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.		009814	1	94
				② E. PIGEON CREEK STR. & APPRS. (S)				

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT
CONSTRUCTION PLANS FOR STATE HIGHWAY

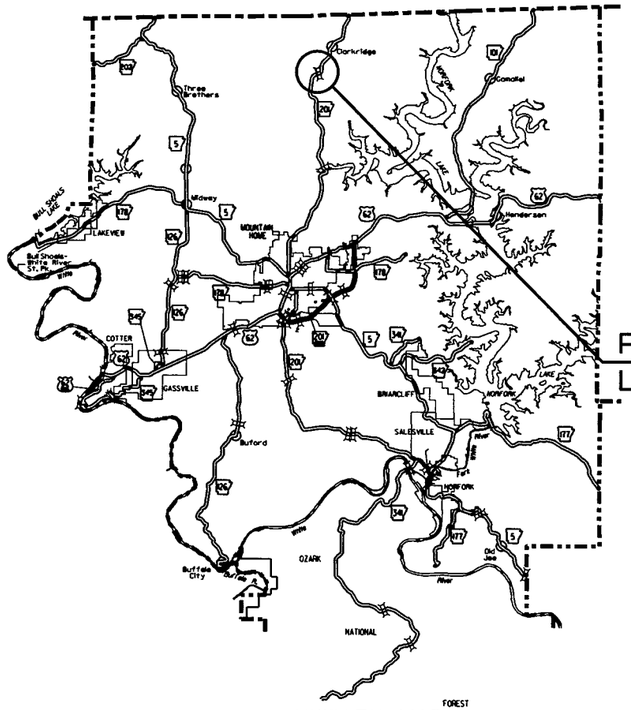
E. PIGEON CREEK
STR. & APPRS. (S)

BAXTER COUNTY

ROUTE 201 SECTION 1

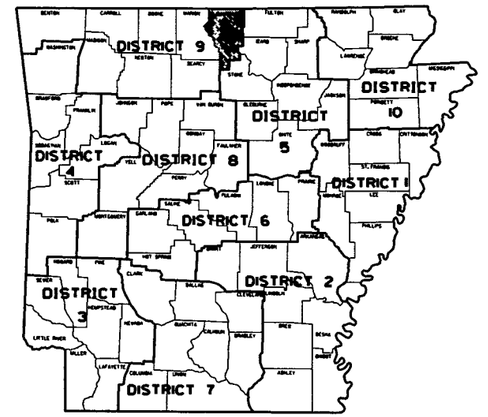
JOB 009814

FED. AID PROJ. NHPP-0003(50)



VICINITY MAP

NOT TO SCALE

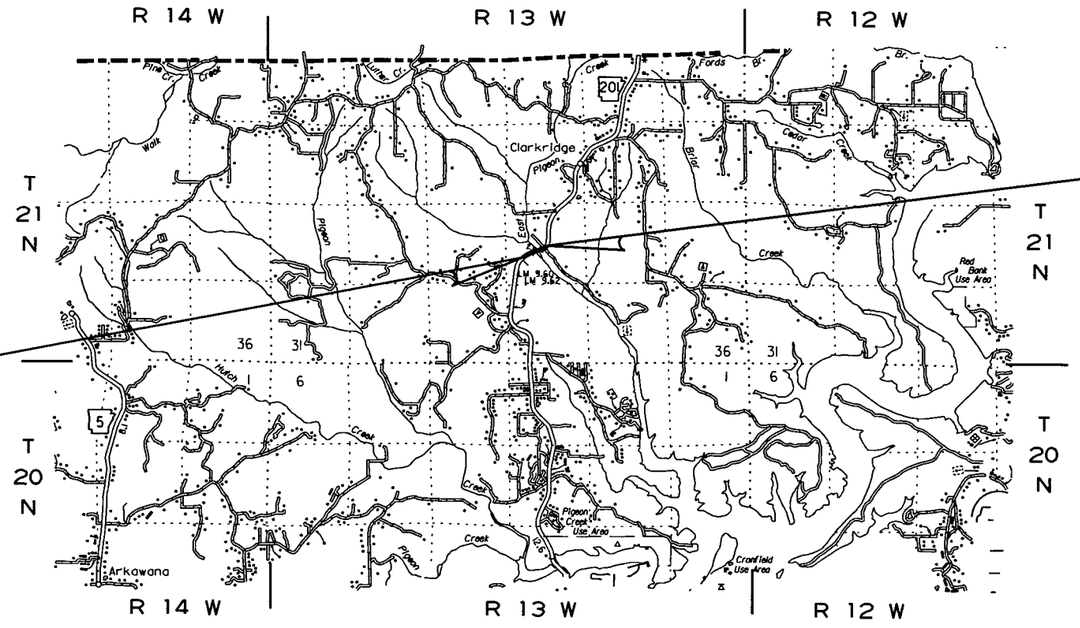


ARK. HWY. DIST. NO. 9

BRIDGE DATA

① BR. END STA. 107+21.87
BRIDGE NO. 07397
40'-0" CLEAR ROADWAY
132'-3⅛" TOTAL LENGTH
130' - 0" CONT. COMP. W-BEAM UNIT
(40', 50', 40')
BR. END STA. 108+54.13

STA. 96+73.54
BEGIN JOB 009814
LOG MILE 9.45



STA. 120+66.86
END JOB 009814

• DESIGN TRAFFIC DATA •

DESIGN YEAR	2036
2016 ADT	2100
2036 ADT	2800
2036 DHV	308
DIRECTIONAL DISTRIBUTION	60%
TRUCKS	7%
DESIGN SPEED	40 MPH

N

APPROVED

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

8-18-16

DEPUTY DIRECTOR
AND CHIEF ENGINEER

BEGINNING OF PROJECT	MID POINT OF PROJECT	END OF PROJECT
LATITUDE = N 36°27'42"	LATITUDE = N 36°27'46"	LATITUDE = N 36°27'54"
LONGITUDE = W 92°21'47"	LONGITUDE = W 92°21'38"	LONGITUDE = W 92°21'30"

GROSS LENGTH OF PROJECT	2393.32	FEET	OR	0.453	MILES
NET " " ROADWAY	2261.06	"	"	0.428	"
NET " " BRIDGES	132.26	"	"	0.025	"
NET " " PROJECT	2393.32	"	"	0.453	"

7/21/2016

R009814.DGN

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

INDEX OF SHEETS

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

GOVERNING SPECIFICATIONS

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

NUMBER	TITLE
ERRATA	ERRATA FOR THE BOOK OF STANDARD SPECIFICATIONS
FHWA-1273	REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - NOTICE TO CONTRACTORS
FHWA-1273	SUPPLEMENT - SPECIFIC EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITIES (23 U.S.C 140)
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - GOALS AND TIMETABLES
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - FEDERAL STANDARDS
FHWA-1273	SUPPLEMENT - POSTERS AND NOTICES REQUIRED FOR FEDERAL-AID PROJECTS
FHWA-1273	SUPPLEMENT - WAGE RATE DETERMINATION
100-3	CONTRACTOR'S LICENSE
108-1	LIQUIDATED DAMAGES
108-2	WORK ALLOWED PRIOR TO ISSUANCE OF WORK ORDER
303-1	AGGREGATE BASE COURSE
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 009814	ARCHEOLOGICAL MONITORING
JOB 009814	BIDDING REQUIREMENTS AND CONDITIONS
JOB 009814	BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB 009814	BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB 009814	CARGO PREFERENCE ACT REQUIREMENTS
JOB 009814	COMPACTED EMBANKMENT
JOB 009814	CONSTRUCTION IN SPECIAL FLOOD HAZARD AREAS
JOB 009814	COORDINATION OF LiDAR BRIDGE SCAN
JOB 009814	DIRECT TENSION INDICATORS FOR HIGH STRENGTH BOLT ASSEMBLIES
JOB 009814	DISADVANTAGED BUSINESS ENTERPRISE BIDDER'S RESPONSIBILITIES
JOB 009814	EXTENSION FOR PIPE CULVERTS
JOB 009814	GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
JOB 009814	HIGH PERFORMANCE PAVEMENT MARKING
JOB 009814	ISSUANCE OF PROPOSALS
JOB 009814	MANDATORY ELECTRONIC CONTRACT
JOB 009814	MANDATORY ELECTRONIC DOCUMENT SUBMITTAL
JOB 009814	NESTING SITES OF MIGRATORY BIRDS
JOB 009814	OFF-SITE RESTRAINING CONDITIONS FOR INDIANA AND NORTHERN LONG-EARED BATS
JOB 009814	PARTNERING REQUIREMENTS
JOB 009814	PLASTIC PIPE
JOB 009814	SECTION 404 NATIONWIDE 14 PERMIT REQUIREMENTS
JOB 009814	SHORING FOR CULVERTS
JOB 009814	SOIL STABILIZATION
JOB 009814	SPECIAL CLEARING REQUIREMENTS
JOB 009814	STORM WATER POLLUTION PREVENTION PLAN
JOB 009814	SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB 009814	UTILITY ADJUSTMENTS
JOB 009814	VALUE ENGINEERING
JOB 009814	WARM MIX ASPHALT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-3-16

GENERAL NOTES

1 GRADE LINE DENOTES FINISHED GRADE WHERE SHOWN ON PLANS

2 ALL PIPE LINES, POWER, TELEPHONE, AND TELEGRAPH LINES TO BE MOVED OR LOWERED BY THE RESPECTIVE OWNERS AS PER AGREEMENT WITH SUCH OWNERS.

3 ANY EQUIPMENT OR APPURTENANCE THAT INTERFERES WITH THE PROPOSED CONSTRUCTION AND WHICH MAY BE THE PROPERTY OF UTILITY SERVICE ORGANIZATIONS SHALL BE MOVED BY THE OWNERS UNLESS OTHERWISE PROVIDED

4 THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING U S. MAILBOXES WITHIN THE PROJECT LIMITS IN SUCH A MANNER THAT THE PUBLIC MAY RECEIVE CONTINUED MAIL SERVICE. PAYMENT WILL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE VARIOUS BID ITEMS

5 ALL LAND MONUMENTS LOCATED WITHIN THE CONSTRUCTION AREA SHALL BE PROTECTED IN ACCORDANCE WITH SECTION 107 12 OF THE STANDARD SPECIFICATIONS

6. ALL TREES THAT DO NOT DIRECTLY INTERFERE WITH THE PROPOSED CONSTRUCTION SHALL BE SPARED AS DIRECTED BY THE ENGINEER. CARE AND DISCRETION SHALL BE USED TO INSURE THAT ALL TREES NOT TO BE REMOVED SHALL BE HARMED AS LITTLE AS POSSIBLE DURING THE CONSTRUCTION OPERATIONS

7 THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A FENCE TO CONTROL LIVESTOCK IN AREAS WHERE PASTURES ARE SEVERED WIRE FENCE MAY BE CONSTRUCTED INITIALLY, OR IN LIEU THEREOF, THE CONTRACTOR AT HIS OWN EXPENSE, MAY ELECT TO PROVIDE TEMPORARY FENCING SUITABLE TO CONTAIN LIVESTOCK.

8 ALL FLEXIBLE BASE AND ASPHALTIC PAVEMENTS REMOVED SHALL BE PAID FOR UNDER THE ITEM NO 210 - UNCLASSIFIED EXCAVATION

9. THE EXISTING ASPHALT PAVEMENT TO BE REMOVED FROM THE REMAINING PAVEMENT SHALL BE SEPARATED BY SAWING ALONG A NEAT LINE. AFTER SAWING, THE PAVEMENT TO BE REMOVED SHALL BE CAREFULLY REMOVED IN A MANNER THAT WILL NOT DAMAGE THE PAVEMENT THAT IS TO REMAIN. ANY DAMAGE OF THE ASPHALT PAVEMENT THAT IS TO REMAIN IN PLACE SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.

2/12/2016

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INDEX OF SHEETS, GOVERNING SPECIFICATIONS AND GENERAL NOTES

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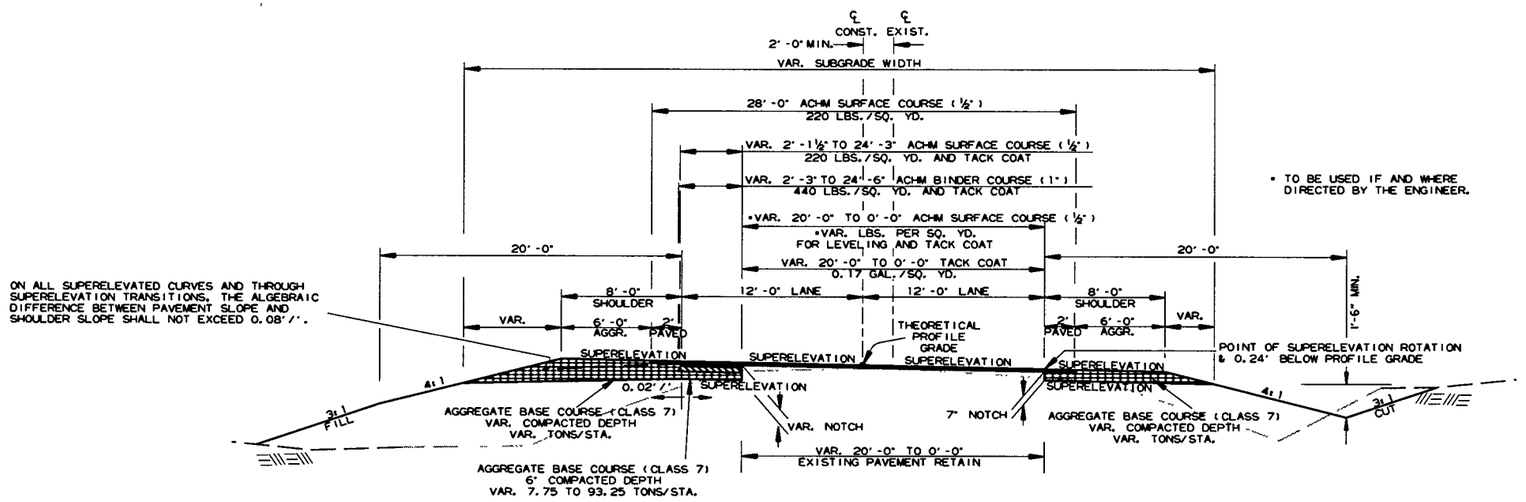
(2) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-3-16

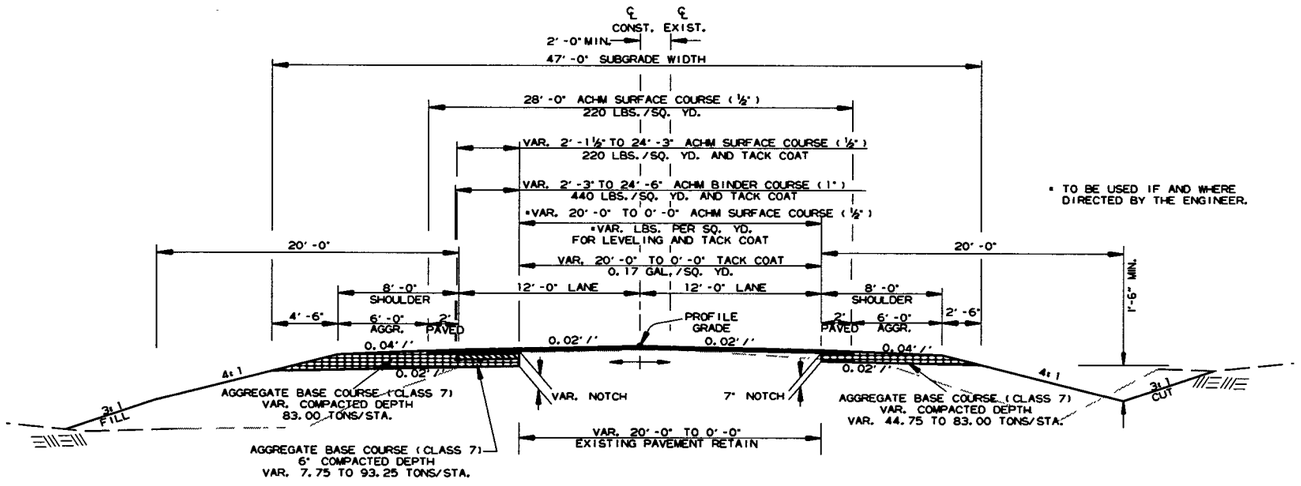


* TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.

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

NOTCH AND WIDENING SECTION - SUPERELEVATION

STA. 96+73.54 - STA. 98+23.54
STA. 99+36.89 - STA. 100+02.08
STA. 115+84.32 - STA. 120+66.86



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

NOTCH AND WIDENING SECTION - TANGENT

STA. 98+23.54 - STA. 99+36.89

NOTES:

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

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

ASPHALT FOR LEVELING OF EXISTING PAVEMENT SHALL BE PLACED ONLY IF AND WHERE DIRECTED BY THE ENGINEER. CALCULATIONS FOR THE AMOUNT OF LEVELING AND/OR LEVELING OPERATIONS SHALL BE PERFORMED BEFORE CONSTRUCTING NOTCH AND WIDENING. CALCULATIONS WILL NOT BE PAID FOR DIRECTLY BUT PAYMENT WILL BE CONSIDERED INCLUDED IN THE VARIOUS PAY ITEMS.

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

7/20/2016

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TYPICAL SECTIONS OF IMPROVEMENT

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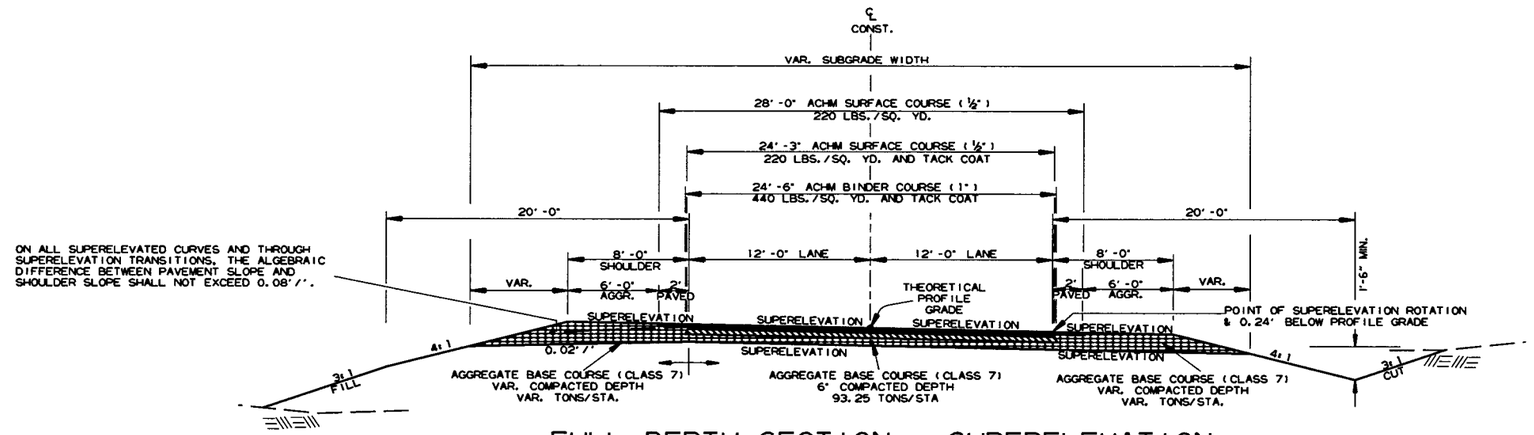
(2) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-3-16



FULL DEPTH SECTION - SUPERELEVATION

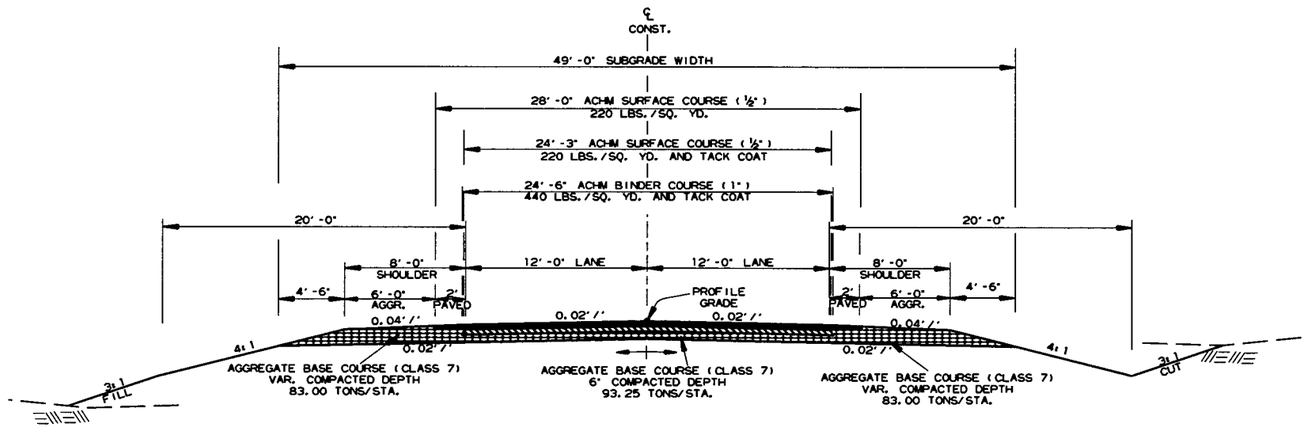
STA. 100+02.08 - STA. 106+92.39
STA. 108+61.43 - STA. 115+84.32

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.



FULL DEPTH SECTION - TANGENT

STA. 106+92.39 - STA. 107+21.85
STA. 108+54.13 - STA. 108+61.43

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TYPICAL SECTIONS OF IMPROVEMENT

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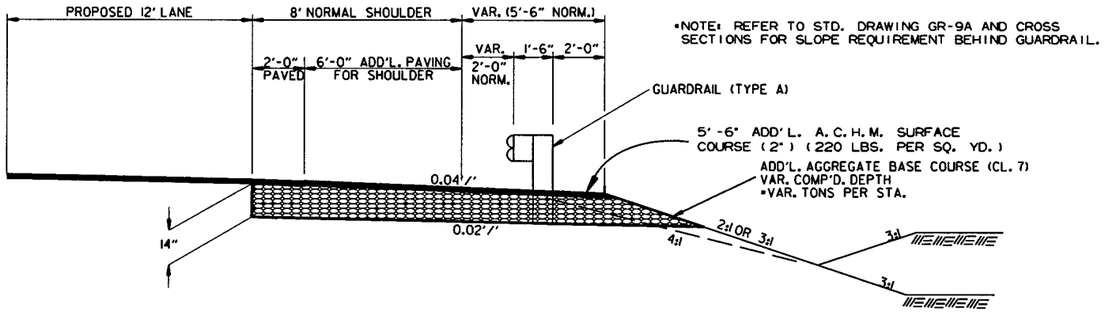
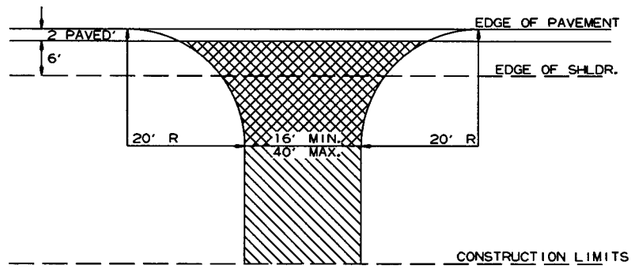
(2) SPECIAL DETAILS



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

WIDENING FOR GUARDRAIL

NOTE: REFER TO STANDARD DRAWINGS GR-8, GR-9, GR-9A, GR-10, & GR-10A FOR ADDITIONAL INFORMATION.

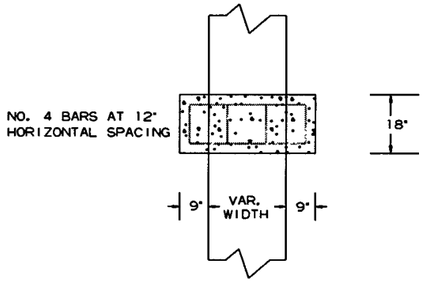


ASPHALT CONCRETE HOT MIX SURFACE COURSE (220 LBS. PER SQ. YD.) AGGREGATE BASE COURSE (CLASS 7) 7" COMP. DEPTH IF ASPHALT DRIVE EXISTS OR 6" CONCRETE IF CONCRETE DRIVE EXISTS.

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

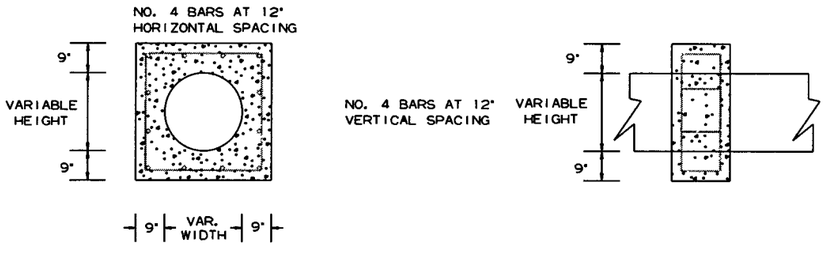
DETAIL FOR DRIVEWAY TURNOUTS (COLLECTORS)

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 8-3-16



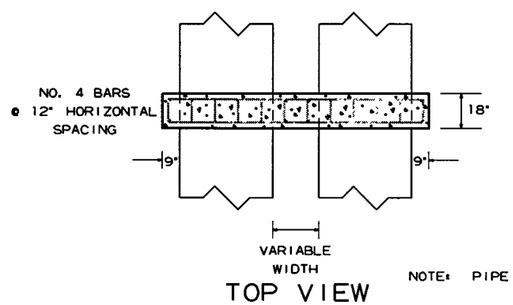
TOP VIEW

MIN 3" COVER



FRONT VIEW SIDE VIEW

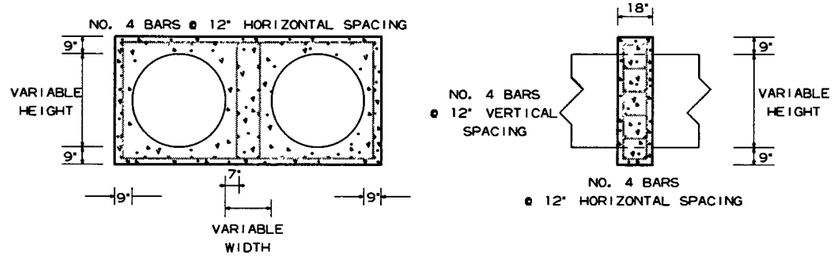
PIPE EXTENSION REINFORCED CONCRETE COLLAR DETAIL



TOP VIEW

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

MIN. 3" COVER



FRONT VIEW SIDE VIEW

PIPE EXTENSION REINFORCED CONCRETE COLLAR DETAIL

7/20/2016

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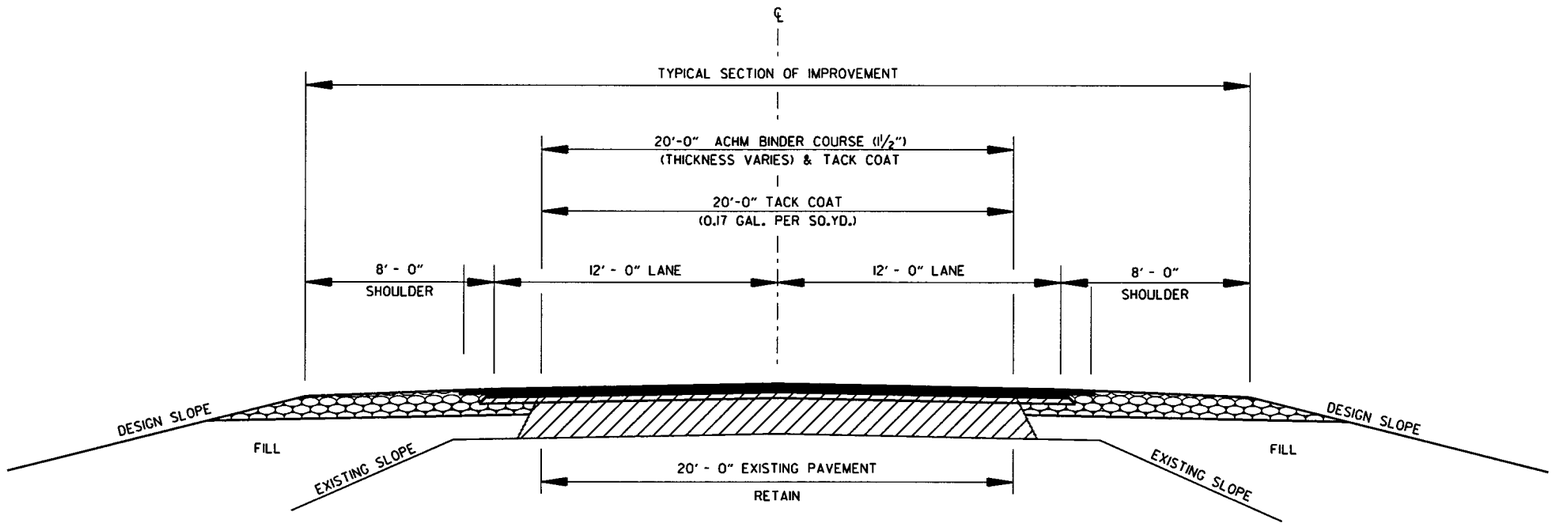
(2) SPECIAL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TIMOTHY D. SMITH
8-3-16



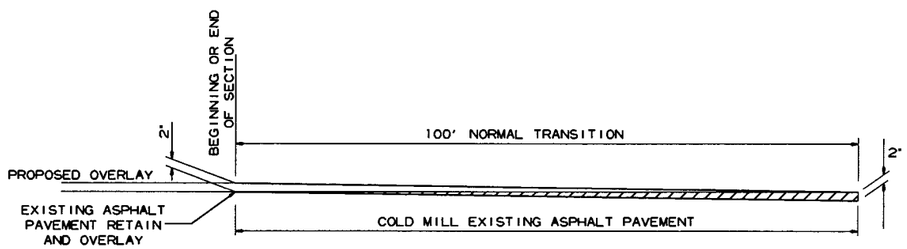
METHOD OF RAISING GRADE

NOTES:

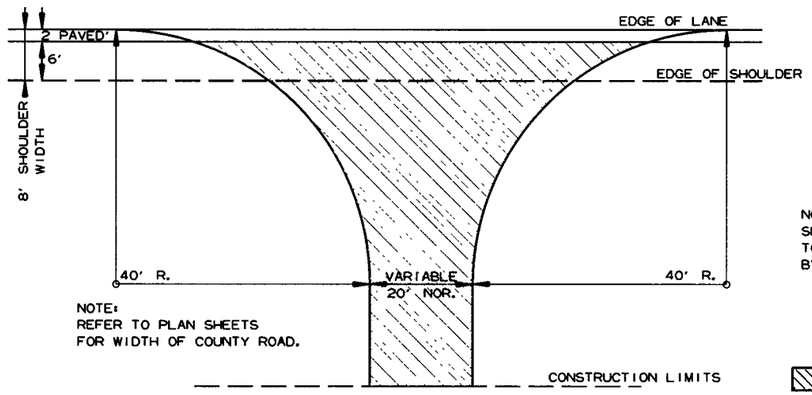
(1) THIS DETAIL TO BE USED ONLY IF AND WHERE DIRECTED BY THE ENGINEER.

(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.



DETAIL FOR TRANSITIONS



DETAIL FOR COUNTY ROAD TURNOUTS OPEN SHOULDER SECTION

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

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

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

7/20/2016

R009814.DGN

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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(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11435
TRINITY D. SMITH
8-3-2

RESTRAINING CONDITION AREA

STA. 95+73.54 - STA. 99+00
INSTALL E-11 = 400 LIN. FT.

STA. 99+00 - STA. 100+00
INSTALL E-11 = 200 LIN. FT.

STA. 100+00 - STA. 101+00
INSTALL E-11 = 125 LIN. FT.

STA. 101+00 - STA. 101+45
INSTALL E-11 = 150 LIN. FT.

STA. 101+45 - STA. 106+41
INSTALL E-11 = 525 LIN. FT.

STA. 106+41 - STA. 107+51
INSTALL E-11 = 300 LIN. FT.

STA. 108+12 - STA. 109+00
INSTALL E-11 = 225 LIN. FT.

STA. 104+00 - STA. 106+41
INSTALL E-11 = 200 LIN. FT.

STA. 105+00 - STA. 107+50
INSTALL E-11 = 275 LIN. FT.

STA. 107+50
INSTALL E-11 = 100 LIN. FT.

STA. 108+75
INSTALL E-11 = 100 LIN. FT.

STA. 108+75 - STA. 110+22
INSTALL E-11 = 250 LIN. FT.

STA. 109+00 - STA. 112+15
INSTALL E-11 = 300 LIN. FT.

PROPOSED R/W
CONST. LIMITS
EXISTING ROW
100' TRANSITION
+73.54
N 54° 22' 29" E
N 72° 35' 40" E
P.T. 96+73.54
P.C. 100+66.88
P.T. 103+16.58
P.T. 105+42.39
P.C. 110+26.
STA 96+73.54
BEGIN JOB 009814
GATE
POND
EAST FORK CREEK
BLUFF & LARGE RIVER
5 STRAND BARB WIRE FENCE
12" TUBE & STRAND BARB WIRE POST W/ CONC.
BED PITCH
ROCK PITCH
ROCK PITCH ON DECK
ENC. OF CUT RIVER PITCH
TOP OF CUT RIVER PITCH
LOWEST SHOT ON ENC. DIKE
TOP OF ENC. DIKE
PK NAIL
MON. STAMPED

REVISIONS

DATE OF REVISION	REVISION

LEGEND

E-11 = SILT FENCE

2/9/2016

R009814.DGN

TEMPORARY EROSION CONTROL DETAILS
CLEARING AND GRUBBING

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
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(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-3-16

RESTRAINING CONDITION AREA

STA. 115+65 - STA. 116+20
INSTALL E-11 = 250 LIN. FT.

STA. 112+37 - STA. 114+00
INSTALL E-11 = 150 LIN. FT.

STA. 110+42 - STA. 113+00
INSTALL E-11 = 400 LIN. FT.

STA. 116+00 - STA. 122+14.35
INSTALL E-11 = 650 LIN. FT.

STA. 115+65 - STA. 116+20
INSTALL E-11 = 175 LIN. FT.

STA 120+66.86
END JOB 009814

100' TRANSITION

PROPOSED R/W
CONST. LIMITS
EXISTING ROW

P.I. 115+10.77

REVISIONS

DATE OF REVISION	REVISION

LEGEND
E-11 = SILT FENCE

2/9/2016
R009814.DGN

TEMPORARY EROSION CONTROL DETAILS
CLEARING AND GRUBBING

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

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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(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-3-16

RESTRAINING CONDITION AREA

PROPOSED R/W
CONST. LIMITS
EXISTING ROW
100' TRANSITION
+73.54
STA 96+73.54
BEGIN JOB 009814
N 54° 22' 29" E
P.T. 96+73.54
P.C. 100+86.88
P.I. 103+16.58
P.I. 105+42.39
P.C. 110+26.
N 72° 35' 40" E
GATE
POND
STRAWBERRY STATE PARK
105
100
95

REVISIONS

DATE OF REVISION	REVISION

LEGEND
(E-5) = SAND BAGS DITCH CHECKS
(E-6) = ROCK DITCH CHECKS
(E-11) = SILT FENCE

TEMPORARY EROSION CONTROL DETAILS
STAGE I

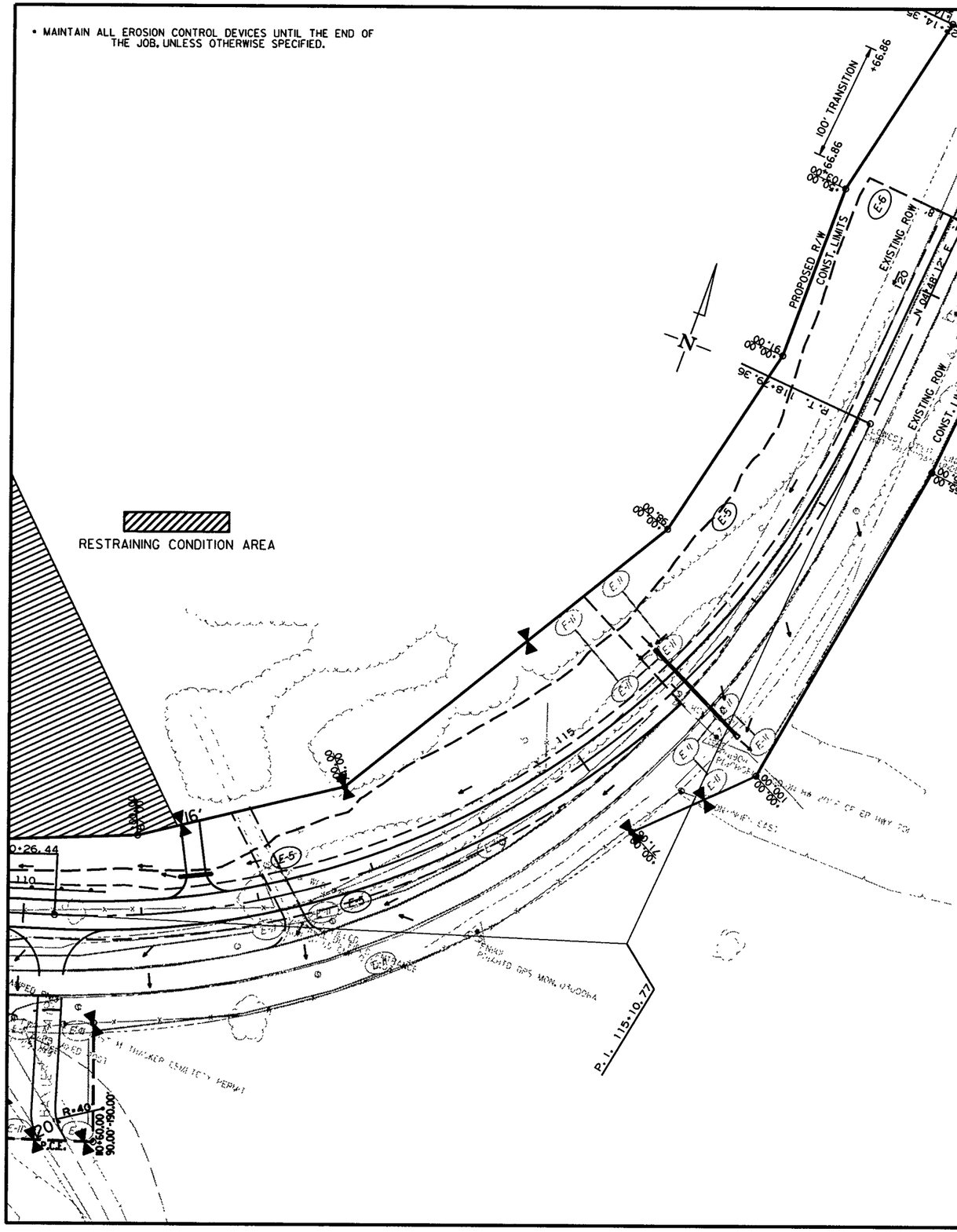
2/9/2016
R009814.DGN

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

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.		009814	10	94

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-3-16



REVISIONS

DATE OF REVISION	REVISION

LEGEND
- (E-5) = SAND BAGS DITCH CHECKS
- (E-6) = ROCK DITCH CHECKS
- (E-11) = SILT FENCE

2/9/2016

R009814.DGN

TEMPORARY EROSION CONTROL DETAILS
STAGE 1

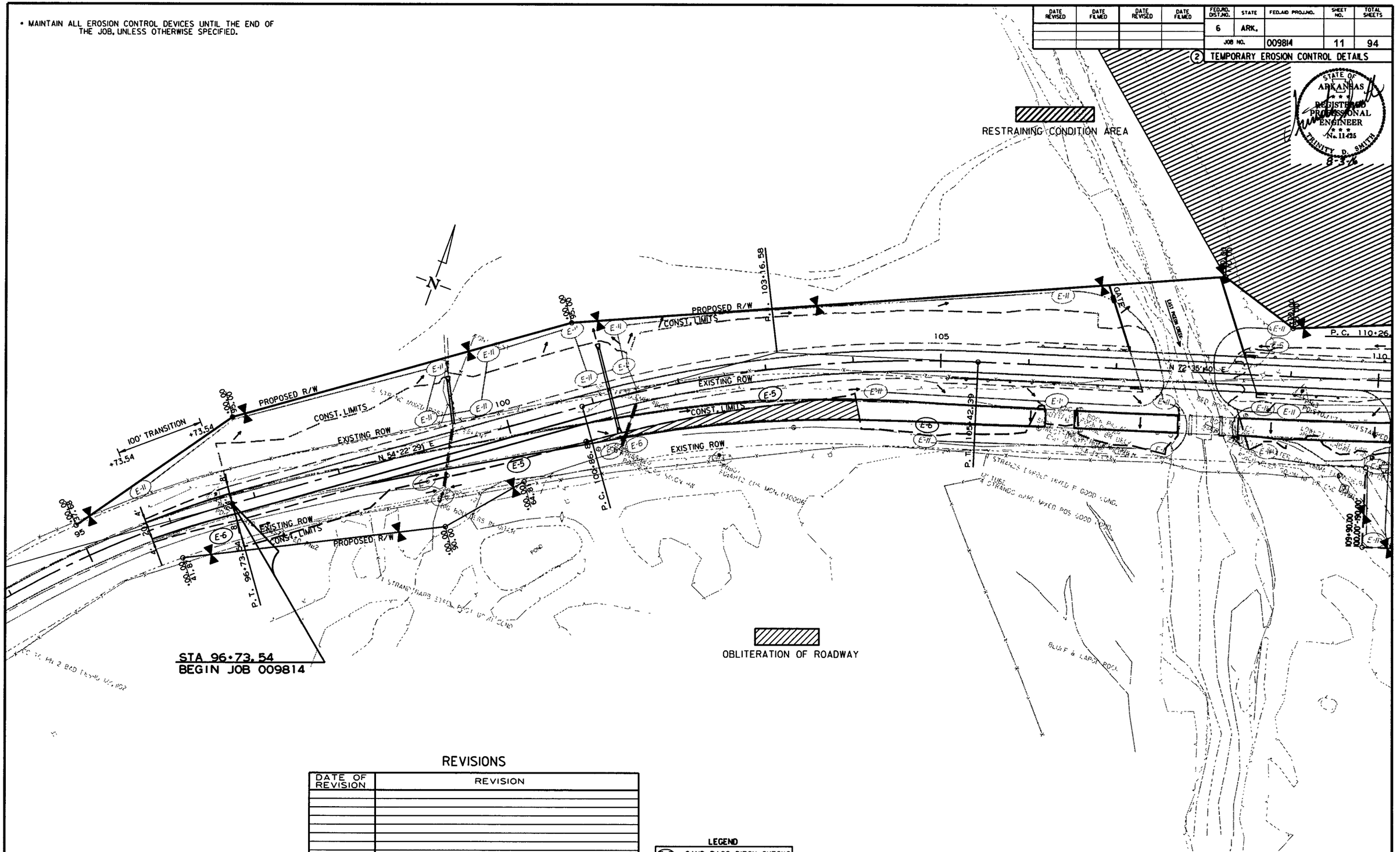
• MAINTAIN ALL EROSION CONTROL DEVICES UNTIL THE END OF THE JOB, UNLESS OTHERWISE SPECIFIED.

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.		009814	11	94

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-3-16

RESTRAINING CONDITION AREA



OBLITERATION OF ROADWAY

REVISIONS

DATE OF REVISION	REVISION

LEGEND
(E-5) = SAND BAGS DITCH CHECKS
(E-6) = ROCK DITCH CHECKS
(E-11) = SILT FENCE

TEMPORARY EROSION CONTROL DETAILS
STAGE 2

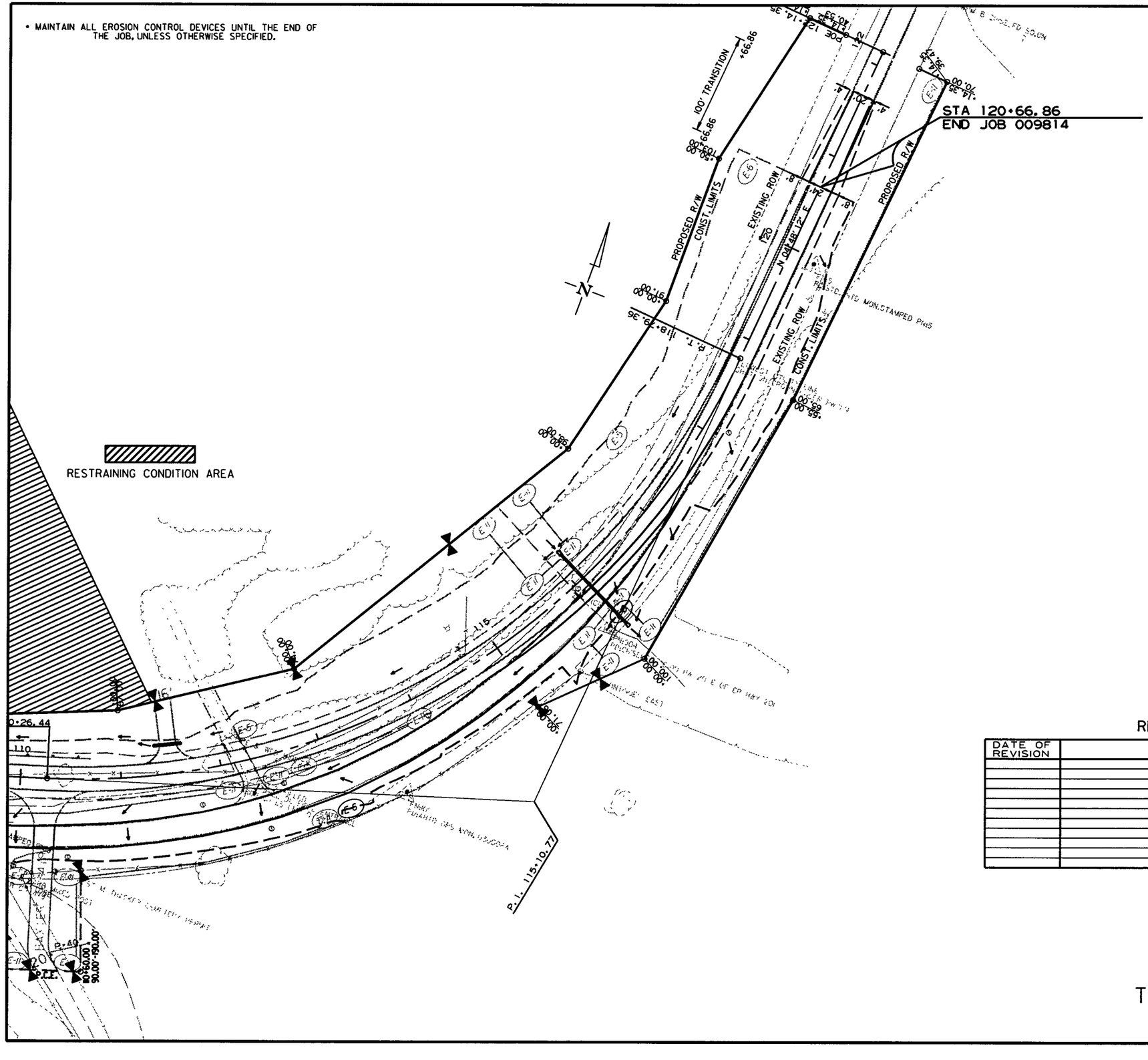
2/9/2016
R009814.DGN

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

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.		009814	12	94

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-3-16



REVISIONS

DATE OF REVISION	REVISION

LEGEND
E-5 = SAND BAGS DITCH CHECKS
E-6 = ROCK DITCH CHECKS
E-11 = SILT FENCE

2/9/2016

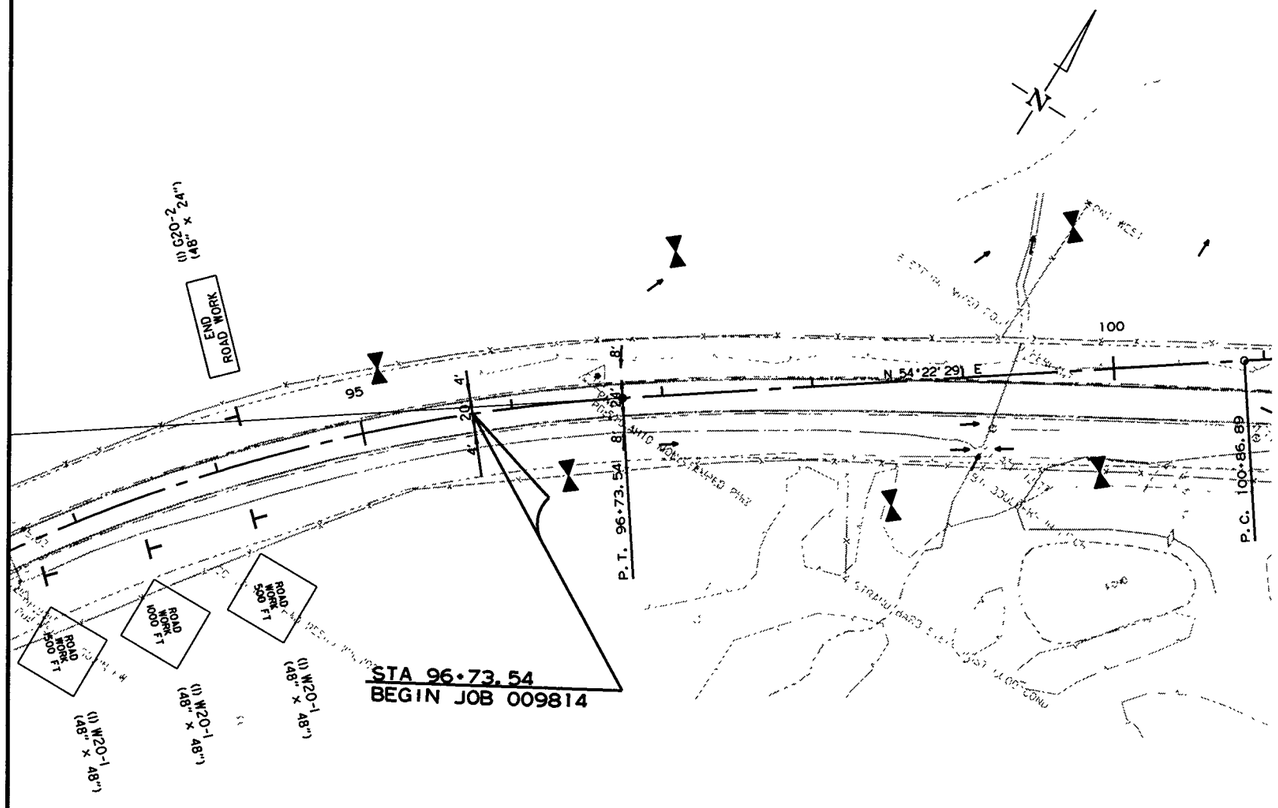
R009814.DGN

TEMPORARY EROSION CONTROL DETAILS
STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		009814	13	94

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-3-16

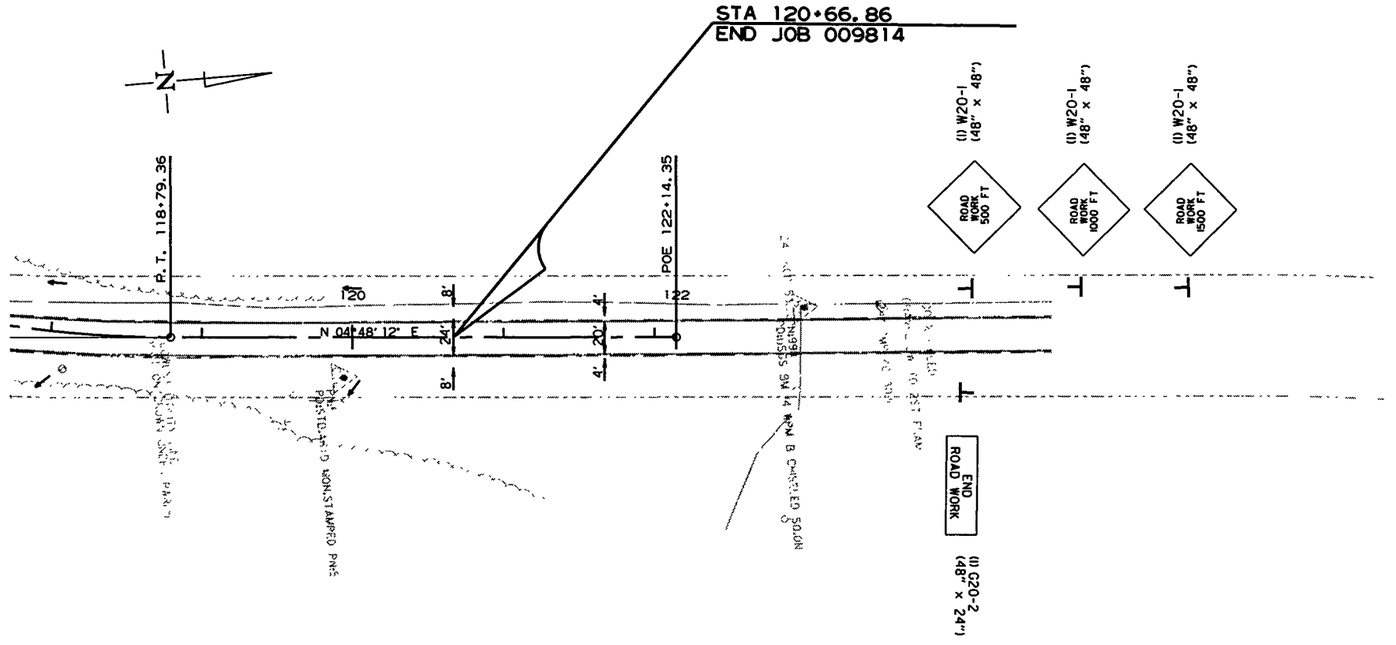


DO NOT PASS (2) R4-1 (24" X 30")

SHOULDER CLOSED (2) RSP-1 (48" X 30")

XX M.P.H. (2) W13-1 (24" X 24")

ADDITIONAL SIGNS NEEDED PLACED AS DIRECTED BY ENGINEER



SEQUENCING:

STAGE 1: CONSTRUCT NEW BRIDGE AND HIGHWAY FULL DEPTH SECTION OF PROPOSED ROADWAY, CONSTRUCT TEMPORARY DRIVEWAYS, AND PERFORM NOTCH AND WIDEN LT. SIDE OF EXISTING PAVEMENT. UTILIZE VERTICAL PANELS AT THE NOTCH AT 40' O.C. SPACING.

STAGE 2: MAINTAIN TRAFFIC ON EXISTING ROADWAY AND PERFORM LEVELING OPERATIONS. SHIFT TRAFFIC ONTO NEW CONSTRUCTED LOCATION. REMOVE EXISTING BRIDGE STRUCTURE. UTILIZE TRAFFIC DRUMS AT 40' O.C. SPACING AT PROPOSED LANE EDGE ON RT. PERFORM NOTCH AND WIDEN RT. SIDE OF EXISTING PAVEMENT AND OBLITERATE EXISTING PAVEMENT THROUGHOUT FULL DEPTH SECTION. UTILIZE VERTICAL PANELS AT THE NOTCH AT 40' O.C. SPACING. COLD MILL TRANSITIONS AT JOB ENDS. PLACE FINAL 2" LIFT OF SURFACE AND FINAL STRIPING.

11/8/2011

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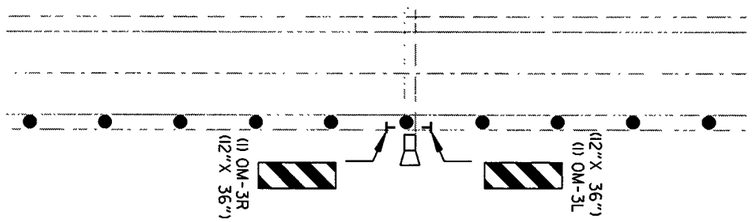
MAINTENANCE OF TRAFFIC DETAILS ADVANCE WARNING SIGNS

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.		009814	14	94

(2) MAINTENANCE OF TRAFFIC DETAILS



TRAFFIC DRUMS AND SIGNS ON EXISTING SHOULDER
FOR EXTENDING/CONSTRUCTING PIPE CULVERTS LT. AND RT.

STA. 101+21 STA. 115+95

SEQUENCING:

STAGE 1: CONSTRUCT NEW BRIDGE AND HIGHWAY FULL DEPTH SECTION OF PROPOSED ROADWAY, CONSTRUCT TEMPORARY DRIVEWAYS, AND PERFORM NOTCH AND WIDEN LT. SIDE OF EXISTING PAVEMENT. UTILIZE VERTICAL PANELS AT THE NOTCH AT 40' O.C. SPACING.

STAGE 2: MAINTAIN TRAFFIC ON EXISTING ROADWAY AND PERFORM LEVELING OPERATIONS. SHIFT TRAFFIC ONTO NEW CONSTRUCTED LOCATION. REMOVE EXISTING BRIDGE STRUCTURE. UTILIZE TRAFFIC DRUMS AT 40' O.C. SPACING AT PROPOSED LANE EDGE ON RT. PERFORM NOTCH AND WIDEN RT. SIDE OF EXISTING PAVEMENT AND OBLITERATE EXISTING PAVEMENT THROUGHOUT FULL DEPTH SECTION. UTILIZE VERTICAL PANELS AT THE NOTCH AT 40' O.C. SPACING. COLD MILL TRANSITIONS AT JOB ENDS. PLACE FINAL 2" LIFT OF SURFACE AND FINAL STRIPING.

STATE OF ARKANSAS
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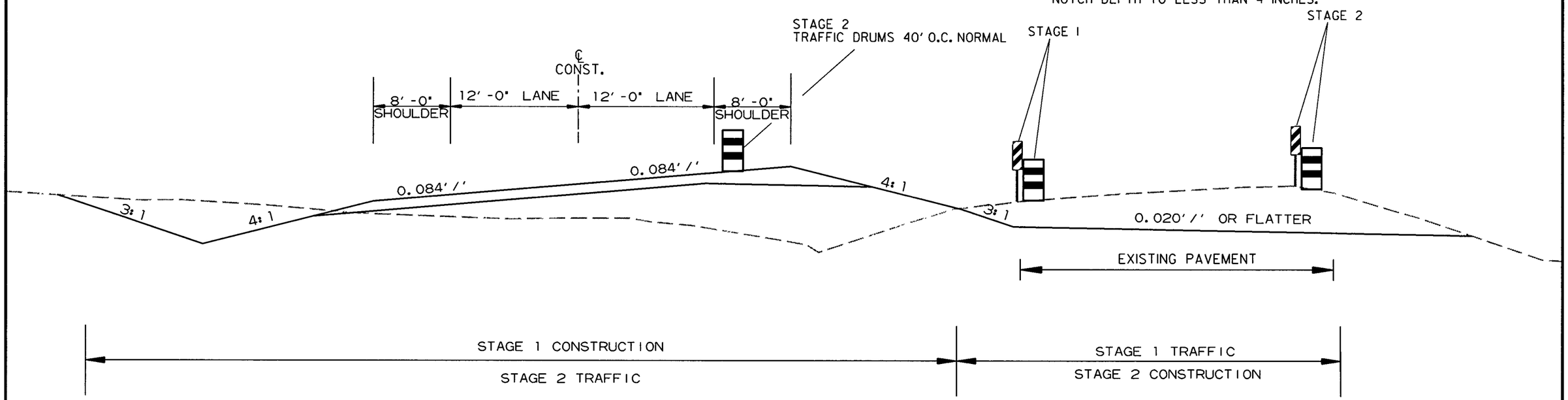
No. 11425
TRINITY D. SMITH
8-3-16

STAGE 1& 2 NOTCHING
VERTICAL PANELS 40' O.C. NORMAL

NOTE:
THE TOTAL LENGTH OF THE WORK AREA ON THE ENTIRE PROJECT HAVING VERTICAL DIFFERENCES GREATER THAN 4" SHALL BE LIMITED TO ONE MILE.

STAGE 1& 2 NOTCHING
TRAFFIC DRUMS 40' O.C. NORMAL

REPLACE VERTICAL PANELS WITH TRAFFIC DRUMS WHEN PAVEMENT CONSTRUCTION REDUCES NOTCH DEPTH TO LESS THAN 4 INCHES.



STAGE CONSTRUCTION DETAIL

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MAINTENANCE OF TRAFFIC DETAILS ADVANCE WARNING SIGNS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		009814	15	94

(2) MAINTENANCE OF TRAFFIC DETAILS

SEQUENCING:

STAGE 1: CONSTRUCT NEW BRIDGE AND HIGHWAY FULL DEPTH SECTION OF PROPOSED ROADWAY, CONSTRUCT TEMPORARY DRIVEWAYS, AND PERFORM NOTCH AND WIDEN LT. SIDE OF EXISTING PAVEMENT. UTILIZE VERTICAL PANELS AT THE NOTCH AT 40' O.C. SPACING.

