 2+89.60
P.I. 3+97.20
P.I. 47+31.46
P.C. 46+95.92
P.T. 47+57.71
P.T. 43+56.50
P.I. 43+27.96
P.C. 42+78.40
P.C. 20+20.00
P.I. 22+03.10
P.I. 20+58.90
P.C. 335+99.70
P.I. 342+08.93
P.T. 347+19.60
POE 4+91.68
POE 47+77.44
POE 4+76.28
POE 47+57.71
POE 23+63.46
POE 348+13.09
P.T. 23+03.67
END BRIDGE STA. 329+58.10

8020 8021 8025 8026 8030 8031 8033 8034 8036 8037 8040 8041 8043 8044 8046 8004 8005 8006 8007

PN:1149 PD:8" SPIKE TRIG ELEV
PN:1150 PD:8" SPIKE TRIG ELEV
PN:1151 PD:8" SPIKE TRIG ELEV
PN:1152 PD:8" SPIKE TRIG ELEV
PN:1153 PD:8" SPIKE TRIG ELEV
PN:1154 PD:8" SPIKE TRIG ELEV
PN:1155 PD:8" SPIKE TRIG ELEV
PN:1156 PD:8" SPIKE TRIG ELEV
PN:1157 PD:8" SPIKE TRIG ELEV
PN:1158 PD:8" SPIKE TRIG ELEV
PN:1159 PD:8" SPIKE TRIG ELEV
PN:1160 PD:8" SPIKE TRIG ELEV
PN:1161 PD:8" SPIKE TRIG ELEV
PN:1162 PD:8" SPIKE TRIG ELEV
PN:1178 PD:8" SPIKE TRIG ELEV
PN:1179 PD:8" SPIKE TRIG ELEV
PN:1180 PD:8" SPIKE TRIG ELEV
PN:1181 PD:8" SPIKE TRIG ELEV
PN:1182 PD:8" SPIKE TRIG ELEV
PN:1183 PD:8" SPIKE TRIG ELEV
PN:1048 PD:8" SPIKE TRIG ELEV
PN:1049 PD:8" SPIKE TRIG ELEV
PN:1001 PD:8" SPIKE

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SURVEY CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		030415	32	131

(2) PLAN AND PROFILE SHEETS

REMOVAL AND DISPOSAL OF FENCE

STA.	STA.	SIDE	LIN. FT.
299+95	302+64	LT.	275
303+67	306+18	RT.	255
306+38	310+09	RT.	404

WIRE FENCE (TYPE D-1)

STA.	STA.	SIDE	LIN. FT.
299+95	302+64	LT.	280
303+67	306+18	RT.	236
306+35	309+65	RT.	355
309+65	310+23	LT.	74

GUARDRAIL

STA.	STA.	SIDE	GUARDRAIL (TYPE A) LIN. FT.	GUARDRAIL TERMINAL (TYPE 2) EACH	THRIE BEAM GUARDRAIL TERMINAL EACH
307+34.75	309+53.50	RT.	150	1	1
308+59.75	309+53.50	LT.	75	1	1

STATE OF ARKANSAS, REGISTERED PROFESSIONAL ENGINEER, No. 11425, TRINITY D. SMITH, 2-16-16

STA. 305+75 CONSTRUCT APPROACH 100 CU. YD.

STA. 306+25 CONSTRUCT APPROACH ON RT. = 190 CU. YDS.

P.I. = 305+14.45
Δ = 30°41'24" RT.
D = 5°00'00"
T = 314.45'
L = 613.80'
P.C. = 302+00.00
P.T. = 308+13.80
e = 0.098'/'
Ls = 350'
ROTATE AROUND C.L.

STA. 301+00.00
BEGIN JOB 030415
LOG MILE 0.54

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

STA. 300+00.00 BEGIN SUPERELEVATION
STA. 303+50.00 MAX SUPERELEVATION (0.098 FT./FT.)
STA. 306+00.00 MAX SUPERELEVATION (0.098 FT./FT.)
STA. 309+50.00 END SUPERELEVATION
ROTATE AROUND CENTERLINE

P.V.I. 301+00.00 313.71'
P.V.I. 302+00.00 314.04'
P.V.I. 303+00.00 313.71'
P.V.C. 303+50.00 313.67'
0.33% -0.33% -0.08%
VC= 300'
e= 0.52'
K= 214.80
P.V.I. 305+00.00 313.55'
1.32%
P.V.R.C. 306+50.00 315.52'
P.V.I. 308+00.00 317.50'
VC= 300'
e= -0.38'
K= 295.08
P.V.T. 309+50.00 317.95'
BEGIN BRIDGE STA. 309+64.90
0.30%

350 340 330 320 310 300 290 280 270 260

295+00 300+00 305+00 310+00

6/23/2014

RO30415.DGN

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				6	ARK.			
				JOB NO.		030415	33	131

(2) PLAN AND PROFILE SHEETS

STA. 309+77.75 - 329+59.05 IN PLACE
26' CLEAR ROADWAY X 1980' LENGTH BRIDGE NO. 03312 CONSISTING OF A CONCRETE DECK AND PLATE GIRDER SPANS SUPPORTED BY TRESTLE BENTS AND CONCRETE PIERS. REMOVE AS EXISTING BRIDGE STRUCTURE (SITE NO. 1) = 1.00 LUMP SUM

STA. 311+96 IN PLACE
DBL. 18" X 30' PLASTIC PIPE CULVERT
LT. SIDE DRAIN
RETAIN

STA. 315+49 IN PLACE
DBL. 24" X 30' PLASTIC PIPE CULVERT
LT. SIDE DRAIN
RETAIN

STA. 317+87 IN PLACE
DBL. 18" X 34' PLASTIC PIPE CULVERT
LT. SIDE DRAIN
RETAIN

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-16-16

EXIST. R/W
310
315
320
325
END FENCE
EXIST. GATE
CONST. LIMITS
LITTLE RIVER
SPECIAL FLOOD HAZARD AREA
N 40°43'16" E
HWY. 41
EXIST. R/W
BEGIN BRIDGE
STA. 309+64.90
PROPOSED R/W
310+00.00
80.00'
310+50.00
50.00'
322+57.85
50.00'
325+36.63
50.00'

BR. END STA. 309+64.90
BRIDGE NO. 07378
40'-00" CLEAR ROADWAY
1993'-2⅛" TOTAL LENGTH
237'-0" TYPE IV PRESTRESSED CONC. GIRDER (79'-79'-79')
237'-0" TYPE IV PRESTRESSED CONC. GIRDER (79'-79'-79')
237'-0" TYPE IV PRESTRESSED CONC. GIRDER (79'-79'-79')
237'-0" TYPE IV PRESTRESSED CONC. GIRDER (79'-79'-79')
237'-0" TYPE IV PRESTRESSED CONC. GIRDER (79'-79'-79')
490'-0" CONT. COMP. PLATE GIRDER (105'-140'-140'-105')
316'-0" TYPE IV PRESTRESSED CONC. GIRDER (79'-79'-79'-79')
BR. END STA.329+58.10

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

LITTLE RIVER AT STA. 323+00 TO 325+35 TO LITTLE RIVER IS CLASSIFIED AS A 5 CFS STREAM. THE TOP OF CHANNEL ELEVATION IS 292.0 FT. MSL. REFER TO SECTION 110.05(c) TEMPORARY FILL OF THE 2014 STANDARD SPECIFICATIONS.

340
330
320
310
300
290
280
270
260
250

0.30%
-0.30%
P.V.I. 320+00.00
321.10'
P.V.C. 317+00.00
320.20'
VC= 600'
e= -0.45'
K= 1000.00
P.V.T. 323+00.00
320.20'
050 DESIGN H. W.
ELEVATION 305.1

310+00
315+00
320+00
325+00

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				6	ARK.			
				JOB NO.		030415	34	131

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11435
2-11-14
TRINITY D. SMITH

EXIST. R/W
325
330
335
RIVER RD. DETOUR
CONST. LIMITS
STA. 326+43 IN PLACE
12" X 32' STEEL PIPE CULVERT
LT. SIDE DRAIN
REMOVE
STA. 338+00 INSTALL
18" X 61' TEMP. PIPE CULVERT
RIVER RD.
HWY. 41
N 40°43'16" E
END BRIDGE
STA. 329+58.10
BEGIN FENCE
PROPOSED R/W
16' GATE
RIVERVIEW DR.
END FENCE
P.C. 335+99.70
336+00.00
60.00'
END FENCE
338+86.56
60.00'
325+36.63
50.00'
327+01.35
50.00'
328+75.00
50.00'
329+50.00
85.00'
328+85.00
240.00'
329+30.00
260.00'
330+00.00
155.00'
330+50.00
130.00'
331+25.00
120.00'
331+75.00
85.00'
333+00.00
85.00'

GUARDRAIL

STA.	STA.	SIDE	GUARDRAIL (TYPE A) LIN. FT.	GUARDRAIL TERMINAL (TYPE 2) EACH	THRIE BEAM GUARDRAIL TERMINAL EACH
329+80.50	330+74.25	RT.	75	1	1
329+80.50	331+99.25	LT.	150	1	1

REMOVAL AND DISPOSAL OF FENCE

STA.	STA.	SIDE	LIN. FT.
326+38	330+20	LT.	383
332+08	336+99	RT.	491
336+99	337+36	RT.	38

WIRE FENCE (TYPE D-1)

STA.	STA.	SIDE	LIN. FT.
326+25	329+90	RT.	442
331+70	338+87	RT.	702

P.I. = 342+08.93
Δ = 55°59'41" RT.
D = 5°00'00"
T = 609.23'
L = 1119.90'
P.C. = 335+99.70
P.T. = 347+19.60
e = 0.098'/'
Ls = 350'
ROTATE AROUND C.L.

SPECIAL FLOOD HAZARD AREA
STA. 330+00 TO STA. 349+00

HWY. 41

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

STA. 333+37.20 BEGIN SUPERELEVATION
STA. 336+87.20 MAX SUPERELEVATION (0.098 FT./FT.)
STA. 344+50.00 MAX SUPERELEVATION (0.098 FT./FT.)
STA. 348+00.00 END SUPERELEVATION
ROTATE AROUND CENTERLINE

END BRIDGE STA. 329+58.10
P.V.C. 330+00.00 318.10'
P.V.I. 332+00.00 317.50'
P.V.R.C. 334+00.00 313.50
P.V.I. 335+50.00 310.50'
P.V.T. 337+00.00 310.64'
-0.30%
-2.00%
0.10%
VC= 400'
e= -0.85'
K= 235.29
VC= 300'
e= 0.79'
K= 143.18

340 330 320 310 300 290 280 270 260 250

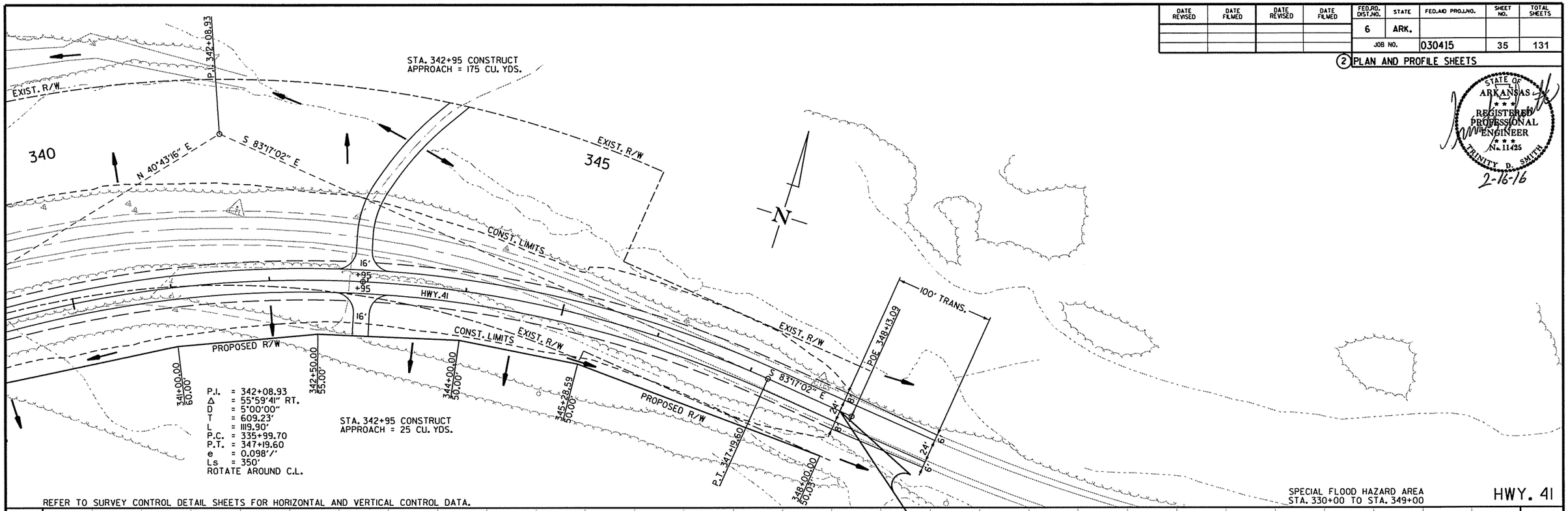
325+00 330+00 335+00 340+00

6/23/2014
R030415.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.		030415	35	131

(2) PLAN AND PROFILE SHEETS

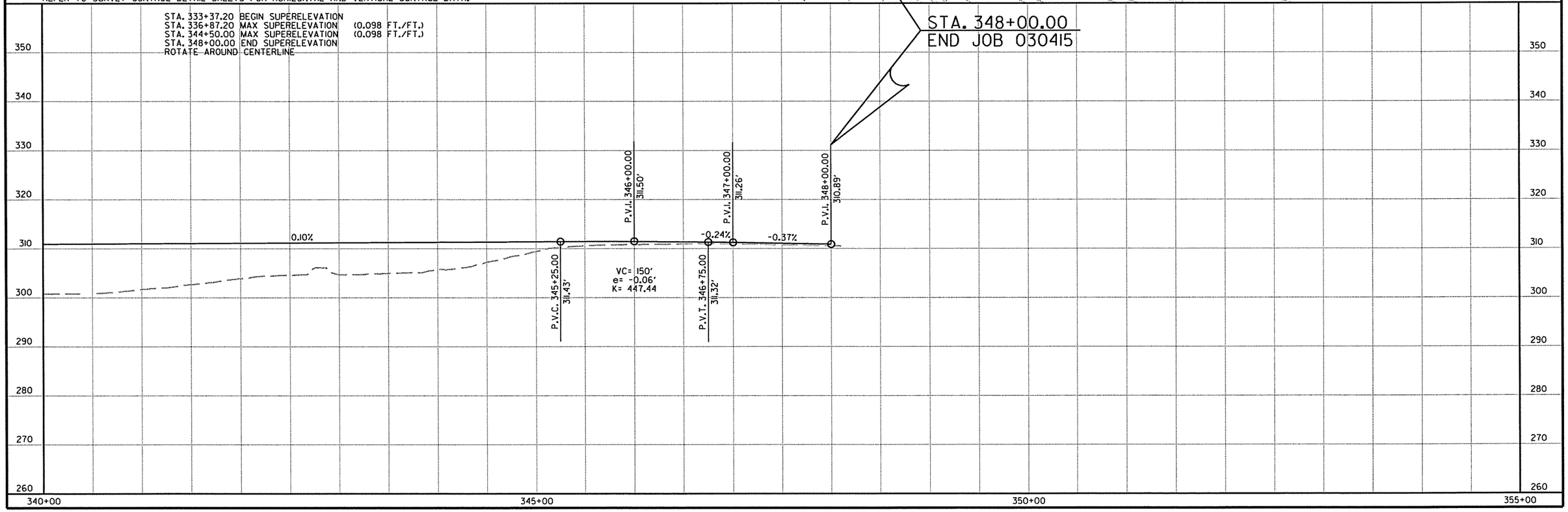
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-16-16



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

STA. 333+37.20 BEGIN SUPERELEVATION
STA. 336+87.20 MAX SUPERELEVATION (0.098 FT./FT.)
STA. 344+50.00 MAX SUPERELEVATION (0.098 FT./FT.)
STA. 348+00.00 END SUPERELEVATION
ROTATE AROUND CENTERLINE

STA. 348+00.00
END JOB 030415

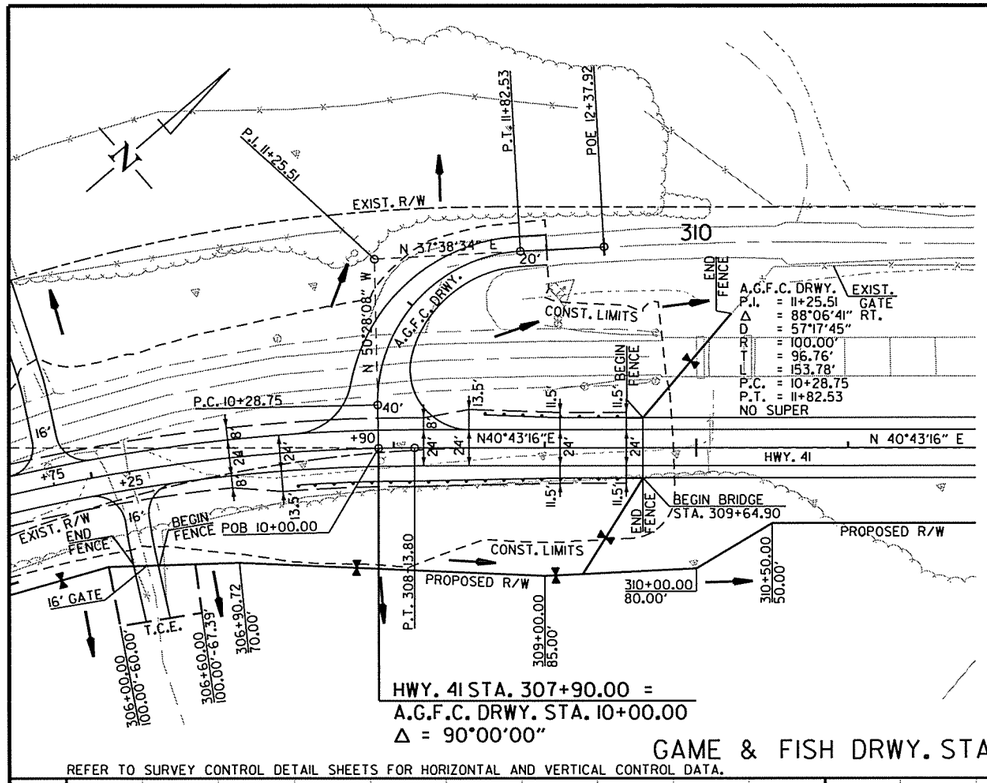


6/23/2014

R030415.DGN

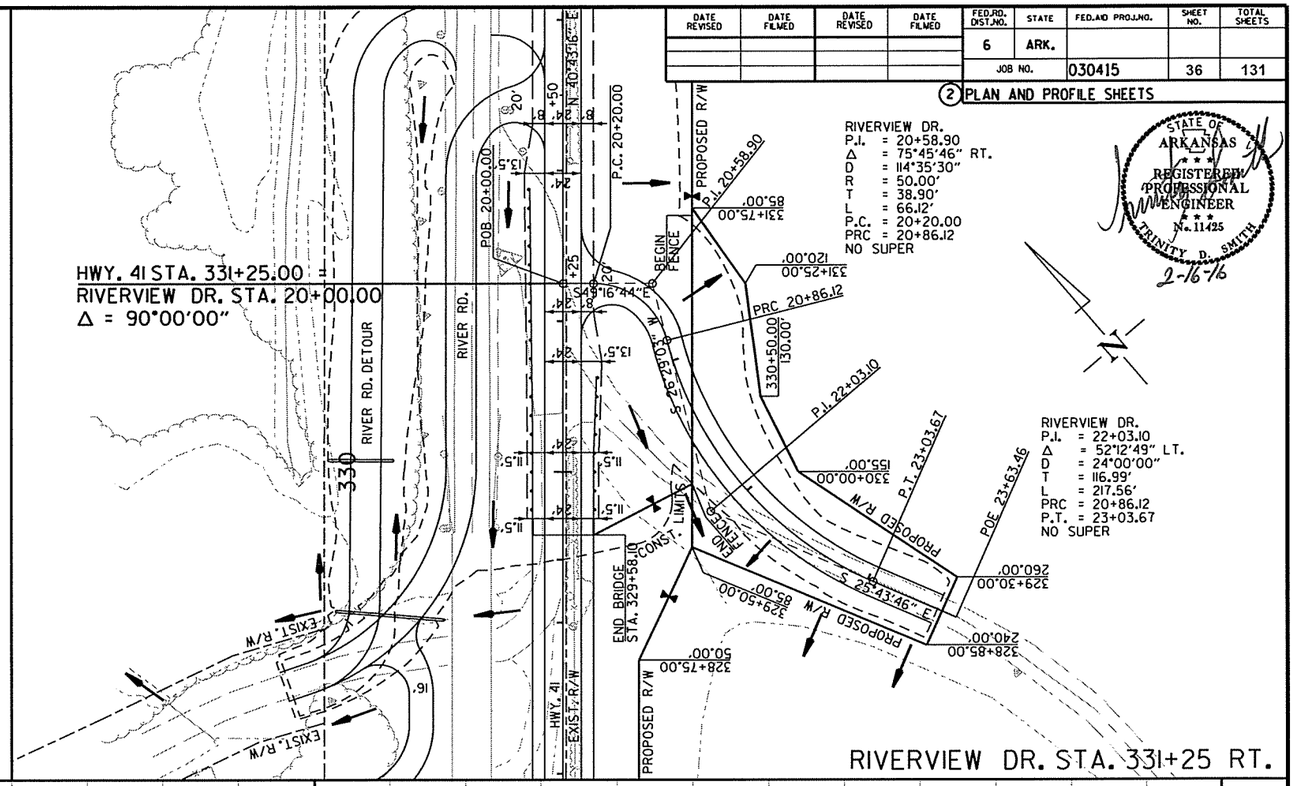
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		030415	36	131

(2) PLAN AND PROFILE SHEETS



HWY. 41 STA. 307+90.00 =
A.G.F.C. DRWY. STA. 10+00.00
Δ = 90°00'00"

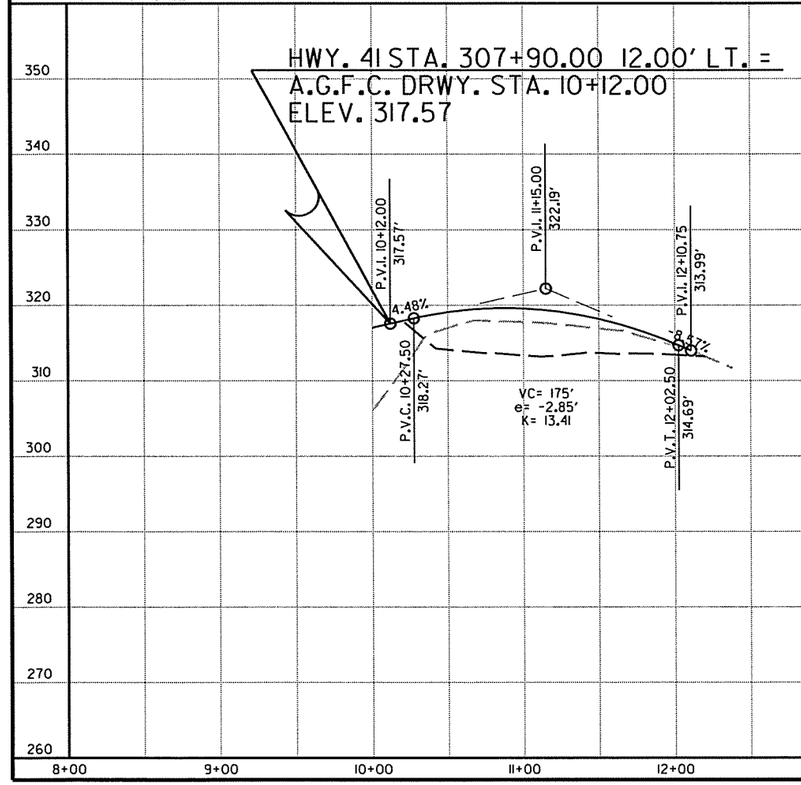
GAME & FISH DRWY. STA. 307+90

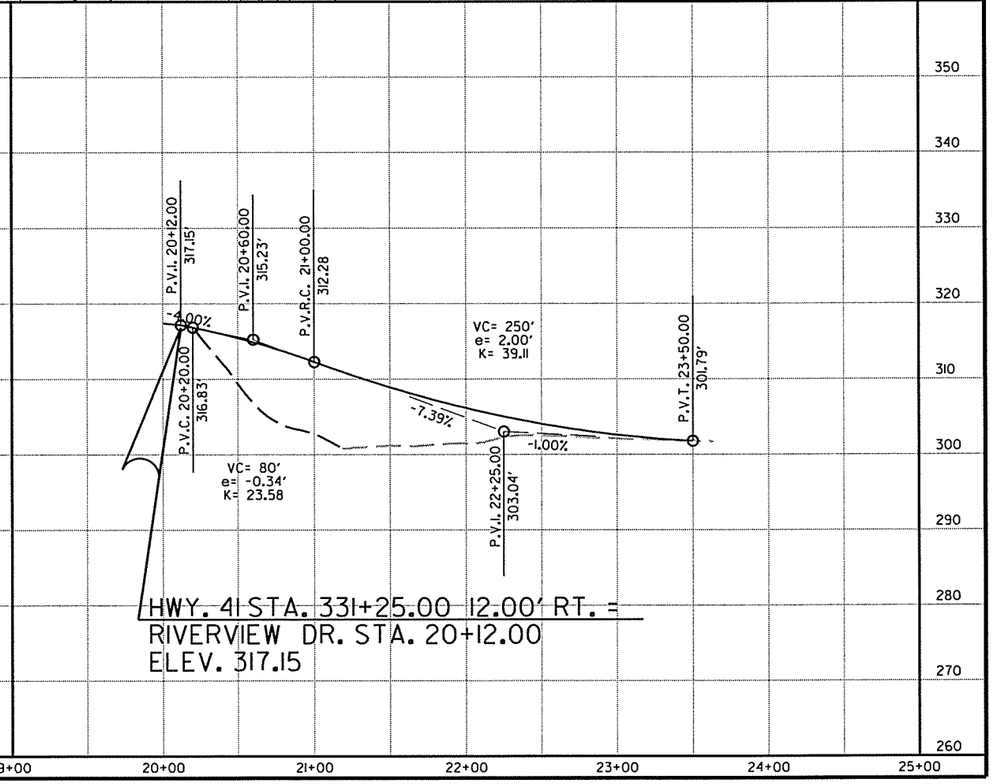


STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-16-16

RIVERVIEW DR. STA. 331+25 RT.

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





HWY. 41 STA. 331+25.00 12.00' RT. =
RIVERVIEW DR. STA. 20+12.00
ELEV. 317.15

6/23/2014

R030415.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.		030415	37	131

(2) PLAN AND PLOT SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-16-16

HWY. 41 STA. 332+50.00 =
RIVER RD. STA. 0+00.00
Δ = 85°00'00"

RIVER RD.
P.I. = 0+67.77
Δ = 85°00'00" LT.
D = 114°35'30"
R = 50.00'
T = 45.82'
L = 74.18'
P.C. = 0+21.95
P.T. = 0+96.13
NO SUPER

RIVER RD.
P.I. = 3+97.20
Δ = 71°18'29" RT.
D = 38°11'50"
R = 150.00'
T = 107.60'
L = 186.68'
P.C. = 2+89.60
P.T. = 4+76.28
NO SUPER

STA. 4+00 INSTALL
18" X 72' PIPE CULVERT
(18" SIDE DRAIN)

STA. 4+16 CONSTRUCT
APPROACH ON LT. = 25 CU. YDS.

VIEW HAS BEEN ROTATED SO THAT THE RIVER RD. HORIZONTAL AND VERTICAL ALIGNMENTS RUN THE SAME DIRECTION.

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

RIVER RD. STA. 332+50 LT.

HWY. 41 STA. 332+48.95 12.00' LT. =
RIVER RD. STA. 0+12.05
ELEV. 315.80

P.V.I. 0+12.05 315.80'
P.V.C. 0+75.00 315.80'
P.V.I. 1+50.00 315.80'
P.V.I.R.C. 2+25.00 311.13
P.V.I. 3+50.00 303.37'
P.V.T. 4+75.00 303.37'
P.V.I. 4+93.33 303.37'

0.00%
-6.21%
-6.21%
0.00%

VC = 150'
e = 1.17'
K = 24.14

VC = 250'
e = 1.94'
K = 40.23

+00
F.L. INLET LT. = 301.45
F.L. OUTLET RT. = 300.66

360 350 340 330 320 310 300 290 280 270

0+00 5+00 10+00

6/23/2014

R030415.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.		030415	38	131

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-16-16

HWY. 41 STA. 333+00.00 =
TEMP. DETOUR STA. 42+00.00
Δ = 90°00'00"

VIEW HAS BEEN ROTATED SO THAT THE RIVER RD. DETOUR HORIZONTAL AND VERTICAL ALIGNMENTS RUN THE SAME DIRECTION.

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

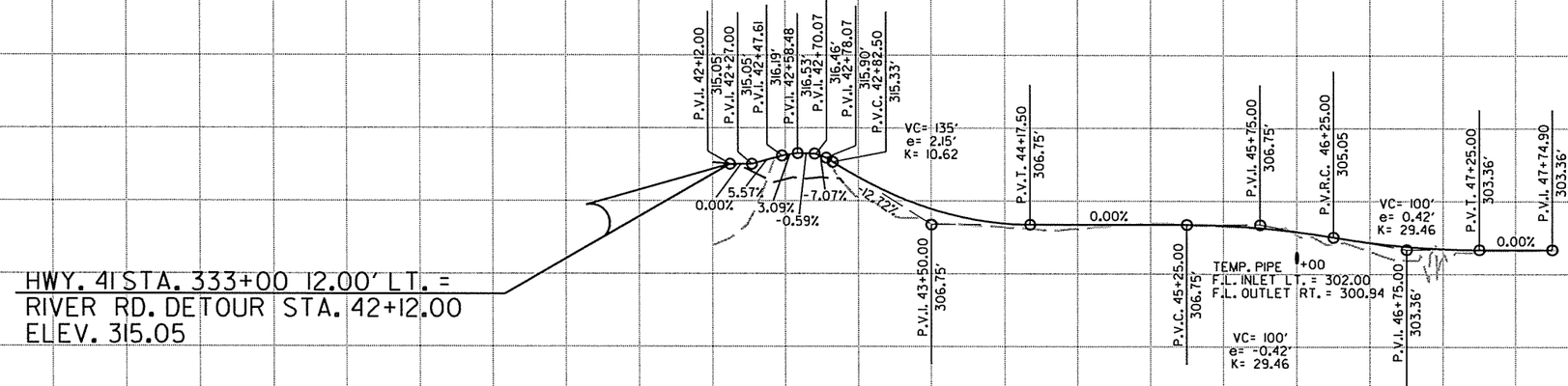
RIVER RD. DETOUR
P.I. = 43+27.96
Δ = 89°29'54" LT.
D = 114°35'30"
R = 50.00'
T = 49.56'
L = 78.10'
P.C. = 42+78.40
P.T. = 43+56.50
NO SUPER

STA. 46+00 INSTALL
18" X 44' TEMP. PIPE CULVERT

RIVER RD. DETOUR
P.I. = 47+31.46
Δ = 70°48'23" RT.
D = 114°35'30"
R = 50.00'
T = 35.54'
L = 61.79'
P.C. = 46+95.92
P.T. = 47+57.71
NO SUPER

45

RIVER RD. DETOUR



6/23/2014

R030415.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.		030415	39	131
				07378		- LAYOUT -		58063

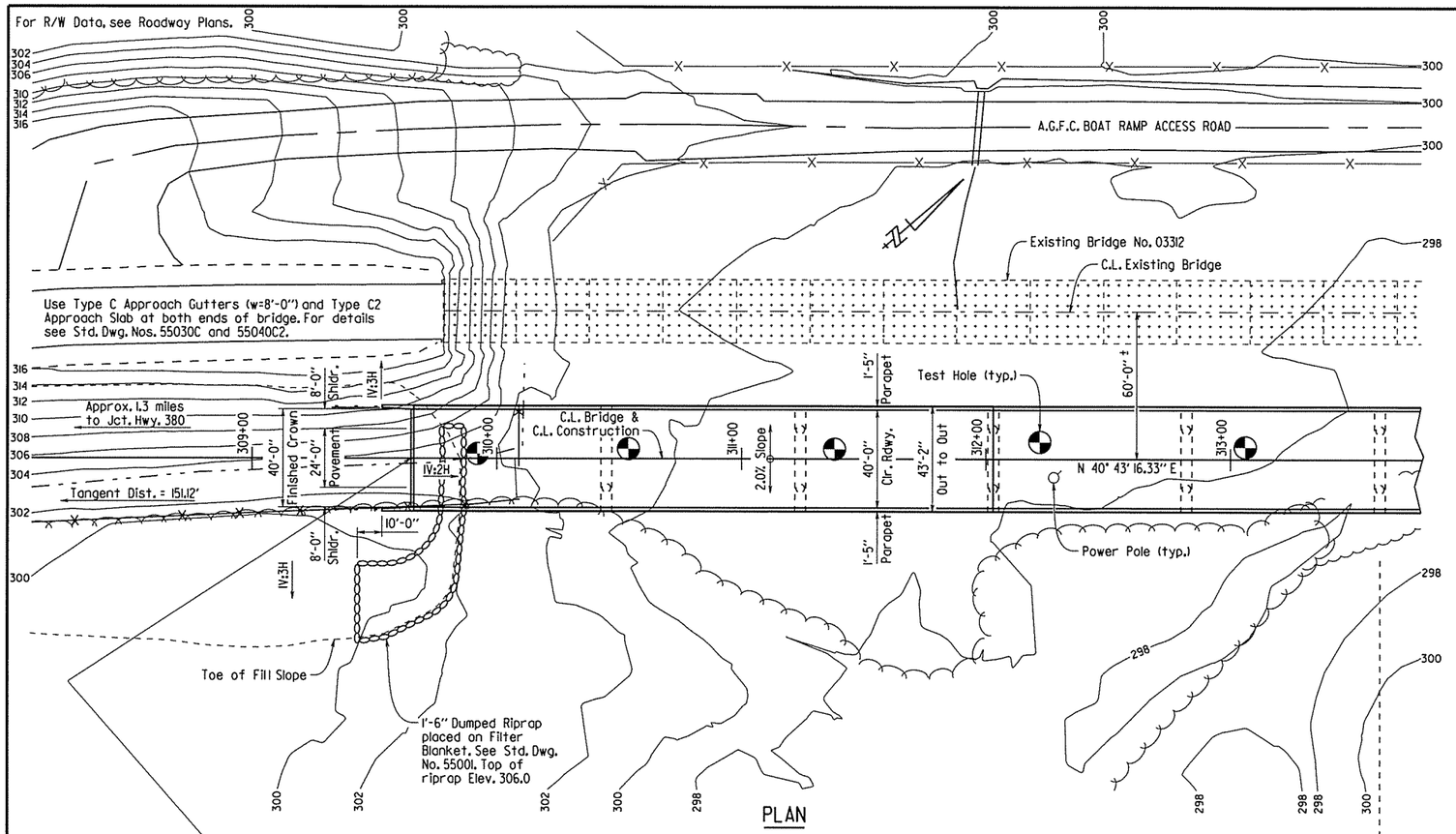


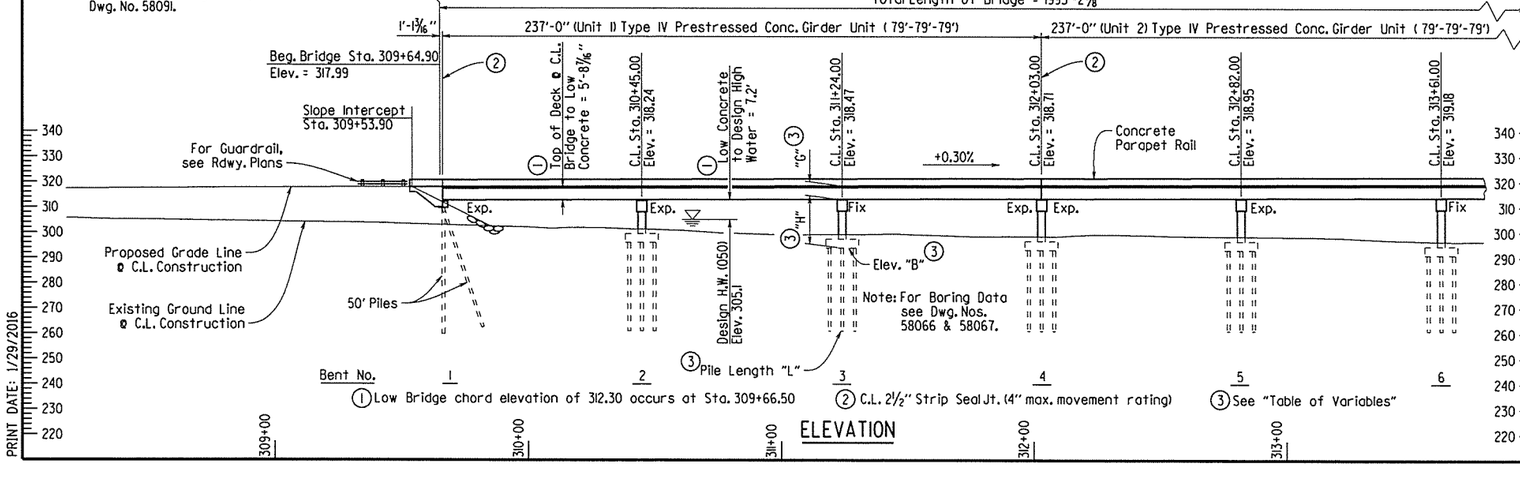
TABLE OF VARIABLES

Bent No.	C.L. Deck @ C.L. Bent to Low Seat of Cap "G"	Low Seat of Cap to Bottom of Footing "H"	Bottom of Footing Elev. "B"	Pile Length "L"
2	6'-0 3/16"	18'-0"	294.22	32'
3	6'-0 7/16"	20'-0"	292.45	32'
4	6'-0 3/16"	21'-0"	291.69	32'
5	6'-0 3/16"	22'-0"	290.93	32'
6	6'-0 7/16"	23'-0"	290.16	32'

Notes: For Hydraulic Data, see Dwg. No. 58065.

For "Vertical Alignment Data", see Dwg. No. 58064.

Note: Stations & Elevations are shown along C.L. Bridge & C.L. Construction. Elevations are shown at working point, see Dwg. No. 58091.



PRINT DATE: 1/29/2016

GENERAL NOTES

BENCH MARK: Vertical Control Data are shown on the Survey Control Data Sheets. (1)

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

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications, Sixth Edition (2012), with 2013 interim revisions.

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
Class S Concrete (Prestressed Concrete Girders)	f'c = 6,000 psi
Reinforcing Steel (Grade 60, AASHTO M31 or M322, Type A)	fy = 60,000 psi
Structural Steel (AASHTO M270, Gr. 50W)	Fy = 50,000 psi
Structural Steel (AASHTO M270, Gr. 36)	Fy = 36,000 psi

BORING LOGS: Boring logs may be obtained from the Construction Contract Procurement Section of the Program Management Division.

STEEL PILING: Piles in Bent 1 shall be HP 12X53 (Gr. 50) and shall be driven with an approved air, steam, or diesel hammer to an ultimate bearing capacity of 200 tons per pile. Piles for Bents 2 thru 7 shall be HP 12x53 (Gr. 50) and shall be driven with an approved air, steam, or diesel hammer to an ultimate bearing capacity of 175 tons per pile. Piling in Bent 1 shall be driven after embankment to bottom of cap is in place. Lengths of piling shown are assumed for estimating quantities only. Actual lengths to be determined in the field. No additional payment will be made for cut-off or build-up. On all steelpiling, the Contractor shall use approved steel H-pile driving points.

CONCRETE PILING: Piling for Bents 8 thru 15, & 21 thru 23, shall be 18" square prestressed concrete piles and shall be driven to an ultimate bearing capacity of 175 tons per pile. Piling for Bent 24 shall be 18" square prestressed concrete piles and shall be driven to an ultimate bearing capacity of 200 tons per pile. All piling shall be driven with an approved air, steam, or diesel hammer. Piling in Bent 24 shall be driven after embankment to bottom of cap is in place. Lengths of piling shown are assumed for estimating quantities only. Actual lengths to be determined in the field. Drive one 65' test pile in Bents 9, 15, and 21. Drive one 55' test pile in Bent 24.

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)". For Bents 1 thru 7, it is estimated that a minimum rated hammer energy of 20,000 foot pounds per blow will be required to obtain the ultimate bearing capacity. For Bents 8 thru 24, it is estimated that a minimum rated hammer energy of 50,000 foot pounds per blow will be required to obtain the ultimate bearing capacity.

DRILLED SHAFTS: No adjustments 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 SP Job 030415 "Drilled Shaft Foundations". Any casing used as a means for construction of the drilled shafts, such as to prevent caving, to exclude groundwater, or to provide shoring, shall not extend below the elevation shown. The Contractor must obtain approval from the Engineer for any deviation from this requirement.

PILE FOOTING: Bottom of footings shall be placed at elevations shown in the plans. Footings shall have a minimum cover above top of footing of 2'-0". Foundations for footings shall be prepared in accordance with Subsection 801.04 and backfilled in accordance with Subsection 801.08.

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.

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

DETAIL DRAWINGS:	DRAWING NO.
Bent 1	58068, 58069
Bents 2 - 7	58070
Bents 8-15, 21-23	58071
Bents 16 & 20	58072
Bents 17 thru 19	58073-58076
Bent 24	58077, 58078
Elastomeric Bearings	58079, 58080
237'-0" Type IV Cont. Comp. Prestressed Conc. Girder Units 1-5	58081-58088
490'-0" Continuous Composite Plate Girder Unit 6	58081, 58091-58095
316'-0" Type IV Cont. Comp. Prestressed Conc. Girder Unit 7	58081-58086, 58089, 58090
Std. General Notes for Steel Bridge Strs.	55006
Steel Piling	55020
Type C Approach Gutters	55030C
Type C2 Approach Slab	55040C2

EXISTING BRIDGE: Existing Bridge No. 03312 is 31.5' wide and 1980' long and consists of RC Slab Spans and Plate Girder Spans supported by trestle bents and concrete piers. The existing bridge is located approximately 60' upstream of the proposed bridge.

REMOVAL AND SALVAGE: After the new bridge is open to traffic, existing bridge No. 03312 shall be removed in accordance with Section 205. All material from the existing bridge shall become the property of the Contractor.

MAINTENANCE OF TRAFFIC: See Roadway Plans.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
1-29-16
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 1 OF 5

LAYOUT OF BRIDGE OVER LITTLE RIVER
LITTLE RIVER STR. & APPRS. (S)
LITTLE RIVER & SEVIER COUNTIES

ROUTE 41 SEC. 2

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: PGT DATE: 6/4/15 FILENAME: b030415_1l.dgn
CHECKED BY: JAC DATE: 11/24/16 SCALE: 1" = 30'-0"
DESIGNED BY: PGT DATE: 6/4/15

BRIDGE NO. 07378 DRAWING NO. 58063

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.		030415	40	131
				① 07378		- LAYOUT -		58064

For R/W Data, see Roadway Plans

A.G.F.C. BOAT RAMP ACCESS ROAD

Existing Bridge No. 03312

C.L. Existing Bridge

1'-5" Parapet

40'-0" Cir. Rdwy.

2.0% Slope

43'-2" Out to Out

60'-0"±

Test Hole (typ.)

C.L. Bridge & C.L. Construction

N 40° 43' 16.33" E

Power Pole (typ.)

Match Line

Match Line

PLAN

Total Length of Bridge = 1993'-2⅜"

237'-0" (Unit 2) Type IV Prestressed Conc. Girder Unit (79'-79'-79')

237'-0" (Unit 3) Type IV Prestressed Conc. Girder Unit (79'-79'-79')

237'-0" (Unit 4) Type IV Prestressed Conc. Girder Unit (79'-79'-79')

237'-0" (Unit 5) Type IV Prestressed Conc. Girder Unit (79'-79'-79')

490'-0" (Unit 6) Continuous Composite Plate Girder Unit (105', 140', 140', 105')

C.L. Sta. 313+61.00 Elev. = 319.18

C.L. Sta. 314+40.00 Elev. = 315.42

C.L. Sta. 315+19.00 Elev. = 313.66

C.L. Sta. 315+98.00 Elev. = 319.89

C.L. Sta. 316+77.00 Elev. = 320.13

C.L. Sta. 317+56.00 Elev. = 320.35

C.L. Sta. 318+35.00 Elev. = 320.51

C.L. Sta. 319+14.00 Elev. = 320.61

C.L. Sta. 319+93.00 Elev. = 320.65

C.L. Sta. 320+72.00 Elev. = 320.62

C.L. Sta. 321+51.00 Elev. = 320.54

C.L. 5" Finger Joint

Proposed Grade Line @ C.L. Construction

Existing Ground Line @ C.L. Construction

Concrete Parapet Rail

+0.30%

"C"

"H"

Elev. "B"

Pile Length "L"

P.V.C. Sta. 317+00.00

Fix

Exp.

Bent No. 6 7 8 9 10 11 12 13 14 15 16

TABLE OF VARIABLES

Bent No.	C.L. Deck @ C.L. Bent to Low Seat of Cap "G"	Low Seat of Cap to Bottom of Footing "H"	Bottom of Footing Elev. "B"	Pile Length "L"
7	6'-0⅜"	22'-0"	291.40	50'
8	6'-0⅜"	21'-0"	292.64	50'
9	6'-0⅜"	22'-0"	291.87	50'
10	6'-0⅜"	23'-0"	291.11	50'
11	6'-0⅜"	21'-0"	293.33	50'
12	6'-0⅜"	19'-0"	295.49	50'
13	6'-0⅜"	19'-0"	295.59	50'
14	6'-0⅜"	19'-0"	295.63	50'
15	6'-0⅜"	20'-0"	294.60	50'
16	6'-0⅜"	24'-6"	290.02	50'

P.V.T. Sta. 309+50.00 Elev. 317.95

P.V.C. Sta. 311+00.00 Elev. 320.20

P.V.I. Sta. 320+00.00 Elev. 321.10

P.V.T. Sta. 323+00.00 Elev. 320.20

P.V.C. Sta. 330+00.00 Elev. 318.10

0.30% 0.30% -0.30% -0.30%

Vertical Curve Length = 600.00'

VERTICAL ALIGNMENT DATA

Stations and Elevations shown are along C.L. Bridge & C.L. Construction. Elevations shown are at working point.

ELEVATION

Note: For Soil Boring Data see Dwg. Nos. 58066 & 58067.

② C.L. 2½" Strip Seal Jt. (4" max. movement rating)

③ See "Table of Variables"

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
1-29-16
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 2 OF 5

LAYOUT OF BRIDGE OVER LITTLE RIVER

LITTLE RIVER STR. & APPRS. (S)

LITTLE RIVER & SEVIER COUNTIES

ROUTE 41 SEC. 2

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: PGT DATE: 6/4/15
CHECKED BY: JAC DATE: 1/29/16
DESIGNED BY: PGT DATE: 6/4/15
FILENAME: b030415_ll.dgn
SCALE: 1" = 30'-0"

BRIDGE NO. 07378 DRAWING NO. 58064

PRINT DATE: 1/27/2016

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.		030415	41	131
				07378		- LAYOUT -		58065

For R/W Data, see Roadway Plans

U.S. Geological Survey (USGS) gaging station to be relocated under the oversight of USGS personnel. This work shall not be paid for directly, but shall be considered incidental to the various bid items. The Contractor shall notify the following USGS contact a minimum of 30 days prior to the removal of the existing bridge:
Mr. William Baldwin
Little Rock Field Services Unit Chief
(501) 228-3602
bbaldwin@usgs.gov

Boat House

Private Drive to be relocated, see R.O.W. plans

Road to be relocated, see R.O.W. plans

Existing Bridge No. 03312

C.L. Existing Bridge

Test Hole (typ.)

60'-0"±

C.L. Bridge & C.L. Construction

1V:2H (typ.)

Power Pole (typ.)

Top of Cut

Limits of Freshwater Mussel Bed (Approx.), see SP Job 030415 "Water Pollution Control and Restraining Conditions".

LITTLE RIVER

Match Line

N 40° 43' 16.33" E

2.0% Slope

40'-0" Cir. Rdwy.

43'-2" Out to Out

1'-5" Parapet

1V:3H

1V:2H

Approx. 2.3 miles to Jct. Hwy. 24

Tangent Dist. Over 500'

10'-0"

1'-6" Dumped Riprap placed on Filter Blanket. See Std. Dwg. No. 55001. Top of riprap Elev. 306.0

Toe of Fill Slope

Riverview Road to be relocated, see R.O.W. Plans

PLAN

Total Length of Bridge = 1993'-2⅜"

237'-0" (Unit 5) Type IV Prestressed Conc. Girder Unit (79'-79'-79')

490'-0" (Unit 6) Continuous Composite Plate Girder Unit (105', 140', 140', 105')

316'-0" (Unit 7) Type IV Prestressed Conc. Girder Unit (79'-79'-79'-79')

C.L. 5" Finger Joint

C.L. Sta. 321+51.00 Elev. = 320.54

C.L. Sta. 322+56.00 Elev. = 320.32

P.V.T. Sta. 323+00.00

C.L. Sta. 323+96.00 Elev. = 319.91

C.L. Sta. 325+36.00 Elev. = 319.49

C.L. Sta. 326+41.00 Elev. = 319.18

C.L. Sta. 327+20.00 Elev. = 318.94

C.L. Sta. 327+99.00 Elev. = 318.70

C.L. Sta. 328+78.00 Elev. = 318.46

End Bridge Sta. 329+58.10 Elev. = 318.23

1'-1⅜"

Slope Intercept Sta. 329+69.10

Concrete Parapet Rail

5'-9⅝"

5'-8¾"

5'-9⅝"

Note: For Vertical Alignment Data, see Dwg. No. 58064.

② C.L. 2½" Strip Seal Jt. (4" max. movement rating)

③ See "Table of Variables"

-0.30%

For Guardrail, see Rdwy. Plans

Exp. Fix

Elev. 294.50

20'-0"

40'-0"

70'-0"

132" ø Permanent Casing (typ.)

Elev. 254.50

120" Dia. Drilled Shaft (typ.)

Elev. 184.50

Note: For Soil Boring Data see Dwg. Nos. 58066 & 58067.

Bent No. 16

17

30'-0"

95'-0"

OHW Elev. = 283.0

Elev. 284.19

Elev. 254.19

Limits of Freshwater Mussel Bed (Approx.), see SP Job 030415 "Water Pollution Control and Restraining Conditions".

Elev. 159.19

18

14'-0"

Elev. 299.67

Excavate Level, to Elev. 295.0, as shown. Approx. 700 cu. yds. of excavation.

Elev. 259.67

Elev. 189.67

19

④ C.L. Deck @ C.L. Bent to Low Seat of Cap

20

21

22

23

24

"G"

"H"

Elev. "B"

Pile Length "L"

60' Piles

Proposed Grade Line @ C.L. Construction

Existing Ground Line @ C.L. Construction

HYDRAULIC DATA

FLOOD DESCRIPTION	FREQUENCY	*TOTAL DISCHARGE	**DISCHARGE	***NATURAL WATER SURFACE ELEVATION	WATER SURFACE ELEV. WITH BACKWATER
	YEARS	CFS	CFS	FEET	FEET
Design	50	55,690	39,966	304.1	305.1
Base	100	61,550	40,241	304.8	305.8
Extreme	500	75,270	51,685	306.1	307.2
Overtopping	>500	-	-	-	-

ELEVATION

* Includes Relief Bridges (Hwy. 41, Sec. 2, Log 1.34 and Log 0.92)
** Portion of flow through this bridge site.
*** Unconstricted water surface without structures or roadway approaches.
Q100 backwater elevation for existing structure = 305.9
Drainage Area = 2,660 square miles (includes relief bridges)
Historical High Water Elevation = 305.7

TABLE OF VARIABLES

Bent No.	C.L. Deck @ C.L. Bent to Low Seat of Cap	Low Seat of Cap to Bottom of Footing	Bottom of Footing Elev.	Pile Length
	"G"	"H"	"B"	"L"
20	5'-11¹³⁄₁₆"	17'-0"	296.16	50'
21	6'-0⅜"	16'-0"	296.92	50'
22	6'-0⅜"	15'-0"	297.68	50'
23	6'-0⅜"	15'-0"	297.44	50'

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
1-29-16
CHARLES R. ELLIS
BRIDGE ENGINEER

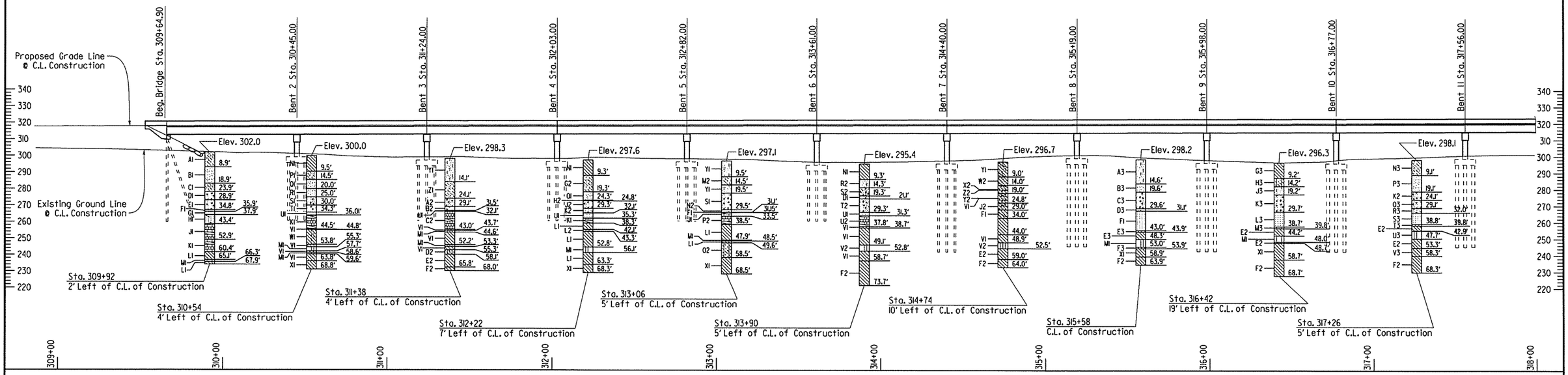
SHEET 3 OF 5
LAYOUT OF BRIDGE OVER LITTLE RIVER
LITTLE RIVER STR. & APPRS. (S)
LITTLE RIVER & SEVIER COUNTIES
ROUTE 41 SEC. 2
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: PGT DATE: 6/4/15
CHECKED BY: JAC DATE: 1/29/16
DESIGNED BY: PGT DATE: 6/4/15
FILENAME: b030415_ll.dgn
SCALE: 1" = 30'-0"

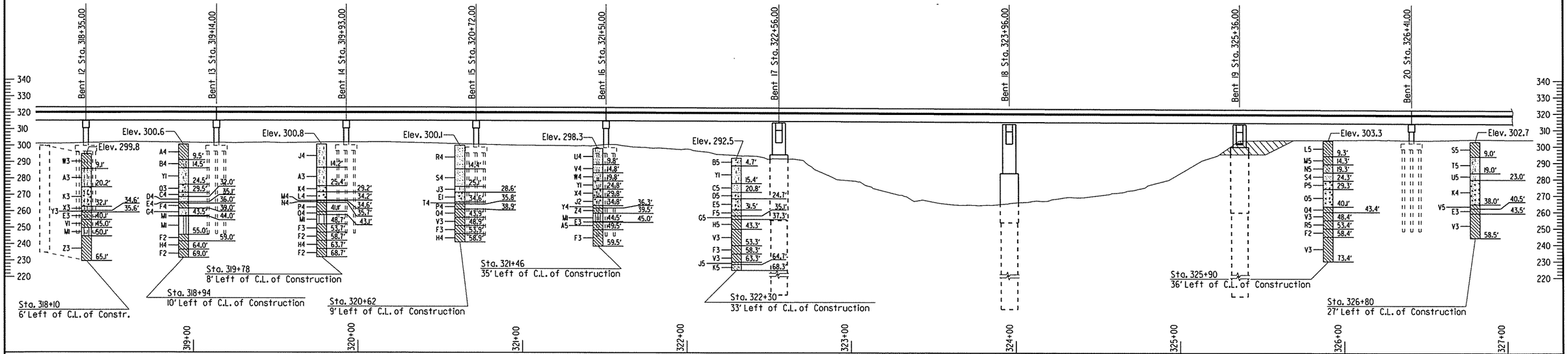
BRIDGE NO. 07378 DRAWING NO. 58065

PRINT DATE: 1/28/2016

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.		030415	42	131
				07378		- LAYOUT -	58066	



ELEVATION - BORINGS



ELEVATION - BORINGS

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
1-29-16
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 4 OF 5

LAYOUT OF BRIDGE OVER LITTLE RIVER
LITTLE RIVER STR. & APPRS. (S)
LITTLE RIVER & SEVIER COUNTIES

ROUTE 41 SEC. 2

ARKANSAS STATE HIGHWAY COMMISSION

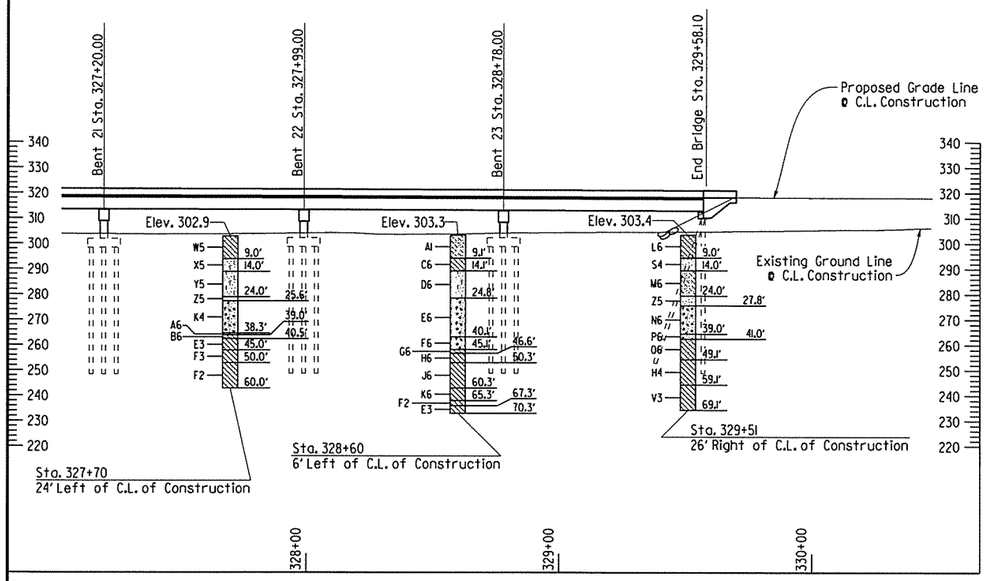
LITTLE ROCK, ARK.

DRAWN BY: PGT DATE: 6/4/15
CHECKED BY: JAC DATE: 1/29/16
DESIGNED BY: PGT DATE: 6/4/15
FILENAME: b030415_ll.dgn
SCALE: 1" = 30'-0"

BRIDGE NO. 07378 DRAWING NO. 58066

PRINT DATE: 1/27/2016

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.		030415	43	131
				(1)	07378	- LAYOUT -	58067	



ELEVATION - BORINGS

Sta. 309+92 - 2' Left of C.L. of Construction
4.4- 5.4, N=6
9.4- 10.4, N=5
14.4- 15.4, N=1
19.4- 20.4, N=1
24.4- 25.4, N=10
29.4- 30.4, N=31
34.4- 35.4, N=45

Sta. 310+54 - 4' Left of C.L. of Construction
5.0- 6.0, N=4
10.0- 11.0, N=4
15.0- 16.0, N=2
20.5- 21.5, N=3
25.5- 26.5, N=15
30.5- 31.5, N=4
35.0- 35.4, N=60(5")
36.0- 36.0, N=60(.01")

Sta. 311+38 - 4' Left of C.L. of Construction
4.6- 5.6, N=2
9.6- 10.6, N=0
14.6- 15.6, N=1
19.6- 20.6, N=2
24.6- 25.6, N=13
29.6- 30.6, N=28
33.5- 33.5, N=60(.01")

Sta. 312+22 - 7' Left of C.L. of Construction
4.8- 5.8, N=3
9.8- 10.8, N=2
14.8- 15.8, N=1
19.8- 20.8, N=4
24.8- 25.8, N=46
29.8- 30.8, N=7
34.8- 35.3, N=62(6")

Sta. 313+06 - 5' Left of C.L. of Construction
5.0- 6.0, N=4
10.0- 11.0, N=2
15.0- 16.0, N=1
20.0- 21.0, N=16
25.0- 26.0, N=25
30.0- 31.0, N=60(2")
31.1- 31.1, N=60(.01")

Sta. 313+90 - 5' Left of C.L. of Construction
4.8- 5.8, N=2
9.8- 10.8, N=0
14.8- 15.8, N=11
19.8- 20.8, N=9
24.8- 25.8, N=26
29.8- 30.8, N=51
31.3- 31.3, N=60(.01")

Sta. 314+74 - 10' Left of C.L. of Construction
4.5- 5.5, N=1
9.5- 10.5, N=2
14.5- 15.5, N=8
19.5- 20.5, N=13
24.5- 25.5, N=31
29.5- 30.5, N=58
31.0- 31.0, N=28(.01")

Sta. 315+58 - C.L. of Construction
5.1- 6.1, N=3
10.1- 11.1, N=3
15.1- 16.1, N=5
20.1- 21.1, N=14
25.1- 26.1, N=5
30.1- 31.1, N=54

Sta. 316+42 - 19' Left of C.L. of Construction
4.7- 5.7, N=5
9.7- 10.7, N=0
14.7- 15.7, N=1
19.7- 20.7, N=29
24.7- 25.7, N=32
29.7- 30.0, N=60(3")
34.2- 34.6, N=60(5")

Sta. 317+26 - 5' Left of C.L. of Construction
4.6- 5.6, N=4
9.6- 10.6, N=1
14.6- 15.6, N=0
19.6- 20.6, N=6
24.6- 25.6, N=42
29.6- 30.6, N=24
34.6- 35.0, N=60(5")

Sta. 318+10 - 6' Left of C.L. of Construction
4.6- 5.6, N=2
9.6- 10.6, N=2
14.6- 15.6, N=2
19.6- 20.6, N=14
24.6- 25.6, N=37
29.6- 30.6, N=34
34.6- 35.6, N=50

Sta. 318+94 - 10' Left of C.L. of Construction
5.0- 6.0, N=2
10.0- 11.0, N=2
15.0- 16.0, N=1
20.0- 21.0, N=3
25.0- 26.0, N=33
30.0- 31.0, N=37
35.0- 36.0, N=96

Sta. 319+78 - 8' Left of C.L. of Construction
4.7- 5.7, N=3
9.7- 10.7, N=5
14.7- 15.7, N=2
19.7- 20.7, N=0
24.7- 25.7, N=16
29.7- 30.7, N=33
34.7- 35.7, N=56

Sta. 320+62 - 9' Left of C.L. of Construction
4.9- 5.9, N=5
9.9- 10.9, N=5
14.9- 15.9, N=3
19.9- 20.9, N=2
24.9- 25.9, N=2
29.9- 30.9, N=33
34.9- 35.8, N=94(11")

Sta. 321+46 - 35' Left of C.L. of Construction
5.3- 6.3, N=4
10.3- 11.3, N=3
15.3- 16.3, N=3
20.3- 21.3, N=2
25.3- 26.3, N=1
30.3- 31.3, N=35
35.3- 36.3, N=59

"N" VALUES

Notes: Traces of organic matter and cemented sand were encountered in the borings and may be encountered in greater amounts at other locations in the project area.

Limestone layers contained some small cavities. Large open cavities are not expected to be encountered but are a possibility.

Sta. 322+30 - 33' Left of C.L. of Construction
5.2- 6.2, N=2
10.2- 11.2, N=2
15.2- 16.2, N=3
20.2- 21.2, N=7
25.2- 26.2, N=47
30.2- 31.2, N=27
34.8- 35.1, N=52(4")

Sta. 325+90 - 36' Left of C.L. of Construction
4.8- 5.8, N=15
9.8- 10.8, N=11
14.8- 15.8, N=10
19.8- 20.8, N=4
24.8- 25.8, N=4
29.8- 30.8, N=14
34.8- 35.8, N=25
39.8- 40.8, N=40

Sta. 326+80 - 27' Left of C.L. of Construction
4.5- 5.5, N=13
9.5- 10.5, N=15
14.5- 15.5, N=7
19.5- 20.5, N=3
24.5- 25.5, N=29
29.5- 30.5, N=21
34.5- 35.5, N=13
39.5- 40.5, N=55

Sta. 327+70 - 24' Left of C.L. of Construction
4.5- 5.5, N=12
9.5- 10.5, N=9
14.5- 15.5, N=4
19.5- 20.5, N=0
24.5- 25.5, N=10
29.5- 30.5, N=22
34.5- 35.5, N=19
39.5- 40.5, N=26

Sta. 328+60 - 6' Left of C.L. of Construction
4.6- 5.6, N=6
9.6- 10.6, N=11
14.6- 15.6, N=3
19.6- 20.6, N=0
24.6- 25.6, N=12
29.6- 30.6, N=33
34.6- 35.6, N=30
40.6- 41.6, N=17
45.6- 46.6, N=50

Sta. 329+51 - 26' Right of C.L. of Construction
4.5- 5.5, N=2
9.5- 10.5, N=3
14.5- 15.5, N=3
19.5- 20.5, N=0
24.5- 25.5, N=5
29.5- 30.5, N=33
34.5- 35.5, N=17
39.5- 40.5, N=21
44.5- 45.5, N=50

BORING LEGEND

A1-Wet, Loose, Brown Clayey Sand
B1-Wet, Loose to Very Loose, Brown Sand
C1-Wet, Very Loose, Gray and Brown Clayey Sand
D1-Wet, Loose, Gray Sand with Gravel
E1-Wet, Dense, Gray Sand with Gravel
F1-Hard, Greenish Gray Cemented Sand
G1-SANDSTONE - Gray and Brown, Cemented, Fractured
H1-SANDSTONE WITH CLAY LAYERS - Brown, Thin Bedded, Cemented
J1-LIMESTONE WITH CLAY LAYERS - Gray, Thin Bedded, Moderately Hard, Vuggy, with Fractured Layers
K1-LIMESTONE INTERBEDDED WITH MEDIUM HARD, BROWN AND GRAY CLAYSTONE - Gray, Thin Bedded, Moderately Hard
L1-CLAYSTONE - Gray and Brown to Dark Gray, Medium Hard
M1-Light Brown, Poorly Cemented Siltstone
N1-Moist, Soft, Brown Clay
P1-Wet, Very Loose, Brown Clayey Sand
Q1-Wet, Very Loose, Brown and Gray Sand
R1-Wet, Very Loose, Gray Sand with Trace of Gravel
S1-Wet, Medium Dense, Gray Sand with Gravel
T1-Gravel with some Gray Sand
U1-Hard, Greenish Gray, Calcareous Cemented Sand
V1-CLAYSTONE - Gray to Dark Gray, Medium Hard
W1-Gray to Dark Gray Claystone with Frequent siltstone Layers
X1-CLAYSTONE - Gray and Reddish Brown, Medium Hard
Y1-Wet, Very Loose, Brown Silty Sand
Z1-Wet, Very Loose, Gray Clayey Sand
A2-Gravel with Medium Dense, Gray Sand
B2-Gravel with some Cemented Sand
C2-LIMESTONE INTERBEDDED WITH MEDIUM HARD, REDDISH BROWN AND GRAY CLAYSTONE - Gray, Thin Bedded, Moderately Hard
D2-Light Brown, Poorly Cemented Siltstone with Occasional Layers of Claystone
E2-CLAYSTONE - Gray and Brown, Medium Hard
F2-CLAYSTONE - Reddish Brown, Medium Hard
G2-Wet, Very Loose, Brown to Gray and Brown Clayey Sand
H2-Wet, Medium Dense, Brown and Gray Sand
J2-Wet, Dense, Brown and Gray Sand with Gravel
K2-Wet, Loose, Brown and Gray Sand with Gravel
L2-Brown to Dark Gray, Medium Hard Claystone with Occasional Layers of Siltstone
M2-Wet, Very Loose, Brown Clayey Sand
N2-Wet, Very Dense, Gray Sand with Gravel
P2-LIMESTONE INTERBEDDED WITH MEDIUM HARD, GRAY CLAYSTONE - Gray, Moderately Hard
Q2-Light Brown, Poorly Cemented Siltstone with Occasional Layers of Brown to Dark Gray Claystone
R2-Wet, Very Loose, Brown Silty Sand
S2-Wet, Medium Dense, Brown Clayey Sand with Gravel
T2-Wet, Medium Dense, Gray Sand with Large Gravel
U2-LIMESTONE INTERBEDDED WITH MEDIUM HARD, GRAY CLAYSTONE - Gray, Thin Bedded, Moderately Hard
V2-Light Brown, Poorly Cemented Siltstone
W2-Wet, Very Loose, Brown Sand
X2-Wet, Loose, Brown Sand with Gravel
Y2-Wet, Medium Dense, Reddish Brown Sand with Gravel
Z2-40.3 CLAYSTONE WITH HARD, GREENISH GRAY CEMENTED SAND - Gray, Medium Hard CLAYSTONE - Gray, Medium Hard
A3-Wet, Very Loose, Brown Silty Sand
B3-Wet, Loose, Brown Sand
C3-Wet, Medium Dense to Loose, Brown Sand with Gravel
D3-Wet, Very Dense, Brown Sand with Gravel
E3-CLAYSTONE - Gray, Medium Hard
F3-CLAYSTONE - Brown and Gray, Medium Hard
G3-Moist, Medium Stiff, Brown Clay
H3-Wet, Very Loose, Gray and Brown Clayey Silt
J3-Wet, Very Loose, Gray Silty Sand
K3-Wet, Medium Dense to Dense, Brown Sand with Gravel
L3-Hard, Greenish Gray and Brown, Calcareous Cemented Sand
M3-LIMESTONE INTERBEDDED WITH MEDIUM HARD, BROWN AND GRAY CLAYSTONE - Gray, Thin Bedded, Moderately Hard
N3-Wet, Very Loose, Brown Clayey Sand with some Organic Matter
P3-Wet, Very Loose, Brown Sand
Q3-Wet, Dense, Brown Sand with Gravel
R3-Wet, Medium Dense, Brown and Gray Sand with Gravel
S3-Hard, Greenish Gray and Brown, Cemented Sand
T3-CLAYSTONE - Dark Gray, Medium Hard
U3-Light Brown, Poorly Cemented Siltstone to Unconsolidated Silt
V3-CLAYSTONE - Reddish Brown and Gray, Medium Hard
W3-Moist, Soft, Brown and Gray Sandy Clay with some Organic Matter
X3-Wet, Dense, Brown Sand
Y3-Hard, Greenish Gray and Brown, Claystone
Z3-CLAYSTONE- Gray and Reddish Brown, Medium Hard
A4-Moist, Soft, Brown Clay with Sand
B4-Wet, Very Loose, Brown Silty, Clayey Sand
C4-Gravel with Gray and Brown Sand
D4-Wet, Dense, Brown and Gray Sand
E4-Very Hard, Gray and Brown, Clay
F4-CLAYSTONE - Greenish Gray and Brown, Medium Hard
G4-CLAYSTONE - Gray to Dark Gray, Medium Hard with Occassional Layer of Poorly Cemented Siltstone
H4-CLAYSTONE - Brown, Medium Hard
J4-Moist, Very Loose to Loose, Brown Silty Sand
K4-Wet, Medium Dense, Brown Sand with Gravel
L4-Gravel
M4-Wet, Very Dense, Gray and Brown, Sand
N4-Moist, Hard, Gray, Clay
P4-CLAYSTONE - Greenish Gray, Medium Hard
Q4-CLAYSTONE - Dark Gray to Gray, Medium Hard
R4-Moist, Loose, Brown Sand with some Organic Matter (Grassroots)
S4-Wet, Very Loose, Brown Sand
T4-Moist, Very Hard, Greenish Gray Clay with Brown Sand
U4-Moist, Very Loose, Brown Sand with some Organic Matter (Grassroots)
V4-Moist, Very Loose, Brown Sand
W4-Moist, Very Loose, Brown Silty Sand
X4-Wet, Very Loose, Brown and Gray Sand with Gravel
Y4-Moist, Hard, Gray Clay a trace of Gravel
Z4-Moist, Gray, Sandy Clay
A5-CLAYSTONE - Reddish Brown and Gray, Medium Hard
B5-Moist, Very Loose, Brown Sand with Gravel
C5-Wet, Very Loose, Gray Sand
D5-Wet, Loose, Gray and Brown Sand with Gravel
E5-Wet, Dense to Medium Dense, Brown and Gray Sand with Gravel
F5-Wet, Very Dense, Brown and Gray Sand with Clay
G5-Moist, Hard, Brown and Gray Clay with Sand Layers
H5-CLAYSTONE - Reddish Brown and Gray to Brown and Gray, Medium Hard
J5-CLAYSTONE WITH SOME SAND AND CEMENTED SAND SEAMS - Brown and Gray, Medium Hard
K5-Light Brown, Poorly Cemented Sandstone with Occasional Claystone Layers
L5-Moist, Stiff, Brown and Gray Clay with Sand
M5-Moist, Stiff, Brown and Gray Sandy Clay
N5-Moist, Loose, brown and Gray Sand with Clay
P5-Wet, Very Loose, Gray Sand with Gravel
Q5-Wet, Medium Dense, Gray to Brown and Gray Sand with Gravel
R5-CLAYSTONE - Gray and Brown to Brown, Medium Hard
S5-Moist, Stiff, Brown and Gray Clay
T5-Moist, Medium Dense to Loose, Brown Silty Sand
U5-Wet, Very Loose, Gray Silty Sand
V5-Moist, Hard, Brown and Gray Clay
W5-Moist, Stiff, Brown Sandy Clay
X5-Moist, Loose, Brown Silty Sand
Y5-Moist to Wet, Very Loose, Gray to Brown and Gray Silty Sand
Z5-Wet, Loose, Gray Sand
A6-Wet, Medium Dense, Brown Sand
B6-Moist, Very Stiff, Gray Clay with Brown Sand and Gravel
C6-Moist, Stiff, Brown and Gray Sandy Clay
D6-Wet, Very Loose, Brown to Gray and Brown Silty Sand
E6-Wet, Medium Dense to Dense, Gray Sand with Gravel
F6-Wet, Medium Dense, Brown and Gray to Brown Sand with Gravel
G6-Moist, Hard, Brown and Gray Clay with Sand and Gravel
H6-CLAYSTONE - Brown and Gray, Medium Hard
J6-CLAYSTONE - Reddish Brown, Medium Hard
K6-CLAYSTONE - Reddish Brown and Gray, Medium Hard
L6-Wet, Soft, Brown Sandy Clay with some Organic Matter
M6-Wet, Very Loose, Brown and Gray to Gray Clayey Sand
N6-Wet, Dense to Medium Dense, Brown Sand with Gravel
P6-Gravel with Medium Dense, Brown Sand
Q6-CLAYSTONE WITH SAND SEAMS - Brown and Gray, Medium Hard

STATE OF ARKANSAS
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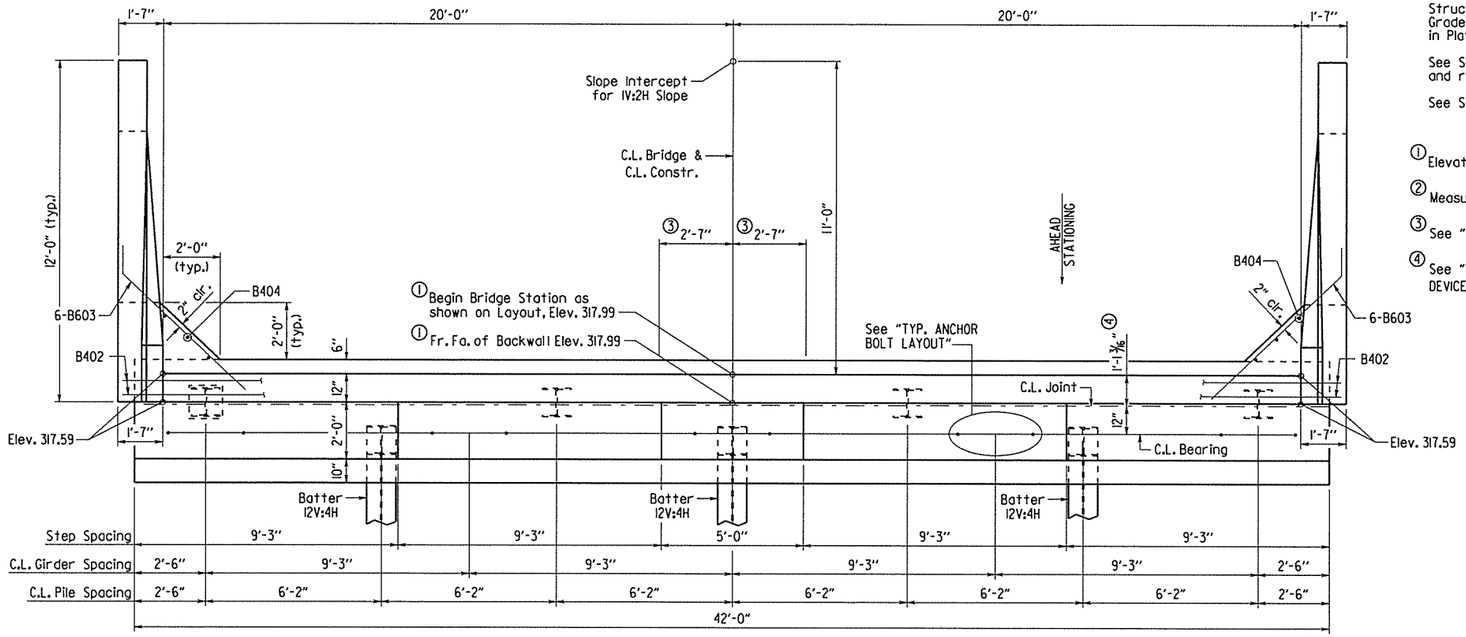
SHEET 5 OF 5
LAYOUT OF BRIDGE OVER LITTLE RIVER
LITTLE RIVER STR. & APPRS. (S)
LITTLE RIVER & SEVIER COUNTIES
ROUTE 41 SEC. 2
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: PGT DATE: 6/4/15 FILENAME: b030415_11.dgn
CHECKED BY: JAC DATE: 1/28/16 SCALE: 1" = 30'-0"
DESIGNED BY: PGT DATE: 6/4/15

BRIDGE NO. 07378 DRAWING NO. 58067

PRINT DATE: 1/27/2016

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.		030415	44	131
				①	07378 - END BENT NO. 1 - 58068			



PLAN
3/8" = 1'-0"

Notes:

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

Structural steel in end bent shall be AASHTO M 270, Grade 50W and shall be paid for as "Structural Steel in Plate Girder Spans (M 270, Gr. 50W)".

