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.		070289	1	365
				(2)	HWY. 273-PETERS RD. (CR 24) (F)			

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT
CONSTRUCTION PLANS FOR STATE HIGHWAY

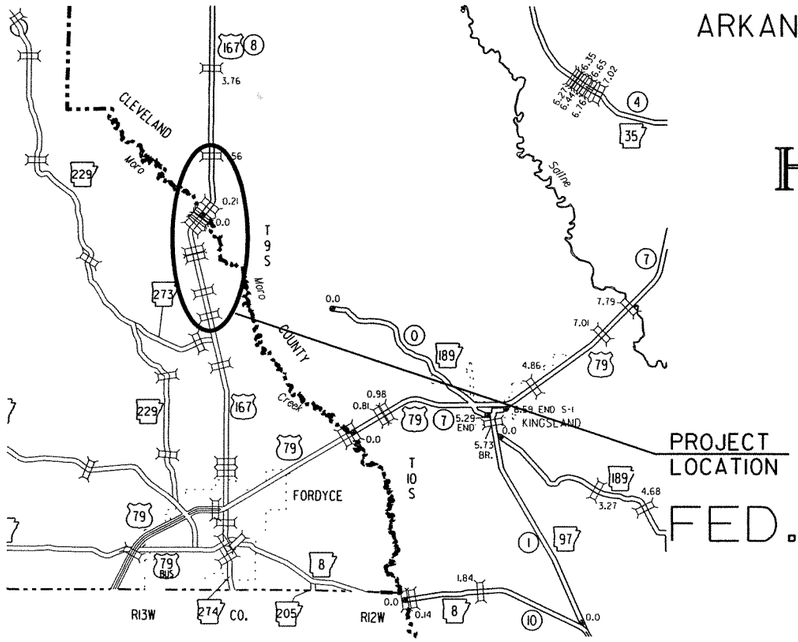
HWY. 273-PETERS RD. (CR 24) (F)

DALLAS AND CLEVELAND COUNTIES

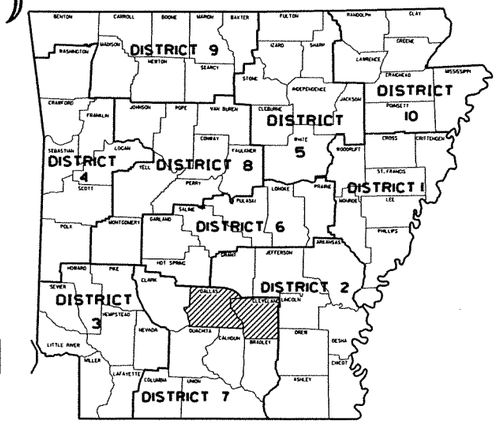
ROUTE 167 SECTIONS 7 & 8

JOB 070289

FED. AID PROJ. NH-STP-CA-EB-2014(1)

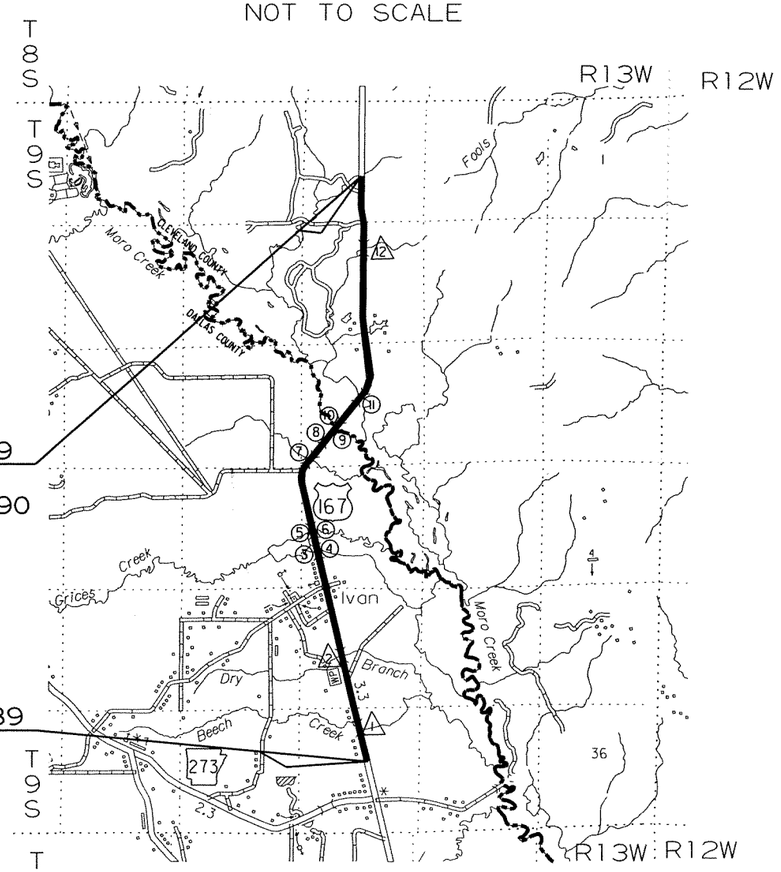


VICINITY MAP



ARK. HWY. DIST. NO. 7

NOT TO SCALE



END JOB 070289
STA. 629+05.14
BEGIN JOB 070290
LOG MILE 2.11

BEGIN JOB 070289
STA. 357+20.00
LOG MILE 4.49
END JOB 070288

LENGTH COMPUTED ALONG C.L. HWY. 167

GROSS LENGTH OF PROJECT	27185.14	FEET OR	5.149	MILES
NET . . ROADWAY	26161.90	. .	4.955	.
NET . . BRIDGES	1023.24	. .	0.194	.
NET . . PROJECT	27185.14	. .	5.149	.

P.E. 001914
NON-PART.

BRIDGE DATA

(3)&(4) STA. 456+16.50 BRIDGE END
BR. NO. A7237 & B7237
110'-0" CONTINUOUS COMPOSITE
INTEGRAL W-BEAM UNIT
(34'-42'-34')
38' CL. RDWY.
111.00' BRIDGE LENGTH
STA. 457+27.50 BRIDGE END

(5)&(6) STA. 465+33.50 BRIDGE END
BR. NO. A7238 & B7238
160'-0" CONTINUOUS COMPOSITE
INTEGRAL W-BEAM UNIT
(50'-60'-50')
38' CL. RDWY.
161.00' BRIDGE LENGTH
STA. 466+94.50 BRIDGE END

(7) STA. 498+03.50 BRIDGE END
BR. NO. 07239
160'-0" CONTINUOUS COMPOSITE
INTEGRAL W-BEAM UNIT
(50'-60'-50')
75' CL. RDWY.
161.00' BRIDGE LENGTH
STA. 499+64.50 BRIDGE END

(8) STA. 510+34.50 BRIDGE END
BR. NO. 07240
120'-0" CONTINUOUS COMPOSITE
INTEGRAL W-BEAM UNIT
(37'-46'-37')
75' CL. RDWY.
121.00' BRIDGE LENGTH
STA. 511+55.50 BRIDGE END

(9) STA. 513+67.50 BRIDGE END
BR. NO. 07241
120'-0" CONTINUOUS COMPOSITE
INTEGRAL W-BEAM UNIT
(37'-46'-37')
75' CL. RDWY.
121.00' BRIDGE LENGTH
STA. 514+88.50 BRIDGE END

(10) STA. 517+05.50 BRIDGE END
BR. NO. 07242
120'-0" CONTINUOUS COMPOSITE
INTEGRAL W-BEAM UNIT
(37'-46'-37')
75' CL. RDWY.
121.00' BRIDGE LENGTH
STA. 518+26.50 BRIDGE END

STRUCTURES OVER 20'-0" SPAN

(1) STA. 377+89 - IN PLACE
DBL. 10' X 6' X 88' R.C. BOX CULVERT
RETAIN AND EXTEND 3' LT. AND
82' RT ON 28° LT. FWD. SKEW
TO A COMPLETED LENGTH OF 173'
(SPAN 22'-1")

(2) STA. 409+99 - IN PLACE
DBL. 10' X 4' X 80' R.C. BOX CULVERT
RETAIN AND EXTEND 12' LT. AND
92' RT. ON 36° LT. FWD. SKEW
TO A COMPLETED LENGTH OF 184'
(SPAN 22'-1")

(12) STA. 600+28 - IN PLACE
DBL. 10' X 6' X 48' R.C. BOX CULVERT
RETAIN AND EXTEND 132' RT
TO A COMPLETED LENGTH OF 180'
CONSTRUCT TYPE 'TM' DROP INLET IN MEDIAN
4'-0" X 3'-0' x H = 0'-6"
(SPAN 22'-1")

BRIDGE DATA

(11) STA. 532+91.50 BRIDGE END
BR. NO. 07243
160'-0" CONTINUOUS COMPOSITE
INTEGRAL W-BEAM UNIT
(50'-60'-50')
75' CL. RDWY.
161.00' BRIDGE LENGTH
STA. 534+52.50 BRIDGE END

• DESIGN TRAFFIC DATA •

DESIGN YEAR	2032
2012 ADT	4000
2032 ADT	5600
2032 DHV	616
DIRECTIONAL DISTRIBUTION	60%
TRUCKS	24%
DESIGN SPEED	60 MPH
AVG. RUNNING SPEED	55 MPH

	BEGIN PROJECT	MID-POINT OF PROJECT	END PROJECT
LATITUDE	N 33°53'29"	N 33°55'38"	N 33°57'44"
LONGITUDE	W 92°24'51"	W 92°25'23"	W 92°24'48"

APPROVED

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 3917
FRANK VOZEL

2/11/13
DEPUTY DIRECTOR
AND CHIEF ENGINEER

r070290.dgn 1/28/2010

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.		070289	2	365

(2) INDEX OF SHEETS

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STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12

8/30/2012

R070289.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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STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

2-8-13

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

2/8/2013

R070289.DGN

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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.		070289	4	365

(2) GOVERNING SPECS. AND GENERAL NOTES

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

9-4-12

GOVERNING SPECIFICATIONS

ARKANSAS STATE HIGHWAY COMMISSION STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, EDITION OF 2003, AND THE FOLLOWING SPECIAL PROVISIONS AND SUPPLEMENTAL SPECIFICATIONS:

NUMBER	TITLE
ERRATA_____	ERRATA FOR THE BOOK OF STANDARD SPECIFICATIONS
FHWA-1273__	REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS
FHWA-1273__	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - NOTICE TO CONTRACTORS
FHWA-1273__	SUPPLEMENT - SPECIFIC EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITIES (23 U.S.C. 140)
FHWA-1273__	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - GOALS AND TIMETABLES
FHWA-1273__	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - FEDERAL STANDARDS
FHWA-1273__	SUPPLEMENT - TRAINING PROGRAM - JOB 070289
FHWA-1273__	SUPPLEMENT - POSTERS AND NOTICES REQUIRED FOR FEDERAL-AID PROJECTS
FHWA-1273__	SUPPLEMENT - WAGE RATE DETERMINATION
100-2_____	MANUAL FOR ASSESSING SAFETY HARDWARE (MASH)
102-1_____	BIDDING REQUIREMENTS AND CONDITIONS
103-1_____	DETERMINATION OF DBE PARTICIPATION
105-1_____	CONSTRUCTION CONTROL MARKINGS
105-2_____	EQUIPMENT AND MATERIAL STORAGE ON BRIDGE STRUCTURES
105-3_____	CONTROL OF WORK
107-1_____	WORKER VISIBILITY
108-1_____	LIQUIDATED DAMAGES
110-1_____	PROTECTION OF WATER QUALITY AND WETLANDS
303-1_____	AGGREGATE BASE COURSE
404-1_____	PRODUCTION VERIFICATION OF ASPHALT CONCRETE HOT MIX
404-2_____	DESIGN AND QUALITY CONTROL OF ASPHALT MIXTURES
409-1_____	MINERAL AGGREGATES
410-3_____	DENSITY TESTING FOR ACHM LEVELING COURSES AND BOND BREAKERS
411-1_____	ASPHALT CONCRETE COLD PLANT MIX
600-1_____	WATER FOR VEGETATION
603-1_____	MAINTENANCE OF TRAFFIC
604-1_____	RETROREFLECTIVE SHEETING FOR TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES
604-2_____	INSPECTION OF TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES
606-1_____	PIPE CULVERTS FOR SIDE DRAINS
606-2_____	PIPE CULVERTS
718-2_____	REFLECTORIZED PAINT PAVEMENT MARKINGS
719-2_____	THERMOPLASTIC PAVEMENT MARKING MATERIAL
804-1_____	INSTALLATION OF DOWEL BARS AND TIE BARS
JOB 070289__	APPROACH SLABS AND GUTTERS
JOB 070289__	ASPHALT CONCRETE HOT MIX SURFACE COURSE SURFACE TOLERANCE AND INCENTIVE PAYMENTS
JOB 070289__	BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB 070289__	BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB 070289__	COMPACTED EMBANKMENT
JOB 070289__	CONSTRUCTION IN SPECIAL FLOOD HAZARD AREAS
JOB 070289__	COORDINATION OF WORK
JOB 070289__	CULVERT CLEAN OUT
JOB 070289__	EMBANKMENT CONSTRUCTION
JOB 070289__	EXTENSION FOR PIPE CULVERTS
JOB 070289__	GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
JOB 070289__	HIGH PERFORMANCE PAVEMENT MARKING
JOB 070289__	INTERNET BIDDING
JOB 070289__	NESTING SITES OF MIGRATORY BIRDS
JOB 070289__	PARTNERING REQUIREMENTS
JOB 070289__	PLASTIC PIPE
JOB 070289__	SECTION 404 INDIVIDUAL PERMIT REQUIREMENTS
JOB 070289__	SITE USE (A + C METHOD)
JOB 070289__	SOIL STABILIZATION
JOB 070289__	STORM WATER POLLUTION PREVENTION PLAN
JOB 070289__	SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB 070289__	UTILITY ADJUSTMENTS
JOB 070289__	VALUE ENGINEERING
JOB 070289__	WARM MIX ASPHALT
JOB 070289__	WATTLES

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.

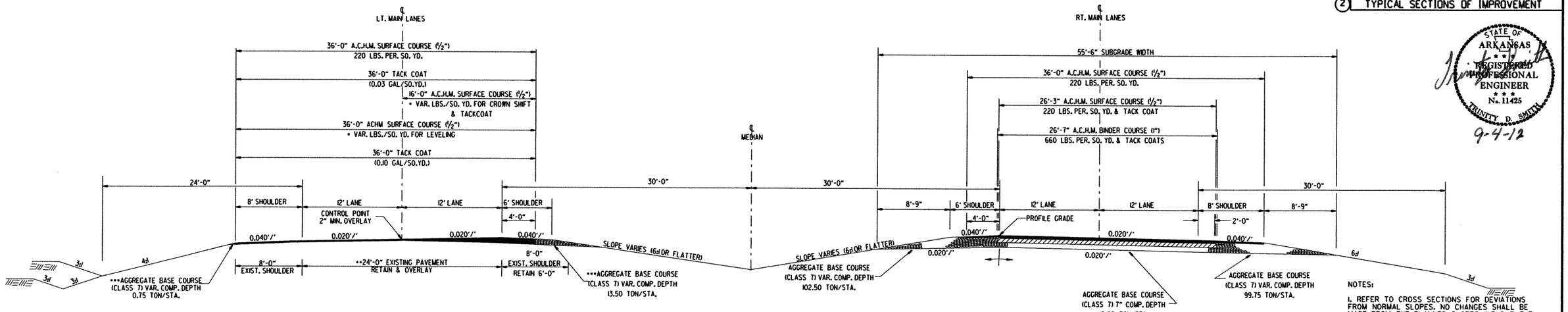
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				6	ARK.			
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(2) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12



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

** NOTE: STA. 357+20 - STA. 419+00 IS AN EXISTING PASSING LANE SECTION.

*** AGGREGATE BASE COURSE SHALL BE UNIFORMLY COMPACTED, STABLE AND FREE OF SEGREGATED AREAS. THE DENSITY REQUIREMENTS OF SECTION 303 ARE WAIVED.

① STA. 588+54.00-598+00.00
TRANSITION FROM OVERLAY LT. MAIN LANES TO FULL DEPTH

HWY. 167 - 4 LANE DIVIDED
(OVERLAY LEFT MAIN LANES)

357+20.00 TO 450+00.00
473+00.00 TO 483+50.00
546+00.00 TO 588+54.00①

(REVERSE FOR OVERLAY RIGHT MAIN LANES)

623+35.00 TO 628+05.14

NOTES:

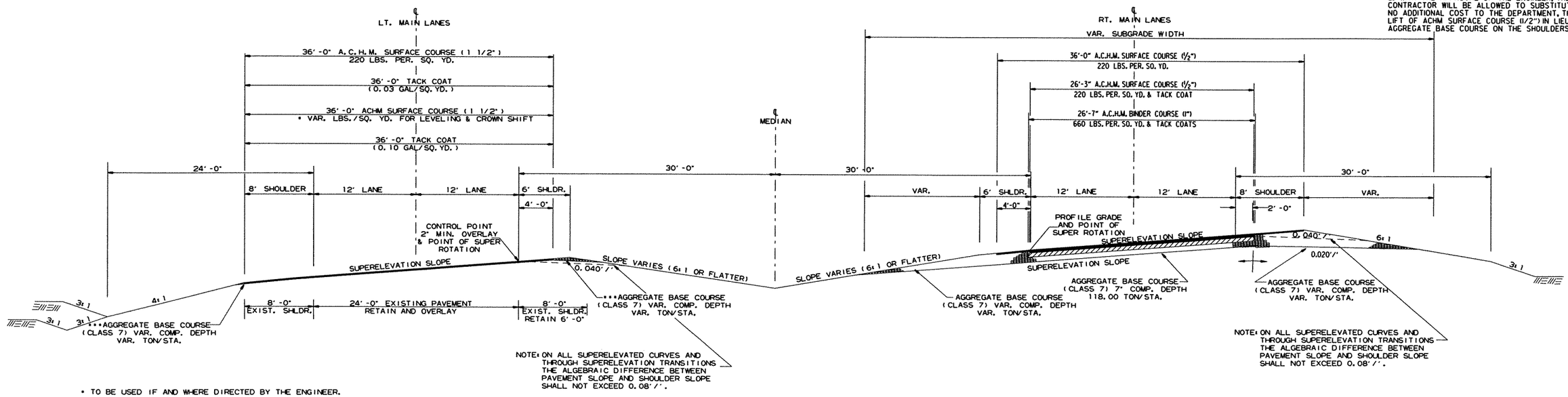
1. REFER TO CROSS SECTIONS FOR DEVIATIONS FROM NORMAL SLOPES. NO CHANGES SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.

2. THE THICKNESS OF AGGREGATE BASE COURSE SHALL BE WITHIN PLUS OR MINUS ONE INCH OF THE PLAN THICKNESS SHOWN. PAYMENT WILL NOT BE MADE FOR MATERIAL PLACED IN EXCESS OF THE TOLERANCE INDICATED.

3. 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.

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

5. WITH THE APPROVAL OF THE ENGINEER, THE CONTRACTOR WILL BE ALLOWED TO SUBSTITUTE, AT NO ADDITIONAL COST TO THE DEPARTMENT, THE FIRST LIFT OF ACHM SURFACE COURSE (1/2") IN LIEU OF AGGREGATE BASE COURSE ON THE SHOULDERS.



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

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

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

*** AGGREGATE BASE COURSE SHALL BE UNIFORMLY COMPACTED, STABLE AND FREE OF SEGREGATED AREAS. THE DENSITY REQUIREMENTS OF SECTION 303 ARE WAIVED.

HWY. 167 - 4 LANE DIVIDED (SUPERELEVATED)

NOTE: REVOLVE SUPERELEVATION AROUND INSIDE PAVEMENT EDGE

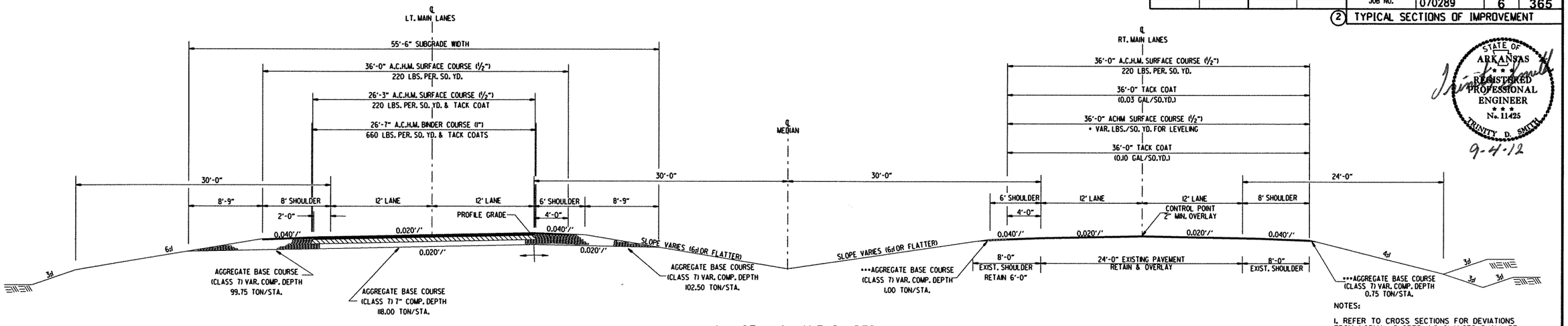
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TYPICAL SECTIONS OF IMPROVEMENT

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(2) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
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No. 11425
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HWY. 167 - 4 LANE DIVIDED (OVERLAY RIGHT MAIN LANES)

628+05.14 TO 629+05.14

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

*** AGGREGATE BASE COURSE SHALL BE UNIFORMLY COMPACTED, STABLE AND FREE OF SEGREGATED AREAS. THE DENSITY REQUIREMENTS OF SECTION 303 ARE WAIVED.

NOTES:

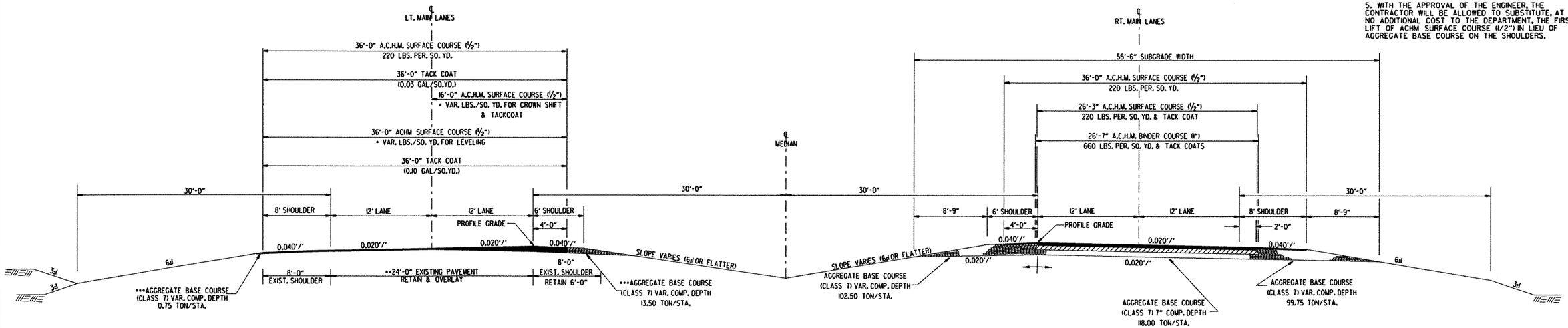
1. REFER TO CROSS SECTIONS FOR DEVIATIONS FROM NORMAL SLOPES. NO CHANGES SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.

2. THE THICKNESS OF AGGREGATE BASE COURSE SHALL BE WITHIN PLUS OR MINUS ONE INCH OF THE PLAN THICKNESS SHOWN. PAYMENT WILL NOT BE MADE FOR MATERIAL PLACED IN EXCESS OF THE TOLERANCE INDICATED.

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HWY. 167 - 4 LANE DIVIDED (OVERLAY LEFT MAIN LANES)

450+00.00 TO 454+00.00
459+50.00 TO 462+00.00
470+50.00 TO 473+00.00
483+50.00 TO 485+00.00
545+00.00 TO 546+00.00

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

** NOTE: STA. 357+20 - STA. 419+00 IS AN EXISTING PASSING LANE SECTION.

*** AGGREGATE BASE COURSE SHALL BE UNIFORMLY COMPACTED, STABLE AND FREE OF SEGREGATED AREAS. THE DENSITY REQUIREMENTS OF SECTION 303 ARE WAIVED.

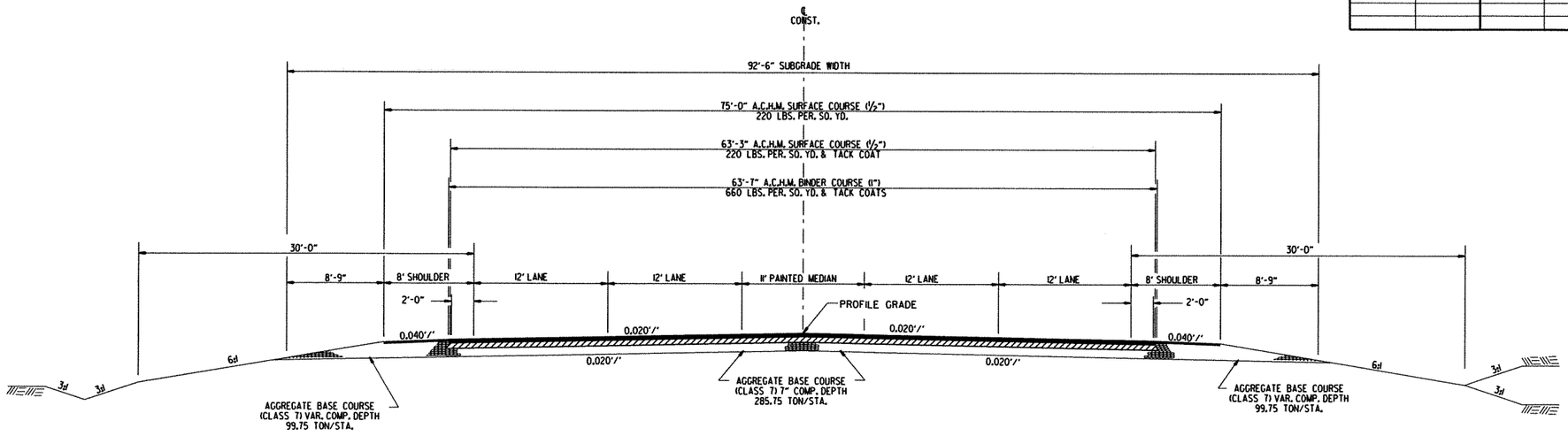
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TYPICAL SECTIONS OF IMPROVEMENT

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(2) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12



HWY. 167 - 5 LANES (FULL DEPTH SECTION)

497+04.94 TO 498+03.50 (B.E.)
499+64.50 (B.E.) TO 510+34.50 (B.E.)
511+55.50 (B.E.) TO 513+67.50 (B.E.)
514+88.50 (B.E.) TO 517+05.50 (B.E.)
518+26.50 (B.E.) TO 525+10.00
530+50.00 TO 532+91.50 (B.E.)
534+52.50 (B.E.) TO 535+79.52

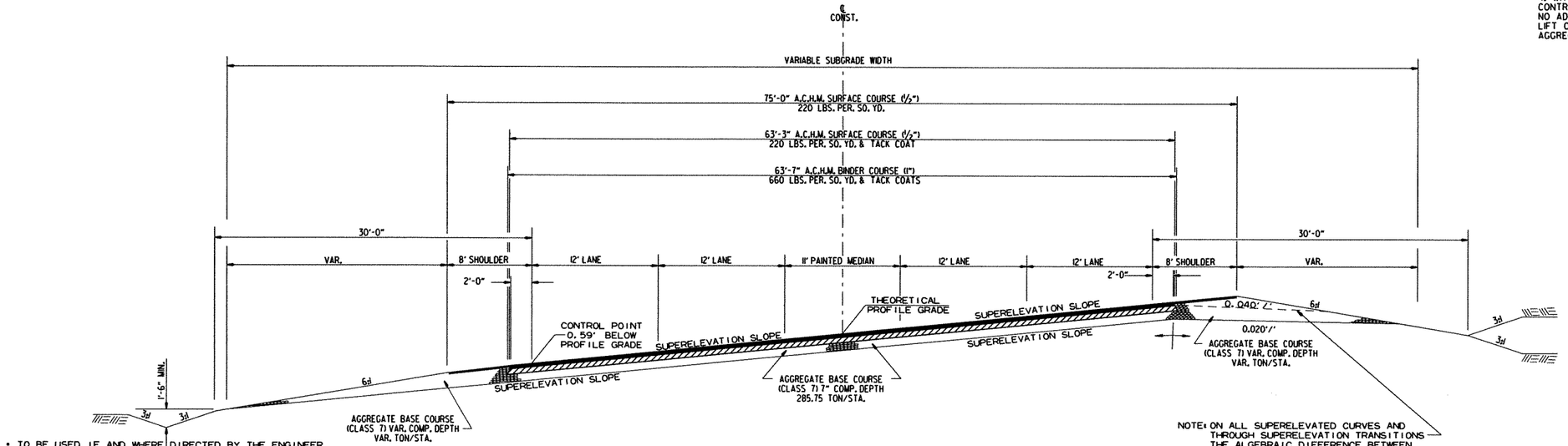
NOTES:

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

2. THE THICKNESS OF AGGREGATE BASE COURSE SHALL BE WITHIN PLUS OR MINUS ONE INCH OF THE PLAN THICKNESS SHOWN. PAYMENT WILL NOT BE MADE FOR MATERIAL PLACED IN EXCESS OF THE TOLERANCE INDICATED.

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

4. WITH THE APPROVAL OF THE ENGINEER, THE CONTRACTOR WILL BE ALLOWED TO SUBSTITUTE, AT NO ADDITIONAL COST TO THE DEPARTMENT, THE FIRST LIFT OF ACHM SURFACE COURSE (1/2") IN LIEU OF AGGREGATE BASE COURSE ON THE SHOULDERS.



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

*** AGGREGATE BASE COURSE SHALL BE UNIFORMLY COMPACTED, STABLE AND FREE OF SEGREGATED AREAS. THE DENSITY REQUIREMENTS OF SECTION 303 ARE WAIVED.

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

HWY. 167 - 5 LANE (FULL DEPTH SECTION) (SUPERELEVATED)

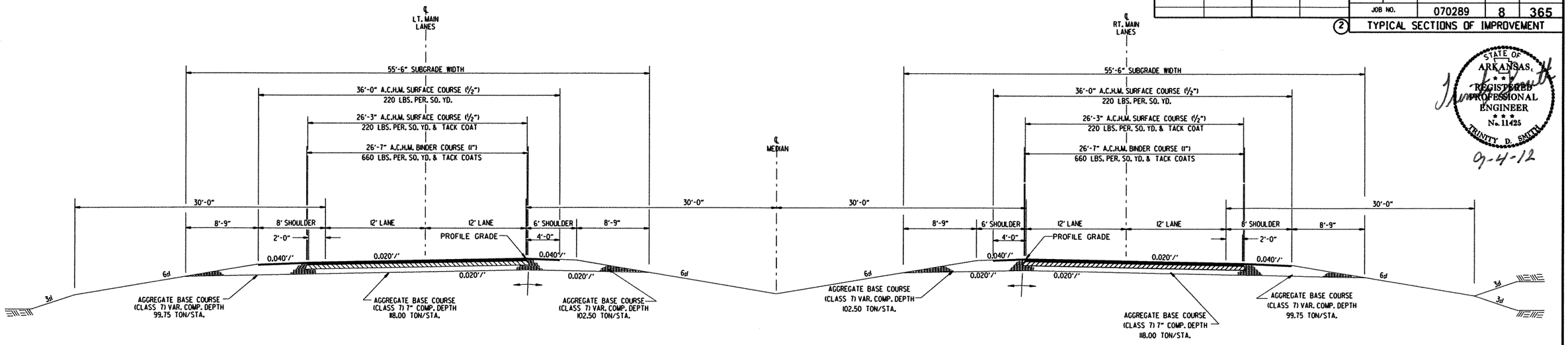
(PAVEMENT SECTION IS SAME AS SHOWN ABOVE)
492+26.00 TO 497+04.94
535+79.52 TO 536+83.00

TYPICAL SECTIONS OF IMPROVEMENT

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(2) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12



① STA. 588+54.00-598+00.00
TRANSITION FROM OVERLAY LT. MAIN LANES TO FULL DEPTH

HWY. 167 - 4 LANE DIVIDED (FULL DEPTH)

454+00.00 TO 456+16.50 (B.E.)
457+27.50 (B.E.) TO 459+50.00
462+00.00 TO 465+33.50 (B.E.)
466+94.50 (B.E.) TO 470+50.00
①598+00.00 TO 623+35.00

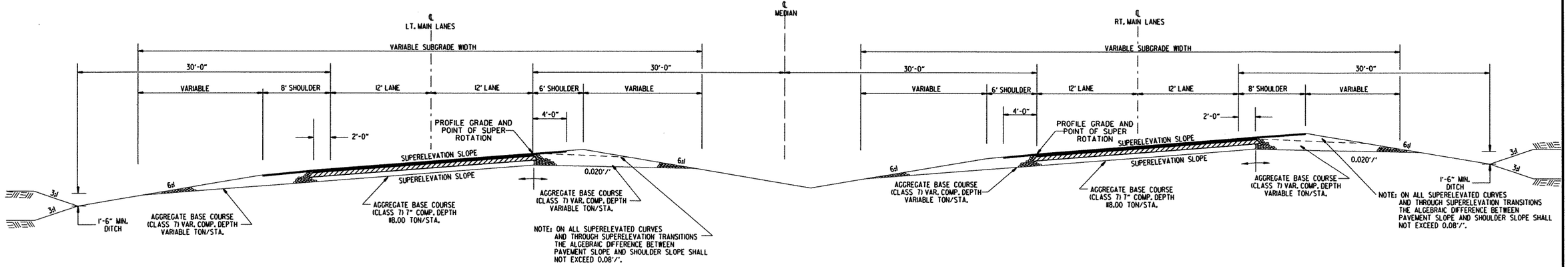
NOTES:

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2. THE THICKNESS OF AGGREGATE BASE COURSE SHALL BE WITHIN PLUS OR MINUS ONE INCH OF THE PLAN THICKNESS SHOWN. PAYMENT WILL NOT BE MADE FOR MATERIAL PLACED IN EXCESS OF THE TOLERANCE INDICATED.

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

4. WITH THE APPROVAL OF THE ENGINEER, THE CONTRACTOR WILL BE ALLOWED TO SUBSTITUTE, AT NO ADDITIONAL COST TO THE DEPARTMENT, THE FIRST LIFT OF ACHM SURFACE COURSE (1/2") IN LIEU OF AGGREGATE BASE COURSE ON THE SHOULDERS.



HWY. 167 - 4 LANE DIVIDED (SUPERELEVATED FULL DEPTH)

(PAVEMENT SECTION IS SAME AS SHOWN ABOVE)
NOTE: REVOLVE SUPERELEVATION AROUND INSIDE PAVEMENT EDGE.

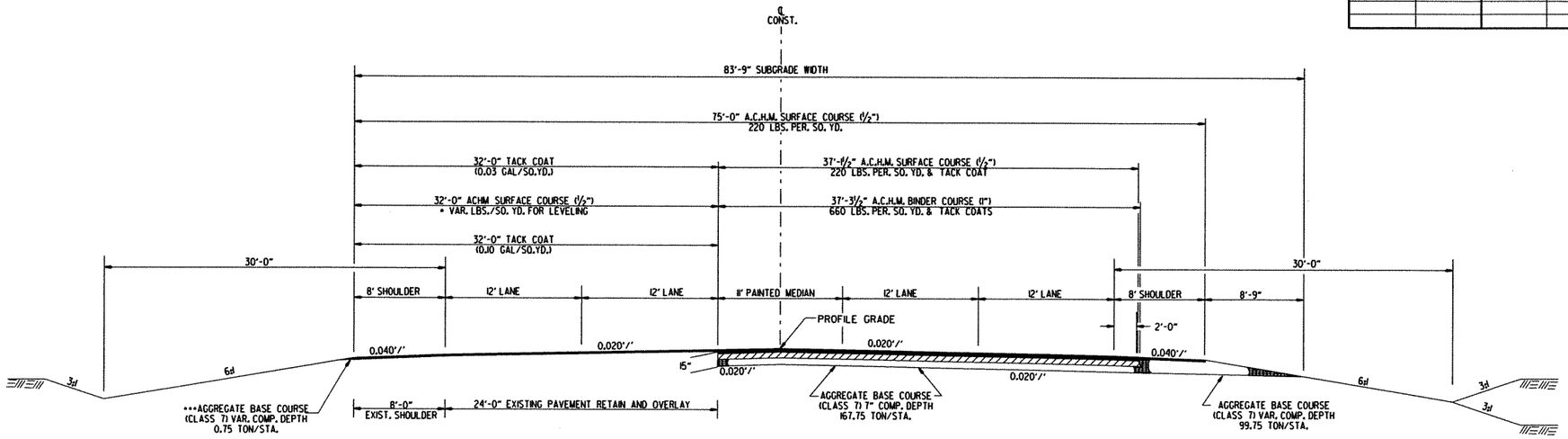
485+00.00 TO 492+26.00
536+83.00 TO 545+00.00

TYPICAL SECTIONS OF IMPROVEMENT

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(2) TYPICAL SECTIONS OF IMPROVEMENT



• TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER

HWY. 167 - 5 LANES (NOTCH AND WIDEN SECTION)

525+10.00 TO 530+50.00

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12

NOTES:

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2. THE THICKNESS OF AGGREGATE BASE COURSE SHALL BE WITHIN PLUS OR MINUS ONE INCH OF THE PLAN THICKNESS SHOWN. PAYMENT WILL NOT BE MADE FOR MATERIAL PLACED IN EXCESS OF THE TOLERANCE INDICATED.

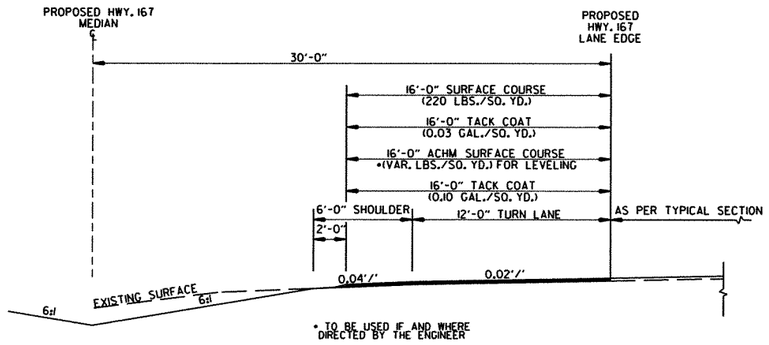
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4. THE FINAL 2" OF SURFACE COURSE IS TO BE PLACED AFTER ALL OTHER COURSES HAVE BEEN LAID. LONGITUDINAL JOINTS SHALL BE AT LANE LINES.

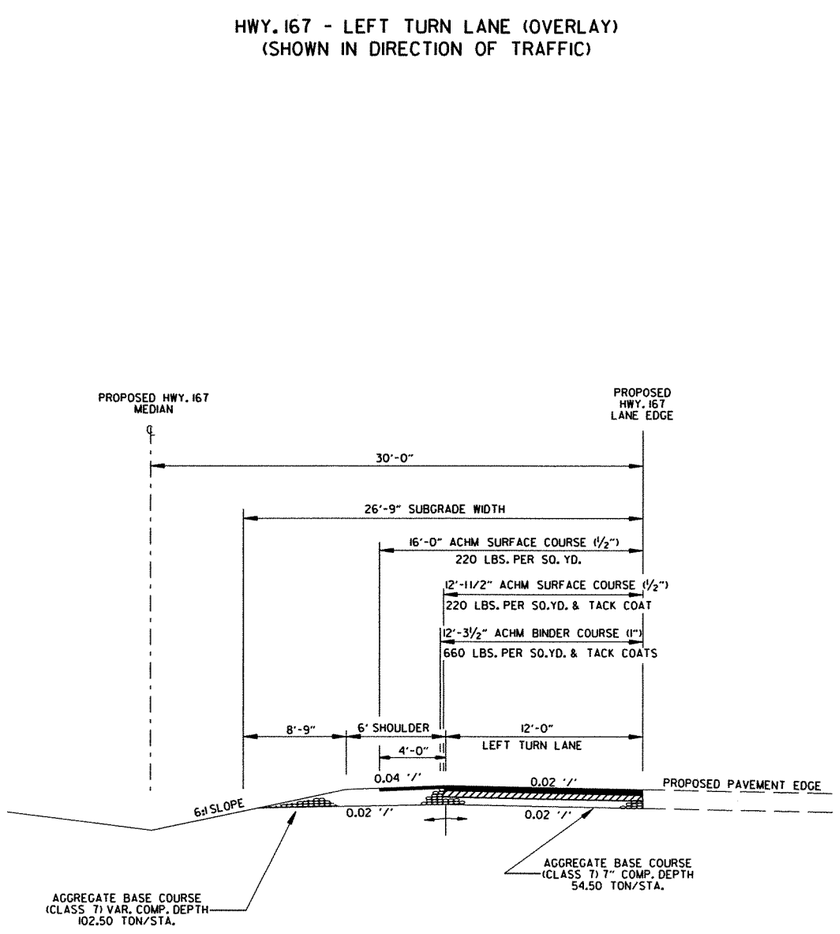
5. WITH THE APPROVAL OF THE ENGINEER, THE CONTRACTOR WILL BE ALLOWED TO SUBSTITUTE, AT NO ADDITIONAL COST TO THE DEPARTMENT, THE FIRST LIFT OF ACHM SURFACE COURSE (1/2") IN LIEU OF AGGREGATE BASE COURSE ON THE SHOULDERS.

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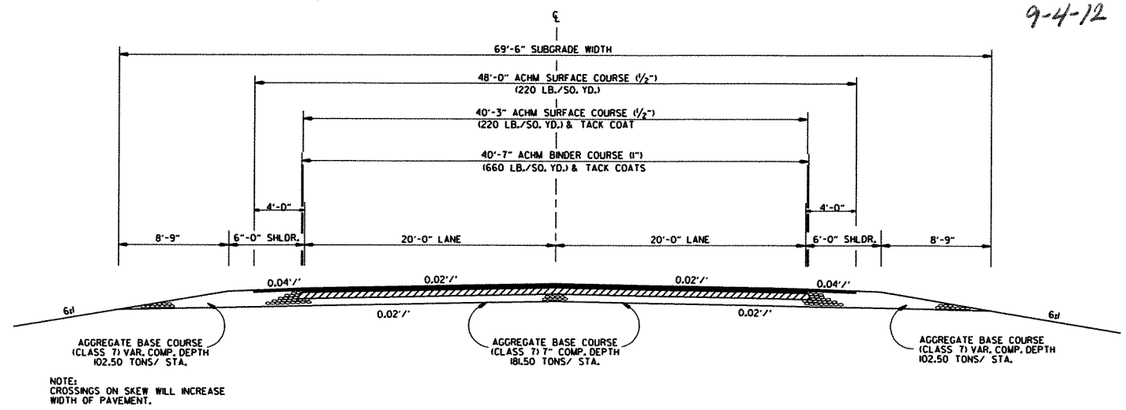
(2) TYPICAL SECTIONS OF IMPROVEMENT



HWY. 167 - LEFT TURN LANE (OVERLAY)
(SHOWN IN DIRECTION OF TRAFFIC)

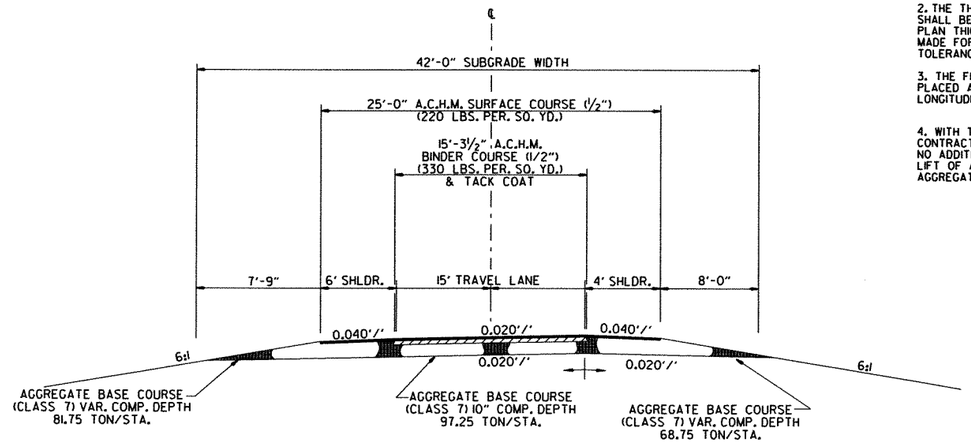


HWY. 167 - LEFT TURN LANE (FULL DEPTH)
(SHOWN IN DIRECTION OF TRAFFIC)



NOTE:
CROSSINGS ON SKEW WILL INCREASE WIDTH OF PAVEMENT.

MEDIAN TURNAROUND & ST. HWY. & COUNTY ROAD CROSSING TYPICAL



TEMPORARY CROSSOVER
FOR STAGED CONSTRUCTION

352+29.15 TO 356+84.00

NOTES:

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

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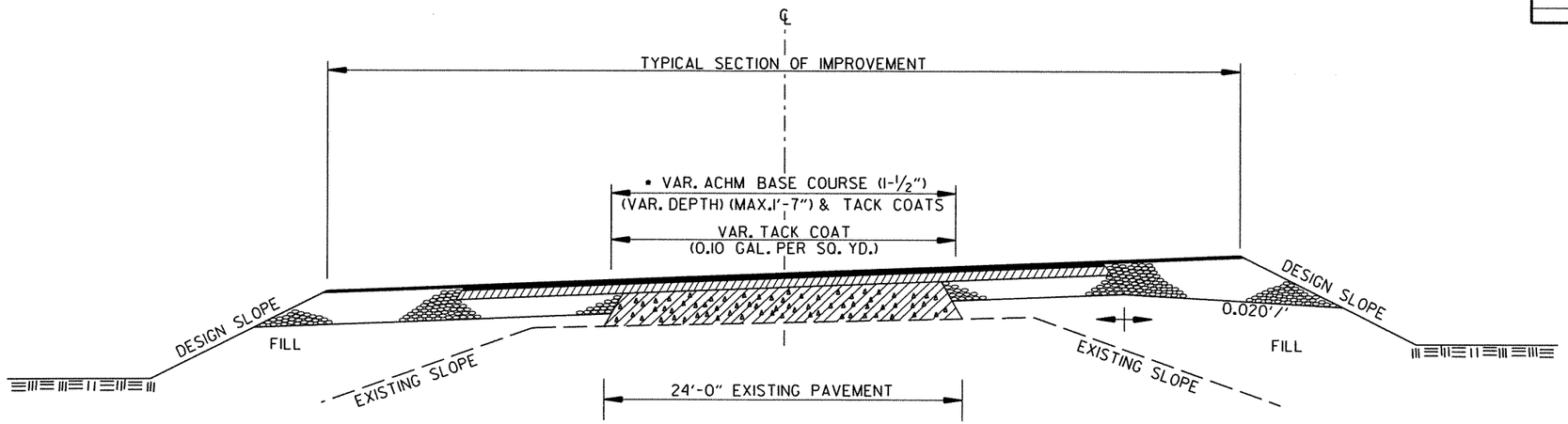
r070289.dgn 7/19/2011

TYPICAL SECTIONS OF IMPROVEMENT

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(2) SPECIAL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12



• 7" AGGREGATE BASE COURSE (CLASS 7)
TO BE REPLACED WITH A.C.H.M. BASE COURSE (I½")

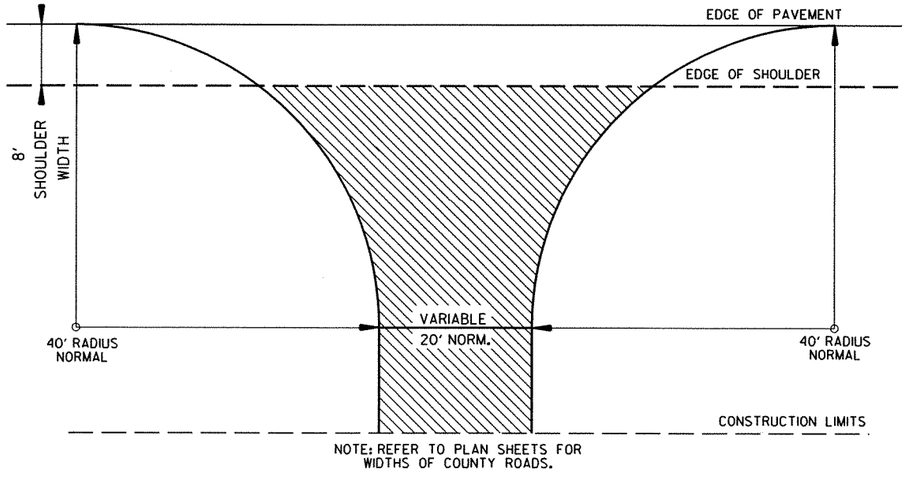
METHOD OF RAISING GRADE

NOTES:

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

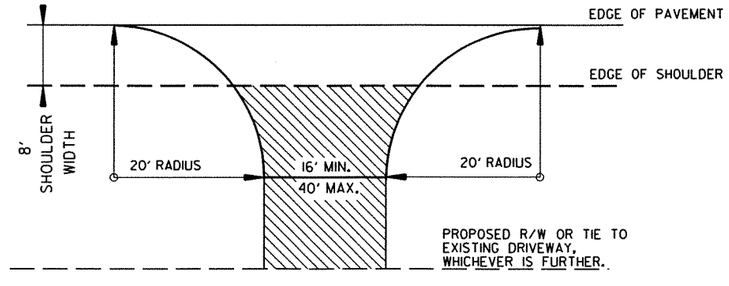
(2) QUANTITIES FOR METHOD OF GRADE RAISE USING ASPHALT WERE CALCULATED ON THIS PROJECT AT LOCATIONS WHERE THE DISTANCE BETWEEN THE EXISTING ASPHALT ROADWAY AND THE PROPOSED SUBGRADE WAS ONE FOOT OR LESS.

(3) IN LOCATIONS WHERE THE DISTANCE BETWEEN THE PROPOSED SUBGRADE AND THE EXISTING ASPHALT ROADWAY IS MORE THAN ONE FOOT, SCARIFICATION OF THE EXISTING ASPHALT ROADWAY WILL BE REQUIRED AS STATED IN SECTION 210, SUBSECTION 210.09 OF THE STANDARD SPECIFICATIONS, EDITION OF 2003.



DETAIL FOR COUNTY ROAD TURNOUTS

A.C.H.M SURFACE COURSE (½")
(220 LBS. PER SQ. YD.) AND
AGGREGATE BASE COURSE (CLASS 7)
7" COMP. DEPTH IF ASPHALT OR
GRAVEL DRIVE EXISTING; OR 6" CONCRETE
IF CONCRETE DRIVE EXISTING.



DETAIL FOR DRIVEWAY TURNOUTS

8/30/2012

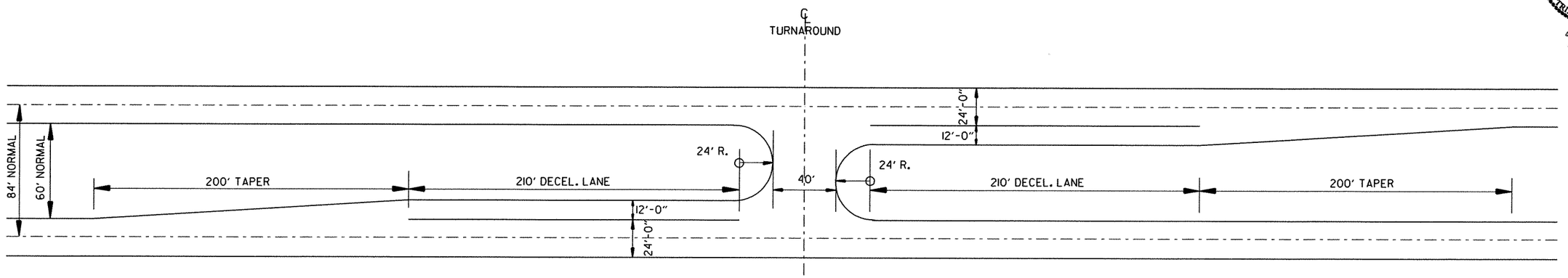
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SPECIAL DETAILS

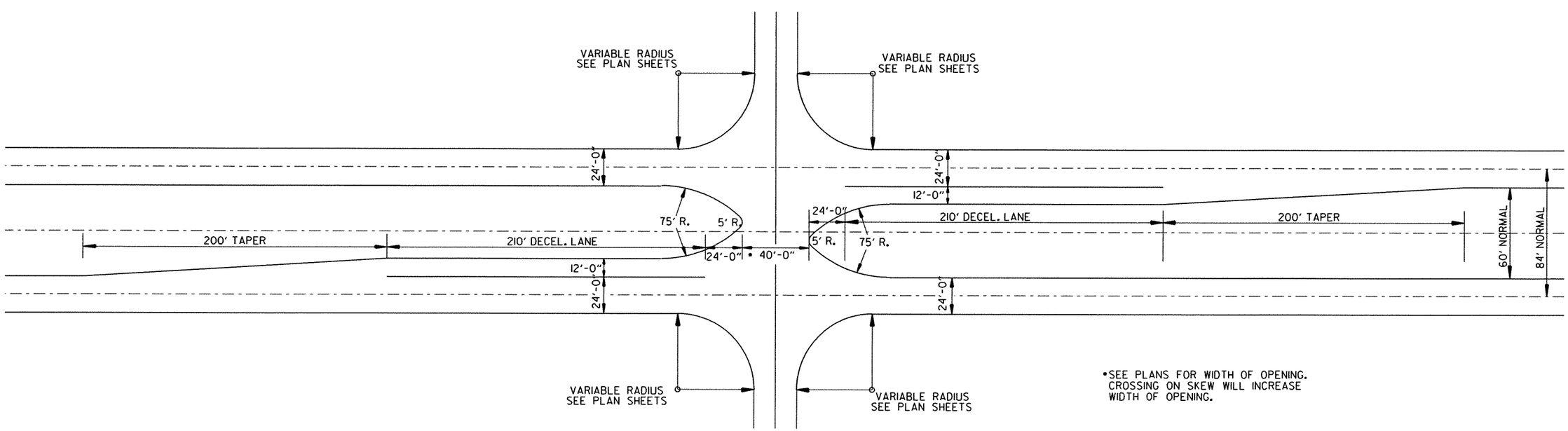
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(2) SPECIAL DETAILS

STATE OF ARKANSAS
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No. 11425
TRINITY D. SMITH
9-4-12



PLAN OF MEDIAN TURNAROUND



DETAIL OF HIGHWAY OR COUNTY ROAD CROSSING

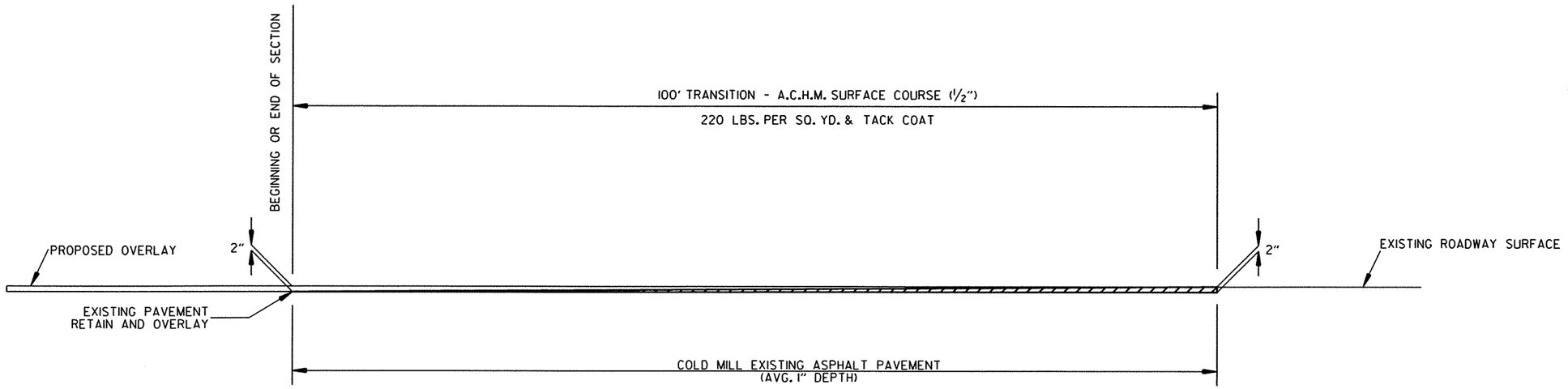
8/30/2012

R070289.DGN

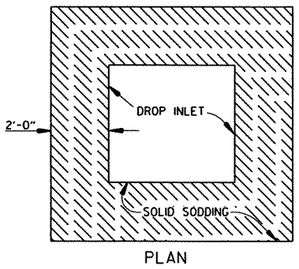
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				6	ARK.			
				JOB NO.		070289	13	365

(2) SPECIAL DETAILS

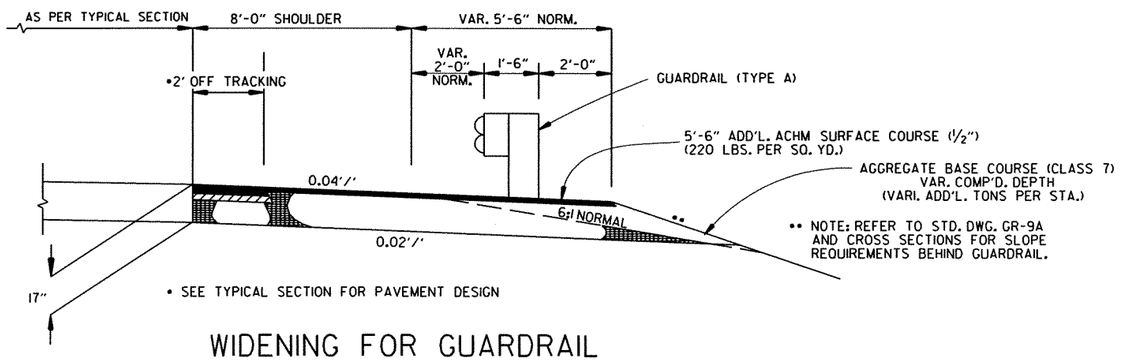
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12



DETAILS FOR PAVEMENT TRANSITIONS



DETAIL OF SOLID SODDING AROUND DROP INLET



WIDENING FOR GUARDRAIL

8/30/2012

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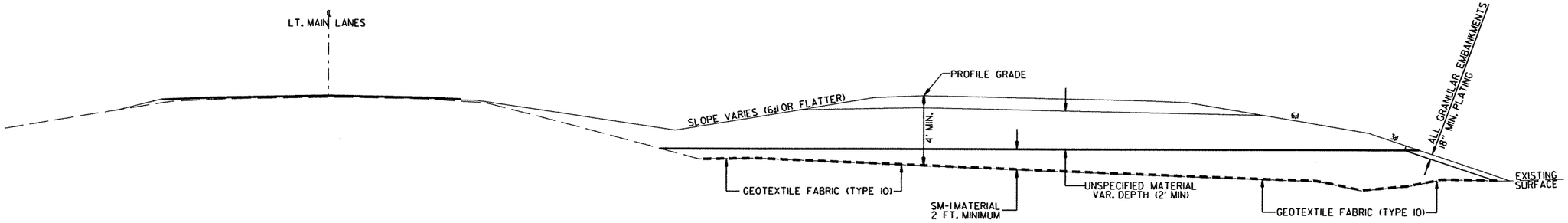
SPECIAL DETAILS

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				JOB NO.		070289	14	365

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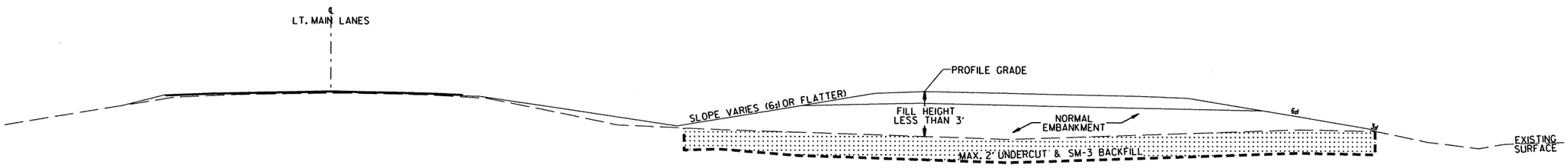
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

9-4-12



DETAIL OF EMBANKMENTS (GREATER THAN 4 FEET)

NOTE: GEOSYNTHETIC FABRIC TO BE INSTALLED AT LOCATIONS WHERE THE GRADE LINE IS AT LEAST FOUR FEET ABOVE THE EXISTING GRADE.



DETAIL OF EMBANKMENTS (3 FEET OR LESS)

NOTE: TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER

8/30/2012

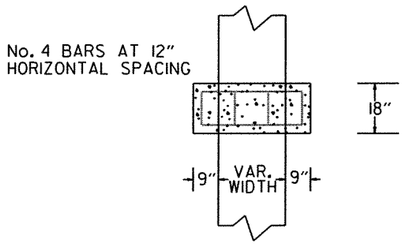
R070289.DGN

SPECIAL DETAILS

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				JOB NO.		070289	15	365

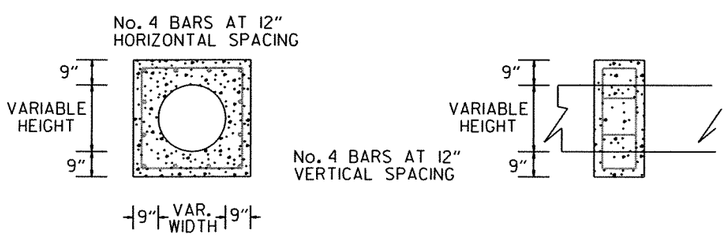
(2) SPECIAL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12



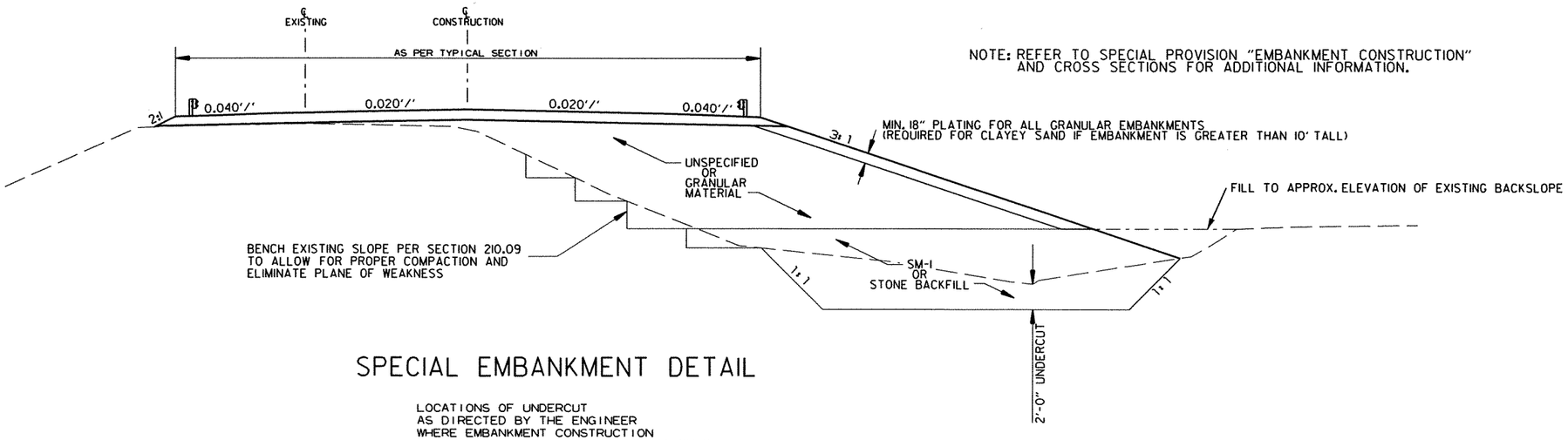
TOP VIEW

MIN 3" COVER



FRONT VIEW SIDE VIEW

PIPE EXTENSION REINFORCED CONCRETE COLLAR DETAIL



NOTE: REFER TO SPECIAL PROVISION "EMBANKMENT CONSTRUCTION" AND CROSS SECTIONS FOR ADDITIONAL INFORMATION.

SPECIAL EMBANKMENT DETAIL

LOCATIONS OF UNDERCUT AS DIRECTED BY THE ENGINEER WHERE EMBANKMENT CONSTRUCTION EXTENDS OVER EXISTING BORROW DITCHES.

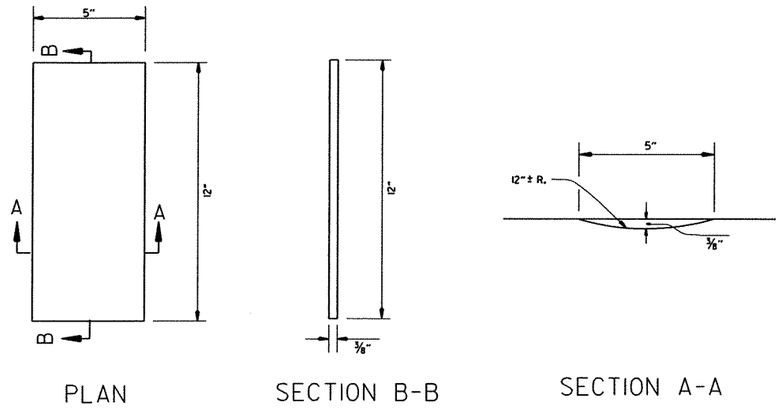
8/30/2012

R070289.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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				JOB NO.		070289	16	365

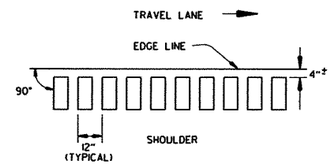
(2) SPECIAL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12

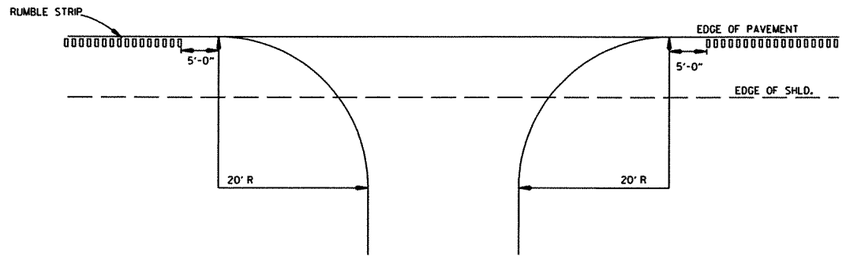


PLAN SECTION B-B SECTION A-A

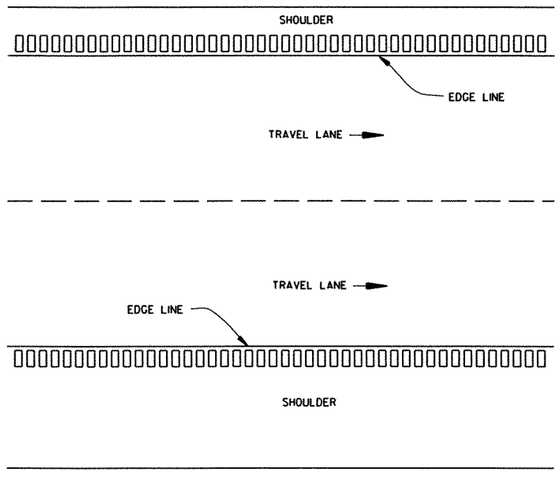
DETAILS OF RUMBLE STRIPS



LOCATION PLAN OF RUMBLE STRIPS
LEFT OR RIGHT SHOULDER



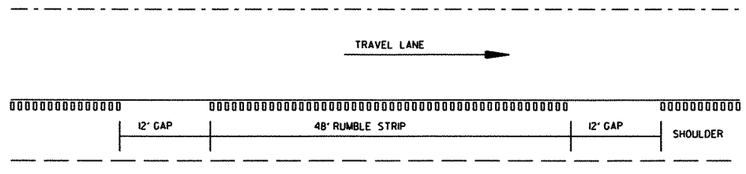
DETAIL FOR RUMBLE STRIP GAP
AT DRIVEWAY TURNOUTS



PLAN VIEW

GENERAL NOTES

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



DETAIL FOR GAP PATTERN RUMBLE STRIP

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

4 LANE DIVIDED

8/30/2012

R070289.DGN

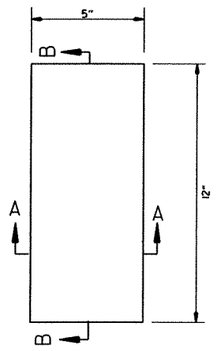
SPECIAL DETAILS

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.		070289	17	365

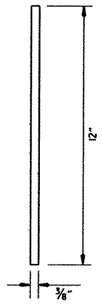
(2) SPECIAL DETAILS

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

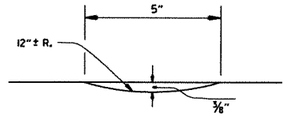
9-4-12



PLAN

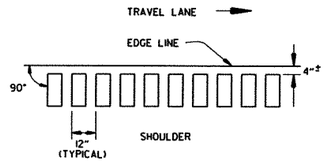


SECTION B-B

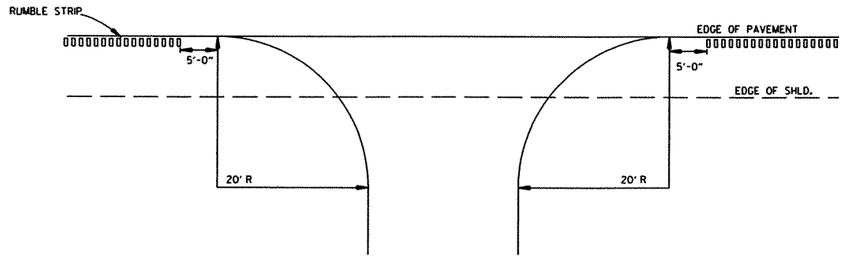


SECTION A-A

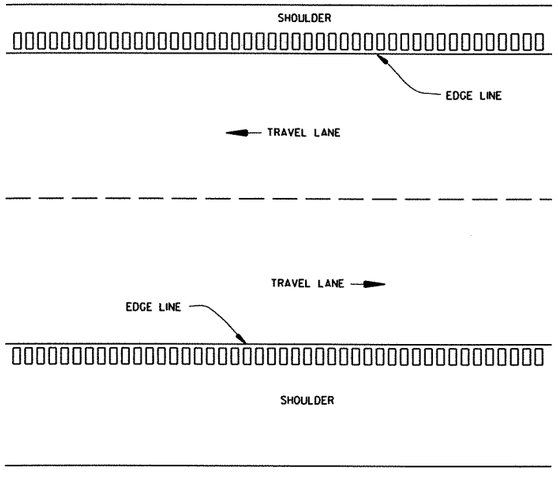
DETAILS OF RUMBLE STRIPS



LOCATION PLAN OF RUMBLE STRIPS
LEFT OR RIGHT SHOULDER



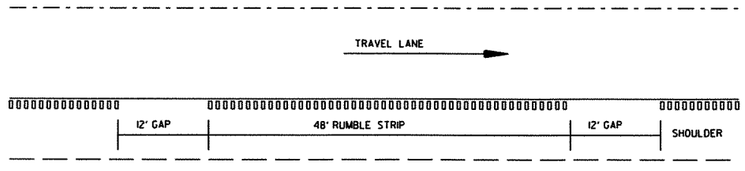
DETAIL FOR RUMBLE STRIP GAP
AT DRIVEWAY TURNOUTS



PLAN VIEW

GENERAL NOTES

1. RUMBLE STRIPS SHALL NOT BE INSTALLED ON CURB SECTIONS, BRIDGE DECKS, APPROACH SLABS, INTERSECTING STREETS OR ROADWAYS, RESIDENTIAL OR COMMERCIAL DRIVEWAYS OR ACROSS TRANSVERSE JOINTS OF CONCRETE SHOULDERS.
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DETAIL FOR GAP PATTERN RUMBLE STRIP

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

5 LANE UNDIVIDED

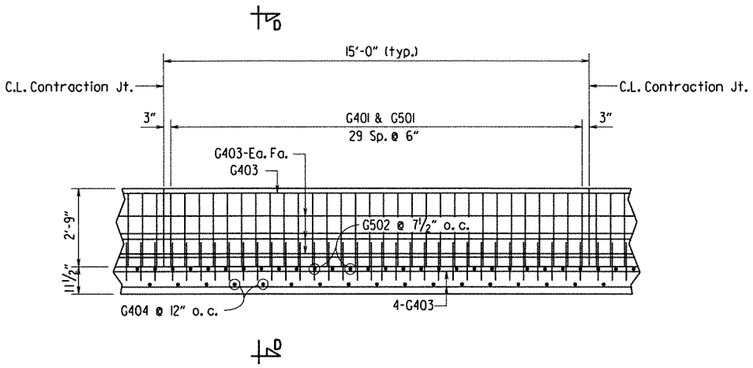
8/30/2012

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SPECIAL DETAILS

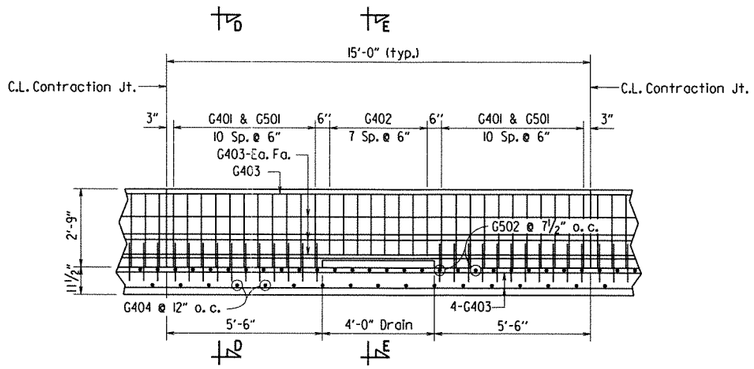
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				6	ARK.			
				JOB NO.		070289	18	365

① SPECIAL DETAILS



DETAILS OF CLOSED CONCRETE BARRIER WALL (PARAPET TYPE A)

Scale: ⅜" = 1'-0"



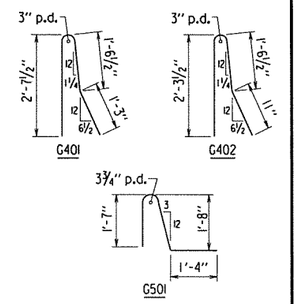
DETAILS OF OPEN CONCRETE BARRIER WALL (PARAPET TYPE A)

Scale: ⅜" = 1'-0"

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7510
CARL J. FUSELIER
5/11/12

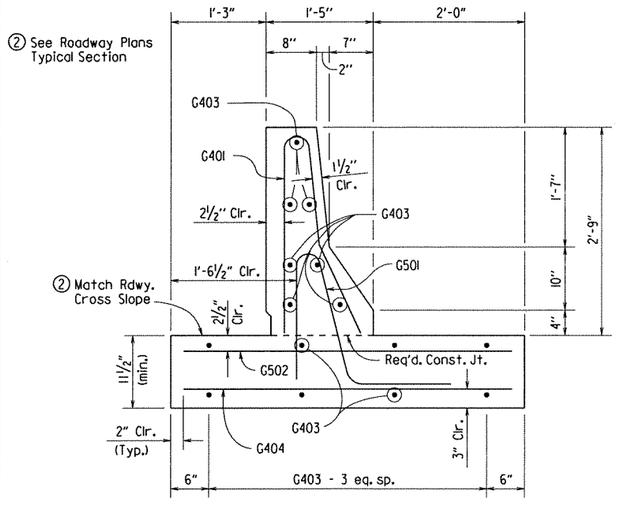
BAR LIST

MARK	LENGTH	P.D.	BENDING DIAGRAMS
G401	5'-6"	3"	
G402	4'-10"	3"	
G403	① 40'-0"	Str.	
G404	4'-4"	Str.	
G501	4'-9"	3¾"	
G502	4'-4"	Str.	