STAGE 2: MAINTAIN TRAFFIC ON EXISTING ROADWAY AND PERFORM LEVELING OPERATIONS. SHIFT TRAFFIC ONTO NEW CONSTRUCTED LOCATION. REMOVE EXISTING BRIDGE STRUCTURE. UTILIZE TRAFFIC DRUMS AT 40' O.C. SPACING AT PROPOSED LANE EDGE ON RT. PERFORM NOTCH AND WIDEN RT. SIDE OF EXISTING PAVEMENT AND OBLITERATE EXISTING PAVEMENT THROUGHOUT FULL DEPTH SECTION. UTILIZE VERTICAL PANELS AT THE NOTCH AT 40' O.C. SPACING. COLD MILL TRANSITIONS AT JOB ENDS. PLACE FINAL 2" LIFT OF SURFACE AND FINAL STRIPING.

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REGISTERED PROFESSIONAL ENGINEER
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TRINITY D. SMITH
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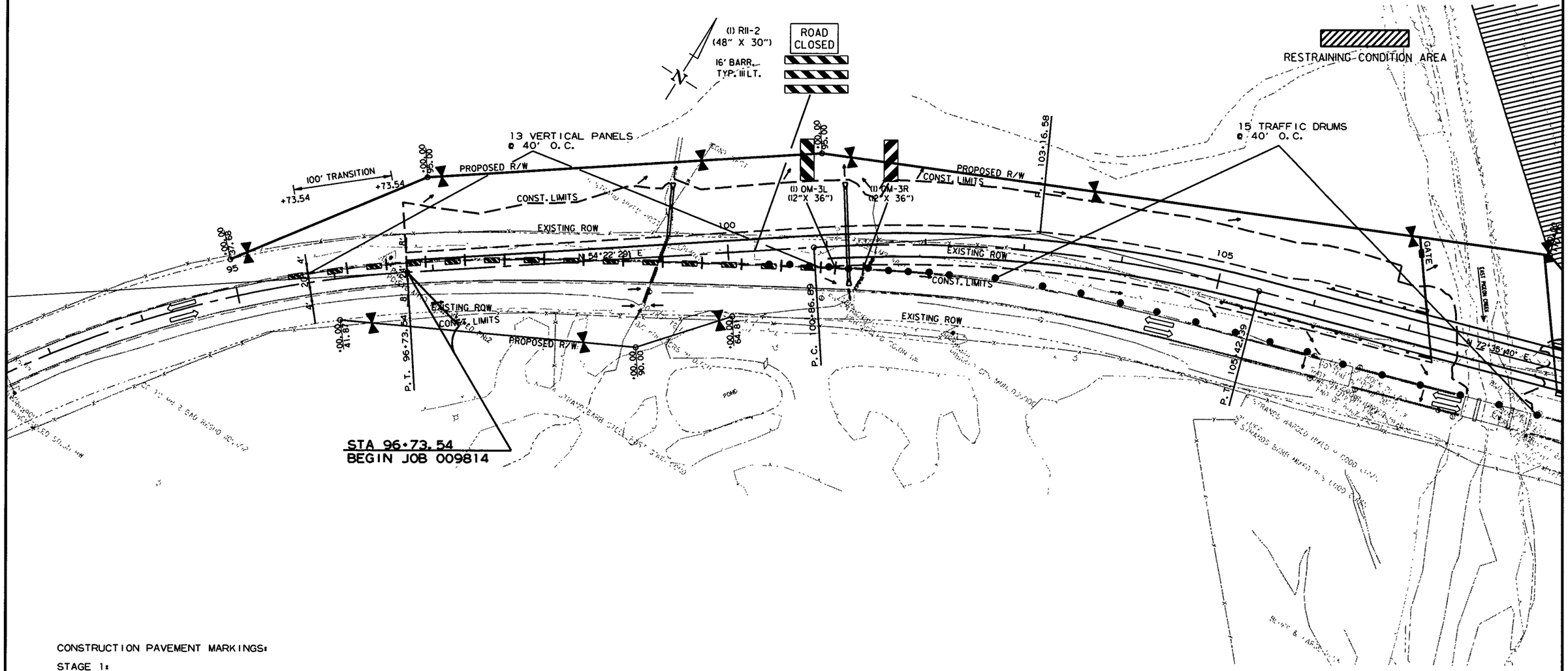

CONSTRUCTION PAVEMENT MARKINGS:

STAGE 1:
AS DIRECTED BY THE ENGINEER:
RT. AND LT. EDGE LINES = 5188 LIN. FT.
DBL. CENTERLINE = 5188 LIN. FT.

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MAINTENANCE OF TRAFFIC DETAILS
STAGE 1

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.NO. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		009814	16	94

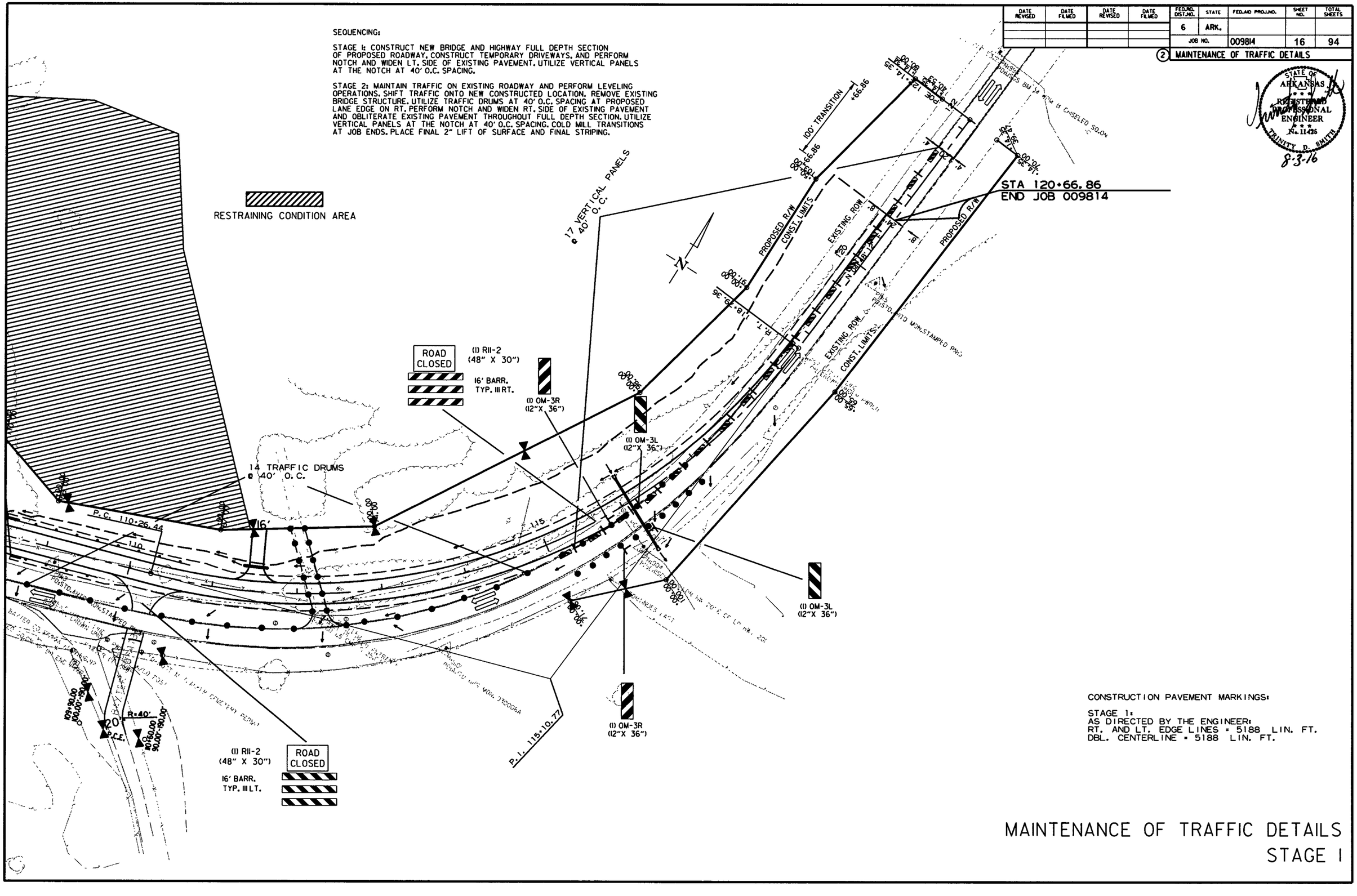
(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-3-16

SEQUENCING:

STAGE 1: CONSTRUCT NEW BRIDGE AND HIGHWAY FULL DEPTH SECTION OF PROPOSED ROADWAY, CONSTRUCT TEMPORARY DRIVEWAYS, AND PERFORM NOTCH AND WIDEN LT. SIDE OF EXISTING PAVEMENT. UTILIZE VERTICAL PANELS AT THE NOTCH AT 40' O.C. SPACING.

STAGE 2: MAINTAIN TRAFFIC ON EXISTING ROADWAY AND PERFORM LEVELING OPERATIONS. SHIFT TRAFFIC ONTO NEW CONSTRUCTED LOCATION. REMOVE EXISTING BRIDGE STRUCTURE. UTILIZE TRAFFIC DRUMS AT 40' O.C. SPACING AT PROPOSED LANE EDGE ON RT. PERFORM NOTCH AND WIDEN RT. SIDE OF EXISTING PAVEMENT AND OBLITERATE EXISTING PAVEMENT THROUGHOUT FULL DEPTH SECTION. UTILIZE VERTICAL PANELS AT THE NOTCH AT 40' O.C. SPACING. COLD MILL TRANSITIONS AT JOB ENDS. PLACE FINAL 2" LIFT OF SURFACE AND FINAL STRIPING.



CONSTRUCTION PAVEMENT MARKINGS:

STAGE 1:
AS DIRECTED BY THE ENGINEER:
RT. AND LT. EDGE LINES = 5188 LIN. FT.
DBL. CENTERLINE = 5188 LIN. FT.

MAINTENANCE OF TRAFFIC DETAILS
STAGE 1

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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.		009814	17	94

(2) MAINTENANCE OF TRAFFIC DETAILS

SEQUENCING:

STAGE 1: CONSTRUCT NEW BRIDGE AND HIGHWAY FULL DEPTH SECTION OF PROPOSED ROADWAY. CONSTRUCT TEMPORARY DRIVEWAYS, AND PERFORM NOTCH AND WIDEN LT. SIDE OF EXISTING PAVEMENT. UTILIZE VERTICAL PANELS AT THE NOTCH AT 40' O.C. SPACING.

STAGE 2: MAINTAIN TRAFFIC ON EXISTING ROADWAY AND PERFORM LEVELING OPERATIONS. SHIFT TRAFFIC ONTO NEW CONSTRUCTED LOCATION. REMOVE EXISTING BRIDGE STRUCTURE. UTILIZE TRAFFIC DRUMS AT 40' O.C. SPACING AT PROPOSED LANE EDGE ON RT. PERFORM NOTCH AND WIDEN RT. SIDE OF EXISTING PAVEMENT AND OBLITERATE EXISTING PAVEMENT THROUGHOUT FULL DEPTH SECTION. UTILIZE VERTICAL PANELS AT THE NOTCH AT 40' O.C. SPACING. COLD MILL TRANSITIONS AT JOB ENDS. PLACE FINAL 2" LIFT OF SURFACE AND FINAL STRIPING.

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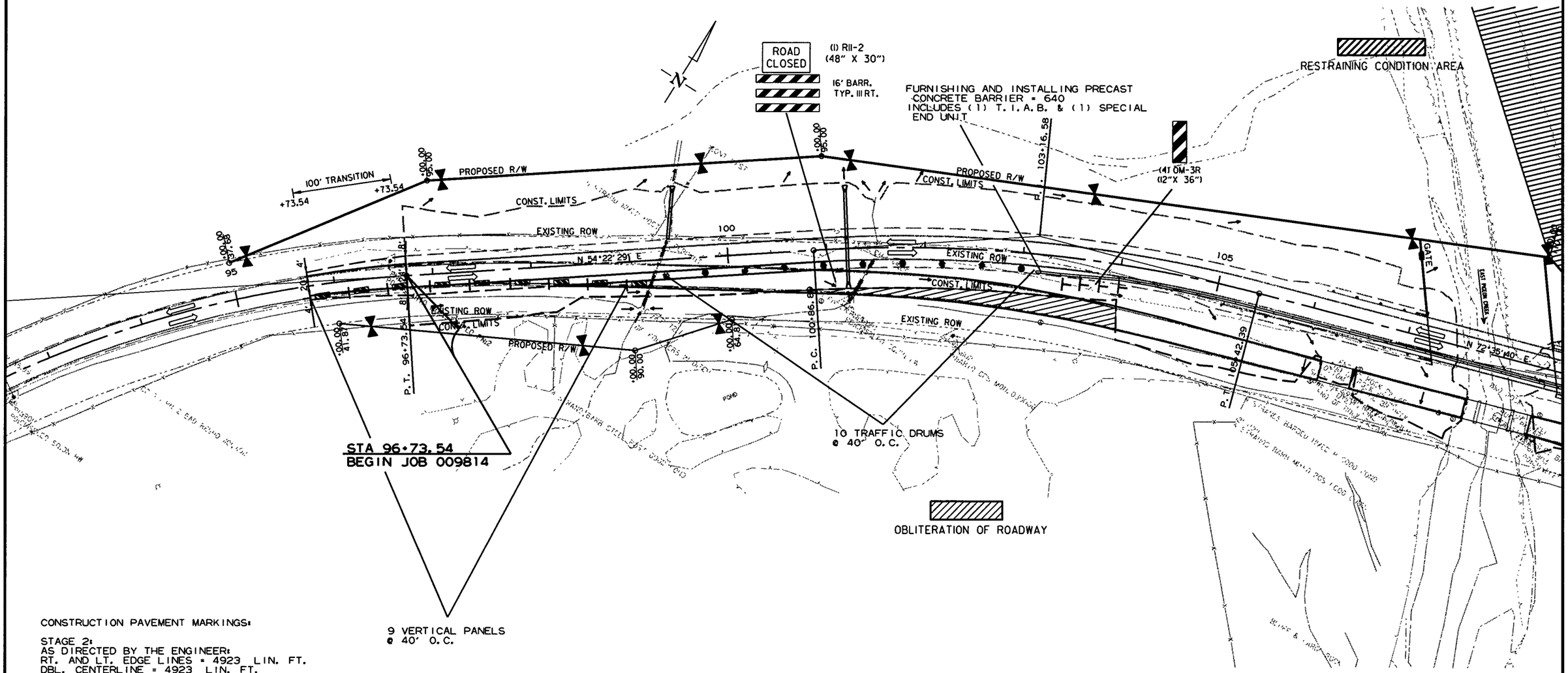

CONSTRUCTION PAVEMENT MARKINGS:

STAGE 2:
AS DIRECTED BY THE ENGINEER:
RT. AND LT. EDGE LINES = 4923 LIN. FT.
DBL. CENTERLINE = 4923 LIN. FT.

PERMANENT PAVEMENT MARKINGS:

ACROSS BRIDGE
THERMOPLASTIC PAVEMENT MARKINGS
LT. & RT. EDGE LINES = 265 LIN.FT. 4" WHITE

HIGH PERFORMANCE CONTRAST PAVEMENT MARKING
= DBL. CENTERLINE = 265 LIN. FT. 4" YELLOW

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MAINTENANCE OF TRAFFIC DETAILS
STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		009814	18	94

(2) MAINTENANCE OF TRAFFIC DETAILS

SEQUENCING:

STAGE 1: CONSTRUCT NEW BRIDGE AND HIGHWAY FULL DEPTH SECTION OF PROPOSED ROADWAY. CONSTRUCT TEMPORARY DRIVEWAYS, AND PERFORM NOTCH AND WIDEN LT. SIDE OF EXISTING PAVEMENT. UTILIZE VERTICAL PANELS AT THE NOTCH AT 40' O.C. SPACING.

STAGE 2: MAINTAIN TRAFFIC ON EXISTING ROADWAY AND PERFORM LEVELING OPERATIONS. SHIFT TRAFFIC ONTO NEW CONSTRUCTED LOCATION. REMOVE EXISTING BRIDGE STRUCTURE. UTILIZE TRAFFIC DRUMS AT 40' O.C. SPACING AT PROPOSED LANE EDGE ON RT. PERFORM NOTCH AND WIDEN RT. SIDE OF EXISTING PAVEMENT AND OBLITERATE EXISTING PAVEMENT THROUGHOUT FULL DEPTH SECTION. UTILIZE VERTICAL PANELS AT THE NOTCH AT 40' O.C. SPACING. COLD MILL TRANSITIONS AT JOB ENDS. PLACE FINAL 2" LIFT OF SURFACE AND FINAL STRIPING.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-3-16

RESTRAINING CONDITION AREA

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

100' TRANSITION +66.86

STA 120+66.86
END JOB 009814

9 VERTICAL PANELS @ 40' O.C.

19 TRAFFIC DRUMS @ 40' O.C.

CONSTRUCTION PAVEMENT MARKINGS:

STAGE 2:
AS DIRECTED BY THE ENGINEER:
RT. AND LT. EDGE LINES = 4923 LIN. FT.
DBL. CENTERLINE = 4923 LIN. FT.

PERMANENT PAVEMENT MARKINGS:

ACROSS BRIDGE
THERMOPLASTIC PAVEMENT MARKINGS
LT. & RT. EDGE LINES = 265 LIN.FT. 4" WHITE

HIGH PERFORMANCE CONTRAST PAVEMENT MARKING
= DBL. CENTERLINE = 265 LIN. FT. 4" YELLOW

MAINTENANCE OF TRAFFIC DETAILS
STAGE 2

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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.		009814	19	94

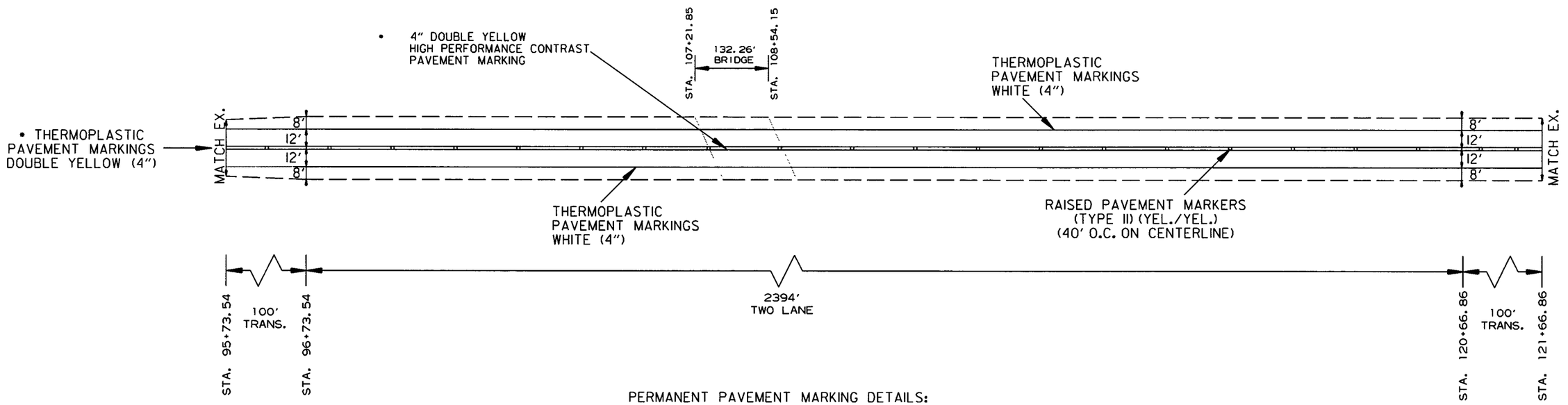
(2) PERMANENT PAVEMENT MARKING DETAILS

SEQUENCING:

STAGE 1: CONSTRUCT NEW BRIDGE AND HIGHWAY FULL DEPTH SECTION OF PROPOSED ROADWAY, CONSTRUCT TEMPORARY DRIVEWAYS, AND PERFORM NOTCH AND WIDEN LT. SIDE OF EXISTING PAVEMENT. UTILIZE VERTICAL PANELS AT THE NOTCH AT 40' O.C. SPACING.

STAGE 2: MAINTAIN TRAFFIC ON EXISTING ROADWAY AND PERFORM LEVELING OPERATIONS. SHIFT TRAFFIC ONTO NEW CONSTRUCTED LOCATION. REMOVE EXISTING BRIDGE STRUCTURE. UTILIZE TRAFFIC DRUMS AT 40' O.C. SPACING AT PROPOSED LANE EDGE ON RT. PERFORM NOTCH AND WIDEN RT. SIDE OF EXISTING PAVEMENT AND OBLITERATE EXISTING PAVEMENT THROUGHOUT FULL DEPTH SECTION. UTILIZE VERTICAL PANELS AT THE NOTCH AT 40' O.C. SPACING. COLD MILL TRANSITIONS AT JOB ENDS. PLACE FINAL 2" LIFT OF SURFACE AND FINAL STRIPING.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-3-16



PERMANENT PAVEMENT MARKING DETAILS:

THERMOPLASTIC PAVEMENT MARKINGS
LT. & RT. EDGE LINES = 5188 LIN.FT. 4" WHITE
• DBL. CENTERLINE = 4923 LIN. FT. 4" YELLOW

HIGH PERFORMANCE CONTRAST PAVEMENT MARKING
• DBL. CENTERLINE = 265 LIN. FT. 4" YELLOW

RAISED PAVEMENT MARKERS:
TYPE II (YEL./YEL.) 40' O.C. ON CENTERLINE = 65 EACH

• 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.

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PERMANENT PAVEMENT MARKING DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		009814	20	94

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-3-16

CONSTRUCTION PAVEMENT MARKINGS AND PERMANENT PAVEMENT MARKINGS

DESCRIPTION	STAGE 1	STAGE 2	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	10376	9846		20222				
RAISED PAVEMENT MARKERS TYPE II (YEL/YEL)		3	62		65			
THERMOPLASTIC PAVEMENT MARKING WHITE (4")		265	4923			5188		
THERMOPLASTIC PAVEMENT MARKING YELLOW (4")			4923				4923	
HIGH PERFORMANCE CONTRAST PAVEMENT MARKING YELLOW (4")		265						265
TOTALS:				**20222**	**65**	**5188**	**4923**	**265**

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.

ADVANCE WARNING SIGNS AND DEVICES

SIGN NUMBER	DESCRIPTION	SIGN SIZE	STAGE 1	STAGE 2	END OF JOB	MAXIMUM NUMBER REQUIRED	TOTAL SIGNS REQUIRED		VERTICAL PANELS	TRAFFIC DRUMS	BARRICADES (TYPE III)		FURNISHING & INSTALLING PRECAST CONC. BARRIER	TEMPORARY IMPACT ATTENUATION BARRIER	TEMP. IMPACT ATTEN.BARR. (REPAIR)
											RIGHT	LEFT			
			LIN. FT. - EACH				NO.	SQ. FT.	EACH		LIN. FT.			EACH	
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"	2	2	2	2	2	32.0							
G20-2	END ROAD WORK	48"x24"	2	2	2	2	2	16.0							
W13-1	SPEED LIMIT (ADVISORY)	24"x24"	2	2	2	2	2	8.0							
R11-2	ROAD CLOSED	48"x30"	3	2		3	3	30.0							
OM-3L	OBJECT MARKER	12"x36"	3			3	3	9.0							
OM-3R	OBJECT MARKER	12"x36"	3	4		4	4	12.0							
R4-1	DO NOT PASS	24"x30"	2	2	2	2	2	10.0							
RSP-1	SHOULDER CLOSED	48"x30"	2	2	2	2	2	20.0							
	VERTICAL PANELS		30	18		30			30						
	TRAFFIC DRUMS		103	67		103				103					
	TYPE III BARRICADE-RT. (16')		1	1		1					16				
	TYPE III BARRICADE-LT. (16')		2	1		2						32			
	FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER			640		640							640		
	TEMPORARY IMPACT ATTENUATION BARRIER			1		1								1	
	TEMPORARY IMPACT ATTENUATION BARRIER (REPAIR)			1		1									1
TOTALS:								**233.0**	**30**	**103**	**16**	**32**	**640**	**1**	**1**

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.

7/20/2016

R009814.DGN

QUANTITIES

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		009814	21	94

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-3-16

SOIL LOG

STATION	LATITUDE			LONGITUDE			LOCATION	DEPTH	LIQUID LIMIT	PLASTICITY INDEX	AASHTO CLASSIFICATION	COLOR
	DEG	MIN	SEC	DEG	MIN	SEC		FEET				
103+00	36	27	43.10	92	21	44.70	5' RT.	0-5	35	22	A-6(17)	BR/GR
103+00	36	27	43.00	92	21	44.70	17' RT.	0-5	34	21	A-6(8)	BR/GR
112+00	36	27	46.20	92	21	34.50	5' LT.	0-5	37	24	A-6(10)	BR/GR
112+00	36	27	46.30	92	21	34 60	17' LT.	0-5	40	27	A-6(11)	BR/GR
112+00	36	27	46.30	92	21	34.60	17' LT.	0-5	36	25	A-6(13)	BR/GR

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
Z- AUGER REFUSAL
NP - NON-PLASTIC
ND - NOT DETERMINABLE

REMOVAL AND DISPOSAL OF FENCE

STATION	STATION	LOCATION	FENCE
			LIN. FT.
95+17	112+10	LT. SIDE OF MAIN LANES	1830
112+30	115+00	LT. SIDE OF MAIN LANES	408
96+25	100+00	RT. SIDE OF MAIN LANES	382
109+90	110+60	RT SIDE OF MAIN LANES	202
115+00	115+59	RT. SIDE OF MAIN LANES	77
119+75	120+10	RT. SIDE OF MAIN LANES	35
TOTALS:			2934

REMOVAL AND DISPOSAL OF CULVERTS

STATION	DESCRIPTION	PIPE CULVERTS
		EACH
101+40	30" X 48' R.C. PIPE CULVERT	1
112+06	18" x 12" x 26' ARCH C.M. PIPE CULVERT	1
115+95	24' x 50' R.C. PIPE CULVERT	1
TOTALS:		3

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

EARTHWORK

STATION	STATION	LOCATION / DESCRIPTION	UNCLASSIFIED EXCAVATION	COMPACTED EMBANKMENT	* SOIL STABILIZATION
			CU. YD.		TON
ENTIRE	PROJECT	STAGE 1-MAIN LANES	11541	25098	
ENTIRE	PROJECT	STAGE 2-MAIN LANES	3281	1357	
ENTIRE	PROJECT	APPROACHES		1080	
ENTIRE	PROJECT	OBLITERATION OF ROADWAY	121		
ENTIRE	PROJECT	BRIDGE NO. M2312	415		
* ENTIRE	PROJECT	TO BE USED IF AND WHERE			100
		DIRECTED BY THE ENGINEER			
TOTALS:			15358	27535	100

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

BASIS OF ESTIMATE: OBLITERATION = 9" DEPTH

SELECTED PIPE BEDDING

LOCATION	SELECTED PIPE BEDDING
	CU.YD.
ENTIRE PROJECT TO BE USED IF	
AND WHERE DIRECTED BY THE	30
ENGINEER	
TOTAL:	30

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

CLEARING AND GRUBBING

STATION	STATION	LOCATION	CLEARING	GRUBBING
			STATION	
95+73	106+65	MAIN LANES	11	11
108+00	109+00	MAIN LANES	1	1
110+00	111+00	MAIN LANES	1	1
111+50	120+00	MAIN LANES	9	9
TOTALS:			22	22

PAVEMENT REPAIR OVER CULVERTS (ASPHALT)

STATION	LOCATION	WIDTH	LENGTH	TON
		FEET		
116+10	MAIN LANES	8 50	22	10
TOTAL:				10

AVG. DEPTH = 9"

COLD MILLING ASPHALT PAVEMENT

STATION	STATION	LOCATION	AVG. WIDTH	COLD MILLING ASPHALT PAVEMENT
			FEET	SQ. YD.
95+73.54	96+73.54	MAIN LANES	20.00	222.22
120+66.86	121+66.86	MAIN LANES	20.00	222.22
TOTAL:				444.44

NOTE: AVERAGE MILLING DEPTH 1"

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 24"	STANDARD DRAWINGS
			FEET	SQ. YD.	TON	TON	LIN. FT.	
110+29	RT.	HWY. 201	20	456.98	50.27	186.60		
111+50	LT.	HWY. 201	16	117.96	12.98	48.17	34	PCC-1, PCM-1, PCP-1, PCP-2
* ENTIRE PROJECT TEMPORARY DRIVES						60.00		
TOTALS:				574.94	63.25	294.77	34	

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2")..... .....94.7% MIN. AGGR ... . 5.3% 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.

7/20/2016

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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.		009814	22	94

(2) QUANTITIES

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 8-3-16

DUMPED RIPRAP AND FILTER BLANKET

STATION	LOCATION	DUMPED RIPRAP	FILTER BLANKET
		CU. YD.	SQ. YD.
99+26	OUTLET OF PIPE CULVERT	40	80
101+40	OUTLET OF PIPE CULVERT	44	88
115+95	OUTLET OF PIPE CULVERT	22	44
	*TO BE USED IF AND WHERE	18	36
	DIRECTED BY THE ENGINEER		
TOTALS:		124	248

*NOTE. QUANTITIES ESTIMATED.
SEE SECTION 104 03 OF THE STANDARD SPECIFICATIONS.

NOTE: FILTER BLANKET SHALL BE GEOTEXTILE FABRIC (TYPE 5).

FENCING

STATION	STATION	LOCATION	WIRE FENCE (TYPE D-1)	* 16'-0" GATES
			LIN. FT.	EACH
95+16	112+04	LT. OF MAIN LANES	1914	1
112+04	112+20	LT. OF MAIN LANES		1
112+20	115+00	LT. OF MAIN LANES	282	
96+32	99+88	RT. OF MAIN LANES	365	
109+00	110+19	RT. OF MAIN LANES	50	
110+54	110+60	RT. OF MAIN LANES	100	1
115+00	115+57	RT. OF MAIN LANES	86	
TOTALS:			2797	3

* DENOTES ALTERNATE BID ITEM

ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC

LOCATION	TON	TACK COAT
		GALLON
ENTIRE PROJECT - TO BE USED IF AND WHERE	10	20
DIRECTED BY THE ENGINEER		
TOTALS:	10	20

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

EROSION CONTROL

STATION	STATION	LOCATION	PERMANENT EROSION CONTROL					TEMPORARY EROSION CONTROL									
			SEEDING	LIME	MULCH COVER	WATER	SECOND SEEDING APPLICATION	TEMPORARY SEEDING	MULCH COVER	WATER	WATTLE (20") DITCH CHECKS (E-1)	SAND BAG DITCH CHECKS (E-5)	ROCK DITCH CHECKS (E-6)	SILT FENCE (E-11)	SEDIMENT BASIN (E-14)	OBLITERATION OF SEDIMENT BASIN	*SEDIMENT REMOVAL & DISPOSAL
			ACRE	TON	ACRE	M.GAL.	ACRE	ACRE	ACRE	M.GAL.	LIN. FT.	BAG	CU.YD.	LIN. FT.	CU.YD.	CU.YD.	CU. YD.
ENTIRE	PROJECT	CLEARING AND GRUBBING						10.52	10.52	214.6							
ENTIRE	PROJECT	STAGE 1						5.27	5.27	107.5		66	18	3000			120
ENTIRE	PROJECT	STAGE 2	2 85	5.70	2 85	290.7	2.85	5.25	5.25	107.1		44	12	1775			72
*ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.			0 71	1.42	0.71	72.4	0.71	5.26	5.26	107.3	99	44	15		230	230	248
TOTALS:			3.56	7.12	3.56	363.1	3.56	26.30	26.30	536.5	99	154	45	4775	230	230	440

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
WATTLE DITCH CHECKS.....9 LIN. FT. / LOCATION
SAND BAG DITCH CHECKS.....22 BAGS / LOCATION
ROCK DITCH CHECKS..... ....3 CU.YD./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.

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.
98+00	100+75	RT. OF MAIN LANES	275.00	7	213 89	122 22	1.54
104+00	105+00	RT. OF MAIN LANES	100.00	7	77.78	44.44	0.56
108+50	115+70	LT. OF MAIN LANES	720.00	7	560.00	320 00	4.03
116+20	120+67	LT. OF MAIN LANES	447.00	7	347.67	198.67	2.50
99+26		SLOPE OF PIPE OUTLET	33.00	7	25.67	14.67	0.18
101+21		SLOPE OF PIPE OUTLET	40.00	7	31.11	17.78	0.22
115+95		SLOPE OF PIPE OUTLET	10.00	7	7.78	4.44	0.06
TOTALS:					1263.90	722.22	9.09

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

EROSION CONTROL MATTING

STATION	STATION	LOCATION	LENGTH	CLASS 3
			LIN. FT.	SQ. YD.
100+75	101+75	RT. OF MAIN LANES	100.0	88.9
105+00	106+00	RT. OF MAIN LANES	100.0	88.9
115+70	116+20	LT. OF MAIN LANES	50.0	44 4
TOTAL:				222.2

NOTE: AVERAGE WIDTH = 8'-0"

BENCH MARKS

STATION	LOCATION	BENCH MARKS
		EACH
108+54.15	BRIDGE END	1
TOTAL:		1

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

GUARDRAIL

STATION	STATION	LOCATION	GUARDRAIL (TYPE A)	THRIE BEAM GUARDRAIL TERMINAL	GUARDRAIL TERMINAL (TYPE 2)	TERMINAL ANCHOR POSTS (TYPE 1)
			LIN. FT.	EACH		
106+21 42	107+15.17	LT. SIDE	75	1		1
105+10.98	107+29.73	RT. SIDE	150	1	1	
108+46 27	110+65.02	LT. SIDE	150	1	1	
108+60.83	109+54 58	RT. SIDE	75	1		1
TOTALS:			450	4	2	2

4" PIPE UNDERDRAIN

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

* NOTE: QUANTITIES ESTIMATED.
SEE SECTION 104 03 OF THE STD. SPECS.

ACHM PATCHING OF EXISTING ROADWAY

DESCRIPTION	TON
ENTIRE PROJECT - TO BE USED IF AND WHERE	10
DIRECTED BY THE ENGINEER	
TOTAL:	10

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

QUANTITIES

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.NO. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		009814	23	94

(2) QUANTITIES

STRUCTURES

STATION	DESCRIPTION	REINFORCED CONCRETE PIPE (CLASS III)		FLARED END SECTIONS FOR R.C. PIPE CULVERTS		SOLID SODDING	WATER	STD. DWG. NOS.
		24"	30"	24"	30"			
		LIN. FT.		EACH		SQ.YD.	M.GAL.	
99+26	IN PLACE- RETAIN AND EXTEND 30" R.C. PIPE CULVERT		52		1	8	0.10	FES-1, FES-2, PCC-1
101+21	CONSTRUCT 30" R.C. PIPE CULVERT		96		2	26	0.33	FES-1, FES-2, PCC-1
116+10	CONSTRUCT 24" R.C. PIPE CULVERT	90		2		16	0.20	FES-1, FES-2, PCC-1
TOTALS:		90	148	2	3	50	0.63	

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

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

APPROACH GUTTERS

STATION	STATION	LOCATION	APPROACH GUTTER (TYPE A)	REINFORCING STEEL-RDWY. (GR. 60)
			CU.YD.	POUND
106+84.57	107+14 57	LT. SIDE	7.55	665
106+99.13	107+29 13	RT. SIDE	7.55	665
108+46.87	108+76 87	LT. SIDE	7.55	665
108+61.43	108+91.43	RT. SIDE	7.55	665
TOTALS:			30.20	2660

NOTE: USE T =14" FOR 6' SHOULDER.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-3-16

BASE AND SURFACING

STATION	STATION	LOCATION	LENGTH	AGGREGATE BASE COURSE (CLASS 7)		TACK COAT				ACHM BINDER COURSE (1")				ACHM SURFACE COURSE (1/2")								
				TON / STATION	TON	AVG. WID.	SQ.YD.	GALLONS / SQ.YD.	GALLON	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 64-22	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 64-22	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 64-22	TOTAL PG 64-22
			FEET			FEET				FEET			TON	FEET			TON	FEET			TON	TON
MAIN LANES																						
95+73.54	96+73.54	TRANSITION	100.00															22.00	244.44	220.00	26.89	26.89
96+73.54	98+23.54	NOTCH AND WIDEN- SUPERELEVATION	150.00	197.38	296.07	26.56	442.67	0.05	22.13	13.38	223.00	440.00	49.06	13.19	219.83	220.00	24.18	28.00	466.67	220.00	51.33	75.51
98+23.54	99+36.89	NOTCH AND WIDEN	113.35	197.38	223.73	26.56	334.51	0.05	16.73	13.38	168.51	440.00	37.07	13.19	166.12	220.00	18.27	28.00	352.64	220.00	38.79	57.06
99+36.89	100+02.08	NOTCH AND WIDEN- SUPERELEVATION	65.19	197.38	128.67	26.56	192.38	0.05	9.62	13.38	96.92	440.00	21.32	13.19	95.54	220.00	10.51	28.00	202.81	220.00	22.31	32.82
100+02.08	106+92.39	FULL DEPTH - SUPERELEVATION	690.31	259.25	1789.63	48.75	3739.18	0.05	186.96	24.50	1879.18	440.00	413.42	24.25	1860.00	220.00	204.60	28 00	2147.63	220.00	236.24	440.84
106+92.39	107+21.87	FULL DEPTH	29.48	259.25	76.43	48.75	159.68	0.05	7.98	24.50	80.25	440.00	17.66	24.25	79.43	220.00	8.74	28.00	91.72	220.00	10.09	18.83
108+54.13	108+61.43	FULL DEPTH	7.30	259.25	18.93	48.75	39.54	0.05	1.98	24.50	19.87	440.00	4.37	24.25	19.67	220.00	2.16	28.00	22.71	220.00	2.50	4.66
108+61.43	115+84.32	FULL DEPTH - SUPERELEVATION	722.89	259.25	1874.09	48.75	3915.65	0.05	195.78	24.50	1967.87	440.00	432.93	24.25	1947.79	220.00	214.26	28.00	2248.99	220 00	247.39	461.65
115+84.32	120+66 86	NOTCH AND WIDEN- SUPERELEVATION	482.54	197.38	952.44	26.56	1424.03	0.05	71.20	13.38	717.38	440.00	157.82	13.19	707.19	220.00	77.79	28.00	1501.24	220 00	165.14	242.93
120+66.86	121+66.86	TRANSITION	100.00															22.00	244.44	220.00	26.89	26.89
ADDITIONAL FOR LEVELING																						
96+73.54	100+02.08	MAIN LANES	328.54			20.00	730.09	0.17	124.12									VAR.	VAR.	VAR.	61.38	61.38
115+84.32	116+00.00	MAIN LANES	15 68			20.00	34.84	0.17	5.92									VAR.	VAR.	VAR.	11.88	11.88
120+00.00	120+66.86	MAIN LANES	66.86			20.00	148.58	0.17	25.26									VAR.	VAR.	VAR.	15.84	15.84
ADDITIONAL FOR METHOD OF RAISING GRADE																						
116+00.00	120+00.00	MAIN LANES	400.00			20.00	888.89	0.17	151.11	VAR.	VAR.	VAR.	465.30									
ADDITIONAL FOR WIDENING FOR GUARDRAIL																						
104+67.98	107+29.73	RT. SIDE OF MAIN LANES	261.75	VAR.	98.94													VAR.	328.75	220.00	36.16	36.16
105+78.42	107+15.17	LT. SIDE OF MAIN LANES	136.75	VAR.	56.87													VAR	179.28	220.00	19.72	19.72
108+60.83	109+97.58	RT. SIDE OF MAIN LANES	136.75	VAR.	67.82													VAR.	169.96	220.00	18.70	18.70
108+46 27	111+08.02	LT. SIDE OF MAIN LANES	261.75	VAR.	99.72													VAR	335.87	220.00	36.95	36.95
ADDITIONAL FOR SUPERELEVATION																						
95+73.54	98+23.54	TRANSITION (NOTCH AND WIDEN)	250 00	37.56	93.90																	
99+36.89	100+02.08	TRANSITION (NOTCH AND WIDEN)	65.19	24.38	15.89																	
100+02.08	101+36.89	TRANSITION (FULL DEPTH)	134.81	35.00	47.18																	
101+36.39	104+92.39	FULL SUPERELEVATION (FULL DEPTH)	356.00	70.00	249.20																	
104+92.39	106+92.39	TRANSITION (FULL DEPTH)	200.00	35.00	70.00																	
108+61.43	111+11.43	TRANSITION (FULL DEPTH)	250.00	50.25	125.63																	
111+11.43	115+84.32	FULL SUPERELEVATION (FULL DEPTH)	472.89	100.50	475.25																	
115+84.32	118+16.86	FULL SUPERELEVATION (NOTCH AND WIDEN)	232.54	97.13	225.87																	
118+16.86	120+66.86	TRANSITION (NOTCH AND WIDEN)	250.00	48.56	121.40																	
TOTALS:					7107.66		12050.04		818.79		5152.98		1598.95		5095.57		560.51		8537.15		1028.20	1588.71

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....94.7% MIN. AGGR.....5.3% ASPHALT BINDER
ACHM BINDER COURSE (1").....95.7% MIN. AGGR.....4.3% ASPHALT BINDER
MAXIMUM NUMBER OF GYRATIONS = 115 FOR PG 64-22
MAXIMUM NUMBER OF GYRATIONS = 160 FOR PG 70-22
MAXIMUM NUMBER OF GYRATIONS = 205 FOR PG 76-22

7/20/2016

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		009814		
				① 07397 - QUANTITIES - 58837				

SCHEDULE OF BRIDGE QUANTITIES-JOB 009814

BRIDGE NO. / NAME PLATE / TITLE	UNIT OF STRUCTURE	ITEM NO.	205	801	802	802	803	804	804	805	SP & 807	808	809	812	816	816
		ITEM	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. _)	UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE	CLASS S CONCRETE-BRIDGE	CLASS S(AE) CONCRETE-BRIDGE	CLASS 2 PROTECTIVE SURFACE TREATMENT	EPOXY COATED REINFORCING STEEL (GRADE 60)	REINFORCING STEEL-BRIDGE (GRADE 60)	① STEEL PILING (HP 12X53)	STRUCTURAL STEEL IN BEAM SPANS (M 270, GRADE 50W)	ELASTOMERIC BEARINGS	SILICONE JOINT SEALANT	BRIDGE NAME PLATE (TYPE D)	FILTER BLANKET	DUMPED RIPRAP
		UNIT	LUMP SUM	CU. YD.	CU. YD.	CU. YD.	SQ. YD.	LB.	LB.	LIN. FT.	LB.	CU. IN.	LIN. FT.	EACH	SQ. YD.	CU. YD.
07397 EAST PIGEON CREEK	BENT 1				27.10		13.1		3,315	85	880	1,365.0			246	144
	BENT 2			36	45.90				7,035			1522.5				
	BENT 3			58	46.50				7,105			1,522.5				
	BENT 4			9	27.90		13.1		3,455	70	880	1,365.0			200	115
	130'-0" W-BEAM UNIT					168.00	681.4	37,980			90,700		91	1		
	SITE NO. 2 (BRIDGE NO. M2312)		1													
	TOTALS FOR BRIDGE NO. 07397			② 103	147.40	168.00	707.6	37,980	20,910	155	92,460	5,775.0	91	1	446	259
	SITE NO. 1 (BRIDGE NO. M2311)		1													
	TOTALS FOR JOB NO. 009814			② 103	147.40	168.00	707.6	37,980	20,910	155	92,460	5,775.0	91	1	446	259

① All steel piling shall be Grade 50 and are required to have approved driving points which will not be paid for directly, but will be considered subsidiary to the item "Steel Piling (HP 12X53)". All piles shall conform to Std. Dwg. No. 55020.

② Includes approx. 53 cu. yds. of rock excavation.

KYLE YEARY
DESIGN SECTION SUPERVISOR

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9235
8-18-16
CHARLES R. ELLIS

BRIDGE ENGINEER

SCHEDULE OF BRIDGE QUANTITIES
E. PIGEON CREEK STR. & APPRS. (S)
BAXTER COUNTY
ROUTE 201 SEC. 1
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: COR DATE: 12/16/2015 FILENAME: b009814_ql.dgn
CHECKED BY: DHP DATE: 8/18/16 SCALE: ---
DESIGNED BY: - DATE: -

BRIDGE NO. 07397 DRAWING NO. 58837

PRINT DATE: 8/18/2016

SUMMARY OF QUANTITIES

ITEM NUMBER	ITEM		QUANTITY	UNIT
SP & 201	CLEARING		22	STATION
201	GRUBBING		22	STATION
202	REMOVAL AND DISPOSAL OF FENCE		2934	LIN. FT.
202	REMOVAL AND DISPOSAL OF PIPE CULVERTS		3	EACH
210	UNCLASSIFIED EXCAVATION		15358	CU. YD
SP & 210	COMPACTED EMBANKMENT		27535	CU. YD
SP & 210	SOIL STABILIZATION		100	TON
SS & 303	AGGREGATE BASE COURSE (CLASS 7)		7402	TON
SS & 401	TACK COAT		839	GAL.
SP, SS, & 406	MINERAL AGGREGATE IN ACHM BINDER COURSE (1")		1530	TON
SP, SS, & 406	ASPHALT BINDER (PG 64-22) IN ACHM BINDER COURSE (1")		69	TON
SP, SS, & 407	MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2")		1564	TON
SP, SS, & 407	ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2")		88	TON
412	COLD MILLING ASPHALT PAVEMENT		444	SQ. YD.
SP & 414	ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC		10	TON
SP & 415	ACHM PATCHING OF EXISTING ROADWAY		10	TON
504	APPROACH GUTTERS		30.20	CU. YD.
601	MOBILIZATION		1.00	LUMP SUM
SP & 602	FURNISHING FIELD OFFICE		1	EACH
603	MAINTENANCE OF TRAFFIC		1.00	LUMP SUM
SS & 604	SIGNS		233	SQ. FT.
SS & 604	BARRICADES		48	LIN. FT.
SS & 604	TRAFFIC DRUMS		103	EACH
604	FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER		640	LIN. FT.
604	CONSTRUCTION PAVEMENT MARKINGS		20222	LIN. FT.
SS & 604	VERTICAL PANELS		30	EACH
605	CONCRETE DITCH PAVING (TYPE B)		1264	SQ. YD.
606	24" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)		90	LIN. FT.
606	30" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)		148	LIN. FT.
SP, SS, & 606	24" SIDE DRAIN		34	LIN. FT.
606	24" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS		2	EACH
606	30" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS		3	EACH
606	SELECTED PIPE BEDDING		30	CU. YD.
611	UNDERDRAIN OUTLET PROTECTORS		4	EACH
611	4" PIPE UNDERDRAINS		1000	LIN. FT.
615	PAVEMENT REPAIR OVER CULVERTS (ASPHALT)		10	TON
617	GUARDRAIL (TYPE A)		450	LIN. FT
617	GUARDRAIL TERMINAL (TYPE 2)		2	EACH
617	THRIE BEAM GUARDRAIL TERMINAL		4	EACH
617	TERMINAL ANCHOR POSTS (TYPE 1)		2	EACH
619	WIRE FENCE (TYPE D-1)		2797	LIN. FT
* 619	16' STEEL GATES	(ALTERNATE NO. 1)	3	EACH
* 619	16' ALUMINUM GATES	(ALTERNATE NO. 2)	3	EACH
620	LIME		7	TON
620	SEEDING		3.56	ACRE
SS & 620	MULCH COVER		29.86	ACRE
620	WATER		909.3	M.GAL
621	TEMPORARY SEEDING		26 30	ACRE
621	SILT FENCE		4775	LIN. FT.
621	SAND BAG DITCH CHECKS		154	BAG
621	SEDIMENT BASIN		230	CU. YD.
621	OBLITERATION OF SEDIMENT BASIN		230	CU. YD.
621	SEDIMENT REMOVAL AND DISPOSAL		440	CU YD.
621	ROCK DITCH CHECKS		45	CU. YD.
621	WATTLE (20")		99	LIN. FT.
623	SECOND SEEDING APPLICATION		3.56	ACRE
624	SOLID SODDING		772	SQ. YD.
626	EROSION CONTROL MATTING (CLASS 3)		222	SQ. YD.
635	ROADWAY CONSTRUCTION CONTROL		1.00	LUMP SUM
719	THERMOPLASTIC PAVEMENT MARKING WHITE (4")		5188	LIN. FT.
719	THERMOPLASTIC PAVEMENT MARKING YELLOW (4")		4923	LIN. FT.
* SP & 719	INVERTED PROFILE THERMOPLASTIC CONTRAST PAVEMENT MARKING YELLOW (4")	(ALTERNATE NO 1)	265	LIN. FT.
* SP	HIGH PERFORMANCE CONTRAST MARKING TAPE YELLOW (4")	(ALTERNATE NO. 2)	265	LIN. FT.
721	RAISED PAVEMENT MARKERS (TYPE II)		65	EACH
731	TEMPORARY IMPACT ATTENUATION BARRIER		1	EACH
731	TEMPORARY IMPACT ATTENUATION BARRIER (REPAIR)		1	EACH
804	REINFORCING STEEL-ROADWAY (GRADE 60)		2660	POUND
816	FILTER BLANKET		248	SQ. YD.
816	DUMPED RIPRAP		124	CU. YD.
	STRUCTURES OVER 20' SPAN			
205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 1)		1 00	LUMP SUM
205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 2)		1.00	LUMP SUM
636	BRIDGE CONSTRUCTION CONTROL		1.00	LUMP SUM
801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE		103	CU. YD.
802	CLASS S CONCRETE-BRIDGE		147.40	CU. YD.
802	CLASS S(AE) CONCRETE-BRIDGE		168.00	CU. YD.
803	CLASS 2 PROTECTIVE SURFACE TREATMENT		707.6	SQ. YD.
804	REINFORCING STEEL-BRIDGE (GRADE 60)		20910	POUND
804	EPOXY COATED REINFORCING STEEL (GRADE 60)		37980	POUND
805	STEEL PILING (HP 12X53)		155	LIN. FT.
SP & 807	STRUCTURAL STEEL IN BEAM SPANS (M270-GR50W)		92460	POUND
808	ELASTOMERIC BEARINGS		5775.0	CU. IN.
809	SILICONE JOINT SEALANT		91	LIN FT.
812	BRIDGE NAME PLATE (TYPE D)		1	EACH
816	FILTER BLANKET		446	SQ. YD.
816	DUMPED RIPRAP		259	CU. YD.

* DENOTES ALTERNATE BID ITEMS.

REVISIONS

DATE	REVISION	SHEET NUMBER

SUMMARY OF QUANTITIES AND REVISIONS

STATE OF ARKANSAS ROBERT D. SMITH REGISTERED PROFESSIONAL ENGINEER No. 11425 8-3-16

DATE REVISED	DATE REVISED	DATE REVISED	DATE FILMED

FED.AID PROJ.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.	009814	25	94

(2) SUMMARY OF QUANTITIES AND REVISIONS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		009814	26	94

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-3-16

SURVEY CONTROL COORDINATES

Project Name: s009814
Date: 6/5/2013
Coordinate System: ARKANSAS STATE PLANE - NORTH ZONE BASED ON GPS CONTROL, PROJECTED TO GROUND.
Units: U.S. SURVEY FOOT

Point Name	Northing	Easting	Elev	Feature	Description
1	774139.3884	1204753.0726	721.702	CTL	STD. AHTD MON. STAMPED PN: 1
2	774710.7800	1205167.1800	673.281	CTL	STD. AHTD MON. STAMPED PN: 2
3	775246.5824	1206290.0874	625.435	CTL	STD. AHTD MON. STAMPED PN: 3
4	774770.4412	1206823.7878	624.107	CTL	STD. AHTD MON. STAMPED PN: 4
5	776035.2619	1206931.5962	699.121	CTL	STD. AHTD MON. STAMPED PN: 5
6	776921.3009	1206963.9041	763.942	CTL	STD. AHTD MON. STAMPED PN: 6
100	785725.2960	1217742.9598	861.225	GPS	NGS MON. CRAWFORD
101	775405.7904	1206732.7543	667.630	GPS	AHTD GPS MON. 030006A
102	774949.3420	1205690.4743	643.036	GPS	AHTD GPS MON. 030006
900	773208.9620	1204630.3507	778.764	TBM	CHISELED SQ. ON HW
901	774391.1545	1204916.2446	693.397	TBM	CHISELED SQ. ON HW
902	774923.8405	1205582.8650	638.134	TBM	CHISELED SQ. ON HW
903	775170.9532	1206239.1356	621.678	TBM	CHISELED SQ. ON NE BR END OVER
904	775629.1914	1206865.3585	681.100	TBM	CHISELED SQ. ON HW 20' E OF EP HWY 201
998	776343.1211	1206911.4116	714.847	BM	USGS BM 14 WPM B CHISELED SQ. ON
999	770451.0050	1204321.8280	869.524	BM	USGS REF MARK 140' N OF BM

HWY. 201

POINT NO.	TYPE	STATION	NORTHING	EASTING
8006	POB	80+25.03	773222.1864	1204613.8389
8007	PC	87+58.08	773946.9920	1204723.4794
8009	PT	96+73.54	774707.0512	1205189.0308
8010	PC	100+86.89	774947.8219	1205525.0228
8012	PT	105+42.39	775150.3159	1205930.8901
8003	PC	110+26.44	775295.1128	1206392.7821
8004	PT	118+79.36	775922.6124	1206895.4852
8005	POE	122+14.35	776256.4212	1206923.5359

*Note - Rebar and Cap - Standard - 5/8" Rebar with 2" Aluminum Cap stamped
*(standard markings common to all caps), or as indicated
(other markings indicated in the point description of the individual point).
ALL DISTANCES ARE GROUND.
USE CAF = 1.0 FOR STAKEOUT FOR THIS PROJECT.
A PROJECT CAF OF 1.0000198630 HAS BEEN USED TO COMPUTE THE ABOVE LISTED GROUND COORDINATES.
THIS CAF IS INTENDED FOR USE WITHIN THE PROJECT LIMITS.
GRID DISTANCE = GROUND DISTANCE X CAF.
GROUND COORDINATES ARE PROJECTED FROM AR. STATE PLANE GRID COORDINATES BY SCALING ALL X,Y
COORDINATE VALUES WITH THE INVERSE (1/X) OF THE COMBINED AJUSTMENT FACTOR (CAF) ABOUT X=0, Y=0.

GRID COORDINATES ARE STORED UNDER FILE NAME. s009814gi.ctl
HORIZONTAL DATUM: NAD 83 (1997)
VERTICAL DATUM: NAVD 88 ELEVATIONS FOR POINTS 1-6, 100-102, AND 900-904 & 998-999 WERE ESTABLISHED BY 3-WIRE LEVEL TECHNIQUES FROM NGS BENCHMARKS.

POSITIONAL ACCURACY:

HORIZONTAL-GPS(POINTS 100-102): 1.0 CM 10 PPM, PRIMARY CONTROL(POINTS 1-6): 2.0 CM 20 PPM

VERTICAL-POSITIONAL ACCURACY IS THIRD ORDER, UNLESS SPECIFIED OTHERWISE AT A SPECIFIC POINT

BASIS OF BEARING:
ARKANSAS STATE PLANE GRID BEARINGS - 0301-NORTH ZONE
DETERMINED FROM GPS CONTROL POINTS:
CONVERGENCE ANGLE: 00-12-35 LEFT AT PN: 3
GRID AZIMUTH = ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE.

LT: 36-27-45.48 LG: 092-21-37.80

GRID NORTHING: 775261.9811 GRID EASTING: 1206314.0479

GROUND NORTHING: 775246.5824 GROUND EASTING: 1206290.0874

12/23/2015

R009814.DGN

SURVEY CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		009814	27	94

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-3-16

HWY. 201

N 54°22'29" E
413.35'

SURVEY BASELINE N35°55'56" E
705.67'

SURVEY BASELINE N64°29'30" E
1244.19'

N 72°35'40" E
484.06'

95 100 105

8009 PK2 PDIST1 AMPD IRON STAMPED PN12

8010

8012

P.I. 103+16.58

P.C. 100+86.89

P.T. 105+42.39

P.T. 96+73.54

HWY. 201
P.I. = 92+41.82
Δ = 45°46'22.4" RT.
D = 5°00'00.0"
T = 483.73'
L = 915.46'
P.C. = 87+58.08
P.T. = 96+73.54
MATCH EXISTING SUPER

STA 96+73.54
BEGIN JOB 009814

HWY. 201
P.I. = 103+16.58
Δ = 18°13'11.1" RT.
D = 4°00'00.0"
T = 229.69'
L = 455.49'
P.C. = 100+86.89
P.T. = 105+42.39
e = 0.051 '/'
Ls = 200'

12/23/2015

R009814.DGN

SURVEY CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		009814	28	94

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-3-16

HWY. 201
P. I. = 115+10.77
Δ = 67°47'27.9" LT.
D = 7°56'53.3"
T = 484.32'
L = 852.92'
P. C. = 110+26.44
P. T. = 118+79.36
e = 0.084 '/'
Ls = 250'

STA 120+66.86
END JOB 009814

SURVEY BASELINE N02°05'18"E
886.63'

SURVEY BASELINE N04°52'19"E
1269.41'

P. I. 115+10.77

P. C. 110+26.44

P. T. 118+79.36

N 04°48'12" E
334.99'

PNK3 PDS TO ANTD MON.STAMPED PNK3

PNK5 PDS TO ANTD MON.STAMPED PNK5

8003

8004

8005

110

115

120

12/23/2015

R009814.DGN

SURVEY CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		009814	29	94

② PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-3-16

P. I. = 92+41.82
Δ = 45°46′ 22.4″ RT.
D = 5°00′ 00.0″
T = 483.73′
L = 915.46′
P.C. = 87+58.08
P.T. = 96+73.54
MATCH EXISTING SUPER

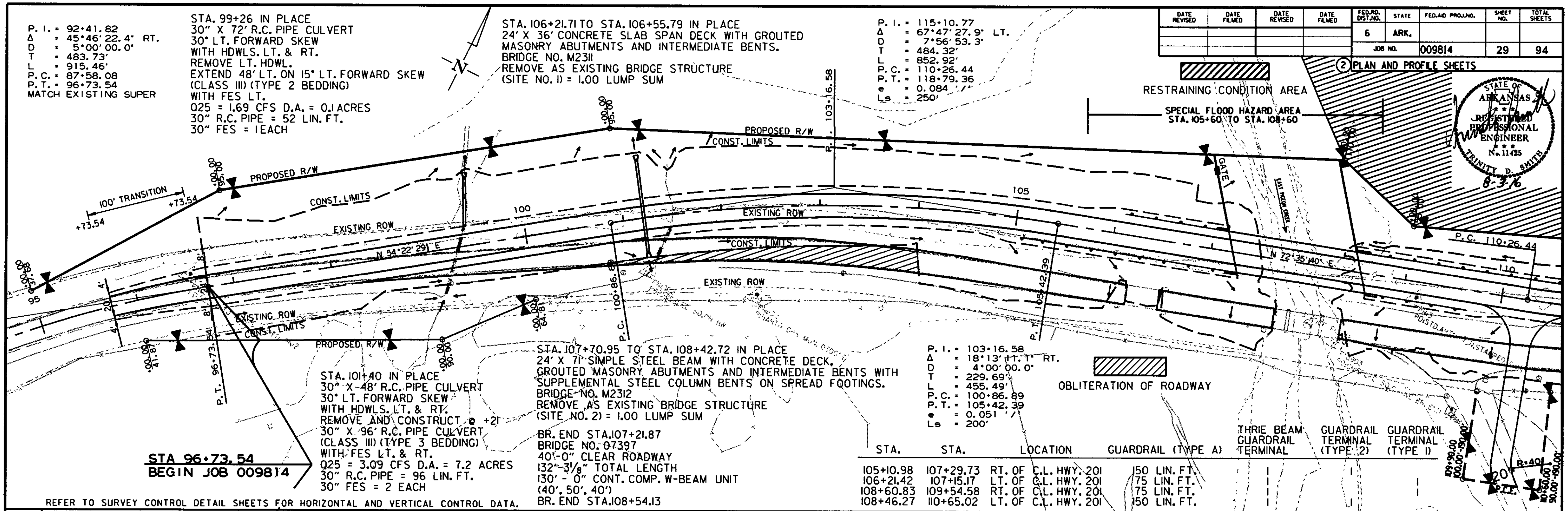
STA. 99+26 IN PLACE
30″ X 72′ R.C. PIPE CULVERT
30° LT. FORWARD SKEW
WITH HDWLS. LT. & RT.
REMOVE LT. HDWL.
EXTEND 48′ LT. ON 15° LT. FORWARD SKEW
(CLASS III) (TYPE 2 BEDDING)
WITH FES LT.
Q25 = 1.69 CFS D.A. = 0.1 ACRES
30″ R.C. PIPE = 52 LIN. FT.
30″ FES = 1 EACH

STA. 106+21.71 TO STA. 106+55.79 IN PLACE
24′ X 36′ CONCRETE SLAB SPAN DECK WITH GROUTED
MASONRY ABUTMENTS AND INTERMEDIATE BENTS.
BRIDGE NO. M2311
REMOVE AS EXISTING BRIDGE STRUCTURE
(SITE NO. 1) = 1.00 LUMP SUM

P. I. = 115+10.77
Δ = 67°47′ 27.9″ LT.
D = 7°56′ 53.3″
T = 484.32′
L = 852.92′
P.C. = 110+26.44
P.T. = 118+79.36
e = 0.084 ′/′
Ls = 250′

▨ RESTRAINING CONDITION AREA

SPECIAL FLOOD HAZARD AREA
STA. 105+60 TO STA. 108+60



STA. 101+40 IN PLACE
30″ X 48′ R.C. PIPE CULVERT
30° LT. FORWARD SKEW
WITH HDWLS. LT. & RT.
REMOVE AND CONSTRUCT @ +21
30″ X 96′ R.C. PIPE CULVERT
(CLASS III) (TYPE 3 BEDDING)
WITH FES LT. & RT.
Q25 = 3.09 CFS D.A. = 7.2 ACRES
30″ R.C. PIPE = 96 LIN. FT.
30″ FES = 2 EACH

STA. 107+70.95 TO STA. 108+42.72 IN PLACE
24′ X 71′ SIMPLE STEEL BEAM WITH CONCRETE DECK,
GROUTED MASONRY ABUTMENTS AND INTERMEDIATE BENTS WITH
SUPPLEMENTAL STEEL COLUMN BENTS ON SPREAD FOOTINGS.
BRIDGE NO. M2312
REMOVE AS EXISTING BRIDGE STRUCTURE
(SITE NO. 2) = 1.00 LUMP SUM

BR. END STA. 107+21.87
BRIDGE NO. 07397
40′-0″ CLEAR ROADWAY
132′-3 1/8″ TOTAL LENGTH
130′ - 0″ CONT. COMP. W-BEAM UNIT
(40′, 50′, 40′)
BR. END STA. 108+54.13

P. I. = 103+16.58
Δ = 18°13′ 11.1″ RT.
D = 4°00′ 00.0″
T = 229.69′
L = 455.49′
P.C. = 100+86.89
P.T. = 105+42.39
e = 0.051 ′/′
Ls = 200′

▨ OBLITERATION OF ROADWAY

STA 96+73.54
BEGIN JOB 009814

STA.	STA.	LOCATION	GUARDRAIL (TYPE A)	THRIE BEAM GUARDRAIL TERMINAL	GUARDRAIL TERMINAL (TYPE 2)	GUARDRAIL TERMINAL (TYPE 1)
105+10.98	107+29.73	RT. OF C.L. HWY. 201	150 LIN. FT.	1	1	
106+21.42	107+15.17	LT. OF C.L. HWY. 201	75 LIN. FT.	1		1
108+60.83	109+54.58	RT. OF C.L. HWY. 201	75 LIN. FT.	1		1
108+46.27	110+65.02	LT. OF C.L. HWY. 201	150 LIN. FT.	1	1	

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

STA. 95+73.54 MATCH EXISTING (0.061 ′/′)
STA. 98+23.54 END SUPERELEVATION

STA. 99+36.89 BEGIN SUPERELEVATION
STA. 101+36.89 MAX SUPERELEVATION (0.051 ′/′)
STA. 104+92.39 MAX SUPERELEVATION (0.051 ′/′)
STA. 106+92.39 END SUPERELEVATION

STA. 108+61.43 BEGIN SUPERELEVATION
STA. 111+11.43 MAX SUPERELEVATION (0.084 ′/′)
STA. 118+16.86 MAX SUPERELEVATION (0.084 ′/′)
STA. 120+66.86 END SUPERELEVATION

E. PIGEON CREEK AT STA. 107+05 TO STA. 108+15
IS CLASSIFIED AS PERENNIAL. THE TOP
OF CHANNEL ELEVATION IS 613.0 FT. MSL.
REFER TO SECTION 110.05(c) TEMPORARY FILL
OF THE 2014 STANDARD SPECIFICATIONS.