See Sheet 2 of 2 for Bar List and details of wing and rail.

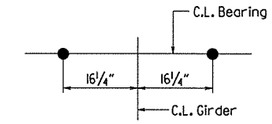
See Std. Dwg. 55006 for additional notes.

① Elevation at Working Point

② Measured to Working Point at Front Face

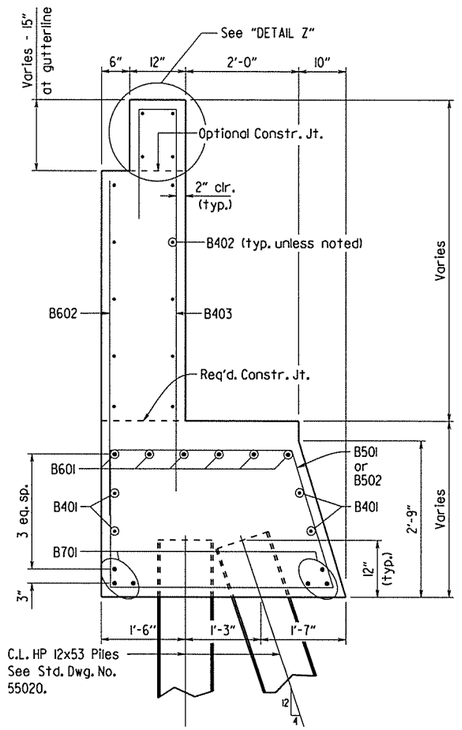
③ See "ROUNDING DETAIL" on Dwg. No 58082.

④ See "SECTION THRU JOINT AT END BENTS" & "EXPANSION DEVICE INSTALLED AT END BENTS" Dwg. No. 58086.

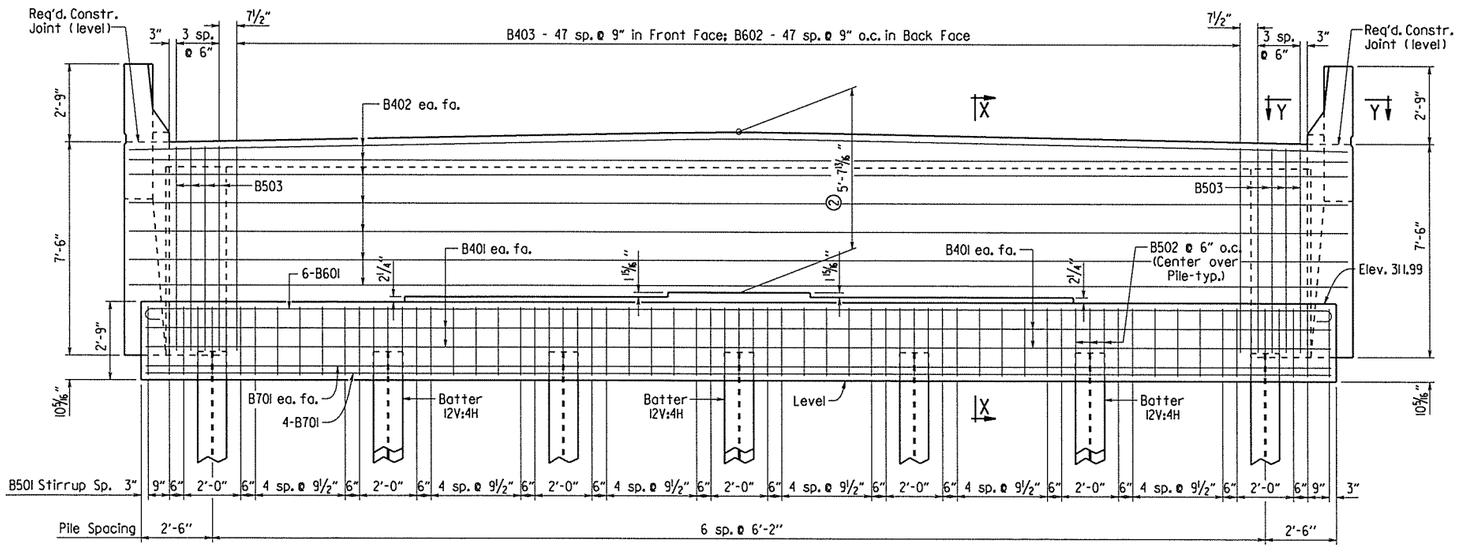


For details of elastomeric bearings, see Dwg. No. 58079 & 58080.

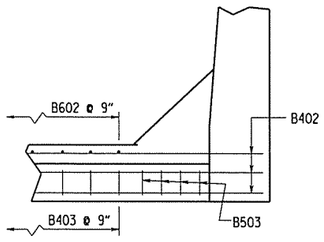
TYP. ANCHOR BOLT LAYOUT
3/4" = 1'-0"



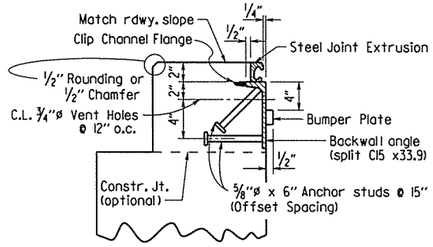
SECTION X-X
3/4"= 1'-0"



ELEVATION
Looking Back
3/8" = 1'-0"



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



Notes: For additional joint details, see Dwg. No. 58086.
Concrete shall be hand packed under the joint armor in the backwall.

DETAIL "Z"
No Scale

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SHEET 1 OF 2
DETAILS OF END BENT NO. 1

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

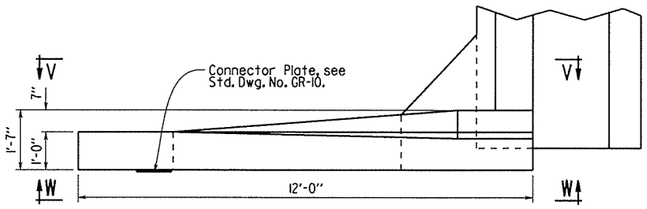
LITTLE ROCK, ARK.

DRAWN BY: ACP DATE: 12-23-15 FILENAME: b030415_b1.dgn
CHECKED BY: TMG DATE: 1/25/16 SCALE: As Shown
DESIGNED BY: ACP DATE: 12-15

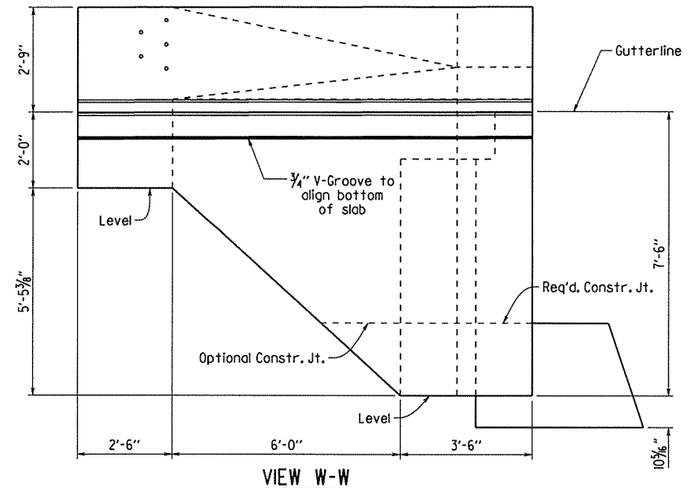
BRIDGE NO. 07378 DRAWING NO. 58068

PRINT DATE: 2/1/2016

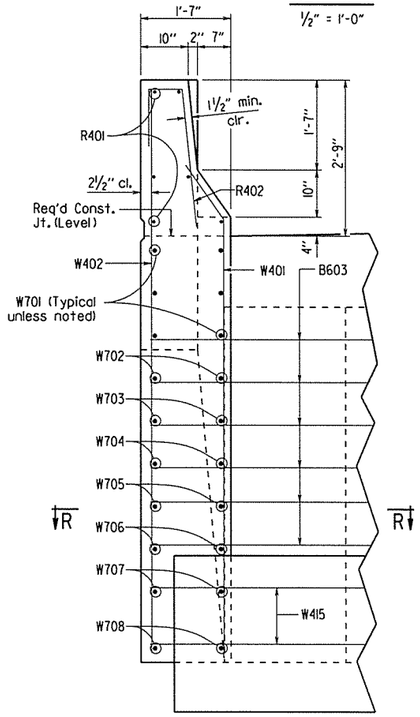
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		030415	45	131
				①	07378 - END BENT NO. 1 - 58069			



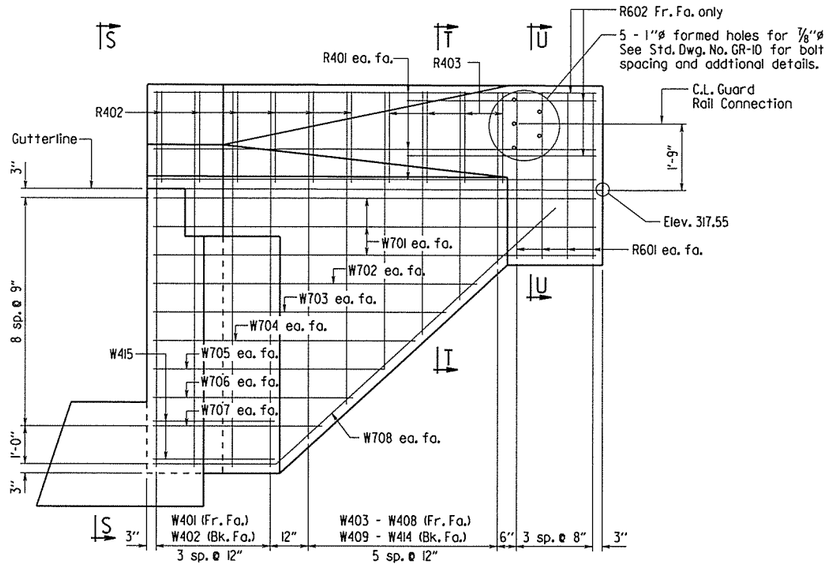
PLAN OF WING
3/8" = 1'-0"



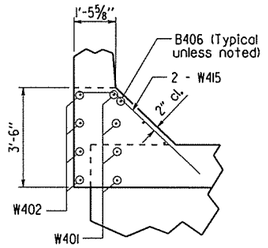
VIEW W-W
½" = 1'-0"



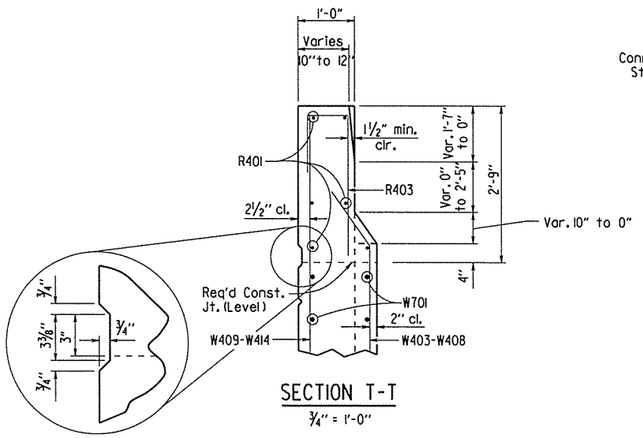
VIEW S-S
¾" = 1'-0"



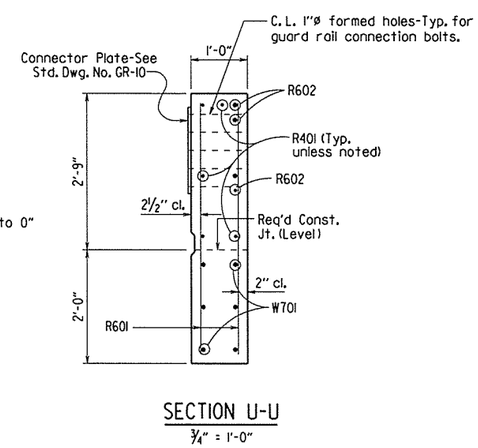
VIEW V-V
½" = 1'-0"



SECTION R-R
⅜" = 1'-0"



SECTION T-T
¾" = 1'-0"

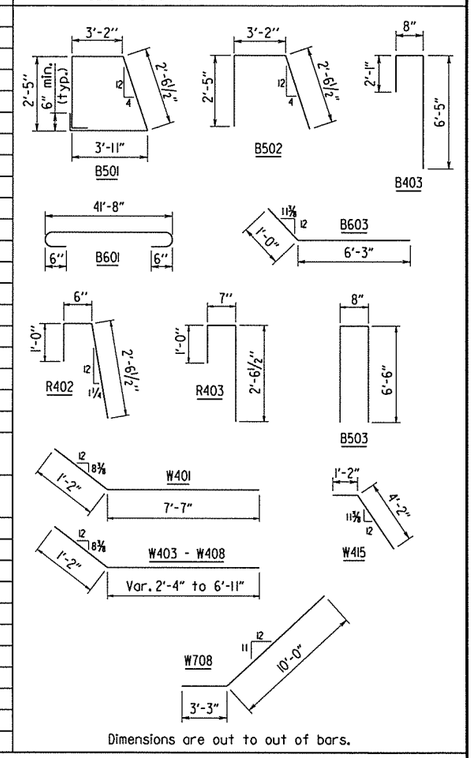


SECTION U-U
¾" = 1'-0"

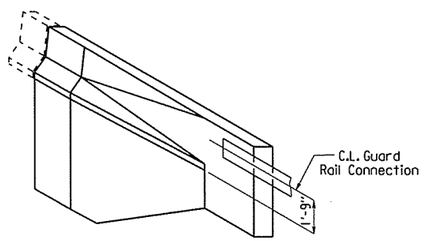
BAR LIST

MARK	NO. REQ'D.	LENGTH	P.D.
B401	4	41'-8"	Str.
B402	14	42'-10"	Str.
B403	48	9'-0"	2"
B404	6	5'-11"	Str.
B501	48	12'-7"	2½"
B502	21	7'-11"	2½"
B503	8	13'-6"	2½"
B601	6	43'-0"	4½"
B602	48	5'-11"	Str.
B603	12	7'-3"	4½"
B701	6	41'-8"	Str.
R401	12	11'-8"	Str.
R402	12	3'-11"	2"
R403	8	4'-0"	2"
R601	16	4'-5"	Str.
R602	6	5'-0"	Str.
W401	8	8'-9"	2"
W402	8	9'-11"	Str.
W403-W408	2 each	Var. 3'-6" to 8'-1"	2"
W409-W414	2 each	Var. 4'-6" to 9'-2"	Str.
W415	4	5'-4"	2"
W701	12	11'-8"	Str.
W702	4	8'-6"	Str.
W703	4	7'-8"	Str.
W704	4	6'-10"	Str.
W705	4	6'-1"	Str.
W706	4	5'-3"	Str.
W707	4	4'-5"	Str.
W708	4	13'-3"	5¼"

BENDING DIAGRAMS



Dimensions are out to out of bars.



THREE DIMENSIONAL VIEW OF RAIL
No Scale

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
1-29-16
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 2 OF 2
DETAILS OF END BENT NO. 1

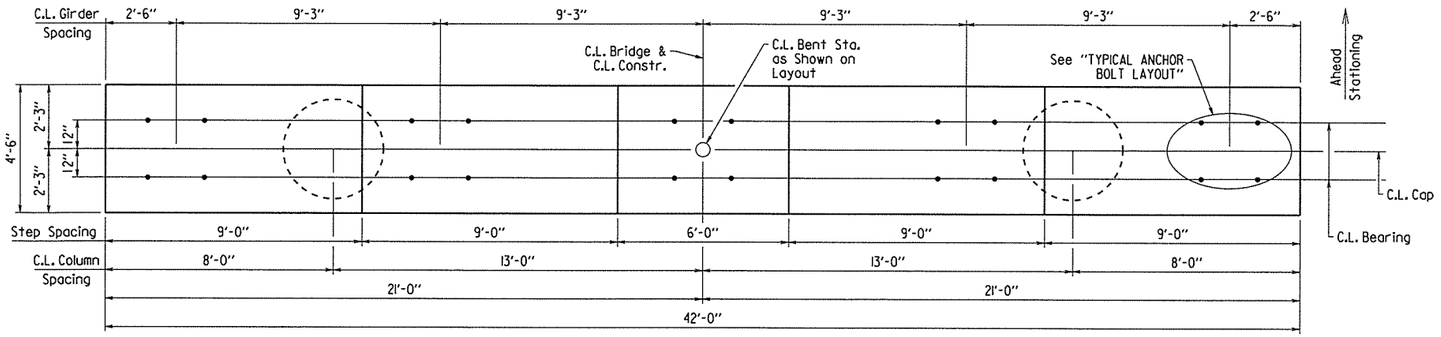
ROUTE SEC.

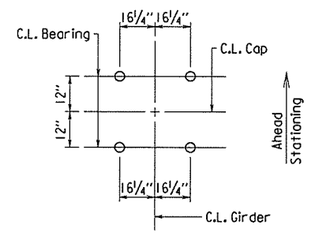
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: ACP DATE: 12-23-15 FILENAME: b030415_b1.dgn
CHECKED BY: TMG DATE: 1-25-16 SCALE: As Shown
DESIGNED BY: ACP DATE: 12-15
BRIDGE NO. 07378 DRAWING NO. 58069

PRINT DATE: 2/1/2016

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.		030415	4/6	131
				07378		- INT. BENTS -	58070	





For Details of Elastomeric Bearings, See Dwg. Nos. 58079 & 58080.

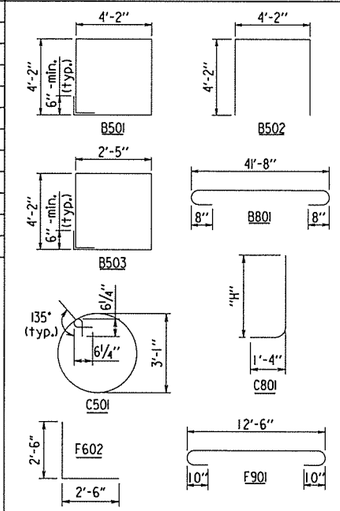
TYPICAL ANCHOR BOLT LAYOUT

No Scale

BAR LIST - PER BENT

MARK	NO. REQ'D.	LENGTH	P.D.
B401	10	41'-8"	Str.
B501	46	17'-2"	2½"
B502	6	12'-4"	2½"
B503	36	13'-8"	2½"
B801	6	43'-6"	6"
B802	6	41'-8"	Str.
B901	16	41'-8"	Str.
C501	"F"	11'-1"	3¾"
C801	36	"L"	6"
F601	52	12'-6"	Str.
F602	8	4'-10"	4½"
F901	100	15'-0"	9"

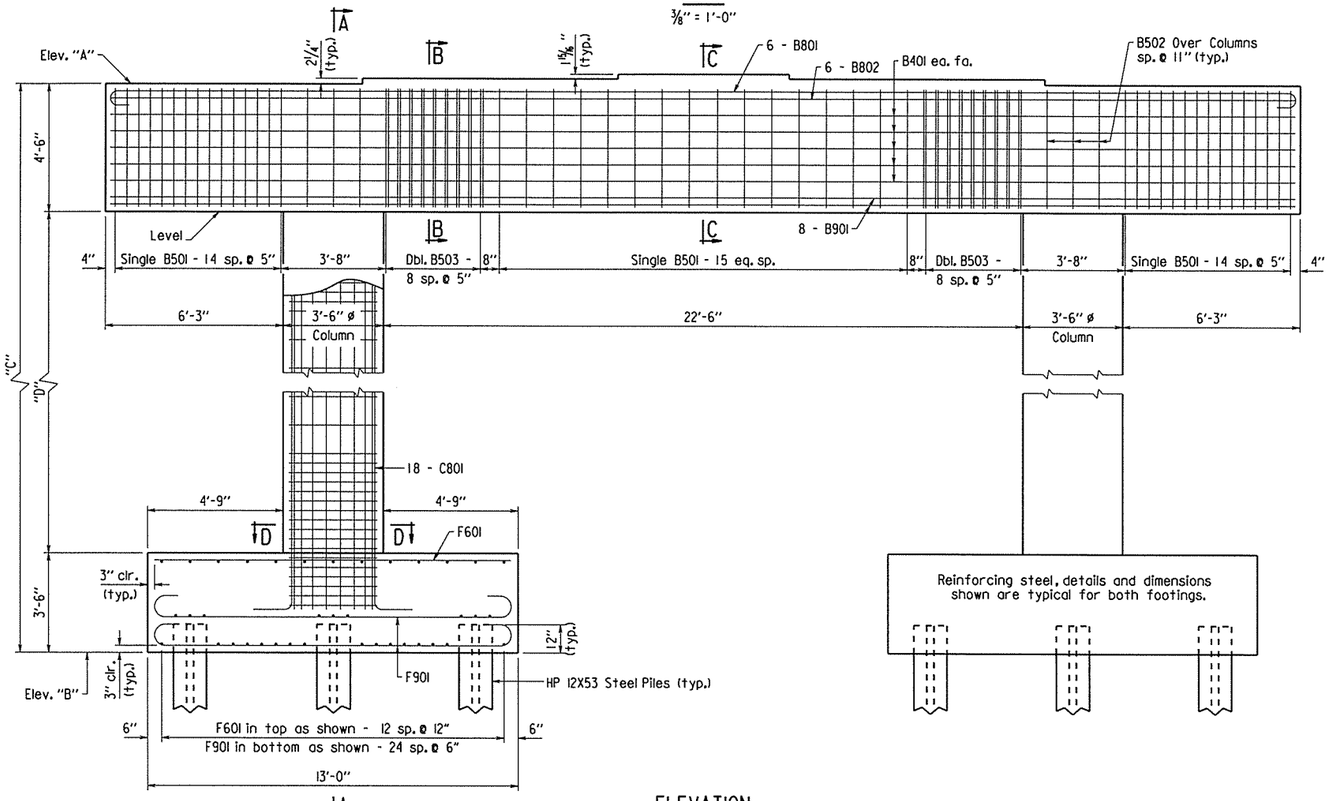
BENDING DIAGRAMS



(Dimensions are out to out of bars)

PLAN

3/8" = 1'-0"



See Std. Dwg. No. 55006 for additional notes.

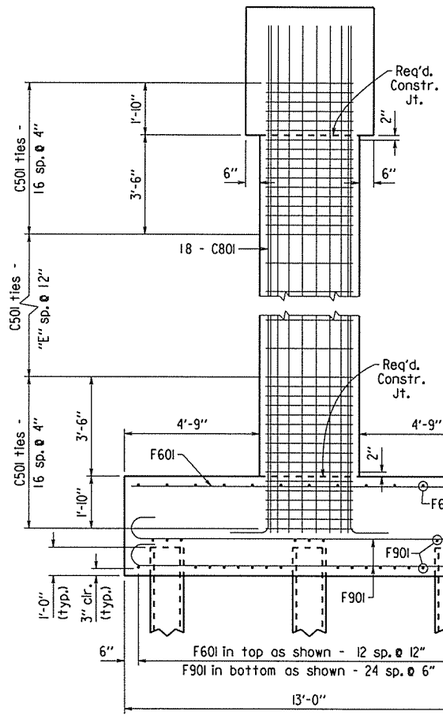
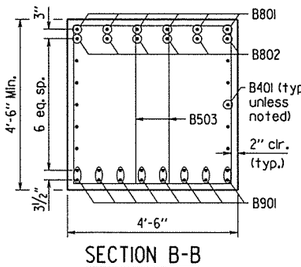


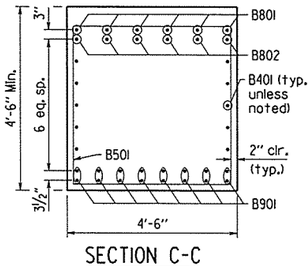
TABLE OF VARIABLES

Bent No.	Elev. "A"	Elev. "B"	"C"	"D"	"E"	"F"	"H"	"L"
2	312.22	294.22	18'-0"	10'-0"	3	72	16'-0"	17'-2"
3	312.45	292.45	20'-0"	12'-0"	5	76	18'-0"	19'-2"
4	312.69	291.69	21'-0"	13'-0"	6	78	19'-0"	20'-2"
5	312.93	290.93	22'-0"	14'-0"	7	80	20'-0"	21'-2"
6	313.16	290.16	23'-0"	15'-0"	8	82	21'-0"	22'-2"
7	313.40	291.40	22'-0"	14'-0"	7	80	20'-0"	21'-2"



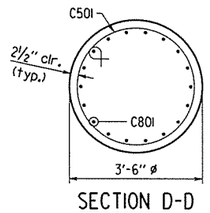
SECTION B-B

½" = 1'-0"



SECTION C-C

½" = 1'-0"



SECTION D-D

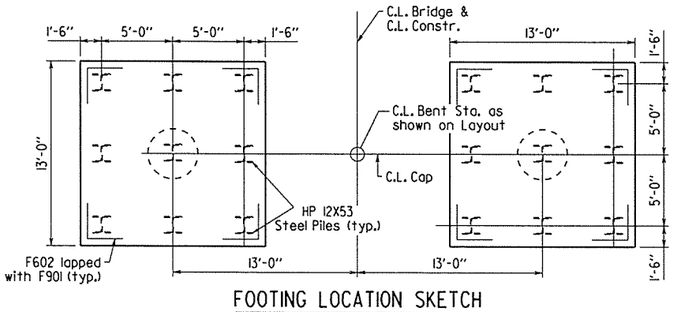
½" = 1'-0"

ELEVATION

Looking Ahead

3/8" = 1'-0"

Reinforcing steel, details and dimensions shown are typical for both footings.



FOOTING LOCATION SKETCH

3/16" = 1'-0"

SECTION A-A

3/8" = 1'-0"

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
1-29-16
CHARLES R. ELLIS

BRIDGE ENGINEER

DETAILS OF INTERMEDIATE BENT NOS. 2 THRU 7

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: JBD DATE: 12-16-15 FILENAME: b030415_b2.dgn

CHECKED BY: DATE: 01-21-16 SCALE: As Shown

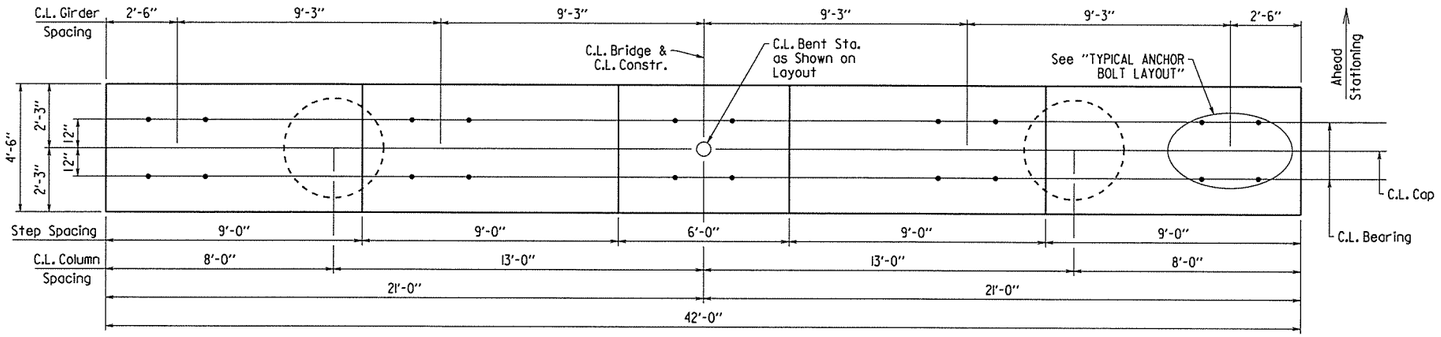
DESIGNED BY: DATE: 12-15-15

BRIDGE NO. 07378 DRAWING NO. 58070

PRINT DATE: 1/27/2016

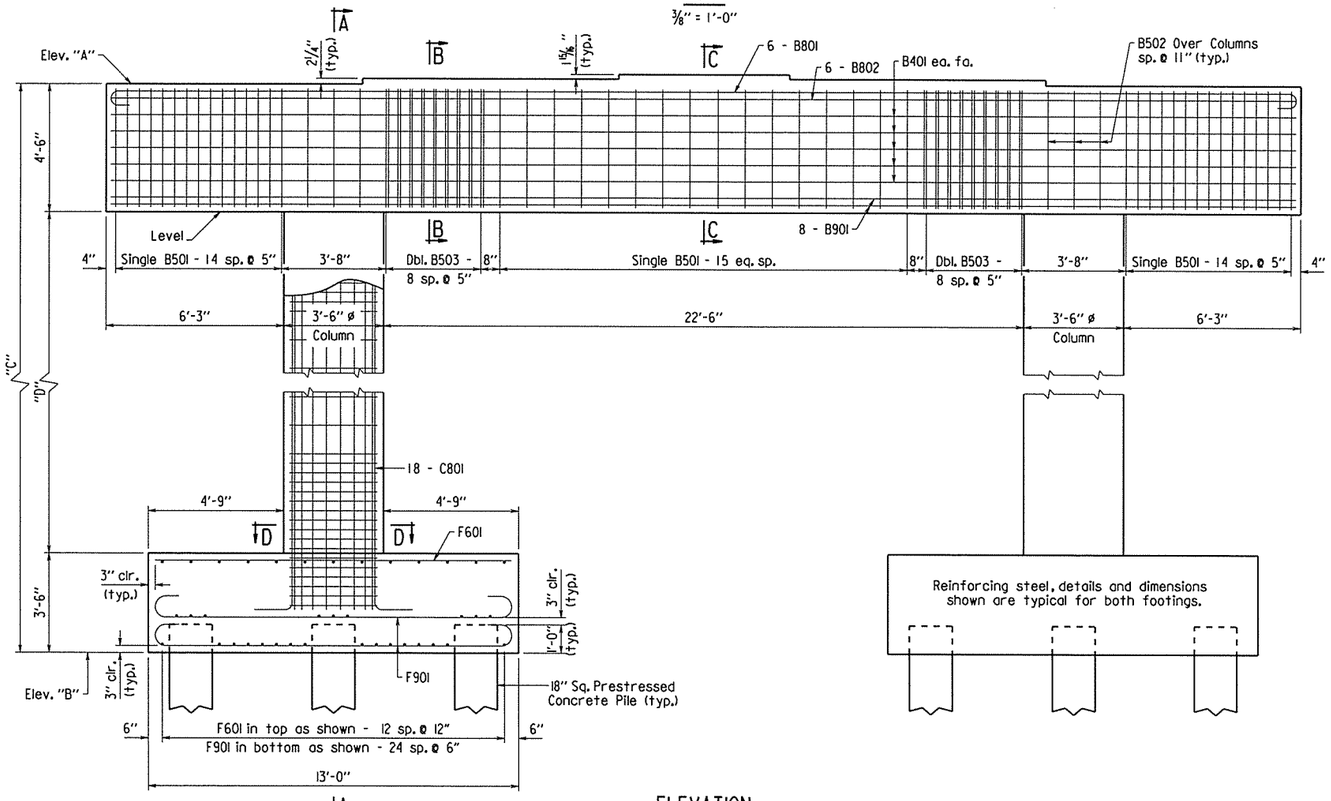
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		030415	47	131

1 07378 - INT. BENTS - 58071

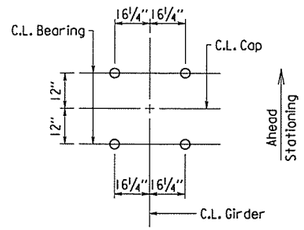


PLAN

3/8" = 1'-0"



See Std. Dwg. No. 55006 for additional notes.



For Details of Elastomeric Bearings, See Dwg. Nos. 58079 & 58080.

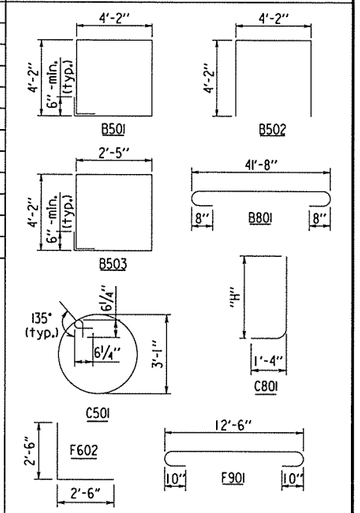
TYPICAL ANCHOR BOLT LAYOUT

No Scale

BAR LIST - PER BENT

MARK	NO. REQ'D.	LENGTH	P.D.
B401	10	41'-8"	Str.
B501	46	17'-2"	2½"
B502	6	12'-4"	2½"
B503	36	13'-8"	2½"
B801	6	43'-6"	6"
B802	6	41'-8"	Str.
B901	16	41'-8"	Str.
C501	"F"	11'-1"	3¾"
C801	36	"L"	6"
F601	52	12'-6"	Str.
F602	8	4'-10"	4½"
F901	100	15'-0"	9"

BENDING DIAGRAMS



(Dimensions are out to out of bars)

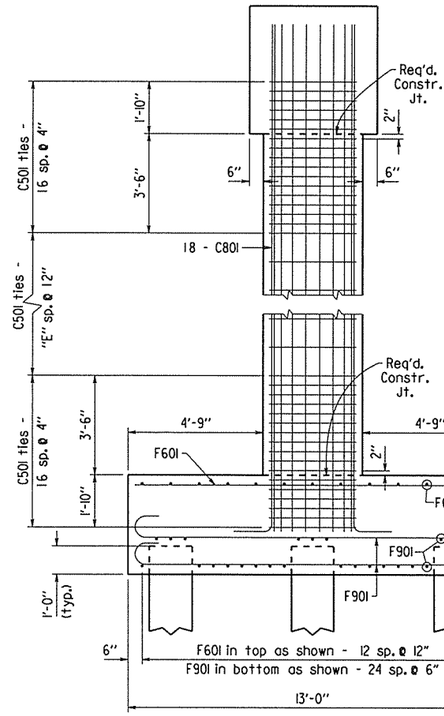
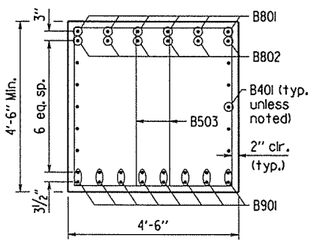


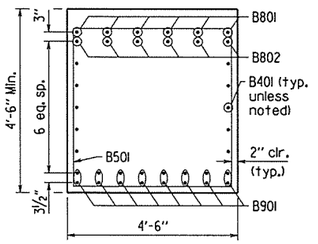
TABLE OF VARIABLES

Bent No.	Elev. "A"	Elev. "B"	"C"	"D"	"E"	"F"	"H"	"L"
8	313.64	292.64	21'-0"	13'-0"	6	78	19'-0"	20'-2"
9	313.87	291.87	22'-0"	14'-0"	7	80	20'-0"	21'-2"
10	314.11	291.11	23'-0"	15'-0"	8	82	21'-0"	22'-2"
11	314.33	293.33	21'-0"	13'-0"	6	78	19'-0"	20'-2"
12	314.49	295.49	19'-0"	11'-0"	4	74	17'-0"	18'-2"
13	314.59	295.59	19'-0"	11'-0"	4	74	17'-0"	18'-2"
14	314.63	295.63	19'-0"	11'-0"	4	74	17'-0"	18'-2"
15	314.60	294.60	20'-0"	12'-0"	5	76	18'-0"	19'-2"
21	312.92	296.92	16'-0"	8'-0"	1	68	14'-0"	15'-2"
22	312.68	297.68	15'-0"	7'-0"	0	66	13'-0"	14'-2"
23	312.44	297.44	15'-0"	7'-0"	0	66	13'-0"	14'-2"



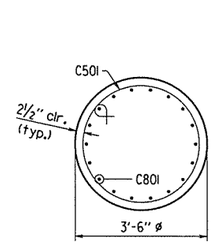
SECTION B-B

½" = 1'-0"



SECTION C-C

½" = 1'-0"



SECTION D-D

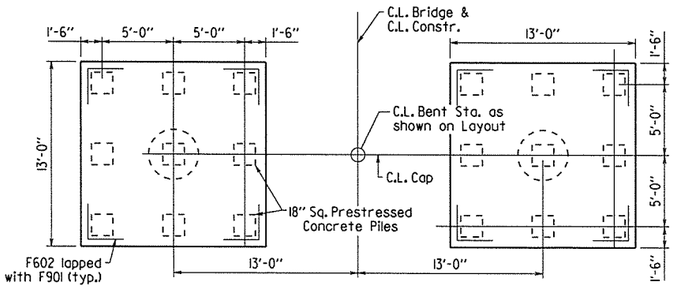
½" = 1'-0"

ELEVATION

Looking Ahead

3/8" = 1'-0"

Reinforcing steel, details and dimensions shown are typical for both footings.



FOOTING LOCATION SKETCH

3/16" = 1'-0"

SECTION A-A

3/8" = 1'-0"

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
12-9-16
CHARLES R. ELLIS

BRIDGE ENGINEER

DETAILS OF INTERMEDIATE BENT NOS. 8 THRU 15, 21 THRU 23

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

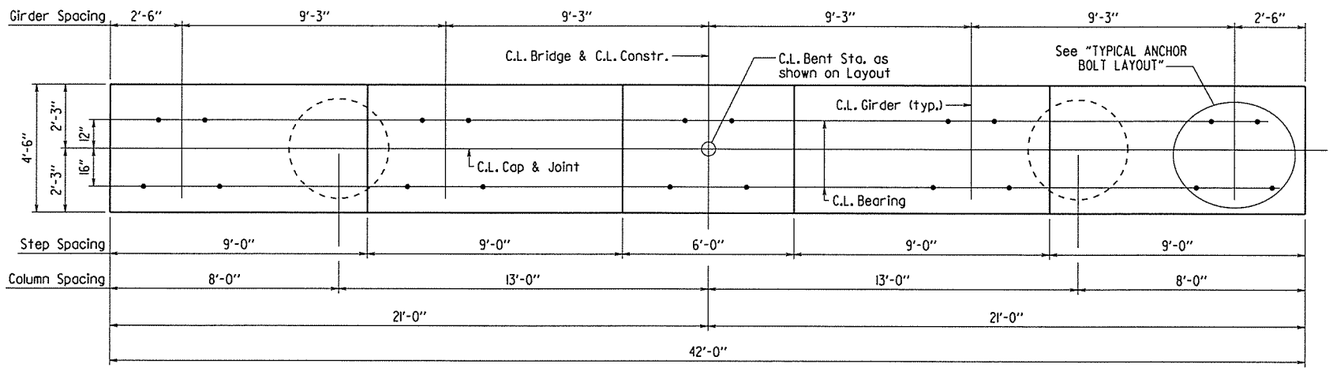
LITTLE ROCK, ARK.

DRAWN BY: EOR DATE: 12-16-15 FILENAME: b030415_b8.dgn
CHECKED BY: DHP DATE: 1-28-16 SCALE: As Shown
DESIGNED BY: JZ DATE: 12-15-15

BRIDGE NO. 07378 DRAWING NO. 58071

PRINT DATE: 1/28/2016

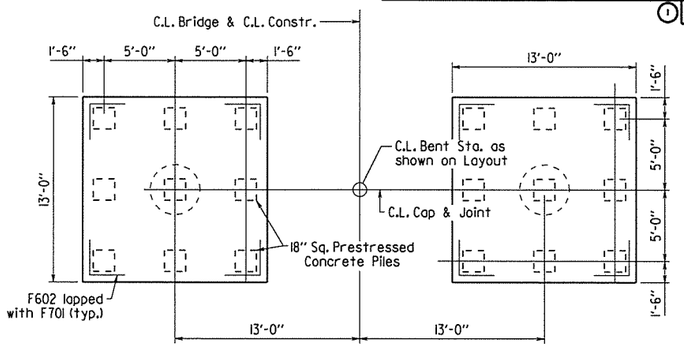
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		030415	48	131
				07378 -		INT. BENTS	- 58072	



PLAN

3/8" = 1'-0"

See Std. Dwg. No. 55006 for additional notes.



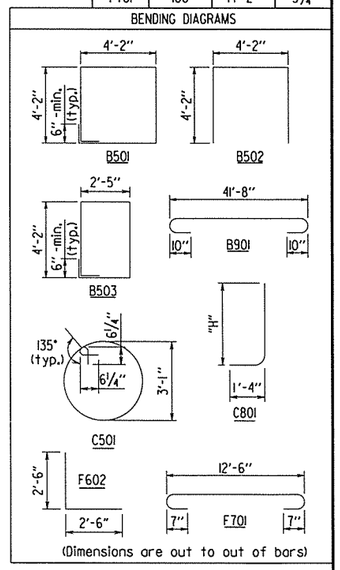
FOOTING LOCATION SKETCH

3/16" = 1'-0"

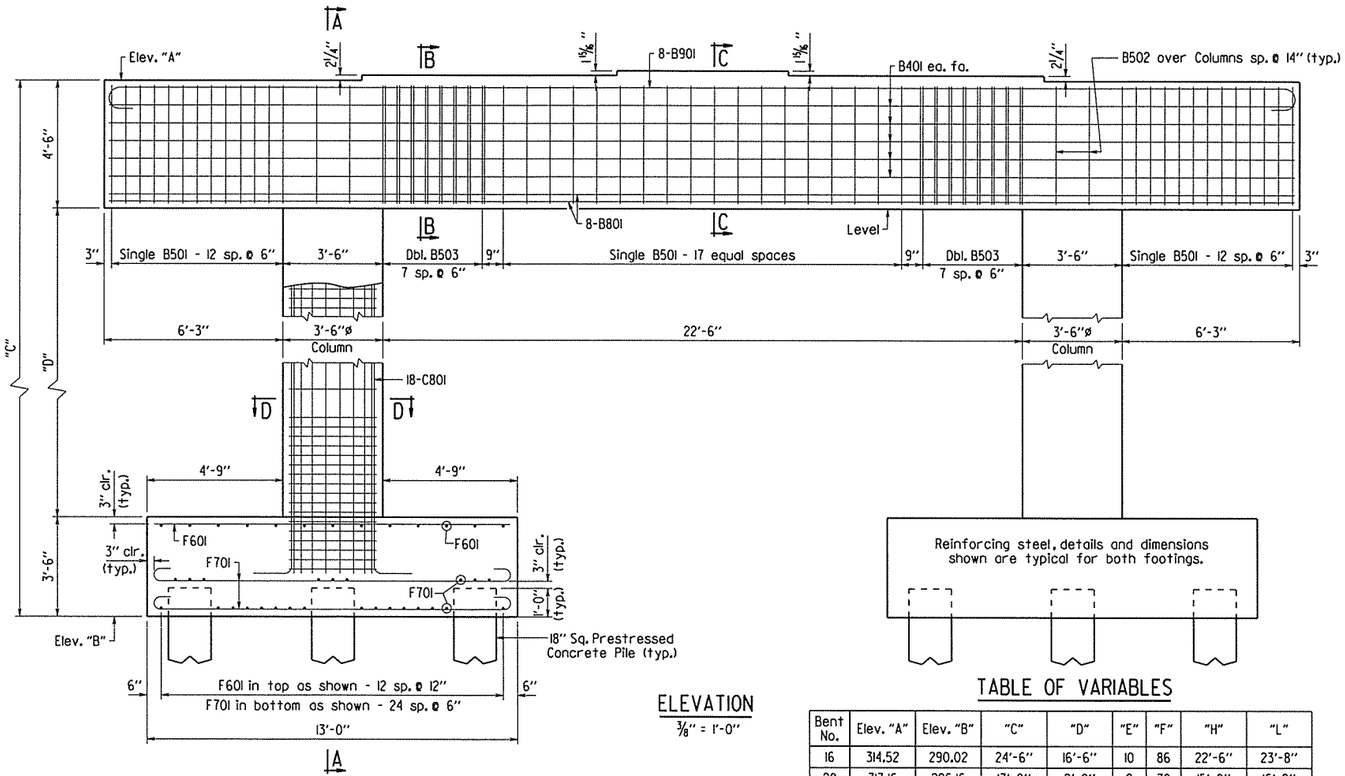
BAR LIST - PER BENT

MARK	NO. REQ'D.	LENGTH	P.D.
B401	10	41'-8"	Str.
B501	44	17'-2"	2½"
B502	4	12'-4"	2½"
B503	32	13'-8"	2½"
B801	16	41'-8"	Str.
B901	8	44'-2"	9"
C501	"F"	11'-1"	3¾"
C801	36	"L"	6"
F601	52	12'-6"	Str.
F602	8	4'-10"	4½"
F701	100	14'-2"	5¼"

BENDING DIAGRAMS



(Dimensions are out to out of bars)



ELEVATION

3/8" = 1'-0"

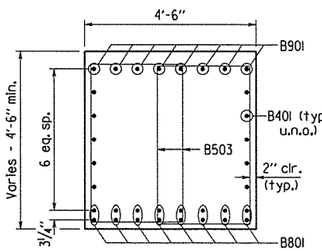
Reinforcing steel, details and dimensions shown are typical for both footings.

TABLE OF VARIABLES

Bent No.	Elev. "A"	Elev. "B"	"C"	"D"	"E"	"F"	"H"	"L"
16	314.52	290.02	24'-6"	16'-6"	10	86	22'-6"	23'-8"
20	313.16	296.16	17'-0"	9'-0"	2	70	15'-0"	16'-2"

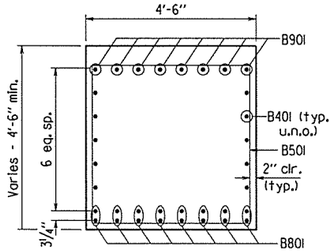
SECTION A-A

3/8" = 1'-0"



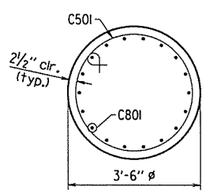
SECTION B-B

½" = 1'-0"



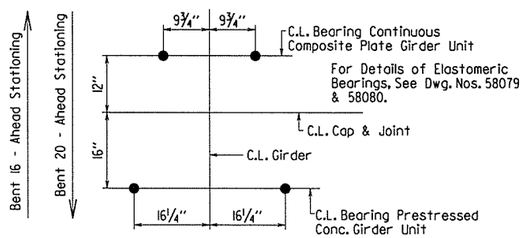
SECTION C-C

½" = 1'-0"



SECTION D-D

½" = 1'-0"



TYPICAL ANCHOR BOLT LAYOUT

¾" = 1'-0"

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
1-29-16
CHARLES R. ELLIS
BRIDGE ENGINEER

DETAILS OF INTERMEDIATE BENT NOS. 16 AND 20

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: LJB DATE: 1-4-15 FILENAME: b030415_bt6.dgn

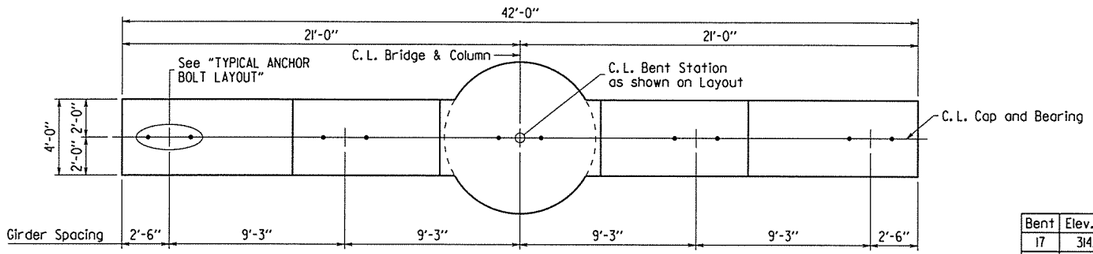
CHECKED BY: DHP DATE: 1-28-16 SCALE: As Shown

DESIGNED BY: TGT DATE: 12/15

BRIDGE NO. 07378 DRAWING NO. 58072

PRINT DATE: 1/28/2016

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.		030415	49	131
				① 07378 -		INT. BENTS	- 58073	

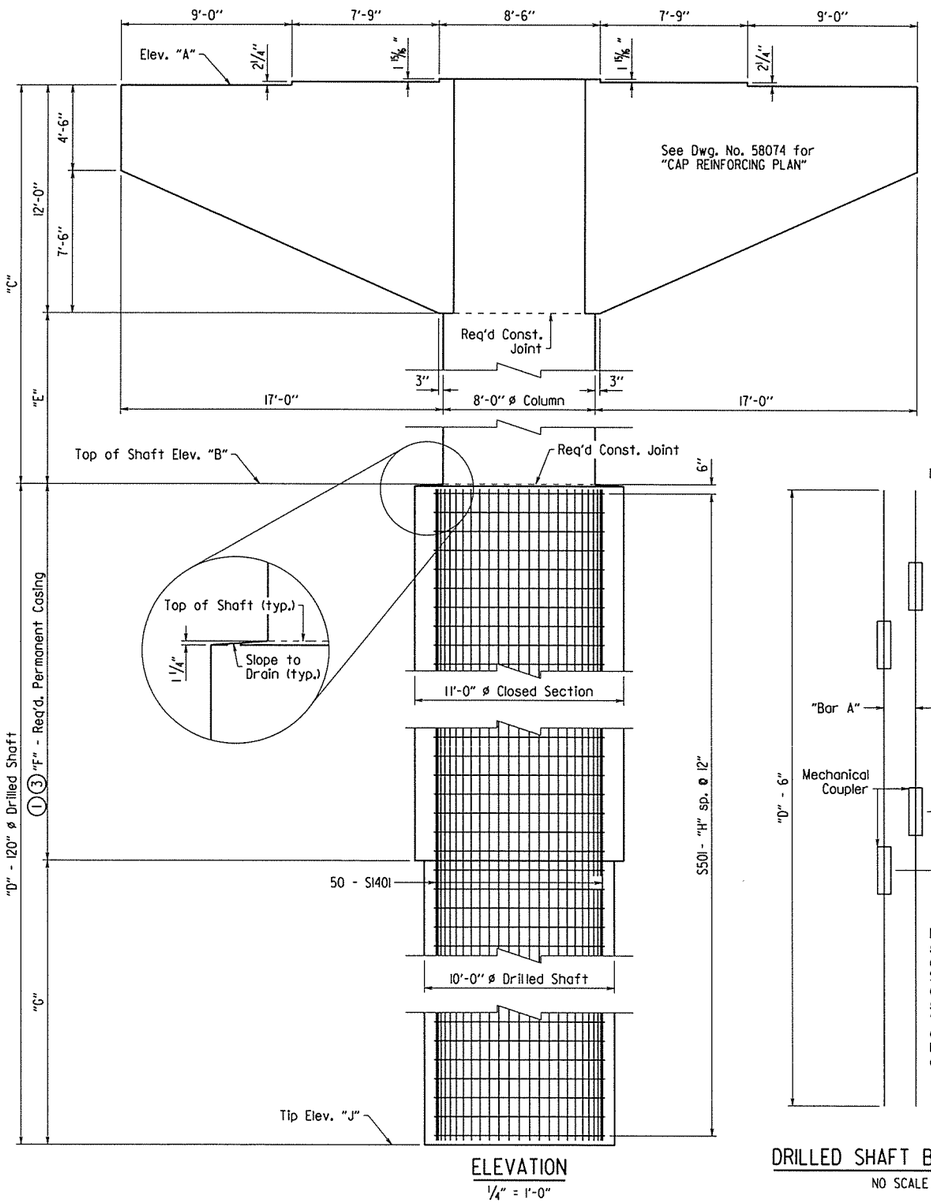


PLAN

1/4" = 1'-0"

TABLE OF VARIABLES

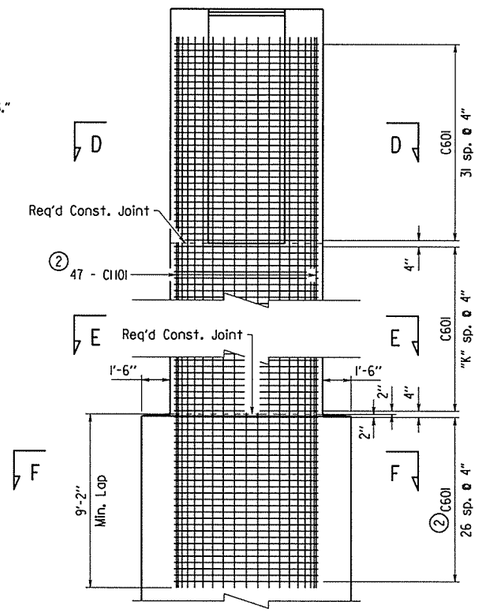
Bent	Elev. "A"	Elev. "B"	"C"	"D"	"E"	"F"	"G"	"H"	Elev. "J"	"K"	"L"	"M"	"N"
17	314.50	294.50	20'-0"	110'-0"	8'-0"	40'-0"	70'-0"	109	184.50	23	83	28'-0"	110
18	314.19	284.19	30'-0"	125'-0"	18'-0"	30'-0"	95'-0"	124	159.19	53	113	38'-0"	125
19	313.67	299.67	14'-0"	110'-0"	2'-0"	40'-0"	70'-0"	109	189.67	5	82	22'-0"	110

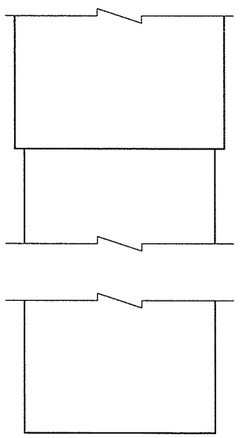


ELEVATION

1/4" = 1'-0"

See Dwg. No. 58076 for "SECTION D-D," "SECTION E-E," "SECTION F-F," and "SECTION G-G."

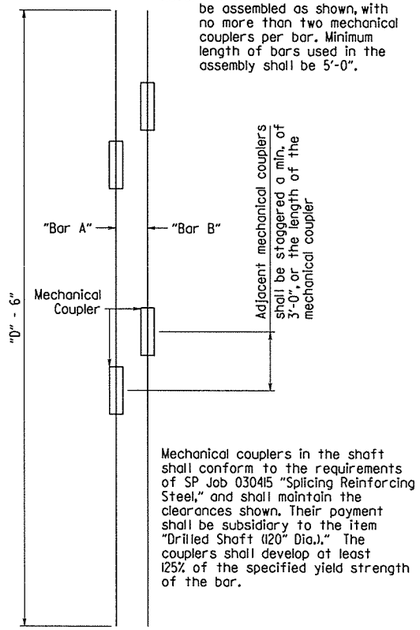




END VIEW

1/4" = 1'-0"

Note: "Bar A" and "Bar B" shall be assembled as shown, with no more than two mechanical couplers per bar. Minimum length of bars used in the assembly shall be 5'-0".



Mechanical couplers in the shaft shall conform to the requirements of SP Job 030415 "Splicing Reinforcing Steel," and shall maintain the clearances shown. Their payment shall be subsidiary to the item "Drilled Shaft (120" Dia.)." The couplers shall develop at least 125% of the specified yield strength of the bar.

DRILLED SHAFT BAR DETAIL

NO SCALE

GENERAL NOTES

Concrete in the cap and column shall be Class S with a minimum 28 day compressive strength, f'c = 3,500 psi., and shall be poured in the dry. Concrete in the drilled shaft shall be Class S as modified by SP Job 030415 "Drilled Shaft Foundations." All exposed corners to be chamfered ¾" unless otherwise noted.

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

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

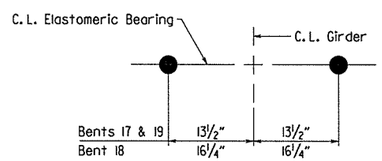
For additional information see layout.

Drilled shafts shall conform to SP Job 030415 "Drilled Shaft Foundations."

① Length of Permanent Casing shown is for estimating quantities only. Actual lengths are to be determined in the field. Permanent casings shall extend to material designated as Claystone on the Boring Legend.

② The column reinforcing cage may be placed before or after concrete placement in the shaft is complete. Vibration of the concrete in the top 10'-0" of the shaft will be needed to ensure the consolidation of concrete around the reinforcing steel and to insert the column reinforcing cage. The Contractor will be responsible for obtaining satisfactory results.

③ The upper 15 ft of permanent casing at Bent 18 shall be painted in accordance with SP Job 030415 "Drilled Shaft Foundations."



TYPICAL ANCHOR BOLT LAYOUT

NO SCALE

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
1-29-16
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 1 OF 4
DETAILS OF INTERMEDIATE BENT NOS. 17 THRU 19

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

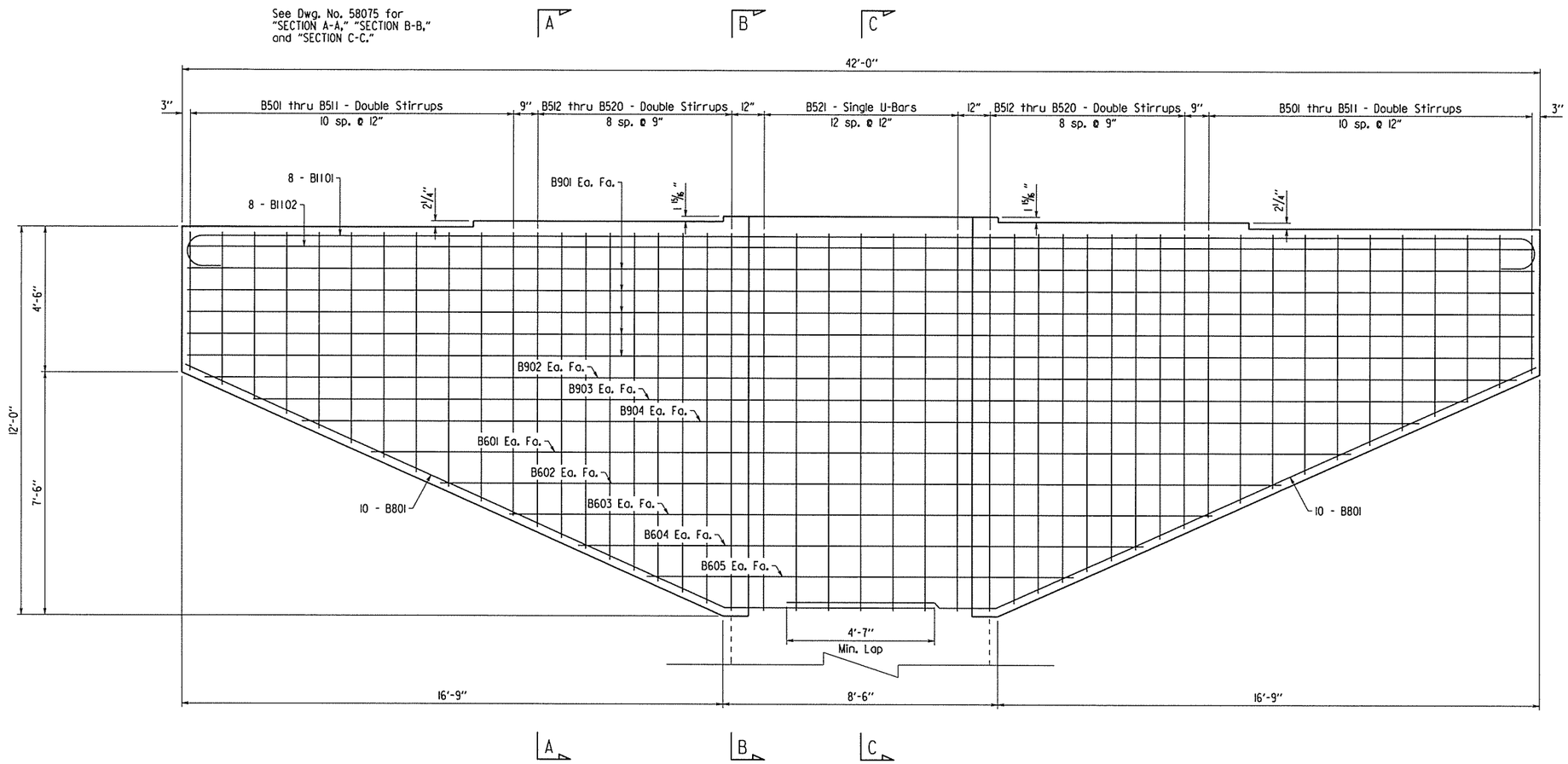
LITTLE ROCK, ARK.

DRAWN BY: TMG DATE: 1/14/2016 FILENAME: b030415x1_bl7.dgn
CHECKED BY: PRT DATE: 1/29/16 SCALE: AS SHOWN
DESIGNED BY: PGT DATE: 1/16

BRIDGE NO. 07378 DRAWING NO. 58073

PRINT DATE: 1/29/2016

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.		030415	50	131
				07378 -	INT. BENTS		- 58074	



CAP REINFORCING PLAN

½" = 1'-0"

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
1-29-16
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 4
DETAILS OF INTERMEDIATE BENT
NOS. 17 THRU 19

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: TMG DATE: 1/14/2016 FILENAME: b030415x1_b17.dgn
CHECKED BY: PGT DATE: 1/20/16 SCALE: AS NOTED
DESIGNED BY: PGT DATE: 1/16

BRIDGE NO. 07378 DRAWING NO. 58074

PRINT DATE: 1/27/2016

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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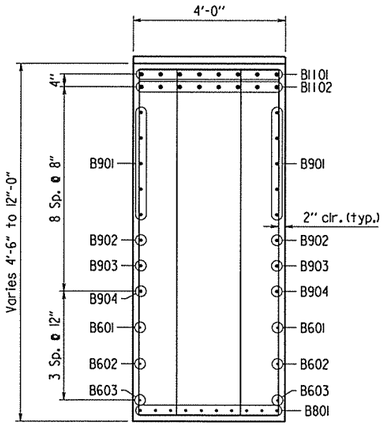
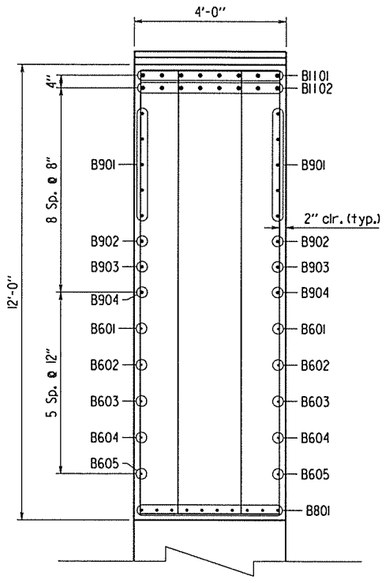
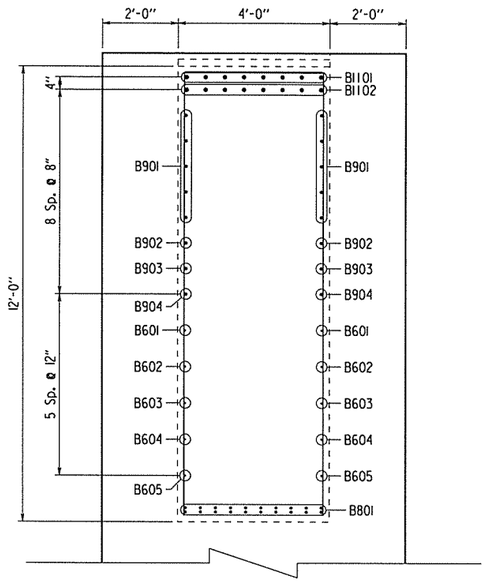
				JOB NO.		030415	51	131
				(1) 07378 -		INT. BENTS	- 58075	



SECTION A-A
½" = 1'-0"



SECTION B-B
½" = 1'-0"



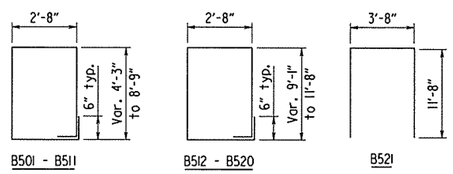
SECTION C-C
½" = 1'-0"

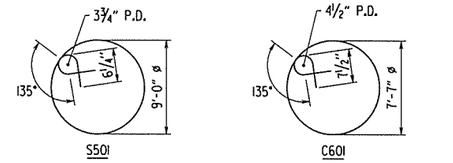
BAR LIST - PER BENT

MARK	NO. REQ'D.	LENGTH	P.D.
B501 - 511	4 each	14'-4" to 23'-4"	2½"
B512 - B520	4 each	24'-0" to 29'-2"	2½"
B521	7	26'-10"	2½"
B601	2	30'-4"	Str.
B602	2	26'-0"	Str.
B603	2	21'-9"	Str.
B604	2	17'-6"	Str.
B605	2	13'-3"	Str.
B801	20	24'-9"	6"
B901	10	41'-8"	Str.
B902	2	40'-7"	Str.
B903	2	37'-7"	Str.
B904	2	34'-8"	Str.
B1101	8	44'-8"	11 ¼"
B1102	8	41'-8"	Str.
C601	(5) "L"	25'-8"	4½"
C1101	47	"M"	Str.
(3) S501	(5) "N"	29'-10"	3¾"
(3)(4) S1401	50	"D" - 6"	Str.

BENDING DIAGRAMS

Dimensions are out to out of bars.





(3) Non-pay item - Subsidiary to the item "Drilled Shaft (120" Dia.)."

(4) Individual lengths shall be determined by the Contractor based on the type of mechanical coupler used.

(5) See "TABLE OF VARIABLES," Dwg. No. 58073.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
1-29-16
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 3 OF 4
DETAILS OF INTERMEDIATE BENT NOS. 17 THRU 19

ROUTE SEC.

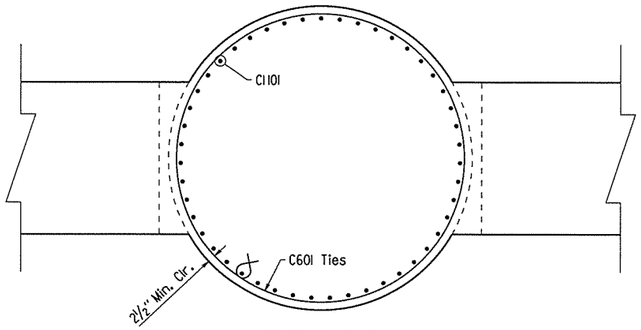
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: TMG DATE: 1/14/2016 FILENAME: b030415x1_bt7.dgn
CHECKED BY: PGT DATE: 1/20/16 SCALE: AS NOTED
DESIGNED BY: PGT DATE: 1/16

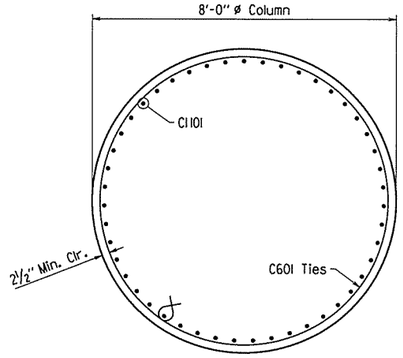
BRIDGE NO. 07378 DRAWING NO. 58075

PRINT DATE: 1/27/2016

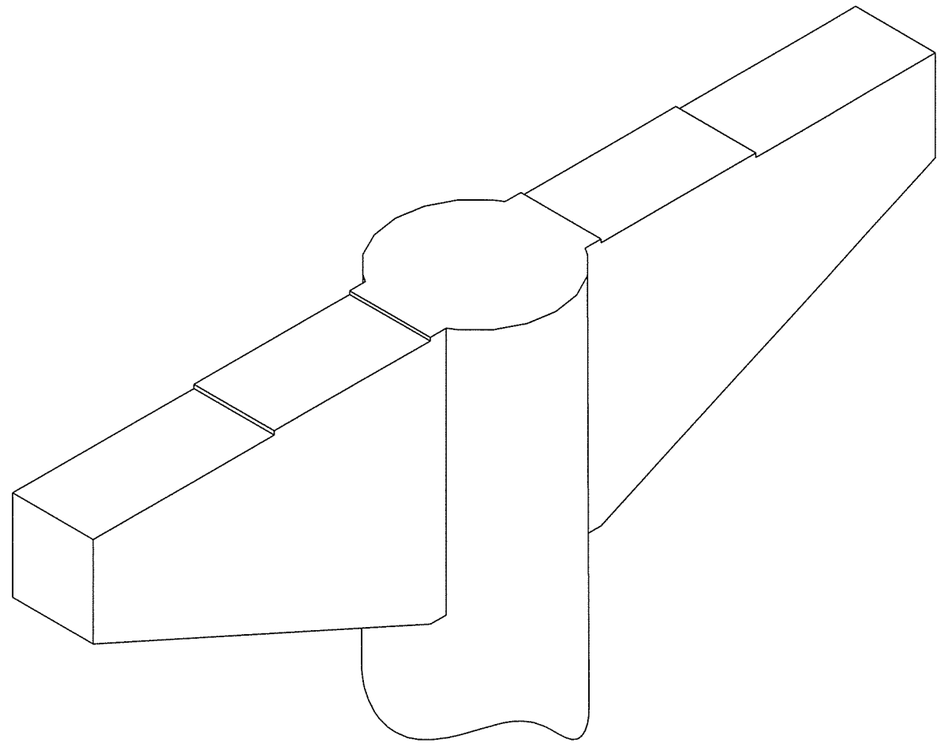
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		030415	52	131
				07378 -	INT. BENTS		- 58076	



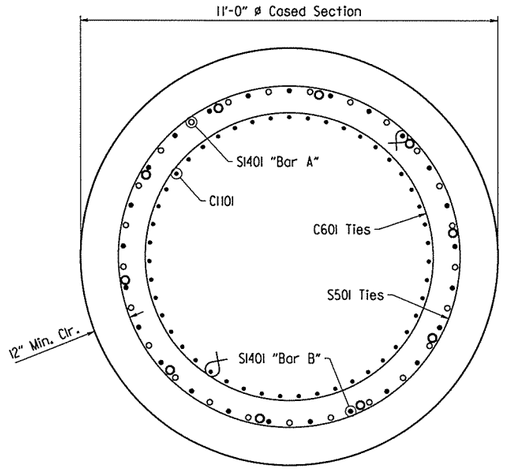
SECTION D-D
½" = 1'-0"



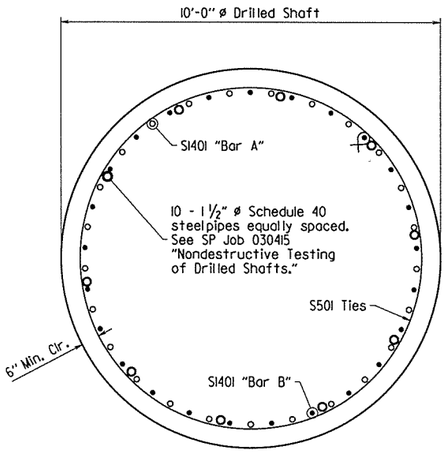
SECTION E-E
½" = 1'-0"



ISOMETRIC VIEW



SECTION F-F
½" = 1'-0"



SECTION G-G
½" = 1'-0"

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9235
1-29-16
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 4 OF 4
DETAILS OF INTERMEDIATE BENT NOS. 17 THRU 19

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: TMG DATE: 1/14/2016 FILENAME: b030415x1.b17.dgn
CHECKED BY: PGT DATE: 1/20/16 SCALE: AS NOTED
DESIGNED BY: PGT DATE: 1/16

BRIDGE NO. 07378 DRAWING NO. 58076

PRINT DATE: 1/27/2016

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.		030415	53	131
				①	07378 - END BENT NO. 24 - 58077			

Notes:

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

Structural steel in end bent shall be AASHTO M 270, Grade 50W and shall be paid for as "Structural Steel in Plate Girder Spans (M 270, Gr. 50W)".

See Sheet 2 of 2 for Bar List and details of wing and rail.