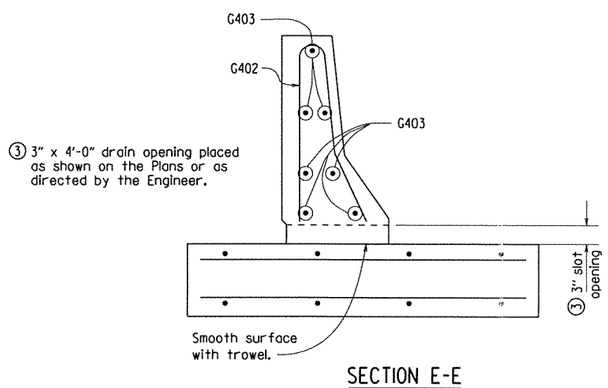
Dimensions are out to out of bars.

① Note: Min. Lap For Longitudinal Bars: #4 Bar - 1'-9". Ends of longitudinal bars shall have 2" clear to ends of barrier walls and at expansion joints.



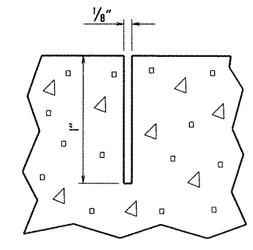
SECTION D-D

Scale: 1" = 1'-0"



SECTION E-E

Scale: 1" = 1'-0"



CONTRACTION JOINT DETAIL

No Scale

GENERAL NOTES

All barrier walls shall be constructed in accordance with Section 631 of the Standard Specifications, 2003 edition. Concrete Barrier Wall will be paid for as "Concrete Barrier Wall (Parapet Type A)".

Contraction joints are required at 15'-0" maximum spacing. All contraction joints shall be formed in fresh concrete on the top and faces of the barrier wall.

All exposed edges of the barrier wall shall have a ¾" chamfer.

Reinforcing Steel shall conform to AASHTO M31 or M53, Grade 60 (fy=60,000 psi).

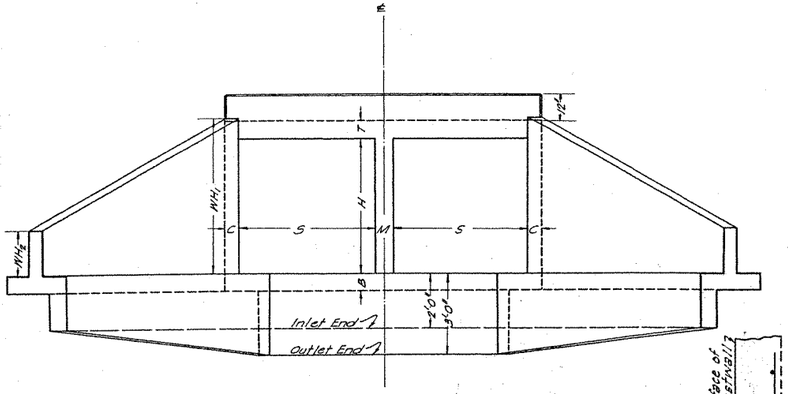
Expansion joints shall be 1½" and the spacing between expansion joints shall not exceed 120 feet. For details of expansion joints, see Dwg. No. CPTJ-6A. Continuous reinforcement shall be cut 2" clear of expansion joints.

Drain openings to be constructed where shown on the plans or as directed by the Engineer.

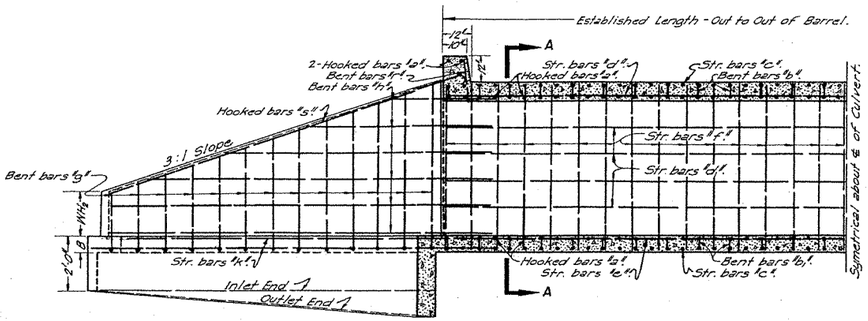
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4/2/13				6	ARK.			
				JOB NO.		070289	19	365

(2) SPECIAL DETAILS

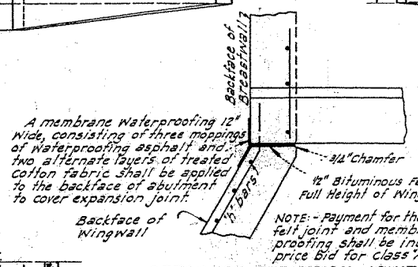
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
4-2-13



END ELEVATION

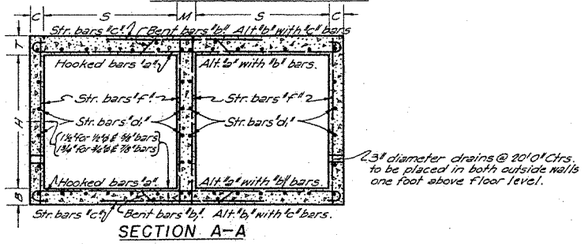


LONGITUDINAL SECTION



DETAIL OF EXPANSION JOINT

FOR CULVERTS WHEN HEIGHT "H" = 8' OR MORE

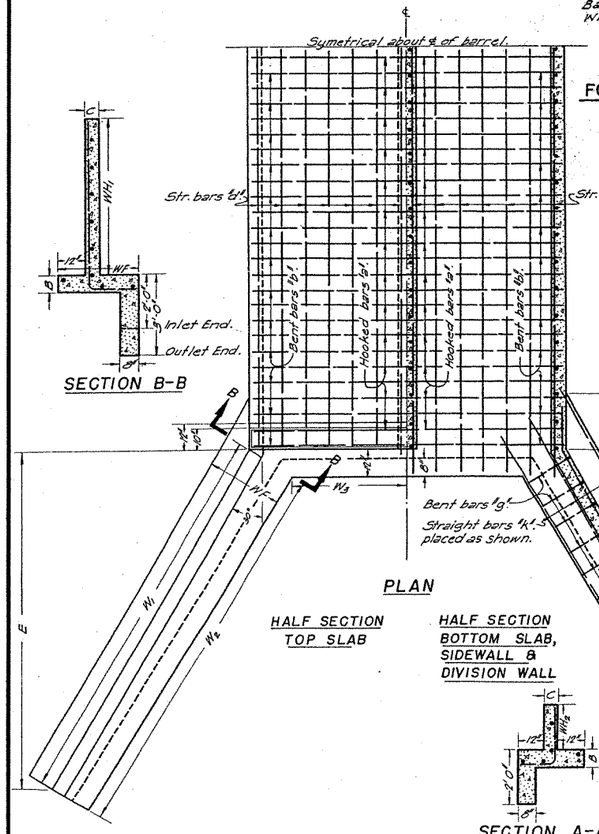


SECTION A-A

DIMENSIONS AND QUANTITIES

NUMBER OF SPANS	SPAN	HEIGHT	AREA OF OPENING SQ. FT.	MAXIMUM DEPTH OF CUTOFF	THICKNESS OF TOP SLAB	THICKNESS OF SIDEWALLS & WINGWALLS	THICKNESS OF DIVISION WALL & BOTTOM SLAB	WINGWALL HEIGHTS AT HEADWALL	WINGWALL HEIGHTS AT WING END	MAXIMUM WIDTH OF WING FOOTING	PERPENDICULAR DIST. FROM FACE OF WINGWALL TO END OF WING	LENGTH OF WINGWALLS	INSIDE LENGTH OF WING FOOTING	FOOTING DIMENSION FROM ℄ OF BOX	CONCRETE CU.YD. HEADWALLS, WINGWALLS & FOOTINGS	CONCRETE CU.YD. PER LINEAR FOOT OF BARREL	STEEL LB. HEADWALLS, WINGWALLS & FOOTINGS	STEEL LB. PER LINEAR FOOT OF BARREL	STEEL LB. ADD'L STEEL FOR LAPS
	S	H	A	D	T	C	M	B	WH_1	WH_2	WF	E	W_1	W_2	W_3				
2	10'	4	80	6'	12"	7/8"	10"	12"	5'-0"	1'-8"	2'-7½"	11'-0"	12'-8½"	12'-3⅝"	3'-9"	14.92	19.00	762	260.14	80.2
		5	100						6'-0"	1'-8"	3'-0"	13'-0"	13'-0"	15'-0⅜"	3'-9⅜"	18.03	20.22	918	265.55	84.6
		6	120						7'-0"	2'-0"	3'-6"	15'-0"	13'-3⅜"	17'-1⅞"	3'-8⅜"	21.83	20.99	1082	270.96	89.1
		7	140						8'-0"	2'-4"	4'-0"	17'-0"	13'-7⅜"	19'-7⅞"	3'-8⅜"	26.02	21.76	1263	276.37	93.5
		8	160						9'-0"	2'-8"	4'-6"	19'-0"	13'-11⅜"	22'-1078"	3'-7⅞"	31.57	22.84	1758	297.48	98.0
		9	180						10'-0"	3'-0"	5'-0"	21'-0"	14'-3"	25'-6"	3'-7"	39.08	23.66	2165	315.44	102.4
		10	200						11'-0"	3'-4"	5'-6"	23'-0"	14'-6⅜"	28'-1½"	3'-6⅞"	47.93	24.67	2619	328.26	106.9
		12	280						13'-0"	4'-0"	6'-6"	27'-0"	15'-2"	33'-1½"	3'-6⅜"	69.97	30.37	3945	360.42	115.8
2	12'	4	96	5'	14"	8"	10"	14"	5'-0"	1'-4"	2'-4"	11'-0"	12'-8⅝"	12'-6"	11'-8⅞"	16.89	21.58	826	327.78	93.5
		5	120						6'-0"	1'-8"	3'-0"	13'-0"	13'-0"	15'-0⅜"	11'-4⅜"	20.32	24.63	983	333.10	98.0
		6	144						7'-0"	2'-0"	3'-6"	15'-0"	13'-3⅜"	17'-7⅞"	10'-3⅜"	24.43	27.43	1148	338.61	102.4
		7	168						8'-0"	2'-4"	4'-0"	17'-0"	13'-7⅜"	20'-3"	10'-2⅜"	29.04	28.23	1329	358.10	106.9
		8	192						9'-0"	2'-8"	4'-6"	19'-0"	13'-11⅜"	22'-10⅜"	9'-7⅜"	34.15	29.03	1829	363.26	111.3
		9	216						10'-0"	3'-0"	5'-0"	21'-0"	14'-3"	25'-6"	9'-2"	42.01	30.09	2241	383.49	115.8
		10	240						11'-0"	3'-4"	5'-6"	23'-0"	14'-6⅜"	28'-1⅝"	8'-11⅜"	51.24	32.52	2698	393.51	120.2
		11	264						12'-0"	3'-8"	6'-0"	25'-0"	14'-10⅛"	30'-9"	8'-7⅜"	61.92	34.73	3303	418.08	124.7
		12	288						13'-0"	4'-0"	6'-6"	27'-0"	15'-2"	33'-1½"	7'-4⅞"	74.14	36.67	4032	429.33	133.2

LAP NOTE:- In computing quantities of Steel from the above table, add one Lap for culverts up to 50'-0" in length, and one Lap for each additional 25'-0" in length.
SPECIFICATIONS:- Arkansas Standard Road and Bridge Specifications.
* REINFORCING STEEL:- To be deformed bars of structural or intermediate grade.
CHAMFER:- All exposed corners to have ¾" Chamfer.
CONCRETE:- All concrete to be Class "S".
* REINFORCING STEEL:- To be deformed bars of intermediate or rail grade on all Interstate Highways.



STEEL SCHEDULE

For Culvert 30'-0" in Length - Out to Out of Barrel.

| NUMBER OF SPANS | SPAN | HEIGHT | 'a' bars: 3 for 1¼ℓ & 3⅛ℓ bars; 4 for 1¼ℓ & 3⅛ℓ bars; 2 in each Headwall; balance in top and bottom slab of barrel. SIZE | 'a' bars SPACING | 'a' bars NUMBER | 'a' bars LENGTH | 'a' bars X | 'b1' bars: 3 for 1¼ℓ & 3⅛ℓ bars; 4 for 1¼ℓ & 3⅛ℓ bars; In top slab of barrel - Alt. with 'a2' bars. SIZE | 'b1' bars SPACING | 'b1' bars NUMBER | 'b1' bars LENGTH | 'b1' bars X | 'b1' bars Y | 'b1' bars Z | 'b1' bars: 3 for 1¼ℓ & 3⅛ℓ bars; 4 for 1¼ℓ & 3⅛ℓ bars; In bottom slab of barrel - Alt. with 'a2' bars. SIZE | 'b1' bars SPACING | 'b1' bars NUMBER | 'b1' bars LENGTH | 'b1' bars X | 'b1' bars Y | 'b1' bars Z | 'c1' bars: STRAIGHT; In top & bottom Slab of barrel; Alt. with 1½ℓ 'b1' bars. SIZE | 'c1' bars SPACING | 'c1' bars NUMBER | 'c1' bars LENGTH | 'd1' bars: STRAIGHT ½ℓ bars; In top slab of barrel. SPACING | 'd1' bars NUMBER | 'd1' bars LENGTH | 'd1' bars: In Sidewalls & Division Wall. SPACING | 'd1' bars NUMBER | 'd1' bars LENGTH | 'e1' bars: In bottom slab of barrel. SPACING | 'e1' bars NUMBER | 'e1' bars LENGTH | 'f' bars: STRAIGHT; Vertical bars in Sidewalls and Division Wall. SIZE | 'f' bars SPACING | 'f' bars NUMBER | 'f' bars LENGTH | 'g1' bars: Vertical bars in back face of Wing-wall, bent into bottom of footing. SIZE | 'g1' bars SPACING | 'g1' bars NUMBER | 'g1' bars LENGTH | 'g1' bars X Min. | 'g1' bars X Max. | 'g1' bars Y Min. | 'g1' bars Y Max. | 'h' bars: ½ℓ bars @ 12" Ctrs. Horizontal bars in Wingwalls. NUMBER | 'h' bars LENGTH | 'h' bars Z Min. | 'h' bars Z Max. | 'k' bars: STRAIGHT; In Wing Footings NUMBER | 'k' bars LENGTH | 'r' bars: ½ℓ bars 12" Ctrs.; Domels in Headwalls. NUMBER | 'r' bars LENGTH | 's' bars: ½ℓ bars; In top of each Wingwall. NUMBER | 's' bars LENGTH | 's' bars Z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---

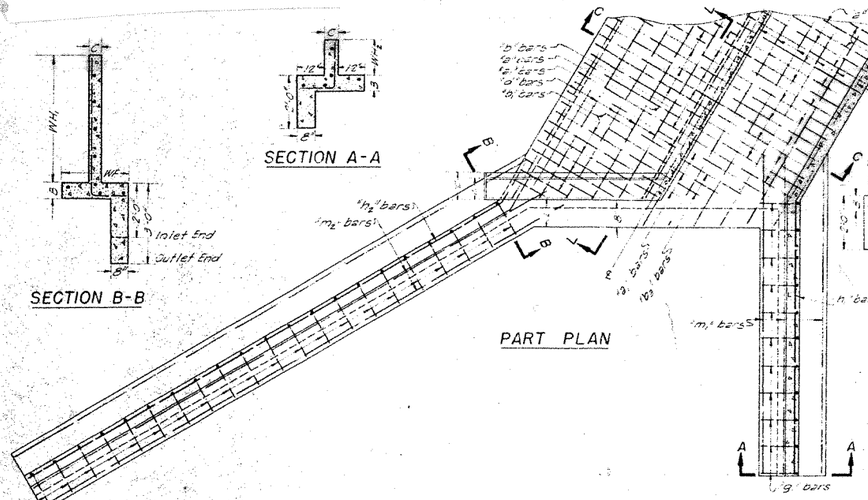
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4/2/13				6	ARK.			
				JOB NO.		070289	20	365

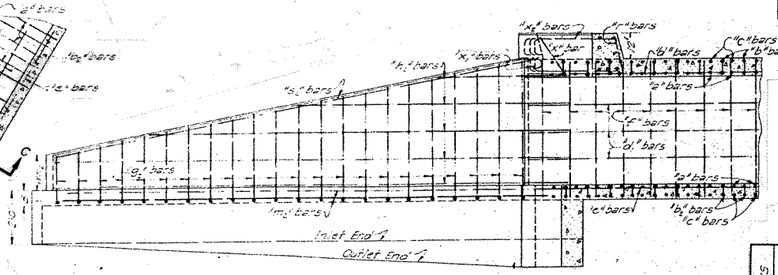
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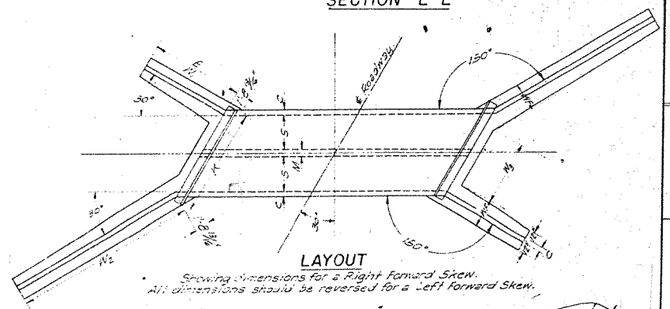
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
4-2-13

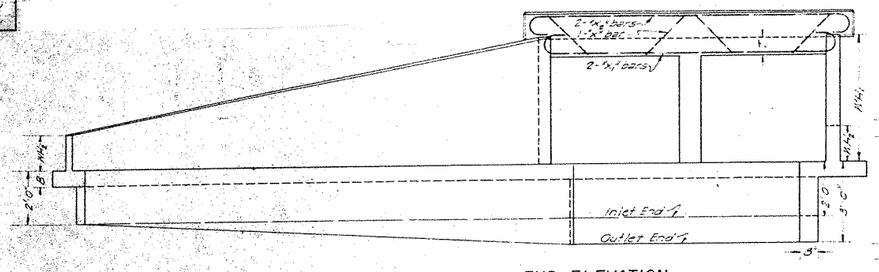
TABLE OF SKEWED LENGTHS

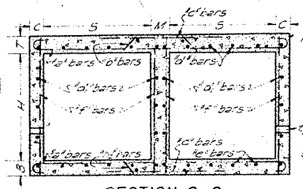
NORMAL LENGTH	SKEWED LENGTH
26'	30'
27'	31'
28'	32'
29'	33'
30'	35'
31'	36'
32'	37'
33'	38'
34'	39'
35'	40
36'	42'
37'	43'
38'	44'
39'	45'
40'	46'
41'	47
42'	49'
43'	50'
44'	51'
45'	52'
46'	53'
47'	54'
48'	55
49'	57'
50'	58'
51'	59'
52'	60'
53'	61'
54'	62'
55'	64'
56'	65'
57'	66'
58'	67'
59'	68'
60'	69'





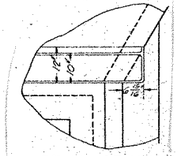






NOTE :- 1¼" Cover for 1¼"ϕ & ⅞"ϕ bars.
¾" Cover for ⅝"ϕ & ⅞"ϕ bars.

3" ϕ diameter drains @ 20'-0" Ctrs. to be placed in outside walls one foot above floor level.



DIMENSIONS AND QUANTITIES

NUMBER OF SPANS	SPAN	HEIGTH	AREA OF OPENING SQ. FT.	MAXIMUM DEPTH OF FOOTING	THICKNESS OF TOP SLAB	THICKNESS OF SIDE-WALLS & WINGWALLS	THICKNESS OF FOOTINGS & BOTTOM SLAB	LENGTH OF HEADWALL	WINGWALL HEIGHTS AT HEADWALL	WINGWALL HEIGHTS AT WING END	MINIMUM WIDTH OF WING FOOTING	PERPENDICULAR DISTANCE FROM FACE OF HEADWALL TO END OF WING	LENGTH OF LONG WING	FOOTING DIMENSION PARALLEL TO HEADWALL	CONCRETE CU.YD. TOTAL FOR CULVERT 30'-0" LONG	CONCRETE CU.YD. PER LINEAR FOOT OF BARREL	STEEL LB. TOTAL FOR CULVERT 30'-0" LONG.	STEEL LB. PER LINEAR FOOT OF BARREL	STEEL LB. ADD'L STEEL FOR LAPS.
S	S	H	A	D	T	C	M	B	K	WH_1	WH_2	WF	E E W_1	W_2	W_3				
2	10'	6'	80	3'-6"	12"	8"	10"	17"	26'-7½"	5'-0"	1'-4"	2'-7½"	11'-0"	22'-0"	22'-4½"	77.1	1.942	7965	196.30	76.7
		5	100						26'-7½"	6'-0"	1'-8"	3'-0"	13'-6"	26'-0"	21'-7½"	83.56	2.082	8237	201.71	80.2
		6	120						26'-7½"	7'-0"	2'-0"	3'-6"	15'-3"	30'-0"	19'-9½"	90.73	2.209	8698	207.12	84.6
		7	140						26'-7½"	8'-0"	2'-4"	4'-0"	17'-1"	34'-0"	18'-2½"	98.60	2.176	9102	212.53	88.1
		8	160			8"			27'-0"	9'-0"	2'-8"	4'-6"	18'-9"	38'-0"	16'-9½"	108.96	2.268	10397	293.49	95.5
		9	180			9"	11"		27'-0½"	10'-0"	3'-0"	5'-0"	20'-6"	42'-0"	15'-3½"	124.16	2.666	11161	241.97	98.0
		10	200			10"	12"		27'-3½"	11'-0"	3'-4"	5'-6"	23'-0"	46'-0"	13'-9½"	141.64	2.667	12212	252.45	102.4
		12	240			12"			27'-8½"	13'-0"	4'-0"	6'-0"	27'-0"	54'-0"	13'-3½"	179.96	3.037	14754	285.23	111.3
2	12'	6'	96	3'-6"	12"	8"	10"	16"	31'-4½"	5'-0"	1'-4"	2'-8"	11'-0"	22'-0"	26'-1½"	98.66	2.582	10028	261.92	86.6
		5	120						31'-4½"	6'-0"	1'-8"	3'-0"	13'-0"	26'-0"	25'-1½"	105.53	2.663	10380	256.73	89.1
		6	144						31'-4½"	7'-0"	2'-0"	3'-6"	15'-0"	30'-0"	24'-1½"	113.26	2.783	10764	262.18	93.5
		7	168						31'-4½"	8'-0"	2'-4"	4'-0"	17'-0"	34'-0"	23'-1½"	121.69	2.923	11168	267.56	98.0
		8	192			8"			31'-6½"	9'-0"	2'-8"	4'-6"	19'-0"	38'-0"	21'-3½"	130.75	2.903	12471	288.40	102.6
		9	216			9"	11"		31'-7½"	10'-0"	3'-0"	5'-0"	21'-0"	42'-0"	20'-2½"	146.51	3.089	13218	297.31	106.9
		10	240			10"			31'-11½"	11'-0"	3'-4"	5'-6"	23'-0"	46'-0"	19'-0½"	164.56	3.292	14118	306.02	111.3
		11	264			11"	12"		32'-1½"	12'-0"	3'-8"	6'-0"	25'-0"	50'-0"	17'-8½"	183.85	3.473	15732	332.18	115.8
		12	288			12"			32'-4"	13'-0"	4'-0"	6'-6"	27'-0"	54'-0"	16'-6½"	205.68	3.667	16932	341.53	120.2

LAP NOTE :- In computing quantities of Steel from the above table, add one Lap for culverts up to 50'-0" in length and one Lap for each additional 25'-0" in length. Quantities for other lengths to be computed by adding or deducting from quantities as computed for a length of 30'-0".

SPECIFICATIONS :- Arkansas Standard Road and Bridge Specifications.

* REINFORCING STEEL :- To be deformed bars of structural or intermediate grade.

CHAMFER :- All exposed corners to have ¾" Chamfer.

CONCRETE :- All concrete to be Class "S"

* Reinforcing Steel to be deformed bars of Intermediate or rail grade on all Interstate Highways

STEEL SCHEDULE

For Culvert 30'-0" in Length out to out of Barrel.

NUMBER OF SPANS	SPAN	HEIGHT	'a' bars	'a₂' bars	'a₁' bars	'b' bars	'b₁' bars	'b₂' bars	'c' bars	'd' bars	'e' bars	'f' bars	'g' bars	'g₁' bars	'g₂' bars	'h' bars	'h₁' bars	'm' bars	'm₁' bars	'n' bars	'n₁' bars	'x' bars	'h₂' bars	'y' bars
S	S	H	In Top and Bottom slabs of barrel.	Var. Size, Spacing and hook same as for 'a' bars.	In top slab of barrel. Alternate with 'a' bars.	Size, Spacing & Hook same as 'a' bars. Alternate with 'a' bars.	In bottom slab of barrel. Alternate with 'a' bars.	Size, Spacing & Hook same as 'b' bars. Alternate with 'b' bars.	STRAIGHT In top and bottom slab of barrel. Alternate with 'b' & 'b₁' bars.	STRAIGHT In Top Slab.	STRAIGHT In Sidewalls & Division Walls.	STRAIGHT In Bottom Slab.	Vertical bars in Sidewalls and Division Wall.	Vertical bars in Short Wing.	Vertical bars in Long Wing. Size and Spacing same as 'g' bars	1¼"ϕ bars @ 12" Centers	1¼"ϕ bars @ 12" Centers	STRAIGHT ¾"ϕ bars. In Short Wing Footing	STRAIGHT ¾"ϕ bars. In Long Wing Footing	½"ϕ bars @12"Ctrs Dowels in Headwalls	½"ϕ Hooked stirrups in Top of Sidewalls	½"ϕ Hooked stirrups in top of Long Wing	1¼"ϕ bars @ 10½" Spaces & Hook.	⅝"ϕ bars @ 12" Spaces and Hook as 'a' bars.	⅝"ϕ bars @ 12" Spaces and Hook as 'a' bars.
			Size Spacing Number Length X	Size Spacing Number Length X Y Z	Size Spacing Number Length X Y Z	Number Min. Length Max. Length	Size Spacing Number Length X Y Z	Number Min. Length Max. Length	Size Spacing Number Length	Size Spacing Number Length	Size Spacing Number Length	Size Spacing Number Length	Size Spacing Number Length	Number Length X Min. Max. Y Min. Max.	Number Length X Min. Max. Y Min. Max.	Number Length Min. Max.	Number Length Min. Max.	Number Length	Number Length	Number Length	Number Length	Number Length	Number Length X Y Z	Number Length	Number Length
2	10'	5'	30 12'-0½ 12'-9½	30 12'-0½ 12'-9½	5 13'-0½ 10'-6 6'-5	20 2'-8½ 2'-4½	5 13'-0½ 10'-6 6'-5	20 2'-8½ 2'-4½	50 10'-0	28 5'-4½ 4'-10½	28 5'-4½ 4'-10½	56 10'-9	56 5'-4½ 4'-10½ 1'-5 2'-5 6'-0	56 6'-1½ 5'-7½ 1'-5 2'-5 6'-0	56 7'-10½ 7'-4½ 1'-5 2'-5 6'-0	12 8'-3" 7'-9" 1'-5" 2'-5" 6'-0"	12 8'-3" 7'-9" 1'-5" 2'-5" 6'-0"	12 8'-3" 7'-9" 1'-5" 2'-5" 6'-0"	12 8'-3" 7'-9" 1'-5" 2'-5" 6'-0"	10 3'-5" 3'-0" 0'-5"	12 3'-5" 3'-0" 0'-5"	10 7'-5" 5'-9" 2'-1"	6 12'-7½"	6 12'-7½"	2 12'-0"	2 12'-0"	2 12'-0"	2 12'-0"	2 12'-0"	2 12'-0"
		6	30 12'-0½ 12'-9½	30 12'-0½ 12'-9½	6 13'-0½ 10'-6 6'-5	20 2'-8½ 2'-4½	6 13'-0½ 10'-6 6'-5	20 2'-8½ 2'-4½	50 10'-0	28 5'-4½ 4'-10½	28 5'-4½ 4'-10½	56 10'-9	56 5'-4½ 4'-10½ 1'-5 2'-5 6'-0	56 6'-1½ 5'-7½ 1'-5 2'-5 6'-0	56 7'-10½ 7'-4½ 1'-5 2'-5 6'-0	12 8'-3" 7'-9" 1'-5" 2'-5" 6'-0"	12 8'-3" 7'-9" 1'-5" 2'-5" 6'-0"	12 8'-3" 7'-9" 1'-5" 2'-5" 6'-0"	12 8'-3" 7'-9" 1'-5" 2'-5" 6'-0"	10 3'-5" 3'-0" 0'-5"	12 3'-5" 3'-0" 0'-5"	10 7'-5" 5'-9" 2'-1"	6 13'-7½"	6 13'-7½"	2 13'-0"	2 13'-0"	2 13'-0"	2 13'-0"	2 13'-0"	2 13'-0"
		7	30 12'-0½ 12'-9½	30 12'-0½ 12'-9½	7 13'-0½ 10'-6 6'-5	20 2'-8½ 2'-4½	7 13'-0½ 10'-6 6'-5	20 2'-8½ 2'-4½	50 10'-0	28 5'-4½ 4'-10½	28 5'-4½ 4'-10½	56 10'-9	56 5'-4½ 4'-10½ 1'-5 2'-5 6'-0	56 6'-1½ 5'-7½ 1'-5 2'-5 6'-0	56 7'-10½ 7'-4½ 1'-5 2'-5 6'-0	12 8'-3" 7'-9" 1'-5" 2'-5" 6'-0"	12 8'-3" 7'-9" 1'-5" 2'-5" 6'-0"	12 8'-3" 7'-9" 1'-5" 2'-5" 6'-0"	12 8'-3" 7'-9" 1'-5" 2'-5" 6'-0"	10 3'-5" 3'-0" 0'-5"	12 3'-5" 3'-0" 0'-5"	10 7'-5" 5'-9" 2'-1"	6 14'-2½"	6 14'-2½"	2 13'-6"	2 13'-6"	2 13'-6"	2 13'-6"	2 13'-6"	2 13'-6"
		8	30 12'-0½ 12'-9½	30 12'-0½ 12'-9½	8 13'-0½ 10'-6 6'-5	20 2'-8½ 2'-4½	8 13'-0½ 10'-6 6'-5	20 2'-8½ 2'-4½	50 10'-0	28 5'-4½ 4'-10½	28 5'-4½ 4'-10½	56 10'-9	56 5'-4½ 4'-10½ 1'-5 2'-5 6'-0	56 6'-1½ 5'-7½ 1'-5 2'-5 6'-0	56 7'-10½ 7'-4½ 1'-5 2'-5 6'-0	12 8'-3" 7'-9" 1'-5" 2'-5" 6'-0"	12 8'-3" 7'-9" 1'-5" 2'-5" 6'-0"	12 8'-3" 7'-9" 1'-5" 2'-5" 6'-0"	12 8'-3" 7'-9" 1'-5" 2'-5" 6'-0"	10 3'-5" 3'-0" 0'-5"	12 3'-5" 3'-0" 0'-5"	10 7'-5" 5'-9" 2'-1"	6 15'-2½"	6 15'-2½"	2 14'-0"	2 14'-0"	2 14'-0"	2 14'-0"	2 14'-0"	2 14'-0"
		9	30 12'-0½ 12'-9½	30 12'-0½ 12'-9½	9 13'-0½ 10'-6 6'-5	20 2'-8½ 2'-4½	9 13'-0½ 10'-6 6'-5	20 2'-8½ 2'-4½	50 10'-0	28 5'-4½ 4'-10½	28 5'-4½ 4'-10½	56 10'-9	56 5'-4½ 4'-10½ 1'-5 2'-5 6'-0	56 6'-1½ 5'-7½ 1'-5 2'-5 6'-0	56 7'-10½ 7'-4½ 1'-5 2'-5 6'-0	12 8'-3" 7'-9" 1'-5" 2'-5" 6'-0"	12 8'-3" 7'-9" 1'-5" 2'-5" 6'-0"	12 8'-3" 7'-9" 1'-5" 2'-5" 6'-0"	12 8'-3" 7'-9" 1'-5" 2'-5" 6'-0"	10 3'-5" 3'-0" 0'-5"	12 3'-5" 3'-0" 0'-5"	10 7'-5" 5'-9" 2'-1"	6 16'-2½"	6 16'-2½"	2 14'-6"	2 14'-6"	2 14'-6"	2 14'-6"	2 14'-6"	2 14'-6"
		10	30 12'-0½ 12'-9½	30 12'-0½ 12'-9½	10 13'-0½ 10'-6 6'-5	20 2'-8½ 2'-4½	10 13'-0½ 10'-6 6'-5	20 2'-8½ 2'-4½	50 10'-0	28 5'-4½ 4'-10½	28 5'-4½ 4'-10½	56 10'-9	56 5'-4½ 4'-10½ 1'-5 2'-5 6'-0	56 6'-1½ 5'-7½ 1'-5 2'-5 6'-0	56 7'-10½ 7'-4½ 1'-5 2'-5 6'-0	12 8'-3" 7'-9" 1'-5" 2'-5" 6'-0"	12 8'-3" 7'-9" 1'-5" 2'-5" 6'-0"	12 8'-3" 7'-9" 1'-5" 2'-5" 6'-0"	12 8'-3" 7'-9" 1'-5" 2'-5" 6'-0"	10 3'-5" 3'-0" 0'-5"	12 3'-5" 3'-0" 0'-5"	10 7'-5" 5'-9" 2'-1"	6 17'-2½"	6 17'-2½"	2 15'-0"	2 15'-0"	2 15'-0"	2 15'-0"	2 15'-0"	2 15'-0"
		12	30 12'-0½ 12'-9½	30 12'-0½ 12'-9½	12 13'-0½ 10'-6 6'-5	20 2'-8½ 2'-4½	12 13'-0½ 10'-6 6'-5	20 2'-8½ 2'-4½	50 10'-0	28 5'-4½ 4'-10½	28 5'-4½ 4'-10½	56 10'-9	56 5'-4½ 4'-10½ 1'-5 2'-5 6'-0	56 6'-1½ 5'-7½ 1'-5 2'-5 6'-0	56 7'-10½ 7'-4½ 1'-5 2'-5 6'-0	12 8'-3" 7'-9" 1'-5" 2'-5" 6'-0"	12 8'-3" 7'-9" 1'-5" 2'-5" 6'-0"	12 8'-3" 7'-9" 1'-5" 2'-5" 6'-0"	12 8'-3" 7'-9" 1'-5" 2'-5" 6'-0"	10 3'-5" 3'-0" 0'-5"	12 3'-5" 3'-0" 0'-5"	10 7'-5" 5'-9" 2'-1"	6 18'-2½"	6 18'-2½"	2 15'-6"	2 15'-6"	2 15'-6"	2 15'-6"	2 15'-6"	2 15'-6"
2	12'	5'	30 12'-0½ 15'-0½	30 12'-0½ 15'-0½	5 13'-0½ 12'-6 7'-5	20 3'-2½ 2'-10½	5 13'-0½ 12'-6 7'-5	20 3'-2½ 2'-10½	50 12'-0	28 6'-4½ 5'-10½	28 6'-4½ 5'-10½	56 12'-9	56 6'-4½ 5'-10½ 1'-5 2'-5 6'-0	56 7'-1½ 6'-7½ 1'-5 2'-5 6'-0	56 8'-10½ 8'-4½ 1'-5 2'-5 6'-0	12 9'-3" 8'-9" 1'-5" 2'-5" 6'-0"	12 9'-3" 8'-9" 1'-5" 2'-5" 6'-0"	12 9'-3" 8'-9" 1'-5" 2'-5" 6'-0"	12 9'-3" 8'-9" 1'-5" 2'-5" 6'-0"	10 3'-5" 3'-0" 0'-5"	12 3'-5" 3'-0" 0'-5"	10 7'-5" 5'-9" 2'-1"	6 15'-7½"	6 15'-7½"	2 15'-0"	2 15'-0"	2 15'-0"	2 15'-0"	2 15'-0"	2 15'-0"
		6	30 12'-0½ 15'-0½	30 12'-0½ 15'-0½	6 13'-0½ 12'-6 7'-5	20 3'-2½ 2'-10½	6 13'-0½ 12'-6 7'-5	20 3'-2½ 2'-10½	50 12'-0	28 6'-4½ 5'-10½	28 6'-4½ 5'-10½	56 12'-9	56 6'-4½ 5'-10½ 1'-5 2'-5 6'-0	56 7'-1½ 6'-7½ 1'-5 2'-5 6'-0	56 8'-10½ 8'-4½ 1'-5 2'-5 6'-0	12 9'-3" 8'-9" 1'-5" 2'-5" 6'-0"	12 9'-3" 8'-9" 1'-5" 2'-5" 6'-0"	12 9'-3" 8'-9" 1'-5" 2'-5" 6'-0"	12 9'-3" 8'-9" 1'-5" 2'-5" 6'-0"	10 3'-5" 3'-0" 0'-5"	12 3'-5" 3'-0" 0'-5"	10 7'-5" 5'-9" 2'-1"	6 16'-7½"	6 16'-7½"	2 15'-6"	2 15'-6"	2 15'-6"	2 15'-6"	2 15'-6"	2 15'-6"
		7	30 12'-0½ 15'-0½	30 12'-0½ 15'-0½	7 13'-0½ 12'-6 7'-5	20 3'-2½ 2'-10½	7 13'-0½ 12'-6 7'-5	20 3'-2½ 2'-10½	50 12'-0	28 6'-4½ 5'-10½	28 6'-4½ 5'-10½	56 12'-9	56 6'-4½ 5'-10½ 1'-5 2'-5 6'-0	56 7'-1½ 6'-7½ 1'-5 2'-5 6'-0	56 8'-10½ 8'-4½ 1'-5 2'-5 6'-0	12 9'-3" 8'-9" 1'-5" 2'-5" 6'-0"	12 9'-3" 8'-9" 1'-5" 2'-5" 6'-0"	12 9'-3" 8'-9" 1'-5" 2'-5" 6'-0"	12 9'-3" 8'-9" 1'-5" 2'-5" 6'-0"	10 3'-5" 3'-0" 0'-5"	12 3'-5" 3'-0" 0'-5"	10 7'-5" 5'-9" 2'-1"	6 17'-7½"	6 17'-7½"	2 16'-0"	2 16'-0"	2 16'-0"	2 16'-0"	2 16'-0"	2 16'-0"
		8	30 12'-0½ 15'-0½	30 12'-0½ 15'-0½	8 13'-0½ 12'-6 7'-5	20 3'-2½ 2'-10½	8 13'-0½ 12'-6 7'-5	20 3'-2½ 2'-10½	50 12'-0	28 6'-4½ 5'-10½	28 6'-4½ 5'-10½	56 12'-9	56 6'-4½ 5'-10½ 1'-5 2'-5 6'-0	56 7'-1½ 6'-7½ 1'-5 2'-5 6'-0	56 8'-10½ 8'-4½ 1'-5 2'-5 6'-0	12 9'-3" 8'-9" 1'-5" 2'-5" 6'-0"	12 9'-3" 8'-9" 1'-5" 2'-5" 6'-0"	12 9'-3" 8'-9" 1'-5" 2'-5" 6'-0"	12 9'-3" 8'-9" 1'-5" 2'-5" 6'-0"	10 3'-5" 3'-0" 0'-5"	12 3'-5" 3'-0" 0'-5"	10 7'-5" 5'-9" 2'-1"	6 18'-7½"	6 18'-7½"	2 16'-6"	2 16'-6"	2 16'-6"	2 16'-6"	2 16'-6"	2 16'-6"
		9	30 12'-0½ 15'-0½	30 12'-0½ 15'-0½	9 13'-0½ 12'-6 7'-5	20 3'-2½ 2'-10½	9 13'-0½ 12'-6 7'-5	20 3'-2½ 2'-10½	50 12'-0	28 6'-4½ 5'-10½	28 6'-4½ 5'-10½	56 12'-9	56 6'-4½ 5'-10½ 1'-5 2'-5 6'-0	56 7'-1½ 6'-7½ 1'-5 2'-5 6'-0	56 8'-10½ 8'-4½ 1'-5 2'-5 6'-0	12 9'-3" 8'-9" 1'-5" 2'-5" 6'-0"	12 9'-3" 8'-9" 1'-5" 2'-5" 6'-0"	12 9'-3" 8'-9" 1'-5" 2'-5" 6'-0"	12 9'-3" 8'-9" 1'-5" 2'-5" 6'-0"	10 3'-5" 3'-0" 0'-5"	12 3'-5" 3'-0" 0'-5"	10 7'-5" 5'-9" 2'-1"	6 19'-7½"	6 19'-7½"	2 16'-6"	2 16'-6"	2 16'-6"	2 16'-6"	2 16'-6"	2 16'-6"
		10	30 12'-0½ 15'-0½	30 12'-0½ 15'-0½	10 13'-0½ 12'-6 7'-5	20 3'-2½ 2'-10½	10 13'-0½ 12'-6 7'-5	20 3'-2½ 2'-10½	50 12'-0	28 6'-4½ 5'-10½	28 6'-4½ 5'-10½	56 12'-9	56 6'-4½ 5'-10½ 1'-5 2'-5 6'-0	56 7'-1½ 6'-7½ 1'-5 2'-5 6'-0	56 8'-10½ 8'-4½ 1'-5 2'-5 6'-0	12 9'-3" 8'-9" 1'-5" 2'-5" 6'-0"	12 9'-3" 8'-9" 1'-5" 2'-5" 6'-0"	12 9'-3" 8'-9" 1'-5" 2'-5" 6'-0"	12 9'-3" 8'-9" 1'-5" 2'-5" 6'-0"	10 3'-5" 3'-0" 0'-5"	12 3'-5" 3'-0" 0'-5"	10 7'-5" 5'-9" 2'-1"	6 20'-7½"	6 20'-7½"	2 17'-0"	2 17'-0"	2 17'-0"	2 17'-0"	2 17'-0"	2 17'-0"
		11	30 12'-0½ 15'-0½	30 12'-0½ 15'-0½	11 13'-0½ 12'-6 7'-5	20 3'-2½ 2'-10½	11 13'-0½ 12'-6 7'-5	20 3'-2½ 2'-10½	50 12'-0	28 6'-4½ 5'-10½	28 6'-4½ 5'-10½	56 12'-9	56 6'-4½ 5'-10½ 1'-5 2'-5 6'-0	56 7'-1½ 6'-7½ 1'-5 2'-5 6'-0	56 8'-10½ 8'-4½ 1'-5 2'-5 6'-0	12 9'-3" 8'-9" 1'-5" 2'-5" 6'-0"	12 9'-3" 8'-9" 1'-5" 2'-5" 6'-0"	12 9'-3" 8'-9" 1'-5" 2'-5" 6'-0"	12 9'-3" 8'-9" 1'-5" 2'-5" 6'-0"	10 3'-5" 3'-0" 0'-5"	12 3'-5" 3'-0" 0'-5"	10 7'-5" 5'-9" 2'-1"	6 21'-7½"	6 21'-7½"	2 17'-6"	2 17'-6"	2 17'-6"	2 17'-6"	2 17'-6"	2 17'-6"
		12	30 12'-0½ 15'-0½	30 12'-0½ 15'-0½	12 13'-0½ 12'-6 7'-5	20 3'-2½ 2'-10½	12 13'-0½ 12'-6 7'-5	20 3'-2½ 2'-10½	50 12'-0	28 6'-4½ 5'-10½	28 6'-4½ 5'-10½	56 12'-9	56 6'-4½ 5'-10½ 1'-5 2'-5 6'-0	56 7'-1½ 6'-7½ 1'-5 2'-5 6'-0	56 8'-10½ 8'-4½ 1'-5 2'-5 6'-0	12 9'-3" 8'-9" 1'-5" 2'-5" 6'-0"	12 9'-3" 8'-9" 1'-5" 2'-5" 6'-0"	12 9'-3" 8'-9" 1'-5" 2'-5" 6'-0"	12 9'-3" 8'-9" 1'-5" 2'-5" 6'-0"	10 3'-5" 3'-0" 0'-5"	12 3'-5" 3'-0" 0'-5"	10 7'-5" 5'-9" 2'-1"	6 22'-7½"	6 22'-7½"	2 18'-0"	2 18'-0"	2 18'-0"	2 18'-0"	2 18'-0"	2 18'-0"

NOTE :- Lengths given above do not include Lap.

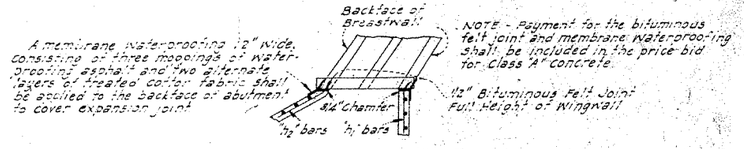
REVISIONS	
Jan. 1946	Drawn
Nov. 1952	Expansion Joint
July, 1954	'h₁' 'h₂' 's₁' & 's₂' bars
Mar. 1955	Design Live Loading
Nov. 1957	S. M. L.

SPECIAL MILITARY LOADING

Add'l. Loading for Interstate Highways. 2-24,000 Lb. Axles @ 4'-0" Ctrs.
Concrete (n-15) 640 Lbs. Per Sq. In.
Reinf. Steel (Int. or Rail) 20,000 Lbs. Per Sq. In.

A.A.S.H.O. DESIGN LIVE LOADING H 30-S16 UNIT STRESSES

Concrete (n-15) - 640 Lbs. per Sq. In.
Reinf. Steel (Str. Gr.) - 18,000 Lbs. per Sq. In.



DETAIL OF EXPANSION JOINT FOR CULVERTS WHEN HEIGHT "H" = 8' OR MORE

ARKANSAS STATE HIGHWAY COMMISSION
REINFORCED CONCRETE BOX CULVERTS
10' TO 12' SPAN — 3:1 SLOPES
DOUBLE 30° SKEW — UNDER 3'-6" COVER
DRAWING NO. R-2303-B

SPECIAL DETAILS

4/2/2013

r070289.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.		070289	21	365

(2) TEMPORARY EROSION CONTROL DETAILS

REVISION BOX

DATE OF REVISION	REVISION

LEGEND

E-5 = SAND BAG DITCH CHECK

E-6 = ROCK DITCH CHECK

E-11 = SILT FENCE

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12

N

STA. 357+20-361+00
SILT FENCE = 380 LIN. FT.

BEGIN JOB 070289
STA. 357+20.00
END JOB 070288

P.I. 355+00.00
Δ= 0°00'22" LT.

P.I. 357+19.92
Δ=0°07'11" RT.

P.I. 360+97.33
Δ=0°08'36" LT.

P.I. 369+38.67
Δ=0°01'15" RT.

355 360 365 370

N 11°41'59" W
N 11°34'47" W
N 11°43'24" W
N 11°42'09" W

HWY. 167 C.L.

EXISTING R/W
EXIST R/W
PROPOSED R/W

STORM SHELTER

P.O.E.

8/30/2012

R070289.DGN

CLEARING AND GRUBBING STAGE
TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070289	22	365

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12

STA. 380+00-381+50
SILT FENCE = 150 LIN. FT.

STA. 383+50-385+12
SILT FENCE = 162 LIN. FT.

STA. 375+00-376+00
SILT FENCE = 100 LIN. FT.

LEGEND

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

REVISION BOX

DATE OF REVISION	REVISION

8/30/2012

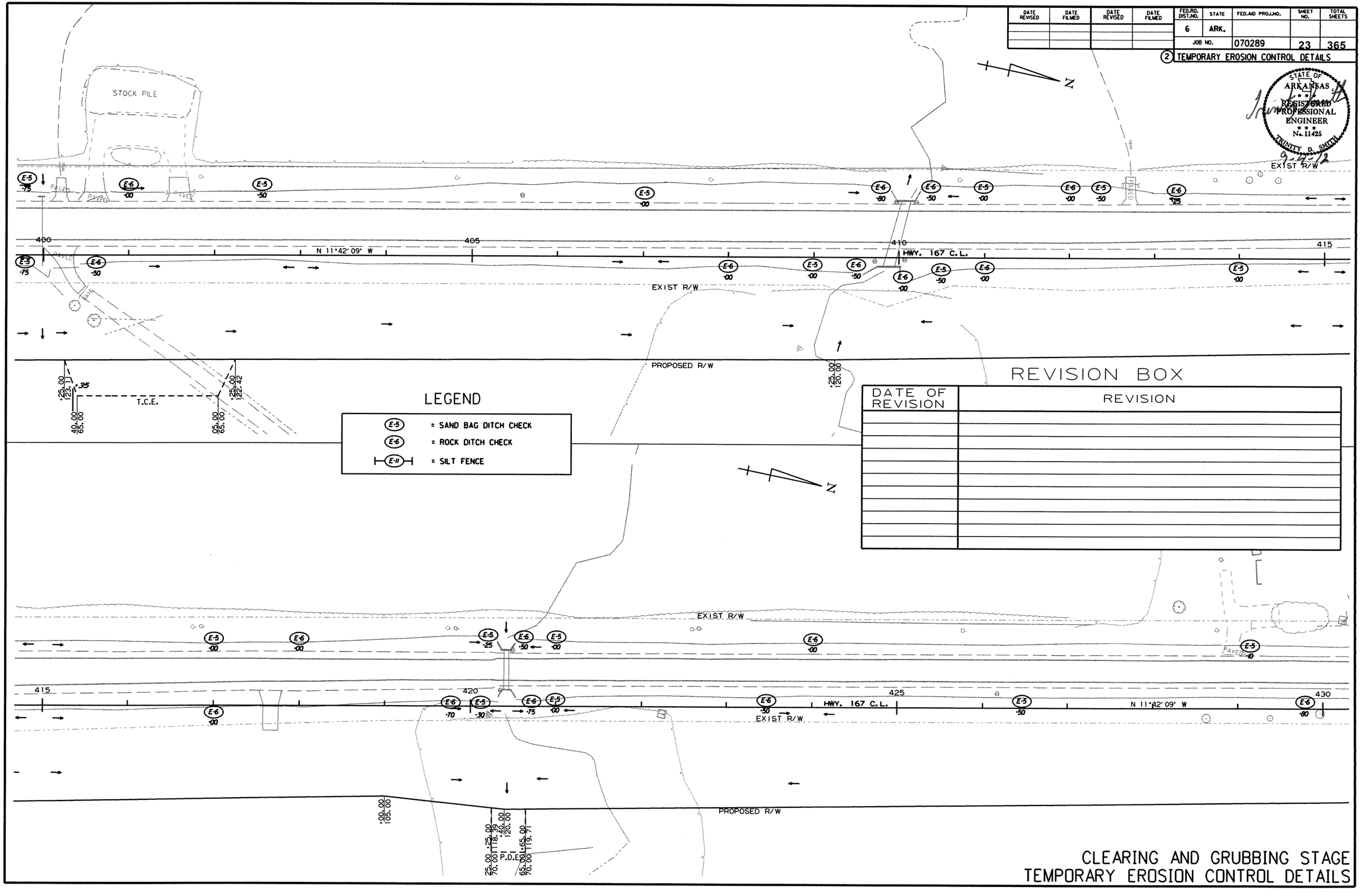
R070289.DGN

CLEARING AND GRUBBING STAGE
TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070289	23	365

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12



LEGEND

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

REVISION BOX

DATE OF REVISION	REVISION

8/30/2012

R070289.DGN

CLEARING AND GRUBBING STAGE
TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070289	24	365

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12

STA. 435+00-436+80
SILT FENCE = 180 LIN. FT.

STA. 441+50-442+50
SILT FENCE = 100 LIN. FT.

STA. 441+20-445+50
SILT FENCE = 430 LIN. FT.

STA. 454+50-456+29
SILT FENCE = 304 LIN. FT.

REVISION BOX

DATE OF REVISION	REVISION

LEGEND

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

8/30/2012

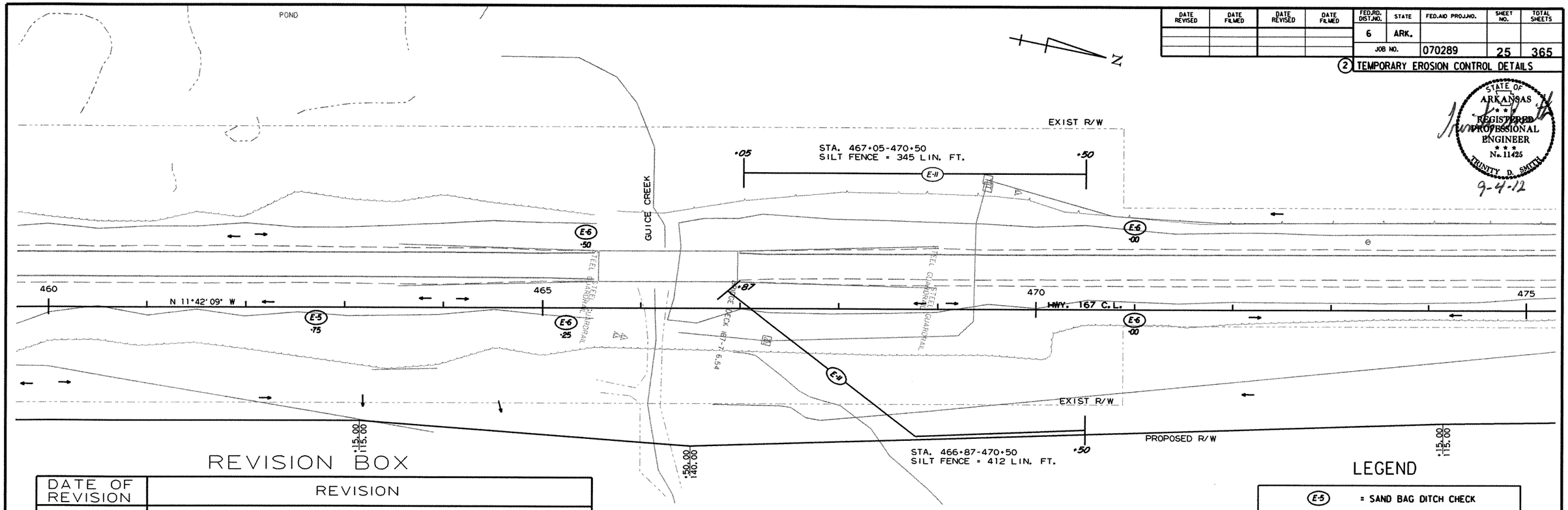
R070289.DGN

CLEARING AND GRUBBING STAGE
TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070289	25	365

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12

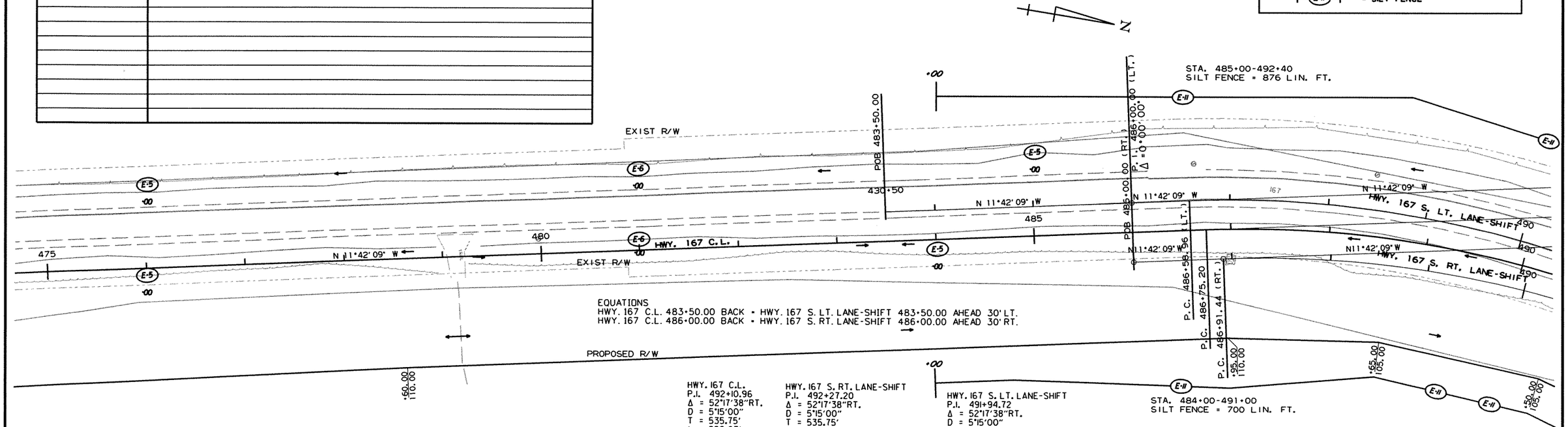


REVISION BOX

DATE OF REVISION	REVISION

LEGEND

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



EQUATIONS
HWY. 167 C.L. 483+50.00 BACK = HWY. 167 S. LT. LANE-SHIFT 483+50.00 AHEAD 30' LT.
HWY. 167 C.L. 486+00.00 BACK = HWY. 167 S. RT. LANE-SHIFT 486+00.00 AHEAD 30' RT.

HWY. 167 C.L.
P.I. 492+10.96
Δ = 52°17'38"RT.
D = 5°15'00"
T = 535.75'
L = 996.07'
P.C. 486+75.20
P.T. 496+71.27
e = 0.098'/'
Ls = 400'

HWY. 167 S. RT. LANE-SHIFT
P.I. 492+27.20
Δ = 52°17'38"RT.
D = 5°15'00"
T = 535.75'
L = 996.07'
P.C. 486+91.44
P.T. 496+87.51

HWY. 167 S. LT. LANE-SHIFT
P.I. 491+94.72
Δ = 52°17'38"RT.
D = 5°15'00"
T = 535.75'
L = 996.07'
P.C. 486+58.96
P.T. 496+55.03

CLEARING AND GRUBBING STAGE TEMPORARY EROSION CONTROL DETAILS

8/30/2012

R070289.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.		070289	26	365

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12

STA. 495+00-497+00
SILT FENCE = 200 LIN. FT.

EXIST R/W

P.I. 491+94.72 (LT.)
P.I. 492+10.96
P.I. 492+27.20 (RT.)
T.C.E.
N 11°42'09" W
N 40°35'28" E
HWY. 167 S. LT. LANE-SHIFT
HWY. 167 S. RT. LANE-SHIFT
HWY. 167 C.L.
P.T. 496+55.03 (LT.)
P.T. 496+71.27
P.T. 496+87.51 (RT.)
MORO CREEK RELIEF
STEEL GUARDRAIL
BRIDGE DECK 167-7 X 46
BRIDGE DECK 167-7 X 195
PROPOSED R/W

EQUATIONS
HWY. 167 S. LT. LANE-SHIFT 497+22.37 BACK 5.5' LT. = HWY. 167 C.L. 497+04.94 AHEAD
HWY. 167 S. RT. LANE-SHIFT 496+87.51 BACK 5.5' RT. = HWY. 167 C.L. 497+04.94 AHEAD

HWY. 167 C.L.	HWY. 167 S. RT. LANE-SHIFT	HWY. 167 S. LT. LANE-SHIFT
P.I. 492+10.96	P.I. 492+27.20	P.I. 491+94.72
Δ = 52°17'38"RT.	Δ = 52°17'38"RT.	Δ = 52°17'38"RT.
D = 5°15'00"	D = 5°15'00"	D = 5°15'00"
T = 535.75'	T = 535.75'	T = 535.75'
L = 996.07'	L = 996.07'	L = 996.07'
P.C. 486+75.20	P.C. 486+91.44	P.C. 486+58.96
P.T. 496+71.27	P.T. 496+87.51	P.T. 496+55.03
e = 0.098'/'		
Ls = 400'		

STA. 496+00-498+35
SILT FENCE = 302 LIN. FT.

LEGEND

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

REVISION BOX

DATE OF REVISION	REVISION

STANDING WATER

8/30/2012

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CLEARING AND GRUBBING STAGE
TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070289	27	365

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-9-12

EXIST R/W

STANDING WATER

MORO CREEK RELIEF

POB. 535+00.00

520 525 530 535

HWY. 167 C.L.

N 40°35' 28" E

N 40°35'

STEEL GUARDRAIL

STEEL GUARD RAIL

PROPOSED R/W

00.00 90.00

64.60 96.49

LEGEND

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

REVISION BOX

DATE OF REVISION	REVISION

HWY. 167 N. LT. LANE-SHIFT
P.I. 540+21.80
Δ = 44°06'10"LT.
D = 5°15'00"
T = 442.07'
L = 840.05'
P.C. 535+79.72
P.T. 544+19.77

EQUATIONS
HWY. 167 C.L. 535+00.00 BACK = HWY. 167 N. LT. LANE-SHIFT 535+00.00 AHEAD 5.50' LT.
HWY. 167 C.L. 535+00.00 BACK = HWY. 167 N. RT. LANE-SHIFT 535+00.00 AHEAD 5.50' RT.
HWY. 167 N. LT. LANE-SHIFT 544+65.88 BACK 30' LT. = HWY. 167 C.L. 544+80.26 AHEAD
HWY. 167 N. RT. LANE-SHIFT 544+94.64 BACK 30' RT. = HWY. 167 C.L. 544+80.26 AHEAD

HWY. 167 N. RT. LANE-SHIFT
P.I. 540+96.66
Δ = 44°06'10"LT.
D = 5°15'00"
T = 442.07'
L = 840.05'
P.C. 536+54.59
P.T. 544+94.64

HWY. 167 C.L.
P.I. 540+59.23
Δ = 44°06'10"LT.
D = 5°15'00"
T = 422.07'
L = 840.05'
P.C. 536+17.16
P.T. 544+57.21
e = 0.098'/'
Ls = 400'

STA. 539+00-544+50
SILT FENCE = 605 LIN. FT.

STA. 548+50-549+92
SILT FENCE = 142 LIN. FT.

STA. 538+00-542+00
SILT FENCE = 426 LIN. FT.

HWY. 167 N. LT. LANE-SHIFT
HWY. 167 N. RT. LANE-SHIFT
HWY. 167 C.L.
EXIST R/W
PROPOSED R/W
N 3°30' 41" W
N 40°35' 28" E
P.I. 540+21.80 (LT.)
P.I. 540+59.23
P.I. 540+96.66 (RT.)
P.T. 544+19.77 (LT.)
P.T. 544+57.21
P.C. 536+17.16
P.C. 536+54.59 (RT.)
POE 545+14.38 (RT.)
POE 544+85.62 (LT.)
STEEL GUARDRAIL
STEEL GUARD RAIL
STANDING WATER
TRAIL

CLEARING AND GRUBBING STAGE
TEMPORARY EROSION CONTROL DETAILS

8/30/2012

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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.		070289	28	365

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-6-12

STA. 563+45-564+50
SILT FENCE = 105 LIN. FT.

STA. 562+00-563+35
SILT FENCE = 135 LIN. FT.

STA. 577+50-579+00
SILT FENCE = 150 LIN. FT.

STA. 579+35-581+50
SILT FENCE = 215 LIN. FT.

REVISION BOX

DATE OF REVISION	REVISION

LEGEND

POND

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

P.I. 569+29.39
Δ = 5°40'28"RT.
D = 1°00'00"
T = 283.96'
L = 567.45'
P.C. 566+45.43
P.T. 572+12.88
e = 0.030'/'
Ls = 350'

8/30/2012

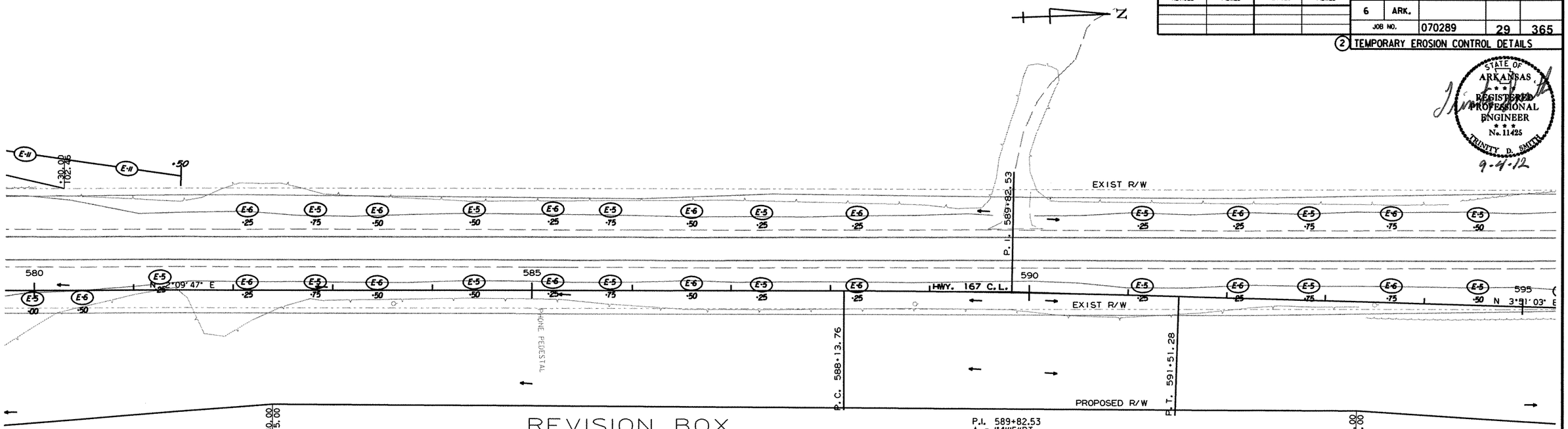
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CLEARING AND GRUBBING STAGE
TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070289	29	365

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12



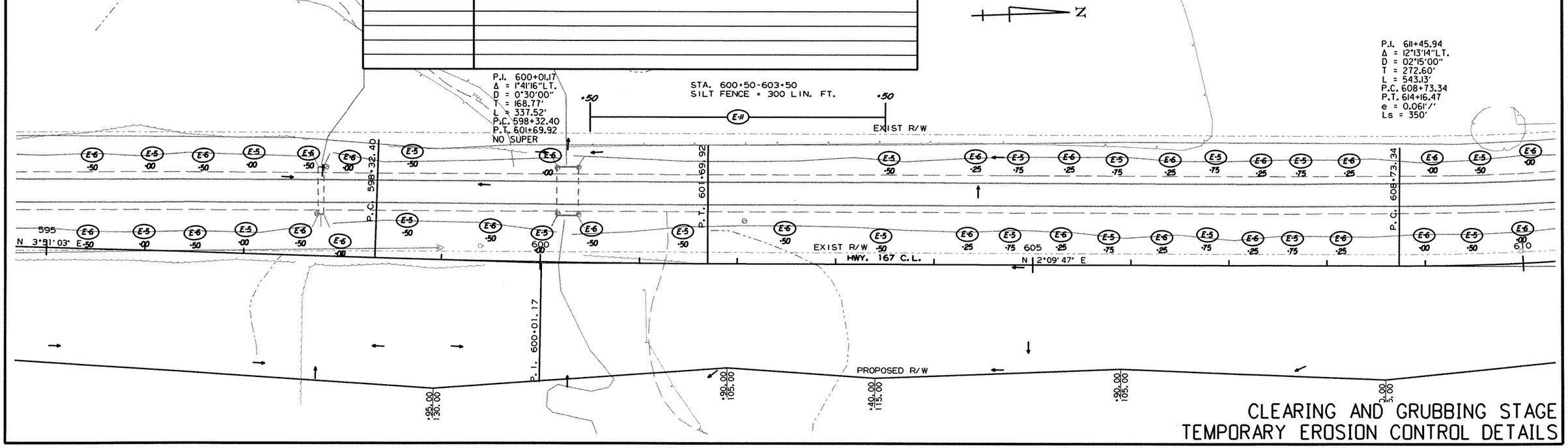
REVISION BOX

DATE OF REVISION	REVISION

P.I. 589+82.53
Δ = 1°41'15"RT.
D = 0°30'00"
T = 168.77'
L = 337.52'
P.C. 588+13.76
P.T. 591+51.28
NO SUPER

LEGEND

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



8/30/2012

R070289.DGN

CLEARING AND GRUBBING STAGE
TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070289	30	365

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12

P.I. 611+45.94
Δ = 12°13'14"LT.
D = 02°15'00"
T = 272.60'
L = 543.13'
P.C. 608+73.34
P.T. 614+16.47
e = 0.061'/'
Ls = 350'

GARNER CEMETERY

LEVEXT.

EXIST R/W

P.T. 614+16.47

EXIST R/W

LOW LINE

P.T. 611+45.94

P.C.E. 611+57.75

PROPOSED R/W

STA. 611+60-613+50
SILT FENCE = 190 LIN. FT.

STA. 620+75-623+50
SILT FENCE = 315 LIN. FT.

P.I. 622+76.69

HWY. 167 C.L.

N 10103'26" W

LAND BURIED CABLE TB

P.C. 620+02.96

P.T. 625+48.32

P.I. 622+76.69
Δ = 12°16'14"RT.
D = 02°15'00"
T = 273.73'
L = 545.36'
P.C. 620+02.96
P.T. 625+48.32
e = 0.061'/'
Ls = 350'

REVISION BOX

DATE OF REVISION	REVISION

LEGEND

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

P.I. 622+76.69
Δ = 12°16'14"RT.
D = 02°15'00"
T = 273.73'
L = 545.36'
P.C. 620+02.96
P.T. 625+48.32
e = 0.061'/'
Ls = 350'

PROPOSED R/W

EXISTING ROW

EXIST R/W

P.T. 625+48.32

P.I. 630+05.20
Δ = 0°00'00"

N 2°12'48" E

HWY. 167 C.L.

END JOB 070289
STA. 629+05.14
BEGIN JOB 070290

CLEARING AND GRUBBING STAGE
TEMPORARY EROSION CONTROL DETAILS

8/30/2012

R070289.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.		070289	31	365

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12

REVISION BOX

DATE OF REVISION	REVISION

LEGEND

- (E-5) = SAND BAG DITCH CHECK
- (E-6) = ROCK DITCH CHECK
- (E-7) = DROP INLET SILT FENCE
- (E-11) = SILT FENCE
- E-14 xx CU FT = SEDIMENT BASIN

HWY. 167 STAGE 2 SOUTH END
P. I. = 352+00.00
Δ = 8°23'40" RT.
D = 3°00'00"
T = 140.16'
L = 279.81'
P.C. 350+59.84
P.T. 353+39.65

HWY. 167 STAGE 2 SOUTH END
P. I. = 357+10.72
Δ = 8°11'05" LT.
D = 3°00'00"
T = 136.64'
L = 272.82'
P.C. 355+74.08
P.T. 358+46.90

BEGIN JOB 070289
STA. 357+20.00
END JOB 070288

8/31/2012

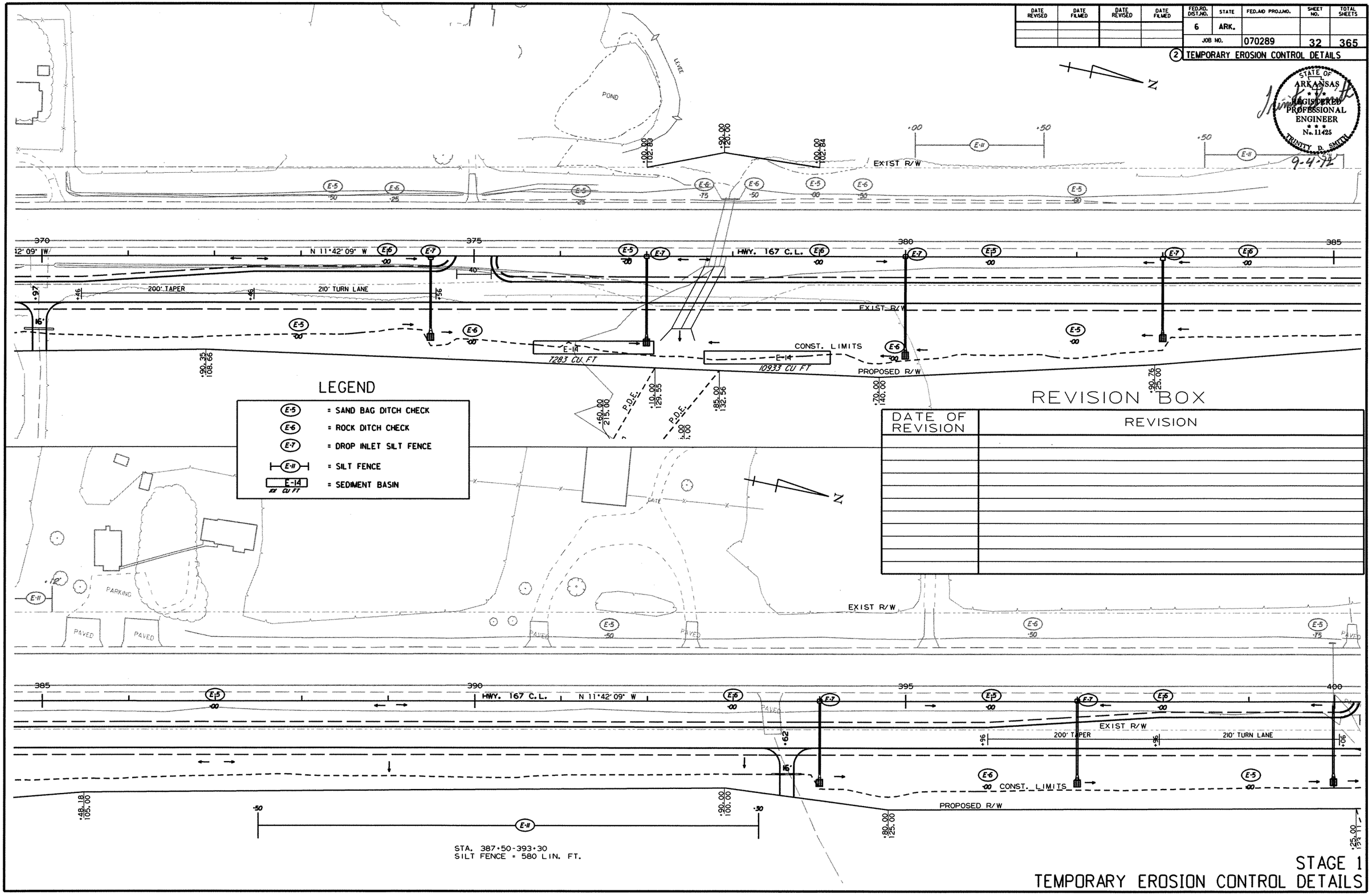
R070289.DGN

STAGE 1
TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070289	32	365

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12



LEGEND

- (E-5) = SAND BAG DITCH CHECK
- (E-6) = ROCK DITCH CHECK
- (E-7) = DROP INLET SILT FENCE
- (E-11) = SILT FENCE
- E-14 XX CU FT = SEDIMENT BASIN

REVISION BOX

DATE OF REVISION	REVISION

STA. 387+50-393+30
SILT FENCE = 580 LIN. FT.