WIRE FENCE AND GATE

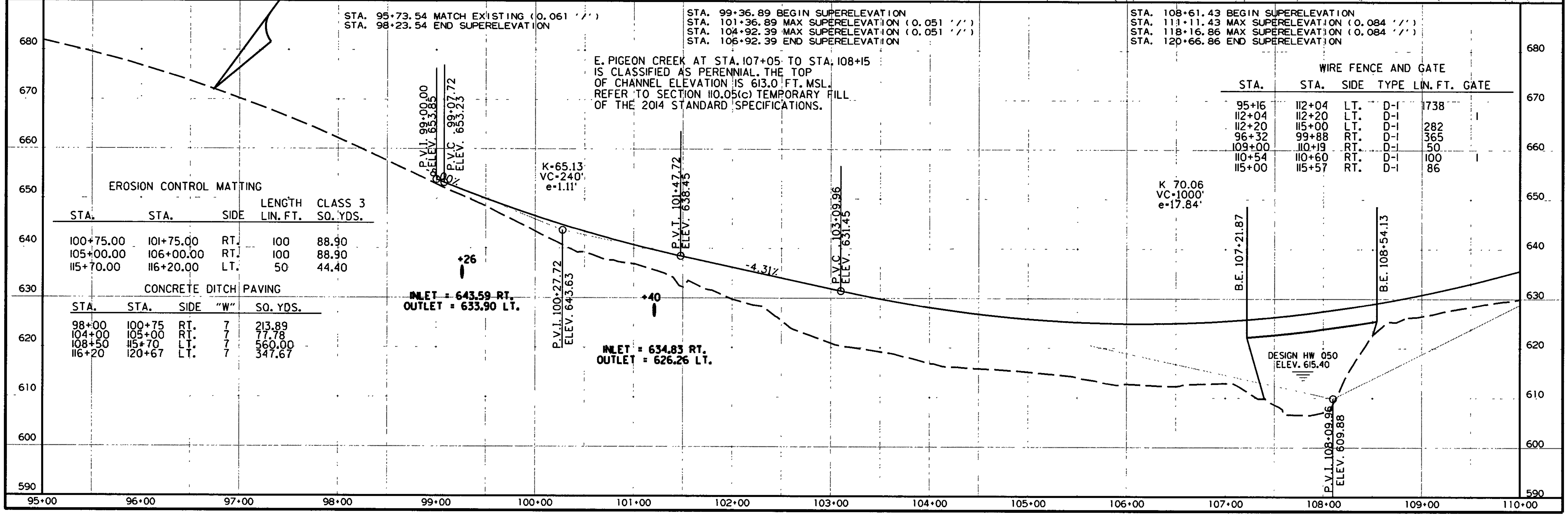
STA.	STA.	SIDE	TYPE	LIN. FT.	GATE
95+16	112+04	LT.	D-1	1738	
112+04	112+20	LT.	D-1		1
112+20	115+00	LT.	D-1	282	
96+32	99+88	RT.	D-1	365	
109+00	110+19	RT.	D-1	50	
110+54	110+60	RT.	D-1	100	1
115+00	115+57	RT.	D-1	86	

EROSION CONTROL MATTING

STA.	STA.	SIDE	LENGTH LIN. FT.	CLASS 3 SQ. YDS.
100+75.00	101+75.00	RT.	100	88.90
105+00.00	106+00.00	RT.	100	88.90
115+70.00	116+20.00	LT.	50	44.40

CONCRETE DITCH PAVING

STA.	STA.	SIDE	"W"	SQ. YDS.
98+00	100+75	RT.	7	213.89
104+00	105+00	RT.	7	77.78
108+50	115+70	LT.	7	560.00
116+20	120+67	LT.	7	347.67



INLET = 643.59 RT.
OUTLET = 633.90 LT.

INLET = 634.83 RT.
OUTLET = 626.26 LT.

8/1/2016

R009814.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.		009814	30	94

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-3-16

RESTRAINING CONDITION AREA

STA. 112+06 IN PLACE
18" x 12" x 26' ARCH C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL @ STA. 111+50
24" x 34' PIPE CULV'T.
LT. SIDE DRAIN
CONST. APPR. = 103 CU. YD.

P. I. = 115+10.77
Δ = 67°47'27.9" LT.
D = 7°56'53.3"
T = 484.32'
L = 852.92'
P. C. = 110+26.44
P. T. = 118+79.36
e = 0.084 '/'
Ls = 250'

STA. 116+10 CONSTRUCT
24" X 90' R.C. PIPE CULVERT
WITH HDWLS. LT. & RT.
(CLASS III) (TYPE 3 BEDDING)
WITH FES LT. & RT.
025 = 1.87 CFS D.A. = 4 ACRES
24" R.C. PIPE = 90 LIN. FT.
24" FES = 2 EACH

STA. 115+95 IN PLACE
24' x 50' R.C. PIPE CULVERT
REMOVE

CONCRETE DITCH PAVING

STA.	STA.	SIDE	"W"	SQ. YDS.
98+00	100+75	RT.	7	213.89
104+00	105+00	RT.	7	77.78
108+50	115+70	LT.	7	560.00
116+20	120+67	LT.	7	347.67

EROSION CONTROL MATTING

STA.	STA.	SIDE	LENGTH LIN. FT.	CLASS 3 SQ. YDS.
100+75.00	101+75.00	RT.	100	88.90
105+00.00	106+00.00	RT.	100	88.90
115+70.00	116+20.00	LT.	50	44.40

STA. 110+29 - COUNTY RD. 479 TURNOUT
CONSTRUCT APPR. = 975 CU. YD.

WIRE FENCE AND GATE

STA.	STA.	SIDE	TYPE	LIN. FT.	GATE
95+16	112+04	LT.	D-1	1738	
112+04	112+20	LT.	D-1		1
112+20	115+00	LT.	D-1	282	
96+32	99+88	RT.	D-1	365	
109+00	110+19	RT.	D-1	50	
110+54	110+60	RT.	D-1	100	1
115+00	115+57	RT.	D-1	86	

STA 120+66.86
END JOB 009814

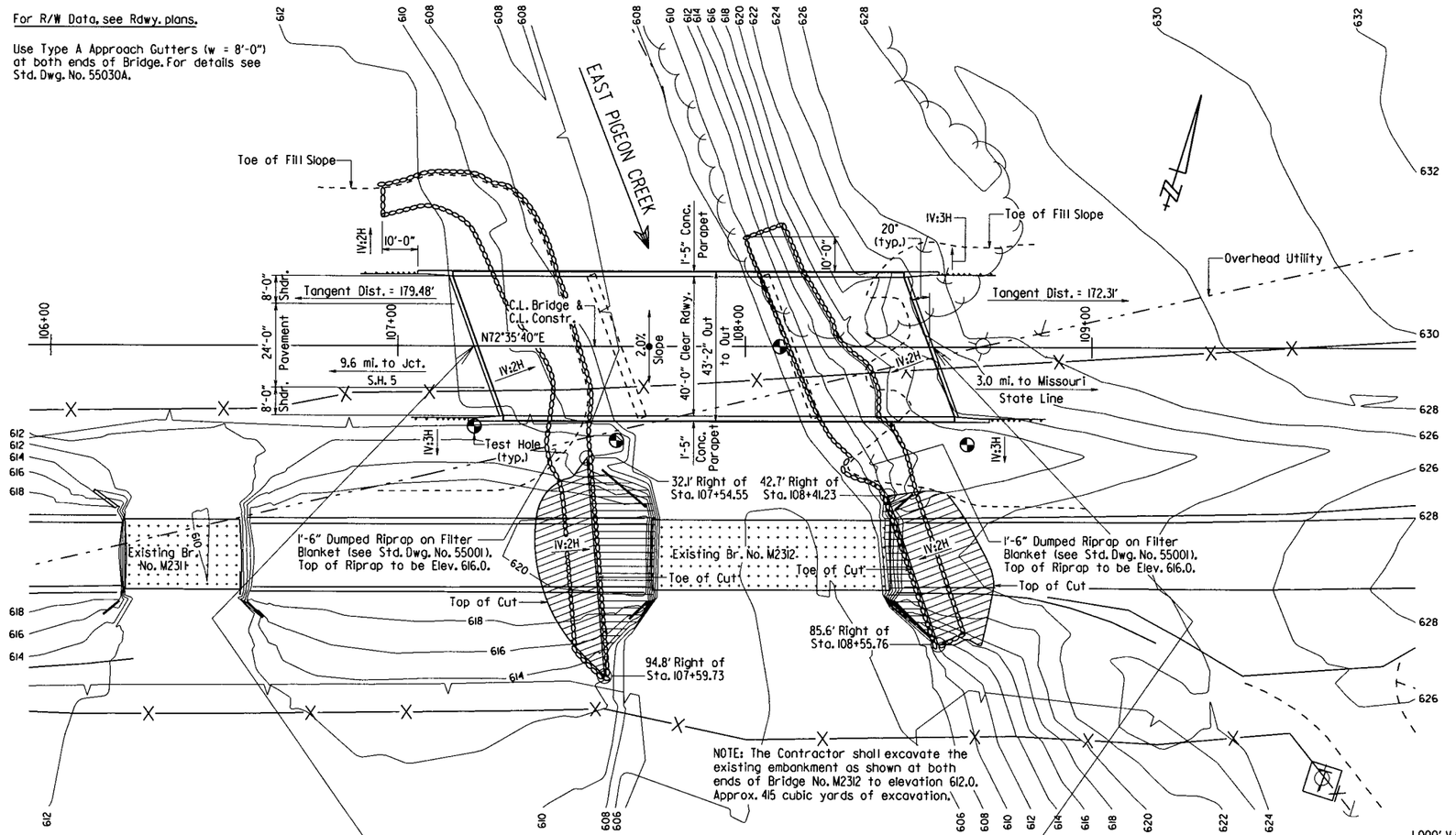
100' TRANSITION

PROPOSED R/W
CONST. LIMITS
EXISTING ROW
EXISTING ROW
PROPOSED R/W
CONST. LIMITS
N 04°48'12" E
P.O.E. 122+14.35
R. T. 118+79.36
P. I. 115+10.77
PLASTIC CAP MON. STAMPED FDOT 5304
PLASTIC CAP MON. STAMPED FDOT 5305
PLASTIC CAP MON. STAMPED FDOT 5306
PLASTIC CAP MON. STAMPED FDOT 5307
PLASTIC CAP MON. STAMPED FDOT 5308
PLASTIC CAP MON. STAMPED FDOT 5309
PLASTIC CAP MON. STAMPED FDOT

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.		009814	-	2
				①		07397 - LAYOUT - 58838		

For R/W Data, see Rdwy. plans.

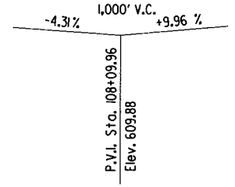
Use Type A Approach Gutters (w = 8'-0") at both ends of Bridge. For details see Std. Dwg. No. 55030A.



PLAN

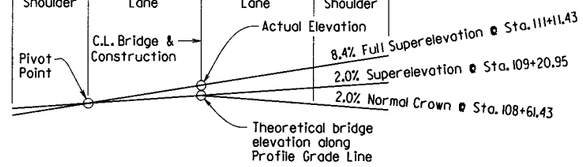
Bent No.	③C.L. Deck @ C.L. Bent to Low Seat of Cap
2	4'-0 1/16"
3	4'-0 11/16"

③Measured at working point.



VERTICAL CURVE DATA

Theoretical Elevation along C.L. Bridge & C.L. Constr. See "CROSS SLOPE TRANSITION SKETCH"



CROSS SLOPE TRANSITION SKETCH

Looking Ahead

HYDRAULIC DATA

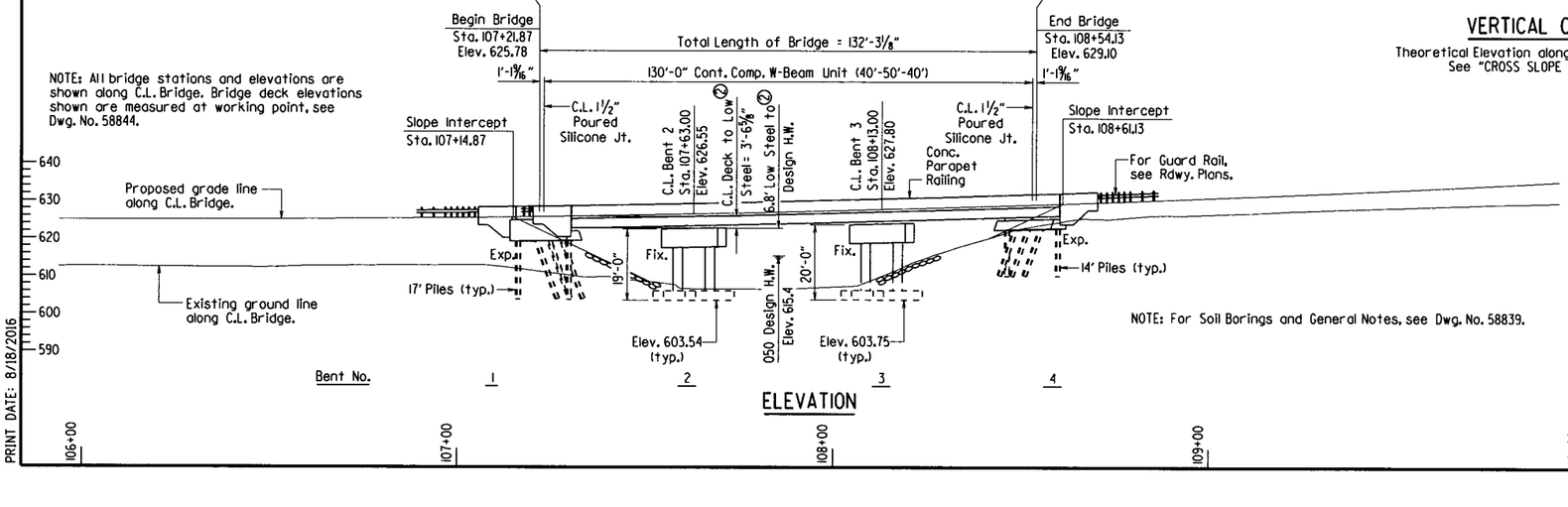
FLOOD DESCRIPTION	FREQUENCY	DISCHARGE	①NATURAL WATER SURFACE ELEVATION	WATER SURFACE ELEV. WITH BACKWATER
	YEARS	CFS	FEET	FEET
Design	50	4,710	613.0	615.4
Base	100	5,440	613.4	616.0
Extreme	500	7,290	614.5	617.5
Overtopping	>500	-	-	-

①Unconstricted water surface without structures or roadway approaches.

Drainage area = 9.7 square miles.
Historical H.W. Elev. = 616.9 ft.
0100 Backwater Elev. for existing structure = 615.6 ft.

②Proposed Low Bridge Chord Elev. = 622.16 feet and occurs @ Sta. 107+17.27.

NOTE: All bridge stations and elevations are shown along C.L. Bridge. Bridge deck elevations shown are measured at working point, see Dwg. No. 58844.



ELEVATION

NOTE: For Soil Borings and General Notes, see Dwg. No. 58839.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9235
CHARLES R. ELLIS
8-18-16
BRIDGE ENGINEER

PRINT DATE: 8/18/2016

SHEET 1 OF 2
LAYOUT OF BRIDGE OVER EAST PIGEON CREEK
E. PIGEON CREEK STR. & APPRS. (S)
BAXTER COUNTY

ROUTE 201 SEC. 1

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KWY DATE: 11/5/2014 FILENAME: b009814_ll.dgn
CHECKED BY: CRE DATE: 8/18/16 SCALE: 1" = 20'
DESIGNED BY: KWY DATE: 4/14

BRIDGE NO. 07397 DRAWING NO. 58838

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.		009814		
				07397 - LAYOUT - 58839				

GENERAL NOTES

BENCH MARK: Refer to Survey Control detail sheets for horizontal and vertical control data.

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, 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: HL93

SEISMIC PERFORMANCE ZONE: 1 S_{D1}=0.084 SITE CLASS = B

MATERIALS AND STRENGTHS:

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

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

STEEL PILING: All piling shall be HP 12x53 (Grade 50) and shall be driven with an approved air, steam or diesel hammer to a minimum safe bearing capacity of 95 tons per pile and into the material designated as Dolostone on the boring legend. Piling in end bents shall be driven after embankment to bottom of cap is in place. Lengths of piling shown are for estimating quantities and for use in determining payment for cut-off and build-up in accordance with Section 805. Actual pile lengths are to be determined in the field. The Contractor shall use approved steel H-Pile driving points on all piles.

FOOTINGS: Footings shall be set a minimum of 2' into material designated as Dolostone on the boring legend. The top of the footings at Bents 2 and 3 shall be set at or below natural ground as determined by the lowest natural ground elevation within the footprint of the footing or the elevations shown on the plans, whichever is lower. Foundations for footings shall be prepared in accordance with Subsection 801.04. Rock excavations shall be made to neat lines of the concrete footings. Care shall be exercised to avoid shattering of rock faces by excessive blasting. Concrete in footings shall be poured directly against excavated surfaces of rock. Excavations shall be backfilled and compacted to the level of the existing ground 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.

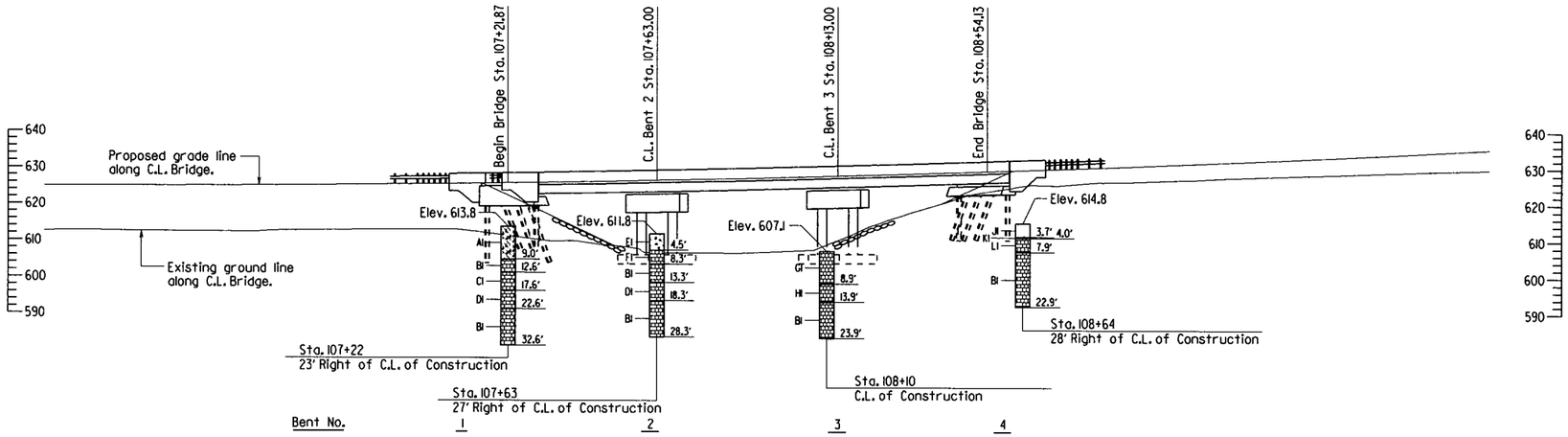
PROTECTIVE SURFACE TREATMENT: Class 2 Protective Surface Treatment shall be applied to the roadway surface and to the roadway face and top of the concrete parapet rail.

DETAIL DRAWINGS	DRAWING NOS.
End Bents	58840-58842
Intermediate Bents	58843
130'-0" Cont. Comp. W-Beam Unit	58844-58848
Elastomeric Bearings	58849
General Notes	55006
Steel Piling	55020
Type A Approach Gutters	55030A

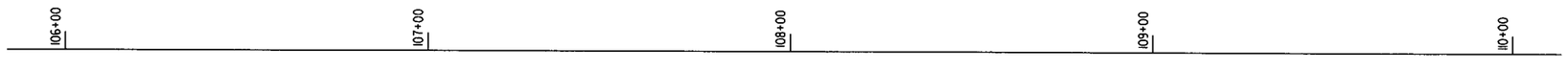
EXISTING BRIDGES: Existing Bridge No. M2311 (Log Mile 9.60) is approximately 23.3' wide and 36.0' long and consists of reinforced concrete slab spans supported by masonry abutments and intermediate bents. Existing Bridge No. M2312 (Log Mile 9.62) is approximately 23.7' wide and 71.0' long and consists of a concrete deck on steel beams supported by masonry abutments and intermediate bent. Existing Bridge No. M2312 has been modified with two assisting bents made of steel columns, steel cap and concrete footings.

REMOVAL AND SALVAGE: After the new bridge is open to traffic, existing Bridge Nos. M2311 and M2312 shall be removed in accordance with Section 205. All material from the existing bridges shall become the property of the Contractor.

MAINTENANCE OF TRAFFIC: See Roadway Plans.



ELEVATION OF SOIL BORINGS



BORING LEGEND

Al-Dry, Very Dense, Brown Sand with Clay, Gravel (Dolostone Fragments) and some Organic Matter
Bl-DOLOSTONE - Gray, Medium Bedded, Slightly Weathered, Hard, with Slight Dip
Cl-DOLOSTONE WITH DARK GRAY SHALE PARTINGS - Gray, Medium Bedded, Slightly Weathered, Hard, with Slight Dip
Dl-DOLOSTONE - Gray and Brown, Medium Bedded, Slightly Weathered, Vuggy, Hard, with Slight Dip
El-Dry, Very Dense, Brown Sand with Gravel (Dolostone Fragments) and some Organic Matter
Fl-DOLOSTONE - Gray and Brown, Medium Bedded, Slightly Weathered, Hard, with Slight Dip and some Fractured Layers
Gl-DOLOSTONE - Brown and Gray, Medium Bedded, Slightly Weathered, Hard, with Slight Dip
Hl-DOLOSTONE - Brown and Gray, Medium Bedded, Slightly Weathered, Vuggy, Hard, with Slight Dip and some Fractured Layers
Jl-Moist, Medium Dense, Brown Sand
Kl-DOLOSTONE - Gray, Weathered, Moderately Hard
Ll-DOLOSTONE - Gray and Brown, Medium Bedded, Slightly Weathered, Hard, with Slight Dip and Fractured Layers

"N" VALUES

Sta. 107+22 - 23' Right of Center Line of Construction
4.5- 5.5, N=62
9.0- 9.1, N=60(1")

Sta. 107+63 - 18' Right of Center Line of Construction
4.5- 4.6, N=60(1")

Sta. 108+10 - Center Line of Construction

Sta. 108+64 - 20' Right of Center Line of Construction
3.7- 4.0, N=60(3")

STATE OF ARKANSAS
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No. 9235
8-18-14
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SHEET 2 OF 2
LAYOUT OF BRIDGE
OVER EAST PIGEON CREEK
E. PIGEON CREEK STR. & APPRS. (S)
BAXTER COUNTY

ROUTE 201 SEC. 1
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: KWY DATE: 11/5/2014 FILENAME: b009814_ll.dgn
CHECKED BY: CMH DATE: 8/18/16 SCALE: 1" = 20'
DESIGNED BY: KWY DATE: 11/14

BRIDGE NO. 07397 DRAWING NO. 58839

PRINT DATE: 8/18/2016

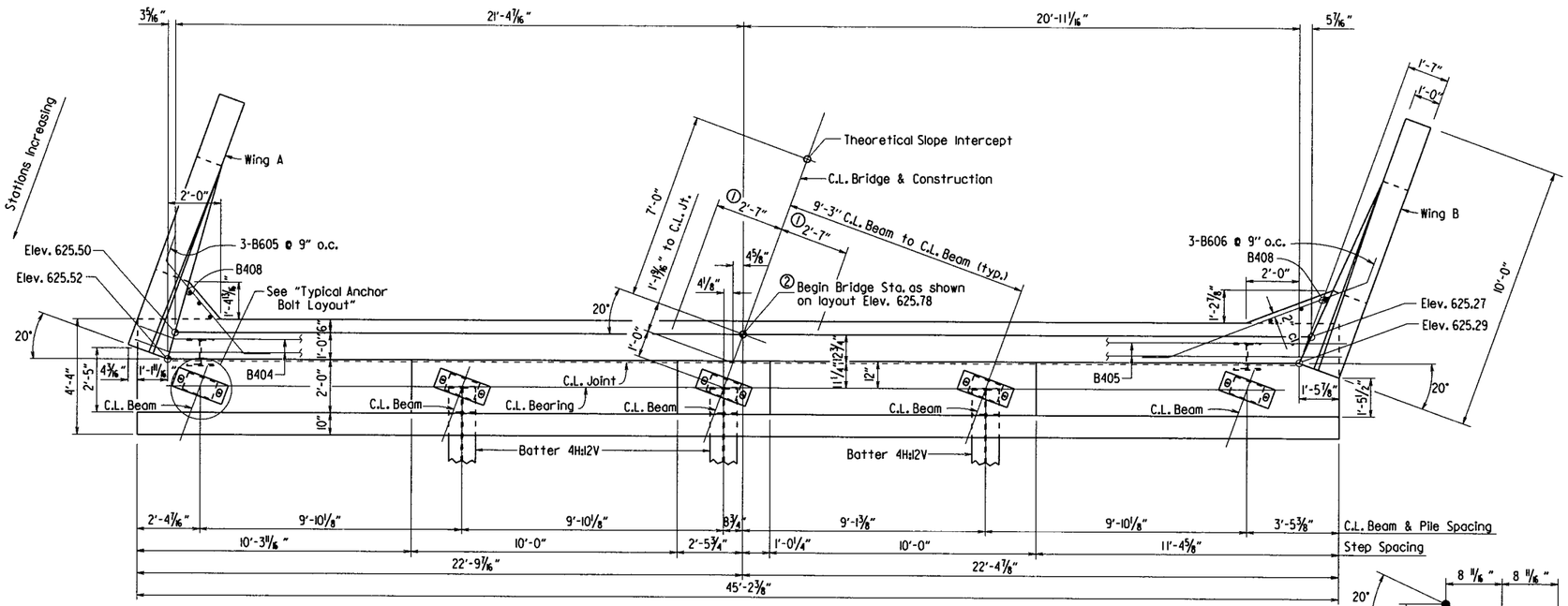
Class 2 Protective Surface Treatment shall be applied to the top of the backwall and to the roadway face and top of the transition rail. For details of wings, see Dwg. No. 58842.

① See "ROUNDING DETAIL" Dwg. No. 58844

② Elevation at Working Point

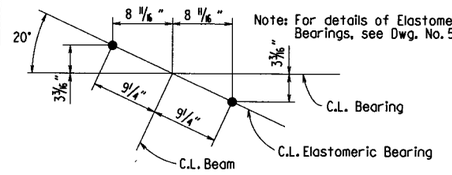
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		009814	33	91

① 07397 - DETAILS OF END BENTS - 58840

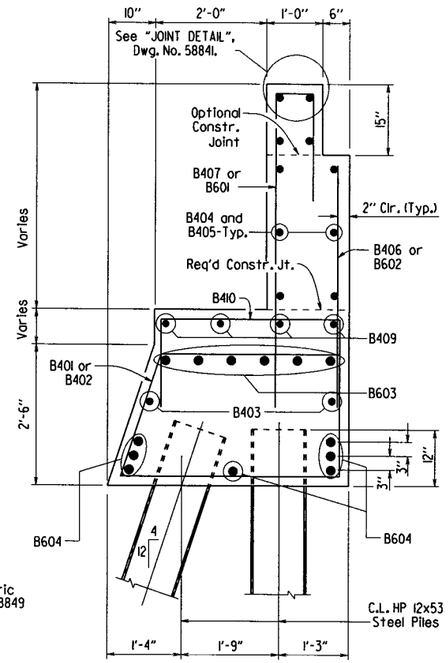


PLAN OF BENT I

3/8"=1'-0"



Note: For details of Elastomeric Bearings, see Dwg. No. 58849

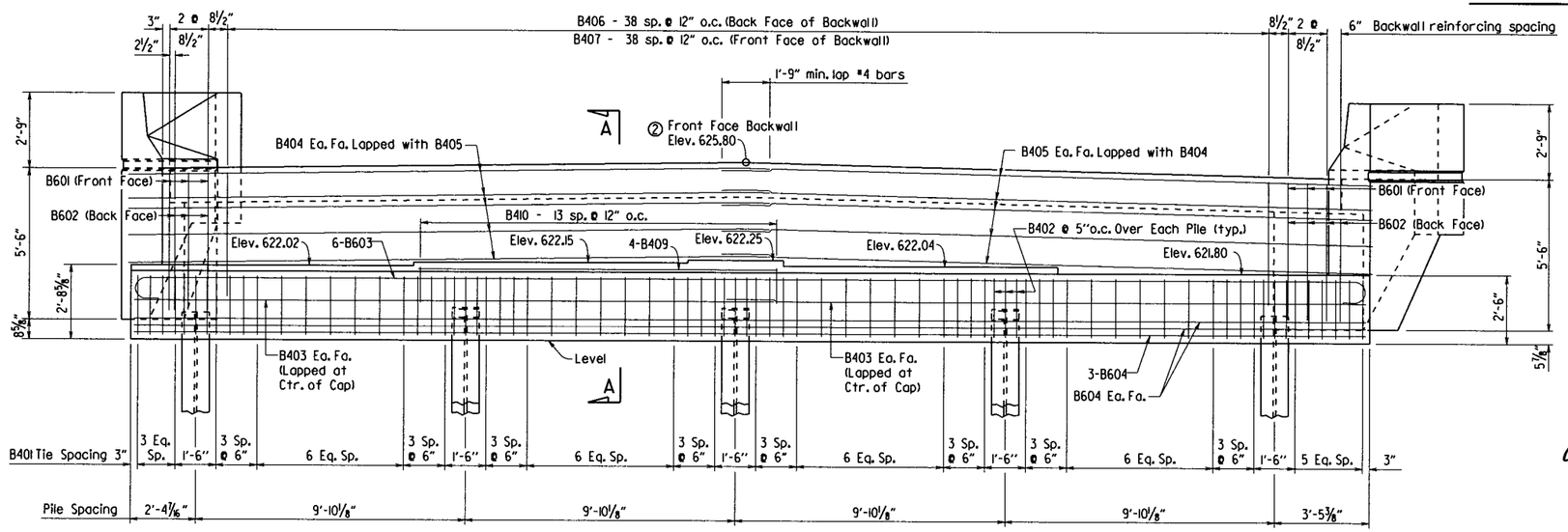


SECTION A-A

No Scale

TYPICAL ANCHOR BOLT LAYOUT

NTS



ELEVATION OF BENT I

Looking Back

3/8"=1'-0"

NOTES:

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

No portion of the backwall shall be poured before beams are in place. The portion of the backwall above the optional construction joint at the paving bracket shall not be placed until the deck pour has been made. Refer to "Expansion Device Installation at End Bents" note on Dwg. No. 58848.

All piling shall be Grade 50.

For additional information, see Layout.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-19-16
CHARLES R. ELLIS
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SHEET 1 OF 3
DETAILS OF END BENTS
EAST PIGEON CREEK

ROUTE 201 SEC. 1

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: dhp DATE: 9-27-15 FILENAME: b009814_b1.dgn
CHECKED BY: KWY DATE: 7/18/16 SCALE: as shown
DESIGNED BY: DHP DATE: 7-15
BRIDGE NO. 07397 DRAWING NO. 58840

PRINT DATE: 7/18/2016

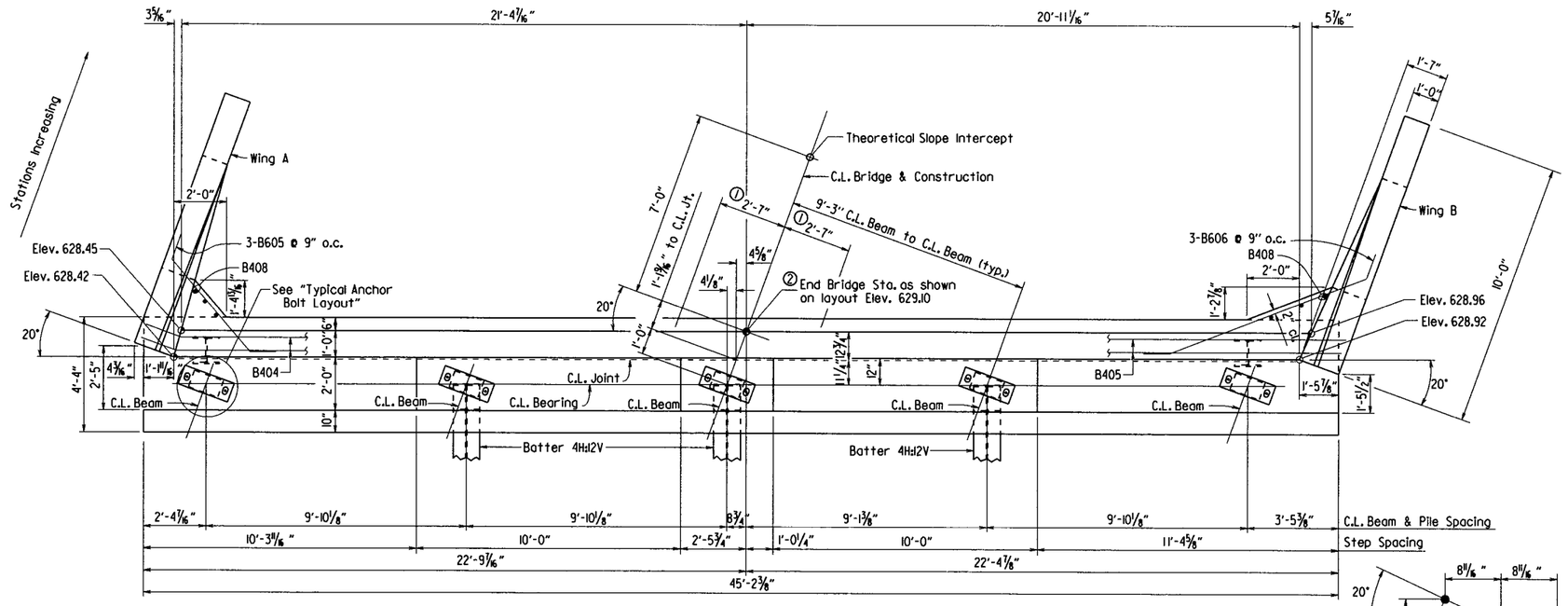
Class 2 Protective Surface Treatment shall be applied to the top of the backwall and to the roadway face and top of the transition rail. For details of wings, See Dwg. No. 58842

① See "ROUNDING DETAIL" Dwg. No. 58844

② Elevation at Working Point

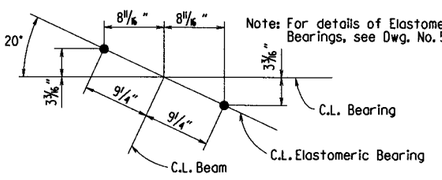
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		009814	34	94

① 07397 - DETAILS OF END BENTS - 58841

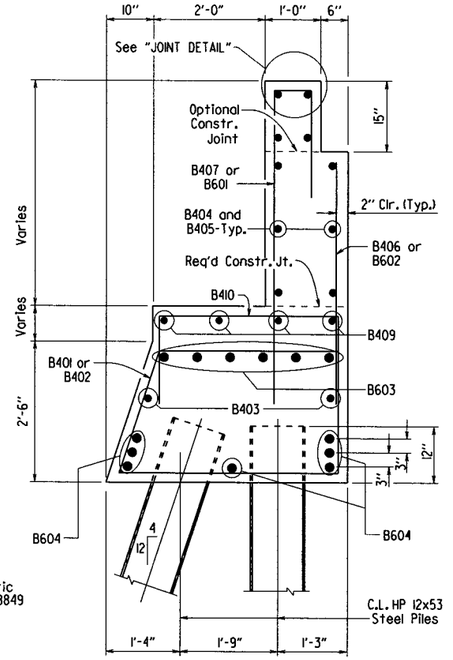


PLAN OF BENT 4

⅜"=1'-0"

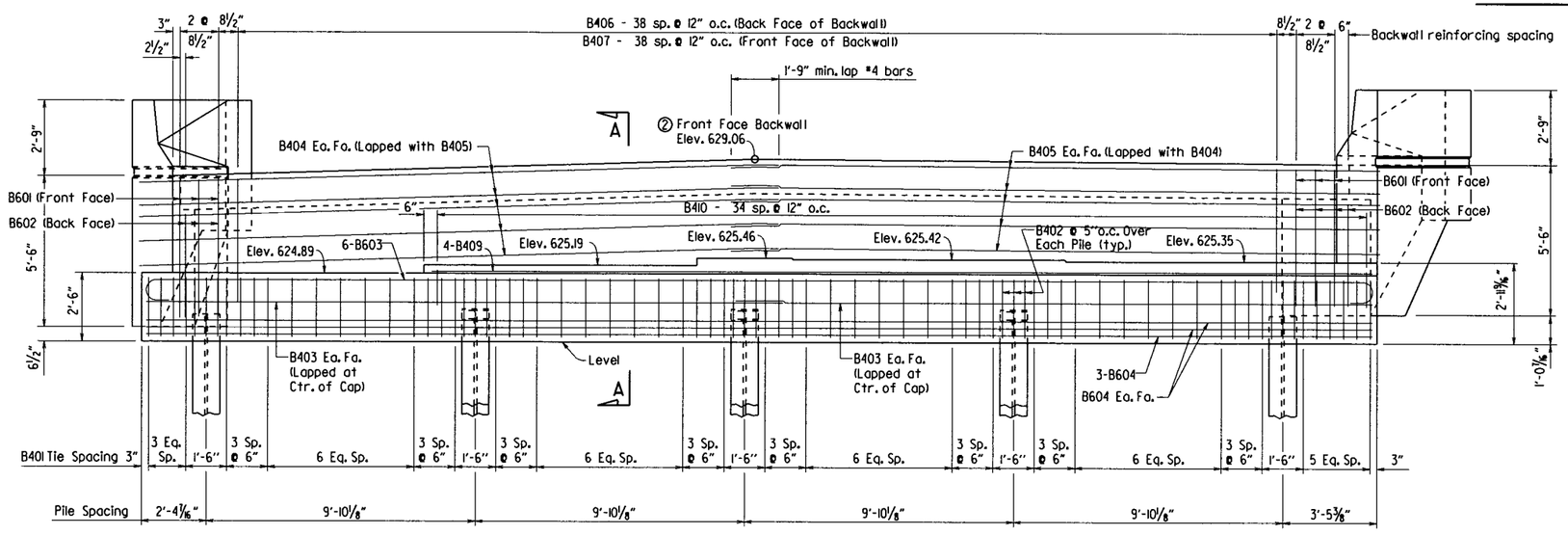


Note: For details of Elastomeric Bearings, see Dwg. No. 58849



SECTION A-A

No Scale



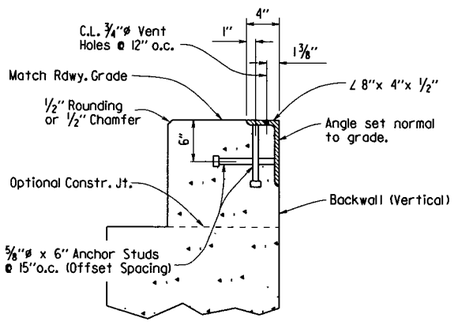
ELEVATION OF BENT 4

Looking Ahead

⅜"=1'-0"

TYPICAL ANCHOR BOLT LAYOUT

NTS



For additional Joint Details See Dwg. No. 58848

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

JOINT DETAIL

No Scale

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-19-16
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 3
DETAILS OF END BENTS
EAST PIGEON CREEK

ROUTE 201 SEC. 1

ARKANSAS STATE HIGHWAY COMMISSION

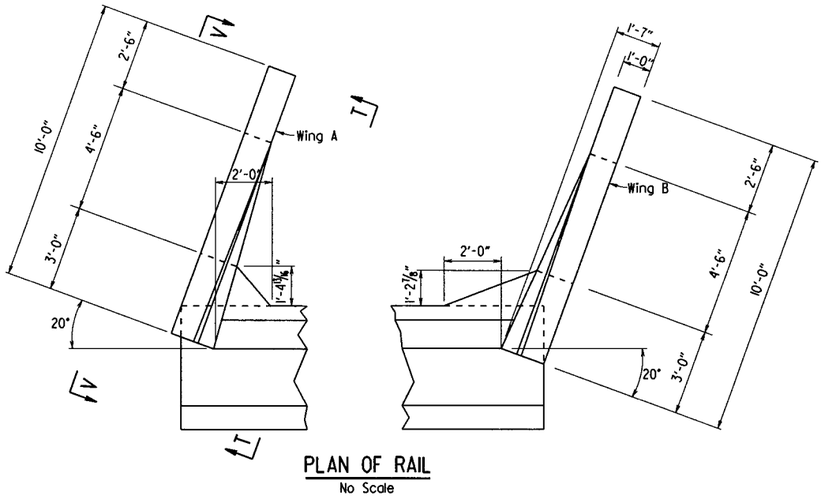
LITTLE ROCK, ARK.

DRAWN BY: dhp DATE: 9-27-15 FILENAME: b009814_bi.dgn
CHECKED BY: KWY DATE: 7/18/16 SCALE: as shown
DESIGNED BY: DHP DATE: 7-15
BRIDGE NO. 07397 DRAWING NO. 58841

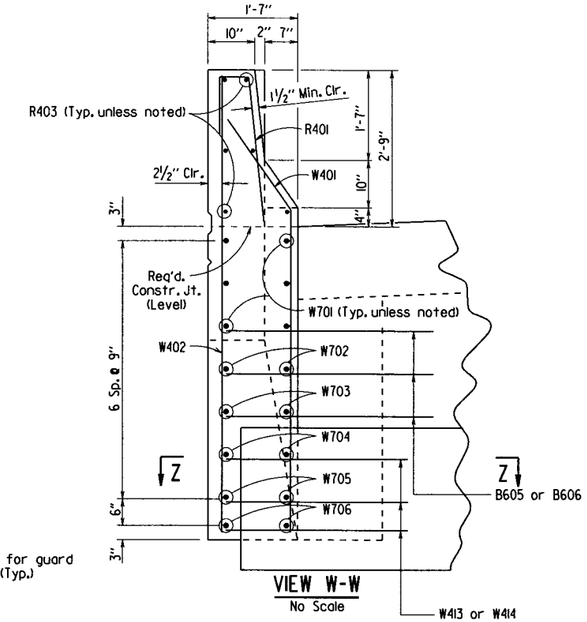
PRINT DATE: 7/18/2016

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.		009814	35	94

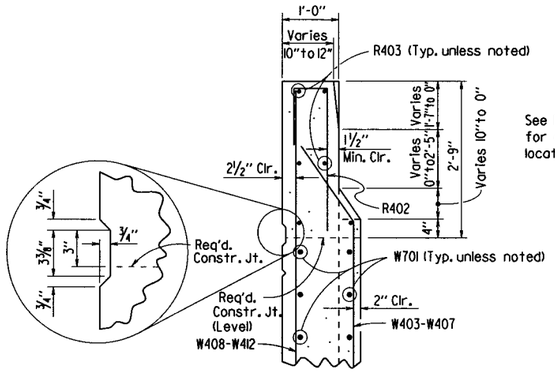
(1) 07397 - DETAILS OF END BENTS - 58842



PLAN OF RAIL
No Scale



VIEW W-W
No Scale



SECTION X-X
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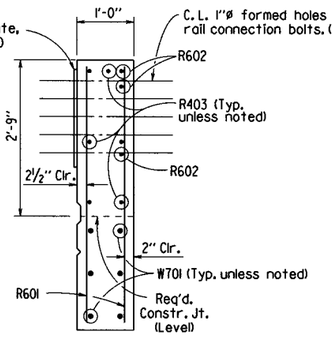

SECTION Y-Y
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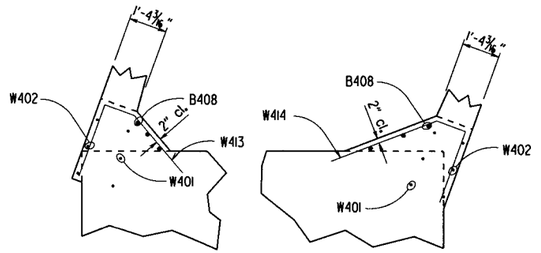
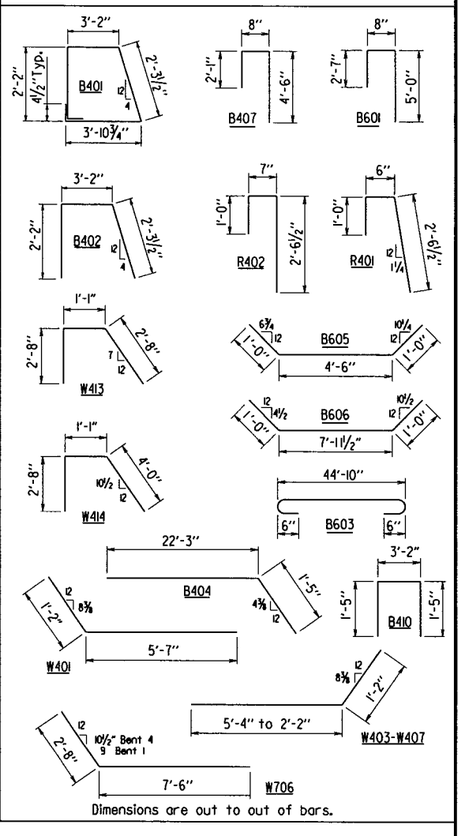


SECTION Z-Z
No Scale

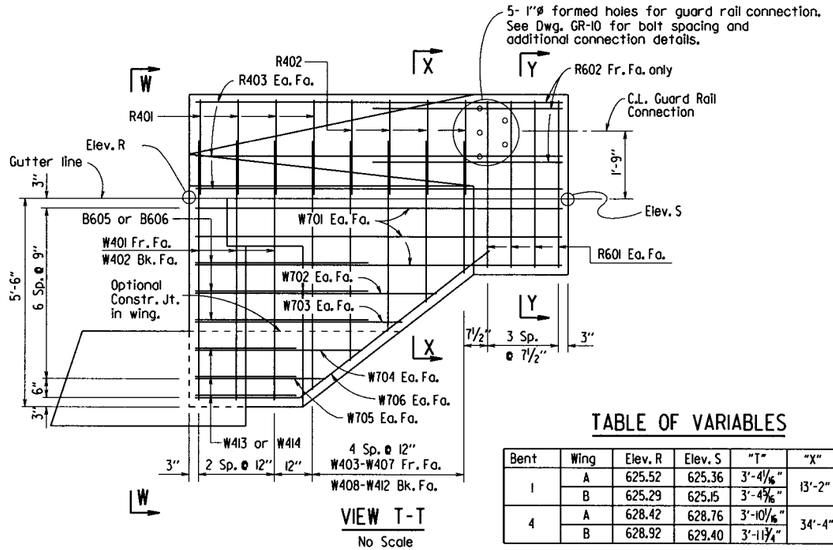
BAR LIST-PER BENT

Mark	No. Req'd.	Length	Pin Dia.
B401	62	11'-11"	2"
B402	15	7'-6"	2"
B403	4	23'-4"	Str.
B404	10	23'-8"	2"
B405	10	23'-8"	Str.
B406	39	3'-3"	Str.
B407	39	7'-1"	2"
B408	6	3'-11"	Str.
B409	4	"X"	Str.
B410	"Y"	5'-10"	2"
B601	6	8'-0"	4½"
B602	7	3'-9"	Str.
B603	6	46'-2"	4½"
B604	7	44'-10"	Str.
B605	3	7'-6"	4½"
B606	3	10'-0"	4½"
R401	8	3'-11'	2"
R402	8	4'-0"	2"
R403	12	9'-8"	Str.
R601	16	4'-4"	Str.
R602	6	5'-0"	Str.
W401	6	6'-9"	2"
W402	6	7'-11"	Str.
W403-W407	2 ea.	6'-6" to 3'-4"	2"
W408-W412	2 ea.	7'-8" to 4'-6"	Str.
W413	3	6'-4"	2"
W414	3	7'-8"	2"
W701	12	9'-8"	Str.
W702	4	6'-5"	Str.
W703	4	5'-6"	Str.
W704	4	4'-6"	Str.
W705	4	3'-6"	Str.
W706	4	10'-2"	5¼"

Bending Diagram



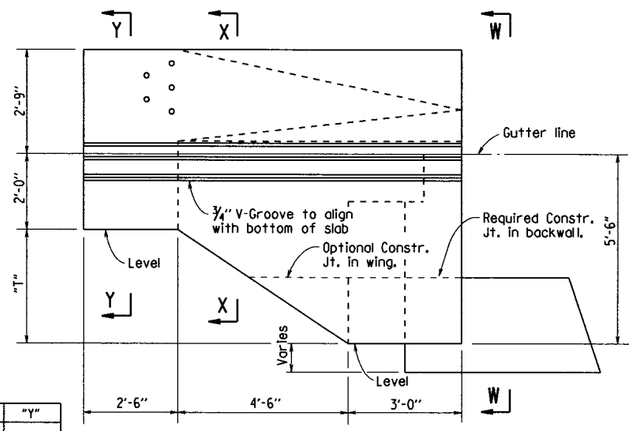
Dimensions are out to out of bars.



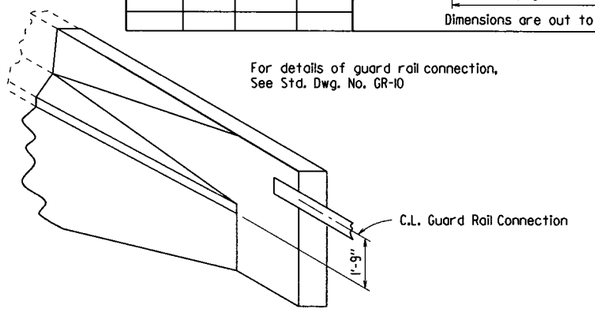
VIEW T-T
No Scale

TABLE OF VARIABLES

Bent	Wing	Elev. R	Elev. S	"T"	"X"	"Y"
1	A	625.52	625.36	3'-4 1/16"	13'-2"	14
	B	625.29	625.15	3'-4 5/16"		
4	A	628.42	628.76	3'-10 1/16"	34'-4"	35
	B	628.92	629.40	3'-11 3/4"		



VIEW V-V
No Scale



THREE DIMENSIONAL VIEW OF RAIL
No Scale

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-19-16
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 3 OF 3
DETAILS OF END BENTS
EAST PIGEON CREEK

ROUTE 201 SEC. 1
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: dhp DATE: 9-27-15 FILENAME: b020542_bl.dgn
CHECKED BY: KWY DATE: 7/19/16 SCALE: as shown
DESIGNED BY: DHP DATE: 7-15
BRIDGE NO. 07397 DRAWING NO. 58842

PRINT DATE: 7/19/2016

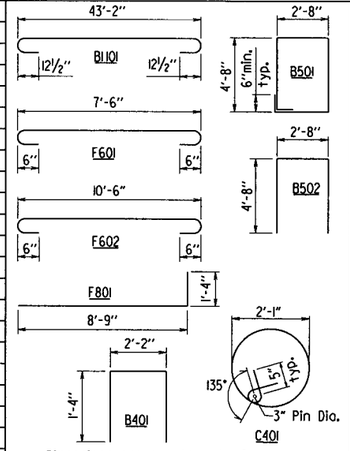
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		009814	36	94

(1) 07397 - DETAILS OF INT. BENTS - 58843

BAR LIST (PER BENT)

Mark	No. Req'd.	Length	Pin Dia.
B401	24	4'-8"	2"
B402	3	23'-2"	Str.
B501	50	15'-2"	2½"
B502	4	11'-10"	2½"
B503	10	43'-2"	Str.
B1001	6	43'-2"	Str.
B1101	5	46'-2"	1¼"
C401	"K"	7'-8"	3"
C801	22	"L"	Str.
F601	42	8'-10"	4½"
F602	30	11'-10"	4½"
F603	22	7'-6"	Str.
F604	16	10'-6"	Str.
F801	22	9'-11"	6"

Bending Diagram

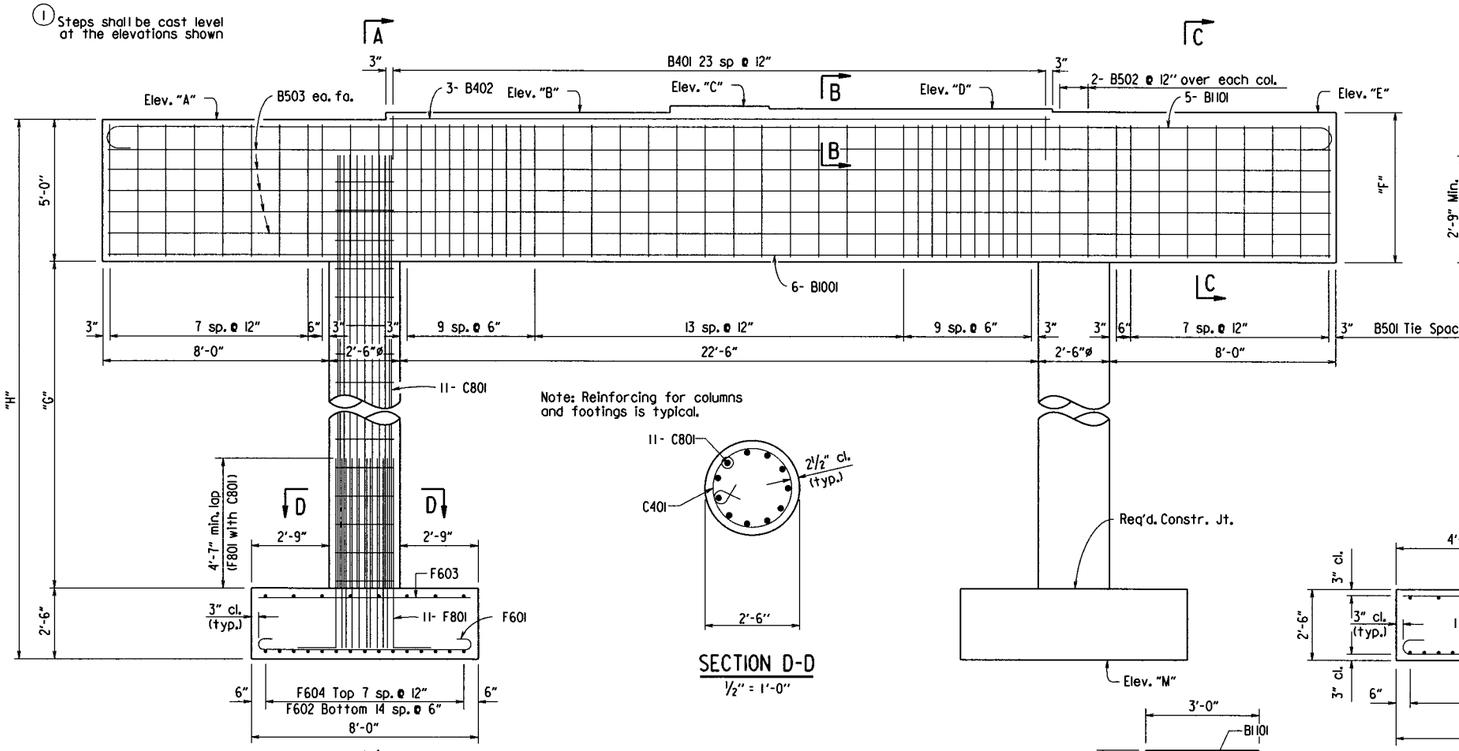


Dimensions are out to out of bars.

PLAN

3/8" = 1'-0"

(1) Steps shall be cast level at the elevations shown



SECTION D-D

1/2" = 1'-0"

ELEVATION

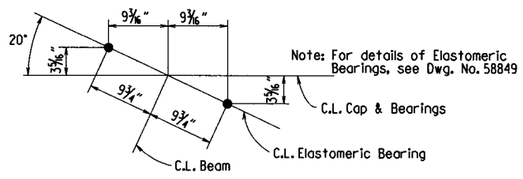
Looking Ahead

3/8" = 1'-0"

SECTION A-A

3/8" = 1'-0"

Note: Reinforcing and dimensions are typical for each column and footing unless otherwise shown.



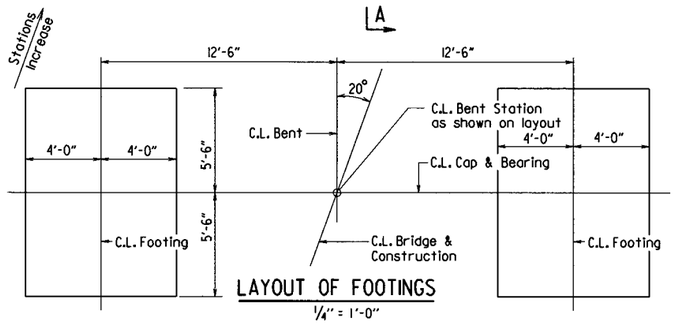
TYPICAL ANCHOR BOLT LAYOUT

NTS

NOTES:

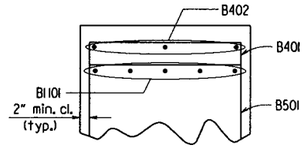
For Standard General Notes, See Std. Dwg. No. 55006.