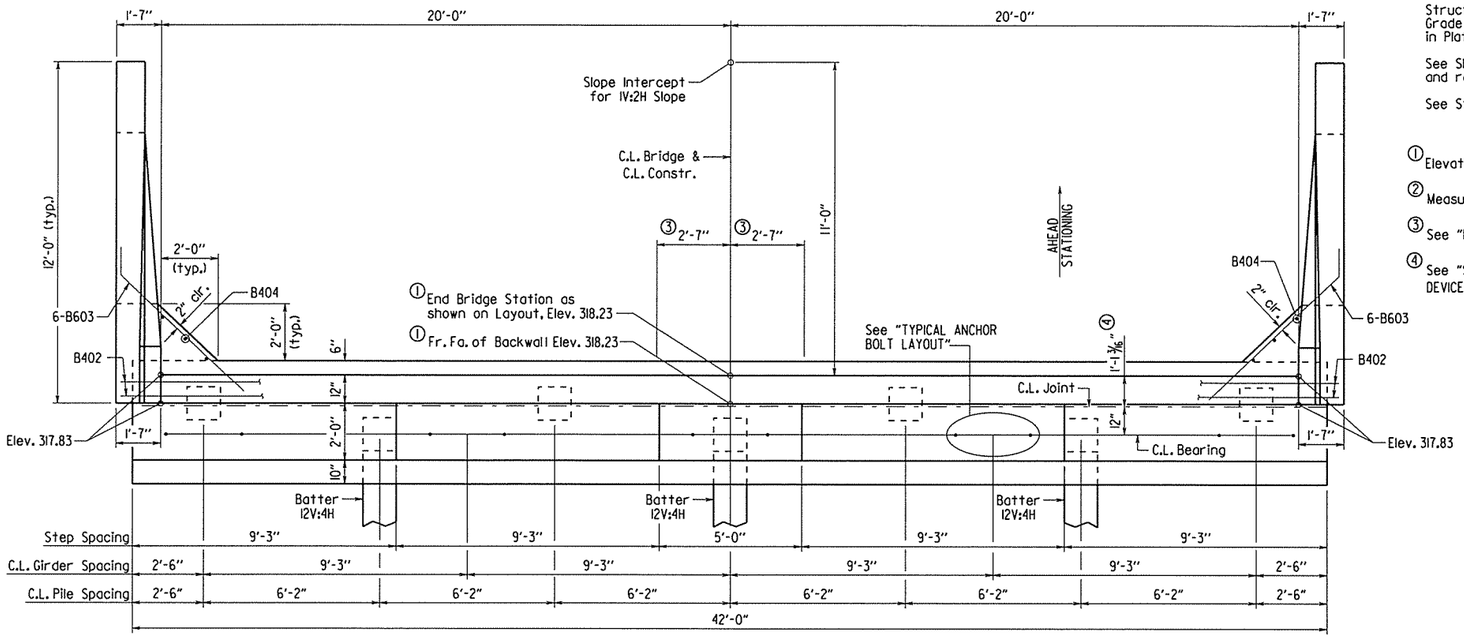
See Std. Dwg. 55006 for additional notes.

① Elevation at Working Point

② Measured to Working Point at Front Face

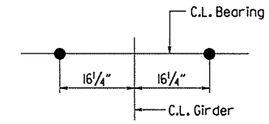
③ See "ROUNDING DETAIL" on Dwg. No 58082.

④ See "SECTION THRU JOINT AT END BENTS" & "EXPANSION DEVICE INSTALLED AT END BENTS" Dwg. No. 58086.



PLAN

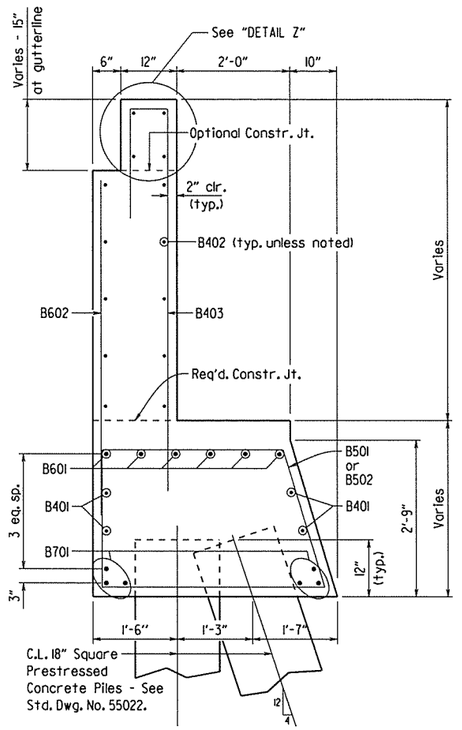
3/8" = 1'-0"



For details of elastomeric bearings, see Dwg. No. 58079 & 58080.

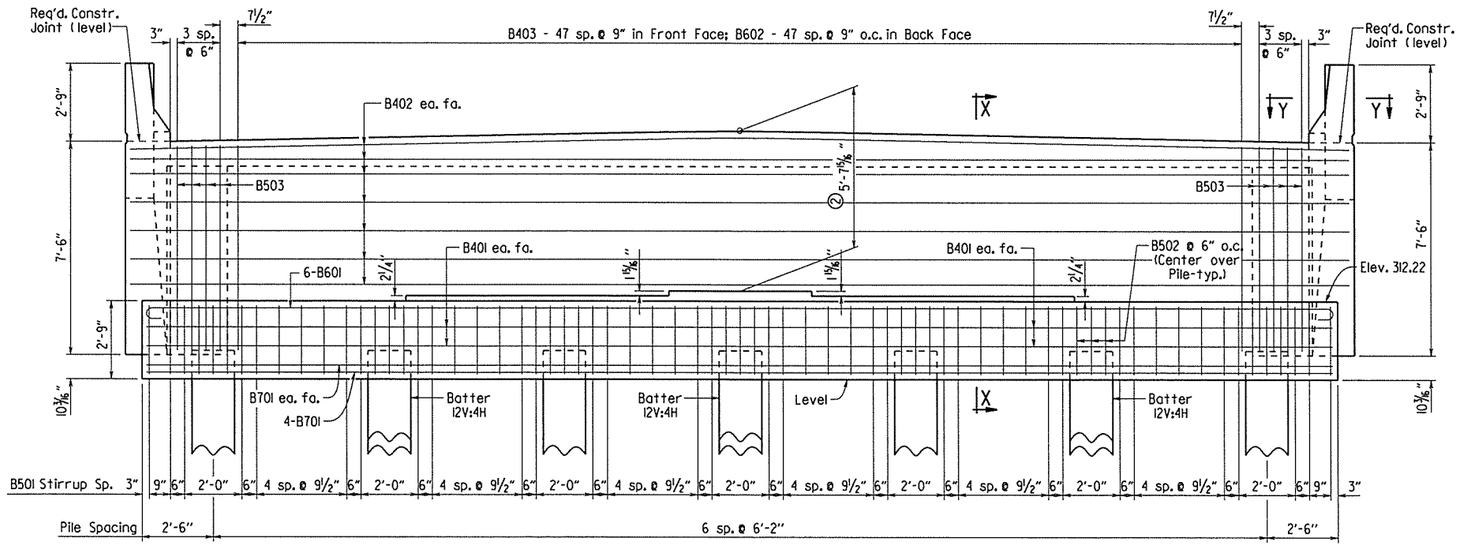
TYP. ANCHOR BOLT LAYOUT

3/4" = 1'-0"



SECTION X-X

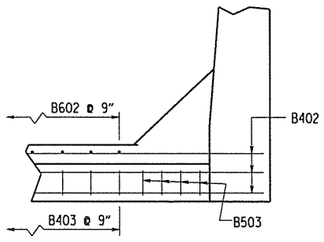
3/4" = 1'-0"



ELEVATION

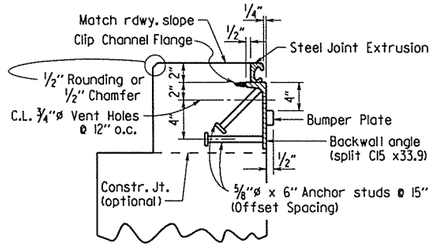
Looking Ahead

3/8" = 1'-0"



SECTION Y-Y

1/2" = 1'-0"



Notes: For additional joint details, see Dwg. No. 58086.

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

DETAIL "Z"

No Scale

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
1-29-16
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 1 OF 2

DETAILS OF END BENT NO. 24

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: ACP DATE: 12-16-15 FILENAME: b030415_bl.dgn

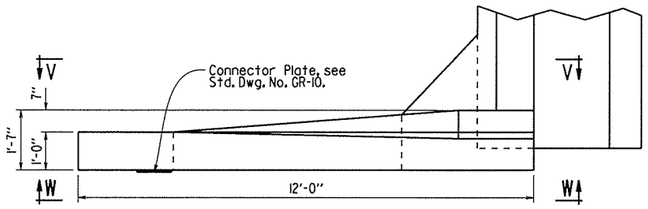
CHECKED BY: TMG DATE: 1-26-16 SCALE: As Shown

DESIGNED BY: ACP DATE: 12-15

BRIDGE NO. 07378 DRAWING NO. 58077

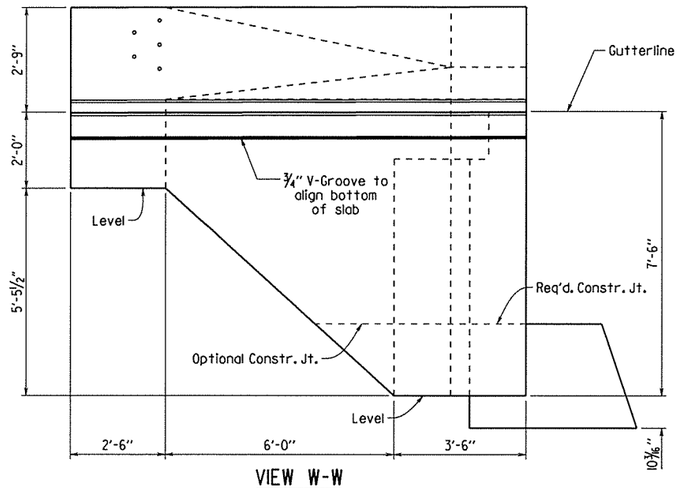
PRINT DATE: 2/1/2016

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.		030415	54	131
				1	07378 - END BENT NO. 24 - 58078			



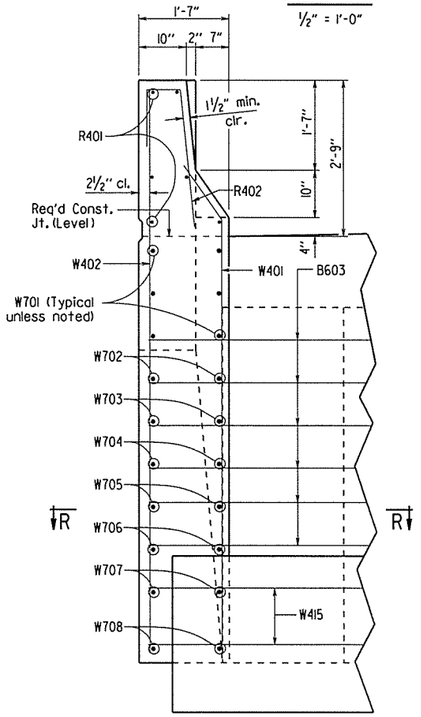
PLAN OF WING

3/8" = 1'-0"



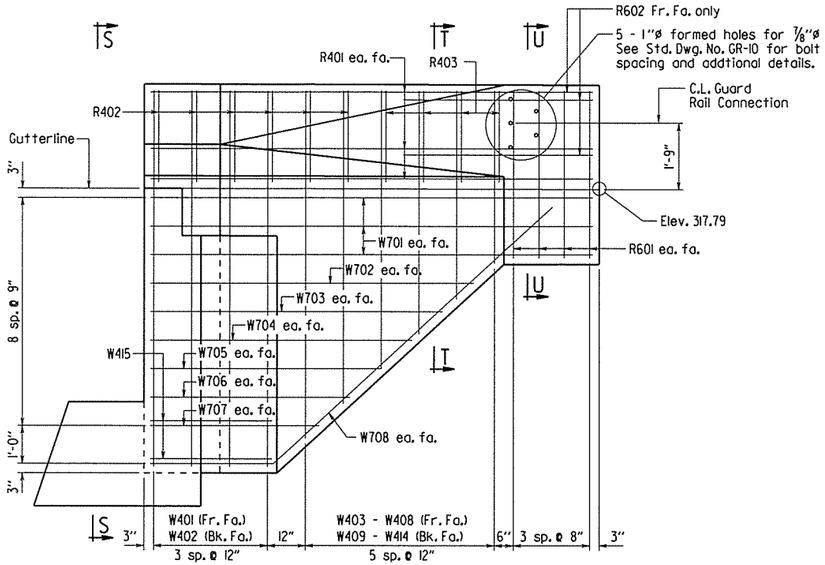
VIEW W-W

½" = 1'-0"



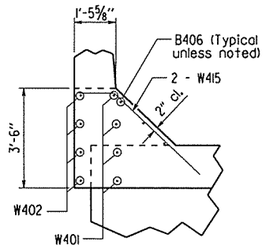
VIEW S-S

¾" = 1'-0"



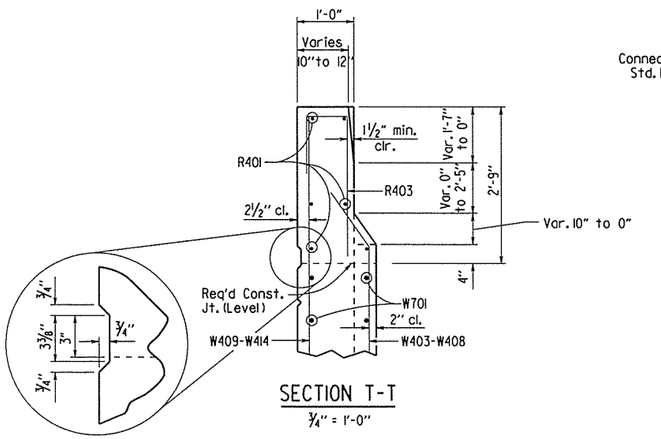
VIEW V-V

½" = 1'-0"



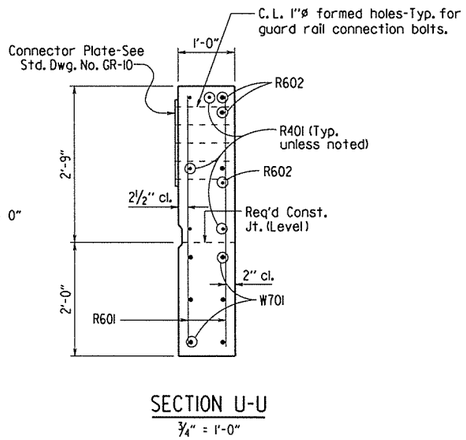
SECTION R-R

⅜" = 1'-0"



SECTION T-T

¾" = 1'-0"



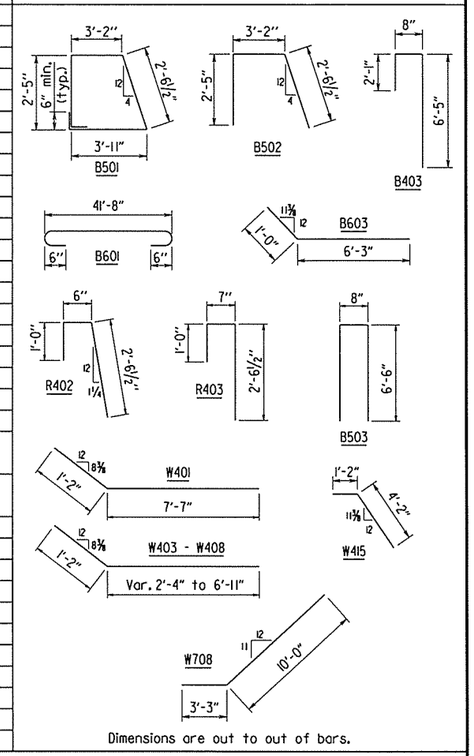
SECTION U-U

¾" = 1'-0"

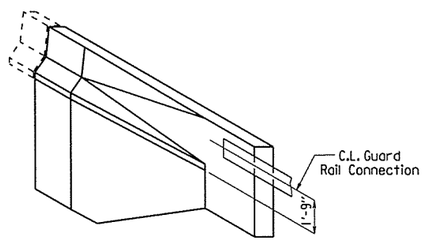
BAR LIST

MARK	NO. REQ'D.	LENGTH	P.D.
B401	4	41'-8"	Str.
B402	14	42'-10"	Str.
B403	48	9'-0"	2"
B404	6	5'-11"	Str.
B501	48	12'-7"	2½"
B502	21	7'-11"	2½"
B503	8	13'-6"	2½"
B601	6	43'-0"	4½"
B602	48	5'-11"	Str.
B603	12	7'-3"	4½"
B701	6	41'-8"	Str.
R401	12	11'-8"	Str.
R402	12	3'-11"	2"
R403	8	4'-0"	2"
R601	16	4'-5"	Str.
R602	6	5'-0"	Str.
W401	8	8'-9"	2"
W402	8	9'-11"	Str.
W403-W408	2 each	Var. 3'-6" to 8'-1"	2"
W409-W414	2 each	Var. 4'-6" to 9'-2"	Str.
W415	4	5'-4"	2"
W701	12	11'-8"	Str.
W702	4	8'-6"	Str.
W703	4	7'-8"	Str.
W704	4	6'-10"	Str.
W705	4	6'-1"	Str.
W706	4	5'-3"	Str.
W707	4	4'-5"	Str.
W708	4	13'-3"	5¼"

BENDING DIAGRAMS



Dimensions are out to out of bars.



THREE DIMENSIONAL VIEW OF RAIL

No Scale

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
1-29-16
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 2
DETAILS OF END BENT NO. 24

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: ACP DATE: 12-16-15 FILENAME: b030415_bl.dgn

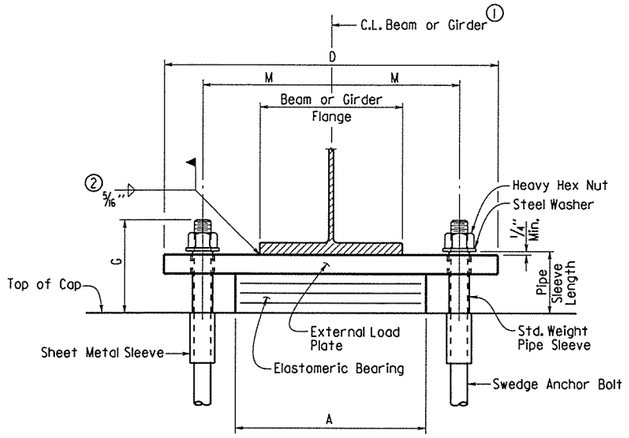
CHECKED BY: TMG DATE: 1-25-16 SCALE: As Shown

DESIGNED BY: ACP DATE: 12-15

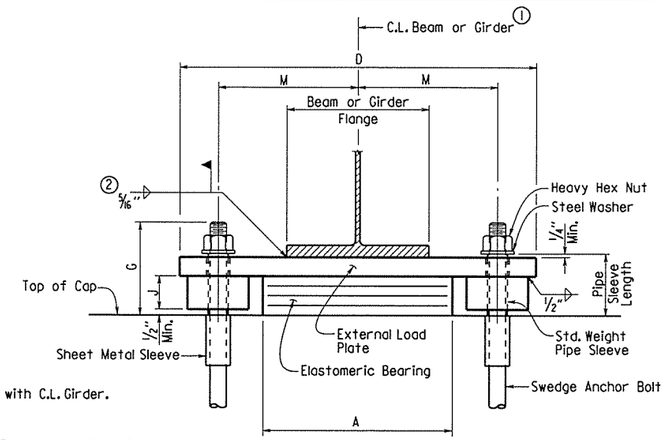
BRIDGE NO. 07378 DRAWING NO. 58078

PRINT DATE: 2/1/2016

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.		030415	55	131
				①	07378	- ELASTO BRGS. -		58079



FRONT VIEW - AT BENT NOS. 16 AHEAD, 17, 19 & 20 BACK

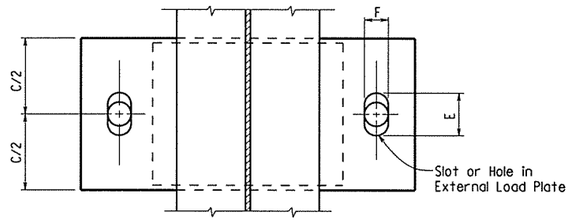


FRONT VIEW - AT BENT NO. 18

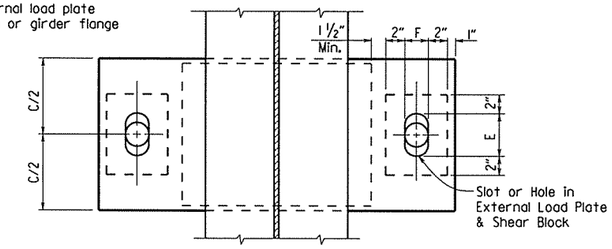
① C.L Elastomeric Pad shall be aligned with C.L. Girder.

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

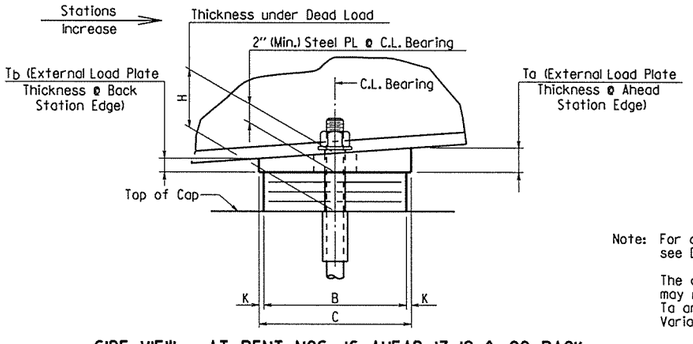
Care shall be taken to ensure that the external load plate is in full and complete contact with the beam or girder flange before welding begins.



PLAN VIEW - AT BENT NOS. 16 AHEAD, 17, 19, & 20 BACK



PLAN VIEW - AT BENT NO. 18

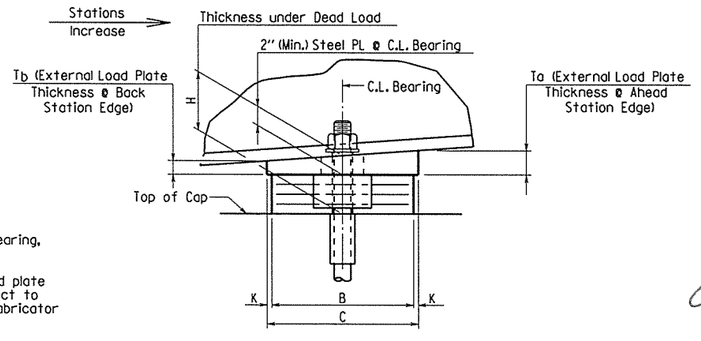


SIDE VIEW - AT BENT NOS. 16 AHEAD, 17, 19, & 20 BACK

ELASTOMERIC BEARINGS @ PLATE GIRDERS WITHOUT SHEAR BLOCKS

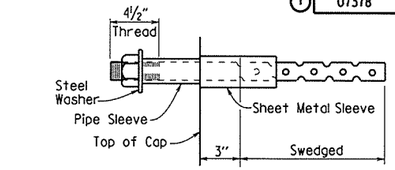
Note: For additional details of the elastomeric bearing, see Dwg. No. 58080.

The direction of bevel of the external load plate may not be accurately depicted with respect to Ta and Tb values shown in the "Table of Fabricator Variables" on Dwg. No. 58080.



SIDE VIEW - AT BENT NO. 18

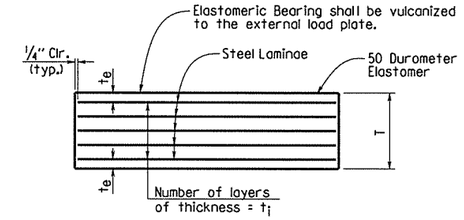
ELASTOMERIC BEARINGS @ PLATE GIRDERS WITH SHEAR BLOCKS



ANCHOR BOLT DETAIL

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

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



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

t_i = Thickness of elastomer between steel laminae

N = Number of elastomer layers of thickness t_i

ELASTOMERIC BEARING

GENERAL NOTES

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

External load plates and shear blocks shall conform to AASHTO M 270, Grade 50W. Pipe sleeves shall be ASTM A500, Grade B, and shall be galvanized to conform to AASHTO M 232, Class C or ASTM B695, Class 50.

External load plates and shear blocks shall be completely fabricated (including bevel, bolt holes and all shop welding) 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 Plate Girder Spans (M 270, Gr. 50W)". External load plates and shear blocks will not be measured or paid for separately, but will be considered incidental to the unit price bid for "Elastomeric Bearings".

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

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9235
1-29-16
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 1 OF 2
DETAILS OF
ELASTOMERIC BEARINGS
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: TMG DATE: 12-21-2015 FILENAME: b030415x1_e.dgn
CHECKED BY: CRE DATE: 01-05-16 SCALE: NO SCALE
DESIGNED BY: PGT DATE: 10/15

BRIDGE NO. 07378 DRAWING NO. 58079

PRINT DATE: 1/27/2016

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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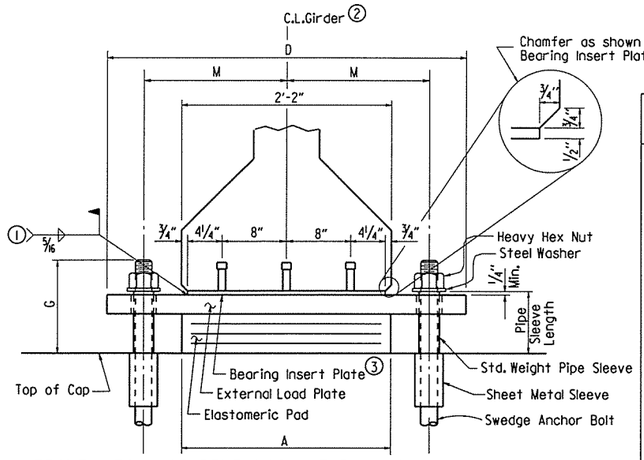
				JOB NO.		030415	56	131
				①	07378 - ELASTO BRGS. -		58080	

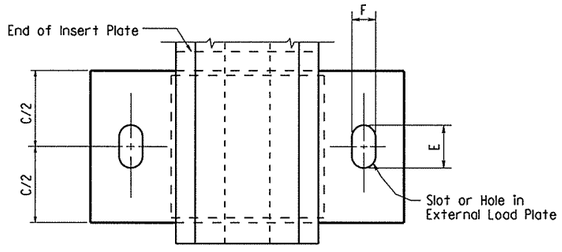


FRONT VIEW - AT BENT NOS. 1 THRU 16 BACK, 20 AHEAD, 21, 23, & 24

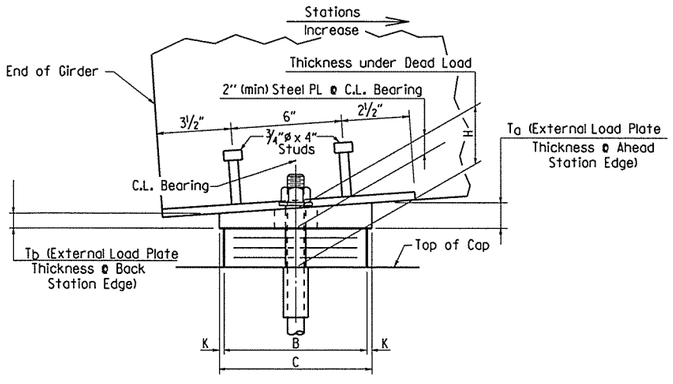
* Maximum Design Load = Service I Limit State

BRIDGE NO.	UNIT	LOCATION: BENT NO(S).	LOCATION: BEAM OR GIRDER 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	J	K	M	T_a	T_b	ANCHOR BOLT: (ø x L)	GRADE	PIPE SLEEVE SIZE (ø x L)	SHEET METAL SLEEVE SIZE (ø x L)	STEEL WASHER SIZE (O.D.)
07378	1	1 & 4	ALL	EXP	5	169	7"	3 3/4"	26	7	2	1/2"	1/4"	3 @ 12 Ga.	1 13/16"	8"	38 1/2"	4 5/8"	2 5/8"	-	1/2"	16 1/4"	2"	2"	1 3/4" x 27"	55	2" x 4"	4" x 6"	3 3/8"
	1	2 & 3	ALL	FIX	10	185	7 1/4"	3 3/4"	26	7	2	1/2"	1/4"	3 @ 12 Ga.	1 13/16"	8"	39"	3 1/8"	3 1/8"	-	1/2"	16 1/4"	2"	2"	2" x 29"	55	2 1/2" x 4"	4" x 6"	3 3/4"
	2	4 & 7	ALL	EXP	5	169	7"	3 3/4"	26	7	2	1/2"	1/4"	3 @ 12 Ga.	1 13/16"	8"	38 1/2"	4 5/8"	2 5/8"	-	1/2"	16 1/4"	2"	2"	1 3/4" x 27"	55	2" x 4"	4" x 6"	3 3/8"
	2	5 & 6	ALL	FIX	10	185	7 1/4"	3 3/4"	26	7	2	1/2"	1/4"	3 @ 12 Ga.	1 13/16"	8"	39"	3 1/8"	3 1/8"	-	1/2"	16 1/4"	2"	2"	2" x 29"	55	2 1/2" x 4"	4" x 6"	3 3/4"
	3	7 & 10	ALL	EXP	5	169	7"	3 3/4"	26	7	2	1/2"	1/4"	3 @ 12 Ga.	1 13/16"	8"	38 1/2"	4 5/8"	2 5/8"	-	1/2"	16 1/4"	2"	2"	1 3/4" x 27"	55	2" x 4"	4" x 6"	3 3/8"
	3	8 & 9	ALL	FIX	10	185	7 1/4"	3 3/4"	26	7	2	1/2"	1/4"	3 @ 12 Ga.	1 13/16"	8"	39"	3 1/8"	3 1/8"	-	1/2"	16 1/4"	2"	2"	2" x 29"	55	2 1/2" x 4"	4" x 6"	3 3/4"
	4	10 & 13	ALL	EXP	5	169	7"	3 3/4"	26	7	2	1/2"	1/4"	3 @ 12 Ga.	1 13/16"	8"	38 1/2"	4 5/8"	2 5/8"	-	1/2"	16 1/4"	2"	2"	1 3/4" x 27"	55	2" x 4"	4" x 6"	3 3/8"
	4	11 & 12	ALL	FIX	10	185	7 1/4"	3 3/4"	26	7	2	1/2"	1/4"	3 @ 12 Ga.	1 13/16"	8"	39"	3 1/8"	3 1/8"	-	1/2"	16 1/4"	2"	2"	2" x 29"	55	2 1/2" x 4"	4" x 6"	3 3/4"
	5	13 & 16	ALL	EXP	5	169	7"	3 3/4"	26	7	2	1/2"	1/4"	3 @ 12 Ga.	1 13/16"	8"	38 1/2"	4 5/8"	2 5/8"	-	1/2"	16 1/4"	2"	2"	1 3/4" x 27"	55	2" x 4"	4" x 6"	3 3/8"
	5	14 & 15	ALL	FIX	10	185	7 1/4"	3 3/4"	26	7	2	1/2"	1/4"	3 @ 12 Ga.	1 13/16"	8"	39"	3 1/8"	3 1/8"	-	1/2"	16 1/4"	2"	2"	2" x 29"	55	2 1/2" x 4"	4" x 6"	3 3/4"
	6	16	ALL	EXP	5	140	11"	7 3/4"	14	12	8	1/2"	1/4"	9 @ 12 Ga.	5 1/16"	13"	26"	7"	3 1/8"	-	1/2"	9 3/4"	2 5/16"	2 5/16"	2" x 32"	55	2 1/2" x 8"	4" x 6"	3 3/4"
	6	17 & 19	ALL	EXP	5	384	8 3/4"	5"	20	14	4	1/2"	1/4"	5 @ 12 Ga.	3"	14"	33 1/2"	6 1/8"	3 3/4"	-	1/2"	13 1/2"	2"	2"	2 1/2" x 35"	55	3" x 5 1/4"	4" x 6"	4 1/2"
	6	18	ALL	FIX	5	400	7 1/2"	3 11/16"	22	15	2	1/2"	1/4"	3 @ 12 Ga.	1 13/16"	14"	43 1/2"	3 1/8"	3 1/8"	1 5/16"	1/2"	16 1/4"	2"	2"	2 1/4" x 32"	55	2 1/2" x 4 1/4"	4" x 6"	4"
	6	20	ALL	EXP	5	140	11 1/4"	7 7/8"	14	12	8	1/2"	1/4"	9 @ 12 Ga.	5 1/16"	13"	26"	7"	3 1/8"	-	1/2"	9 3/4"	2 7/16"	2 7/16"	2" x 32"	55	2 1/2" x 8 1/4"	4" x 6"	3 3/4"
	7	20 & 24	ALL	EXP	5	169	7"	3 3/4"	26	7	2	1/2"	1/4"	3 @ 12 Ga.	1 13/16"	8 5/8"	38 1/2"	5 1/4"	2 5/8"	-	13/16"	16 1/4"	2"	2"	1 3/4" x 27"	55	2" x 4"	4" x 6"	3 3/8"
	7	21 & 23	ALL	EXP	10	185	7"	3 3/4"	26	7	2	1/2"	1/4"	3 @ 12 Ga.	1 13/16"	8 5/8"	38 1/2"	5 1/4"	2 5/8"	-	13/16"	16 1/4"	2"	2"	1 3/4" x 27"	55	2" x 4"	4" x 6"	3 3/8"
	7	22	ALL	FIX	10	185	7"	3 3/4"	26	7	2	1/2"	1/4"	3 @ 12 Ga.	1 13/16"	8"	45 1/4"	2 5/8"	2 5/8"	1 1/4"	1/2"	18 5/16"	2"	2"	1 3/4" x 27"	55	2" x 4"	4" x 6"	3 3/8"

Note: For additional details of the elastomeric bearing, see Dwg. No. 58079.

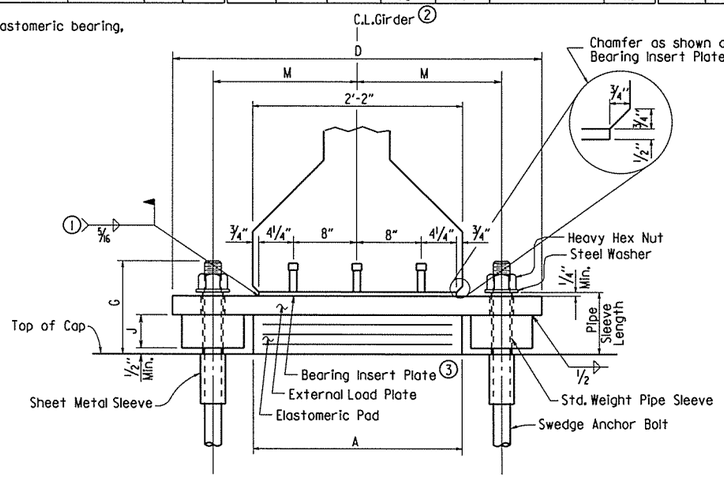


PLAN VIEW - AT BENT NOS. 1 THRU 16 BACK, 20 AHEAD, 21, 23, & 24

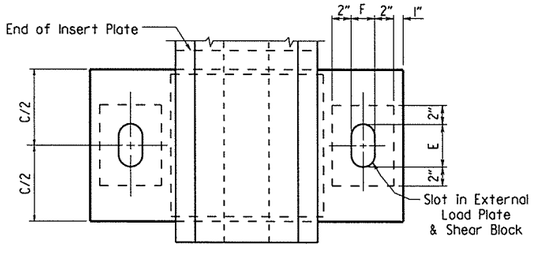


SIDE VIEW - AT BENT NOS. 1 THRU 16 BACK, 20 AHEAD, 21, 23, & 24

ELASTOMERIC BEARINGS @ PRESTRESSED CONC. GIRDERS WITHOUT SHEAR BLOCKS

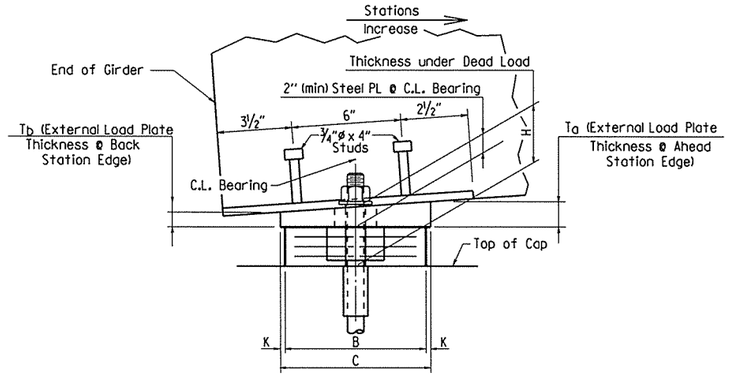


FRONT VIEW - AT BENT NO. 22



PLAN VIEW - AT BENT NO. 22

ELASTOMERIC BEARINGS @ PRESTRESSED CONC. GIRDERS WITH SHEAR BLOCKS



SIDE VIEW - AT BENT NO. 22

① Care shall be taken to ensure that the external load plate is in full and complete contact with the Bearing Insert Plate before welding begins.

② C. L. Elastomeric pad shall be aligned with C. L. Girder.

③ Bearing Insert Plate (M 270, Gr. 50W) & Studs shall be considered subsidiary to the item "Prestressed Concrete Girders."

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
1-29-16
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 2
DETAILS OF
ELASTOMERIC BEARINGS
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

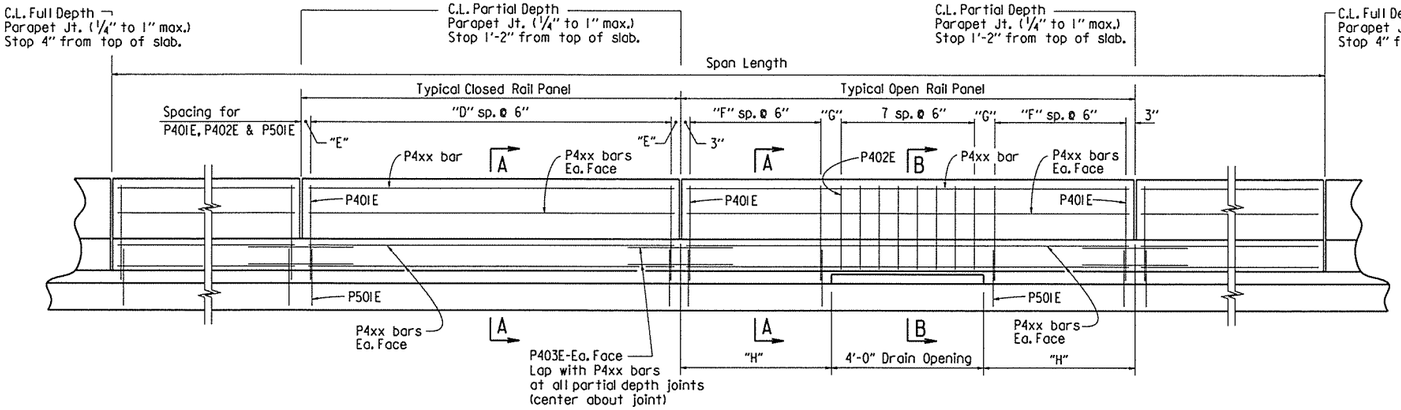
DRAWN BY: TMG DATE: 12-21-2015 FILENAME: b030415xl_e.dgn
CHECKED BY: [illegible] DATE: 01-08-16 SCALE: NO SCALE
DESIGNED BY: PCR DATE: 10/15

BRIDGE NO. 07378 DRAWING NO. 58080

PRINT DATE: 1/29/2016

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.		030415	57	131

(1) 07378 -DTLS. OF PARAPET RAILS- 58081



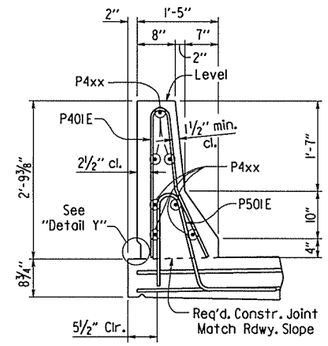
ELEVATION - CONCRETE PARAPET RAIL

Note:
For location of open and closed parapets, and full and partial depth joints, See:
Dwg. No. 58087 "HALF - REINFORCING PLAN - 237' UNIT (TYPE A)" and
Dwg. No. 58088 "REINFORCING PLAN - 237' UNIT (TYPE B)"
Dwg. No. 58093 "HALF - REINFORCING PLAN & POURING SEQUENCE - PLATE GIRDER UNIT"
Dwg. No. 58089 "REINFORCING PLAN - 316' UNIT"

TABLE OF PARAPET RAIL VARIABLES

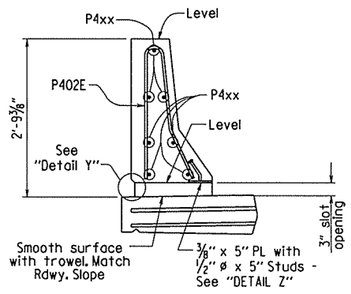
	237'-0" & 316'-0" Cont. Prestressed Concrete Girder Units						
	Panel Length	P4xx Bar	"D"	"E"	"F"	"G"	"H"
Closed Parapet	15'-6"	P404E	30	3"	—	—	—
Open Parapet	16'-0"	P405E	—	—	11	6"	6'-0"

	490'-0" Cont. Plate Girder Unit						
	Panel Length	P4xx Bar	"D"	"E"	"F"	"G"	"H"
Closed Parapet	12'-6"	P406E	24	3"	—	—	—
	14'-0"	P407E	27	3"	—	—	—
Open Parapet	16'-0"	P405E	—	—	11	6"	6'-0"



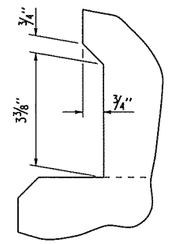
SECTION A-A

(Closed)



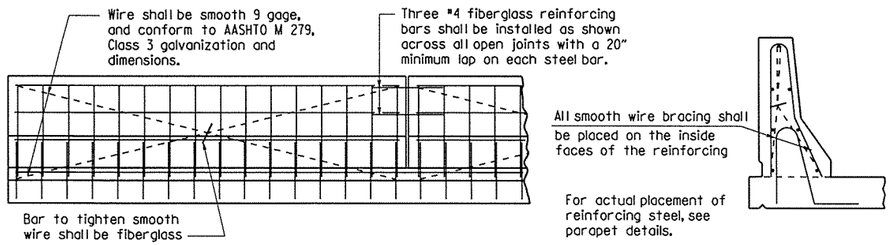
SECTION B-B

(Open)



DETAIL Y

Note: Longitudinal reinforcing in slab not shown.

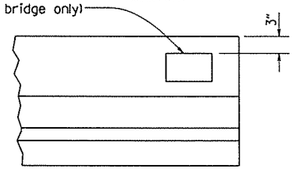


All panels shall be braced as required to prevent racking. All open joints shall be sawed as soon as practical to a minimum width of ¼". To control cracking before sawing, all joints must be grooved before the concrete is set. Sawing of the joints must be controlled so it will follow the grooved joint.

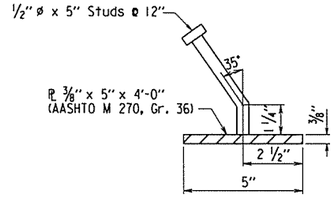
The extruded parapet shall conform to the horizontal and vertical lines shown on the plans or as directed by the Engineer and shall present a smooth, uniform appearance and texture. Unless otherwise noted, exposed surfaces may be given a light brush finish or a Class 3, Textured Coating Finish, in place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

DETAILS OF OPTIONAL SLIPFORMING OF CONCRETE PARAPET RAIL

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



NAME PLATE DETAIL



DETAIL Z

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 Plate Girder Spans (M 270, Gr. 50W)."

Parapet studs shall be 5" long, granular flux filled, solid fluxed or equal, and automatically end welded to the plate. Studs and plates shall meet the requirements of Section 807 and shall be measured and paid for as "Structural Steel in Plate Girder Spans (M 270, Gr. 50W)."

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
1-29-16
CHARLES R. ELLIS
BRIDGE ENGINEER

DETAILS OF CONCRETE PARAPET RAILS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: EOR DATE: 10/15/15 FILENAME: b030415_cl.dgn
CHECKED BY: [illegible] DATE: 12/08/15 SCALE: NO SCALE
DESIGNED BY: PLT DATE: 9/15

BRIDGE NO. 07378 DRAWING NO. 58081

PRINT DATE: 1/27/2016

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				6	ARK.			
				JOB NO.		030415	58	171
				①		07378 - COMMON DETAILS - 58082		

Slab Reinforcing:

Longitudinal: S402E as shown
S601E as shown over int. supports.
See Reinforcing Plans on Dwg. Nos. 58087, 58088, and 58089

Transverse: S502E @ 12" o.c. bent up over girders — Alternate
S501E @ 12" o.c. in top, S401E @ 12" o.c. in bottom
S503E @ 6" in top of overhangs (bundled with #5 bars)

NOTE: At the Contractor's option, in lieu of providing bars S502E, one epoxy coated #5 bar top and bottom may be substituted for each bar. Payment for reinforcing will be based on the weight of bars S502E. Bars in top and bottom shall be epoxy coated.

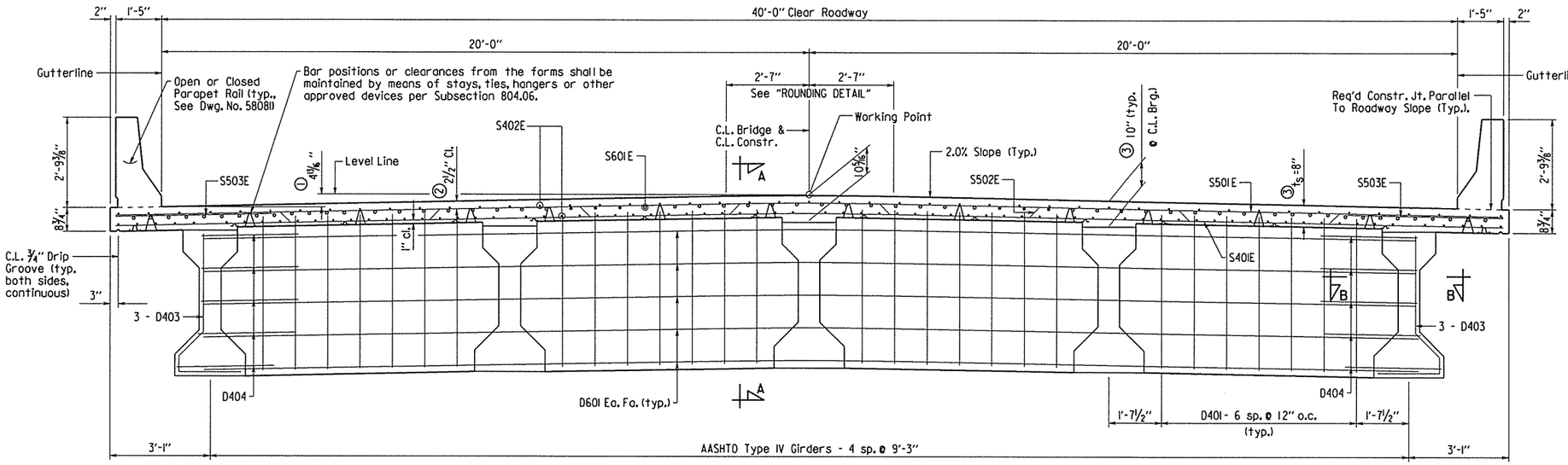
NOTE: Class I Protective Surface Treatment shall be applied to the Roadway Surface and to the Face & Top of the Concrete Parapet Rail.

NOTE: All bars designated with an "E" suffix shall be Epoxy Coated.

① Working point to gutterline.

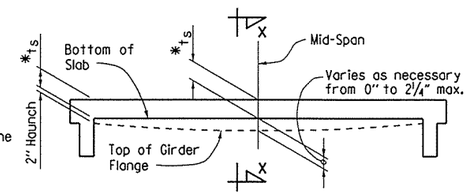
② Tolerance: Minus = 1/4"; Plus equal to the amount of slab thickening used to meet slab thickness tolerance. See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE".

③ See "Adjustment for Slab Thickness Tolerance".

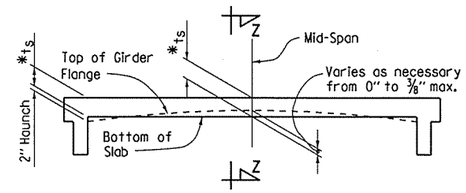


TYPICAL SECTION AT INTERMEDIATE BENTS WITHOUT EXPANSION JOINT

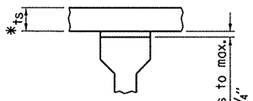
BENTS 2, 3, 5, 6, 8, 9, 11, 12, 14, 15, 21, 22 AND 23
LOOKING AHEAD
1/2" = 1'-0"



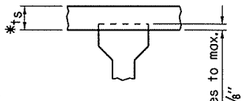
GIRDER ELEVATION



GIRDER ELEVATION



SECTION X-X



SECTION Z-Z

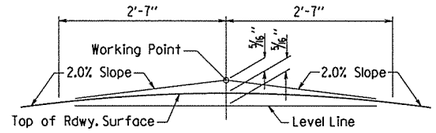
NOTE:
ts = slab thickness as shown on superstructure details - See "TYPICAL SECTION AT INTERMEDIATE BENTS WITHOUT EXPANSION JOINT".

*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. See Std. Dwg. No. 55005 for tolerances when permanent steel deck forms are used.

"Girder Elevation" sketches show the range of acceptablity of the top of the Girder relative to bottom of slab after the placement of the slab. When the top of the Girder projects more than 3/8" into the slab, a raise in grade will be necessary. Girders shall be set in a sufficient number of spans over suitable increments so the revised grade line will produce a smooth riding surface. Variation of haunch height will be at the Contractor's expense.

ADJUSTMENT FOR SLAB THICKNESS TOLERANCE

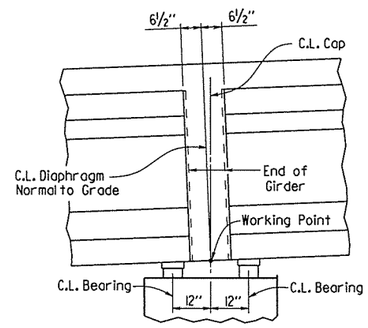
No Scale



NOTE: Working Point matches Theoretical Roadway Grade.

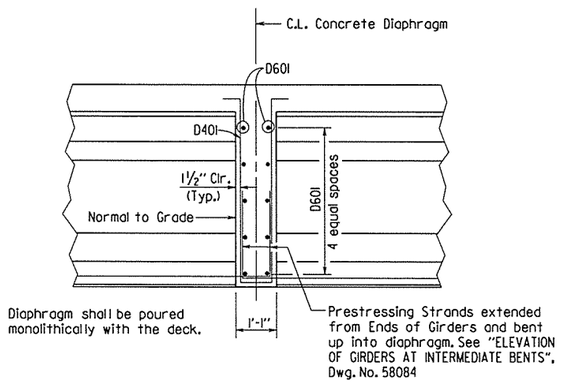
ROUNDING DETAIL

No Scale



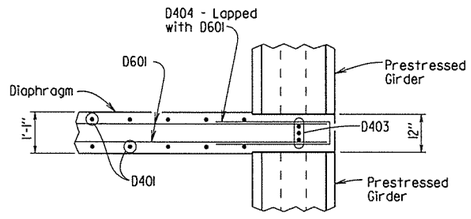
VIEW AT INTERMEDIATE BENT WITHOUT JOINT

NTS



SECTION A-A

Intermediate Bent Diaphragm
NTS



SECTION B-B

NTS

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
1-29-16
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 1 OF 5
COMMON DETAILS OF CONTINUOUS PRESTRESSED CONCRETE GIRDER UNITS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: EOR DATE: 10/15/15 FILENAME: b030415_cl.dgn
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BRIDGE NO. 07378 DRAWING NO. 58082

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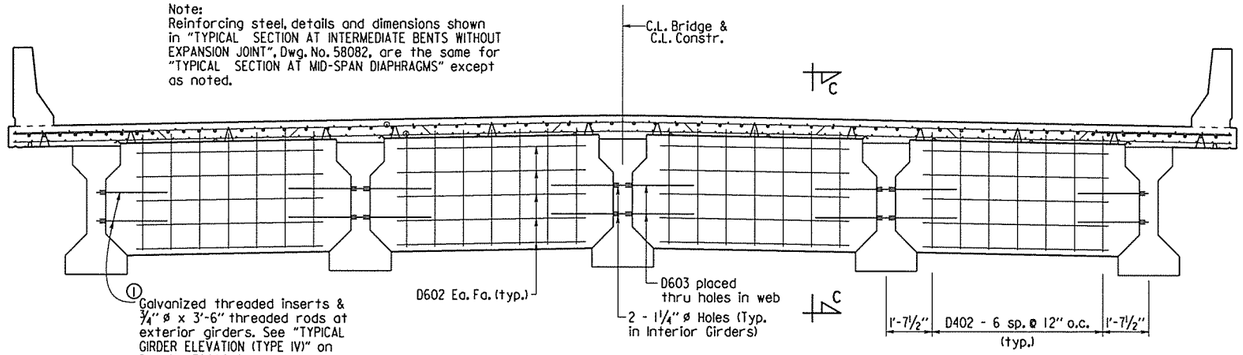
				6	ARK.			
				JOB NO.		030415	59	131
				①	07378 - COMMON DETAILS - 58083			

Note:
Reinforcing steel, details and dimensions shown in "TYPICAL SECTION AT INTERMEDIATE BENTS WITHOUT EXPANSION JOINT", Dwg. No. 58082, are the same for "TYPICAL SECTION AT MID-SPAN DIAPHRAGMS" except as noted.

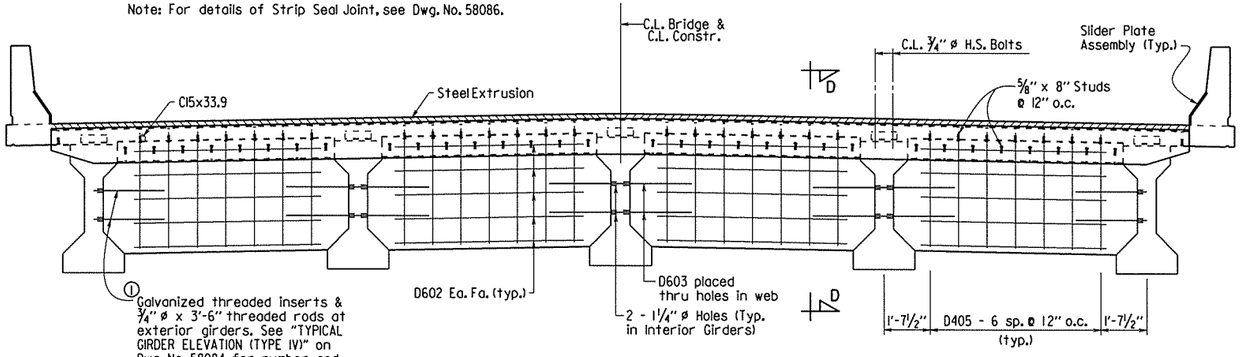


TYPICAL SECTION AT MID-SPAN DIAPHRAGMS

LOOKING AHEAD
⅜" = 1'-0"

EXPANSION DEVICE:
Roadway Channel - C15x33.9
Connection Angle - C15x33.9 (Cope one flange)
Neoprene Strip Seal with Steel Extrusion

Note: For details of Strip Seal Joint, see Dwg. No. 58086.

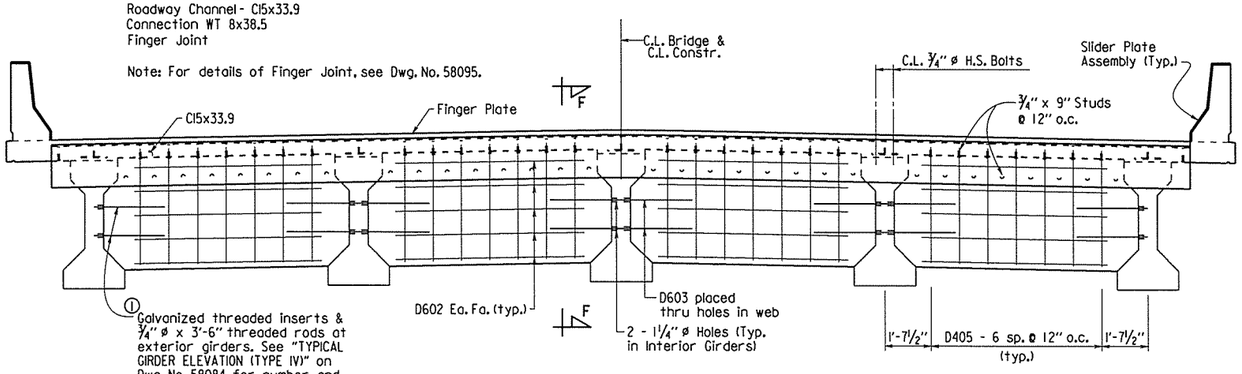


TYPICAL SECTION AT ENDS OF UNITS (STRIP SEAL JOINTS)

LOOKING AHEAD
BENTS 1, 4, 7, 10, 13 AND 24
⅜" = 1'-0"

EXPANSION DEVICE:
Roadway Channel - C15x33.9
Connection WT 8x38.5
Finger Joint

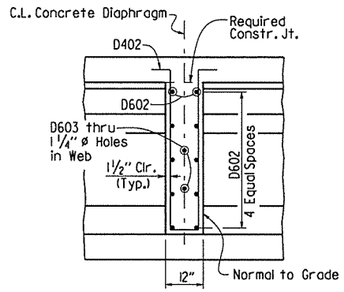
Note: For details of Finger Joint, see Dwg. No. 58095.



TYPICAL SECTION AT ENDS OF UNITS (FINGER JOINTS)

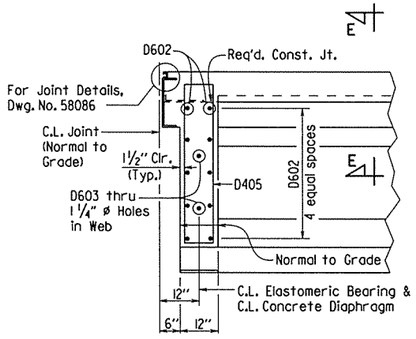
LOOKING AHEAD
BENTS 16 AND 20
⅜" = 1'-0"

① Galvanized Threaded Inserts shall be Dayton-Richmond F-42 Loop Ferrule Inserts or approved equal. ¾" ø Galvanized Threaded Rods shall be AASHTO M 270, Grade 36 or Grade 60 (Fy = 60,000 psi) conforming to AASHTO M 31 or M 322, Type A with mill test reports. Galvanizing shall be in accordance with AASHTO M 232, Class C or AASHTO M 298, Class 50. These items will not be paid for directly, but shall be considered subsidiary to the item "Prestressed Concrete Girders (Type IV)".



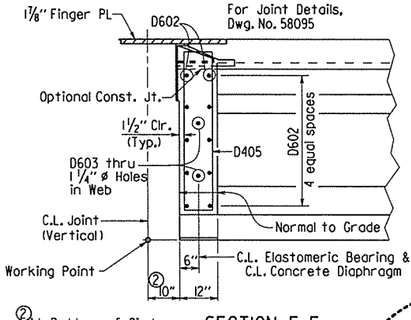
SECTION C-C

Midspan Concrete Diaphragm
½" = 1'-0"



SECTION D-D

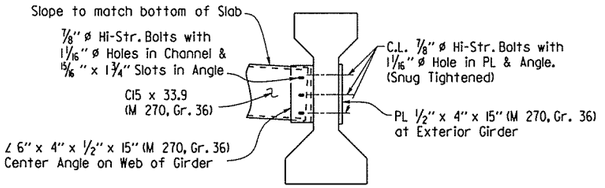
End of Unit Diaphragm
@ Strip Seal Joints
½" = 1'-0"



② At Bottom of Girder from working point

SECTION F-F

End of Unit Diaphragm
@ Finger Joints
½" = 1'-0"

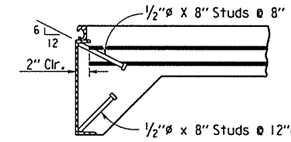


A standard washer shall be supplied under both the nut and the head of the ⅞" ø H.S. bolts. An additional plate washer shall cover the angle slots.

DETAILS OF ALTERNATE MID-SPAN DIAPHRAGM

No Scale

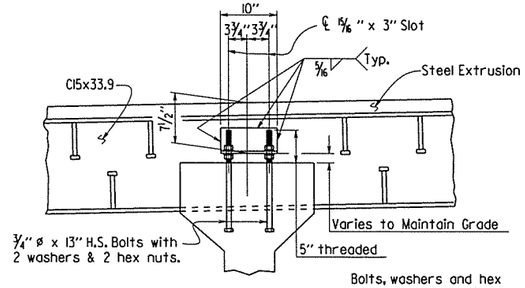
Note: Galvanized Steel Diaphragms may be used in place of Concrete at Mid-Span Diaphragms only. All components of the Alternate Steel Diaphragms shall be Galvanized. Payment will be based on concrete diaphragms.



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

DETAILS OF ALTERNATE ANCHORS AND PLACEMENT OF LONGITUDINAL REINFORCEMENT @ STRIP SEAL JT.

No Scale



SECTION E-E

1" = 1'-0"

Bolts, washers and hex nuts shall be considered subsidiary to the item "Prestressed Concrete Girders (Type IV)".

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9235
1-29-16
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 2 OF 5
COMMON DETAILS OF CONTINUOUS PRESTRESSED CONCRETE GIRDER UNITS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: EOR DATE: 10/15/15
CHECKED BY: VB DATE: 1/28/15
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BRIDGE NO. 07378 DRAWING NO. 58083

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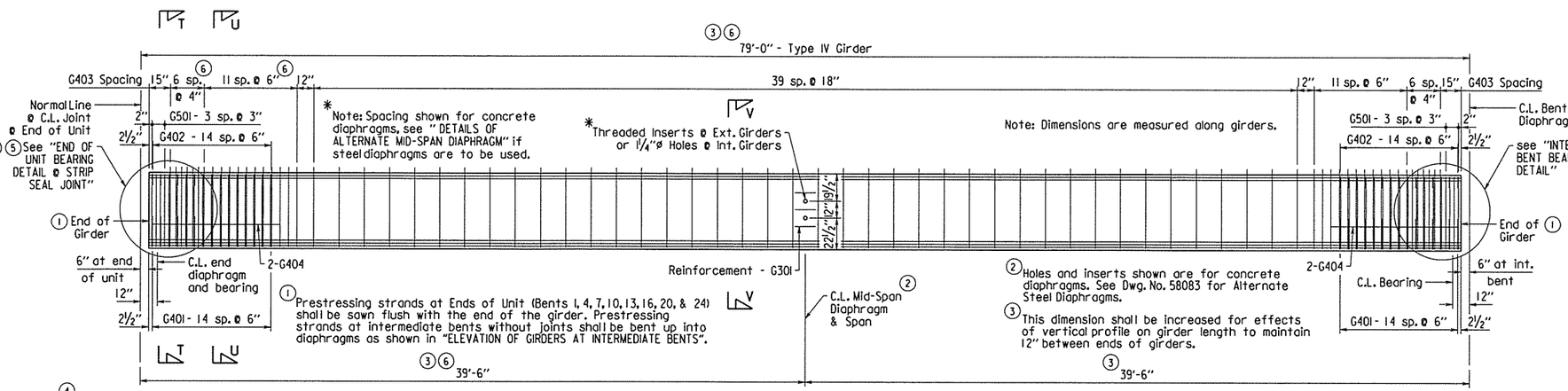
				JOB NO.		030415	60	131
				(1)	07378 - COMMON DETAILS - 58084			



(4) See "END OF UNIT BEARING DETAIL @ FINGER JOINT" for details of end spans at finger joints.

(5) See "END OF UNIT BEARING DETAIL @ STRIP SEAL JOINT" for details of end spans at finger joints.

(6) Girder Length is 77'-8" for spans adjacent to finger joints. See "END OF UNIT BEARING DETAIL @ FINGER JOINT" for adjusted G403 spacing for the Girder end adjacent to the finger joint.

TYPICAL GIRDER ELEVATION (TYPE IV)

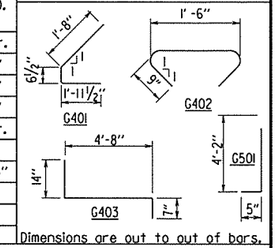
(END SPAN WITH STRIP SEAL JOINT SHOWN)

¼" = 1'-0"

BAR LIST - PER GIRDER

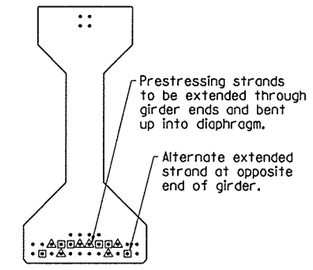
MARK	NO. REQ'D.	LENGTH	P.D.
G301	6	1'-3"	Str.
G401	60	4'-1"	2"
G402	30	3'-1"	3"
G403	152	6'-3"	2"
G404	4	7'-7"	Str.
G501	16	4'-6"	2½"

BENDING DIAGRAMS



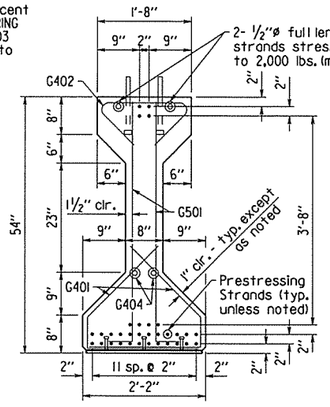
Dimensions are out to out of bars.

Note: All bars in BAR LIST shall be subsidiary to the item "Prestressed Concrete Girders (Type IV)". For Bar List of Span Reinforcing, See Dwg. Nos. 58087 & 58089.



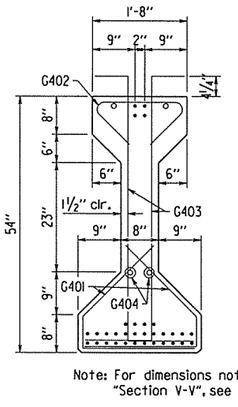
POSITIVE MOMENT CONNECTIONS

¾" = 1'-0"



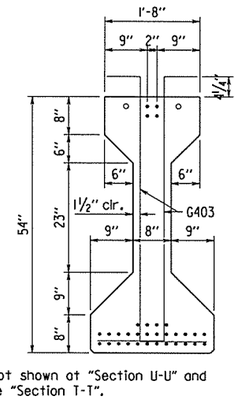
SECTION T-T

¾" = 1'-0"



SECTION U-U

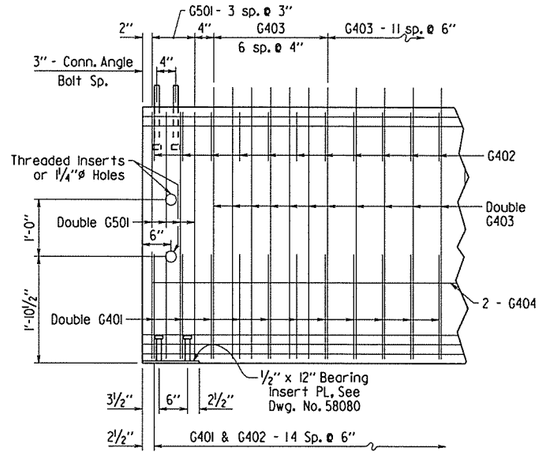
¾" = 1'-0"



SECTION V-V

¾" = 1'-0"

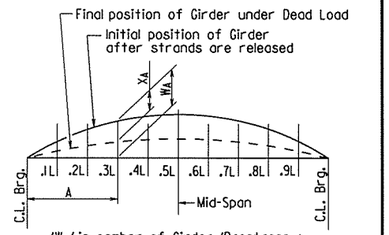
Note: For dimensions not shown at "Section U-U" and "Section V-V", see "Section T-T".



END OF UNIT BEARING DETAIL @ STRIP SEAL JOINT

Showing reinforcing in relation to bearing plate assembly and 1¼"ø holes

No Scale



'W_A' is camber of Girder (Prestress + Dead Load of Girder @ 60 days after release)

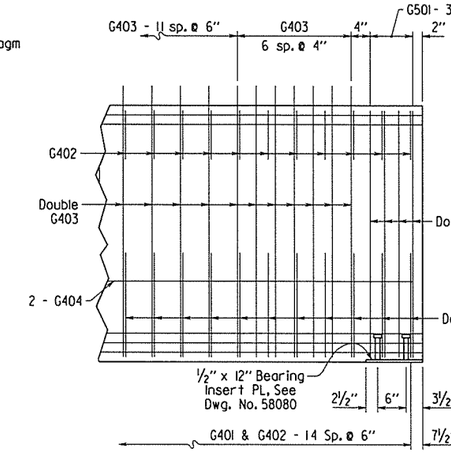
'X_A' is Dead Load Deflection of Slab + Diaphragms + Composite Dead Load

Span Pt.	Inches	
	W_A	X_A
0.00	0.000	0.000
0.10	0.509	0.268
0.20	0.903	0.429
0.30	1.150	0.494
0.40	1.298	0.525
0.50	1.345	0.533
0.60	1.298	0.525
0.70	1.150	0.494
0.80	0.903	0.429
0.90	0.509	0.268
1.00	0.000	0.000

CAMBER & DEFLECTIONS (INCHES)

No Scale

Note: 'W_A' & 'X_A' are based on the required minimum concrete strength and may vary from the dimension shown. 'W_A' & 'X_A' shall be measured along bottom of girders unless otherwise approved by the Engineer. See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE" on Dwg. No. 58082 for limitations of the girder final position under dead load. The Contractor is responsible for any adjustment necessary to meet slab thickness tolerance and to achieve an acceptable finished grade. No payment shall be made for any additional concrete in the haunches when camber is less than shown.



* Shop bend 6 prestressing strands from each end of girder into diaphragm as required. See "POSITIVE MOMENT CONNECTIONS" detail for alternating pattern.

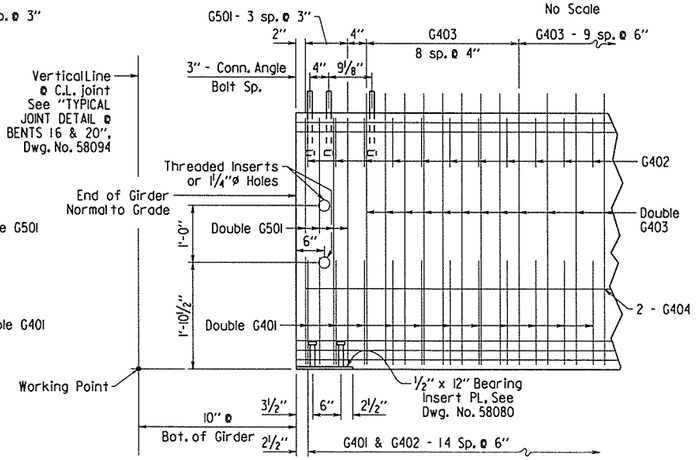
ELEVATION OF GIRDERS AT INTERMEDIATE BENTS

No Scale

INTERMEDIATE BENT BEARING DETAIL

Showing reinforcing in relation to bearing plate assembly

No Scale



END OF UNIT BEARING DETAIL @ FINGER JOINT

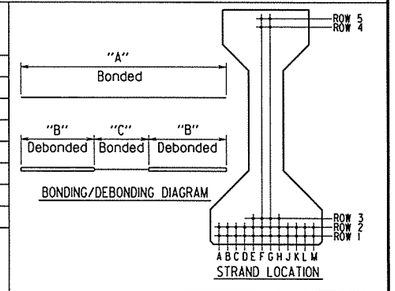
Showing reinforcing in relation to bearing plate assembly and 1¼"ø holes

No Scale

TABLE OF GIRDER VARIABLES

STRAND DESIGNATION		VARIABLES OF BONDING/DEBONDING		
ROW	LINE	"A"	"B"	"C"
1	C,K	—	10'	58'
1	F,G	—	15'	48'
1	A,B,D,E,H,J,L,M	78'	—	—
2	A,B,C,D,E,F,G,H,J,K,L,M	78'	—	—
3	E,F,G,H	78'	—	—
4	F,G	78'	—	—
5	G,G	78'	—	—

Note: Prestressing Strands shall be considered subsidiary to the item "PRESTRESSED CONCRETE GIRDERS (TYPE IV)"



STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
* * *
No. 9235
1-29-16
CHARLES R. ELLIS

BRIDGE ENGINEER

PRINT DATE: 1/28/2016

SHEET 3 OF 5
COMMON DETAILS OF CONTINUOUS PRESTRESSED CONCRETE GIRDER UNITS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: EOR DATE: 10/15/15 FILENAME: b030415_cl.dgn

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DESIGNED BY: PGT DATE: 9/15

BRIDGE NO. 07378 DRAWING NO. 58084

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				6	ARK.			
				JOB NO.		030415	4 of	131
				①		07378 - COMMON DETAILS - 58085		

PRESTRESSED GIRDERS GENERAL NOTES

Pretensioning steel shall be ½" dia. Low Relaxation strands with a minimum ultimate strength of 270 ksi, and shall conform to AASHTO M 203.

Distances from the forms and spacing of the Prestressing Steel shall be maintained by stays, ties, hangers, spacers, or other approved supports which shall be shown on the Shop Drawings.

Strands requiring debonding shall be blanketed over the regions shown with sheathing. Sheathing shall be either split plastic or solid plastic with a minimum wall thickness of 0.025 inch. To prevent concrete from contacting the strands within the debonded length, sheathing shall be thoroughly taped at each end. Split sheathing shall be additionally sealed along its entire length by thorough taping.

All girders shall be Type IV as noted on the details and shall be the standard prestressed sections adopted by the Joint Committee of AASHTO and the Prestressed Concrete Institute. All girders shall be cast in concrete floored pallets and in metal forms. All work and materials shall be as specified in Subsection 802.22.

Concrete shall be Class S and shall have a minimum 28 day compressive strength, f'c = 6,000 psi. The initial tensile force applied to each ½" dia. strand shall be 31,000 lbs. except as noted. Transfer of this tensioning load to the girder shall not be done until the compressive strength of the concrete is 5,000 psi.

Dimensions shown are to the center of the strands.

The Contractor shall submit the method and sequence for release of strands to the Engineer for approval prior to casting of the girders.

The first 16" along the tops of the Girders at beginning and the end of unit shall have a smooth surface. The tops of the remaining length of the girders shall be rough floated at approximately the time of set. This portion of the tops of girders shall be scrubbed transversely with a coarse wire brush to remove all laitance and to produce a roughened surface for bonding the slab.

Extreme care shall be exercised in handling and moving precast prestressed concrete girders. Girders must be maintained in an upright position at all times and must be picked up from points near the girder ends. Disregard of this requirement may lead to collapse of the girder. The Contractor's proposed lifting details shall be submitted on shop drawings to the Engineer for approval. The use of holes for lifting purposes will not be permitted.

The points of support and directions of the reactions with respect to the member shall be approximately the same during transportation and storage as when the member is in its final position.

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

The Contractor may submit alternate strand patterns with design calculations for review and approval.

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

SUPERSTRUCTURE 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), with 2013 Interim Revisions.

LIVE LOADING: HL-93

REINFORCING STEEL: Reinforcing Steel shall be Grade 60 (fy = 60,000 psi.) conforming to AASHTO M31 or M322, Type A with mill test reports. Reinforcing steel shall be accurately located in the forms and firmly held in place by steel wire supports sufficient in size and number to prevent displacement during the course of construction. The wire supports will not be paid for directly but will be considered subsidiary to the item of "Epoxy Coated Reinforcing Steel (Grade 60)".

CONCRETE: Concrete in Slab, Parapet, and Diaphragms shall be Class S (AE) with a minimum 28 day compressive strength f'c = 4,000 psi and shall be poured in the dry. Excluding diaphragms located within closure pours, all end of unit and midspan diaphragms shall be cast in place and poured a minimum of 48 hours before the slab is poured. Intermediate bent diaphragms shall be cast monolithically with the slab. Removable forms shall be used hen pouring diaphragms. The slab and intermediate bent diaphragms for the Prestressed Concrete Girder Units shall not be poured until at least 90 days after the release of the Prestressing Strands.

All exposed corners to be chamfered ¾" unless otherwise noted.

The superstructure details shown are for when removable deck forming is used and are the basis for measurement of Class S (AE) Concrete. See Std. Dwg. No. 55005 for allowable modifications and for tolerances when permanent steel bridge deck forms are used.