8/30/2012

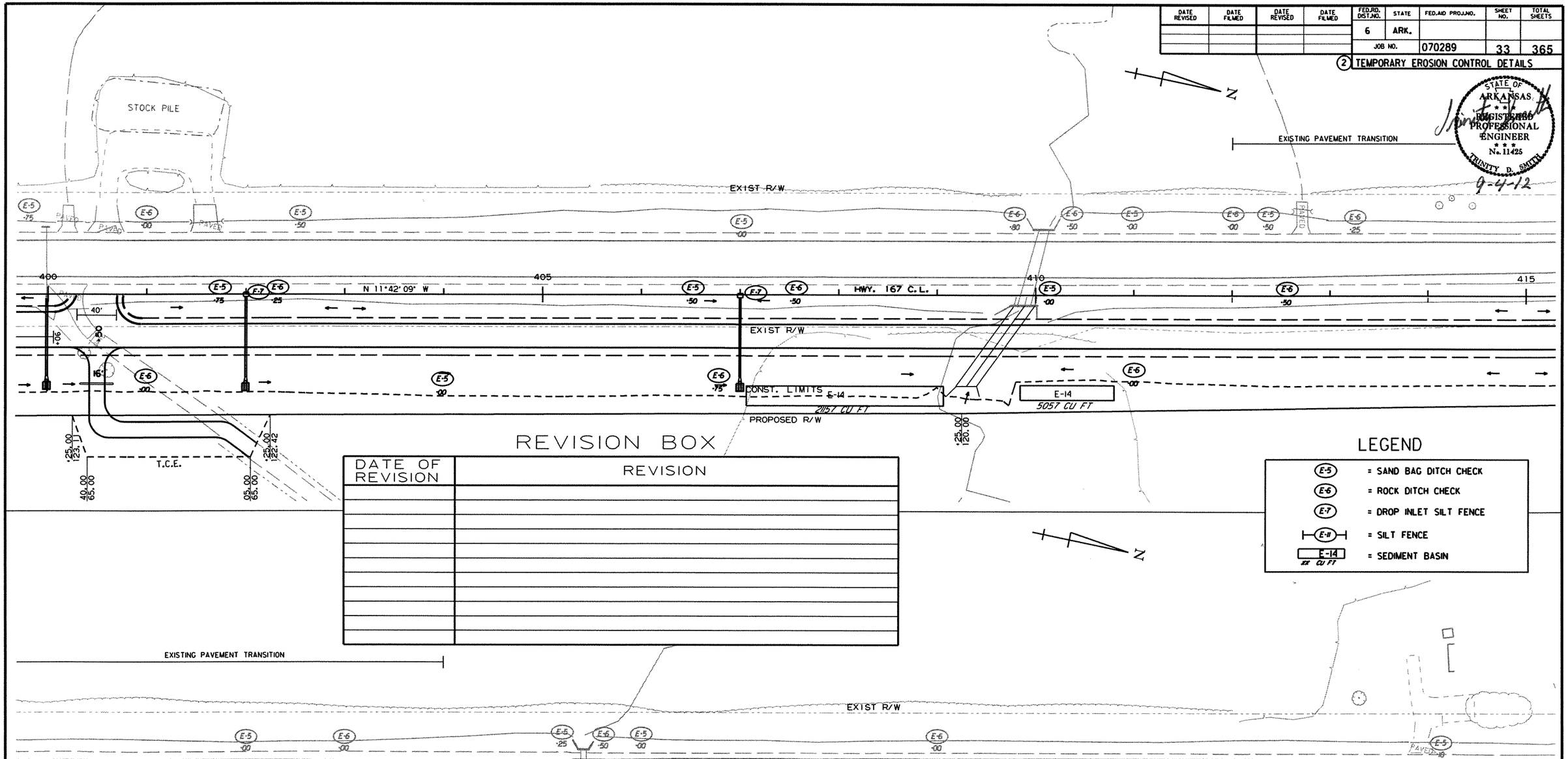
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STAGE 1
TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070289	33	365

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12



REVISION BOX

DATE OF REVISION	REVISION

LEGEND

- (E-5) = SAND BAG DITCH CHECK
- (E-6) = ROCK DITCH CHECK
- (E-7) = DROP INLET SILT FENCE
- (E-11) = SILT FENCE
- E-14 xxx CU FT = SEDIMENT BASIN

8/30/2012

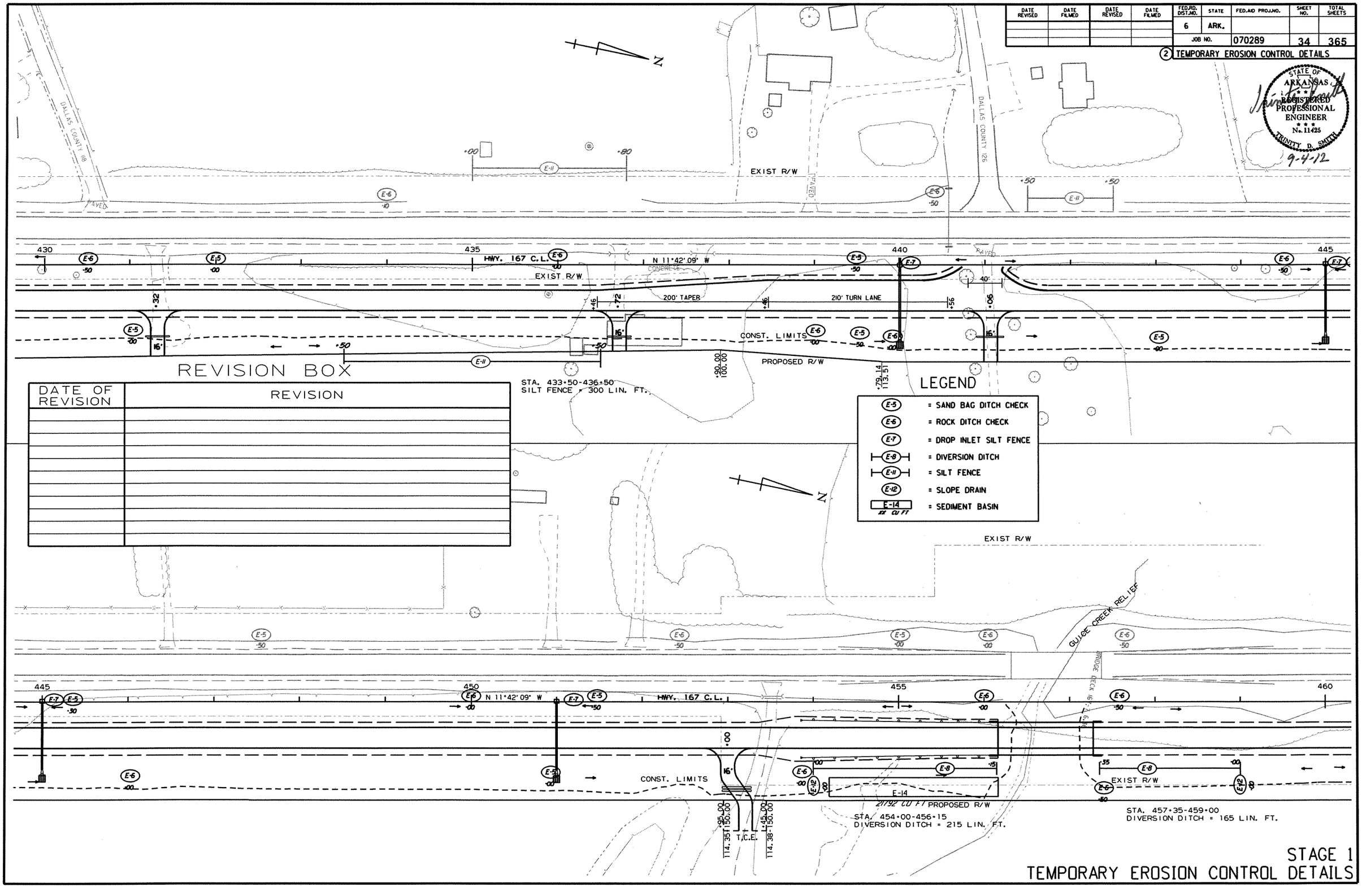
R070289.DGN

STAGE 1
TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070289	34	365

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12



REVISION BOX

DATE OF REVISION	REVISION

8/30/2012

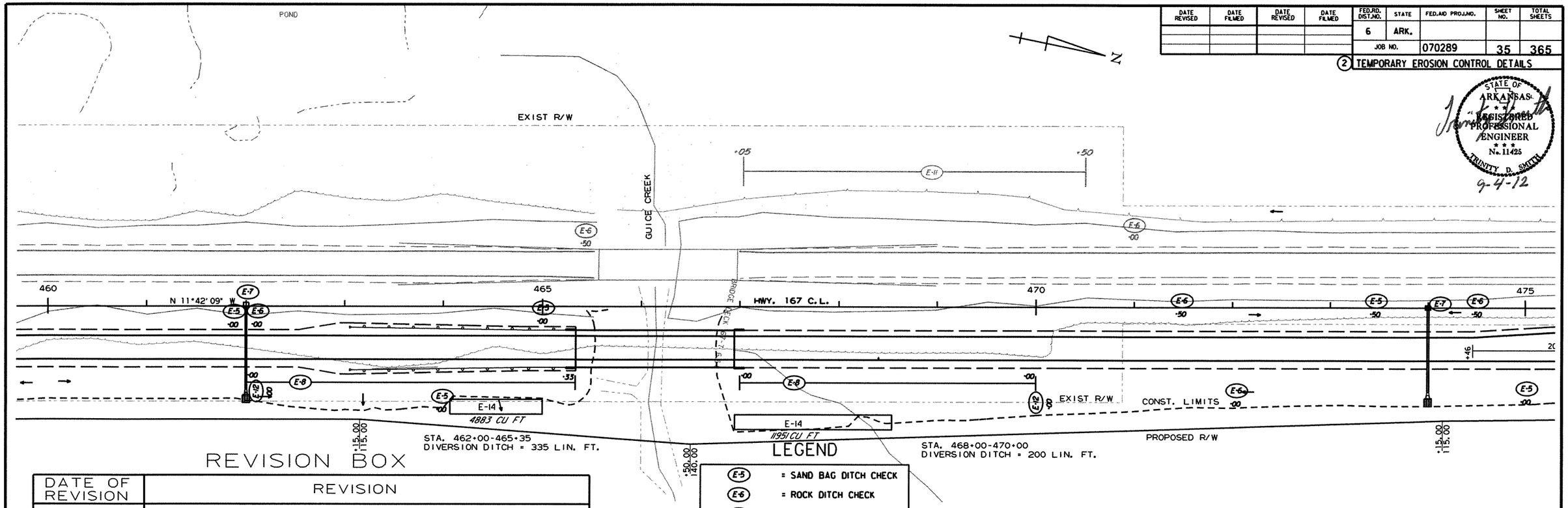
R070289.DGN

STAGE 1
TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070289	35	365

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12

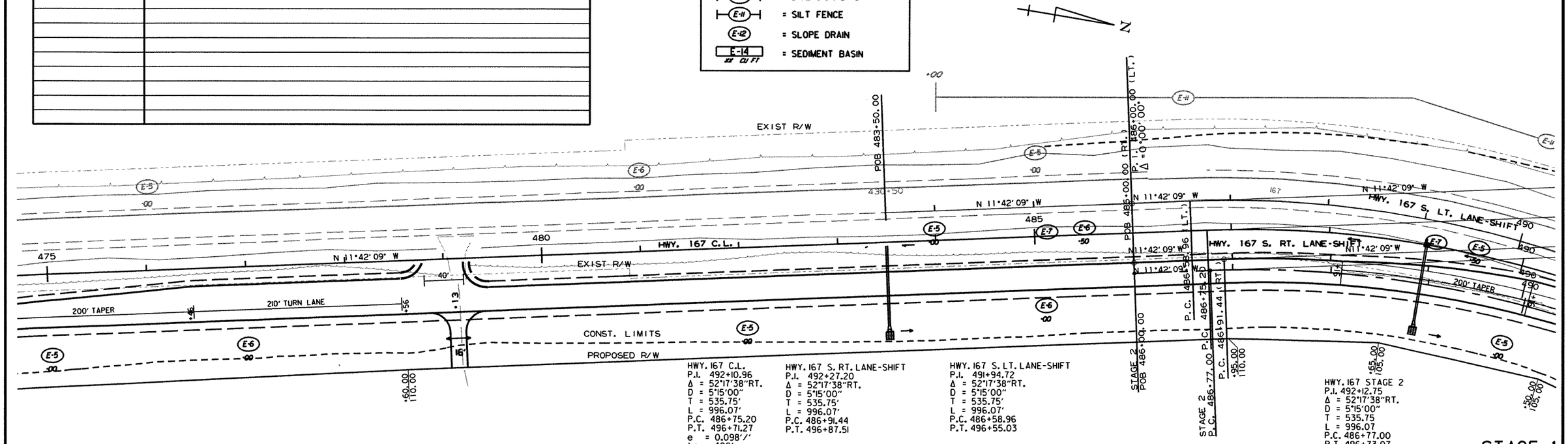


REVISION BOX

DATE OF REVISION	REVISION

LEGEND

- (E-5) = SAND BAG DITCH CHECK
- (E-6) = ROCK DITCH CHECK
- (E-7) = DROP INLET SILT FENCE
- (E-8) = DIVERSION DITCH
- (E-11) = SILT FENCE
- (E-12) = SLOPE DRAIN
- E-14 xx CU FT = SEDIMENT BASIN



HWY. 167 C.L.
P.I. 492+10.96
Δ = 52°17'38"RT.
D = 5°15'00"
T = 535.75'
L = 996.07'
P.C. 486+75.20
P.T. 496+71.27
e = 0.098'/'
Ls = 400'

HWY. 167 S. RT. LANE-SHIFT
P.I. 492+27.20
Δ = 52°17'38"RT.
D = 5°15'00"
T = 535.75'
L = 996.07'
P.C. 486+91.44
P.T. 496+87.51

HWY. 167 S. LT. LANE-SHIFT
P.I. 491+94.72
Δ = 52°17'38"RT.
D = 5°15'00"
T = 535.75'
L = 996.07'
P.C. 486+58.96
P.T. 496+55.03

HWY. 167 STAGE 2
P.I. 492+12.75
Δ = 52°17'38"RT.
D = 5°15'00"
T = 535.75
L = 996.07
P.C. 486+77.00
P.T. 496+73.07

EQUATIONS
HWY. 167 C.L. 483+50.00 BACK = HWY. 167 S. LT. LANE-SHIFT 483+50.00 AHEAD 30' LT.
HWY. 167 C.L. 486+00.00 BACK = HWY. 167 S. RT. LANE-SHIFT 486+00.00 AHEAD 30' RT.

STAGE 1
TEMPORARY EROSION CONTROL DETAILS

8/31/2012
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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.		070289	36	365

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12

EXIST R/W
P.I. 491+94.72 (LT.)
P.I. 492+10.96
STAGE 2 492+12.75
P.I. 492+27.20 (RT.)
T.C.E.
N 11°42' 09" W
N 40°35' 28" E
HWY. 167 S. LT. LANE-SHIFT
HWY. 167 S. RT. LANE-SHIFT
210' TURN LANE
200' TAPER
HWY. 167 C.L.
MORO CREEK RELIEF
EXIST R/W
CONST. LIMITS
PROPOSED R/W
P.T. 496+55.03 (LT.)
P.T. 496+71.27
STAGE 2 P.T. 496+73.07
P.T. 496+87.51 (RT.)
E-14 749 CU FT
BRIDGE DECK
BREAK BACK

EQUATIONS
HWY. 167 S. LT. LANE-SHIFT 497+22.37 BACK 5.5' LT. = HWY. 167 C.L. 497+04.94 AHEAD
HWY. 167 S. RT. LANE-SHIFT 496+87.51 BACK 5.5' RT. = HWY. 167 C.L. 497+04.94 AHEAD

HWY. 167 C.L.	HWY. 167 S. RT. LANE-SHIFT	HWY. 167 S. LT. LANE-SHIFT	HWY. 167 STAGE 2
P.I. 492+10.96	P.I. 492+27.20	P.I. 491+94.72	P.I. 492+12.75
Δ = 52°17'38"RT.	Δ = 52°17'38"RT.	Δ = 52°17'38"RT.	Δ = 52°17'38"RT.
D = 5°15'00"	D = 5°15'00"	D = 5°15'00"	D = 5°15'00"
T = 535.75'	T = 535.75'	T = 535.75'	T = 535.75
L = 996.07'	L = 996.07'	L = 996.07'	L = 996.07
P.C. 486+75.20	P.C. 486+91.44	P.C. 486+58.96	P.C. 486+77.00
P.T. 496+71.27	P.T. 496+87.51	P.T. 496+55.03	P.T. 496+73.07
e = 0.098'/'			
Ls = 400'			

STA. 495+00-498+15
DIVERSION DITCH = 315 LIN. FT.

STA. 499+65-510+35
DIVERSION DITCH = 1070 LIN. FT.

LEGEND

- (E-5) = SAND BAG DITCH CHECK
- (E-6) = ROCK DITCH CHECK
- (E-7) = DROP INLET SILT FENCE
- (E-8) = DIVERSION DITCH
- (E-11) = SILT FENCE
- (E-12) = SLOPE DRAIN
- E-14 XX CU FT = SEDIMENT BASIN

REVISION BOX

DATE OF REVISION	REVISION

EXIST R/W
MORO CREEK RELIEF
STANDING WATER
HWY. 167 C.L.
N 40°35' 28" E
BRIDGE DECK
BRIDGE DIAPHRAGM
EXIST R/W
CONST. LIMITS
E-14 691 CU FT
PROPOSED R/W

STA. 511+55-513+67
DIVERSION DITCH = 212 LIN. FT.

STA. 514+88-517+05
DIVERSION DITCH = 217 LIN. FT.

STA. 518+26-533+98
DIVERSION DITCH = 215 LIN. FT.

STAGE 1
TEMPORARY EROSION CONTROL DETAILS

8/31/2012

R070289.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.		070289	37	365

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12

EXIST R/W

STANDING WATER

MORO CREEK RELIEF

520 525 530 535

HWY. 167 C.L.

N 40°35'28" E

CONST. LIMITS

EXIST R/W

PROPOSED R/W

E-14 6816 CU FT

STA. 534+52-546+00
DIVERSION DITCH = 1148 LIN. FT.

STA. 534+52-538+00
SILT FENCE = 362 LIN. FT.

LEGEND

E-5	= SAND BAG DITCH CHECK
E-6	= ROCK DITCH CHECK
E-7	= DROP INLET SILT FENCE
E-8	= DIVERSION DITCH
E-11	= SILT FENCE
E-12	= SLOPE DRAIN
E-14 xx CU FT	= SEDIMENT BASIN

EQUATIONS
HWY. 167 C.L. 535+00.00 BACK = HWY. 167 N. LT. LANE-SHIFT 535+00.00 AHEAD 5.50' LT.
HWY. 167 C.L. 535+00.00 BACK = HWY. 167 N. RT. LANE-SHIFT 535+00.00 AHEAD 5.50' RT.
HWY. 167 N. LT. LANE-SHIFT 544+65.88 BACK 30' LT. = HWY. 167 C.L. 544+80.26 AHEAD
HWY. 167 N. RT. LANE-SHIFT 544+94.64 BACK 30' RT. = HWY. 167 C.L. 544+80.26 AHEAD

HWY. 167 N. LT. LANE-SHIFT
P.I. 540+21.80
Δ = 44°06'10" LT.
D = 5°15'00"
T = 442.07'
L = 840.05'
P.C. 535+79.72
P.T. 544+19.77

HWY. 167 N. RT. LANE-SHIFT
P.I. 540+96.66
Δ = 44°06'10" LT.
D = 5°15'00"
T = 442.07'
L = 840.05'
P.C. 536+54.59
P.T. 544+94.64

HWY. 167 C.L.
P.I. 540+59.23
Δ = 44°06'10" LT.
D = 5°15'00"
T = 422.07'
L = 840.05'
P.C. 536+17.16
P.T. 544+57.21
e = 0.098'/'
Ls = 400'

HWY. 167 STAGE 2
P.I. 540+63.46
Δ = 44°06'10" RT.
D = 5°15'00"
T = 442.07
L = 840.05
P.C. 536+21.39
P.T. 544+61.44

REVISION BOX

DATE OF REVISION	REVISION

HWY. 167 N. LT. LANE-SHIFT
HWY. 167 N. RT. LANE-SHIFT
HWY. 167 C.L.
HWY. 167 STAGE 2
P.C. 535+79.72 (LT.)
P.C. 536+17.16 (LT.)
P.C. 536+21.39 (RT.)
P.C. 536+54.59 (RT.)
P.I. 540+21.80
P.I. 540+59.23
P.I. 540+63.46
P.I. 540+96.66
P.T. 544+19.77 (LT.)
P.T. 544+57.21 (LT.)
P.T. 544+61.44 (RT.)
P.T. 544+94.64 (RT.)
POE 544+85.62 (LT.)
POE 545+14.38 (RT.)
N 40°35'28" E
N 3°30'41" W
STAGE 2
535+85.68
80.00 99.40
50.00 105.00
20.00 110.00
95.00 120.00
45.00 130.00
25.00 125.00
80.00 100.00
90.00 145.00

STA. 546+50-547+50
SILT FENCE = 102 LIN. FT.

8/31/2012

R070289.DGN

STAGE 1
TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070289	38	365

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12

GARDEN

N

EXIST R/W

590 E-7 E-6 E-5 E-6 E-5 E-6 E-5 E-6 E-5 E-6 555 E-5 N 3°30'41" W

HWY. 167 C.L.

560 E-6 E-5 E-6 E-5 E-6 E-5 E-6 E-5 E-6 E-5 E-6 E-7 E-6 565 E-5

EXIST R/W

LEVEE

E-5 E-6 E-6 E-11 E-6 20' E-6 CONST. LIMITS E-5 E-6 E-8 E-8 E-12 E-14 3980 CU FT

PROPOSED R/W

T.C.E.

-50.00 110.00 -50.00 100.00 -50.00 120.00 -85.00 115.65 -50.00 115.00 -60.00 125.00 -90.00 145.00 -0 -50 -0 -0 I.C.E. -15.00 124.49

STA. 550+10-554+50
SILT FENCE = 444 LIN. FT.

STA. 561+00-565+00
DIVERSION DITCH = 400 LIN. FT.

REVISION BOX

DATE OF REVISION	REVISION

LEGEND

POND

- E-5 = SAND BAG DITCH CHECK
- E-6 = ROCK DITCH CHECK
- E-7 = DROP INLET SILT FENCE
- E-8 = DIVERSION DITCH
- E-11 = SILT FENCE
- E-12 = SLOPE DRAIN
- E-14 xx CU FT = SEDIMENT BASIN

N

P.I. 569+29.39 -85.00 175.00 -15.00 175.00 P.O.E. -90.00 102.60 -85.00 102.76

EXIST R/W

565 E-6 E-5 E-6 N 3°30'41" W 570 E-6 E-7 HWY. 167 C.L. 575 E-5 E-6 N 2°09'47" E E-7 580

EXIST R/W

P.I. 569+29.39 LOT LINE E-6 E-7 E-5 20' 16' 67 P.C. 566+45.43 572+12.88 P.T. E-5 E-6 CONST. LIMITS PROPOSED R/W E-5 E-6 E-5 E-8 E-12 E-14 3992 CU FT E-14 9045 CU FT

-90.00 110.00 -70.00 115.00 -15.00 140.00 I.C.E. -15.00 124.49

P.I. 569+29.39
Δ = 5°40'28"RT.
D = 1°00'00"
T = 283.96'
L = 567.45'
P.C. 566+45.43
P.T. 572+12.88
e = 0.030'/'
Ls = 350'

STA. 578+00-580+00
DIVERSION DITCH = 200 LIN. FT.

STAGE 1
TEMPORARY EROSION CONTROL DETAILS

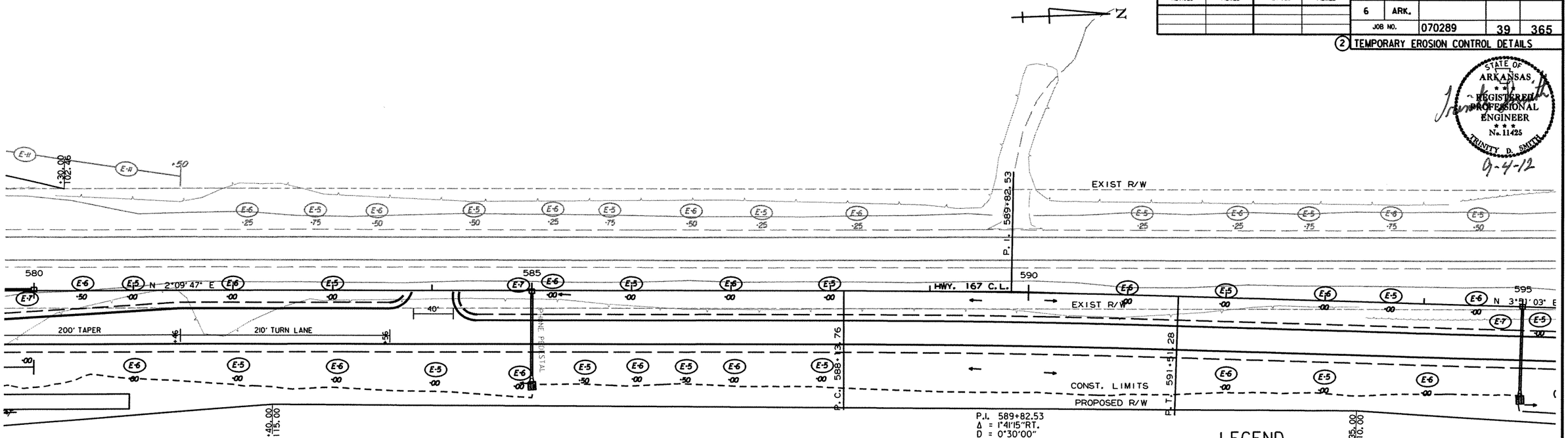
8/30/2012

R070289.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.		070289	39	365

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12

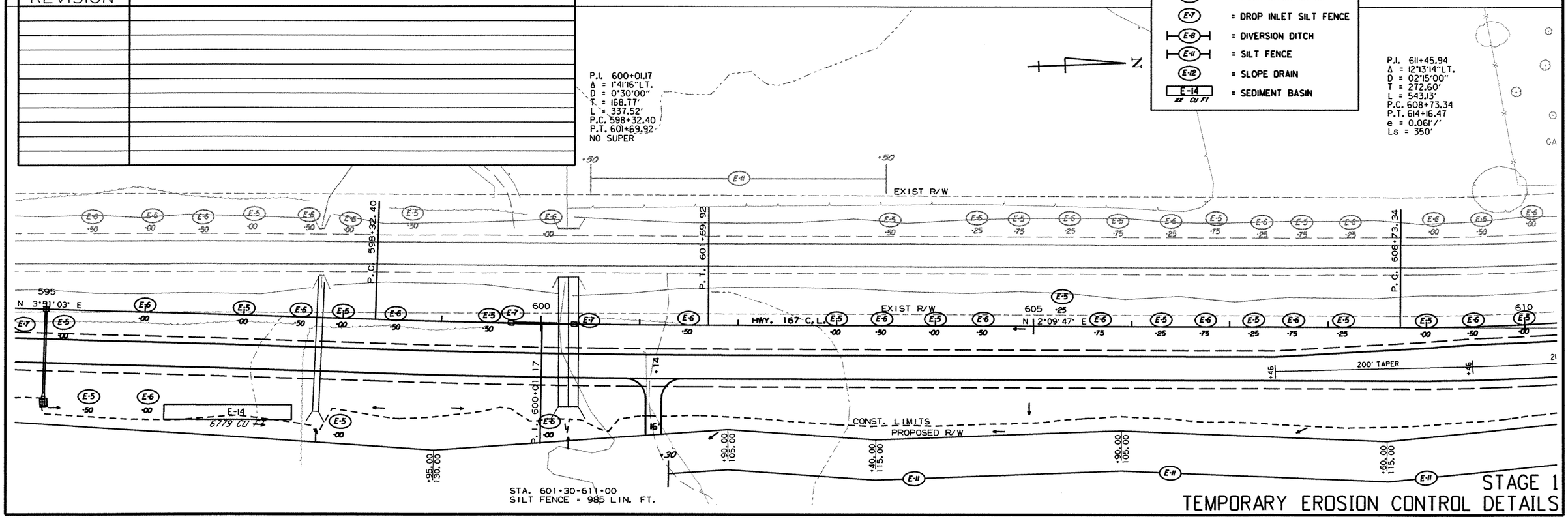


REVISION BOX

DATE OF REVISION	REVISION

LEGEND

E-5	= SAND BAG DITCH CHECK
E-6	= ROCK DITCH CHECK
E-7	= DROP INLET SILT FENCE
E-8	= DIVERSION DITCH
E-11	= SILT FENCE
E-12	= SLOPE DRAIN
E-14 ## CU FT	= SEDIMENT BASIN



STAGE 1
TEMPORARY EROSION CONTROL DETAILS

8/30/2012

R070289.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.		070289	40	365

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-7-12

P.I. 611+45.94
Δ = 12°13'14"LT.
D = 02°15'00"
T = 272.60'
L = 543.13'
P.C. 608+73.34
P.T. 614+16.47
e = 0.061'/'
Ls = 350'

GARNER CEMETERY

STA. 620+82-622+00
DIVERSION DITCH = 120 LIN. FT.

STA. 623+50-625+40
SILT FENCE = 209 LIN. FT.

STA. 613+50-619+00
SILT FENCE = 553 LIN. FT.

N 10103'26" W

P.I. 620+02.96
P.T. 614+16.47

P.I. 622+76.69
Δ = 12°16'14"RT.
D = 02°15'00"
T = 273.73'
L = 545.36'
P.C. 620+02.96
P.T. 625+48.32
e = 0.061'/'
Ls = 350'

E-14 4775 CU.FT

E-14 2338 CU FT

EXIST R/W — HWY. 167 C.L. — 210' TURN LANE — CONST. LIMITS — PROPOSED R/W — EXISTING ROW — 40' — 20' — 16' — 610 — 615 — 620 — 625 — 630 — 635 — 640

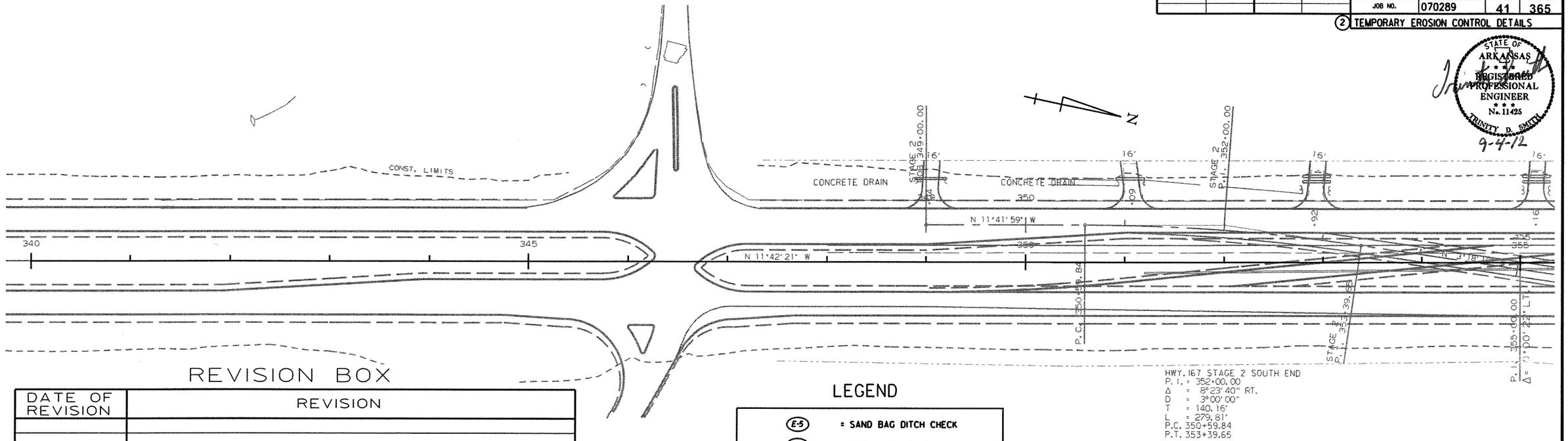
REVISION BOX

DATE OF REVISION	REVISION

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070289	41	365

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12



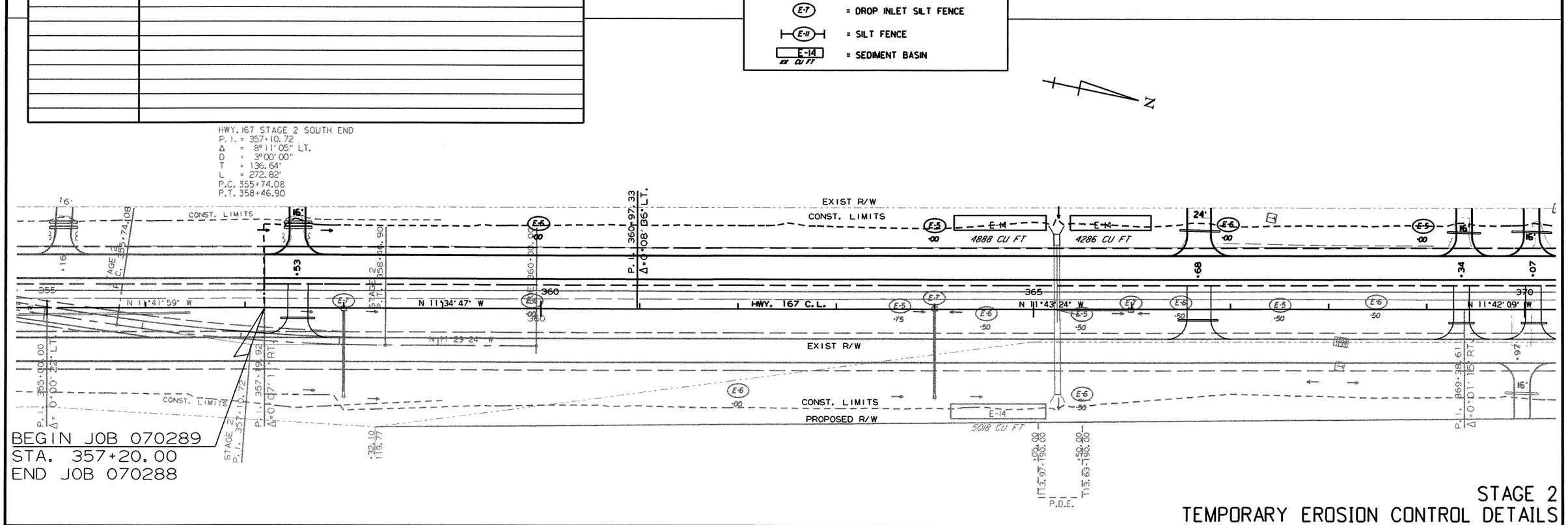
REVISION BOX

DATE OF REVISION	REVISION

LEGEND

- (E-5) = SAND BAG DITCH CHECK
- (E-6) = ROCK DITCH CHECK
- (E-7) = DROP INLET SILT FENCE
- (E-11) = SILT FENCE
- E-14 XX CU FT = SEDIMENT BASIN

HWY. 167 STAGE 2 SOUTH END
P.I. = 357+10.72
Δ = 8°11'05" LT.
D = 3°00'00"
T = 136.64'
L = 272.82'
P.C. 355+74.08
P.T. 358+46.90



BEGIN JOB 070289
STA. 357+20.00
END JOB 070288

8/31/2012

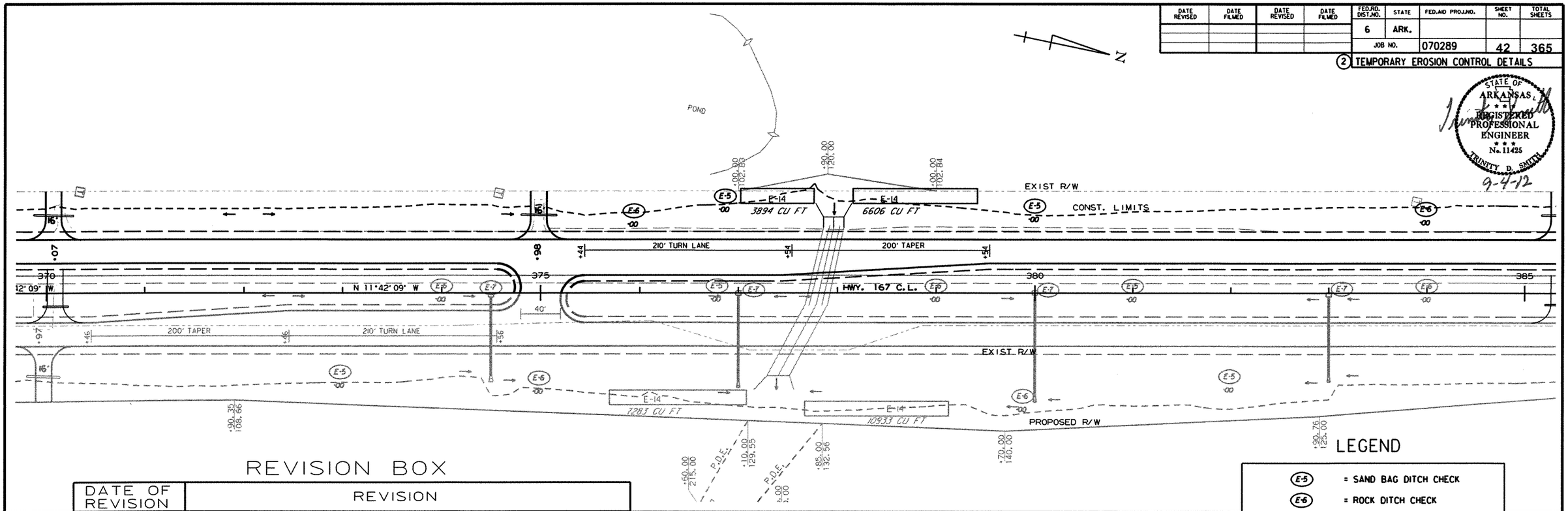
R070289.DGN

STAGE 2
TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070289	42	365

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12

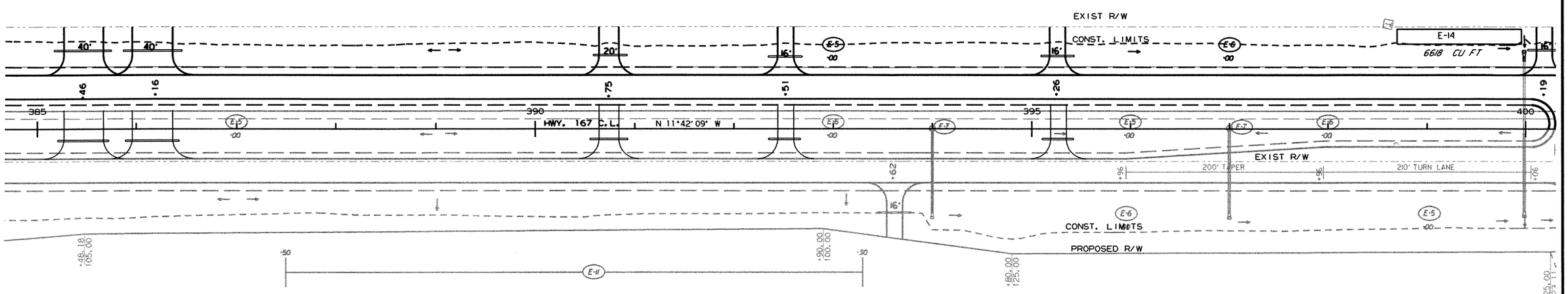


REVISION BOX

DATE OF REVISION	REVISION

LEGEND

- (E-5) = SAND BAG DITCH CHECK
- (E-6) = ROCK DITCH CHECK
- (E-7) = DROP INLET SILT FENCE
- (E-11) = SILT FENCE
- E-14 / xx CU FT = SEDIMENT BASIN



8/30/2012

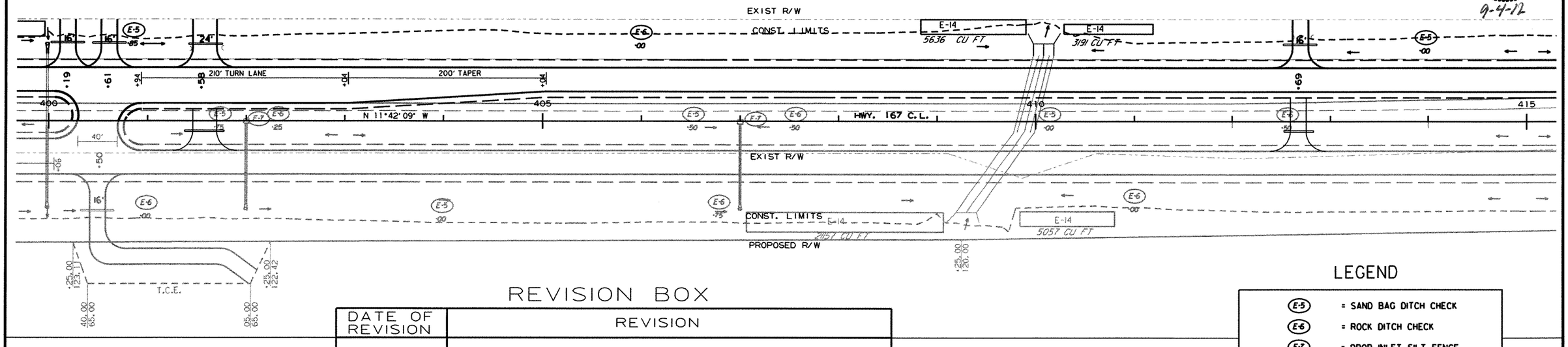
R070289.DGN

STAGE 2
TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070289	43	365

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12



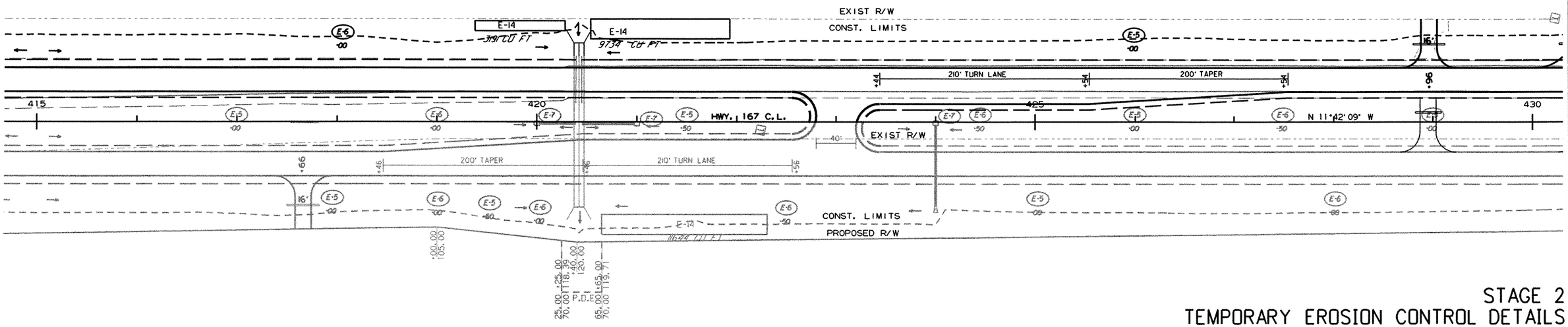
REVISION BOX

DATE OF REVISION	REVISION

EXISTING PAVEMENT TRANSITION

LEGEND

- (E-5) = SAND BAG DITCH CHECK
- (E-6) = ROCK DITCH CHECK
- (E-7) = DROP INLET SILT FENCE
- (E-11) = SILT FENCE
- E-14 xx CU FT = SEDIMENT BASIN



8/30/2012

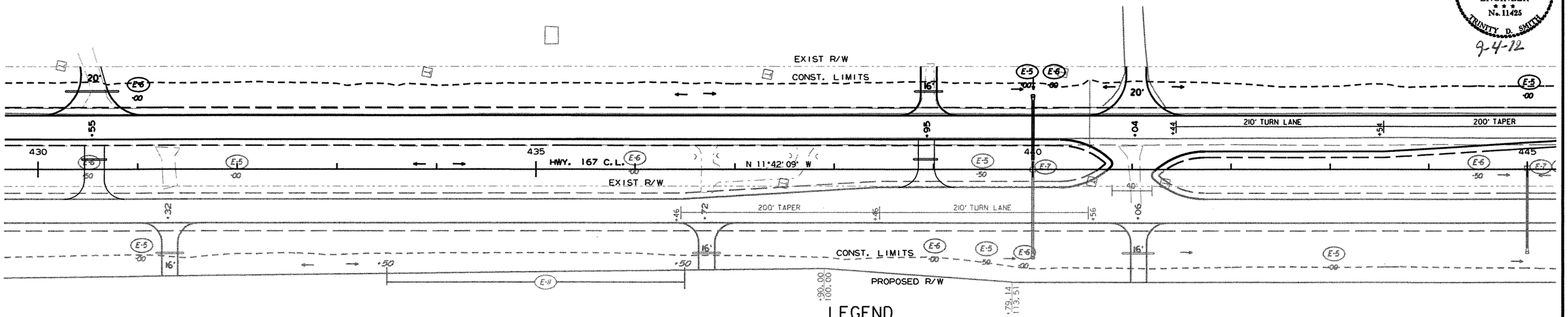
R070289.DGN

STAGE 2
TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070289	44	365

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12

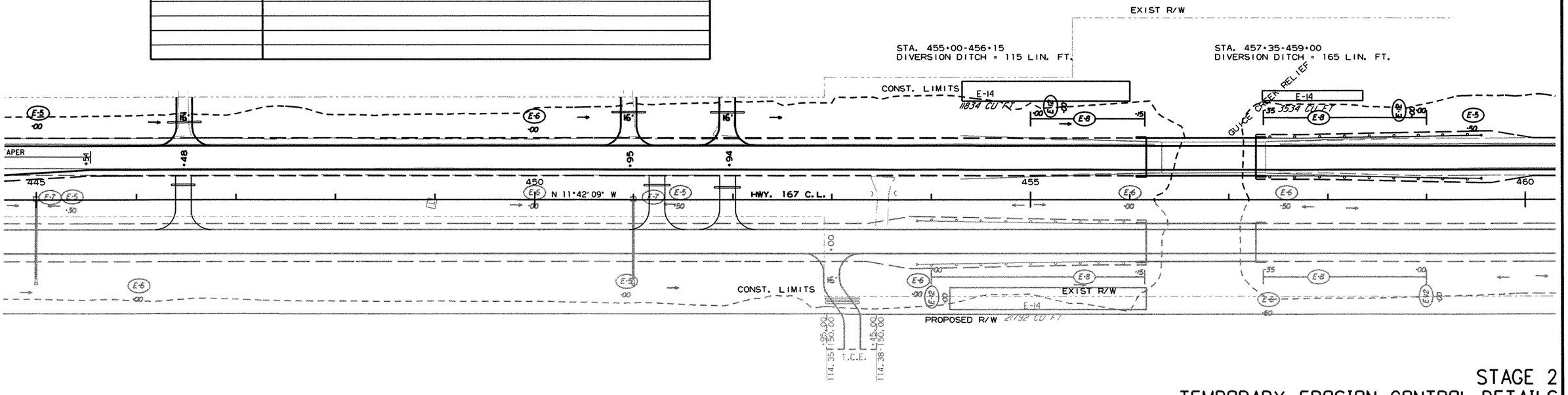


REVISION BOX

DATE OF REVISION	REVISION

LEGEND

- (E-5) = SAND BAG DITCH CHECK
- (E-6) = ROCK DITCH CHECK
- (E-7) = DROP INLET SILT FENCE
- (E-8) = DIVERSION DITCH
- (E-11) = SILT FENCE
- (E-12) = SLOPE DRAIN
- E-14 ## CU FT = SEDIMENT BASIN



8/30/2012

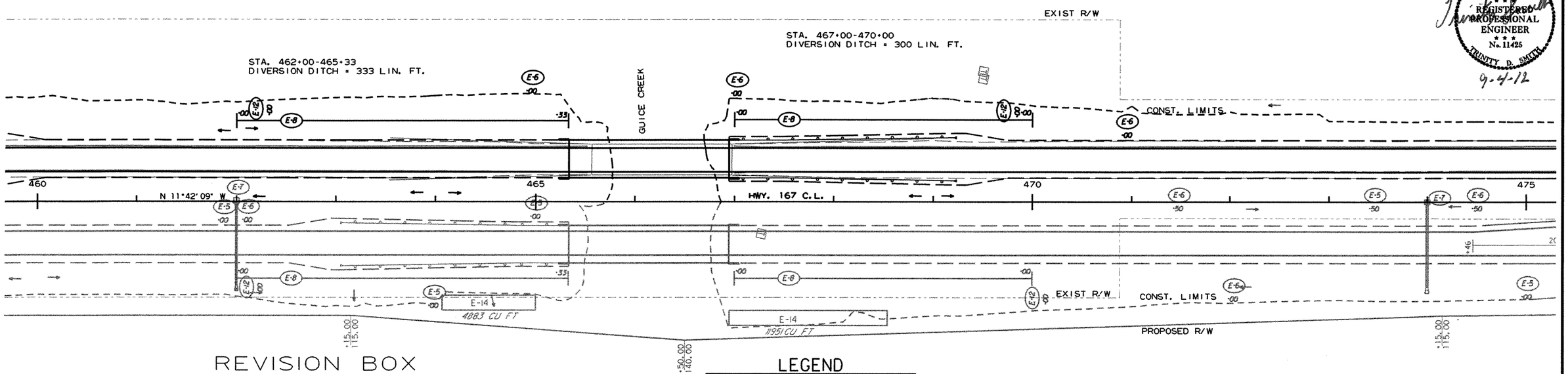
R070289.DGN

STAGE 2
TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070289	45	365

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12

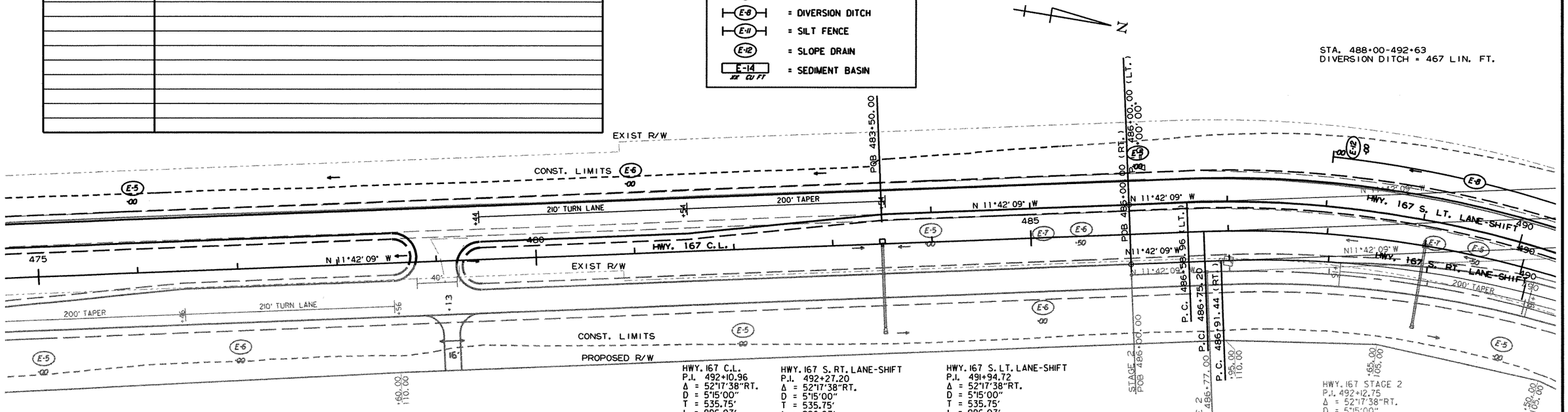


REVISION BOX

DATE OF REVISION	REVISION

LEGEND

- E-5 = SAND BAG DITCH CHECK
- E-6 = ROCK DITCH CHECK
- E-7 = DROP INLET SILT FENCE
- E-8 = DIVERSION DITCH
- E-11 = SILT FENCE
- E-12 = SLOPE DRAIN
- E-14 ## CU FT = SEDIMENT BASIN



HWY. 167 C.L.
P.I. 492+10.96
Δ = 52°17'38"RT.
D = 5°15'00"
T = 535.75'
L = 996.07'
P.C. 486+75.20
P.T. 496+71.27
e = 0.098'/'
Ls = 400'

HWY. 167 S. RT. LANE-SHIFT
P.I. 492+27.20
Δ = 52°17'38"RT.
D = 5°15'00"
T = 535.75'
L = 996.07'
P.C. 486+91.44
P.T. 496+87.51

HWY. 167 S. LT. LANE-SHIFT
P.I. 491+94.72
Δ = 52°17'38"RT.
D = 5°15'00"
T = 535.75'
L = 996.07'
P.C. 486+58.96
P.T. 496+55.03

EQUATIONS
HWY. 167 C.L. 483+50.00 BACK = HWY. 167 S. LT. LANE-SHIFT 483+50.00 AHEAD 30' LT.
HWY. 167 C.L. 486+00.00 BACK = HWY. 167 S. RT. LANE-SHIFT 486+00.00 AHEAD 30' RT.

STAGE 2
TEMPORARY EROSION CONTROL DETAILS

8/31/2012

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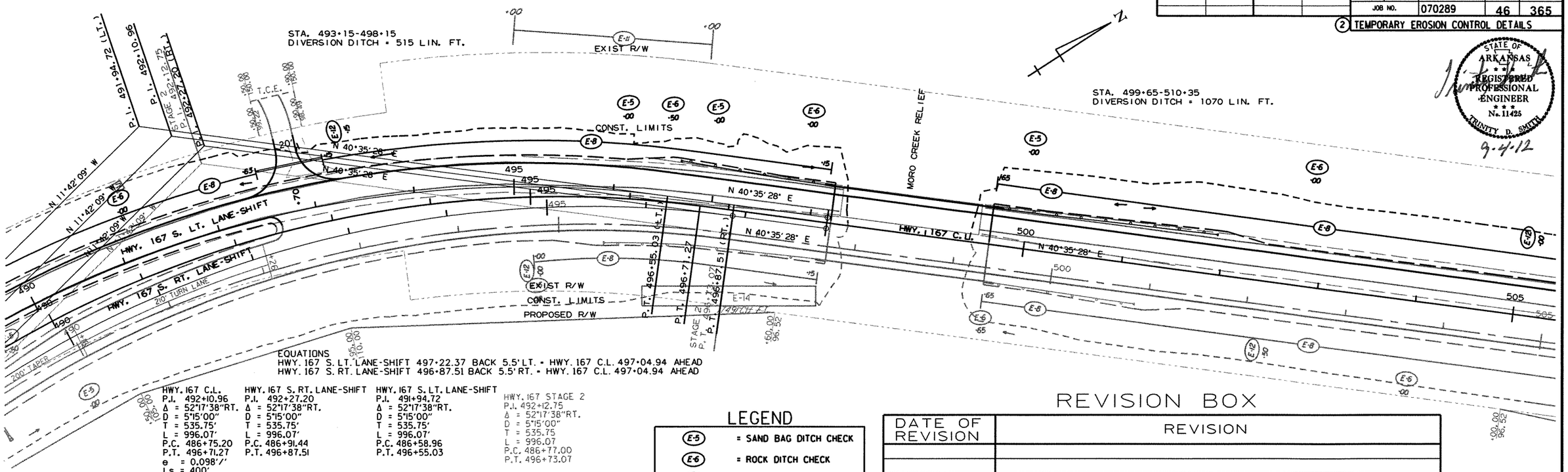
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070289	46	365

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12

STA. 493+15-498+15
DIVERSION DITCH = 515 LIN. FT.

STA. 499+65-510+35
DIVERSION DITCH = 1070 LIN. FT.



EQUATIONS
HWY. 167 S. LT. LANE-SHIFT 497+22.37 BACK 5.5' LT. = HWY. 167 C.L. 497+04.94 AHEAD
HWY. 167 S. RT. LANE-SHIFT 496+87.51 BACK 5.5' RT. = HWY. 167 C.L. 497+04.94 AHEAD

HWY. 167 C.L.	HWY. 167 S. RT. LANE-SHIFT	HWY. 167 S. LT. LANE-SHIFT
P.I. 492+10.96	P.I. 492+27.20	P.I. 491+94.72
Δ = 52°17'38"RT.	Δ = 52°17'38"RT.	Δ = 52°17'38"RT.
D = 5°15'00"	D = 5°15'00"	D = 5°15'00"
T = 535.75'	T = 535.75'	T = 535.75'
L = 996.07'	L = 996.07'	L = 996.07'
P.C. 486+75.20	P.C. 486+91.44	P.C. 486+58.96
P.T. 496+71.27	P.T. 496+87.51	P.T. 496+55.03
e = 0.098'/'		
Ls = 400'		

HWY. 167 STAGE 2
P.I. 492+12.75
Δ = 52°17'38"RT.
D = 5°15'00"
T = 535.75
L = 996.07
P.C. 486+77.00
P.T. 496+73.07

LEGEND

- E-5 = SAND BAG DITCH CHECK
- E-6 = ROCK DITCH CHECK
- E-7 = DROP INLET SILT FENCE
- E-8 = DIVERSION DITCH
- E-11 = SILT FENCE
- E-12 = SLOPE DRAIN
- E-14 XX CU FT = SEDIMENT BASIN

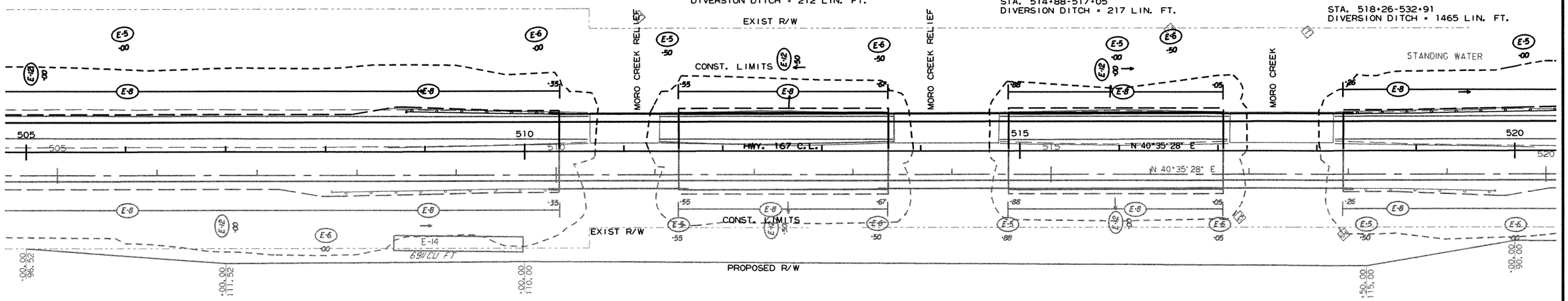
REVISION BOX

DATE OF REVISION	REVISION

STA. 511+55-513+67
DIVERSION DITCH = 212 LIN. FT.

STA. 514+88-517+05
DIVERSION DITCH = 217 LIN. FT.

STA. 518+26-532+91
DIVERSION DITCH = 1465 LIN. FT.



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STAGE 2
TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070289	47	365

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12

STA. 534+52-539+00
DIVERSION DITCH = 433 LIN. FT.

EXIST R/W
CONST. LIMITS
HWY. 167 C.L.
PROPOSED R/W
MORO CREEK RELIEF
POE 535+00.00
STANDING WATER
N 40°35' 28" E
E-14 6016 CU FT

LEGEND

- E-5 = SAND BAG DITCH CHECK
- E-6 = ROCK DITCH CHECK
- E-7 = DROP INLET SILT FENCE
- E-8 = DIVERSION DITCH
- E-11 = SILT FENCE
- E-12 = SLOPE DRAIN
- E-14 xxx CU-FT = SEDIMENT BASIN

REVISION BOX

DATE OF REVISION	REVISION

EQUATIONS
HWY. 167 C.L. 535+00.00 BACK = HWY. 167 N. LT. LANE-SHIFT 535+00.00 AHEAD 5.50' LT.
HWY. 167 C.L. 535+00.00 BACK = HWY. 167 N. RT. LANE-SHIFT 535+00.00 AHEAD 5.50' RT.
HWY. 167 N. LT. LANE-SHIFT 544+65.88 BACK 30' LT. = HWY. 167 C.L. 544+80.26 AHEAD
HWY. 167 N. RT. LANE-SHIFT 544+94.64 BACK 30' RT. = HWY. 167 C.L. 544+80.26 AHEAD

HWY. 167 N. LT. LANE-SHIFT
P.I. 540+21.80
Δ = 44°06'10"LT.
D = 5°15'00"
T = 442.07'
L = 840.05'
P.C. 535+79.72
P.T. 544+19.77

HWY. 167 N. RT. LANE-SHIFT
P.I. 540+96.66
Δ = 44°06'10"LT.
D = 5°15'00"
T = 442.07'
L = 840.05'
P.C. 536+54.59
P.T. 544+94.64

HWY. 167 C.L.
P.I. 540+59.23
Δ = 44°06'10"LT.
D = 5°15'00"
T = 422.07'
L = 840.05'
P.C. 536+17.16
P.T. 544+57.21
e = 0.098'/'
Ls = 400'

EXIST R/W
HWY. 167 N. LT. LANE-SHIFT
HWY. 167 N. RT. LANE-SHIFT
HWY. 167 C.L.
CONST. LIMITS
PROPOSED R/W
N 3°30' 41" W
POE 544+85.62 (LT.)
POE 544+14.38 (RT.)
P.T. 544+19.77 (LT.)
P.T. 544+94.64 (RT.)
P.T. 544+57.21
P.I. 540+21.80 (LT.)
P.I. 540+59.23
P.I. 540+96.66 (RT.)
STAGE 2

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R070289.DGN

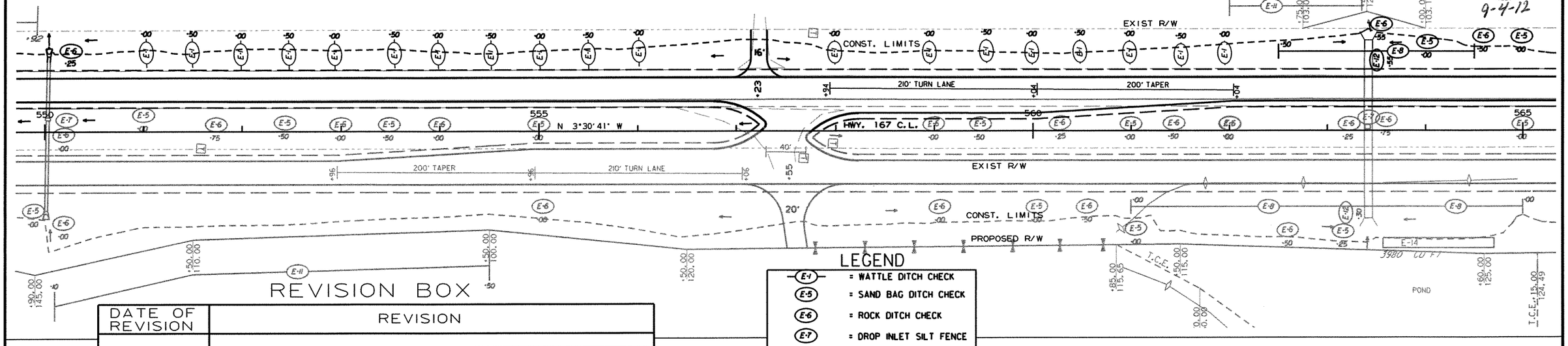
STAGE 2
TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070289	48	365

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
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No. 11425
TRINITY D. SMITH
9-4-12

STA. 562+50-564+50
DIVERSION DITCH = 200 LIN. FT.



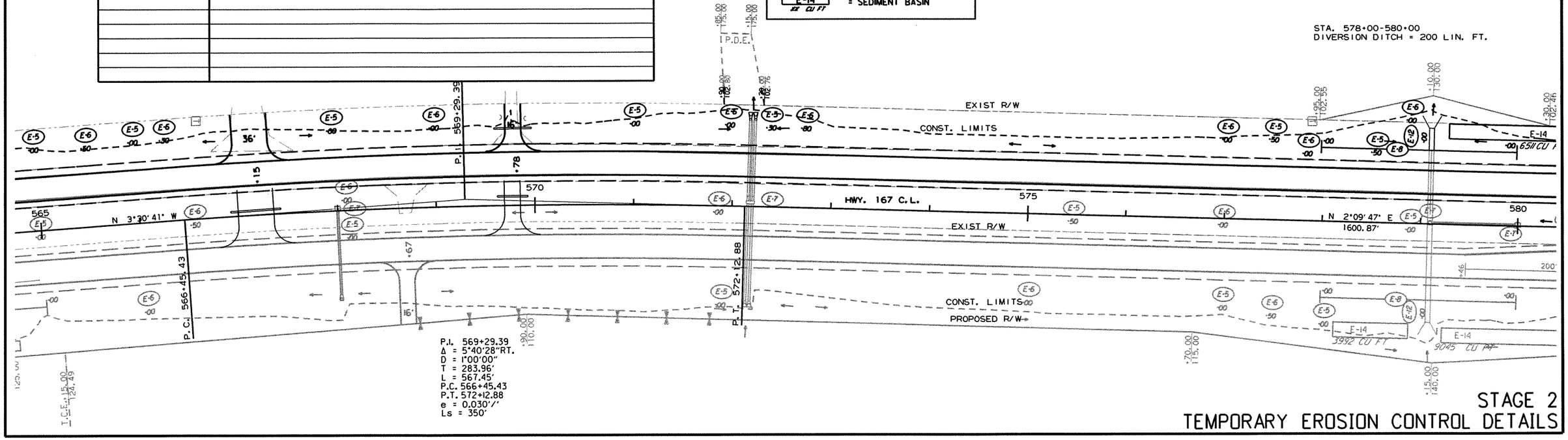
REVISION BOX

DATE OF REVISION	REVISION

LEGEND

- E-1 = WATTLE DITCH CHECK
- E-5 = SAND BAG DITCH CHECK
- E-6 = ROCK DITCH CHECK
- E-7 = DROP INLET SILT FENCE
- E-8 = DIVERSION DITCH
- E-11 = SILT FENCE
- E-12 = SLOPE DRAIN
- E-14 ### CU FT = SEDIMENT BASIN

STA. 578+00-580+00
DIVERSION DITCH = 200 LIN. FT.



P.I. 569+29.39
Δ = 5°40'28"RT.
D = 1°00'00"
T = 283.96'
L = 567.45'
P.C. 566+45.43
P.T. 572+12.88
e = 0.030'/'
Ls = 350'

8/30/2012

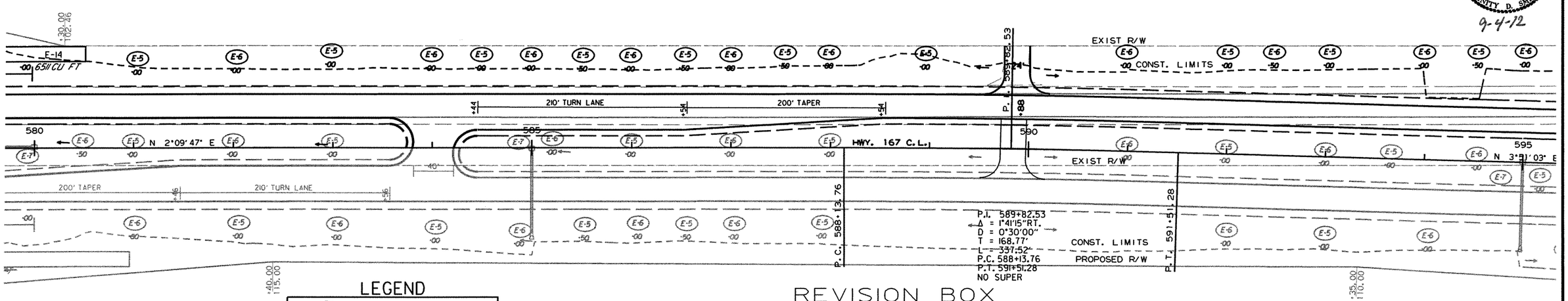
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STAGE 2
TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070289	49	365

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12



LEGEND

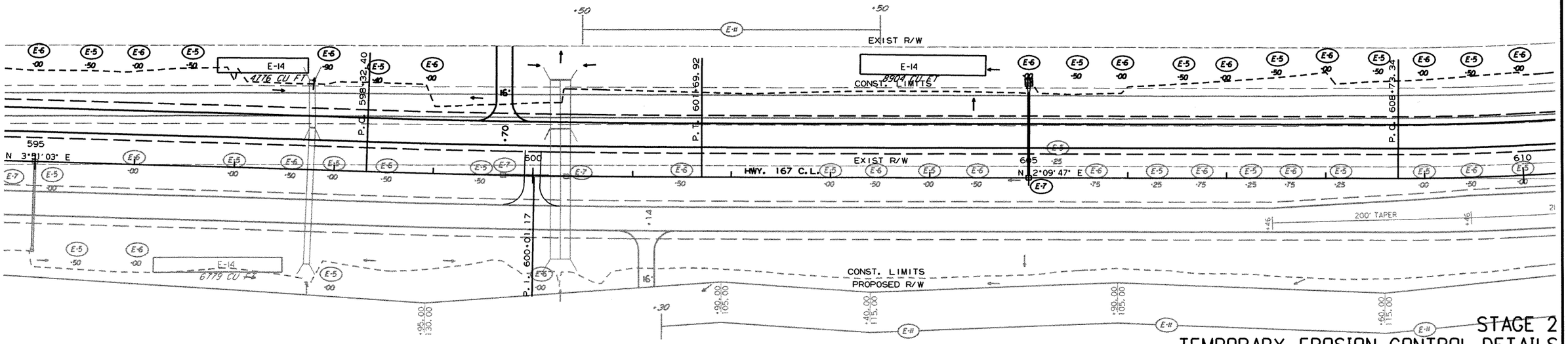
- E-5 = SAND BAG DITCH CHECK
- E-6 = ROCK DITCH CHECK
- E-7 = DROP INLET SILT FENCE
- E-8 = DIVERSION DITCH
- E-11 = SILT FENCE
- E-12 = SLOPE DRAIN
- E-14 xx CU FT = SEDIMENT BASIN

REVISION BOX

DATE OF REVISION	REVISION

P.I. 600+01.17
Δ = 1°41'16"LT.
D = 0°30'00"
T = 168.77'
L = 337.52'
P.C. 598+32.40
P.T. 601+69.92
NO SUPER

P.I. 611+45.94
Δ = 12°13'14"LT.
D = 02°15'00"
T = 272.60'
L = 543.13'
P.C. 608+73.34
P.T. 614+16.47
e = 0.06ft/'
Ls = 350'



8/30/2012

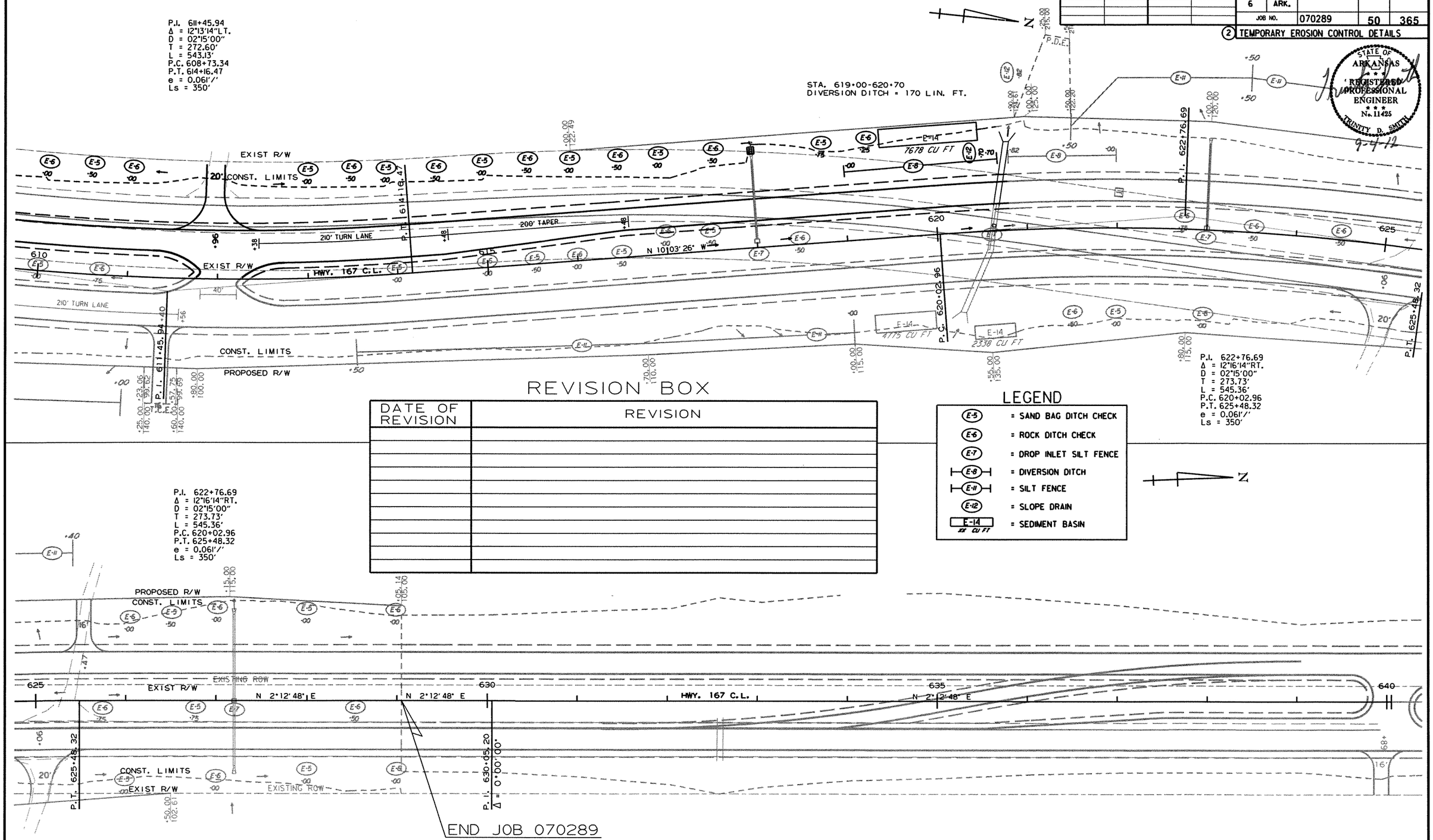
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STAGE 2
TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070289	50	365

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12



REVISION BOX

DATE OF REVISION	REVISION

LEGEND

- E-5 = SAND BAG DITCH CHECK
- E-6 = ROCK DITCH CHECK
- E-7 = DROP INLET SILT FENCE
- E-8 = DIVERSION DITCH
- E-11 = SILT FENCE
- E-12 = SLOPE DRAIN
- E-14 XX CU FT = SEDIMENT BASIN

8/30/2012

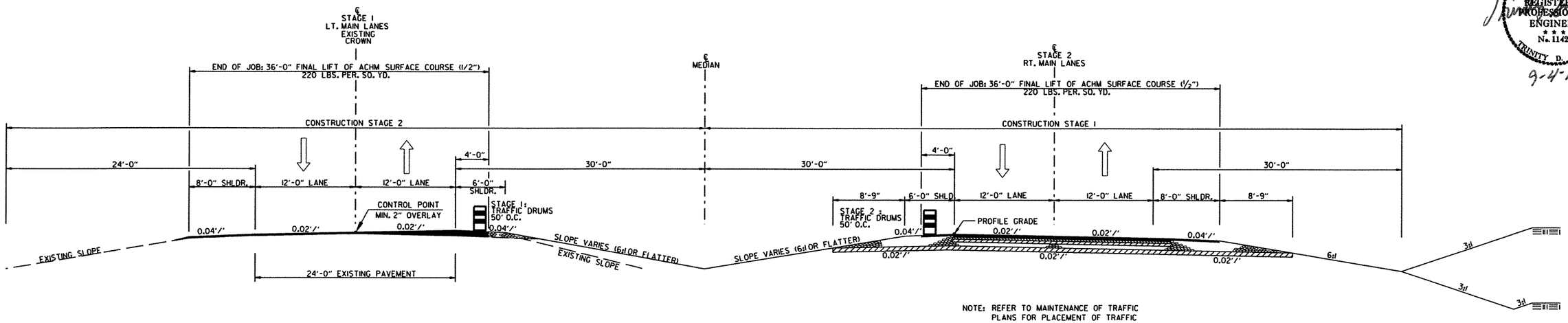
R070289.DGN

STAGE 2
TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070289	51	365

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12



NOTE: REFER TO MAINTENANCE OF TRAFFIC PLANS FOR PLACEMENT OF TRAFFIC DRUMS. SPACING WILL VARY AT DRIVEWAYS AND HWY. INTERSECTIONS.