For additional information, see Layout.



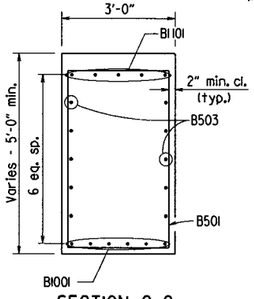
LAYOUT OF FOOTINGS

1/4" = 1'-0"



SECTION B-B

3/4" = 1'-0"



SECTION C-C

1/2" = 1'-0"

TABLE OF VARIABLES

Bent	Elev. "A"	Elev. "B"	Elev. "C"	Elev. "D"	Elev. "E"	"F"	"G"	"H"	"J"	"K"	"L"	Elev. "M"
2	622.54	622.80	623.03	622.94	622.83	5'-3½"	11'-6"	19'-0"	14	30	16'-3"	603.54
3	623.75	624.03	624.28	624.22	624.13	5'-4⅝"	12'-6"	20'-0"	15	32	17'-3"	603.75

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-19-16
CHARLES R. ELLIS
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DETAILS OF INTERMEDIATE BENTS EAST PIGEON CREEK

ROUTE 201 SEC. 1

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

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BRIDGE NO. 07397

DRAWING NO. 58843

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				6	ARK.			
				JOB NO.		009814	37	94
				①	07397 - SPAN DETAILS - 58844			

Slab Reinforcing:

Longitudinal: S402E as shown
S601E as shown over int. supports, see "Reinforcing Plan & Deck Pouring Sequence", Dwg. No. 58846.

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

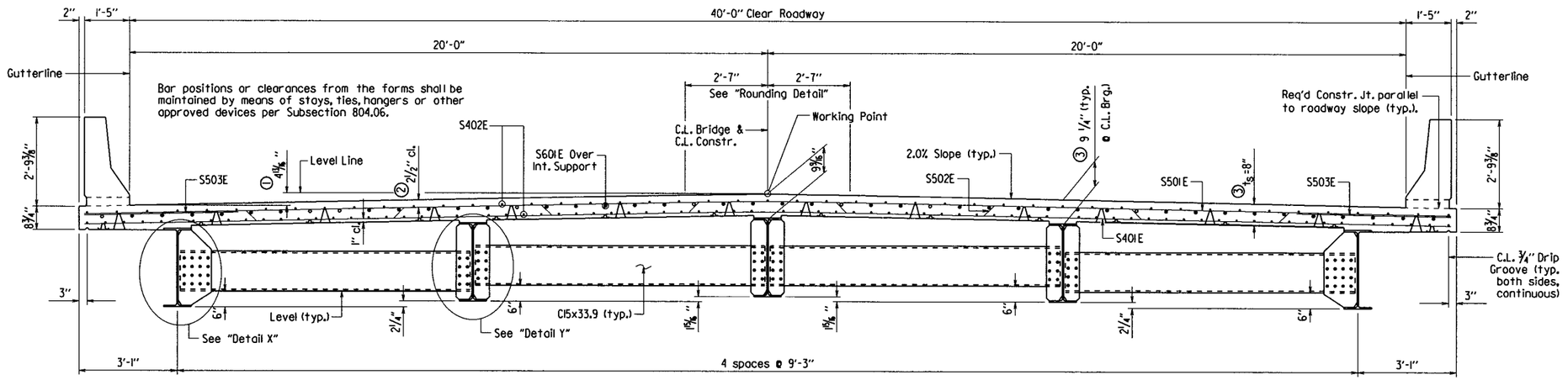
NOTE: At the Contractor's option, two straight epoxy coated #5 bars may be substituted for bar S502E. Payment for reinforcing will be based on the weight of bar S502E.

NOTE: Class 2 Protective Surface Treatment shall be applied to the Roadway Surface and the Roadway Face and top of the Concrete Parapet Rail.

① Working point to gutterline.

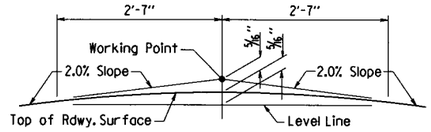
② Tolerance: Minus = 1/4"; Plus equal to the amount of slab thickening used to meet slab thickness tolerance. See "Adjustment for Slab Thickness Tolerance".

③ See "Adjustment for Slab Thickness Tolerance".



TYPICAL ROADWAY SECTION

1/2" = 1'-0"



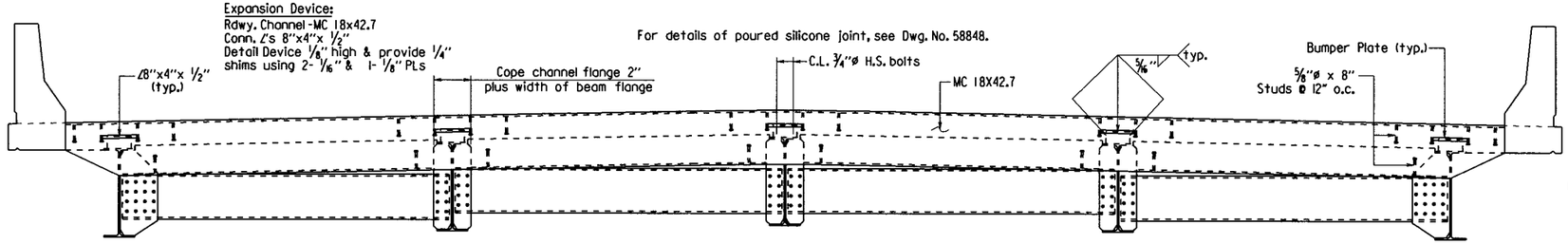
NOTE: Working Point matches Theoretical Roadway Grade.

ROUNDING DETAIL

NO SCALE

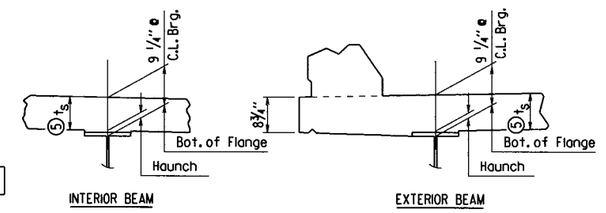
t_s = slab thickness as shown in "Typical Roadway Section"

Expansion Device:
Rdwy. Channel - MC 18x42.7
Conn. ∠'s 8"x4"x 1/2"
Detail Device 1/8" high & provide 1/4" shims using 2- 1/16" & 1- 1/8" PLs



TYPICAL ROADWAY SECTION NEAR JOINT

Looking Ahead Bent 1
Looking Back Bent 4
1/2" = 1'-0"



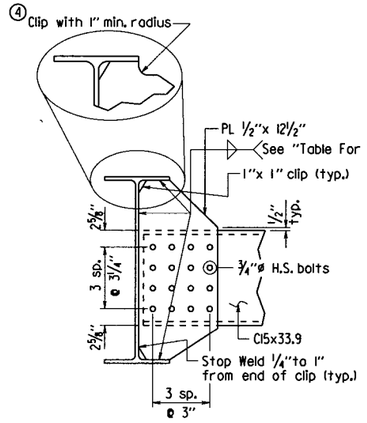
⑤ Tolerance when removable deck forming is used is + 1/2", - 1/4". Haunch forming is required and shall be adjusted to maintain slab thickness tolerance.

ADJUSTMENT FOR SLAB THICKNESS TOLERANCE

NO SCALE

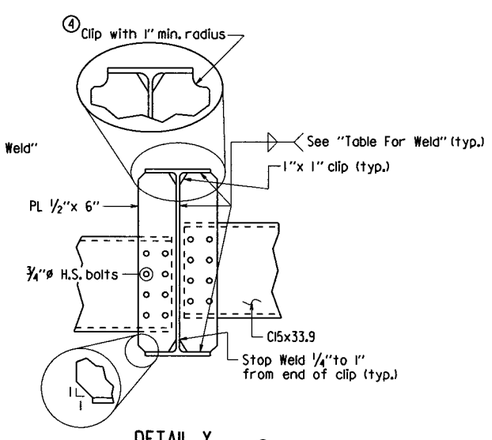
NOTES:
Haunch dimension may vary within the following limits to maintain the grade and slab thickness tolerance: Minimum occurs when top flange contacts bottom reinforcing steel; Maximum = top flange thickness plus 1 1/4". No increase in concrete and structural steel quantities will be made to maintain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



DETAIL X

1" = 1'-0"



DETAIL Y

1" = 1'-0"

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

TABLE FOR WELD

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

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

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-19-16
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SHEET 1 OF 5
DETAILS OF
130'-0" CONTINUOUS
COMPOSITE W-BEAM UNIT
EAST PIGEON CREEK

ROUTE 201 SEC. 1
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: EOR DATE: 6/11/2015 FILENAME: b009814_sl.dgn
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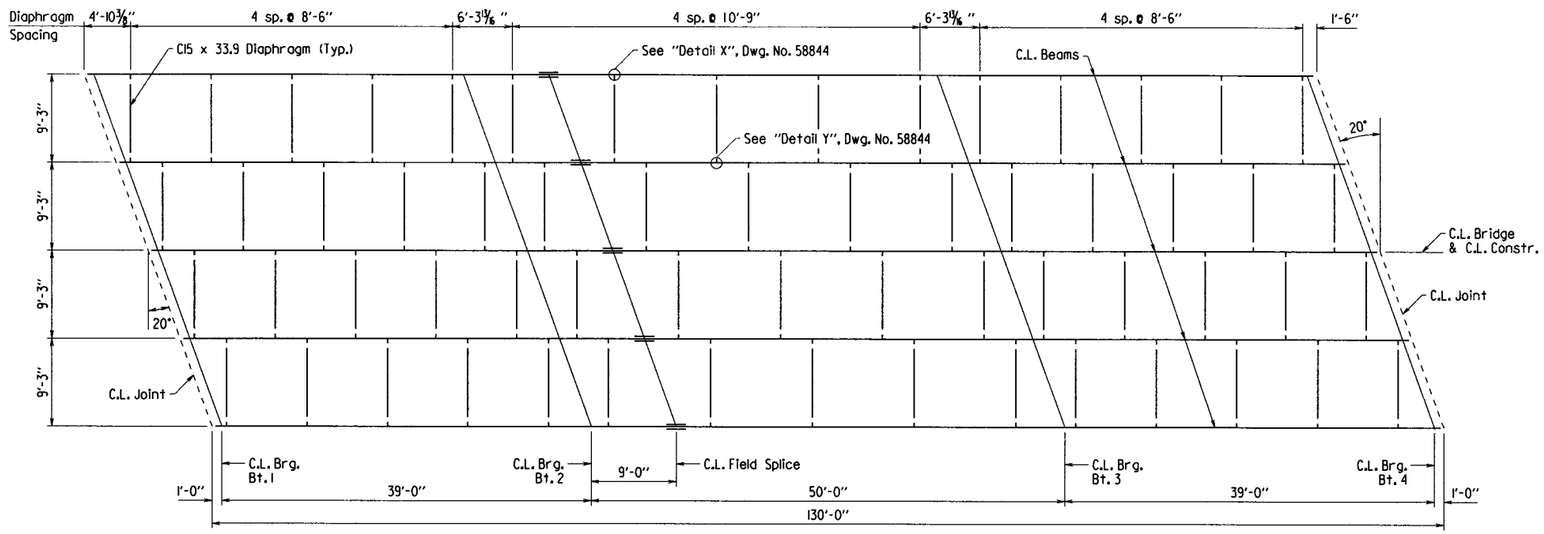
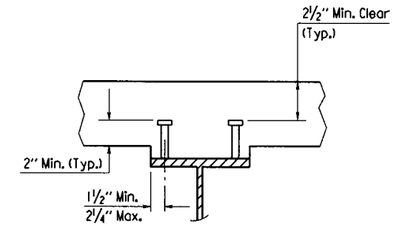
				6	ARK.			
				JOB NO.		009814	38	94
				07397 - SPAN DETAILS - 58845				



FRAMING PLAN

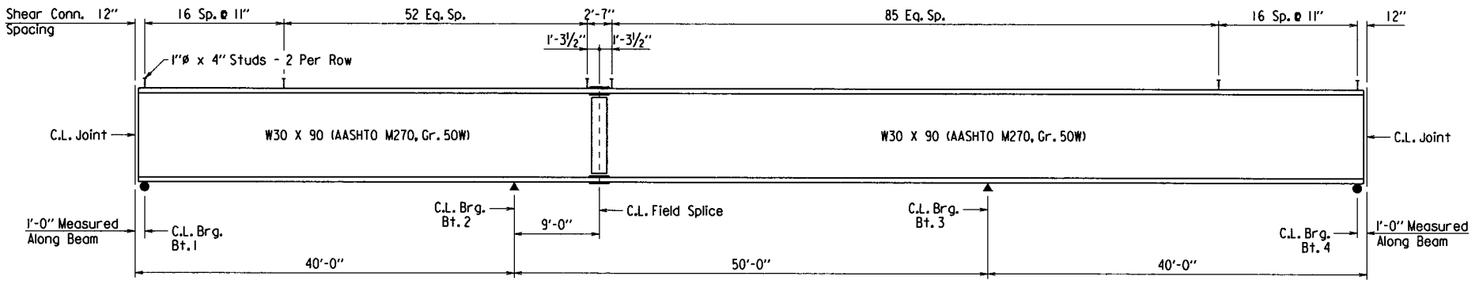
1/8" = 1-0"



Stud Shear Connectors shown shall be 1"ø x 4" long, granular flux filled, solid fluxed or equal, and automatically end welded to the beam flange in accordance with the recommendations of the Manufacturer.

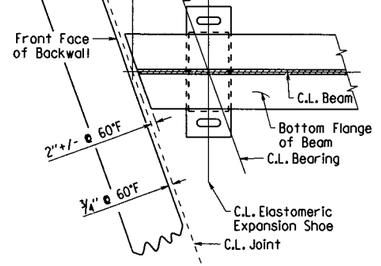
SHEAR CONNECTOR DETAIL

NO SCALE



TYPICAL BEAM ELEVATION

NO SCALE

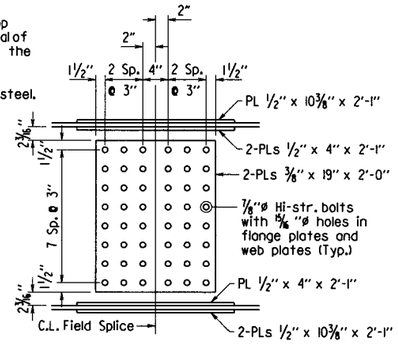


PLAN OF BEARING AT END BENTS

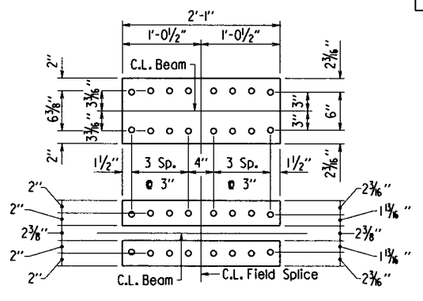
NO SCALE

NOTES:
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.

All Field Splice Plates shall be AASHTO M270, Gr. 50W steel.
All Field Splice Bolts shall be ⅞"ø H.S. Bolts.
All Field Splice Bolt Holes shall be 15/16 "ø.



WEB SPLICE



FLANGE SPLICE

FIELD SPLICE - DETAILS

1" = 1'-0"

All structural steel shall be AASHTO M 270, Grade 50W unless otherwise noted and shall be paid for as "Structural Steel in Beam Spans (M 270, Gr. 50W)". See Std. Dwg. No. 55006 for additional notes.

STATE OF ARKANSAS
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REGISTERED PROFESSIONAL ENGINEER
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7-19-16
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SHEET 2 OF 5
DETAILS OF
130'-0" CONTINUOUS
COMPOSITE W-BEAM UNIT
EAST PIGEON CREEK

ROUTE 201 SEC. 1
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: EOR DATE: 6/11/2015 FILENAME: b009814_sl.dgn
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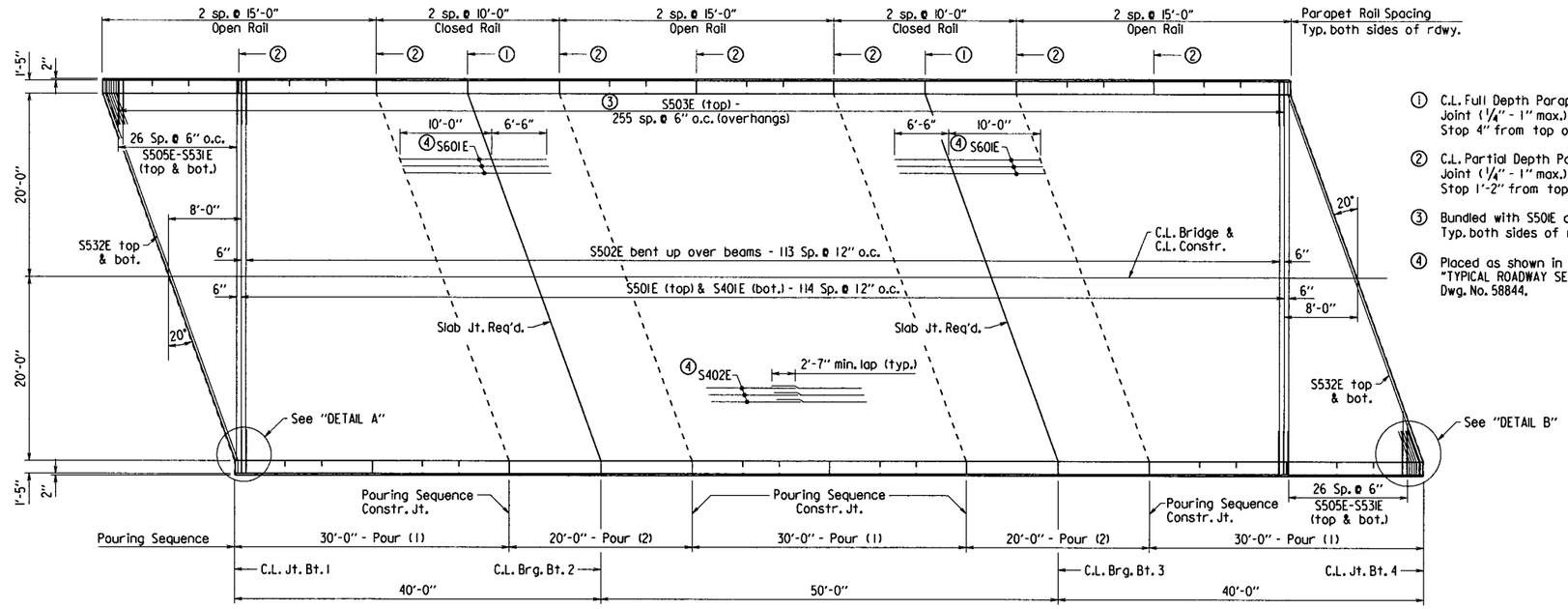
				6	ARK.			
				JOB NO.		009814	39	94
				①	07397 - SPAN DETAILS - 58846			



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

② C.L. Partial Depth Parapet Joint (1/4" - 1" max.) Stop 1'-2" from top of slab.

③ Bundled with S501E and S502E Typ. both sides of rdwy.

④ Placed as shown in "TYPICAL ROADWAY SECTION", Dwg. No. 58844.

REINFORCING PLAN & DECK POURING SEQUENCE

1/8" = 1-0"

NOTE: For bar list and parapet details, see Dwg. No. 58847.

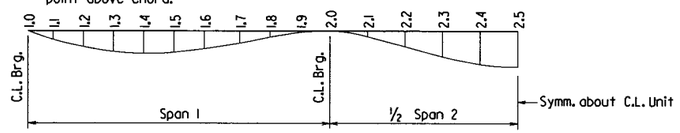
Pours with the same number may be placed simultaneously or separately. All Pours (1) must be placed before Pours (2) can be placed. A minimum 48 hours shall elapse between the end of a pour and the start of the next pour. A minimum of 72 hours shall elapse between the end of a pour and the start of an adjacent pour. A minimum of 72 hours shall elapse between completion of the slab and the pouring of the parapet railing. 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. 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.

TABLE OF DEAD LOAD DEFLECTIONS (INCHES)

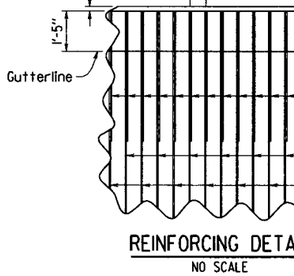
Span	Point of Deflection	Structural Steel		Structural Steel + Slab		Structural Steel + Slab + Parapet	
		Int. Beam	Ext. Beam	Int. Beam	Ext. Beam	Int. Beam	Ext. Beam
1	0	0.000	0.000	0.000	0.000	0.000	0.000
	0.1	0.010	0.008	0.087	0.071	0.091	0.077
	0.2	0.018	0.015	0.160	0.130	0.167	0.140
	0.3	0.023	0.020	0.209	0.170	0.218	0.184
	0.4	0.025	0.021	0.228	0.186	0.237	0.201
	0.5	0.024	0.020	0.217	0.176	0.226	0.190
	0.6	0.020	0.017	0.179	0.146	0.186	0.158
	0.7	0.014	0.012	0.123	0.100	0.128	0.108
	0.8	0.007	0.006	0.062	0.051	0.065	0.055
	0.9	0.002	0.001	0.014	0.011	0.015	0.012
2	0	0.000	0.000	0.000	0.000	0.000	0.000
	0.1	0.006	0.005	0.056	0.045	0.058	0.049
	0.2	0.017	0.015	0.157	0.128	0.164	0.138
	0.3	0.029	0.024	0.260	0.212	0.271	0.229
	0.4	0.037	0.031	0.335	0.272	0.349	0.294
	0.5	0.040	0.034	0.362	0.294	0.377	0.318
C.L. Unit							

This table is symmetrical about C.L. Unit

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

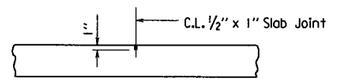


DEAD LOAD DEFLECTION DIAGRAM



REINFORCING DETAIL

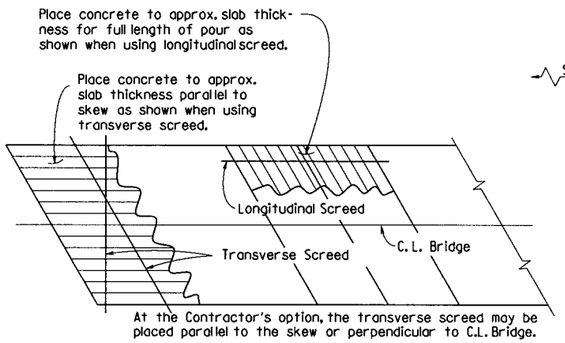
NO SCALE



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

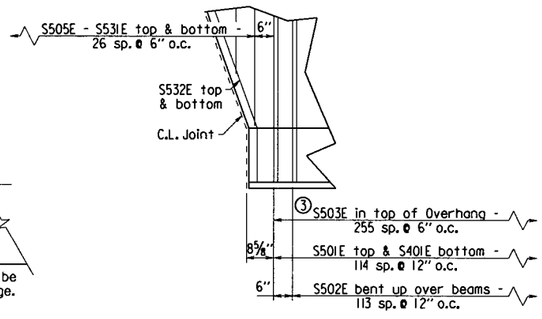
SLAB JOINT DETAIL

NO SCALE



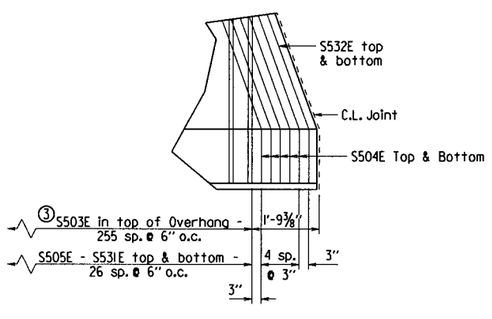
CONCRETE PLACEMENT PROCEDURE

NO SCALE



DETAIL A

NO SCALE



DETAIL B

NO SCALE

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-19-16
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 3 OF 5
DETAILS OF
130'-0" CONTINUOUS
COMPOSITE W-BEAM UNIT
EAST PIGEON CREEK

ROUTE 201 SEC. 1

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: EOR DATE: 6/11/2015 FILENAME: b009814_sl.dgn
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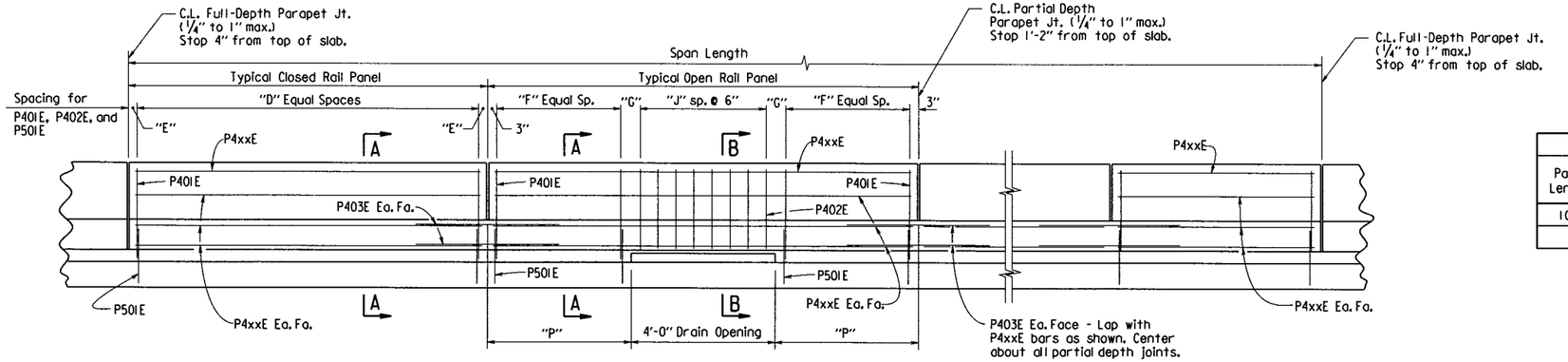
				6	ARK.			
				JOB NO.		009814	40	94
				①	07397 - SPAN DETAILS - 58847			



ELEVATION - CONCRETE PARAPET RAIL

½" = 1'-0"

NOTE:
For location of full and partial depth parapet joints, see Dwg. No. 58846.

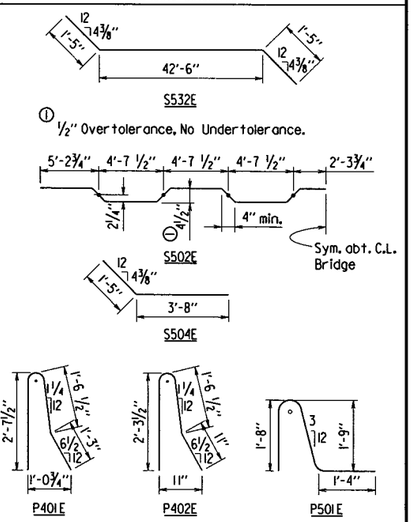
TABLE OF VARIABLES

Closed Rail Panels				Open Rail Panels					
Panel Length	"D"	"E"	P4xxE Bar	Panel Length	"F"	"G"	"J"	"P"	P4xxE Bar
10'-0"	19	3"	P404E	15'-0"	10	6"	7	5'-6"	P405E

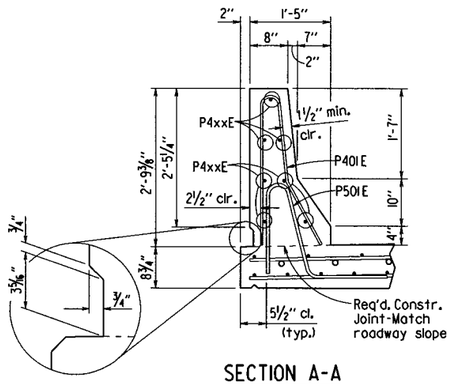
BAR LIST

MARK	NO. REQ'D.	LENGTH	P.D.
S401E	115	42'-10"	Str.
S402E	484	34'-6"	Str.
S501E	115	42'-10"	Str.
S502E	114	43'-8"	3"
S503E	512	4'-10"	Str.
S504E	20	5'-1"	2½"
S505E-S531E	4 ea.	5'-8" to 41'-4"	Str.
S532E	4	45'-4"	2½"
S601E	92	16'-6"	Str.
P401E	424	5'-6"	3"
P402E	96	4'-10"	3"
P403E	56	5'-6"	Str.
P404E	56	9'-8"	Str.
P405E	84	14'-8"	Str.
P501E	424	4'-10"	3¾"

BENDING DIAGRAMS

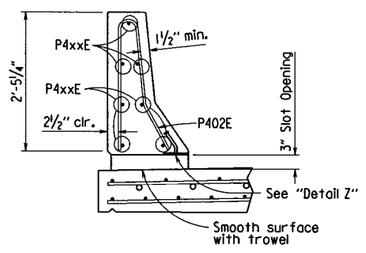


Dimensions are out to out of bars.
Bars designated with an "E" suffix are epoxy coated.



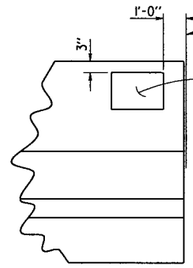
SECTION A-A

¾" = 1'-0"



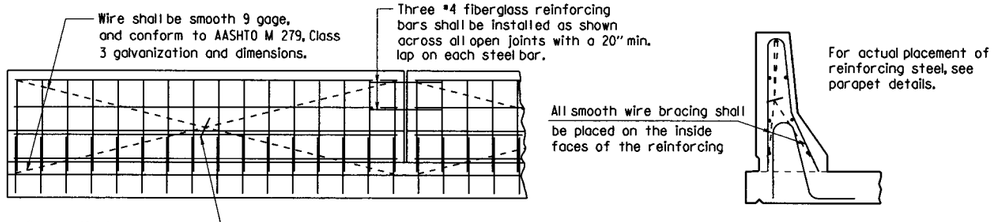
SECTION B-B

¾" = 1'-0"



VIEW SHOWING LOCATION OF NAME PLATE

NO SCALE

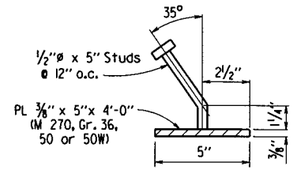


All panels shall be braced as required to prevent racking. All open joints shall be sawed as soon as practical to a minimum width of ¼". To control cracking before sawing, all joints must be grooved before the concrete is set. Sawing of the joints must be controlled so it will follow the grooved joint.

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 Class 2 Rubbed Finish.

DETAILS OF OPTIONAL SLIPFORMING OF CONCRETE PARAPET RAIL

NO SCALE



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

The surfaces of the ⅜" Plates which will not be in contact with concrete shall be painted in accordance with Section 638, or as approved by the Engineer. Only one coat is required and shall be applied in the Fabricator's shop. Painting will not be paid for directly, but will be considered subsidiary to Structural Steel in Beam Spans (M 270, Gr. 50W).

DETAIL Z

NO SCALE

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-19-16
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 4 OF 5
DETAILS OF 130'-0" CONTINUOUS COMPOSITE W-BEAM UNIT EAST PIGEON CREEK

ROUTE 201 SEC. 1

ARKANSAS STATE HIGHWAY COMMISSION

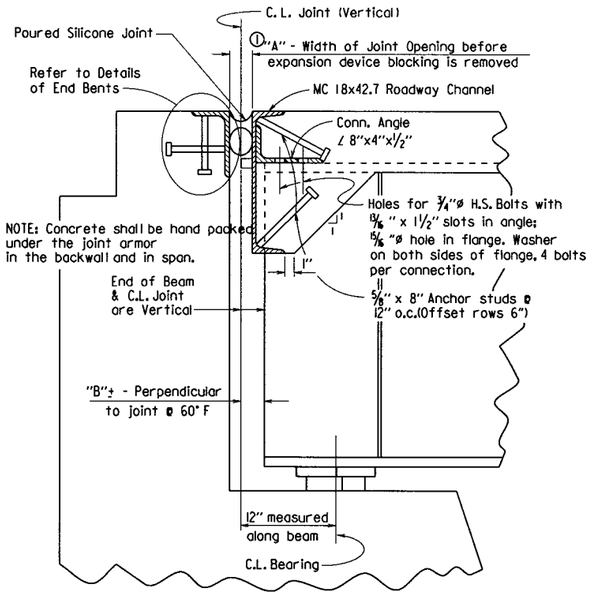
LITTLE ROCK, ARK.

DRAWN BY: EOR DATE: 6/15/2015 FILENAME: b009814_sl.dgn
CHECKED BY: KWY DATE: 7/19/16 SCALE: as shown
DESIGNED BY: CMW DATE: 4/15

BRIDGE NO. 07397 DRAWING NO. 58847

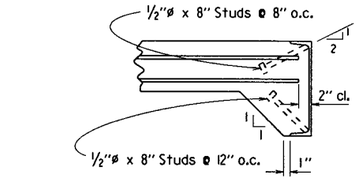
PRINT DATE: 7/19/2016

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.		009814	41	94
				① 07397 - SPAN DETAILS - 58848				



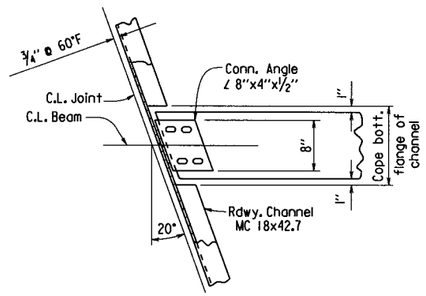
NOTE: Section taken perpendicular to C.L. Joint, except as noted.

SECTION THRU JOINT AT END BENTS

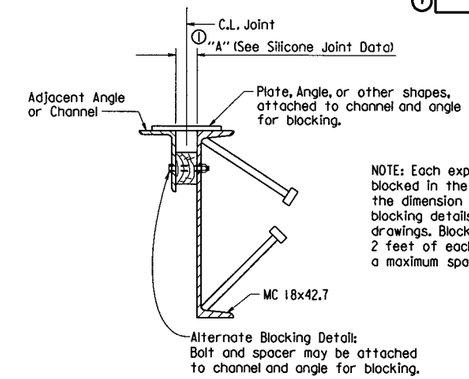


NOTE: As an alternate to ⅝"ø studs, ½"ø x 8" studs spaced as shown may be used. Use weight of ⅝"ø stud as basis of measurement of structural steel in anchors.

DETAILS OF ALTERNATE ANCHORS AND PLACEMENT OF LONGITUDINAL REINFORCEMENT



CHANNEL CONNECTION DETAIL



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

DETAILS FOR BLOCKING EXPANSION JOINT DEVICE

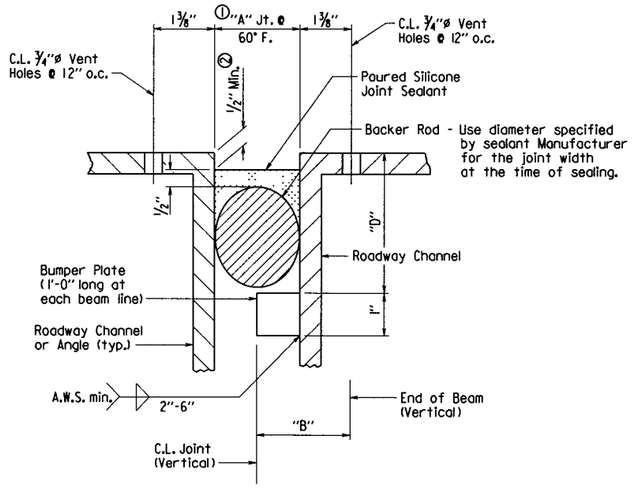
EXPANSION DEVICE INSTALLATION AT END BENTS:

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

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

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

② Recess depth as recommended by the sealant Manufacturer



DETAIL OF POURED SILICONE JOINT

SILICONE JOINT DATA

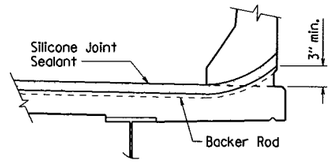
Bent No.	"A" Width Perpendicular to Joint at 24 Hour Average Temperature ① Of:			"B" Perpendicular to Joint at 60°F	"D"	Bumper Plate Size
	40°F	60°F	80°F			
1 & 4	1⅝"	1½"	1⅜"	2" ±	4"	1" x ¾"

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

Notes:
The temperature limitations recommended by the sealant Manufacturer shall be observed. The sealant shall be installed only when the average 24 hour air temperature is between 40° and 80° F.

Use an appropriately sized backer rod at the depth shown in the Manufacturer's literature based on the joint width at the time of sealing. Unless otherwise noted, do not install more backer rod than can be sealed in the same day.

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



JOINT SEAL PLACEMENT AT CURB

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-19-16
CHARLES R. ELLIS
BRIDGE ENGINEER

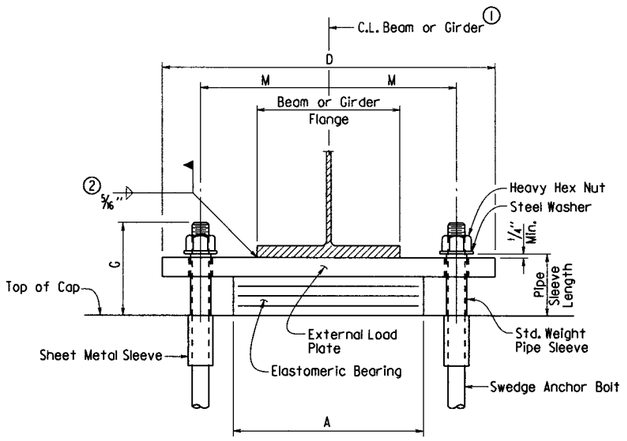
SHEET 5 OF 5
DETAILS OF
130'-0" CONTINUOUS
COMPOSITE W-BEAM UNIT
EAST PIGEON CREEK

ROUTE 201 SEC. 1
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: EOR DATE: 6/16/2015 FILENAME: b009814_sl.dgn
CHECKED BY: KWY DATE: 7/19/16 SCALE: no scale
DESIGNED BY: CMW DATE: 4/15
BRIDGE NO. 07397 DRAWING NO. 58848

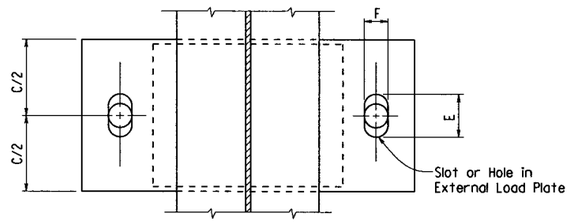
PRINT DATE: 7/19/2016

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.		009814	42	94
				①	07397 - ELASTO. BRGS. - 58849			



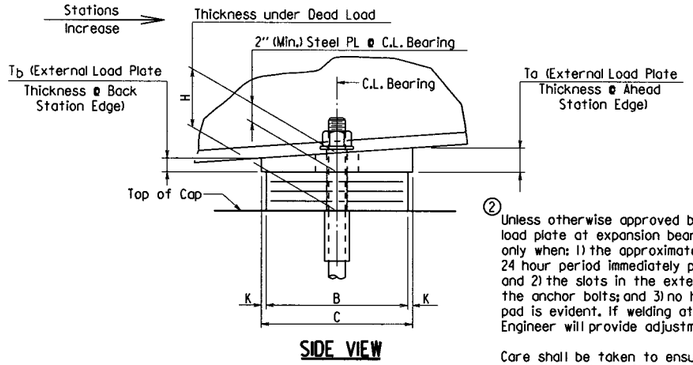
FRONT VIEW

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



PLAN VIEW

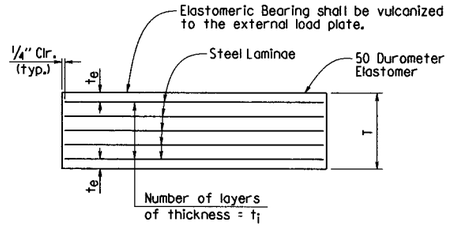
The direction of bevel of the external load plate may not be accurately depicted with respect to Ta and Tb values shown in the "Table of Fabricator Variables".



SIDE VIEW

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.



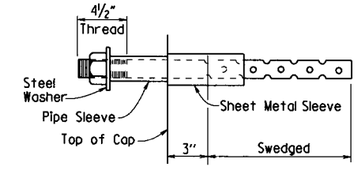
t_e = Thickness of elastomer cover on top and bottom of pad

t_i = Thickness of elastomer between steel laminae

N = Number of elastomer layers of thickness t_i

ELASTOMERIC BEARING

Prior to erection of the beams or girders, the Contractor shall verify the orientation of the bearings with respect to Ta and Tb.



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 Beam Spans (M 270, Gr. 50W)".

TABLE OF FABRICATOR VARIABLES

③ Maximum Design Load = Service I Limit State

BRIDGE NO.	LOCATION BENT NO(S).	LOCATION BEAM OR GIRDER NO.	BEARING TYPE	NO. of BEARINGS EACH BENT	③ MAXIMUM DESIGN LOAD (KIPS)	G	H	ELASTOMERIC PAD A	B	N	t_i	t_e	NO. & THICKNESS OF STEEL LAMINAE	T	EXTERNAL LOAD PLATE C	D	E	F	K	M	T_a	T_b	ANCHOR BOLT ANCHOR BOLT (ø x L)	GRADE	PIPE SLEEVE SIZE (ø x L)	SHEET METAL SLEEVE SIZE (ø x L)	STEEL WASHER SIZE (O.D.)
07397	1	ALL	EXP	5	81.00	7 1/4"	4 3/8"	14"	8"	3	1/2"	1/4"	4 @ 12 Ga.	2 7/16"	9"	24"	3 3/8"	2 1/4"	1/2"	9 1/4"	2.07"	1.93"	1 1/2"ø x 24"	55	1 1/2"ø x 4 5/8"	3"ø x 10"	3"
	2	ALL	FIX	5	166.00	7 1/4"	3 13/16"	14"	12"	2	1/2"	1/4"	3 @ 12 Ga.	1 13/16"	13"	26"	3 1/8"	3 1/8"	1/2"	9 3/4"	2.14"	1.86"	2"ø x 29"	55	2 1/2"ø x 4 1/8"	4"ø x 10"	3 3/4"
	3	ALL	FIX	5	166.00	7 1/4"	3 13/16"	14"	12"	2	1/2"	1/4"	3 @ 12 Ga.	1 13/16"	13"	26"	3 1/8"	3 1/8"	1/2"	9 3/4"	2.19"	1.81"	2"ø x 29"	55	2 1/2"ø x 4 1/8"	4"ø x 10"	3 3/4"
	4	ALL	EXP	5	81.00	7 1/4"	4 3/8"	14"	8"	3	1/2"	1/4"	4 @ 12 Ga.	2 7/16"	9"	24"	3 3/8"	2 1/4"	1/2"	9 1/4"	2.15"	1.85"	1 1/2"ø x 24"	55	1 1/2"ø x 4 5/8"	3"ø x 10"	3"

GENERAL NOTES

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

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

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

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

Pipe Sleeves, Anchor Bolts, Washers and Nuts shall be paid for at the unit price bid for "Structural Steel in Beam Spans (M 270, Gr. 50W)". External load plates will not be measured and 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
7-19-16
CHARLES R. ELLIS
BRIDGE ENGINEER

DETAILS OF ELASTOMERIC BEARINGS EAST PIGEON CREEK

ROUTE 201 SEC. 1

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: EOR DATE: 6/18/2015 FILENAME: b009814_el.dgn

CHECKED BY: CWW DATE: 7/19/16 SCALE: no scale

DESIGNED BY: CWW DATE: 4/15

BRIDGE NO. 07397 DRAWING NO. 58849

PRINT DATE: 7/19/2016

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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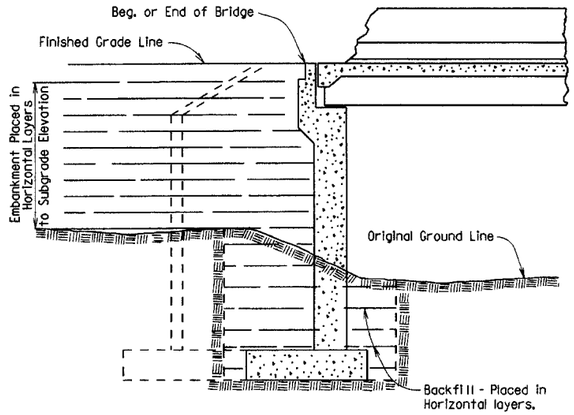
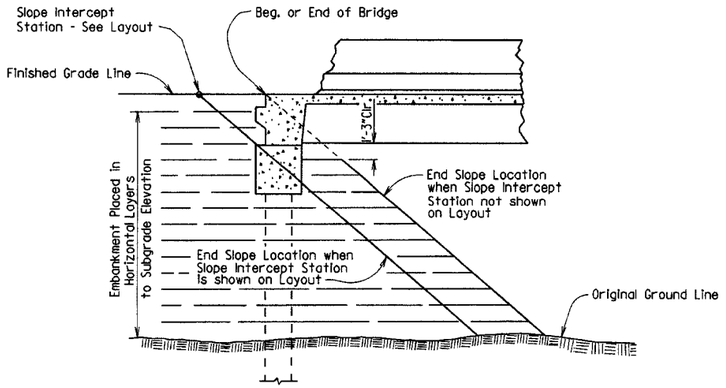
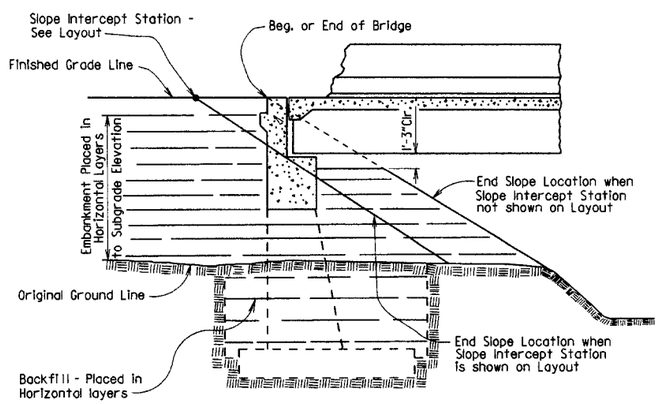
				JOB NO.				
				① EMBANKMENT & BACKFILL 55000				



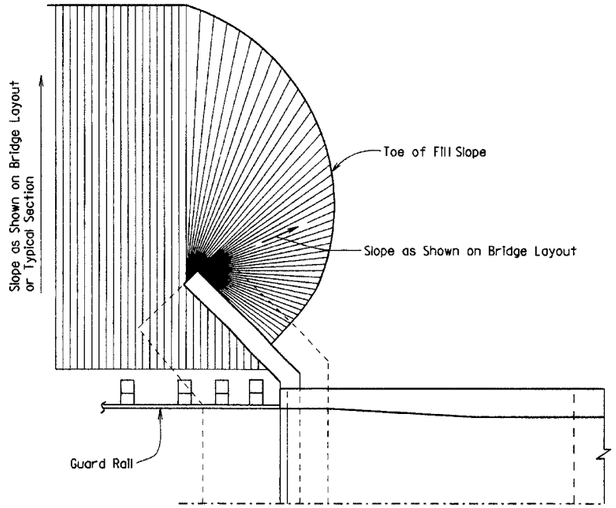
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT VERTICAL WALL ABUTMENTS



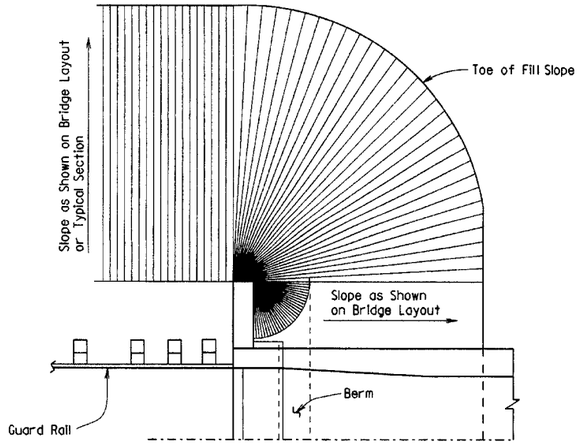
EMBANKMENT CONSTRUCTION AT SPILL-THROUGH PILE END BENTS



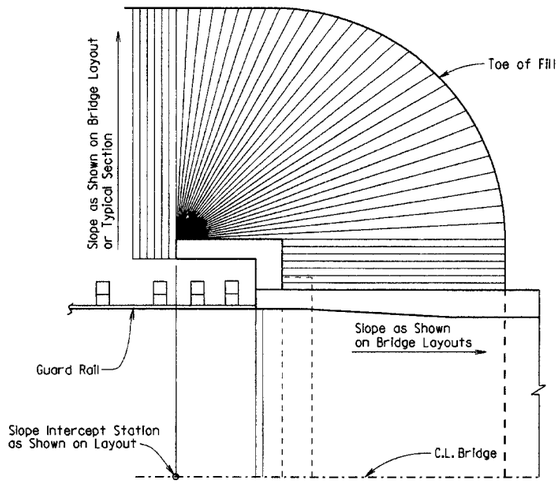
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT SPILL-THROUGH END BENTS



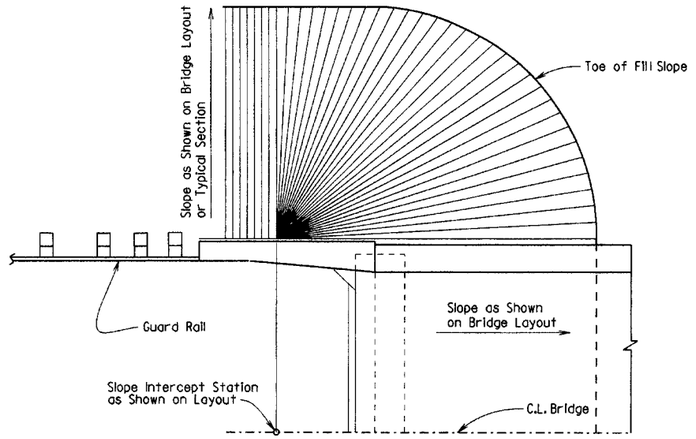
VERTICAL WALL ABUTMENTS



SPILL-THROUGH END BENTS WITH STUB WING



SPILL-THROUGH END BENTS WITH TURNBACK WING



SPILL-THROUGH END BENTS WITH TRANSITION WING

METHOD OF DETERMINING FILL SLOPE LOCATION AT BRIDGE ENDS

GENERAL NOTES

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

STANDARD DETAILS FOR EMBANKMENT CONSTRUCTION AND BACKFILL AT BRIDGE ENDS

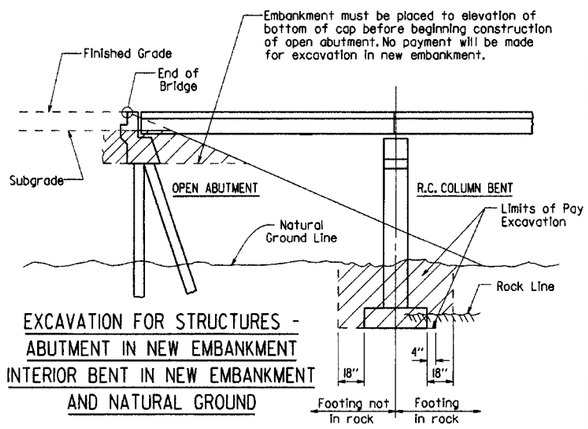
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

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

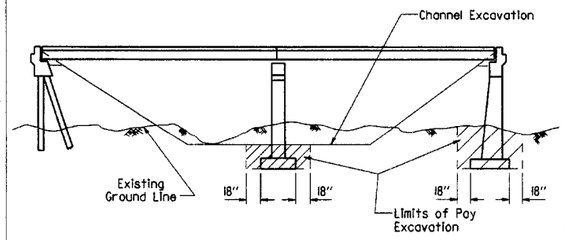
DRAWING NO. 55000

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		44	
				JOB NO.				

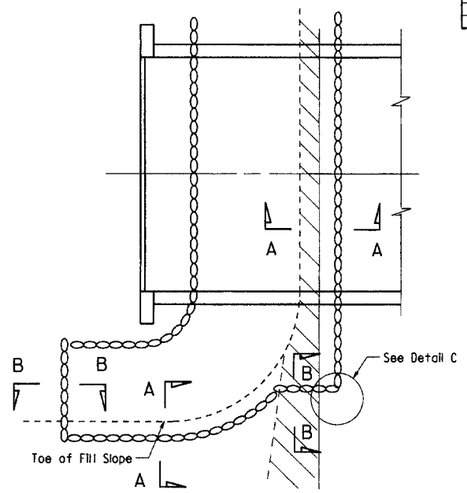
(1) RIPRAP & EXCAV. 55001



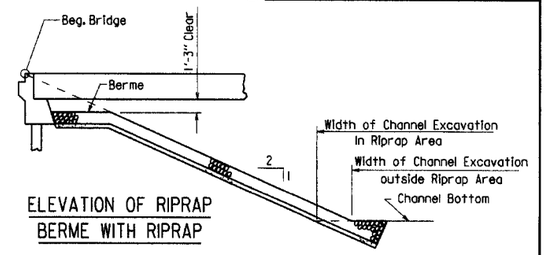
EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NEW EMBANKMENT AND NATURAL GROUND



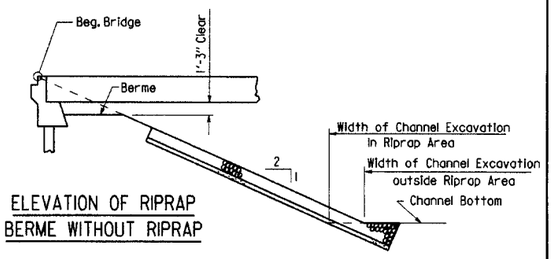
EXCAVATION FOR STRUCTURES - BRIDGE LOCATION WITH DESIGNATED CHANNEL CHANGE



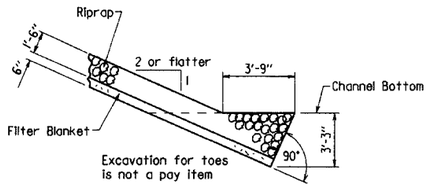
PLAN OF DUMPED RIPRAP



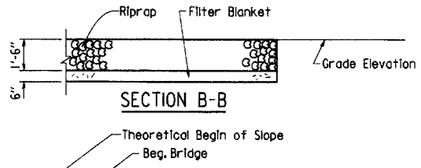
ELEVATION OF RIPRAP BERME WITH RIPRAP



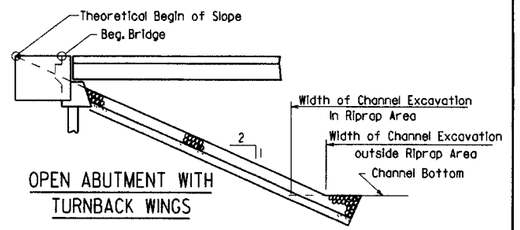
ELEVATION OF RIPRAP BERME WITHOUT RIPRAP



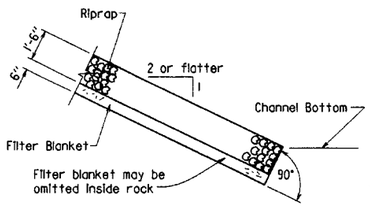
SECTION A-A
(Toe Excavation in Soil)



SECTION B-B



OPEN ABUTMENT WITH TURNBACK WINGS

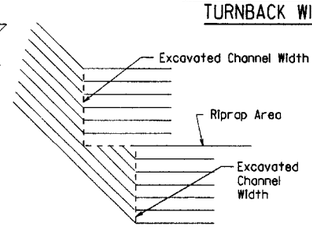


SECTION A-A
(Toe Excavation in Rock)

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.



DETAIL C

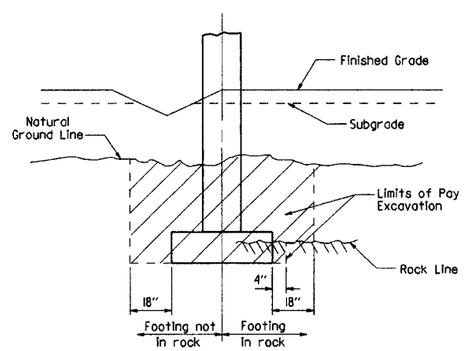
STANDARD DETAILS FOR DUMPED RIPRAP AND FILTER BLANKET AND COMPUTING EXCAVATION FOR STRUCTURES

ARKANSAS STATE HIGHWAY COMMISSION

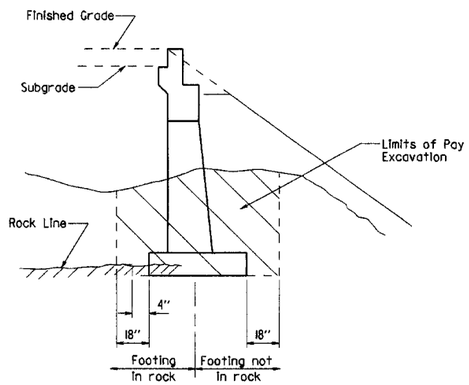
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 2-27-2014 FILENAME: b55001.dgn
CHECKED BY: BEF DATE: 2-27-2014 SCALE: NO SCALE
DESIGNED BY: STD. DATE:

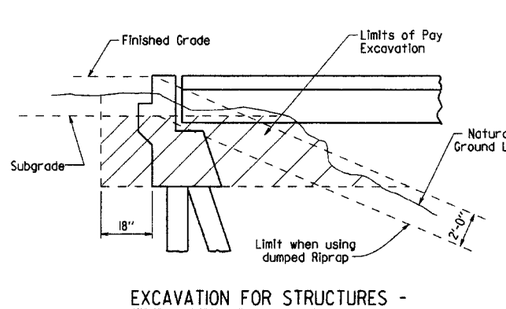
DRAWING NO. 55001



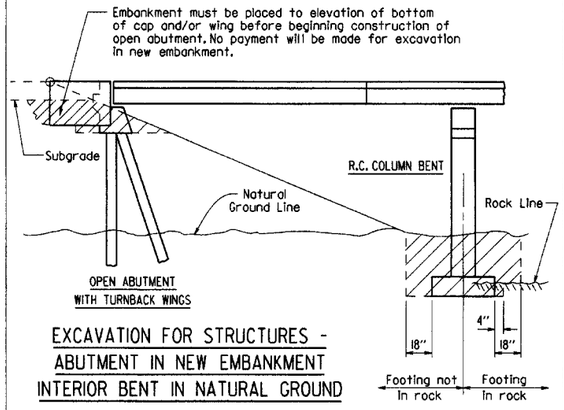
EXCAVATION FOR STRUCTURES - BENT IN ROADWAY FILL SECTION AND NATURAL GROUND



EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND AND NEW EMBANKMENT



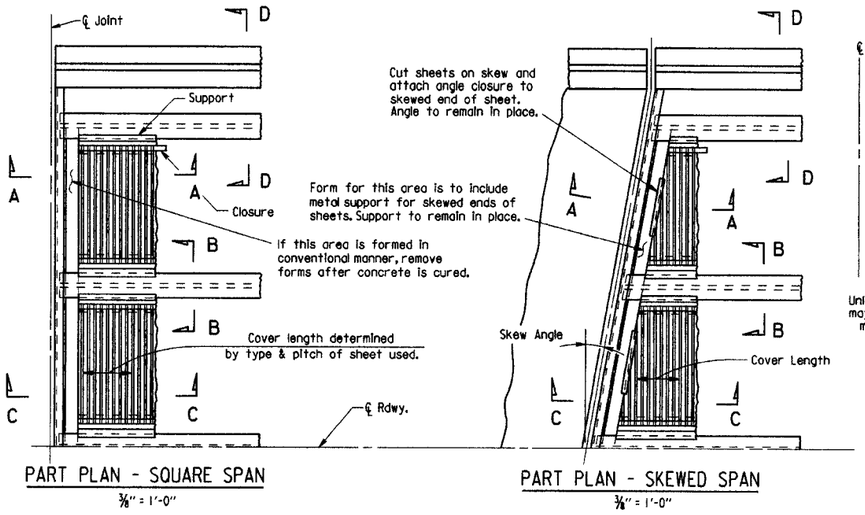
EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND



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

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
3/24/16				6	ARK.		45	
				JOB NO.				

① BRIDGE DECK FORMS 55005

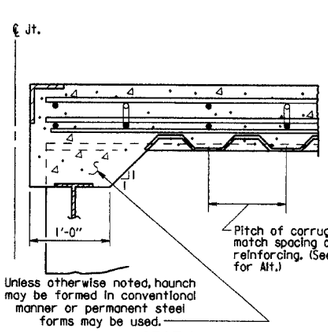


PART PLAN - SQUARE SPAN

3/8" = 1'-0"

PART PLAN - SKEWED SPAN

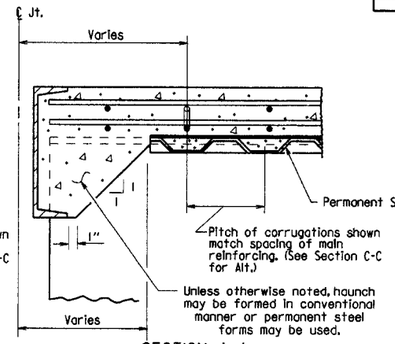
3/8" = 1'-0"



SECTION A-A

N.T.S.