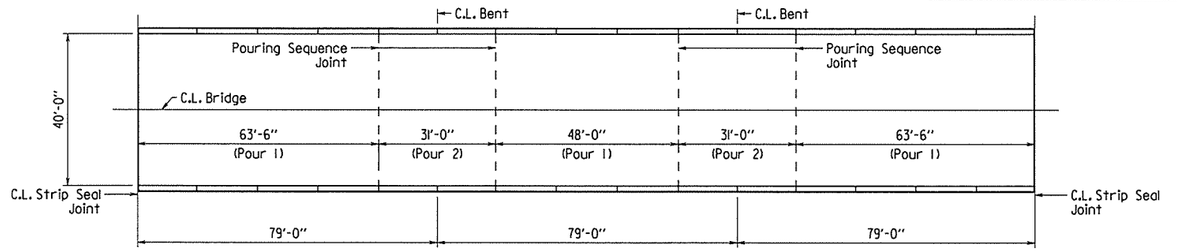
Concrete in bridge superstructure shall be placed, consolidated and screeded off for the entire pour before any concrete has taken its initial set. This may require the use of a retarding agent. The concrete bridge deck shall be given a tine finish as specified for final finishing in Subsection 802.19 for a Class 5 Tined Bridge Roadway Surface Finish. Movement of the finishing machine across the new concrete shall be on planks placed on the surface and shall be prohibited for 72 hours after finishing the pour. Sufficient concrete must be placed ahead of the strike-off to fully load the girder.

STRUCTURAL STEEL: All Structural Steel shall be AASHTO M270, Gr. 50W unless otherwise noted and shall be aid for at the unit price bid for "Structural Steel in Plate Girder Spans (M270, Gr. 50W). All exposed surfaces to be cleaned in accordance with Subsection 807.84(e).

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.

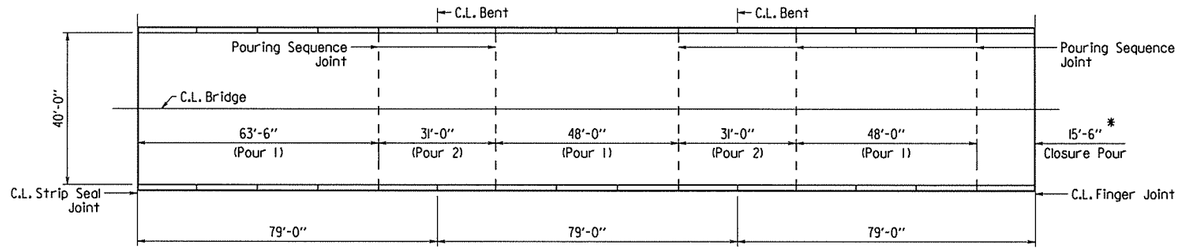
All welding that is to be done during fabrication of structural steel, including temporary welds, shall be detailed on he shop drawings and submitted for approval. If additional welds are required, whether permanent or temporary formal request with detailed drawings shall be submitted to the Engineer for approval. All welding shall conform to Subsection 807.26.

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



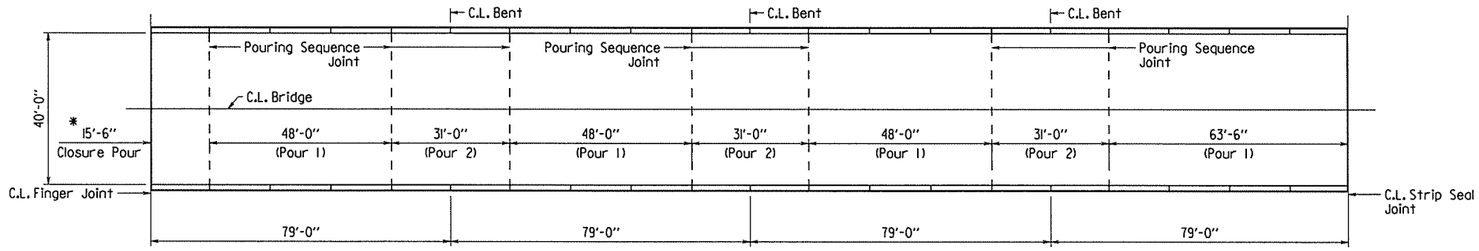
SLAB POURING SEQUENCE

237'-0" PRESTRESSED CONCRETE GIRDER UNIT
WITH STRIP SEAL JOINT ON EACH END



SLAB POURING SEQUENCE

237'-0" PRESTRESSED CONCRETE GIRDER UNIT
WITH STRIP SEAL JOINT ON ONE END AND FINGER JOINT ON THE OTHER END



SLAB POURING SEQUENCE

316'-0" PRESTRESSED CONCRETE GIRDER UNIT

POURING SEQUENCE NOTES:

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

Any railing pours made before the entire slab unit has been placed must be approved by the Engineer. The Contractor must obtain approval from the Engineer for any deviations from the pouring sequences shown.

*After all incremental pours on the Units adjacent to a Finger Joint are completed, closure pours on each side of Finger Joint shall be poured simultaneously. A minimum of 48 hours shall elapse between the last incremental pour and the closure pours.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
1-29-16
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 4 OF 5
COMMON DETAILS OF CONTINUOUS PRESTRESSED CONCRETE GIRDER UNITS

ROUTE SEC.

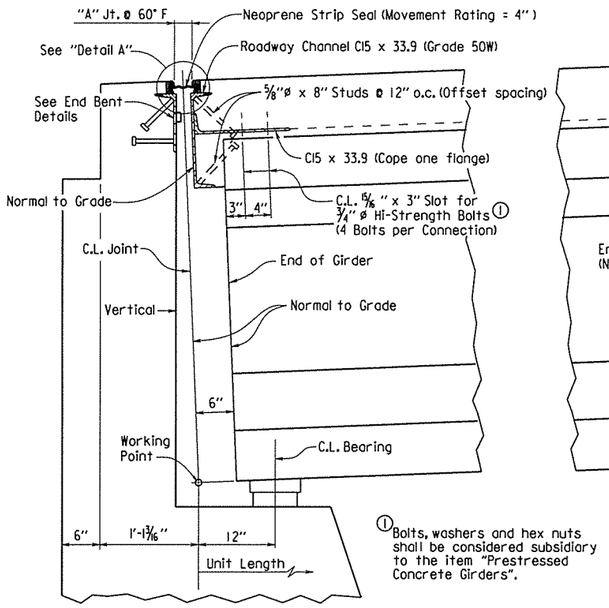
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: EOR DATE: 10/15/15 FILENAME: b030415_cl.dgn
CHECKED BY: YE DATE: 10/28/15 SCALE: 1" = 20'-0"
DESIGNED BY: PGT DATE: 9/15

BRIDGE NO. 07378 DRAWING NO. 58085

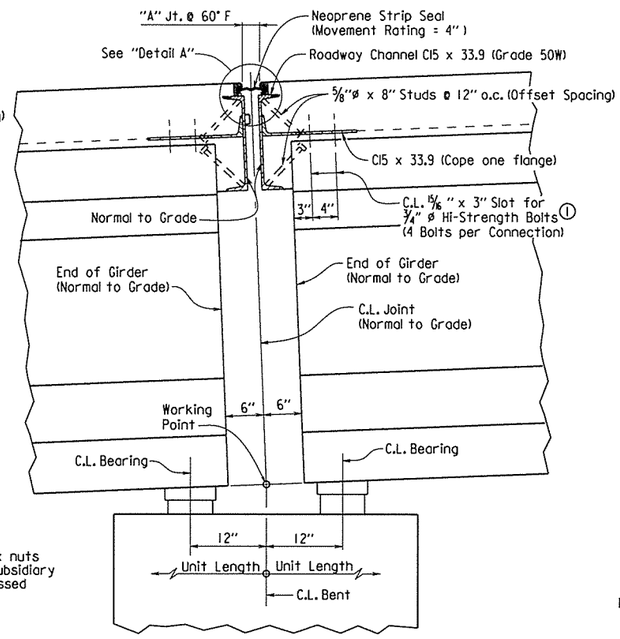
PRINT DATE: 1/29/2016

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.		030415	62	131
				①		07378 - COMMON DETAILS - 58086		

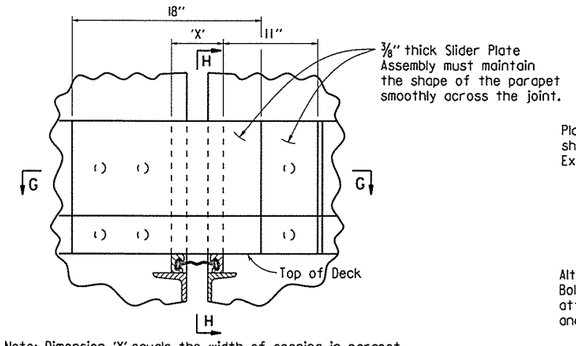


① Bolts, washers and hex nuts shall be considered subsidiary to the item "Prestressed Concrete Girders".

SECTION THRU JOINT AT END BENTS

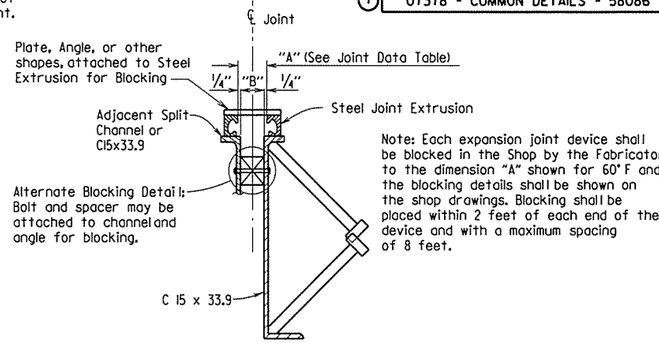


SECTION THRU JOINT AT INT. BENT NOS. 4, 7, 10, AND 13



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

DETAIL OF NEOPRENE STRIP SEAL AT CURB



Note: Each expansion joint device shall be blocked in the Shop by the Fabricator to the dimension "A" shown for 60° F and the blocking details shall be shown on the shop drawings. Blocking shall be placed within 2 feet of each end of the device and with a maximum spacing of 8 feet.

DETAILS FOR BLOCKING EXPANSION JOINT DEVICE

EXPANSION DEVICE INSTALLATION AT END BENTS:

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

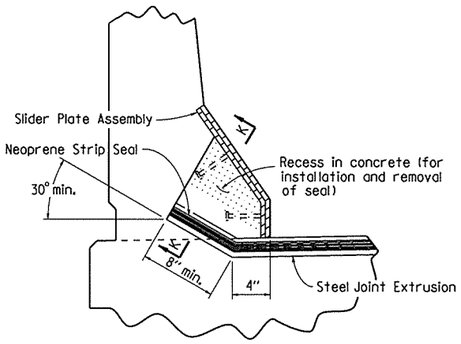
1) The concrete span pour adjacent to joint shall be placed before the end bent backwall is placed. After the end bent backwall forms are in place and the girders erected, the blocked expansion device shall be installed and adjusted for grade. All connection bolts shall be fully tightened prior to placing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

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

EXPANSION DEVICE INSTALLATION AT INTERMEDIATE BENTS:

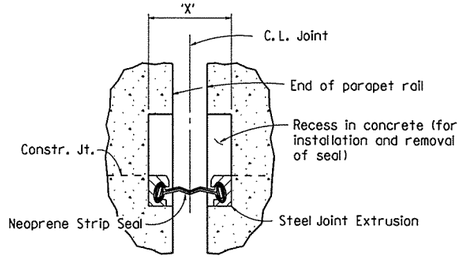
After all girders on each side of the joint are erected the blocked expansion device shall be installed and adjusted for grade. Deck concrete shall be placed for the entire unit or span on one side of the joint before deck concrete on the other side is placed. Connection bolts for the first side to have deck concrete placed shall be completely bolted. Bolts on the other side shall be loosely installed so that thermal and rotational movements will not be restricted during concrete placement on the first side.

Connection bolts on the second side shall remain loose until the concrete pour adjacent to the joint is to be placed. Immediately prior to pouring the span concrete on the second side, the blocking shall be removed, the joint adjusted for temperature and grade, and the connection bolts tightened.

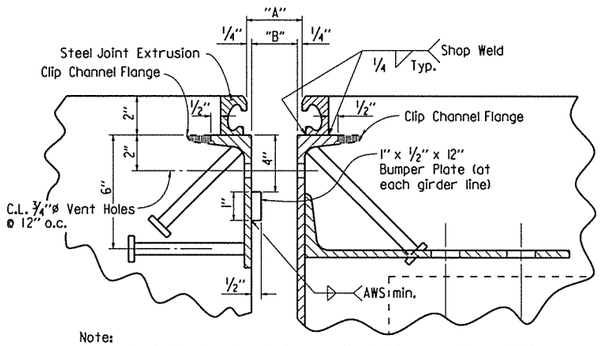


Note: Details of Joint turn-up in curb and parapet are general and show basic design controls only.

SECTION H-H



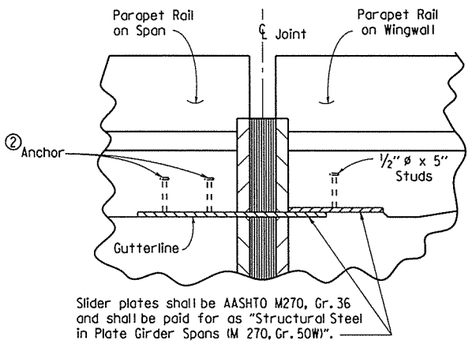
SECTION K-K



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

DETAIL A

Detail is shown at End Bents.
Details at Intermediate Bents are similar.



Slider plates shall be AASHTO M270, Gr. 36 and shall be paid for as "Structural Steel in Plate Girder Spans (M 270, Gr. 50W)".

SECTION G-G

② The method of attachment of the slider plate assembly must be such that it may be removed to provide for future replacement of the neoprene seal. Anchors will not be paid for directly, but shall be considered subsidiary to "Structural Steel in Plate Girder Spans (M 270, Gr. 50W)".

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

STRIP SEAL JOINT DATA

Bent No(s).	Movement Rating (inch)	"A" Width Perpendicular to Joint at 24 Hour Average Temperature③ of:			"B" Width Perpendicular to Joint at 24 Hour Average Temperature③ of:		
		40° F	60° F	80° F	40° F	60° F	80° F
1 & 24	4"	2 3/4"	2 1/2"	2 1/4"	2 1/4"	2"	1 3/4"
4, 7, 10 & 13	4"	3 1/16"	2 1/2"	1 5/8"	2 3/16"	2"	1 1/16"

③ 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.

GENERAL NOTES FOR NEOPRENE STRIP SEAL JOINTS:

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

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

All structural steel shall be Grade 50W except for the parapet slider plates which shall be Grade 36. Grade 50W steel shall not be painted and all exposed surfaces shall be cleaned in accordance with subsection 807.84(e). All exposed surfaces of the parapet slider plates shall be cleaned and painted in accordance with Section 638. Painting will not be paid for directly and structural steel completely embedded in concrete need not be painted. All structural steel shall be paid for as "Structural Steel in Plate Girder Spans (M 270, Gr. 50W)", except as noted.

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

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
1-29-16
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 5 OF 5
COMMON DETAILS OF CONTINUOUS PRESTRESSED CONCRETE GIRDER UNITS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: EOR DATE: 10/15/15 FILENAME: b030415_cl.dgn
CHECKED BY: VE DATE: 10/26/15 SCALE: No Scale
DESIGNED BY: PGT DATE: 9/15

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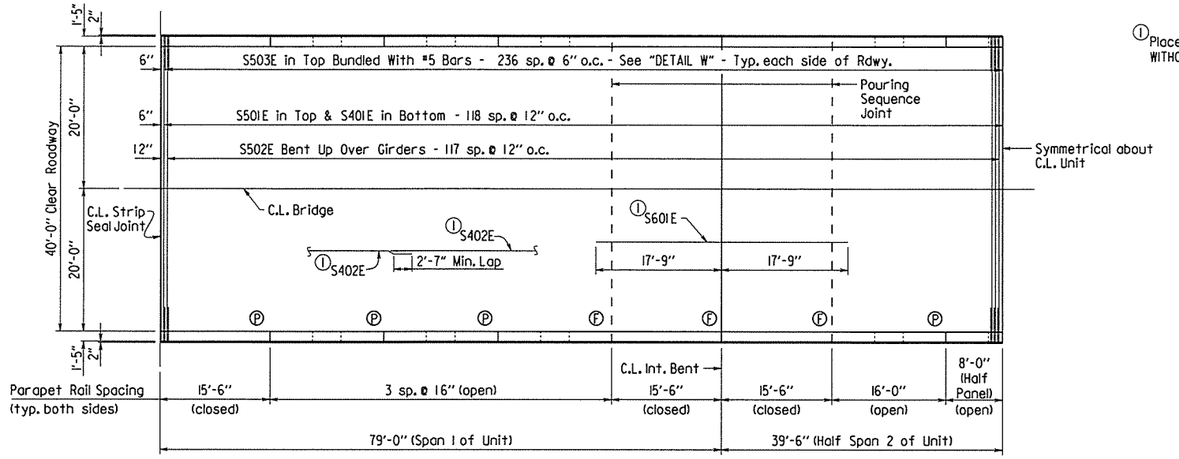
PRINT DATE: 1/28/2016

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.		030415	63	131
				①	07378 - 237' CONT. UNIT -		58087	



HALF-REINFORCING PLAN - 237'-0" UNIT (TYPE A)

Units 1, 2, 3 & 4

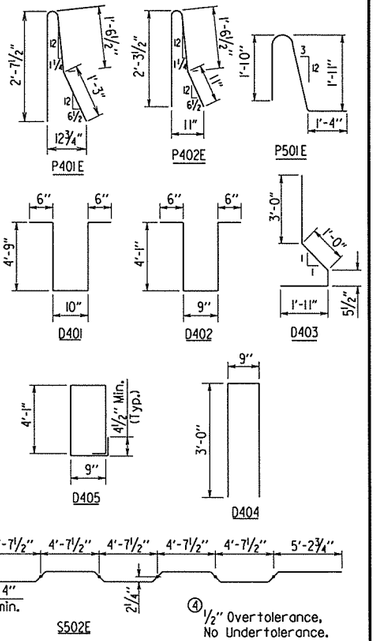
1/12 " = 1'-0"

① Placed as Shown in "TYPICAL SECTION AT INTERMEDIATE BENTS WITHOUT EXPANSION JOINT", See Dwg. No. 58082

BAR LIST - PER 237'-0" UNIT

Mark	No. Req'd.		Length		Pin Dia.
	Type A	Type B	Type A	Type B	
S401E	237	234	42'-10"	42'-10"	Str.
S402E	847	847	36'-0"	36'-0"	Str.
S501E	237	234	42'-10"	42'-10"	Str.
S502E	236	235	43'-8"	43'-8"	3"
S503E	946	938	4'-10"	4'-10"	Str.
S504E	-	12	-	7'-11"	Str.
S505E	-	6	-	2'-3"	Str.
S601E	124	124	35'-6"	35'-6"	Str.
P401E	804	804	5'-6"	5'-6"	3"
P402E	144	144	4'-10"	4'-10"	3"
P403E	64	64	5'-6"	5'-6"	Str.
P404E	84	84	15'-2"	15'-2"	Str.
P405E	126	126	15'-8"	15'-8"	Str.
P501E	804	804	4'-10"	4'-10"	3 3/4"
D401	56	56	11'-0"	11'-0"	2"
D402	84	84	9'-7"	9'-7"	2"
D403	12	12	6'-3"	6'-3"	2"
D404	20	20	6'-7"	6'-7"	2"
D405	56	56	10'-0"	10'-0"	2"
D601	20	20	37'-6"	37'-6"	Str.
D602	200	200	6'-6"	6'-6"	Str.
D603	30	30	5'-0"	5'-0"	Str.

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



All bars designated with an "E" suffix shall be Epoxy Coated.

② For "DETAILS OF ALTERNATE MID-SPAN DIAPHRAGM" see Dwg. No. 58083

③ After erection, the ends of girders at all bents shall be blocked using temporary blocking to maintain proper location on bent caps until all bearings are welded and diaphragms are poured.

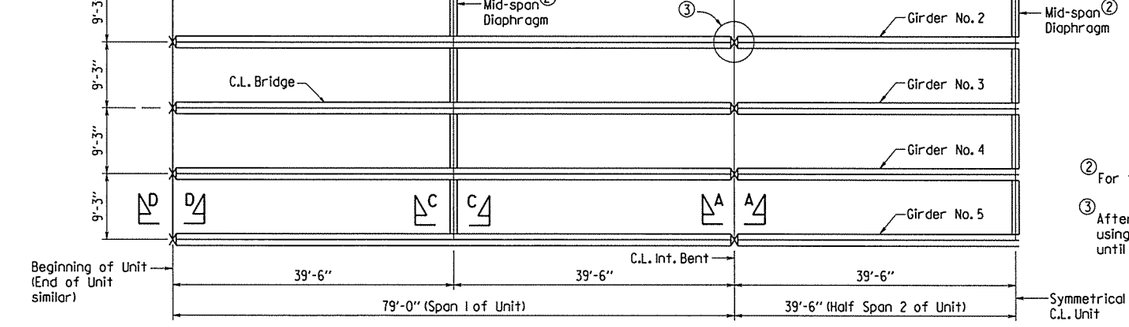
Notes:
Required slab joints and pouring sequence construction joints shall align with parapet joints at gutterline.

Location of full and partial depth parapet joints are similar for both sides of roadway.

Ⓕ Full depth parapet joint at this location

Ⓟ Partial depth parapet joint at this location

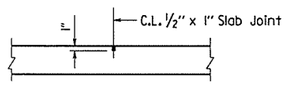
For "SECTION A-A", See Dwg. No. 58082
For "SECTION C-C" & "SECTION D-D", See Dwg. No. 58083



HALF-FRAMING PLAN - 237'-0" UNIT (TYPE A)

Units 1, 2, 3 & 4

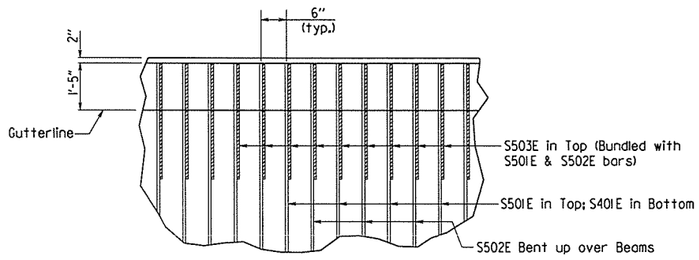
1/12 " = 1'-0"



Use 1/2" x 1" Type 3 or 4 Joint Sealer. See Subsections 501.02(h) and 501.05(j). Backer rod filler will not be required. Joint Sealer shall be measured and paid for as Class S(AE) Concrete-Bridge. Slab Joints shall extend to the outside edge of the deck slab and shall align with open joints at the front face of the parapet. Slab joints shall be installed before the parapet railing is poured. If slab joints are to be sawed, they shall be sawed as soon as the concrete has sufficiently set to allow sawing of the joint without damaging the slab. Slab joints shall be placed at all pouring sequence construction joints and required slab joint locations. The joint sealer shall extend across the deck from gutterline to gutterline.

SLAB JOINT DETAIL

No Scale



DETAIL W

No Scale

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
1-29-16
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 1 OF 2
DETAILS OF 237'-0" CONTINUOUS PRESTRESSED CONCRETE GIRDER UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: EOR DATE: 10/15/15 FILENAME: b030415_sl.dgn
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DESIGNED BY: PGT DATE: 9/15

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PRINT DATE: 1/28/2016

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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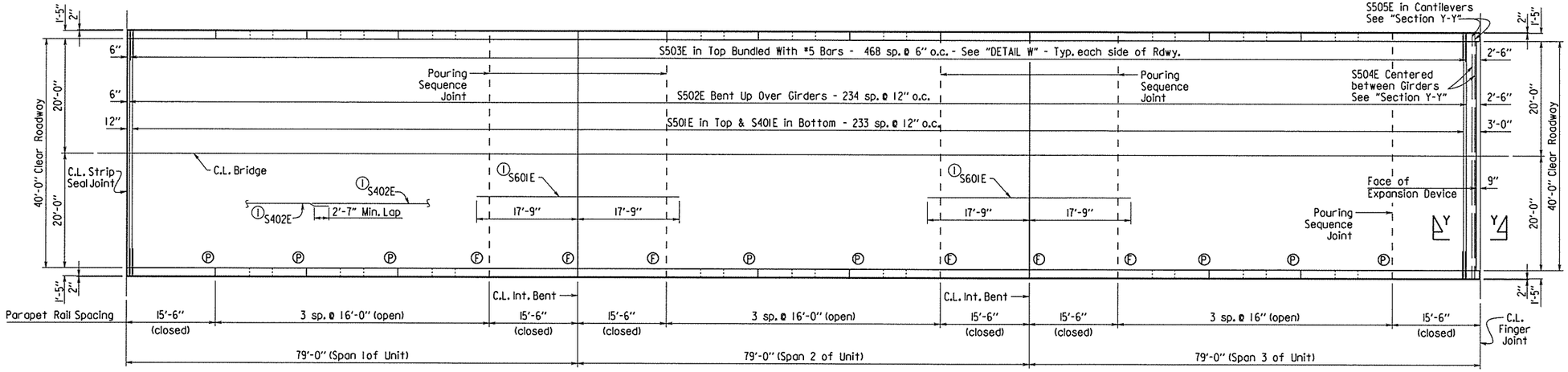
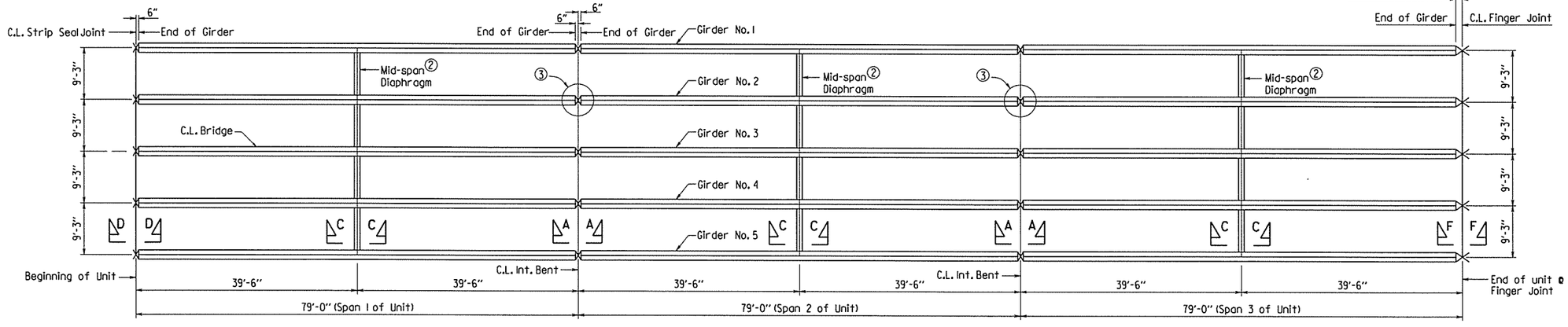
				JOB NO.		030415	64	131
				①	07378 - 237' CONT. UNIT -		58088	



REINFORCING PLAN - 237'-0" UNIT (TYPE B)

Unit 5

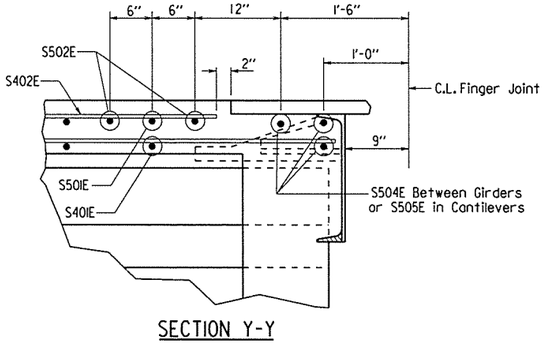
3/32 " = 1'-0"



FRAMING PLAN - 237'-0" UNIT (TYPE B)

Unit 5

3/32 " = 1'-0"



SECTION Y-Y

No Scale

① Placed as Shown in "TYPICAL SECTION AT INTERMEDIATE BENTS WITHOUT EXPANSION JOINT", See Dwg. No. 58082

② For "DETAILS OF ALTERNATE MID-SPAN DIAPHRAGM" see Dwg. No. 58083

③ After erection, the ends of girders at all bents shall be blocked using temporary blocking to maintain proper location on bent caps until all bearings are welded and diaphragms are poured.

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

Location of full and partial depth parapet joints are similar for both sides of roadway.

Ⓕ Full depth parapet joint at this location

Ⓟ Partial depth parapet joint at this location

For "SECTION A-A", See Dwg. No. 58082
For "SECTION C-C" & "SECTION F-F", See Dwg. No. 58083

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
1-27-16
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 2 OF 2
DETAILS OF
237'-0" CONTINUOUS PRESTRESSED CONCRETE GIRDER UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: EOR DATE: 10/15/15
CHECKED BY: YE DATE: 10/28/15
DESIGNED BY: PGT DATE: 9/15
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SCALE: As Noted

BRIDGE NO. 07378 DRAWING NO. 58088

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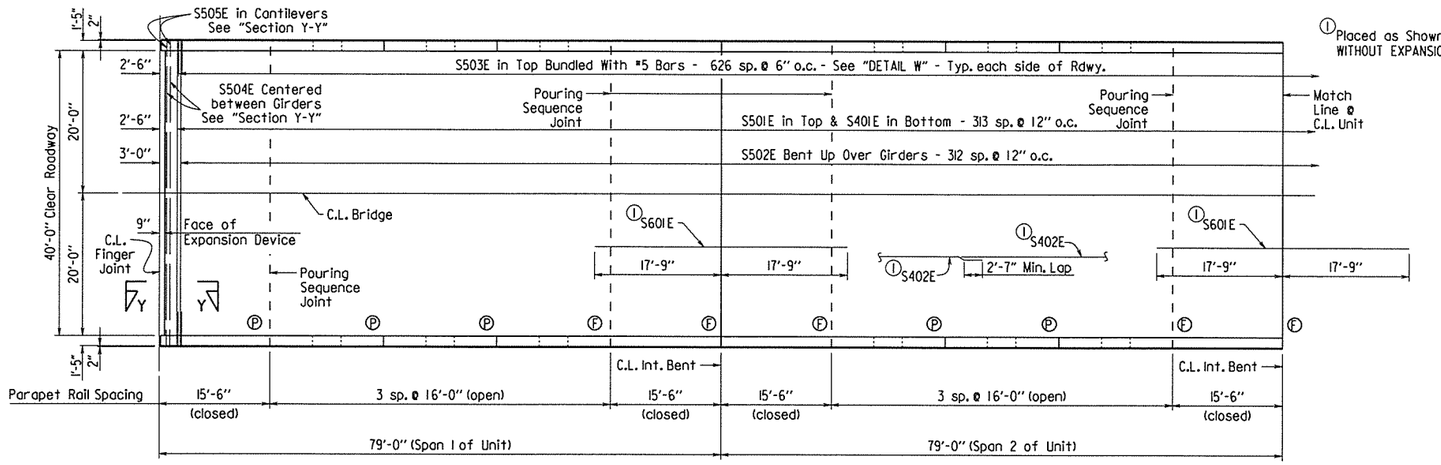
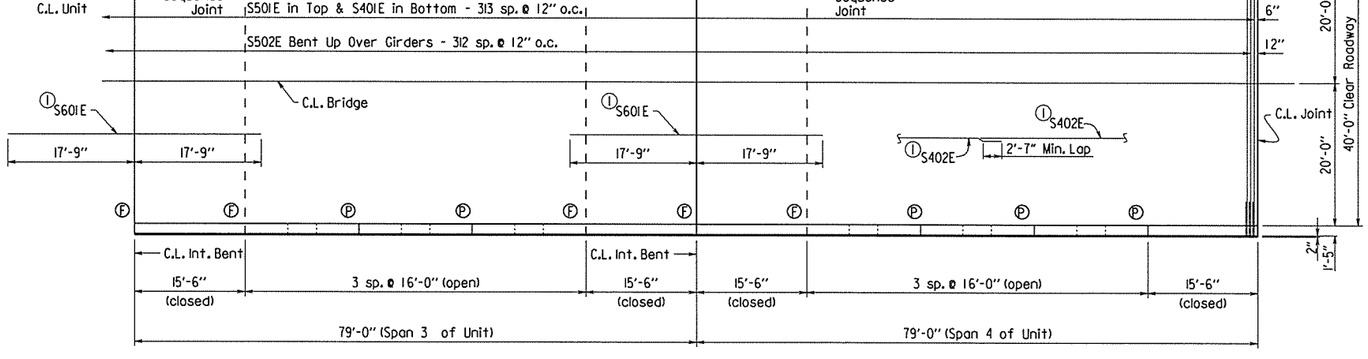
				6	ARK.			
				JOB NO.		030415	65	131
				① 07378		- 316' CONT. UNIT -		58089



①Placed as Shown in "TYPICAL SECTION AT INTERMEDIATE BENTS WITHOUT EXPANSION JOINT", See Dwg. No. 58082

REINFORCING PLAN - 316'-0" UNIT

Unit 7
Scale: 3/32 " = 1'-0"



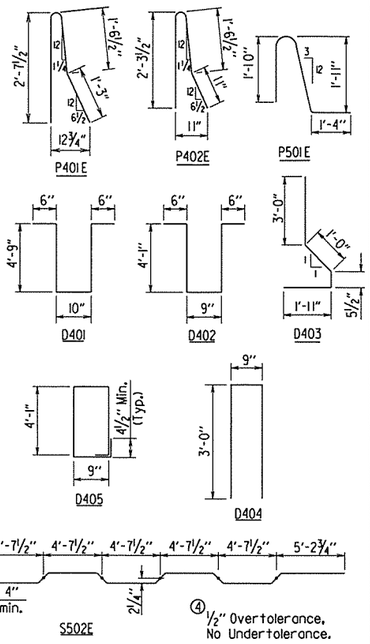
REINFORCING PLAN - 316'-0" UNIT

Unit 7
Scale: 3/32 " = 1'-0"

BAR LIST - 316'-0" Unit

Mark	No. Req'd.	Length	Pin Dia.
S401E	314	42'-10"	Str.
S402E	1089	37'-4"	Str.
S501E	314	42'-10"	Str.
S502E	313	43'-8"	3"
S503E	1254	4'-10"	Str.
S504E	12	7'-11"	Str.
S505E	6	2'-3"	Str.
S601E	186	35'-6"	Str.
P401E	1072	5'-6"	3"
P402E	192	4'-10"	3"
P403E	80	5'-6"	Str.
P404E	112	15'-2"	Str.
P405E	168	15'-8"	Str.
P501E	1072	4'-10"	3¾"
D401	84	11'-0"	2"
D402	112	9'-7"	2"
D403	18	6'-3"	2"
D404	30	6'-7"	2"
D405	56	10'-0"	2"
D601	30	37'-6"	Str.
D602	240	6'-6"	Str.
D603	36	5'-0"	Str.

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



All bars designated with an "E" suffix shall be Epoxy Coated.

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

Location of full and partial depth parapet joints are similar for both sides of roadway.

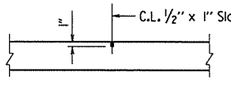
Ⓕ Full depth parapet joint at this location

Ⓟ Partial depth parapet joint at this location

For "SECTION Y-Y", See Dwg. No. 58090

②For "DETAILS OF ALTERNATE MID-SPAN DIAPHRAGM" see Dwg. No. 58083

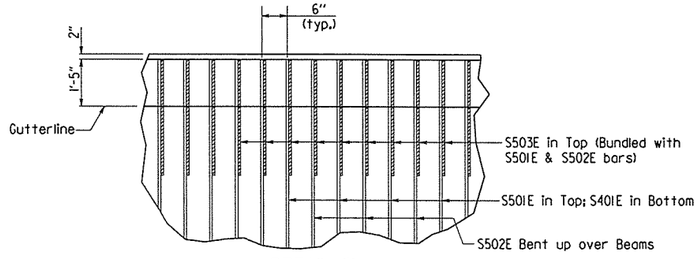
③After erection, the ends of girders at all bents shall be blocked using temporary blocking to maintain proper location on bent caps until all bearings are welded and diaphragms are poured.



Use ½" x 1" Type 3 or 4 Joint Sealer. See Subsections 501.02(h) and 501.05(j). Backer rod filler will not be required. Joint Sealer shall be measured and paid for as Class S(AE) Concrete-Bridge. Slab Joints shall extend to the outside edge of the deck slab and shall align with open joints at the front face of the parapet. Slab joints shall be installed before the parapet railing is poured. If slab joints are to be sawed, they shall be sawed as soon as the concrete has sufficiently set to allow sawing of the joint without damaging the slab. Slab joints shall be placed at all pouring sequence construction joints and required slab joint locations. The joint sealer shall extend across the deck from gutterline to gutterline.

SLAB JOINT DETAIL

No Scale



DETAIL W

No Scale

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
1-29-16
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 1 OF 2
DETAILS OF 316'-0" CONTINUOUS PRESTRESSED CONCRETE GIRDER UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

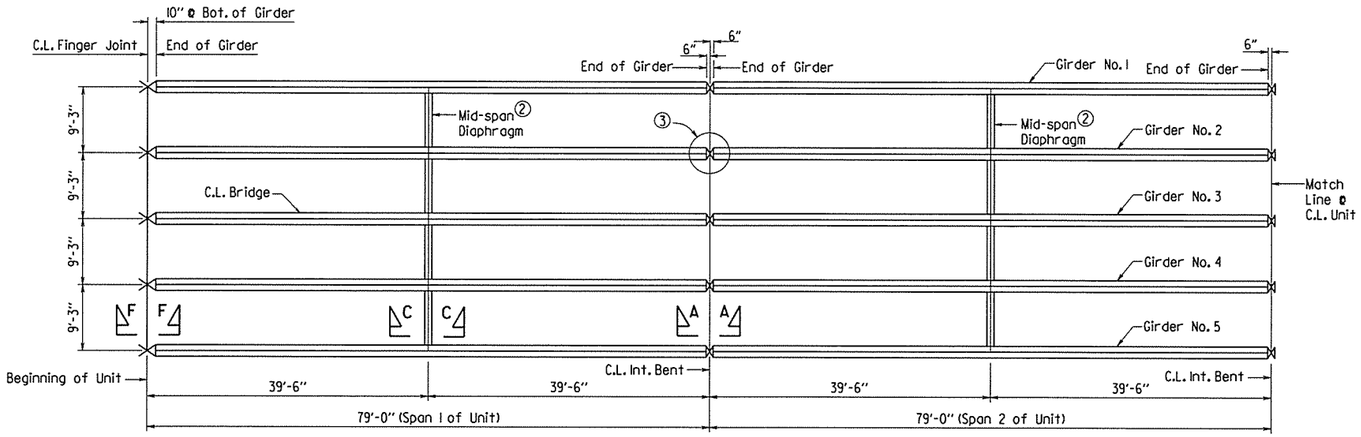
LITTLE ROCK, ARK.

DRAWN BY: EOR DATE: 10/15/15 FILENAME: b030415_s2.dgn
CHECKED BY: YE DATE: 10/22/15 SCALE: As Noted
DESIGNED BY: PET DATE: 9/15

BRIDGE NO. 07378 DRAWING NO. 58089

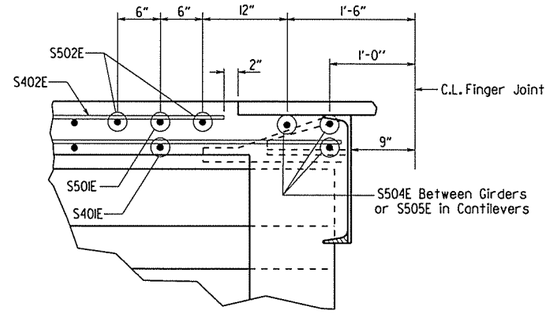
PRINT DATE: 1/28/2016

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.		030415	60	131
				(1) 07378 - 316' CONT. UNIT -			58090	



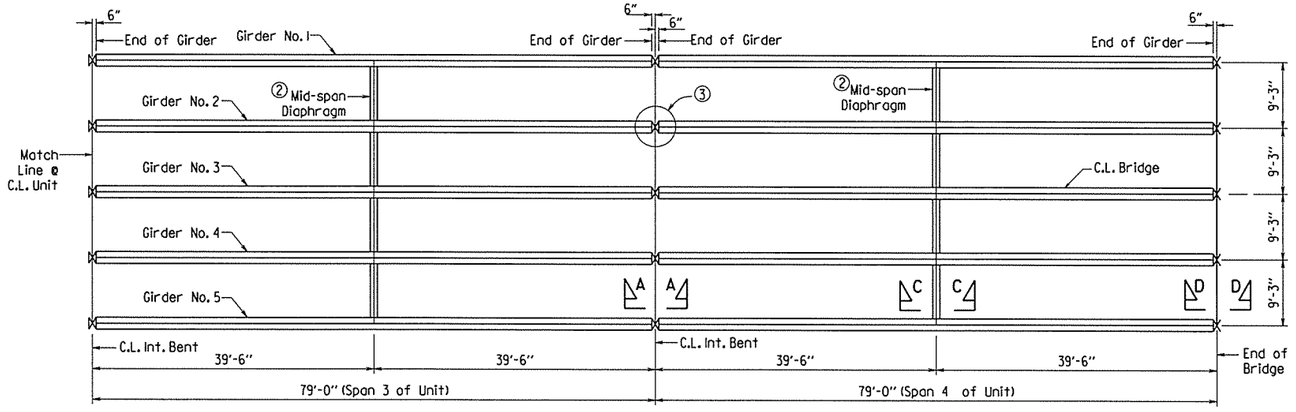
FRAMING PLAN - 316'-0" UNIT

3/32 " = 1'-0"



SECTION Y-Y

No Scale



FRAMING PLAN - 316'-0" UNIT

3/32 " = 1'-0"

② For "DETAILS OF ALTERNATE MID-SPAN DIAPHRAGM" see Dwg. No. 58082

③ After erection, the ends of girders at all bents shall be blocked using temporary blocking to maintain proper location on bent caps until all bearings are welded and diaphragms are poured.

Note:
For "SECTION A-A", See Dwg. No. 58082
For "SECTION C-C", "SECTION D-D" & "SECTION F-F", See Dwg. No. 58083

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
1-29-16
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 2
DETAILS OF
316'-0" CONTINUOUS PRESTRESSED CONCRETE GIRDER UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: EOR DATE: 10/15/15 FILENAME: b030415_s2.dgn
CHECKED BY: VJZ DATE: 9/28/15 SCALE: As Noted
DESIGNED BY: PGT DATE: 9/15

BRIDGE NO. 07378 DRAWING NO. 58090

PRINT DATE: 1/28/2016

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.		030415	67	131
				① 07378		- 490' CONT. UNIT -	58091	

Slab Reinforcing:
Longitudinal: S402E as shown
S601E or S602E as shown over int. supports, see "HALF -REINFORCING PLAN & POURING SEQUENCE", Dwg. No. 58093.
Transverse: S502E @ 12" o.c. bent up over girders ——— Alternate
S501E @ 12" o.c. in top, S401E @ 12" o.c. in bottom
S503E @ 6" in top of overhangs (bundled with #5 bars)

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.

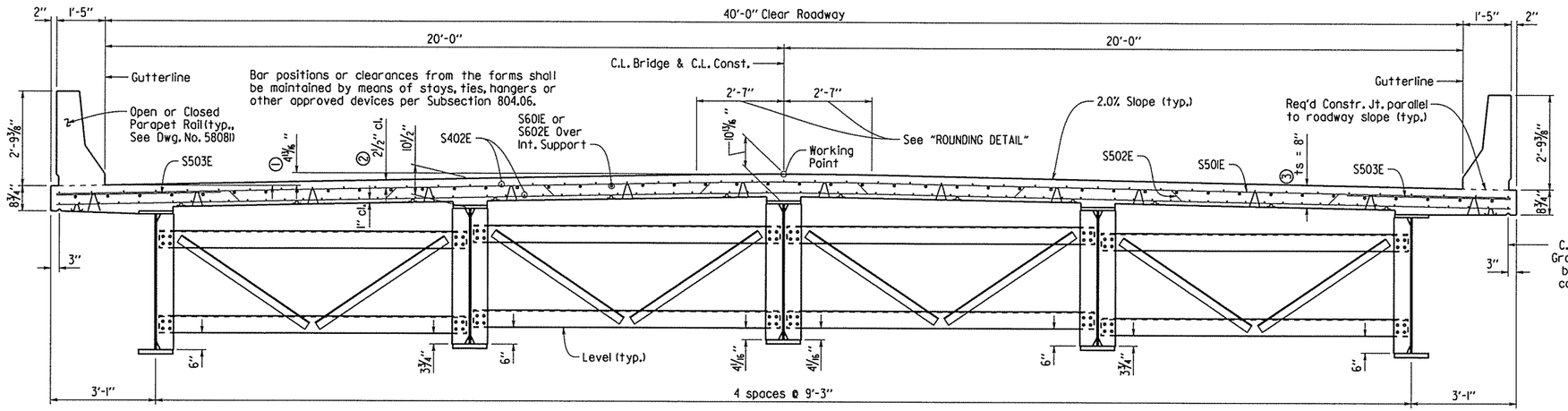
Note: Class I Protective Surface Treatment shall be applied to the Roadway Surface and to the Face & Top of the Concrete Parapet Rail.

Note: All bars designated with an "E" shall be Epoxy Coated.

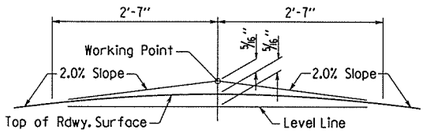
①Working point to gutterline.

②Tolerance: Minus = 1/4"; Plus equal to the amount of slab thickening used to meet slab thickness tolerance. See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE".

③See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE".

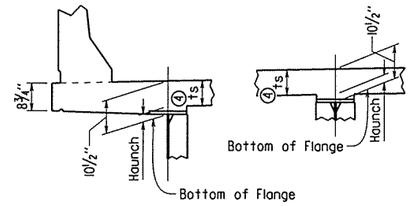


TYPICAL ROADWAY SECTION
1/2" = 1'-0"



NOTE: Working Point matches Theoretical Roadway Grade.

ROUNDING DETAIL
No Scale



Note:
ts = slab thickness shown on superstruture details - See "TYPICAL ROADWAY SECTION".

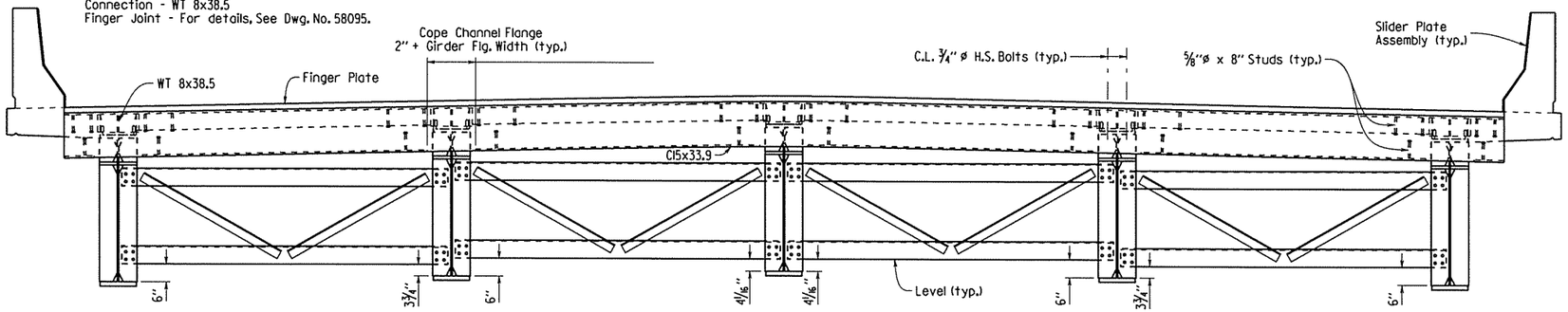
④Tolerance when removable deck forming is used is + 1/2", - 1/4". Haunch forming is required and shall be adjusted to maintain slab thickness tolerance.

ADJUSTMENT FOR SLAB THICKNESS TOLERANCE
1/2" = 1'-0"

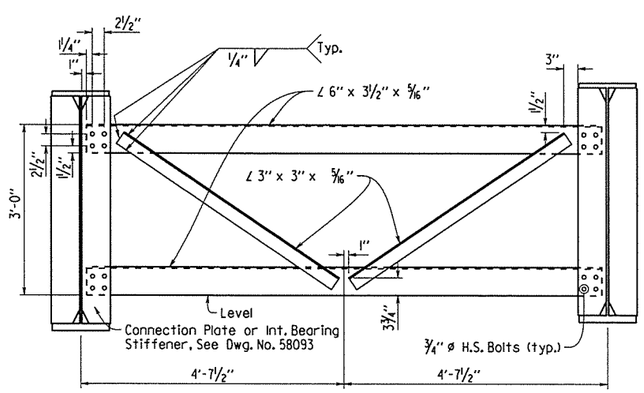
Notes:
Haunch dimension may vary within the following limits to maintain the grade and slab thickness tolerance: Minimum occurs when top flange contacts bottom reinforcing steel; Maximum = top flange thickness plus 1 3/4". No increase in concrete and structural steel quantities will be made to maintain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

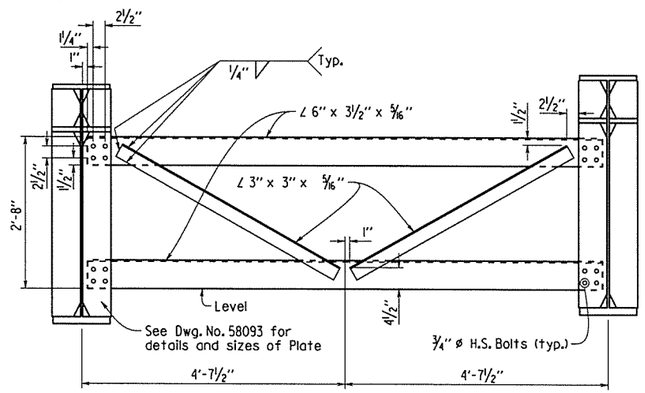
Expansion Device:
Roadway Channel - C15x33.9
Connection - WT 8x38.5
Finger Joint - For details, See Dwg. No. 58095.



TYPICAL ROADWAY SECTION NEAR JOINT
1/2" = 1'-0"



TYPICAL K-FRAME
3/4" = 1'-0"



K-FRAME AT ENDS OF UNIT
3/4" = 1'-0"

NOTE: See Std. Dwg. No. 55006 for General Notes

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
12-9-16
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 1 OF 4
DETAILS OF 490'-0" CONTINUOUS PLATE GIRDER UNIT

ROUTE SEC.

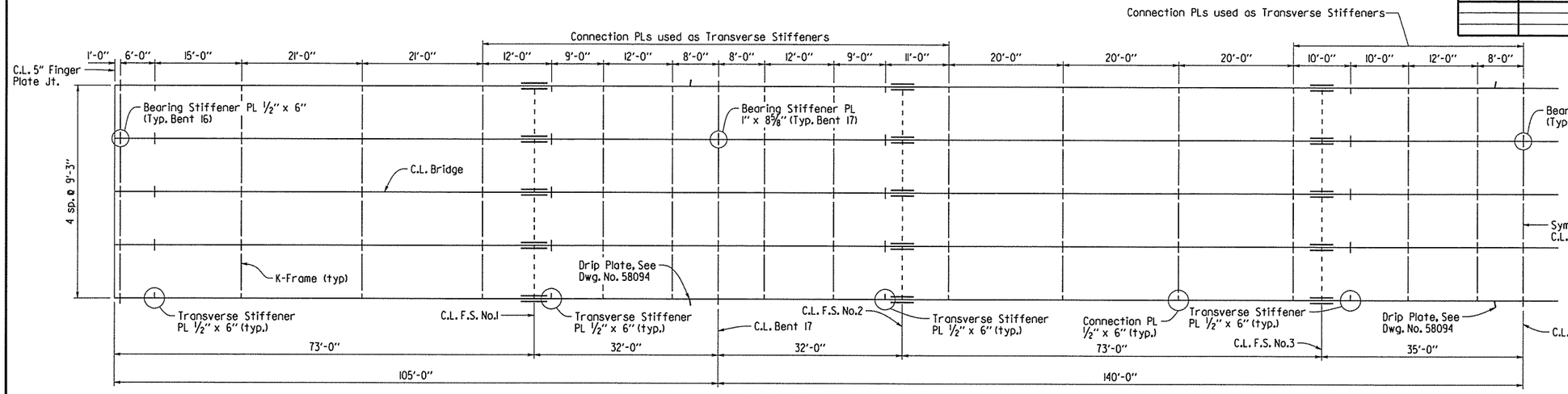
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: PGT DATE: 11/15 FILENAME: b030415_s3.dgn
CHECKED BY: YB DATE: 12/28/15 SCALE: As Noted
DESIGNED BY: PGT DATE: 10/15

BRIDGE NO. 07378 DRAWING NO. 58091

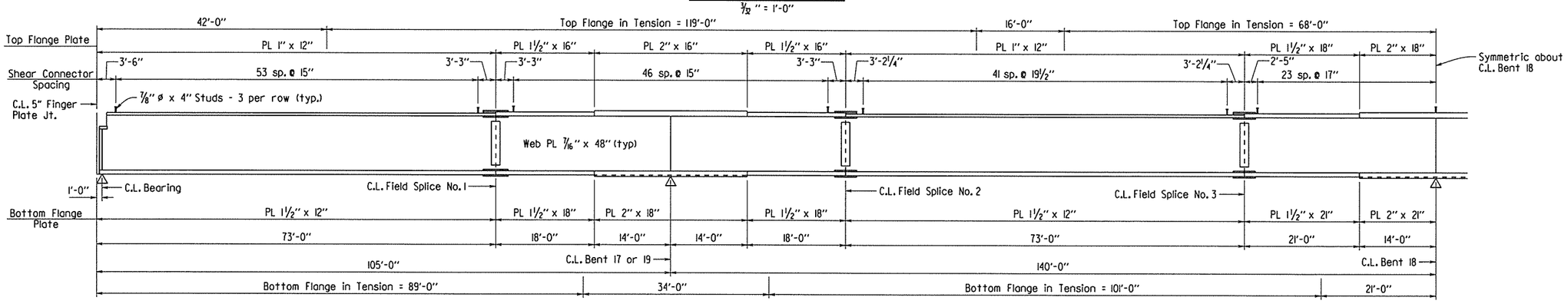
PRINT DATE: 1/28/2016

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.		030415	68	131
				1	07378 - 490' CONT. UNIT -		58092	



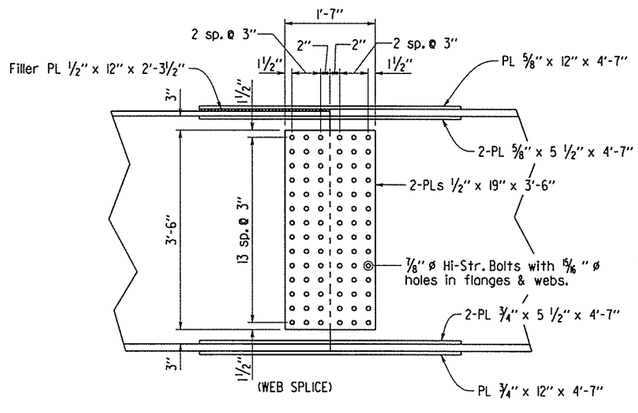
HALF - FRAMING PLAN

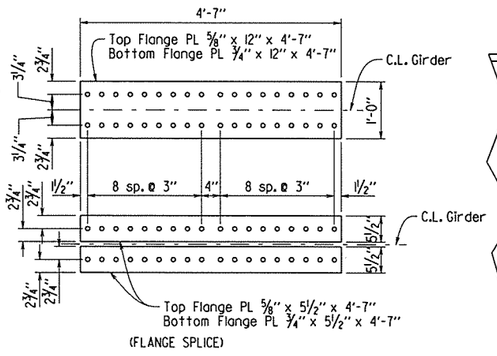
3/32" = 1'-0"

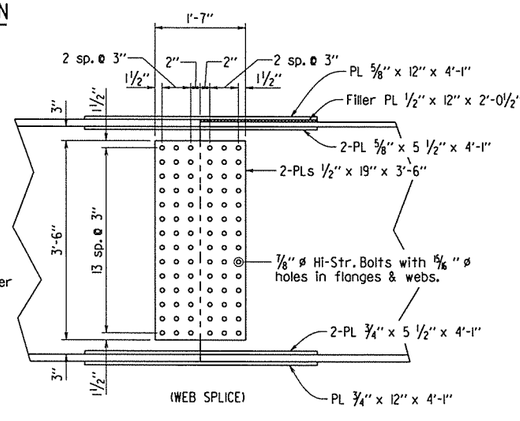


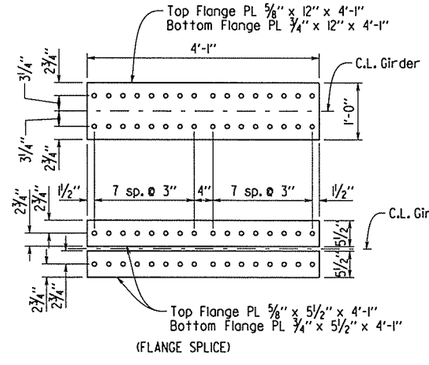
HALF - GIRDER ELEVATION

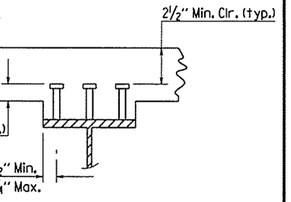
NTS







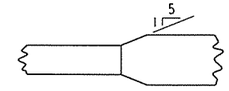




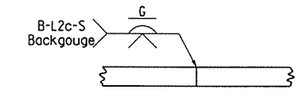
Stud Shear Connectors shown shall be 7/8"ø x 4" automatically end welded to the girder flange in accordance with the recommendations of the Manufacturer. 3/4"ø studs may be used in place of the 7/8"ø studs shown at the ratio of 1.361-3/4"ø studs in place on one 7/8"ø stud. 7/8"ø studs will be used as the basis for measurement of structural steel in shear connectors.

SHEAR CONNECTOR DETAIL

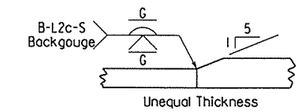
NTS



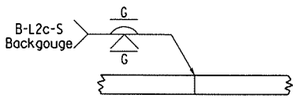
FLANGE SPLICE



WEB SPLICE



FLANGE SPLICE



FLANGE SPLICE

DETAILS OF SPLICES

NTS

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

DETAILS OF FIELD SPLICE NO. 1

NTS

DETAILS OF FIELD SPLICE NOS. 2 AND 3

NTS

For Standard General Notes, See Std. Dwg. No. 55006

All structural steel shall be AASHTO M 270, Grade 50W unless otherwise noted and shall be paid for as "Structural Steel in Plate Girder Spans (M 270, Gr. 50W)". Grade 50W steel shall not be painted.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
1-29-16
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 2 OF 4
DETAILS OF 490'-0" CONTINUOUS PLATE GIRDER UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

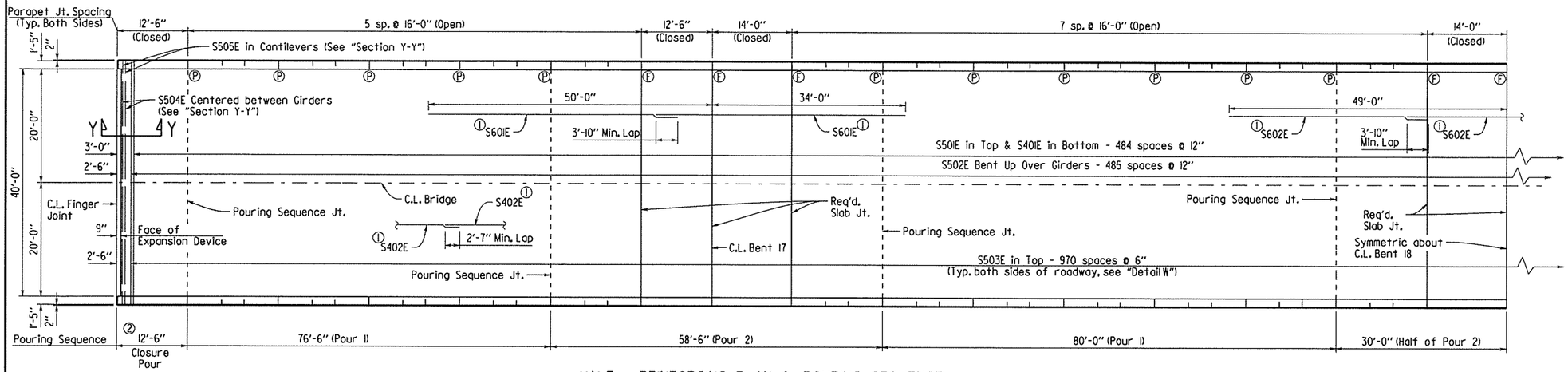
DRAWN BY: PGT DATE: 11/15 FILENAME: b030415_s3.dgn
CHECKED BY: CRE DATE: 12/28/15 SCALE: As Noted
DESIGNED BY: PGT DATE: 10/15

BRIDGE NO. 07378 DRAWING NO. 58092

PRINT DATE: 1/28/2016

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.		030415	69	131
				①	07378	- 490' CONT. UNIT -	58093	

① Placed as Shown in "TYPICAL ROADWAY SECTION", See Dwg. No. 58091



Notes:
Required slab joints and pouring sequence construction joints shall be align with parapet joints at gutterline.

Ⓕ Full depth parapet joint at this location

Ⓟ Partial depth parapet joint at this location

Slab Pouring Sequence Notes:

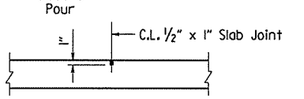
Pours with the same number may be placed simultaneously or separately. All Pours (1) must be placed before Pours (2) can be placed. 48 hours shall elapse between the end of a pour and the start of the next pour. 72 hours shall elapse between adjacent pours. Any railing pours made before the entire slab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

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

② After all incremental pours on both Units adjacent to Finger Joint are complete, closure pours on each side of Finger Joint shall be poured simultaneously. A minimum of 48 hours shall elapse between the last incremental pour and the closure pours.

HALF - REINFORCING PLAN & POURING SEQUENCE

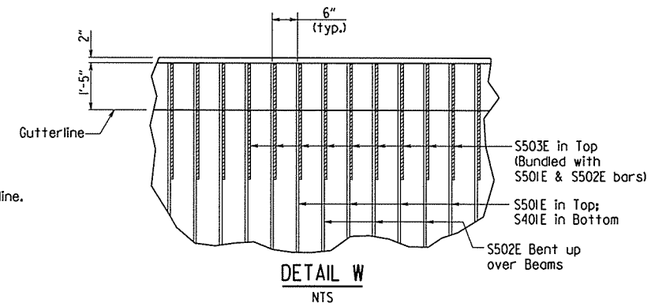
3/32 " = 1'-0"



Use 1/2" x 1" Type 3 or 4 Joint Sealer. See Subsections 501.02(h) and 501.05(j). Backer rod filler will not be required. Joint Sealer shall be measured and paid for as Class S(AE) Concrete-Bridge. Slab Joints shall extend to the outside edge of the deck slab and shall align with open joints at the front face of the parapet. Slab joints shall be installed before the parapet railing is poured. If slab joints are to be sawed, they shall be sawed as soon as the concrete has sufficiently set to allow sawing of the joint without damaging the slab. Slab joints shall be placed at all pouring sequence construction joints and required slab joint locations. The joint sealer shall extend across the deck from gutterline to gutterline.

SLAB JOINT DETAIL

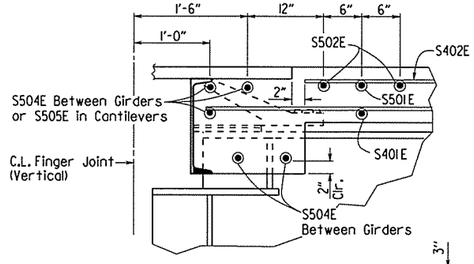
NTS



DETAIL W

NTS

Note:
For additional details of Finger Joint, See Dwg. No. 58095



SECTION Y-Y

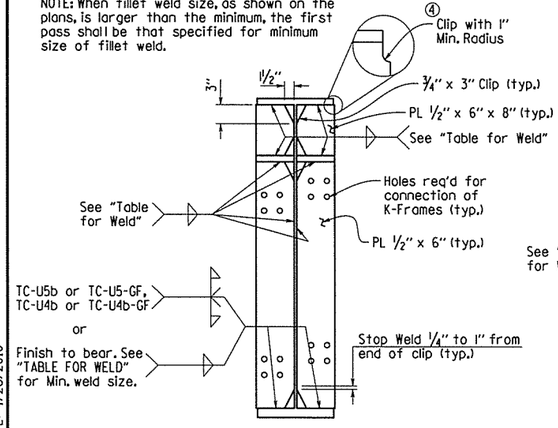
NTS

TABLE FOR WELD

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

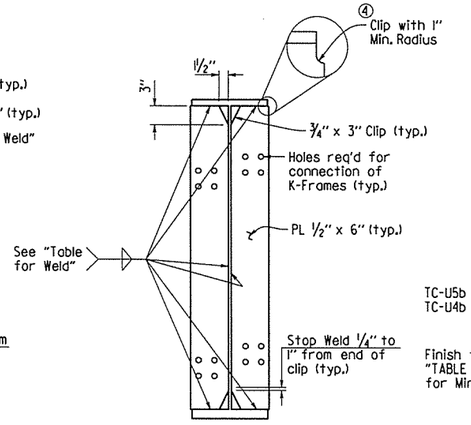
NOTE: When fillet weld size, as shown on the plans, is larger than the minimum, the first pass shall be that specified for minimum size of fillet weld.

④ If permanent steel bridge deck forms are used, the Fabricator shall clip the plates as necessary to accommodate the deck form support.



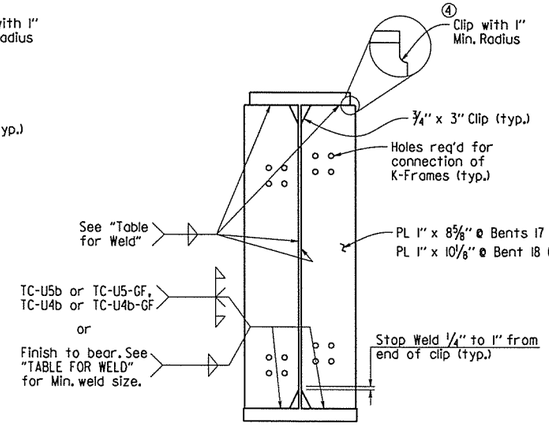
END BEARING STIFFENERS

1" = 1'-0"



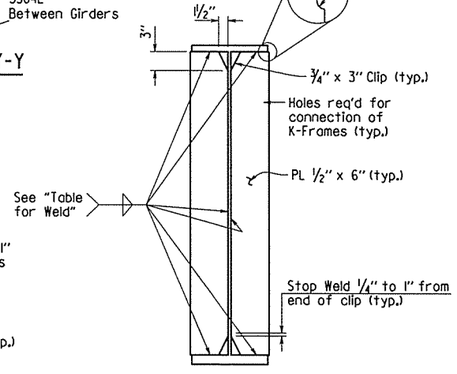
TYPICAL CONNECTION PLATE

1" = 1'-0"



INTERMEDIATE BEARING STIFFENERS

1" = 1'-0"



TRANSVERSE STIFFENER

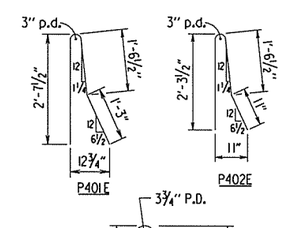
1" = 1'-0"

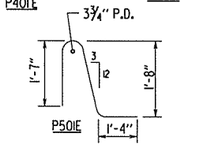
BAR LIST

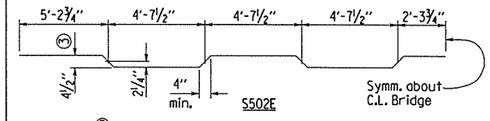
Mark	No. Req'd.	Length	Pin Dia.
S401E	485	42'-10"	Str.
S402E	1694	37'-5"	Str.
S501E	485	42'-10"	Str.
S502E	486	43'-8"	3"
S503E	1942	5'-0"	Str.
S504E	40	8'-0"	Str.
S505E	12	2'-3 1/2"	Str.
S601E	184	43'-11"	Str.
S602E	138	35'-3"	Str.
P401E	1576	5'-6"	3"
P402E	384	4'-10"	3"
P403E	176	5'-6"	Str.
P405E	336	15'-8"	Str.
P406E	56	12'-2"	Str.
P407E	56	13'-8"	Str.
P501E	1576	4'-10"	3 3/4"

Bending Diagrams

(Dimensions are out to out of bars)







③ 1/2" Overtolerance, No Undertolerance.

Note: All bars designated with an "E" suffix shall be Epoxy Coated

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
1-29-16
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 3 OF 4
DETAILS OF 490'-0" CONTINUOUS PLATE GIRDER UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

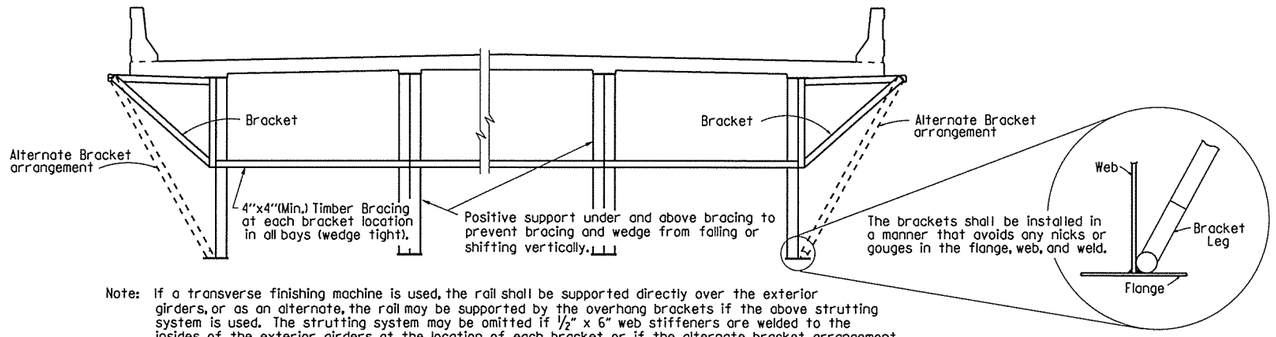
LITTLE ROCK, ARK.

DRAWN BY: PGT DATE: 11/15 FILENAME: b030415_s3.dgn
CHECKED BY: CRE DATE: 12/28/15 SCALE: As Noted
DESIGNED BY: PGT DATE: 10/15

BRIDGE NO. 07378 DRAWING NO. 58093

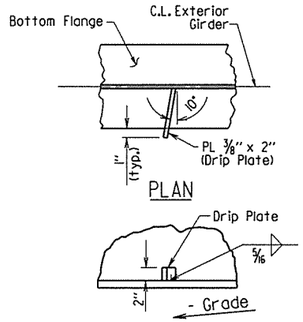
PRINT DATE: 1/28/2016

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.		030415	70	131
				(1)	07378	- 490' CONT. UNIT -	58094	



Note: If a transverse finishing machine is used, the rail shall be supported directly over the exterior girders, or as an alternate, the rail may be supported by the overhang brackets if the above strutting system is used. The strutting system may be omitted if ½" x 6" web stiffeners are welded to the insides of the exterior girders at the location of each bracket or if the alternate bracket arrangement shown above is used. The Alternate Bracket arrangement shall extend down to the junction of the web and bottom flange. The stiffener shall conform to the details for cross frame connection plates shown on Drawing No. 5498l. No direct payment will be made for brackets, timber bracing, supports, or welded stiffeners. Payment shall be subsidiary to "Structural Steel in Plate Girder Spans (M270, Gr. 50W)".

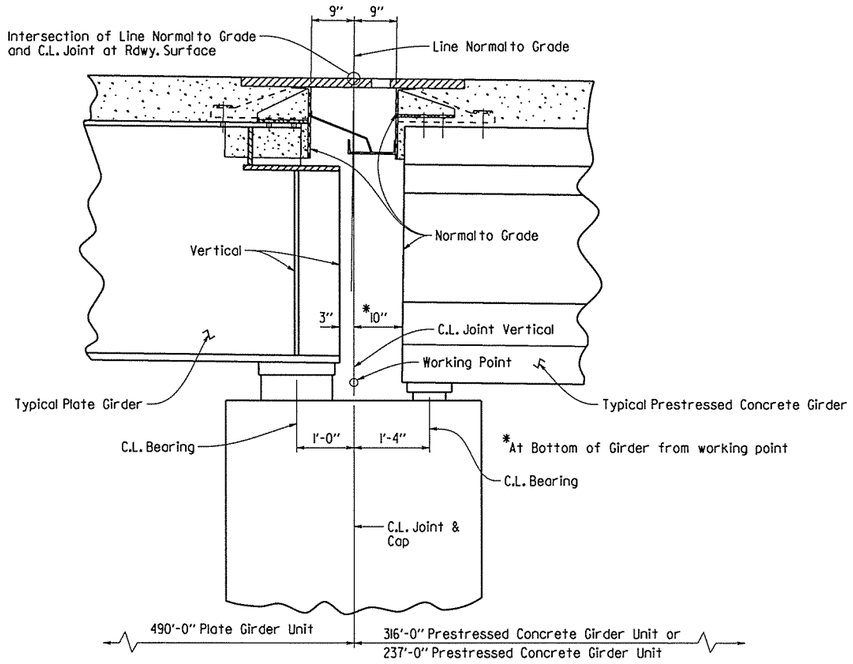
SCREED RAIL SUPPORT
NTS



Notes:
Drip Plate to be welded to the outer side of the bottom flange of the exterior girders.

Locate drip plate 5'-0" from C.L. Bearing on high side of each bent.

BOTTOM FLANGE DRIP PLATE
NTS

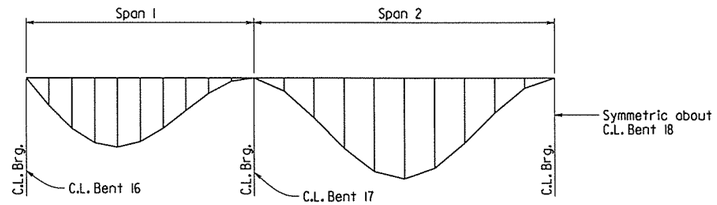


TYPICAL JOINT DETAIL AT BENTS 16 AND 20
NTS

TABLE OF DEAD LOAD DEFLECTIONS (INCHES)

Span	Point of Deflection	Structural Steel		Structural Steel + Slab		Structural Steel + Slab + Parapet	
		Ext. Girder	Int. Girder	Ext. Girder	Int. Girder	Ext. Girder	Int. Girder
Span 1	0.0	0.000	0.000	0.000	0.000	0.000	0.000
	0.1	0.097	0.102	0.527	0.643	0.632	0.643
	0.2	0.178	0.187	0.959	1.171	1.15	1.171
	0.3	0.229	0.241	1.232	1.504	1.479	1.504
	0.4	0.246	0.258	1.315	1.605	1.58	1.605
	0.5	0.228	0.240	1.211	1.478	1.457	1.478
	0.6	0.182	0.191	0.956	1.167	1.152	1.167
	0.7	0.120	0.125	0.621	0.757	0.749	0.757
	0.8	0.057	0.060	0.295	0.360	0.355	0.360
	0.9	0.012	0.013	0.066	0.081	0.078	0.081
Span 2	1.0	0.000	0.000	0.000	0.000	0.000	0.000
	1.1	0.049	0.051	0.250	0.304	0.313	0.304
	1.2	0.147	0.154	0.761	0.927	0.942	0.927
	1.3	0.256	0.269	1.341	1.636	1.651	1.636
	1.4	0.337	0.354	1.777	2.167	2.180	2.167
	1.5	0.363	0.381	1.915	2.336	2.346	2.336
	1.6	0.326	0.342	1.714	2.090	2.102	2.090
	1.7	0.238	0.250	1.239	1.511	1.524	1.511
	1.8	0.129	0.136	0.664	0.810	0.820	0.810
	1.9	0.038	0.040	0.193	0.235	0.239	0.235
	2.0	0.000	0.000	0.000	0.000	0.000	0.000

← Symmetric about C.L. Bent 18



DEAD LOAD DEFLECTION DIAGRAM

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

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
1-29-16
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 4 OF 4
DETAILS OF 490'-0" CONTINUOUS PLATE GIRDER UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

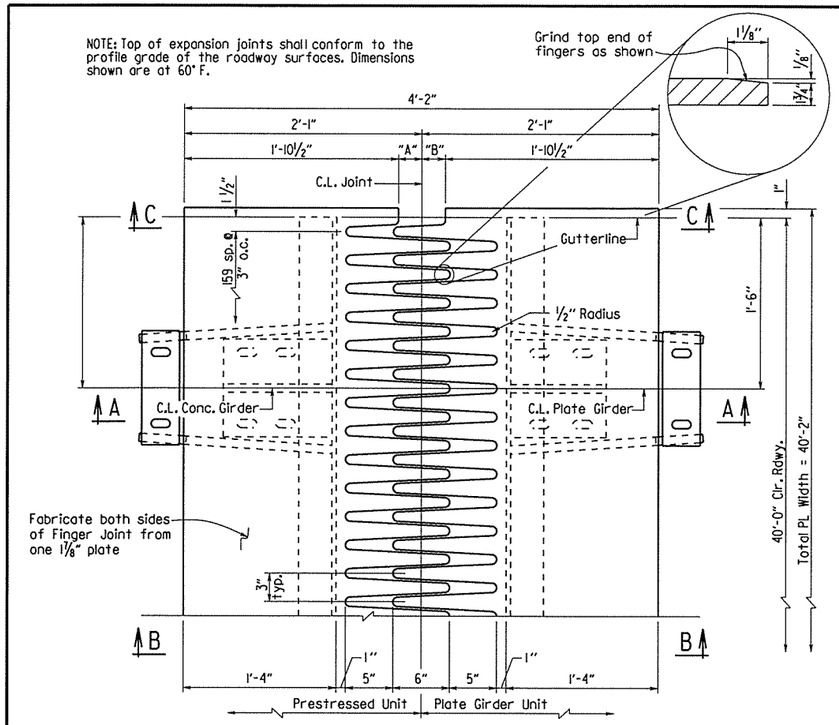
DRAWN BY: PGT DATE: 11/15
CHECKED BY: CE DATE: 12/28/15
DESIGNED BY: PGT DATE: 10/15
FILENAME: b030415_s3.dgn
SCALE: As Noted

BRIDGE NO. 07378 DRAWING NO. 58094

PRINT DATE: 1/28/2016

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.		030415	71	131
				07378	- FINGER JOINT -		58095	

NOTE: Top of expansion joints shall conform to the profile grade of the roadway surfaces. Dimensions shown are at 60° F.