STAGE CONSTRUCTION

STA. 357+20.00-STA. 492+50.00,
STA. 536+83.00-STA. 620+82.00,
STA. 620+82.00-STA. 629+05.14,**

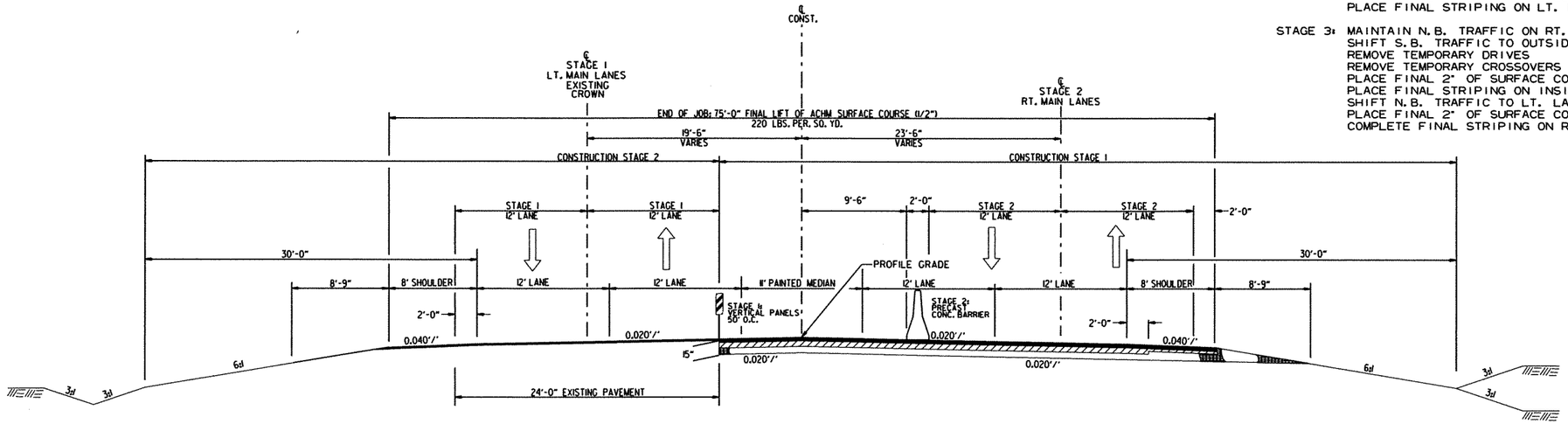
** REVERSE RT. LANES TYPICAL WITH THE LT. LANES TYPICAL

SEQUENCE OF CONSTRUCTION:

STAGE 1: MAINTAIN TRAFFIC ON EXISTING LANES
CONSTRUCT DROP INLET & PIPE OUTLET AT STATION 618+00
CONSTRUCT RT. MAIN LANES & STRUCTURES STA. 357+20-620+82
CONSTRUCT LT. MAIN LANES & STRUCTURES STA. 620+82-629+05
OVERLAY THE EXISTING LANES STA. 620+57-623+00
CONSTRUCT RT. MAIN LANES BY METHOD OF RAISING THE GRADE STA. 620+82-629+05

STAGE 2: SHIFT N.B. TRAFFIC TO RT. LANE OF RT. MAIN LANES
CONSTRUCT TEMPORARY CROSSOVER
SHIFT S.B. TRAFFIC TO RT. MAIN LANES
CONSTRUCT LT. MAIN LANES & STRUCTURES STA. 357+20-620+82
PLACE FINAL 2" OF SURFACE COURSE ON LT. MAIN LANES
PLACE FINAL STRIPING ON LT. MAIN LANES

STAGE 3: MAINTAIN N.B. TRAFFIC ON RT. LANE OF RT. MAIN LANES
SHIFT S.B. TRAFFIC TO OUTSIDE LANE OF LT. MAIN LANES
REMOVE TEMPORARY DRIVES
REMOVE TEMPORARY CROSSOVERS
PLACE FINAL 2" OF SURFACE COURSE ON LT. LANE OF RT. MAIN LANES
PLACE FINAL STRIPING ON INSIDE LANE EDGE
SHIFT N.B. TRAFFIC TO LT. LANE OF RT. MAIN LANES
PLACE FINAL 2" OF SURFACE COURSE ON RT. LANE OF RT. MAIN LANES
COMPLETE FINAL STRIPING ON RT. MAIN LANES



* TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER

STAGE CONSTRUCTION

STA. 492+50.00-STA. 497+04.94,
STA. 525+10.00-STA. 530+50.00,
STA. 535+79.52-STA. 536+83.00,

NOTE: REFER TO MAINTENANCE OF TRAFFIC PLANS FOR PLACEMENT OF TRAFFIC DRUMS. SPACING WILL VARY AT DRIVEWAYS AND HWY. INTERSECTIONS.

8/30/2012

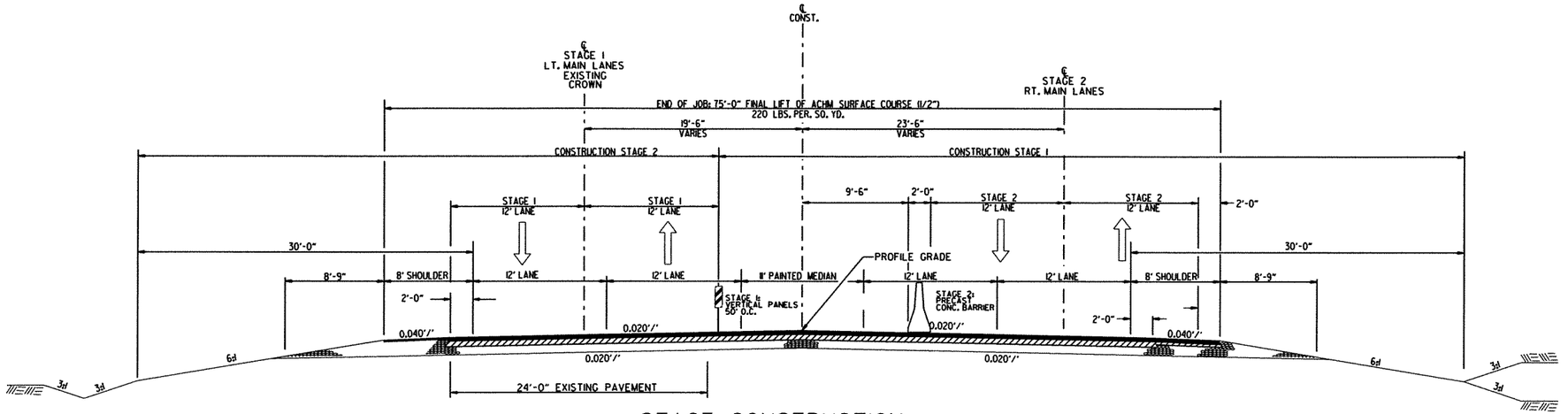
R070289.DGN

ALL STAGES MAINTENANCE OF TRAFFIC

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.		070289	52	365

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12



STAGE CONSTRUCTION

STA. 497+04.94-STA. 525+10.00,
STA. 530+50.00-STA. 535+79.52,

NOTE: REFER TO MAINTENANCE OF TRAFFIC PLANS FOR PLACEMENT OF TRAFFIC DRUMS. SPACING WILL VARY AT DRIVEWAYS AND HWY. INTERSECTIONS.

SEQUENCE OF CONSTRUCTION:

STAGE 1: MAINTAIN TRAFFIC ON EXISTING LANES
CONSTRUCT DROP INLET & PIPE OUTLET AT STATION 618+00
CONSTRUCT RT. MAIN LANES & STRUCTURES STA. 357+20-620+82
CONSTRUCT LT. MAIN LANES & STRUCTURES STA. 620+82-629+05
OVERLAY THE EXISTING LANES STA. 620+57-623+00
CONSTRUCT RT. MAIN LANES BY METHOD OF RAISING THE GRADE STA. 620+82-629+05

STAGE 2: SHIFT N.B. TRAFFIC TO RT. LANE OF RT. MAIN LANES
CONSTRUCT TEMPORARY CROSSOVER
SHIFT S.B. TRAFFIC TO RT. MAIN LANES
CONSTRUCT LT. MAIN LANES & STRUCTURES STA. 357+20-620+82
PLACE FINAL 2" OF SURFACE COURSE ON LT. MAIN LANES
PLACE FINAL STRIPING ON LT. MAIN LANES

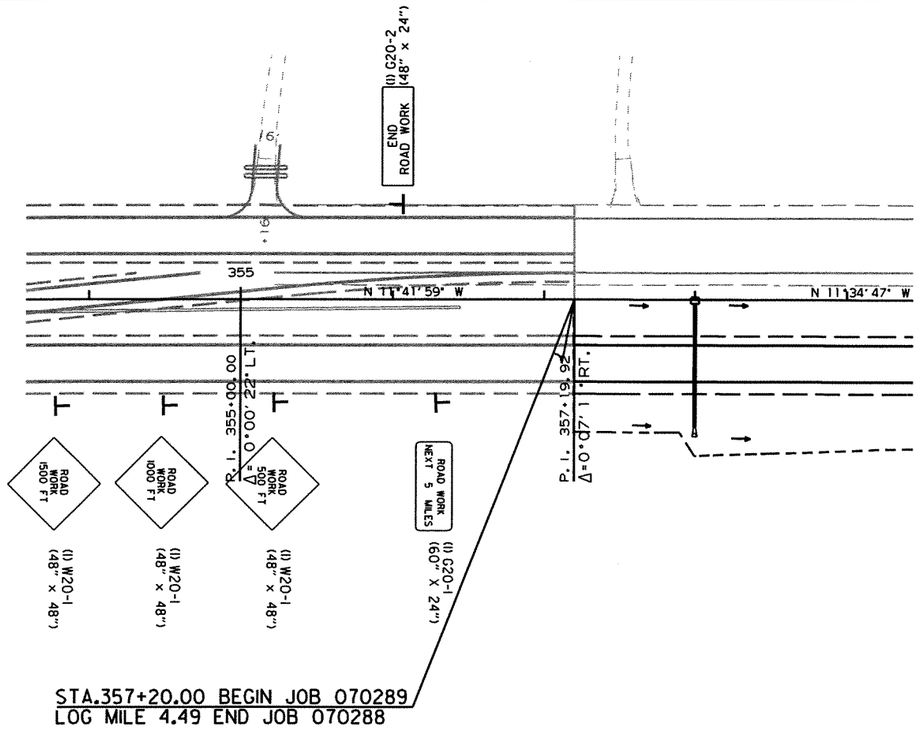
STAGE 3: MAINTAIN N.B. TRAFFIC ON RT. LANE OF RT. MAIN LANES
SHIFT S.B. TRAFFIC TO OUTSIDE LANE OF LT. MAIN LANES
REMOVE TEMPORARY DRIVES
REMOVE TEMPORARY CROSSOVERS
PLACE FINAL 2" OF SURFACE COURSE ON LT. LANE OF RT. MAIN LANES
PLACE FINAL STRIPING ON INSIDE LANE EDGE
SHIFT N.B. TRAFFIC TO LT. LANE OF RT. MAIN LANES
PLACE FINAL 2" OF SURFACE COURSE ON RT. LANE OF RT. MAIN LANES
COMPLETE FINAL STRIPING ON RT. MAIN LANES

R070289.DGN 8/30/2012

ALL STAGES
MAINTENANCE OF TRAFFIC

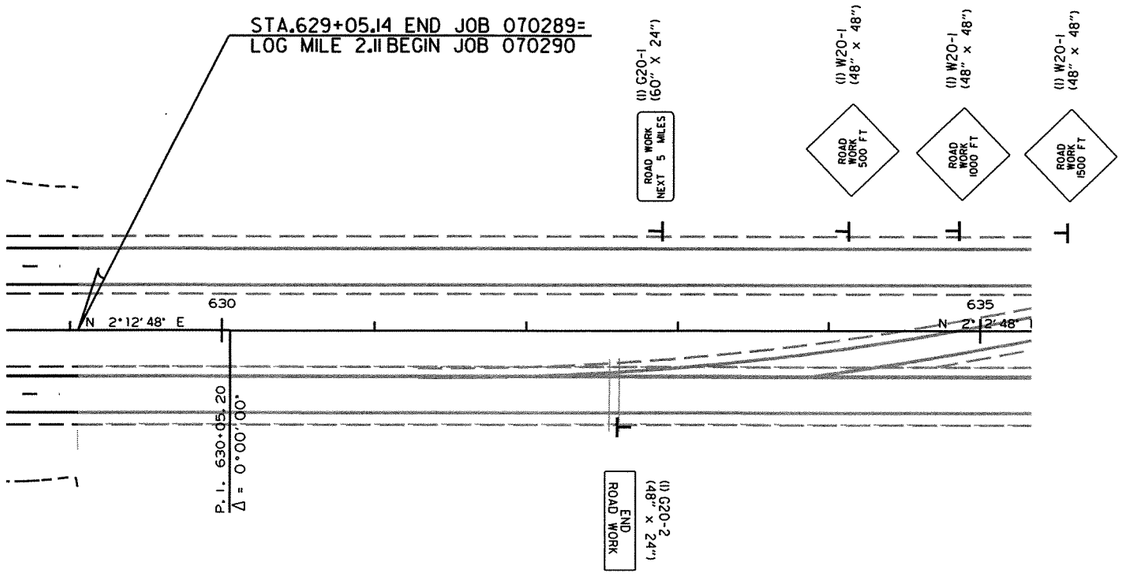
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070289	53	365

(2) MAINTENANCE OF TRAFFIC



STA.357+20.00 BEGIN JOB 070289
LOG MILE 4.49 END JOB 070288

STA.629+05.14 END JOB 070289=
LOG MILE 2.11 BEGIN JOB 070290



SEQUENCE OF CONSTRUCTION:

STAGE 1: MAINTAIN TRAFFIC ON EXISTING LANES
CONSTRUCT DROP INLET & PIPE OUTLET AT STATION 618+00
CONSTRUCT RT. MAIN LANES & STRUCTURES STA. 357+20-620+82
CONSTRUCT LT. MAIN LANES & STRUCTURES STA. 620+82-629+05
OVERLAY THE EXISTING LANES STA. 620+57-623+00
CONSTRUCT RT. MAIN LANES BY METHOD OF RAISING THE GRADE STA. 620+82-629+05

STAGE 2: SHIFT N.B. TRAFFIC TO RT. LANE OF RT. MAIN LANES
CONSTRUCT TEMPORARY CROSSOVER
SHIFT S.B. TRAFFIC TO RT. MAIN LANES
CONSTRUCT LT. MAIN LANES & STRUCTURES STA. 357+20-620+82
PLACE FINAL 2" OF SURFACE COURSE ON LT. MAIN LANES
PLACE FINAL STRIPING ON LT. MAIN LANES

STAGE 3: MAINTAIN N.B. TRAFFIC ON RT. LANE OF RT. MAIN LANES
SHIFT S.B. TRAFFIC TO OUTSIDE LANE OF LT. MAIN LANES
REMOVE TEMPORARY DRIVES
REMOVE TEMPORARY CROSSOVERS
PLACE FINAL 2" OF SURFACE COURSE ON LT. LANE OF RT. MAIN LANES
PLACE FINAL STRIPING ON INSIDE LANE EDGE
SHIFT N.B. TRAFFIC TO LT. LANE OF RT. MAIN LANES
PLACE FINAL 2" OF SURFACE COURSE ON RT. LANE OF RT. MAIN LANES
COMPLETE FINAL STRIPING ON RT. MAIN LANES

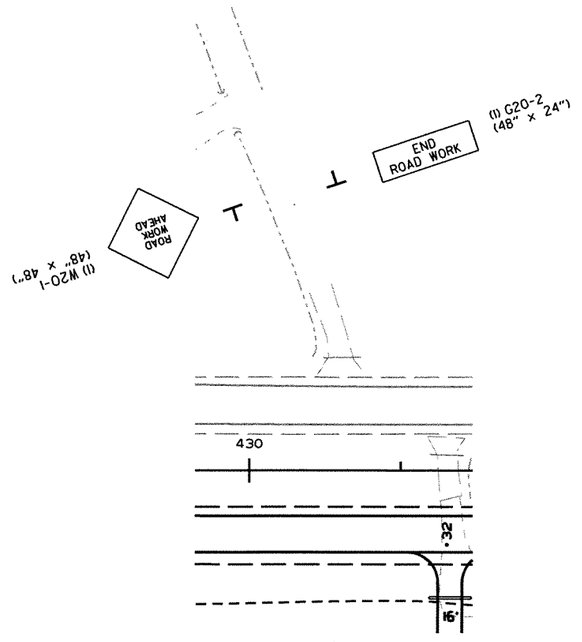
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12

DO NOT PASS (20) R4-1 (24" X 30")

LOW SHOULDER (10) W8-9 (36" X 36")

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

TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.



PLACE AT ALL COUNTY ROADS 6 LOCATIONS

8/30/2012

R070289.DGN

ALL STAGES
MAINTENANCE OF TRAFFIC

SEQUENCE OF CONSTRUCTION:

STAGE 1: MAINTAIN TRAFFIC ON EXISTING LANES
CONSTRUCT DROP INLET & PIPE OUTLET AT STATION 618+00
CONSTRUCT RT. MAIN LANES & STRUCTURES STA. 357+20-620+82
CONSTRUCT LT. MAIN LANES & STRUCTURES STA. 620+82-629+05
OVERLAY THE EXISTING LANES STA. 620+57-623+00
CONSTRUCT RT. MAIN LANES BY METHOD OF RAISING THE GRADE STA. 620+82-629+05

STAGE 2: SHIFT N.B. TRAFFIC TO RT. LANE OF RT. MAIN LANES
CONSTRUCT TEMPORARY CROSSOVER
SHIFT S.B. TRAFFIC TO RT. MAIN LANES
CONSTRUCT LT. MAIN LANES & STRUCTURES STA. 357+20-620+82
PLACE FINAL 2" OF SURFACE COURSE ON LT. MAIN LANES
PLACE FINAL STRIPING ON LT. MAIN LANES

STAGE 3: MAINTAIN N.B. TRAFFIC ON RT. LANE OF RT. MAIN LANES
SHIFT S.B. TRAFFIC TO OUTSIDE LANE OF LT. MAIN LANES
REMOVE TEMPORARY DRIVES
REMOVE TEMPORARY CROSSOVERS
PLACE FINAL 2" OF SURFACE COURSE ON LT. LANE OF RT. MAIN LANES
PLACE FINAL STRIPING ON INSIDE LANE EDGE
SHIFT N.B. TRAFFIC TO LT. LANE OF RT. MAIN LANES
PLACE FINAL 2" OF SURFACE COURSE ON RT. LANE OF RT. MAIN LANES
COMPLETE FINAL STRIPING ON RT. MAIN LANES

TRAFFIC DRUMS
STA. 357+00.00 TO STA. 455+00.00 = 172 EACH (50' O.C. LT.)
STA. 460+50.00 TO STA. 465+00.00 = 10 EACH (50' O.C. LT.)
STA. 469+90.00 TO STA. 492+40.00 = 46 EACH (50' O.C. LT.)
STA. 537+50.00 TO STA. 621+40.00 = 134 EACH (50' O.C. LT.)
STA. 621+90.00 TO STA. 629+05.00 = 7 EACH (50' O.C. RT.)
STA. 357+20 TO STA. 620+82 = 109 EACH (20' O.C. FOR DRIVES RT.)
STA. 620+00 TO STA. 629+05 = 11 EACH (20' O.C. FOR DRIVES LT.)
STA. 357+20 TO STA. 620+82 = 12 EACH (20' O.C. FOR COUNTY ROADS RT.)

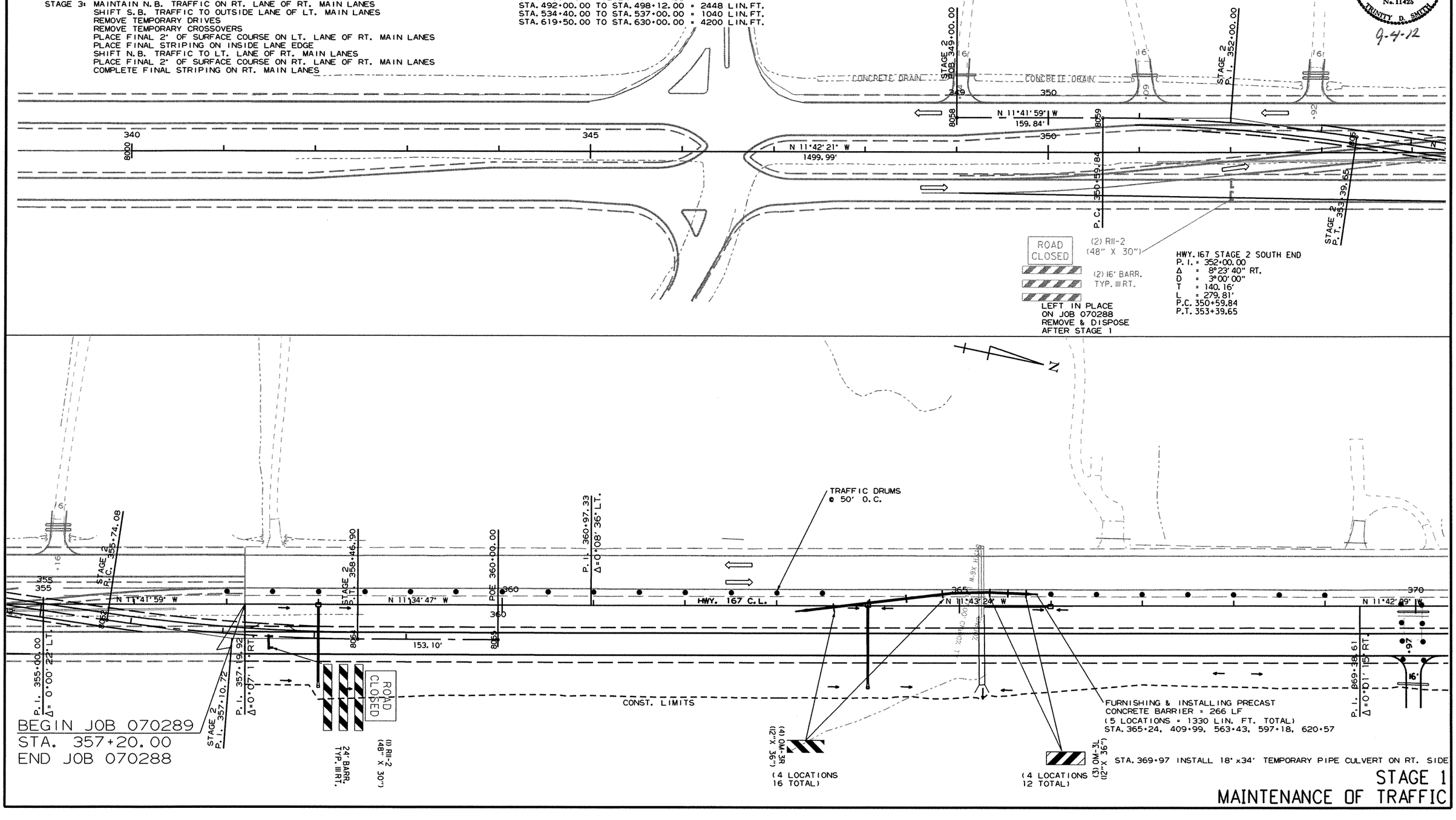
VERTICAL PANELS
STA. 492+50.00 TO STA. 495+00.00 = 5 EACH (50' O.C. LT.)
STA. 501+50.00 TO STA. 509+50.00 = 16 EACH (50' O.C. LT.)
STA. 520+00.00 TO STA. 531+50.00 = 23 EACH (50' O.C. LT.)
STA. 536+40.00 TO STA. 536+90.00 = 1 EACH (50' O.C. LT.)

CONSTRUCTION PAVEMENT MARKINGS
STA. 492+00.00 TO STA. 498+12.00 = 2448 LIN. FT.
STA. 534+40.00 TO STA. 537+00.00 = 1040 LIN. FT.
STA. 619+50.00 TO STA. 630+00.00 = 4200 LIN. FT.

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				JOB NO.		070289	54	365

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12



STAGE 1 MAINTENANCE OF TRAFFIC

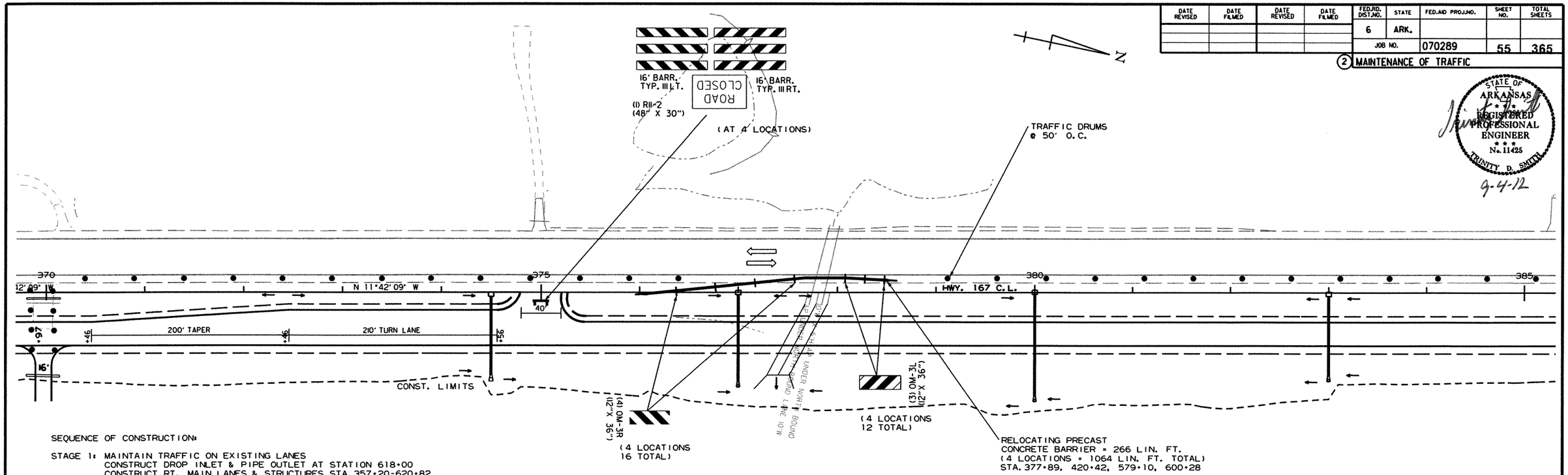
8/30/2012

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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.		070289	55	365

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12

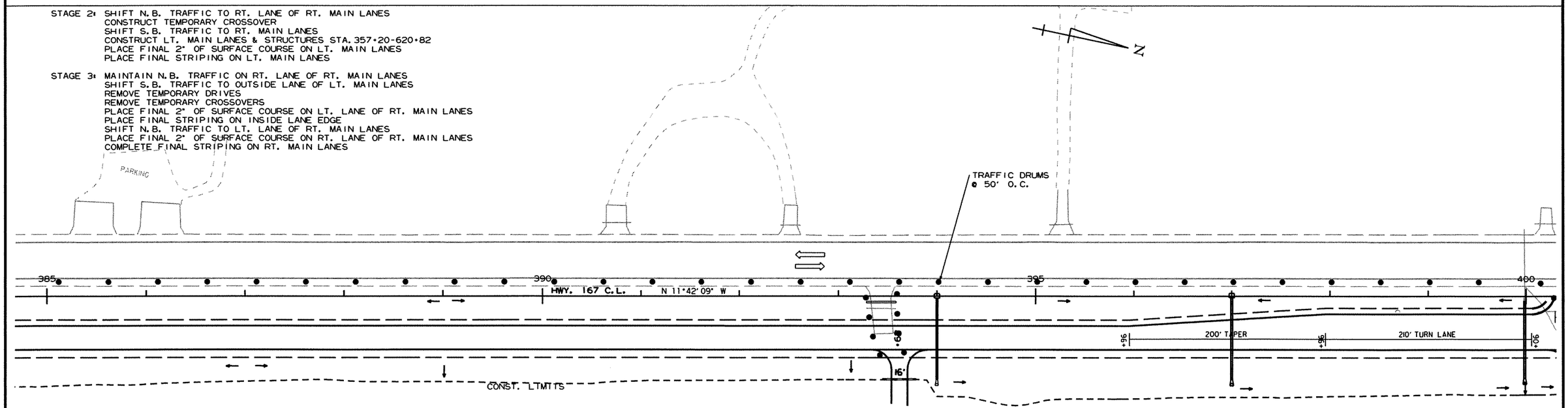


SEQUENCE OF CONSTRUCTION:

STAGE 1: MAINTAIN TRAFFIC ON EXISTING LANES
CONSTRUCT DROP INLET & PIPE OUTLET AT STATION 618+00
CONSTRUCT RT. MAIN LANES & STRUCTURES STA. 357+20-620+82
CONSTRUCT LT. MAIN LANES & STRUCTURES STA. 620+82-629+05
OVERLAY THE EXISTING LANES STA. 620+57-623+00
CONSTRUCT RT. MAIN LANES BY METHOD OF RAISING THE GRADE STA. 620+82-629+05

STAGE 2: SHIFT N.B. TRAFFIC TO RT. LANE OF RT. MAIN LANES
CONSTRUCT TEMPORARY CROSSOVER
SHIFT S.B. TRAFFIC TO RT. MAIN LANES
CONSTRUCT LT. MAIN LANES & STRUCTURES STA. 357+20-620+82
PLACE FINAL 2" OF SURFACE COURSE ON LT. MAIN LANES
PLACE FINAL STRIPING ON LT. MAIN LANES

STAGE 3: MAINTAIN N.B. TRAFFIC ON RT. LANE OF RT. MAIN LANES
SHIFT S.B. TRAFFIC TO OUTSIDE LANE OF LT. MAIN LANES
REMOVE TEMPORARY DRIVES
REMOVE TEMPORARY CROSSOVERS
PLACE FINAL 2" OF SURFACE COURSE ON LT. LANE OF RT. MAIN LANES
PLACE FINAL STRIPING ON INSIDE LANE EDGE
SHIFT N.B. TRAFFIC TO LT. LANE OF RT. MAIN LANES
PLACE FINAL 2" OF SURFACE COURSE ON RT. LANE OF RT. MAIN LANES
COMPLETE FINAL STRIPING ON RT. MAIN LANES



STA. 393+62 INSTALL 18"x30' TEMPORARY PIPE CULVERT ON RT. SIDE

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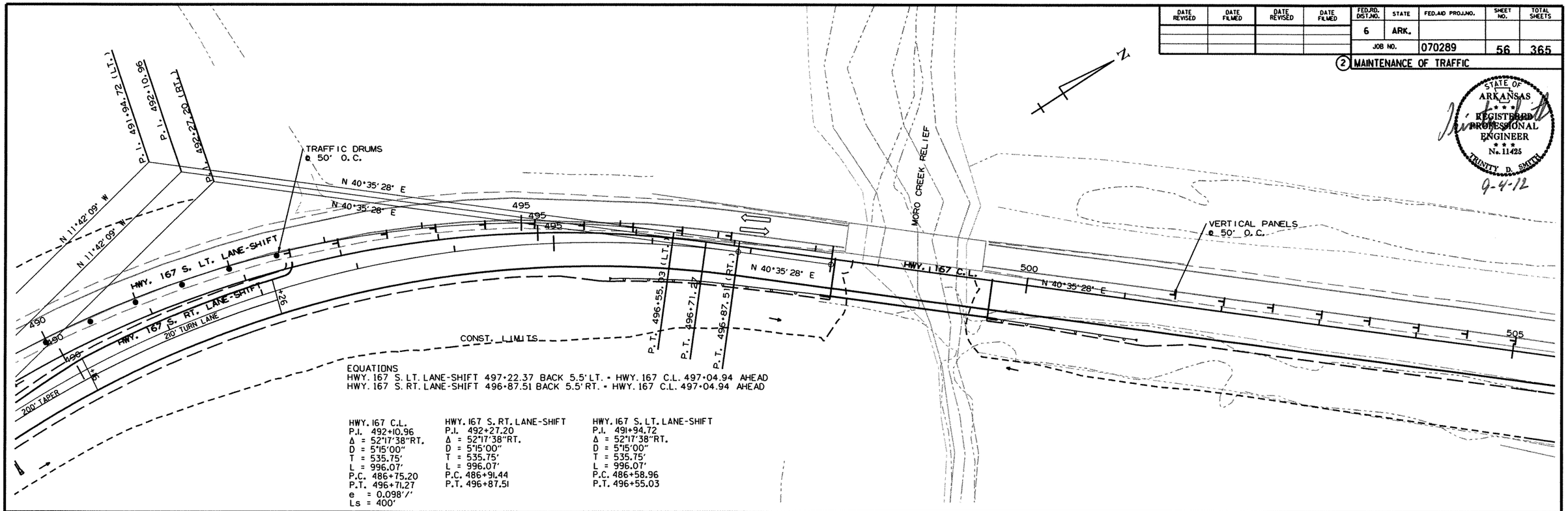
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STAGE 1
MAINTENANCE OF TRAFFIC

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
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(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12



EQUATIONS
HWY. 167 S. LT. LANE-SHIFT 497+22.37 BACK 5.5' LT. = HWY. 167 C.L. 497+04.94 AHEAD
HWY. 167 S. RT. LANE-SHIFT 496+87.51 BACK 5.5' RT. = HWY. 167 C.L. 497+04.94 AHEAD

HWY. 167 C.L.
P.I. 492+10.96
Δ = 52°17'38"RT.
D = 5°15'00"
T = 535.75'
L = 996.07'
P.C. 486+75.20
P.T. 496+71.27
e = 0.098'/'
Ls = 400'

HWY. 167 S. RT. LANE-SHIFT
P.I. 492+27.20
Δ = 52°17'38"RT.
D = 5°15'00"
T = 535.75'
L = 996.07'
P.C. 486+91.44
P.T. 496+87.51

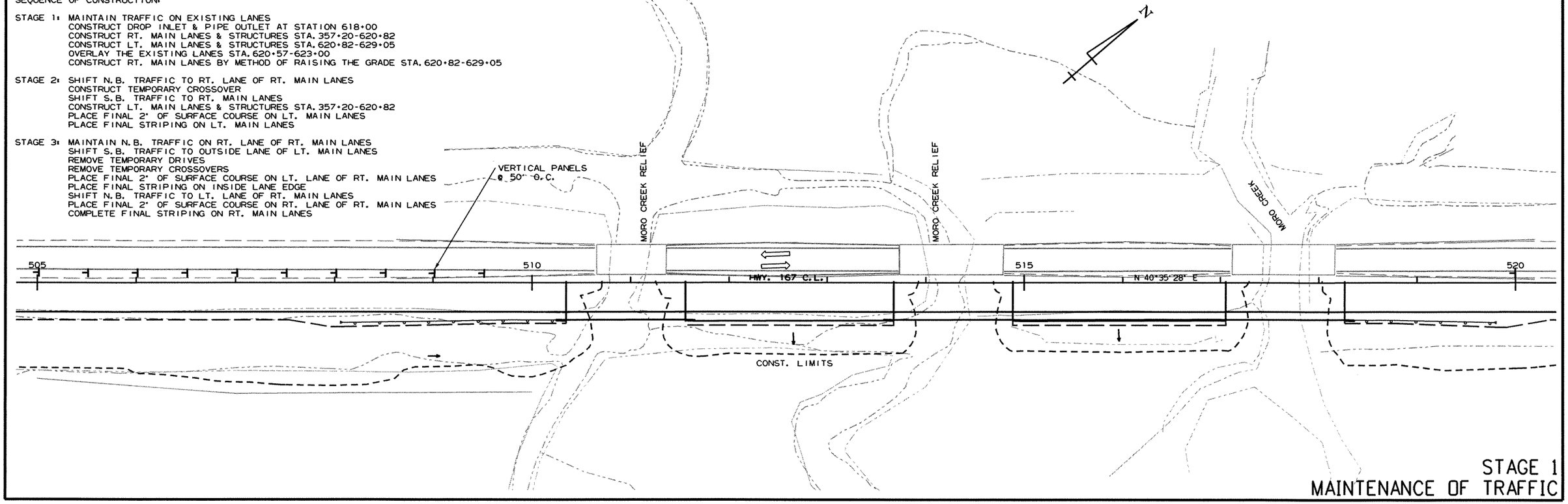
HWY. 167 S. LT. LANE-SHIFT
P.I. 491+94.72
Δ = 52°17'38"RT.
D = 5°15'00"
T = 535.75'
L = 996.07'
P.C. 486+58.96
P.T. 496+55.03

SEQUENCE OF CONSTRUCTION:

STAGE 1: MAINTAIN TRAFFIC ON EXISTING LANES
CONSTRUCT DROP INLET & PIPE OUTLET AT STATION 618+00
CONSTRUCT RT. MAIN LANES & STRUCTURES STA. 357+20-620+82
CONSTRUCT LT. MAIN LANES & STRUCTURES STA. 620+82-629+05
OVERLAY THE EXISTING LANES STA. 620+57-623+00
CONSTRUCT RT. MAIN LANES BY METHOD OF RAISING THE GRADE STA. 620+82-629+05

STAGE 2: SHIFT N.B. TRAFFIC TO RT. LANE OF RT. MAIN LANES
CONSTRUCT TEMPORARY CROSSOVER
SHIFT S.B. TRAFFIC TO RT. MAIN LANES
CONSTRUCT LT. MAIN LANES & STRUCTURES STA. 357+20-620+82
PLACE FINAL 2" OF SURFACE COURSE ON LT. MAIN LANES
PLACE FINAL STRIPING ON LT. MAIN LANES

STAGE 3: MAINTAIN N.B. TRAFFIC ON RT. LANE OF RT. MAIN LANES
SHIFT S.B. TRAFFIC TO OUTSIDE LANE OF LT. MAIN LANES
REMOVE TEMPORARY DRIVES
REMOVE TEMPORARY CROSSOVERS
PLACE FINAL 2" OF SURFACE COURSE ON LT. LANE OF RT. MAIN LANES
PLACE FINAL STRIPING ON INSIDE LANE EDGE
SHIFT N.B. TRAFFIC TO LT. LANE OF RT. MAIN LANES
PLACE FINAL 2" OF SURFACE COURSE ON RT. LANE OF RT. MAIN LANES
COMPLETE FINAL STRIPING ON RT. MAIN LANES



STAGE 1
MAINTENANCE OF TRAFFIC

8/30/2012

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				6	ARK.			
				JOB NO.		070289	57	365

(2) MAINTENANCE OF TRAFFIC

SEQUENCE OF CONSTRUCTION:

STAGE 1: MAINTAIN TRAFFIC ON EXISTING LANES
CONSTRUCT DROP INLET & PIPE OUTLET AT STATION 618+00
CONSTRUCT RT. MAIN LANES & STRUCTURES STA. 357+20-620+82
CONSTRUCT LT. MAIN LANES & STRUCTURES STA. 620+82-629+05
OVERLAY THE EXISTING LANES STA. 620+57-623+00
CONSTRUCT RT. MAIN LANES BY METHOD OF RAISING THE GRADE STA. 620+82-629+05

STAGE 2: SHIFT N.B. TRAFFIC TO RT. LANE OF RT. MAIN LANES
CONSTRUCT TEMPORARY CROSSOVER
SHIFT S.B. TRAFFIC TO RT. MAIN LANES
CONSTRUCT LT. MAIN LANES & STRUCTURES STA. 357+20-620+82
PLACE FINAL 2" OF SURFACE COURSE ON LT. MAIN LANES
PLACE FINAL STRIPING ON LT. MAIN LANES

STAGE 3: MAINTAIN N.B. TRAFFIC ON RT. LANE OF RT. MAIN LANES
SHIFT S.B. TRAFFIC TO OUTSIDE LANE OF LT. MAIN LANES
REMOVE TEMPORARY DRIVES
REMOVE TEMPORARY CROSSOVERS
PLACE FINAL 2" OF SURFACE COURSE ON LT. LANE OF RT. MAIN LANES
PLACE FINAL STRIPING ON INSIDE LANE EDGE
SHIFT N.B. TRAFFIC TO LT. LANE OF RT. MAIN LANES
PLACE FINAL 2" OF SURFACE COURSE ON RT. LANE OF RT. MAIN LANES
COMPLETE FINAL STRIPING ON RT. MAIN LANES

STATE OF ARKANSAS
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No. 11425
TRINITY D. SMITH
9-4-12

VERTICAL PANELS @ 50' O.C.

MORO CREEK RELIEF

520 525 530 535

HWY. 167 C.L.

N 40°35'28" E

N 40°35'

CONST. LIMITS

EQUATIONS
HWY. 167 C.L. 535+00.00 BACK = HWY. 167 N. LT. LANE-SHIFT 535+00.00 AHEAD 5.50' LT.
HWY. 167 C.L. 535+00.00 BACK = HWY. 167 N. RT. LANE-SHIFT 535+00.00 AHEAD 5.50' RT.
HWY. 167 N. LT. LANE-SHIFT 544+65.88 BACK 30' LT. = HWY. 167 C.L. 544+80.26 AHEAD
HWY. 167 N. RT. LANE-SHIFT 544+94.64 BACK 30' RT. = HWY. 167 C.L. 544+80.26 AHEAD

HWY. 167 N. LT. LANE-SHIFT
P.I. 540+21.80
Δ = 44°06'10" LT.
D = 5°15'00"
T = 442.07'
L = 840.05'
P.C. 535+79.72
P.T. 544+19.77

HWY. 167 N. RT. LANE-SHIFT
P.I. 540+96.66
Δ = 44°06'10" LT.
D = 5°15'00"
T = 442.07'
L = 840.05'
P.C. 536+54.59
P.T. 544+94.64

HWY. 167 C.L.
P.I. 540+59.23
Δ = 44°06'10" LT.
D = 5°15'00"
T = 422.07'
L = 840.05'
P.C. 536+17.16
P.T. 544+57.21
e = 0.098'/'
Ls = 400'

N

535 @ N 40°35'28" E
P.C. 535+79.72 (LT.)
P.C. 536+17.16
P.C. 536+54.59 (RT.)
VERTICAL PANELS @ 50' O.C.

HWY. 167 N. LT. LANE-SHIFT
HWY. 167 N. RT. LANE-SHIFT
HWY. 167 C.L.
N 3°30'41" W

P.T. 544+19.77 (LT.)
P.T. 544+57.21
P.T. 544+94.64 (RT.)
POE 544+85.62 (LT.)
POE 545+14.38 (RT.)

TRAFFIC DRUMS @ 50' O.C.

15 TRAFFIC DRUMS @ 20' O.C.
(5 LOCATIONS = 75 EACH)
120' 40' 120'

540 545 550

P.I. 540+21.80 (LT.)
P.I. 540+59.23
P.I. 540+96.66 (RT.)

CONST. LIMITS

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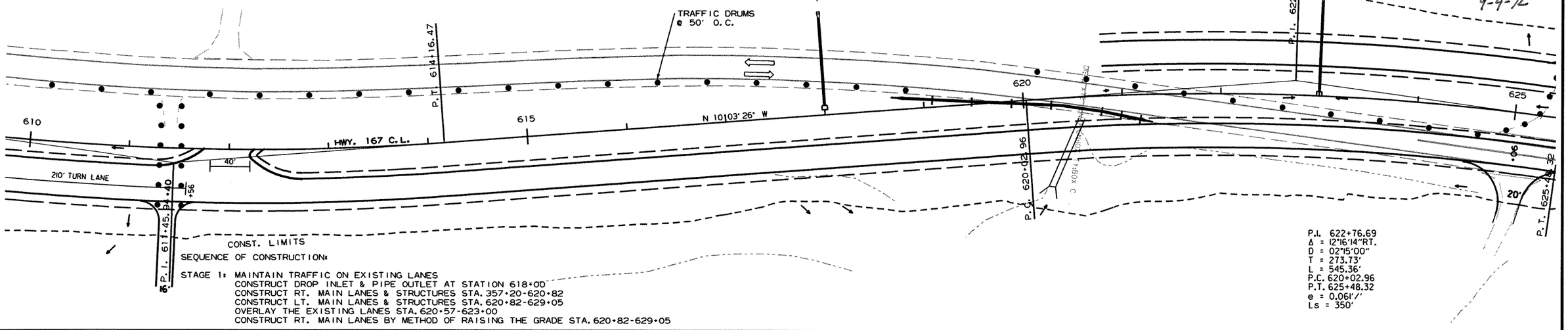
STAGE 1
MAINTENANCE OF TRAFFIC

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) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12

P.I. 611+45.94
Δ = 12°13'14"LT.
D = 02°15'00"
T = 272.60'
L = 543.13'
P.C. 608+73.34
P.T. 614+16.47
e = 0.061'/'
Ls = 350'



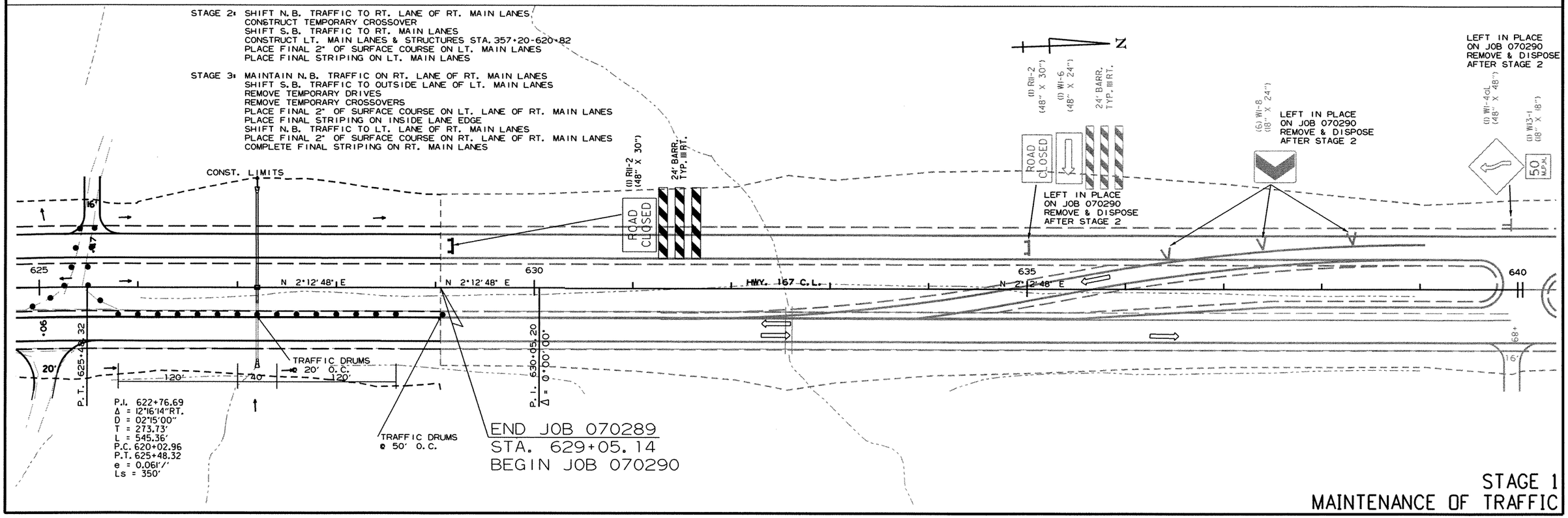
P.I. 622+76.69
Δ = 12°16'14"RT.
D = 02°15'00"
T = 273.73'
L = 545.36'
P.C. 620+02.96
P.T. 625+48.32
e = 0.061'/'
Ls = 350'

SEQUENCE OF CONSTRUCTION:

STAGE 1: MAINTAIN TRAFFIC ON EXISTING LANES
CONSTRUCT DROP INLET & PIPE OUTLET AT STATION 618+00
CONSTRUCT RT. MAIN LANES & STRUCTURES STA. 357+20-620+82
CONSTRUCT LT. MAIN LANES & STRUCTURES STA. 620+82-629+05
OVERLAY THE EXISTING LANES STA. 620+57-623+00
CONSTRUCT RT. MAIN LANES BY METHOD OF RAISING THE GRADE STA. 620+82-629+05

STAGE 2: SHIFT N.B. TRAFFIC TO RT. LANE OF RT. MAIN LANES
CONSTRUCT TEMPORARY CROSSOVER
SHIFT S.B. TRAFFIC TO RT. MAIN LANES
CONSTRUCT LT. MAIN LANES & STRUCTURES STA. 357+20-620+82
PLACE FINAL 2" OF SURFACE COURSE ON LT. MAIN LANES
PLACE FINAL STRIPING ON LT. MAIN LANES

STAGE 3: MAINTAIN N.B. TRAFFIC ON RT. LANE OF RT. MAIN LANES
SHIFT S.B. TRAFFIC TO OUTSIDE LANE OF LT. MAIN LANES
REMOVE TEMPORARY DRIVES
REMOVE TEMPORARY CROSSOVERS
PLACE FINAL 2" OF SURFACE COURSE ON LT. LANE OF RT. MAIN LANES
PLACE FINAL STRIPING ON INSIDE LANE EDGE
SHIFT N.B. TRAFFIC TO LT. LANE OF RT. MAIN LANES
PLACE FINAL 2" OF SURFACE COURSE ON RT. LANE OF RT. MAIN LANES
COMPLETE FINAL STRIPING ON RT. MAIN LANES



STAGE 1
MAINTENANCE OF TRAFFIC

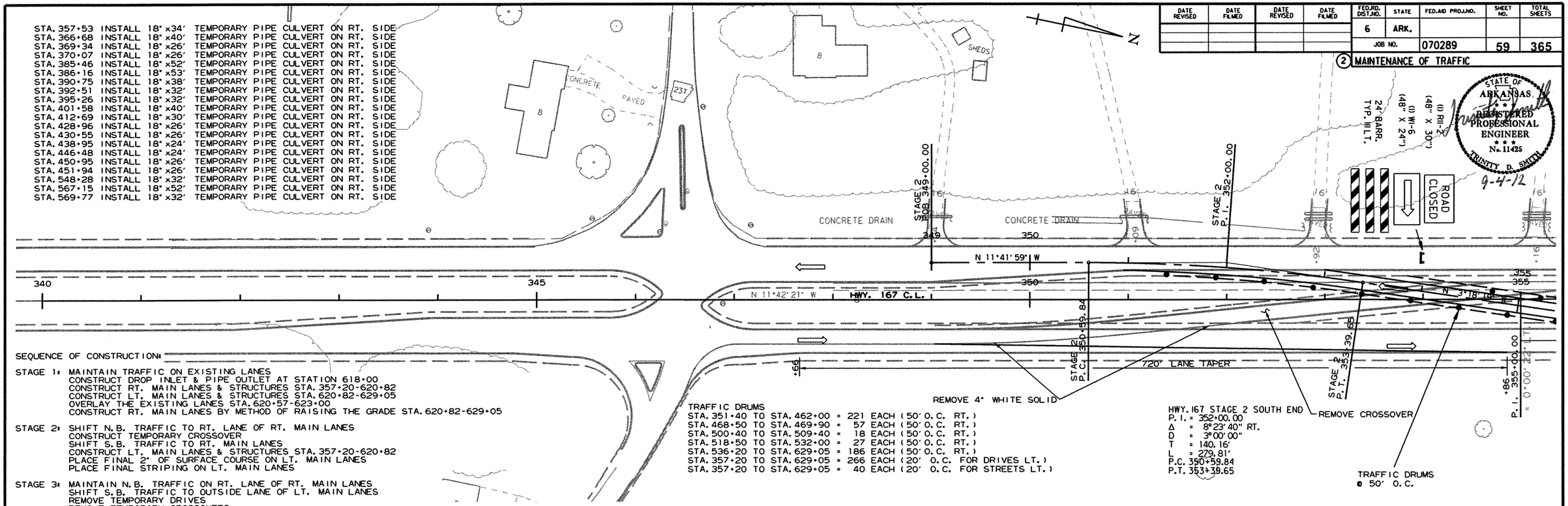
8/30/2012

R070289.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.		070289	59	365

(2) MAINTENANCE OF TRAFFIC

STA. 357+53 INSTALL 18" x34' TEMPORARY PIPE CULVERT ON RT. SIDE
STA. 366+68 INSTALL 18" x40' TEMPORARY PIPE CULVERT ON RT. SIDE
STA. 369+34 INSTALL 18" x26' TEMPORARY PIPE CULVERT ON RT. SIDE
STA. 370+07 INSTALL 18" x26' TEMPORARY PIPE CULVERT ON RT. SIDE
STA. 385+46 INSTALL 18" x52' TEMPORARY PIPE CULVERT ON RT. SIDE
STA. 386+16 INSTALL 18" x53' TEMPORARY PIPE CULVERT ON RT. SIDE
STA. 390+75 INSTALL 18" x38' TEMPORARY PIPE CULVERT ON RT. SIDE
STA. 392+51 INSTALL 18" x32' TEMPORARY PIPE CULVERT ON RT. SIDE
STA. 395+26 INSTALL 18" x32' TEMPORARY PIPE CULVERT ON RT. SIDE
STA. 401+58 INSTALL 18" x40' TEMPORARY PIPE CULVERT ON RT. SIDE
STA. 412+69 INSTALL 18" x30' TEMPORARY PIPE CULVERT ON RT. SIDE
STA. 428+96 INSTALL 18" x26' TEMPORARY PIPE CULVERT ON RT. SIDE
STA. 430+55 INSTALL 18" x26' TEMPORARY PIPE CULVERT ON RT. SIDE
STA. 438+95 INSTALL 18" x24' TEMPORARY PIPE CULVERT ON RT. SIDE
STA. 446+48 INSTALL 18" x24' TEMPORARY PIPE CULVERT ON RT. SIDE
STA. 450+95 INSTALL 18" x26' TEMPORARY PIPE CULVERT ON RT. SIDE
STA. 451+94 INSTALL 18" x26' TEMPORARY PIPE CULVERT ON RT. SIDE
STA. 548+28 INSTALL 18" x32' TEMPORARY PIPE CULVERT ON RT. SIDE
STA. 567+15 INSTALL 18" x52' TEMPORARY PIPE CULVERT ON RT. SIDE
STA. 569+77 INSTALL 18" x32' TEMPORARY PIPE CULVERT ON RT. SIDE



SEQUENCE OF CONSTRUCTION:

STAGE 1: MAINTAIN TRAFFIC ON EXISTING LANES
CONSTRUCT DROP INLET & PIPE OUTLET AT STATION 618+00
CONSTRUCT RT. MAIN LANES & STRUCTURES STA. 357+20-620+82
CONSTRUCT LT. MAIN LANES & STRUCTURES STA. 620+82-629+05
OVERLAY THE EXISTING LANES STA. 620+57-623+00
CONSTRUCT RT. MAIN LANES BY METHOD OF RAISING THE GRADE STA. 620+82-629+05

STAGE 2: SHIFT N.B. TRAFFIC TO RT. LANE OF RT. MAIN LANES
CONSTRUCT TEMPORARY CROSSOVER
SHIFT S.B. TRAFFIC TO RT. MAIN LANES
CONSTRUCT LT. MAIN LANES & STRUCTURES STA. 357+20-620+82
PLACE FINAL 2" OF SURFACE COURSE ON LT. MAIN LANES
PLACE FINAL STRIPING ON LT. MAIN LANES

STAGE 3: MAINTAIN N.B. TRAFFIC ON RT. LANE OF RT. MAIN LANES
SHIFT S.B. TRAFFIC TO OUTSIDE LANE OF LT. MAIN LANES
REMOVE TEMPORARY DRIVES
REMOVE TEMPORARY CROSSOVERS
PLACE FINAL 2" OF SURFACE COURSE ON LT. LANE OF RT. MAIN LANES
PLACE FINAL STRIPING ON INSIDE LANE EDGE
SHIFT N.B. TRAFFIC TO LT. LANE OF RT. MAIN LANES
PLACE FINAL 2" OF SURFACE COURSE ON RT. LANE OF RT. MAIN LANES
COMPLETE FINAL STRIPING ON RT. MAIN LANES

TRAFFIC DRUMS
STA. 351+40 TO STA. 462+00 = 221 EACH (50' O.C. RT.)
STA. 468+50 TO STA. 469+90 = 57 EACH (50' O.C. RT.)
STA. 500+40 TO STA. 509+40 = 18 EACH (50' O.C. RT.)
STA. 518+50 TO STA. 532+00 = 27 EACH (50' O.C. RT.)
STA. 536+20 TO STA. 629+05 = 186 EACH (50' O.C. RT.)
STA. 357+20 TO STA. 629+05 = 266 EACH (20' O.C. FOR DRIVES LT.)
STA. 357+20 TO STA. 629+05 = 40 EACH (20' O.C. FOR STREETS LT.)

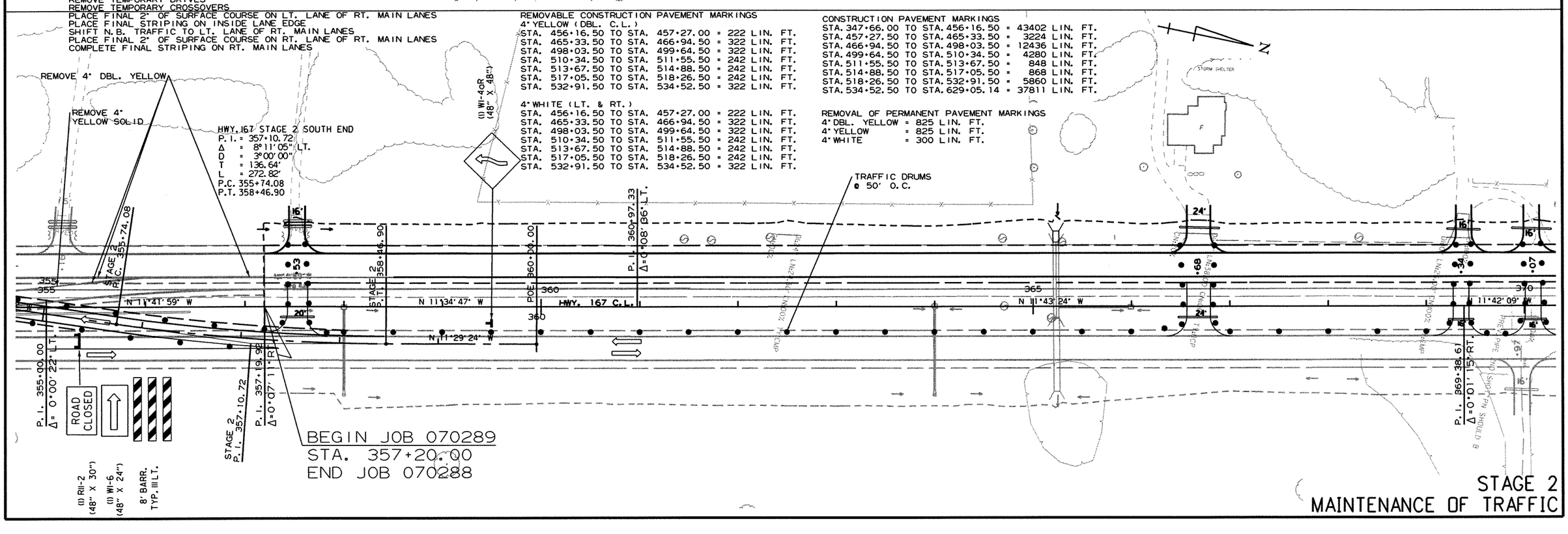
HWY. 167 STAGE 2 SOUTH END
P.I. = 352+00.00
Δ = 8°23'40" RT.
D = 3°00'00"
T = 140.16'
L = 279.81'
P.C. 350+59.84
P.T. 353+39.65

REMOVABLE CONSTRUCTION PAVEMENT MARKINGS
4" YELLOW (DBL. C.L.)
STA. 456+16.50 TO STA. 457+27.00 = 222 LIN. FT.
STA. 465+33.50 TO STA. 466+94.50 = 322 LIN. FT.
STA. 498+03.50 TO STA. 499+64.50 = 322 LIN. FT.
STA. 510+34.50 TO STA. 511+55.50 = 242 LIN. FT.
STA. 513+67.50 TO STA. 514+88.50 = 242 LIN. FT.
STA. 517+05.50 TO STA. 518+26.50 = 242 LIN. FT.
STA. 532+91.50 TO STA. 534+52.50 = 322 LIN. FT.

4" WHITE (LT. & RT.)
STA. 456+16.50 TO STA. 457+27.00 = 222 LIN. FT.
STA. 465+33.50 TO STA. 466+94.50 = 322 LIN. FT.
STA. 498+03.50 TO STA. 499+64.50 = 322 LIN. FT.
STA. 510+34.50 TO STA. 511+55.50 = 242 LIN. FT.
STA. 513+67.50 TO STA. 514+88.50 = 242 LIN. FT.
STA. 517+05.50 TO STA. 518+26.50 = 242 LIN. FT.
STA. 532+91.50 TO STA. 534+52.50 = 322 LIN. FT.

CONSTRUCTION PAVEMENT MARKINGS
STA. 347+66.00 TO STA. 456+16.50 = 43402 LIN. FT.
STA. 457+27.50 TO STA. 465+33.50 = 3224 LIN. FT.
STA. 466+94.50 TO STA. 498+03.50 = 12436 LIN. FT.
STA. 499+64.50 TO STA. 510+34.50 = 4280 LIN. FT.
STA. 511+55.50 TO STA. 513+67.50 = 848 LIN. FT.
STA. 514+88.50 TO STA. 517+05.50 = 868 LIN. FT.
STA. 518+26.50 TO STA. 532+91.50 = 5860 LIN. FT.
STA. 534+52.50 TO STA. 629+05.14 = 37811 LIN. FT.

REMOVAL OF PERMANENT PAVEMENT MARKINGS
4" DBL. YELLOW = 825 LIN. FT.
4" YELLOW = 825 LIN. FT.
4" WHITE = 300 LIN. FT.



STAGE 2 MAINTENANCE OF TRAFFIC

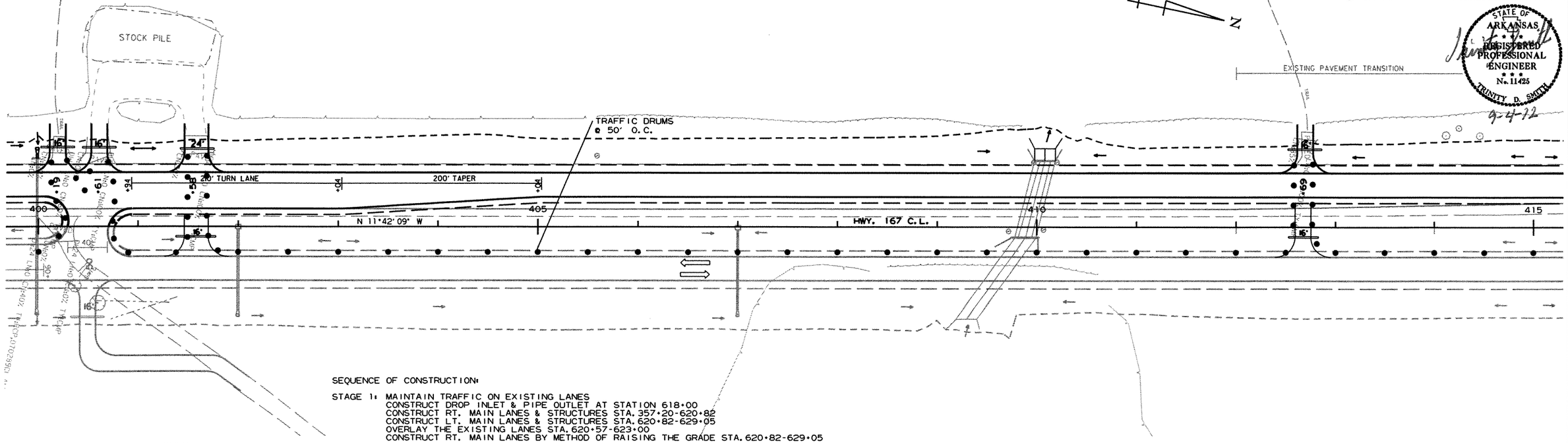
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				6	ARK.			
				JOB NO.		070289	60	365

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12

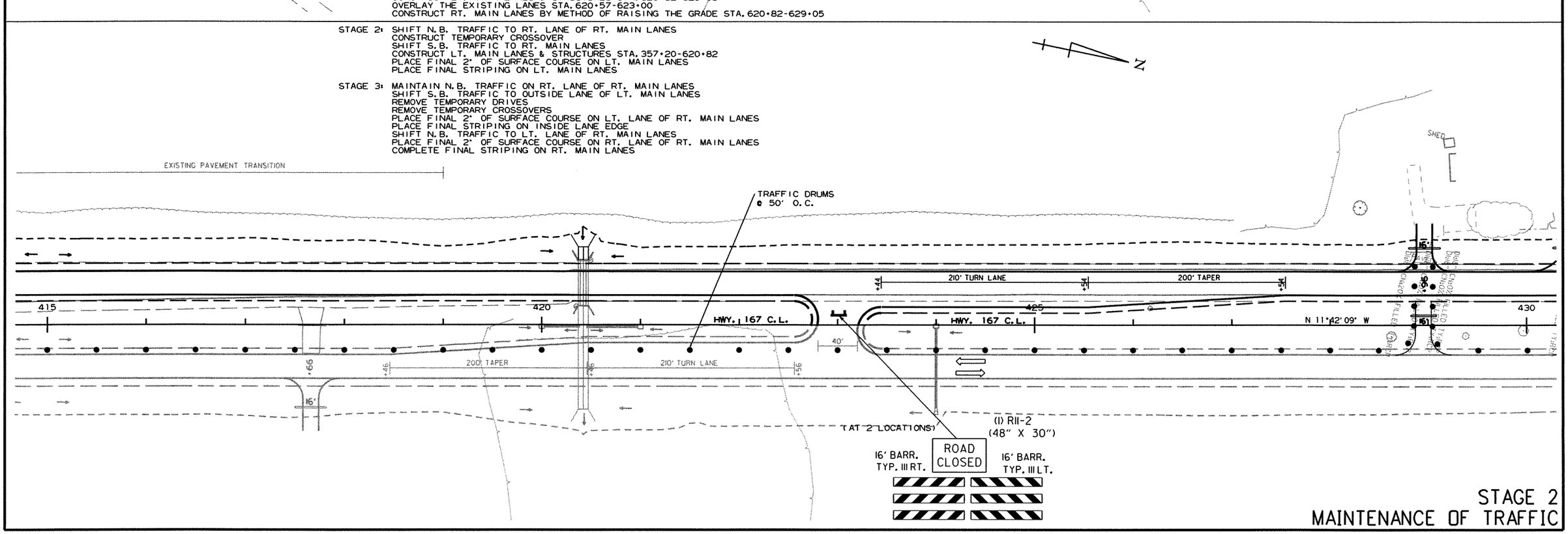


SEQUENCE OF CONSTRUCTION:

STAGE 1: MAINTAIN TRAFFIC ON EXISTING LANES
CONSTRUCT DROP INLET & PIPE OUTLET AT STATION 618+00
CONSTRUCT RT. MAIN LANES & STRUCTURES STA. 357+20-620+82
CONSTRUCT LT. MAIN LANES & STRUCTURES STA. 620+82-629+05
OVERLAY THE EXISTING LANES STA. 620+57-623+00
CONSTRUCT RT. MAIN LANES BY METHOD OF RAISING THE GRADE STA. 620+82-629+05

STAGE 2: SHIFT N.B. TRAFFIC TO RT. LANE OF RT. MAIN LANES
CONSTRUCT TEMPORARY CROSSOVER
SHIFT S.B. TRAFFIC TO RT. MAIN LANES
CONSTRUCT LT. MAIN LANES & STRUCTURES STA. 357+20-620+82
PLACE FINAL 2" OF SURFACE COURSE ON LT. MAIN LANES
PLACE FINAL STRIPING ON LT. MAIN LANES

STAGE 3: MAINTAIN N.B. TRAFFIC ON RT. LANE OF RT. MAIN LANES
SHIFT S.B. TRAFFIC TO OUTSIDE LANE OF LT. MAIN LANES
REMOVE TEMPORARY DRIVES
REMOVE TEMPORARY CROSSOVERS
PLACE FINAL 2" OF SURFACE COURSE ON LT. LANE OF RT. MAIN LANES
PLACE FINAL STRIPING ON INSIDE LANE EDGE
SHIFT N.B. TRAFFIC TO LT. LANE OF RT. MAIN LANES
PLACE FINAL 2" OF SURFACE COURSE ON RT. LANE OF RT. MAIN LANES
COMPLETE FINAL STRIPING ON RT. MAIN LANES



STAGE 2
MAINTENANCE OF TRAFFIC

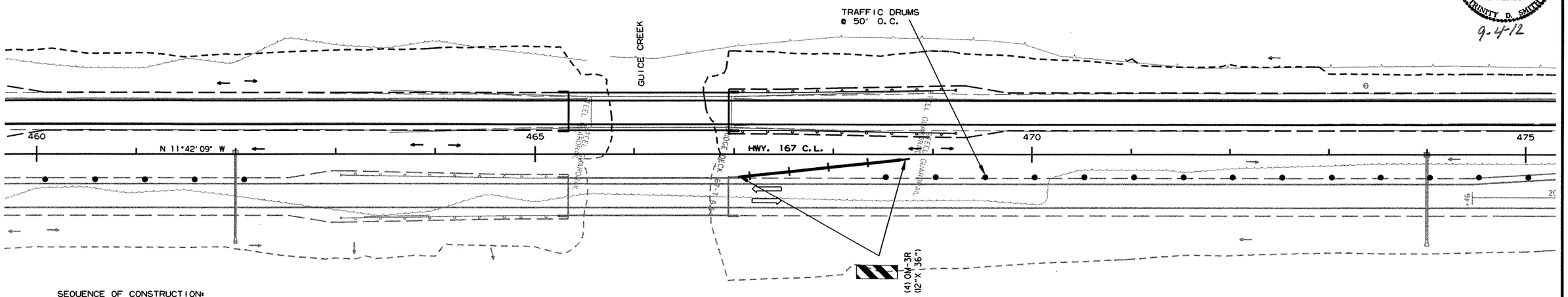
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				6	ARK.			
				JOB NO.		070289	61	365

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12



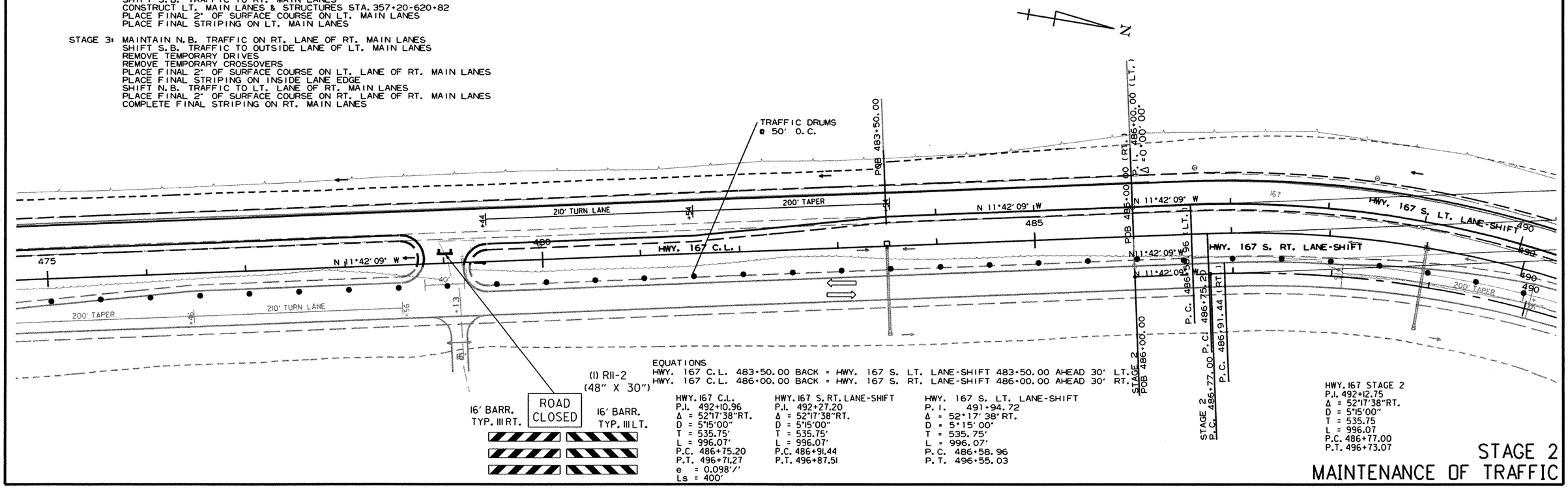
SEQUENCE OF CONSTRUCTION:

STAGE 1: MAINTAIN TRAFFIC ON EXISTING LANES
CONSTRUCT DROP INLET & PIPE OUTLET AT STATION 618+00
CONSTRUCT RT. MAIN LANES & STRUCTURES STA. 357+20-620+82
CONSTRUCT LT. MAIN LANES & STRUCTURES STA. 620+82-629+05
OVERLAY THE EXISTING LANES STA. 620+57-623+00
CONSTRUCT RT. MAIN LANES BY METHOD OF RAISING THE GRADE STA. 620+82-629+05

STAGE 2: SHIFT N.B. TRAFFIC TO RT. LANE OF RT. MAIN LANES
CONSTRUCT TEMPORARY CROSSOVER
SHIFT S.B. TRAFFIC TO RT. MAIN LANES
CONSTRUCT LT. MAIN LANES & STRUCTURES STA. 357+20-620+82
PLACE FINAL 2" OF SURFACE COURSE ON LT. MAIN LANES
PLACE FINAL STRIPING ON LT. MAIN LANES

STAGE 3: MAINTAIN N.B. TRAFFIC ON RT. LANE OF RT. MAIN LANES
SHIFT S.B. TRAFFIC TO OUTSIDE LANE OF LT. MAIN LANES
REMOVE TEMPORARY DRIVES
REMOVE TEMPORARY CROSSOVERS
PLACE FINAL 2" OF SURFACE COURSE ON LT. LANE OF RT. MAIN LANES
PLACE FINAL STRIPING ON INSIDE LANE EDGE
SHIFT N.B. TRAFFIC TO LT. LANE OF RT. MAIN LANES
PLACE FINAL 2" OF SURFACE COURSE ON RT. LANE OF RT. MAIN LANES
COMPLETE FINAL STRIPING ON RT. MAIN LANES

RELOCATING PRECAST CONCRETE BARRIER = 173 LIN. FT.
(2 LOCATIONS = 346 LIN.FT.)
STA. 458+00 & 467+00



EQUATIONS
HWY. 167 C.L. 483+50.00 BACK = HWY. 167 S. LT. LANE-SHIFT 483+50.00 AHEAD 30' LT.
HWY. 167 C.L. 486+00.00 BACK = HWY. 167 S. RT. LANE-SHIFT 486+00.00 AHEAD 30' RT.