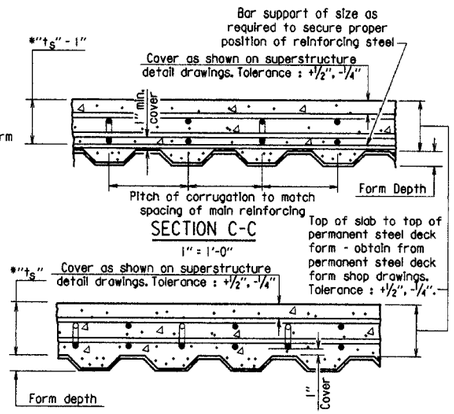
(Angle at end of span)



SECTION A-A

N.T.S.

(Channel at end of span)



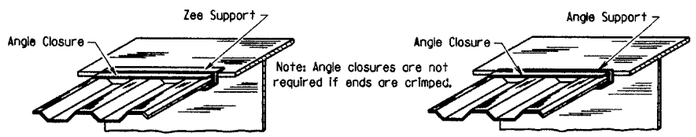
SECTION C-C

1" = 1'-0"

SECTION C-C - ALTERNATE

1" = 1'-0"

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



SKETCH OF PERMISSIBLE SUPPORTS

N.T.S.

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

GENERAL NOTES

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

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

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

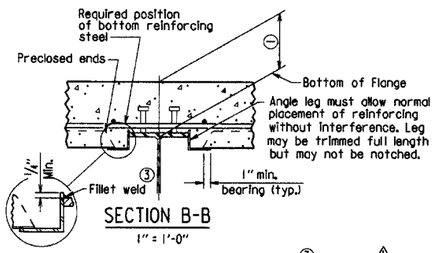
Form sheets shall be fastened to supporting members and to each other with galvanized metal screws sufficient in size and number to provide a secure attachment. Alternate methods of attachment must be approved by the Engineer.

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

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

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

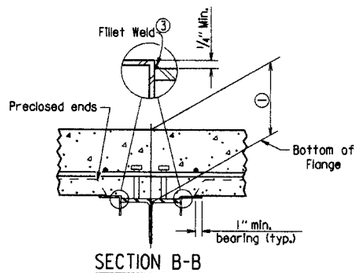
Specifications: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2014 Edition), with applicable Supplemental Specifications and Special Provisions.



SECTION B-B

1" = 1'-0"

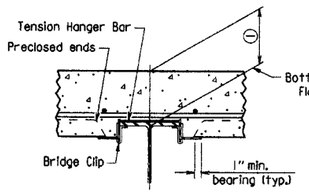
(Showing permissible support for tension flange where shear connectors are used, and for all compression flanges)



SECTION B-B

1" = 1'-0"

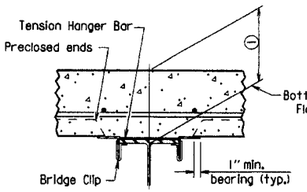
(Showing permissible support for tension flange where shear connectors are used and for all compression flanges)



SECTION B-B

1" = 1'-0"

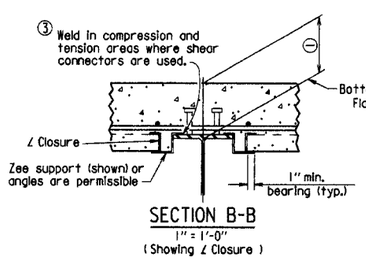
(Showing permissible support for tension flange where shear connectors are not used)



SECTION B-B

1" = 1'-0"

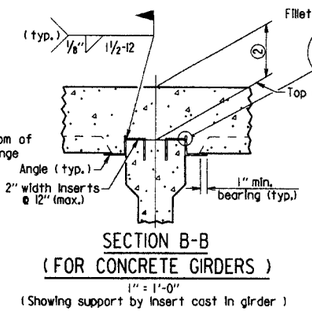
(Showing permissible support for tension flange where shear connectors are not used)



SECTION B-B

1" = 1'-0"

(Showing ∠ Closure)

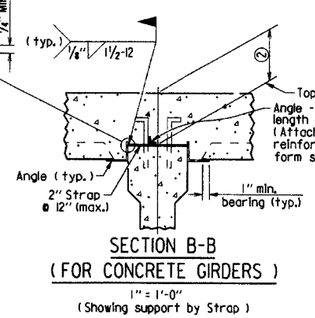


SECTION B-B

(FOR CONCRETE GIRDERS)

1" = 1'-0"

(Showing support by insert cast in girder)

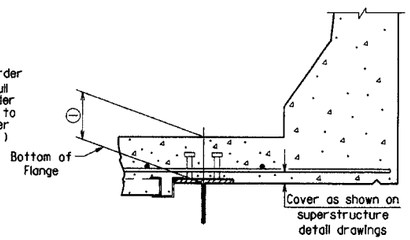


SECTION B-B

(FOR CONCRETE GIRDERS)

1" = 1'-0"

(Showing support by Strap)



SECTION D-D

1" = 1'-0"

Note: Only Bottom Reinforcing is shown.

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

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

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

⚠ Revised weld dimension by KWY, Ck'd. by BEF, 3/24/16.

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

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 2-27-2014 FILENAME: b55005.dgn

CHECKED BY: BEF DATE: 2-27-2014 SCALE: NONE

DESIGNED BY: STD. DATE: —

DRAWING NO. 55005

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		46	
				JOB NO.				
						GENERAL NOTES		55006

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.

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

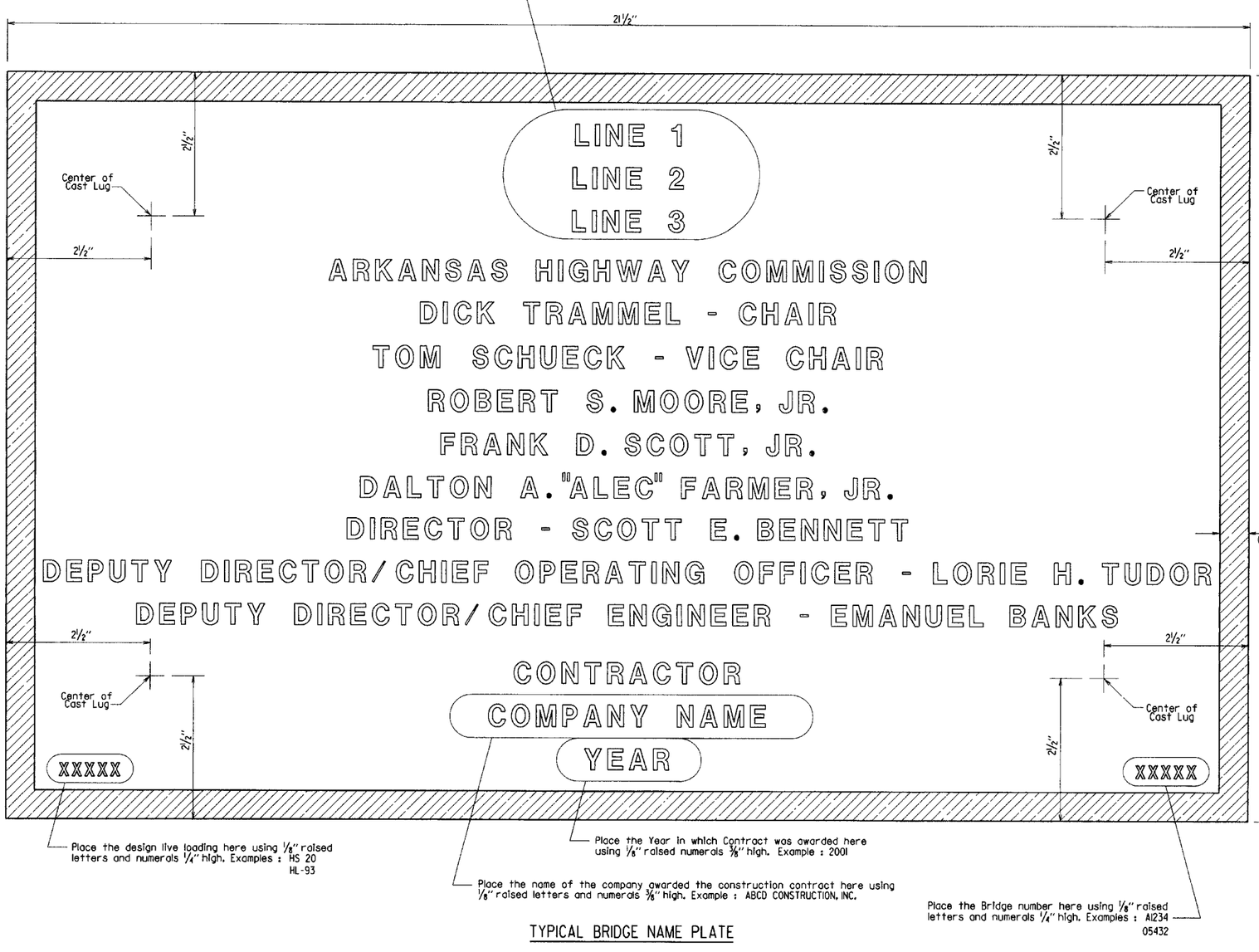
PRINT DATE: 9/10/2015

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.		47	
1-14-15				JOB NO.				

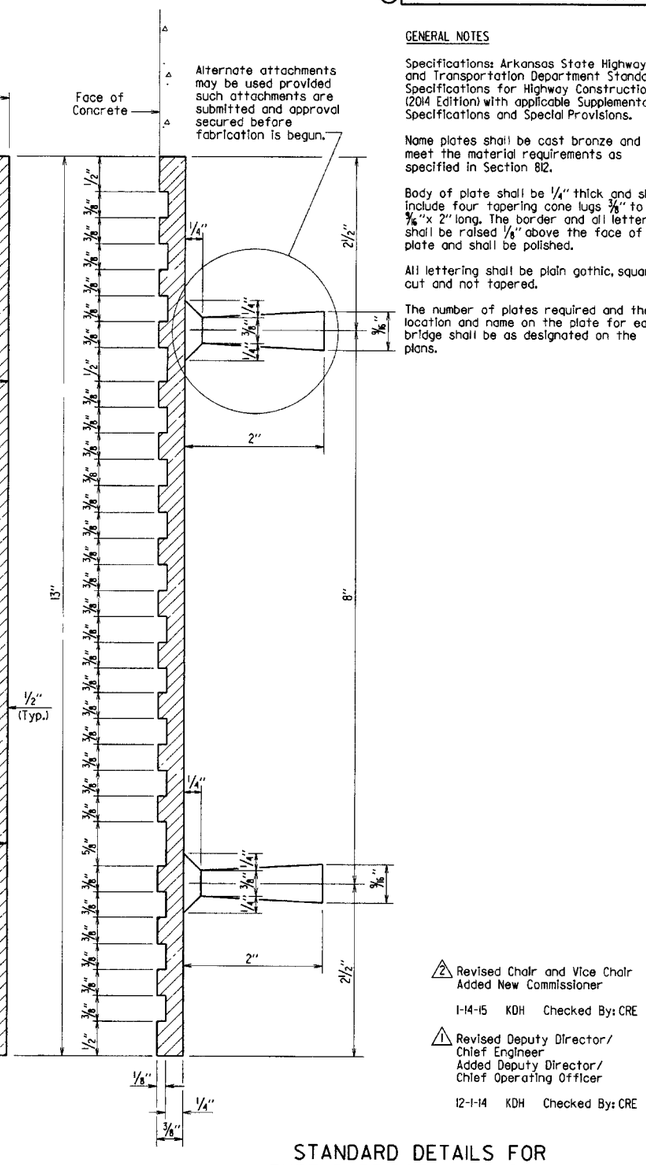
① TYPE D NAME PLATE 55010

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

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



TYPICAL BRIDGE NAME PLATE



GENERAL NOTES

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

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

Body of plate shall be 1/4" thick and shall include four tapering cone lugs 3/8" to 5/8" 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
3/24/16				6	ARK.		48	
				JOB NO.				
				①		STEEL H-PILES		55020

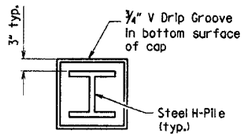
GENERAL NOTES FOR STEEL H-PILES:

Steel H-Piles shall conform to AASHTO M 270, Grade 36 or greater.

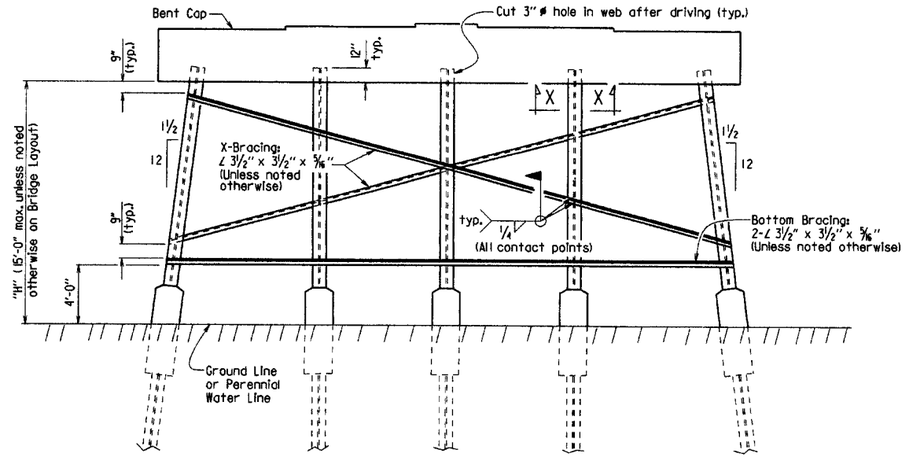
See Bridge Layout and Bent Details for pile size, estimated length, spacing, pile anchorage (if required) and for driving information.

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.

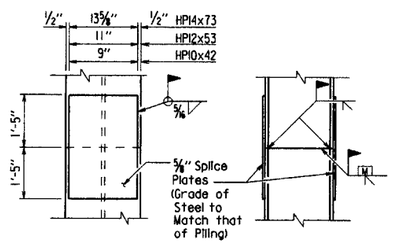
Omit X-Bracing and Bottom Bracing when "H" is 5 feet or less.

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)



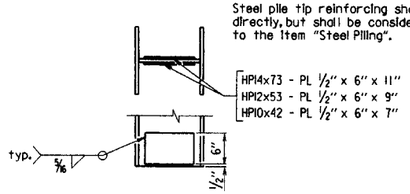
The Contractor may for his own convenience and at his own expense provide as many as three splices per pile. Minimum spacing between splices shall be 5 feet.

TYPICAL SPLICE DETAILS

⚠ H-pile splicers manufactured by Associated Pile and Fitting Corporation, LB Foster Piling, Skyline Steel or equivalent may be used in lieu of the "Typical Splice Details" shown. H-pile splicers shall match the same grade of steel specified for the piling and shall be welded to the pile with a 5/16" fillet weld around the entire perimeter of the splice. Flanges shall be welded with a complete penetration groove weld complying with AASHTO/AWS Joint Designation B-U4a or B-U4b. All welding shall conform to Subsection 807.26 of the AHTD Standard Specifications for Highway Construction (2014 Edition).

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:

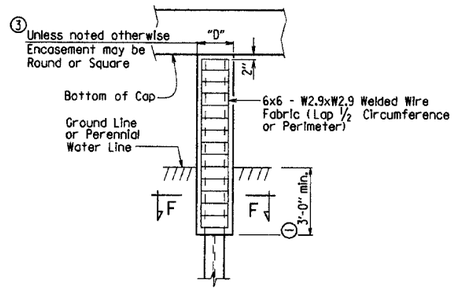
⚠ See Bridge Layout for additional notes, any pile encasement restrictions and required location of pile encasements.

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.

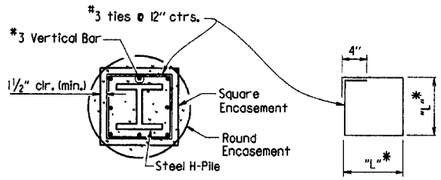
Welded Wire Fabric shall conform to AASHTO M 55 or M 221. Galvanized Corrugated Steel Pipe shall conform to AASHTO M 36 and M 218.

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)

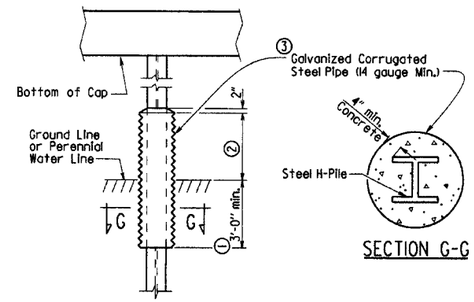


SECTION F-F

*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

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.

⚠ Added alternate method of splicing H-piles and revised pile encasement note.
3/24/2016 AMS

This document was originally issued and sealed by Charles R. Ellis, PE No. 9235, on March 24, 2016. This copy is not a signed and sealed document.

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

STANDARD DETAILS FOR STEEL H-PILES AND PILE ENCASEMENTS

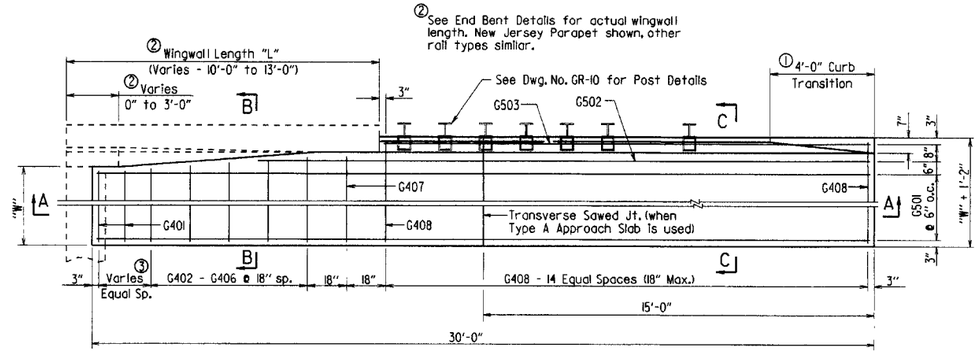
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

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

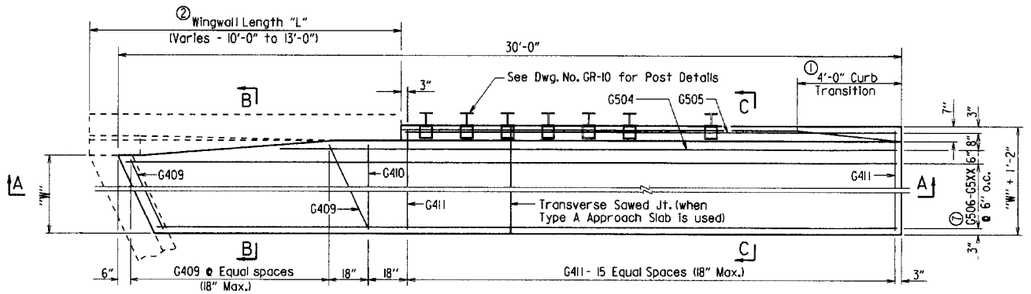
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
9/2/15				6	ARK.		49	
				JOB NO.				

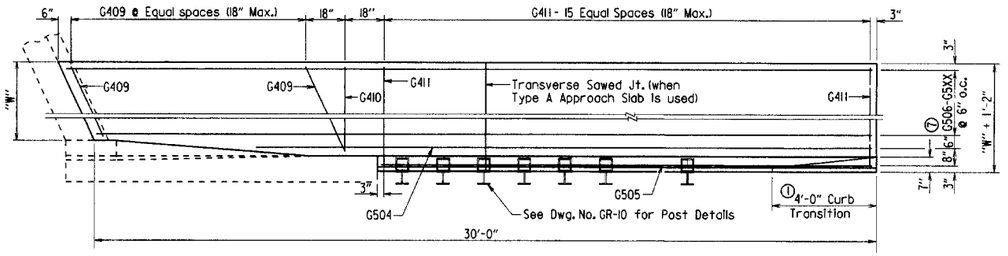
① TYPE A GUTTERS 55030A



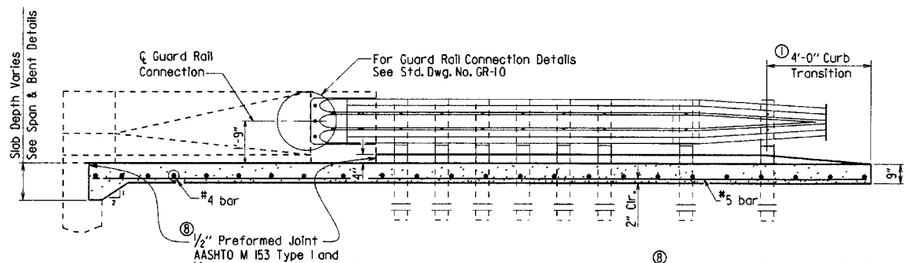
③ Number of G401 bars vary with wingwall length - See Bar List

HALF PLAN OF APPROACH GUTTERS FOR SQUARE BRIDGE





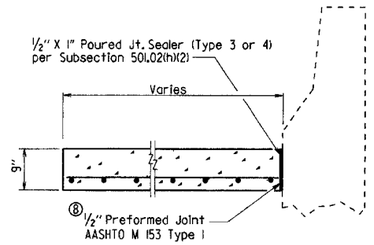
PLAN OF APPROACH GUTTERS FOR SKEWED BRIDGE



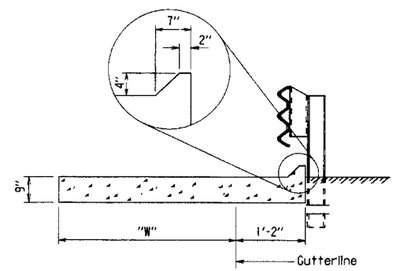
SECTION A-A

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

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



SECTION B-B
N.T.S.



SECTION C-C
N.T.S.

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

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

BAR LIST FOR ONE TYPE A GUTTER

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

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

⑦ G509 for "W" = 2' ⚠
G511 for "W" = 3'
G513 for "W" = 4'
G517 for "W" = 6'
G521 for "W" = 8'

⑤ Bar Lengths vary with Skew and Wingwall Length.

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

QUANTITIES FOR ONE SQUARE APPROACH GUTTER

(FOR INFORMATION ONLY)

⚠ "W" Width (ft.)	Reinforcing Steel (Lbs.)	Concrete (Cu. Yds.)
2	210	2.55
3	285	3.40
4	360	4.25
6	515	5.90
8	665	7.55

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

GENERAL NOTES

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

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

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

⚠ Revised to add "W" = 2'-0"; By LJB
Checked By: KWY 9/2/15

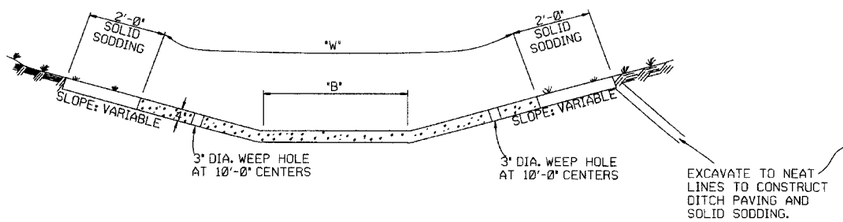
STANDARD DETAILS FOR TYPE A APPROACH GUTTERS

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: A.M.S. DATE: 2/27/2014 FILENAME: b55030a.dgn
CHECKED BY: K.W.Y. DATE: 2/27/2014 SCALE: 3/4" = 1'-0" or As Shown
DESIGNED BY: STD. DATE:

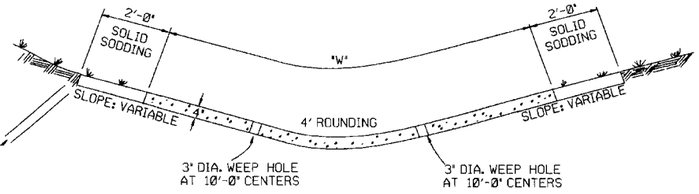
DRAWING NO. 55030A

REFER TO TABULATION OF QUANTITIES FOR 'W' & 'B' DIMENSIONS



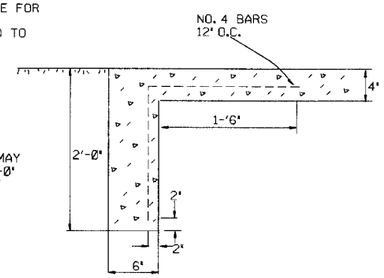
TYPE A

REFER TO TABULATION OF QUANTITIES FOR 'W' DIMENSIONS



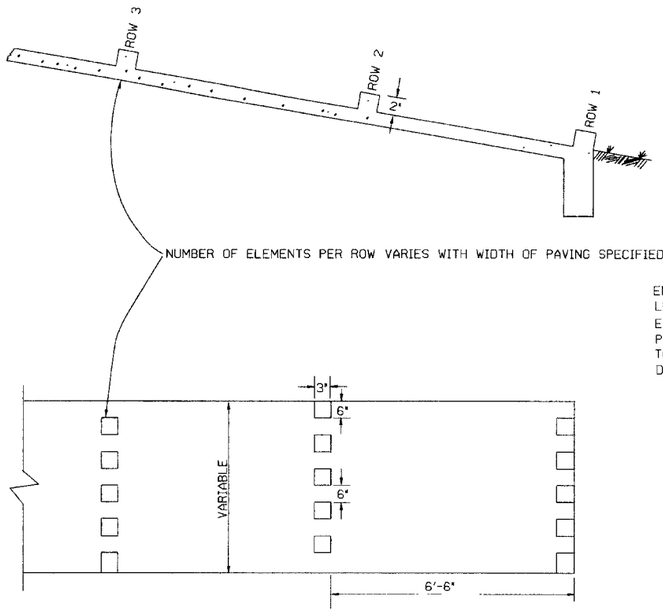
TYPE B

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
(NO SCALE)

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.

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.

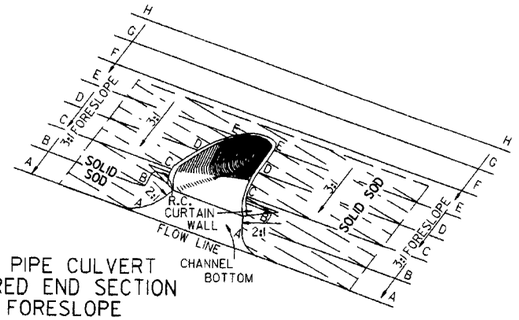
1" WIDE TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE DITCH PAVING AT 45' INTERVALS. THE SPACE SHALL BE FILLED WITH APPROVED JOINT FILLER COMPLYING WITH AASHTO M213.

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 TYPES A & B	
10-2-72	REVISED AND REDRAWN	508-10-2-72

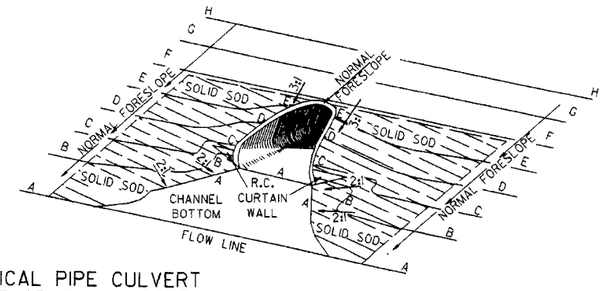
ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE DITCH PAVING

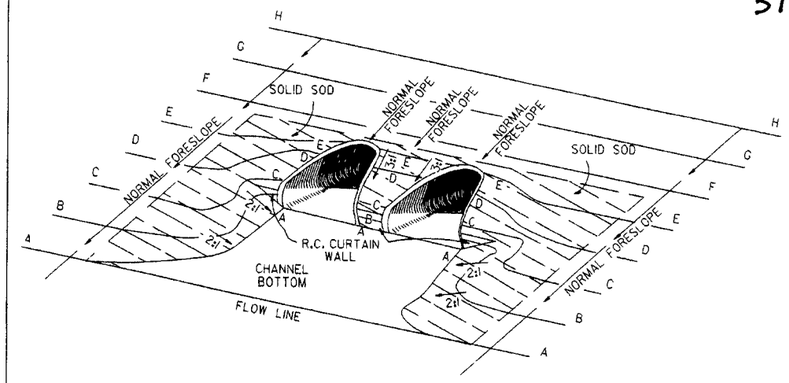
STANDARD DRAWING CDP-1



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



TYPICAL PIPE CULVERT
WITH FLARED END SECTION
& FLATTENED ADJACENT SLOPES



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

R.C. CURTAIN WALL DIMENSIONS & QUANTITIES

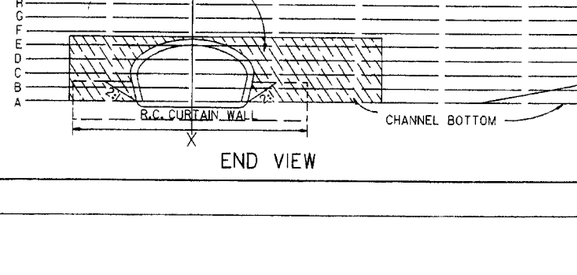
PIPE DIA.	H_1	L_1	L	L (DBL.)/2	SINGLE R.C.P.C. CONC. CU. YDS.	SINGLE R.C.P.C. REINF. STEEL LBS.	DOUBLE R.C.P.C. CONC. CU. YDS.	DOUBLE R.C.P.C. REINF. STEEL LBS.
18"	1'-11½"	3'-5"	8'-0"	6'-3"	0.31	27.7	0.45	39.5
24"	1'-0½"	4'-6"	9'-6"	7'-6"	0.37	33.4	0.53	48.0
30"	1'-3½"	5'-7"	11'-0"	9'-0"	0.45	39.0	0.67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

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

REINFORCING STEEL SCHEDULE

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

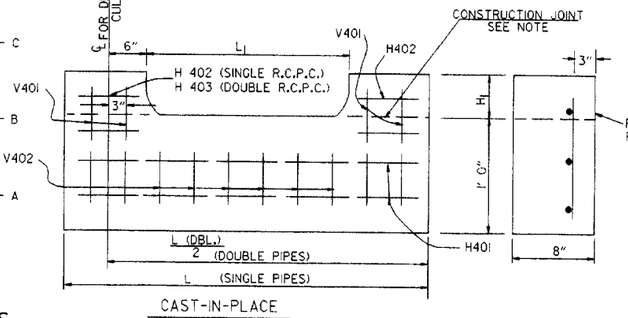
ALL REINFORCING STEEL #4 BARS @ 6" O.C.



PLAN VIEW
3:1 FORESLOPES

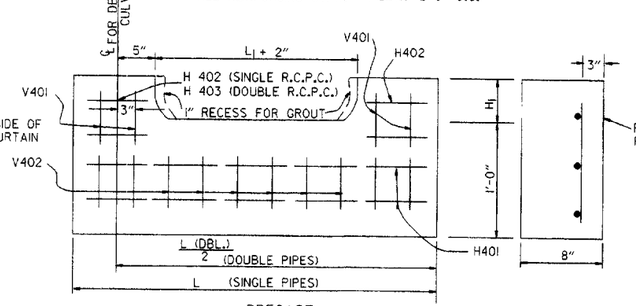
NOTE: THE CONFIGURATION OF CONTOURS WILL VARY WITH FORESLOPE VARIATIONS.

PLAN VIEW
FLATTENED FORESLOPES



CAST-IN-PLACE

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



PRECAST

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

R.C. CURTAIN WALL DETAILS

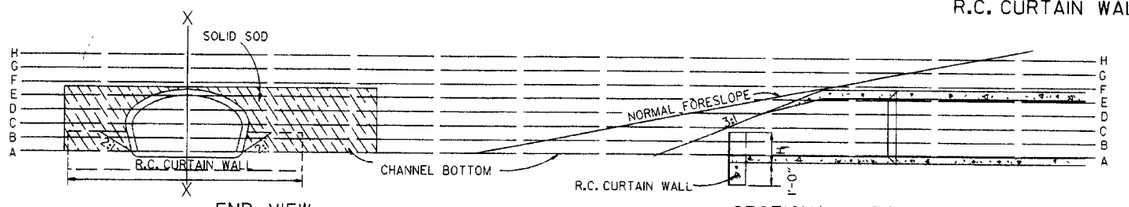
SOLID SODDING

PIPE DIA.	SINGLE R.C.P.C. 3:1	4:1	6:1	DOUBLE R.C.P.C. 3:1	4:1	6:1
	SQ. YDS.			SQ. YDS.		
18"	5	7	12	6	8	13
24"	8	12	19	9	13	20
30"	13	18	29	14	19	30
36"	17	26	41	18	28	43
42"	23	35	55	25	37	57
48"	29	46	68	31	48	70
54"	35	57	85	37	59	87
60"	45	62	104	48	65	107
72"	64	92	156	67	95	155

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

GENERAL NOTES

1. A CAST-IN-PLACE OR PRECAST CURTAIN WALL MAY BE USED. PAYMENT FOR THE CURTAIN WALL SHALL BE CONSIDERED TO BE INCLUDED IN THE UNIT PRICE BID EACH FOR FLARED END SECTIONS OF THE SEVERAL SIZES, WHICH PRICE SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIALS INCLUDING REINFORCING STEEL AND CONCRETE: FOR FORMS, MIXING AND PLACING; FOR EXCAVATION AND BACKFILL, AND FOR ALL LABOR, TOOLS, EQUIPMENT AND INCIDENTALS NECESSARY TO COMPLETE THE WORK.
2. ALL EXPOSED EDGES SHALL BE CHAMFERED ¾".
3. CONCRETE FOR CURTAIN WALL SHALL MEET THE REQUIREMENTS FOR CLASS A OR S CONCRETE AS PROVIDED IN SECTION 802 OF THE STANDARD SPECIFICATIONS OR FOR PAVING CONCRETE AS PROVIDED N SECTION 501 OF THE STANDARD SPECIFICATIONS.
4. WELDED WIRE MESH 3 x 3 W/10 x W10 MAY BE USED IN LIEU OF REINFORCING BARS.



END VIEW

SECTIONAL VIEW "X-X"

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

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FLARED END SECTION

STANDARD DRAWING FES-1

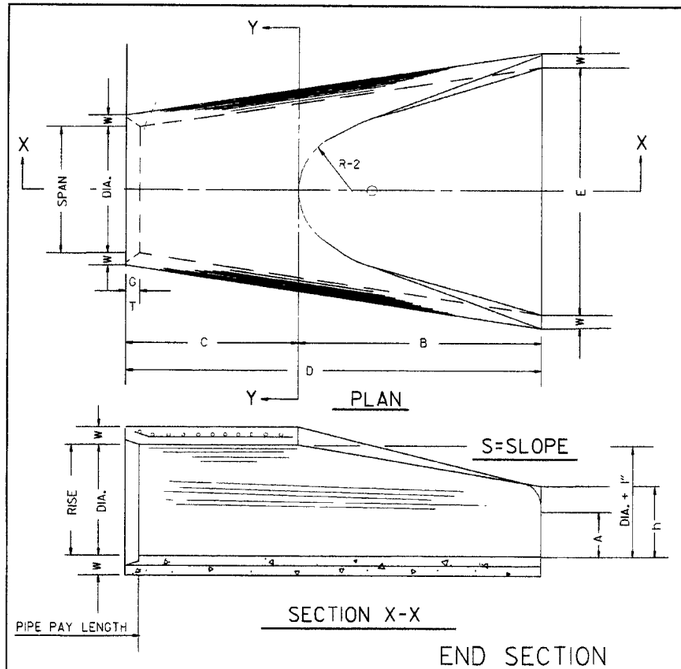
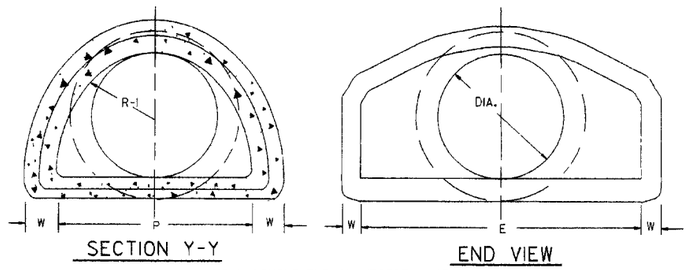


TABLE OF DIMENSIONS

DIA.	WALL	A	B	C	D	E	S	DIA. + 1"	P	R-1	R-2	G-T	WT.	h
18"	2½"	9"	2'-3"	3'-10"	6'-1"	3'-0"	3:1	19"	29"	15½"	12"	2"	1000	1'-0½"
24"	3"	9½"	3'-7½"	2'-6"	6'-11½"	4'-0"	3:1	25"	33 3/16"	16 13/16"	14"	2½"	1600	1'-1½"
30"	3½"	1'-0"	4'-6"	1'-7¾"	6'-1¾"	5'-0"	3:1	31"	37"	18½"	15"	3¼"	1940	1'-4⅝"
36"	4"	1'-3"	5'-3"	2'-10¾"	8'-1¾"	6'-0"	3:1	37"	47 1/16"	24 5/16"	20"	3½"	4100	1'-8"
42"	4½"	1'-9"	5'-3"	2'-11"	8'-2"	6'-6"	3:1	43"	53 1/16"	27½"	22"	3½"	5380	2'-2½"
48"	5"	2'-0"	6'-0"	2'-2"	8'-2"	7'-0"	3:1	49"	56½"	28½"	22"	3½"	6550	2'-6"
54"	5½"	2'-4"	6'-6"	1'-10"	8'-4"	7'-6"	3:1	55"	65½"	33⅛"	24"	4"	8750	2'-10½"
60"	6"	2'-10"	6'-6"	1'-10"	8'-4"	8'-0"	3:1	61"	72½"	36 1/16"	24"	4"	9270	3'-5"
72"	7"	3'-10"	6'-6"	1'-10"	8'-4"	9'-0"	3:1	73"	77 13/16"	38 7/16"	24"	5"	13250	4'-6"



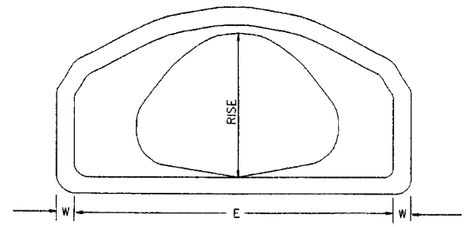
NOTE: TONGUE END ON UPSTREAM SECTION
GROOVE END ON DOWNSTREAM SECTION

END SECTION FOR REINFORCED CONCRETE PIPE CULVERTS

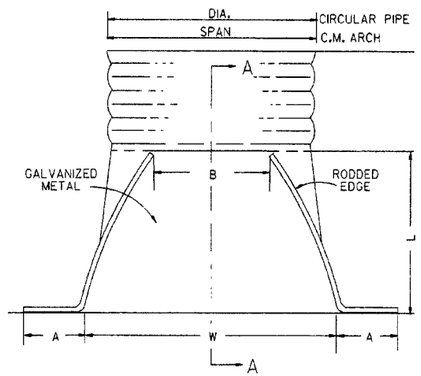
ARCH PIPE

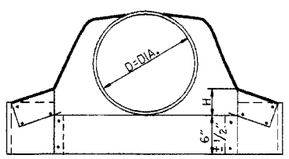
EQUIV. DIA.	• SPAN AASHTO M 206	• SPAN AHD NOMINAL	• RISE AASHTO M 206	• RISE AHD NOMINAL	W	A	B	C	D	E	P	R2	G-T	S
	INCHES													
15	18	18	11	11	2"	4"	2'-0"	4'-0"	6'-0"	3'-0"	29"	12"	1½"	2½ 1
18	22	22	13½	14	2½"	5"	2'-0"	4'-1"	6'-1"	3'-6"	32⅛"	13"	2½"	2½ 1
21	26	26	15½	16	2¾"	7"	2'-3"	3'-10"	6'-1"	4'-0"	34⅛"	14"	2½"	2½ 1
24	28½	29	18	18	3"	9"	2'-3"	3'-10"	6'-1"	5'-0"	36 13/16"	15"	2½"	2½ 1
30	36¼	36	22½	23	3½"	10"	3'-1"	3'-0½"	6'-1½"	6'-0"	47 1/16"	20"	3"	2½ 1
36	43¾	44	26⅝	27	4"	10½"	4'-0"	2'-1½"	6'-1½"	6'-6"	54 7/16"	22'	3½"	2½ 1
42	51⅛	51	31 5/16	31	4½"	11½"	4'-7"	1-10¼"	6'-5¼"	7'-2"	59½"	23"	3¾"	2½ 1
48	58½	59	36	36	5"	1'-3"	5'-3"	2'-10¾"	8'-1¾"	7'-10"	70⅝"	24"	4¼"	2½ 1
54	65	65	40	40	5½"	1'-7"	5'-3"	2'-11"	8'-2"	8'-6"	72 1/16"	24"	4¾"	2¼ 1
60	73	73	45	45	6"	1'-10"	5'-6"	2'-8"	8'-2"	9'-0"	77 13/16"	24"	5"	2¼ 1

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

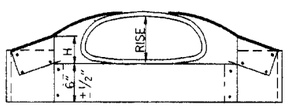


END VIEW
CONCRETE ARCH PIPE





CIRCULAR PIPE



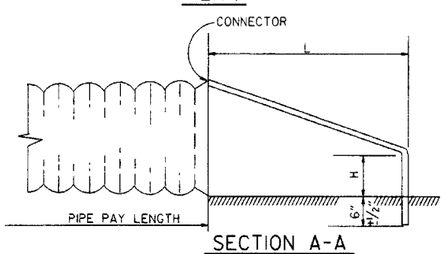
C.M. ARCH PIPE

CIRCULAR PIPE

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

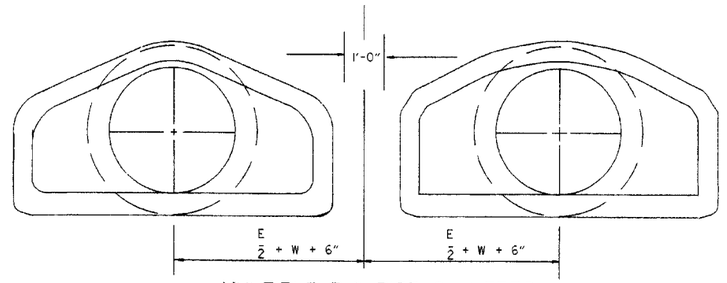
C.M. ARCH PIPE

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

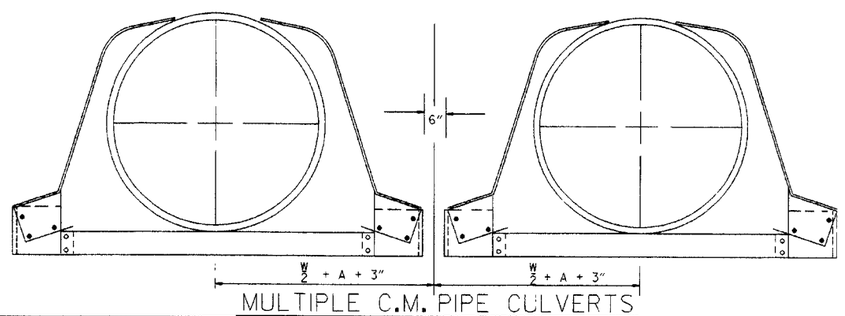


NOTE: ALTERNATE CONNECTIONS TO THE PIPE CULVERTS, IN ACCORDANCE WITH MANUFACTURER'S STANDARD PRACTICES, MAY BE MADE SUBJECT TO THE APPROVAL OF THE ENGINEER.

END SECTIONS FOR CORRUGATED METAL PIPE CULVERTS



MULTIPLE R.C. PIPE CULVERTS



MULTIPLE C.M. PIPE CULVERTS

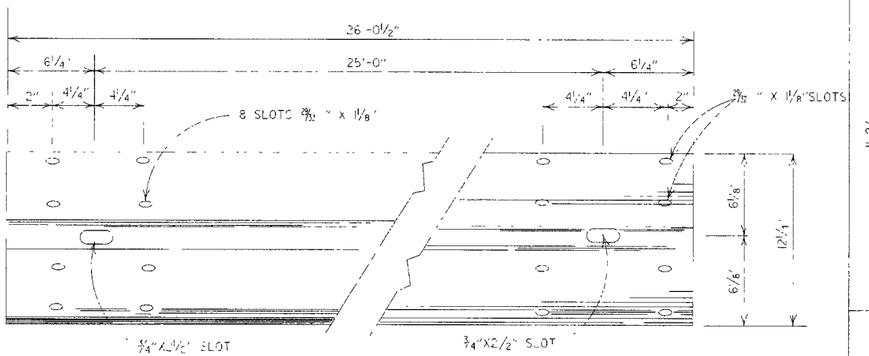
DATE	REVISION	FILMED
10-18-96	REVISED ASTM REF. TO AASHTO	10-18-96
5-15-80	REVISED DISTANCE BETWEEN MULTIPLE R.C.P. F.E.S.	664-5-15-80
7-14-78	C.M. ARCH SIZES TO CONFORM WITH AASHTO SIZES	752-7-14-78
8-22-75	ADDED MULTIPLE PIPE CULVERTS	517-8-22-75
12-5-74	REMOVED NOTE RE REINF. FOR R.C. F.E.S.	500-12-5-74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

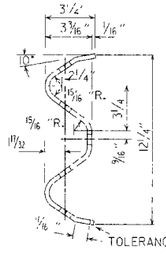
ARKANSAS STATE HIGHWAY COMMISION

FLARED END SECTION

STANDARD DRAWING FES-2

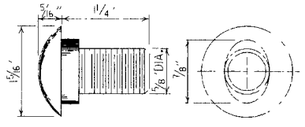
std fes2.dgn



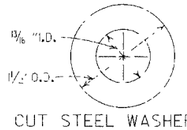


DETAILS OF W-BEAM GUARD RAIL

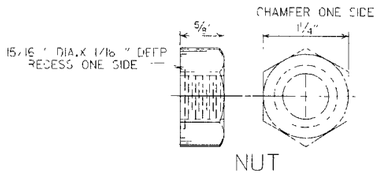
RAIL SECTION OF CLOSELY SIMILAR DIMENSIONS AND COMPARABLE STRENGTH MAY BE SUBSTITUTED IF APPROVED BY THE ENGINEER.



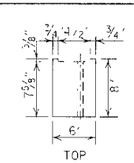
SPLICE BOLT
POST BOLT - SAME EXCEPT LENGTH



CUT STEEL WASHER

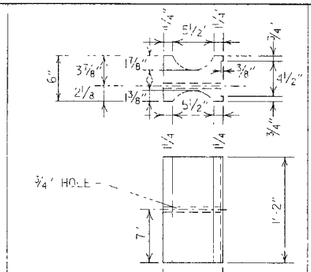


NUT



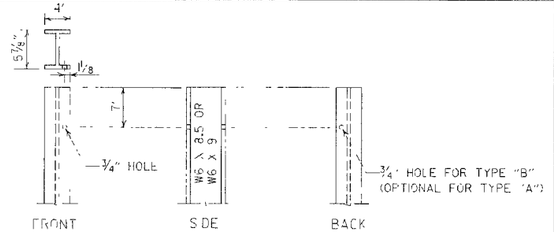
WOOD BLOCKOUT USED WITH WOOD POSTS SHALL BE 6"x8"x1'-2" WITH NO NOTCH REQUIRED.

WOOD BLOCKOUT (W-BEAM)

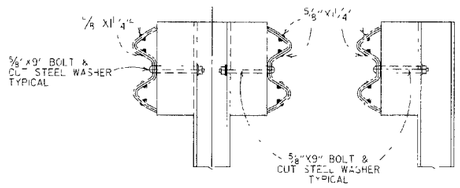


NOTES:
1. SIMILAR SHAPED PLASTIC BLOCKOUTS MAY BE USED AS LONG AS THEY MEET NCHRP 350 TEST LEVEL 3 SPECIFICATIONS OR REQUIREMENTS FOR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).
2. DIMENSIONS ARE SUBJECT TO MANUFACTURERS TOLERANCES.

PLASTIC BLOCKOUT (W-BEAM)

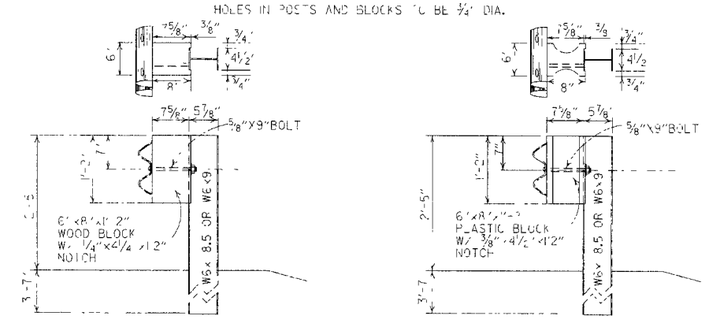


STEEL POST



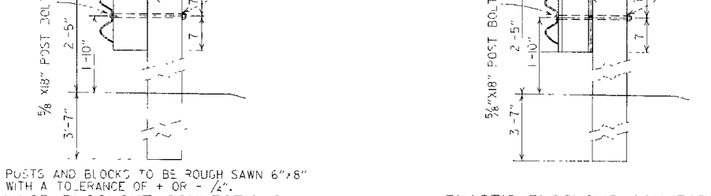
DETAILS OF STEEL LINE POST CONNECTIONS (W-BEAM)

HOLES IN POSTS AND BLOCKS TO BE ¾" DIA.



DETAILS OF STEEL LINE POST CONNECTIONS (W-BEAM)

HOLES IN POSTS AND BLOCKS TO BE ¾" DIA.



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 ¾" BEYOND IT.

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

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

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

ANY BACKFILLING UNDER OR AROUND POST SHALL BE CAMP 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.

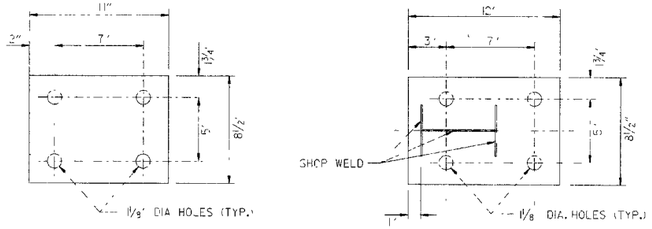
CONTRACTOR SHALL HAVE THE OPTION OF USING WOOD BLOCKOUTS FOR W-BEAM GUARD RAIL OR PLASTIC BLOCKOUTS, AS LONG AS BLOCKOUT USED MEETS NCHRP-350 TEST LEVEL 3 SPECIFICATIONS OR REQUIREMENTS FOR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) FOR W-BEAM GUARD RAIL.

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	
8-12-94	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 DETAIL OF STEEL LINE POST CONN. REMOVED BACK-UP PLATE, REVISED HOLES IN STEEL POLES	
4-3-97	REMOVED "LAP IN DIRECTION OF TRAFFIC" NOTE & PLACED ARROWS ON WASHERS	
10-18-96	REVISED WOOD POST NOTE	
6-2-94	ADDED A.T. STEEL POST SIZE	
2-5-93	REVISED STEEL POST SIZE	8-5-93
10-1-92	REDRAWN & REVISED	10-1-92
8-15-3	REVISED WASHER NOTE	8-15-91
8-2-90	REV. GEN. NOTE & DEPTH OF ANC. POST IN ROCK	8-2-90
7-15-88	REVISED SECTION 3 & GENERAL NOTES	
3-4-88	REV. ANCHOR POST, REV. 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

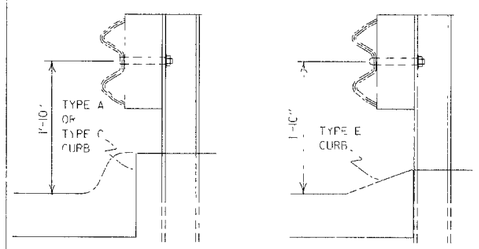
STANDARD DRAWING GR-8



WASHER PLATE

BASE PLATE

Note: Bolts, nuts, washers and plates shall be galvanized in accordance with Section 907 of the Standard Specifications.



FOR DESIGN SPEEDS OF 50 MPH OR LESS

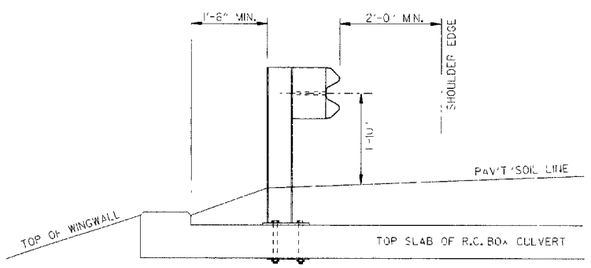
ALIGN FACE OF GUARD RAIL WITH FACE OF CURB.

FOR DESIGN SPEEDS OF 55 MPH OR MORE

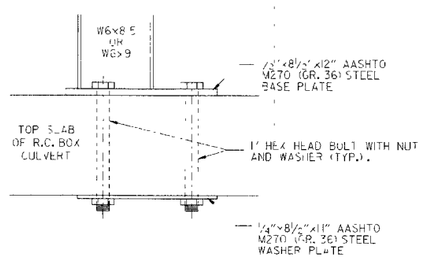
PLACE GUARD RAIL POSTS AGAINST BACK OF CURB.

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.

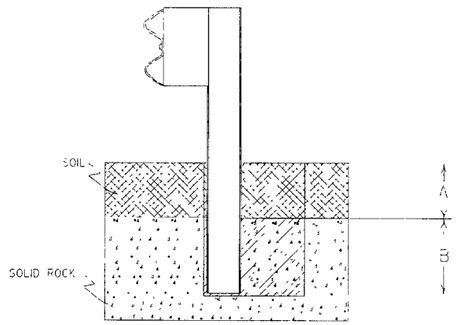


SECTION A-A

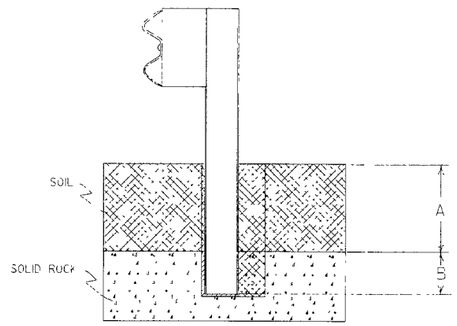


DETAIL OF CONNECTION

Case 1

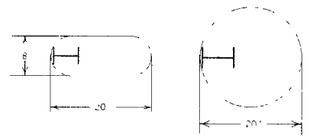


Case 2



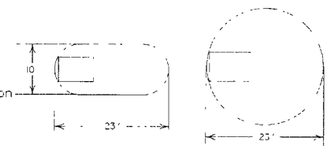
Plan View Steel Posts

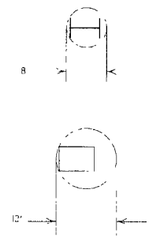
Either hole configuration acceptable



Plan View Wood Posts

Either hole configuration acceptable





Notes: For overlying soil depths (A) ranging from 0 to 19", the depth of required drilling (B) is equal to 24".

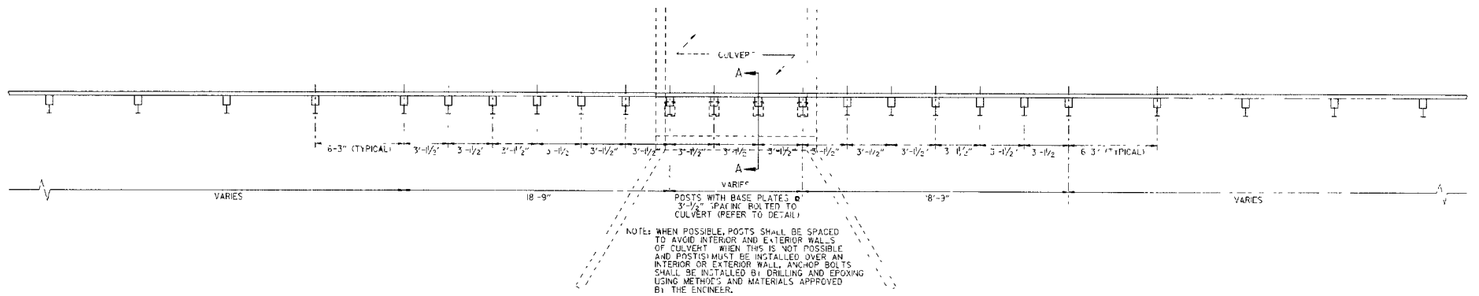
Zone A:
Backfill according to Section 617.03(a).

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 AASHTO T-99.