EXPANSION PLATE DETAIL

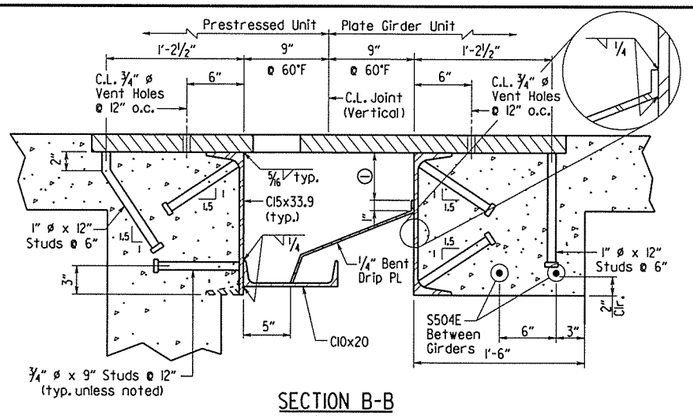
1½" = 1'-0"

	237'-0" Prestressed Unit	316'-0" Prestressed Unit	490'-0" Plate Girder Unit
Temp.	"A"	"A"	"B"
40°F	2 11/16"	2¾"	2⅞"
60°F	2½"	2½"	2½"
80°F	2 5/16"	2¼"	2⅛"

NOTES:
The finger joints shall be set and adjusted for grade before closure pours are made.

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.

All structural steel in Finger Joints, except parapet slider plates, shall be AASHTO M 270, Gr. 50W. Parapet slider plates shall be AASHTO M 270, Gr. 36. Surfaces of the parapet slider plates which will not be in contact with the concrete shall be cleaned and painted in accordance with Section 638. Only one coat is required and shall be applied in the shop. All structural steel shall be paid for as "Structural Steel in Plate Girder Spans (M270, Gr. 50W)", except as noted, which price shall include painting.

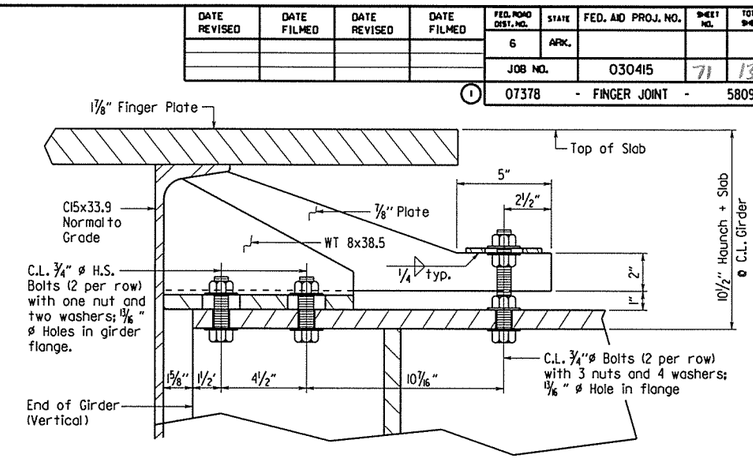


SECTION B-B

1½" = 1'-0"

NOTES:
The Studs shown shall be granular flux filled, solid fluxed, or equal, and automatically end welded to the channel in accordance with the recommendations of the manufacturer.

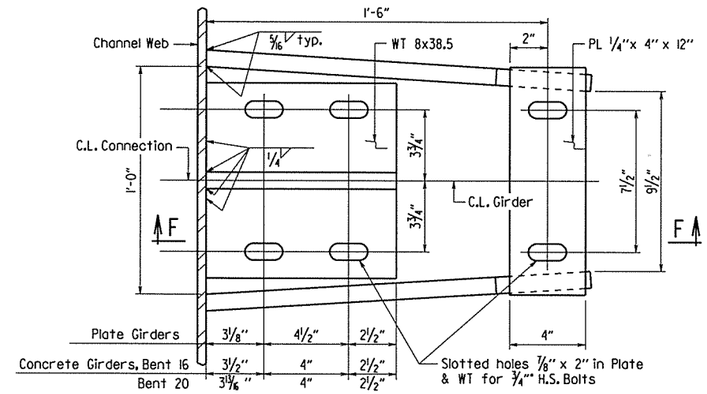
Concrete shall be hand packed under the joint armor.



SECTION F-F AT PLATE GIRDER

3" = 1'-0"

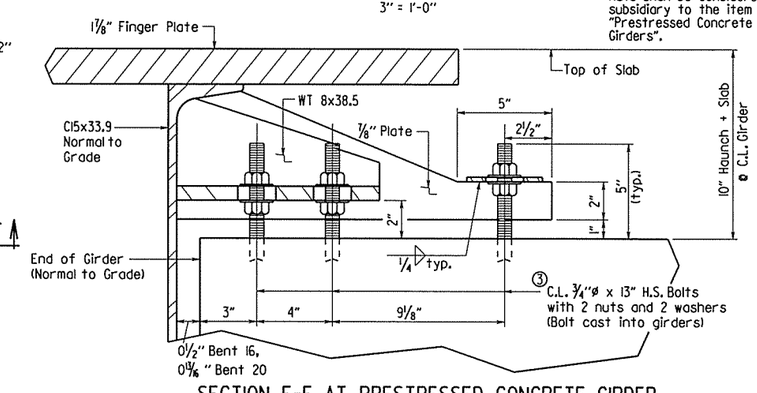
③ Bolts, washers and hex nuts shall be considered subsidiary to the item "Prestressed Concrete Girders".



For Plate Girder Only, detail device ⅛" high and provide ¼" shims for WT using 1- ⅛" PL and 2 - 1/16" PL's.

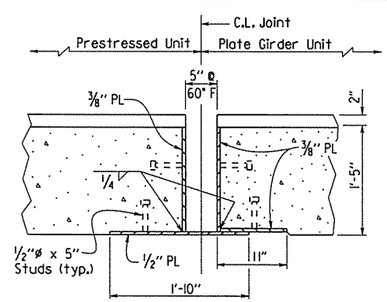
PLAN OF CONNECTION TO GIRDER

3" = 1'-0"



SECTION F-F AT PRESTRESSED CONCRETE GIRDER

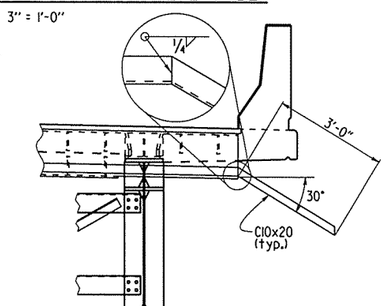
3" = 1'-0"



The ½"ø studs shall be granular flux filled, solid fluxed, or equal and automatically end welded to the PL's in accordance with the recommendations of the manufacturer.

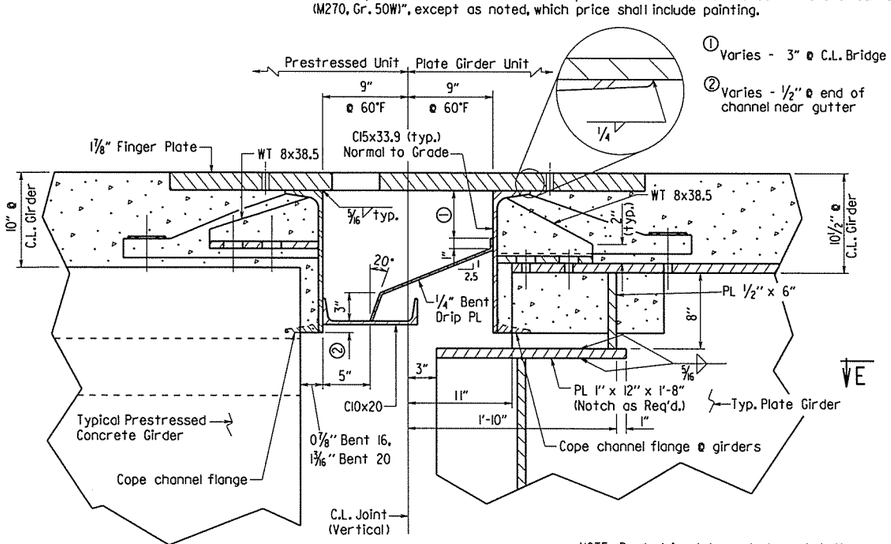
SECTION E-E

1" = 1'-0"



DRAIN DETAIL

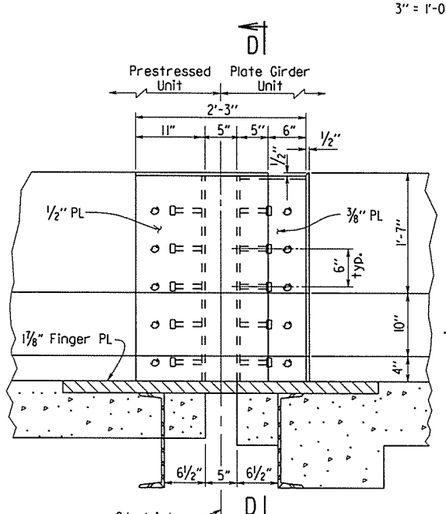
(Section Shown @ Plate Girder)
No Scale



SECTION A-A AT GIRDER

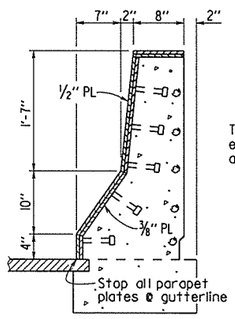
1½" = 1'-0"

NOTE: Bent drip plate and channel shall be located on the expansion device to provide maximum slope for runoff.



SECTION C-C

1" = 1'-0"



Concrete shall be hand packed under parapet slider plates.

SECTION D-D

1" = 1'-0"

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
1-29-16
CHARLES R. ELLIS

BRIDGE ENGINEER

DETAILS OF FINGER JOINTS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

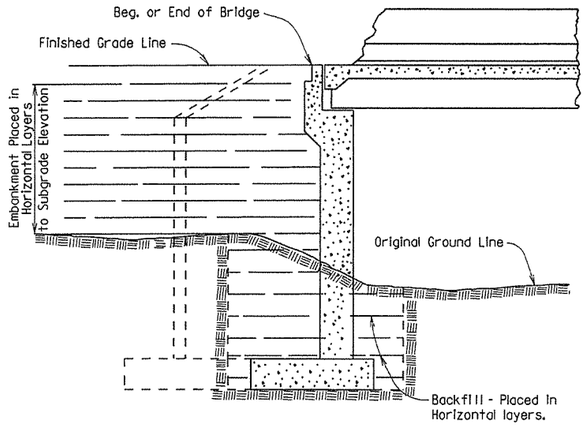
LITTLE ROCK, ARK.

DRAWN BY: PGT DATE: 12/15 FILENAME: b070282_jt.dgn
CHECKED BY: VZ DATE: 01/04/16 SCALE: As Noted
DESIGNED BY: PGT DATE: 11/12/15

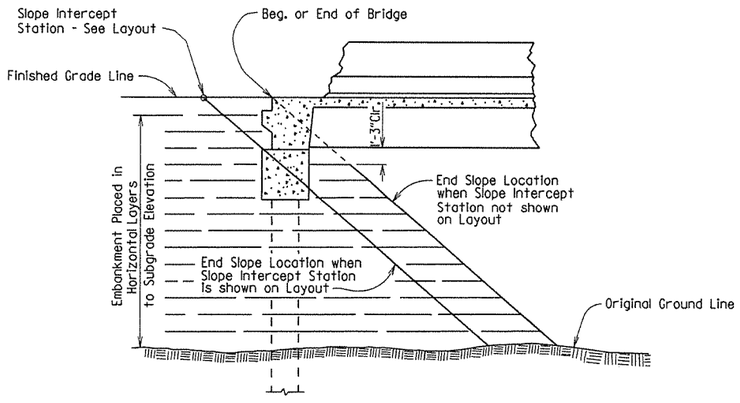
BRIDGE NO. 07378 DRAWING NO. 58095

PRINT DATE: 1/28/2016

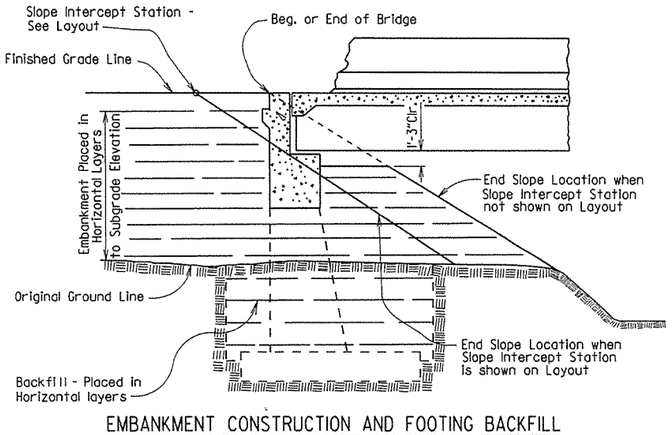
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		12	
				JOB NO.				
				① EMBANKMENT & BACKFILL 55000				



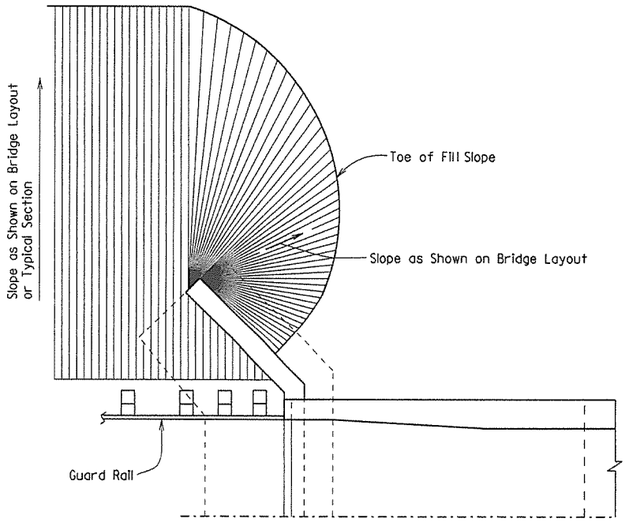
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT VERTICAL WALL ABUTMENTS



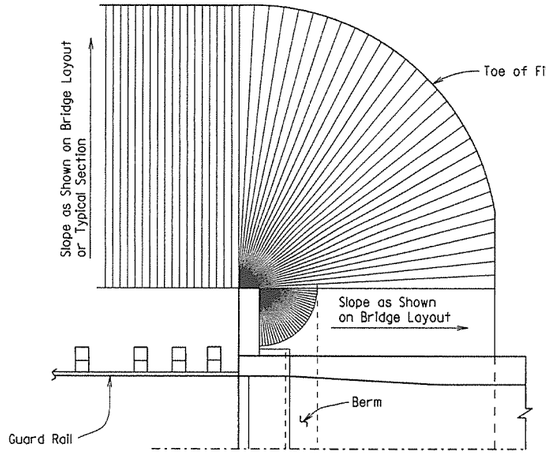
EMBANKMENT CONSTRUCTION AT SPILL-THROUGH PILE END BENTS



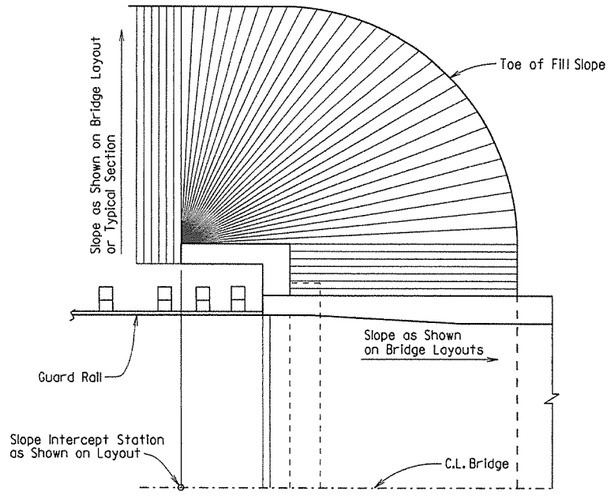
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT SPILL-THROUGH END BENTS



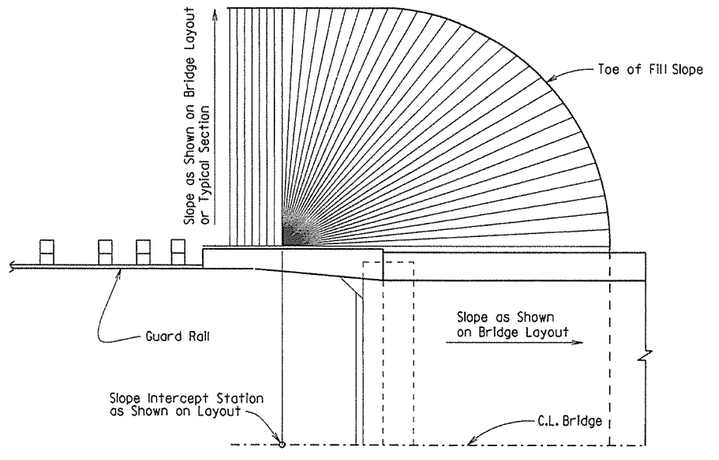
VERTICAL WALL ABUTMENTS



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.

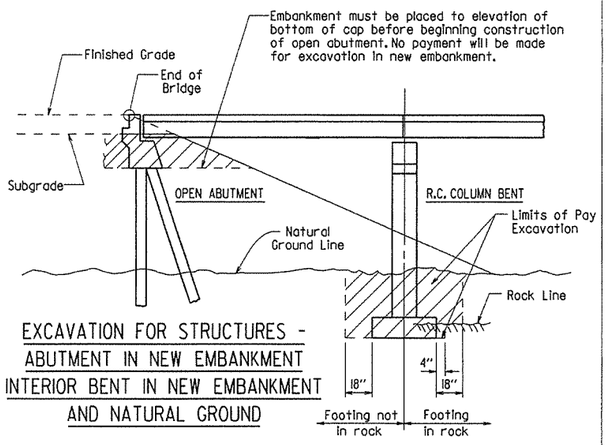
STANDARD DETAILS FOR EMBANKMENT CONSTRUCTION AND BACKFILL AT BRIDGE ENDS

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

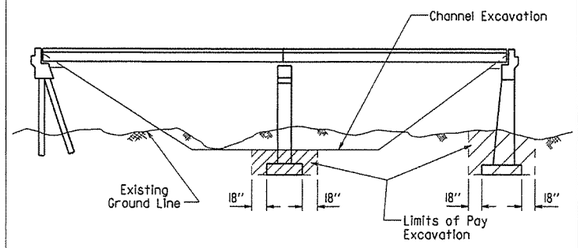
DRAWN BY: KDH DATE: 2-27-2014 FILENAME: b55000.dgn
CHECKED BY: BEF DATE: 2-27-2014 SCALE: NO SCALE
DESIGNED BY: STD. DATE: -

DRAWING NO. 55000

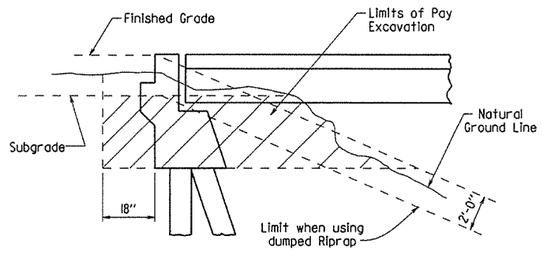
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		13	
				JOB NO.				
				①	RIPRAP & EXCAV. 55001			



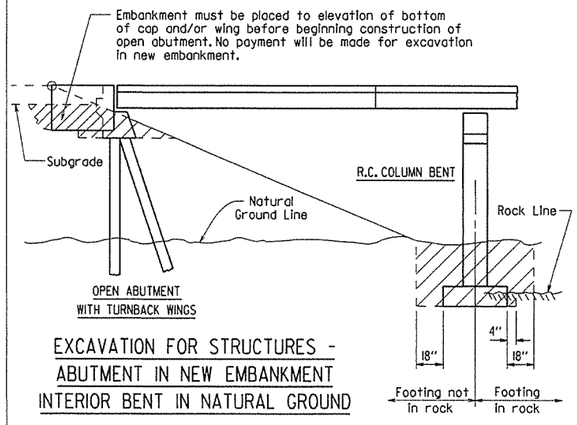
EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NEW EMBANKMENT AND NATURAL GROUND



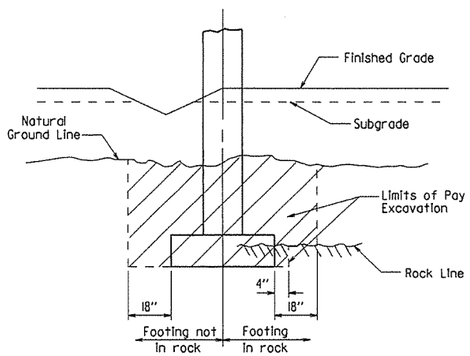
EXCAVATION FOR STRUCTURES - BRIDGE LOCATION WITH DESIGNATED CHANNEL CHANGE



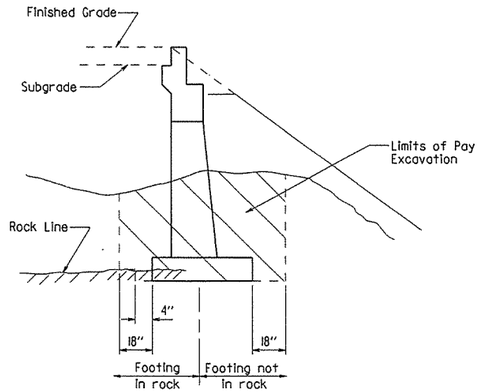
EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND



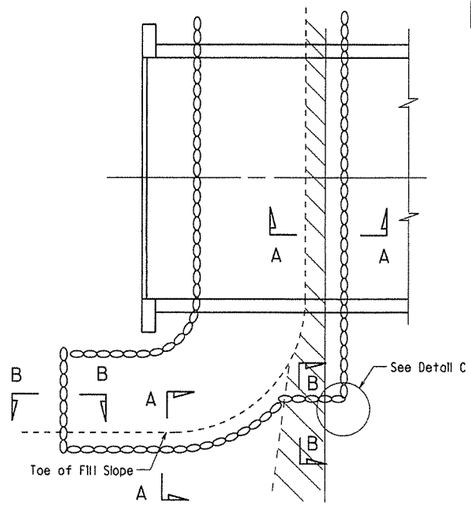
EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NATURAL GROUND



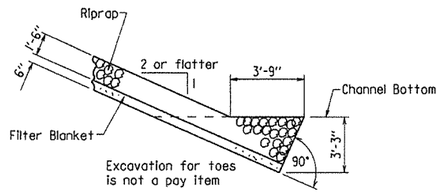
EXCAVATION FOR STRUCTURES - BENT IN ROADWAY FILL SECTION AND NATURAL GROUND



EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND AND NEW EMBANKMENT

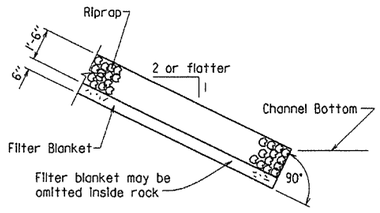


PLAN OF DUMPED RIPRAP



SECTION A-A

(Toe Excavation in Soil)



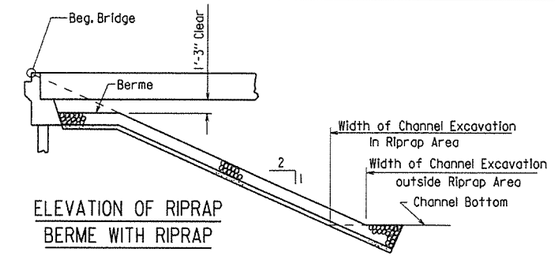
SECTION A-A

(Toe Excavation in Rock)

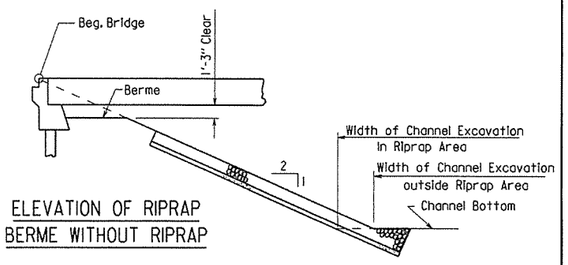
Note : Use this type of toe when rock is encountered which is in a stable condition.

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.

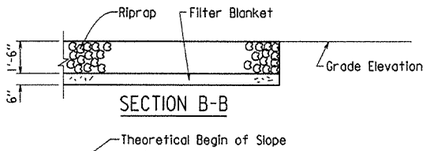
Note : Details for computing excavation for structures are included for information as to how plan quantities were calculated and for use when adjusting quantities when changing footing elevation.



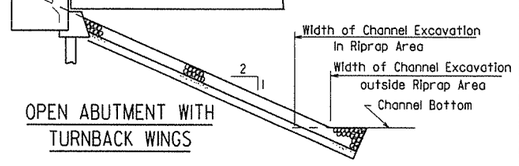
ELEVATION OF RIPRAP BERME WITH RIPRAP



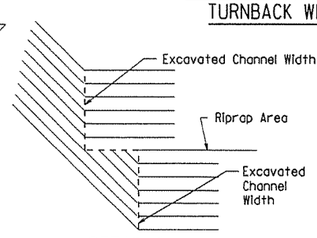
ELEVATION OF RIPRAP BERME WITHOUT RIPRAP



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.

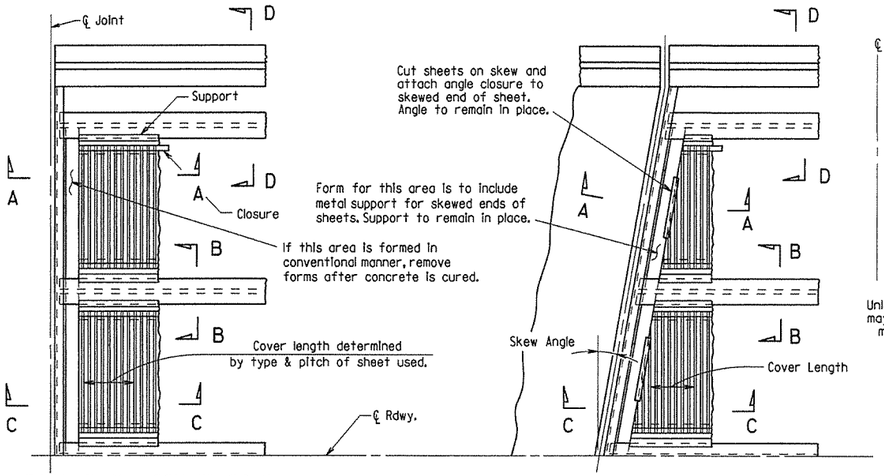
DRAWN BY: KDH DATE: 2-27-2014 FILENAME: b55001.dgn

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.		74	
				JOB NO.				
				① BRIDGE DECK FORMS 55005				

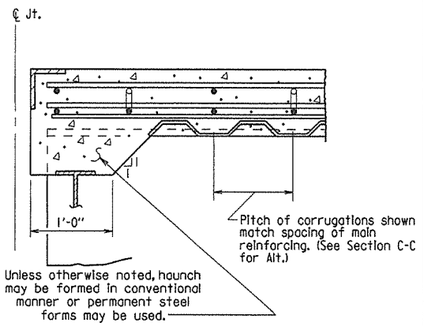


PART PLAN - SQUARE SPAN

⅜" = 1'-0"

PART PLAN - SKEWED SPAN

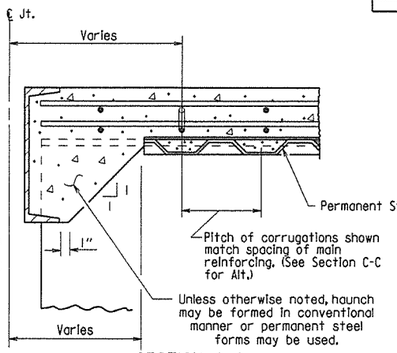
⅜" = 1'-0"



SECTION A-A

N.T.S.

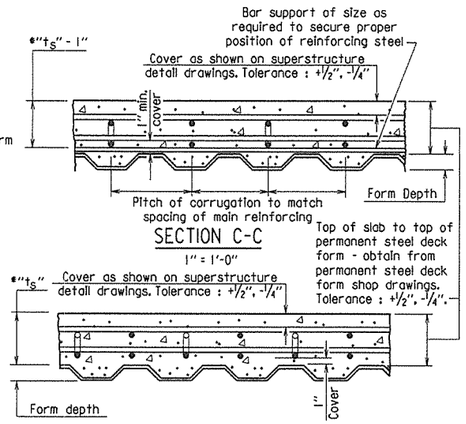
(Angle at end of span)



SECTION A-A

N.T.S.

(Channel at end of span)



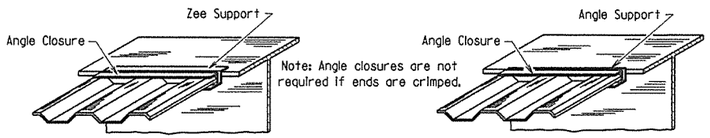
SECTION C-C

1" = 1'-0"

SECTION C-C - ALTERNATE

1" = 1'-0"

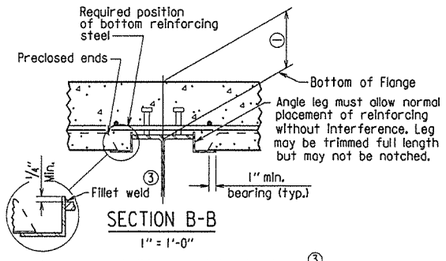
(Applicable when corrugations do not match spacing of main reinforcement)



SKETCH OF PERMISSIBLE SUPPORTS

N.T.S.

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

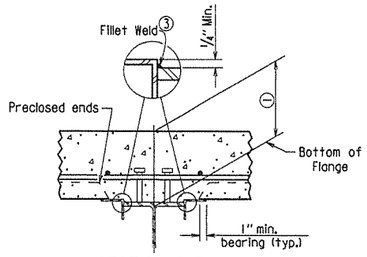


SECTION B-B

1" = 1'-0"

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

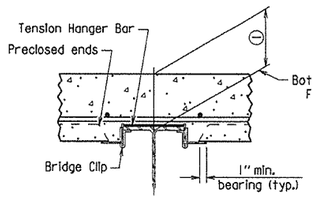
③ Minimum weld: ⅛" x 1' ø 18". More weld may be required; maximum length per weld = 1½" (typ.)



SECTION B-B

1" = 1'-0"

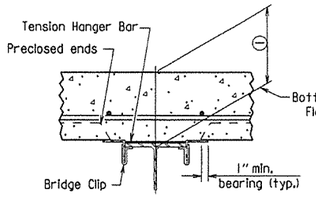
(Showing permissible support for tension flange where shear connectors are used and for all compression flanges)



SECTION B-B

1" = 1'-0"

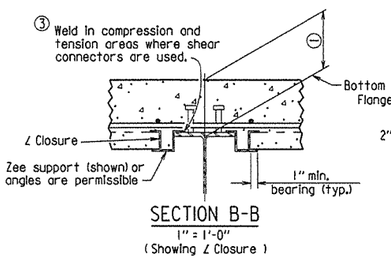
(Showing permissible support for tension flange where shear connectors are not used)



SECTION B-B

1" = 1'-0"

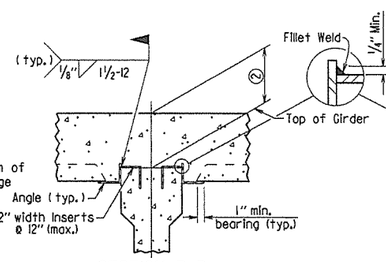
(Showing permissible support for tension flange where shear connectors are not used)



SECTION B-B

1" = 1'-0"

(Showing ∠ Closure)

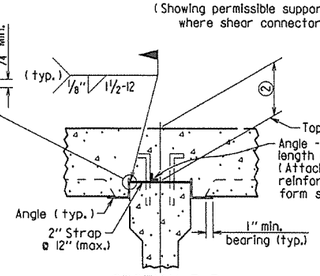


SECTION B-B

(FOR CONCRETE GIRDERS)

1" = 1'-0"

(Showing support by insert cast in girder)

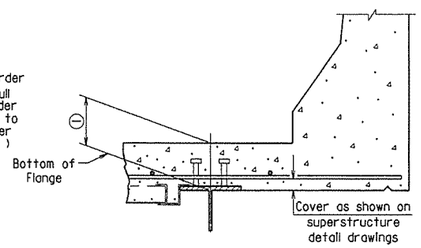


SECTION B-B

(FOR CONCRETE GIRDERS)

1" = 1'-0"

(Showing support by Strap)



SECTION D-D

1" = 1'-0"

Note: Only Bottom Reinforcing is shown.

① Distance from top of slab to bottom of top flange as measured at centerline girder and as shown on superstructure detail drawings. This dimension may vary within the following limits to maintain the grade and slab thickness tolerances : Minimum - occurs when either the top flange or the support angle leg contacts the bottom reinforcing steel; Maximum = t_s + 1¾" + 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.

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.

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

GENERAL NOTES

These GENERAL NOTES are applicable unless otherwise shown in the Plan Details, Special Provisions, or Supplemental Specifications.

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 Specifications.

DESIGN SPECIFICATIONS: See Bridge Layout(s).

SUPERSTRUCTURE NOTES:

MATERIALS AND STRENGTHS:

Class S(AE) Concrete	f'c =	4,000 psi
Reinforcing Steel (Gr. 60, AASHTO M 31 or M 322, Type A)	fy =	60,000 psi
Structural Steel (AASHTO M 270, Gr. 36)	Fy =	36,000 psi
Structural Steel (AASHTO M 270, Gr. 50)	Fy =	50,000 psi
Structural Steel (AASHTO M 270, Gr. 50W)	Fy =	50,000 psi
Structural Steel (AASHTO M 270, Gr. HPS70W)	Fy =	70,000 psi

See Plan Details for Grade(s) of Structural Steel required.

CONCRETE:

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

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.

Use of a longitudinal screed is not permitted on any span of a bridge deck with horizontal curvature.

The concrete deck (roadway surface) shall be given a tine finish in accordance with Subsection 802.19 for Class 5 Tined Bridge Roadway Surface Finish. Sidewalks shall receive a broomed finish as specified for final finishing in Subsection 802.19 for Class 6 Broomed 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 or girder. When permitted, the use of a longitudinal strike-off will require that a vertical camber adjustment be made in the strike-off to account for the future dead load deflection due to any railings, median barrier, and sidewalks.

REINFORCING STEEL:

All reinforcing steel shall be Grade 60 conforming to AASHTO M 31 or M 322, Type A, with mill test reports and shall be epoxy coated. The reinforcing steel is to be accurately located in the forms and firmly held in place by steel wire supports, sufficient in number and size to prevent displacement during the course of construction. The wire supports will not be paid for directly, but will be considered subsidiary to the item "Epoxy Coated Reinforcing Steel (Grade 60)".

STRUCTURAL STEEL (COMMON TO W-BEAMS AND PLATE GIRDERS):

Structural steel shall be AASHTO M 270 with grade and payment as specified in the plans. Grade 50W steel shall not be painted and all exposed surfaces shall be cleaned in accordance with Subsection 807.84(e). Grade 36 and Grade 50 steel shall be painted unless otherwise noted and all exposed surfaces shall be cleaned in accordance with Subsection 807.84. Structural steel completely embedded in concrete may be AASHTO M 270, Gr. 36, Gr. 50 or Gr. 50W unless otherwise noted.

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

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

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

Unless otherwise noted, field connections shall be bolted with ¾" ø high-strength bolts using 13/16 " ø open holes. 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. The use of oversized holes will not be allowed on main members unless otherwise noted. Bolts shall be placed with heads on the outside face of the exterior beam or girder webs and on the bottom of the beam or girder flanges.

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

When painting is required, all structural steel except galvanized steel and steel completely encased in concrete shall be painted in accordance with Subsection 807.75. The color of paint shall be as specified in the plans.

STRUCTURAL STEEL (W-BEAMS):

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

All beams in continuous units and simple spans with field splices shall be blocked in their true position in the shop in groups as specified in Subsection 807.54(b)(2) with the webs horizontal. The camber, length of sections, distance between bearings, and openings of joints shall be measured and this information shall become part of the permanent records. The component parts shall be match marked in this assembly and these marks shall be shown on the erection diagram.

All beams in simple spans without field splices shall be blocked in their true position with webs horizontal. The camber, distance between bearings, and openings of joints shall be measured and this information shall become part of the permanent records.

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 beam dimensions are based on a temperature of 60 degrees F. A tolerance of ¼" +/- is allowed for camber.

Bent plate diaphragms for horizontally curved beams 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. Bent plate diaphragms for straight beams may be cut and fabricated in accordance with Subsection 807.35 or as required for horizontally curved beams.

Unless otherwise noted, 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.

STRUCTURAL STEEL (PLATE GIRDERS):

All references to cross-frames shall include "X" or "K" types.

All girder web and flange plates, all field splice plates, and all diaphragms, cross-frames and connection plates attached to horizontally curved girders 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 Plate Girder Spans (M 270, Gr. ___)".

All girders in continuous units and simple spans with field splices shall be assembled in the shop as specified in Subsection 807.54(b)(2) and blocked in their true position with webs horizontal. The camber, length of sections, distance between bearings, and openings of joints shall be measured and this information shall become part of the permanent records. The component parts shall be match marked in this assembly and these marks shall be shown on the erection diagram.

All girders in simple spans without field splices shall be blocked in their true position with webs horizontal. The camber, distance between bearings, and openings of joints shall be measured and this information shall become part of the permanent records.

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

Girder webs may be made by shop splicing with minimum lengths of 25 feet for sections. Flange plates longer than 50 feet may be made by shop splicing with minimum lengths of 25 feet for sections. No additional payment will be made for shop welded splices.

All girder dimensions are based on a temperature of 60 degrees F. A tolerance of ¼" +/- is allowed for camber.

Groove welds in web and flange plates shall be Quality Control (Q.C.) tested by nondestructive testing, as required in Subsection 807.23(b). Fillet welds at flange to web plate connections shall be Q.C. tested by the magnetic particle method. All Q.C. testing shall be considered subsidiary to the item "Structural Steel in Plate Girder Spans (M 270, Gr. ___)".

Bent plate diaphragms for horizontally curved girders 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. Bent plate diaphragms for straight girders may be cut and fabricated in accordance with Subsection 807.35 or as required for horizontally curved girders.

Unless otherwise noted, cross-frames and diaphragms shall be installed as girders are erected. All bolts in cross-frames, diaphragms, and field splices shall be installed and tightened in accordance with Subsection 807.71 prior to pouring the concrete deck.

SUBSTRUCTURE NOTES:

CONCRETE:

Unless otherwise noted, concrete in caps, columns and footings (except seal footings) shall be Class "S" with a minimum 28 day compressive strength f'c = 3,500 psi and shall be poured in the dry. Seal Concrete for footings shall have a minimum 28 day compressive strength f'c = 2,100 psi.

Concrete in drilled shafts shall be Class "S" as modified by Job SP "Drilled Shaft Foundations".

All exposed corners shall be chamfered ¾" unless otherwise noted.

REINFORCING STEEL:

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

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

STRUCTURAL STEEL:

Structural steel in end bents shall be AASHTO M 270 with grade and payment as specified in the plans.

FOR ADDITIONAL INFORMATION AND NOTES, SEE LAYOUT(S) AND PLAN DETAILS.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		75	
				JOB NO.				
				①	GENERAL NOTES		55006	

STANDARD GENERAL NOTES
FOR STEEL BRIDGE STRUCTURES

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: A.M.S. DATE: 9-2-2015 FILENAME: b55006.dgn
CHECKED BY: B.E.F. DATE: 9-2-2015 SCALE: NO SCALE
DESIGNED BY: STD. DATE:

DRAWING NO. 55006

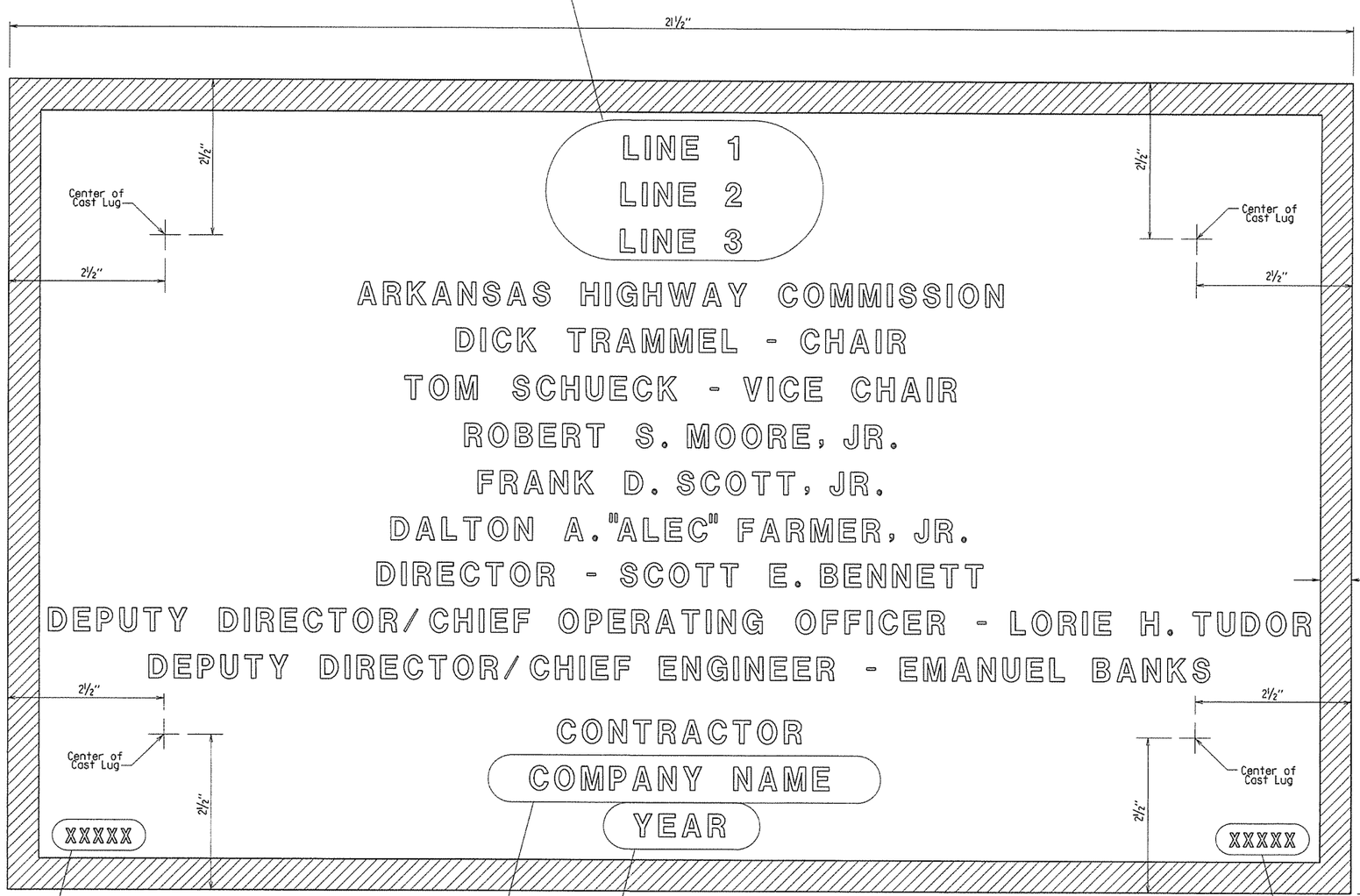
PRINT DATE: 9/10/2015

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
12-1-14				6	ARK.		76	
1-14-15				JOB NO.				

(1) TYPE D NAME PLATE 55010

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

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



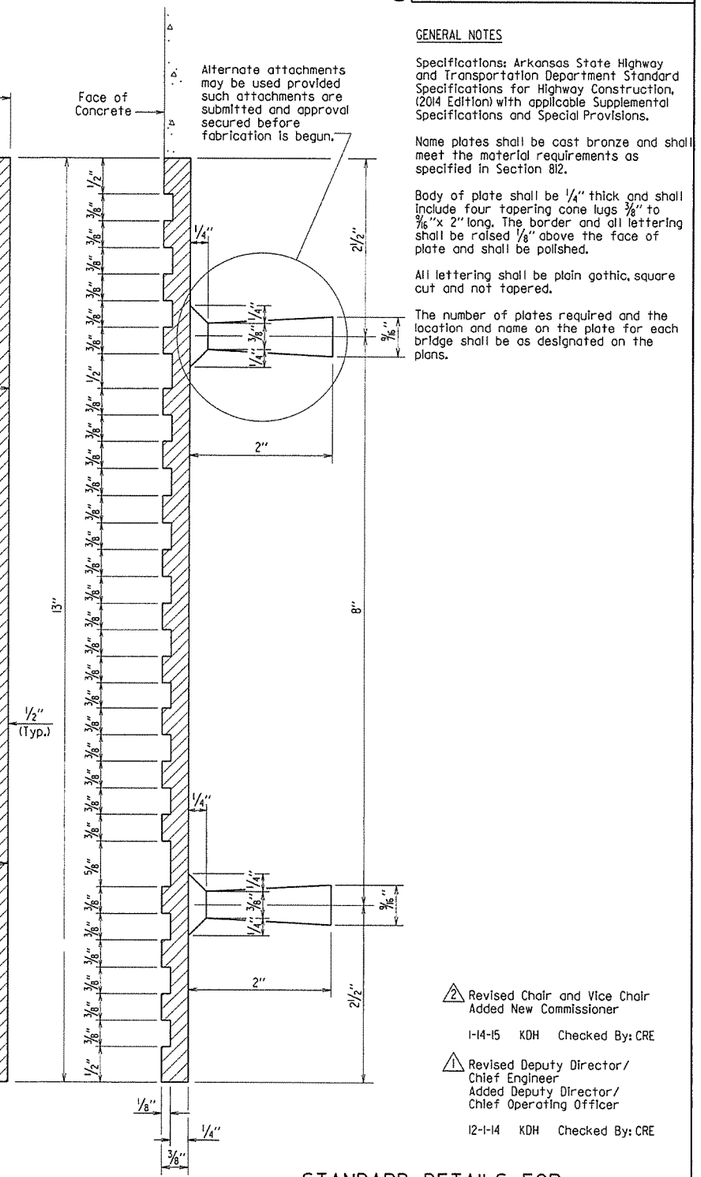
Place the design live loading here using 1/8" raised letters and numerals 1/4" high. Examples : HS 20
HL-93

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

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

Place the Bridge number here using 1/8" raised letters and numerals 1/4" high. Examples : AI234
05432

TYPICAL BRIDGE NAME PLATE



GENERAL NOTES

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

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

Body of plate shall be 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.

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

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

STANDARD DETAILS FOR
TYPE D BRIDGE NAME PLATE

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

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

DRAWING NO. 55010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		77	
				JOB NO.				
				①		STEEL H-PILES		55020

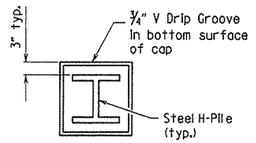
GENERAL NOTES FOR STEEL H-PILES:

Steel H-Piles shall conform to AASHTO M 270, Grade 36 or greater.

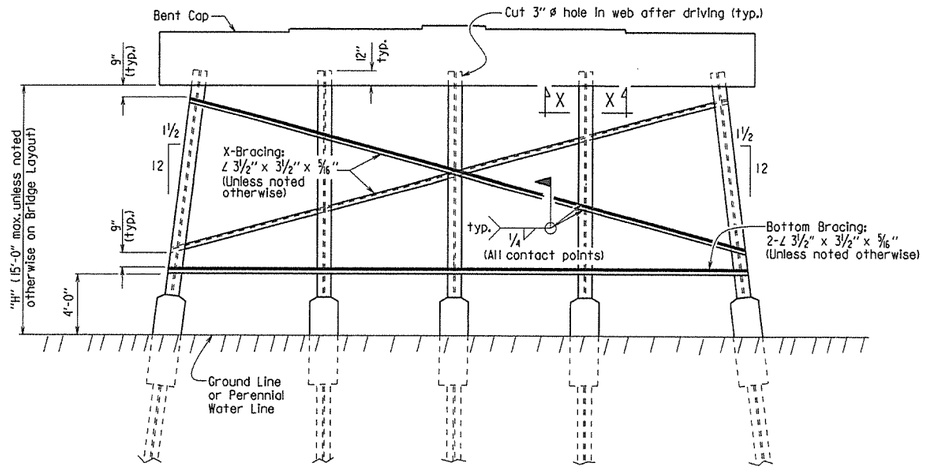
See Bridge Layout and Bent Details for pile size, estimated length, spacing, pile anchorage (if required) and for driving information.

Steel H-Piles that extend above the ground and are not protected by pile encasement shall be painted in accordance with Subsection 805.02.

Brackets, lugs, cap plates, pile tips, driving points, pile painting, splicing and welding shall not be paid for directly, but shall be considered subsidiary to the item "Steel Piling".



VIEW X-X



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

Unless noted otherwise, omit X-Bracing when "H" is less than 8 feet.

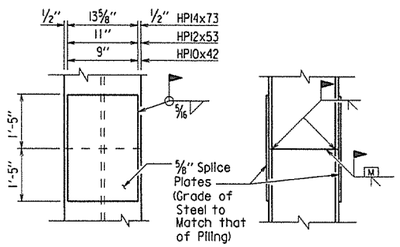
Omit X-Bracing and Bottom Bracing when "H" is 5 feet or less.

When required on the Bridge Layout sheet, pile encasements shall be constructed. See Notes and Details for H-Pile Encasements.

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

TYPICAL DETAILS OF H-PILE TRESTLE INTERMEDIATE BENT

(Shown with Partial Height Encasement)

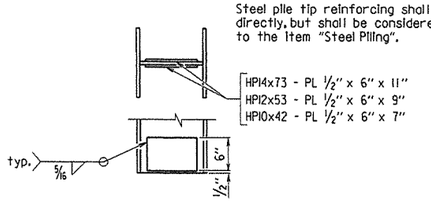


Note:
The Contractor may for his own convenience and at his own expense provide as many as three splices per pile. Minimum spacing between splices shall be 5 feet.

TYPICAL SPLICE DETAILS

Notes:
Steel pile tip reinforcing not required when approved H-Pile driving points are used.

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



REINFORCING DETAIL FOR STEEL H-PILE TIP

GENERAL NOTES FOR H-PILE ENCASEMENTS:

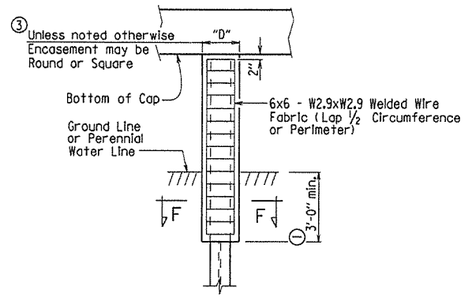
See Bridge Layout for additional notes and required location of pile encasements.

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

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

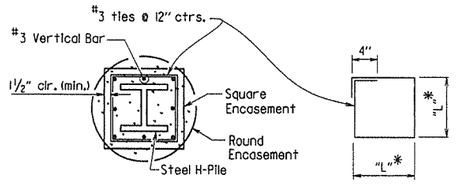
Welded Wire Fabric shall conform to AASHTO M 55 or M 221. Galvanized Corrugated Steel Pipe shall conform to AASHTO M 36 and M 218.

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



PILE ENCASEMENT DETAIL FOR STEEL H-PILES

④ (Shown with Encasement to Bottom of Cap)

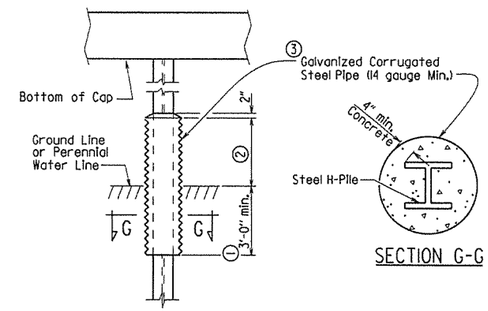


SECTION F-F

*Measured out-to-out of bar.

TABLE OF VARIABLES FOR PILE ENCASEMENT

Pile Size	"D" Square Encsmt.	"D" Round Encsmt.	"L"*
HPI0x42	1'-7"	2'-0"	1'-4"
HPI2x53	1'-8"	2'-2"	1'-5"
HPI4x73	1'-11"	2'-6"	1'-8"



SECTION G-G

⑤ ALTERNATE PILE ENCASEMENT DETAIL FOR STEEL H-PILES

(Shown with Partial Height Encasement)

① Unless otherwise noted on Bridge Layout.

② 3'-0" minimum or as shown on Bridge Layout.

③ Encasement dimensions shall be sized to maintain a minimum concrete cover of 4" from the H-Pile. Reinforcement shall be sized to provide a minimum concrete cover of 1½" and a minimum clearance of 1¼" from the pile.

④ Alternate pile encasement, when not extended to bottom of cap, shall have 2" concrete taper for water runoff as shown in the Partial Height Encasement detail.

⑤ Alternate pile encasement may not be allowed. See Bridge Layout.

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

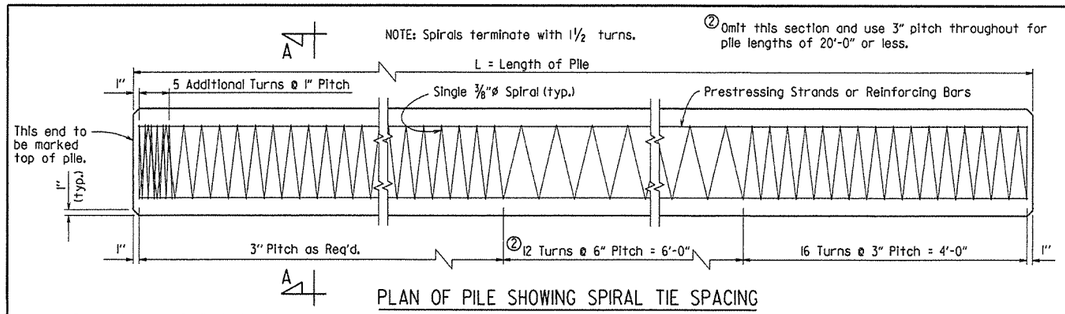
BRIDGE ENGINEER

STANDARD DETAILS FOR STEEL H-PILES AND PILE ENCASEMENTS

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: A.M.S. DATE: 2/27/2014 FILENAME: b55020.dgn
CHECKED BY: B.E.F. DATE: 2/27/2014 SCALE: NO SCALE
DESIGNED BY: STD. DATE: —

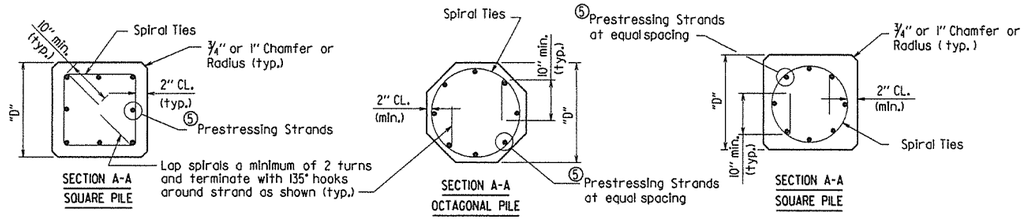
DRAWING NO. 55020



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

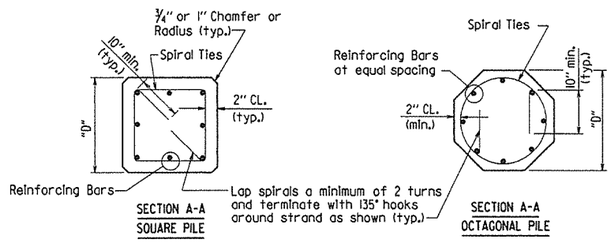
① Number based on initial pre-stress force of "B" x Ultimate Tensile Stress, Prestress Losses and min. 700 psi Unit Prestress on concrete after Losses.

"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	①Number of Strands per Size "D" 16" Oct.	18" Oct.	④ 14" Sq.	16" Sq.	18" Sq.	Minimum Ultimate Tensile Strength Per Strand (Lbs.)	Initial Prestressing Force Per Strand (Lbs.)
Stress-Relieved	250	7/16"	11	13	10	13	16	27,000	18,900
		½"	8	10	8	10	12	36,000	25,200
	270	7/16"	9	11	8	12	14	31,000	21,700
		½"	7	9	6	8	10	41,300	28,900
Low Relaxation	250	7/16"	9	11	8	11	14	27,000	20,200
		½"	7	9	6	8	10	36,000	27,000
	270	7/16"	8	10	7	9	12	31,000	23,300
		½"	6	8	6	7	9	41,300	31,000

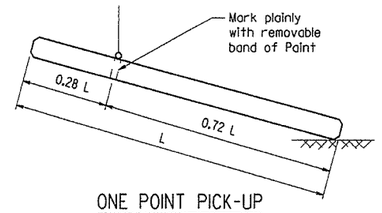


NON-PRESTRESSED PILE REINFORCING

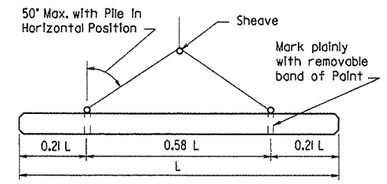
Pile Size	No. Req'd.	Bar Size
16" Oct.	8	# 7
18" Oct.	8	# 7
④ 14" Sq.	8	# 7
16" Sq.	8	# 7
18" Sq.	8	# 8

④ 14" sq. piles to be used in Seismic Performance Zone 1 only.

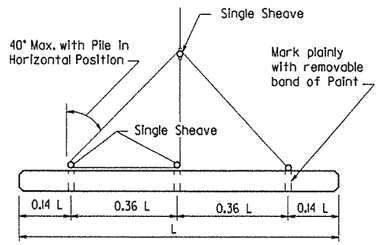
NON-PRESTRESSED CONCRETE PILES



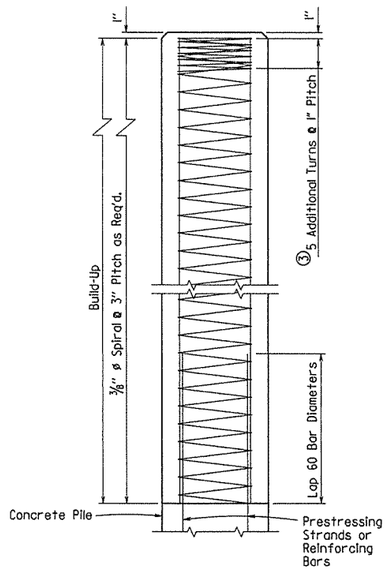
ONE POINT PICK-UP



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.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		78	
				JOB NO.				
				①	CONC. PILES	55022		

MAXIMUM PICKUP LENGTHS "L"

Type of Pick-Up	Prestressed 16" Oct.	18" Oct.	Non-Prestressed 16" or 18" Oct.	Prestressed ④ 14" Sq.	16" Sq.	18" Sq.	Non-Prestressed 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.

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

BRIDGE ENGINEER

STANDARD DETAILS FOR CONCRETE PILES

ARKANSAS STATE HIGHWAY COMMISSION

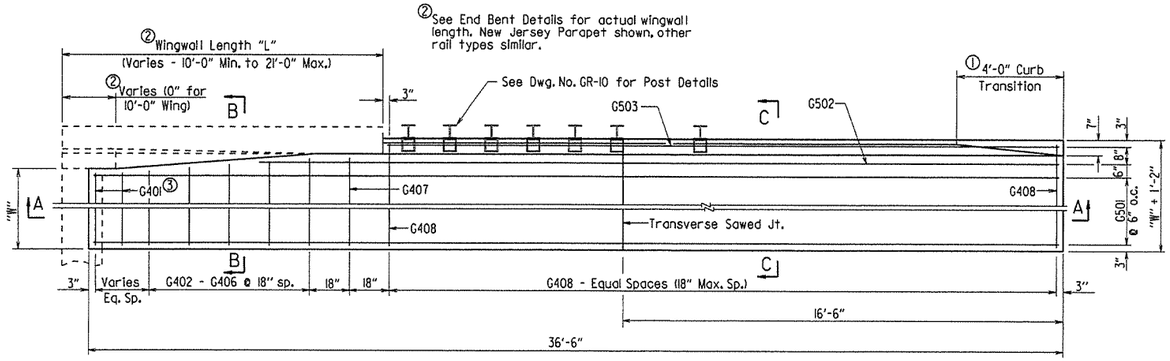
LITTLE ROCK, ARK.

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

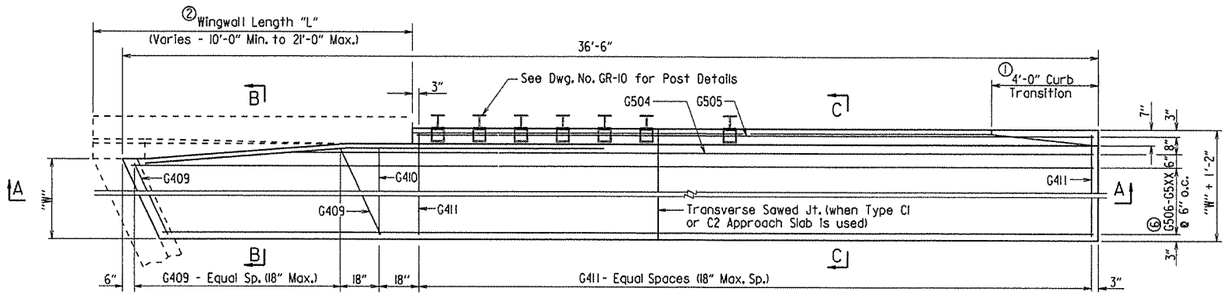
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		79	
				JOB NO.				

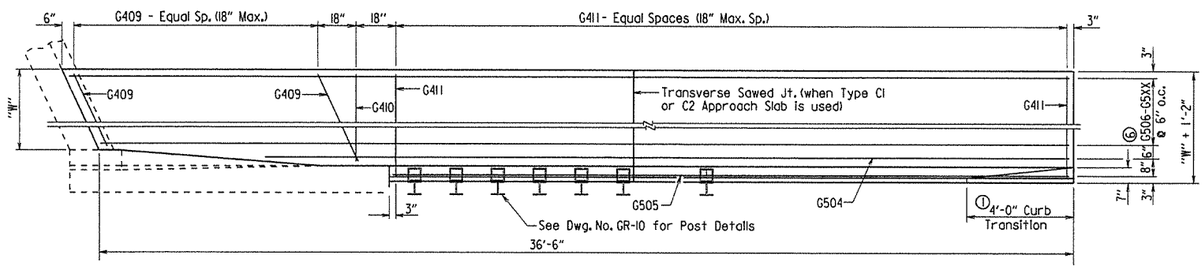
① TYPE C GUTTERS 55030C



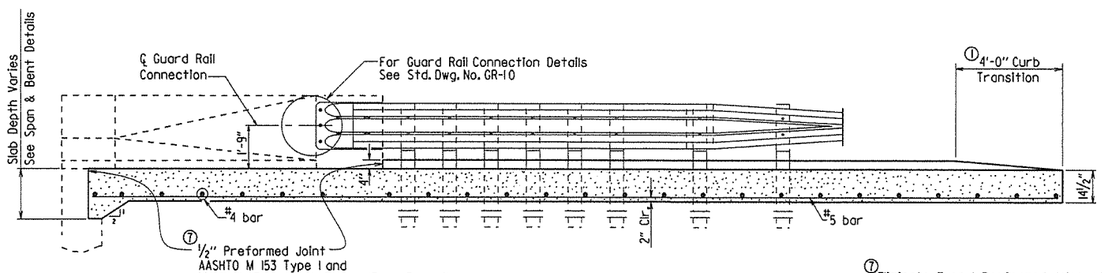
③Provide G401 bars @ 18" max. spacing. Number of G401 bars vary with wingwall length. No G401 bars required for 10'-0" wingwalls.

HALF PLAN OF APPROACH GUTTERS FOR SQUARE BRIDGE





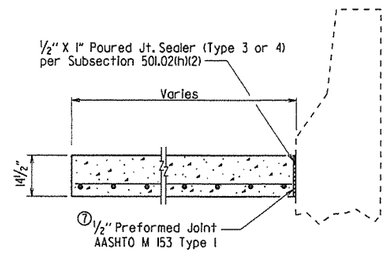
PLAN OF APPROACH GUTTERS FOR SKEWED BRIDGE



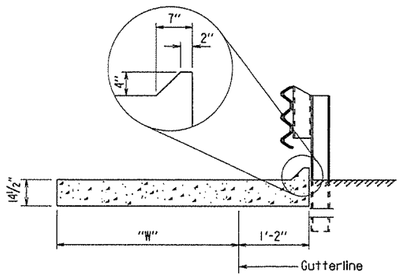
SECTION A-A

①Construct 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.

⑦Eliminate Type I Preformed Joint at end bent backwall and at face of wingwalls when gutters used with Type C2 Approach Slabs. Poured joint sealer is required, however backer rod shall be eliminated.

BAR LIST FOR ONE TYPE C GUTTER

	Mark	No. Req'd. for Width "W" 4'-0"	6'-0"	8'-0"	10'-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	④	④	④	④	"W"+ 10"
	G501	8	12	16	20	36'-2"
	G502	1	1	1	1	(4'-1") - "L"
	G503	1	1	1	1	(37'-2") - "L"
Skewed Bridge	G409	④	④	④	④	⑤
	G410	1	1	1	1	"W"+3"
	G411	④	④	④	④	"W"+ 10"
	G504	1	1	1	1	⑤
	G505	1	1	1	1	⑤
	G506 - G5XX ⑥	1 each	1 each	1 each	1 each	⑤

④No. Req'd. varies with Skew and Wingwall Length.

⑤Bar Lengths vary with Skew and Wingwall Length.

⑥G513 for "W" = 4'
G517 for "W" = 6'
G521 for "W" = 8'
G525 for "W" = 10'

QUANTITIES FOR ONE SQUARE APPROACH GUTTER

(FOR INFORMATION ONLY)

"W" Width (ft.)	Reinforcing Steel (Lbs.)	Concrete (Cu. Yds.)
4	445	8.30
6	630	11.55
8	810	14.80
10	995	18.10

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 C APPROACH GUTTERS

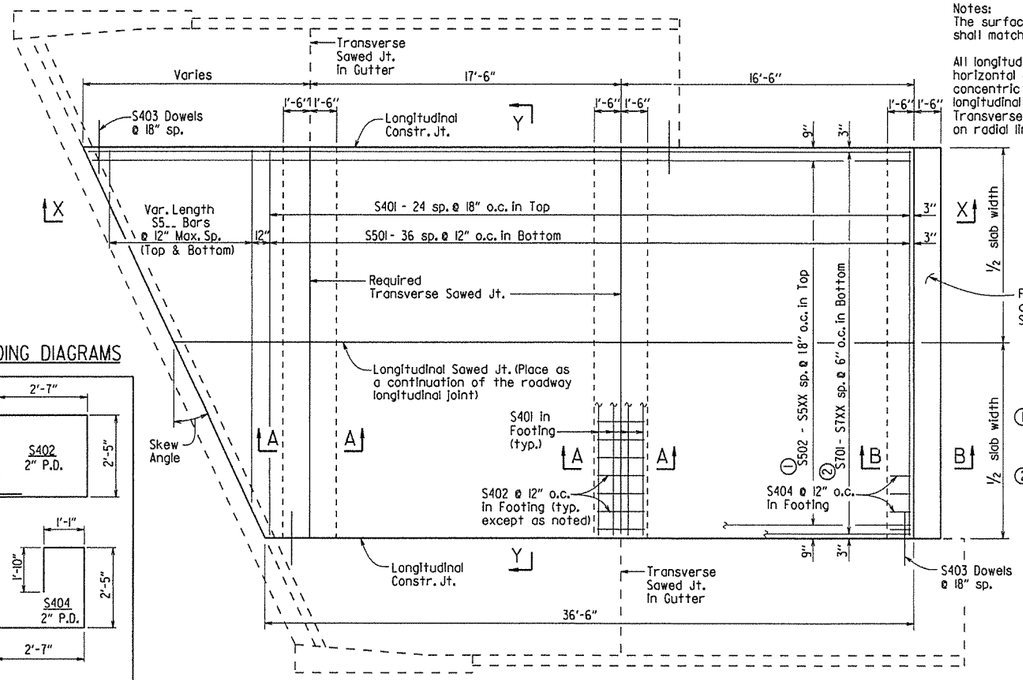
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: A.M.S. DATE: 2/27/2014 FILENAME: b55030c.dgn
CHECKED BY: K.W.Y. DATE: 2/27/2014 SCALE: 3/8" = 1'-0" or As Shown
DESIGNED BY: STD. DATE:

DRAWING NO. 55030C

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

TYPE C2 APPROACH SLAB 55040C2



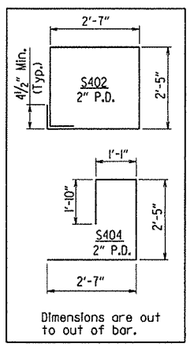
Notes:
The surface finish for Approach Slabs shall match that used on the bridge deck.

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

① S5XX = S511 for 15'-0" Width
= S517 for 24'-0" Width
= S525 for 36'-0" Width

② S7XX = S730 for 15'-0" Width
= S748 for 24'-0" Width
= S772 for 36'-0" Width

BENDING DIAGRAMS



Dimensions are out to out of bar.

BAR LIST

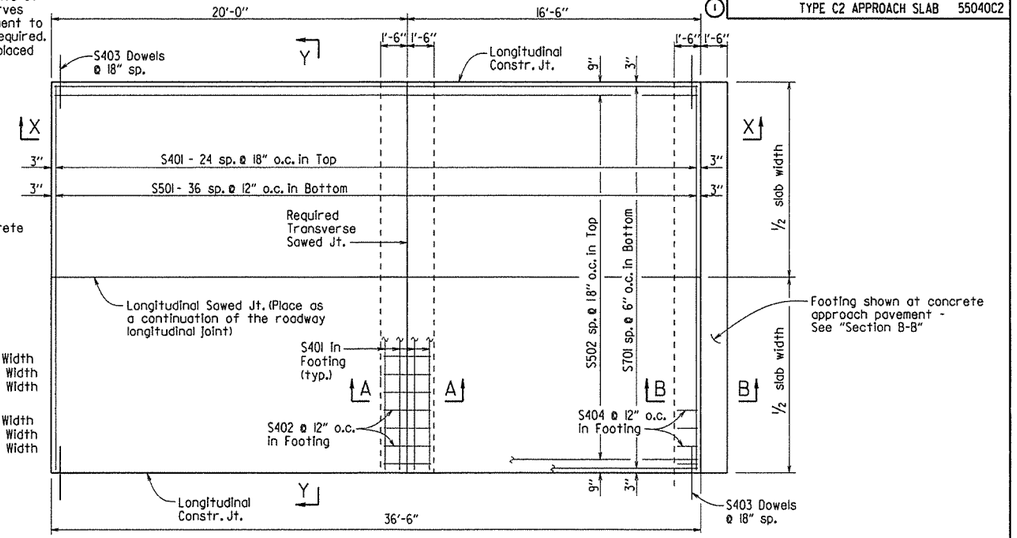
(Square & Skewed Approach Slabs)

	Mark	Square No. Req'd.	Square Length	Skewed No. Req'd.	Skewed Length
15'-0" Slab Width	S401	33	14'-8"	37	14'-8"
	S402	15	10'-4"	30	10'-4"
	S403	50	3'-0"	*	3'-0"
	S404	15	7'-8"	15	7'-8"
	S501	37	14'-8"	37	14'-8"
	S502	10	36'-2"	—	—
	S502 - S511	—	—	1 Ea.	36.1' + 0.75'(tan skew angle) to 36.1' + 14.25'(tan skew angle)
	S5__	—	—	2 Ea.	14.7' - 0.75'/(tan skew angle) to 2'-0" Min.
	S701	30	36'-2"	—	—
	S701 - S730	—	—	1 Ea.	36.1' + 0.25'(tan skew angle) to 36.1' + 14.75'(tan skew angle)
24'-0" Slab Width	S401	33	23'-8"	37	23'-8"
	S402	24	10'-4"	48	10'-4"
	S403	50	3'-0"	*	3'-0"
	S404	24	7'-8"	24	7'-8"
	S501	37	23'-8"	37	23'-8"
	S502	16	36'-2"	—	—
	S502 - S517	—	—	1 Ea.	36.1' + 0.75'(tan skew angle) to 36.1' + 23.25'(tan skew angle)
	S5__	—	—	2 Ea.	23.7' - 0.75'/(tan skew angle) to 2'-0" Min.
	S701	48	36'-2"	—	—
	S701 - S748	—	—	1 Ea.	36.1' + 0.25'(tan skew angle) to 36.1' + 23.75'(tan skew angle)
36'-0" Slab Width	S401	33	35'-8"	37	35'-8"
	S402	36	10'-4"	72	10'-4"
	S403	50	3'-0"	*	3'-0"
	S404	36	7'-8"	36	7'-8"
	S501	37	35'-8"	37	35'-8"
	S502	24	36'-2"	—	—
	S502 - S525	—	—	1 Ea.	36.1' + 0.75'(tan skew angle) to 36.1' + 35.25'(tan skew angle)
	S5__	—	—	2 Ea.	35.7' - 0.75'/(tan skew angle) to 2'-0" Min.
	S701	72	36'-2"	—	—
	S701 - S772	—	—	1 Ea.	36.1' + 0.25'(tan skew angle) to 36.1' + 35.75'(tan skew angle)

*Varies with skew angle

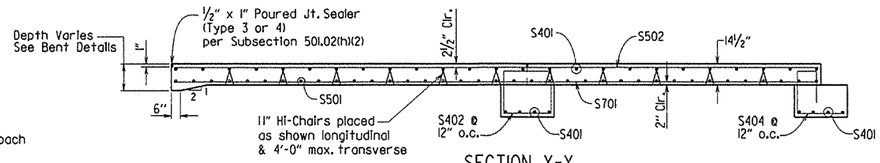
PLAN - SKEWED APPROACH SLAB WITH APPROACH GUTTERS

¼" = 1'-0"



PLAN - SQUARE APPROACH SLAB

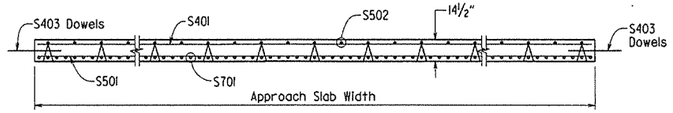
¼" = 1'-0"



SECTION X-X

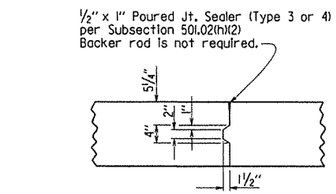
SQUARE APPROACH SLAB SHOWN

¼" = 1'-0"



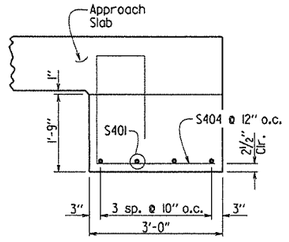
SECTION Y-Y

N.T.S.