HWY. 167 C.L.
P.I. 492+10.96
Δ = 52°17'38"RT.
D = 5°15'00"
T = 535.75'
L = 996.07'
P.C. 486+75.20
P.T. 496+71.27
e = 0.098'/'
Ls = 400'

HWY. 167 S. RT. LANE-SHIFT
P.I. 492+27.20
Δ = 52°17'38"RT.
D = 5°15'00"
T = 535.75'
L = 996.07'
P.C. 486+91.44
P.T. 496+87.51

HWY. 167 S. LT. LANE-SHIFT
P. I. 491+94.72
Δ = 52°17' 38"RT.
D = 5°15' 00"
T = 535. 75'
L = 996. 07'
P. C. 486+58. 96
P. T. 496+55. 03

HWY. 167 STAGE 2
P.I. 492+12.75
Δ = 52°17'38"RT.
D = 5°15'00"
T = 535.75
L = 996.07
P.C. 486+77.00
P.T. 496+73.07

STAGE 2
MAINTENANCE OF TRAFFIC

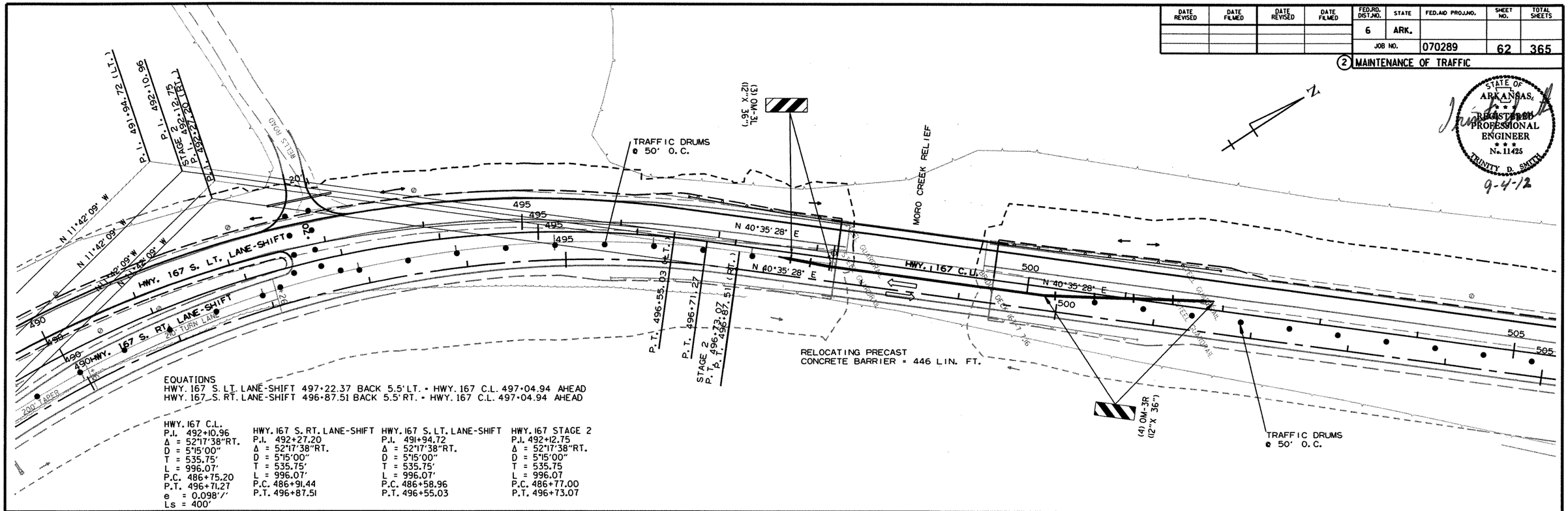
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(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12



EQUATIONS
HWY. 167 S. LT. LANE-SHIFT 497+22.37 BACK 5.5' LT. = HWY. 167 C.L. 497+04.94 AHEAD
HWY. 167 S. RT. LANE-SHIFT 496+87.51 BACK 5.5' RT. = HWY. 167 C.L. 497+04.94 AHEAD

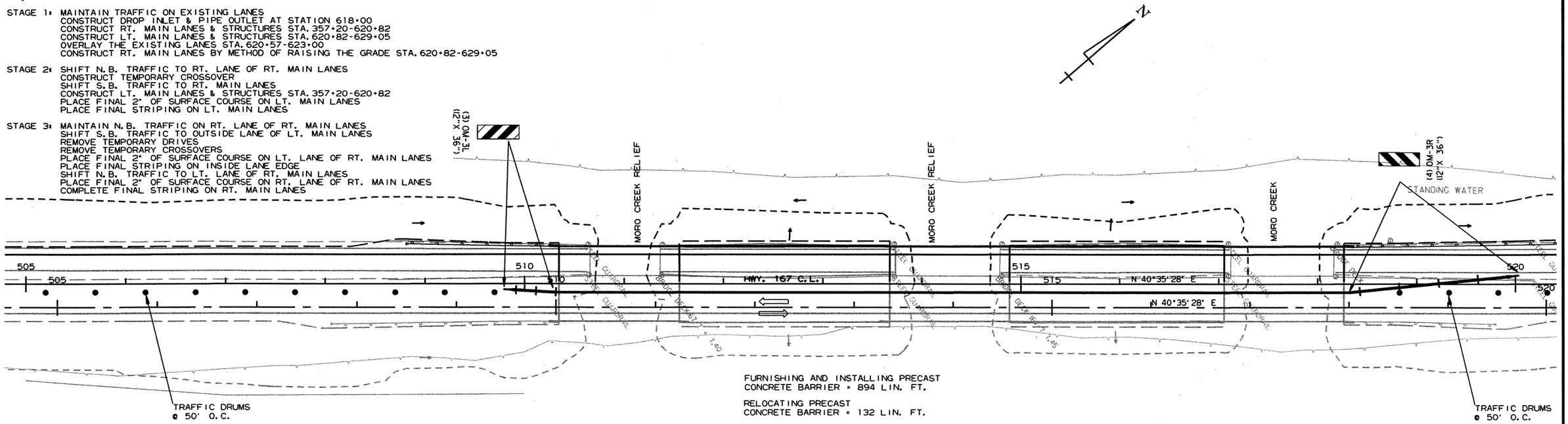
HWY. 167 C.L.	HWY. 167 S. RT. LANE-SHIFT	HWY. 167 S. LT. LANE-SHIFT	HWY. 167 STAGE 2
P.I. 492+10.96	P.I. 492+27.20	P.I. 491+94.72	P.I. 492+12.75
Δ = 52°17'38"RT.	Δ = 52°17'38"RT.	Δ = 52°17'38"RT.	Δ = 52°17'38"RT.
D = 5°15'00"	D = 5°15'00"	D = 5°15'00"	D = 5°15'00"
T = 535.75'	T = 535.75'	T = 535.75'	T = 535.75
L = 996.07'	L = 996.07'	L = 996.07'	L = 996.07
P.C. 486+75.20	P.C. 486+91.44	P.C. 486+58.96	P.C. 486+77.00
P.T. 496+71.27	P.T. 496+87.51	P.T. 496+55.03	P.T. 496+73.07
e = 0.098'/'			
Ls = 400'			

SEQUENCE OF CONSTRUCTION:

STAGE 1: MAINTAIN TRAFFIC ON EXISTING LANES
CONSTRUCT DROP INLET & PIPE OUTLET AT STATION 618+00
CONSTRUCT RT. MAIN LANES & STRUCTURES STA. 357+20-620+82
CONSTRUCT LT. MAIN LANES & STRUCTURES STA. 620+82-629+05
OVERLAY THE EXISTING LANES STA. 620+57-623+00
CONSTRUCT RT. MAIN LANES BY METHOD OF RAISING THE GRADE STA. 620+82-629+05

STAGE 2: SHIFT N.B. TRAFFIC TO RT. LANE OF RT. MAIN LANES
CONSTRUCT TEMPORARY CROSSOVER
SHIFT S.B. TRAFFIC TO RT. MAIN LANES
CONSTRUCT LT. MAIN LANES & STRUCTURES STA. 357+20-620+82
PLACE FINAL 2" OF SURFACE COURSE ON LT. MAIN LANES
PLACE FINAL STRIPING ON LT. MAIN LANES

STAGE 3: MAINTAIN N.B. TRAFFIC ON RT. LANE OF RT. MAIN LANES
SHIFT S.B. TRAFFIC TO OUTSIDE LANE OF LT. MAIN LANES
REMOVE TEMPORARY DRIVES
REMOVE TEMPORARY CROSSOVERS
PLACE FINAL 2" OF SURFACE COURSE ON LT. LANE OF RT. MAIN LANES
PLACE FINAL STRIPING ON INSIDE LANE EDGE
SHIFT N.B. TRAFFIC TO LT. LANE OF RT. MAIN LANES
PLACE FINAL 2" OF SURFACE COURSE ON RT. LANE OF RT. MAIN LANES
COMPLETE FINAL STRIPING ON RT. MAIN LANES



FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER = 894 LIN. FT.

RELOCATING PRECAST CONCRETE BARRIER = 132 LIN. FT.

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STAGE 2 MAINTENANCE OF TRAFFIC

SEQUENCE OF CONSTRUCTION:

STAGE 1: MAINTAIN TRAFFIC ON EXISTING LANES
CONSTRUCT DROP INLET & PIPE OUTLET AT STATION 618+00
CONSTRUCT RT. MAIN LANES & STRUCTURES STA. 357+20-620+82
CONSTRUCT LT. MAIN LANES & STRUCTURES STA. 620+82-629+05
OVERLAY THE EXISTING LANES STA. 620+57-623+00
CONSTRUCT RT. MAIN LANES BY METHOD OF RAISING THE GRADE STA. 620+82-629+05

STAGE 2: SHIFT N.B. TRAFFIC TO RT. LANE OF RT. MAIN LANES
CONSTRUCT TEMPORARY CROSSOVER
SHIFT S.B. TRAFFIC TO RT. MAIN LANES
CONSTRUCT LT. MAIN LANES & STRUCTURES STA. 357+20-620+82
PLACE FINAL 2" OF SURFACE COURSE ON LT. MAIN LANES
PLACE FINAL STRIPING ON LT. MAIN LANES

STAGE 3: MAINTAIN N.B. TRAFFIC ON RT. LANE OF RT. MAIN LANES
SHIFT S.B. TRAFFIC TO OUTSIDE LANE OF LT. MAIN LANES
REMOVE TEMPORARY DRIVES
REMOVE TEMPORARY CROSSOVERS
PLACE FINAL 2" OF SURFACE COURSE ON LT. LANE OF RT. MAIN LANES
PLACE FINAL STRIPING ON INSIDE LANE EDGE
SHIFT N.B. TRAFFIC TO LT. LANE OF RT. MAIN LANES
PLACE FINAL 2" OF SURFACE COURSE ON RT. LANE OF RT. MAIN LANES
COMPLETE FINAL STRIPING ON RT. MAIN LANES.

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(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12

(3) ON-3L (12' X 36")

STANDING WATER

MORO CREEK RELIEF

POB 535+00.00

520 525 530 535

HWY. 167 C.L.

N 40°35' 28" E

TRAFFIC DRUMS @ 50' O.C.

RELOCATING PRECAST CONCRETE BARRIER = 406 LIN. FT.

EQUATIONS
HWY. 167 C.L. 535+00.00 BACK = HWY. 167 N. LT. LANE-SHIFT 535+00.00 AHEAD 5.50' LT.
HWY. 167 C.L. 535+00.00 BACK = HWY. 167 N. RT. LANE-SHIFT 535+00.00 AHEAD 5.50' RT.
HWY. 167 N. LT. LANE-SHIFT 544+65.88 BACK 30' LT. = HWY. 167 C.L. 544+80.26 AHEAD
HWY. 167 N. RT. LANE-SHIFT 544+94.64 BACK 30' RT. = HWY. 167 C.L. 544+80.26 AHEAD

HWY. 167 N. LT. LANE-SHIFT
P.I. 540+21.80
Δ = 44°06'10" LT.
D = 5°15'00"
T = 442.07'
L = 840.05'
P.C. 535+79.72
P.T. 544+19.77

HWY. 167 N. RT. LANE-SHIFT
P.I. 540+96.66
Δ = 44°06'10" LT.
D = 5°15'00"
T = 442.07'
L = 840.05'
P.C. 536+54.59
P.T. 544+94.64

HWY. 167 C.L.
P.I. 540+59.23
Δ = 44°06'10" LT.
D = 5°15'00"
T = 422.07'
L = 840.05'
P.C. 536+17.16
P.T. 544+57.21
e = 0.098'/'
Ls = 400'

HWY. 167 STAGE 2
P.I. 540+63.46
Δ = 44°06'10" RT.
D = 5°15'00"
T = 442.07
L = 840.05
P.C. 536+21.39
P.T. 544+61.44

(4) ON-3R (12' X 36")
STAGE 2 P.I. 535+85.60

P.C. 535+79.72 (LT.)
P.C. 536+17.16
P.C. 536+21.39 (RT.)
P.C. 536+54.59 (RT.)

N 40°35' 28" E

HWY. 167 N. LT. LANE-SHIFT
HWY. 167 C.L.
HWY. 167 N. RT. LANE-SHIFT

P.I. 540+21.80 (LT.)
P.I. 540+59.23
STAGE 2 P.I. 540+63.46
P.I. 540+96.66 (RT.)

P.T. 544+19.77 (LT.)
N 3°30' 41" W
P.T. 544+57.21
STAGE 2 P.T. 544+61.44 (RT.)
P.T. 544+94.64 (RT.)
STAGE 2 POE 544+85.62 (LT.)
STAGE 2 POE 545+14.38 (RT.)
POE 545+00.00

N 3°30' 41" W
N 3°30' 41" W

TRAFFIC DRUMS @ 50' O.C.

RELOCATED HOG WIRE

STAGE 2
MAINTENANCE OF TRAFFIC

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				JOB NO.		070289	64	365

(2) MAINTENANCE OF TRAFFIC

SEQUENCE OF CONSTRUCTION:

STAGE 1: MAINTAIN TRAFFIC ON EXISTING LANES
CONSTRUCT DROP INLET & PIPE OUTLET AT STATION 618+00
CONSTRUCT RT. MAIN LANES & STRUCTURES STA. 357+20-620+82
CONSTRUCT LT. MAIN LANES & STRUCTURES STA. 620+82-629+05
OVERLAY THE EXISTING LANES STA. 620+57-623+00
CONSTRUCT RT. MAIN LANES BY METHOD OF RAISING THE GRADE STA. 620+82-629+05

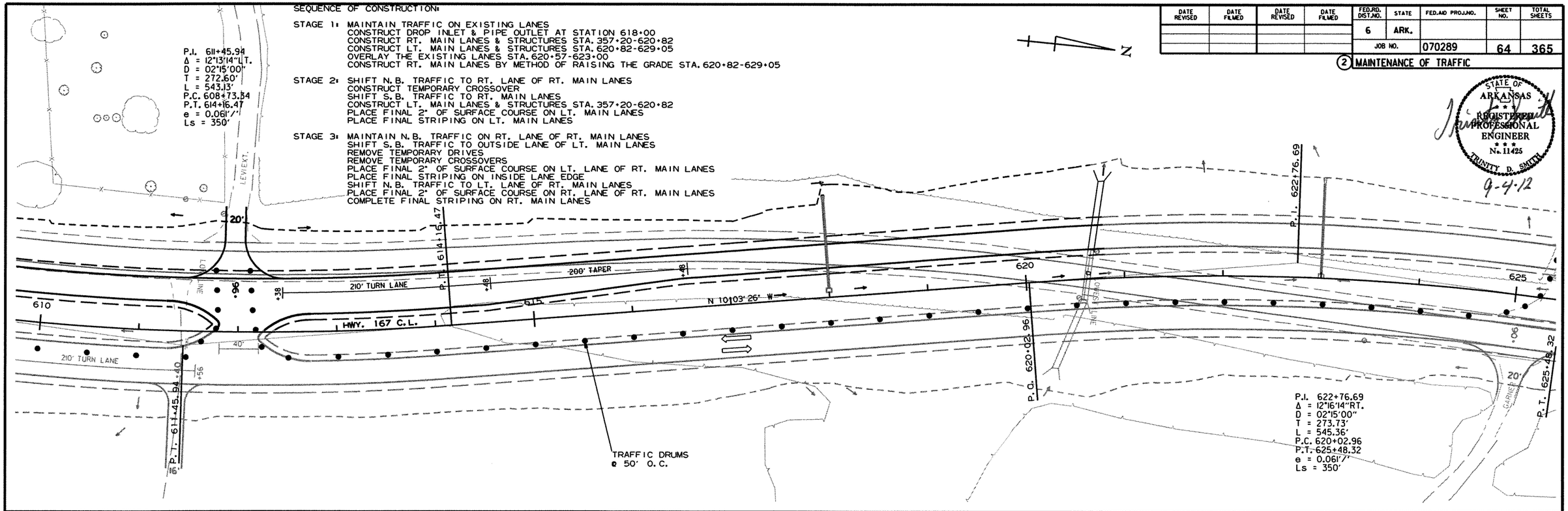
STAGE 2: SHIFT N.B. TRAFFIC TO RT. LANE OF RT. MAIN LANES
CONSTRUCT TEMPORARY CROSSOVER
SHIFT S.B. TRAFFIC TO RT. MAIN LANES
CONSTRUCT LT. MAIN LANES & STRUCTURES STA. 357+20-620+82
PLACE FINAL 2" OF SURFACE COURSE ON LT. MAIN LANES
PLACE FINAL STRIPING ON LT. MAIN LANES

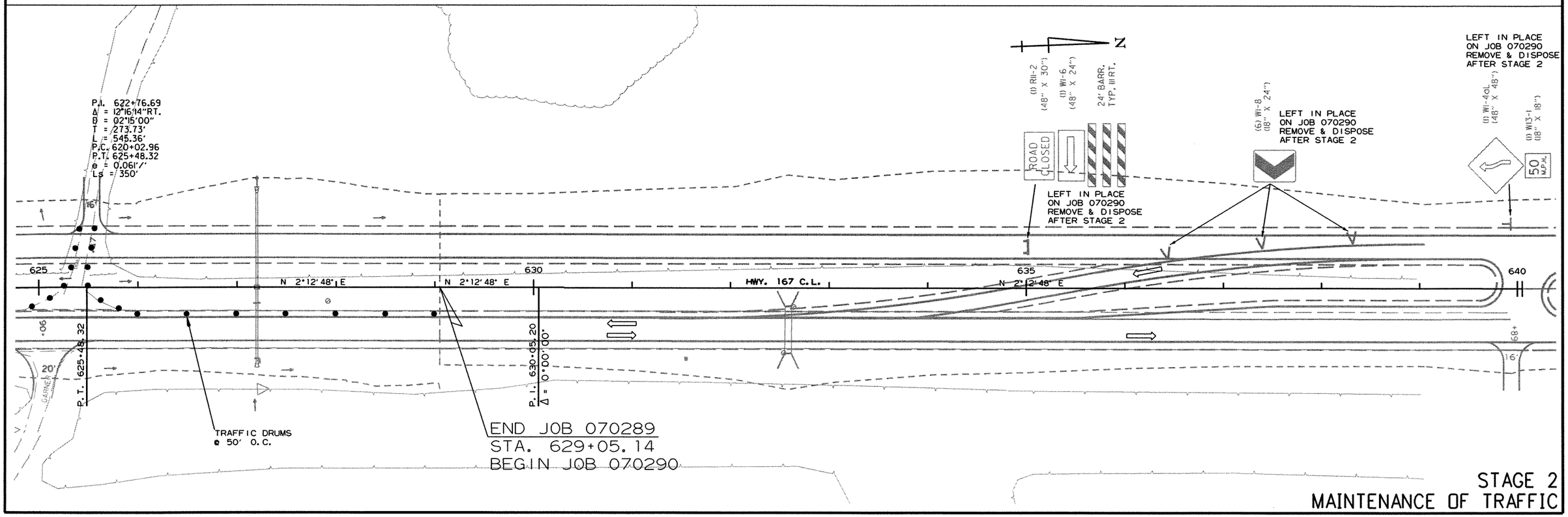
STAGE 3: MAINTAIN N.B. TRAFFIC ON RT. LANE OF RT. MAIN LANES
SHIFT S.B. TRAFFIC TO OUTSIDE LANE OF LT. MAIN LANES
REMOVE TEMPORARY DRIVES
REMOVE TEMPORARY CROSSOVERS
PLACE FINAL 2" OF SURFACE COURSE ON LT. LANE OF RT. MAIN LANES
PLACE FINAL STRIPING ON INSIDE LANE EDGE
SHIFT N.B. TRAFFIC TO LT. LANE OF RT. MAIN LANES
PLACE FINAL 2" OF SURFACE COURSE ON RT. LANE OF RT. MAIN LANES
COMPLETE FINAL STRIPING ON RT. MAIN LANES

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P.I. 611+45.94
Δ = 12°13'14" LT.
D = 02°15'00"
T = 272.60'
L = 543.13'
P.C. 608+73.34
P.T. 614+16.47
e = 0.061'/'
Ls = 350'

P.I. 622+76.69
Δ = 12°16'14" RT.
D = 02°15'00"
T = 273.73'
L = 545.36'
P.C. 620+02.96
P.T. 625+48.32
e = 0.061'/'
Ls = 350'





STAGE 2
MAINTENANCE OF TRAFFIC

8/30/2012

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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.		070289	65	365

(2) MAINTENANCE OF TRAFFIC

SEQUENCE OF CONSTRUCTION:

STAGE 1: MAINTAIN TRAFFIC ON EXISTING LANES
CONSTRUCT DROP INLET & PIPE OUTLET AT STATION 618+00
CONSTRUCT RT. MAIN LANES & STRUCTURES STA. 357+20-620+82
CONSTRUCT LT. MAIN LANES & STRUCTURES STA. 620+82-629+05
OVERLAY THE EXISTING LANES STA. 620+57-623+00
CONSTRUCT RT. MAIN LANES BY METHOD OF RAISING THE GRADE STA. 620+82-629+05

STAGE 2: SHIFT N.B. TRAFFIC TO RT. LANE OF RT. MAIN LANES
CONSTRUCT TEMPORARY CROSSOVER
SHIFT S.B. TRAFFIC TO RT. MAIN LANES
CONSTRUCT LT. MAIN LANES & STRUCTURES STA. 357+20-620+82
PLACE FINAL 2" OF SURFACE COURSE ON LT. MAIN LANES
PLACE FINAL STRIPING ON LT. MAIN LANES

STAGE 3: MAINTAIN N.B. TRAFFIC ON RT. LANE OF RT. MAIN LANES
SHIFT S.B. TRAFFIC TO OUTSIDE LANE OF LT. MAIN LANES
REMOVE TEMPORARY DRIVES
REMOVE TEMPORARY CROSSOVERS
PLACE FINAL 2" OF SURFACE COURSE ON LT. LANE OF RT. MAIN LANES
PLACE FINAL STRIPING ON INSIDE LANE EDGE
SHIFT N.B. TRAFFIC TO LT. LANE OF RT. MAIN LANES
PLACE FINAL 2" OF SURFACE COURSE ON RT. LANE OF RT. MAIN LANES
COMPLETE FINAL STRIPING ON RT. MAIN LANES

N

STA. 357+20-629+05.14 LT. & RT.
TRAFFIC DRUMS @ 100 O.C. = 544 EACH

TRAFFIC DRUMS @ 100' O.C.

STA. 354+89 IN PLACE
18" x 525' PIPE CULVERT
IN MEDIAN
REMOVE

16' 16' 16' 16' 16'

CONST. LIMITS

CONST. LIMITS

350 355 360

N 11°41'59" W

N 11°34'47" W

N 11°43'24" W

P.I. 355+00.00
Δ = 0°00'22" LT.

P.I. 357+19.92
Δ = 0°07'11" RT.

P.I. 360+97.33
Δ = 0°08'36" LT.

BEGIN JOB 070289
STA. 357+20.00
LOG MILE 4.49
END JOB 070288

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TRINITY D. SMITH
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N

TRAFFIC DRUMS @ 100' O.C.

ROAD CLOSED

STA. 635+00 IN PLACE
22' x 14' x 400' R.C. ARCH PIPE CULVERT
IN MEDIAN
REMOVE

(1) RII-2 (48" X 30")
(1) WI-6 (48" X 24")
24' BARR. TYP. III LT.

625 630 635 640

N 2°12'48" E N 2°12'48" E N 2°12'48" E

P.T. 625+48.32

P.I. 630+05.20
Δ = 0°00'00"

200' TAPER 210' TURN LANE

END JOB 070289
STA. 629+05.14
BEGIN JOB 070290

P.I. 622+76.69
Δ = 12°16'14" RT.
D = 02°15'00"
T = 273.73'
L = 545.36'
P.C. 620+02.96
P.T. 625+48.32
e = 0.06 ft/ft
Ls = 350'

STAGE 3
MAINTENANCE OF TRAFFIC

8/14/2012

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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.		070289	66	365

(2) PERMANENT PAVEMENT MARKING DETAILS

SEQUENCE OF CONSTRUCTION:

STAGE 1: MAINTAIN TRAFFIC ON EXISTING LANES
CONSTRUCT DROP INLET & PIPE OUTLET AT STATION 618+00
CONSTRUCT RT. MAIN LANES & STRUCTURES STA. 357+20-620+82
CONSTRUCT LT. MAIN LANES & STRUCTURES STA. 620+82-629+05
OVERLAY THE EXISTING LANES STA. 620+57-623+00
CONSTRUCT RT. MAIN LANES BY METHOD OF RAISING THE GRADE STA. 620+82-629+05

STAGE 2: SHIFT N.B. TRAFFIC TO RT. LANE OF RT. MAIN LANES
CONSTRUCT TEMPORARY CROSSOVER
SHIFT S.B. TRAFFIC TO RT. MAIN LANES
CONSTRUCT LT. MAIN LANES & STRUCTURES STA. 357+20-620+82
PLACE FINAL 2" OF SURFACE COURSE ON LT. MAIN LANES
PLACE FINAL STRIPING ON LT. MAIN LANES

STAGE 3: MAINTAIN N.B. TRAFFIC ON RT. LANE OF RT. MAIN LANES
SHIFT S.B. TRAFFIC TO OUTSIDE LANE OF LT. MAIN LANES
REMOVE TEMPORARY DRIVES
REMOVE TEMPORARY CROSSOVERS
PLACE FINAL 2" OF SURFACE COURSE ON LT. LANE OF RT. MAIN LANES
PLACE FINAL STRIPING ON INSIDE LANE EDGE
SHIFT N.B. TRAFFIC TO LT. LANE OF RT. MAIN LANES
PLACE FINAL 2" OF SURFACE COURSE ON RT. LANE OF RT. MAIN LANES
COMPLETE FINAL STRIPING ON RT. MAIN LANES

THERMOPLASTIC PAVEMENT MARKINGS (CONT.):

4" WHITE SOLID TURN LANE LINES
STA. 372+46-374+56 = 210 LIN. FT.
STA. 375+44-377+54 = 210 LIN. FT.
STA. 397+95-400+05 = 210 LIN. FT.
STA. 421+55-423+65 = 210 LIN. FT.
STA. 422+34-424+44 = 210 LIN. FT.
STA. 439+27-441+37 = 210 LIN. FT.
STA. 440+60-442+70 = 210 LIN. FT.
STA. 477+55-479+65 = 210 LIN. FT.
STA. 478+34-480+44 = 210 LIN. FT.
STA. 491+38-493+48 = 210 LIN. FT.
STA. 554+66-556+76 = 210 LIN. FT.
STA. 558+24-560+34 = 210 LIN. FT.
STA. 581+47-583+57 = 210 LIN. FT.
STA. 584+45-586+55 = 210 LIN. FT.
STA. 609+19-611+29 = 210 LIN. FT.
STA. 612+74-614+84 = 210 LIN. FT.

THERMOPLASTIC PAVEMENT MARKINGS (CONT.):

4" DBL. YELLOW (LT. AND RT.)
STA. 492+89-496+71 RT. = 764 LIN. FT.
STA. 492+89-496+81 LT. = 784 LIN. FT.
STA. 492+89-492+89 = 42 LIN. FT.
STA. 535+00-536+87 RT. = 374 LIN. FT.
STA. 535+00-536+87 LT. = 374 LIN. FT.

THERMOPLASTIC PAVEMENT MARKINGS (CONT.):

4" YELLOW SKIP
STA. 496+71.00-498+03.50 RT. = 33 LIN. FT.
STA. 496+71.00-498+03.50 LT. = 33 LIN. FT.
STA. 499+64.50-510+34.50 RT. = 268 LIN. FT.
STA. 499+64.50-510+34.50 LT. = 268 LIN. FT.
STA. 511+55.50-513+67.50 RT. = 53 LIN. FT.
STA. 511+55.50-513+67.50 LT. = 53 LIN. FT.
STA. 514+88.50-517+05.50 RT. = 54 LIN. FT.
STA. 514+88.50-517+05.50 LT. = 54 LIN. FT.
STA. 518+26.50-532+91.50 RT. = 54 LIN. FT.
STA. 518+26.50-532+91.50 LT. = 54 LIN. FT.
STA. 534+52.50-534+99.00 RT. = 54 LIN. FT.
STA. 534+52.50-534+99.00 LT. = 54 LIN. FT.

THERMOPLASTIC PAVEMENT MARKINGS:

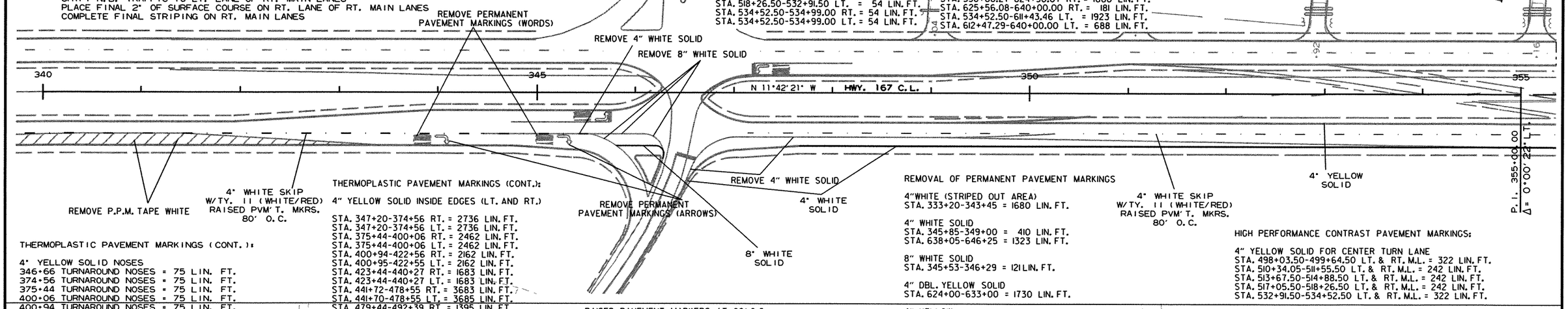
4" WHITE SKIP LINES
STA. 340+00.00-345+54.00 RT. = 139 LIN. FT.
STA. 347+14.00-456+16.50 RT. = 2726 LIN. FT.
STA. 347+20.00-430+02.91 LT. = 2071 LIN. FT.
STA. 431+06.91-440+53.19 LT. = 237 LIN. FT.
STA. 441+54.11-492+23.78 LT. = 1267 LIN. FT.
STA. 493+16.65-456+16.50 LT. = 9075 LIN. FT.
STA. 457+26.50-465+33.50 RT. = 202 LIN. FT.
STA. 457+26.50-465+33.50 LT. = 202 LIN. FT.
STA. 466+94.50-498+03.50 RT. = 77 LIN. FT.
STA. 466+94.50-498+03.50 LT. = 77 LIN. FT.
STA. 499+64.50-510+34.50 RT. = 268 LIN. FT.
STA. 499+64.50-510+34.50 LT. = 268 LIN. FT.
STA. 511+55.50-513+67.50 RT. = 53 LIN. FT.
STA. 511+55.50-513+67.50 LT. = 53 LIN. FT.
STA. 514+88.50-517+05.50 RT. = 54 LIN. FT.
STA. 514+88.50-517+05.50 LT. = 54 LIN. FT.
STA. 518+26.50-532+91.50 RT. = 366 LIN. FT.
STA. 518+26.50-532+91.50 LT. = 366 LIN. FT.
STA. 534+52.50-557+07.22 RT. = 564 LIN. FT.
STA. 558+08.27-624+50.07 RT. = 1660 LIN. FT.
STA. 625+56.08-640+00.00 RT. = 181 LIN. FT.
STA. 534+52.50-611+43.46 LT. = 1923 LIN. FT.
STA. 612+47.29-640+00.00 LT. = 688 LIN. FT.

THERMOPLASTIC PAVEMENT MARKINGS:

4" WHITE SOLID EDGE LINES
STA. 347+66-557+07 RT. = 20941 LIN. FT.
STA. 347+20-430+03 LT. = 8283 LIN. FT.
STA. 431+07-440+54 LT. = 947 LIN. FT.
STA. 441+54-492+24 LT. = 5070 LIN. FT.
STA. 493+17-589+56 LT. = 9639 LIN. FT.
STA. 558+08-624+50 RT. = 6642 LIN. FT.
STA. 590+21-611+44 LT. = 2123 LIN. FT.
STA. 612+47-640+00 LT. = 2755 LIN. FT.
STA. 625+56-640+00 RT. = 1446 LIN. FT.

8" WHITE SOLID EDGE LINES
STA. 345+80-346+29 RT. = 59 LIN. FT.

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THERMOPLASTIC PAVEMENT MARKINGS (CONT.):

4" YELLOW SOLID NOSES
346+66 TURNAROUND NOSES = 75 LIN. FT.
374+56 TURNAROUND NOSES = 75 LIN. FT.
375+44 TURNAROUND NOSES = 75 LIN. FT.
400+06 TURNAROUND NOSES = 75 LIN. FT.
400+94 TURNAROUND NOSES = 75 LIN. FT.
422+55 TURNAROUND NOSES = 75 LIN. FT.
423+44 TURNAROUND NOSES = 75 LIN. FT.
440+27 CROSSING NOSES = 121 LIN. FT.
441+72 CROSSING NOSES = 121 LIN. FT.
478+55 TURNAROUND NOSES = 75 LIN. FT.
479+44 TURNAROUND NOSES = 75 LIN. FT.
492+39 TURNAROUND NOSES = 36 LIN. FT.
536+90 TURNAROUND NOSES = 24 LIN. FT.
556+76 CROSSING NOSES = 121 LIN. FT.
558+23 CROSSING NOSES = 121 LIN. FT.
584+44 TURNAROUND NOSES = 75 LIN. FT.
611+28 CROSSING NOSES = 121 LIN. FT.
612+73 CROSSING NOSES = 121 LIN. FT.
639+85 CROSSING NOSES = 121 LIN. FT.

12" YELLOW SOLID MEDIAN HATCH
STA. 492+90-496+00 = 240 LIN. FT.
STA. 535+00-536+80 = 83 LIN. FT.

THERMOPLASTIC PAVEMENT MARKINGS (CONT.):

4" YELLOW SOLID INSIDE EDGES (LT. AND RT.)
STA. 347+20-374+56 RT. = 2736 LIN. FT.
STA. 347+20-374+56 LT. = 2736 LIN. FT.
STA. 375+44-400+06 RT. = 2462 LIN. FT.
STA. 375+44-400+06 LT. = 2462 LIN. FT.
STA. 400+94-422+56 RT. = 2162 LIN. FT.
STA. 400+95-422+55 LT. = 2162 LIN. FT.
STA. 423+44-440+27 RT. = 1683 LIN. FT.
STA. 423+44-440+27 LT. = 1683 LIN. FT.
STA. 441+72-478+55 RT. = 3683 LIN. FT.
STA. 441+70-478+55 LT. = 3685 LIN. FT.
STA. 479+44-492+39 RT. = 1395 LIN. FT.
STA. 479+44-492+39 LT. = 1395 LIN. FT.
STA. 496+71-498+03.50 RT. = 133 LIN. FT.
STA. 496+71-498+03.50 LT. = 133 LIN. FT.
STA. 499+64.50-510+34.50 RT. = 1070 LIN. FT.
STA. 499+64.50-510+34.50 LT. = 1070 LIN. FT.
STA. 511+55.50-513+67.50 RT. = 212 LIN. FT.
STA. 511+55.50-513+67.50 LT. = 212 LIN. FT.
STA. 514+88.50-517+05.50 RT. = 217 LIN. FT.
STA. 514+88.50-517+05.50 LT. = 217 LIN. FT.
STA. 518+26.50-532+91.50 RT. = 1465 LIN. FT.
STA. 518+26.50-532+91.50 LT. = 1465 LIN. FT.
STA. 534+52.50-534+99.00 RT. = 47 LIN. FT.
STA. 534+52.50-534+99.00 LT. = 47 LIN. FT.
STA. 536+90-556+77 RT. = 1987 LIN. FT.
STA. 536+91-556+77 LT. = 1986 LIN. FT.
STA. 558+23-583+50 RT. = 2527 LIN. FT.
STA. 558+23-583+57 LT. = 2534 LIN. FT.
STA. 584+45-611+28 RT. = 2683 LIN. FT.
STA. 584+45-611+26 LT. = 2681 LIN. FT.
STA. 612+73-640+00 RT. = 2689 LIN. FT.
STA. 612+73-640+00 LT. = 2689 LIN. FT.

RAISED PAVEMENT MARKERS AT 80' O.C.

TYPE II (WHITE/RED)
STA. 340+00.00-345+54.00 RT. = 7 EACH
STA. 347+14.00-640+00.00 RT. = 366 EACH
STA. 347+20.00-640+00.00 LT. = 366 EACH

RAISED PAVEMENT MARKERS AT 80' O.C.

TYPE II (YELLOW/YELLOW) ON CENTER TURN LANE SKIP LINES
STA. 496+71.00-534+99.00 LT. & RT. M.L. = 96 EACH

REMOVAL OF PERMANENT PAVEMENT MARKINGS

4"WHITE (STRIPED OUT AREA)
STA. 333+20-343+45 = 1680 LIN. FT.

4" WHITE SOLID
STA. 345+85-349+00 = 410 LIN. FT.
STA. 638+05-646+25 = 1323 LIN. FT.

8" WHITE SOLID
STA. 345+53-346+29 = 121 LIN. FT.

4" DBL. YELLOW SOLID
STA. 624+00-633+00 = 1730 LIN. FT.

4" YELLOW
STA. 633+00-635+00 = 358 LIN. FT.

(WORDS)
STA. 333+20-343+45 = 2 EACH

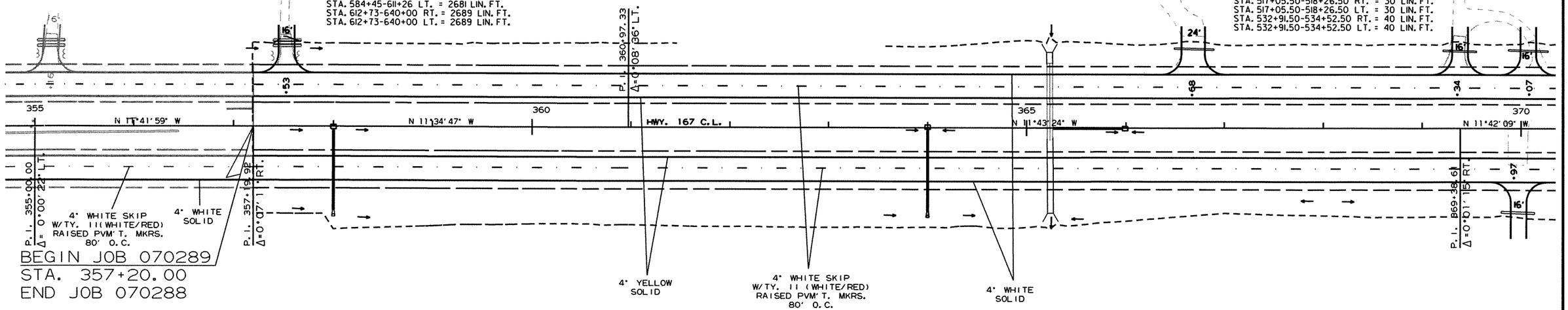
(ARROWS)
STA. 344+05-345+25 = 2 EACH

HIGH PERFORMANCE CONTRAST PAVEMENT MARKINGS:

4" YELLOW SOLID FOR CENTER TURN LANE
STA. 498+03.50-499+64.50 LT. & RT. M.L. = 322 LIN. FT.
STA. 510+34.05-511+55.50 LT. & RT. M.L. = 242 LIN. FT.
STA. 513+67.50-514+88.50 LT. & RT. M.L. = 242 LIN. FT.
STA. 517+05.50-518+26.50 LT. & RT. M.L. = 242 LIN. FT.
STA. 532+91.50-534+52.50 LT. & RT. M.L. = 322 LIN. FT.

4" YELLOW SKIP FOR CENTER TURN LANE
STA. 498+03.50-499+64.50 LT. & RT. M.L. = 81 LIN. FT.
STA. 510+34.05-511+55.50 LT. & RT. M.L. = 61 LIN. FT.
STA. 513+67.50-514+88.50 LT. & RT. M.L. = 61 LIN. FT.
STA. 517+05.50-518+26.50 LT. & RT. M.L. = 61 LIN. FT.
STA. 532+91.50-534+52.50 LT. & RT. M.L. = 81 LIN. FT.

4" WHITE SKIP LINE:
STA. 456+16.50-457+27.50 RT. = 28 LIN. FT.
STA. 456+16.50-457+26.50 LT. = 28 LIN. FT.
STA. 465+33.50-466+94.50 RT. = 40 LIN. FT.
STA. 465+33.50-466+94.50 LT. = 40 LIN. FT.
STA. 498+03.50-499+64.50 RT. = 40 LIN. FT.
STA. 498+03.50-499+64.50 LT. = 40 LIN. FT.
STA. 510+34.50-511+55.50 RT. = 30 LIN. FT.
STA. 510+34.50-511+55.50 LT. = 30 LIN. FT.
STA. 513+67.50-514+88.50 RT. = 30 LIN. FT.
STA. 513+67.50-514+88.50 LT. = 30 LIN. FT.
STA. 517+05.50-518+26.50 RT. = 30 LIN. FT.
STA. 517+05.50-518+26.50 LT. = 30 LIN. FT.
STA. 532+91.50-534+52.50 RT. = 40 LIN. FT.
STA. 532+91.50-534+52.50 LT. = 40 LIN. FT.



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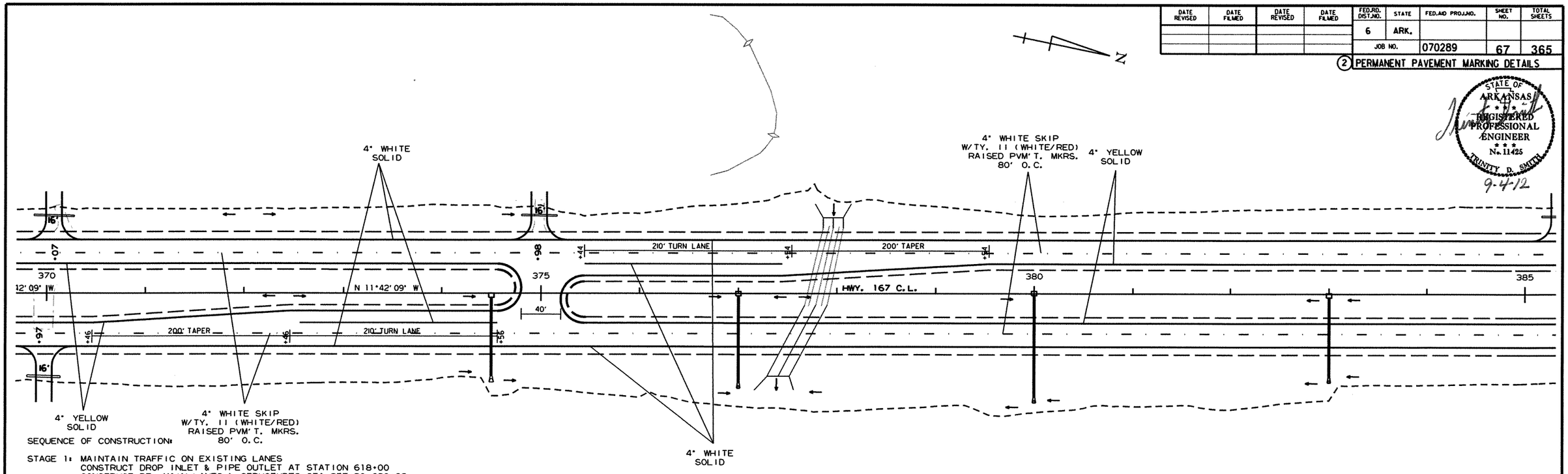
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PERMANENT PAVEMENT MARKING DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
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(2) PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS
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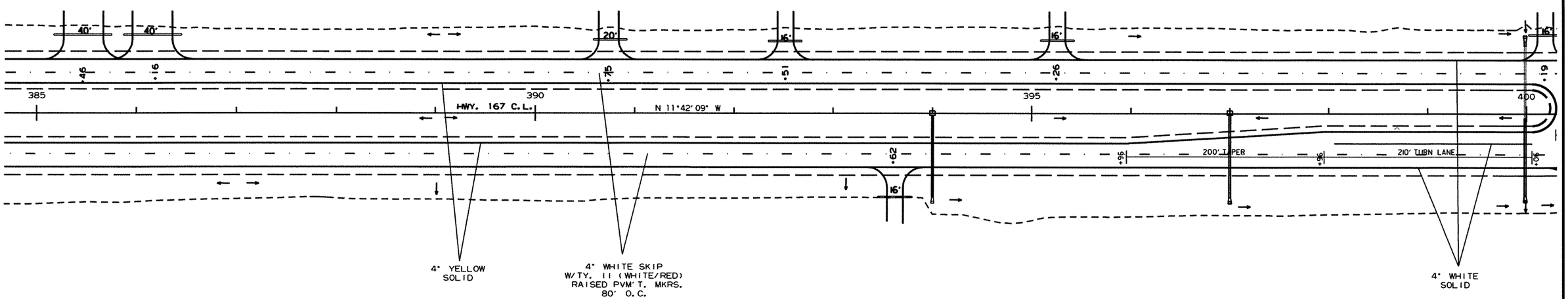


SEQUENCE OF CONSTRUCTION:

STAGE 1: MAINTAIN TRAFFIC ON EXISTING LANES
CONSTRUCT DROP INLET & PIPE OUTLET AT STATION 618+00
CONSTRUCT RT. MAIN LANES & STRUCTURES STA. 357+20-620+82
CONSTRUCT LT. MAIN LANES & STRUCTURES STA. 620+82-629+05
OVERLAY THE EXISTING LANES STA. 620+57-623+00
CONSTRUCT RT. MAIN LANES BY METHOD OF RAISING THE GRADE STA. 620+82-629+05

STAGE 2: SHIFT N.B. TRAFFIC TO RT. LANE OF RT. MAIN LANES
CONSTRUCT TEMPORARY CROSSOVER
SHIFT S.B. TRAFFIC TO RT. MAIN LANES
CONSTRUCT LT. MAIN LANES & STRUCTURES STA. 357+20-620+82
PLACE FINAL 2" OF SURFACE COURSE ON LT. MAIN LANES
PLACE FINAL STRIPING ON LT. MAIN LANES

STAGE 3: MAINTAIN N.B. TRAFFIC ON RT. LANE OF RT. MAIN LANES
SHIFT S.B. TRAFFIC TO OUTSIDE LANE OF LT. MAIN LANES
REMOVE TEMPORARY DRIVES
REMOVE TEMPORARY CROSSOVERS
PLACE FINAL 2" OF SURFACE COURSE ON LT. LANE OF RT. MAIN LANES
PLACE FINAL STRIPING ON INSIDE LANE EDGE
SHIFT N.B. TRAFFIC TO LT. LANE OF RT. MAIN LANES
PLACE FINAL 2" OF SURFACE COURSE ON RT. LANE OF RT. MAIN LANES
COMPLETE FINAL STRIPING ON RT. MAIN LANES



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PERMANENT PAVEMENT MARKING DETAILS

SEQUENCE OF CONSTRUCTION:

STAGE 1: MAINTAIN TRAFFIC ON EXISTING LANES
CONSTRUCT DROP INLET & PIPE OUTLET AT STATION 618+00
CONSTRUCT RT. MAIN LANES & STRUCTURES STA. 357+20-620+82
CONSTRUCT LT. MAIN LANES & STRUCTURES STA. 620+82-629+05
OVERLAY THE EXISTING LANES STA. 620+57-623+00
CONSTRUCT RT. MAIN LANES BY METHOD OF RAISING THE GRADE STA. 620+82-629+05

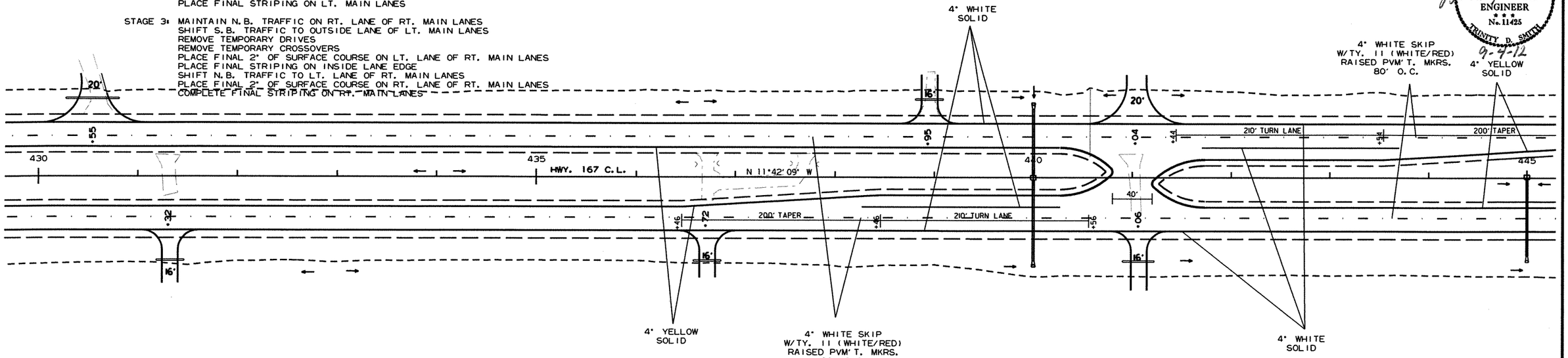
STAGE 2: SHIFT N.B. TRAFFIC TO RT. LANE OF RT. MAIN LANES
CONSTRUCT TEMPORARY CROSSOVER
SHIFT S.B. TRAFFIC TO RT. MAIN LANES
CONSTRUCT LT. MAIN LANES & STRUCTURES STA. 357+20-620+82
PLACE FINAL 2" OF SURFACE COURSE ON LT. MAIN LANES
PLACE FINAL STRIPING ON LT. MAIN LANES

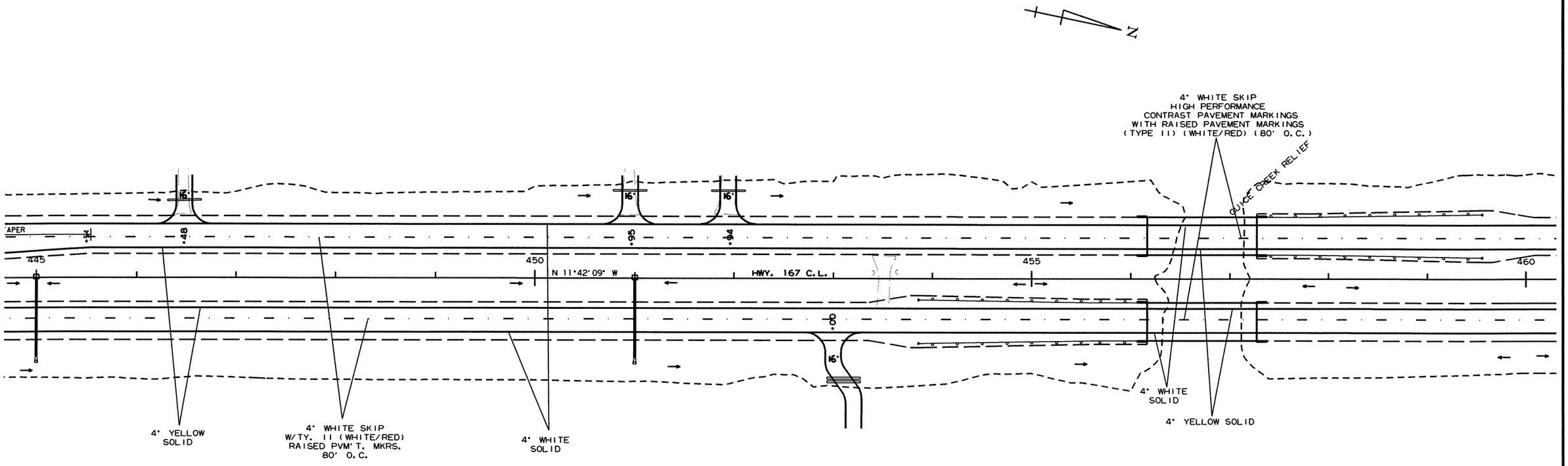
STAGE 3: MAINTAIN N.B. TRAFFIC ON RT. LANE OF RT. MAIN LANES
SHIFT S.B. TRAFFIC TO OUTSIDE LANE OF LT. MAIN LANES
REMOVE TEMPORARY DRIVES
REMOVE TEMPORARY CROSSOVERS
PLACE FINAL 2" OF SURFACE COURSE ON LT. LANE OF RT. MAIN LANES
PLACE FINAL STRIPING ON INSIDE LANE EDGE
SHIFT N.B. TRAFFIC TO LT. LANE OF RT. MAIN LANES
PLACE FINAL 2" OF SURFACE COURSE ON RT. LANE OF RT. MAIN LANES
COMPLETE FINAL STRIPING ON RT. MAIN LANES

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(2) PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
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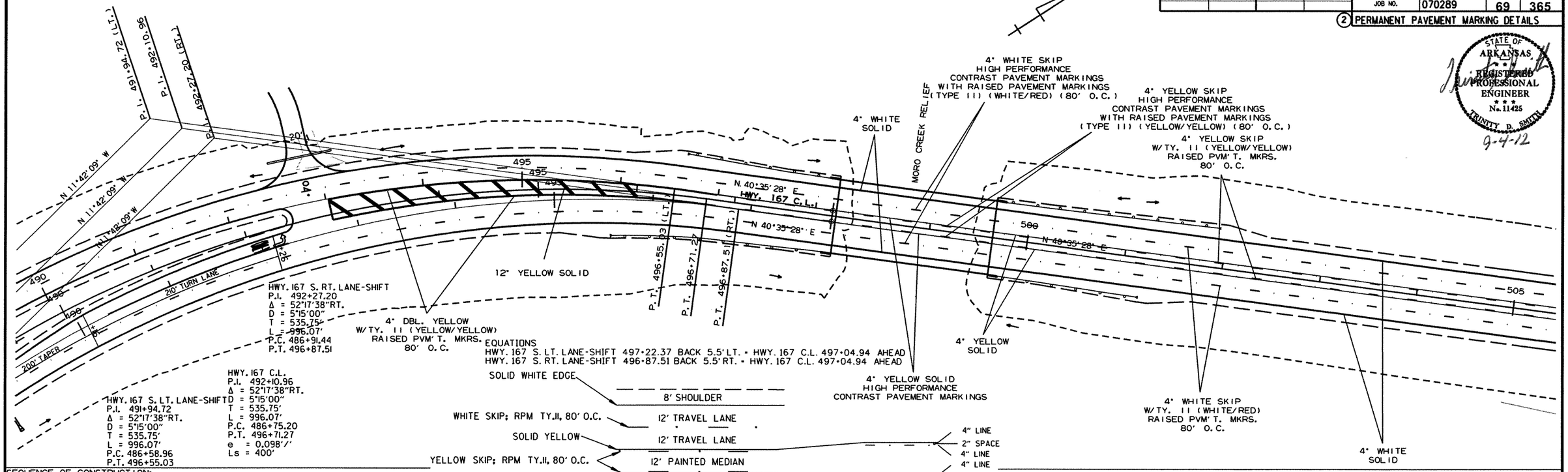
PERMANENT PAVEMENT MARKING DETAILS

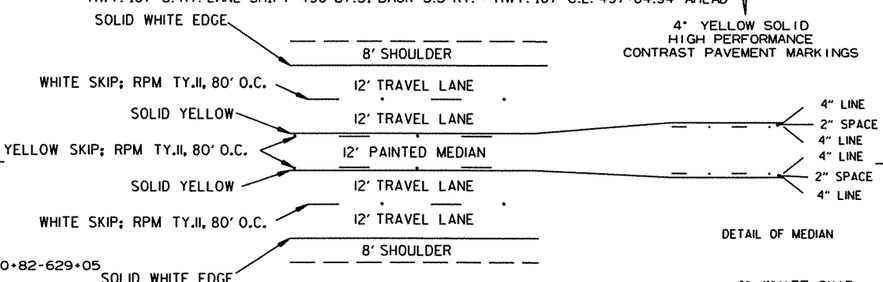
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070289	69	365

(2) PERMANENT PAVEMENT MARKING DETAILS

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

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4 LANE STRIPING
WITH 12'-0" PAINTED MEDIAN
(OPEN SHOULDER)

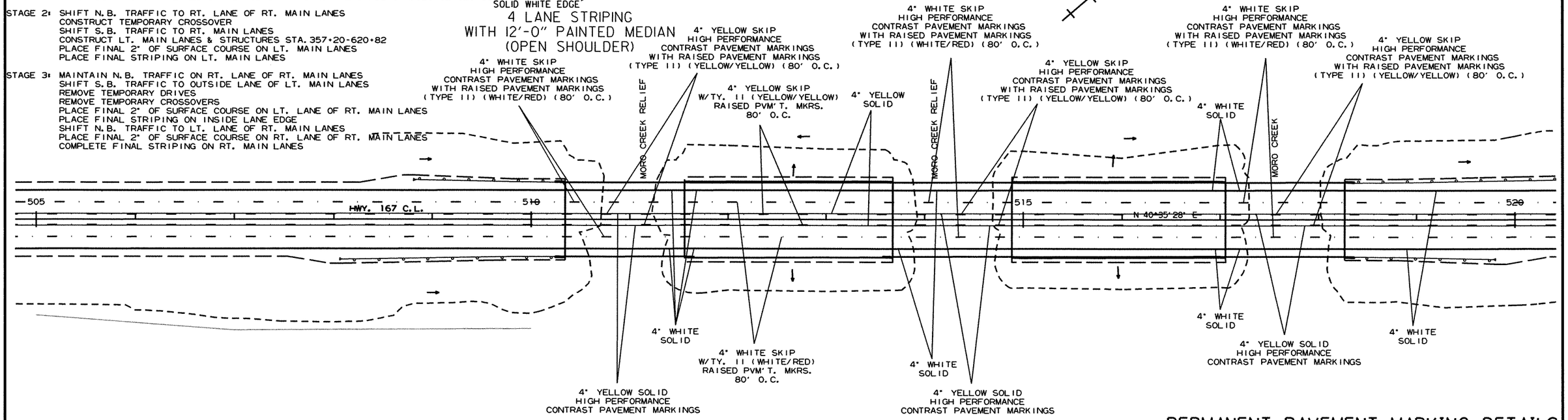
DETAIL OF MEDIAN

SEQUENCE OF CONSTRUCTION:

STAGE 1: MAINTAIN TRAFFIC ON EXISTING LANES
CONSTRUCT DROP INLET & PIPE OUTLET AT STATION 618+00
CONSTRUCT RT. MAIN LANES & STRUCTURES STA. 357+20-620+82
CONSTRUCT LT. MAIN LANES & STRUCTURES STA. 620+82-629+05
OVERLAY THE EXISTING LANES STA. 620+57-623+00
CONSTRUCT RT. MAIN LANES BY METHOD OF RAISING THE GRADE STA. 620+82-629+05

STAGE 2: SHIFT N. B. TRAFFIC TO RT. LANE OF RT. MAIN LANES
CONSTRUCT TEMPORARY CROSSOVER
SHIFT S. B. TRAFFIC TO RT. MAIN LANES
CONSTRUCT LT. MAIN LANES & STRUCTURES STA. 357+20-620+82
PLACE FINAL 2" OF SURFACE COURSE ON LT. MAIN LANES
PLACE FINAL STRIPING ON LT. MAIN LANES

STAGE 3: MAINTAIN N. B. TRAFFIC ON RT. LANE OF RT. MAIN LANES
SHIFT S. B. TRAFFIC TO OUTSIDE LANE OF LT. MAIN LANES
REMOVE TEMPORARY DRIVES
REMOVE TEMPORARY CROSSOVERS
PLACE FINAL 2" OF SURFACE COURSE ON LT. LANE OF RT. MAIN LANES
PLACE FINAL STRIPING ON INSIDE LANE EDGE
SHIFT N. B. TRAFFIC TO LT. LANE OF RT. MAIN LANES
PLACE FINAL 2" OF SURFACE COURSE ON RT. LANE OF RT. MAIN LANES
COMPLETE FINAL STRIPING ON RT. MAIN LANES



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PERMANENT PAVEMENT MARKING DETAILS

SEQUENCE OF CONSTRUCTION:

STAGE 1: MAINTAIN TRAFFIC ON EXISTING LANES
CONSTRUCT DROP INLET & PIPE OUTLET AT STATION 618+00
CONSTRUCT RT. MAIN LANES & STRUCTURES STA. 357+20-620+82
CONSTRUCT LT. MAIN LANES & STRUCTURES STA. 620+82-629+05
OVERLAY THE EXISTING LANES STA. 620+57-623+00
CONSTRUCT RT. MAIN LANES BY METHOD OF RAISING THE GRADE STA. 620+82-629+05

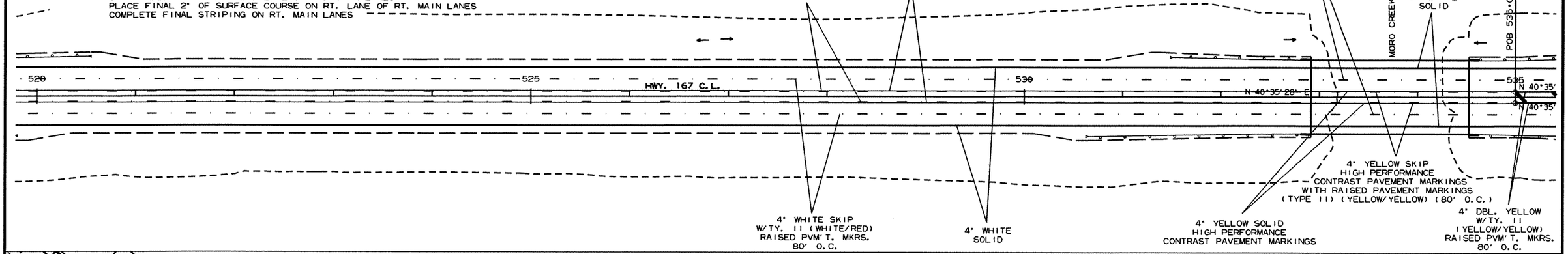
STAGE 2: SHIFT N. B. TRAFFIC TO RT. LANE OF RT. MAIN LANES
CONSTRUCT TEMPORARY CROSSOVER
SHIFT S. B. TRAFFIC TO RT. MAIN LANES
CONSTRUCT LT. MAIN LANES & STRUCTURES STA. 357+20-620+82
PLACE FINAL 2" OF SURFACE COURSE ON LT. MAIN LANES
PLACE FINAL STRIPING ON LT. MAIN LANES

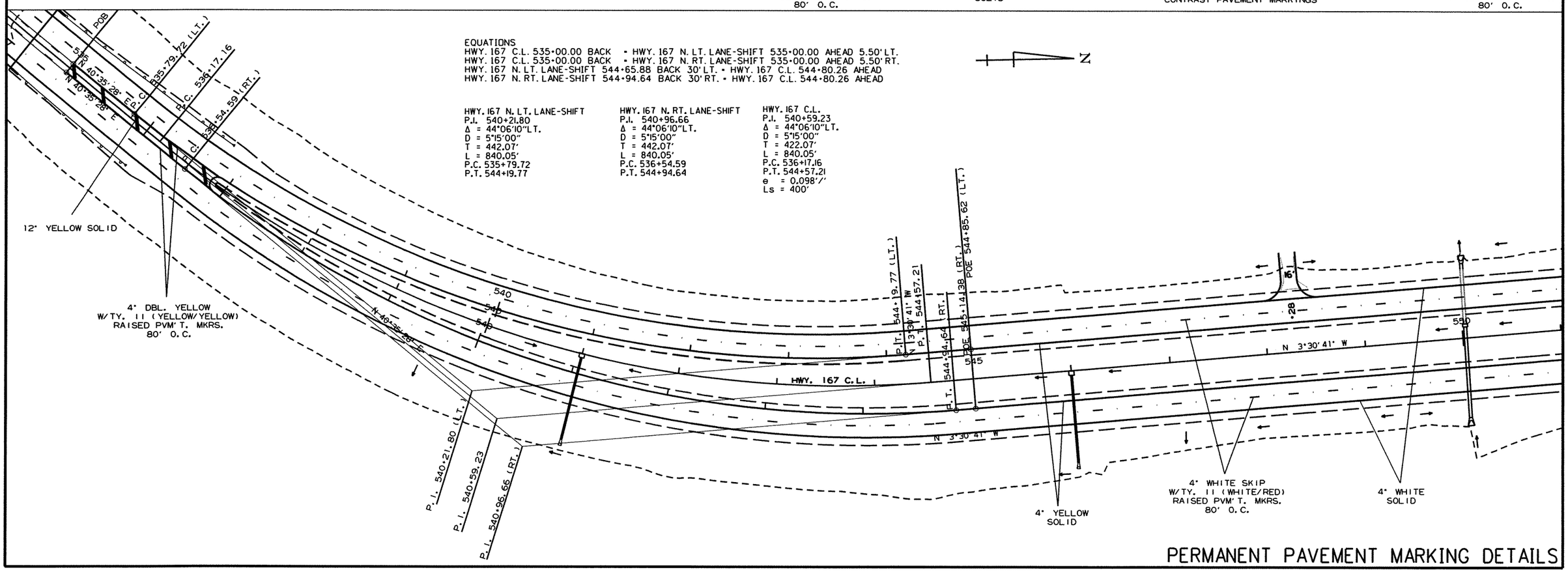
STAGE 3: MAINTAIN N. B. TRAFFIC ON RT. LANE OF RT. MAIN LANES
SHIFT S. B. TRAFFIC TO OUTSIDE LANE OF LT. MAIN LANES
REMOVE TEMPORARY DRIVES
REMOVE TEMPORARY CROSSOVERS
PLACE FINAL 2" OF SURFACE COURSE ON LT. LANE OF RT. MAIN LANES
PLACE FINAL STRIPING ON INSIDE LANE EDGE
SHIFT N. B. TRAFFIC TO LT. LANE OF RT. MAIN LANES
PLACE FINAL 2" OF SURFACE COURSE ON RT. LANE OF RT. MAIN LANES
COMPLETE FINAL STRIPING ON RT. MAIN LANES

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				6	ARK.			
				JOB NO.		070289	70	365

(2) PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12





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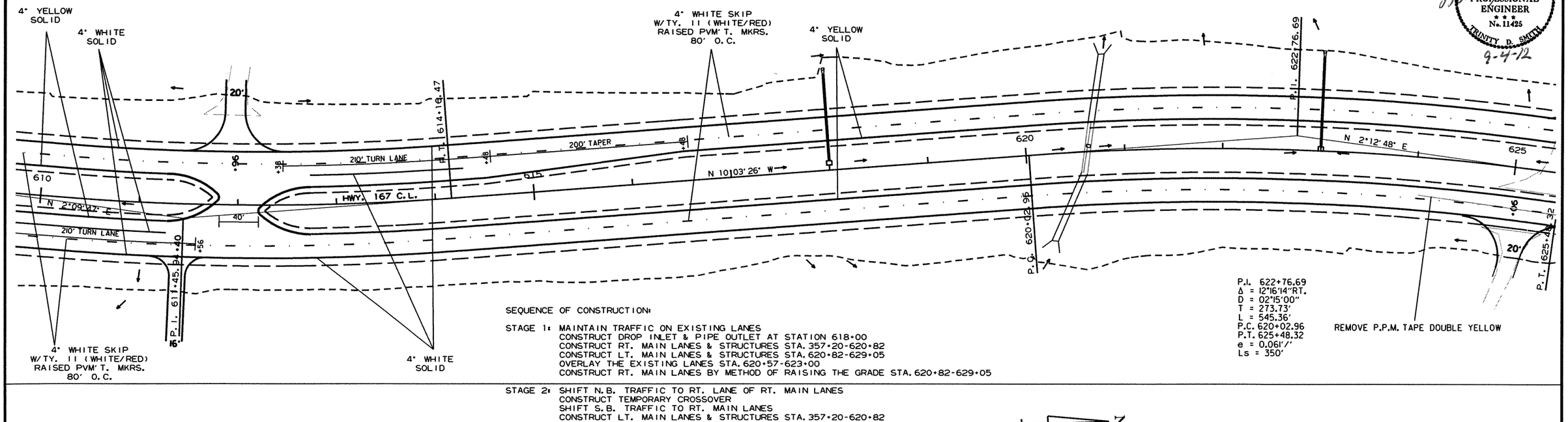
PERMANENT PAVEMENT MARKING DETAILS

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.		070289	71	365

(2) PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12

P.I. 611+45.94
Δ = 12°13'14"LT.
D = 02°15'00"
T = 272.60'
L = 543.13'
P.C. 608+73.34
P.T. 614+16.47
e = 0.061'/'
Ls = 350'



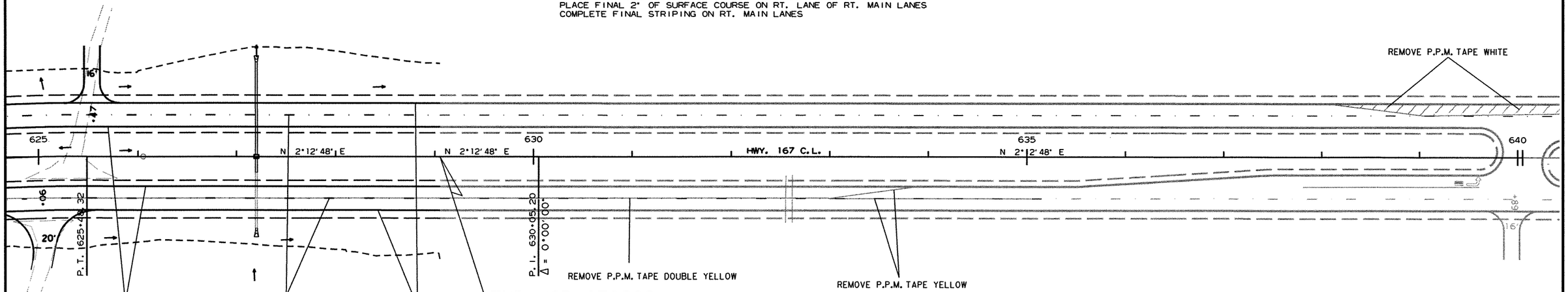
P.I. 622+76.69
Δ = 12°16'14"RT.
D = 02°15'00"
T = 273.73'
L = 545.36'
P.C. 620+02.96
P.T. 625+48.32
e = 0.061'/'
Ls = 350'

SEQUENCE OF CONSTRUCTION:

STAGE 1: MAINTAIN TRAFFIC ON EXISTING LANES
CONSTRUCT DROP INLET & PIPE OUTLET AT STATION 618+00
CONSTRUCT RT. MAIN LANES & STRUCTURES STA. 357+20-620+82
CONSTRUCT LT. MAIN LANES & STRUCTURES STA. 620+82-629+05
OVERLAY THE EXISTING LANES STA. 620+57-623+00
CONSTRUCT RT. MAIN LANES BY METHOD OF RAISING THE GRADE STA. 620+82-629+05

STAGE 2: SHIFT N.B. TRAFFIC TO RT. LANE OF RT. MAIN LANES
CONSTRUCT TEMPORARY CROSSOVER
SHIFT S.B. TRAFFIC TO RT. MAIN LANES
CONSTRUCT LT. MAIN LANES & STRUCTURES STA. 357+20-620+82
PLACE FINAL 2" OF SURFACE COURSE ON LT. MAIN LANES
PLACE FINAL STRIPING ON LT. MAIN LANES

STAGE 3: MAINTAIN N.B. TRAFFIC ON RT. LANE OF RT. MAIN LANES
SHIFT S.B. TRAFFIC TO OUTSIDE LANE OF LT. MAIN LANES
REMOVE TEMPORARY DRIVES
REMOVE TEMPORARY CROSSOVERS
PLACE FINAL 2" OF SURFACE COURSE ON LT. LANE OF RT. MAIN LANES
PLACE FINAL STRIPING ON INSIDE LANE EDGE
SHIFT N.B. TRAFFIC TO LT. LANE OF RT. MAIN LANES
PLACE FINAL 2" OF SURFACE COURSE ON RT. LANE OF RT. MAIN LANES
COMPLETE FINAL STRIPING ON RT. MAIN LANES



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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.		070289	72	365

(2) QUANTITY SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12

ADVANCE WARNING SIGNS AND DEVICES

SIGN NUMBER	DESCRIPTION	SIGN SIZE	STAGE 1	STAGE 2	STAGE 3	MAXIMUM NUMBER REQUIRED	TOTAL SIGNS REQUIRED		VERTICAL PANELS	TRAFFIC DRUMS	BARRICADES (TYPE III)		FURNISHING & INSTALLING PRECAST CONC. BARRIER	RELOCATING PRECAST CONCRETE BARRIER
											RIGHT	LEFT		
			LIN.FT. - EACH				NO.	SQ. FT.	EACH				LIN.FT.	
W20-1	ROAD WORK 1500 FT.	48"x48"	2	2	2	2	2	32.0						
W20-1	ROAD WORK 1000 FT.	48"x48"	2	2	2	2	2	32.0						
W20-1	ROAD WORK 500 FT.	48"x48"	2	2	2	2	2	32.0						
W20-1	ROAD WORK AHEAD	48"x48"	6	6	6	6	6	96.0						
G20-2	END ROAD WORK	48"x24"	8	8	8	8	8	64.0						
G20-1	ROAD WORK NEXT xx MILES	60"x24"	2	2	2	2	2	20.0						
R11-2	ROAD CLOSED	48"x30"	6	6	1	6	6	60.0						
OM-3L	OBJECT MARKER	12"x36"	12	12		12	12	36.0						
OM-3R	OBJECT MARKER	12"x36"	16	16		16	16	48.0						
R4-1	DO NOT PASS	24"x30"	20	20	20	20	20	100.0						
RSP-1	SHOULDER CLOSED	48"x30"	1	1	1	1	1	10.0						
W8-9	LOW SHOULDER	36"X36"	10	10	10	10	10	90.0						
W1-6	LARGE ARROW	48"x24"		2	1	2	2	16.0						
W1-4aR	RIGHT CURVE	48"x48"		1		1	1	16.0						
	VERTICAL PANELS		45			45			45					
	TRAFFIC DRUMS		501	815	544	815				815				
	TYPE III BARRICADE-RT. (16')		4	3		4					64			
	TYPE III BARRICADE-LT. (16')		4	3		4						64		
	TYPE III BARRICADE-RT. (24')		2	1		2					48			
	TYPE III BARRICADE-LT. (24')			2	1	2						48		
	FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER		1330	894		2224							2224	
	RELOCATING PRECAST CONCRETE BARRIER		1064	1330		2394								2394
TOTALS:								652.0	45	815	112	112	2224	2394

NOTE: THIS IS A HIGH TRAFFIC VOLUME ROAD AS DEFINED IN SECTION 604.03, STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, 2003 EDITION.

CONSTRUCTION PAVEMENT MARKINGS AND PERMANENT PAVEMENT MARKINGS

DESCRIPTION	STAGE 1	STAGE 2	END OF JOB	REMOVAL OF PERMANENT PAVEMENT MARKINGS	CONSTRUCTION PAVEMENT MARKINGS	REMOVABLE CONSTRUCTION PAVEMENT MARKINGS	REMOVAL OF PERMANENT PAVEMENT MARKINGS		RAISED PAVEMENT MARKERS		THERMOPLASTIC PAVEMENT MARKINGS				HIGH PERFORMANCE CONTRAST PAVEMENT MARKING	
							(WORDS)	(ARROWS)	TYPE II (WHITE/RED)	TYPE II (YEL/YEL)	4" WHITE	4" YELLOW	8" WHITE	12" YELLOW	4" WHITE	4" YELLOW
	LIN.FT. - EACH			LIN.FT.			EACH		EACH		LIN.FT.				LIN.FT.	
REMOVAL OF PERMANENT PAVEMENT MARKINGS		1950	5622	7572												
CONSTRUCTION PAVEMENT MARKINGS	7688	108729			116417											
REMOVABLE CONSTRUCTION PAVEMENT MARKINGS		3828				3828										
REMOVAL OF PERMANENT PAVEMENT MARKINGS (WORDS)			2				2									
REMOVAL OF PERMANENT PAVEMENT MARKINGS (ARROWS)			2					2								
RAISED PAVEMENT MARKERS TYPE II (WHITE/RED)			739						739							
RAISED PAVEMENT MARKERS TYPE II (YEL/YEL)			96							96						
THERMOPLASTIC PAVEMENT MARKINGS WHITE (4")			83777								83777					
THERMOPLASTIC PAVEMENT MARKINGS YELLOW (4")			59335									59335				
THERMOPLASTIC PAVEMENT MARKINGS WHITE (8")			59										59			
THERMOPLASTIC PAVEMENT MARKINGS YELLOW (12")			323											323		
HIGH PERFORMANCE CONTRAST PAVEMENT MARKING WHITE (4")			476												476	
HIGH PERFORMANCE CONTRAST PAVEMENT MARKING YELLOW (4")			1715													1715
TOTALS:				7572	116417	3828	2	2	739	96	83777	59335	59	323	476	1715

NOTE: THIS IS A HIGH TRAFFIC VOLUME ROAD AS DEFINED IN SECTION 604.03, STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, 2003 EDITION.