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

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

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



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

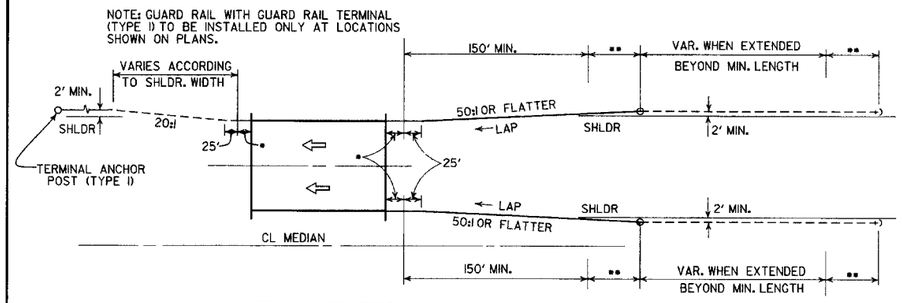
NOTE: THIS DETAIL IS TO BE USED ONLY WHEN THE COVER OVER THE CULVERT DOES NOT PERMIT FULL EMBEDMENT OF GUARD RAIL POSTS AS SHOWN ON STD DWG. GR-8

DATE	REVISION	DATE FILM
7-14-10	RAISED HEIGHT OF GUARD RAIL 1"	
4-12-07	REVISED DETAIL OF GUARD RAIL PLACEMENT BEHIND CURB	
11-10-05	ADDED GUARD RAIL PLACEMENT BEHIND CURB; REVISED DETAIL OF CONNECTION	
1-16-04	REVISED POST PLACEMENT IN ROCK & CULVERT CONNECTION DETAILS. ADDED DETAIL FOR GUARD RAIL PLACEMENT AT LOW-FILL CULVERTS.	
4-30-00	REMOVED CONCRETE INSERT ANCHOR	
8-12-98	CHANGED STEEL SPACER BLOCK TO WOOD BLOCKOUT, ADD. DET. OF GUARD RAIL CONNECTION TO R.C. BOX CULV'T. 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	
1-22-95	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
1-15-88	CONFORMED TO 988 SPECS	
7-4-38	REVISED ANCHOR NOTE	
10-30-87	REVISED ANCHOR ASSEMBLY	712-10-30-87
0-30-87	REVISED PLACEMENT BEHIND CURB	547-10-30-87
10-8-87	REDRAWN & REVISED	803-10-9-87

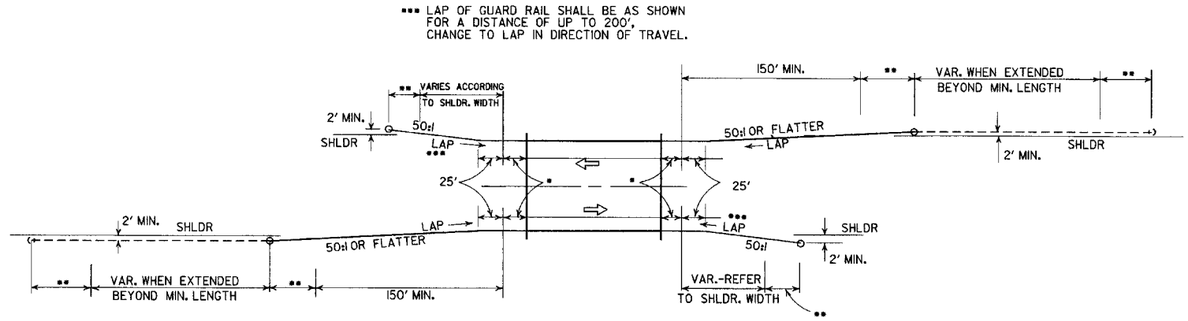
ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR-8A



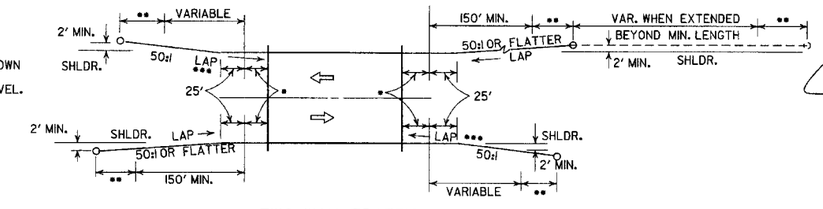
ONE-WAY TRAFFIC



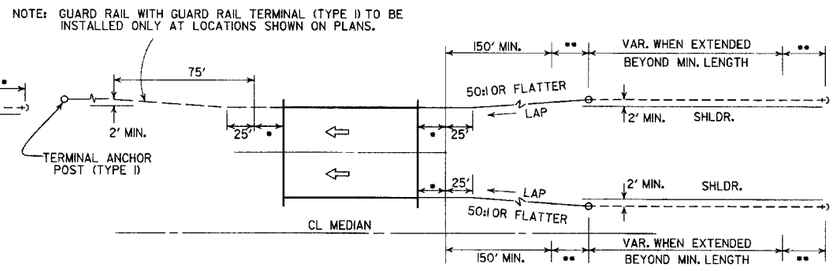
TWO-WAY TRAFFIC

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

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



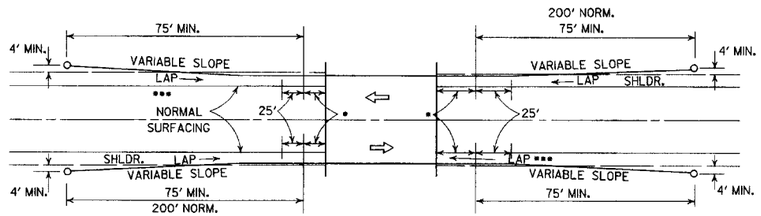
TWO-WAY TRAFFIC



ONE-WAY TRAFFIC

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

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



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

LEGEND

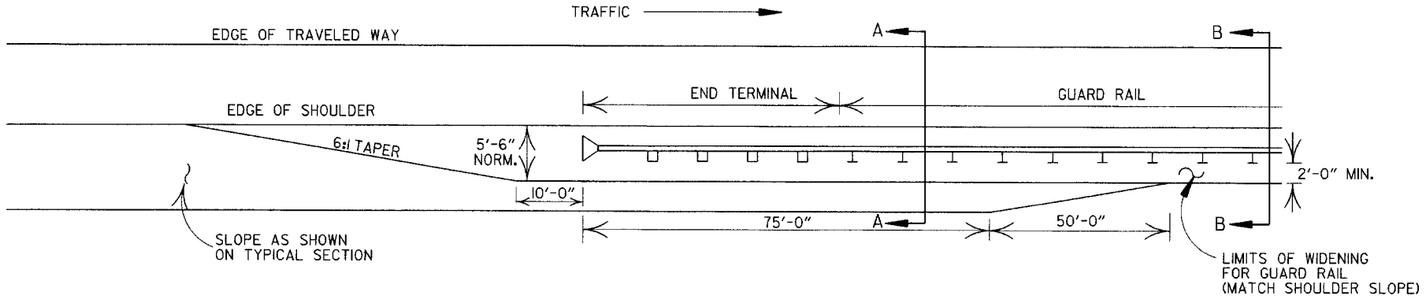
- • THRIE BEAM GUARD RAIL TERMINAL
- •• GUARD RAIL TERMINAL (TYPE 2)

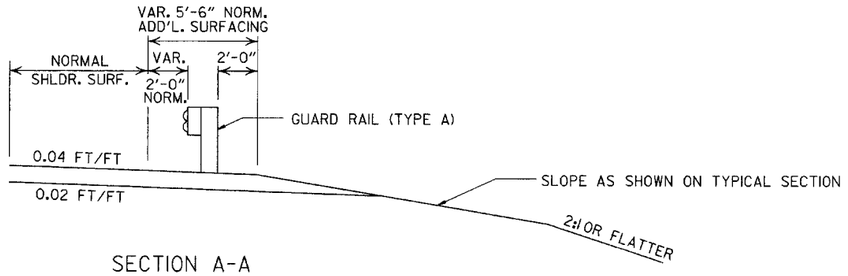
DATE	REVISION	DATE FILM
4-17-08	REVISED LAYOUTS	
11-10-05	REMOVED GUARD RAIL NOTES AND DETAILS	
11-16-01	DELETED NOTE-METHOD OF INSTALLATION OF GUARD RAIL USING GUARD RAIL TERM. (TY. I)	
1-12-00	ADDED CONSTRUCTION NOTE	1-12-00
6-26-97	REVISED LAYOUT	
10-1-92	REDRAWN & REVISED	10-1-92
	ADDED NOTE	
10-9-87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

ARKANSAS STATE HIGHWAY COMMISSION

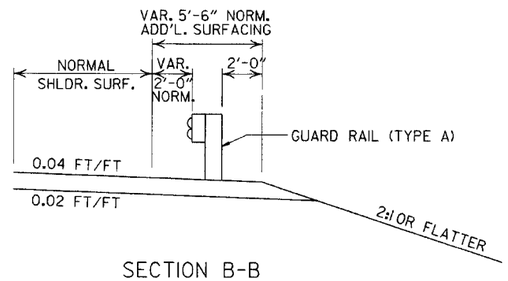
GUARD RAIL DETAILS

STANDARD DRAWING GR-9





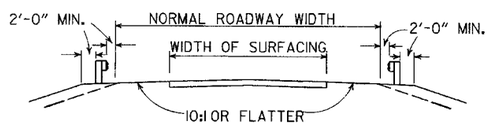
SECTION A-A



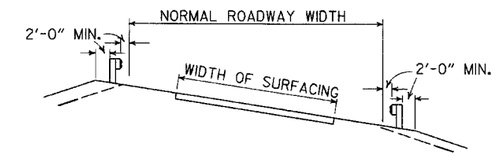
SECTION B-B

DETAILS OF WIDENING FOR GUARD RAIL

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

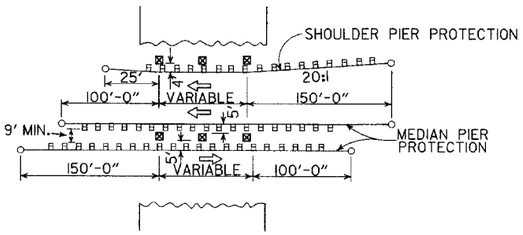


SECTION ON TANGENT



SECTION ON CURVE

DETAILS SHOWING POSITION OF GUARD RAIL ON HIGHWAY



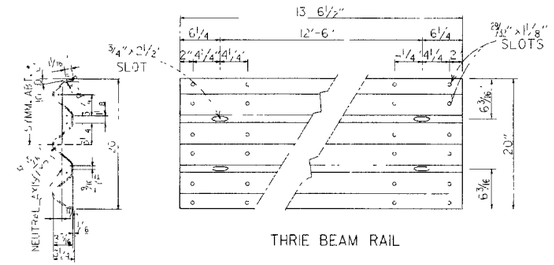
METHOD OF INSTALLATION OF GUARD RAIL AT FIXED OBSTACLE

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

ARKANSAS STATE HIGHWAY COMMISSION

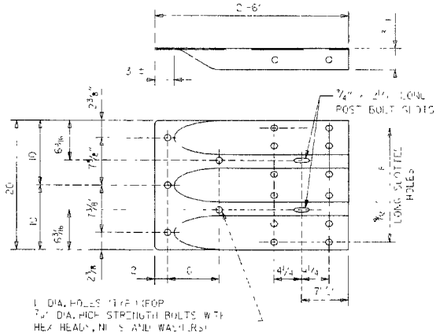
GUARD RAIL DETAILS

STANDARD DRAWING GR-9A

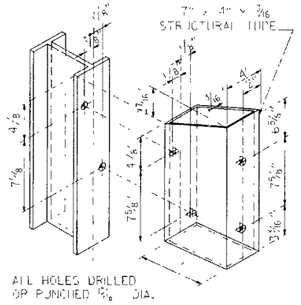


THRIE BEAM RAIL

SECTION THRU THRIE BEAM RAIL

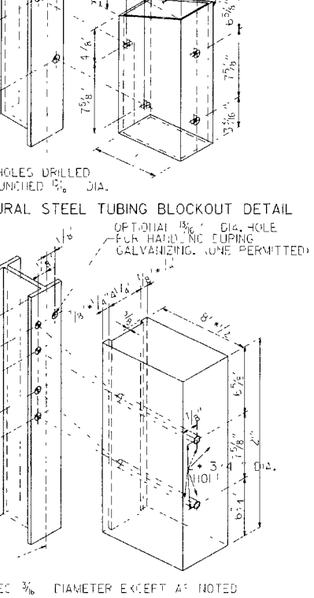


SPECIAL END SHOE



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

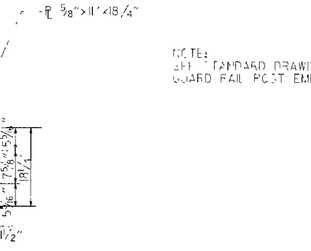
STRUCTURAL STEEL TUBING BLOCKOUT DETAIL



ALL HOLES ⅝" DIAMETER EXCEPT AS NOTED

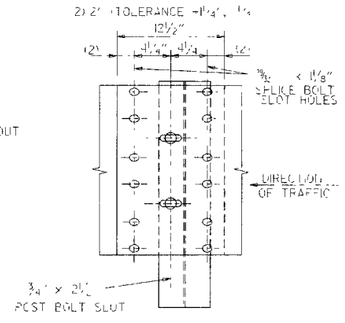
HOLE PUNCHING DETAIL FOR STEEL POST & WOOD OR PLASTIC BLOCKOUTS

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

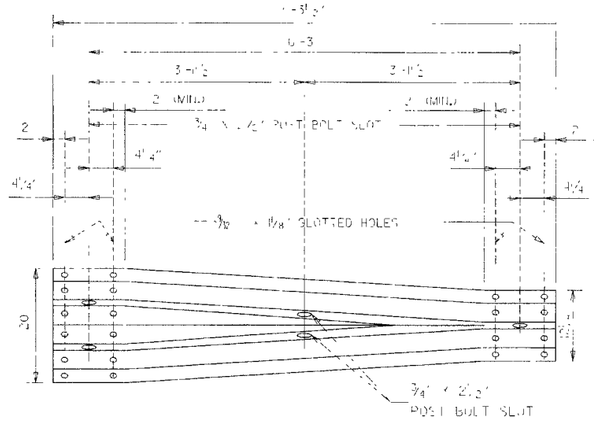


CONNECTOR PLATE

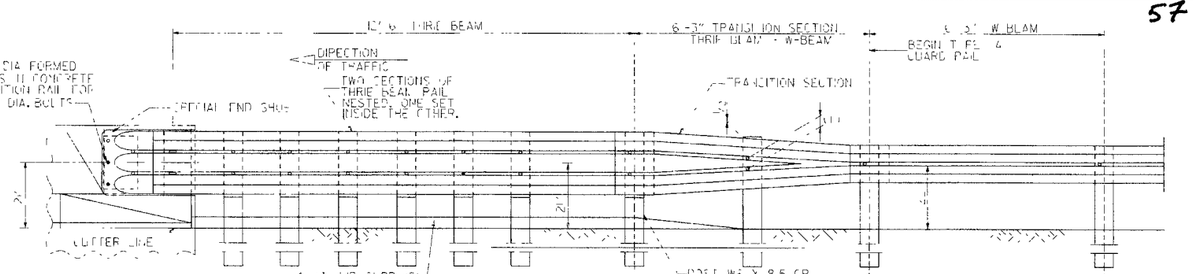
CONNECTOR PLATE SHALL BE AASHTO M270, GR. 36 AND SHALL BE GALVANIZED AFTER FABRICATION. GALVANIZING SHALL CONFORM TO SUBSECTION 807.9 OF THE STANDARD SPECIFICATIONS. CONNECTOR PLATE TO BE BOLTED TO SPECIAL END SHOE USING ⅞" DIA. HIGH STRENGTH BOLTS, WITH THE HEADS PLACED ON THE TRAFFIC FACE. WASHERS 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



PLAN

(1) VERIFY BOLT SPACING FROM RAIL TRANSITION PRODUCER.
(2) REFER TO APPROACH CUTTER DETAILS.
(3) LENGTH OF BLOCKOUT ON POST 6 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 .

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 8.

WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7# (400 F/B) GRADE NO. 1 OR 2 SOUTHERN PINE.

REFER TO STD. DRWG. GR 10A FOR TOS DETAILS.

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

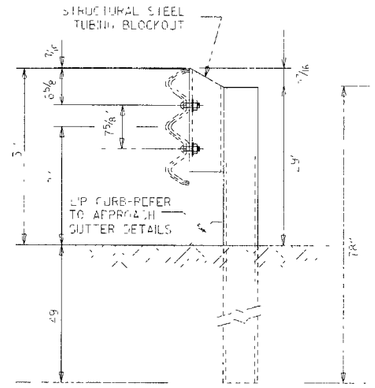
THRIE BEAM POSTS SHALL BE SAME MATERIAL AS W-BEAM POSTS FOR ENTIRE JOB.

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	

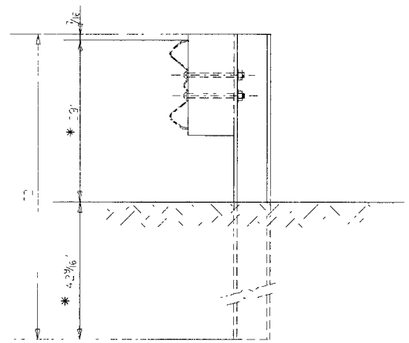
ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR-10

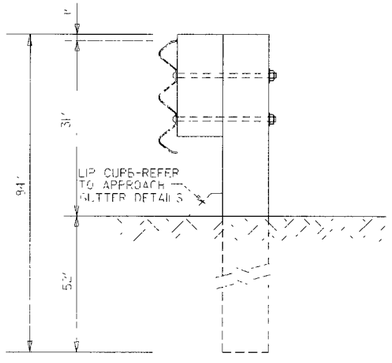


THRIE BEAM RAIL WITH STEEL TUBING BLOCKOUT
AND STEEL POST
POSTS 1-7

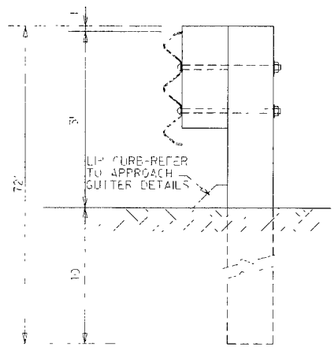


W-BEAM TO THRIE BEAM TRANSITION RAIL
WITH WOOD OR PLASTIC BLOCKOUT AND STEEL POST
POST 8

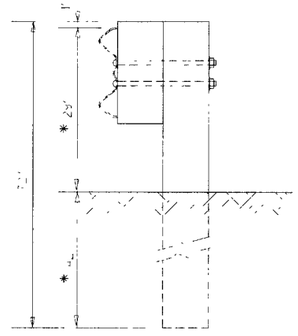
* NOTE:
THESE DIMENSIONS WILL NEED TO BE ADJUSTED IN THE FIELD TO MAKE THE TRANSITION FROM "R" MID POINT OF THRIE BEAM TO "Z" MID POINT OF W BEAM.



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.

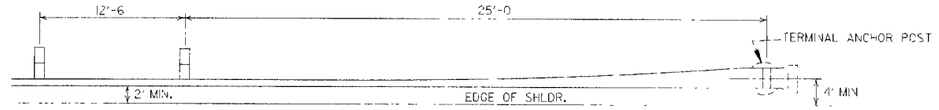
WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 4.76 (460 F/IN²) TO 1350 f SOUTHERN PINE.

DATE	REVISION	DATE FILM
7-14-10	REVISED POST 8 DIMENSIONS	
11-29-07	ADDED PLASTIC BLOCKOUTS	
8-22-02	REVISED LIP CURB NOTE	
3-30-00	DRAWN & ISSUED	

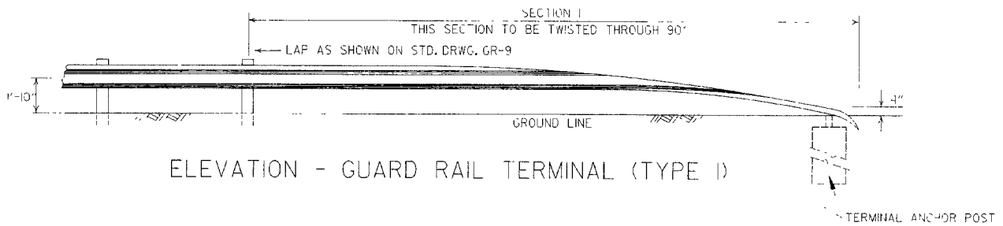
ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR-10A

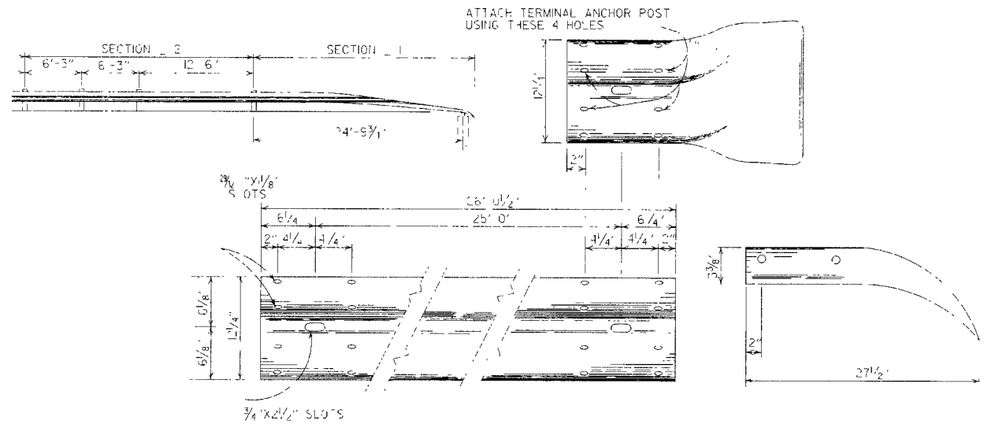


PLAN - GUARD RAIL TERMINAL (TYPE I)



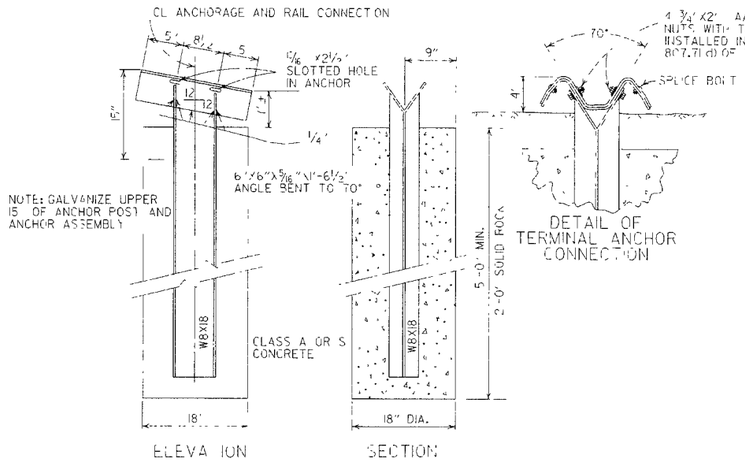
ELEVATION - GUARD RAIL TERMINAL (TYPE I)

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



SECTION 1

TERMINAL SECTION



NOTE: RAIL MEMBERS MAY BE BOLTED TO ANGLE AT TERMINAL ANCHOR AND THE TWO ASSEMBLIES POSITIONED TO PROPER ALIGNMENT PRIOR TO PLACING CONCRETE AROUND W8X18 POST IF CONTRACTOR SO DESIRES.

DETAIL OF TERMINAL ANCHOR POST (TYPE I)

DATE	REVISION	DATE FILM
7-14-00	RAISED HEIGHT OF GUARD RAIL 1"	
6-26-97	REVISED AF NOTE	
10-18-96	REVISED ASTM REF. TO 449M10	
11-2-94	DIMENSION TERMINAL DETAIL	
11-11-92	ADDED NOTE FOR PAYMENT.	11-11-92
10-1-92	DRAWN & ISSUED	10-1-92

ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR1-I

REINFORCED CONCRETE ARCH PIPE DIMENSIONS

EQUIV. DIA.	SPAN		RISE	
	AASHTO M 206	AHTD NOMINAL	AASHTO M 206	AHTD NOMINAL
INCHES	INCHES			
15	18	18	11	11
18	22	22	13½	14
21	26	26	15½	16
24	28½	29	18	18
30	36¼	36	22½	23
36	43⅜	44	26⅝	27
42	51⅛	51	31⅝	31
48	58½	59	36	36
54	65	65	40	40
60	73	73	45	45
72	88	88	54	54
84	102	102	62	62
90	115	115	72	72
96	122	122	77½	77
108	138	138	87⅛	87
120	154	154	96⅞	97
132	168¾	169	106½	107

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

REINFORCED CONCRETE HORIZONTAL ELLIPTICAL PIPE DIMENSIONS

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

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

CONSTRUCTION SEQUENCE

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

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

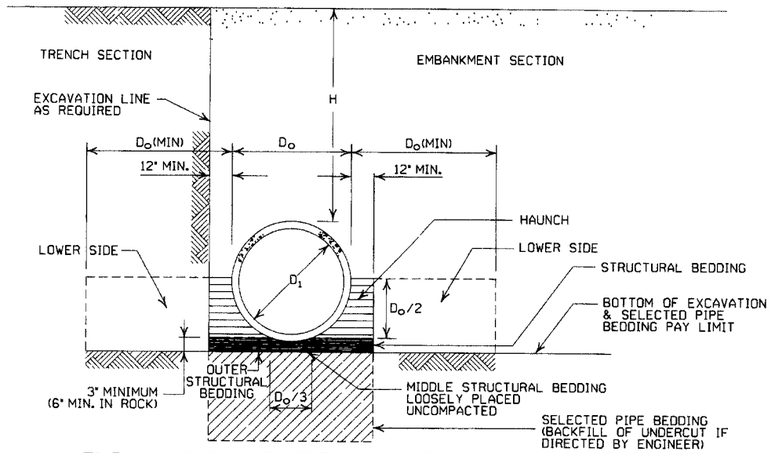
- LEGEND -

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

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

* SM-3 WILL NOT BE ALLOWED.

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



EMBANKMENT AND TRENCH INSTALLATIONS

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

GENERAL NOTES

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE PIPE CULVERT FILL HEIGHTS & BEDDING

STANDARD DRAWING PCC-1

CORRUGATED STEEL PIPE (ROUND)

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

CORRUGATED ALUMINUM PIPE (ROUND)

PIPE DIAMETER (INCHES)	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.)		MAX. HEIGHT OF FILL, "H" (FT.)		MIN. THICKNESS REQUIRED INCHES	① MIN. HEIGHT OF FILL, "H" (FT.)		MAX. HEIGHT OF FILL, "H" (FT.)
				INSTALLATION		INSTALLATION			INSTALLATION		INSTALLATION
				TYPE 1		TYPE 1			TYPE 1		TYPE 1
			2 ⅔ INCH BY ½ INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM					2 ⅔ INCH BY ½ INCH CORRUGATION RIVETED OR HELICAL LOCK-SEAM			
15	17x13	3	0.064	2		15		0.060	2		15
18	21x15	3	0.064	2		15		0.060	2		15
21	24x18	3	0.064	2.25		15		0.060	2.25		15
24	28x20	3	0.064	2.5		15		0.075	2.5		15
30	35x24	3	0.079	3		12		0.075	3		12
36	42x29	3½	0.079	3		12		0.105	3		12
42	49x33	4	0.079	3		12		0.105	3		12
48	57x38	5	0.109	3		13		0.135	3		13
54	64x43	6	0.109	3		14		0.135	3		14
60	71x47	7	0.138	3		15		0.164	3		15
66	77x52	8	0.168	3		15					
72	83x57	9	0.168	3		15					
			② 3 INCH BY 1 INCH OR 5 INCH BY 1 INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM								
				INSTALLATION		INSTALLATION					
				TYPE 2	TYPE 1	TYPE 2	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.

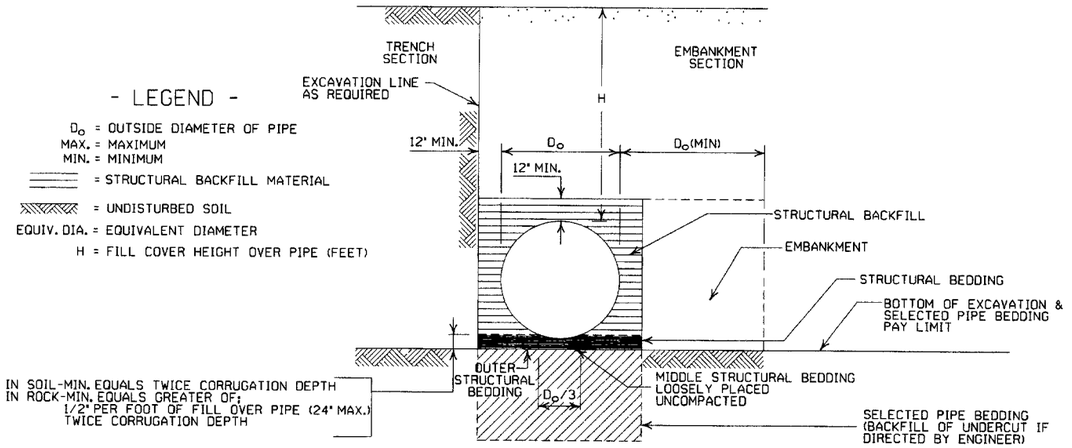
NOTE: STRUCTURAL BACKFILL AND STRUCTURAL BEDDING MATERIAL WILL NOT BE PAID FOR SEPARATELY, BUT COMPENSATION WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID PER LINEAR FOOT OF METAL PIPE.

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



EMBANKMENT AND TRENCH INSTALLATIONS

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

GENERAL NOTES

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

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

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

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

ARKANSAS STATE HIGHWAY COMMISSION

METAL PIPE CULVERT FILL HEIGHTS & BEDDING

STANDARD DRAWING PCM-1

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

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

SM3 WILL NOT BE ALLOWED.

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

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

MULTIPLE INSTALLATION OF HIGH DENSITY POLYETHYLENE PIPES

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

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

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

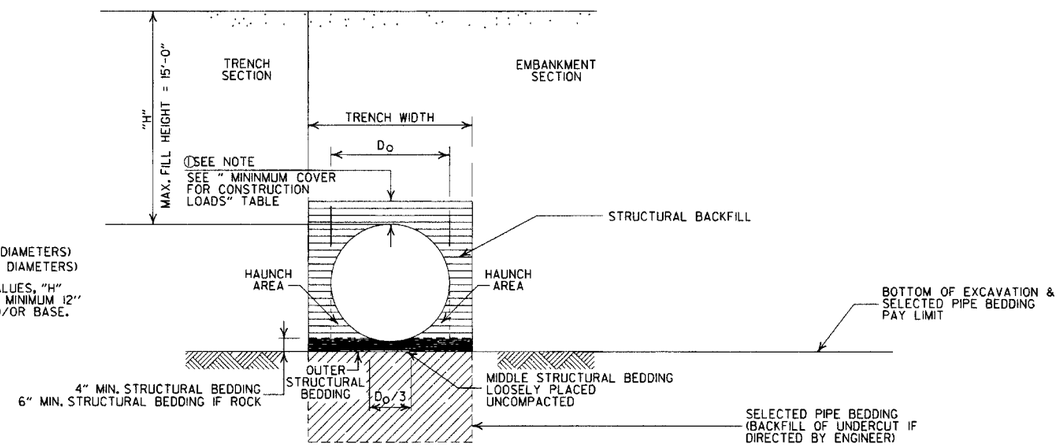
①NOTE:
18" MIN. (18" - 30" DIAMETERS)
24" MIN. (36" - 48" DIAMETERS)

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

MINIMUM COVER FOR CONSTRUCTION LOADS

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

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



TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

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

CONSTRUCTION SEQUENCE

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

GENERAL NOTES

1. PIPE SHALL CONFORM TO AASHTO M294, TYPE S. INSTALLATION SHALL CONFROM TO JOB SPECIAL PROVISION "PLASTIC PIPE" AND SECTION 606 OF THE STANDARD SPECIFICIATIONS FOR HIGHWAY CONSTRUCTION (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

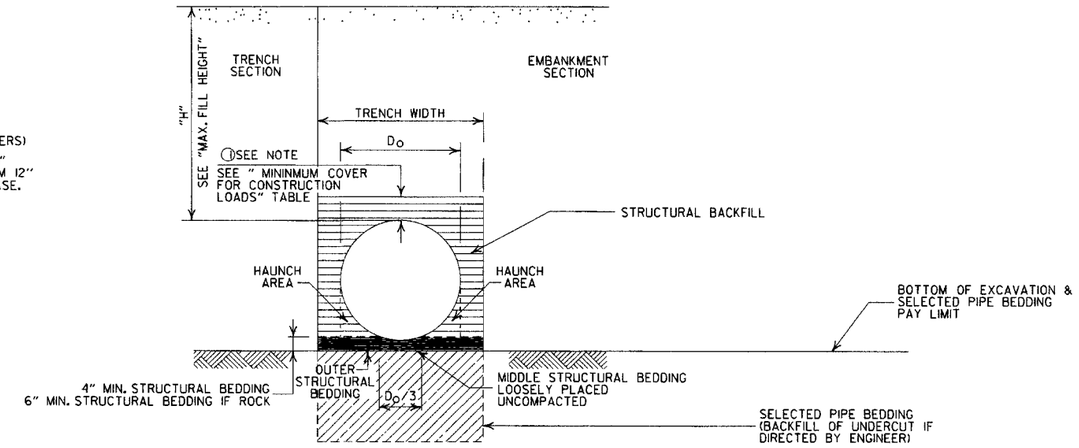
PIPE DIAMETER	"H"
18"	45'-0"
24"	45'-0"
30"	40'-0"
36"	40'-0"

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

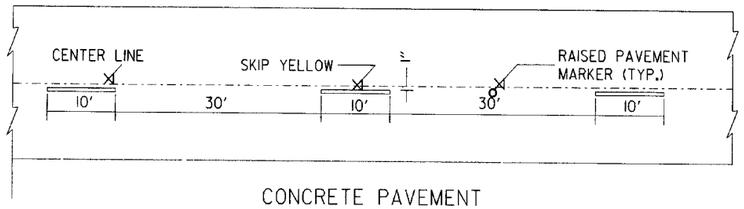
DATE	REVISION	DATE FILMED
2-27-14	REVISED GENERAL NOTE 1.	
12-15-11	REV GENERAL NOTES & MINIMUM COVER NOTE; DELETED SM3 MATERIAL	
11-17-10	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

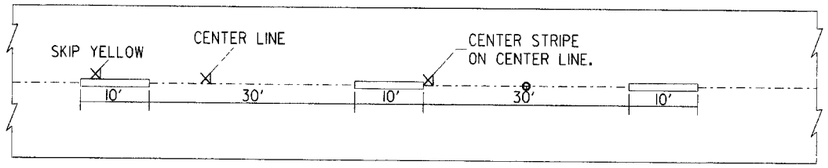
PLASTIC PIPE CULVERT (PVC F949)

STANDARD DRAWING PCP-2

NOTES:
1. REFER TO THE STRIPING DETAILS FOR PAVEMENT MARKING LINE WIDTHS.
2. THIS DRAWING SHALL BE USED IN CONJUNCTION WITH THE LATEST REVISED ADDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES."
3. RAISED PAVEMENT MARKERS SHALL BE PLACED ON AN 80 FEET SPACING UNLESS OTHERWISE SHOWN IN THE PLANS.

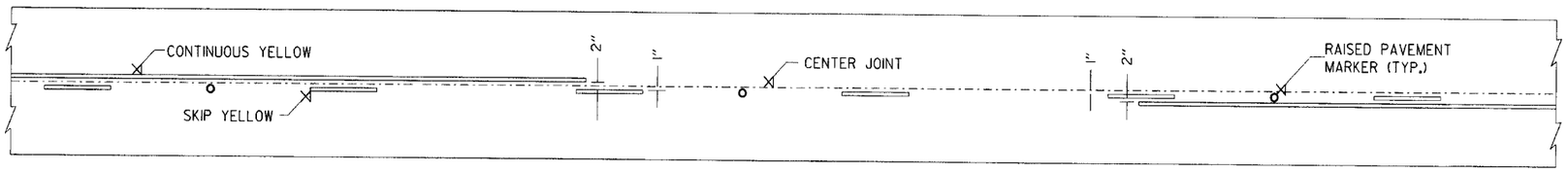


CONCRETE PAVEMENT

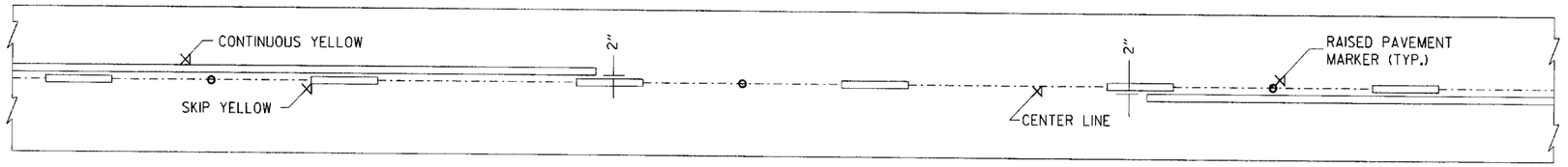


ASPHALT PAVEMENT

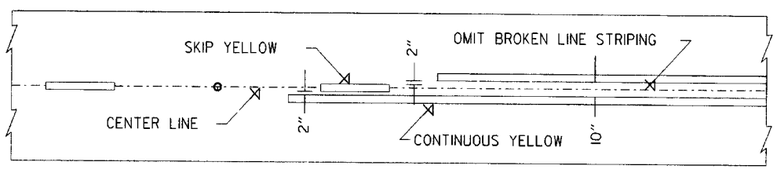
BROKEN LINE STRIPING



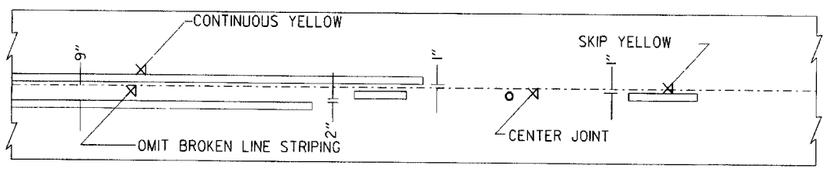
SOLID LINE STRIPING ON CONCRETE PAVEMENT



SOLID LINE STRIPING ON ASPHALT PAVEMENT

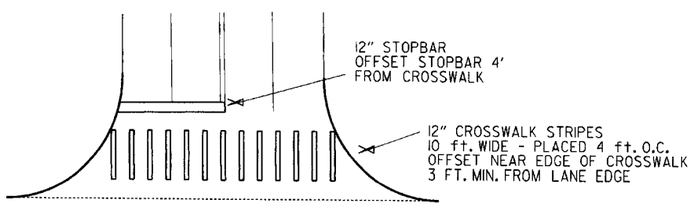


ASPHALT PAVEMENT



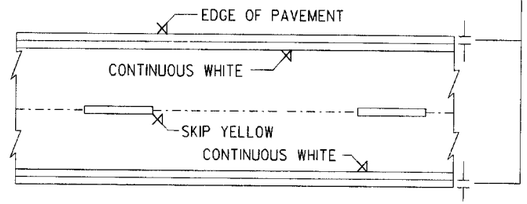
CONCRETE PAVEMENT

STRIPING AT ADJACENT NO PASSING LANES

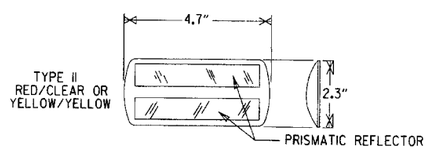


CROSSWALK AND STOPBAR DETAILS

2" FOR ASPHALT OR CONCRETE PAVEMENT
6" FOR BITUMINOUS SURFACE TREATMENT



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

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	
5-12-16	REVISED LINE WIDTHS, SPACING, & NOTES	
9-12-13	REVISED DETAIL OF STANDARD RAISED PAVEMENT MARKERS	
11-17-10	REVISED GENERAL NOTES & REMOVED PLOWABLE PVMT MRKRS	
11-18-04	REVISED NOTE 2 & GENERAL NOTES	
8-22-02	ADDED CROSSWALK & STOPBAR DTLS.	
7-02-98	ADDED DETAILS OF STD. RAISED PAV'T. MARKERS	
4-26-96	REV. NOTES 3&4; ADDED R.P.M.	
9-30-80	DRAWN	1-9-30-80
DATE	REVISION	FILMED

ARKANSAS STATE HIGHWAY COMMISSION

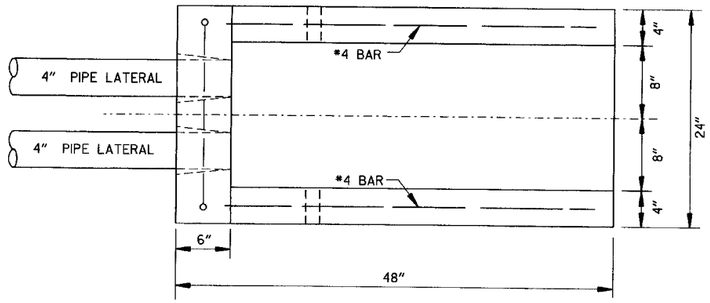
PAVEMENT MARKING DETAILS

STANDARD DRAWING PM-1

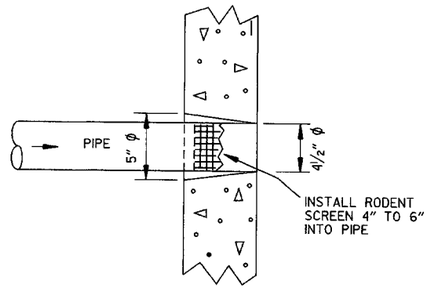
NOTE:
1. GRANULAR BACKFILL TO BE SUBSIDIARY TO PIPE UNDERDRAIN.

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

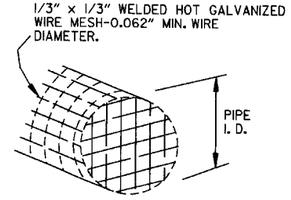
3. GRANULAR MATERIAL SHALL BE WRAPPED WITH GEOTEXTILE FABRIC. LAP FABRIC 12" OR THE WIDTH OF THE TRENCH AT THE TOP.



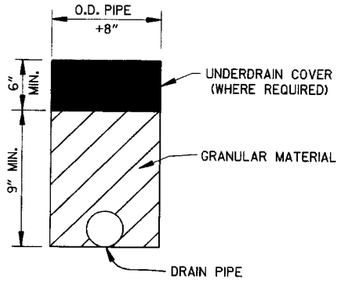
PLAN VIEW

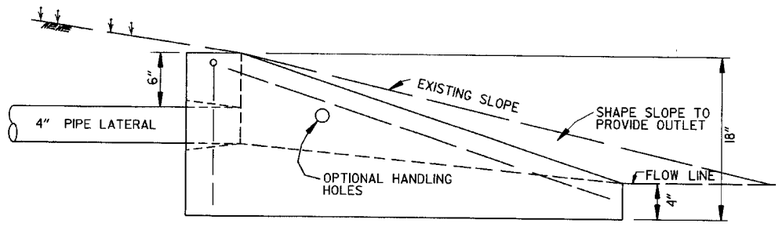


DETAIL OF HOLE FOR 4" PIPE

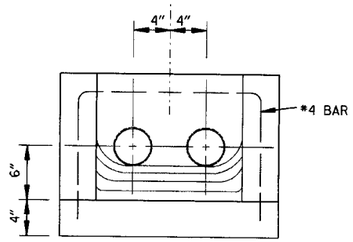


DETAIL OF RODENT SCREEN

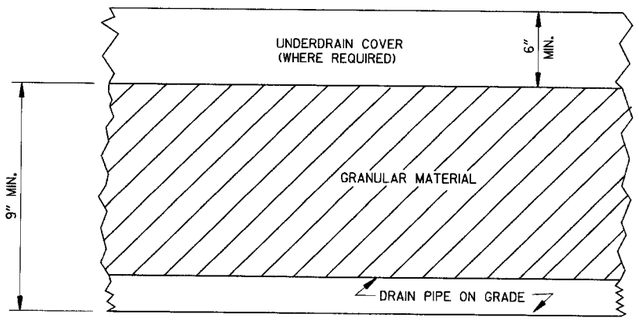




SIDE VIEW

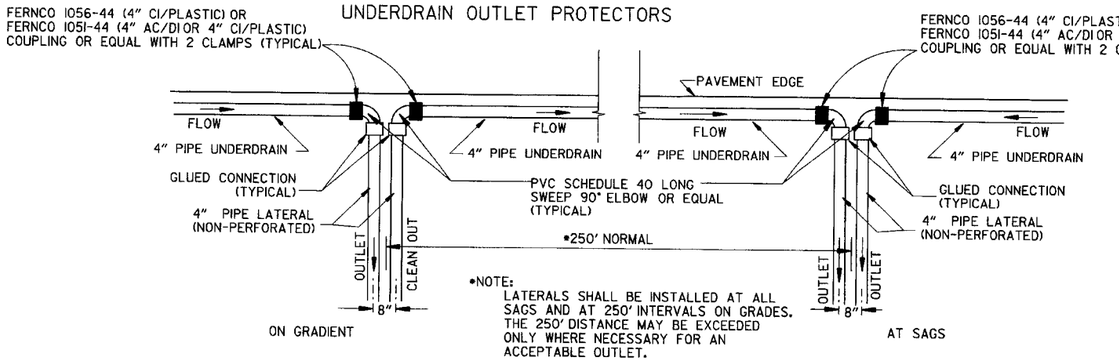


FRONT VIEW



DETAILS OF PIPE UNDERDRAIN

UNDERDRAIN OUTLET PROTECTORS



DETAIL OF PIPE UNDERDRAIN LATERALS WHEN PLACED ALONG PAVEMENT EDGE

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

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

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF PIPE UNDERDRAIN

STANDARD DRAWING PU-1

7-20-95 INSTD.PUI

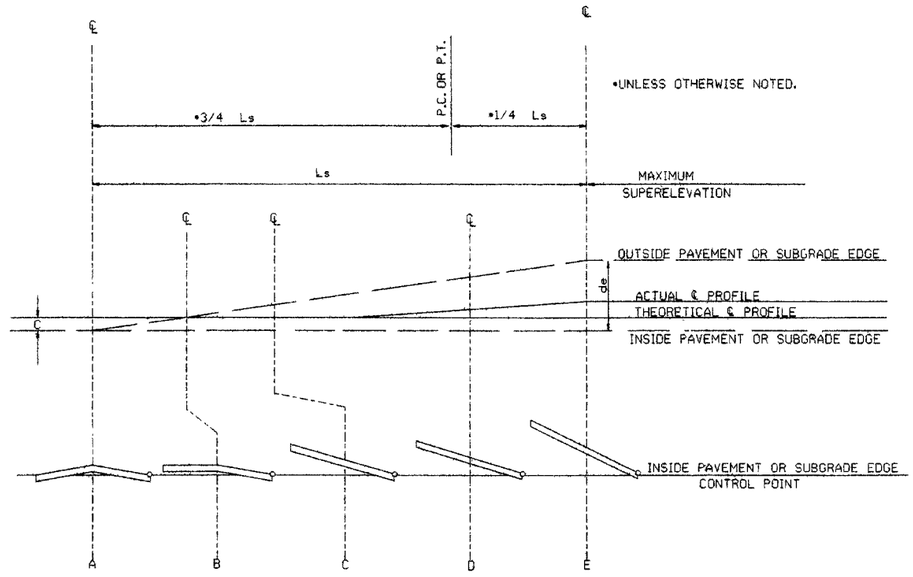
SUPERELEVATION TABLE FOR TWO - WAY TRAFFIC

DEGREE OF CURVE	30 MPH e	30 MPH Ls (FT) MINIMUM	30 MPH Ls (FT) DESIRABLE	40 MPH e	40 MPH Ls (FT) MINIMUM	40 MPH Ls (FT) DESIRABLE	50 MPH e	50 MPH Ls (FT) MINIMUM	50 MPH Ls (FT) DESIRABLE	55 MPH e	55 MPH Ls (FT) MINIMUM	55 MPH Ls (FT) DESIRABLE	60 MPH e	60 MPH Ls (FT) MINIMUM	60 MPH Ls (FT) DESIRABLE	70 MPH e	70 MPH Ls (FT) MINIMUM	70 MPH Ls (FT) DESIRABLE
0° 15'	N.C.			N.C.			N.C.			N.C.			N.C.			N.C.		
0° 30'	N.C.			N.C.			N.C.			N.C.			N.C.			N.C.		
0° 45'	N.C.			N.C.			R.C.			0.022			0.023			0.028		
1° 00'	N.C.			N.C.			0.021			0.025			0.030			0.037	275	300
1° 15'	N.C.			R.C.			0.026			0.029			0.037			0.046		
1° 30'	N.C.			0.021			0.031	200		0.032	225		0.043	250		0.054		
1° 45'	N.C.			0.025	175		0.036			0.037		300	0.048		300	0.062		
2° 00'	R.C.			0.028			0.040			0.043			0.055			0.070		
2° 15'	R.C.			0.031			0.045			0.048			0.061			0.078	300	
2° 30'	0.021			0.034			0.049		250	0.053			0.067			0.085	315	350
2° 45'	0.023			0.037			0.053			0.058			0.072			0.091	335	
3° 00'	0.025	150		0.040		200	0.057			0.063			0.077	260		0.096	350	400
3° 15'	0.027			0.043			0.061			0.067	230		0.082	275		0.098	360	
3° 30'	0.029			0.046			0.065	205		0.072	245		0.086	285		0.100	360	
3° 45'	0.031			0.049			0.069	215		0.076	255		0.090	295				
4° 00'	0.033			0.051			0.072	225		0.080	265		0.093	305	350			
4° 30	0.037			0.056			0.078	240		0.083	270		0.096	315				
5° 00'	0.040			0.061			0.083	250		0.087	280		0.098	320				
5° 30'	0.043			0.066	185		0.088	260		0.091	295							
6° 00'	0.046			0.070	190		0.092	270		0.094	300	350						
6° 30'	0.050			0.074	200		0.095	280	300	0.096	305							
7° 00'	0.053			0.078	210		0.098	285		0.100	315							
7° 30'	0.056			0.081	215		0.099	290										
8° 00'	0.058			0.084	220		0.100	290										
8° 30'	0.061			0.087	225	250												
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.

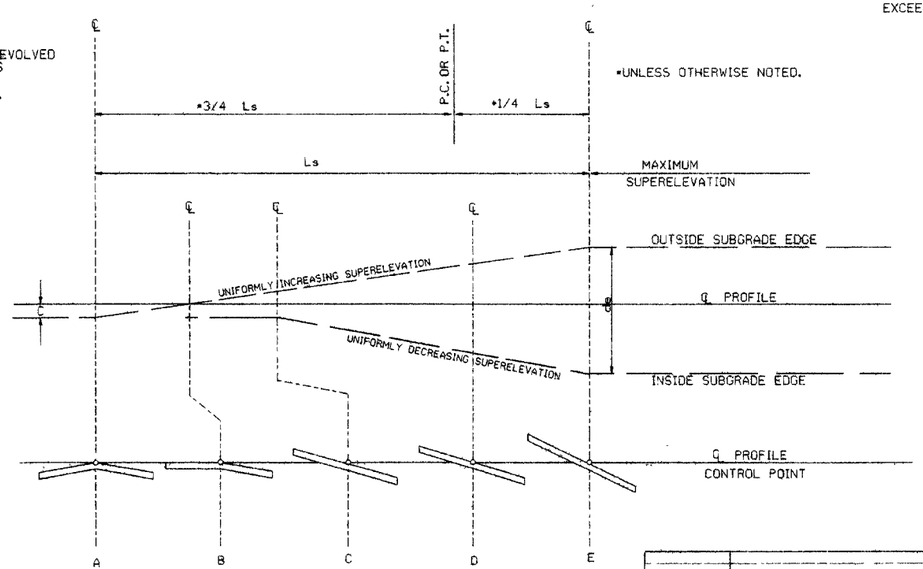
GENERAL NOTES

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 = $\frac{Lde}{Ls}$

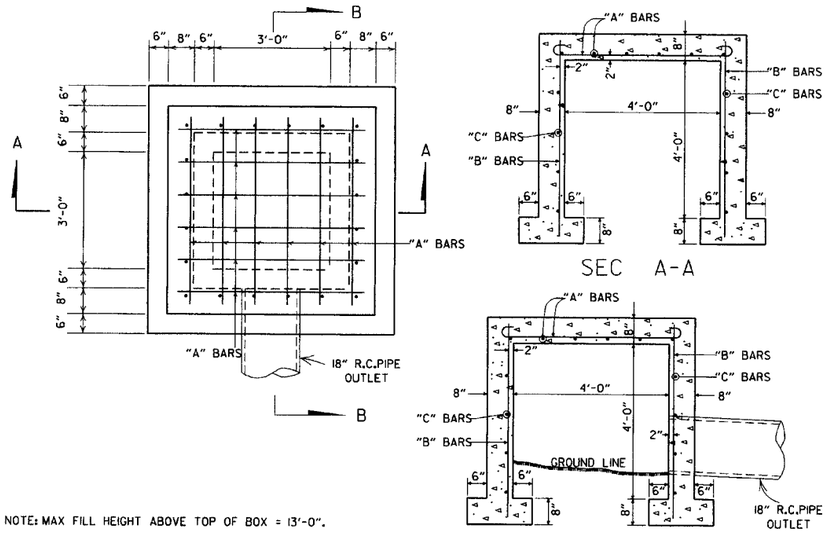
DATE	REVISION	DATE FILMED
10-18-96	ADDED FORMULA	10-28-96
01-09-87	ISSUED	534-1-9-87

ARKANSAS STATE HIGHWAY COMMISSION

TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC

STANDARD DRAWING SE-2

FILE STDSE2.DGN

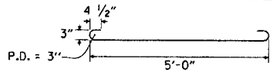


NOTE: MAX FILL HEIGHT ABOVE TOP OF BOX = 13'-0".

STEEL SCHEDULE

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

ALL STEEL TO BE #4 BARS



"A" BARS

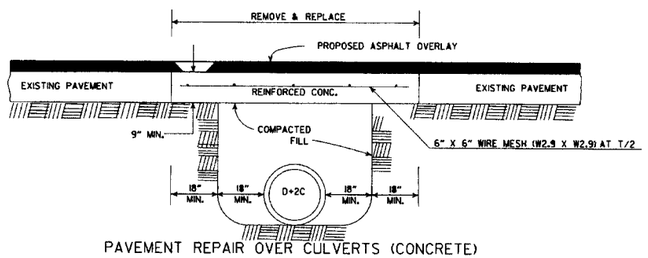
QUANTITIES

CONCRETE 3.31 CU. YDS.
REINFORCING STEEL 168 LB.

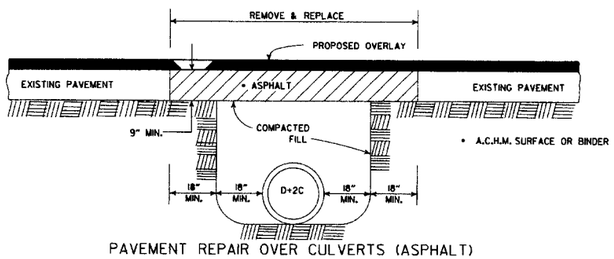
GENERAL NOTE:

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

REINFORCED CONCRETE SPRING BOX



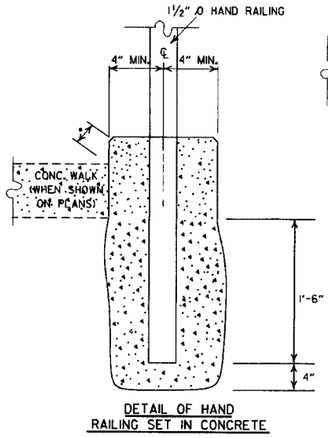
PAVEMENT REPAIR OVER CULVERTS (CONCRETE)



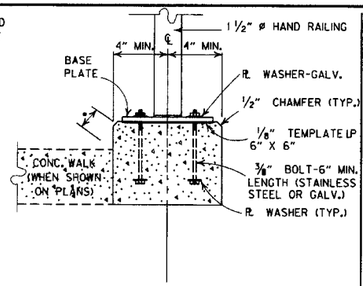
PAVEMENT REPAIR OVER CULVERTS (ASPHALT)

DETAIL SHOWING REPAIR OF EXISTING PAVEMENT AT CULVERT INSTALLATIONS

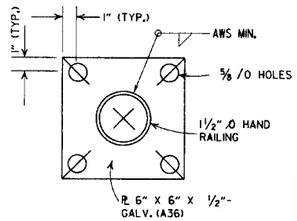
* A 2" MIN. HIGH CURB IS REQUIRED WHEN CONCRETE WALK IS ADJACENT TO THE HAND RAILING. PAYMENT FOR CURB SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR CONCRETE WALKS.



DETAIL OF HAND RAILING SET IN CONCRETE

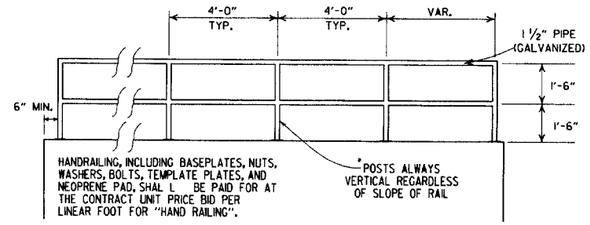


POST CONNECTION TO WALL

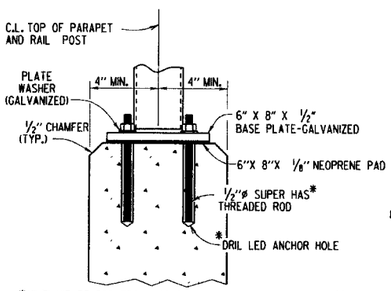


BASE PLATE

POST CONNECTION DETAILS



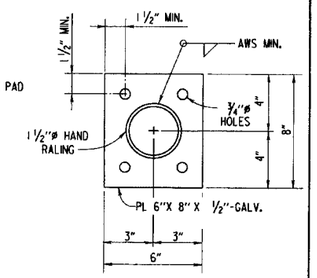
HAND RAILING SHALL CONFORM TO SECTION 633.



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

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

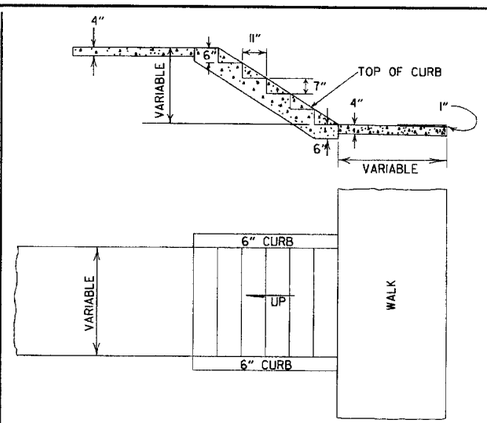
POST CONNECTION TO WALL



BASE PLATE

DETAILS OF ALTERNATE POST ANCHOR SYSTEM
(EPOXY ADHESIVE ANCHORS)

HAND RAILING DETAILS



GENERAL NOTES

1. RISE AND TREAD DIMENSIONS OF STEPS MAY BE VARIED AS DIRECTED BY THE ENGINEER, HOWEVER, TREAD WIDTHS SHALL BE 11" MIN. ALL STEPS IN A FLIGHT SHALL HAVE CONSISTENT TREAD & RISER DIMENSIONS.
2. 1" TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE WALKS AT 45' INTERVALS.

DETAILS OF CONCRETE STEPS & WALKS

DATE	REVISION	DATE FILMED
9-12-13	REVISED REINFORCED CONCRETE SPRING BOX	
7-26-12	REMOVED RETAINING WALL DETAILS & REVISED HAND RAILING DETAILS	
4-17-08	REV. JOINT & FOOTING STEP DETAILS	
11-29-07	REVISED RETAINING WALL DRAINAGE	
5-25-06	REVISED PVMT REPAIR OVER CULVERTS (CONC); REVISED REINFORCED CONC SPRING BOX	
10-9-03	REVISED PIPE RAILING DETAILS TO HAND RAILING DETAILS	
4-10-03	REVISED RETAINING WALL DRAWING	
8-22-02	ADDED HAND RAILING DETAIL	
11-16-01	REVISED PVMT REPAIR OVER CULVERTS (CONC); CORRECTED SPELLING IN GENERAL NOTES	
11-18-98	ADDED GENERAL NOTES TO CONCRETE STEPS & WALKS	
7-02-98	ENLARGED PIPE	
4-03-97	ADDED NOTE TO STEEL BAR SCHED.	
10-18-96	CORRECTED SPELLING	
4-26-96	ADD WEEP HOLE;REV. JOINT SPACING IN RET. WALL	
6-2-94	CHANGED CONST. TO CONTRACTION JOINT	
10-1-92	CHANGED MESH FABRIC TO WIRE MESH	10-1-92
8-15-91	DELETED HDWL MODIFICATION DETAIL	8-15-91
11-8-90	DELETED COLD MIX FROM CULV'T. REPAIR	11-8-90
11-30-89	REV. RETAINING WALL STEEL SCHEDULE	11-30-89
11-17-88	V. BARS BEHIND ARROW	665-11-17-88
7-15-88	REV. PAVEMENT REPAIR ADDED HDWL. MODS, DEL. PIPE UNDERDRAINS	649-7-15-88
11-1-84	REV. TRENCH FOR PIPE UNDERDRAIN	510-11-1-84
1-4-83	ELIMINATED CONC. CLASS & ADDED CHAMFER NOTE	682-1-4-83
3-2-81	SPELLING OF "UNDERDRAIN"	721-3-2-81
4-20-79	REV. UNDERDRAIN DET& PAVEMENT REPAIR	674-4-20-79
2-2-76	12"MIN. GRAN. MAT'L. OVER PIPE	919-2-2-76
4-10-75	REM. SPECS. FOR GRAN. MAT'L.	568-4-10-75-853
5-22-74	GRANULAR MAT'L. TO BE SB-3	567-5-22-74-740
10-2-72	REVISED AND REDRAWN	564-10-16-72

ARKANSAS STATE HIGHWAY COMMISSION

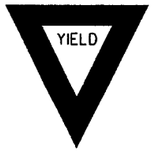
DETAILS OF SPECIAL ITEMS

STANDARD DRAWING SI - 1

R1-1

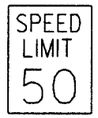
STANDARD 30"X30"
EXPRESSWAY 36"X36"
SPECIAL 48"X48"

R1-2



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

R2-1



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

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"

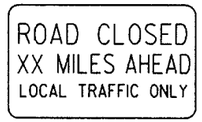
R5-1

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

R11-2

48"X30"

R11-3A



60"X30"

R11-4

60"X30"

RSP-1

48"X30"

W1-1

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

W1-2

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

W1-3

STD. 48"X48"

W1-4

STD. 48"X48"

W1-6

STD. 48"X24"
SPECIAL 60"X30"

W1-8

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

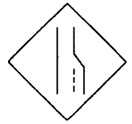
W3-1

STD. 36"X36"
SPECIAL 48"X48"

W3-2

STD. 36"X36"
SPECIAL 48"X48"

W4-2



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

W5-1

STD. 36"X36"
SPECIAL 48"X48"

W6-3

EXPWY. 36"X36"
SPECIAL 48"X48"

W8-7

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

W9-2

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

W13-1

STD. 24"X24"

W20-1

STD. 48"X48"

W20-2

STD. 48"X48"

W20-3

STD. 48"X48"

W20-4

STD. 48"X48"

W20-5

STD. 48"X48"

W20-7a

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

W21-2

STD. 30"X30"
SPECIAL 36"X36"

W21-5

STD. 30"X30"
SPECIAL 36"X36"

W24-1

STD. 36"X36"

W1-4b

STD. 48"X48"

R56-1

STD. 18"X18"

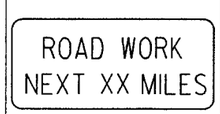
W8-11

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

W8-9

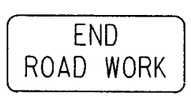
STD. 36"X36"
FWY. 48"X48"

G20-1



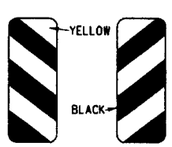
60"X24"

G20-2



48"X24"

OM-3L OM-3R



12"X36"

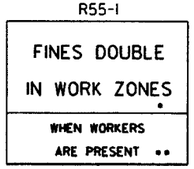
M4-9

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.