DETAILS OF LONGITUDINAL CONSTRUCTION JOINT

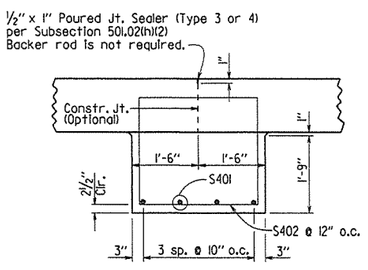
¾" = 1'-0"



SECTION B-B

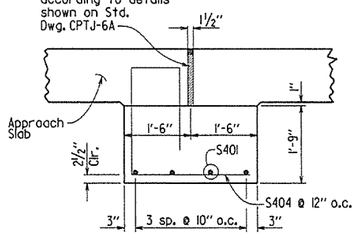
AT ASPHALT APPROACH PAVEMENT

N.T.S.



SECTION A-A

N.T.S.



SECTION B-B

AT CONCRETE APPROACH PAVEMENT

N.T.S.

TABLE OF QUANTITIES FOR ONE SQUARE APPROACH SLAB

(FOR INFORMATION ONLY)

Slab Width	Reinforcing Steel (Lbs.)	Concrete (Cu. Yds.)
15'-0"	3765	30.75
24'-0"	5980	49.15
36'-0"	8925	73.75

GENERAL NOTES

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

15'-0" Slab Width: Maximum Skew Angle = 50°
24'-0" Slab Width: Maximum Skew Angle = 40°
36'-0" Slab Width: Maximum Skew Angle = 30°

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

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

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

STANDARD DETAILS FOR TYPE C2 APPROACH SLAB

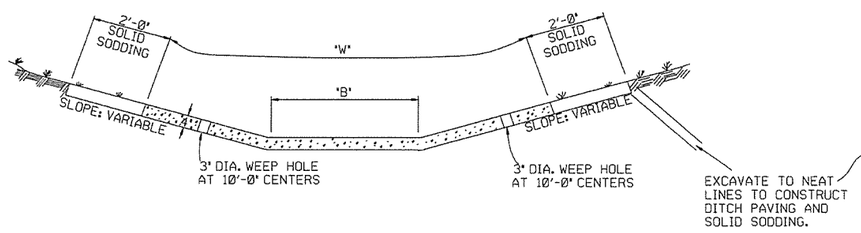
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: A.M.S. DATE: 2/27/2014 FILENAME: b55040c2.dgn
CHECKED BY: K.W.Y. DATE: 2/27/2014 SCALE: AS SHOWN
DESIGNED BY: STD. DATE:

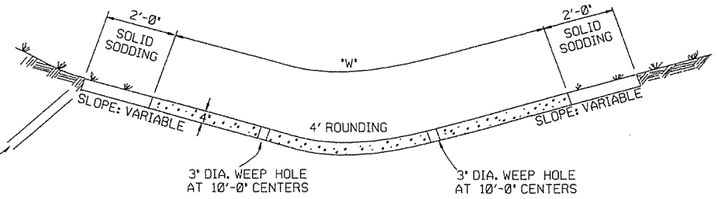
DRAWING NO. 55040C2

REFER TO TABULATION OF QUANTITIES FOR 'W' & 'B' DIMENSIONS



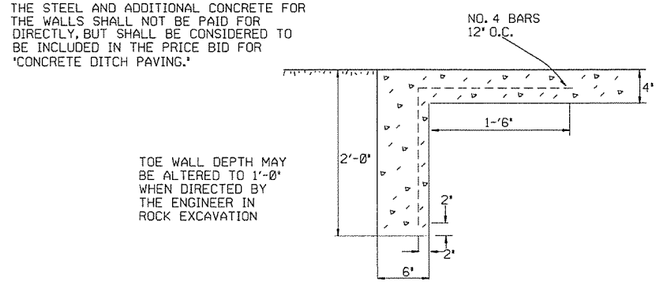
TYPE A

REFER TO TABULATION OF QUANTITIES FOR 'W' DIMENSIONS



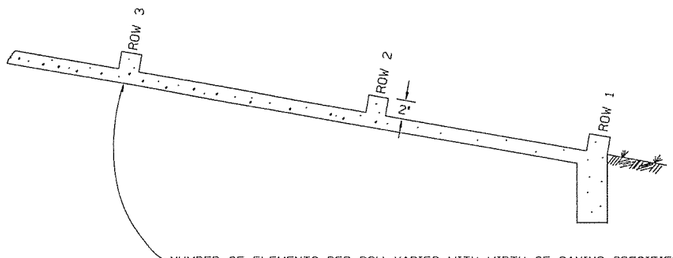
TYPE B

THE STEEL AND ADDITIONAL CONCRETE FOR THE WALLS SHALL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID FOR 'CONCRETE DITCH PAVING.'

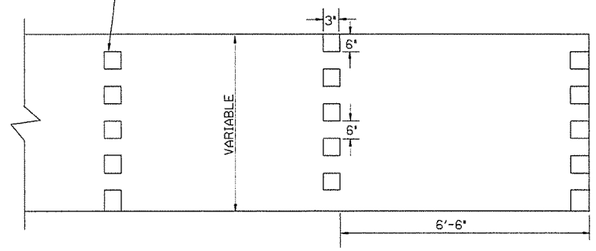


TOE WALL DEPTH MAY BE ALTERED TO 1'-0" WHEN DIRECTED BY THE ENGINEER IN ROCK EXCAVATION

TOE WALL DETAIL FOR CONCRETE DITCH PAVING



ENERGY DISSIPATORS TO BE USED FOR THE ENTIRE LENGTH OF DITCH WHEN SLOPE OF DITCH PAVING EXCEEDS 7%. THE DISSIPATORS WILL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED TO BE UNCLUDED IN THE PRICE BID FOR CONCRETE DITCH PAVING.



ENERGY DISSIPATORS
(NO SCALE)

GENERAL NOTES:

THE FULL WIDTH OF EACH SECTION SHALL BE POURED MONOLITHICALLY.

TOE WALLS TO BE CONSTRUCTED FULL WIDTH AT EACH END OF DITCH PAVING, AND POURED MONOLITHICALLY.

SOLID SOD ALONG DITCH PAVING TO BE PLACED WITHIN 14 DAYS OF DITCH PAVING CONSTRUCTION.

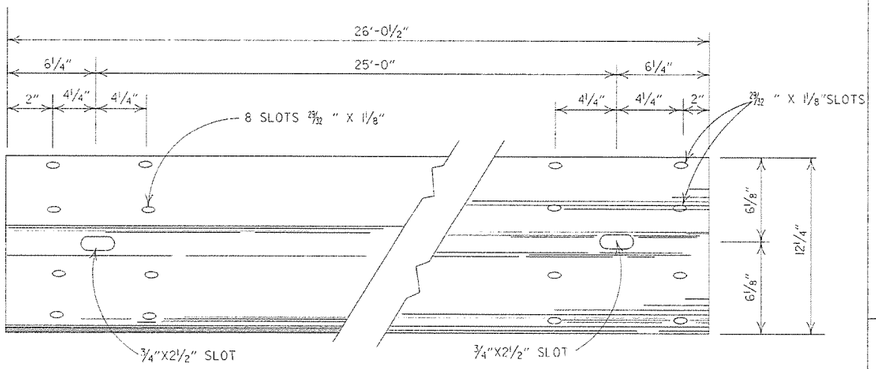
1" WIDE TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE DITCH PAVING AT 45' INTERVALS. THE SPACE SHALL BE FILLED WITH APPROVED JOINT FILLER COMPLYING WITH AASHTO M213.

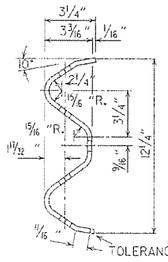
DATE	REVISION	DATE FILM'D
11-17-10	ADDED GENERAL NOTE	
6-2-94	ADDED GENERAL NOTE ABOUT SOLID SODDING	
11-30-8	ELIMINATED MIN. ROWS OF ELEMENTS	111-30-89
7-15-88	REVISED DISSIPATOR NOTE	653-7-15-88
4-3-87	REVISED ENERGY DISSIPATOR	671-4-3-87
1-9-87	MODIFIED NOTE ON ENERGY DISS.	532-1-9-87
11-3-86	ADDED NOTE TO ENERGY DISS.	599-12-1-86
11-1-84	ENERGY DISSIPATOR DETAILS ADDED	508-11-1-84
11-1-84	EXCAVATION DETAILS ADDED TYPED A & B	
10-2-72	REVISED AND REDRAWN	508-10-2-72

ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE DITCH PAVING

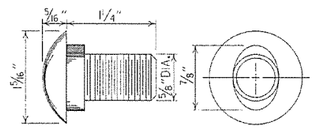
STANDARD DRAWING CDP-1



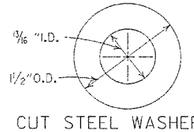


DETAILS OF
W-BEAM GUARD RAIL

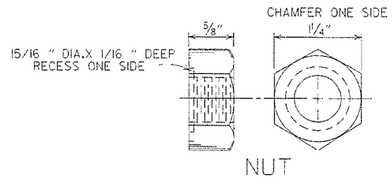
RAIL SECTION OF CLOSELY SIMILAR DIMENSIONS AND COMPARABLE STRENGTH MAY BE SUBSTITUTED IF APPROVED BY THE ENGINEER.



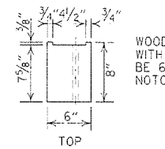
SPLICE BOLT
POST BOLT - SAME EXCEPT LENGTH



CUT STEEL WASHER

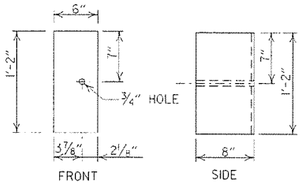


NUT

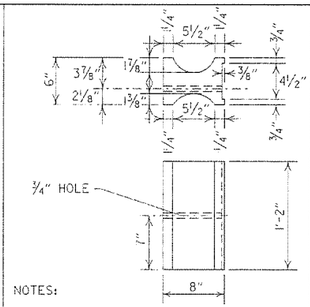


TOP

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



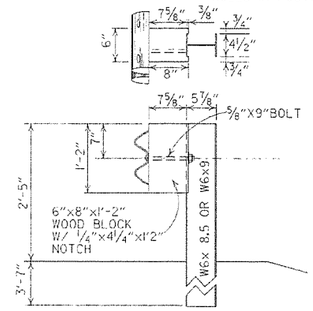
WOOD BLOCKOUT
(W-BEAM)



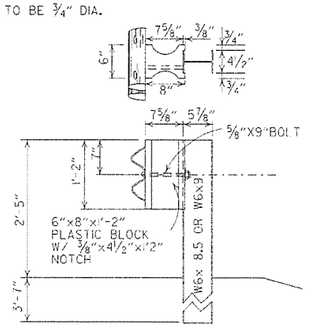
NOTES:
1. SIMILAR SHAPED PLASTIC BLOCKOUTS MAY BE USED AS LONG AS THEY MEET NCHRP-350 TEST LEVEL 3 SPECIFICATIONS OR REQUIREMENTS FOR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).
2. DIMENSIONS ARE SUBJECT TO MANUFACTURERS TOLERANCES.

PLASTIC BLOCKOUT
(W-BEAM)

HOLES IN POSTS AND BLOCKS TO BE ¾" DIA.

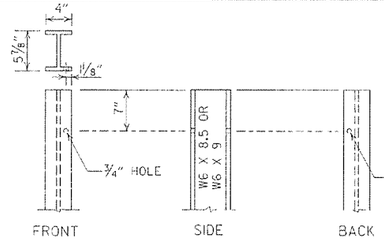


WOOD BLOCKOUT CONNECTIONS

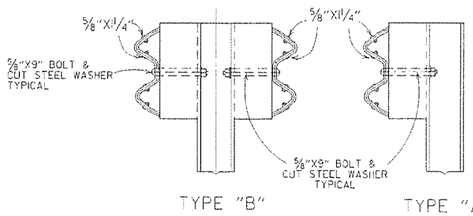


PLASTIC BLOCKOUT CONNECTIONS

DETAILS OF STEEL LINE POST CONNECTIONS
(W-BEAM)



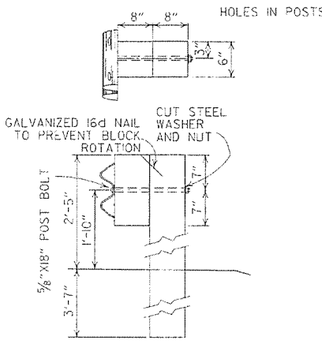
STEEL POST



TYPE "B" TYPE "A"

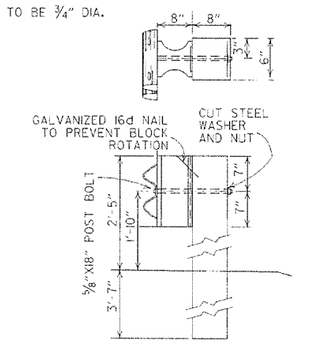
DETAILS OF STEEL LINE POST CONNECTIONS
(W-BEAM)

HOLES IN POSTS AND BLOCKS TO BE ¾" DIA.



POSTS AND BLOCKS TO BE ROUGH SAWN 6"x8" WITH A TOLERANCE OF + OR - ¼".

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 ¼" 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.

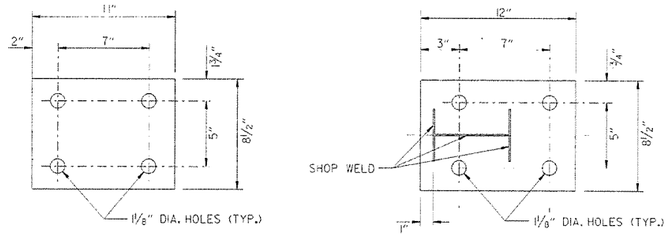
CONTRACTOR SHALL HAVE THE OPTION OF USING WOOD BLOCKOUTS FOR W-BEAM GUARD RAIL OR PLASTIC BLOCKOUTS, AS LONG AS BLOCKOUT USED MEETS NCHRP-350 TEST LEVEL 3 SPECIFICATIONS OR REQUIREMENTS FOR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) FOR W-BEAM GUARD RAIL.

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

ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

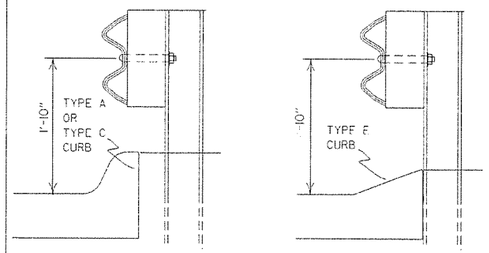
STANDARD DRAWING GR-8



WASHER PLATE

BASE PLATE

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



FOR DESIGN SPEEDS OF 50 MPH OR LESS

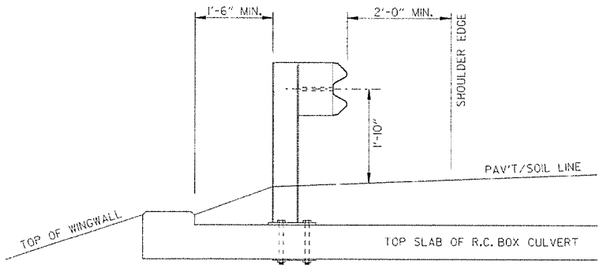
ALIGN FACE OF GUARD RAIL WITH FACE OF CURB.

FOR DESIGN SPEEDS OF 55 MPH OR MORE

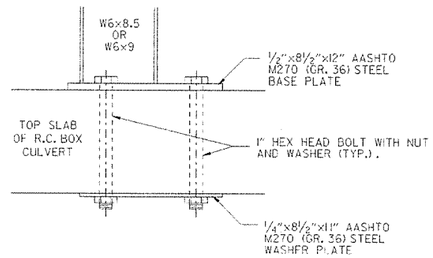
PLACE GUARD RAIL POSTS AGAINST BACK OF CURB.

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

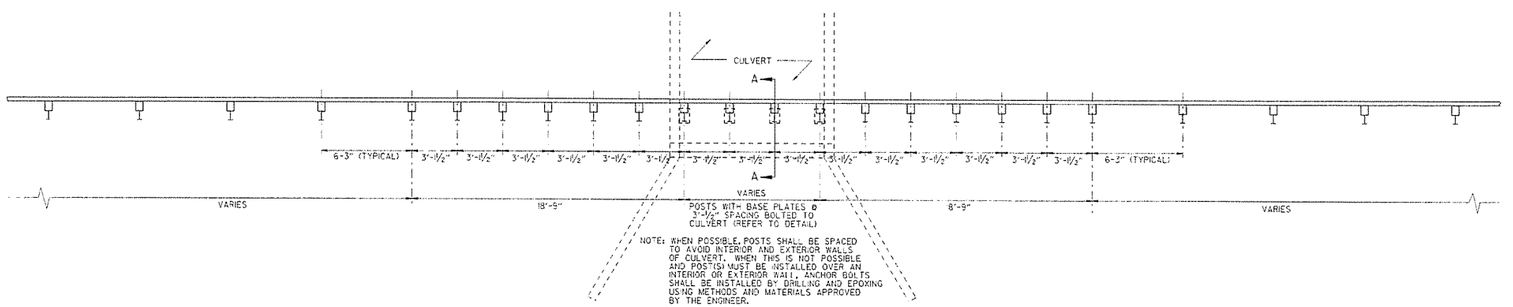
FOR DESIGN SPEEDS OF 50 MPH OR LESS ALL CURB FACES, AS SHOWN ON STD. DRWG. CG-1, MAY BE USED. FOR DESIGN SPEEDS OF 55 MPH OR MORE TYPE "E" CURB FACE SHALL BE USED.



SECTION A-A



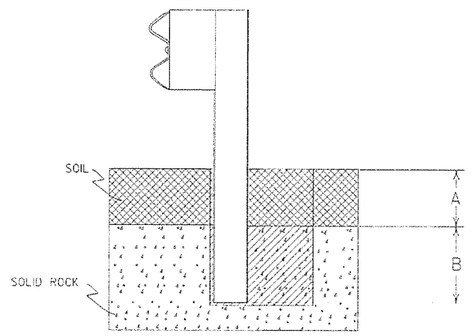
DETAIL OF CONNECTION



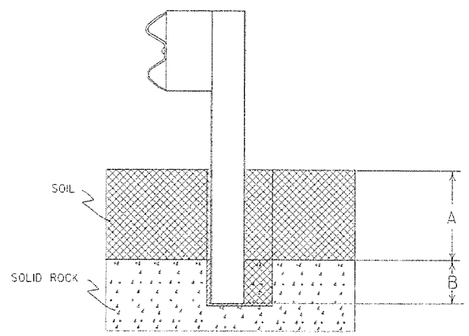
PLAN LAYOUT OF TYPE A GUARD RAIL AT LOW-FILL CULVERTS

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

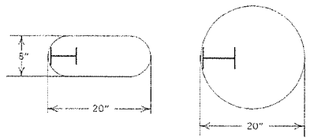


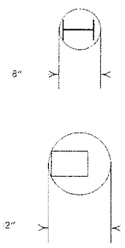
Case 2



Plan View Steel Posts

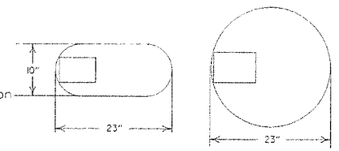
Either hole configuration acceptable





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)

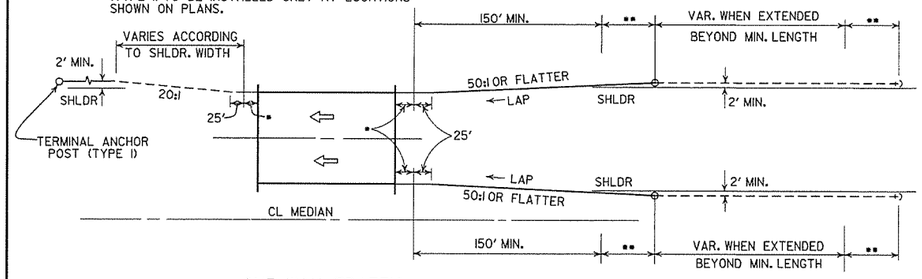
DATE	REVISION	DATE FILM
7-14-10	RAISED HEIGHT OF GUARD RAIL 1"	
4-12-07	REVISED DETAIL OF GUARD RAIL PLACEMENT BEHIND CURB	
11-10-05	ADDED GUARD RAIL PLACEMENT BEHIND CURB; REVISED DETAIL OF CONNECTION	
11-18-04	REVISED POST PLACEMENT IN ROCK & CULVERT CONNECTION DETAILS. ADDED DETAIL FOR GUARD RAIL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

ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

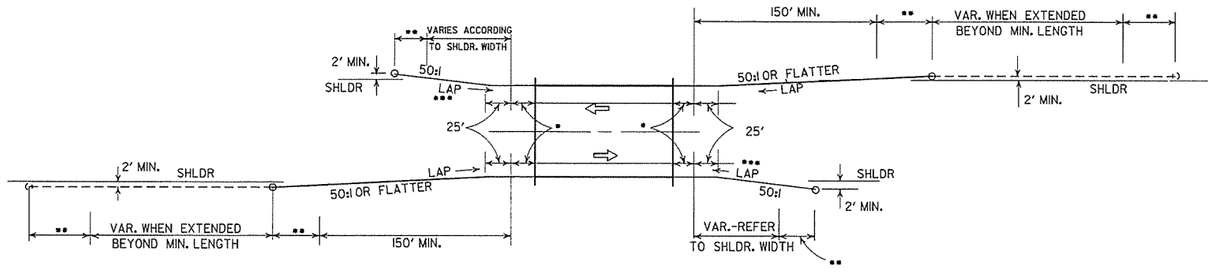
STANDARD DRAWING GR-8A

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



ONE-WAY TRAFFIC

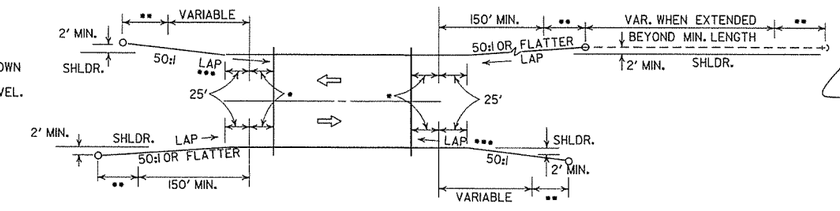
••• LAP OF GUARD RAIL SHALL BE AS SHOWN FOR A DISTANCE OF UP TO 200', CHANGE TO LAP IN DIRECTION OF TRAVEL.



TWO-WAY TRAFFIC

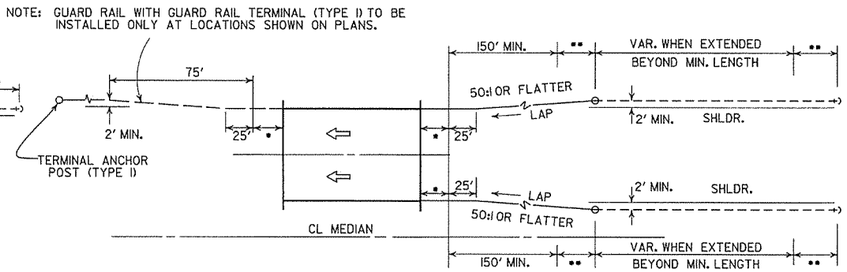
METHODS OF INSTALLATION OF GUARD RAIL AT LESS THAN FULL SHOULDER WIDTH BRIDGES USING GUARD RAIL TERMINAL (TYPE 2)

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



TWO-WAY TRAFFIC

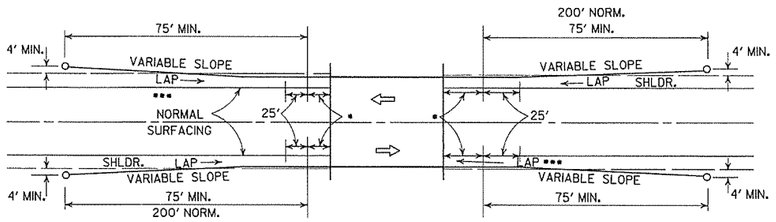
NOTE: GUARD RAIL WITH GUARD RAIL TERMINAL (TYPE I) TO BE INSTALLED ONLY AT LOCATIONS SHOWN ON PLANS.



ONE-WAY TRAFFIC

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

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



LEGEND

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

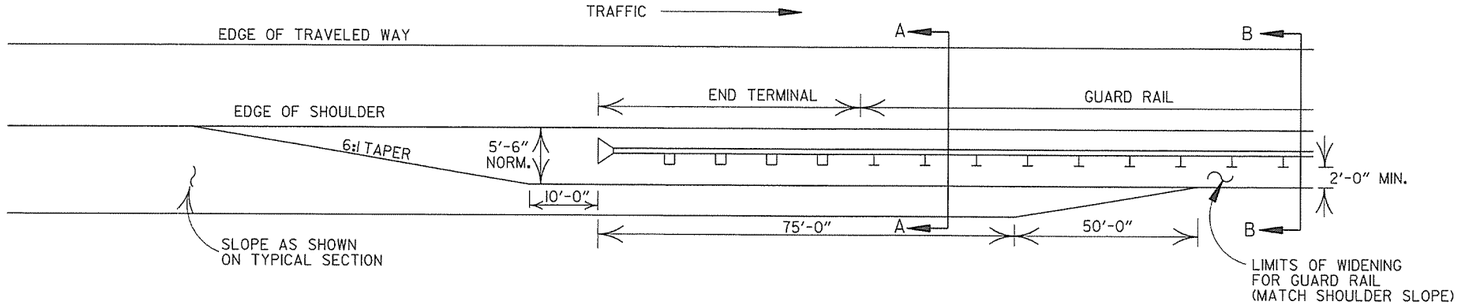
METHOD OF INSTALLATION OF GUARD RAIL USING GUARD RAIL TERMINAL (TYPE I) (FULL SHOULDER WIDTH OR LESS BRIDGES)

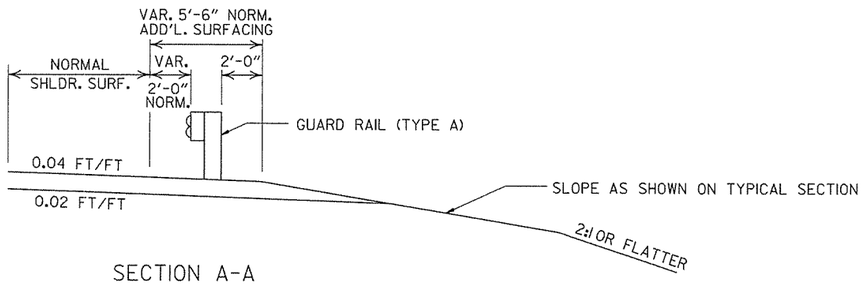
DATE	REVISION	DATE FILM
4-17-08	REVISED LAYOUTS	
11-10-05	REMOVED GUARD RAIL NOTES AND DETAILS	
11-16-01	DELETED NOTE-METHOD OF INSTALLATION OF GUARD RAIL USING GUARD RAIL TERM. (TY. I)	
1-12-00	ADDED CONSTRUCTION NOTE	1-12-00
6-26-97	REVISED LAYOUT	
10-1-92	REDRAWN & REVISED	10-1-92
	ADDED NOTE	
10-9-87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

ARKANSAS STATE HIGHWAY COMMISSION

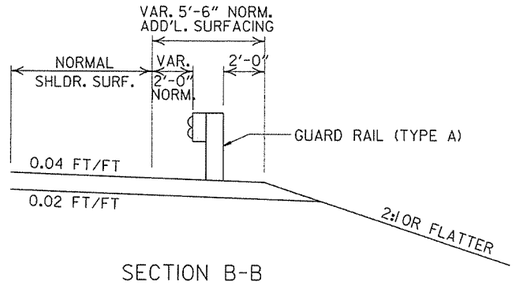
GUARD RAIL DETAILS

STANDARD DRAWING GR-9





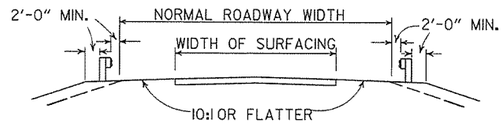
SECTION A-A



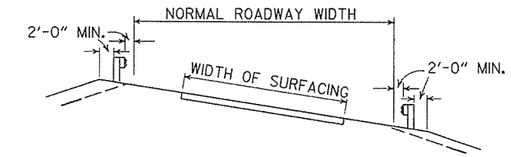
SECTION B-B

DETAILS OF WIDENING FOR GUARD RAIL

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

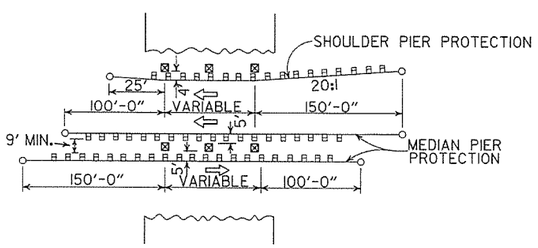


SECTION ON TANGENT



SECTION ON CURVE

DETAILS SHOWING POSITION OF GUARD RAIL ON HIGHWAY



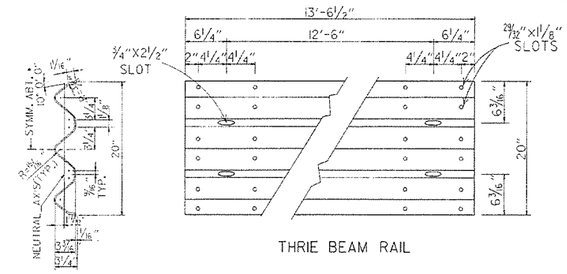
METHOD OF INSTALLATION OF GUARD RAIL AT FIXED OBSTACLE

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

ARKANSAS STATE HIGHWAY COMMISSION

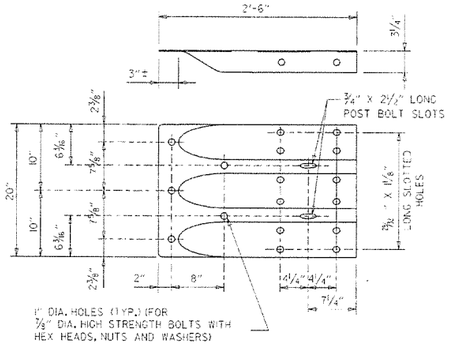
GUARD RAIL DETAILS

STANDARD DRAWING GR-9A



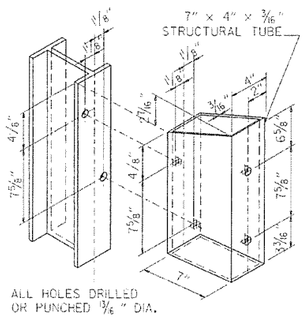
THRIE BEAM RAIL

SECTION THRU
THRIE BEAM RAIL



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

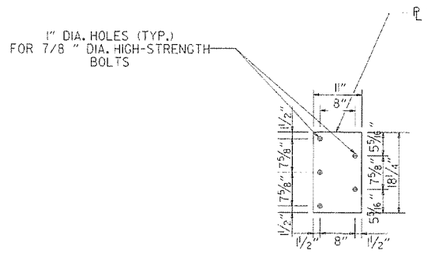
SPECIAL END SHOE



ALL HOLES DRILLED OR PUNCHED ⅜" DIA.

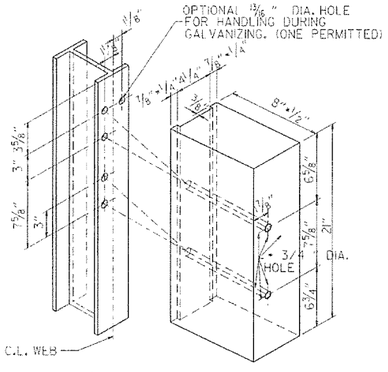
STRUCTURAL STEEL TUBING BLOCKOUT DETAIL

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



CONNECTOR PLATE

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



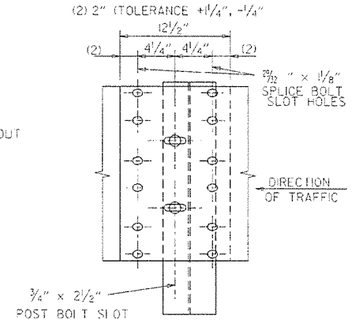
ALL HOLES 13/16" DIAMETER EXCEPT AS NOTED

HOLE PUNCHING DETAIL
FOR STEEL POST & WOOD
OR PLASTIC BLOCKOUTS

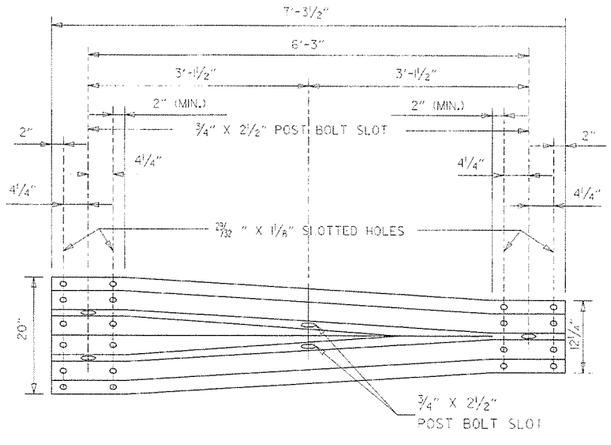
NOTE: BLOCKS SHALL BE THE SAME TYPE THROUGHOUT THE PROJECT LIMITS.

CONNECTOR PLATE

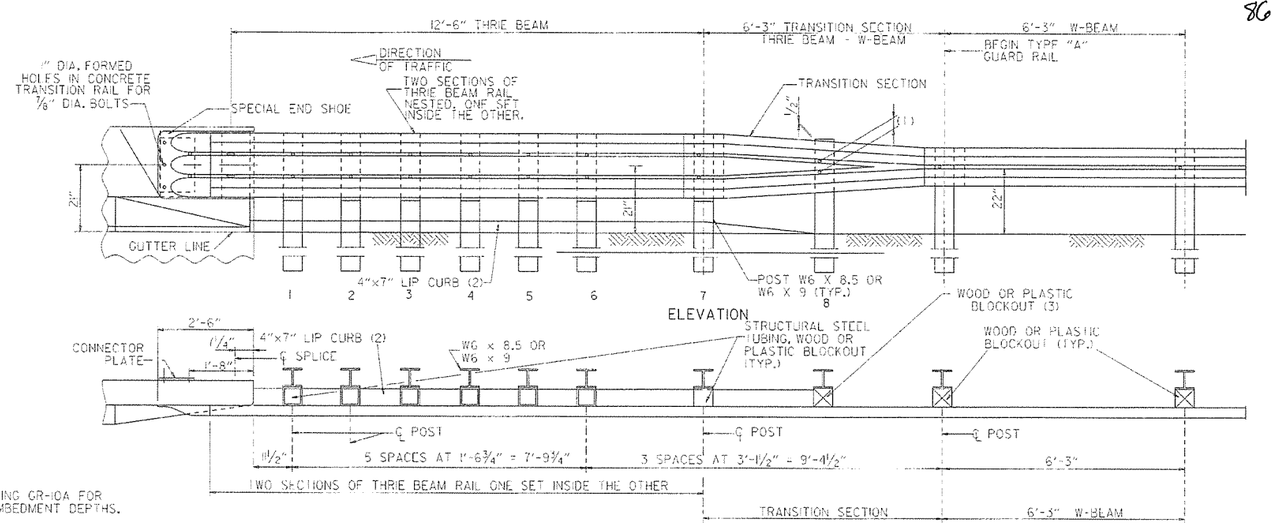
CONNECTOR PLATE SHALL BE AASHTO M270, GR. 36 AND SHALL BE GALVANIZED AFTER FABRICATION. GALVANIZING SHALL CONFORM TO SUBSECTION 807.19 OF THE STANDARD SPECIFICATIONS. CONNECTOR PLATE TO BE BOLTED TO SPECIAL END SHOE USING ⅞" DIA. HIGH STRENGTH BOLTS, WITH THE HEADS PLACED ON THE TRAFFIC FACE. WASHERS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



THRIE BEAM RAIL
SPLICE AT POST



TRANSITION SECTION



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

THRIE BEAM GUARD RAIL CONNECTION AT BRIDGE ENDS

GENERAL NOTES:

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

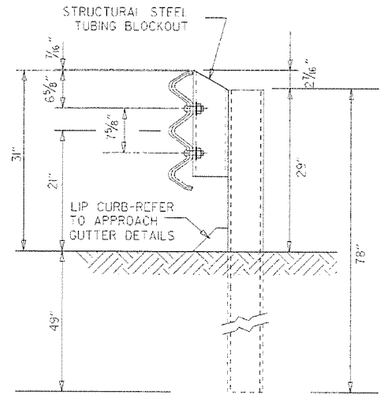
THRIE BEAM POSTS SHALL BE SAME MATERIAL AS W BEAM POSTS FOR ENTIRE JOB.

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	

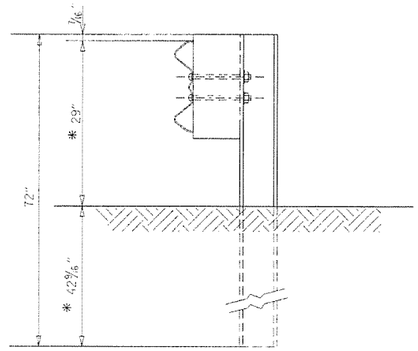
ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR-10

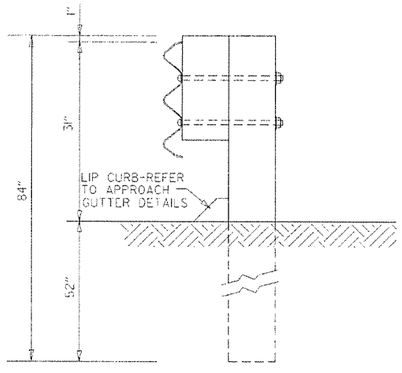


THRIE BEAM RAIL WITH STEEL TUBING BLOCKOUT
AND STEEL POST
POSTS 1-7

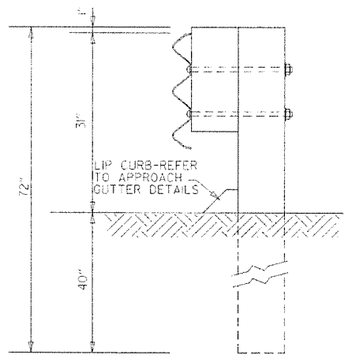


W-BEAM TO THRIE BEAM TRANSITION RAIL
WITH WOOD OR PLASTIC BLOCKOUT AND STEEL POST
POST 8

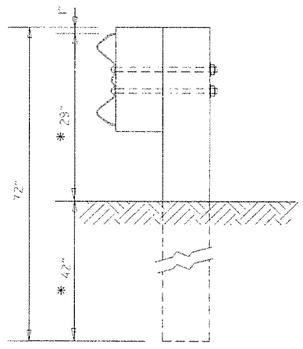
* NOTE:
THESE DIMENSIONS WILL NEED TO BE ADJUSTED IN THE FIELD TO MAKE THE TRANSITION FROM 21" MID POINT OF THRIE BEAM TO 22" MID POINT OF W-BEAM.



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

DATE	REVISION	DATE FILM
7-14-10	REVISED POST 8 DIMENSIONS	
11-29-07	ADDED PLASTIC BLOCKOUTS	
8-22-02	REVISED LIP CURB NOTE	
3-30-00	DRAWN & ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR-10A

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	87½	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.

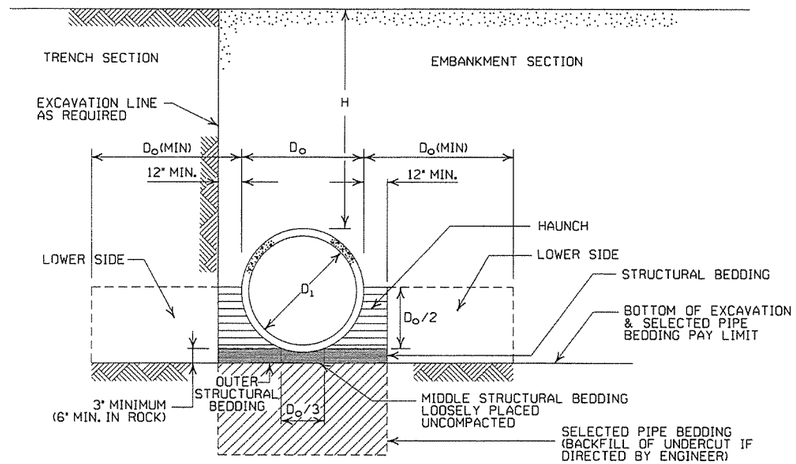
- LEGEND -

D_1 = 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.

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.

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."

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

ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE PIPE CULVERT FILL HEIGHTS & BEDDING

STANDARD DRAWING PCC-1

CORRUGATED STEEL PIPE (ROUND)

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

CORRUGATED ALUMINUM PIPE (ROUND)

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

CORRUGATED METAL PIPE ARCHES

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

CONSTRUCTION SEQUENCE

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

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

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

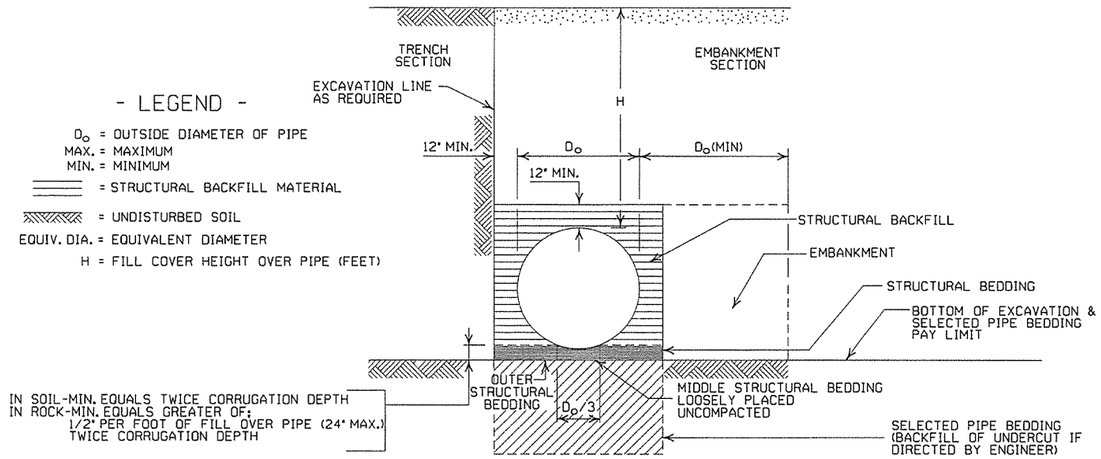
③ SM-3 WILL NOT BE ALLOWED.

EQUIVALENT METAL THICKNESSES AND GAUGES

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

- LEGEND -

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



EMBANKMENT AND TRENCH INSTALLATIONS

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

GENERAL NOTES

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

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

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

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

ARKANSAS STATE HIGHWAY COMMISSION

METAL PIPE CULVERT FILL HEIGHTS & BEDDING

STANDARD DRAWING PCM-1

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

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

SM3 WILL NOT BE ALLOWED.

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

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

MULTIPLE INSTALLATION OF HIGH DENSITY POLYETHYLENE PIPES

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

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

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

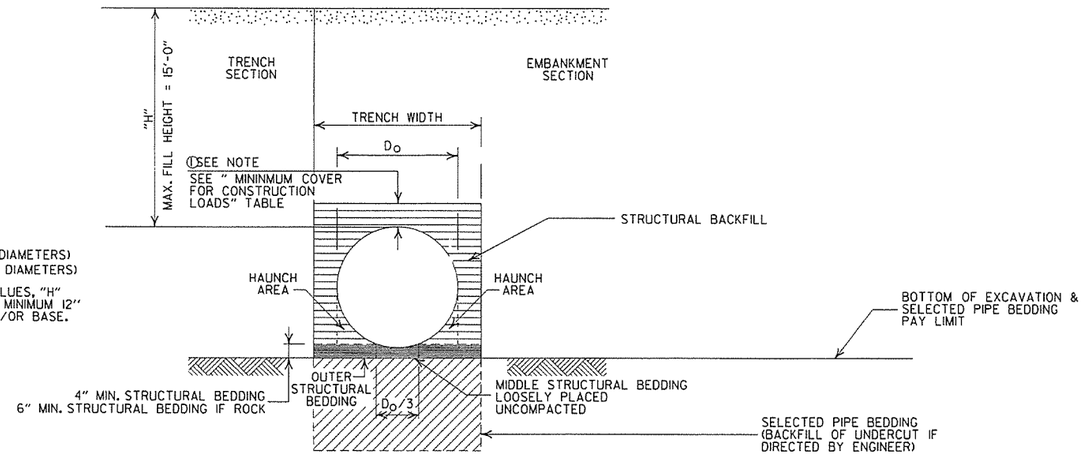
①NOTE:
18" MIN. (18" - 30" DIAMETERS)
24" MIN. (36" - 48" DIAMETERS)

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

MINIMUM COVER FOR CONSTRUCTION LOADS

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

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



TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

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

CONSTRUCTION SEQUENCE

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

GENERAL NOTES

1. PIPE SHALL CONFORM TO AASHTO M294, TYPE S. INSTALLATION SHALL CONFROM TO JOB SPECIAL PROVISION "PLASTIC PIPE" AND SECTION 606 OF THE STANDARD SPECIFICIATIONS FOR HIGHWAY CONSTRUCTION (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"	"H" >OR= 10'-0"
18"	4'-6"	4'-6"
24"	5'-0"	6'-0"
30"	5'-6"	7'-6"
36"	6'-0"	9'-0"

MULTIPLE INSTALLATION OF PVC PIPES

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

MAXIMUM FILL HEIGHT BASED ON STRUCTURAL BACKFILL

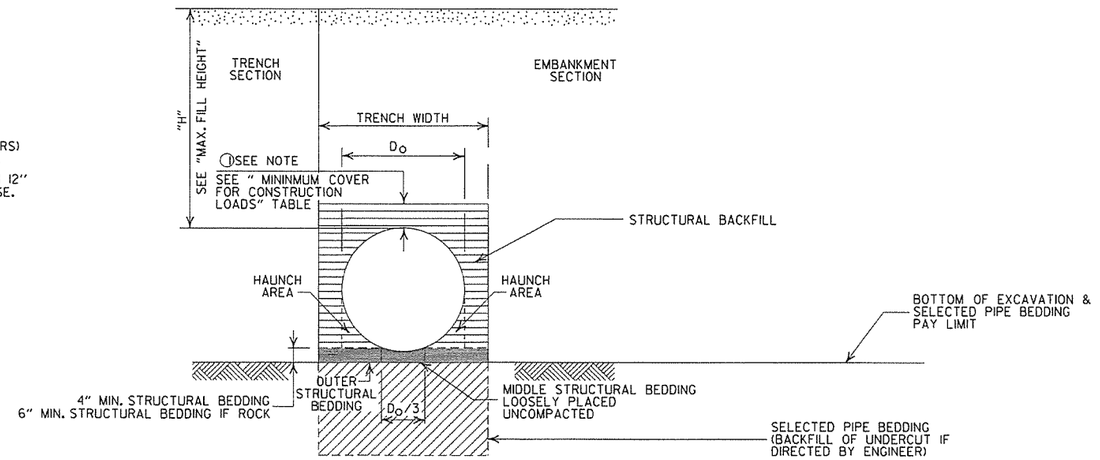
PIPE DIAMETER	"H"
18"	45'-0"
24"	45'-0"
30"	40'-0"
36"	40'-0"

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

MINIMUM COVER FOR CONSTRUCTION LOADS

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

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



TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

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

CONSTRUCTION SEQUENCE

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

GENERAL NOTES

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

- LEGEND -

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

= STRUCTURAL BACKFILL MATERIAL

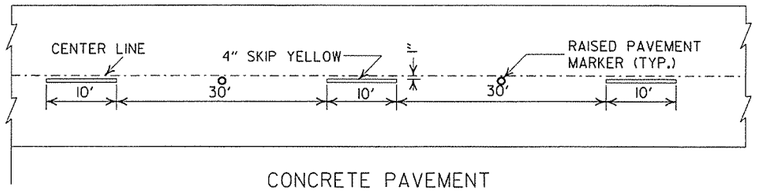
= UNDISTURBED SOIL

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

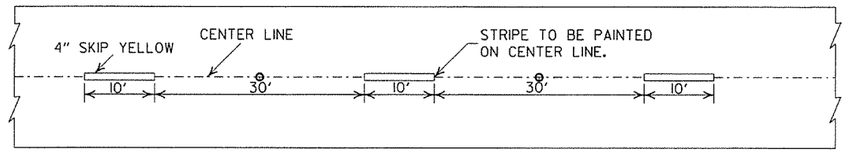
ARKANSAS STATE HIGHWAY COMMISSION

PLASTIC PIPE CULVERT (PVC F949)

STANDARD DRAWING PCP-2

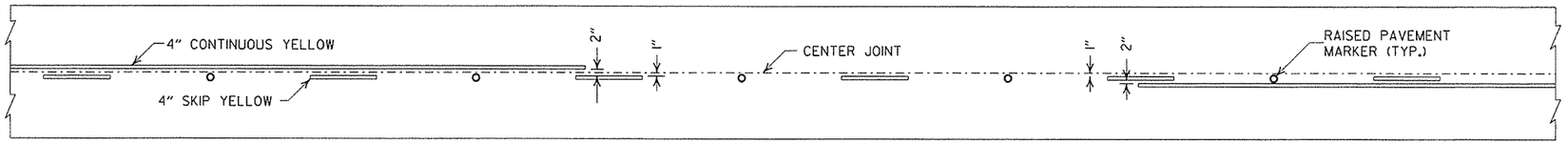


CONCRETE PAVEMENT

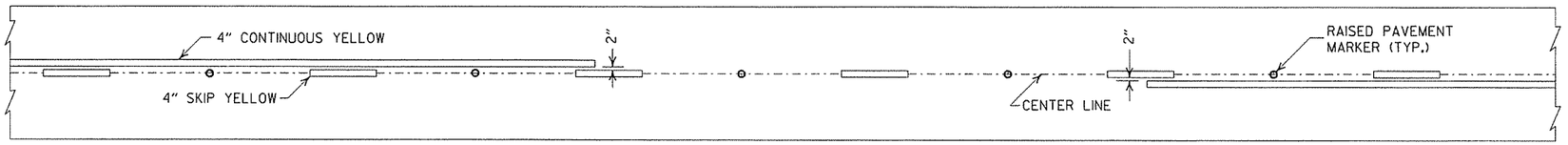


ASPHALT PAVEMENT

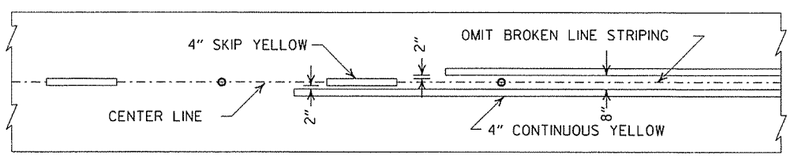
BROKEN LINE STRIPING



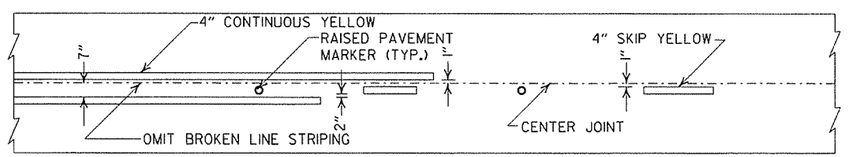
SOLID LINE STRIPING ON CONCRETE PAVEMENT



SOLID LINE STRIPING ON ASPHALT PAVEMENT

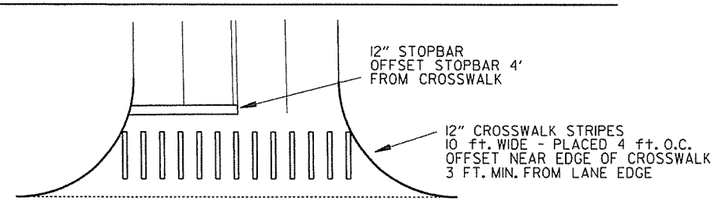


ASPHALT PAVEMENT



CONCRETE PAVEMENT

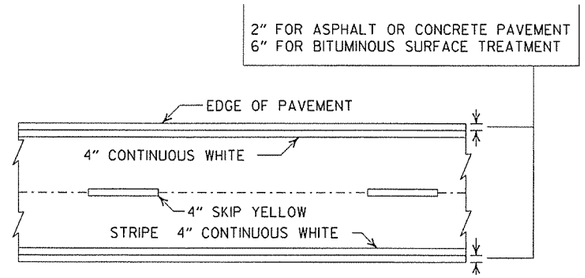
STRIPING AT ADJACENT NO PASSING LANES



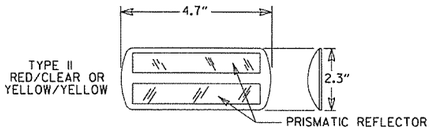
CROSSWALK AND STOPBAR DETAILS

NOTES:

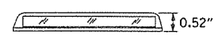
1. ALL LINES SHALL HAVE A WIDTH OF 4 INCHES.
2. THE THICKNESS AND RATE OF PAINT APPLICATION SHALL BE AS SPECIFIED IN SECTION 718 OF THE STANDARD SPECIFICATIONS.
3. THIS DRAWING SHALL BE USED IN CONJUNCTION WITH THE LATEST REVISED ADDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES."
4. RAISED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



PAVEMENT EDGE LINE MARKING



NOTE:
THE RED LENS OF THE TYPE II R.P.M. SHALL FACE THE INCORRECT TRAFFIC MOVEMENT.



DETAIL OF STANDARD RAISED PAVEMENT MARKERS

GENERAL NOTES:

THIS DRAWING SHOULD BE CONSIDERED AS TYPICAL ONLY AND THE FINAL LOCATION OF THE STRIPING AND RAISED PAVEMENT MARKERS SHALL BE DETERMINED BY THE ENGINEER.

THIS DRAWING SHOULD BE USED IN CONJUNCTION WITH THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", LATEST REVISION.

NOTE:

DIMENSIONS SHOWN FOR RAISED PAVEMENT MARKERS ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR MARKERS WITH THE APPROVAL OF THE ENGINEER. REQUESTING APPROVAL FOR SIMILAR MARKERS MAY BE MADE BY REFERRING TO THE AHTD QUALIFIED PRODUCTS LIST.

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

ARKANSAS STATE HIGHWAY COMMISSION

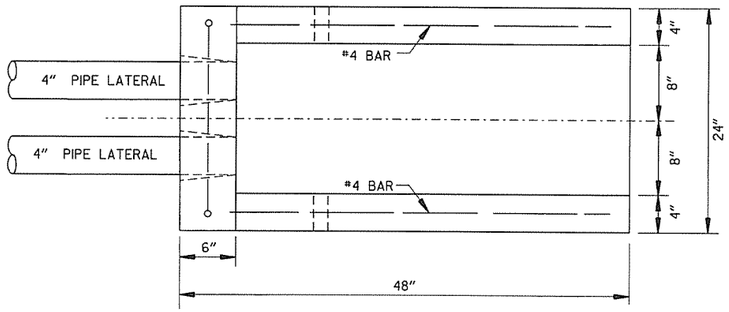
PAVEMENT MARKING DETAILS

STANDARD DRAWING PM-1

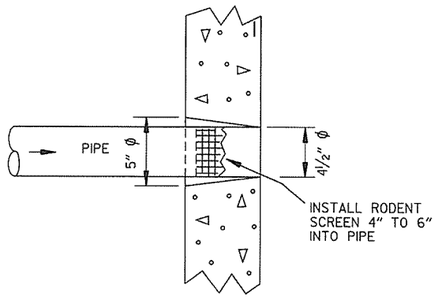
NOTE:
1. GRANULAR BACKFILL TO BE SUBSIDIARY TO PIPE UNDERDRAIN.

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

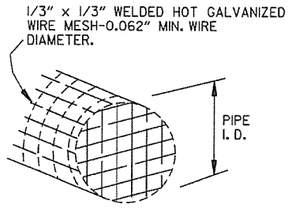
3. GRANULAR MATERIAL SHALL BE WRAPPED WITH GEOTEXTILE FABRIC. LAP FABRIC 12" OR THE WIDTH OF THE TRENCH AT THE TOP.



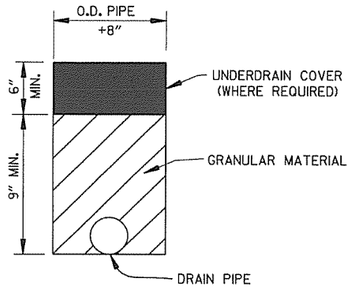
PLAN VIEW

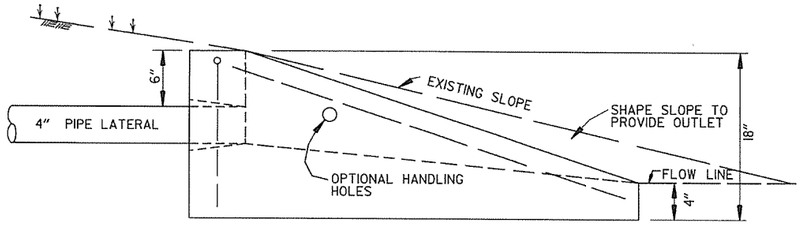


DETAIL OF HOLE FOR 4" PIPE

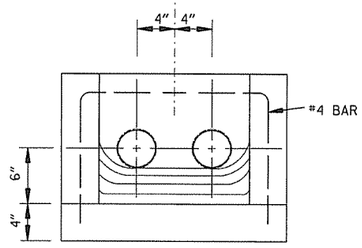


DETAIL OF RODENT SCREEN

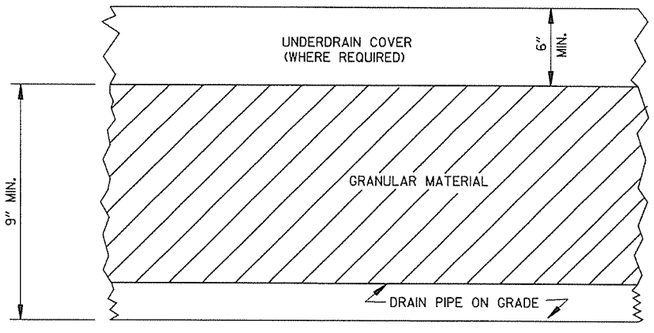




SIDE VIEW

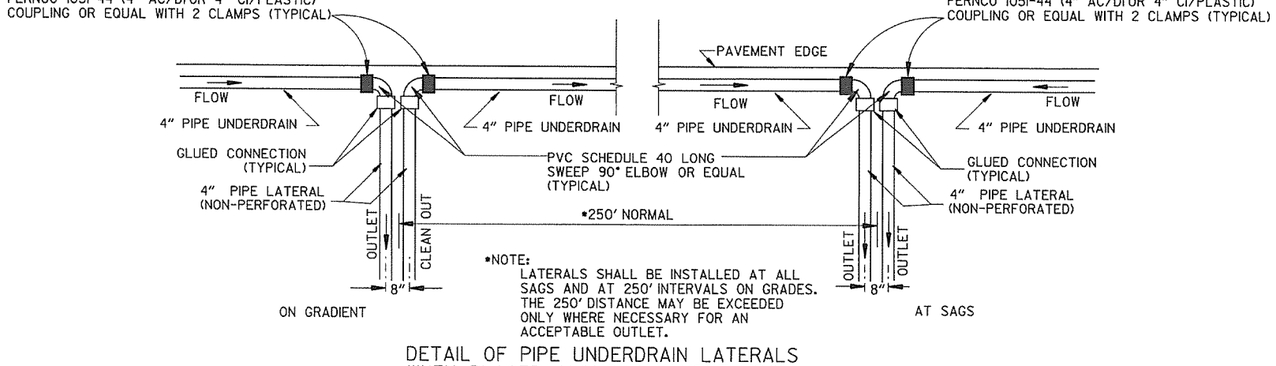


FRONT VIEW



DETAILS OF PIPE UNDERDRAIN

UNDERDRAIN OUTLET PROTECTORS



DETAIL OF PIPE UNDERDRAIN LATERALS WHEN PLACED ALONG PAVEMENT EDGE

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

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

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF PIPE UNDERDRAIN

STANDARD DRAWING PU-1

7-20-95 INSTD.PUI

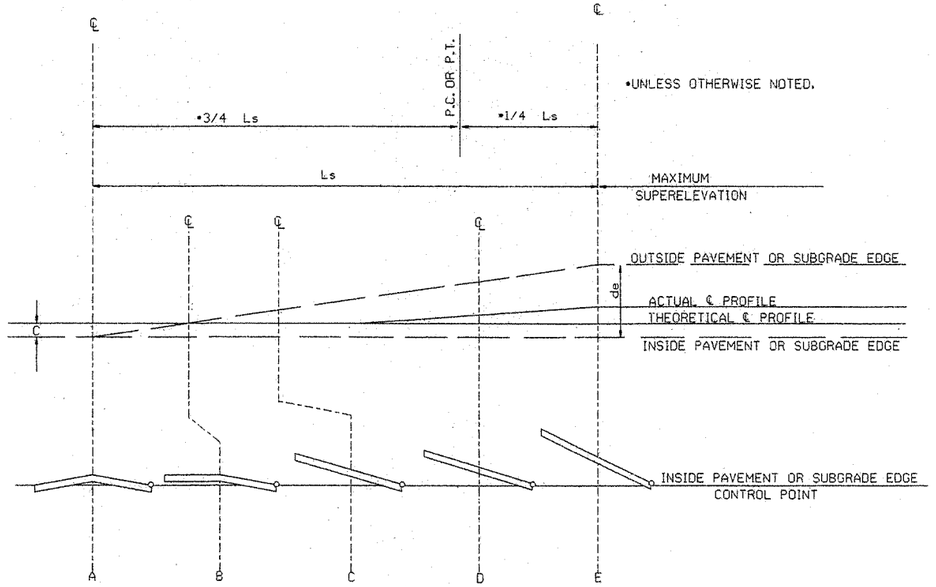
SUPERELEVATION TABLE FOR TWO - WAY TRAFFIC

DEGREE OF CURVE	30 MPH e	30 MPH Ls (FT) MINIMUM	30 MPH Ls (FT) DESIRABLE	40 MPH e	40 MPH Ls (FT) MINIMUM	40 MPH Ls (FT) DESIRABLE	50 MPH e	50 MPH Ls (FT) MINIMUM	50 MPH Ls (FT) DESIRABLE	55 MPH e	55 MPH Ls (FT) MINIMUM	55 MPH Ls (FT) DESIRABLE	60 MPH e	60 MPH Ls (FT) MINIMUM	60 MPH Ls (FT) DESIRABLE	70 MPH e	70 MPH Ls (FT) MINIMUM	70 MPH Ls (FT) DESIRABLE
0° 15′	N.C.			N.C.			N.C.			N.C.			N.C.			N.C.		
0° 30′	N.C.			N.C.			N.C.			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		
1° 15′	N.C.			R.C.			0.026			0.032			0.037			0.046		
1° 30′	N.C.			0.021			0.031			0.037			0.043			0.054		
1° 45′	N.C.			0.025	175		0.036	200		0.043	225		0.049	250		0.062	275	
2° 00′	R.C.			0.028			0.040			0.048			0.055			0.070		
2° 15′	R.C.			0.031			0.045			0.053			0.061			0.078	300	
2° 30′	0.021			0.034			0.049			0.058			0.067			0.085	315	350
2° 45′	0.023			0.037			0.053			0.063			0.072			0.091	335	
3° 00′	0.025	150		0.040			0.057			0.067	230		0.077	260		0.096	350	
3° 15′	0.027			0.043		200	0.061			0.072	245		0.082	275		0.098	360	400
3° 30′	0.029			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				
4° 00′	0.033			0.051			0.072	225		0.083	270		0.093	305	350			
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		0.098	320				
5° 30′	0.043			0.066	185		0.088	260		0.094	300	350						
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′	0.089	200																
17° 00′	0.091	200																
18° 00′	0.093	205																
19° 00′	0.095	210																
20° 00′	0.097	215	250															
21° 00′	0.098	215																
22° 00′	0.099	215																
23° 00′	0.099	215																
24° 00′	0.100	220																

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

ABBREVIATIONS

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



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

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

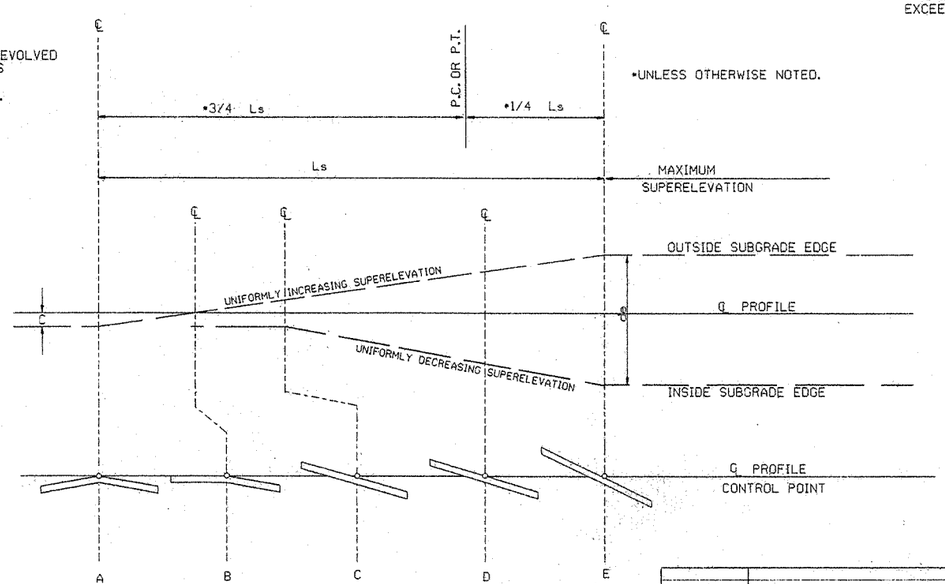
GENERAL NOTES

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

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

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

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



STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND CENTER LINE

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

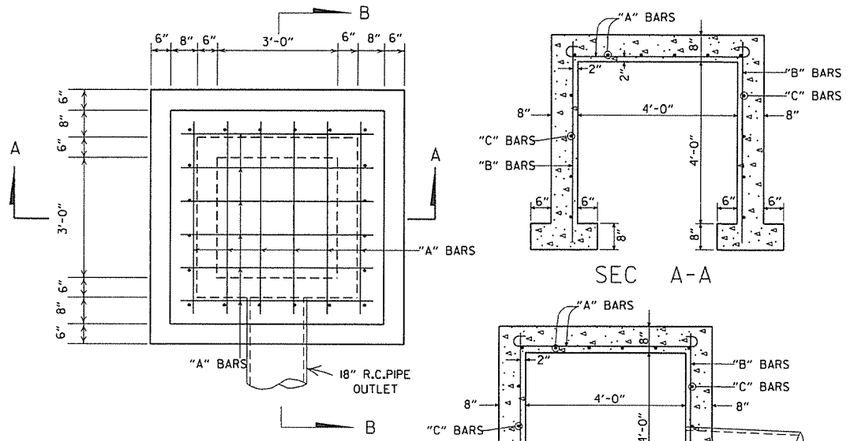
DATE	REVISION	DATE FILMED
10-18-96	ADDED FORMULA	10-18-96
01-09-87	ISSUED	534-1-9-87

ARKANSAS STATE HIGHWAY COMMISSION

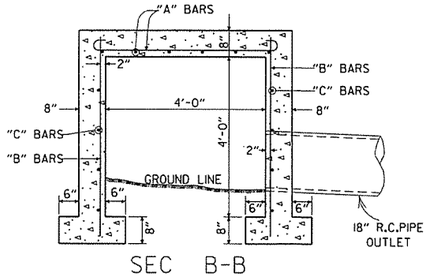
TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC

STANDARD DRAWING SE-2

FILE STDSE2.DGN



SEC A-A



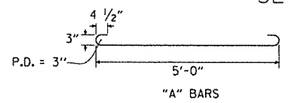
SEC B-B

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

STEEL SCHEDULE

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

ALL STEEL TO BE #4 BARS



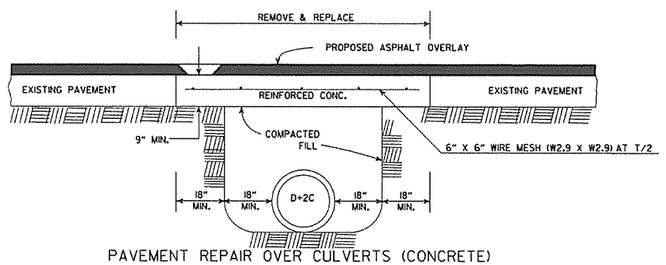
"A" BARS

QUANTITIES

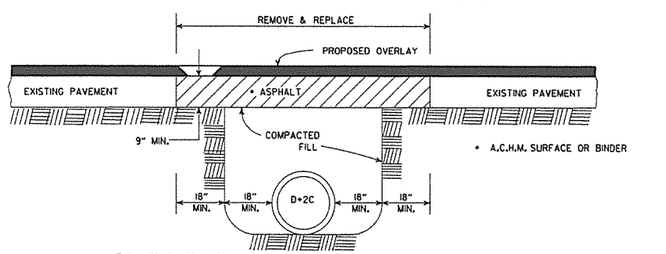
CONCRETE 3.31 CU. YDS.
REINFORCING STEEL 168 LB.

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

REINFORCED CONCRETE SPRING BOX



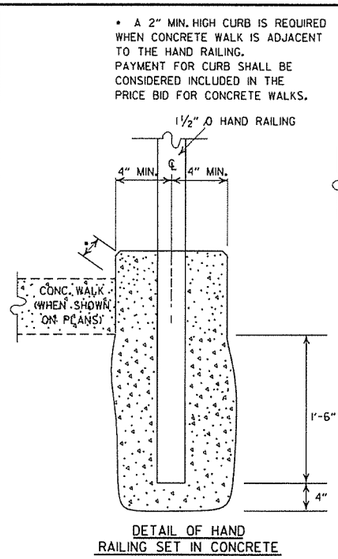
PAVEMENT REPAIR OVER CULVERTS (CONCRETE)



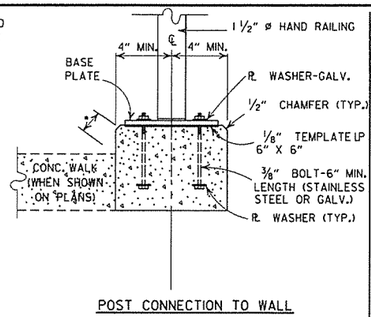
PAVEMENT REPAIR OVER CULVERTS (ASPHALT)

DETAIL SHOWING REPAIR OF EXISTING PAVEMENT AT CULVERT INSTALLATIONS

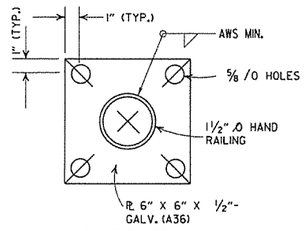
* A 2" MIN. HIGH CURB IS REQUIRED WHEN CONCRETE WALK IS ADJACENT TO THE HAND RAILING. PAYMENT FOR CURB SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR CONCRETE WALKS.



DETAIL OF HAND RAILING SET IN CONCRETE

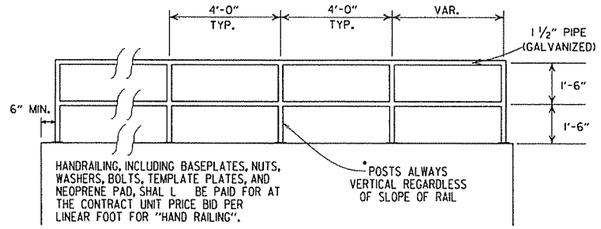


POST CONNECTION TO WALL

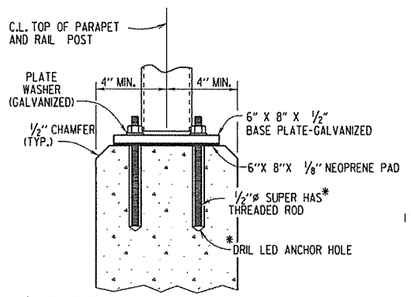


BASE PLATE

POST CONNECTION DETAILS



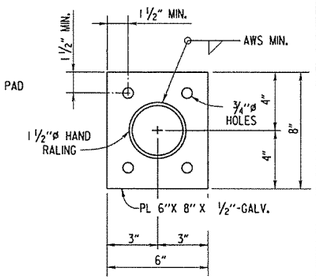
HAND RAILING SHAL L CONFORM TO SECTION 633.