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				6	ARK.			
				JOB NO.		070289	73	365
				(2) QUANTITY SHEETS				

REMOVAL AND DISPOSAL OF PIPE CULVERTS

STATION	DESCRIPTION	PIPE CULVERTS
		EACH
354+89	18" X 525' PIPE CULVERT IN MEDIAN	1
362+52	24" X 24.5' C.M. PIPE CULV'T	1
366+68	12" X 38' R.C. PIPE CULV'T	1
369+34	10" X 25' C.M. PIPE CULV'T	1
369+97	24" X 34' PIPE CULV'T	1
374+98	10" X 20' C.M. PIPE CULV'T	1
390+75	12" X 30' C.M. PIPE CULV'T	1
392+51	12" X 20' R.C. PIPE CULV'T	1
393+44	12" X 30' C.M. PIPE CULV'T	1
395+26	24" X 24' C.M. PIPE CULV'T	1
400+22	12" X 28' C.M. PIPE CULV'T	1
400+27	24" X 30' C.M. PIPE CULV'T	1
400+60	12" X 31' C.M. PIPE CULV'T	1
401+60	12" X 32' C.M. PIPE CULV'T	1
412+71	12" X 17' C.M. PIPE CULV'T	1
417+68	10" X 28' C.M. PIPE CULV'T	1
428+93	18" X 20' R.C. PIPE CULV'T	1
429+28	18" X 8' PIPE CULV'T	1
430+61	18" X 24' R.C. PIPE CULV'T	1
431+30	18" X 23' C.M. PIPE CULV'T	1
436+71	18" X 20' C.M. PIPE CULV'T	1
437+69	18" X 24' C.M. PIPE CULV'T	1
438+96	10" X 21' CAST IRON PIPE CULV'T	1
440+58	24" X 69' R.C. PIPE CULV'T	1
441+04	18" X 27' C.M. PIPE CULV'T	1
446+48	12" X 23' R.C. PIPE CULV'T	1
450+94	24" X 24' C.P. PIPE CULV'T	1
451+94	24" X 24' C.P. PIPE CULV'T	1
453+53	DBL. 12" X 20' C.M. PIPE CULV'T	2
550+04	36" X 72' R.C. PIPE CULV'T	1
563+40	PIPE TO DRAIN POND	1
569+79	24" X 24' C.M. PIPE CULV'T	1
635+00	21" X 14" X 400' R.C. ARCH PIPE	1
TOTAL:		34

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

RUMBLE STRIPS IN ASPHALT SHOULDERS

STATION	STATION	LOCATION	* RUMBLE STRIPS IN ASPHALT SHOULDERS
			LIN.FT.
357+19.92	455+90	RT. SIDE	7474
357+19.92	455+90	LT. SIDE	6662
357+19.92	374+80	LT. & RT. INSIDE SHOULDERS	2816
375+20.00	400+30	LT. & RT. INSIDE SHOULDERS	4016
400+70.00	422+80	LT. & RT. INSIDE SHOULDERS	3536
423+20.00	440+80	LT. & RT. INSIDE SHOULDERS	2816
441+20.00	455+90	LT. & RT. INSIDE SHOULDERS	2352
457+28	465+34	RT. SIDE	645
457+28	465+34	LT. SIDE	645
457+28	465+34	LT. & RT. INSIDE SHOULDERS	1290
466+95	498+04	RT. SIDE	2434
466+95	498+04	LT. SIDE	2399
466+95	478+80	LT. & RT. INSIDE SHOULDERS	1896
479+20	492+50	LT. & RT. INSIDE SHOULDERS	2128
499+65	510+35	RT. SIDE	856
499+65	510+35	LT. SIDE	856
511+56	513+67	RT. SIDE	169
511+56	513+67	LT. SIDE	169
515+27	517+05	RT. SIDE	142
515+27	517+05	LT. SIDE	142
518+27	532+92	RT. SIDE	1172
518+27	532+92	LT. SIDE	1172
534+53	629+05.14	RT. SIDE	7227
534+53	629+05.14	LT. SIDE	7082
536+83	557+30	LT. & RT. INSIDE SHOULDERS	3275
557+70	583+81	LT. & RT. INSIDE SHOULDERS	4178
584+21	611+81	LT. & RT. INSIDE SHOULDERS	4416
612+21	629+05.14	LT. & RT. INSIDE SHOULDERS	2695
TOTAL:			74660

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

CLEARING AND GRUBBING

STATION	STATION	LOCATION	CLEARING	GRUBBING
			STATION	
364+00	366+00	MAIN LANES	2	2
368+00	381+00	MAIN LANES	13	13
382+00	384+00	MAIN LANES	2	2
386+00	394+00	MAIN LANES	8	8
400+00	401+00	MAIN LANES	1	1
407+00	411+00	MAIN LANES	4	4
414+00	415+00	MAIN LANES	1	1
419+00	423+00	MAIN LANES	4	4
427+00	431+00	MAIN LANES	4	4
432+00	559+00	MAIN LANES	127	127
560+00	566+00	MAIN LANES	6	6
567+00	607+00	MAIN LANES	40	40
609+00	611+00	MAIN LANES	2	2
614+00	629+05	MAIN LANES	16	16
TOTALS:			230	230

REMOVAL AND DISPOSAL OF FENCE

STATION	STATION	LOCATION	FENCE	GATES
			LIN. FT.	EACH
400+40		RT. SIDE OF HWY. 167		1
452+88	453+16	RT. SIDE OF HWY. 167		1
545+90	550+41	RT. SIDE OF HWY. 167	450	
551+17	553+90	RT. SIDE OF HWY. 167	273	
555+62	556+59	RT. SIDE OF HWY. 167	97	
557+67	560+72	RT. SIDE OF HWY. 167	506	
557+72		RT. SIDE OF HWY. 167		1
560+67		RT. SIDE OF HWY. 167		1
568+80	571+79	RT. SIDE OF HWY. 167	390	
TOTALS:			1716	4

REMOVAL AND DISPOSAL OF ITEMS

STATION	STATION	LOCATION	SIGN FOUNDATIONS	LUMINAIRE POLES	GUARDRAIL	WELL	POST	SIGNS	BARRICADES	WAGON WHEELS
			EACH	EACH	LIN.FT.	EACH	EACH	EACH	EACH	EACH
352+00		ROAD CLOSED SIGNS AND BARRICADES						2	2	
365+83		SIGN LT. OF CL HWY. 167						1		
382+62		SIGN LT. OF CL HWY. 167						1		
391+54		SIGN LT. OF CL HWY. 167						1		
395+13		SOLAR LIGHT LT. OF CL HWY. 167		1						
396+72		WOODEN POST LT. OF CL HWY. 167					1			
396+94		WOODEN POST LT. OF CL HWY. 167					1			
400+00		WOODEN POST LT. OF CL HWY. 167					1			
400+54		CONCRETE FILLED STEEL POST RT. OF CL HWY. 167					1			
435+90		CLOSE WELL RT. OF CL HWY. 167				1				
438+88		WAGON WHEEL LT. OF CL HWY. 167								1
439+02		WAGON WHEEL LT. OF CL HWY. 167								1
441+24		BRICK SIGN RT. OF CL HWY. 167	1					1		
452+88		WOODEN POST RT. OF CL HWY. 167					1			
453+16		WOODEN POST RT. OF CL HWY. 167					1			
454+29	456+31	GUARDRAIL ON LT.			202					
454+29	456+31	GUARDRAIL ON RT.			202					
457+38	459+39	GUARDRAIL ON LT.			201					
457+38	459+40	GUARDRAIL ON RT.			202					
463+54	465+56	GUARDRAIL ON LT.			202					
463+54	465+56	GUARDRAIL ON RT.			202					
466+98	469+00	GUARDRAIL ON LT.			202					
466+98	469+00	GUARDRAIL ON RT.			202					
496+12	498+11	GUARDRAIL ON LT.			199					
496+11	498+12	GUARDRAIL ON RT.			201					
499+55	501+56	GUARDRAIL ON LT.			201					
499+55	501+55	GUARDRAIL ON RT.			200					
508+62	510+63	GUARDRAIL ON LT.			201					
508+63	510+64	GUARDRAIL ON RT.			201					
511+38	513+74	GUARDRAIL ON LT.			236					
511+38	513+74	GUARDRAIL ON RT.			236					
514+80	517+13	GUARDRAIL ON LT.			233					
514+80	517+13	GUARDRAIL ON RT.			233					
518+18	520+20	GUARDRAIL ON LT.			202					
518+18	520+20	GUARDRAIL ON RT.			202					
530+96	533+01	GUARDRAIL ON LT.			205					
530+96	533+01	GUARDRAIL ON RT.			205					
534+43	536+43	GUARDRAIL ON LT.			200					
534+43	536+43	GUARDRAIL ON RT.			200					
557+66		SIGN RT. OF CL HWY. 167						2		
589+50		SIGN LT. OF CL HWY. 167						1		
590+38		SIGN LT. OF CL HWY. 167						1		
598+84		SIGN LT. OF CL HWY. 167						1		
625+22		SIGN LT. OF CL HWY. 170						1		
635+00		ROAD CLOSED SIGNS AND BARRICADES						2	1	
636+00	639+00	CHEVRONS						6		
640+00		CURVE WARNING SIGNS						2		
TOTALS:			1	1	4970	1	6	22	3	2

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-28-13

2/27/2013
R070289.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.		070289	74	365

(2) QUANTITY SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12

SOIL LOG (1 OF 2)

STATION	LATITUDE			LONGITUDE			LOCATION	DEPTH	LIQUID LIMIT	PLASTICITY INDEX	AASHTO CLASSIFICATION	COLOR
	DEG	MIN	SEC	DEG	MIN	SEC		FEET				
358+00	33	53	29.10	92	24	51.30	11'LT	0-5	24.00	4	A-4(1)	BROWN
358+00	33	53	29.10	92	24	51.40	21'LT	0-5	19.00	3	A-4(0)	BROWN
362+00	33	53	33.50	92	24	52.10	CL	0-5	21.00	3	A-4(0)	BROWN
366+00	33	53	37.10	92	24	53.90	55'LT	0-5	ND	NP	A-4(0)	GRAY
366+00	33	53	37.10	92	24	53.80	45'LT	0-5	ND	NP	A-4(0)	GRAY
370+00	33	53	41.40	92	24	54.20	CL	0-5	ND	NP	A-4(0)	BROWN
374+00	33	53	44.90	92	24	55.30	11'LT	0-5	ND	NP	A-4(0)	GR/RD
374+00	33	53	44.90	92	24	55.40	21'LT	0-5	19.00	6	A-4(0)	BR/GR
378+00	33	53	49.20	92	24	56.00	CL	0-5	20.00	5	A-4(0)	GR/BR
382+00	33	53	52.70	92	24	57.80	55'LT	0-5	ND	NP	A-4(0)	GR/BR
382+00	33	53	52.80	92	24	57.70	45'LT	0-5	ND	NP	A-4(0)	GR/BR
386+00	33	53	56.60	92	24	58.00	CL	0-5	17.00	3	A-4(0)	BR/GR
386+00	33	53	56.60	92	24	58.00	CL	0-5	ND	NP	A-4(0)	BR/GR
390+00	33	54	0.50	92	24	59.30	11'LT	0-5	24.00	5	A-4(0)	BROWN
390+00	33	54	0.50	92	24	59.40	21'LT	0-5	17.00	4	A-4(0)	BR/GR
394+00	33	54	4.20	92	24	59.90	CL	0-5	17.00	1	A-4(0)	GR/BR
398+00	33	54	8.10	92	25	1.80	55'LT	0-5	30.00	14	A-6(8)	GRAY
398+00	33	54	8.10	92	25	1.60	45'LT	0-5	18.00	3	A-4(0)	GRAY
402+00	33	54	12.20	92	25	1.90	CL	0-5	20.00	4	A-4(0)	BROWN
406+00	33	54	15.80	92	25	3.20	11'LT	0-5	ND	NP	A-4(0)	GR/BR
406+00	33	54	15.70	92	25	3.20	21'LT	0-5	18.00	3	A-4(0)	GR/BR
411+00	33	54	20.60	92	25	4.00	CL	0-5	17.00	1	A-4(0)	GR/BR
414+00	33	54	23.60	92	25	5.70	54'LT	0-5	ND	NP	A-4(0)	GRAY
414+00	33	54	23.60	92	25	5.50	45'LT	0-5	17.00	3	A-4(0)	GR/BR
418+00	33	54	28.10	92	25	6.10	CL	0-5	16.00	3	A-4(0)	BR/GR
422+00	33	54	31.90	92	25	7.40	24'LT	0-5	17.00	2	A-4(0)	GR/BR
422+00	33	54	31.90	92	25	7.50	33'LT	0-5	20.00	5	A-4(0)	GR/BR
426+00	33	54	35.40	92	25	8.10	CL	0-5	22.00	6	A-4(3)	GR/BR
430+00	33	54	38.40	92	25	9.60	54'LT	0-5	18.00	4	A-4(0)	GRAY
430+00	33	54	38.40	92	25	9.40	45'LT	0-5	22.00	7	A-4(3)	GRAY
434+00	33	54	43.10	92	25	10.00	CL	0-5	23.00	3	A-4(1)	GRAY
438+00	33	54	46.90	92	25	11.20	24'LT	0-5	18.00	4	A-4(0)	GR/BR
438+00	33	54	46.90	92	25	11.30	33'LT	0-5	20.00	4	A-4(0)	GR/BR
442+00	33	54	50.70	92	25	12.00	CL	0-5	23.00	3	A-4(0)	GR/BR
446+00	33	54	54.40	92	25	13.50	54'LT	0-5	18.00	2	A-4(0)	BR/GR
446+00	33	54	54.40	92	25	13.40	45'LT	0-5	21.00	5	A-4(0)	BROWN
450+00	33	54	58.60	92	25	14.00	CL	0-5	21.00	6	A-4(2)	GR/BR
454+00	33	55	2.40	92	25	15.10	21'LT	0-5	18.00	5	A-4(0)	GR/BR
454+00	33	55	2.30	92	25	15.20	33'LT	0-5	ND	NP	A-4(0)	GR/BR
462+00	33	55	9.60	92	25	16.60	CL	0-5	20.00	4	A-4(0)	GRAY
467+00	33	55	18.20	92	25	19.50	54'LT	0-5	18.00	4	A-4(0)	BROWN
467+00	33	55	18.20	92	25	19.40	45'LT	0-5	21.00	5	A-4(0)	BROWN
472+00	33	55	22.30	92	25	19.90	CL	0-5	20.00	4	A-4(1)	GR/BR
476+00	33	55	24.00	92	25	20.60	24'LT	0-5	19.00	4	A-4(0)	GRAY
476+00	33	55	24.00	92	25	20.70	33'LT	0-5	17.00	3	A-4(0)	GRAY
480+00	33	55	27.80	92	25	21.30	CL	0-5	ND	NP	A-4(0)	GRAY
480+00	33	55	27.80	92	25	21.30	CL	0-5	ND	NP	A-4(0)	GRAY
484+00	33	55	31.40	92	25	22.30	24'LT	0-5	18.00	3	A-4(0)	GR/BR
484+00	33	55	31.40	92	25	22.40	33'LT	0-5	19.00	3	A-4(0)	GR/BR
488+00	33	55	35.30	92	25	23.10	CL	0-5	24.00	8	A-4(5)	BR/GR
492+00	33	55	39.30	92	25	22.70	24'LT	0-5	19.00	4	A-4(0)	GRAY
492+00	33	55	39.30	92	25	22.80	33'LT	0-5	20.00	4	A-4(1)	GRAY
496+00	33	55	41.90	92	25	20.90	CL	0-5	22.00	7	A-4(3)	GRAY
502+00	35	55	48.50	92	25	15.50	25'LT	0-5	19.00	3	A-4(0)	GR/RD
502+00	33	55	48.40	92	25	15.40	35'LT	0-5	ND	NP	A-2-4(0)	GRAY
504+00	33	55	49.80	92	25	13.20	20'RT	0-5	35.00	17	A-6(15)	GR/BR
508+00	33	55	52.40	92	25	10.90	4'LT	0-5	18.00	4	A-2-4(0)	BROWN
508+00	33	55	52.50	92	25	10.90	12'LT	0-5	21.00	7	A-4(0)	BROWN
520+00	33	56	0.80	92	25	2.00	30'RT	0-5	24.00	6	A-4(3)	GR/BR
524+00	33	56	4.00	92	24	59.50	32'LT	0-5	18.00	4	A-2-4(0)	GRAY
524+00	33	56	4.00	92	24	59.40	23'LT	0-5	20	4	A-4(0)	RD/BR

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

SOIL LOG (2 OF 2)

STATION	LATITUDE			LONGITUDE			LOCATION	DEPTH	LIQUID LIMIT	PLASTICITY INDEX	AASHTO CLASSIFICATION	COLOR
	DEG	MIN	SEC	DEG	MIN	SEC		FEET				
528+00	33	56	6.70	92	24	56.00	20'RT	0-5	26.00	11	A-6(6)	GR/BR
538+00	33	56	14.20	92	24	48.90	4'LT	0-5	20.00	5	A-4(0)	RD/GR
538+00	33	56	14.20	92	24	48.90	14'LT	0-5	26.00	11	A-6(1)	RD/GR
540+00	33	56	16.20	92	24	47.50	CL	0-5	20.00	3	A-4(0)	GR/BR
544+00	33	56	20.10	92	24	47.30	54'LT	0-5	18.00	5	A-4(0)	BR/GR
544+00	33	56	20.10	92	24	47.20	45'LT	0-5	19.00	4	A-4(0)	BROWN
548+00	33	56	23.90	92	24	47.00	CL	0-5	40.00	22	A-6(20)	BR/GR
552+00	33	56	28.00	92	24	47.50	24'LT	0-5	ND	NP	A-4(0)	BROWN
552+00	33	56	27.90	92	24	47.60	33'LT	0-5	ND	NP	A-4(0)	BROWN
556+00	33	56	31.30	92	24	47.50	CL	0-5	20.00	3	A-4(0)	BROWN
560+00	33	56	36.50	92	24	48.60	54'LT	0-5	ND	NP	A-2-4(0)	BR/GR
560+00	33	56	36.50	92	24	48.50	45'LT	0-5	19.00	4	A-4(0)	BROWN
564+00	33	56	40.60	92	24	48.30	CL	0-5	26.00	9	A-4(4)	BR/RD
568+00	33	56	43.70	92	24	48.70	24'LT	0-5	25.00	11	A-6(4)	GRAY
568+00	33	56	43.80	92	24	48.80	33'LT	0-5	26.00	12	A-2-6(0)	BR/GR
572+00	33	56	47.80	92	24	48.50	CL	0-5	50.00	32	A-7-6(30)	RD/BR
572+00	33	56	47.80	92	24	48.50	CL	0-5	28.00	13	A-6(10)	RD/BR
576+00	33	56	53.10	92	24	48.90	54'LT	0-5	18.00	3	A-2-4(0)	BR/GR
576+00	33	56	53.10	92	24	48.90	45'LT	0-5	18.00	5	A-4(0)	BR/GR
580+00	33	56	56.40	92	24	48.10	CL	0-5	ND	NP	A-4(0)	BROWN
584+00	33	56	59.80	92	24	48.30	23'LT	0-5	18.00	1	A-4(0)	GR/BR
584+00	33	56	59.80	92	24	48.40	33'LT	0-5	19.00	2	A-4(0)	BR/GR
588+00	33	57	3.70	92	24	47.80	CL	0-5	25.00	9	A-4(5)	GRAY
592+00	33	57	8.00	92	24	48.30	54'LT	0-5	16.00	2	A-4(0)	BR/GR
592+00	33	57	8.00	92	24	48.20	45'LT	0-5	18.00	5	A-4(0)	BR/GR
596+00	33	57	11.20	92	24	47.50	CL	0-5	26.00	10	A-4(6)	GRAY
600+00	33	57	15.10	92	24	47.60	23'LT	0-5	24.00	10	A-2-4(0)	GR/BR
600+00	33	57	15.10	92	24	47.70	34'LT	0-5	18.00	6	A-4(0)	GR/BR
604+00	33	57	19.10	92	24	47.20	CL	0-5	ND	NP	A-2-4(0)	BR/GR
608+00	33	57	29.00	92	24	47.70	54'LT	0-5	ND	NP	A-4(0)	BROWN
608+00	33	57	29.00	92	24	47.60	45'LT	0-5	20.00	7	A-4(0)	RD/BR
612+00	33	57	27.30	92	24	47.10	CL	0-5	29.00	15	A-6(7)	BROWN
612+00	33	57	27.30	92	24	47.10	CL	0-5	35.00	20	A-6(15)	BROWN
616+00	33	57	30.30	92	24	47.90	23'LT	0-5	ND	NP	A-4(0)	GRAY
616+00	33	57	30.30	92	24	47.80	33'LT	0-5	ND	NP	A-4(0)	GRAY
620+00	33	55	34.90	92	24	48.70	15'LT	0-5	19.00	6	A-4(0)	GR/BR
620+00	33	57	34.90	92	24	48.60	8'LT	0-5	30.00	15	A-6(6)	GRAY

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

BENCH MARKS

STATION	LOCATION	BENCH MARKS
		EACH
365+24	R.C. BOX CULV'T. HEADWALL	1
377+89	R.C. BOX CULV'T. HEADWALL	1
409+99	R.C. BOX CULV'T. HEADWALL	1
420+24	R.C. BOX CULV'T. HEADWALL	1
456+16	BRIDGE	1
465+33	BRIDGE	1
498+03	BRIDGE	1
510+34	BRIDGE	1
513+67	BRIDGE	1
517+05	BRIDGE	1
532+91	BRIDGE	1
563+43	R.C. BOX CULV'T. HEADWALL	1
579+10	R.C. BOX CULV'T. HEADWALL	1
597+78	R.C. BOX CULV'T. HEADWALL	1
600+28	R.C. BOX CULV'T. HEADWALL	1
620+57	R.C. BOX CULV'T. HEADWALL	1
TOTAL:		16

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

CONCRETE BARRIER WALL

STATION	STATION	LOCATION	CONCRETE BARRIER WALL (PARAPET TYPE A)
			LIN.FT.
511+65.50	513+57.50	LT. M.L.	192
511+65.50	513+57.50	RT. M.L.	192
514+78.50	516+95.50	LT. M.L.	217
514+78.50	516+95.50	RT. M.L.	217
TOTAL:			818

8/30/2012

R070289.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.		070289	75	365

(2) QUANTITY SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-25-13

DUMPED RIPRAP AND FILTER BLANKET

STATION	LOCATION	DUMPED RIPRAP	FILTER BLANKET
		CU. YDS.	SQ. YDS.
377+40	OUTLET OF BOX CULVERT	72	143
399+99	OUTLET OF PIPE CULVERT	6	11
410+08	OUTLET OF BOX CULVERT	46	91
420+42	OUTLET OF PIPE CULVERT	29	57
440+00	OUTLET OF PIPE CULVERT	5	9
572+19	OUTLET OF DBL. PIPE CULVERT	6	11
620+80	OUTLET OF PIPE CULVERT	30	60
627+20	OUTLET OF PIPE CULVERT	4	8
	TO BE USED IF AND WHERE	20	40
	DIRECTED BY THE ENGINEER		
TOTALS:		218	430

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

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

MAILBOXES

LOCATION	MAILBOXES	MAILBOX SUPPORTS (SINGLE)	MAILBOX SUPPORTS (DOUBLE)
	EACH		
ENTIRE PROJECT	8	6	1
TOTALS:	8	6	1

FENCING

STATION	STATION	LOCATION	WIRE FENCE (TYPE C)
			LIN.FT.
545+90	550+41	RT. SIDE OF HWY. 167	450
551+17	553+90	RT. SIDE OF HWY. 167	273
555+62	556+58	RT. SIDE OF HWY. 167	97
557+80	560+72	RT. SIDE OF HWY. 167	292
568+80	571+79	RT. SIDE OF HWY. 167	299
TOTAL:			1411

EROSION CONTROL MATTING

STATION	STATION	LOCATION	LENGTH	CLASS 3
			LIN. FT.	SQ. YD.
373+00	374+00	RT. SIDE OF HWY. 167	100.0	88.9
376+00	380+00	LT. SIDE OF HWY. 167	400.0	355.6
383+00	384+00	RT. SIDE OF HWY. 167	100.0	88.9
419+00	420+42	RT. SIDE OF HWY. 167	142.0	126.2
439+00	440+00	RT. SIDE OF HWY. 167	100.0	88.9
498+00	499+00	RT. SIDE OF HWY. 167	100.0	88.9
534+53	536+00	RT. SIDE OF HWY. 167	147.0	130.7
544+00	548+00	LT. SIDE OF HWY. 167	400.0	355.6
557+94	562+50	HWY. 167 MEDIAN	456.0	405.3
558+00	563+41	RT. SIDE OF HWY. 167	541.0	480.9
571+00	572+19	LT. SIDE OF HWY. 167	119.0	105.8
581+50	585+00	LT. SIDE OF HWY. 167	350.0	311.1
582+00	583+56	HWY. 167 MEDIAN	156.0	138.7
584+44	588+00	HWY. 167 MEDIAN	356.0	316.4
586+00	587+00	RT. SIDE OF HWY. 167	100.0	88.9
591+00	597+78	LT. SIDE OF HWY. 167	678.0	602.7
592+00	596+00	HWY. 167 MEDIAN	400.0	355.6
593+00	598+00	RT. SIDE OF HWY. 167	500.0	444.4
602+00	604+00	HWY. 167 MEDIAN	200.0	177.8
608+50	610+00	HWY. 167 MEDIAN	150.0	133.3
615+00	616+00	HWY. 167 MEDIAN	100.0	88.9
618+00	619+00	LT. SIDE OF HWY. 167	100.0	88.9
619+00	620+57	HWY. 167 MEDIAN	157.0	139.6
626+00	627+15	RT. SIDE OF HWY. 167	115.0	102.2
TOTAL:				5304.2

NOTE: AVERAGE WIDTH = 8'-0"

CULVERT CLEAN OUT

STATION	LOCATION	EACH
420+42	DBL 5' X 4' R.C. BOX CULV'T	1
TOTAL:		1

SELECTED PIPE BEDDING

LOCATION	SELECTED PIPE BEDDING
	CU.YD.
ENTIRE PROJECT TO BE USED IF	
AND WHERE DIRECTED BY THE	300
ENGINEER	
TOTAL:	300

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

CONCRETE DITCH PAVING

STATION	STATION	LOCATION	"W"	"B"	CONC. DITCH PAVING (TYPE A)	CONC. DITCH PAVING (TYPE B)	SOLID SODDING	WATER
			FEET	FEET	SQ. YD.	SQ. YD.	SQ. YD.	M. GAL.
357+53	358+00	RT. SIDE OF HWY. 167	9.5			49.61	20.89	0.26
410+07	411+00	LT. SIDE OF HWY. 167	6.5			67.17	41.33	0.52
420+42	421+00	LT. SIDE OF HWY. 167	6.5			41.89	25.78	0.32
424+00	425+00	RT. SIDE OF HWY. 167	6.5			72.22	44.44	0.56
455+00	456+00	RT. SIDE OF HWY. 167	5.5			61.11	44.44	0.56
546+00	548+00	RT. SIDE OF HWY. 167	6.5			144.44	88.89	1.12
550+04	555+00	LT. SIDE OF HWY. 167	6.5			358.22	220.44	2.78
550+04	555+00	RT. SIDE OF HWY. 167	6.5			358.22	220.44	2.78
550+04	555+00	HWY. 167 MEDIAN	12.5			688.89	220.44	2.78
559+00	562+00	LT. SIDE OF HWY. 167	16.5	10	550.00		133.33	1.68
564+50	567+00	LT. SIDE OF HWY. 167	6.5			180.56	111.11	1.40
572+19	573+00	LT. SIDE OF HWY. 167	6.5			58.50	36.00	0.45
577+00	580+00	LT. SIDE OF HWY. 167	6.5			216.67	133.33	1.68
577+00	581+00	RT. SIDE OF HWY. 167	9.5			422.22	177.78	2.24
585+00	586+00	RT. SIDE OF HWY. 167	9.5			105.56	44.44	0.56
585+00	587+50	LT. SIDE OF HWY. 167	7.5			208.33	111.11	1.40
600+28	601+00	RT. SIDE OF HWY. 167	6.5			52.00	32.00	0.40
600+28	602+00	LT. SIDE OF HWY. 167	9.5			181.56	76.44	0.96
604+00	608+50	HWY. 167 MEDIAN	12.5			625.00	200.00	2.52
616+00	618+00	LT. SIDE OF HWY. 167	6.5			144.44	88.89	1.12
616+00	619+00	HWY. 167 MEDIAN	12.5			416.67	133.33	1.68
619+00	621+00	LT. SIDE OF HWY. 167	6.5			144.44	88.89	1.12
620+00	622+00	RT. SIDE OF HWY. 167	9.5			211.11	88.89	1.12
626+00	627+15	LT. SIDE OF HWY. 167	6.5			83.06	51.11	0.64
TOTALS:					550.00	4891.89	2433.74	30.65

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

EROSION CONTROL

STATION	STATION	LOCATION	PERMANENT EROSION CONTROL: SEEDING	LIME	MULCH COVER	WATER	SECOND SEEDING APPLICATION	TEMPORARY EROSION CONTROL: TEMPORARY SEEDING	MULCH COVER	WATER	WATTLE (20") (E-1)	SAND BAG DITCH CHECKS (E-5)	ROCK DITCH CHECKS (E-6)	DROP INLET SILT FENCE (E-7)	SILT FENCE (E-11)	DIVERSION DITCH (E-8)	SLOPE DRAIN (E-12): PIPE FOR SLOPE DRAINS	SLOPE DRAIN (E-12): DUMPED RIPRAP	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.	LIN.FT.	LIN.FT.	LIN.FT.	CU.YD.	CU.YD.	CU.YD.	CU. YD.
ENTIRE	PROJECT	CLEARING AND GRUBBING										2948	489		6794						549
ENTIRE	PROJECT	STAGE 1	24.74	49.48	24.74	2523.5	24.74					2310	375	740	3535	4812	678	32	5757	5757	6145
ENTIRE	PROJECT	STAGE 2	25.58	51.16	25.58	2609.2	25.58				570	1254	189			5862	576	30	3381	3381	3520
*ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.								118.38	118.38	2415.0	90	990	150	200	800	2800	500	20	2000	2000	2135
TOTALS:			50.32	100.64	50.32	5132.7	50.32	118.38	118.38	2415.0	660	7502	1203	940	11129	13474	1754	82	11138	11138	12349

BASIS OF ESTIMATE:
LIME .....2 TONS / ACRE OF SEEDING
WATER.....102.0 M.G. / ACRE OF SEEDING.
WATER.....20.4 M.G. / ACRE OF TEMPORARY SEEDING.
WATER.....12.6 GAL. / SQ. YD. OF SOLID SODDING.
WATTLE DITCH CHECKS.....30 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 ARE ESTIMATED.
SEE SECTION 104.03 OF THE STD. SPECS.

2/27/2013

R070289.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.		070289	76	365

(2) QUANTITY SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12

EARTHWORK

STATION	STATION	LOCATION / DESCRIPTION	UNCLASSIFIED EXCAVATION	COMPACTED EMBANKMENT				STONE BACKFILL	* SOIL STABILIZATION	* GEOTEXTILE FABRIC
				NORM.	*SM-1	*SM-3	TOTAL			TYPE 10
			CU. YD.					TON	TON	SQ. YDS.
ENTIRE	PROJECT	STAGE 1-MAIN LANES	39246	242625			242625			
ENTIRE	PROJECT	* STAGE 1-COMP. EMB. OVER 4' (TO BE USED IF			30400		30400			45600
		AND WHERE DIRECTED BY THE ENGINEER)								
ENTIRE	PROJECT	STAGE 1-BORROW DITCHES (TO BE USED IF	15811		26821		26821	28608		
		AND WHERE DIRECTED BY THE ENGINEER)								
ENTIRE	PROJECT	STAGE 2-MAIN LANES	27357	73758			73758			
ENTIRE	PROJECT	STAGE 2-BORROW DITCHES (TO BE USED IF	3349		5027		5027	5362		
		AND WHERE DIRECTED BY THE ENGINEER)								
ENTIRE	PROJECT	STAGE 2 TEMP. CROSSOVER AT THE SOUTH END		516			516			
ENTIRE	PROJECT	APPROACHES		3165			3165			
ENTIRE	PROJECT	TEMPORARY APPROACHES		2500			2500			
ENTIRE	PROJECT	REMOVE TEMP. CROSSOVER FROM JOB 070288	898							
ENTIRE	PROJECT	REMOVE TEMP. CROSSOVER FROM JOB 070290	1074							
ENTIRE	PROJECT	REMOVE TEMP. CROSSOVER IN STAGE 3	997							
456+16	457+28	BRIDGE EARTHWORK	259							
456+34	466+95	BRIDGE EARTHWORK	444							
498+04	499+65	BRIDGE EARTHWORK	215							
510+35	511+56	BRIDGE EARTHWORK	724							
513+68	514+89	BRIDGE EARTHWORK	236							
517+06	518+27	BRIDGE EARTHWORK	310							
532+92	534+53	BRIDGE EARTHWORK	375							
365+24		CHANNEL CHANGE	35							
377+89		CHANNEL CHANGE	267							
409+99		CHANNEL CHANGE	275							
420+42		CHANNEL CHANGE	144							
563+43		CHANNEL CHANGE	98							
579+10		CHANNEL CHANGE	62							
597+78		CHANNEL CHANGE	86							
600+28		CHANNEL CHANGE	35							
620+57		CHANNEL CHANGE	97							
* ENTIRE	PROJECT	UNDERCUT & BACKFILL- TO BE USED IF AND	90000			90000	90000			
		WHERE DIRECTED BY THE ENGINEER								
* ENTIRE	PROJECT	TO BE USED IF AND WHERE							2000	
		DIRECTED BY THE ENGINEER								
TOTALS:			182394	322564	62248	90000	474812	33970	2000	45600

* QUANTITY ESTIMATED.
SEE SECTION 104.03 OF THE STD. SPECS.
REFER TO "EMBANKMENT CONSTRUCTION " SP FOR ADDITIONAL INFORMATION.

GUARDRAIL

STATION	STATION	LOCATION	GUARDRAIL (TYPE A)	THRIE BEAM GUARDRAIL TERMINAL	GUARDRAIL TERMINAL (TYPE 2)	TERMINAL ANCHOR POST (TYPE 1)
			LIN.FT.	EACH		
453+87.75	456+06.50	LT. SIDE OF RT. MAIN LANES	150	1	1	
453+87.75	456+06.50	RT. SIDE OF RT. MAIN LANES	150	1	1	
457+37.50	459+56.25	LT. SIDE OF LT. MAIN LANES	150	1	1	
457+37.50	459+56.25	RT. SIDE OF LT. MAIN LANES	150	1	1	
463+04.75	465+23.50	LT. SIDE OF RT. MAIN LANES	150	1	1	
463+04.75	465+23.50	RT. SIDE OF RT. MAIN LANES	150	1	1	
467+04.50	469+23.25	LT. SIDE OF LT. MAIN LANES	150	1	1	
467+04.50	469+23.25	RT. SIDE OF LT. MAIN LANES	150	1	1	
495+74.75	497+93.50	RT. SIDE	150	1	1	
496+49.75	497+93.50	LT. SIDE	125	1		1
499+74.50	501+93.25	LT. SIDE	150	1	1	
499+74.50	501+18.25	RT. SIDE	125	1		1
508+05.75	510+24.50	RT. SIDE	150	1	1	
508+80.75	510+24.50	LT. SIDE	125	1		1
518+36.50	520+55.25	LT. SIDE	150	1	1	
518+36.50	519+80.25	RT. SIDE	125	1		1
530+62.75	532+81.50	RT. SIDE	150	1	1	
531+47.75	532+81.50	LT. SIDE	125	1		1
534+62.50	536+81.25	LT. SIDE	150	1	1	
534+62.50	536+06.25	RT. SIDE	125	1		1
TOTALS:			2850	20	14	6

ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC

LOCATION	TON	TACK COAT
		GALLON
ENTIRE PROJECT - TO BE USED IF AND WHERE	150	300
DIRECTED BY THE ENGINEER		
TOTALS:	150	300

NOTE: QUANTITIES ARE ESTIMATED.
SEE SECTION 104.03 OF THE STD. SPECS.
BASIS OF ESTIMATE:
ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC...25 TON/MILE
TACK COAT FOR MAINTENANCE OF TRAFFIC.....50 GAL./MILE

4" PIPE UNDERDRAIN

STATION	STATION	LOCATIONS	4" PIPE UNDERDRAINS	UNDERDRAIN OUTLET PROTECTORS
			LIN.FT.	EACH
357+20	362+00	LT. SIDE OF HWY. 167	520	3
357+20	362+00	RT. SIDE OF HWY. 167	520	3
378+00	382+00	LT. SIDE OF HWY. 167	440	3
378+00	382+00	RT. SIDE OF HWY. 167	440	3
399+00	403+00	LT. SIDE OF HWY. 167	440	3
399+00	403+00	RT. SIDE OF HWY. 167	440	3
407+00	411+00	LT. SIDE OF HWY. 167	440	3
407+00	411+00	RT. SIDE OF HWY. 167	440	3
418+00	425+00	LT. SIDE OF HWY. 167	760	4
418+00	425+00	RT. SIDE OF HWY. 167	760	4
450+00	453+00	LT. SIDE OF HWY. 167	340	3
450+00	453+00	RT. SIDE OF HWY. 167	340	3
459+00	463+00	LT. SIDE OF HWY. 167	440	3
459+00	463+00	RT. SIDE OF HWY. 167	440	3
470+00	474+00	LT. SIDE OF HWY. 167	440	3
470+00	474+00	RT. SIDE OF HWY. 167	440	3
485+00	488+00	LT. SIDE OF HWY. 167	340	3
490+00	494+00	RT. SIDE OF HWY. 167	440	3
501+00	504+00	LT. SIDE OF HWY. 167	340	3
501+00	504+00	RT. SIDE OF HWY. 167	340	3
528+00	530+00	LT. SIDE OF HWY. 167	220	2
528+00	530+00	RT. SIDE OF HWY. 167	220	2
540+00	544+00	LT. SIDE OF HWY. 167	440	3
540+00	544+00	RT. SIDE OF HWY. 167	440	3
561+00	567+00	LT. SIDE OF HWY. 167	660	4
561+00	567+00	RT. SIDE OF HWY. 167	660	4
578+00	583+00	LT. SIDE OF HWY. 167	540	3
578+00	583+00	RT. SIDE OF HWY. 167	540	3
596+00	603+00	LT. SIDE OF HWY. 167	760	4
596+00	603+00	RT. SIDE OF HWY. 167	760	4
620+00	624+00	LT. SIDE OF HWY. 167	440	3
620+00	624+00	RT. SIDE OF HWY. 167	440	3
* ENTIRE PROJECT TO BE USED IF AND			1000	4
WHERE DIRECTED BY THE ENGINEER				
TOTALS:			16220	104

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

ACHM PATCHING OF EXISTING ROADWAY

DESCRIPTION	TON
ENTIRE PROJECT - TO BE USED IF AND WHERE	100
DIRECTED BY THE ENGINEER	
TOTAL:	100

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

8/30/2012

R070289.DGN

QUANTITY SHEETS

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.		070289	77	365

(2) QUANTITY SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-28-13

STRUCTURES

STATION	DESCRIPTION	REINFORCED CONCRETE PIPE CULVERT (CLASS III) 18"	24"	36"	FLARED END SECTIONS FOR R.C. PIPE CULVERTS 18"	24"	36"	TEMPORARY PIPE CULVERTS 18"	DROP INLETS TYPE RM	TM	SPAN	HEIGHT	LENGTH	CLASS S CONCRETE-ROADWAY	REINF. STEEL-ROADWAY (GRADE 60)	UNCL.EXC. FOR STR.-ROADWAY	SOLID SODDING	WATER	STD. DWG. NOS.
		LIN. FT.			EACH			LIN. FT.	EACH		LIN. FT.			CU.YD.	POUND	CU.YD.	SQ.YD.	M.GAL	
357+53	INSTALL 18" TEMPORARY PIPE CULV'T IN MEDIAN							34											PCP-1, PCP-2, PCC-1, PCM-1
358+00	CONST. R.M. DROP INLET IN MEDIAN & R.C. PIPE CULVERT OUTLET	82			1				1								10	0.13	FES-1, FES-2, FPC-9D, PCC-1
364+00	CONST. R.M. DROP INLET IN MEDIAN & R.C. PIPE CULVERT OUTLET	84			1				1								10	0.13	FES-1, FES-2, FPC-9D, PCC-1
365+24	IN PLACE 6' X 3' X 77' R.C. BOX CULV'T EXTEND 13' LT. & 72' RT.										6	3	85	46.60	6266	31	13	0.16	W-X003-1,R-100X-0,RCB-1, RCB-2, RCB-3
366+00	CONST. R.M. DROP INLET IN MEDIAN & R.C. PIPE CULVERT OUTLET	72							1								5	0.06	FPC-9D, PCC-1
366+68	INSTALL 18" TEMPORARY PIPE CULV'T IN MEDIAN							40											PCP-1, PCP-2, PCC-1, PCM-1
369+34	INSTALL 18" TEMPORARY PIPE CULV'T IN MEDIAN							28											PCP-1, PCP-2, PCC-1, PCM-1
369+97	INSTALL 18" TEMPORARY PIPE CULV'T IN MEDIAN							34											PCP-1, PCP-2, PCC-1, PCM-1
370+07	INSTALL 18" TEMPORARY PIPE CULV'T IN MEDIAN							28											PCP-1, PCP-2, PCC-1, PCM-1
374+50	CONST. R.M. DROP INLET IN MEDIAN & R.C. PIPE CULVERT OUTLET	86			1				1								10	0.13	FES-1, FES-2, FPC-9D, PCC-1
377+00	CONST. R.M. DROP INLET IN MEDIAN & R.C. PIPE CULVERT OUTLET	84			1				1								10	0.13	FES-1, FES-2, FPC-9D, PCC-1
380+00	CONST. R.M. DROP INLET IN MEDIAN & R.C. PIPE CULVERT OUTLET	86			1				1								10	0.13	FES-1, FES-2, FPC-9D, PCC-1
383+00	CONST. R.M. DROP INLET IN MEDIAN & R.C. PIPE CULVERT OUTLET	82			1				1								10	0.13	FES-1, FES-2, FPC-9D, PCC-1
385+46	INSTALL 18" TEMPORARY PIPE CULV'T IN MEDIAN							52											PCP-1, PCP-2, PCC-1, PCM-1
386+16	INSTALL 18" TEMPORARY PIPE CULV'T IN MEDIAN							53											PCP-1, PCP-2, PCC-1, PCM-1
390+75	INSTALL 18" TEMPORARY PIPE CULV'T IN MEDIAN							38											PCP-1, PCP-2, PCC-1, PCM-1
392+51	INSTALL 18" TEMPORARY PIPE CULV'T IN MEDIAN							32											PCP-1, PCP-2, PCC-1, PCM-1
393+62	INSTALL 18" TEMPORARY PIPE CULV'T IN MEDIAN							30											PCP-1, PCP-2, PCC-1, PCM-1
394+00	CONST. R.M. DROP INLET IN MEDIAN & R.C. PIPE CULVERT OUTLET	84			1				1								10	0.13	FES-1, FES-2, FPC-9D, PCC-1
395+26	INSTALL 18" TEMPORARY PIPE CULV'T IN MEDIAN							32											PCP-1, PCP-2, PCC-1, PCM-1
397+00	CONST. R.M. DROP INLET IN MEDIAN & R.C. PIPE CULVERT OUTLET	86			1				1								10	0.13	FES-1, FES-2, FPC-9D, PCC-1
400+00	IN PLACE 24" X 82' R.C. PIPE CULV'T EXTEND 8' LT. 70' RT.		86			2											16	0.20	FES-1, FES-2, PCC-1
401+58	INSTALL 18" TEMPORARY PIPE CULV'T IN MEDIAN							40											PCP-1, PCP-2, PCC-1, PCM-1
402+00	CONST. R.M. DROP INLET IN MEDIAN & R.C. PIPE CULVERT OUTLET	74			1				1								10	0.13	FES-1, FES-2, FPC-9D, PCC-1
407+00	CONST. R.M. DROP INLET IN MEDIAN & R.C. PIPE CULVERT OUTLET	82			1				1								10	0.13	FES-1, FES-2, FPC-9D, PCC-1
412+69	INSTALL 18" TEMPORARY PIPE CULV'T IN MEDIAN							30											PCP-1, PCP-2, PCC-1, PCM-1
420+00	CONST. R.M. DROP INLET IN MEDIAN & R.C. PIPE CULVERT OUTLET	38							1								5	0.06	FPC-9D, PCC-1
420+42	IN PLACE DBL. 5' X 4' X 47' R.C. BOX CULV'T EXTEND 3' LT. &104 RT.										5	4	116	98.03	16123	47	17	0.21	R-200X-0,W-X003-1,RCB-1,RCB-2,RCB-3
421+00	CONST. R.M. DROP INLET IN MEDIAN & R.C. PIPE CULVERT OUTLET	54							1								5	0.06	FPC-9D, PCC-1
424+00	CONST. R.M. DROP INLET IN MEDIAN & R.C. PIPE CULVERT OUTLET	74			1				1								10	0.13	FES-1, FES-2, FPC-9D, PCC-1
428+96	INSTALL 18" TEMPORARY PIPE CULV'T IN MEDIAN							28											PCP-1, PCP-2, PCC-1, PCM-1
430+55	INSTALL 18" TEMPORARY PIPE CULV'T IN MEDIAN							28											PCP-1, PCP-2, PCC-1, PCM-1
438+95	INSTALL 18" TEMPORARY PIPE CULV'T IN MEDIAN							28											PCP-1, PCP-2, PCC-1, PCM-1
440+00	CONST. R.M. DROP INLET IN MEDIAN & R.C. PIPE CULVERT OUTLET		146			2			1								21	0.26	FES-1, FES-2, FPC-9D, PCC-1
445+00	CONST. R.M. DROP INLET IN MEDIAN & R.C. PIPE CULVERT OUTLET	82			1				1								10	0.13	FES-1, FES-2, FPC-9D, PCC-1
446+48	INSTALL 18" TEMPORARY PIPE CULV'T IN MEDIAN							28											PCP-1, PCP-2, PCC-1, PCM-1
450+95	INSTALL 18" TEMPORARY PIPE CULV'T IN MEDIAN							28											PCP-1, PCP-2, PCC-1, PCM-1
451+00	CONST. R.M. DROP INLET IN MEDIAN & R.C. PIPE CULVERT OUTLET	82			1				1								10	0.13	FES-1, FES-2, FPC-9D, PCC-1
451+94	INSTALL 18" TEMPORARY PIPE CULV'T IN MEDIAN							28											PCP-1, PCP-2, PCC-1, PCM-1
462+00	CONST. R.M. DROP INLET IN MEDIAN & R.C. PIPE CULVERT OUTLET	84			1				1								10	0.13	FES-1, FES-2, FPC-9D, PCC-1
474+00	CONST. R.M. DROP INLET IN MEDIAN & R.C. PIPE CULVERT OUTLET	80			1				1								10	0.13	FES-1, FES-2, FPC-9D, PCC-1
483+50	CONST. R.M. DROP INLET IN MEDIAN & R.C. PIPE CULVERT OUTLET	82			1				1								10	0.13	FES-1, FES-2, FPC-9D, PCC-1
489+00	CONST. R.M. DROP INLET IN MEDIAN & R.C. PIPE CULVERT OUTLET	86			1				1								10	0.13	FES-1, FES-2, FPC-9D, PCC-1
541+00	CONST. R.M. DROP INLET IN MEDIAN & R.C. PIPE CULVERT OUTLET	86			1				1								10	0.13	FES-1, FES-2, FPC-9D, PCC-1
546+00	CONST. R.M. DROP INLET IN MEDIAN & R.C. PIPE CULVERT OUTLET	90			1				1								10	0.13	FES-1, FES-2, FPC-9D, PCC-1
548+28	INSTALL 18" TEMPORARY PIPE CULV'T IN MEDIAN							32											PCP-1, PCP-2, PCC-1, PCM-1
550+04	CONST. R.M. DROP INLET IN MEDIAN & R.C. PIPE CULVERT OUTLET			165			2		1								17	0.21	FES-1, FES-2, FPC-9D, PCC-1
563+43	IN PLACE 5' X 4' X 84' R.C. BOX CULV'T EXTEND 2' LT. & 100' RT. & CONST. TM D.I.									1	5	4	102	51.54	5226	32	14	0.18	W-X003-1,R-100X-XI, FPC-9, FPC-9D, RCB-1, RCB-2, RCB-3
567+15	INSTALL 18" TEMPORARY PIPE CULV'T IN MEDIAN							52											PCP-1, PCP-2, PCC-1, PCM-1
568+00	CONST. R.M. DROP INLET IN MEDIAN & R.C. PIPE CULVERT OUTLET	84			1				1								10	0.13	FES-1, FES-2, FPC-9D, PCC-1
569+77	INSTALL 18" TEMPORARY PIPE CULV'T IN MEDIAN							32											PCP-1, PCP-2, PCC-1, PCM-1
572+19	IN PLACE DBL. 24" X 83' R.C. PIPE CULV'T REMOVE. 7'LT AND 4' RT.					1											8	0.10	FES-1,FES-2, PCC-1
572+19	CONST. R.M. DROP INLET IN MEDIAN & DBL. R.C. PIPE CULVERT OUTLET		87			1			1								8	0.10	FES-1, FES-2, FPC-9D, PCC-1
579+10	IN PLACE 6' X 6' X 66' R.C. BOX CULV'T EXTEND 12' LT. & 102' RT. & CONST. TM D.I.									1	6	6	114	84.52	8412	46	19	0.24	W-X003-1,R-100X-XI, FPC-9, FPC-9D, RCB-1, RCB-2, RCB-3
580+00	CONST. R.M. DROP INLET IN MEDIAN & R.C. PIPE CULVERT OUTLET	90							1								5	0.06	FPC-9D, PCC-1
585+00	CONST. R.M. DROP INLET IN MEDIAN & R.C. PIPE CULVERT OUTLET	74			1				1								10	0.13	FES-1, FES-2, FPC-9D, PCC-1
595+00	CONST. R.M. DROP INLET IN MEDIAN & R.C. PIPE CULVERT OUTLET	82			1				1								10	0.13	FES-1, FES-2, FPC-9D, PCC-1
597+78	IN PLACE 5' X 5' X 49' R.C. BOX CULV'T EXTEND 127' RT.										5	5	127	63.95	8177	33	8	0.10	W-X003-1,R-100X-0,RCB-1, RCB-2, RCB-3
599+70	CONST. R.M. DROP INLET IN MEDIAN & R.C. PIPE CULVERT OUTLET	46							1								5	0.06	FPC-9D, PCC-1
605+00	CONST. R.M. DROP INLET IN MEDIAN & R.C. PIPE CULVERT OUTLET	86			1				1								10	0.13	FES-1, FES-2, FPC-9D, PCC-1
618+00	CONST. R.M. DROP INLET IN MEDIAN & R.C. PIPE CULVERT OUTLET	88			1				1								10	0.13	FES-1, FES-2, FPC-9D, PCC-1
620+57	IN PLACE 6' X 5' X 52' R.C. BOX CULV'T EXTEND 70' LT. ON 10° LT. FWD. SKEW AND 78' RT. ON 25° LT. FWD. SKEW									1	6	5	148	90.26	10078	48	19	0.24	R-100X-XI, W-X15, W-X153-1, R-115X-1, W-X30, W-X303-1, R-130X-1, RCB-1,RCB-2,RCB-3, FPC-9, FPC-9D
623+00	CONST. R.M. DROP INLET IN MEDIAN & R.C. PIPE CULVERT OUTLET	92			1				1								10	0.13	FES-1, FES-2, FPC-9D, PCC-1
627+15	CONST. R.M. DROP INLET IN MEDIAN & R.C. PIPE CULVERT OUTLET		86			1			1								13	0.16	FES-1, FES-2, FPC-9D, PCC-1
627+15	IN PLACE 24" X 58' R.C. PIPE CULV'T EXTEND 16' LT. AND 2' RT.		26			1											8	0.10	FES-1, FES-2, PCC-1
SUBTOTALS:		**2382**	**431**	**165**	**25**	**8**	**2**	**755**	**34**	**3**				**434.90**	**54282**	**237**	**456**	**5.81**	
STRUCTURES OVER 20'-0" SPAN																			
377+89	IN PLACE DBL. 10' X 6' X88' R.C. BOX CULV'T EXTEND 3' LT. & 82' RT. ON 28° LT. FWD. SKEW										10	6	85	181.45	27593	90	28	0.35	W-X003-1, R-200X-0, W-X30, W-X303-1, R-230X-02, RCB-1, RCB-2, RCB-3
409+99	IN PLACE DBL. 10' X 4' X 80' R.C.BOX CULV'T EXTEND 12' LT. & 92' RT. ON 36° LT. FWD. SKEW										10	4	104	235.94	24072	99	24	0.30	SPECIAL DETAILS PG. 19 & 20, RCB-1, RCB-2, RCB-3
600+28	IN PLACE DBL. 10' X 6' X 48' R.C.BOX CULV'T EXTEND 132' RT.									1	10	6	132	249.41	39361	113	18	0.23	W-X003-1, R-200X-0, RCB-1, RCB-2, RCB-3, FPC-9, FPC-9D
SUBTOTALS:										**1**				**666.80**	**91026**	**302**	**70**	**0.88**	
TOTALS:		**2382**	**431**	**165**	**25**	**8**	**2**	**755**	**34**	**4**				**1101.70**	**145308**	**539**	**526**	**6.69**	

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

2/27/2013

R070289.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.		070289	78	365

(2) QUANTITY SHEETS

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		STANDARD DRAWING NUMBERS
							18"	24"	
			FEET	SQ. YD.	TON	TON	LIN. FT.		
357+53	LT.	HWY. 167 - OVERLAY	16	76.1	8.4				
362+52	LT.	HWY. 167	16	76.3	8.4	31.2		30	PCC-1, PCM-1, PCP-1, PCP-2
366+68	LT.	HWY. 167	24	112.5	12.4	45.9	44		PCC-1, PCM-1, PCP-1, PCP-2
369+34	LT.	HWY. 167	16	48.5	5.3	19.8	34		PCC-1, PCM-1, PCP-1, PCP-2
369+97	RT.	HWY. 167	16	52.3	5.8	21.4		28	PCC-1, PCM-1, PCP-1, PCP-2
370+07	LT.	HWY. 167	16	47.8	5.3	19.5	32		PCC-1, PCM-1, PCP-1, PCP-2
374+98	LT.	HWY. 167	16	24.7	2.7	10.1	36		PCC-1, PCM-1, PCP-1, PCP-2
385+46	LT.	HWY. 167	40	119.1	13.1	48.6	58		PCC-1, PCM-1, PCP-1, PCP-2
386+16	LT.	HWY. 167	40	115.6	12.7	47.2	56		PCC-1, PCM-1, PCP-1, PCP-2
390+75	LT.	HWY. 167	20	57.5	6.3	23.5	36		PCC-1, PCM-1, PCP-1, PCP-2
392+51	LT.	HWY. 167	16	46.5	5.1	19.0	32		PCC-1, PCM-1, PCP-1, PCP-2
393+62	RT.	HWY. 167	16	76.2	8.4	31.1	28		PCC-1, PCM-1, PCP-1, PCP-2
395+26	LT.	HWY. 167	16	48.9	5.4	20.0		32	PCC-1, PCM-1, PCP-1, PCP-2
400+19	LT.	HWY. 167	16	40.9	4.5	16.7	34		PCC-1, PCM-1, PCP-1, PCP-2
400+50	RT.	HWY. 167	16	142.2	15.6	58.1		38	PCC-1, PCM-1, PCP-1, PCP-2
400+61	LT.	HWY. 167	16	47.8	5.3	19.5	32		PCC-1, PCM-1, PCP-1, PCP-2
401+58	LT.	HWY. 167	24	68.9	7.6	28.1	40		PCC-1, PCM-1, PCP-1, PCP-2
412+69	LT.	HWY. 167	16	47.8	5.3	19.5	32		PCC-1, PCM-1, PCP-1, PCP-2
417+66	RT.	HWY. 167	16	58.6	6.4	23.9	32		PCC-1, PCM-1, PCP-1, PCP-2
428+96	LT.	HWY. 167	16	47.7	5.2	19.5	32		PCC-1, PCM-1, PCP-1, PCP-2
430+55	LT.	HWY. 167-DALLAS COUNTY 118	20	135.6	14.9	55.4	42		PCC-1, PCM-1, PCP-1, PCP-2
431+32	RT.	HWY. 167	16	49.6	5.5	20.3	28		PCC-1, PCM-1, PCP-1, PCP-2
436+72	RT.	HWY. 167	16	76.5	8.4	31.2	28		PCC-1, PCM-1, PCP-1, PCP-2
438+95	LT.	HWY. 167	16	49.7	5.5	20.3	34		PCC-1, PCM-1, PCP-1, PCP-2
441+04	LT.	HWY. 167-DALLAS COUNTY 126	20	165.7	18.2	67.7			
441+04	RT.	HWY. 167	16	70.7	7.8	28.9		34	PCC-1, PCM-1, PCP-1, PCP-2
446+48	LT.	HWY. 167	16	41.9	4.6	17.1	34		PCC-1, PCM-1, PCP-1, PCP-2
450+95	LT.	HWY. 167	16	65.6	7.2	26.8		34	PCC-1, PCM-1, PCP-1, PCP-2
451+94	LT.	HWY. 167	16	84.0	9.2	34.3		36	PCC-1, PCM-1, PCP-1, PCP-2
453+00	RT.	HWY. 167	16	83.0	9.1	33.9		80	PCC-1, PCM-1, PCP-1, PCP-2
479+13	RT.	HWY. 167	16	83.0	9.1	33.9			
492+70	LT.	HWY. 167-WELLS RD.	20	283.1	31.1	115.6	68		PCC-1, PCM-1, PCP-1, PCP-2
548+28	LT.	HWY. 167	16	47.8	5.3	19.5			
557+23	LT.	HWY. 167	16	57.0	6.3	23.3			
557+55	RT.	HWY. 167-GRACE CHURCH RD.	20	147.6	16.2	60.3			
567+15	LT.	HWY. 167	36	105.6	11.6	43.1			
568+67	RT.	HWY. 167	16	63.4	7.0	25.9			
569+78	LT.	HWY. 167	16	64.6	7.1	26.4		30	PCC-1, PCM-1, PCP-1, PCP-2
589+88	LT.	HWY. 167	24	73.9	8.1	30.2			
599+70	LT.	HWY. 167	16	50.9	5.6	20.8			
601+14	RT.	HWY. 167	16	88.2	9.7	36.0			
611+40	RT.	HWY. 167	16	131.7	14.5	53.8			
611+96	LT.	HWY. 167-LEVI EXT.	20	188.4	20.7	76.9			
625+06	RT.	HWY. 167-GARNER RD.	20	145.0	16.0	59.2			
625+47	LT.	HWY. 167	16	71.5	7.9	29.2			
* ENTIRE PROJECT TEMPORARY DRIVES						440.0			
TOTALS:				**3779.9**	**415.8**	**1952.6**	**792**	**342**	

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....94.6% MIN. AGGR.....5.4% 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.
FOR C.M. PIPE CULVERT INSTALLATIONS USE TYPE 2 BEDDING UNLESS OTHERWISE SPECIFIED.

THE CONTRACTOR, WITH THE APPROVAL OF THE ENGINEER, WILL BE ALLOWED TO SUBSTITUTE A HIGHER PERFORMANCE GRADE ASPHALT SURFACE COURSE FOR DRIVEWAYS AND MINOR SIDE STREET CONSTRUCTION AT NO ADDITIONAL COST TO THE DEPARTMENT.

PAVEMENT REPAIR OVER CULVERTS (CONCRETE)

STATION	LOCATION	WIDTH	LENGTH	CU.YD.
		FEET		
440+00	HWY. 167	8.50	38	12.0
440+58	HWY. 167	8.50	42	13.2
550+04	HWY. 167	8.50	38	12.0
618+00	HWY. 167	7.92	36	10.6
TOTAL:				47.8

AVG. DEPTH = 1'-0"

COLD MILLING ASPHALT PAVEMENT

STATION	STATION	LOCATION	AVG. WIDTH	COLD MILLING ASPHALT PAVEMENT
			FEET	SQ. YD.
356+20	357+20	HWY. 167- LT. LANES	36	400.00
629+05	630+05	HWY. 167- RT. LANES	36	400.00
TOTAL:				800.00

NOTE: AVERAGE MILLING DEPTH 1".

APPROACH GUTTERS

STATION	STATION	LOCATION	APPROACH GUTTER (TYPE B)	APPROACH GUTTER (TYPE SPECIAL 1)	APPROACH GUTTER (TYPE SPECIAL 2)	REINFORCING STEEL-RDWY. (GR 60)
			CU.YD.	CU.YD.	CU.YD.	POUND
455+89.50	456+16.50	LT. SIDE OF LT. MAIN LANES	6.75			590
455+89.50	456+16.50	RT. SIDE OF LT. MAIN LANES	5.25			459
455+89.50	456+16.50	LT. SIDE OF RT. MAIN LANES	5.25			459
455+89.50	456+16.50	RT. SIDE OF RT. MAIN LANES	6.75			590
457+27.50	457+54.50	LT. SIDE OF LT. MAIN LANES	6.75			590
457+27.50	457+54.50	RT. SIDE OF LT. MAIN LANES	5.25			459
457+27.50	457+54.50	LT. SIDE OF RT. MAIN LANES	5.25			459
457+27.50	457+54.50	RT. SIDE OF RT. MAIN LANES	6.75			590
465+06.50	465+33.50	LT. SIDE OF RT. MAIN LANES	5.25			459
465+06.50	465+33.50	RT. SIDE OF RT. MAIN LANES	6.75			590
465+06.50	465+33.50	LT. SIDE OF LT. MAIN LANES	6.75			590
465+06.50	465+33.50	RT. SIDE OF LT. MAIN LANES	5.25			459
466+94.50	467+21.50	LT. SIDE OF RT. MAIN LANES	5.25			459
466+94.50	467+21.50	RT. SIDE OF RT. MAIN LANES	6.75			590
466+94.50	467+21.50	LT. SIDE OF LT. MAIN LANES	6.75			590
466+94.50	467+21.50	RT. SIDE OF LT. MAIN LANES	5.25			459
497+76.50	498+03.50	LT. SIDE		10.80		1550
497+76.50	498+03.50	RT. SIDE		10.80		1550
499+64.50	499+91.50	LT. SIDE		10.80		1550
499+64.50	499+91.50	RT. SIDE		10.80		1550
510+07.50	510+34.50	LT. SIDE		10.80		1550
510+07.50	510+34.50	RT. SIDE		10.80		1550
511+55.50	511+82.50	LT. SIDE			12.50	2170
511+55.50	511+82.50	RT. SIDE			12.50	2170
513+40.50	513+67.50	LT. SIDE			12.50	2170
513+40.50	513+67.50	RT. SIDE			12.50	2170
514+88.50	515+15.50	LT. SIDE			12.50	2170
514+88.50	515+15.50	RT. SIDE			12.50	2170
516+78.50	517+05.50	LT. SIDE			12.50	2170
516+78.50	517+05.50	RT. SIDE			12.50	2170
518+26.50	518+53.50	LT. SIDE		10.80		1550
518+26.50	518+53.50	RT. SIDE		10.80		1550
532+64.50	532+91.50	LT. SIDE		10.80		1550
532+64.50	532+91.50	RT. SIDE		10.80		1550
534+52.50	534+79.50	LT. SIDE		10.80		1550
534+52.50	534+79.50	RT. SIDE		10.80		1550
TOTALS:			**96.00**	**129.60**	**100.00**	**44352**

NOTE: USE T=17" FOR 8' SHOULDER AND 6' SHOULDER

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-28-13

2/27/2013

R070289.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.		070289	79	365

(2) QUANTITY SHEETS

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

9-4-12

BASE AND SURFACING (BOX 1 OF 2)

STATION	STATION	LOCATION	LENGTH	AGGREGATE BASE COURSE (CLASS 7)		TACK COAT				ACHM BASE COURSE (1 1/2")				ACHM BINDER COURSE (1")				ACHM SURFACE COURSE (1/2")			
				TON / STATION	TON	TOTAL WID.	SQ.YD.	GALLONS / SQ.YD.	GALLON	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 70-22	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 70-22	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 70-22
			FEET			FEET				FEET			TON	FEET			TON	FEET			TON
MAIN LANES																					
356+20	357+20	TRANSITION	100.0			36.0	400.0	0.10	40.0									36.0	400.0	220.0	44.0
357+20	370+46	HWY. 167 - FULL DEPTH - RT. M.L.	1326.0	320.25	4246.5	79.4	11698.3	0.03	350.9					26.6	3919.1	660.0	1293.3	62.3	9178.9	220.0	1009.7
357+20	374+56	HWY. 167 - OVERLAY - LT. M.L.	1736.0	14.25	247.4	36.0	6944.0	0.03	208.3									36.0	6944.0	220.0	763.8
370+46	372+46	HWY. 167 - FULL DEPTH - RT. M.L. W/ LT. TURN LANE TAPER	200.0	347.50	695.0	97.4	2164.4	0.03	64.9					32.6	724.4	660.0	239.1	74.3	1651.1	220.0	181.6
372+46	374+56	HWY. 167 - FULL DEPTH - RT. M.L. W/ LT. TURN LANE	210.0	374.75	787.0	115.4	2692.7	0.03	80.8					38.6	900.7	660.0	297.2	86.3	2013.7	220.0	221.5
374+56	375+44	HWY. 167 - MEDIAN TURNAROUND	88.0	VAR.	389.8	VAR.	2010.0	0.03	60.3					VAR.	529.1	660.0	174.6	VAR.	1627.3	220.0	179.0
375+44	377+54	HWY. 167 - OVERLAY - LT. M.L. W/ LT. TURN LANE	210.0	14.25	29.9	48.0	1120.0	0.03	33.6									48.0	1120.0	220.0	123.2
375+44	395+96	HWY. 167 - FULL DEPTH - RT. M.L.	2052.0	320.25	6571.5	79.4	18103.2	0.03	543.1					26.6	6064.8	660.0	2001.4	62.3	14204.4	220.0	1562.5
377+54	379+54	HWY. 167 - OVERLAY - LT. M.L. W/ LT. TURN LANE TAPER	200.0	14.25	28.5	42.0	933.3	0.03	28.0									42.0	933.3	220.0	102.7
379+54	400+06	HWY. 167 - OVERLAY - LT. M.L.	2052.0	14.25	292.4	36.0	8208.0	0.03	246.2									36.0	8208.0	220.0	902.9
395+96	397+96	HWY. 167 - FULL DEPTH - RT. M.L. W/ LT. TURN LANE TAPER	200.0	347.50	695.0	97.4	2164.4	0.03	64.9					32.6	724.4	660.0	239.1	74.3	1651.1	220.0	181.6
397+96	400+06	HWY. 167 - FULL DEPTH - RT. M.L. W/ LT. TURN LANE	210.0	374.75	787.0	115.4	2692.7	0.03	80.8					38.6	900.7	660.0	297.2	86.3	2013.7	220.0	221.5
400+06	400+94	HWY. 167 - MEDIAN TURNAROUND	88.0	VAR.	389.8	VAR.	2010.0	0.03	60.3					VAR.	529.1	660.0	174.6	VAR.	1627.3	220.0	179.0
400+94	403+04	HWY. 167 - OVERLAY - LT. M.L. W/ LT. TURN LANE	210.0	14.25	29.9	48.0	1120.0	0.03	33.6									48.0	1120.0	220.0	123.2
400+94	418+46	HWY. 167 - FULL DEPTH - RT. M.L.	1752.0	320.25	5610.8	79.4	15456.5	0.03	463.7					26.6	5178.1	660.0	1708.8	62.3	12127.7	220.0	1334.0
403+04	405+04	HWY. 167 - OVERLAY - LT. M.L. W/ LT. TURN LANE TAPER	200.0	14.25	28.5	42.0	933.3	0.03	28.0									42.0	933.3	220.0	102.7
405+04	422+56	HWY. 167 - OVERLAY - LT. M.L.	1752.0	14.25	249.7	36.0	7008.0	0.03	210.2									36.0	7008.0	220.0	770.9
418+46	420+46	HWY. 167 - FULL DEPTH - RT. M.L. W/ LT. TURN LANE TAPER	200.0	347.50	695.0	97.4	2164.4	0.03	64.9					32.6	724.4	660.0	239.1	74.3	1651.1	220.0	181.6
420+46	422+56	HWY. 167 - FULL DEPTH - RT. M.L. W/ LT. TURN LANE	210.0	374.75	787.0	115.4	2692.7	0.03	80.8					38.6	900.7	660.0	297.2	86.3	2013.7	220.0	221.5
422+56	423+44	HWY. 167 - MEDIAN TURNAROUND	88.0	VAR.	431.5	VAR.	2199.3	0.03	66.0					VAR.	630.8	660.0	208.2	VAR.	1737.9	220.0	191.2
423+44	425+54	HWY. 167 - OVERLAY - LT. M.L. W/ LT. TURN LANE	210.0	157.75	331.3	68.7	1603.0	0.03	48.1					12.3	287.0	660.0	94.7	60.1	1402.3	220.0	154.3
423+44	436+46	HWY. 167 - FULL DEPTH - RT. M.L.	1302.0	320.25	4169.7	79.4	11486.5	0.03	344.6					26.6	3848.1	660.0	1269.9	62.3	9012.7	220.0	991.4
425+54	427+54	HWY. 167 - OVERLAY - LT. M.L. W/ LT. TURN LANE TAPER	200.0	130.50	261.0	50.4	1120.0	0.03	33.6					6.2	137.8	660.0	45.5	48.1	1068.9	220.0	117.6
427+54	440+56	HWY. 167 - OVERLAY - LT. M.L.	1302.0	14.25	185.5	36.0	5208.0	0.03	156.2									36.0	5208.0	220.0	572.9
436+46	438+46	HWY. 167 - FULL DEPTH - RT. M.L. W/ LT. TURN LANE TAPER	200.0	347.50	695.0	97.4	2164.4	0.03	64.9					32.6	724.4	660.0	239.1	74.3	1651.1	220.0	181.6
438+46	440+56	HWY. 167 - FULL DEPTH - RT. M.L. W/ LT. TURN LANE	210.0	374.75	787.0	115.4	2692.7	0.03	80.8					38.6	900.7	660.0	297.2	86.3	2013.7	220.0	221.5
440+56	441+44	HWY. 167 - MEDIAN CROSSING	88.0	VAR.	528.3	VAR.	4325.1	0.03	129.8					VAR.	1437.9	660.0	474.5	VAR.	1443.6	220.0	158.8
441+44	443+54	HWY. 167 - OVERLAY - LT. M.L. W/ LT. TURN LANE	210.0	157.75	331.3	68.7	1603.0	0.03	48.1					12.3	287.0	660.0	94.7	60.1	1402.3	220.0	154.3
441+44	456+16.50	HWY. 167 - FULL DEPTH - RT. M.L.	1472.5	320.25	4715.7	79.4	12990.7	0.03	389.7					26.6	4352.1	660.0	1436.2	62.3	10193.0	220.0	1121.2
443+54	445+54	HWY. 167 - OVERLAY - LT. M.L. W/ LT. TURN LANE TAPER	200.0	130.50	261.0	50.4	1120.0	0.03	33.6					6.2	137.8	660.0	45.5	48.1	1068.9	220.0	117.6
445+54.00	454+00	HWY. 167 - OVERLAY - LT. M.L.	846.0	14.25	120.6	36.0	3384.0	0.03	101.5									36.0	3384.0	220.0	372.2
454+00	456+16.50	HWY. 167 - FULL DEPTH - LT. M.L.	216.5	320.25	693.3	79.4	1910.0	0.03	57.3					26.6	639.9	660.0	211.2	62.3	1498.7	220.0	164.9
457+27.50	459+50	HWY. 167 - FULL DEPTH - LT. M.L.	222.5	320.25	712.6	79.4	1962.9	0.03	58.9					26.6	657.6	660.0	217.0	62.3	1540.2	220.0	169.4
459+50	462+00	HWY. 167 - OVERLAY - LT. M.L.	250.0	14.25	35.6	36.0	1000.0	0.03	30.0									36.0	1000.0	220.0	110.0
457+27.50	465+33.50	HWY. 167 - FULL DEPTH - RT. M.L.	806.0	320.25	2581.2	79.4	7110.7	0.03	213.3					26.6	2382.2	660.0	786.1	62.3	5579.3	220.0	613.7
462+00	465+33.50	HWY. 167 - FULL DEPTH - LT. M.L.	333.5	320.25	1068.0	79.4	2942.2	0.03	88.3					26.6	985.7	660.0	325.3	62.3	2308.6	220.0	253.9
466+94.50	474+46	HWY. 167 - FULL DEPTH - RT. M.L.	751.5	320.25	2406.7	79.4	6629.9	0.03	198.9					26.6	2221.1	660.0	733.0	62.3	5202.1	220.0	572.2
466+94.50	470+50	HWY. 167 - FULL DEPTH - LT. M.L.	355.5	320.25	1138.5	79.4	3136.3	0.03	94.1					26.6	1050.7	660.0	346.7	62.3	2460.9	220.0	270.7
470+50	478+56	HWY. 167 - OVERLAY - LT. M.L.	806.0	14.25	114.9	36.0	3224.0	0.03	96.7									36.0	3224.0	220.0	354.6
474+46	476+46	HWY. 167 - FULL DEPTH - RT. M.L. W/ LT. TURN LANE TAPER	200.0	347.50	695.0	97.4	2164.4	0.03	64.9					32.6	724.4	660.0	239.1	74.3	1651.1	220.0	181.6
476+46	478+56	HWY. 167 - FULL DEPTH - RT. M.L. W/ LT. TURN LANE	210.0	374.75	787.0	115.4	2692.7	0.03	80.8					38.6	900.7	660.0	297.2	86.3	2013.7	220.0	221.5
478+56	479+44	HWY. 167 - MEDIAN TURNAROUND	88.0	VAR.	431.5	VAR.	2199.3	0.03	66.0					VAR.	630.8	660.0	208.2	VAR.	1737.9	220.0	191.2
479+44	481+54	HWY. 167 - OVERLAY - LT. M.L. W/ LT. TURN LANE	210.0	157.75	331.3	68.7	1603.0	0.03	48.1					12.3	287.0	660.0	94.7	60.1	1402.3	220.0	154.3
479+44	488+16	HWY. 167 - FULL DEPTH - RT. M.L.	872.0	320.25	2792.6	79.4	7693.0	0.03	230.8					26.6	2577.2	660.0	850.5	62.3	6036.2	220.0	664.0
481+54	483+54	HWY. 167 - OVERLAY - LT. M.L. W/ LT. TURN LANE TAPER	200.0	130.50	261.0	50.4	1120.0	0.03	33.6					6.2	137.8	660.0	45.5	48.1	1068.9	220.0	117.6
483+54	485+00	HWY. 167 - OVERLAY - LT. M.L.	146.0	14.25	20.8	36.0	584.0	0.03	17.5									36.0	584.0	220.0	64.2
485+00	492+26	HWY. 167 - FULL DEPTH - LT. M.L.	726.0	320.25	2325.0	79.4	6404.9	0.03	192.1					26.6	2145.7	660.0	708.1	62.3	5025.5	220.0	552.8
488+16	490+16	HWY. 167 - FULL DEPTH - RT. M.L. W/ LT. TURN LANE TAPER	200.0	347.50	695.0	97.4	2164.4	0.03	64.9					32.6	724.4	660.0	239.1	74.3	1651.1	220.0	181.6
490+16	492+26	HWY. 167 - FULL DEPTH - RT. M.L. W/ LT. TURN LANE	210.0	374.75	787.0	115.4	2692.7	0.03	80.8					38.6	900.7	660.0	297.2	86.3	2013.7	220.0	221.5
492+26	497+05	HWY. 167 - FULL DEPTH-TRANSITION	479.0	VAR.	2481.8	VAR.	11416.2	0.03	342.5					VAR.	3805.4	660.0	1255.8	VAR.	3978.7	220.0	437.7
497+05	498+03.50	HWY. 167 - FULL DEPTH	98.5	485.25	478.0	190.4	2083.8	0.03	62.5					63.6	696.1	660.0	229.7	138.3	1513.6	220.0	166.5
499+64.50	510+34.50	HWY. 167 - FULL DEPTH	1070.0	485.25	5192.2	190.4	22636.4	0.03	679.1					63.6	7561.3	660.0	2495.2	138.3	16442.3	220.0	1808.7
511+55.50	513+67.50	HWY. 167 - FULL DEPTH	212.0	485.25	1028.7	190.4	4485.0	0.03	134.6					63.6	1498.1	660.0	494.4	138.3	3257.7	220.0	358.3
514+88.50	517+05.50	HWY. 167 - FULL DEPTH	217.0	485.25	1053.0	190.4	4590.8	0.03	137.7					63.6	1533.5	660.0	506.1	138.3	3334.6	220.0	366.8
518+26.50	525+10	HWY. 167 - FULL DEPTH	683.5	485.25	3316.7	190.4	14459.8	0.03	433.8					63.6	4830.1	660.0	1593.9	138.3	10503.1	220.0	1155.3
525+10	530+50	HWY. 167 - NOTCH AND WIDEN	540.0	267.50	1444.5	111.7	6702.0	0.03	201.1					37.3	2238.0	660.0	738.5	112.1	6726.0	220.0	739.9
530+50	532+91.50	HWY. 167 - FULL DEPTH	241.5	485.25	1171.9	190.4	5109.1	0.03	153.3					63.6	1706.6	660.0	563.2	138.3	3711.1	220.0	408.2
534+52.50	536+83	HWY. 167 - FULL DEPTH	230.5	485.25	1118.5	190.4	4876.4	0.03	146.3					63.6	1628.9	660.0	537.5	138.3	3542.0	220.0	389.6
536+83	544+85.62	HWY. 167 - OVERLAY - LT. M.L.	802.6	14.25	114.4	36.0	3210.4	0.03	96.3									36.0	3210.4	220.0	353.1
536+83	545+14.38	HWY. 167 - FULL DEPTH - RT. M.L.	831.4	320.25	2662.6	79.4	7334.8	0.03	220.0					26.6	2457.2	660.0	810.9	62.3	5755.1	220.0	633.1
545+00	557+06	HWY. 167 - OVERLAY - LT. M.L.	1206.0	14.25	171.9	36.0	4824.0	0.03	144.7									36.0	4824.0	220.0	530.6
545+00	552+96	HWY. 167 - FULL DEPTH - RT. M.L.	796.0	320.25	2549.2	79.4	7022.5	0.03	210.7					26.6	2352.6	660.0	776.4	62.3	5510.1	220.0	606.1
552+96	554+96	HWY. 167 - FULL DEPTH - RT. M.L. W/ LT. TURN LANE TAPER	200.0	347.50	695.0	97.4	2164.4	0.03	64.9					32.6	724.4	660.0	239.1	74.3	1651.1	220.0	181.6
554+96	557+06	HWY. 167 - FULL DEPTH - RT. M.L. W/ LT. TURN LANE	210.0	374.75	787.0	115.4	2692.7	0.03	80.8					38.6	900.7	660.0	297.2	86.3	2013.7	220.0	221.5
557+06	557+94	HWY. 167 - MEDIAN CROSSING	88.0	VAR.	528.3	VAR.	4325.1	0.03	129.8					VAR.	1437.9	660.0	474.5	VAR.	1443.6	220.0	158.8
557+94	560+04	HWY. 167 - OVERLAY - LT. M.L. W/ LT. TURN LANE	210.0	157.75	331.3	68.7	1603.0	0.03	48.1					12.3	287.0	660.0	94.7	60.1	1402.3	220.0	154.3
557+94	579+46	HWY. 167 - FULL DEPTH - RT. M.L.	2152.0	320.25	6891.8	79.4	18985.4	0.03	569.6					26.6	6360.4	660.0	2098.9	62.3	14896.6	220.0	1638.6
560+04	562+04	HWY. 167 - OVERLAY - LT. M.L. W/ LT. TURN LANE TAPER	200.0	130.50	261.0	50.4	1120.0	0.03	33.6					6.2	137.8	660.0	45.5	48.1	1068.9	220.0	117.6
562+04	583+56	HWY. 167 - OVERLAY - LT. M.L.	2152.0	14.25	306.7	36.0	8608.0	0.03	258.2									36.0	8608.0	220.0	946.9
579+46	581+46	HWY. 167 - FULL DEPTH - RT. M.L. W/ LT. TURN LANE TAPER	200.0	347.50	695.0	97.4	2164.4	0.03	64.9					32.6	724.4	660.0	239.1	74.3	1651.1	220.0	181.6
581+46	583+56	HWY. 167 - FULL DEPTH - RT. M.L. W/ LT. TURN LANE	210.0	374.75	787.0	115.4	2692.7	0.03	80.8					38.6	900.7	660.0	297.2	86.3	2013.7	220.0	221.5
583+56	584+44	HWY. 167 - MEDIAN TURNAROUND	88.0	VAR.	431.5	VAR.	2199.3	0.03	66.0					VAR.	630.8	660.0	208.2	VAR.	1737.9	220.0	191.2
584+44	586+54	HWY. 167 - OVERLAY - LT. M.L. W/ LT. TURN LANE	210.0	157.75	331.3	68.7	1603.0	0.03	48.1					12.3	287.0	660.0	94.7	60.1	1402.3	220.0	154.3
586+54	588+54	HWY. 167 - OVERLAY - LT. M.L. W/ LT. TURN LANE TAPER	200.0	130.50	261.0	50.4	1120.0	0.03	33.6					6.2	137.8	660.0	45.5	48.1	1068.9	220.0	117.6
588+54	598+00	HWY. 167 - NOTCH AND WIDEN - LT. M.L.	946.0	VAR.	1489.0	VAR.	5716.4	0.03	171.5					VAR.	1362.5	660.0	449.6	VAR.	5030.0	220.0	553.3
584+44	607+46	HWY. 167 - FULL DEPTH - RT. M.L.	2302.0	320.25	7372.2	79.4	20308.8	0.03	609.3					26.6	6803.7	660.0	2245.2	62.3	15935.0	220.0	1752.9
598+00	611+56	HWY. 167 - FULL DEPTH - LT. M.L.	1356.0	320.25	4342.6	79.4	11962.9	0.03	358.9					26.6	4007.7	660.0	1322.5	62.3	9386.5	220.0	1032.5
607+46	609+46	HWY. 167 - FULL DEPTH - RT. M.L. W/ LT. TURN LANE TAPER	200.0	347.50	695.0	97.4	2164.4	0.03	64.9					32.6	724.4	660.0	239.1	74.3	1651.1	220.0	181.6
609+46	611+56	HWY. 167 - FULL DEPTH - RT. M.L. W/ LT. TURN LANE	210.0	374.75	787.0	115.4	2692.7	0.03	80.8					38.6	900.7	660.0	297.2	86.3	2013.7	220.0	221.5
611+56	612+38	HWY. 167 - MEDIAN CROSSING	82.0	VAR.	492.3	VAR.	4325.1	0.03	129.8					VAR.	1437.9	660.0	474.5	VAR.	1443.6	220.0	158.8
612+38	614+48	HWY. 167 - FULL DEPTH - LT. M.L. W/ LT. TURN LANE	210.0	374.75	787.0	115.4	2692.7	0.03	80.8					38.6	900.7	660.0	297.2	86.3	2013.7	220.0	221.5
612+38	623+35	HWY. 167 - FULL DEPTH - RT. M.L.	1097.0	320.25	3513.1	79.4	9678.0	0.03	290.3					26.6	3242.2	660.0	1069.9	62.3	7593.7	220.0	835.3
614+48	616+48	HWY. 167 - FULL DEPTH - LT. M.L. W/ LT. TURN LANE TAPER	200.0	347.50	695.0	97.4	2164.4	0.03	64.9					32.6	724.4	660.0	239.1	74.3	1651.1	220.0	181.6
616+48	629+05.14	HWY. 167 - FULL DEPTH - LT. M.L.	1257.1	320.25	4025.9	79.4	11090.4	0.03	332.7					26.6	3715.4	660.0	1226.1	62.3	8701.9	220.0	957.2
623+35	624+65	HWY. 167 - NOTCH AND WIDEN - RT. M.L.	130.0	VAR.	449.0	VAR.	1723.6	0.03	51.7					VAR.	410.8	660.0	135.6	VAR.	1516.6	220.0	166.8
624+65	629+05.14	HWY. 167 - OVERLAY - RT. M.L.	440.1	14.25	62.7	36.0	1760.4	0.03	52.8									36.0	1760.4	220.0	193.6
629+05.14	630+05.14	TRANSITION	100.0			36.0	400.0	0.10	40.0									36.0	400.0	220.0	44.0
SUBTOTALS:					**113056.7**		**422356.0**		**12726.6**						**117872.1**		**38898.2**		**332375.3**		**36561.2**