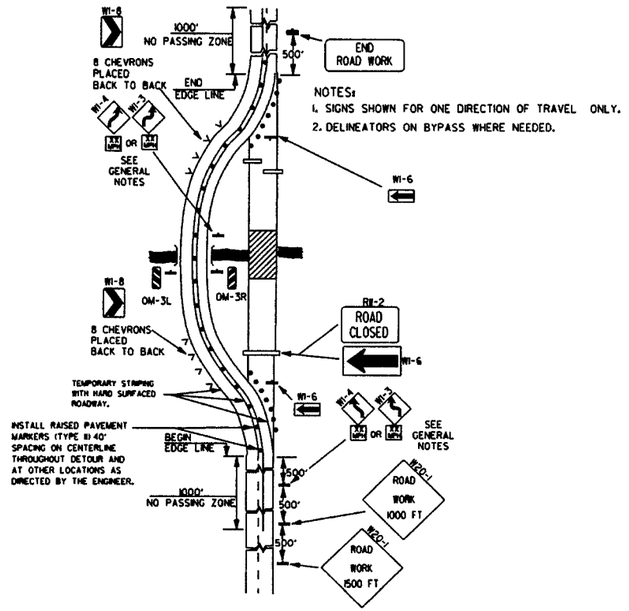
• NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE REQUIREMENTS SHOWN IN NOTES 4 & 5, BUT MEET THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH), WILL BE ACCEPTED. COMPLIANCE WITH THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY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

DATE	REVISION	FILMED
5-2-15	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	
5-28-00	REVISED NOTE	
6-18-98	ADDED NOTE	
6-26-97	REVISED NOTE 5	
4-03-97	REVISED NOTE 5	
10-18-96	ADDED CONTROLLED ACCESS HWY. SIGN & TO NOTE 7	
10-12-95	ADDED R55-1	
6-8-95	REVISED TO CORRECT SIGN ILLUSTRATIONS	6-8-95
2-2-95	REVISED PER PART VI, MUTCD SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	

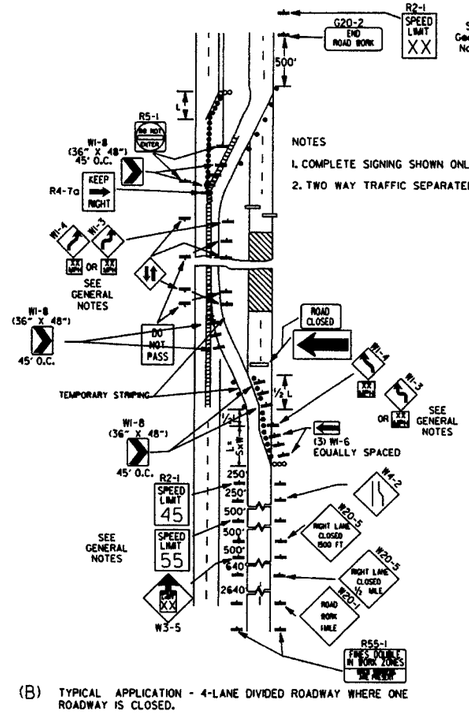
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

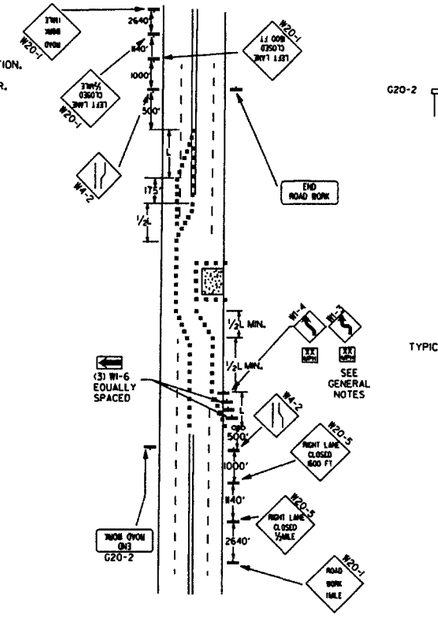
STANDARD DRAWING TC-1



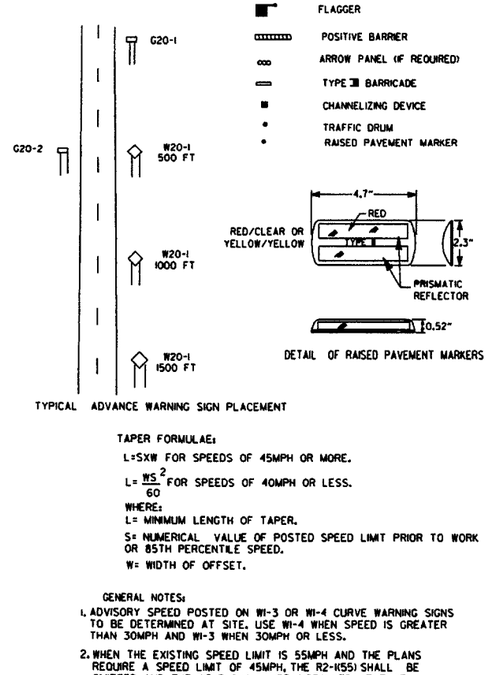
(A) TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES ON A 2-LANE HIGHWAY WHERE THE ENTIRE ROADWAY IS CLOSED AND A BYPASS DETOUR IS PROVIDED.



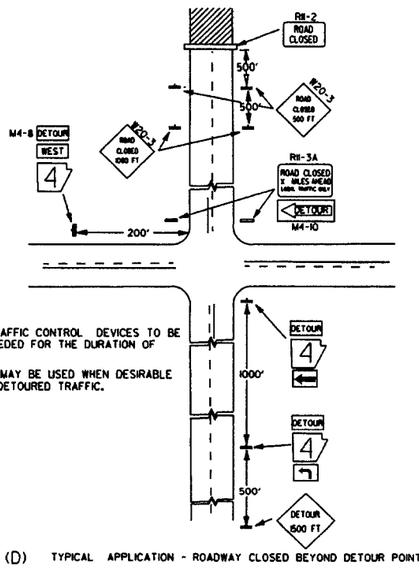
(B) TYPICAL APPLICATION - 4-LANE DIVIDED ROADWAY WHERE ONE ROADWAY IS CLOSED.



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

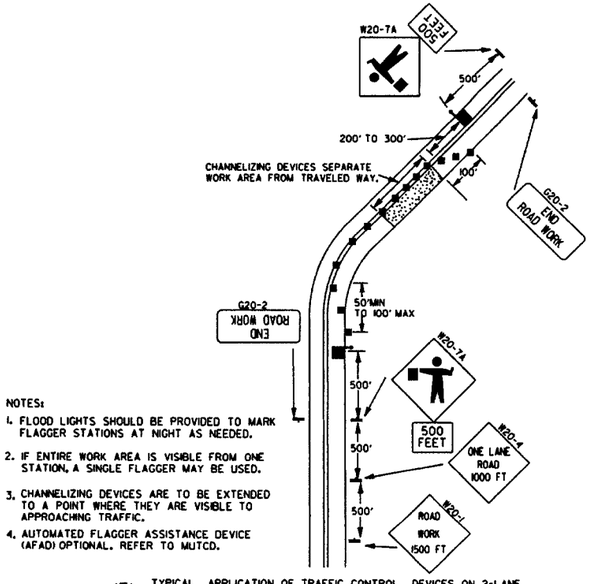


TYPICAL ADVANCE WARNING SIGN PLACEMENT



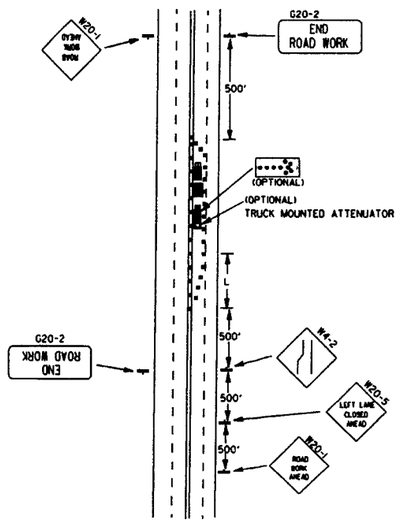
NOTES:
1. REGULATORY TRAFFIC CONTROL DEVICES TO BE MODIFIED AS NEEDED FOR THE DURATION OF THE DETOUR.
2. STREET NAMES MAY BE USED WHEN DESIRABLE FOR DIRECTING DETOURED TRAFFIC.

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



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

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



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

TAPER FORMULAE:

L=SXW FOR SPEEDS OF 45MPH OR MORE.

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

WHERE:

L= MINIMUM LENGTH OF TAPER.

S= NUMERICAL VALUE OF POSTED SPEED LIMIT PRIOR TO WORK OR 85TH PERCENTILE SPEED.

W= WIDTH OF OFFSET.

GENERAL NOTES:

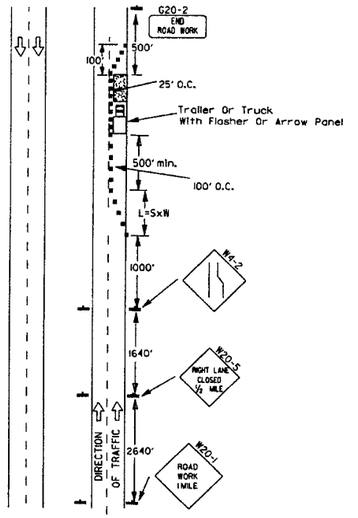
1. ADVISORY SPEED POSTED ON W1-3 OR W1-4 CURVE WARNING SIGNS TO BE DETERMINED AT SITE. USE W1-4 WHEN SPEED IS GREATER THAN 30MPH AND W1-3 WHEN 30MPH OR LESS.
2. WHEN THE EXISTING SPEED LIMIT IS 55MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 45MPH, THE R2-1(55) SHALL BE OMITTED AND THE W3-5 SHALL BE INSTALLED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

DATE	REVISION	FILMED
9-2-15	REVISED NOTE 2, ADDED NOTE 8, REVISED DRAWING (A) & REPLACED R2-5A WITH W3-5	
9-12-13	REVISED DETAIL OF RAISED PAVEMENT MARKERS	
3-8-10	ADDED (AFAD)	
8-20-08	REVISED SIGN DESIGNATIONS	
8-16-04	ADDED GENERAL NOTE	
10-18-96	ADDED R55-1	
4-26-96	CORRECTED (a) BEHIND G20-2	
6-8-95	CORRECTED SIGN IDENT. ON W1-4A	6-8-95
2-2-95	REVISED PER PART VI, MUTCD, SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	

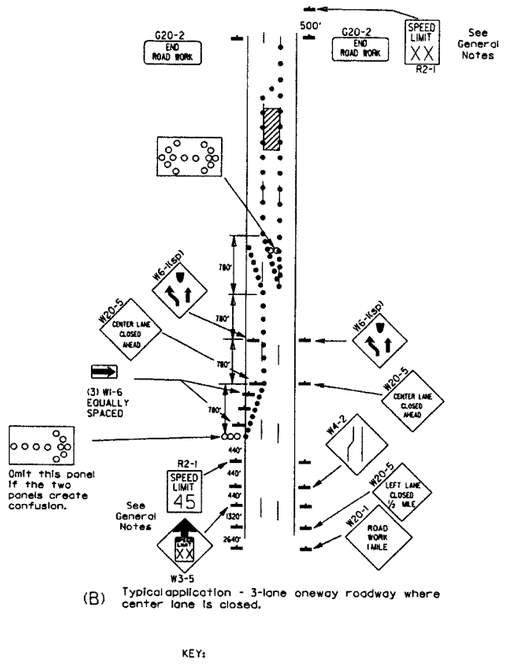
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

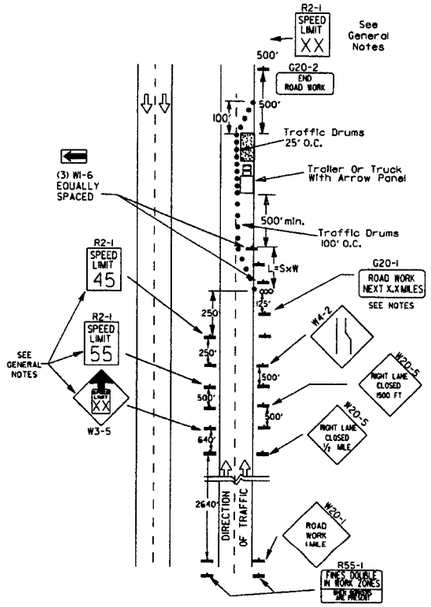
STANDARD DRAWING TC-2



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



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



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

KEY:

ooo Arrow Panel (If Required)

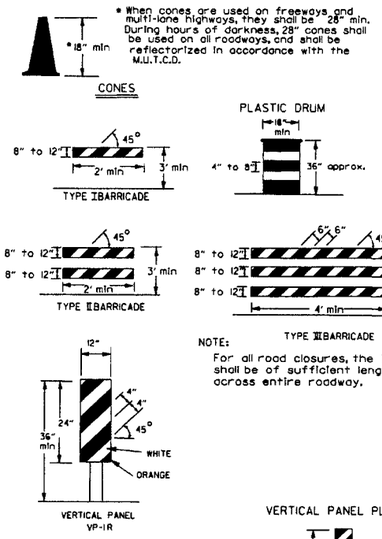
■ Channelizing Device

● Traffic drum

GENERAL NOTES:

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

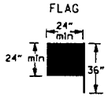
TRAFFIC CONTROL DEVICES
FOR
VERTICAL PAVEMENT DIFFERENTIALS

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.

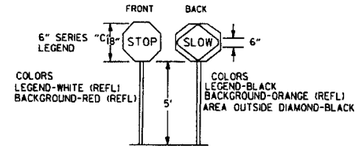
When the shoulder area is used as part of the traveled lane and there is insufficient width to place drums on the remaining shoulder width, then vertical panels shall be used.

FLAG

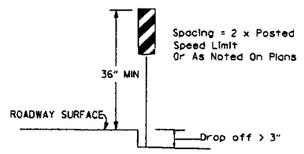


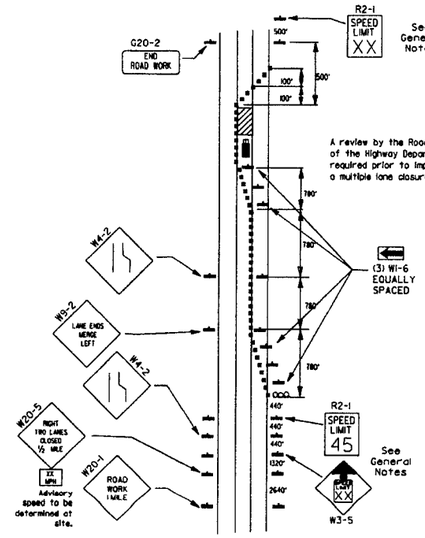
Flag shall be of good grade red material

STOP SLOW PADDLE



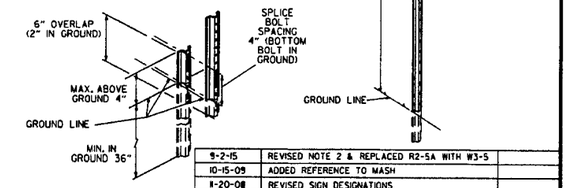
VERTICAL PANEL PLACEMENT





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

DETAIL OF SPLICES



NOTES: USE SPLICES ONLY WHEN NECESSARY FOR INSTALLATION. TYPICAL INSTALLATION SHOULD HAVE NO SPLICES (SEE STD. DRAWING NO. SHS-21)

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

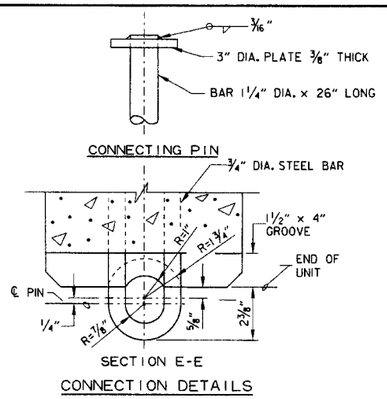
ARKANSAS STATE HIGHWAY COMMISSION

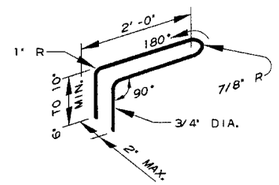
STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-3

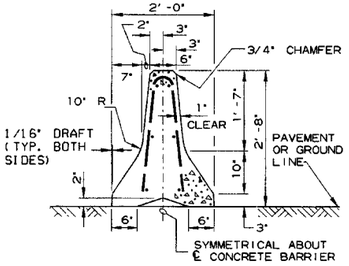
REINFORCING BAR TABLE PER BARRIER UNIT

MARK	LOCATION	BAR SIZE	(NO. BARS)	SKETCH
H-1	HORIZONTAL IN BARRIER TIED INSIDE V-1 BARS	#5	(6)	19'-3"
H-2	CENTERED ABOVE DRAIN SLOTS LONG. & TRANSVERSELY	#5	(6)	6'-6"
H-3	TIED ABOVE H-1 BARS TO SUPPORT H-2. TIED TO V-1	#4	(2)	1'-6"
S-1	OVER LIFT HOLES	#4	(2)	2'-5", LIFTING HOLE, 90°, 3 3/8" R
S-2	HORIZ. AROUND SLOTS BETWEEN V-1'S @ DRAIN SLOTS	#4	(2)	1 1/2" R, SLOTS, 7", 1" MIN. CLEAR TO BAR, 1'-6", 5'-1" BAR W/(4) 1 1/2" R BENDS & MIN. 1'-0" OVERLAP
V-1	VERTICAL IN BARRIER(3) EACH END & (2) AT EACH DRAIN SLOTS	#5	(16)	TOTAL LENGTH 4'-9", 2 3/16" R, 12°, 19 1/2", 4 3/8", 2'-1 3/8"

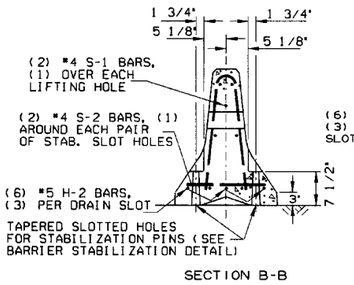




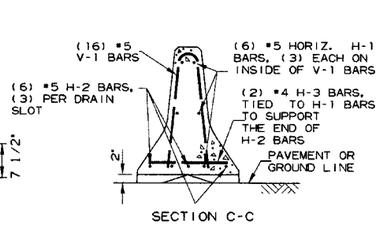
CONNECTION LOOP



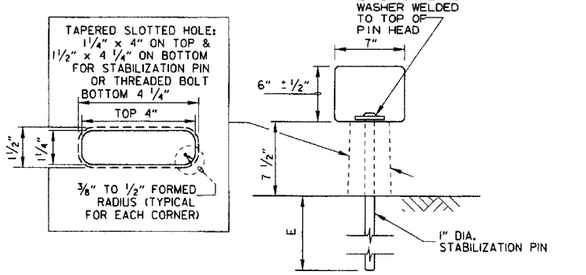
SECTION A-A



SECTION B-B



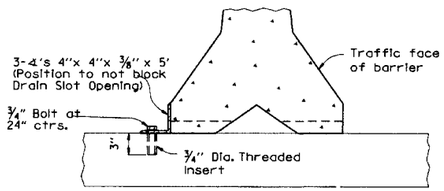
SECTION C-C



BARRIER STABILIZATION DETAIL

ROADWAY SECTION

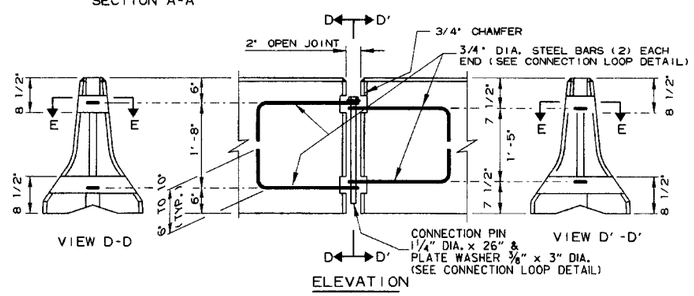
(E) 4" - Concrete Pavement
8" - Asphalt Pavement
12" - Shoulder Areas



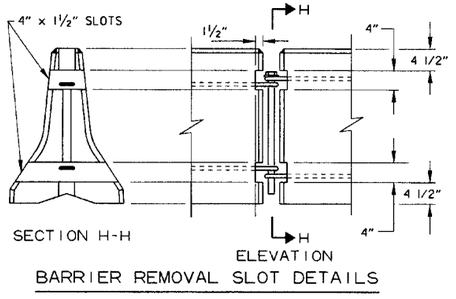
NOTE: 3/4" Threaded Inserts shall be cast in place for all new bridge decks and drilled and grouted for existing bridge decks. Inserts shall have a minimum ultimate load capacity of 8000 lbs. in tension. After removal of barrier, bolts, and angles, the inserts shall be filled with approved non-shrink epoxy.

BARRIER STABILIZATION DETAIL

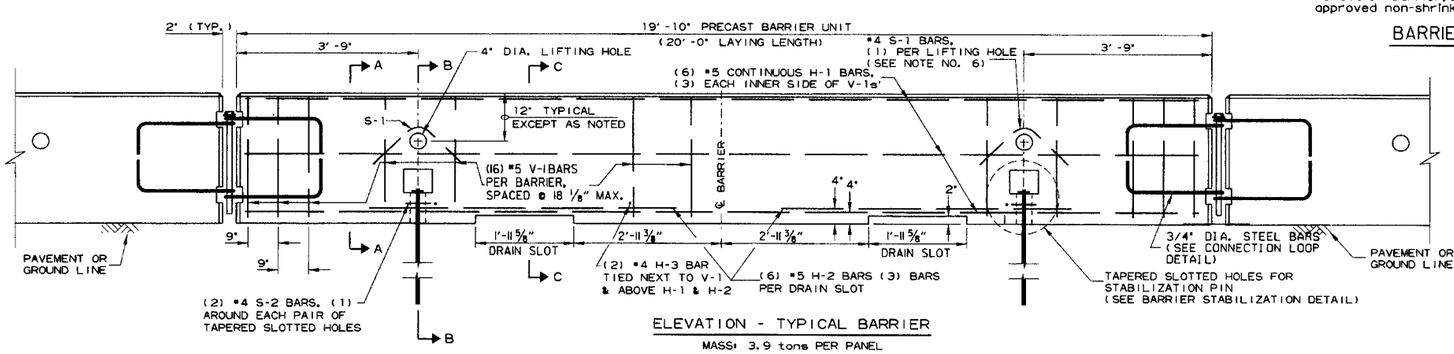
BRIDGE DECKS



ELEVATION



BARRIER REMOVAL SLOT DETAILS



ELEVATION - TYPICAL BARRIER

MASS: 3.9 tons PER PANEL

General Notes

(1) The contractor shall furnish the Precast Concrete Barrier Units and shall be responsible for the manufacture, shipment, storage, placement and removal. At the completion of the project, the precast units will remain the property of the contractor.

(2) Materials shall meet the following minimum requirements:
Concrete: 2500 psi compressive strength at 28 days.
Reinforcing Steel: AASHTO M 31 or M 53, Grade 60
Structural Steel: AASHTO-M270 Grade 36 shall be used for the Connection Pin, Connection Loops, and Stabilization Pins. A One Piece Pin with a 3" rounded top may be used in place of the detailed Connection Pin.
Delineators: Delineators shall be mounted at 10' spacing on top of precast barrier.

In applications where barrier wall is within 6 feet of a traffic lane, additional delineators shall be placed on the barrier at 10' spacing approximately one (1) foot from the top of the barrier. Delineators shall be on the AHTD Qualified Products List for Construction Concrete Barrier Markers.
Delineator color shall be in accordance with the Manual on Uniform Traffic Control Devices.
Payment for delineators shall be considered included in the price bid per Lin. Ft. for "Furnishing and Installing Precast Concrete Barrier". The contractor shall certify to the Engineer that the material and the design used in the precast barrier units meets the requirements as shown on this standard drawing.

(3) Other Precast Concrete Barriers that have been crash tested and approved by the Federal Highway Administration to meet the requirements of NCHRP-350 test level 3 or Manual For Assessing Safety Hardware (MASH) will be accepted in lieu of the barrier shown. Drain slots shall be provided as needed or as directed by the Engineer. The Contractor shall furnish a certification of NCHRP Report 350 or Manual For Assessing Safety Hardware (MASH) compliance for any other types of precast barrier to be used. The certification shall state that the precast concrete barrier meets the requirements of NCHRP Report 350 or Manual For Assessing Safety Hardware (MASH) and include a copy of the Federal Highway Administration's (FHWA) approval letter with all attachments. Precast concrete barrier units shall be fabricated and installed in accordance with crash testing and documentation provided in the FHWA approval letter. Mixing of shapes will not be allowed in a continuous line of units.

(4) Dowel holes in pavement or bridge slabs that are to remain in place shall be filled. Holes in concrete pavement and bridge slabs shall be filled with an approved non-shrink epoxy grout. Holes in asphalt pavement shall be filled with an approved asphalt joint filler. Payment for drilling and filling holes to be included in the price for various barrier items.

(5) Attach Units To Roadway Surface with Stabilization Pins and to Deck Slabs using bolts when required.

(6) A 4" White PVC Sleeve may be used to form the Lifting Hole and if used the Sleeve is to be left in place.

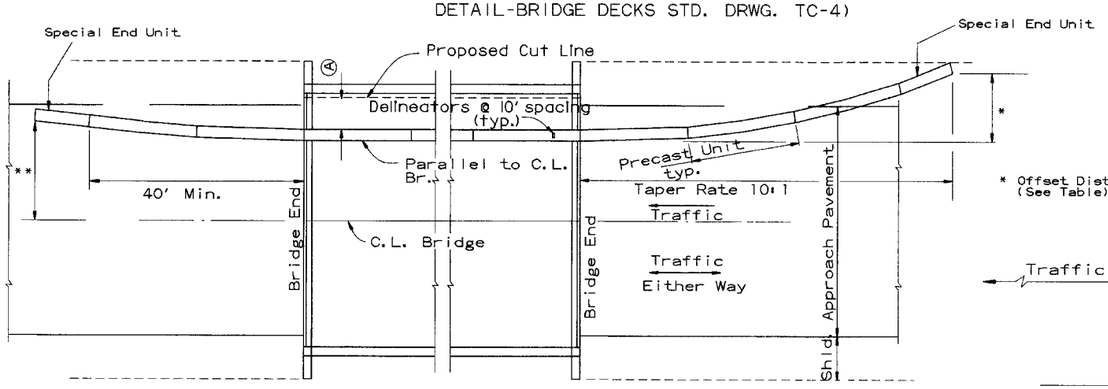
DATE	REVISION	FILMED
2-27-14	REVISED BARRIER STABILIZATION DETAIL	
10-15-09	ADDED REFERENCE TO MASH	
8-5-09	REV. NOTE 3 CONCERNING DRAIN SLOTS	
11-29-07	REVISED NOTE 3	
5-25-06	DELETED GENERAL NOTE 7	
11-18-04	REVISED BARRIER STABILIZATION DETAIL BRIDGE DECKS	
4-10-03	REVISED GENERAL NOTE 2	
8-22-02	ISSUED NEW DRAWING	

ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION - TEMPORARY PRECAST BARRIER

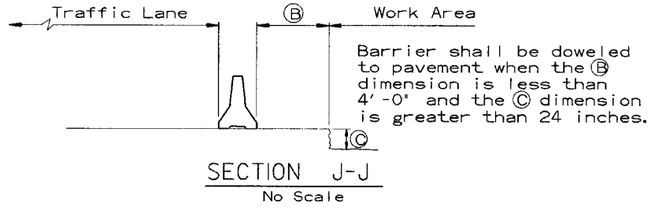
STANDARD DRAWING TC-4

Ⓐ 4 feet or greater preferred. If less than 4 feet, Precast Units shall be connected to slab (SEE BARRIER STABILIZATION DETAIL-BRIDGE DECKS STD. DRWG. TC-4)



BARRIER PLACEMENT ALONG BRIDGE WITH OFFSET

No Scale

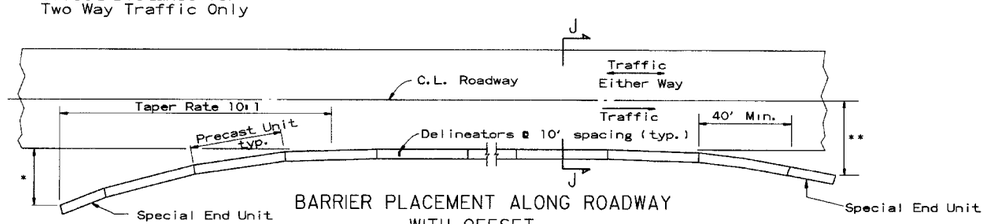


Barrier shall be doweled to pavement when the Ⓑ dimension is less than 4'-0" and the Ⓒ dimension is greater than 24 inches.

SECTION J-J

No Scale

** Offset Distance for Two Way Traffic Only



BARRIER PLACEMENT ALONG ROADWAY WITH OFFSET

No Scale

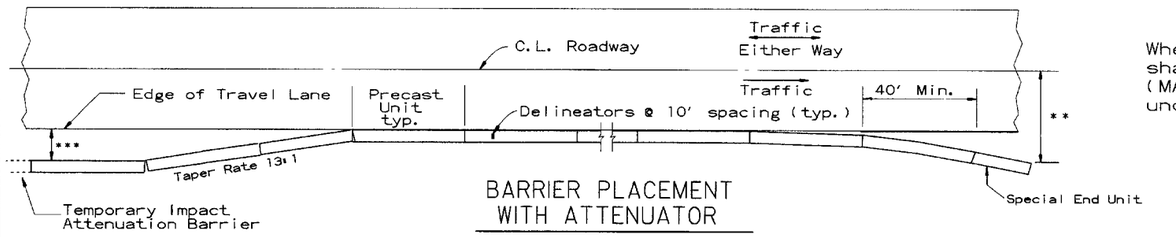
** Offset Distance For Two Way Traffic Only

* Offset Distance (See Table)

Offset Distance Table

Speed (MPH)	Offset Distance (FT.)
≤ 45	12
> 45	18

If offset distance is not attainable, then see "Barrier Placement With Attenuator" Detail shown below.

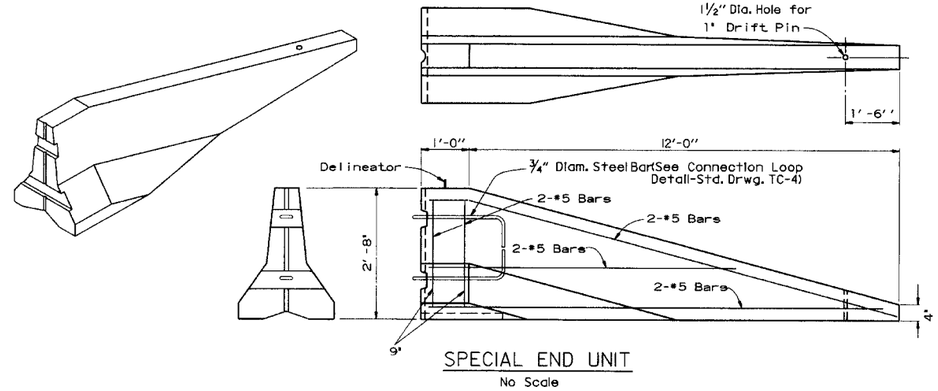


BARRIER PLACEMENT WITH ATTENUATOR

No Scale

*** Min. 3'-0" From Edge of Travel Lane to Nearest Edge of Attenuator

** Offset Distance For Two Way Traffic Only



SPECIAL END UNIT

No Scale

General Notes

When shown on the Plans, the ends of the Temporary Precast Concrete Barrier shall be protected with an NCHRP-350 or Manual For Assessing Safety Hardware (MASH) approved Crash Cushion. Payment for Crash Cushions shall be made under the item of "Temporary Impact Attenuation Barrier."

DATE	REVISION	FILMED
10-15-09	ADDED REFERENCE TO MASH	
5-25-06	REVISED BARRIER PLACEMENT	
8-22-02	ISSUED NEW DRAWING	

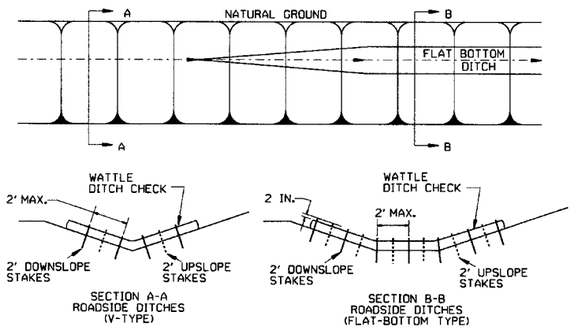
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION - TEMPORARY PRECAST BARRIER

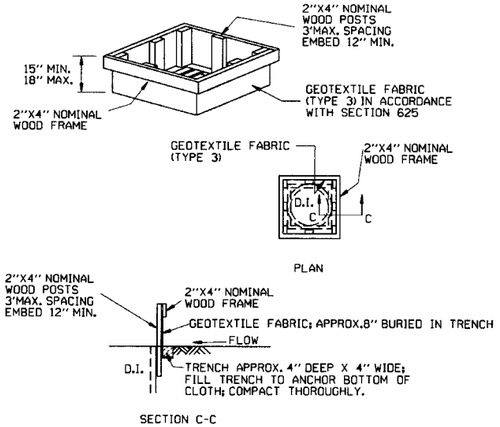
STANDARD DRAWING TC-5

GENERAL NOTES

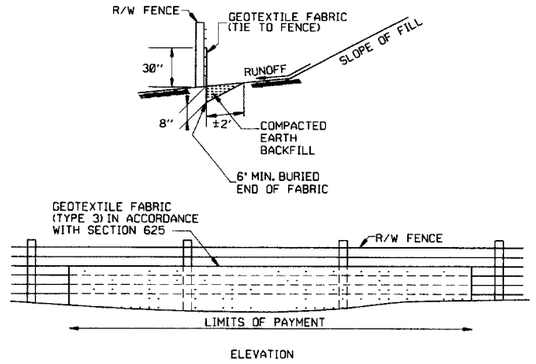
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.



WATTLE DITCH CHECK (E-1)



DROP INLET SILT FENCE (E-7)



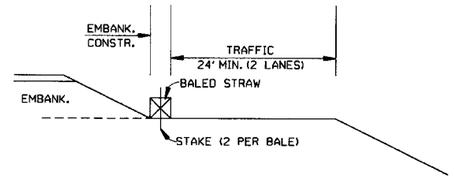
SILT FENCE ON R/W FENCE (E-4)

GENERAL NOTES

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

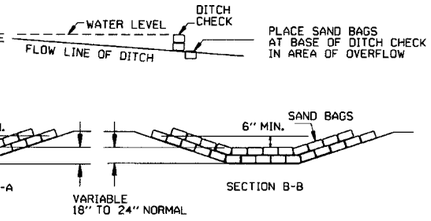
GENERAL NOTES

1. STRAW BALES SHALL BE INSTALLED SO THAT THE BINDINGS ARE ORIENTED AROUND THE SIDES RATHER THAN ALONG THE TOPS AND BOTTOMS OF THE BALES. THE BALES SHALL BE A MINIMUM OF 30 INCHES IN LENGTH.
2. NO GAPS SHALL BE LEFT BETWEEN BALES.
3. BALED STRAW FILTER BARRIERS COMPLETED AND ACCEPTED WILL BE MEASURED BY THE BALE IN PLACE AS AUTHORIZED BY THE ENGINEER AND WILL BE PAID FOR AT THE CONTRACT UNIT PRICE BID PER BALE FOR BALED STRAW DITCH CHECKS.

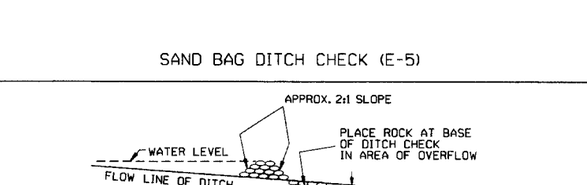


BALED STRAW FILTER BARRIER (E-2)

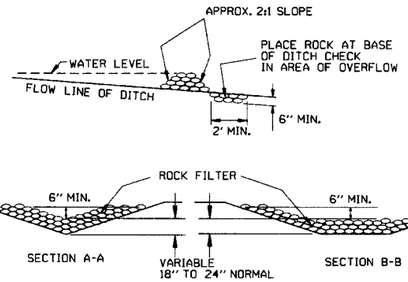
NUMBER OF SAND BAGS AND ARRANGEMENT VARIABLE WITH ON-SITE CONDITIONS.



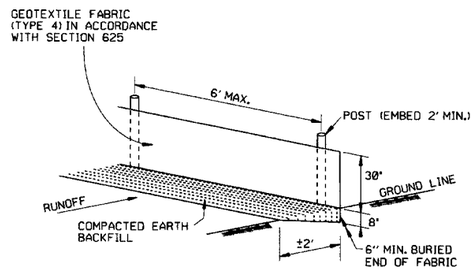
PLACE SAND BAGS AT BASE OF DITCH CHECK IN AREA OF OVERFLOW



SAND BAG DITCH CHECK (E-5)



ROCK DITCH CHECK (E-6)



SILT FENCE (E-11)

GENERAL NOTES

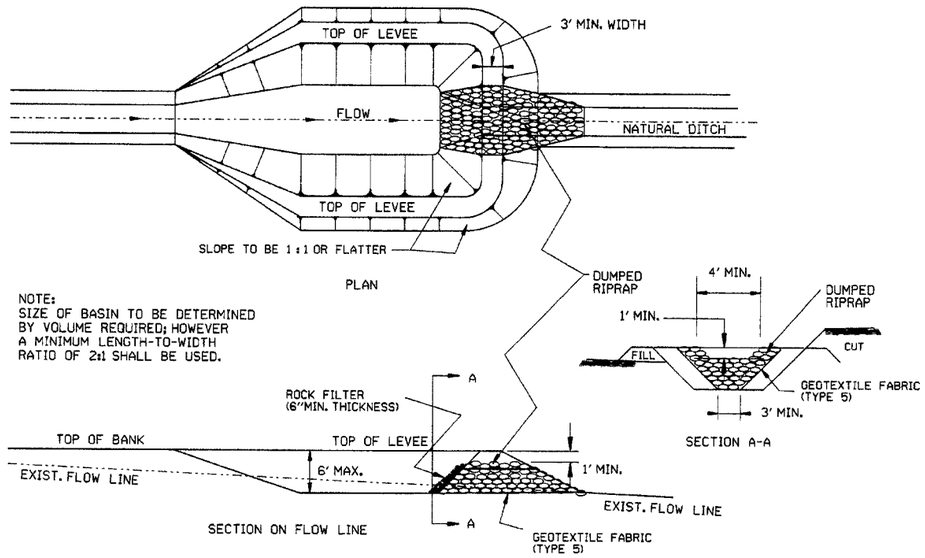
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

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

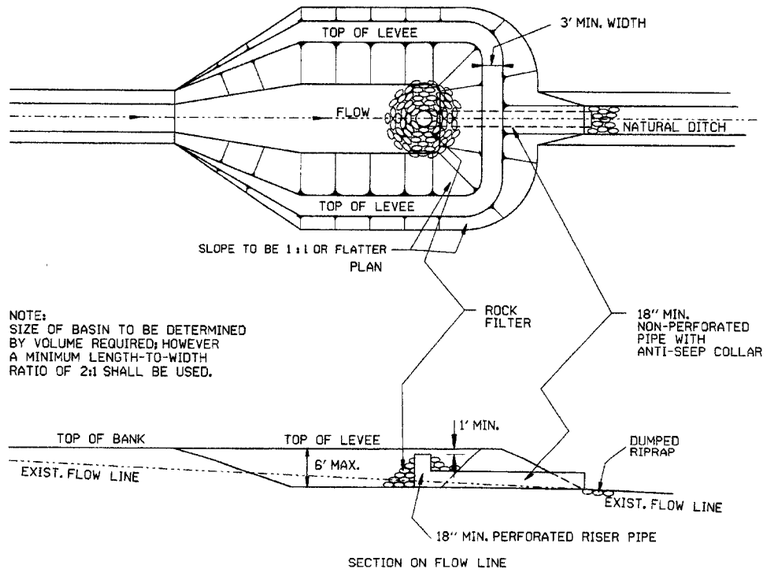
ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

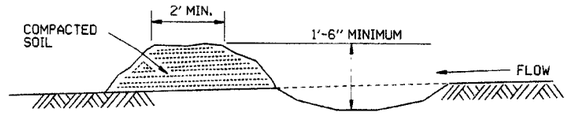
STANDARD DRAWING TEC-1



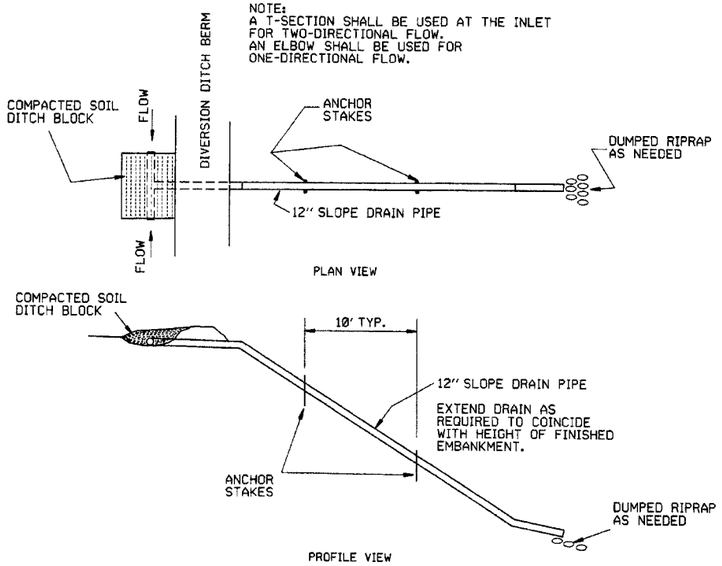
SEDIMENT BASIN WITH RIPRAP OUTLET (E-9)



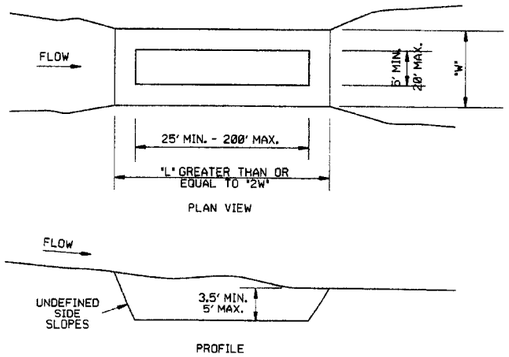
SEDIMENT BASIN WITH PIPE OUTLET (E-10)



DIVERSION DITCH (E-8)



SLOPE DRAIN (E-12)



SEDIMENT BASIN (E-14)

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

ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

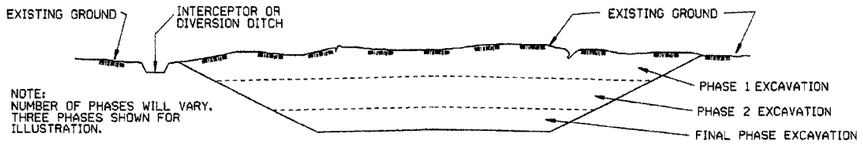
STANDARD DRAWING TEC-2

CLEARING AND GRUBBING

CONSTRUCTION SEQUENCE

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

EXCAVATION



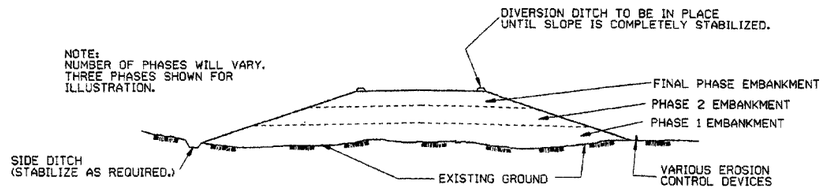
GENERAL NOTE

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

CONSTRUCTION SEQUENCE

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

EMBANKMENT



GENERAL NOTE

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

CONSTRUCTION SEQUENCE

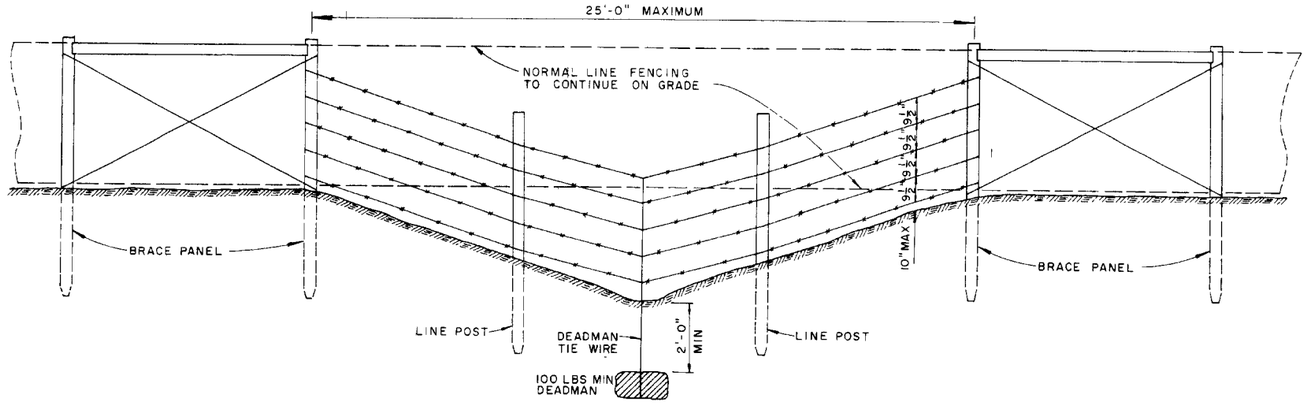
1. CONSTRUCT DIVERSION DITCHES, DITCH CHECKS, SEDIMENT BASINS, SILT FENCES, OR OTHER EROSION CONTROL DEVICES AS SPECIFIED.
2. PLACE PHASE 1 EMBANKMENT WITH PERMANENT OR TEMPORARY SEEDING. PROVIDE DIVERSION DITCHES AND SLOPE DRAINS IF EMBANKMENT CONSTRUCTION IS TO BE TEMPORARILY ABANDONED FOR A PERIOD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

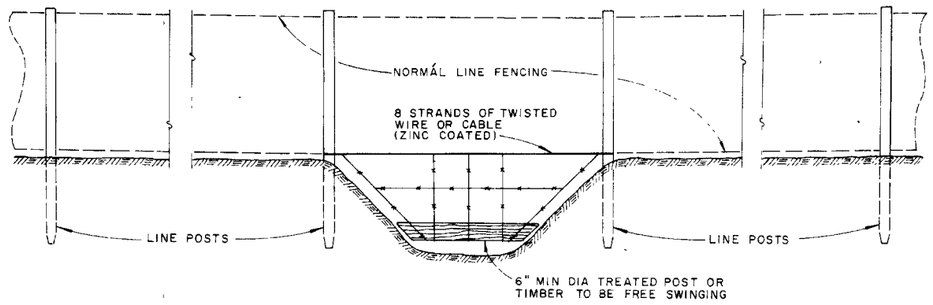
DATE	REVISION	FILMED
11-03-94	CORRECTED SPELLING	
6-2-94	Drawn & Issued	6-2-94

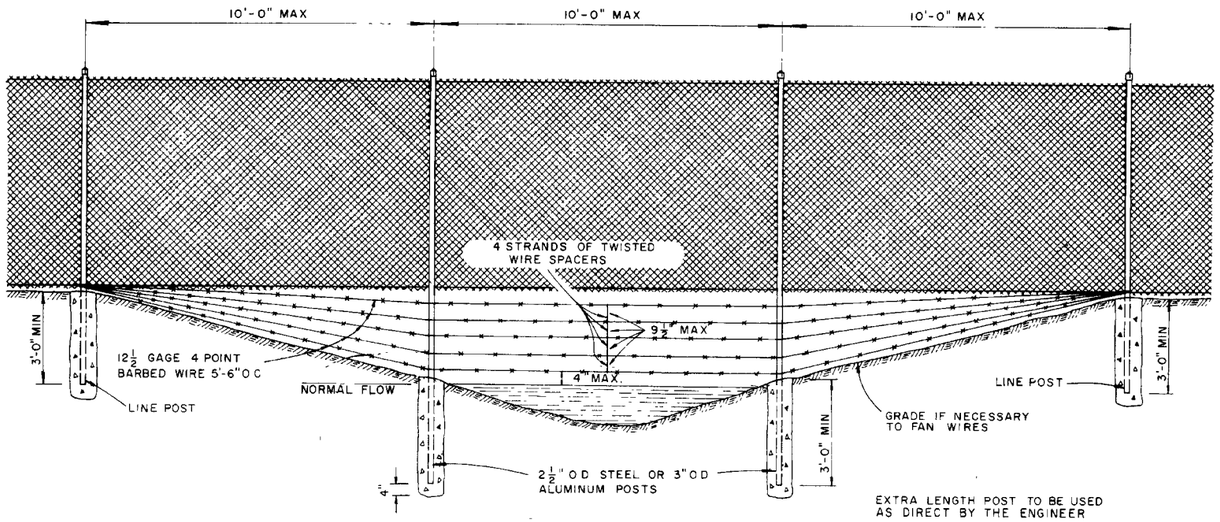
ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

STANDARD DRAWING TEC-3







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 FILMED
4-20-79	REVISED TOP RAIL & TENSION WIRE	696 4-20-79
10-2-72	REVISED & REDRAWN	529 10-2-72

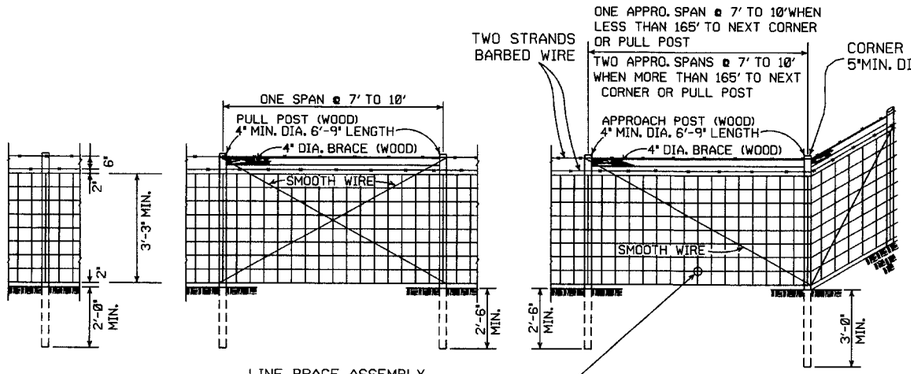
ARKANSAS STATE HIGHWAY COMMISSION

WIRE FENCE WATER GAPS

STANDARD DRAWING

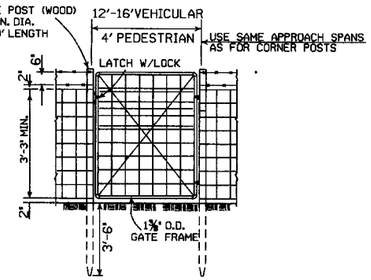
WF-2

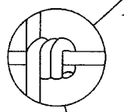
TYPE C FENCE (WOOD POSTS)



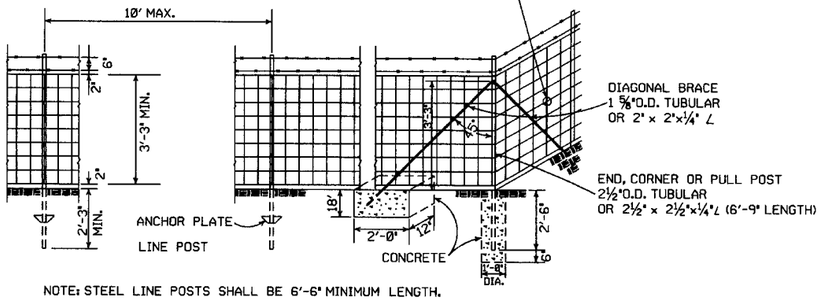
LINE POST
3" MIN. DIA. 6'-3" LENGTH
MAX. SPACING TO BE 10'-0"

LINE BRACE ASSEMBLY
MAX. SPACING TO BE 330'

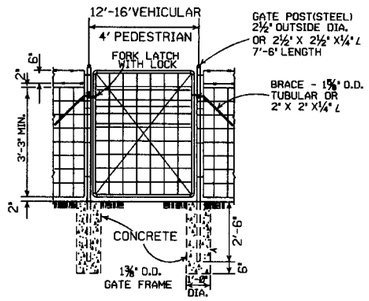


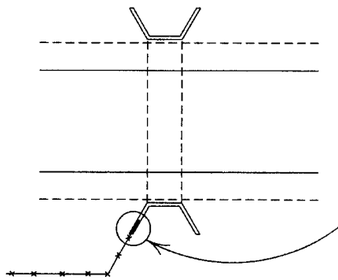


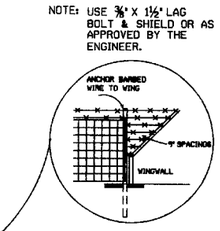
OTHER APPROVED TIES WILL BE PERMITTED



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







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

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.

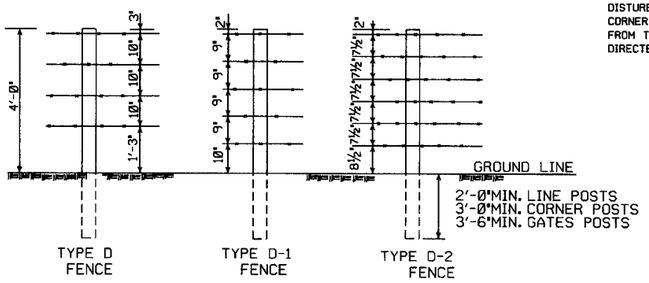
SPLICE FOR BARBED WIRE BETWEEN PULL POST ASSEMBLY SHALL BE BY THE 'EYE METHOD' AS DESCRIBED AS FOLLOWS: THE ENDS OF THE BARBED WIRE SHALL BE BENT TO FORM A LOOP. THE LOOPS SHALL BE CONNECTED. AFTER THE LOOPS ARE CONNECTED THE ENDS OF THE WIRE SHALL BE WRAPPED AROUND THE PROJECTING WIRES A MINIMUM OF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

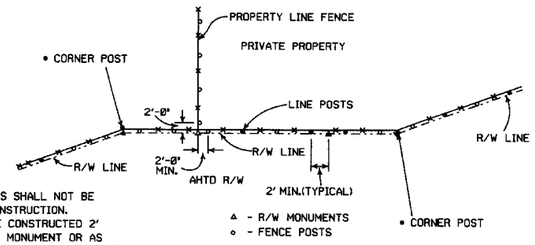
TYPE C FENCE (STEEL POSTS)

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



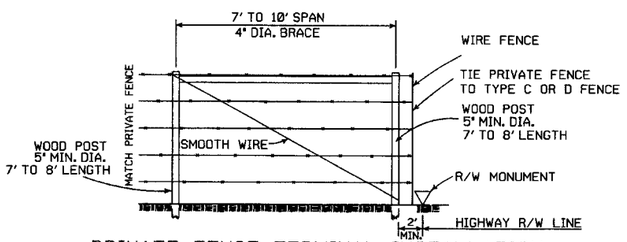
TYPE D FENCE | TYPE D-1 FENCE | TYPE D-2 FENCE

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

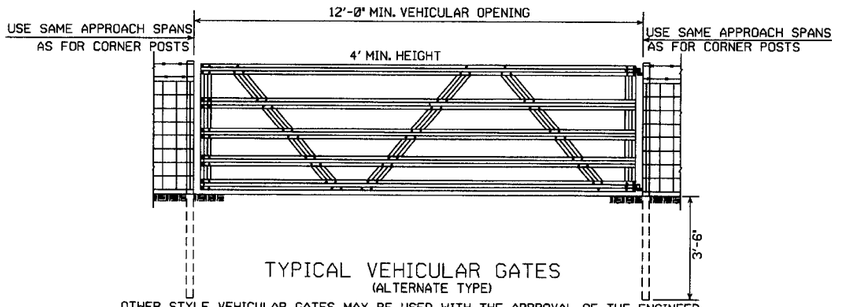


• NOTE: RIGHT-OF-WAY MONUMENTS SHALL NOT BE DISTURBED BY FENCE CONSTRUCTION. CORNER POSTS SHALL BE CONSTRUCTED 2' FROM THE RIGHT-OF-WAY MONUMENT OR AS DIRECTED BY THE ENGINEER.