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

THE ADHESIVE ANCHOR SYSTEM SHAL L BE INSTAL LED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

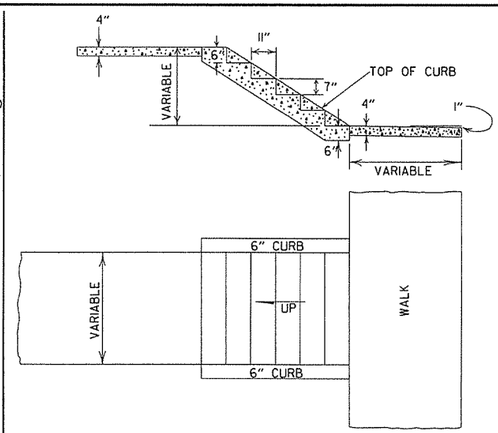
POST CONNECTION TO WALL



BASE PLATE

DETAILS OF ALTERNATE POST ANCHOR SYSTEM
(EPOXY ADHESIVE ANCHORS)

HAND RAILING DETAILS



GENERAL NOTES

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

DETAILS OF CONCRETE STEPS & WALKS

DATE	REVISION	DATE FILMED
9-12-13	REVISED REINFORCED CONCRETE SPRING BOX	
7-26-12	REMOVED RETAINING WALL DETAILS & REVISED HAND RAILING DETAILS	
4-17-08	REV. JOINT & FOOTING STEP DETAILS	
11-29-07	REVISED RETAINING WALL DRAINAGE	
5-25-06	REVISED PVMT REPAIR OVER CULVERTS (CONC); REVISED REINFORCED CONC SPRING BOX	
10-9-03	REVISED PIPE RAILING DETAILS TO HAND RAILING DETAILS	
4-10-03	REVISED RETAINING WALL DRAWING	
8-22-02	ADDED HAND RAILING DETAIL	
11-16-01	REVISED PVMT REPAIR OVER CULVERTS (CONC); CORRECTED SPELLING IN GENERAL NOTES	
11-18-98	ADDED GENERAL NOTES TO CONCRETE STEPS & WALKS	
7-02-98	ENLARGED PIPE	
4-03-97	ADDED NOTE TO STEEL BAR SCHED.	
10-18-96	CORRECTED SPELLING	
4-26-96	ADD WEEP HOLE,REV. JOINT SPACING IN RET. WALL	
6-2-94	CHANGED CONST. TO CONTRACTION JOINT	
10-1-92	CHANGED MESH FABRIC TO WIRE MESH	10-1-92
8-15-91	DELETED HDWL MODIFICATION DETAIL	8-15-91
11-8-90	DELETED COLD MIX FROM CULV'T. REPAIR	11-8-90
11-30-89	REV. RETAINING WALL STEEL SCHEDULE	11-30-89
11-17-88	V. BARS BEHIND ARROW	665-11-17-88
7-15-88	REV. PAVEMENT REPAIR ADDED HDWL. MODS, DEL. PIPE UNDERDRAINS	649-7-15-88
11-1-84	REV. TRENCH FOR PIPE UNDERDRAIN	510-11-1-84
1-4-83	ELIMINATED CONC. CLASS & ADDED CHAMFER NOTE	682-1-4-83
3-2-81	SPELLING OF "UNDERDRAIN"	721-3-2-81
4-20-79	REV. UNDERDRAIN DET& PAVEMENT REPAIR	674-4-20-79
2-2-76	12"MIN. GRAN. MAT'L. OVER PIPE	919-2-2-76
4-10-75	REM. SPECS. FOR GRAN. MAT'L.	568-4-10-75-853
5-22-74	GRANULAR MAT'L. TO BE SB-3	567-5-22-74-740
10-2-72	REVISED AND REDRAWN	564-10-16-72

ARKANSAS STATE HIGHWAY COMMISSION

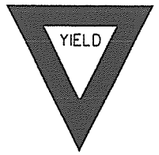
DETAILS OF SPECIAL ITEMS

STANDARD DRAWING SI-1

R1-1

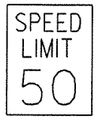
STANDARD 30"X30"
EXPRESSWAY 36"X36"
SPECIAL 48"X48"

R1-2



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

R2-1



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

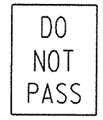
W3-5

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

W3-5a

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

R4-1

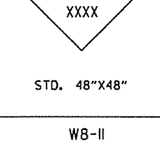


STD. 24"X30"
EXPWY. 36"X48"
FWY. 48"X60"

R4-2

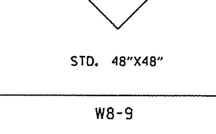
STD. 24"X30"
EXPWY. 36"X48"
FWY. 48"X60"

R5-1



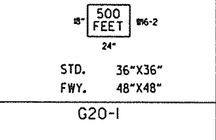
STD. 30"X30"
EXPWY. 36"X36"
SPECIAL 48"X48"

RII-2



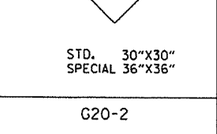
48"X30"

RII-3A



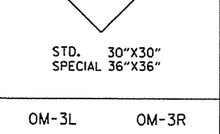
60"X30"

RII-4



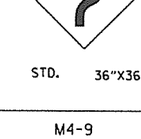
60"X30"

RSP-1



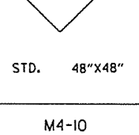
48"X30"

WI-1



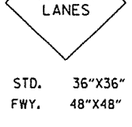
STD. 36"X36"
FWY. 48"X48"

WI-2



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

WI-3

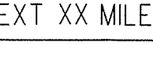


STD. 48"X48"

WI-4

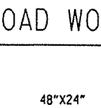
STD. 48"X48"

WI-6



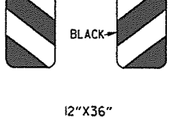
STD. 48"X24"
SPECIAL 60"X30"

WI-8



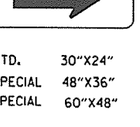
STD. 18"X24"
SPECIAL 24"X30"
EXPWY. 30"X36"
FWY. 36"X48"

W3-1



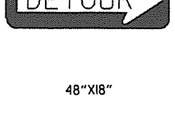
STD. 36"X36"
SPECIAL 48"X48"

W3-2



STD. 36"X36"
SPECIAL 48"X48"

W4-2



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

W5-1

STD. 36"X36"
SPECIAL 48"X48"

W6-3

EXPWY. 36"X36"
SPECIAL 48"X48"

W8-7

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

W9-2

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

WI3-1

STD. 24"X24"

W20-1

STD. 48"X48"

W20-2

STD. 48"X48"

W20-3

STD. 48"X48"

W20-4

STD. 48"X48"

W20-5

STD. 48"X48"

W20-7a

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

W21-2

STD. 30"X30"
SPECIAL 36"X36"

W21-5

STD. 30"X30"
SPECIAL 36"X36"

W24-1

STD. 36"X36"

WI-4b

STD. 48"X48"

R56-1

STD. 18"X18"

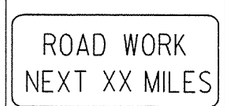
W8-11

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

W8-9

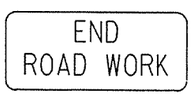
STD. 36"X36"
FWY. 48"X48"

G20-1



60"X24"

G20-2

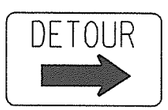


48"X24"

OM-3L OM-3R

12"X36"

M4-9

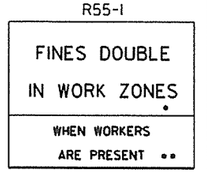


STD. 30"X24"
SPECIAL 48"X36"
SPECIAL 60"X48"

M4-10

48"X18"

R55-1



36"X60"

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

ADVANCE DISTANCES
(XXXX)

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

GENERAL NOTES:

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

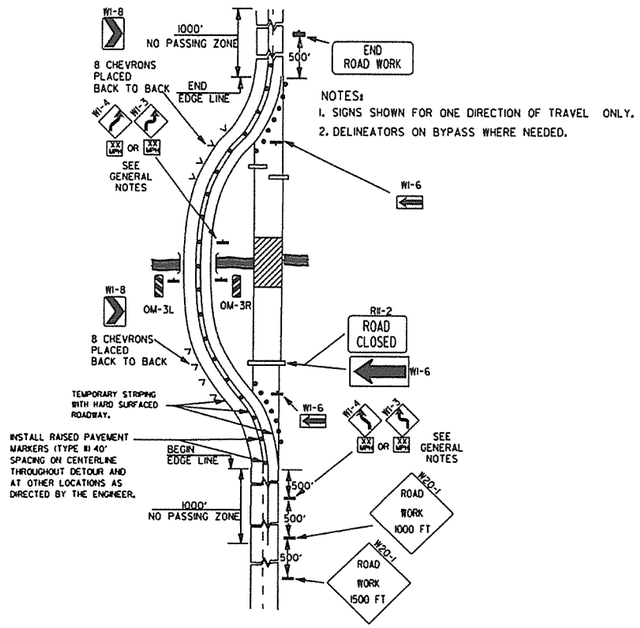
• NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE REQUIREMENTS SHOWN IN NOTES 4 & 5, BUT MEET THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH), WILL BE ACCEPTED. COMPLIANCE WITH THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY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

DATE	REVISION	FILMED
9-2-15	REVISED REDUCED SPEED LIMIT AHEAD SIGNS REVISED ROAD WORK NEXT XX MILES	
12-15-11	REVISED W24-1	
11-17-10	DELETED W8-9a & ADDED W8-9	
10-15-09	ADDED REFERENCE TO MASH & ADDED SIGN W24-1	
4-17-08	REVISED SIGN DESIGNATIONS	
11-18-04	REVISED NOTES	
10-9-03	REVISED NOTE 1	
11-16-01	REVISED NOTE 7	
9-28-00	REVISED NOTE	
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	
8-15-78	DRAWN AND PLACED IN USE	

ARKANSAS STATE HIGHWAY COMMISSION

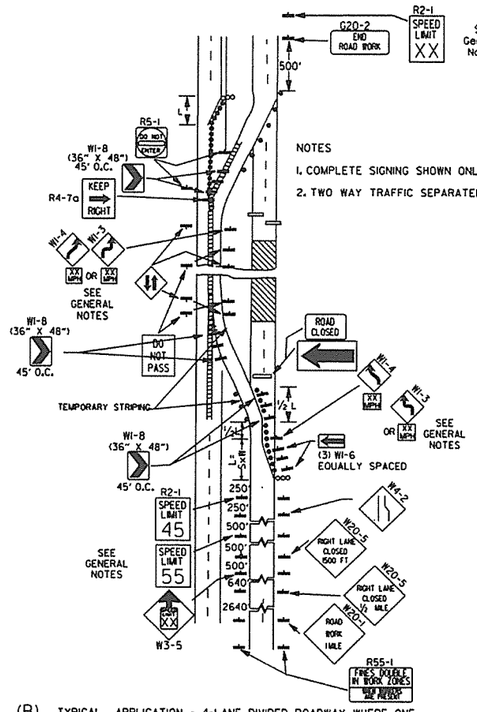
STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-1



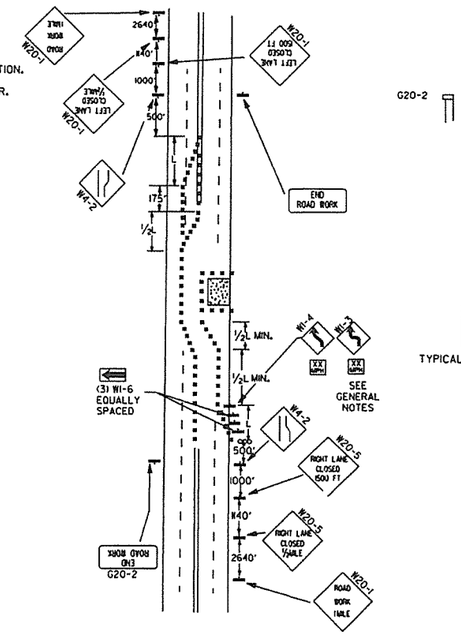
NOTES:
1. SIGNS SHOWN FOR ONE DIRECTION OF TRAVEL ONLY.
2. DELINEATORS ON BYPASS WHERE NEEDED.

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

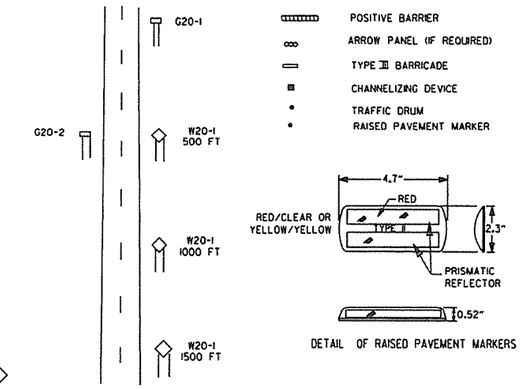


NOTES
1. COMPLETE SIGNING SHOWN ONLY IN CROSSOVER DIRECTION.
2. TWO WAY TRAFFIC SEPARATED WITH POSITIVE BARRIER.

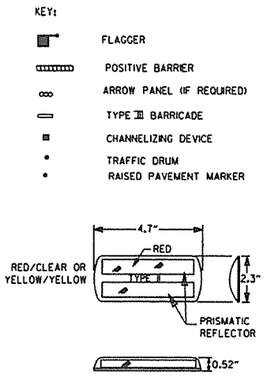
(B) TYPICAL APPLICATION - 4-LANE DIVIDED ROADWAY WHERE ONE ROADWAY IS CLOSED.



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



TYPICAL ADVANCE WARNING SIGN PLACEMENT



DETAIL OF RAISED PAVEMENT MARKERS

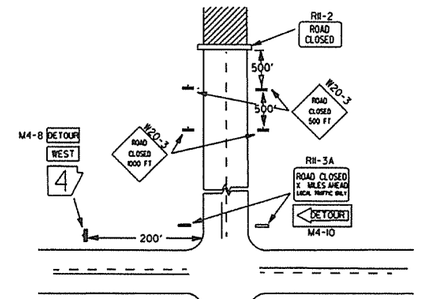
TAPER FORMULAE:

L=SXW FOR SPEEDS OF 45MPH OR MORE.

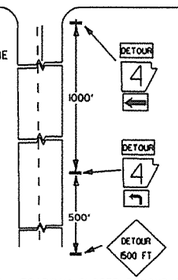
$L = \frac{WS^2}{60}$ FOR SPEEDS OF 40MPH OR LESS.

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

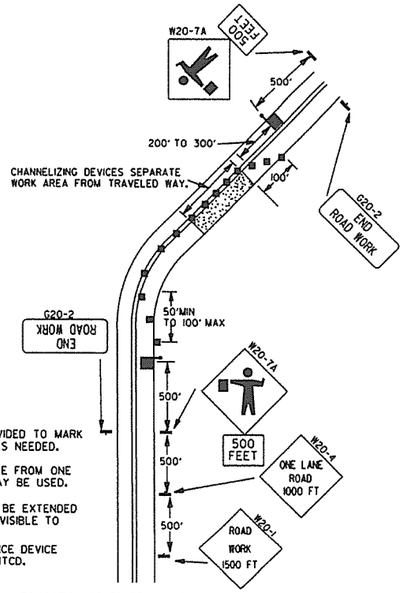
GENERAL NOTES:
1. ADVISORY SPEED POSTED ON W1-3 OR W1-4 CURVE WARNING SIGNS TO BE DETERMINED AT SITE. USE W1-4 WHEN SPEED IS GREATER THAN 30MPH AND W1-3 WHEN 30MPH OR LESS.
2. WHEN THE EXISTING SPEED LIMIT IS 55MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 45MPH, THE R2-1(55) SHALL BE OMITTED AND THE W3-5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



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.

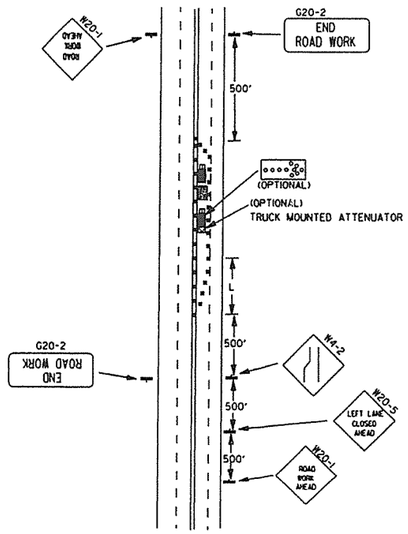


(D) TYPICAL APPLICATION - ROADWAY CLOSED BEYOND DETOUR POINT.



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.



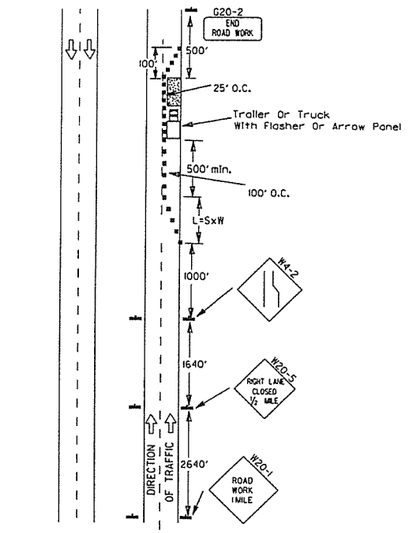
(F) TYPICAL APPLICATION - 4-LANE UNDIVIDED ROADWAY WITH INSIDE LANE CLOSED.

DATE	REVISION	FILMED
9-2-15	REVISED NOTE 2, ADDED NOTE 8, REVISED DRAWING (A) & REPLACED R2-5A WITH W3-5	
9-12-13	REVISED DETAIL OF RAISED PAVEMENT MARKERS	
3-8-10	ADDED (AFAD)	
11-20-08	REVISED SIGN DESIGNATIONS	
11-18-04	ADDED GENERAL NOTE	
10-18-96	ADDED R55-1	
4-26-96	CORRECTED (G) BEHIND G20-2	
6-8-95	CORRECTED SIGN IDENT. ON W1-4A	6-8-95
2-2-95	REVISED PER PART VI, MUTCD, SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	

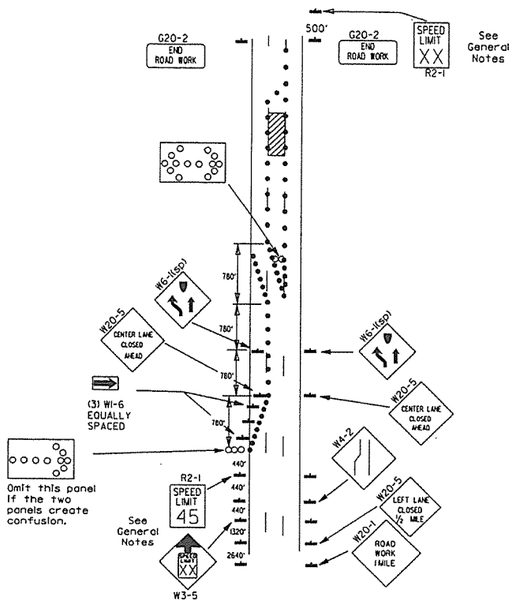
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

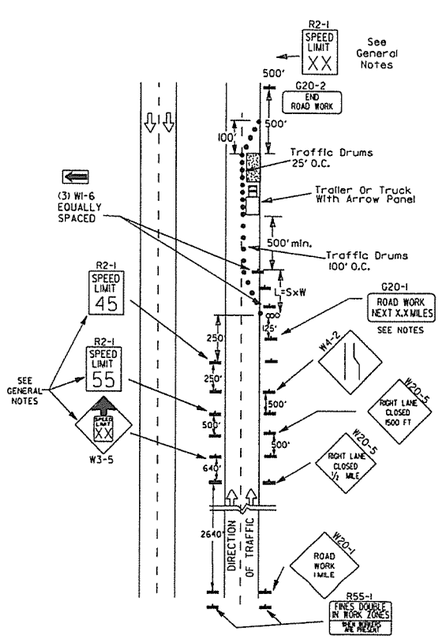
STANDARD DRAWING TC-2



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



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



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

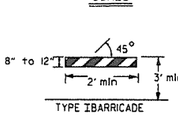
KEY:

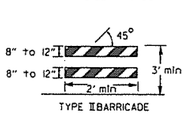
- ○○○ Arrow Panel (If Required)
- ■ Channelizing Device
- ● Traffic drum

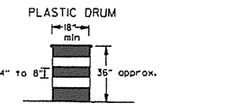
GENERAL NOTES:

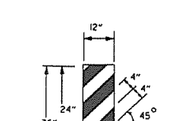
1. A speed limit reduction may be implemented ONLY when designated in the plan or when recommended by the Roadway Design Division.
2. When the existing speed limit is 55mph and the plans require a speed limit of 45mph, the R2-1(55) shall be omitted and the W3-5 shall be installed at that location. Additional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

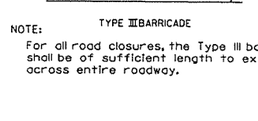
Channelizing devices



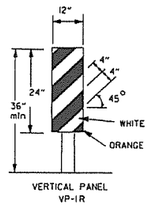








NOTE: For all road closures, the Type III barricades shall be of sufficient length to extend across entire roadway.

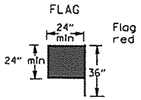


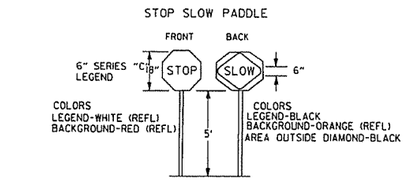
TRAFFIC CONTROL DEVICES FOR VERTICAL PAVEMENT DIFFERENTIALS

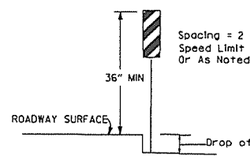
VERTICAL DIFFERENTIAL	LOCATIONS	TRAFFIC CONTROL
1" to 3"	Centerline, lane lines	W8-11
1" to 3"	Edge of shoulder	W8-9
Greater than 3"	Lane lines	Standard lane closure required
Greater than 3"	Edge of traveled lane	*RSP-1 and vertical panels, drums or concrete barrier
Greater than 3"	Edge of shoulder	*Vertical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

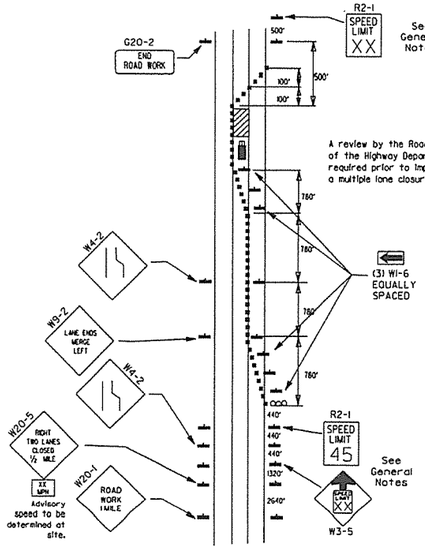
* When shown on the plans concrete barrier will be used.

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

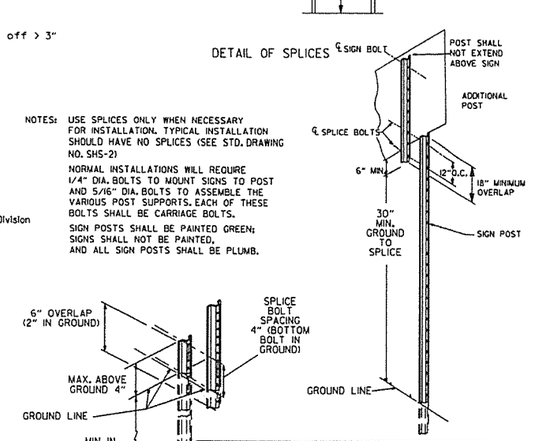








(D) Typical application - closing multiple lanes of a multilane highway.



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

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

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

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

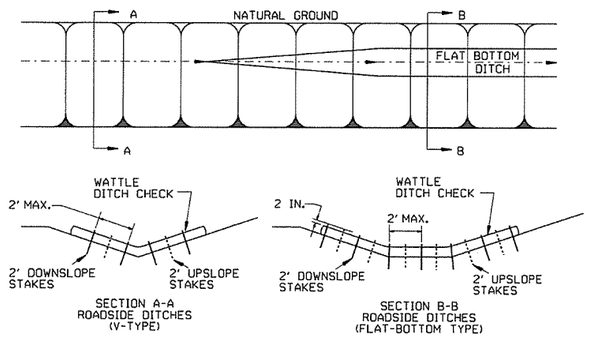
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

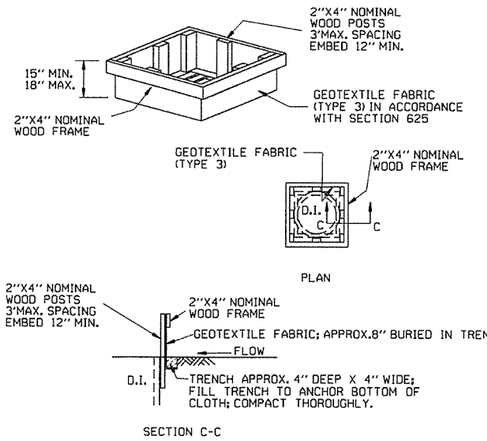
STANDARD DRAWING TC-3

GENERAL NOTES

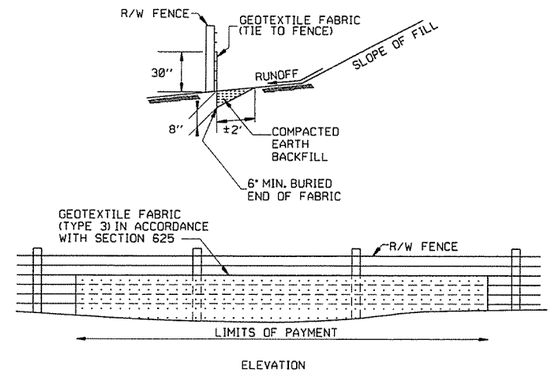
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.



WATTLE DITCH CHECK (E-1)



DROP INLET SILT FENCE (E-7)



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

GENERAL NOTES

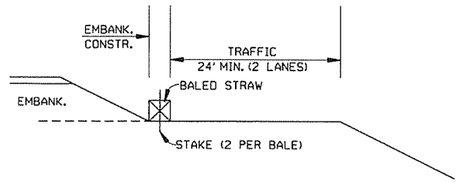
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST, OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

GENERAL NOTES

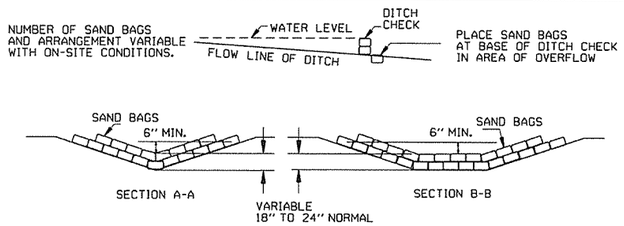
1. STRAW BALES SHALL BE INSTALLED SO THAT THE BINDINGS ARE ORIENTED AROUND THE SIDES RATHER THAN ALONG THE TOPS AND BOTTOMS OF THE BALES. THE BALES SHALL BE A MINIMUM OF 30 INCHES IN LENGTH.

2. NO GAPS SHALL BE LEFT BETWEEN BALES.

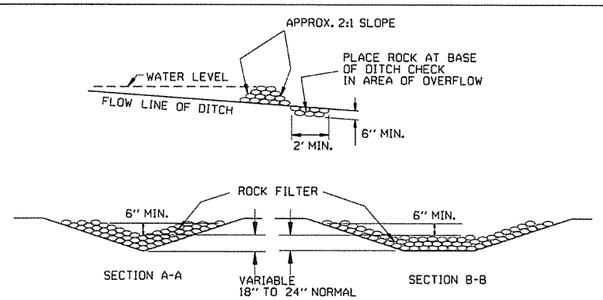
3. BALED STRAW FILTER BARRIERS COMPLETED AND ACCEPTED WILL BE MEASURED BY THE BALE IN PLACE AS AUTHORIZED BY THE ENGINEER AND WILL BE PAID FOR AT THE CONTRACT UNIT PRICE BID PER BALE FOR BALED STRAW DITCH CHECKS.



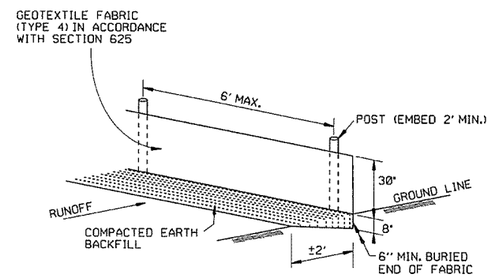
BALED STRAW FILTER BARRIER (E-2)



SAND BAG DITCH CHECK (E-5)



ROCK DITCH CHECK (E-6)



SILT FENCE (E-11)

GENERAL NOTES

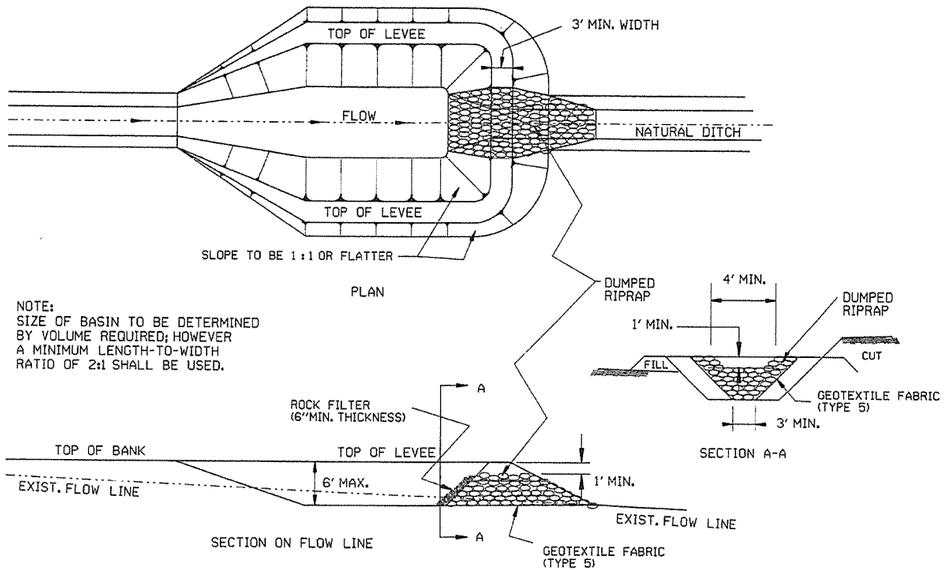
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

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

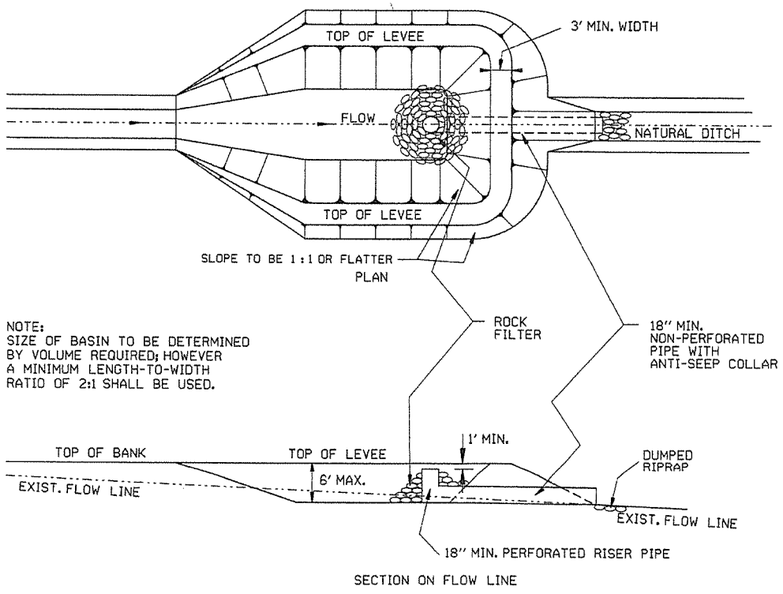
ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

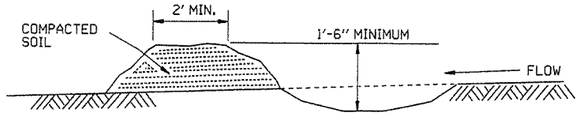
STANDARD DRAWING TEC-1



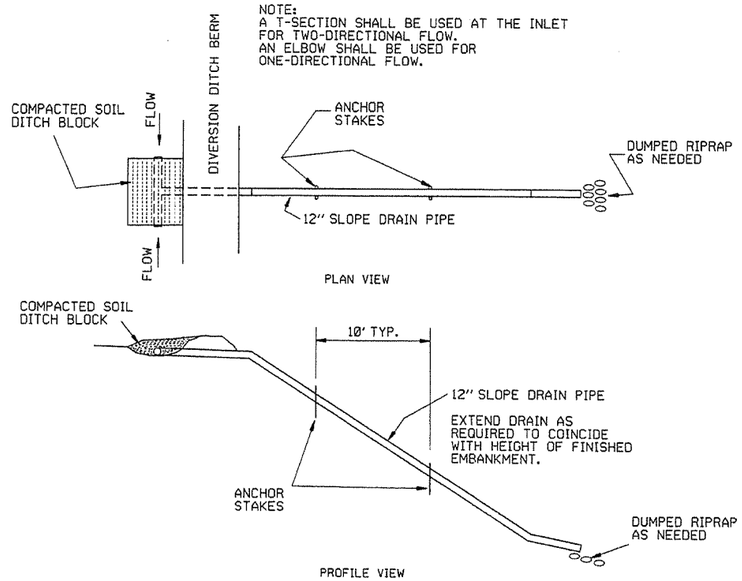
SEDIMENT BASIN WITH RIPRAP OUTLET (E-9)



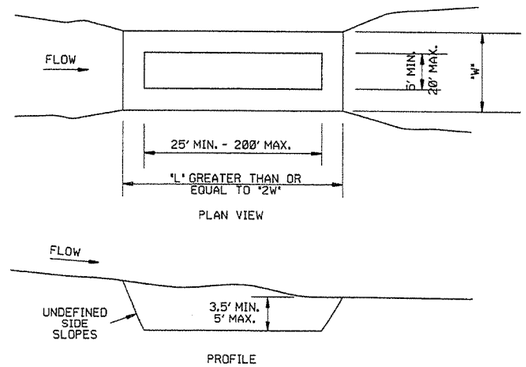
SEDIMENT BASIN WITH PIPE OUTLET (E-10)



DIVERSION DITCH (E-8)



SLOPE DRAIN (E-12)



SEDIMENT BASIN (E-14)

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

ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

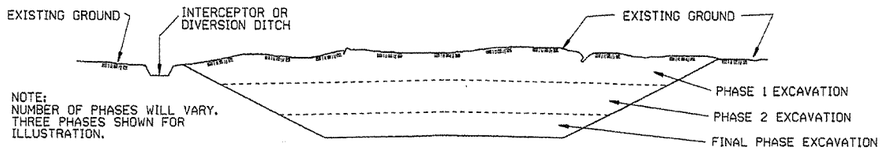
STANDARD DRAWING TEC-2

CLEARING AND GRUBBING

CONSTRUCTION SEQUENCE

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

EXCAVATION



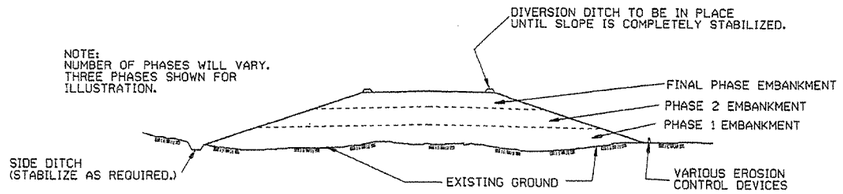
GENERAL NOTE

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

CONSTRUCTION SEQUENCE

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

EMBANKMENT



GENERAL NOTE

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

CONSTRUCTION SEQUENCE

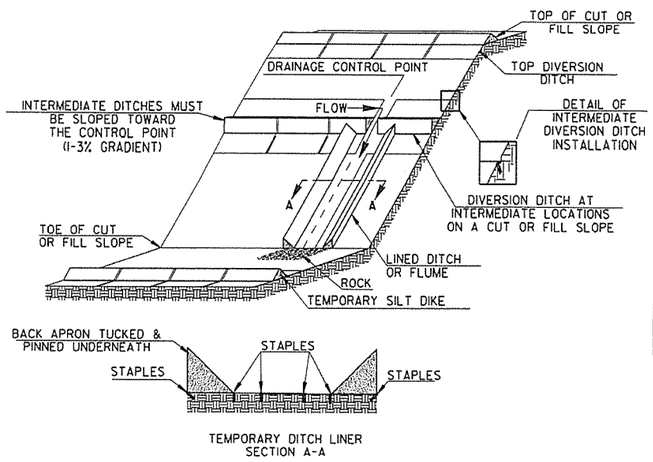
1. CONSTRUCT DIVERSION DITCHES, DITCH CHECKS, SEDIMENT BASINS, SILT FENCES, OR OTHER EROSION CONTROL DEVICES AS SPECIFIED.
2. PLACE PHASE 1 EMBANKMENT WITH PERMANENT OR TEMPORARY SEEDING. PROVIDE DIVERSION DITCHES AND SLOPE DRAINS IF EMBANKMENT CONSTRUCTION IS TO BE TEMPORARILY ABANDONED FOR A PERIOD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

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

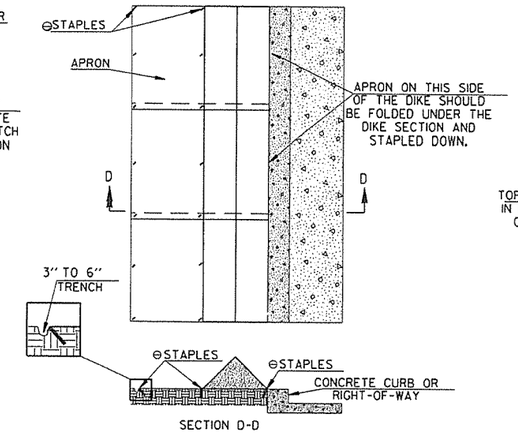
ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

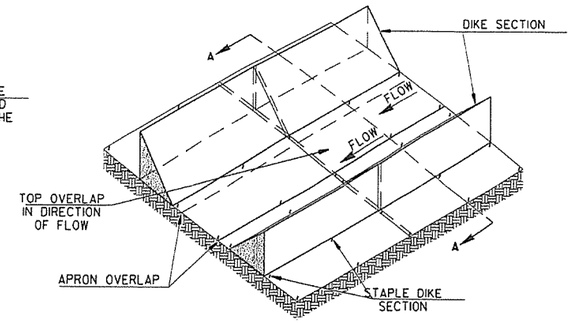
STANDARD DRAWING TEC-3



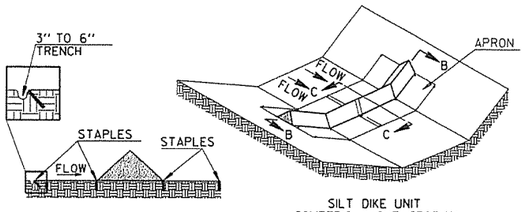
TRIANGULAR SILT DIKE INSTALLATION
FOR
DIVERSION DITCH AND/OR DITCH LINER

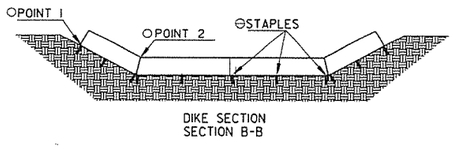


TRIANGULAR SILT DIKE INSTALLATION
FOR
CONTINUOUS BARRIER



TRIANGULAR SILT DIKE INSTALLATION
FOR
TEMPORARY DITCH LINER

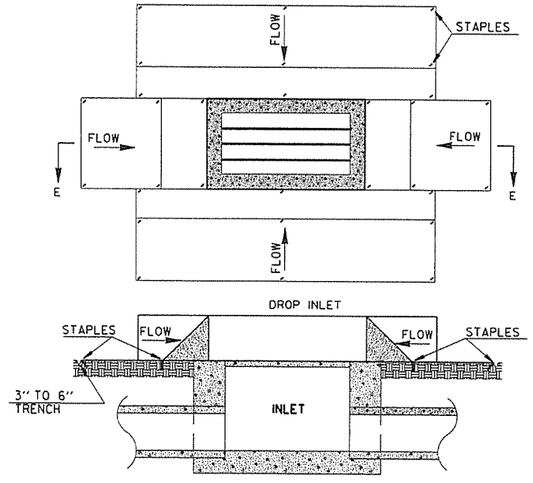




TRIANGULAR SILT DIKE INSTALLATION
FOR
ROADWAY DITCH OR DRAINAGE DITCH

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

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



TRIANGULAR SILT DIKE INSTALLATION
FOR
DROP INLETS

GENERAL NOTES

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

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

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

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

SYMBOLOGY
SYMBOL TO BE USED TO DENOTE DEVICE ON PLANS

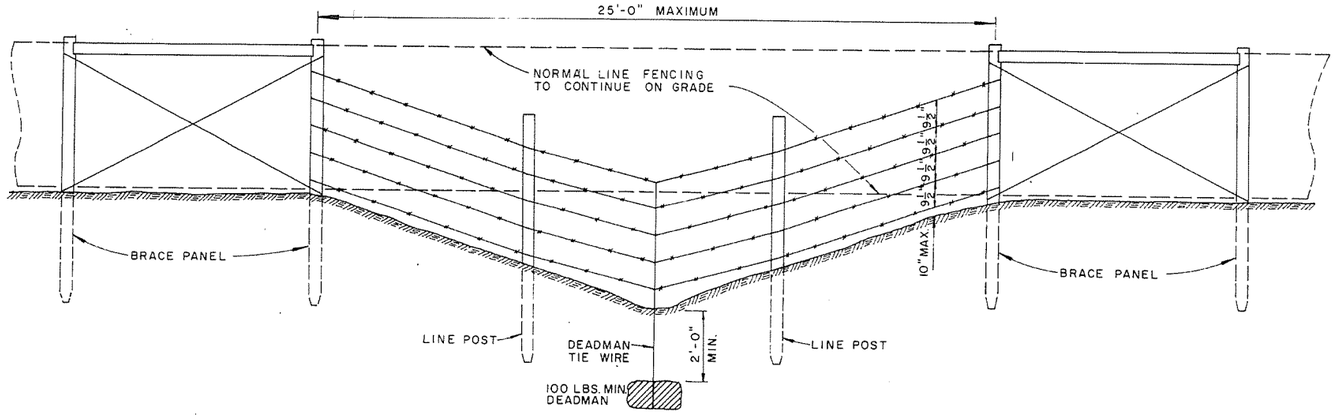
NOTE: SILT DIKE SHOULD ONLY BE USED FOR DROP INLETS IN SUMP LOCATIONS.

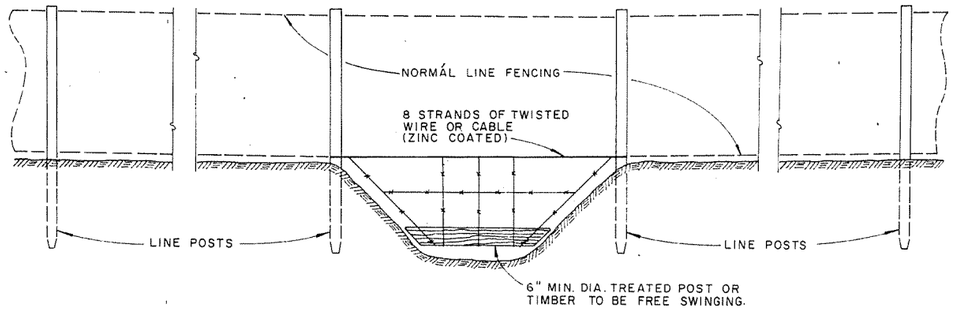
DATE	REVISION	FILMED
7-26-12	REVISED GENERAL NOTE 2.	
12-15-11	ISSUED	

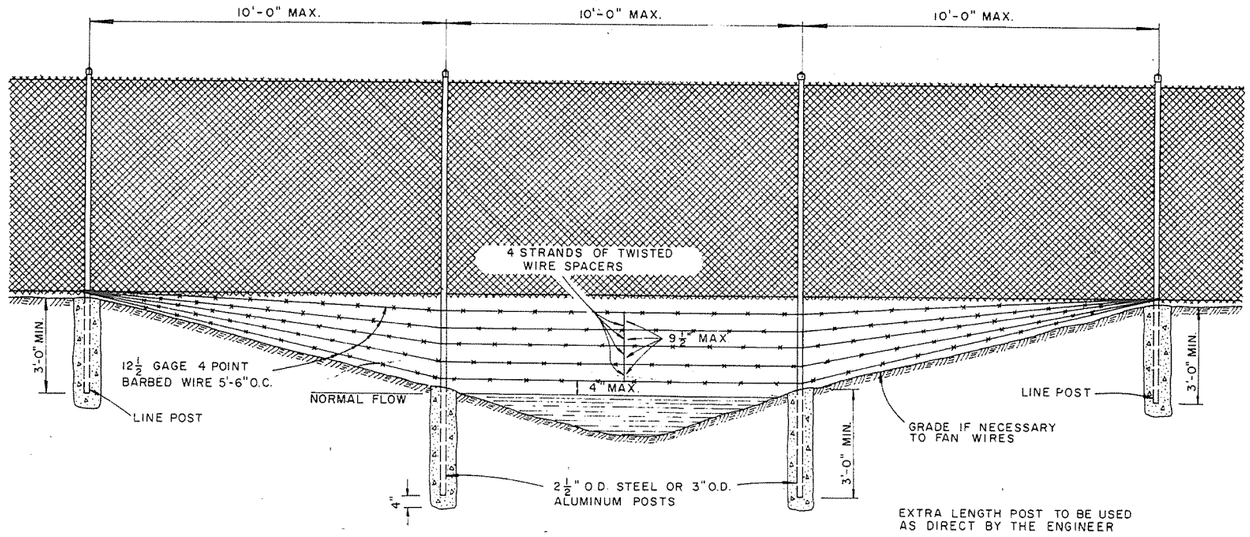
ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

STANDARD DRAWING TEC-4







GENERAL NOTES:

THESE INSTALLATIONS TO BE USED WHERE NORMAL FENCING INSTALLATION WOULD CAUSE THE COLLECTING OF DRIFT IN THE CHANNEL OR THE DEPRESSION WILL NOT PERMIT NORMAL INSTALLATION. INSTALLATIONS WILL BE MADE ONLY WHERE DIRECTED BY THE ENGINEER.

WHEN A FENCE LINE APPROACHES A DITCH, GULLY OR DEPRESSION, THE LAST POST ON LEVEL GROUND SHALL BE PLACED CLOSE ENOUGH TO THE EDGE OF THE DROP OFF THAT THE FENCE MAY BE STRUNG TO THE POST IN THE DEPRESSION WITHOUT TOUCHING THE GROUND.

IN TERRAIN OF SUCH EXTREME IRREGULARITY THAT MINOR GRADING WILL NOT BE FEASIBLE, THE NORMAL FENCE SHALL CONTINUE ON GRADE AND THE GULLIES OR DEPRESSIONS TREATED BY AUXILIARY FENCES AS SHOWN.

PAYMENT FOR THE TYPE INSTALLATION USED WILL NOT BE MADE DIRECTLY BUT WILL BE INCLUDED IN THE CONTRACT UNIT PRICE BID FOR WIRE FENCE OR CHAIN LINK FENCE.

DATE	REVISION	DATE FILM'D.
4-20-79	REVISED TOP RAIL & TENSION WIRE	696-4-20-79
10-2-72	REVISED & REDRAWN	529 10-2-72

ARKANSAS STATE HIGHWAY COMMISSION

WIRE FENCE WATER GAPS

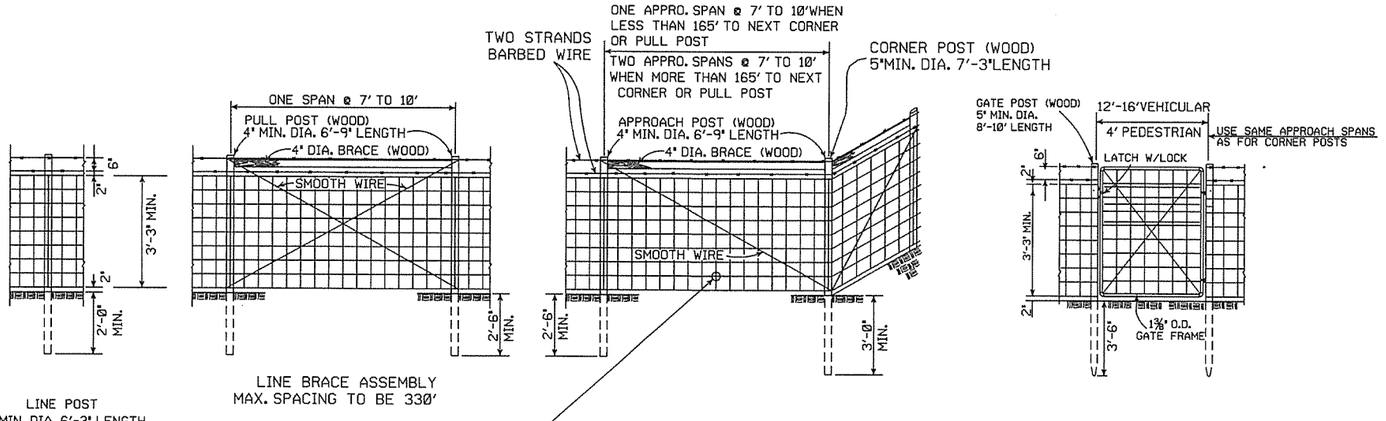
STANDARD DRAWING

WF-2

73

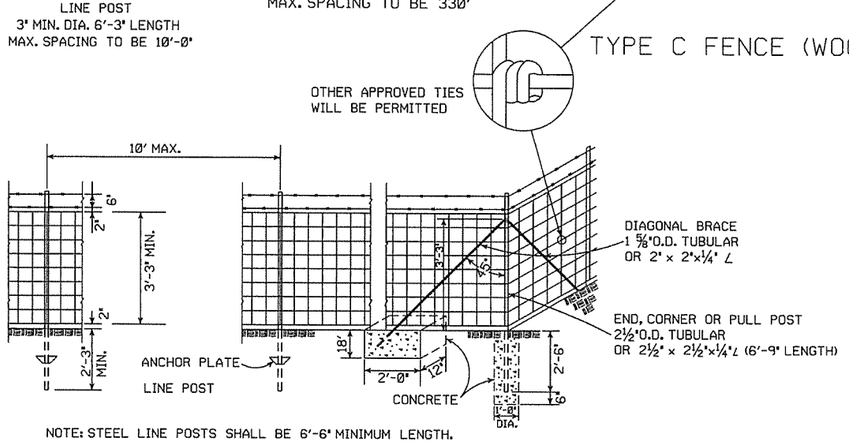
1M—11-71—67001—PPASCo

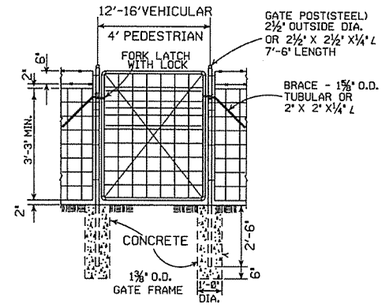
TYPE C FENCE (WOOD POSTS)

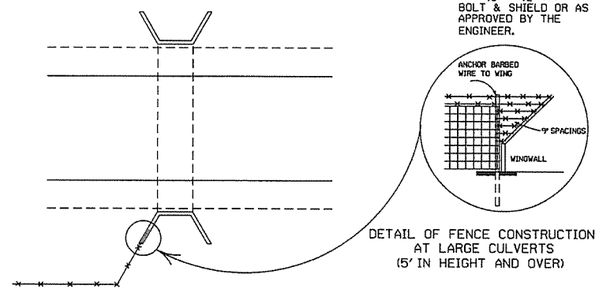


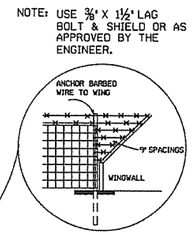
LINE POST
3" MIN. DIA. 6'-3" LENGTH
MAX. SPACING TO BE 10'-0"

LINE BRACE ASSEMBLY
MAX. SPACING TO BE 330'









NOTE: USE ⅜" X 1½" LAG BOLT & SHIELD OR AS APPROVED BY THE ENGINEER.

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

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

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.

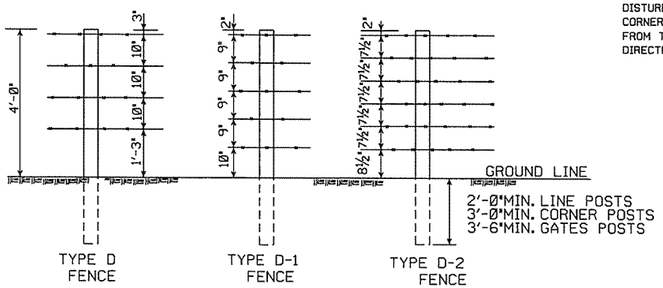
SPLICE FOR BARBED WIRE BETWEEN PULL POST ASSEMBLY SHALL BE BY THE 'EYE METHOD' AS DESCRIBED AS FOLLOWS:
THE ENDS OF THE BARBED WIRE SHALL BE BENT TO FORM A LOOP. THE LOOPS SHALL BE CONNECTED. AFTER THE LOOPS ARE CONNECTED THE ENDS OF THE WIRE SHALL BE WRAPPED AROUND THE PROJECTING WIRES A MINIMUM OF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

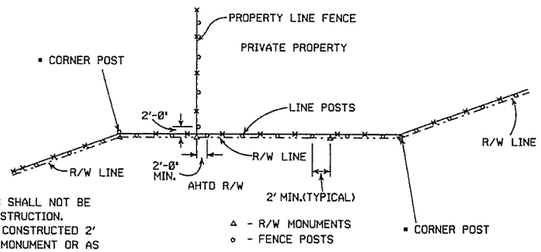
STAPLE AT LEAST TOP, BOTTOM AND ALTERNATE WIRES OF WOVEN FABRIC FOR WOOD LINE POSTS.

TYPE C FENCE (STEEL POSTS)

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

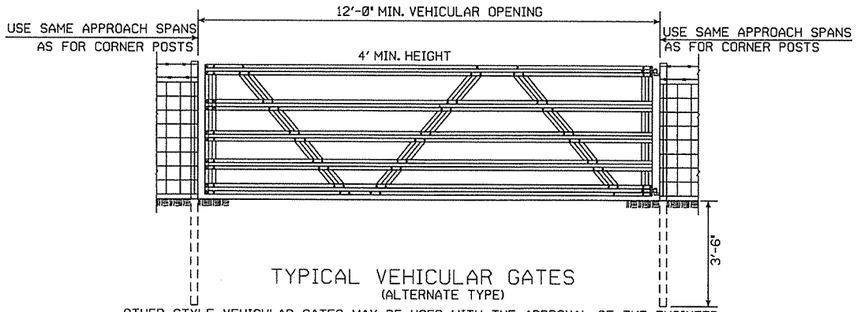


NOTE: SPACING AND SIZE (EXCEPT LENGTH) OF POSTS, APPROACH SPANS, PULL POST ASSEMBLIES, AND CORNER BRACING FOR TYPE D FENCE SHALL CONFORM TO TYPE C FENCE. USE GALVANIZED STAPLES ON WOOD POSTS AND APPROVED FASTENERS ON STEEL POSTS.



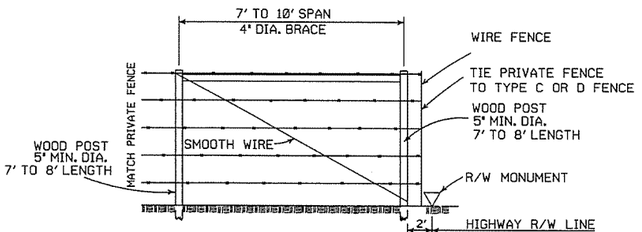
• NOTE: RIGHT-OF-WAY MONUMENTS SHALL NOT BE DISTURBED BY FENCE CONSTRUCTION. CORNER POSTS SHALL BE CONSTRUCTED 2' FROM THE RIGHT-OF-WAY MONUMENT OR AS DIRECTED BY THE ENGINEER.

RIGHT-OF-WAY FENCE LOCATION



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.



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.

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

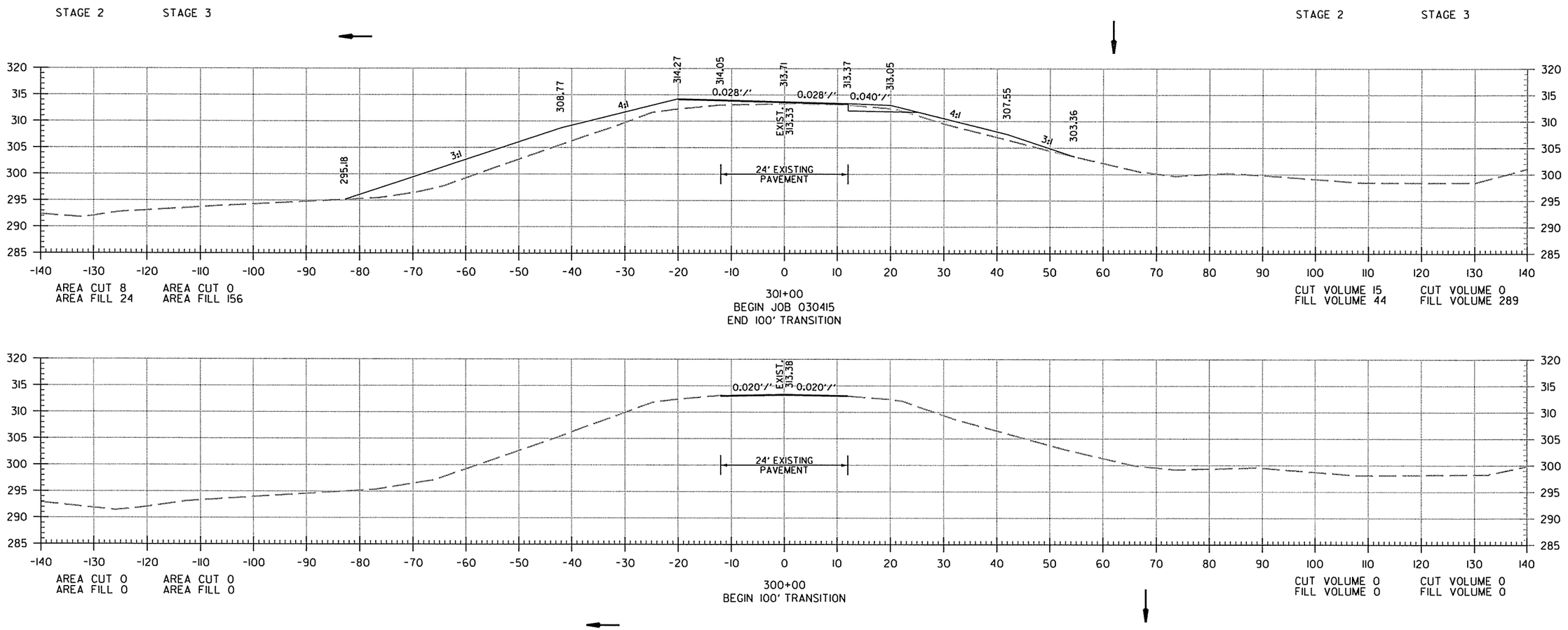
ARKANSAS STATE HIGHWAY COMMISSION

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.		030415	105	131

(2) CROSS SECTIONS



2/5/2016

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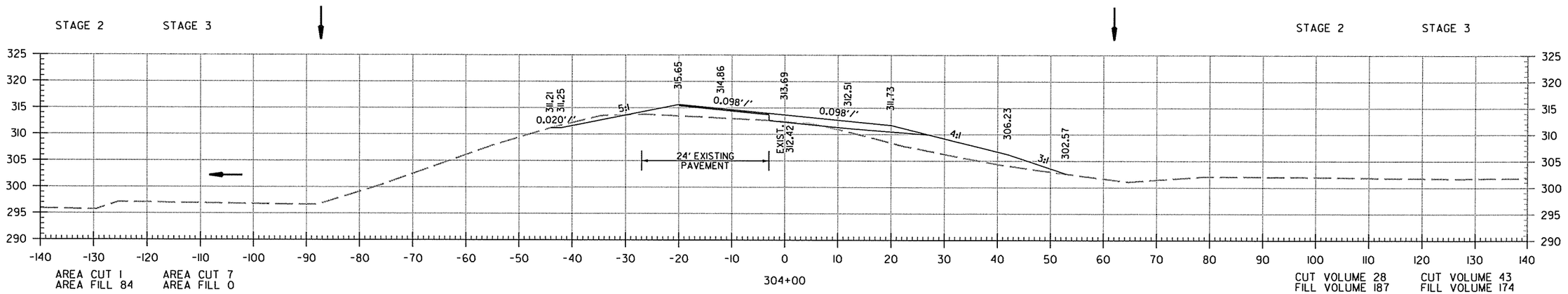
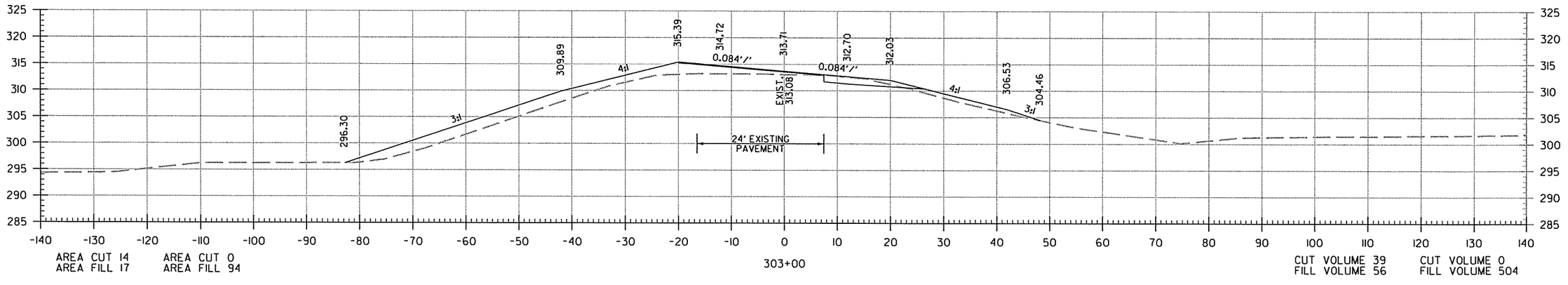
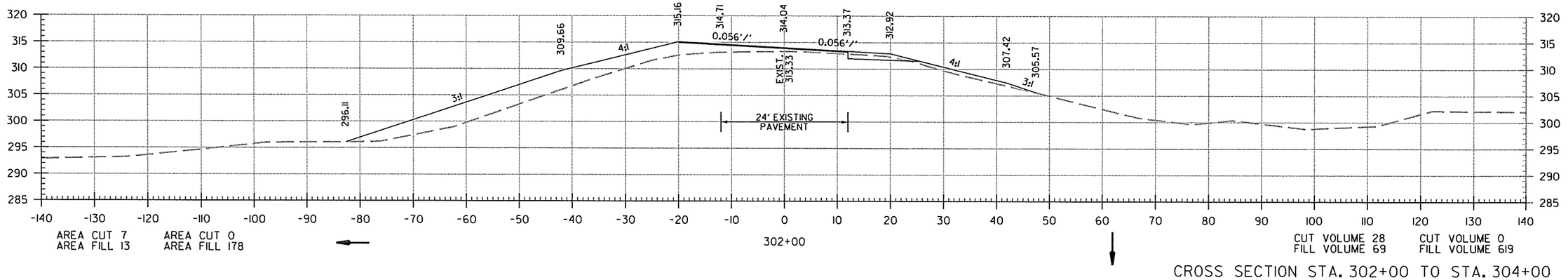
CROSS SECTION STA. 300+00 TO STA. 301+00

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.		030415	106	131

(2) CROSS SECTIONS







CROSS SECTION STA. 302+00 TO STA. 304+00

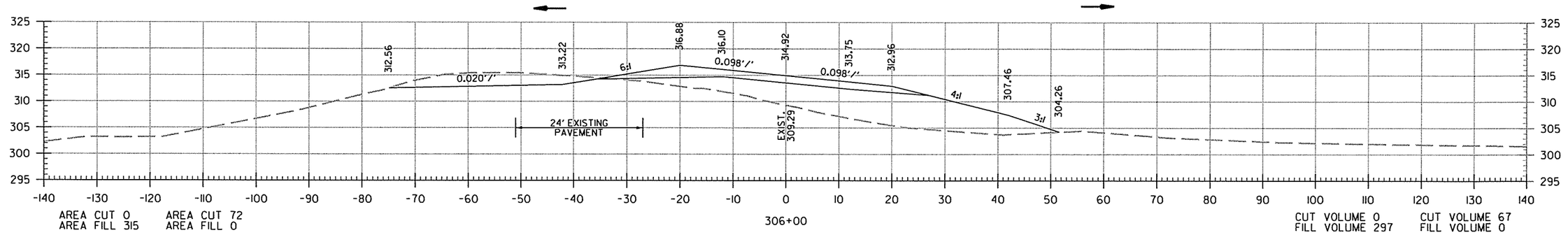
2/5/2016

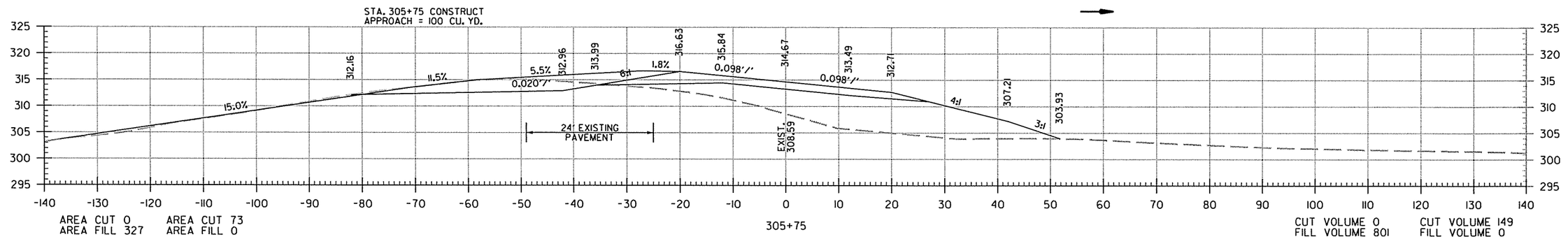
R030415.DGN

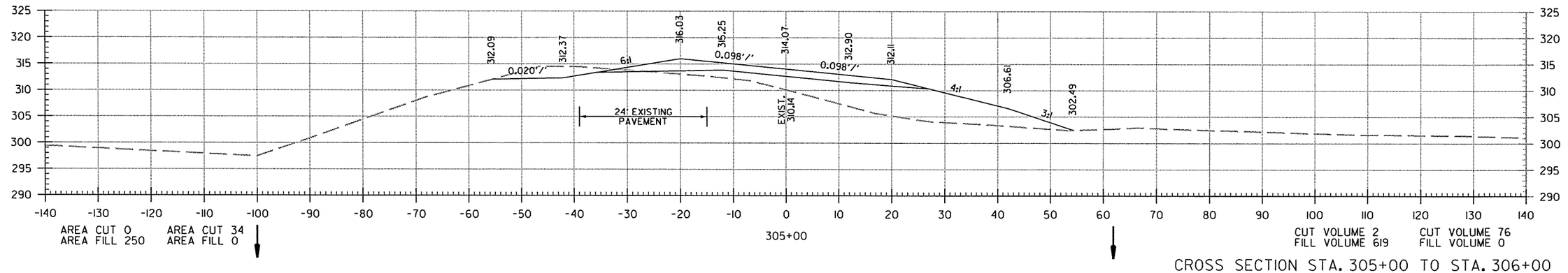
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		030415	107	131

(2) CROSS SECTIONS

STAGE 2 STAGE 3







CROSS SECTION STA. 305+00 TO STA. 306+00

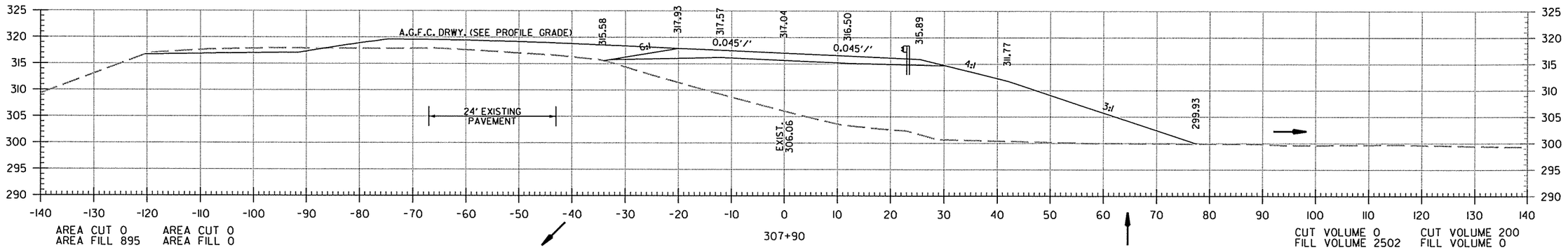
2/5/2016

R030415.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.		030415	108	131

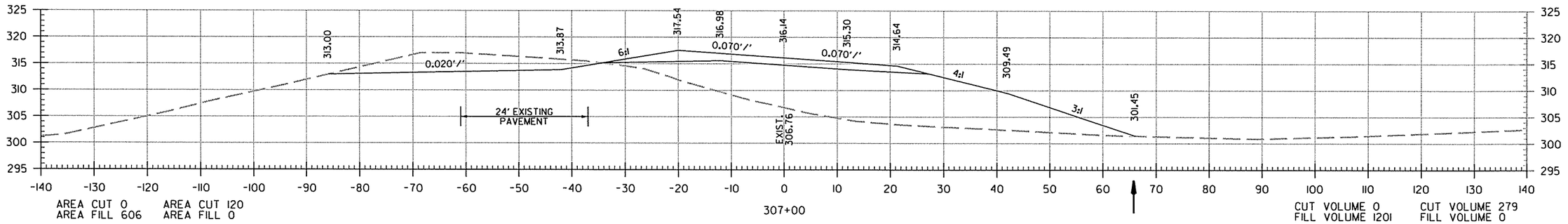
(2) CROSS SECTIONS

STAGE 2 STAGE 3

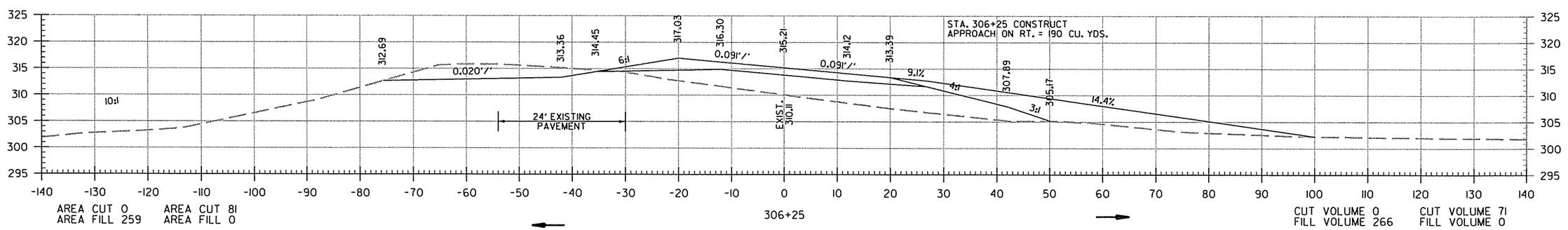


STAGE 2 STAGE 3

STA. 307+34.75 RT. BEGIN GUARDRAIL
STA. 307+24.75 RT. END GUARDRAIL WIDENING TAPER



STA. 306+91.75 RT. BEGIN GUARDRAIL WIDENING TAPER



CROSS SECTION STA. 306+25 TO STA. 307+90

2/5/2016

R030415.DGN

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

STAGE 2 — AREA CUT 0, AREA FILL 0

STAGE 3 — AREA CUT 0, AREA FILL 0

STA. 329+41.85 TOE OF SLOPE

STAGE 2 — CUT VOLUME 0, FILL VOLUME 0

STAGE 3 — CUT VOLUME 0, FILL VOLUME 0

STA. 309+84.86 TOE OF SLOPE

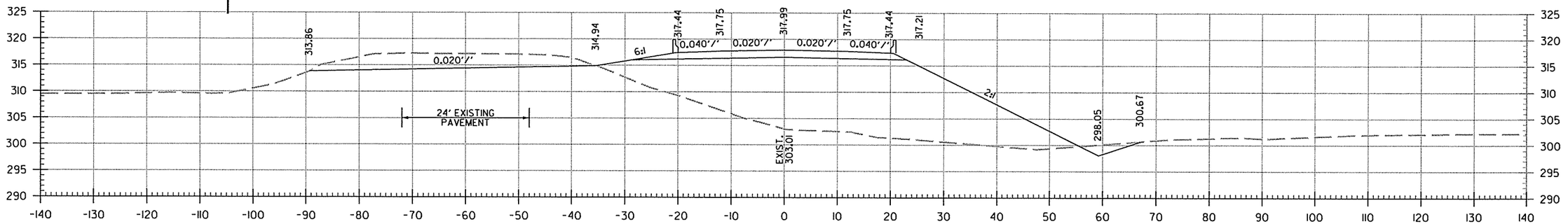
STAGE 2 — AREA CUT 0, AREA FILL 0

STAGE 3 — AREA CUT 0, AREA FILL 0

STA. 309+80 END
0.50% RT. DITCH GRADE
ELEV. 297.98

STAGE 2 — CUT VOLUME 4, FILL VOLUME 317

STAGE 3 — CUT VOLUME 46, FILL VOLUME 0



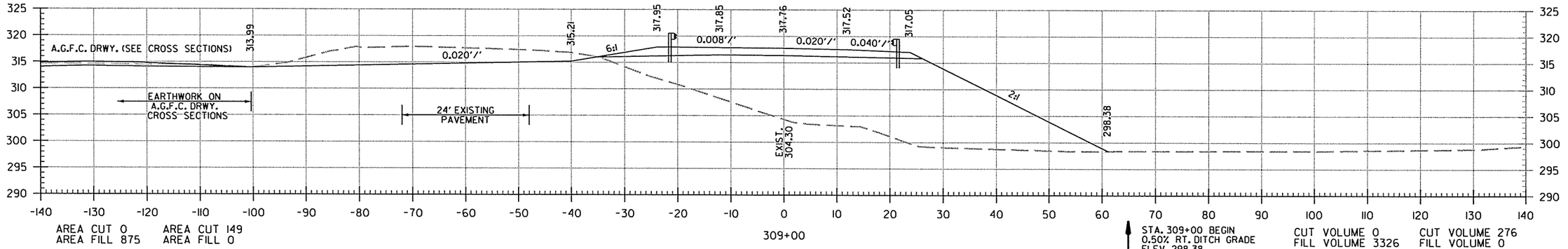
AREA CUT 12, AREA FILL 856

AREA CUT 124, AREA FILL 0

309+64.90
STA. 309+64.90 BEGIN BRIDGE
STA. 309+53.50 LT. & RT. END GUARDRAIL WIDENING
STA. 309+53.50 LT. & RT. END GUARDRAIL

CUT VOLUME 14, FILL VOLUME 2084

CUT VOLUME 329, FILL VOLUME 46



AREA CUT 0, AREA FILL 875

AREA CUT 149, AREA FILL 0

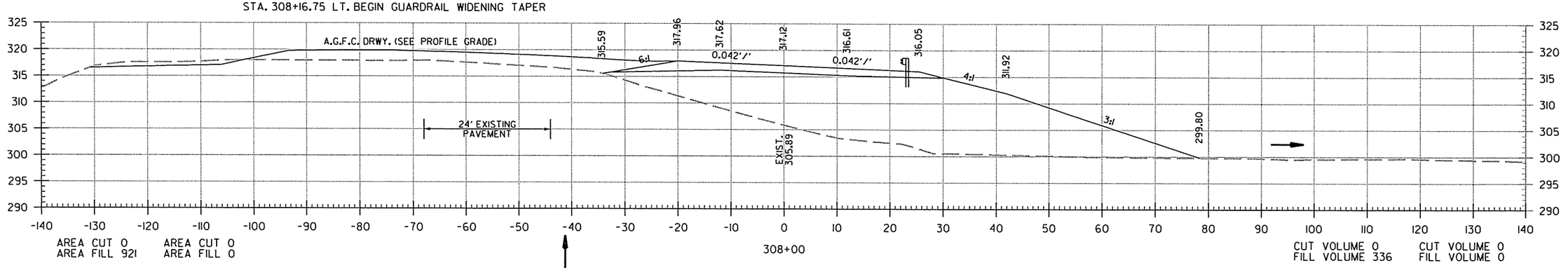
309+00

STA. 309+00 BEGIN
0.50% RT. DITCH GRADE
ELEV. 298.38

CUT VOLUME 0, FILL VOLUME 3326

CUT VOLUME 276, FILL VOLUME 0

STA. 308+59.75 LT. BEGIN GUARDRAIL
STA. 308+49.75 LT. END GUARDRAIL WIDENING TAPER
STA. 308+16.75 LT. BEGIN GUARDRAIL WIDENING TAPER