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....94.6% MIN. AGGR.....5.4% ASPHALT BINDER
ACHM BINDER COURSE (1").....95.6% MIN. AGGR.....4.4% ASPHALT BINDER
ACHM BASE COURSE (1 1/2").....96.0% MIN. AGGR.....4.0% ASPHALT BINDER
MAXIMUM NUMBER OF GYRATIONS = 160 FOR PG 70-22

8/30/2012

R070289.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.		070289	80	365

(2) QUANTITY SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12

BASE AND SURFACING (BOX 2 OF 3)

STATION	STATION	LOCATION	LENGTH	AGGREGATE BASE COURSE (CLASS 7)		TACK COAT				ACHM BASE COURSE (1 1/2")				ACHM BINDER COURSE (1")				ACHM SURFACE COURSE (1/2")			
				TON / STATION	TON	TOTAL WID.	SQ.YD.	GALLONS / SQ.YD.	GALLON	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 70-22	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 70-22	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 70-22
			FEET			FEET				FEET			TON	FEET			TON	FEET			TON
ADDITIONAL FOR LEVELING AND CROWN SHIFT																					
357+20	454+00	HWY. 167 - LEVELING - LT. M.L.	9680.0			36.0	38720.0	0.10	3872.0									36.0	38720.0	220.0	4259.2
357+20	454+00	HWY. 167- CROWN SHIFT LT. M.L.	9680.0			16.0	17208.9	0.03	516.3									16.0	17208.9	VAR.	2839.5
459+50	462+00	HWY. 167 - LEVELING - LT. M.L.	250.0			36.0	1000.0	0.10	100.0									36.0	1000.0	220.0	110.0
459+50	462+00	HWY. 167- CROWN SHIFT LT. M.L.	250.0			16.0	444.4	0.03	13.3									16.0	444.4	VAR.	73.3
470+50	478+56	HWY. 167 - LEVELING - LT. M.L.	806.0			36.0	3224.0	0.10	322.4									36.0	3224.0	220.0	354.6
470+50	478+56	HWY. 167- CROWN SHIFT LT. M.L.	806.0			16.0	1432.9	0.03	43.0									16.0	1432.9	VAR.	236.4
525+10	530+50	HWY. 167 - LEVELING - NOTCH & WIDEN	540.0			24.0	1440.0	0.10	144.0									24.0	1440.0	220.0	158.4
536+83	598+00	HWY. 167 - LEVELING - LT. M.L.	6117.0			36.0	24468.0	0.10	2446.8									36.0	24468.0	220.0	2691.5
536+83	598+00	HWY 167- CROWN SHIFT LT. M.L.	6117.0			16.0	10874.7	0.03	326.2									16.0	10874.7	VAR.	1794.3
623+35	629+05	HWY. 167 - LEVELING - RT. M.L.	570.0			36.0	2280.0	0.10	228.0									36.0	2280.0	220.0	250.8
623+35	629+05	HWY. 167 - CROWN SHIFT RT. M.L.	570.0			16.0	1013.3	0.03	30.4									16.0	1013.3	VAR.	167.2
ADDITIONAL FOR SUPERELEVATION																					
483+75.20	487+75.20	SUPER TRANSITION - RT. M.L.	400.0	83.75	335.0																
485+00.00	487+75.20	SUPER TRANSITION - LT. M.L.	275.2	111.25	306.2																
487+75.20	492+26.00	FULL SUPER DIVIDED (0.098'/') - LT. M.L.	450.8	176.25	794.5																
487+75.20	492+26.00	FULL SUPER DIVIDED - RT. M.L.	450.8	167.50	755.1																
492+26.00	493+22.37	FULL SUPER UNDIVIDED (0.098'/') - LT. M.L.	96.4	103.25	99.5																
492+26.00	492+87.51	FULL SUPER UNDIVIDED - RT. M.L.	61.5	73.00	44.9																
492+87.51	496+87.51	SUPER TRANSITION - RT. M.L.	400.0	36.50	146.0																
493+22.37	497+22.37	SUPER TRANSITION - LT. M.L.	400.0	51.63	206.5																
535+79.52	536+83.00	SUPER TRANSITION -UNDIVIDED LT. ML.	103.5	27.13	28.1																
535+79.52	536+83.00	SUPER TRANSITION -UNDIVIDED RT. ML.	103.5	19.77	20.5																
536+83.00	539+79.52	FULL SUPER DIVIDED - RT. M.L.	296.5	107.88	319.9																
539+79.52	544+09.02	FULL SUPER DIVIDED (0.098'/') - RT. M.L.	429.5	176.25	757.0																
544+09.02	547+94.64	TRANSITION DIVIDED - RT.ML.	385.6	88.13	339.8																
606+10.84	609+60.84	SUPER TRANSITION	350.0	99.13	347.0																
609+60.84	613+28.97	FULL SUPER (0.061'/')	368.1	198.25	729.8																
613+28.97	616+78.97	SUPER TRANSITION	350.0	99.13	347.0																
617+40.46	620+90.46	SUPER TRANSITION - LT. M.L.	350.0	49.50	173.3																
617+40.46	620+90.46	SUPER TRANSITION - RT. M.L.	350.0	49.63	173.7																
620+90.46	623+35.00	FULL DEPTH - RT. ML.	244.5	99.25	242.7																
620+90.46	624+60.82	FULL SUPER (0.061'/') - LT. M.L.	370.4	99.00	366.7																
623+35.00	624+60.82	NOTCH & WIDEN -RT. ML. RT. SHLD.	125.8	33.00	41.5																
624+60.82	624+65.00	TRANSITION NOTCH & WIDEN - RT. M.L. RT. SHLD.	4.2	32.25	1.4																
624+60.82	628+10.82	SUPER TRANSITION - LT. M.L.	350.0	49.50	173.3																
TEMPORARY CROSSOVER																					
351+00.00	358+00.00	STAGE 2 CROSSOVER	700.0	VAR.	1149.6	VAR.	800.0	0.03	24.0					VAR.	805.0	330.0	132.8	VAR.	1218.0	220.0	134.0
ADDITIONAL FOR GUARDRAIL																					
453+35.75	453+77.75	LT. SIDE OF RT. M.L. (6:1 TAPER)	42.0	23.38	9.8													3.5	16.3	220.0	1.8
453+77.75	453+87.75	LT. SIDE OF RT. M.L. (10' BEYOND GR)	10.0	46.75	4.7													7.0	7.8	220.0	0.9
453+87.75	455+62.75	LT. SIDE OF RT. M.L. (50:1 TAPER)	175.0	34.50	60.4													5.25	102.1	220.0	11.2
455+62.75	456+06.50	LT. SIDE OF RT. M.L.	43.8	22.25	9.7													3.5	17.0	220.0	1.9
453+35.75	453+77.75	RT. SIDE OF RT. M.L. (6:1 TAPER)	42.0	24.75	10.4													3.5	16.3	220.0	1.8
453+77.75	453+87.75	RT. SIDE OF RT. M.L. (10' BEYOND GR)	10.0	49.50	5.0													7.0	7.8	220.0	0.9
453+87.75	455+62.75	RT. SIDE OF RT. M.L. (50:1 TAPER)	175.0	37.25	65.2													5.25	102.1	220.0	11.2
455+62.75	456+06.50	RT. SIDE OF RT. M.L.	43.8	25.00	11.0													3.5	17.0	220.0	1.9
457+37.50	457+81.25	LT. SIDE OF LT. M.L.	43.8	25.00	11.0													3.5	17.0	220.0	1.9
457+81.25	459+56.25	LT. SIDE OF LT. M.L. (50:1 TAPER)	175.0	37.25	65.2													5.25	102.1	220.0	11.2
459+56.25	459+66.25	LT. SIDE OF LT. M.L. (10' BEYOND GR)	10.0	49.50	5.0													7.0	7.8	220.0	0.9
459+66.25	460+08.25	LT. SIDE OF LT. M.L. (6:1 TAPER)	42.0	24.75	10.4													3.5	16.3	220.0	1.8
457+37.50	457+81.25	RT. SIDE OF LT. M.L.	43.8	22.25	9.7													3.5	17.0	220.0	1.9
457+81.25	459+56.25	RT. SIDE OF LT. M.L. (50:1 TAPER)	175.0	34.50	60.4													5.25	102.1	220.0	11.2
459+56.25	459+66.25	RT. SIDE OF LT. M.L. (10' BEYOND GR)	10.0	46.75	4.7													7.0	7.8	220.0	0.9
459+66.25	460+08.25	RT. SIDE OF LT. M.L. (6:1 TAPER)	42.0	23.38	9.8													3.5	16.3	220.0	1.8
462+52.75	462+94.75	LT. SIDE OF RT. M.L. (6:1 TAPER)	42.0	23.38	9.8													3.5	16.3	220.0	1.8
462+94.75	463+04.75	LT. SIDE OF RT. M.L. (10' BEYOND GR)	10.0	46.75	4.7													7.0	7.8	220.0	0.9
463+04.75	464+79.75	LT. SIDE OF RT. M.L. (50:1 TAPER)	175.0	34.50	60.4													5.25	102.1	220.0	11.2
464+79.75	465+23.50	LT. SIDE OF RT. M.L.	43.8	22.25	9.7													3.5	17.0	220.0	1.9
462+52.75	462+94.75	RT. SIDE OF RT. M.L. (6:1 TAPER)	42.0	24.75	10.4													7.0	32.7	220.0	3.6
462+94.75	463+04.75	RT. SIDE OF RT. M.L. (10' BEYOND GR)	10.0	49.50	5.0													3.5	3.9	220.0	0.4
463+04.75	464+79.75	RT. SIDE OF RT. M.L. (50:1 TAPER)	175.0	37.25	65.2													5.25	102.1	220.0	11.2
464+79.75	465+23.50	RT. SIDE OF RT. M.L.	43.8	25.00	11.0													3.5	17.0	220.0	1.9
467+04.50	467+48.25	LT. SIDE OF LT. M.L.	43.8	25.00	11.0													3.5	17.0	220.0	1.9
467+48.25	469+23.25	LT. SIDE OF LT. M.L. (50:1 TAPER)	175.0	37.25	65.2													5.25	102.1	220.0	11.2
469+23.25	469+33.25	LT. SIDE OF LT. M.L. (10' BEYOND GR)	10.0	49.50	5.0													7.0	7.8	220.0	0.9
469+33.25	469+75.25	LT. SIDE OF LT. M.L. (6:1 TAPER)	42.0	24.75	10.4													3.5	16.3	220.0	1.8
467+04.50	467+48.25	RT. SIDE OF LT. M.L.	43.8	22.25	9.7													3.5	17.0	220.0	1.9
467+48.25	469+23.25	RT. SIDE OF LT. M.L. (50:1 TAPER)	175.0	34.50	60.4													5.25	102.1	220.0	11.2
469+23.25	469+33.25	RT. SIDE OF LT. M.L. (10' BEYOND GR)	10.0	46.75	4.7													7.0	7.8	220.0	0.9
469+33.25	469+75.25	RT. SIDE OF LT. M.L. (6:1 TAPER)	42.0	23.38	9.8													3.5	16.3	220.0	1.8
495+22.75	495+64.75	RT. SIDE (6:1 TAPER)	42.0	24.75	10.4													3.5	16.3	220.0	1.8
495+64.75	495+74.75	RT. SIDE (10' BEYOND GR)	10.0	49.50	5.0													7.0	7.8	220.0	0.9
495+74.75	497+49.75	RT. SIDE (50:1 TAPER)	175.0	37.25	65.2													5.25	102.1	220.0	11.2
497+49.75	497+93.50	RT. SIDE	43.8	25.00	11.0													3.5	17.0	220.0	1.9
495+94.75	496+39.75	LT. SIDE (6:1 TAPER)	45.0	26.00	11.7													3.75	18.8	220.0	2.1
496+39.75	496+49.75	LT. SIDE (10' BEYOND GR)	10.0	52.00	5.2													7.5	8.3	220.0	0.9
496+49.75	497+49.75	LT. SIDE (VAR. TAPER)	100.0	38.50	38.5													5.5	61.1	220.0	6.7
SUBTOTALS:					**8750.8**		**102906.2**		**8066.4**						**805.0**		**132.8**		**104713.7**		**13222.4**

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....94.6% MIN. AGGR.....5.4% ASPHALT BINDER
ACHM BINDER COURSE (1").....95.6% MIN. AGGR.....4.4% ASPHALT BINDER
ACHM BASE COURSE (1 1/2").....96.0% MIN. AGGR.....4.0% ASPHALT BINDER
MAXIMUM NUMBER OF GYRATIONS = 160 FOR PG 70-22

8/30/2012

R070289.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.		070289	81	365

(2) QUANTITY SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12

BASE AND SURFACING (BOX 3 OF 3)

STATION	STATION	LOCATION	LENGTH	AGGREGATE BASE COURSE (CLASS 7)		TACK COAT				ACHM BASE COURSE (1 1/2")				ACHM BINDER COURSE (1")				ACHM SURFACE COURSE (1/2")			
			FEET	TON / STATION	TON	TOTAL WID. FEET	SQ.YD.	GALLONS / SQ.YD.	GALLON	AVG. WID. FEET	SQ.YD.	POUND / SQ.YD.	PG 70-22 TON	AVG. WID. FEET	SQ.YD.	POUND / SQ.YD.	PG 70-22 TON	AVG. WID. FEET	SQ.YD.	POUND / SQ.YD.	PG 70-22 TON
ADDITIONAL FOR GUARDRAIL (CONTD.)																					
497+49.75	497+93.50	LT. SIDE	43.8	25.00	11.0													3.5	17.0	220.0	1.9
499+74.50	500+18.25	RT. SIDE	43.8	25.00	11.0													3.5	17.0	220.0	1.9
500+18.25	501+18.25	RT. SIDE (VAR. TAPER)	100.0	38.50	38.5													5.5	61.1	220.0	6.7
501+18.25	501+28.25	RT. SIDE (10' BEYOND GR)	10.0	52.00	5.2													7.5	8.3	220.0	0.9
501+28.25	501+73.25	RT. SIDE (6:1 TAPER)	45.0	26.00	11.7													3.75	18.8	220.0	2.1
499+74.50	500+18.25	LT. SIDE	43.8	25.00	11.0													3.5	17.0	220.0	1.9
500+18.25	501+93.25	LT. SIDE (50:1 TAPER)	175.0	37.25	65.2													5.25	102.1	220.0	11.2
501+93.25	502+03.25	LT. SIDE (10' BEYOND GR)	10.0	49.50	5.0													7.0	7.8	220.0	0.9
502+03.25	502+45.25	LT. SIDE (6:1 TAPER)	42.0	24.75	10.4													3.5	16.3	220.0	1.8
507+53.75	507+95.75	RT. SIDE (6:1 TAPER)	42.0	24.75	10.4													3.5	16.3	220.0	1.8
507+95.75	508+05.75	RT. SIDE (10' BEYOND GR)	10.0	49.50	5.0													7.0	7.8	220.0	0.9
508+05.75	509+80.75	RT. SIDE (50:1 TAPER)	175.0	37.25	65.2													5.25	102.1	220.0	11.2
509+80.75	510+24.50	RT. SIDE	43.8	25.00	11.0													3.5	17.0	220.0	1.9
508+25.75	508+70.75	LT. SIDE (6:1 TAPER)	45.0	26.00	11.7													3.75	18.8	220.0	2.1
508+70.75	508+80.75	LT. SIDE (10' BEYOND GR)	10.0	52.00	5.2													7.5	8.3	220.0	0.9
508+80.75	509+80.75	LT. SIDE (VAR. TAPER)	100.0	38.50	38.5													5.5	61.1	220.0	6.7
509+80.75	510+24.50	LT. SIDE	43.8	25.00	11.0													3.5	17.0	220.0	1.9
518+36.50	518+80.25	RT. SIDE	43.8	25.00	11.0													3.5	17.0	220.0	1.9
518+80.25	519+80.25	RT. SIDE (VAR. TAPER)	100.0	38.50	38.5													5.5	61.1	220.0	6.7
519+80.25	519+90.25	RT. SIDE (10' BEYOND GR)	10.0	52.00	5.2													7.5	8.3	220.0	0.9
519+90.25	520+35.25	RT. SIDE (6:1 TAPER)	45.0	26.00	11.7													3.75	18.8	220.0	2.1
518+36.50	518+80.25	LT. SIDE	43.8	25.00	11.0													3.5	17.0	220.0	1.9
518+80.25	520+55.25	LT. SIDE (50:1 TAPER)	175.0	37.25	65.2													5.25	102.1	220.0	11.2
520+55.25	520+65.25	LT. SIDE (10' BEYOND GR)	10.0	49.50	5.0													7.0	7.8	220.0	0.9
520+65.25	521+07.25	LT. SIDE (6:1 TAPER)	42.0	24.75	10.4													3.5	16.3	220.0	1.8
530+10.75	530+52.75	RT. SIDE (6:1 TAPER)	42.0	24.75	10.4													3.5	16.3	220.0	1.8
530+52.75	530+62.75	RT. SIDE (10' BEYOND GR)	10.0	49.50	5.0													7.0	7.8	220.0	0.9
530+62.75	532+37.75	RT. SIDE (50:1 TAPER)	175.0	37.25	65.2													5.25	102.1	220.0	11.2
532+37.75	532+81.50	RT. SIDE	43.8	25.00	11.0													3.5	17.0	220.0	1.9
530+82.75	531+27.75	LT. SIDE (6:1 TAPER)	45.0	26.00	11.7													3.75	18.8	220.0	2.1
531+27.75	531+37.75	LT. SIDE (10' BEYOND GR)	10.0	52.00	5.2													7.5	8.3	220.0	0.9
531+37.75	532+37.75	LT. SIDE (VAR. TAPER)	100.0	38.50	38.5													5.5	61.1	220.0	6.7
532+37.75	532+81.50	LT. SIDE	43.8	25.00	11.0													3.5	17.0	220.0	1.9
534+62.50	535+06.25	RT. SIDE	43.8	25.00	11.0													3.5	17.0	220.0	1.9
535+06.25	536+06.25	RT. SIDE (VAR. TAPER)	100.0	38.50	38.5													5.5	61.1	220.0	6.7
536+06.25	536+16.25	RT. SIDE (10' BEYOND GR)	10.0	52.00	5.2													7.5	8.3	220.0	0.9
536+16.25	536+61.25	RT. SIDE (6:1 TAPER)	45.0	26.00	11.7													3.75	18.8	220.0	2.1
534+62.50	535+06.25	LT. SIDE	43.8	25.00	11.0													3.5	17.0	220.0	1.9
535+06.25	536+81.25	LT. SIDE (50:1 TAPER)	175.0	37.25	65.2													5.25	102.1	220.0	11.2
536+81.25	536+91.25	LT. SIDE (10' BEYOND GR)	10.0	49.50	5.0													7.0	7.8	220.0	0.9
536+91.25	537+33.25	LT. SIDE (6:1 TAPER)	42.0	24.75	10.4													3.5	16.3	220.0	1.8
ADDITIONAL FOR GRADE RAISE																					
450+00	454+00	HWY. 167 - LT. M.L.	400.0			VAR.	3683.8	0.03	110.5	VAR.	1108.6	440.0	243.9	VAR.	1287.6	660.0	424.9				
459+50	462+00	HWY. 167 - LT. M.L.	250.0			VAR.	6399.3	0.03	192.0	VAR.	3074.5	440.0	676.4	VAR.	1662.4	660.0	548.6				
470+50	473+00	HWY. 167 - LT. M.L.	250.0			VAR.	3327.6	0.03	99.8	VAR.	1591.8	440.0	350.2	VAR.	867.9	660.0	286.4				
483+00	485+00	HWY. 167 - LT. M.L.	200.0			VAR.	1527.2	0.03	45.8	VAR.	191.4	440.0	42.1	VAR.	667.9	660.0	220.4				
525+10	530+50	HWY. 167	540.0			VAR.	3423.7	0.03	102.7	VAR.	734.1	440.0	161.5	VAR.	1344.8	660.0	443.8				
536+83	546+00	HWY. 167 - LT. M.L.	917.0			VAR.	12015.3	0.03	360.5	VAR.	4370.5	440.0	961.5	VAR.	3822.4	660.0	1261.4				
593+50	598+00	HWY. 167 - LT. M.L.	450.0			VAR.	49.0	0.03	1.5					VAR.	24.5	660.0	8.1				
622+00	624+00	HWY. 167 - RT. M.L.	200.0			VAR.	3946.1	0.03	118.4	VAR.	2257.7	440.0	496.7	VAR.	844.2	660.0	278.6				
SUBTOTALS (BOX 1 0F 3):					**113056.7**		**422356.0**		**12726.6**						**117872.1**		**38898.2**		**332375.3**		**36561.2**
SUBTOTALS (BOX 2 0F 3):					**8750.8**		**102906.2**		**8066.4**						**805.0**		**132.8**		**104713.7**		**13222.4**
SUBTOTALS (BOX 3 0F 3):					**801.0**		**34372.0**		**1031.2**		**13328.6**		**2932.3**		**10521.7**		**3472.2**		**1259.0**		**138.9**
TOTALS:					**122608.5**		**559634.2**		**21824.2**		**13328.6**		**2932.3**		**129198.8**		**42503.2**		**438348.0**		**49922.5**

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....94.6% MIN. AGGR.....5.4% ASPHALT BINDER
ACHM BINDER COURSE (1").....95.6% MIN. AGGR.....4.4% ASPHALT BINDER
ACHM BASE COURSE (1 1/2").....96.0% MIN. AGGR.....4.0% ASPHALT BINDER
MAXIMUM NUMBER OF GYRATIONS = 160 FOR PG 70-22

8/30/2012

R070289.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070289	82	365

(1) A&B7237, A&B7238 - QUANTITIES - 52781

SCHEDULE OF BRIDGE QUANTITIES-JOB 070289

BRIDGE NO.	CODE NO.	NAME PLATE TITLE	UNIT OF STRUCTURE	ITEM NO.	205	801	802	802	803	SS & 804	SS & 804	805	805	805	805	805	807	812	816	816
				ITEM	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO.)	UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE	CLASS S CONCRETE-BRIDGE	CLASS S(AE) CONCRETE-BRIDGE	CLASS 1 PROTECTIVE SURFACE TREATMENT	REINFORCING STEEL-BRIDGE (GRADE 60)	EPOXY COATED REINFORCING STEEL (GRADE 60)	(1)CONCRETE PILING (16" SQ.)	(1)TEST PILE (16" SQ.)	(2)CONCRETE PILING (24" SQ.)	(2)TEST PILE (24" SQ.)	PREBORING	STRUCTURAL STEEL IN BEAM SPANS (M 270, GRADE 50W)	BRIDGE NAME PLATE (TYPE D)	FILTER BLANKET	DUMPED RIPRAP
				UNIT	LUMP SUM	CU.YD.	CU.YD.	CU.YD.	GAL.	LB.	LB.	LIN.FT.	LIN.FT.	LIN.FT.	LIN.FT.	LIN.FT.	LB.	EACH	SQ.YD.	CU.YD.
A7237	X071	GUICE CREEK RELIEF	END BENTS 1&4			24	29.60		0.3	2,773	1,072	369	46			100			412	228
			INT. BENTS 2&3				37.30			3,387				369	46					
			110'-0" CONT. INTEGRAL W-BEAM UNIT					165.60	11.2		37,618						57,390	1		
SITE NO. 3 (BRIDGE NO. 00794)					1															
TOTALS FOR BRIDGE NO. A7237						24	66.90	165.60	11.5	6,160	38,690	369	46	369	46	100	57,390	1	412	228
B7237	X071	GUICE CREEK RELIEF	END BENTS 1&4				29.60		0.3	2,773	1,072	369	46			100			479	262
			INT. BENTS 2&3				37.30			3,387				369	46					
			110'-0" CONT. INTEGRAL W-BEAM UNIT					165.60	11.2		37,618						57,390	1		
TOTALS FOR BRIDGE NO. B7237							66.90	165.60	11.5	6,160	38,690	369	46	369	46	100	57,390	1	479	262
A7238	X071	GUICE CREEK	END BENTS 1&4			47	29.60		0.3	2,773	1,180	405	50			100			430	237
			INT. BENTS 2&3				37.30			3,387				405	50					
			160'-0" CONT. INTEGRAL W-BEAM UNIT					231.80	16.2		52,910						113,300	1		
SITE NO. 5 (BRIDGE NO. 00793)					1															
TOTALS FOR BRIDGE NO. A7238						47	66.90	231.80	16.5	6,160	54,090	405	50	405	50	100	113,300	1	430	237
B7238	X071	GUICE CREEK	END BENTS 1&4				29.60		0.3	2,773	1,180	405	50			100			528	288
			INT. BENTS 2&3				37.30			3,387				405	50					
			160'-0" CONT. INTEGRAL W-BEAM UNIT					231.80	16.2		52,910						113,300	1		
TOTALS FOR BRIDGE NO. B7238							66.90	231.80	16.5	6,160	54,090	405	50	405	50	100	113,300	1	528	288

(1) Piles shall conform to Std. Dwg. No. 14964.
(2) Piles shall conform to Dwg. No. 52786.

STEWART LINZ
DESIGN SECTION SUPERVISOR

STATE OF ARKANSAS
CARL J. FUSELIER
REGISTERED PROFESSIONAL ENGINEER
No. 7510
7/23/12

BRIDGE ENGINEER

SHEET 1 OF 2

SCHEDULE OF BRIDGE QUANTITIES
HWY. 273 - PETERS RD. (CR 24) (F)
DALLAS AND CLEVELAND COUNTIES

ROUTE 167 SEC. 7 & 8

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CMW DATE: 04/30/2012 FILENAME: b070289_ql.dgn
CHECKED BY: DHP DATE: 7-16-12 SCALE:
DESIGNED BY: — DATE: —

BRIDGE NOS. A&B7237, A&B7238 DRAWING NO. 52781

PRINT DATE: 7/20/2012

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.		070289	83	365

① 07239 - 07243 - QUANTITIES - 52782

SCHEDULE OF BRIDGE QUANTITIES-JOB 070289

BRIDGE NO. / CODE NO. / NAME PLATE TITLE	UNIT OF STRUCTURE	ITEM NO.	205	801	802	802	803	SS & 804	SS & 804	805	805	805	805	805	807	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 I PROTECTIVE SURFACE TREATMENT	REINFORCING STEEL-BRIDGE (GRADE 60)	EPOXY COATED REINFORCING STEEL (GRADE 60)	①CONCRETE PILING (16" SQ.)	①TEST PILE (16" SQ.)	②CONCRETE PILING (24" SQ.)	②TEST PILE (24" SQ.)	PREBORING	STRUCTURAL STEEL IN BEAM SPANS (M 270, GRADE 50W)	BRIDGE NAME PLATE (TYPE D)	FILTER BLANKET	DUMPED RIPRAP
		UNIT	LUMP SUM	CU.YD.	CU.YD.	CU.YD.	GAL.	LB.	LB.	LIN.FT.	LIN.FT.	LIN.FT.	LIN.FT.	LIN.FT.	LB.	EACH	SQ.YD.	CU.YD.
07239 X071 MORO CREEK RELIEF	END BENTS 1&4			50	56.50		0.3	5,630	1,930	799	52			180			627	348
	INT. BENTS 2&3				75.80			7,310				799	52					
	160'-0" CONT. INTEGRAL W-BEAM UNIT					401.20	29.4		90,160						208,220	1		
SITE NO. 7 (BRIDGE NO. 00792)			1															
TOTALS FOR BRIDGE NO. 07239				50	132.30	401.20	29.7	12,940	92,090	799	52	799	52	180	208,220	1	627	348
07240 X071 MORO CREEK RELIEF	END BENTS 1&4			38	56.60		0.3	5,627	1,964	782	51			180			864	470
	INT. BENTS 2&3				75.80			7,313				782	51					
	120'-0" CONT. INTEGRAL W-BEAM UNIT					307.50	22.1		69,096						114,370	1		
SITE NO. 8 (BRIDGE NO. 00791)			1															
TOTALS FOR BRIDGE NO. 07240				38	132.40	307.50	22.4	12,940	71,060	782	51	782	51	180	114,370	1	864	470
07241 X071 MORO CREEK RELIEF	END BENTS 1&4			38	56.70		0.3	5,627	2,003	656	92			180			697	383
	INT. BENTS 2&3				75.80			7,313				782	51					
	120'-0" CONT. INTEGRAL W-BEAM UNIT					308.30	22.1		69,107						114,370	1		
SITE NO. 9 (BRIDGE NO. 00790)			1															
TOTALS FOR BRIDGE NO. 07241				38	132.50	308.30	22.4	12,940	71,110	656	92	782	51	180	114,370	1	697	383
07242 X071 MORO CREEK	END BENTS 1&4			40	56.60		0.3	5,627	1,964	952	61			180			815	445
	INT. BENTS 2&3				75.80			7,313				918	59					
	120'-0" CONT. INTEGRAL W-BEAM UNIT					307.50	22.1		69,096						114,370	1		
SITE NO. 10 (BRIDGE NO. 00789)			1															
TOTALS FOR BRIDGE NO. 07242				40	132.40	307.50	22.4	12,940	71,060	952	61	918	59	180	114,370	1	815	445
07243 X071 MORO CREEK RELIEF	END BENTS 1&4			53	56.50		0.3	5,630	1,930	822	56			180			843	460
	INT. BENTS 2&3				75.80			7,310				969	62					
	160'-0" CONT. INTEGRAL W-BEAM UNIT					401.20	29.4		90,160						208,220	1		
SITE NO. 11 (BRIDGE NO. 00788)			1															
TOTALS FOR BRIDGE NO. 07243				53	132.30	401.20	29.7	12,940	92,090	822	56	969	62	180	208,220	1	843	460
TOTALS FOR JOB NO. 070289				290	929.50	2,520.50	182.6	89,340	582,970	5,559	504	5,798	467	1,300	1,100,930	9	5,695	3,121

①Piles shall conform to Std. Dwg. No. 14964.
②Piles shall conform to Dwg. No. 52786.

STEWART LINZ
DESIGN SECTION SUPERVISOR

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
7/23/12
CARL J. FUSELIER
BRIDGE ENGINEER

SHEET 2 OF 2

SCHEDULE OF BRIDGE QUANTITIES
HWY. 273 - PETERS RD. (CR 24) (F)
DALLAS AND CLEVELAND COUNTIES

ROUTE 167 SEC. 7 & 8

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CMW DATE: 04/30/2012 FILENAME: b070289_ql.dgn
CHECKED BY: RBR DATE: 7-18-12 SCALE:
DESIGNED BY: - DATE: -

BRIDGE NOS. 07239 - 07243 DRAWING NO. 52782

PRINT DATE: dateprinted

SUMMARY OF QUANTITIES

ITEM NUMBER	ITEM		QUANTITY	UNIT
201	CLEARING		230	STATION
201	GRUBBING		230	STATION
202	REMOVAL AND DISPOSAL OF WELL		1	EACH
202	REMOVAL AND DISPOSAL OF FENCE		1716	LIN. FT.
202	REMOVAL AND DISPOSAL OF GATES		4	EACH
202	REMOVAL AND DISPOSAL OF POSTS		6	EACH
202	REMOVAL AND DISPOSAL OF WAGON WHEELS		2	EACH
202	REMOVAL AND DISPOSAL OF BARRICADES		3	EACH
202	REMOVAL AND DISPOSAL OF SIGN FOUNDATIONS		1	EACH
202	REMOVAL AND DISPOSAL OF PIPE CULVERTS		34	EACH
202	REMOVAL AND DISPOSAL OF GUARDRAIL		4970	LIN. FT.
202	REMOVAL AND DISPOSAL OF LUMINAIRE POLES		1	EACH
202	REMOVAL AND DISPOSAL OF SIGNS		22	EACH
SP & 207	STONE BACKFILL		33970	TON
210	UNCLASSIFIED EXCAVATION		182394	CU. YD.
SP & 210	COMPACTED EMBANKMENT		474812	CU. YD.
SP & 210	SOIL STABILIZATION		2000	TON
SS & 303	AGGREGATE BASE COURSE (CLASS 7)		124561	TON
401	TACK COAT		22124	GAL.
SP, SS, & 405	MINERAL AGGREGATE IN ACHM BASE COURSE (1 1/2")		2815	TON
SP, SS, & 405	ASPHALT BINDER (PG 70-22) IN ACHM BASE COURSE (1 1/2")		117	TON
SP, SS, & 406	MINERAL AGGREGATE IN ACHM BINDER COURSE (1")		40633	TON
SP, SS, & 406	ASPHALT BINDER (PG 70-22) IN ACHM BINDER COURSE (1")		1870	TON
SP, SS, & 407	MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2")		47620	TON
SP, SS, & 407	ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2")		22	TON
SP, SS, & 407	ASPHALT BINDER (PG 70-22) IN ACHM SURFACE COURSE (1/2")		2696	TON
412	COLD MILLING ASPHALT PAVEMENT		800	SQ. YD.
SP, SS, & 414	ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC		150	TON
SP, SS, & 415	ACHM PATCHING OF EXISTING ROADWAY		100	TON
SP & 504	APPROACH GUTTERS		325.60	CU. YD.
601	MOBILIZATION		1.00	LUMP SUM
SP & 602	FURNISHING FIELD OFFICE		1	EACH
SS & 603	MAINTENANCE OF TRAFFIC		1.00	LUMP SUM
603	18" TEMPORARY CULVERT		755	LIN. FT.
SS & 604	SIGNS		652	SQ. FT.
SS & 604	BARRICADES		224	LIN. FT.
SS & 604	TRAFFIC DRUMS		815	EACH
SS & 604	FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER		2224	LIN. FT.
SS & 604	RELOCATING PRECAST CONCRETE BARRIER		2394	LIN. FT.
SS & 604	CONSTRUCTION PAVEMENT MARKINGS		116417	LIN. FT.
604	REMOVABLE CONSTRUCTION PAVEMENT MARKINGS		3828	LIN. FT.
604	REMOVAL OF PERMANENT PAVEMENT MARKINGS		7572	LIN. FT.
604	REMOVAL OF PERMANENT PAVEMENT MARKINGS (WORDS)		2	EACH
604	REMOVAL OF PERMANENT PAVEMENT MARKINGS (ARROWS)		2	EACH
SS & 604	VERTICAL PANELS		45	EACH
605	CONCRETE DITCH PAVING (TYPE A)		550	SQ. YD.
605	CONCRETE DITCH PAVING (TYPE B)		4892	SQ. YD.
SP	CULVERT CLEAN OUT		1	EACH
SS & 606	18" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)		2382	LIN. FT.
SS & 606	24" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)		431	LIN. FT.
SS & 606	36" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)		165	LIN. FT.
SP, SS, & 606	18" SIDE DRAIN		792	LIN. FT.
SP, SS, & 606	24" SIDE DRAIN		342	LIN. FT.
606	18" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS		25	EACH
606	24" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS		8	EACH
606	36" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS		2	EACH
606	SELECTED PIPE BEDDING		300	CU. YD.
609	DROP INLETS (TYPE RM)		34	EACH
609	DROP INLETS (TYPE TM)		4	EACH
611	UNDERDRAIN OUTLET PROTECTORS		104	EACH
611	4" PIPE UNDERDRAINS		16220	LIN. FT.
615	PAVEMENT REPAIR OVER CULVERTS (CONCRETE)		47.8	CU. YD.
SS & 617	GUARDRAIL (TYPE A)		2850	LIN. FT.
SS & 617	TERMINAL ANCHOR POSTS (TYPE 1)		6	EACH
SS & 617	GUARDRAIL TERMINAL (TYPE 2)		14	EACH
SS & 617	THRIE BEAM GUARDRAIL TERMINAL		20	EACH
619	WIRE FENCE (TYPE C)		1411	LIN. FT.
620	LIME		101	TON
620	SEEDING		50.32	ACRE
620	MULCH COVER		168.70	ACRE
SS & 620	WATER		7585.0	M.GAL.
621	TEMPORARY SEEDING		118.38	ACRE
621	SILT FENCE		11129	LIN. FT.
621	SAND BAG DITCH CHECKS		7502	BAG
621	DIVERSION DITCH		13474	LIN. FT.
621	DROP INLET SILT FENCE		940	LIN. FT.
621	SEDIMENT BASIN		11138	CU. YD.
621	OBLITERATION OF SEDIMENT BASIN		11138	CU. YD.
621	SEDIMENT REMOVAL AND DISPOSAL		12349	CU. YD.
621	PIPE FOR SLOPE DRAINS		1754	LIN. FT.
621	ROCK DITCH CHECKS		1203	CU. YD.
SP	WATTLE (20")		660	LIN. FT.
623	SECOND SEEDING APPLICATION		50.32	ACRE
624	SOLID SODDING		2960	SQ. YD.
SP & 625	GEOTEXTILE FABRIC (TYPE 10)		45600	SQ. YD.
626	EROSION CONTROL MATTING (CLASS 3)		5304	SQ. YD.
631	CONCRETE BARRIER WALL (PARAPET TYPE A)		818	LIN. FT.
635	ROADWAY CONSTRUCTION CONTROL		1.00	LUMP SUM
637	MAILBOXES		8	EACH
637	MAILBOX SUPPORTS (SINGLE)		6	EACH
637	MAILBOX SUPPORTS (DOUBLE)		1	EACH
642	RUMBLE STRIPS IN ASPHALT SHOULDERS		74608	LIN. FT.
SS & 719	THERMOPLASTIC PAVEMENT MARKING WHITE (4")		83777	LIN. FT.
SS & 719	THERMOPLASTIC PAVEMENT MARKING WHITE (8")		59	LIN. FT.
SS & 719	THERMOPLASTIC PAVEMENT MARKING YELLOW (4")		59335	LIN. FT.
SS & 719	THERMOPLASTIC PAVEMENT MARKING YELLOW (12")		323	LIN. FT.
SP & 719	INVERTED PROFILE THERMOPLASTIC CONTRAST PAVEMENT MARKING WHITE (4")	(ALTERNATE NO. 1)	476	LIN. FT.
SP	HIGH PERFORMANCE CONTRAST MARKING TAPE WHITE (4")	(ALTERNATE NO. 2)	476	LIN. FT.
SP & 719	INVERTED PROFILE THERMOPLASTIC CONTRAST PAVEMENT MARKING YELLOW (4")	(ALTERNATE NO. 1)	1715	LIN. FT.
SP	HIGH PERFORMANCE CONTRAST MARKING TAPE YELLOW (4")	(ALTERNATE NO. 2)	1715	LIN. FT.
721	RAISED PAVEMENT MARKERS (TYPE II)		835	EACH
801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-ROADWAY		237	CU. YD.
802	CLASS S CONCRETE-ROADWAY		434.90	CU. YD.
SS & 804	REINFORCING STEEL-ROADWAY (GRADE 60)		98634	POUND
816	FILTER BLANKET		430	SQ. YD.
816	DUMPED RIPRAP		300	CU. YD.
	STRUCTURES OVER 20' SPAN			
205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 3)		1.00	LUMP SUM
205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 5)		1.00	LUMP SUM
205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 7)		1.00	LUMP SUM
205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 8)		1.00	LUMP SUM
205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 9)		1.00	LUMP SUM
205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 10)		1.00	LUMP SUM
205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 11)		1.00	LUMP SUM
636	BRIDGE CONSTRUCTION CONTROL		1.00	LUMP SUM
801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE		290	CU. YD.
801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-ROADWAY		302	CU. YD.
802	CLASS S CONCRETE-ROADWAY		666.80	CU. YD.
802	CLASS S CONCRETE-BRIDGE		929.50	CU. YD.
802	CLASS S(AE) CONCRETE-BRIDGE		2520.50	CU. YD.
803	CLASS 1 PROTECTIVE SURFACE TREATMENT		182.6	GAL.
SS & 804	REINFORCING STEEL-ROADWAY (GRADE 60)		91026	POUND
SS & 804	REINFORCING STEEL-BRIDGE (GRADE 60)		89340	POUND
SS & 804	EPOXY COATED REINFORCING STEEL (GRADE 60)		582970	POUND
805	CONCRETE PILING (16" SQUARE)		5559	LIN. FT.
805	CONCRETE PILING (24" SQUARE)		5798	LIN. FT.
805	TEST PILE (16" SQUARE)		504	LIN. FT.
805	TEST PILE (24" SQUARE)		467	LIN. FT.
805	PREBORING		1300	LIN. FT.
807	STRUCTURAL STEEL IN BEAM SPANS (M270-GR50W)		1100930	POUND
812	BRIDGE NAME PLATE (TYPE D)		9	EACH
816	FILTER BLANKET		5695	SQ. YD.
816	DUMPED RIPRAP		3121	CU. YD.

*DENOTES ALTERNATE BID ITEMS.

REVISION BOX

DATE	REVISION	SHEET NUMBER
4/2/2013	CHANGED CONCRETE FROM CLASS A TO CLASS S	19, 20, 84

SUMMARY OF QUANTITIES AND REVISIONS

STATE OF ARKANSAS TIMOTHY D. SMITH REGISTERED PROFESSIONAL ENGINEER No. 11425 4-2-13

DATE REVISED	DATE PLANS	DATE REVISED	DATE PLANS	FEDERAL DIST. NO.
4/2/2013				

(2) SUMMARY OF QUANTITIES AND REVISIONS

JOB NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
070289	ARK.		84	365

SURVEY CONTROL COORDINATES

Project Name: s070289
Date: 12/9/2010
Coordinate System: ARKANSAS STATE PLANE - SOUTH ZONE BASED ON GPS CONTROL, PROJECTED TO GROUND.
Units: U.S. SURVEY FOOT

Point Name	Northing	Easting	Elev	Feature	Description
1	1734897.7991	1187197.5325	264.509	CTL	5/8" Rebar with 2" Aluminum Cap
2	1735052.0525	1187806.2751	245.181	CTL	5/8" Rebar with 2" Aluminum Cap
3	1736212.6164	1187877.2729	256.776	CTL	5/8" Rebar with 2" Aluminum Cap
4	1737503.7791	1187926.7837	275.458	CTL	CPS
5	1738603.0100	1188012.9229	253.649	CTL	5/8" Rebar with 2" Aluminum Cap
6	1739741.5307	1188034.8080	214.232	CTL	5/8" Rebar with 2" Aluminum Cap
7	1741140.0033	1188076.3052	213.610	CTL	5/8" Rebar with 2" Aluminum Cap
8	1743281.4140	1188146.9077	214.184	CTL	5/8" Rebar with 2" Aluminum Cap
9	1744002.1207	1188160.8290	216.778	CTL	CPS, HPT 701 OLD JOB RX0028 CPS IN A
10	1745106.3222	1188216.6242	222.057	CTL	5/8" Rebar with 2" Aluminum Cap
11	1746394.8554	1188257.1122	249.113	CTL	5/8" Rebar with 2" Aluminum Cap
12	1747288.2930	1188286.6635	249.673	CTL	5/8" Rebar with 2" Aluminum Cap
13	1748208.0992	1188318.0735	270.638	CTL	5/8" Rebar with 2" Aluminum Cap
14	1749427.6139	1188360.8688	252.161	CTL	5/8" Rebar with 2" Aluminum Cap
15	1750343.2614	1188387.3216	229.739	CTL	5/8" Rebar with 2" Aluminum Cap
16	1751630.6238	1188125.0631	236.218	CTL	CPS IN E-EB
17	1752591.9429	1187923.6585	204.876	CTL	CPS IN E-EB, HPT 713
18	1753786.6842	1187681.9431	206.849	CTL	5/8" Rebar with 2" Aluminum Cap
19	1754703.0648	1187491.6624	204.286	CTL	CPS
20	1755285.4993	1187396.5617	208.102	CTL	CPS, HPT 714 OLD JOB RX0028
21	1755821.2798	1187257.5090	210.582	CTL	CPS, T15 FROM OLD JOB RX0028
22	1758246.6481	1186721.1600	208.972	CTL	CPS IN W-EB T-22
23	1760242.5640	1186364.3812	204.969	CTL	5/8" Rebar with 2" Aluminum Cap T-23
24	1761236.3367	1186157.3784	207.093	CTL	5/8" Rebar with 2" Aluminum Cap T-24
25	1762564.3825	1185885.2675	204.189	CTL	5/8" Rebar with 2" Aluminum Cap T-25
26	1763654.7244	1185655.7260	205.551	CTL	5/8" Rebar with 2" Aluminum Cap T-26
27	1764815.0931	1185395.9674	206.113	CTL	5/8" Rebar with 2" Aluminum Cap
28	1766649.2127	1184959.7324	208.053	CTL	5/8" Rebar with 2" Aluminum Cap T-28
29	1765387.5871	1185275.7322	208.595	CTL	CPS, OLD HPT-729 RX0028
30	1768184.5105	1184699.5322	207.995	CTL	5/8" Rebar with 2" Aluminum Cap T-30
31	1769123.3920	1184466.0481	207.682	CTL	5/8" Rebar with 2" Aluminum Cap T-31
32	1770320.6452	1184261.2586	203.534	CTL	5/8" Rebar with 2" Aluminum Cap T-32
33	1771427.3240	1184067.2312	207.925	CTL	CPS
34	1772252.0473	1184539.3757	206.898	CTL	5/8" Rebar with 2" Aluminum Cap T-34
35	1773627.6887	1185768.4474	206.721	CTL	5/8" Rebar with 2" Aluminum Cap T-35
36	1774860.7840	1186824.8630	207.040	CTL	5/8" Rebar with 2" Aluminum Cap
37	1775723.0532	1187171.7766	212.244	CTL	CPS
38	1777040.5858	1187046.8674	235.850	CTL	5/8" Rebar with 2" Aluminum Cap
39	1778182.4720	1187032.4807	231.181	CTL	5/8" Rebar with 2" Aluminum Cap
40	1779220.3422	1187056.2774	228.680	CTL	CPS
41	1780296.8005	1187056.0891	245.098	CTL	5/8" Rebar with 2" Aluminum Cap
42	1781352.3606	1187137.6558	228.526	CTL	CPS
43	1782498.4770	1187119.0338	261.786	CTL	5/8" Rebar with 2" Aluminum Cap
44	1783782.6523	1187062.1123	239.563	CTL	5/8" Rebar with 2" Aluminum Cap
45	1785280.1669	1187170.0960	246.455	CTL	5/8" Rebar with 2" Aluminum Cap
46	1786563.7501	1187212.5163	237.627	CTL	CPS
47	1787835.2918	1187268.5277	259.403	CTL	5/8" Rebar with 2" Aluminum Cap
48	1789169.5351	1187312.5825	287.772	CTL	CPS
49	1789604.5037	1187288.1731	293.444	CTL	5/8" Rebar with 2" Aluminum Cap
50	1790982.8672	1187380.9044	254.008	CTL	CPS
51	1791979.2338	1187424.4792	246.399	CTL	5/8" Rebar with 2" Aluminum CapAST HW
52	1793212.3132	1187463.5044	229.466	CTL	CPS
53	1794419.7294	1187507.3547	229.559	CTL	CPS
54	1795859.0922	1187567.1488	243.939	CTL	5/8" Rebar with 2" Aluminum Cap
55	1797202.0700	1187609.6877	222.023	CTL	CPS
56	1797933.3788	1187636.5128	240.785	CTL	CPS
57	1799125.1759	1187681.6698	250.959	CTL	CPS
58	1799883.8609	1187713.0832	260.454	CTL	5/8" Rebar with 2" Aluminum Cap
59	1800979.4349	1187752.0392	235.003	CTL	5/8" Rebar with 2" Aluminum Cap
60	1802208.3332	1187793.6874	222.794	CTL	CPS
61	1804229.3974	1187864.9446	224.353	CTL	CPS
62	1805421.4360	1187903.2070	207.457	CTL	CPS
63	1806536.6757	1187940.5906	205.710	CTL	CPS
64	1807604.5661	1187992.6051	215.354	CTL	5/8" Rebar with 2" Aluminum Cap
65	1809388.0691	1188047.7558	239.879	CTL	5/8" Rebar with 2" Aluminum Cap
66	1810029.2144	1188064.1303	236.623	CTL	CPS
67	1811226.0403	1188102.0559	229.431	CTL	CPS
68	1812366.6223	1188142.8908	215.279	CTL	5/8" Rebar with 2" Aluminum Cap
69	1813774.7710	1188183.2848	248.180	CTL	5/8" Rebar with 2" Aluminum Cap
70	1814937.4389	1188218.8753	252.596	CTL	5/8" Rebar with 2" Aluminum Cap
71	1815768.7801	1188248.2978	253.763	CTL	5/8" Rebar with 2" Aluminum Cap
72	1816381.4663	1188253.7742	261.898	CTL	CPS
73	1817599.9366	1188213.0857	226.896	CTL	5/8" Rebar with 2" Aluminum Cap
74	1819023.5269	1188323.3441	207.418	CTL	CPS, T 86 FROM OLD JOB RX0028
75	1820165.9781	1188353.9781	205.266	CTL	CPS, T 87 OLD JOB RX0028
76	1821110.8742	1188382.7618	196.348	CTL	CPS, T 88 OLD JOB RX0028
77	1822180.8659	1188413.8718	191.465	CTL	CPS, T 89 OLD JOB RX0028
78	1823184.4454	1188443.3344	191.173	CTL	CPS, T 90 OLD JOB RX0028
79	1824156.9403	1188473.5825	191.503	CTL	CPS, T 91 OLD JOB RX0028
80	1825250.5579	1188508.8878	182.795	CTL	5/8" Rebar with 2" Aluminum Cap
81	1826397.7483	1188548.3173	185.681	CTL	5/8" Rebar with 2" Aluminum Cap
82	1827623.6181	1188578.0925	188.428	CTL	5/8" Rebar with 2" Aluminum Cap
83	1830079.3407	1188648.4633	189.190	CTL	CPS
84	1830697.5132	1188675.5803	189.245	CTL	5/8" Rebar with 2" Aluminum Cap, T 1 OLD JOB 070244
85	1831698.5019	1188672.1355	188.348	CTL	5/8" Rebar with 2" Aluminum Cap, T 2 OLD JOB 070244
86	1832858.4449	1188763.3964	180.844	CTL	T-3 OLD JOB 070244
87	1833814.4406	1188799.1052	181.067	CTL	T-4 OLD JOB 070244
88	1835693.9023	1188878.6305	180.452	CTL	T-5 OLD JOB 070244
89	1836788.8687	1188957.3723	180.138	CTL	T-6 OLD JOB 070244
90	1837635.4712	1189118.9893	180.502	CTL	RTK ELEV
900	1733147.8262	1187810.4818	239.431	BM	TBM 900 CH, SQ, SW CONC. OF SE
901	1737659.6676	1187887.6089	273.149	BM	CH, SQ, N END CB OF BREAD OF LI
902	1741155.5074	1188038.7372	214.647	BM	CH, SQ, ON SW CONC. OF BR
903	1743191.1151	1188094.3117	213.862	BM	CH, SQ, N END ON RCP
904	1746281.6829	1188302.8537	248.928	BM	CPS IN SE CONC. OF DW TBM 904
905	1749183.7517	1188387.9895	253.152	BM	CPS IN NE CONC. OF DW TBM 905
906	1751646.3487	1188148.7839	236.494	BM	CH, SQ,
907	1753900.8907	1187697.5693	227.671	BM	TBM 907 CH, SQ
908	1757301.5019	1186882.5442	226.009	BM	CH, SQ AT CONC. ISLAND S END HWY
910	1759161.9923	1186603.9536	203.915	BM	2" ALUM DISK SET ON NE HW
911	1760399.8261	1186347.2770	203.181	BM	3" ALUM DISK AHTD
912	1763542.7298	1185695.7941	202.902	BM	TBM 912 3" ALUM DISK AHTD
913	1766516.2148	1184977.9243	209.346	BM	TBM 913 CH, SQ CENTER HW
914	-99999.0000	-99999.0000	208.445	BM	167-7 6.54 LOG MILE
915	1772097.8455	1184456.9332	207.666	BM	CH, SQ, SE HW TBM 915
916	1774745.8041	1186726.0275	207.427	BM	CHSL SQ BR END
917	1777633.1086	1186996.6187	218.096	BM	SQ SW COR WEST HW
918	-99999.0000	-99999.0000	230.536	BM	CH SQ EAST HW
919	1783340.3387	1187095.5737	236.274	BM	CHSL SQ EAST HW
920	1786226.5844	1187214.7281	234.869	BM	CHSL SQ EAST HW
921	1788697.1678	1187311.9667	265.204	BM	CHSL SQ
922	1791330.7822	1187403.6318	248.236	BM	CHISELED SQ.HW
923	1794965.2390	1187533.9153	225.966	BM	CHISELED SQ.CON.HW LT
924	1798327.3559	1187660.1558	232.669	BM	CHISELED SQ.CON.HW
925	1800995.9257	1187761.1295	232.191	BM	CHSLD SQUARE S\EAST COR HW
926	1803369.1121	1187845.3422	225.085	BM	CHSLD SQUARE CENTER OF HW
927	1806612.5633	1187948.9926	203.862	BM	CSLD SQUARE CENTER HW
928	1811528.3363	1188134.5006	205.023	BM	CHISELED CENTER OF HW
929	1817043.7420	1188192.8944	235.210	BM	DISK HDWL
930	1819356.6821	1188341.0741	203.135	BM	CHSL SQ HDWL
931	-99999.0000	-99999.0000	190.107	BM	CHSL SQ HDWL
932	1824848.6801	1188501.0480	181.963	BM	CHSL SQ HDWL
933	1827632.8323	1188601.1252	183.992	BM	CHSL SQ HDWL
934	1830544.4891	1188678.2560	187.616	BM	CHSL SQ HDWL, OLD BM 996 JOB 070244
935	1831670.9222	1188747.3751	188.060	BM	USGS DISK 9CHC 1961
936	-99999.0000	-99999.0000	184.721	BM	USGS CONC MON W/BRASS CAP
951	1730094.5889	1187824.6806	271.768	BM	2"' BRASS CAP NGS T-81
952	1729793.7037	1187232.8110	289.841	BM	2"' BRASS CAP U-11
953	1756794.4182	1184728.0112	229.052	BM	2" BRASS CAP SET IN CONC. NGS
955	1796775.7369	1197522.1746	226.578	BM	USGS DISK 12CHC 1962
956	1798454.7529	1181952.4729	272.340	BM	USGS 13CHC 1962

*Note - Rebar and Cap - Standard -"- Rebar with 2" Aluminum Cap stamped
*(standard markings common to all caps), or as indicated
(other markings indicated in the point description of the individual point).
USE CAF = 1.0 FOR STAKEOUT FOR THIS PROJECT
A PROJECT CAF OF 0.999909465) HAS BEEN USED TO COMPUTE THE ABOVE GROUND COORDINATES.
THIS CAF IS INTENDED FOR USE WITHIN THE PROJECT LIMITS.
GRID DISTANCE * GROUND DISTANCE X CAF.
GRID COORDINATES ARE STORED UNDER FILE NAME s070289gi.CTL
HORIZONTAL DATUM: NAD 83 (1997)
VERTICAL DATUM: NAVD 88 POSITIONAL ACCURACY THIRD ORDER, UNLESS SPECIFIED OTHERWISE AT A SPECIFIC POINT.

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

BASIS OF BEARING:
ARKANSAS STATE PLANE GRID BEARINGS - 0302-SOUTH ZONE
DETERMINED FROM NGS CONTROL POINTS: T 81, U 11, HEYS, H 80
CONVERGENCE ANGLE: 0-13-48.3 RIGHT AT LT: 34-00-51.5 LG: 092-24-39.9
GRID AZIMUTH = ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE.

HWY. 167 CL

POINT NO.	TYPE	STATION	NORTHING	EASTING
8000	POB	340+00.01	1756685.8491	1187104.8219
8001	PI	355+00.00	1758154.6443	1186800.4915
8002	PI	357+19.92	1758369.9984	1186755.8951
8003	PI	360+97.33	1758739.7204	1186680.1377
8004	PI	369+38.61	1759563.4501	1186509.2023
8005	PC	486+75.20	1771056.0873	1184128.6604
8007	PT	496+71.27	1771987.5408	1184368.5858
8008	PC	536+17.16	1774983.9287	1186936.0068
8010	PT	544+57.21	1775760.8650	1187196.5683
8011	PC	566+45.43	1777944.9849	1187062.5463
8013	PT	572+12.88	1778512.1627	1187055.8726
8014	PC	588+13.76	1780111.8950	1187116.2965
8016	PT	591+51.28	1780448.9433	1187134.0013
8017	PC	598+32.40	1781128.5192	1187179.7431
8019	PT	601+69.92	1781465.5674	1187197.4479
8020	PC	608+73.34	1782168.4893	1187223.9981
8022	PT	614+16.47	1782709.3049	1187186.6822
8023	PC	620+02.96	1783286.7798	1187084.2620
8025	PT	625+48.32	1783829.8245	1187047.0313
8026	PI	630+05.20	1784286.3638	1187064.6759
8027	POE	640+05.14	1785285.5574	1187103.2933

HWY. 167 N. LT. LANE-SHIFT

POINT NO.	TYPE	STATION	NORTHING	EASTING
8028	POB	535+00.00	1774898.5421	1186855.6015
8029	PC	535+79.72	1774959.0827	1186907.4750
8031	PT	544+19.77	1775736.0190	1187168.0365
8032	POE	544+85.62	1775801.7407	1187164.0037

HWY. 167 N. RT. LANE-SHIFT

POINT NO.	TYPE	STATION	NORTHING	EASTING
8033	POB	535+00.00	1774891.3849	1186863.9546
8034	PC	536+54.59	1775008.7746	1186964.5387
8036	PT	544+94.64	1775785.7109	1187225.1002
8037	POE	545+14.38	1775805.4155	1187223.8911

HWY. 167 S. LT. LANE-SHIFT

POINT NO.	TYPE	STATION	NORTHING	EASTING
8038	POB	483+50.00	1770731.5605	1184165.2448
8039	PI	486+00.00	1770976.3640	1184114.5371
8040	PC	486+58.96	1771034.0999	1184102.5779
8042	PT	496+55.03	1771965.5535	1184342.5033
8043	POE	498+17.43	1772088.8705	1184448.1661

HWY. 167 S. RT. LANE-SHIFT

POINT NO.	TYPE	STATION	NORTHING	EASTING
8044	POB	486+00.00	1770988.5338	1184173.2900
8045	PC	486+91.44	1771078.0746	1184154.7428
8047	PT	496+87.51	1772009.5282	1184394.6682
8048	POE	497+82.57	1772081.7132	1184456.5192

HWY. 167 STAGE 2

POINT NO.	TYPE	STATION	NORTHING	EASTING
8049	POB	486+00.00	1770990.7266	1184183.8262
8050	PC	486+77.00	1771066.1257	1184168.2084
8052	PT	496+73.07	1771997.5792	1184408.1337
8053	PI	535+85.60	1774968.6382	1186953.8521
8054	PC	536+21.39	1774995.8184	1186977.1411
8056	PT	544+61.44	1775772.7547	1187237.7026
8057	POE	545+00.00	1775811.2397	1187235.3411

HWY. 167 STAGE 2 SOUTH END

POINT NO.	TYPE	STATION	NORTHING	EASTING
8058	POB	349+00.00	1757559.5057	1186885.4398
8059	PC	350+59.84	1757716.0277	1186853.0265
8061	PT	353+39.65	1757993.1967	1186816.5242
8062	PC	355+74.08	1758227.2306	1186803.0082
8064	PT	358+46.90	1758497.5506	1186767.9111
8065	POE	360+00.00	1758647.5858	1186737.4136

STATE OF ARKANSAS
JAMES D. SMITH
PROFESSIONAL ENGINEER
No. 11425
9-9-12

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.AID PROJ.NO.	STATE	SHEET NO.	TOTAL SHEETS
				070289	ARK.	85	365

JOB NO. 6

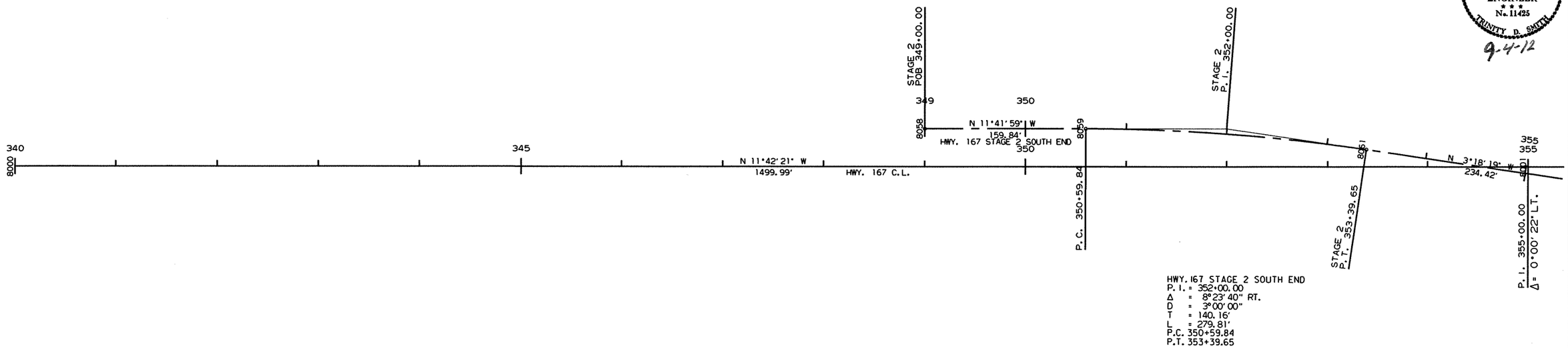
(2) SURVEY CONTROL DETAILS

SURVEY CONTROL DETAILS

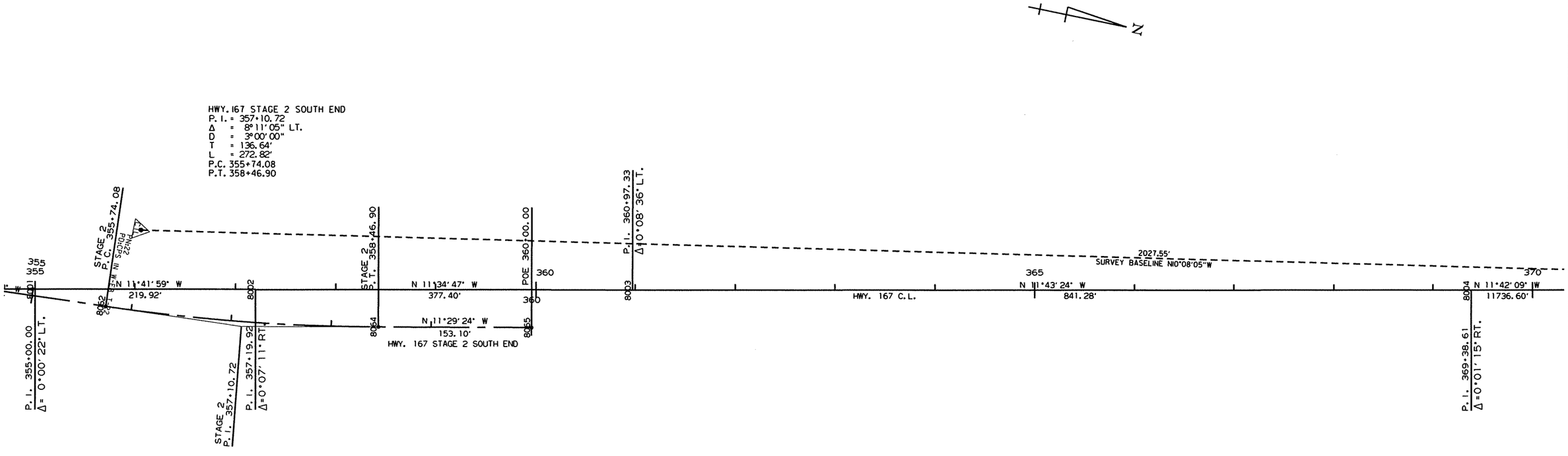
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				6	ARK.			
				JOB NO.		070289	86	365

(2) SURVEY CONTROL DETAILS

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REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12



HWY. 167 STAGE 2 SOUTH END
P. I. = 352+00.00
Δ = 8°23'40" RT.
D = 3°00'00"
T = 140.16'
L = 279.81'
P.C. 350+59.84
P.T. 353+39.65



8/30/2012

R070289.DGN

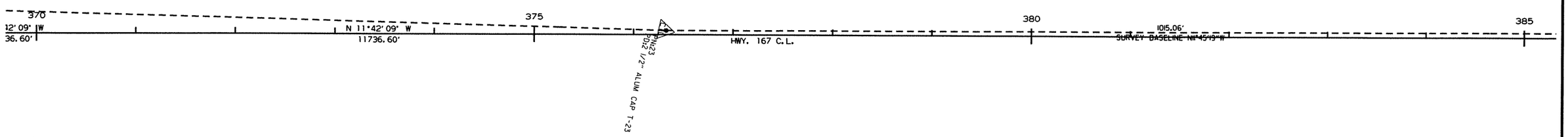
SURVEY CONTROL DETAILS

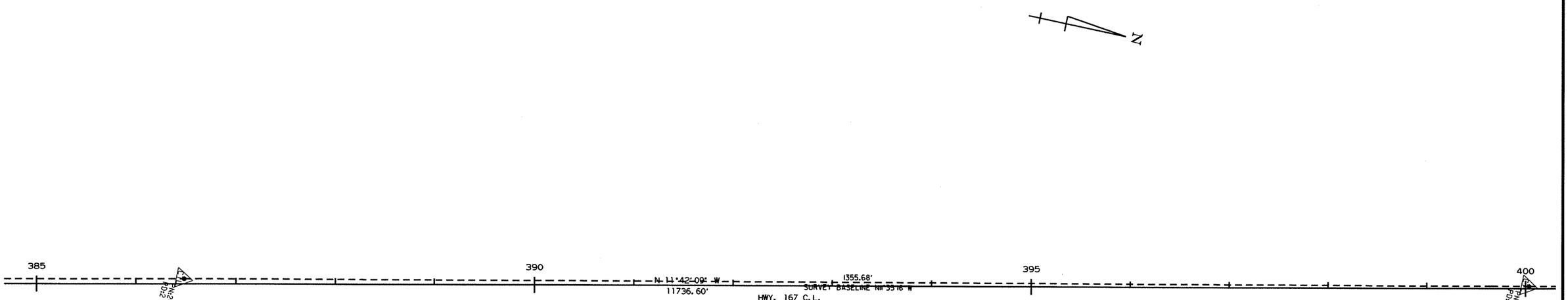
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				6	ARK.			
				JOB NO.		070289	87	365

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
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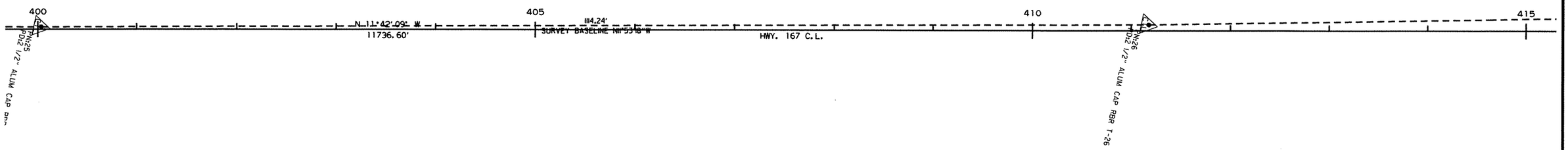
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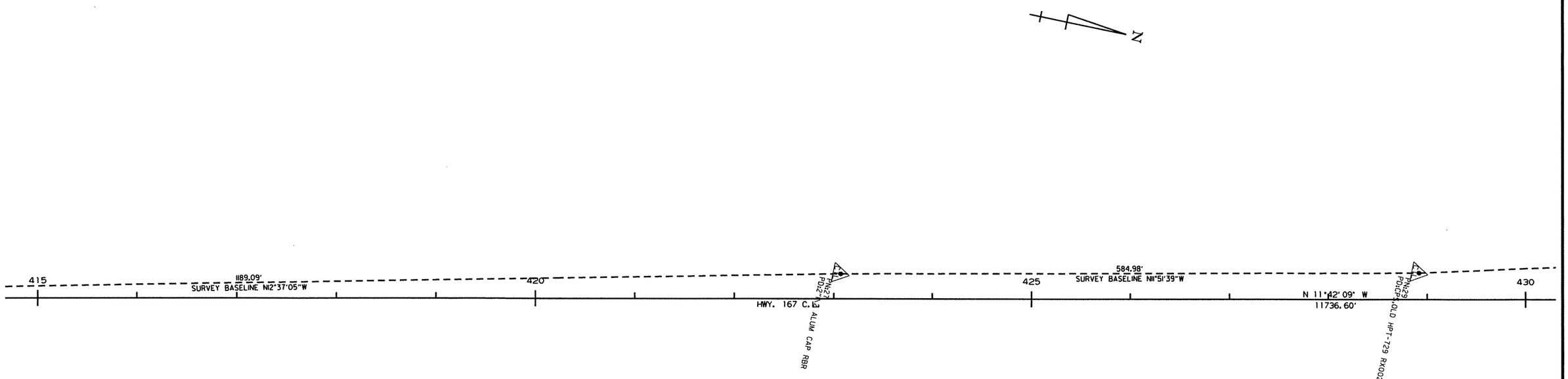
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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070289	88	365

(2) SURVEY CONTROL DETAILS

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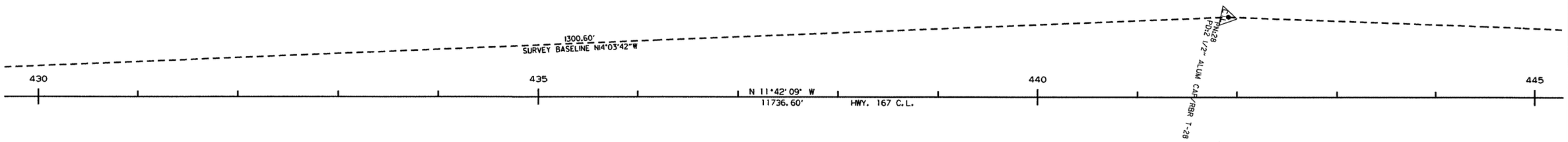
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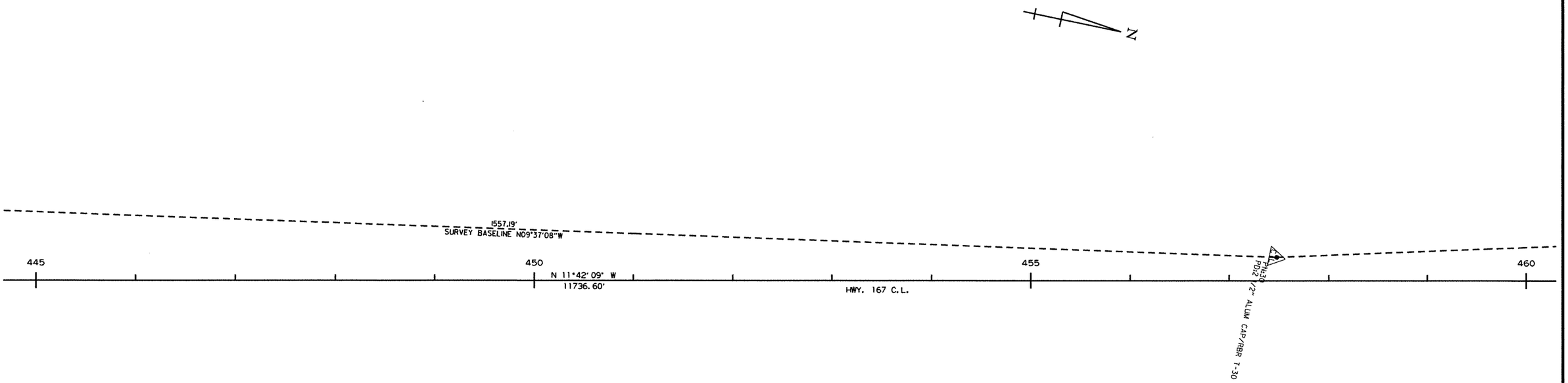
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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
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				JOB NO.		070289	89	365

(2) SURVEY CONTROL DETAILS

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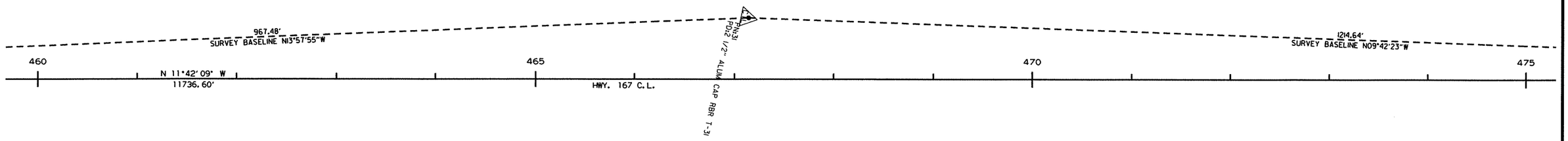
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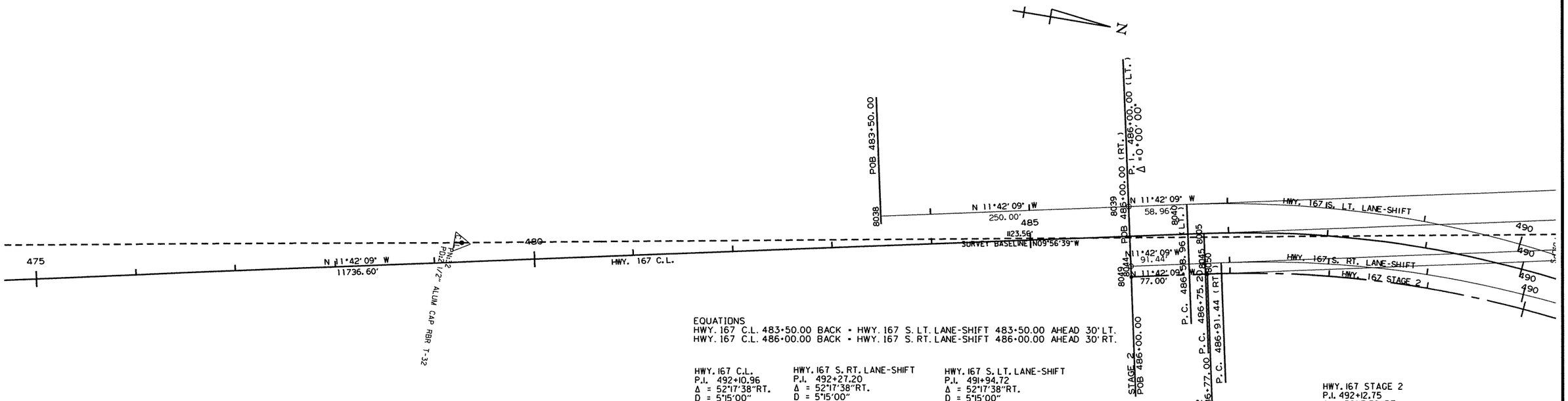
SURVEY CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070289	90	365

(2) SURVEY CONTROL DETAILS

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EQUATIONS
HWY. 167 C.L. 483+50.00 BACK = HWY. 167 S. LT. LANE-SHIFT 483+50.00 AHEAD 30' LT.
HWY. 167 C.L. 486+00.00 BACK = HWY. 167 S. RT. LANE-SHIFT 486+00.00 AHEAD 30' RT.