RIGHT-OF-WAY FENCE LOCATION



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



TYPICAL VEHICULAR GATES
(ALTERNATE TYPE)

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

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

ARKANSAS STATE HIGHWAY COMMISSION

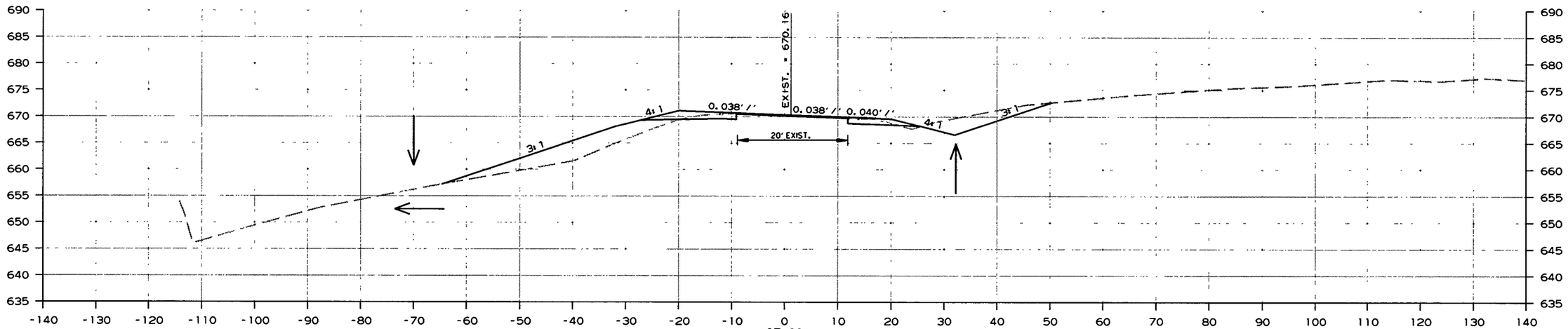
WIRE FENCE
TYPE C AND D

STANDARD DRAWING WF-4

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		009814	78	94

(2) CROSS SECTIONS

AREA (STAGE 1) | AREA (STAGE 2) | VOLUME (STAGE 1) | VOLUME (STAGE 2)

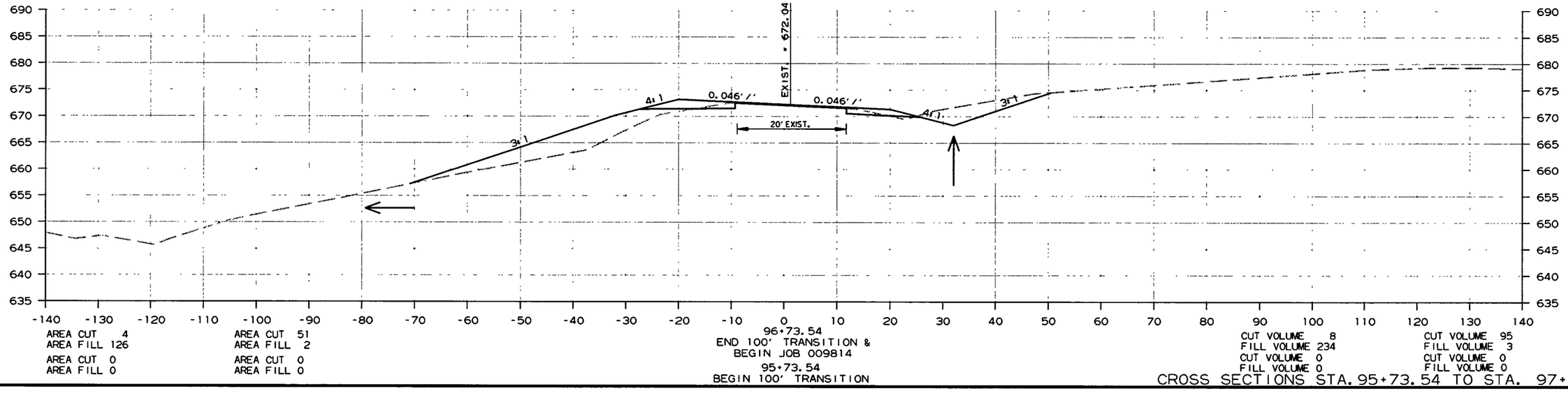


AREA CUT 7
AREA FILL 98

AREA CUT 50
AREA FILL 1

CUT VOLUME 6
FILL VOLUME 110

CUT VOLUME 49
FILL VOLUME 1



AREA CUT 4
AREA FILL 126

AREA CUT 0
AREA FILL 0

AREA CUT 51
AREA FILL 2

AREA CUT 0
AREA FILL 0

96+73.54
END 100' TRANSITION &
BEGIN JOB 009814

95+73.54
BEGIN 100' TRANSITION

CUT VOLUME 8
FILL VOLUME 234
CUT VOLUME 0
FILL VOLUME 0

CUT VOLUME 95
FILL VOLUME 3
CUT VOLUME 0
FILL VOLUME 0

CROSS SECTIONS STA. 95+73.54 TO STA. 97+00

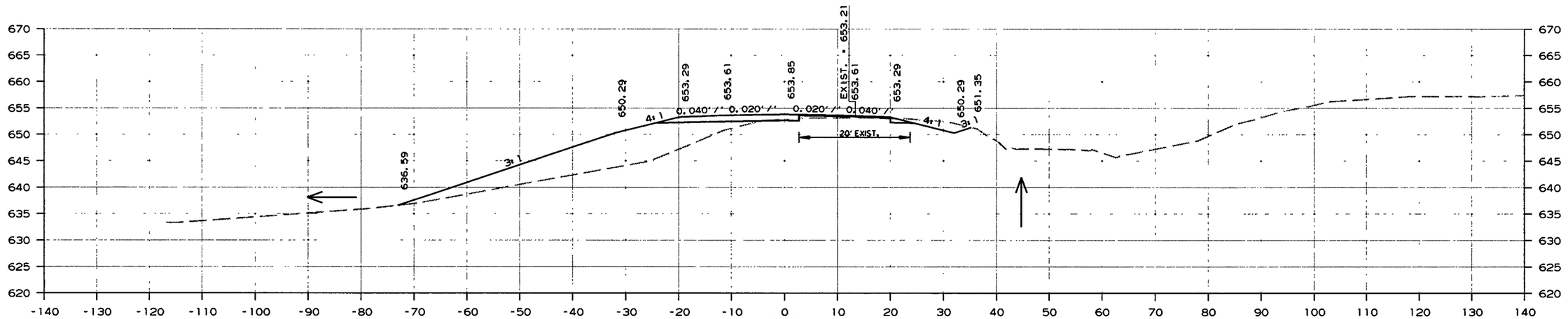
8/1/2016

R009814.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.		009814	79	94

(2) CROSS SECTIONS

AREA (STAGE 1) | AREA (STAGE 2) | VOLUME (STAGE 1) | VOLUME (STAGE 2)

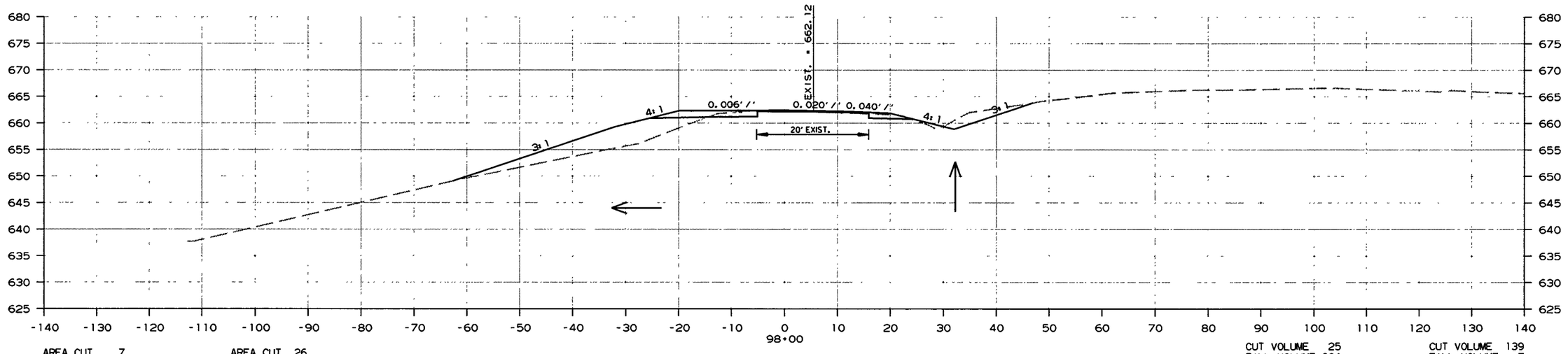


AREA CUT 1
AREA FILL 250

AREA CUT 34
AREA FILL 0

CUT VOLUME 15
FILL VOLUME 665

CUT VOLUME 77
FILL VOLUME 5



AREA CUT 7
AREA FILL 109

AREA CUT 26
AREA FILL 3

CUT VOLUME 25
FILL VOLUME 384

CUT VOLUME 139
FILL VOLUME 7

CROSS SECTIONS STA. 98+00 TO STA. 99+00

8/1/2016

R009814.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.		009814	80	94

(2) CROSS SECTIONS

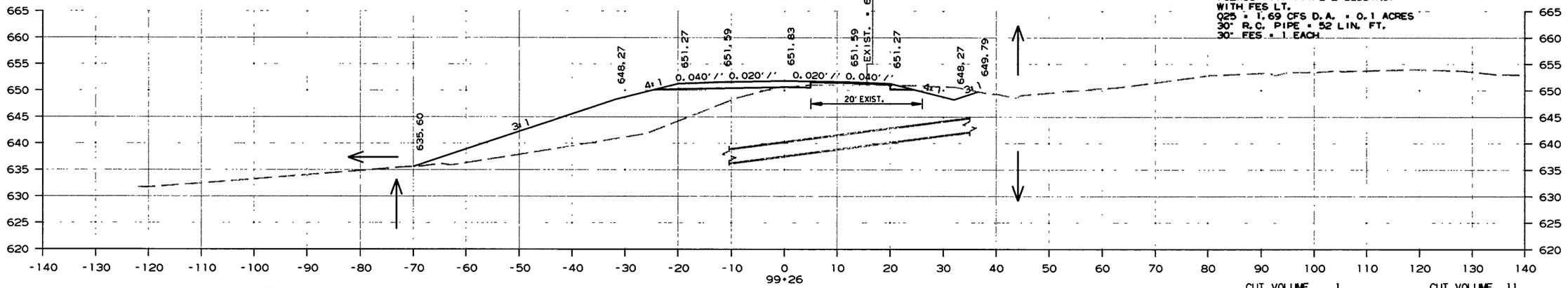
AREA (STAGE 1)

AREA (STAGE 2)

VOLUME (STAGE 1)

VOLUME (STAGE 2)

STA. 99+26 IN PLACE
30" X 72" R.C. PIPE CULVERT
30° LT. FORWARD SKEW
WITH HDWLS. LT. & RT.
REMOVE LT. HDWL.
EXTEND 48' LT. ON 15° LT. FORWARD SKEW
(CLASS III) (TYPE 2 BEDDING)
WITH FES LT.
Q25 = 1.69 CFS D.A. = 0.1 ACRES
30" R.C. PIPE = 52 LIN. FT.
30" FES = 1 EACH

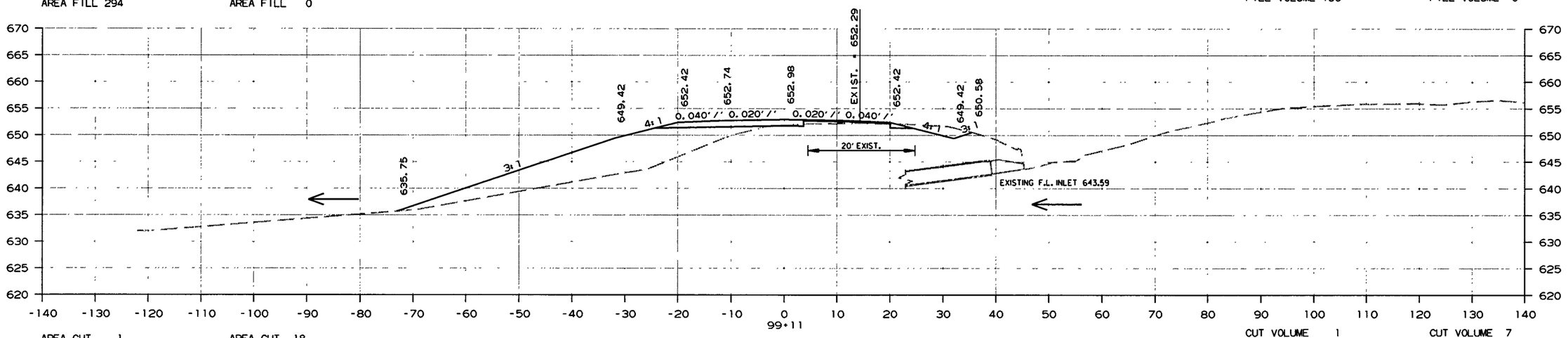


AREA CUT 1
AREA FILL 294

AREA CUT 124
AREA FILL 0

CUT VOLUME 1
FILL VOLUME 156

CUT VOLUME 11
FILL VOLUME 0



AREA CUT 1
AREA FILL 269

AREA CUT 18
AREA FILL 0

CUT VOLUME 1
FILL VOLUME 106

CUT VOLUME 7
FILL VOLUME 0

CROSS SECTIONS STA. 99+11 TO STA. 99+26

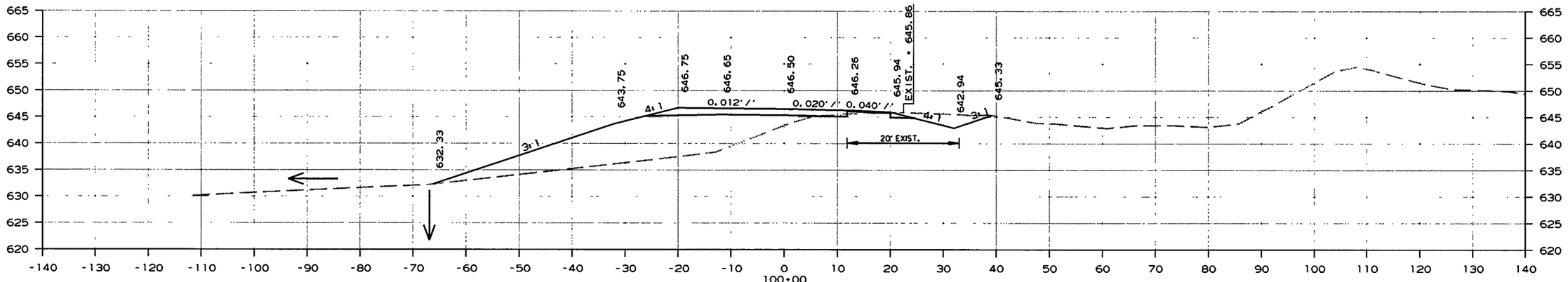
8/1/2016

R009814.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.		009814	81	94

(2) CROSS SECTIONS

AREA (STAGE 1) | AREA (STAGE 2) | VOLUME (STAGE 1) | VOLUME (STAGE 2)

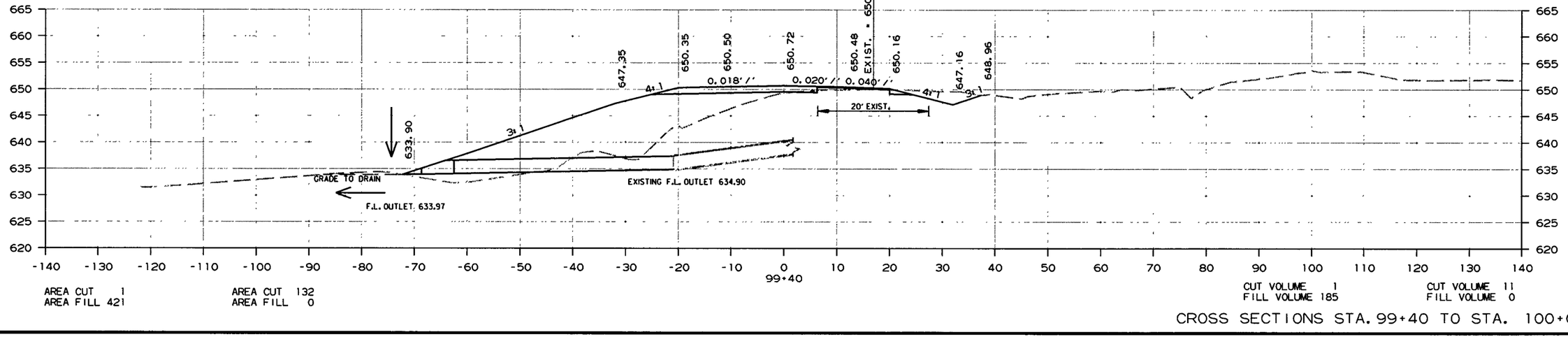


AREA CUT 1
AREA FILL 343

AREA CUT 95
AREA FILL 0

CUT VOLUME 2
FILL VOLUME 849

CUT VOLUME 55
FILL VOLUME 0



AREA CUT 1
AREA FILL 421

AREA CUT 132
AREA FILL 0

CUT VOLUME 1
FILL VOLUME 185

CUT VOLUME 11
FILL VOLUME 0

CROSS SECTIONS STA. 99+40 TO STA. 100+00

8/1/2016

R009814.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.		009814	82	94

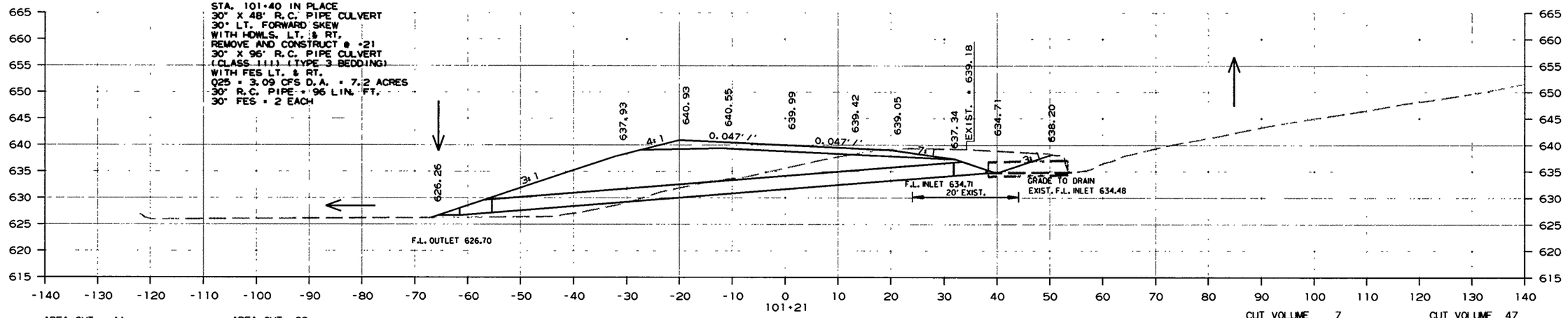
(2) CROSS SECTIONS

AREA (STAGE 1)

AREA (STAGE 2)

VOLUME (STAGE 1)

VOLUME (STAGE 2)



AREA CUT 11
AREA FILL 419

AREA CUT 88
AREA FILL 0

CUT VOLUME 7
FILL VOLUME 315

CUT VOLUME 47
FILL VOLUME 0

AREA CUT 6
AREA FILL 390

AREA CUT 85
AREA FILL 0

CUT VOLUME 13
FILL VOLUME 1357

CUT VOLUME 111
FILL VOLUME 0

CROSS SECTIONS STA. 101+00 TO STA. 101+21

8/1/2016

R009814.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.		009814	83	94

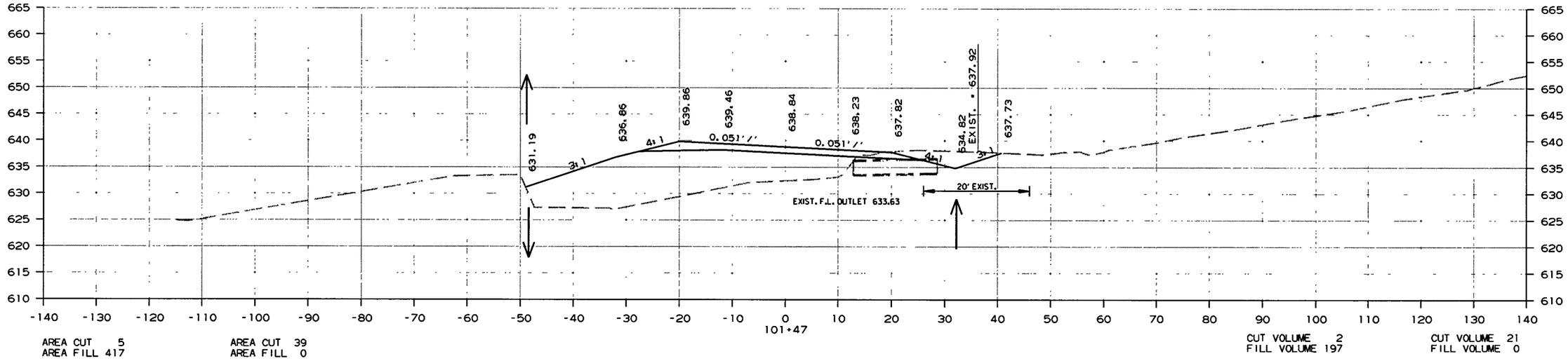
(2) CROSS SECTIONS

AREA (STAGE 1)

AREA (STAGE 2)

VOLUME (STAGE 1)

VOLUME (STAGE 2)

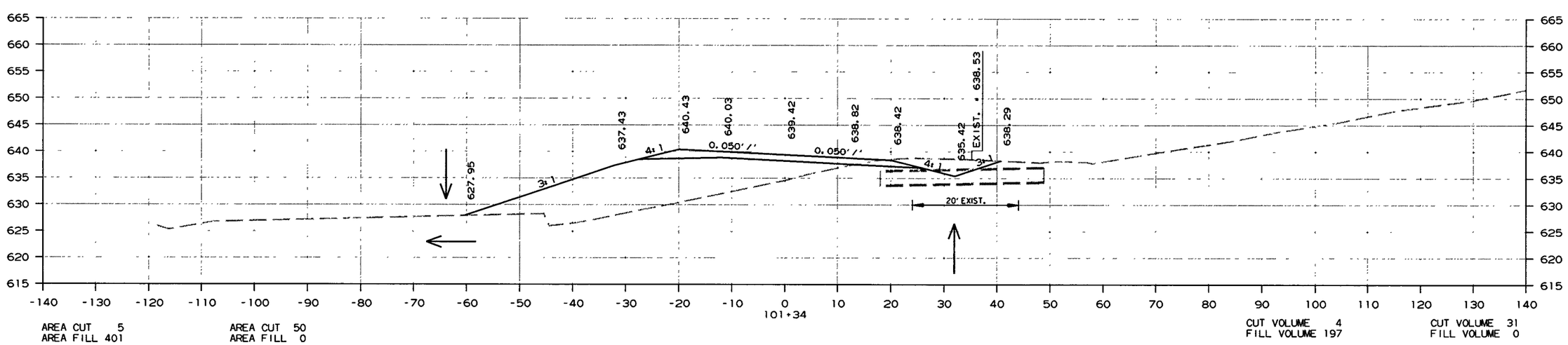


AREA CUT 5
AREA FILL 417

AREA CUT 39
AREA FILL 0

CUT VOLUME 2
FILL VOLUME 197

CUT VOLUME 21
FILL VOLUME 0



AREA CUT 5
AREA FILL 401

AREA CUT 50
AREA FILL 0

CUT VOLUME 4
FILL VOLUME 197

CUT VOLUME 31
FILL VOLUME 0

CROSS SECTIONS STA. 101+34 TO STA. 101+47

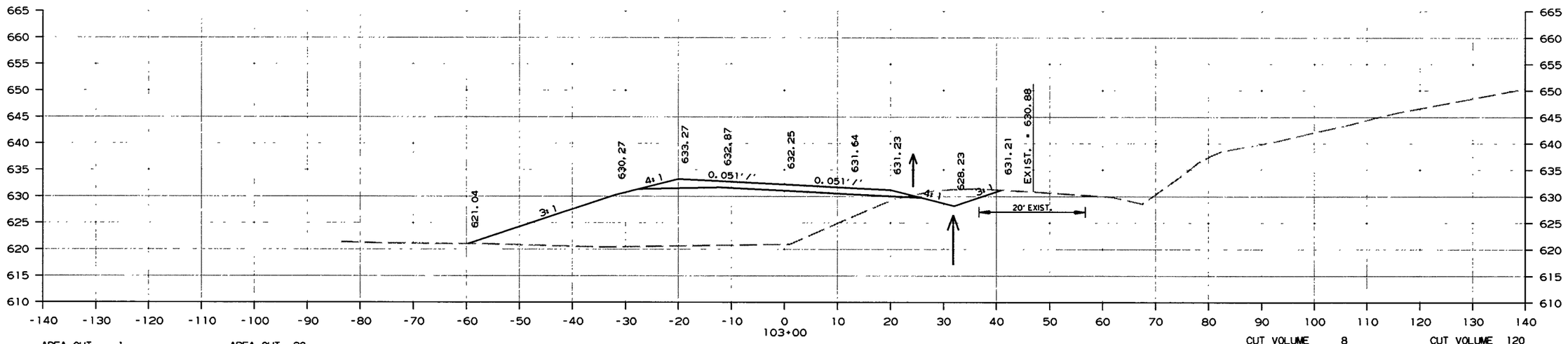
8/1/2016

R009814.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.		009814	84	94

(2) CROSS SECTIONS

AREA (STAGE 1) | AREA (STAGE 2) | VOLUME (STAGE 1) | VOLUME (STAGE 2)

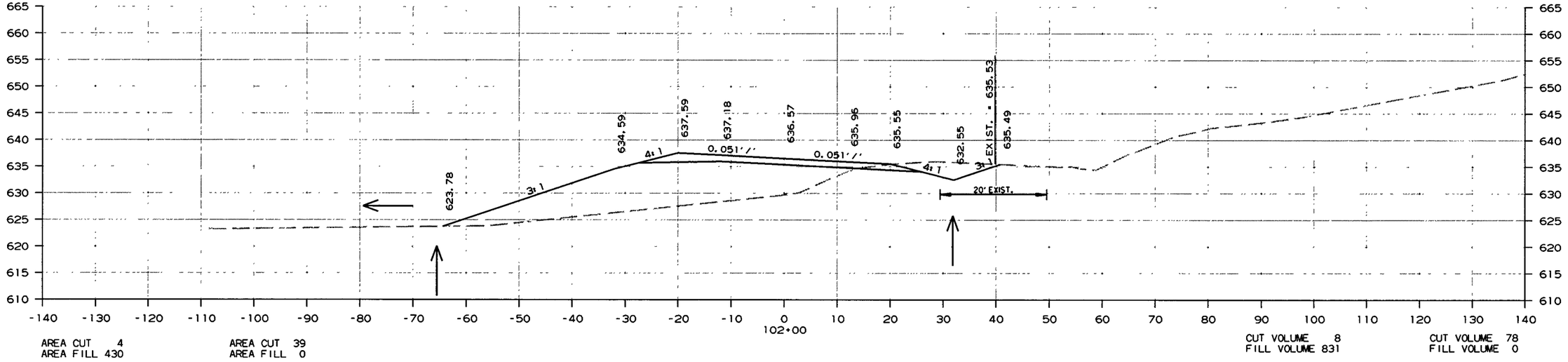


AREA CUT 1
AREA FILL 594

AREA CUT 28
AREA FILL 0

CUT VOLUME 8
FILL VOLUME 1895

CUT VOLUME 120
FILL VOLUME 0



AREA CUT 4
AREA FILL 430

AREA CUT 39
AREA FILL 0

CUT VOLUME 8
FILL VOLUME 831

CUT VOLUME 78
FILL VOLUME 0

CROSS SECTIONS STA. 102+00 TO STA. 103+00

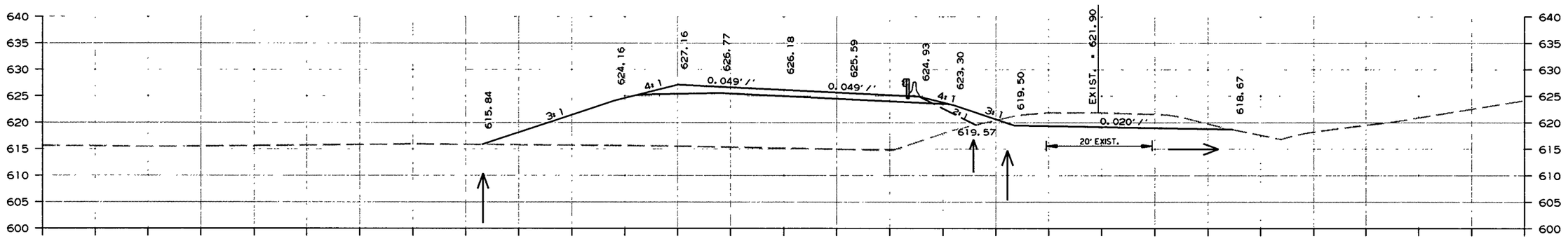
8/1/2016

R009814.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.		009814	85	94

(2) CROSS SECTIONS

AREA (STAGE 1) AREA (STAGE 2) VOLUME (STAGE 1) VOLUME (STAGE 2)

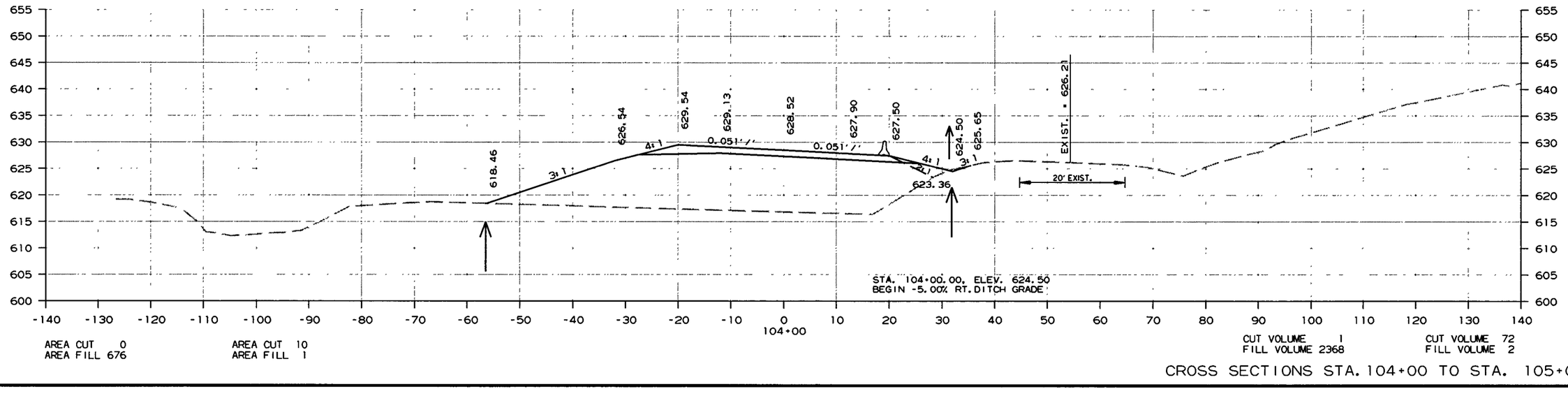


AREA CUT 0
AREA FILL 700

AREA CUT 91
AREA FILL 17

CUT VOLUME 0
FILL VOLUME 2565

CUT VOLUME 188
FILL VOLUME 33



AREA CUT 0
AREA FILL 676

AREA CUT 10
AREA FILL 1

CUT VOLUME 1
FILL VOLUME 2368

CUT VOLUME 72
FILL VOLUME 2

CROSS SECTIONS STA. 104+00 TO STA. 105+00

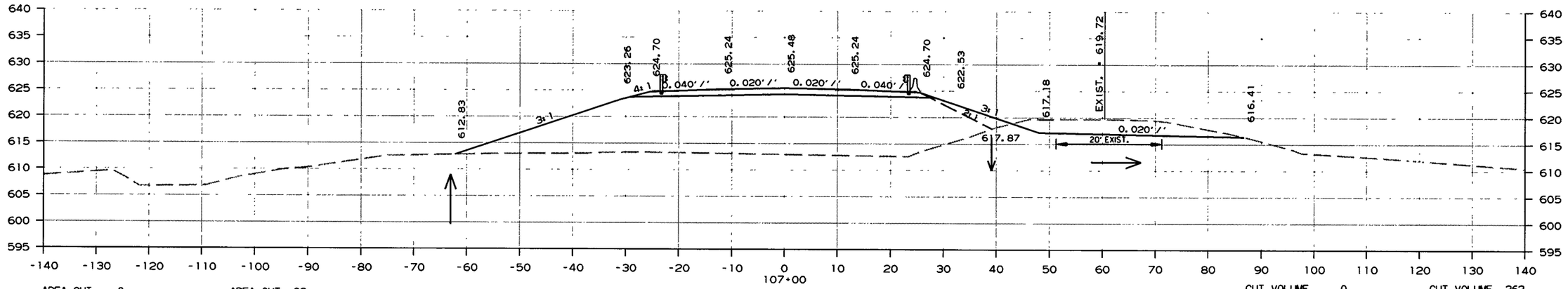
8/1/2016

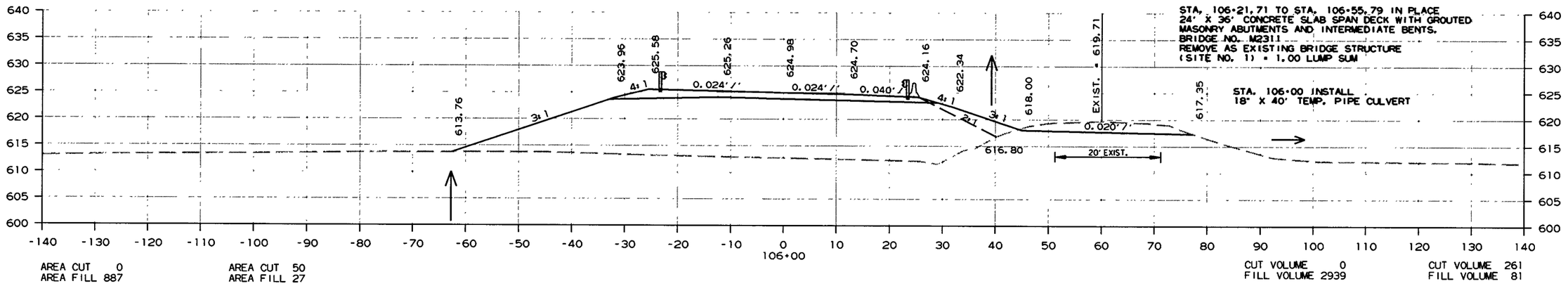
R009814.DGN

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.		009814	86	94

(2) CROSS SECTIONS

AREA (STAGE 1) | AREA (STAGE 2) | VOLUME (STAGE 1) | VOLUME (STAGE 2)





CROSS SECTIONS STA. 106+00 TO STA. 107+00

8/1/2016

R009814.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.		009814	87	94

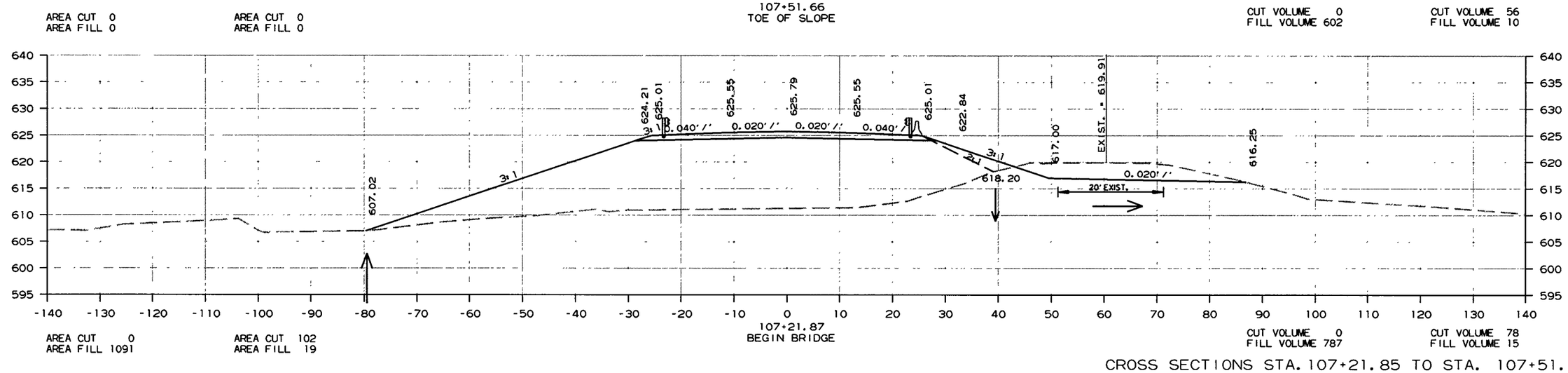
(2) CROSS SECTIONS

AREA (STAGE 1)

AREA (STAGE 2)

VOLUME (STAGE 1)

VOLUME (STAGE 2)



CROSS SECTIONS STA. 107+21.85 TO STA. 107+51.66

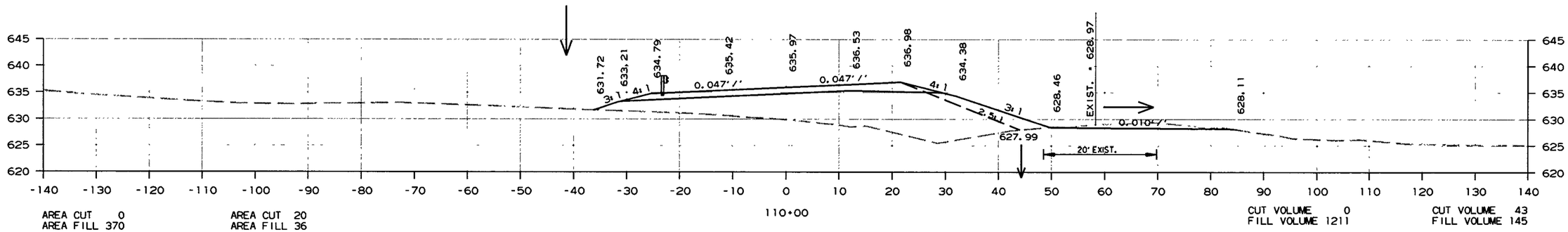
8/1/2016

R009814.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.		009814	88	94

(2) CROSS SECTIONS

AREA (STAGE 1) | AREA (STAGE 2) | VOLUME (STAGE 1) | VOLUME (STAGE 2)



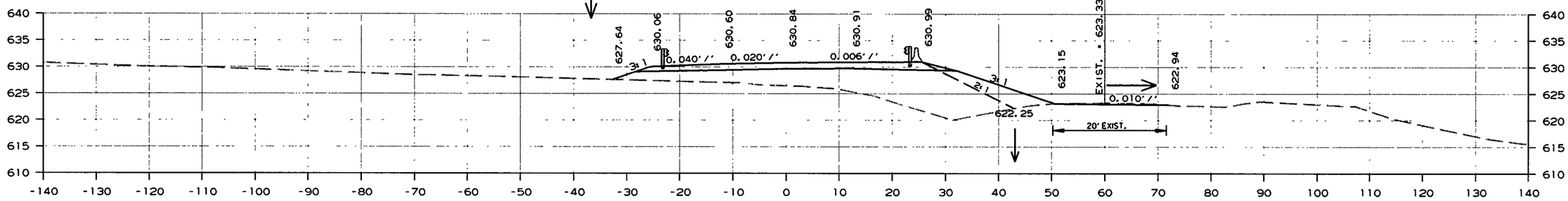
AREA CUT 0
AREA FILL 370

AREA CUT 20
AREA FILL 36

110+00

CUT VOLUME 0
FILL VOLUME 1211

CUT VOLUME 43
FILL VOLUME 145



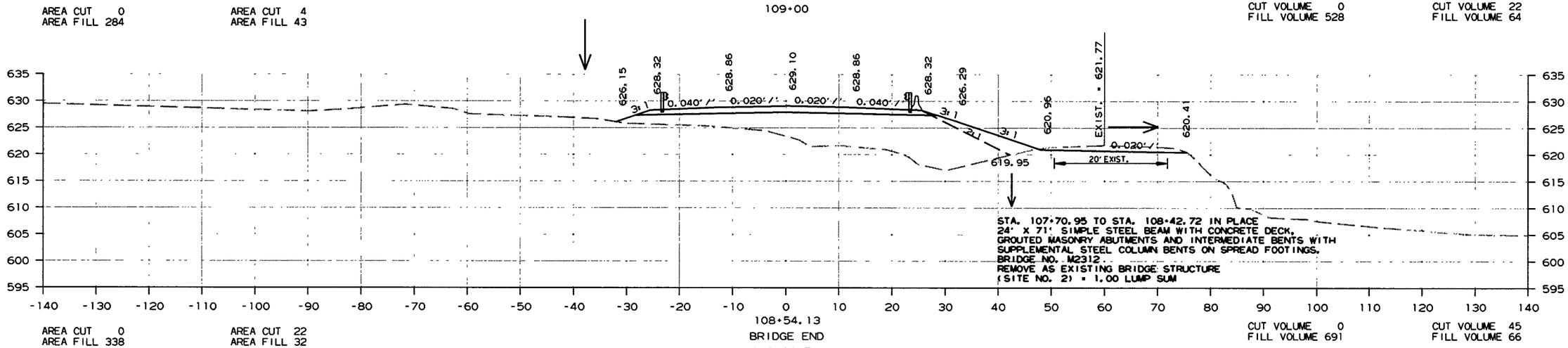
AREA CUT 0
AREA FILL 284

AREA CUT 4
AREA FILL 43

109+00

CUT VOLUME 0
FILL VOLUME 528

CUT VOLUME 22
FILL VOLUME 64



STA. 107+70.95 TO STA. 108+42.72 IN PLACE
24' X 71' SIMPLE STEEL BEAM WITH CONCRETE DECK,
GROUTED MASONRY ABUTMENTS AND INTERMEDIATE BENTS WITH
SUPPLEMENTAL STEEL COLUMN BENTS ON SPREAD FOOTINGS.
BRIDGE NO. M2312.
REMOVE AS EXISTING BRIDGE STRUCTURE
(SITE NO. 2) = 1.00 LUMP SUM

AREA CUT 0
AREA FILL 338

AREA CUT 22
AREA FILL 32

108+54.13
BRIDGE END

108+29.78
TOE OF SLOPE

CUT VOLUME 0
FILL VOLUME 691

CUT VOLUME 45
FILL VOLUME 66

CROSS SECTIONS STA. 107+43.75 TO STA. 110+00

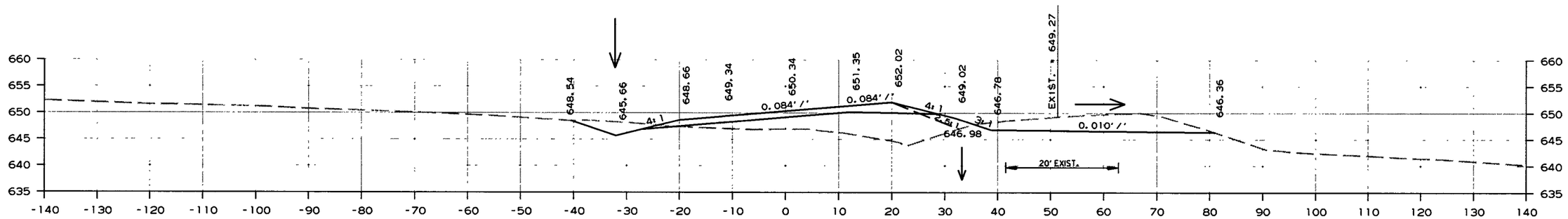
8/1/2016

R009814.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.		009814	89	94

(2) CROSS SECTIONS

AREA (STAGE 1) | AREA (STAGE 2) | VOLUME (STAGE 1) | VOLUME (STAGE 2)



AREA CUT 24
AREA FILL 150

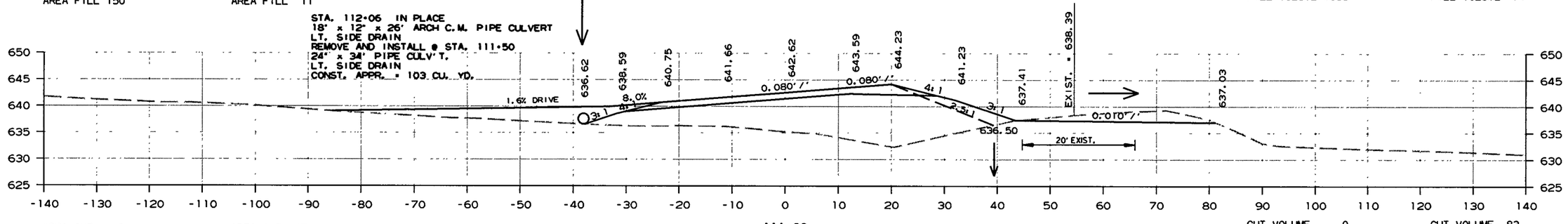
AREA CUT 104
AREA FILL 11

112+00

CUT VOLUME 44
FILL VOLUME 1035

CUT VOLUME 280
FILL VOLUME 71

STA. 112+06 IN PLACE
18" x 12" x 26' ARCH C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL @ STA. 111+50
24" x 34' PIPE CULV'T.
LT. SIDE DRAIN
CONST. APPR. = 103 CU. YD.



AREA CUT 0
AREA FILL 409

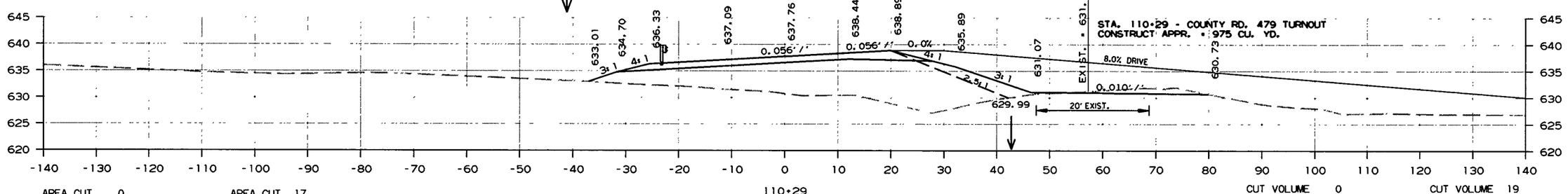
AREA CUT 47
AREA FILL 27

111+00

CUT VOLUME 0
FILL VOLUME 1056

CUT VOLUME 83
FILL VOLUME 85

STA. 110+29 - COUNTY RD. 479 TURNOUT
CONSTRUCT APPR. = 975 CU. YD.



AREA CUT 0
AREA FILL 394

AREA CUT 17
AREA FILL 37

110+29

CUT VOLUME 0
FILL VOLUME 411

CUT VOLUME 19
FILL VOLUME 39

CROSS SECTIONS STA. 110+29 TO STA. 112+00

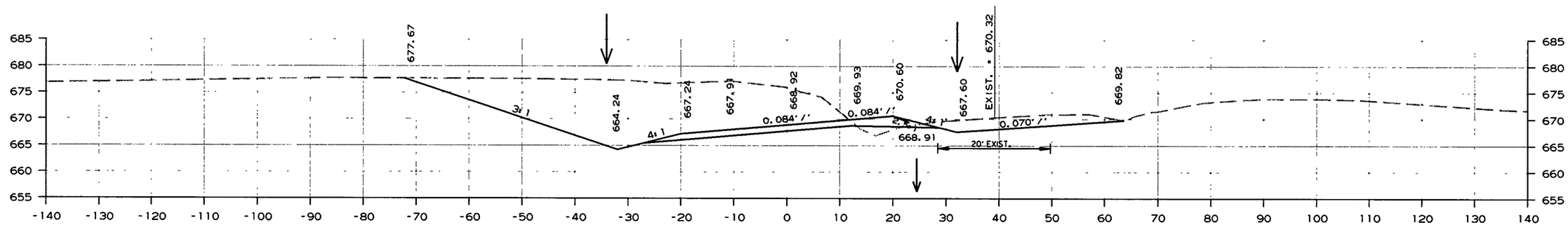
8/1/2016

R009814.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.		009814	90	94

(2) CROSS SECTIONS

AREA (STAGE 1) | AREA (STAGE 2) | VOLUME (STAGE 1) | VOLUME (STAGE 2)



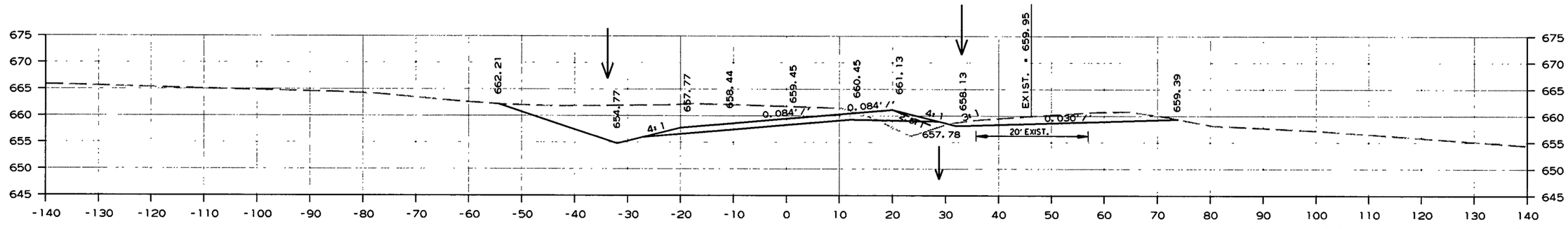
AREA CUT 669
AREA FILL 8

AREA CUT 64
AREA FILL 0

114+00

CUT VOLUME 1757
FILL VOLUME 46

CUT VOLUME 221
FILL VOLUME 6



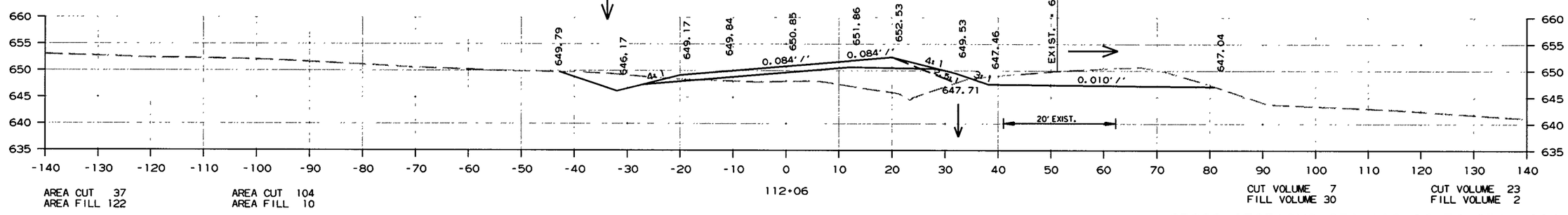
AREA CUT 280
AREA FILL 17

AREA CUT 55
AREA FILL 3

113+00

CUT VOLUME 551
FILL VOLUME 241

CUT VOLUME 276
FILL VOLUME 23



AREA CUT 37
AREA FILL 122

AREA CUT 104
AREA FILL 10

112+06

CUT VOLUME 7
FILL VOLUME 30

CUT VOLUME 23
FILL VOLUME 2

CROSS SECTIONS STA. 112+06 TO STA. 114+00

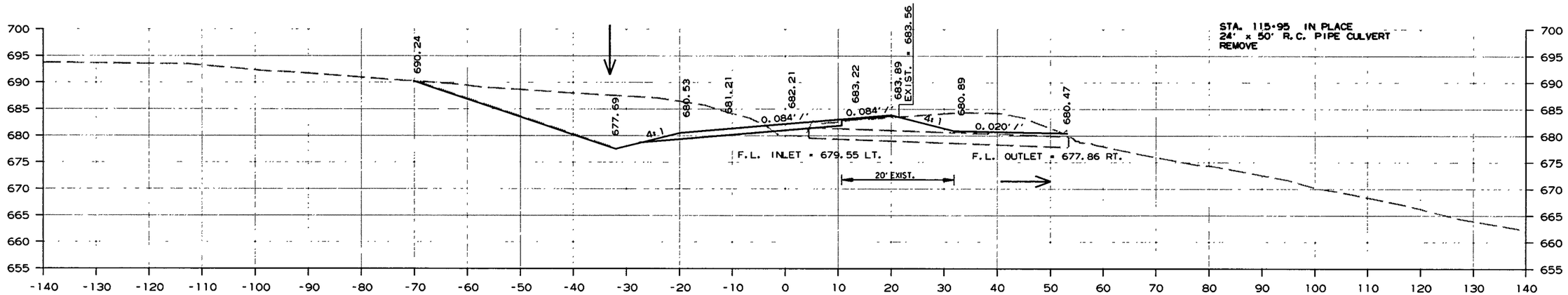
8/1/2016

R009814.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.		009814	91	94

(2) CROSS SECTIONS

AREA (STAGE 1) AREA (STAGE 2) VOLUME (STAGE 1) VOLUME (STAGE 2)



CROSS SECTIONS STA. 115+00 TO STA. 115+95

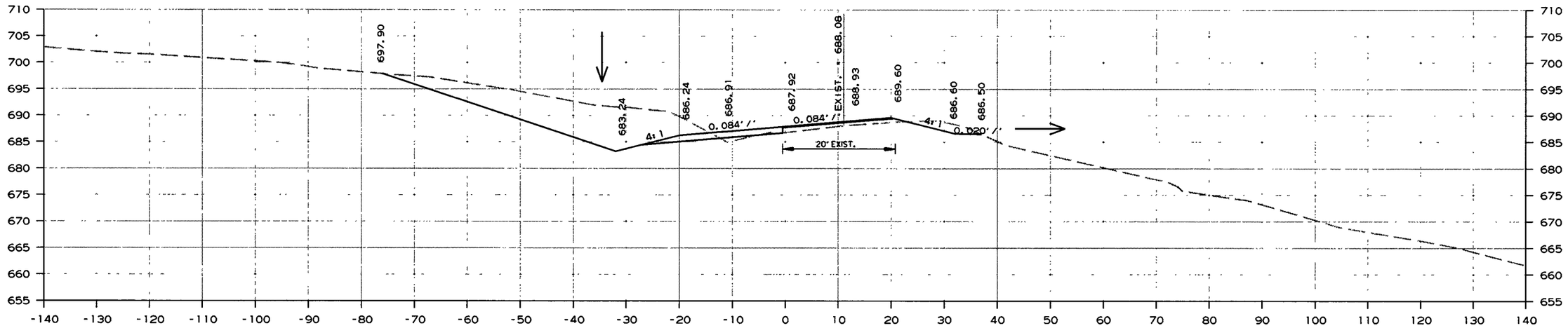
8/1/2016

R009814.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.		009814	92	94

(2) CROSS SECTIONS

AREA (STAGE 1) AREA (STAGE 2) VOLUME (STAGE 1) VOLUME (STAGE 2)



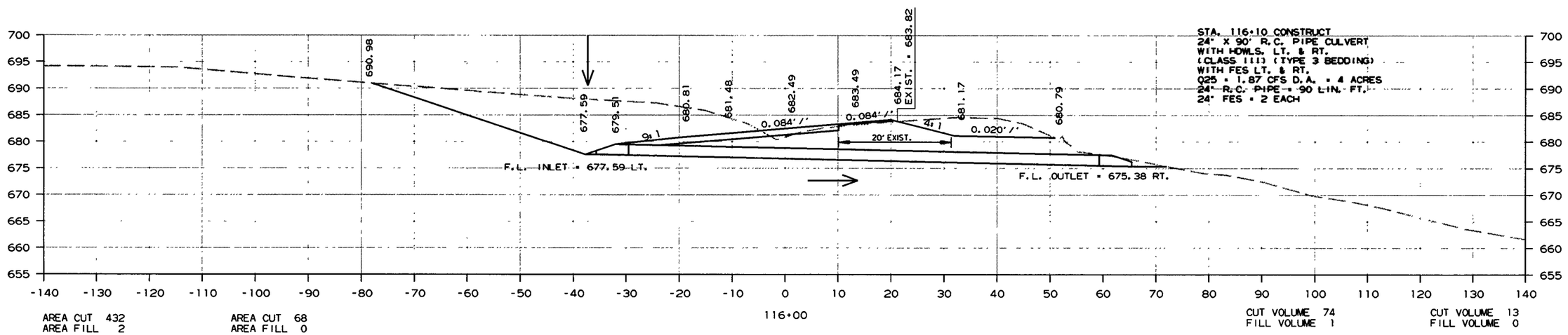
AREA CUT 295
AREA FILL 3

AREA CUT 15
AREA FILL 0

117+00

CUT VOLUME 1345
FILL VOLUME 9

CUT VOLUME 154
FILL VOLUME 0



STA. 116+10 CONSTRUCT
24" X 90' R.C. PIPE CULVERT
WITH HDWLS. LT. & RT.
(CLASS III) (TYPE 3 BEDDING)
WITH FES LT. & RT.
Q25 = 1.87 CFS D.A. = 4 ACRES
24" R.C. PIPE = 90 LIN. FT.
24" FES = 2 EACH

AREA CUT 432
AREA FILL 2

AREA CUT 68
AREA FILL 0

116+00

CUT VOLUME 74
FILL VOLUME 1

CUT VOLUME 13
FILL VOLUME 0

CROSS SECTIONS STA. 116+00 TO STA. 117+00

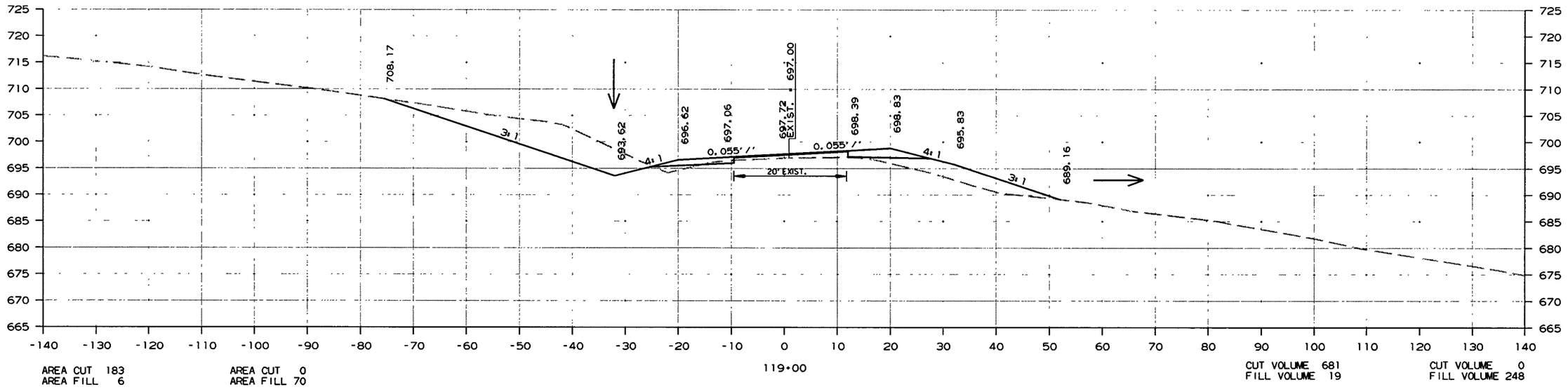
8/1/2016

R009814.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.		009814	93	94

(2) CROSS SECTIONS

AREA (STAGE 1) | AREA (STAGE 2) | VOLUME (STAGE 1) | VOLUME (STAGE 2)

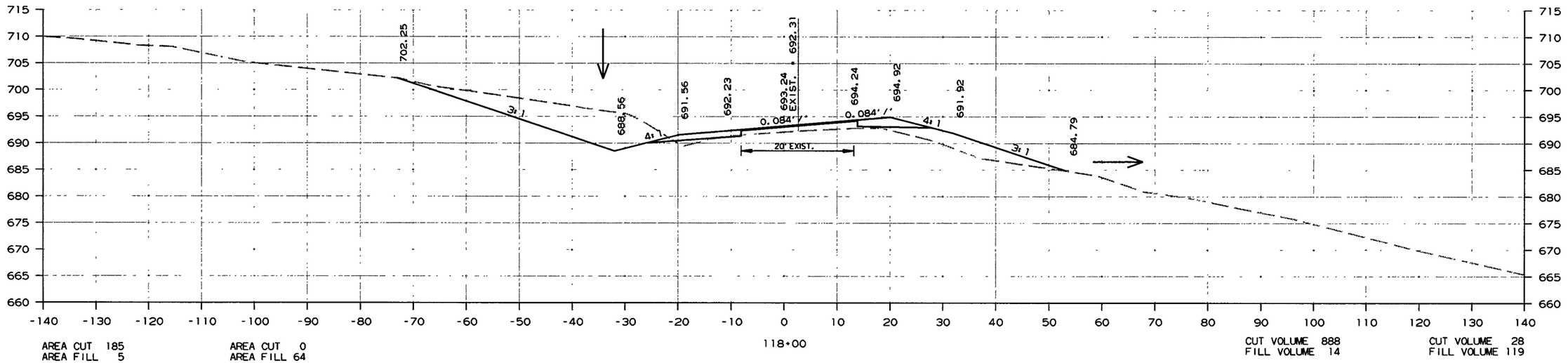


AREA CUT 183
AREA FILL 6

AREA CUT 0
AREA FILL 70

CUT VOLUME 681
FILL VOLUME 19

CUT VOLUME 0
FILL VOLUME 248



AREA CUT 185
AREA FILL 5

AREA CUT 0
AREA FILL 64

CUT VOLUME 888
FILL VOLUME 14

CUT VOLUME 28
FILL VOLUME 119

CROSS SECTIONS STA. 118+00 TO STA. 119+00

8/1/2016

R009814.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.		009814	94	94

(2) CROSS SECTIONS

AREA (STAGE 1)

AREA (STAGE 2)

VOLUME (STAGE 1)

VOLUME (STAGE 2)

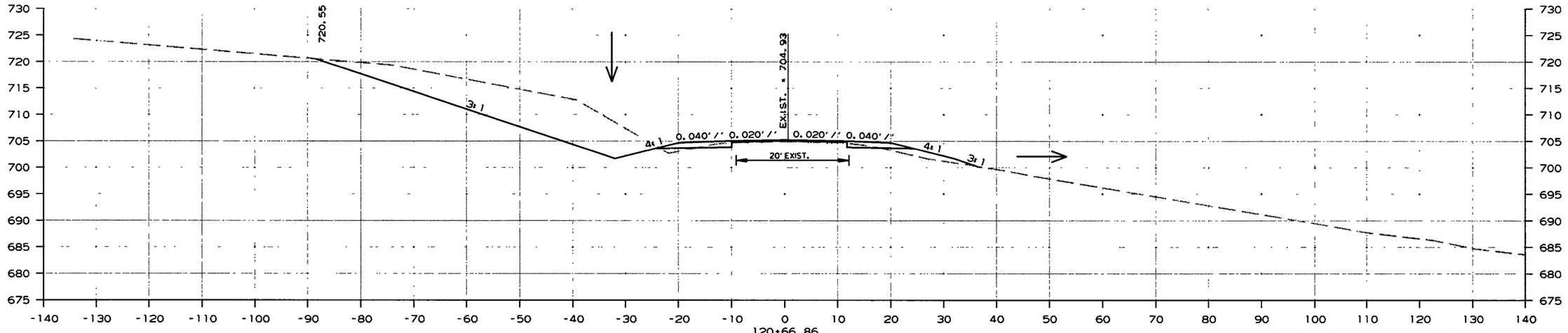
121+66.86
END 100' TRANSITION

AREA CUT 0
AREA FILL 0

AREA CUT 0
AREA FILL 0

CUT VOLUME 608
FILL VOLUME 6

CUT VOLUME 5
FILL VOLUME 27



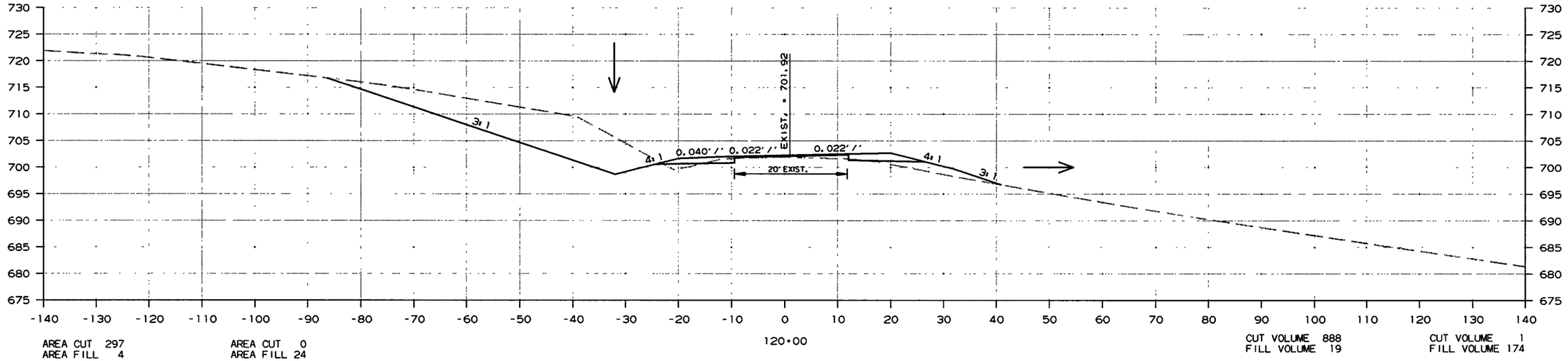
AREA CUT 328
AREA FILL 3

AREA CUT 3
AREA FILL 15

120+66.86
END JOB 009814 &
BEGIN 100' TRANSITION

CUT VOLUME 774
FILL VOLUME 9

CUT VOLUME 4
FILL VOLUME 48



AREA CUT 297
AREA FILL 4

AREA CUT 0
AREA FILL 24

120+00

CUT VOLUME 888
FILL VOLUME 19

CUT VOLUME 1
FILL VOLUME 174

CROSS SECTIONS STA. 120+00 TO STA. 120+67

8/1/2016

R009814.DGN