AREA CUT 0, AREA FILL 921

AREA CUT 0, AREA FILL 0

308+00

CUT VOLUME 0, FILL VOLUME 336

CUT VOLUME 0, FILL VOLUME 0

CROSS SECTION STA. 308+00 TO STA. 309+64.90

2/5/2016

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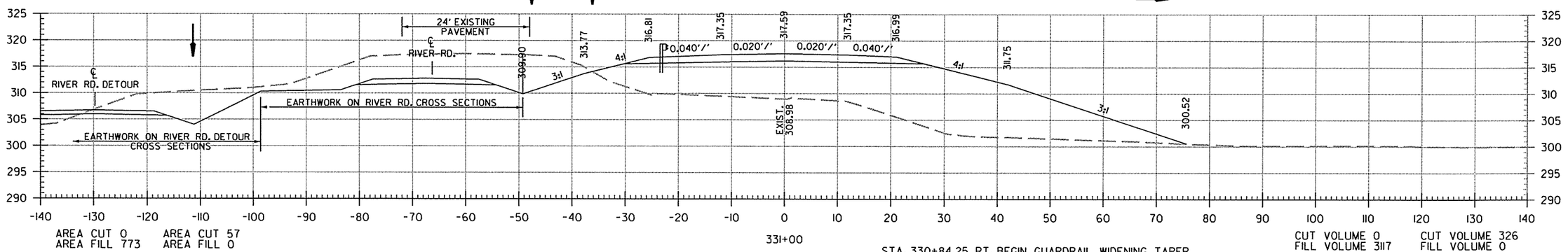
				6	ARK.			
				JOB NO.		030415	110	131

(2) CROSS SECTIONS

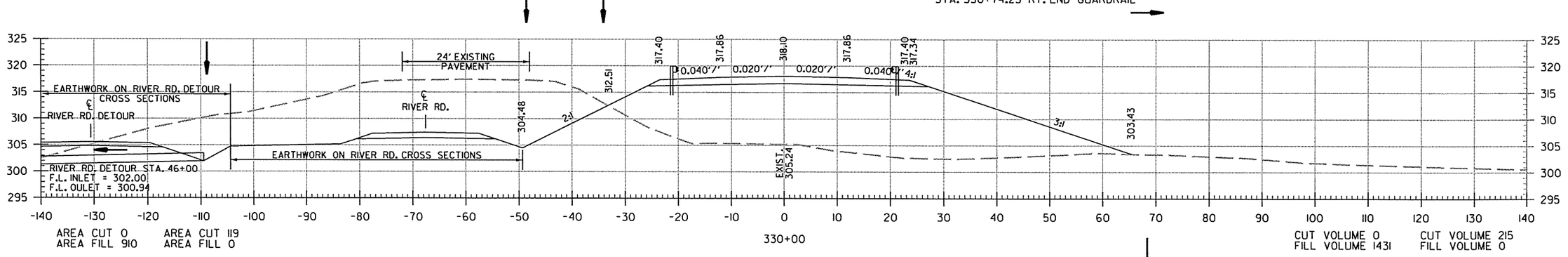
STAGE 2 STAGE 3

STAGE 2 STAGE 3

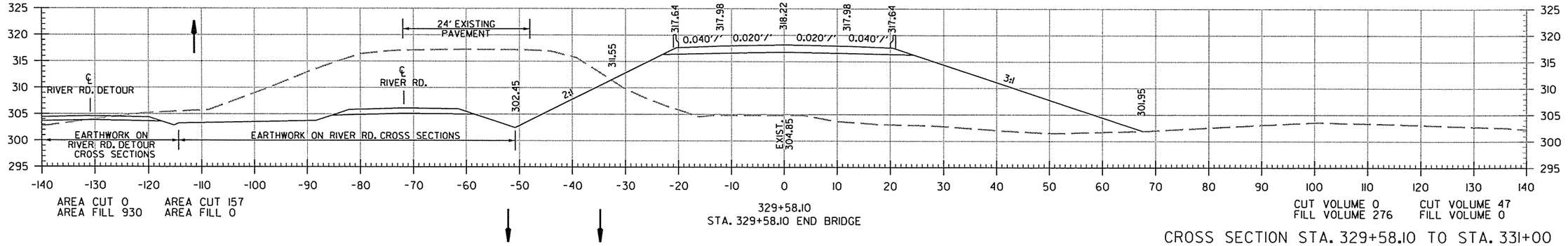
STA. 331+17.25 RT. END GUARDRAIL WIDENING TAPER



STA. 330+84.25 RT. BEGIN GUARDRAIL WIDENING TAPER
STA. 330+74.25 RT. END GUARDRAIL



STA. 329+80.50 LT. & RT. BEGIN GUARDRAIL
STA. 329+80.50 LT. & RT. BEGIN GUARDRAIL WIDENING



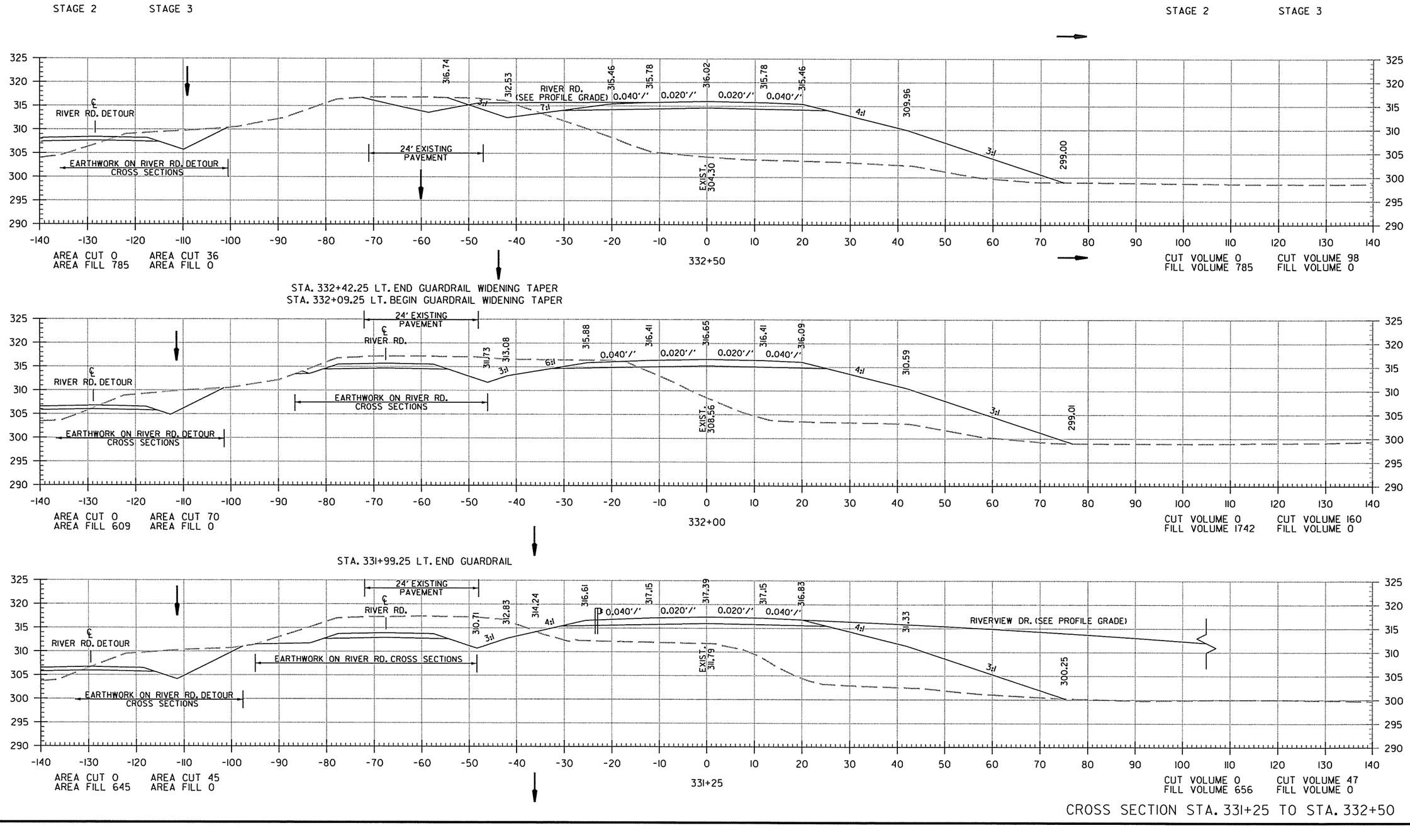
CROSS SECTION STA. 329+58.10 TO STA. 331+00

2/5/2016

R030415.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.		030415	111	131

(2) CROSS SECTIONS



CROSS SECTION STA. 331+25 TO STA. 332+50

2/5/2016

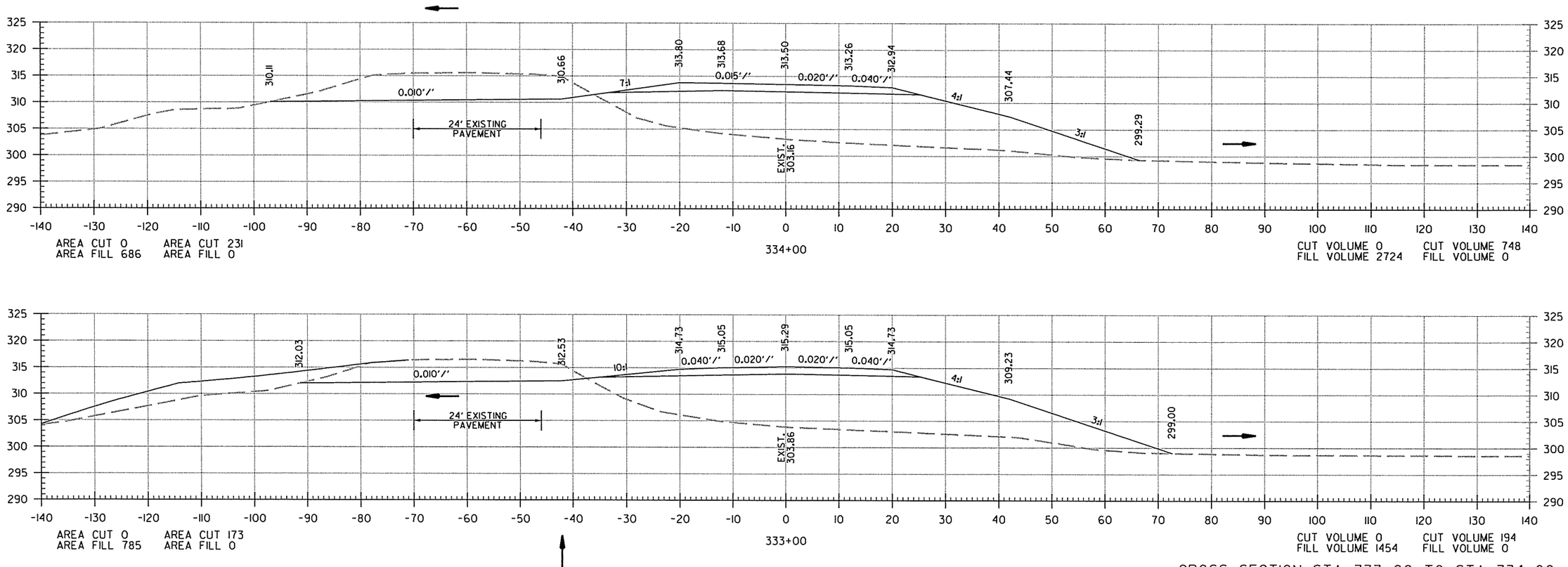
R030415.DGN

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.		030415	112	131

(2) CROSS SECTIONS

STAGE 2 STAGE 3

STAGE 2 STAGE 3



CROSS SECTION STA. 333+00 TO STA. 334+00

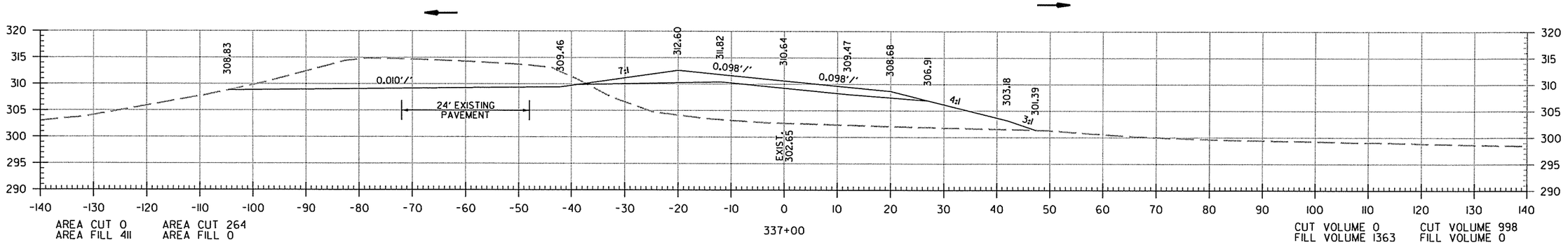
2/5/2016

R030415.DGN

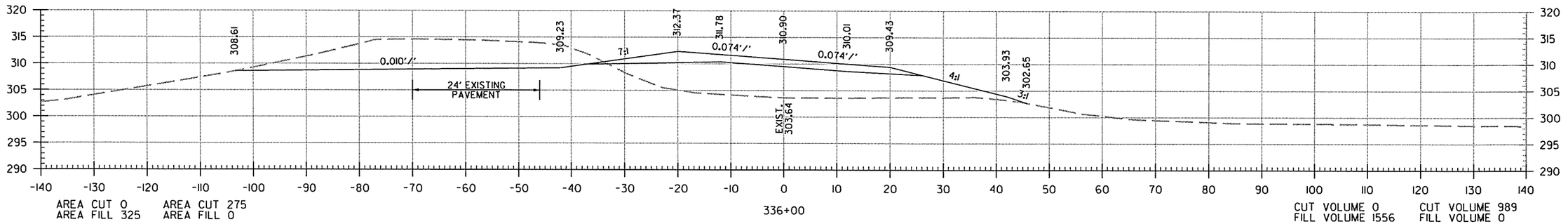
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		030415	113	131

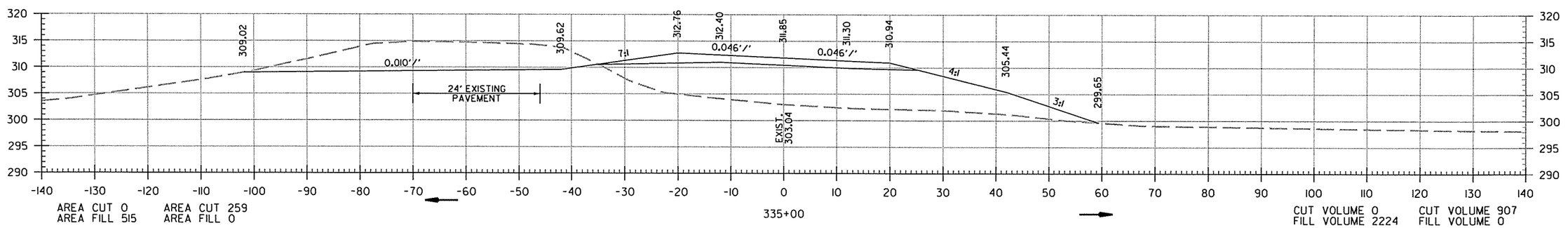
(2) CROSS SECTIONS

STAGE 2 STAGE 3



STAGE 2 STAGE 3





CROSS SECTION STA. 335+00 TO STA. 337+00

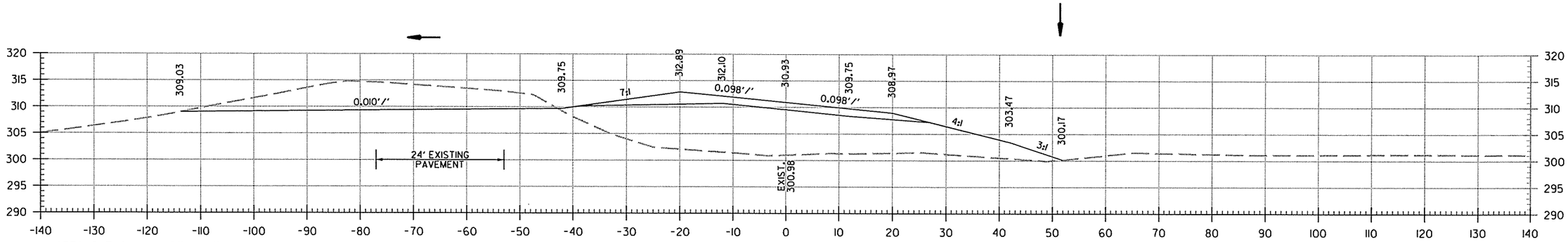
2/5/2016

R030415.DGN

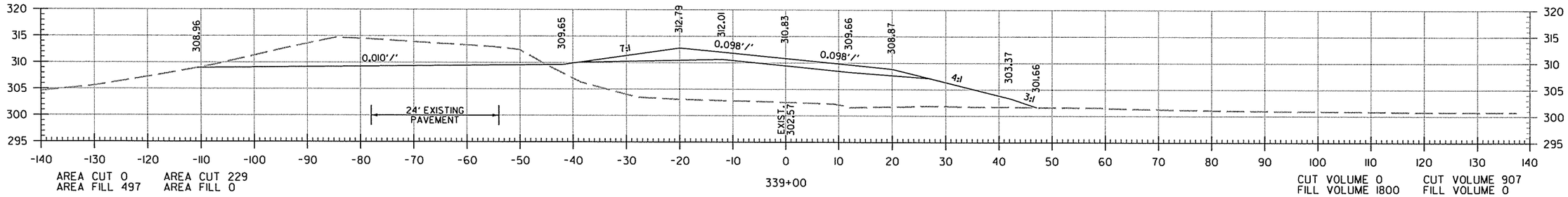
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		030415	114	131

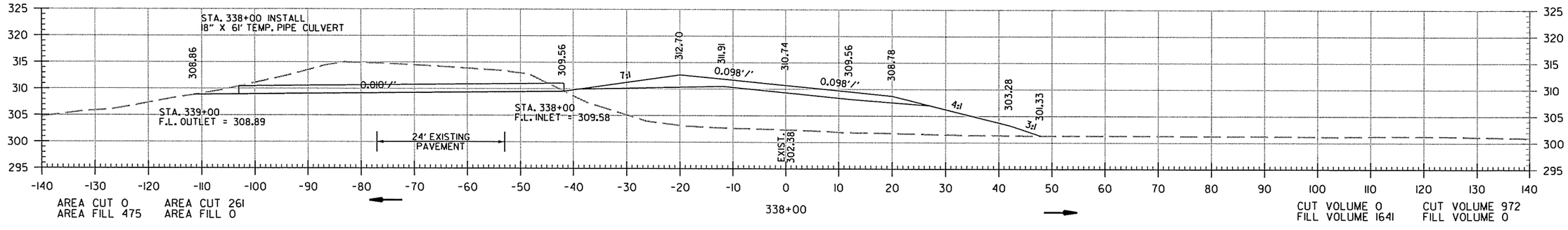
(2) CROSS SECTIONS

STAGE 2 STAGE 3



STAGE 2 STAGE 3





CROSS SECTION STA. 338+00 TO STA. 340+00

2/5/2016

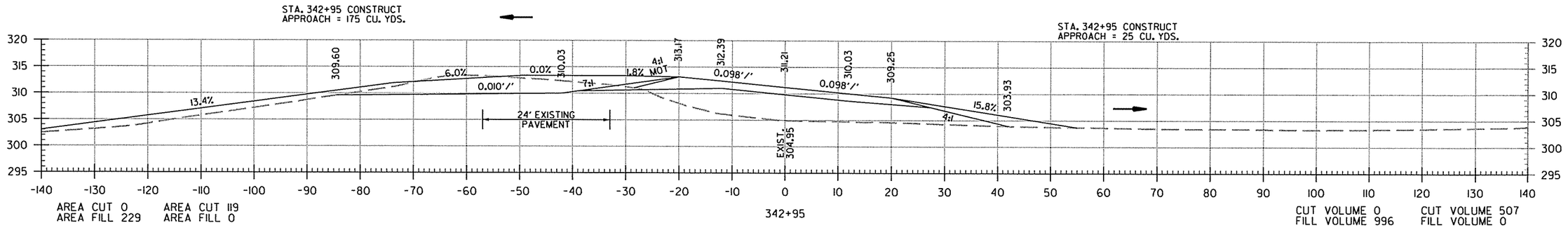
R030415.DGN

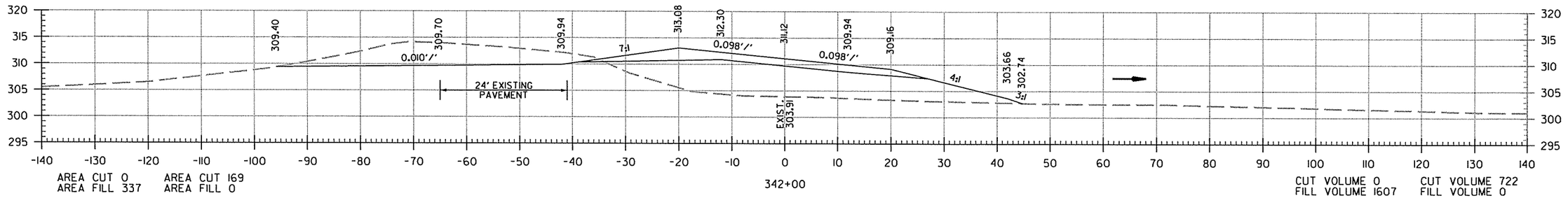
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		030415	115	131

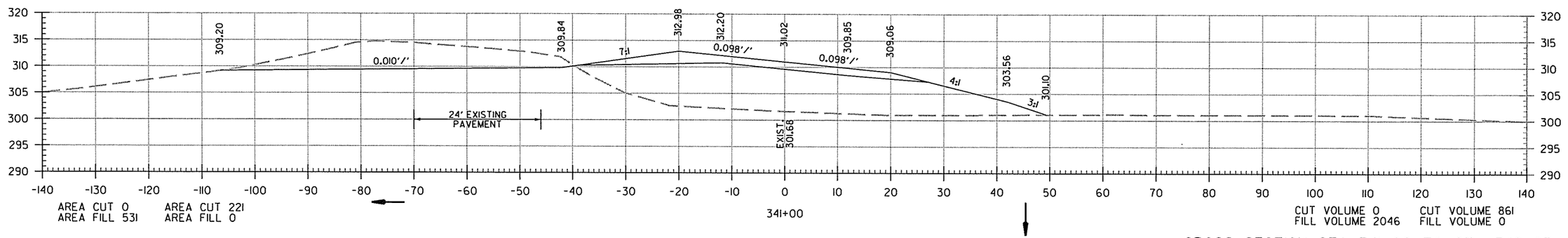
(2) CROSS SECTIONS

STAGE 2 STAGE 3

STAGE 2 STAGE 3







CROSS SECTION STA. 341+00 TO STA. 342+95

2/5/2016

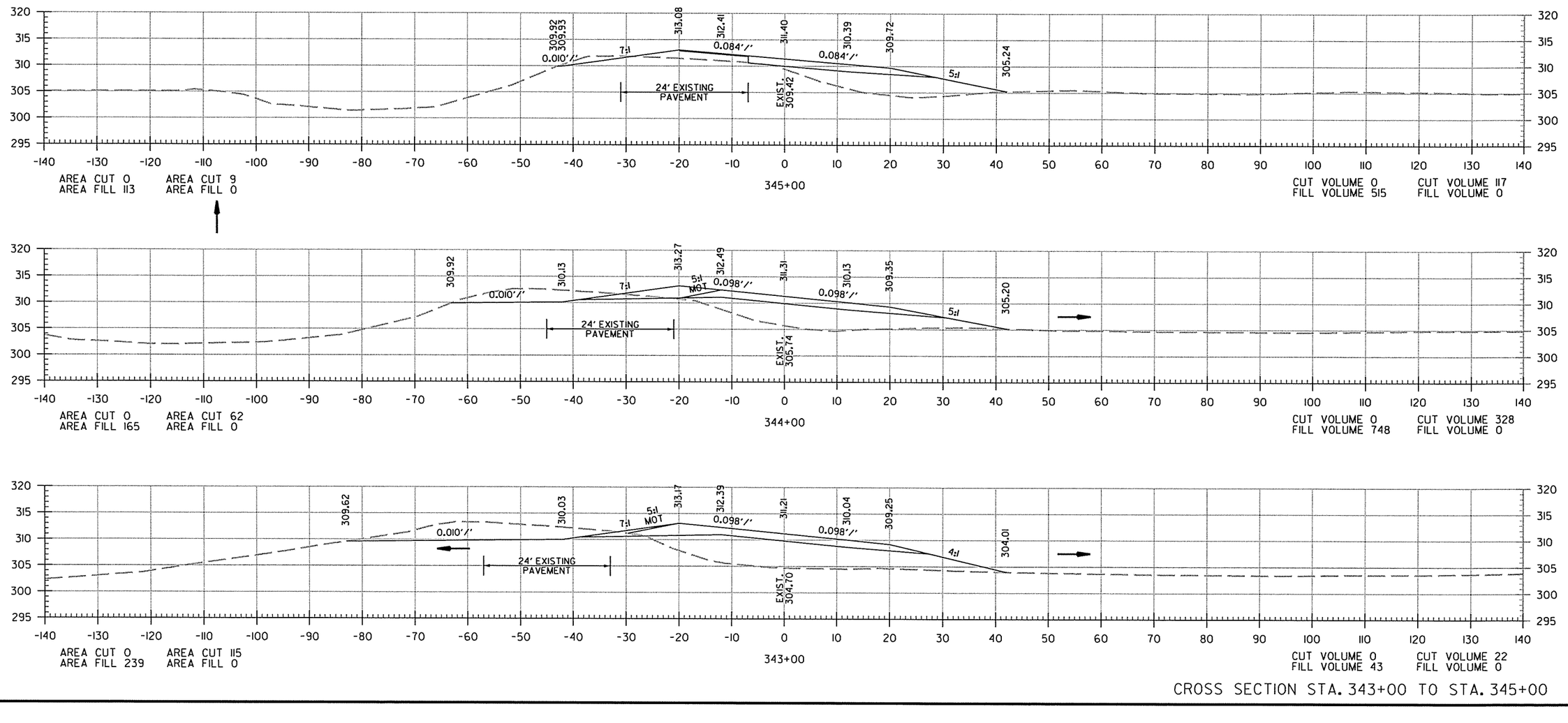
R030415.DGN

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.		030415	116	131

(2) CROSS SECTIONS

STAGE 2 STAGE 3

STAGE 2 STAGE 3



CROSS SECTION STA. 343+00 TO STA. 345+00

2/5/2016

R030415.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.		030415	117	131

(2) CROSS SECTIONS

STAGE 2 STAGE 3

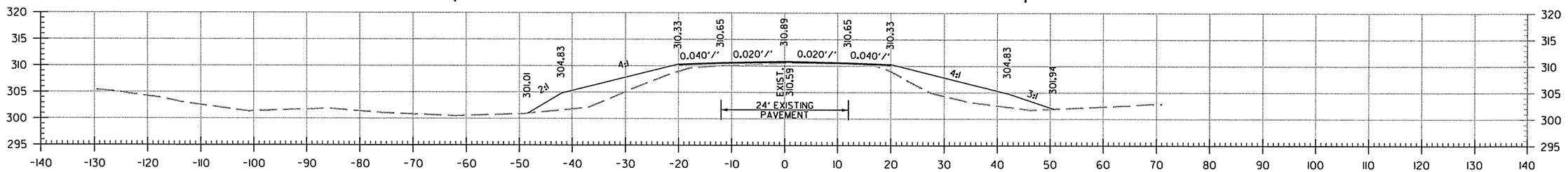
AREA CUT 0
AREA FILL 0

AREA CUT 0
AREA FILL 0

CUT VOLUME 0
FILL VOLUME 148

CUT VOLUME 0
FILL VOLUME 131

349+00
STA. 349+00 END 100' TRANSITION



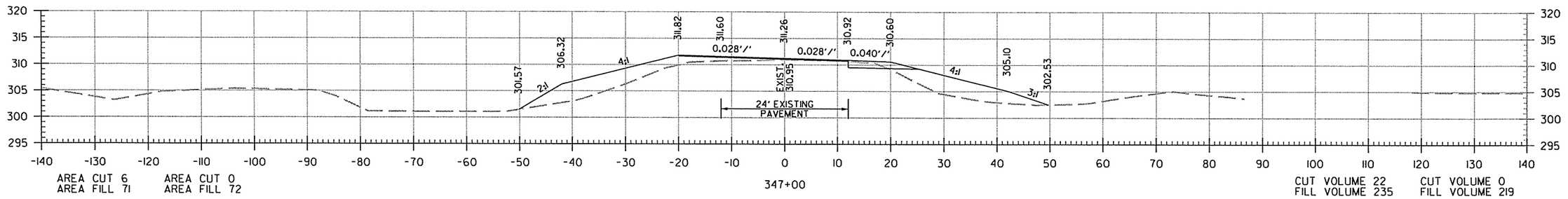
AREA CUT 0
AREA FILL 80

AREA CUT 0
AREA FILL 71

348+00
BEGIN 100' TRANSITION
END JOB 030415

CUT VOLUME 11
FILL VOLUME 280

CUT VOLUME 0
FILL VOLUME 265



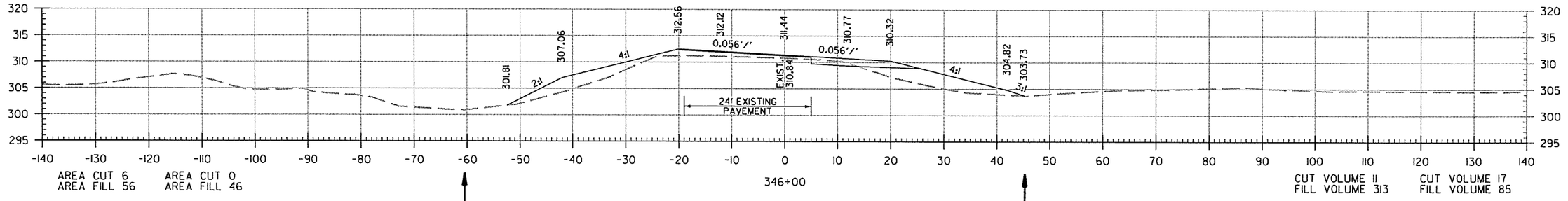
AREA CUT 6
AREA FILL 71

AREA CUT 0
AREA FILL 72

347+00

CUT VOLUME 22
FILL VOLUME 235

CUT VOLUME 0
FILL VOLUME 219



AREA CUT 6
AREA FILL 56

AREA CUT 0
AREA FILL 46

346+00

CUT VOLUME 11
FILL VOLUME 313

CUT VOLUME 17
FILL VOLUME 85

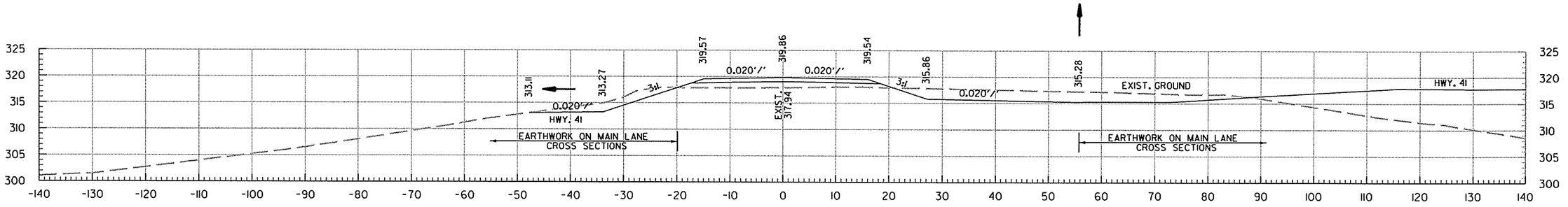
CROSS SECTION STA. 346+00 TO STA. 349+00

2/5/2016

R030415.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.		030415	118	131

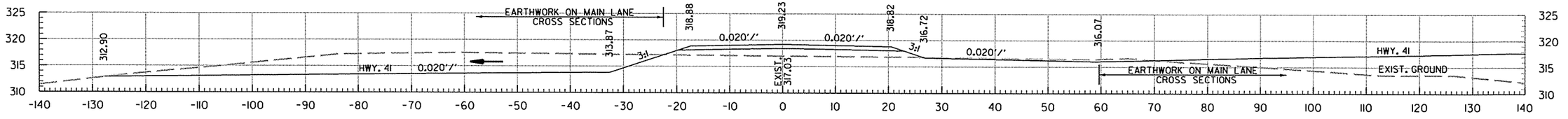
(2) CROSS SECTIONS



AREA CUT 37
AREA FILL 63

10+75

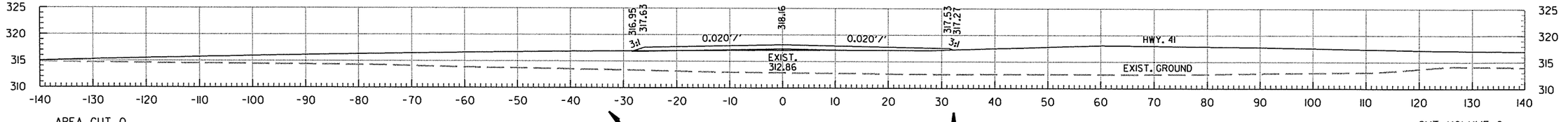
CUT VOLUME 21
FILL VOLUME 56



AREA CUT 8
AREA FILL 57

10+50

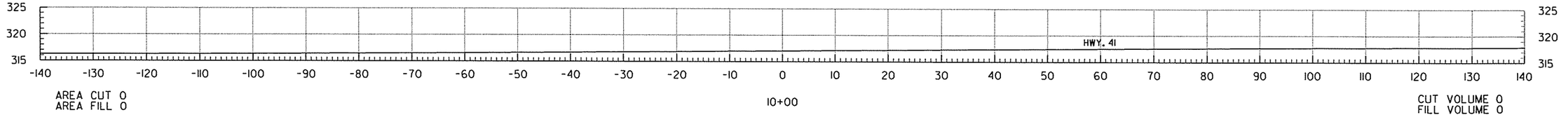
CUT VOLUME 4
FILL VOLUME 26



AREA CUT 0
AREA FILL 0

10+25

CUT VOLUME 0
FILL VOLUME 0



AREA CUT 0
AREA FILL 0

10+00

CUT VOLUME 0
FILL VOLUME 0

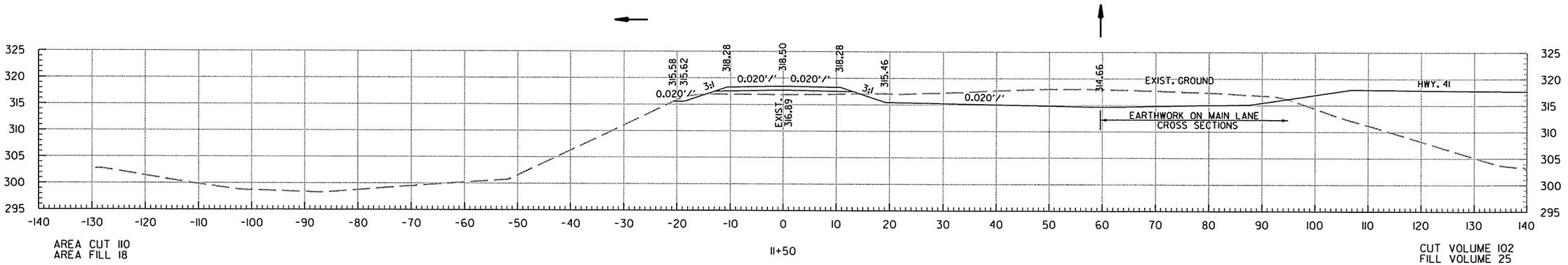
A.G.F.C. DRWY. @ MAIN LANE STA. 307+90 ON LT.
CROSS SECTION STA. 10+00 TO STA. 10+75

2/5/2016

R030415.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.		030415	119	131

(2) CROSS SECTIONS



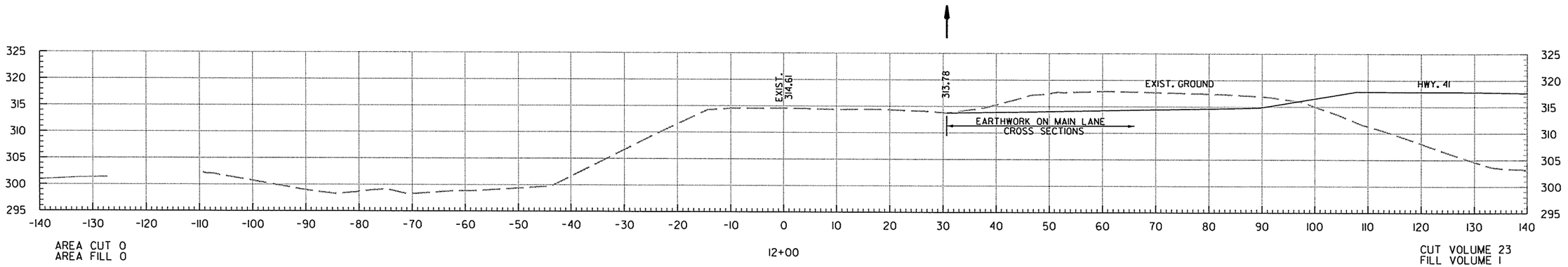
A.G.F.C. DRWY. @ MAIN LANE STA. 307+90 ON LT.
CROSS SECTION STA. 11+00 TO STA. 11+50

2/5/2016

R030415.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.		030415	120	131

(2) CROSS SECTIONS



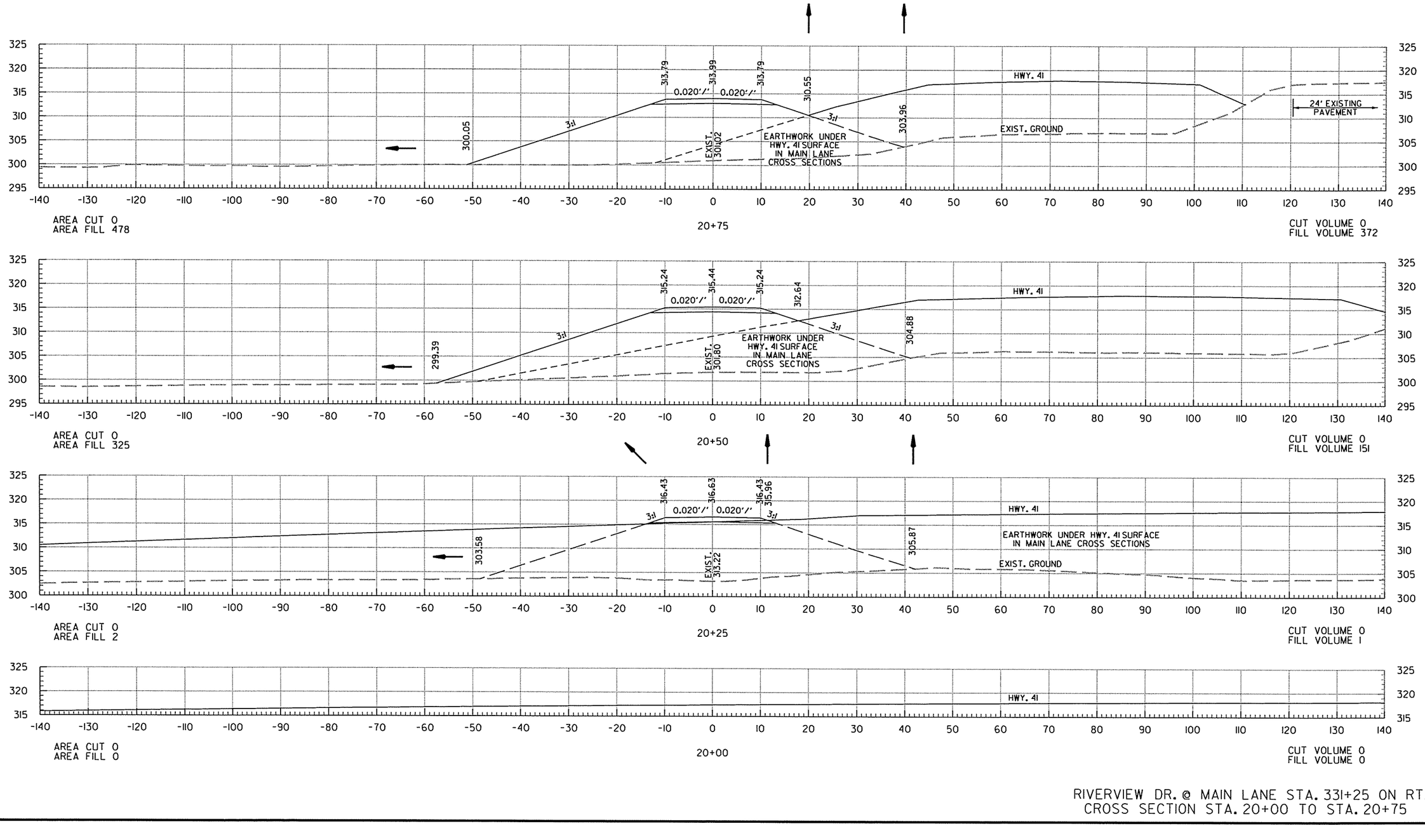
A.G.F.C. DRWY. @ MAIN LANE STA. 307+90 ON LT.
CROSS SECTION STA. 11+75 TO STA. 12+00

2/5/2016

R030415.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.		030415	121	131

(2) CROSS SECTIONS



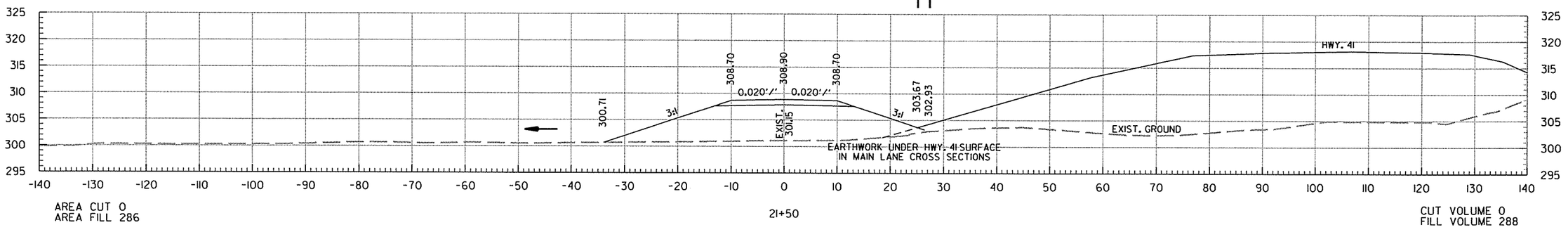
RIVERVIEW DR. @ MAIN LANE STA. 331+25 ON RT.
CROSS SECTION STA. 20+00 TO STA. 20+75

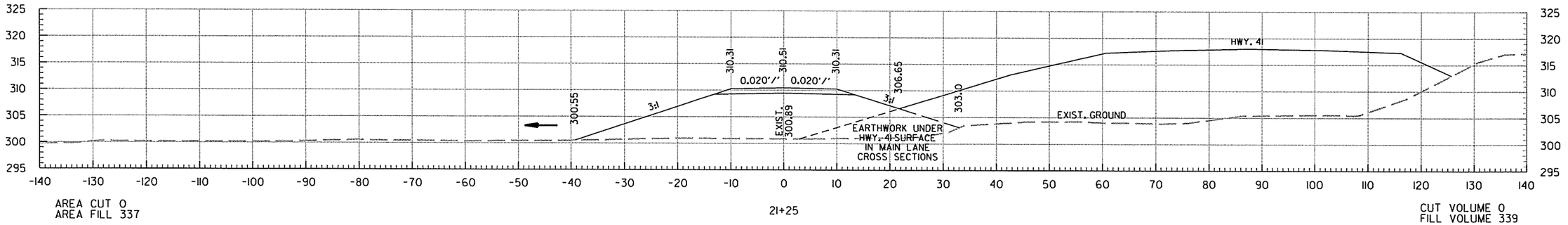
2/5/2016

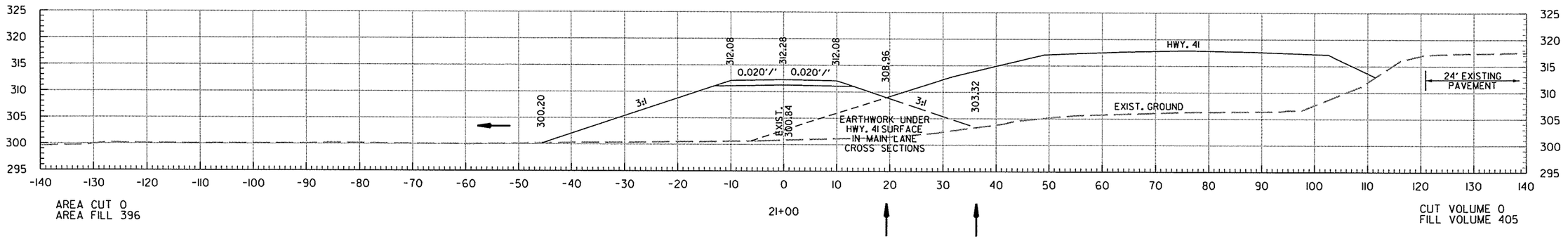
R030415.DGN

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.		030415	122	131

(2) CROSS SECTIONS







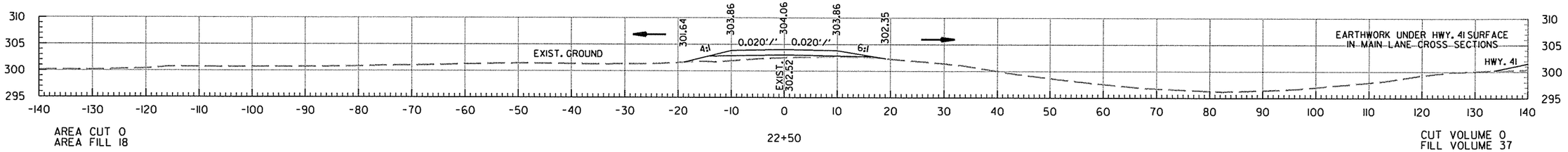
RIVERVIEW DR. @ MAIN LANE STA. 331+25 ON RT.
CROSS SECTION STA. 21+00 TO STA. 21+50

2/5/2016

R030415.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.		030415	123	131

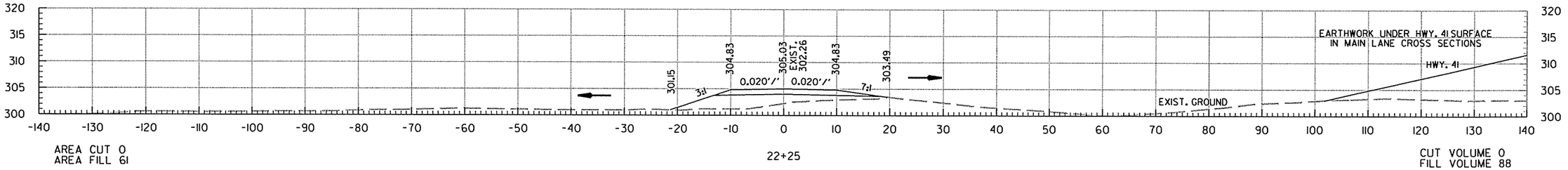
(2) CROSS SECTIONS



AREA CUT 0
AREA FILL 18

22+50

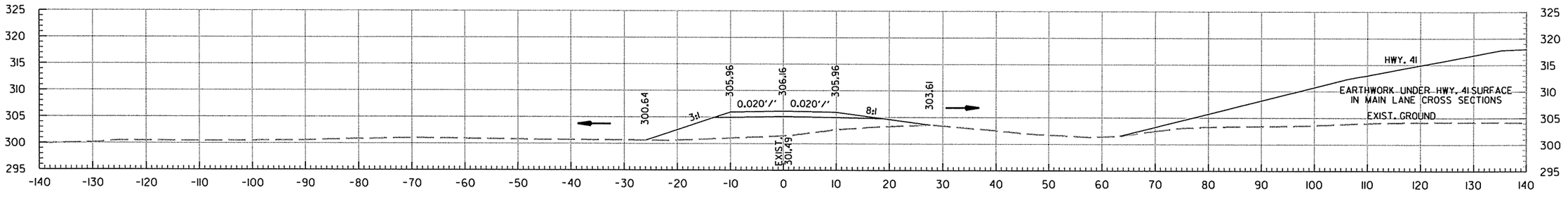
CUT VOLUME 0
FILL VOLUME 37



AREA CUT 0
AREA FILL 61

22+25

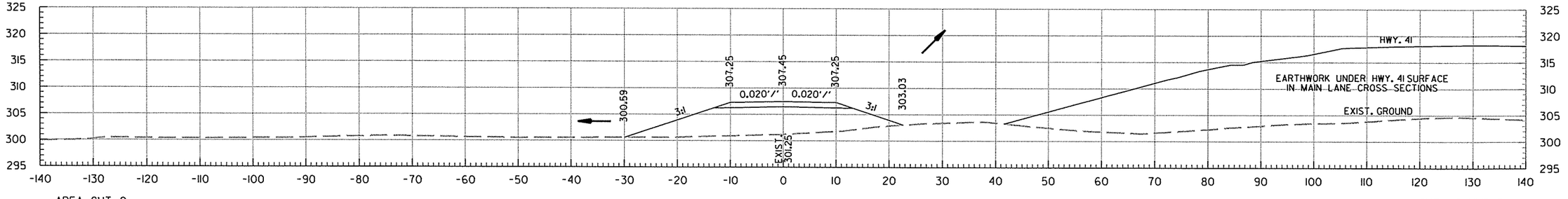
CUT VOLUME 0
FILL VOLUME 88



AREA CUT 0
AREA FILL 130

22+00

CUT VOLUME 0
FILL VOLUME 150



AREA CUT 0
AREA FILL 195

21+75

CUT VOLUME 0
FILL VOLUME 223

RIVERVIEW DR. @ MAIN LANE STA. 331+25 ON RT.
CROSS SECTION STA. 21+75 TO STA. 22+50

2/5/2016

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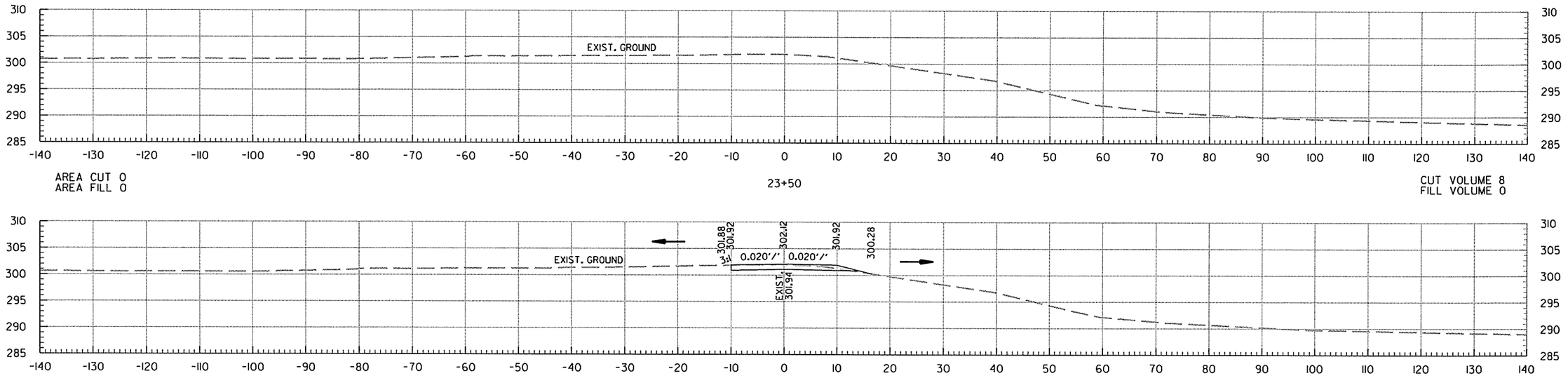
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		030415	124	131

(2) CROSS SECTIONS



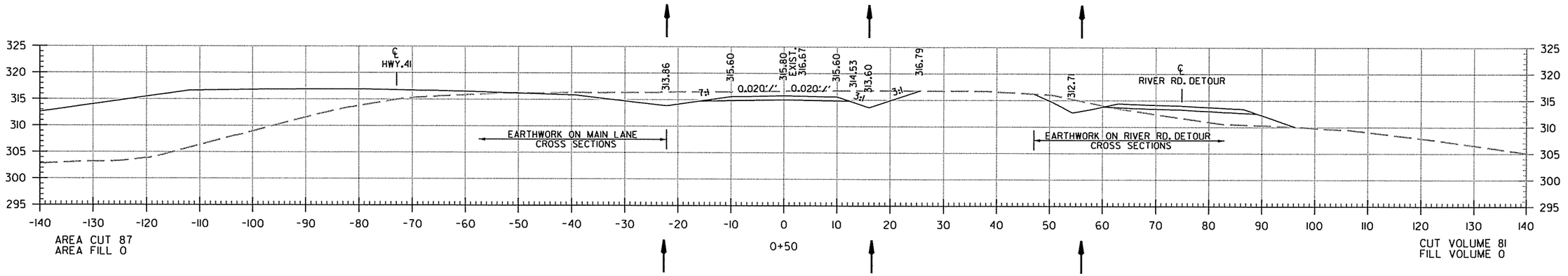
2/5/2016

R030415.DGN

RIVERVIEW DR. @ MAIN LANE STA. 331+25 ON RT.
CROSS SECTION STA. 22+75 TO STA. 23+50

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.		030415	125	131

(2) CROSS SECTIONS

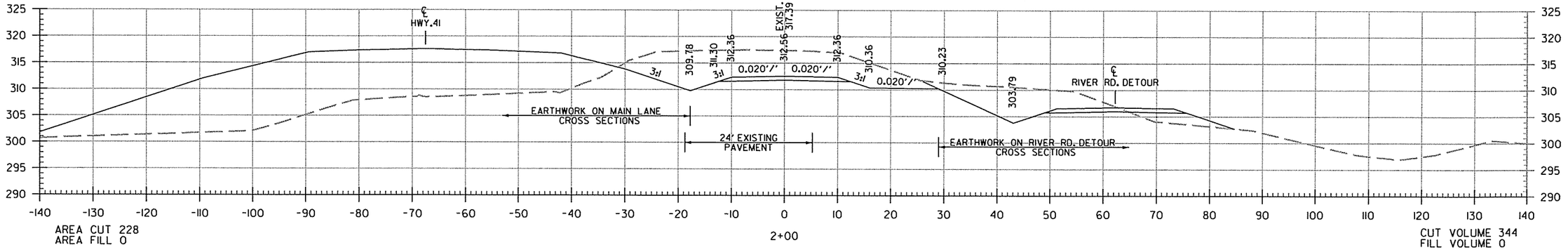


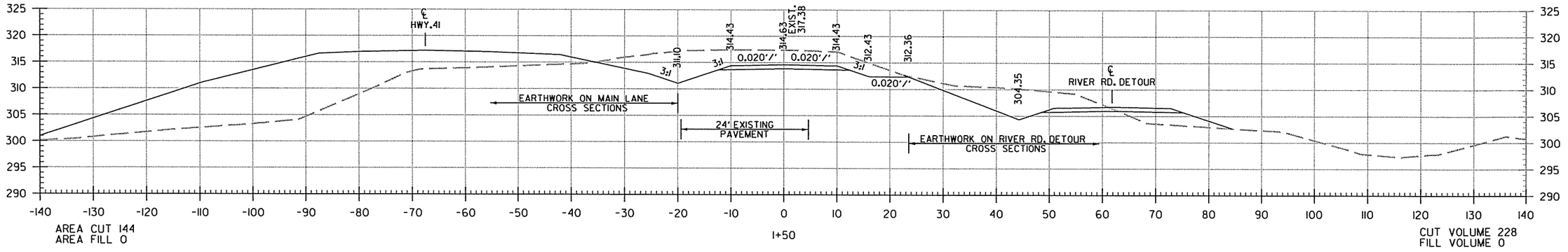
RIVER RD. @ MAIN LANE STA. 332+50 ON LT.
CROSS SECTION STA. 0+50

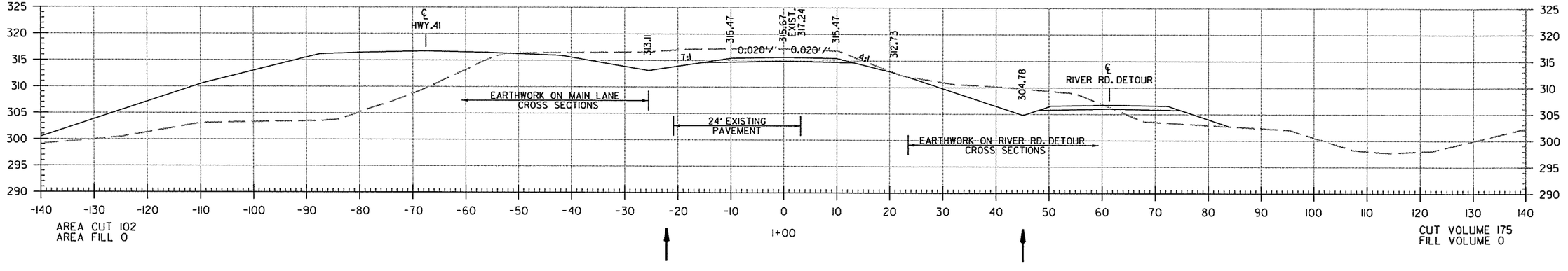
R030415.DGN 2/5/2016

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.		030415	126	131

(2) CROSS SECTIONS







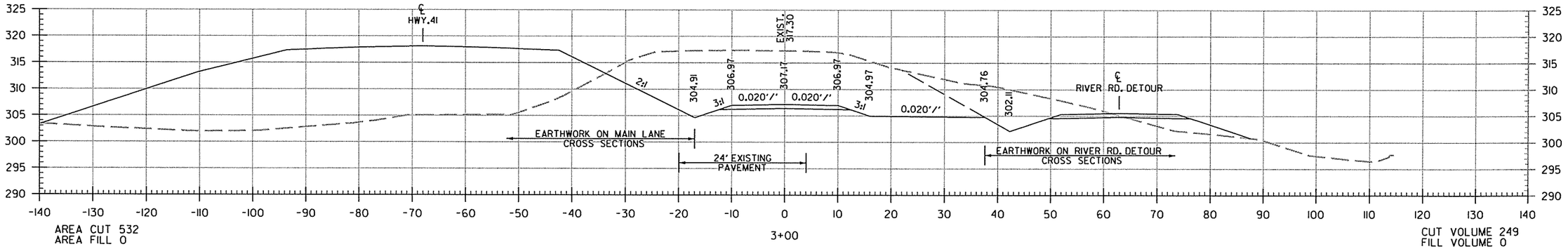
RIVER RD. @ MAIN LANE STA. 332+50 ON LT.
CROSS SECTION STA. 1+00 TO STA. 2+00

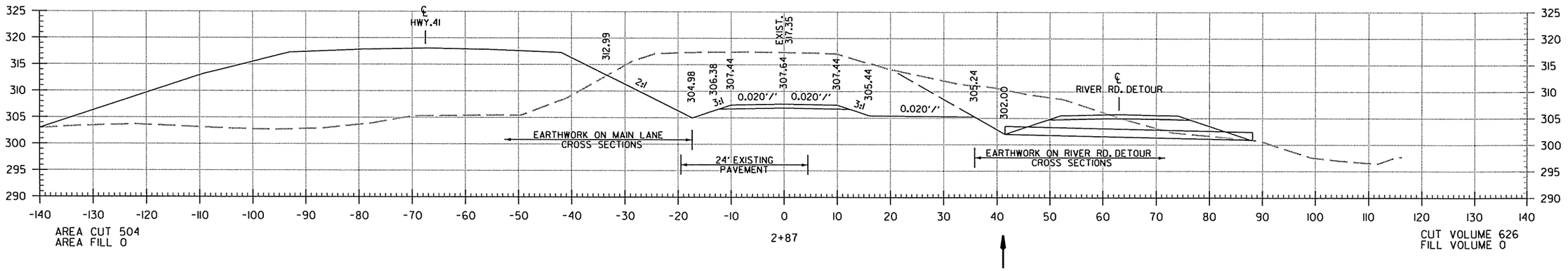
2/5/2016

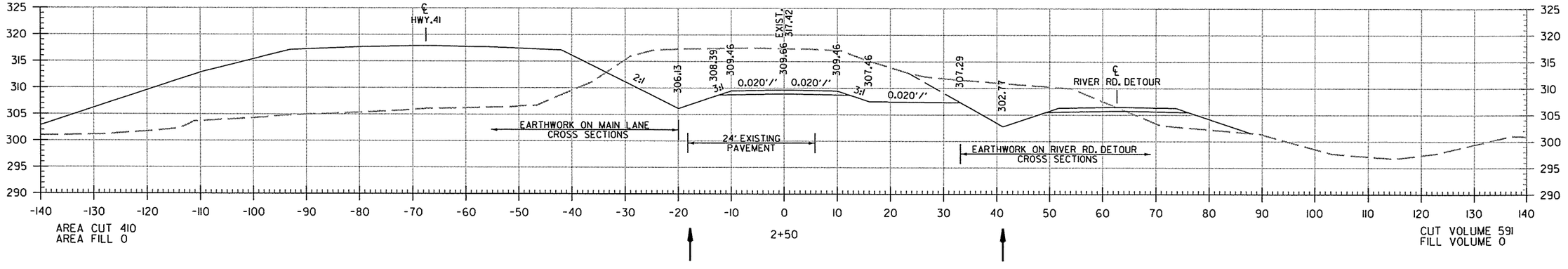
R030415.DGN

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.		030415	127	131

(2) CROSS SECTIONS







RIVER RD. @ MAIN LANE STA. 332+50 ON LT.
CROSS SECTION STA. 2+50 TO STA. 3+00

2/5/2016

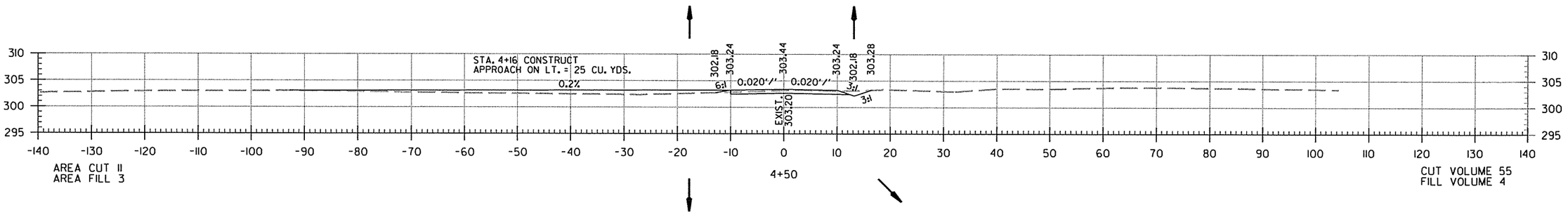
R030415.DGN

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.		030415	128	131

(2) CROSS SECTIONS

AREA CUT 0
AREA FILL 0

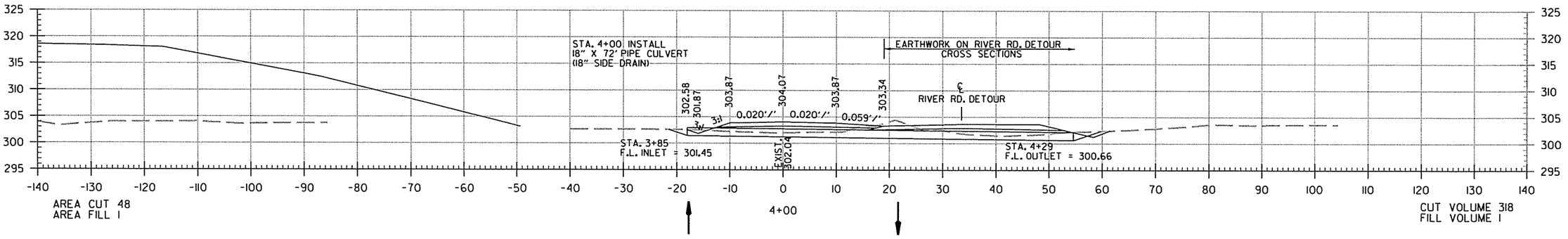
CUT VOLUME 9
FILL VOLUME 2



AREA CUT II
AREA FILL 3

4+50

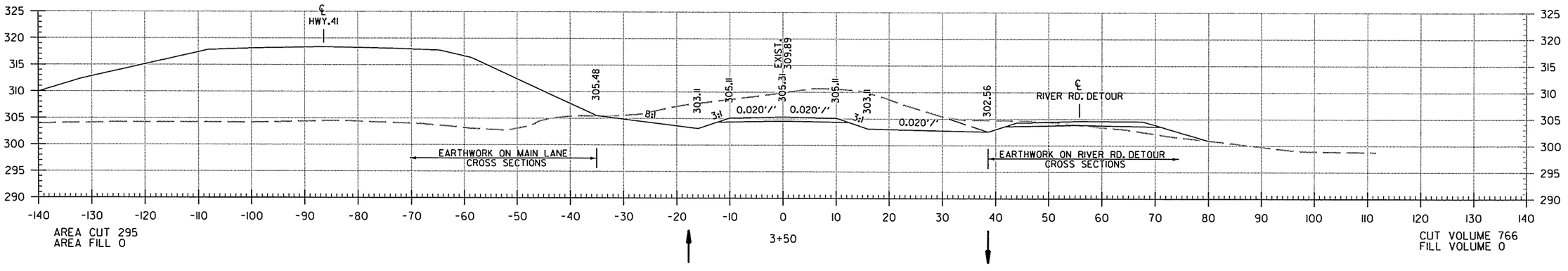
CUT VOLUME 55
FILL VOLUME 4



AREA CUT 48
AREA FILL 1

4+00

CUT VOLUME 318
FILL VOLUME 1



AREA CUT 295
AREA FILL 0

3+50

CUT VOLUME 766
FILL VOLUME 0

RIVER RD. @ MAIN LANE STA. 332+50 ON LT.
CROSS SECTION STA. 3+50 TO STA. 4+50

2/5/2016

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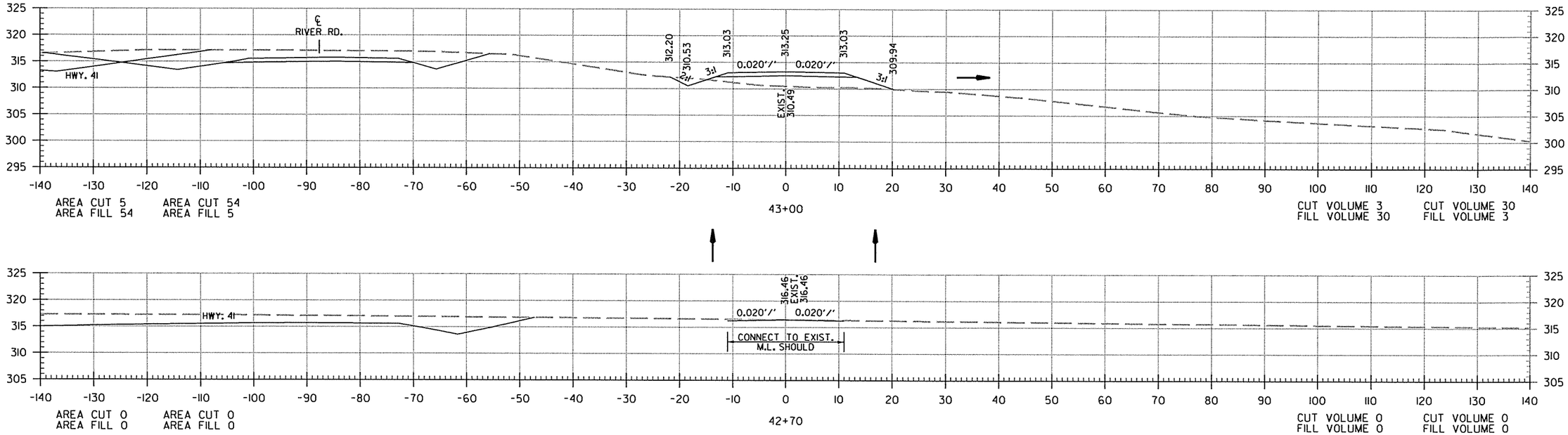
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		030415	129	131

(2) CROSS SECTIONS

STAGE 1

STAGE 3
OBLITERATION



STAGE 1

STAGE 3
OBLITERATION

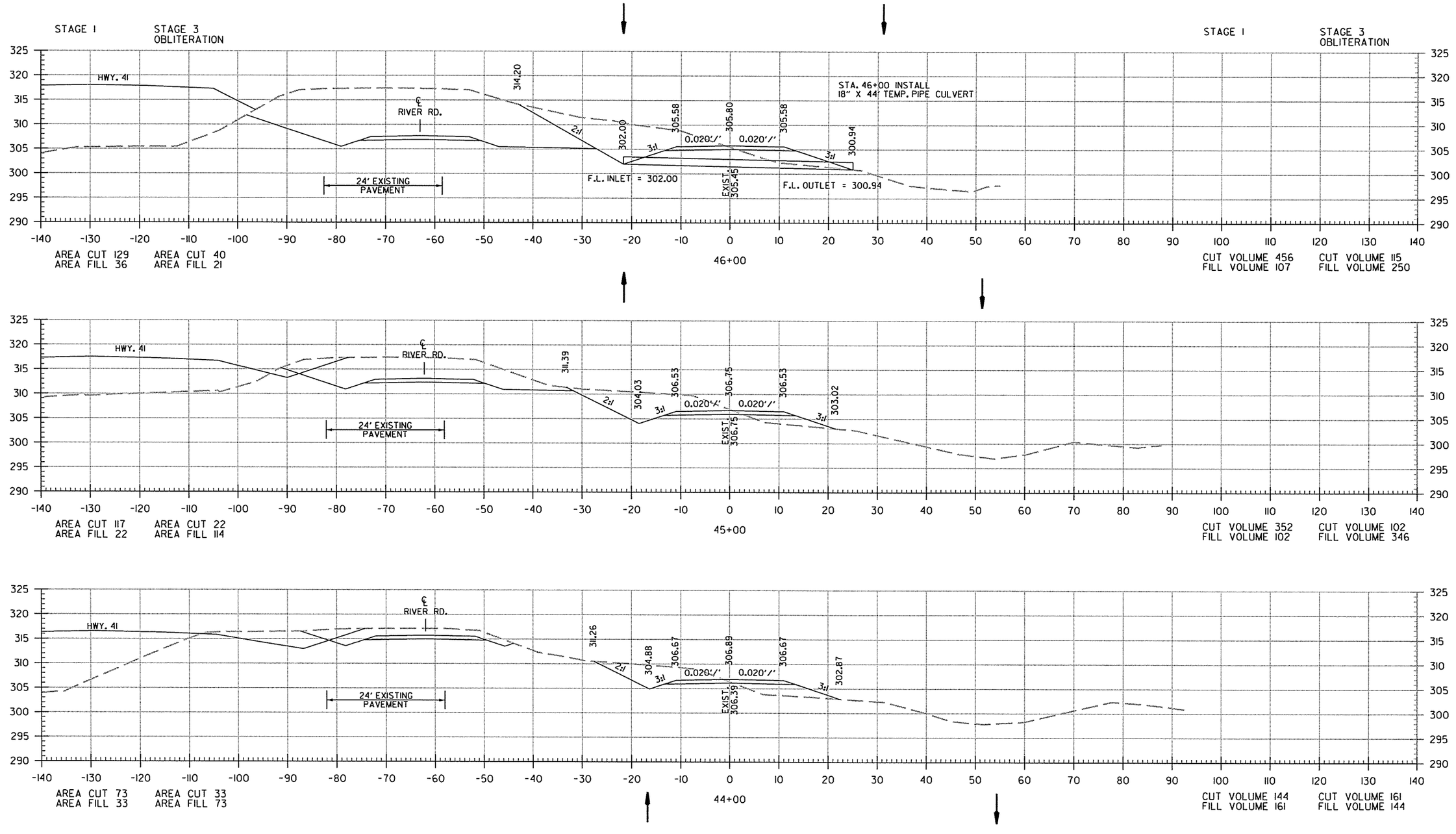
2/5/2016

R030415.DGN

RIVER RD. DETOUR @ MAIN LANE STA. 333+00 ON LT.
CROSS SECTION STA. 42+70 TO STA. 43+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.		030415	130	131

(2) CROSS SECTIONS



RIVER RD. DETOUR @ MAIN LANE STA. 333+00 ON LT.
CROSS SECTION STA. 44+00 TO STA. 46+00

2/5/2016

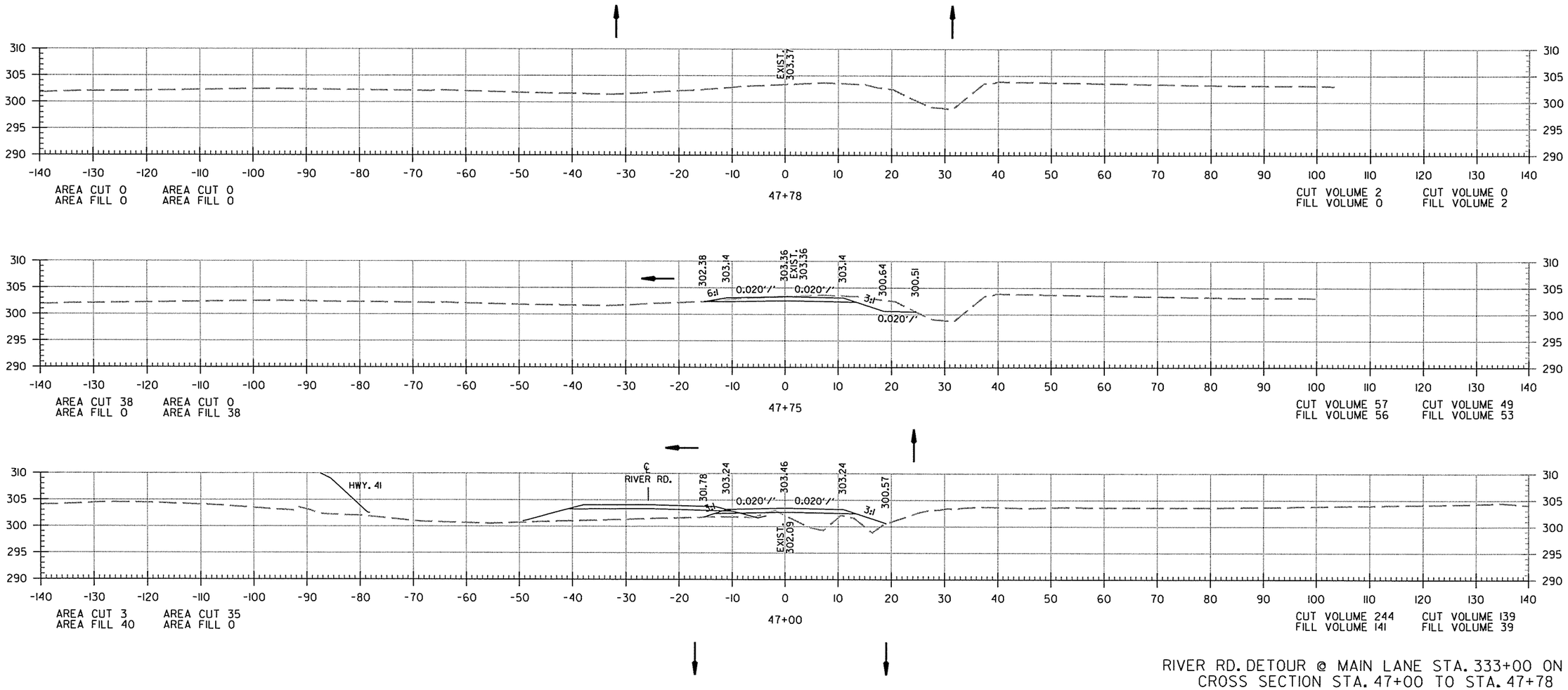
R030415.DGN

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.		030415	131	131

(2) CROSS SECTIONS

STAGE 1 STAGE 3 OBLITERATION

STAGE 1 STAGE 3 OBLITERATION



RIVER RD. DETOUR @ MAIN LANE STA. 333+00 ON LT.
CROSS SECTION STA. 47+00 TO STA. 47+78

2/5/2016

R030415.DGN