HWY. 167 C.L.
P.I. 492+10.96
Δ = 52°17'38"RT.
D = 5°15'00"
T = 535.75'
L = 996.07'
P.C. 486+75.20
P.T. 496+71.27
e = 0.098'/'
Ls = 400'

HWY. 167 S. RT. LANE-SHIFT
P.I. 492+27.20
Δ = 52°17'38"RT.
D = 5°15'00"
T = 535.75'
L = 996.07'
P.C. 486+91.44
P.T. 496+87.51

HWY. 167 S. LT. LANE-SHIFT
P.I. 491+94.72
Δ = 52°17'38"RT.
D = 5°15'00"
T = 535.75'
L = 996.07'
P.C. 486+58.96
P.T. 496+55.03

HWY. 167 STAGE 2
P.I. 492+12.75
Δ = 52°17'38"RT.
D = 5°15'00"
T = 535.75
L = 996.07
P.C. 486+77.00
P.T. 496+73.07

SURVEY CONTROL DETAILS

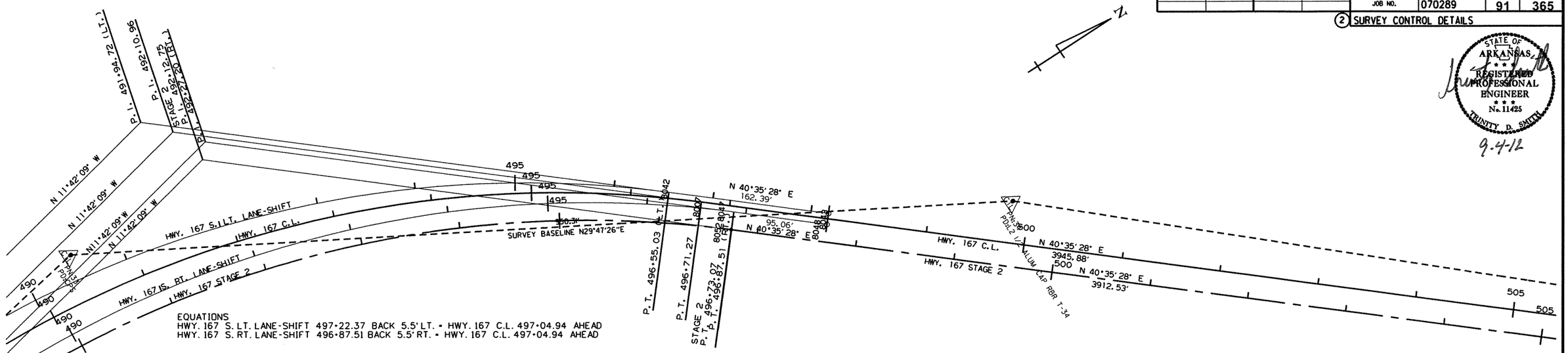
8/30/2012

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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.			
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(2) SURVEY CONTROL DETAILS

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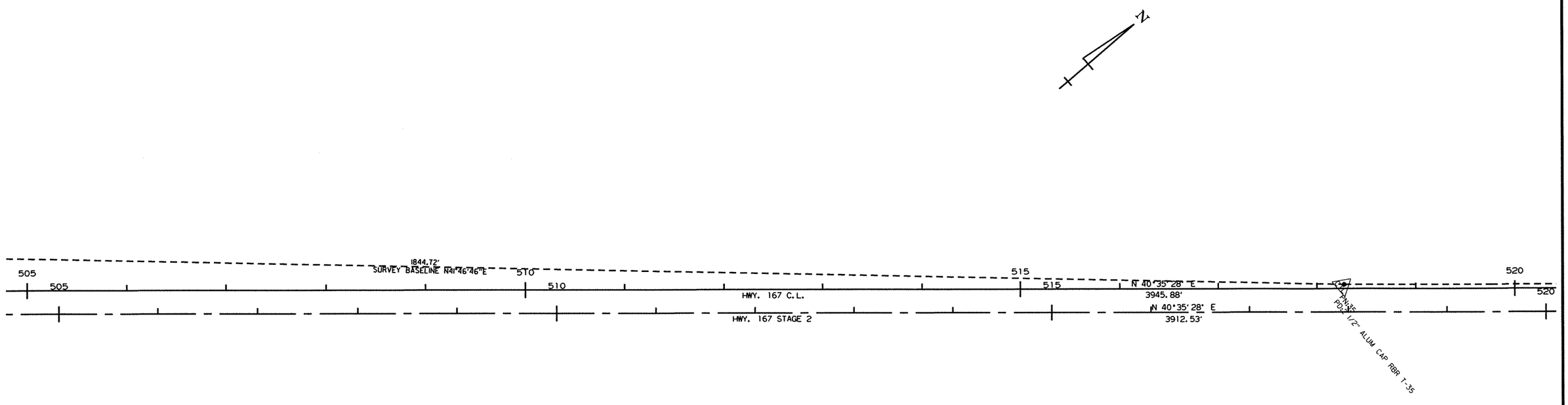
EQUATIONS
HWY. 167 S. LT. LANE-SHIFT 497+22.37 BACK 5.5' LT. = HWY. 167 C.L. 497+04.94 AHEAD
HWY. 167 S. RT. LANE-SHIFT 496+87.51 BACK 5.5' RT. = HWY. 167 C.L. 497+04.94 AHEAD

HWY. 167 C.L.
P.I. 492+10.96
Δ = 52°17'38"RT.
D = 5°15'00"
T = 535.75'
L = 996.07'
P.C. 486+75.20
P.T. 496+71.27
e = 0.098'/'
Ls = 400'

HWY. 167 S. RT. LANE-SHIFT
P.I. 492+27.20
Δ = 52°17'38"RT.
D = 5°15'00"
T = 535.75'
L = 996.07'
P.C. 486+91.44
P.T. 496+87.51

HWY. 167 S. LT. LANE-SHIFT
P.I. 491+94.72
Δ = 52°17'38"RT.
D = 5°15'00"
T = 535.75'
L = 996.07'
P.C. 486+58.96
P.T. 496+55.03

HWY. 167 STAGE 2
P.I. 492+12.75
Δ = 52°17'38"RT.
D = 5°15'00"
T = 535.75
L = 996.07
P.C. 486+77.00
P.T. 496+73.07



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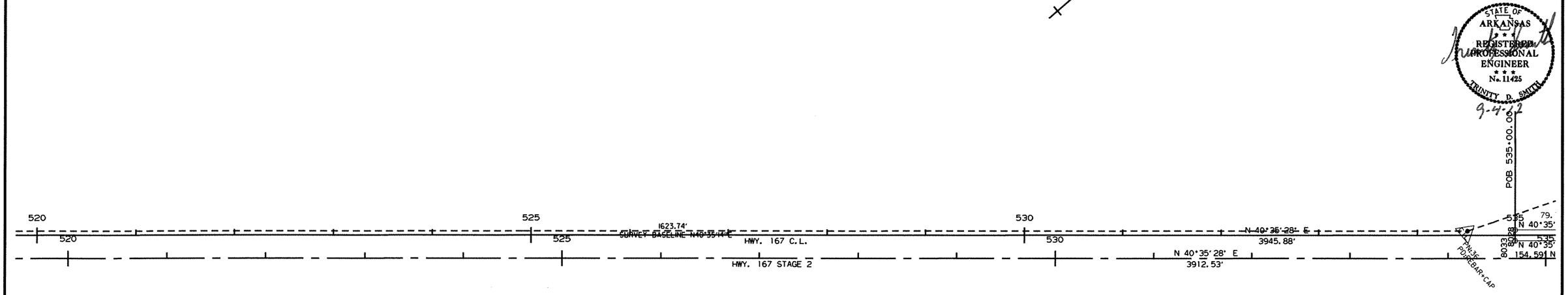
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SURVEY CONTROL DETAILS

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

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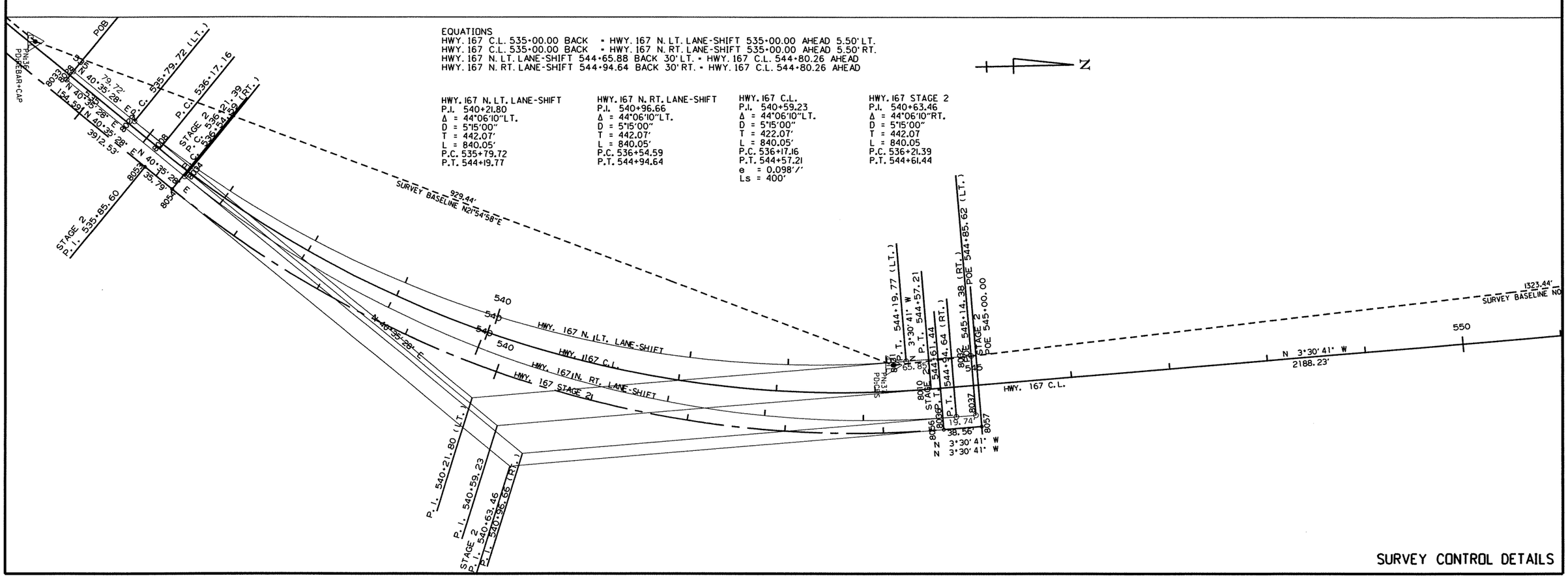
EQUATIONS
HWY. 167 C.L. 535+00.00 BACK = HWY. 167 N. LT. LANE-SHIFT 535+00.00 AHEAD 5.50' LT.
HWY. 167 C.L. 535+00.00 BACK = HWY. 167 N. RT. LANE-SHIFT 535+00.00 AHEAD 5.50' RT.
HWY. 167 N. LT. LANE-SHIFT 544+65.88 BACK 30' LT. = HWY. 167 C.L. 544+80.26 AHEAD
HWY. 167 N. RT. LANE-SHIFT 544+94.64 BACK 30' RT. = HWY. 167 C.L. 544+80.26 AHEAD

HWY. 167 N. LT. LANE-SHIFT
P.I. 540+21.80
Δ = 44°06'10"LT.
D = 5°15'00"
T = 442.07'
L = 840.05'
P.C. 535+79.72
P.T. 544+19.77

HWY. 167 N. RT. LANE-SHIFT
P.I. 540+96.66
Δ = 44°06'10"LT.
D = 5°15'00"
T = 442.07'
L = 840.05'
P.C. 536+54.59
P.T. 544+94.64

HWY. 167 C.L.
P.I. 540+59.23
Δ = 44°06'10"LT.
D = 5°15'00"
T = 422.07'
L = 840.05'
P.C. 536+17.16
P.T. 544+57.21
e = 0.098'/'
Ls = 400'

HWY. 167 STAGE 2
P.I. 540+63.46
Δ = 44°06'10"RT.
D = 5°15'00"
T = 442.07
L = 840.05
P.C. 536+21.39
P.T. 544+61.44



SURVEY CONTROL DETAILS

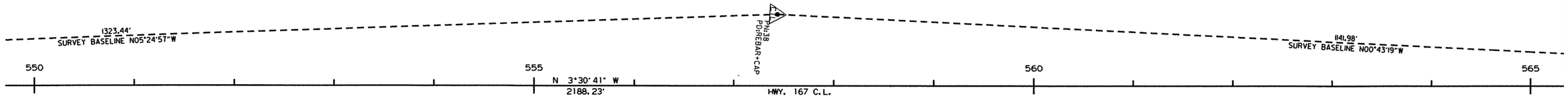
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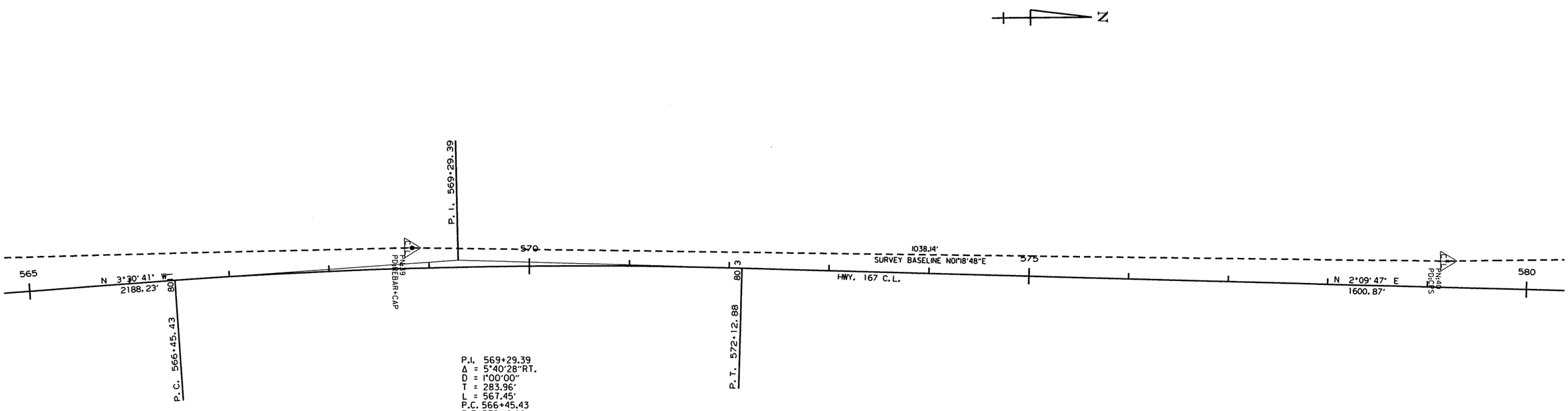
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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070289	93	365

(2) SURVEY CONTROL DETAILS

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9-4-12





P.I. 569+29.39
Δ = 5°40'28"RT.
D = 1°00'00"
T = 283.96'
L = 567.45'
P.C. 566+45.43
P.T. 572+12.88
e = 0.030'/'
Ls = 350'

8/30/2012

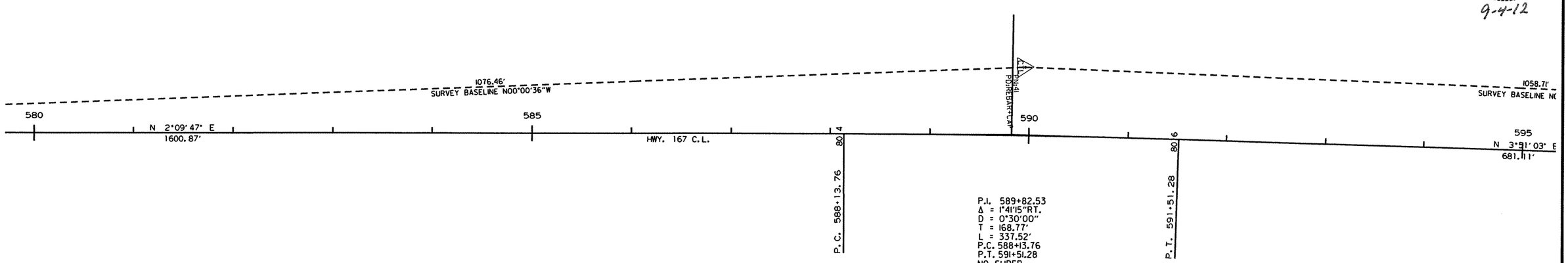
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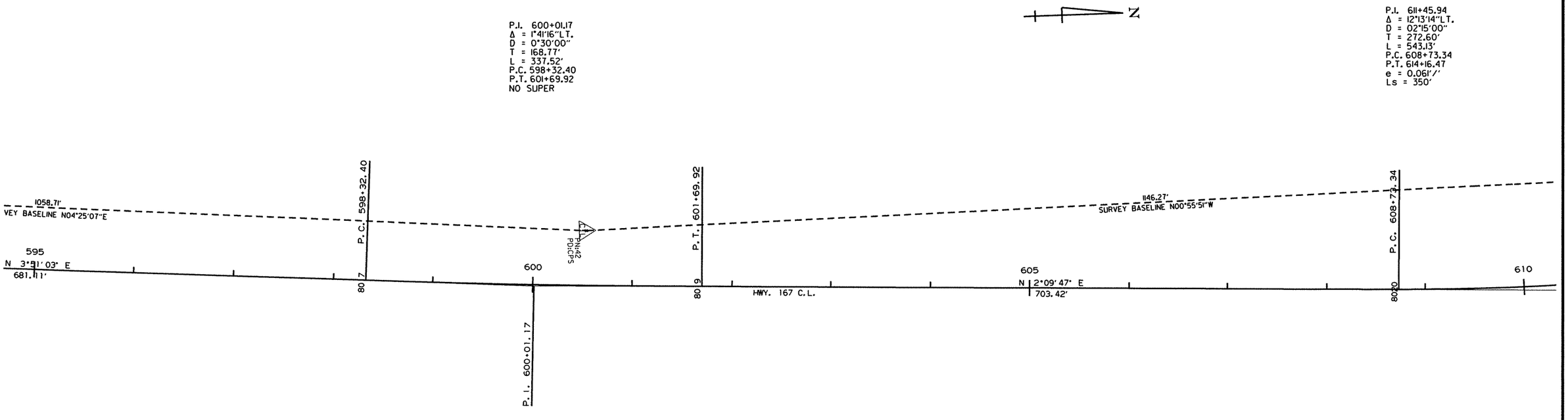
SURVEY CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070289	94	365

(2) SURVEY CONTROL DETAILS

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9-4-12





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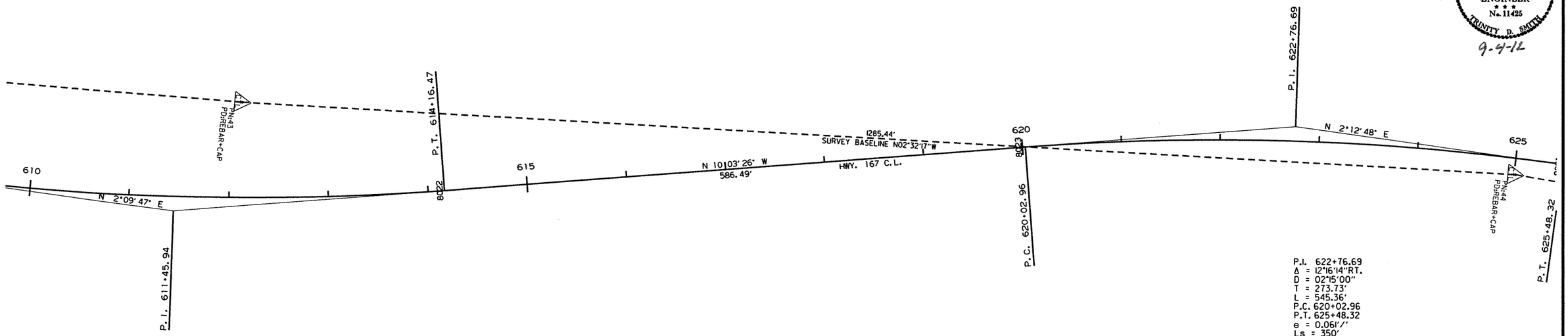
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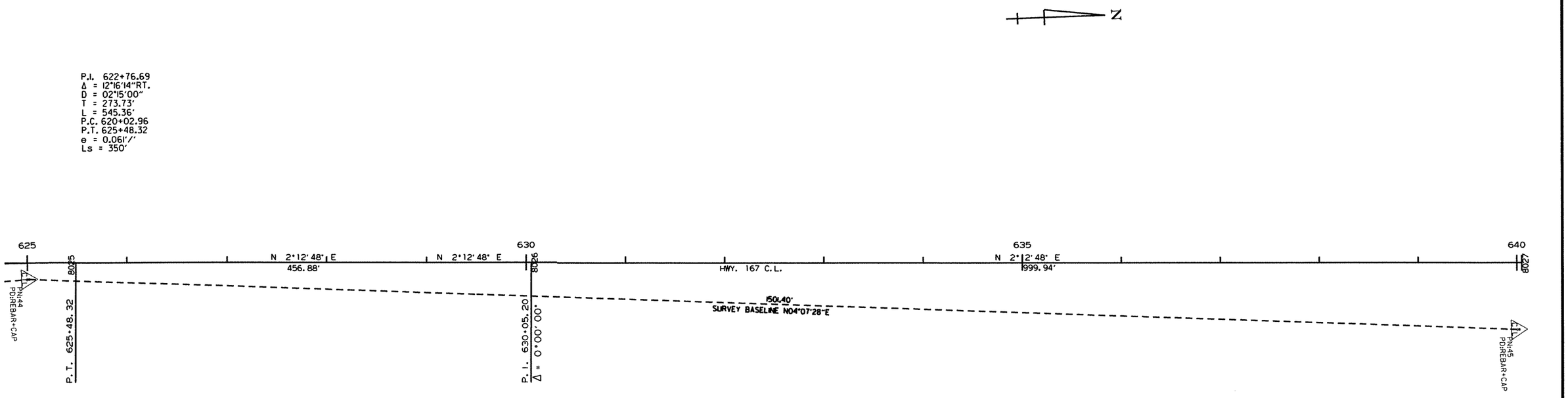
SURVEY CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070289	95	365

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12





8/30/2012

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SURVEY CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070289	96	365

(2) PLAN AND PROFILE SHEETS

CONCRETE DITCH PAVING (TYPE B)

STA.	STA.	SIDE	"W"	SQ. YDS.
357+53	358+00	RT.	9'-6"	49.61

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-28-13

+20 100' TRANSITION +20

EXIST R/W

CONST. LIMITS

PROPOSED R/W

HWY. 167 C.L.

STA. 357+53 - IN PLACE
DBL. 24" x 32' C.M. PIPE CULV'T.
LT. SIDE DRAIN
RETAIN AND OVERLAY

STA. 362+52 - IN PLACE
24" X 24.5' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
24" X 30' PIPE CULVERT
LT. SIDE DRAIN
CONST.APPR. = 45 CU. YDS.

STA. 366+68 - IN PLACE
12" X 38' R.C. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 44' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPR. = 75 CU. YDS.

STA. 369+34 - IN PLACE
10" X 25' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 34' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPR. = 40 CU. YDS.

P.I. 355+00.00
Δ= 0°00' 22" LT.

P.I. 357+19.92
Δ=0°07' 11" RT.

P.I. 360+97.33
Δ=0°08' 86" LT.

P.I. 369+38.61
Δ=0°01' 15" RT.

N 11°41' 59" W

N 11°34' 47" W

N 11°43' 24" W

N 11°42' 09" W

355 360 365 370

BEGIN JOB 070289
STA. 357+20.00
LOG MILE 4.49
END JOB 070288

STA. 358+00 - CONSTRUCT
TYPE 'RM' DROP INLET IN MEDIAN (4'-0" X 3'-0" X H = 2'-9")
WITH 18" X 82' R.C. PIPE OUTLET ON RT.
(CLASS III) (TYPE 3 BEDDING) WITH F.E.S. RT.
18" R.C. PIPE (CL. III) = 82 LIN.FT.
18" F.E.S. = 1EA.

STA. 364+00 - CONSTRUCT
TYPE 'RM' DROP INLET IN MEDIAN (4'-0" X 3'-0" X H = 2'-9")
WITH 18" X 84' R.C. PIPE OUTLET ON RT.
(CLASS III) (TYPE 3 BEDDING) WITH F.E.S. RT.
18" R.C. PIPE (CL. III) = 84 LIN.FT.
18" F.E.S. = 1EA.

STA. 365+24 - IN PLACE
6' X 3' X 77' R.C. BOX CULVERT
RETAIN AND EXTEND 13' LT. AND 72' RT.
TO A COMPLETED LENGTH OF 162'
Q50 = 86 CFS D.A. = 84 ACRES

P.O.E.

STA. 366+00 - CONSTRUCT
TYPE 'RM' DROP INLET IN MEDIAN
(4'-0" X 3'-0" X H = 2'-9")
WITH 18" X 72' R.C. PIPE OUTLET
(CLASS III) (TYPE 3 BEDDING)
CONNECT TO BOX CULVERT @ STA. 365+24
18" R.C. PIPE (CL. III) = 72 LIN.FT.

STA. 369+97 - IN PLACE
24" X 34' PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
24" X 28' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPR. = 25 CU. YDS.

STA. 357+20.00
BEGIN LT. LANE OVERLAY
BEGIN RT. LANE PROFILE GRADE
ELEV. 209.01

CONSTUCTED UNDER 070288

-1.85%

K-432.38
VC-800'
e-1.85'

0.00%

K-5831.58
VC-300'
e--0.02'

-0.25% RT.DT.GR.

-1.37% LT.DT.GR.

.70% MED.DT.GR.

.08% LT.DT.GR.

.78% RT.DT.GR.

18"x72' R.C.PIPE @ 0.38%

357+41.00 206.96

+00 TOP D.I. 204.15

F.L. D.I. 201.40
F.L. OUTLET RT. 201.20

.00.00 RT.DT.GR. RT.ELEV. 201.20

+00 TOP D.I. 202.63

F.L. D.I. 199.88
F.L. OUTLET RT. 199.69

.00.00 LT.DT.GR. LT.ELEV. 201.97

+24 +00 TOP D.I. 202.97

F.L. INLET LT. 200.29
F.L. OUTLET RT. 199.38

.24.00 MED.DT.GR. MED.ELEV. 203.50
.24.00 RT.DT.GR. RT.ELEV. 199.38
.24.00 LT.DT.GR. LT.ELEV. 200.29

F.L. D.I. 200.22

.00.00 MED.DT.GR. MED. ELEV. 202.97

.00.00 RT.DT.GR. RT.ELEV. 202.53
.00.00 LT.DT.GR. LT.ELEV. 202.23

369+28.00 206.96

BM 910: 2" ALUM. DISK SET ON NE HW
11.2' RT. STA. 365+26.27 ELEV. 203.91

240 235 230 225 220 215 210 205 200 195 190

355+00 356+00 357+00 358+00 359+00 360+00 361+00 362+00 363+00 364+00 365+00 366+00 367+00 368+00 369+00 370+00

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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.		070289	97	365

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12

STA. 370+07 - INSTALL
18" X 32' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPR. ON LT. = 40 CU. YDS.

STA. 374+98 - IN PLACE
10" X 20' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 36' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPR. = 55 CU. YDS.

BEGIN FLOOD HAZARD AREA

LIMITS OF SPECIAL FLOOD HAZARD AREA
STA. 375+55
STA. 38415

STA. 377+89 - IN PLACE
DBL. 10' X 6' X 88' R.C. BOX CULVERT
RETAIN AND EXTEND 3' LT. AND
82' RT ON 28° LT. FWD. SKEW
TO A COMPLETED LENGTH OF 173'
Q50 = 740 CFS D.A. = 960 ACRES
(SPAN 22'-1")

END FLOOD HAZARD AREA

N

POND

LEVEE

EXIST R/W

CONST. LIMITS

16'

+07

24' 8"

370

N 09° W

60'

+97

+46

200' TAPER

210' TURN LANE

8'

24' 6"

+98

+44

210' TURN LANE

+54

200' TAPER

+54

375

N 11°42'09" W

40'

EXIST R/W

CONST. LIMITS

PROPOSED R/W

380

HWY. 167 C.L.

+46

385

60

+48.18
126.00

+30.35
108.66

+30.76
125.00

STA. 374+50 - CONSTRUCT
TYPE 'RM' DROP INLET IN MEDIAN
(4'-0" X 3'-0" X H = 2'-9")
WITH 18" X 86' R.C. PIPE OUTLET ON RT.
(CLASS III) (TYPE 3 BEDDING) WITH F.E.S. RT.
18" R.C. PIPE (CL. III) = 86 LIN.FT.
18" F.E.S. = 1EA.

STA. 377+00 - CONSTRUCT
TYPE 'RM' DROP INLET IN MEDIAN
(4'-0" X 3'-0" X H = 2'-9")
WITH 18" X 84' R.C. PIPE OUTLET ON RT.
(CLASS III) (TYPE 3 BEDDING) WITH F.E.S. RT.
18" R.C. PIPE (CL. III) = 84 LIN.FT.
18" F.E.S. = 1EA.

+60.00
215.00

P.D.E.

+10.00
129.55

+85.00
132.56

P.D.E.

P.D.E.

+05.00
230.00

+70.00
140.00

STA. 380+00 - CONSTRUCT
TYPE 'RM' DROP INLET IN MEDIAN
(4'-0" X 3'-0" X H = 2'-9")
WITH 18" X 86' R.C. PIPE OUTLET ON RT.
(CLASS III) (TYPE 3 BEDDING) WITH F.E.S. RT.
18" R.C. PIPE (CL. III) = 86 LIN.FT.
18" F.E.S. = 1EA.

STA. 383+00 - CONSTRUCT
TYPE 'RM' DROP INLET IN MEDIAN
(4'-0" X 3'-0" X H = 2'-9")
WITH 18" X 82' R.C. PIPE OUTLET ON RT.
(CLASS III) (TYPE 3 BEDDING) WITH F.E.S. RT.
18" R.C. PIPE (CL. III) = 82 LIN.FT.
18" F.E.S. = 1EA.

240

FOR THE CONSTRUCTION OF TEMPORARY RAMPS OR HAUL ROADS. THIS STREAM IS CLASSIFIED AS AN INTERMITTENT STREAM. THE STREAM BANK ELEVATIONS ARE 198 FT. MSL.
REFER TO SECTION 110.06 (c) OF THE 2003 STANDARD SPECIFICATIONS.

235 230 225 220 215 210 205 200 195 190

K-5831.58
VC-300'
e=-0.02'

-0.05%

+50
TOP D.I. 203.94

F.L. D.I. 201.19
F.L. OUTLET RT. 199.80

-1.45% RT.DT.GR.

+50.00 RT.DT.GR.
RT.ELEV. 199.80

+00
TOP D.I. 203.49

F.L. D.I. 200.74
F.L. OUTLET RT. 196.18

-2.06% LT.DT.GR.

+00.00 LT.DT.GR.
LT. ELEV. 201.01

+89

F.L. INLET LT. 196.97
F.L. OUTLET RT. 195.06
+77.00 RT.DT.GR.
+96.00 LT.DT.GR.
RT.ELEV. 195.06
LT. ELEV. 196.97

2.59% LT.DT.GR.

K-853.62
VC-300'
e-0.13'

380+00.00
206.41

+00
TOP D.I. 202.63

F.L. D.I. 199.88
F.L. OUTLET RT. 197.31
+00.00 LT.DT.GR.
LT. ELEV. 202.25

1.01% RT.DT.GR.

0.30%

207.91

+00
TOP D.I. 203.32

F.L. D.I. 200.57
F.L. OUTLET RT. 200.33

+00.00 RT.DT.GR.
RT.ELEV. 200.33

BM 911: 3" ALUM. DISK AHTD
11.08' RT. STA. 377+90.44 ELEV. 203.18

370+00 371+00 372+00 373+00 374+00 375+00 376+00 377+00 378+00 379+00 380+00 381+00 382+00 383+00 384+00 385+00

R070289.DGN 5/29/2012

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				6	ARK.			
				JOB NO.		070289	98	365

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12

STA. 385+46 - INSTALL
18" x 58' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPR. = 85 CU. YDS.

STA. 386+16 - INSTALL
18" x 56' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPR. = 80 CU. YDS.

STA. 390+75 - IN PLACE
12" X 30' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 36' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPR. = 45 CU. YDS.

STA. 392+51 - IN PLACE
12" X 20' R.C. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 32' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPR. = 35 CU. YDS.

STA. 395+26 - IN PLACE
24" X 24' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
24" X 32' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPR. = 45 CU. YDS.

STA. 393+44 - IN PLACE
12" X 30' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE

STA. 393+62 - INSTALL
18" X 28' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPR. = 35 CU. YDS.

STA. 394+00 - CONSTRUCT
TYPE 'RM' DROP INLET IN MEDIAN (4'-0" X 3'-0" X H = 2'-9")
WITH 18" X 84' R.C. PIPE OUTLET ON RT.
(CLASS III) (TYPE 3 BEDDING) WITH F.E.S. RT.
18" R.C. PIPE (CL. III) = 84 LIN.FT.
18" F.E.S. = 1EA.

STA. 397+00 - CONSTRUCT
TYPE 'RM' DROP INLET IN MEDIAN (4'-0" X 3'-0" X H = 2'-9")
WITH 18" X 86' R.C. PIPE OUTLET ON RT.
(CLASS III) (TYPE 3 BEDDING) WITH F.E.S.
18" R.C. PIPE (CL. III) = 86 LIN.FT.
18" F.E.S. = 1EA.

VACANT
PARKING
EXIST R/W
CONST. LIMITS
PROPOSED R/W
N 11°42'09" W
HWY. 167 C.L.
200' TAPER
210' TURN LANE
PAVED
40'
20'
16'
60'
24'
8'
6'
385
390
395
400
+46
+16
+75
+51
+26
+19
+62
+96
48+18
105.00
90.00
100.00
80.00
125.00
25.00
123.11
207.91
0.30%
389+40.00
209.23
K=468.49
VC=300'
e=-0.24'
-0.34%
K=881.44
VC=300'
e=0.13'
+00
TOP D.I. 203.38
F.L. D.I. 200.63
F.L. OUTLET RT. 200.50
+00.00 RT.DI.GR.
RT.ELEV. 200.50
+00
TOP D.I. 202.74
-0.30% RT.DI.GR.
F.L. D.I. 199.99
F.L. OUTLET RT. 199.60
-0.44% LT.DI.GR.
-0.11% RT.DI.GR.
+00.00 RT.DI.GR.
RT.ELEV. 199.09
+00.00 LT.DI.GR.
LT.ELEV. 200.92
+00.00 LT.DI.GR.
LT.ELEV. 200.48
240
235
230
225
220
215
210
205
200
195
190
385+00
386+00
387+00
388+00
389+00
390+00
391+00
392+00
393+00
394+00
395+00
396+00
397+00
398+00
399+00
400+00

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				6	ARK.			
				JOB NO.		070289	99	365

(2) PLAN AND PROFILE SHEETS

STA. 400+22 - IN PLACE
12" X 28' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL @ +19
18" X 34' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPR. = 45 CU. YDS.

STA. 400+60 - IN PLACE
12" X 31' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL @ +61
18" X 32' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPR. = 40 CU. YDS.

STA. 401+60 - IN PLACE
12" X 32' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL @ +58
18" X 40' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPR. = 50 CU. YDS.

STA. 409+99 - IN PLACE
DBL. 10' X 4' X 80' R.C. BOX CULVERT
RETAIN AND EXTEND 12' LT. AND
92' RT. ON 36° LT. FWD. SKEW
TO A COMPLETED LENGTH OF 184'
050 = 550 CFS D.A. = 640 ACRES
(SPAN 22'-1")

STA. 412+71 - IN PLACE
12" X 17' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL @ +69
18" X 32' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPR. = 40 CU. YDS.

LIMITS OF SPECIAL FLOOD HAZARD AREA
STA. 407+89 TO STA. 410+84

CONCRETE DITCH PAVING (TYPE B)

STA.	STA.	SIDE	"W"	SQ. YDS.
410+07	411+00	LT.	6'-6"	67.17

STATE OF ARKANSAS
TRINITY D. SMITH
REGISTERED PROFESSIONAL ENGINEER
No. 11425
9-4-12

BEGIN FLOOD HAZARD AREA
END FLOOD HAZARD AREA
EXISTING PAVEMENT TRANSITION
EXIST R/W
CONST. LIMITS
PROPOSED R/W
210' TURN LANE
200' TAPER
N 11°42' 09" W
HWY. 167 C.L.
STOCK PILE
ALUM. CAP RBR T 25'
92' LT.
T.C.E.

STA. 400+00 - IN PLACE
24" X 82' R.C. PIPE CULVERT
RETAIN AND EXTEND 8' LT. AND 70' RT.
TO A COMPLETED LENGTH OF 160'
WITH F.E.S. LT. AND RT.
(USE TYPE 3 BEDDING)
050 = 22 CFS D.A. = 19 ACRES
24" R.C. PIPE (CL. III) = 86 LIN.FT.
24" F.E.S. = 2 EA.

STA. 400+27 - IN PLACE
24" X 30' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE

STA. 400+50 - INSTALL
24" X 38' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPR. = 125 CU. YDS.

STA. 402+00 - CONSTRUCT
TYPE 'RM' DROP INLET IN MEDIAN
(4'-0" X 3'-0" X H = 2'-9")
WITH 18" X 74' R.C. PIPE OUTLET ON RT.
(CLASS III) (TYPE 3 BEDDING) WITH F.E.S.
18" R.C. PIPE (CL. III) = 74 LIN.FT.
18" F.E.S. = 1EA.

STA. 407+00 - CONSTRUCT
TYPE 'RM' DROP INLET IN MEDIAN
(4'-0" X 3'-0" X H = 2'-9")
WITH 18" X 82' R.C. PIPE OUTLET ON RT.
(CLASS III) (TYPE 3 BEDDING) WITH F.E.S.
18" R.C. PIPE (CL. III) = 82 LIN.FT.
18" F.E.S. = 1EA.

FOR THE CONSTRUCTION OF TEMPORARY RAMPS OR HAUL ROADS. THIS STREAM IS CLASSIFIED AS AN INTERMITTENT STREAM. THE STREAM BANK ELEVATIONS ARE 198 FT. MSL.
REFER TO SECTION 110.06 (c) OF THE 2003 STANDARD SPECIFICATIONS.

K-881.44
VC-300'
e-0.13'
0.00%
K-461.54
VC-300'
e-0.24'
0.65%
K-250.00
VC-300
e--0.45'
-0.22% LT.DT.GR.
-0.11% RT.DT.GR.
-0.26% LT.DT.GR.
-0.43% LT.DT.GR.
-0.31% RT.DT.GR.
0.05% MED.DT.GR.
5.20% LT.DT.GR.

F.L. INLET LT. 200.48
F.L. OUTLET RT. 198.89
F.L. INLET 199.53
F.L. OUTLET 198.67
F.L. D.I. 198.50
F.L. OUTLET RT. 198.13
F.L. INLET RT. 197.70
F.L. OUTLET LT. 197.12

TBM 912: 3" ALUM. DISK AHTD
10.62' RT. STA. 410+00.16 ELEV. 202.90

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				6	ARK.			
				JOB NO.		070289	100	365

(2) PLAN AND PROFILE SHEETS

CONCRETE DITCH PAVING (TYPE B)

STA.	STA.	SIDE	"W"	SQ. YDS.
420+42	421+00	LT.	6'-6"	41.89
424+00	425+00	RT.	6'-6"	72.22

STA. 420+00 - CONSTRUCT
TYPE 'RM' DROP INLET IN MEDIAN (4'-0" X 3'-0" X H = 2'-9")
WITH 18" X 38' R.C. PIPE OUTLET
CONNECT TO BOX CULVERT @ STA. 420+42
(CLASS III) (TYPE 3 BEDDING)
18" R.C. PIPE (CL. III) = 38 LIN.FT.

STA. 420+42 - IN PLACE
DBL. 5' X 4' X 47' R.C. BOX CULVERT
RETAIN AND EXTEND 12' LT. AND 104' RT.
TO A COMPLETED LENGTH OF 163'
Q50 = 121 CFS D.A. = 151 ACRES

STA. 421+00 - CONSTRUCT
TYPE 'RM' DROP INLET IN MEDIAN (4'-0" X 3'-0" X H = 2'-9")
WITH 18" X 54' R.C. PIPE OUTLET
CONNECT TO BOX CULVERT @ STA. 420+42
(CLASS III) (TYPE 3 BEDDING)
18" R.C. PIPE (CL. III) = 54 LIN.FT.

STA. 428+93 - IN PLACE
18" X 20' R.C. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL @ +96
18" X 32' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPR. = 40 CU. YDS.

STA. 429+28 - IN PLACE
18" X 8' PIPE CULVERT
LT. SIDE DRAIN
REMOVE

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12

EXISTING PAVEMENT TRANSITION +00
EXIST R/W
CONST. LIMITS
24' 8" 6" 60' 6" 24' 8"
415
420
425
430
HWY. 167 C.L.
N 11°42'09" W
EXIST R/W
+66 200' TAPER +46 +56 210' TURN LANE +56
+44 210' TURN LANE +54 200' TAPER +94
+96
40'
16'
CONST. LIMITS
PROPOSED R/W

STA. 417+68 - IN PLACE
10" X 28' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL @ +66
18" X 32' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPR. = 45 CU. YDS.

STA. 424+00 - CONSTRUCT
TYPE 'RM' DROP INLET IN MEDIAN (4'-0" X 3'-0" X H = 2'-9")
WITH 18" X 74' R.C. PIPE OUTLET ON RT.
(CLASS III) (TYPE 3 BEDDING) WITH F.E.S. RT.
18" R.C. PIPE (CL. III) = 72 LIN.FT.
18" F.E.S. = 1 EA.

+00.00 105.00
+25.00 170.00 +25.00 118.39 +40.00 120.00 P.D.E. +65.00 170.00 +65.00 119.91

240 235 230 225 220 215 210 205 200 195 190

415+00.00 209.25
-0.55%
K-250.00 VC-300' e=-0.45'
-0.13% MED.DT.GR.
+00.00 MED.DT.GR. MED. ELEV. 203.96
+00.00 RT.DT.GR. RT.ELEV. 202.62
+00.00 LT.DT.GR. LT.ELEV. 202.39
-1.82%
-2.90% RT.DT.GR.
F.L. D.I. 200.83
18"x36' R.C.PIPE @ 4.67%
18"x52' R.C.PIPE @ 1.83%
K-571.43 VC-600' e=0.79'
+00 TOP D.I. 203.58
+42 4.14% LT.DT.GR.
+00 TOP D.I. 203.75
+41.00 205.96
F.L. D.I. 201.00
+00.00 LT.DT.GR.
F.L. INLET LT. 199.80 LT. ELEV. 202.20
F.L. OUTLET RT. 198.50
+00.00 MED.DT.GR. MED. ELEV. 203.58
+42.00 RT.DT.GR.
+42.00 LT.DT.GR.
RT.ELEV. 198.50
LT. ELEV. 199.80
0.54% RT.DT.GR.
+00 TOP D.I. 204.47
F.L. D.I. 201.73
F.L. OUTLET RT. 200.42
+00.00 RT.DT.GR. RT.ELEV. 200.42
0.50%
430+00.00 210.45

415+00 416+00 417+00 418+00 419+00 420+00 421+00 422+00 423+00 424+00 425+00 426+00 427+00 428+00 429+00 430+00

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				6	ARK.			
				JOB NO.		070289	101	365

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12

STA. 430+55 - INSTALL
18" X 62' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPR. = 90 CU. YDS.

STA. 430+61 - IN PLACE
18" X 24' R.C. PIPE CULVERT
LT. SIDE DRAIN
REMOVE

STA. 438+96 - IN PLACE
10" X 21' CAST IRON PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL @ +95
18" X 34' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPR. = 45 CU. YDS.

STA. 441+04
CONST. APPR. = 75 CU. YDS.

STA. 440+58 - IN PLACE
24" X 69' R.C. PIPE CULVERT
REMOVE

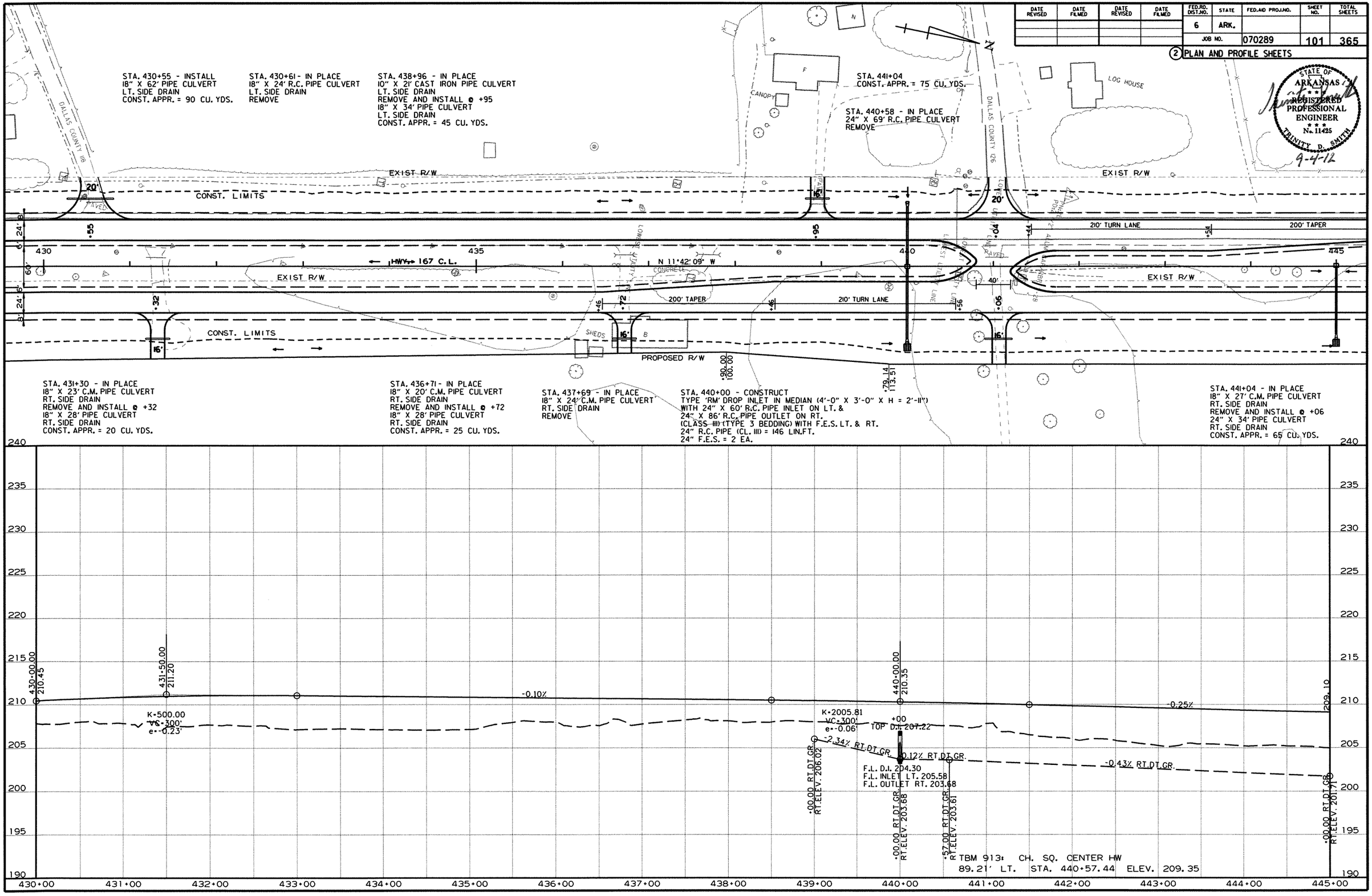
STA. 431+30 - IN PLACE
18" X 23' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL @ +32
18" X 28' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPR. = 20 CU. YDS.

STA. 436+71 - IN PLACE
18" X 20' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL @ +72
18" X 28' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPR. = 25 CU. YDS.

STA. 437+69 - IN PLACE
18" X 24' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE

STA. 440+00 - CONSTRUCT
TYPE 'RM' DROP INLET IN MEDIAN (4'-0" X 3'-0" X H = 2'-11")
WITH 24" X 60' R.C. PIPE INLET ON LT. &
24" X 86' R.C. PIPE OUTLET ON RT.
(CLASS III) (TYPE 3 BEDDING) WITH F.E.S. LT. & RT.
24" R.C. PIPE (CL. III) = 146 LIN.FT.
24" F.E.S. = 2 EA.

STA. 441+04 - IN PLACE
18" X 27' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL @ +06
24" X 34' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPR. = 65 CU. YDS.



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				6	ARK.			
				JOB NO.		070289	102	365

(2) PLAN AND PROFILE SHEETS

LIMITS OF SPECIAL FLOOD HAZARD AREA
STA. 445+00 TO STA. 517+34

STA. 446+48 - IN PLACE
12" X 23' R.C. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 34' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPR. = 40 CU. YDS.

STA. 450+94 - IN PLACE
24" X 24' C.P. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL @ +95
24" X 34' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPR. = 65 CU. YDS. EMB.

STA. 451+94 - IN PLACE
24" X 24' C.P. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
24" X 36' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPR. = 70 CU. YDS.

STA.	STA.	LANES	SIDE	GUARDRAIL (TYPE A) LIN. FT.	THRIE BEAM GUARDRAIL TERMINAL	GUARDRAIL TERMINAL (TYPE 2)
453+87.75	456+06.50	RT.	LT.	150	1 EA.	1 EA.
453+87.75	456+06.50	RT.	RT.	150	1 EA.	1 EA.
457+37.50	459+56.25	LT.	LT.	150	1 EA.	1 EA.
457+37.50	459+56.25	LT.	RT.	150	1 EA.	1 EA.

CONCRETE DITCH PAVING (TYPE B)

STA.	STA.	SIDE	"W"	SQ. YDS.
455+00	456+00	RT.	5'-6"	61.11

REMOVAL AND DISPOSAL OF GUARDRAIL

STA.	STA.	SIDE	LIN. FT.
454+29	456+31	LT.	202
454+29	456+31	RT.	202
457+38	459+39	LT.	201
457+38	459+40	RT.	202

STA 456+33 TO STA. 457+39 - IN PLACE
106' x 28' BRIDGE (LM 6.36)
CONSISTING OF CONC. TEE BEAMS SUPPORTED BY CONC. PILE BENTS
REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 3) = 1.00 LUMP SUM
BR. NO. 00794

STA 456+16.50 TO STA. 457+27.50 - CONSTRUCT
111.00' X 38' CLEAR RDWY. BRIDGE
CONTINUOUS COMPOSITE INTEGRAL W-BEAM UNIT (34'-42'-34')
BR. NO. A7237

STATE OF ARKANSAS
TRINITY D. SMITH
REGISTERED PROFESSIONAL ENGINEER
No. 11425
9-4-12

BEGIN FLOOD HAZARD AREA

EXIST R/W
CONST. LIMITS
EXIST R/W
CONST. LIMITS
PROPOSED R/W
GUICE CREEK RELIEF
LOW ST. LIGHT TYP.
HWY. 167 C.L.
N 11°42'09" W
445
450
455
460
16'
24'-8"
60'
24'-6"
.48
.95
.94
.00
.54
APER

STA. 445+00 - CONSTRUCT
TYPE 'RM' DROP INLET IN MEDIAN (4'-0" X 3'-0" X H = 2'-9")
WITH 18"X 82' R.C. PIPE OUTLET ON RT.
(CLASS III) (TYPE 3 BEDDING) WITH F.E.S. RT.
18" R.C. PIPE (CL. III) = 82 LIN.FT.
18" F.E.S. = 1EA.

STA. 451+00 - CONSTRUCT
TYPE 'RM' DROP INLET IN MEDIAN (4'-0" X 3'-0" X H = 2'-9")
WITH 18"X 82' R.C. PIPE OUTLET ON RT.
(CLASS III) (TYPE 3 BEDDING) WITH F.E.S. RT.
18" R.C. PIPE (CL. III) = 82 LIN.FT.
18" F.E.S. = 1EA.

95.00 LT. 150.00 RT. T.C.E. 45.00 LT. 150.00 RT.
TT4.35
TT4.38

STA. 453+00 - INSTALL
DBL. 24" X 40' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPR. = 105 CU. YDS.

STA. 453+53 - IN PLACE
DBL. 12" X 20' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE

STA 456+16.50 TO STA. 457+27.50 - CONSTRUCT
111.00' X 38' CLEAR RDWY. BRIDGE
CONTINUOUS COMPOSITE INTEGRAL W-BEAM UNIT
(34'-42'-34')
BR. NO. B7237

235 235

BRIDGE STA. 456+16.50 ELEV. 209.94

BRIDGE STA. 457+27.50 ELEV. 209.94

FOR THE CONSTRUCTION OF TEMPORARY RAMPS OR HAUL ROADS. THIS STREAM IS CLASSIFIED AS AN INTERMITTENT STREAM. THE STREAM BANK ELEVATIONS ARE 200 FT. MSL.
REFER TO SECTION 110.06 (c) OF THE 2003 STANDARD SPECIFICATIONS.

STA. 450+00.00
END LT. LANE OVERLAY
BEGIN LT. LANE PROFILE GRADE
ELEV. 207.85

209.10
+00 TOP D.I. 205.01
-0.25%
-00.00 RT.DT.GR. RT.ELEV. 201.47
F.L. D.I. 202.26
F.L. OUTLET RT. 201.71
K-205.53 VC-200' e-0.24'
+00 TOP D.I. 203.43
451+50.00 207.48
-0.18% RT.DT.GR.
-0.14% LT.DT.GR.
F.L. D.I. 200.68
F.L. OUTLET RT. 200.61
-95.00 LT.DT.GR. LT. ELEV. 202.92
0.72%
454+90.00 209.94
K-207.32 VC-150' e-0.14'
-75.00 LT.DT.GR. LT. ELEV. 202.39
-00.00 RT.DT.GR. RT.ELEV. 199.87
-3.32% RT.DT.GR.
-00.00 RT.DT.GR. RT.ELEV. 196.55
2:1
050 DESIGN H.W. ELEVATION 205.10
0.00%
458+30.00 209.94
K-173.82 VC-150' e-0.16'
-00.00 MED.DT.GR. MED. ELEV. 205.99
-0.43% MED.DT.GR.
K-152.70 VC-250' e-0.51'
-0.86%

235 230 225 220 215 210 205 200 195 190 185

445+00 446+00 447+00 448+00 449+00 450+00 451+00 452+00 453+00 454+00 455+00 456+00 457+00 458+00 459+00 460+00

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(2) PLAN AND PROFILE SHEETS

LIMITS OF SPECIAL FLOOD HAZARD AREA
STA. 445+00 TO
STA. 517+34

POND

REMOVAL AND DISPOSAL OF GUARDRAIL			
STA.	STA.	SIDE	LIN. FT.
463+54	465+56	LT.	202
463+54	465+56	RT.	202
466+98	469+00	LT.	202
466+98	469+00	RT.	202

N

STA. 465+58 TO STA. 466+99 - IN PLACE
141' x 28' BRIDGE (LM 6.54)
CONSISTING OF CONC. TEE BEAMS SUPPORTED BY CONC. PILE BENTS
REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 5) = 1.00 LUMP SUM
BR. NO. 00793

GUARDRAIL						
STA.	STA.	LANES	SIDE	(TYPE A) LIN. FT.	THRIE BEAM GUARDRAIL TERMINAL	TERMINAL (TYPE 2)
463+04.75	465+23.50	RT.	LT.	150	1 EA.	1 EA.
463+04.75	465+23.50	RT.	RT.	150	1 EA.	1 EA.
467+04.50	469+23.25	LT.	LT.	150	1 EA.	1 EA.
467+04.50	469+23.25	LT.	RT.	150	1 EA.	1 EA.

STA 465+33.50 TO STA. 466+94.50 - CONSTRUCT
161.00' X 38' CLEAR RDWY. BRIDGE
CONTINUOUS COMPOSITE INTEGRAL W-BEAM UNIT (50'-60'-50')
BR. NO. A7238

EXIST R/W

GUICE CREEK

CONST. LIMITS

460 465 470 475

N 11°42'09" W

HWY. 167 C.L.

24' 8" 24' 16" 60' 24' 16" 24' 8"

+46 200'

EXIST R/W

PROPOSED R/W

CONST. LIMITS

STA. 462+00+00 - CONSTRUCT
TYPE 'RM' DROP INLET IN MEDIAN (4'-0" X 3'-0" X H = 2'-9")
WITH 18" X 84' R.C. PIPE OUTLET ON RT.
(CLASS III) (TYPE 3 BEDDING) WITH F.E.S. RT.
18" R.C. PIPE (CL. III) = 84 LIN.FT.
18" F.E.S. = 1EA.

15.00 115.00

50.00 140.00

STA 465+33.50 TO STA. 466+94.50 - CONSTRUCT
161.00' X 38' CLEAR RDWY. BRIDGE
CONTINUOUS COMPOSITE INTEGRAL W-BEAM UNIT (50'-60'-50')
BR. NO. B7238

STA. 474+00 - CONSTRUCT
TYPE 'RM' DROP INLET INLET IN MEDIAN (4'-0" X 3'-0" X H = 2'-6")
WITH 18" X 80' R.C. PIPE OUTLET ON RT.
(CLASS III)(TYPE 3 BEDDING) WITH F.E.S. RT.
18" R.C. PIPE (CL. III) = 80 LIN.FT.
18" F.E.S. = 1EA.

15.00 115.00

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230 225 220 215 210 205 200 195 190 185 180

BRIDGE STA. 465+33.50 ELEV. 210.32

BRIDGE STA. 466+94.50 ELEV. 210.32

FOR THE CONSTRUCTION OF TEMPORARY RAMPS OR HAUL ROADS. THIS STREAM IS CLASSIFIED AS AN INTERMITTENT STREAM. THE STREAM BANK ELEVATIONS ARE 200 FT. MSL.
REFER TO SECTION 110.06 (c) OF THE 2003 STANDARD SPECIFICATIONS.

K+152.70
VC=250'
e=0.51'

0.77%

464+50.00
210.32

K+193.73
VC=150'
e=-0.15'

0.00%

468+00.00
210.32

K+176.50
VC=200'
e=-0.28'

-1.13%

K+165.75
VC=200'
e=0.30'

STA. 473+00.00
END LT. LANE PROFILE GRADE
BEGIN LT. LANE OVERLAY
ELEV. 205.88

0.08%

475+00.00
206.03

K+3710.18
VC=300'
e=-0.03'

0.43% MED.DT.GR.

461+00.00
207.61

+00
TOP D.I. 204.28

2.02% RT.DT.GR.

F.L. D.I. 201.53
F.L. OUTLET RT. 200.40

+00.00 MED.DT.GR.
+00.00 RT.DT.GR.
RT.ELEV. 200.40
MED. ELEV. 204.28

+00.00 RT.DT.GR.
RT.ELEV. 198.38

24"

050 DESIGN H.W. ELEVATION 205.00

+25.00 RT.DT.GR.
RT.ELEV. 195.80

24"

0.46% RT.DT.GR.

+00.00 LT.DT.GR.
LT. ELEV. 199.71

0.09% LT.DT.GR.

472+00.00
205.80

+00.00 LT.DT.GR.
LT. ELEV. 199.80

+00
TOP D.I. 201.90

0.45% RT.DT.GR.

F.L. D.I. 199.40
F.L. OUTLET RT. 199.35

+00.00 RT.DT.GR.
RT.ELEV. 199.35

460+00 461+00 462+00 463+00 464+00 465+00 466+00 467+00 468+00 469+00 470+00 471+00 472+00 473+00 474+00 475+00

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				6	ARK.			
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(2) PLAN AND PROFILE SHEETS

LIMITS OF SPECIAL FLOOD HAZARD AREA
STA. 445+00 TO
STA. 517+34

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
4-4-12

N

EXIST R/W
CONST. LIMITS
210' TURN LANE
200' TAPER
HWY. 167 C.L.
N 11°42'09" W
EXIST R/W
200' TAPER
210' TURN LANE
CONST. LIMITS
PROPOSED R/W
PDB 483+50.00
PDB 486+00.00 (LT.)
P.I. 486+00.00 (RT.)
Δ = 0°00'00"
N 11°42'09" W
HWY. 167 S. LT. LANE-SHIFT
HWY. 167 S. RT. LANE-SHIFT
200' TAPER
P.C. 486+58.96
P.C. 486+75.20
P.C. 486+91.44 (RT.)
STA. 479+13
CONST. APPR. = 60 CU. YDS.

STA. 483+50 - CONSTRUCT
TYPE 'RM' DROP INLET IN MEDIAN (4'-0" X 3'-0" X H = 2'-9")
WITH 18" X 82' R.C. PIPE OUTLET ON RT.
(CLASS III) (TYPE 3 BEDDING) WITH F.E.S. RT.
18" R.C. PIPE (CL. III) = 82 LIN.FT.
18" F.E.S. = 1EA.

STA. 489+00 - CONSTRUCT
TYPE 'RM' DROP INLET IN MEDIAN (4'-0" X 3'-0" X H = 2'-9")
WITH 18" X 86' R.C. PIPE OUTLET ON RT.
(CLASS III) (TYPE 3 BEDDING) WITH F.E.S. RT.
18" R.C. PIPE (CL. III) = 86 LIN.FT.
18" F.E.S. = 1EA.

HWY. 167 C.L.
P.I. 492+10.96
Δ = 52°17'38"RT.
D = 5°15'00"
T = 535.75'
L = 996.07'
P.C. 486+75.20
P.T. 496+71.27
e = 0.098'/'
Ls = 400'

HWY. 167 S. RT. LANE-SHIFT
P.I. 492+27.20
Δ = 52°17'38"RT.
D = 5°15'00"
T = 535.75'
L = 996.07'
P.C. 486+91.44
P.T. 496+87.51

HWY. 167 S. LT. LANE-SHIFT
P.I. 491+94.72
Δ = 52°17'38"RT.
D = 5°15'00"
T = 535.75'
L = 996.07'
P.C. 486+58.96
P.T. 496+55.03

EQUATIONS
HWY. 167 C.L. 483+50.00 BACK = HWY. 167 S. LT. LANE-SHIFT 483+50.00 AHEAD 30' LT.
HWY. 167 C.L. 486+00.00 BACK = HWY. 167 S. RT. LANE-SHIFT 486+00.00 AHEAD 30' RT.

HWY. 167 C.L. 483+75.20 BEGIN SUPERELEVATION N.C.
HWY. 167 S. LT. LANE-SHIFT 487+75.20 MAX. SUPERELEVATION 0.098'/'
HWY. 167 S. LT. LANE-SHIFT 493+22.37 MAX. SUPERELEVATION 0.098'/'
HWY. 167 S. LT. LANE-SHIFT 497+22.37 END SUPERELEVATION N.C.

483+50.00 BK = AHD
483+50.00 AHD
205.53
0.08%
LT. MAIN LANES
STA. 483+50.00
BEGIN LT. LANES PROFILE GRADE
K=214.03
VC=200'
e=0.23'
1.02%
K=173.98
VC=200'
e=-0.29'
486+50.00
205.78

HWY. 167 C.L. 483+75.20 BEGIN SUPERELEVATION N.C.
HWY. 167 S. RT. LANE-SHIFT 487+75.20 MAX. SUPERELEVATION 0.098'/'
HWY. 167 S. RT. LANE-SHIFT 492+87.51 MAX. SUPERELEVATION 0.098'/'
HWY. 167 S. RT. LANE-SHIFT 496+87.51 END SUPERELEVATION N.C.

475+00.00
206.03
K=3710.18
VC=300'
e=-0.03'
0.00%
RT. MAIN LANES
0.45% RT.DT.GR.
-00.00 RT.DT.GR.
RT.ELEV. 201.60
-0.66% RT.DT.GR.
-00.00 LT.DT.GR.
LT. ELEV. 200.72
K=373.83
VC=200'
e=-0.13'
+00
TOP D.I. 201.55
484+00.00
206.03
F.L. D.I. 198.80
F.L. OUTLET RT. 198.64
-00.00 RT.DT.GR.
RT.ELEV. 198.64
0.53%
486+00.00 BK = AHD
486+00.00 AHD
207.10
0.55%
0.03% LT.DT.GR.
488+00.00
208.20
K=333.33
VC=200'
e=-0.15'
RT. MAIN LANES
-0.05%
208.10
+00
TOP D.I. 205.34
-0.08% RT.DT.GR.
-00.00 LT.DT.GR.
LT. ELEV. 200.86
F.L. D.I. 202.60
F.L. OUTLET RT. 198.20

240 235 230 225 220 215 210 205 200 195 190
220 215 210 205 200 195 190
475+00 476+00 477+00 478+00 479+00 480+00 481+00 482+00 483+00 484+00 485+00 486+00 487+00 488+00 489+00 490+00

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				6	ARK.			
				JOB NO.		070289	105	365

(2) PLAN AND PROFILE SHEETS

LIMITS OF SPECIAL FLOOD HAZARD AREA
STA. 445+00 TO
STA. 517+34

STA. 492+70 - INSTALL
18" x 68' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPR. = 655 CU. YDS.

REMOVAL AND DISPOSAL OF GUARDRAIL

STA.	STA.	SIDE	LIN. FT.
496+12	498+11	LT.	199
496+11	498+12	RT.	201
499+55	501+56	LT.	201
499+55	501+55	RT.	200

STA. 498+14 - STA. 499+55 - IN PLACE
141' X 28' BRIDGE (LM 7.16)
CONSISTING OF CONC. TEE BEAMS SUPPORTED BY CONC. PILE BENTS
REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 7) = 1.00 LUMP SUM
BR. NO. 00792

STA 498+03.50 TO STA. 499+64.50 - CONSTRUCT
161.00' X 75' CLEAR RDWY. BRIDGE
CONTINUOUS COMPOSITE INTEGRAL W-BEAM UNIT (50'-60'-50')
BR. NO. 07239

STA.	STA.	SIDE	GUARDRAIL (TYPE A) LIN. FT.	THRIE BEAM GUARDRAIL TERMINAL	GUARDRAIL TERMINAL (TYPE 2)	TERMINAL ANCHOR POST (TYPE 1)
495+74.75	497+93.50	RT.	150	1 EA.	1 EA.	
496+49.75	497+93.50	LT.	125	1 EA.		1 EA.
499+74.50	501+93.25	LT.	150	1 EA.	1 EA.	
499+74.50	501+18.25	RT.	125	1 EA.		1 EA.

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P.I. 491+94.72 (LT.)
P.I. 492+10.96
P.I. 492+27.20 (RT.)
EXIST R/W
CONST. LIMITS
N 11°42' 09" W
HWY. 167 S. LT. LANE-SHIFT
HWY. 167 S. RT. LANE-SHIFT
210' TURN LANE
200' TAPER
PROPOSED R/W
N 40°35' 28" E
HWY. 167 C.L.
MORO CREEK REL IEF
P.T. 496+55.23 (LT.)
P.T. 496+71.27
P.T. 496+87.51 (RT.)
60.00
96.52
95.00
170.00

HWY. 167 C.L.
P.I. 492+10.96
Δ = 52°17'38"RT.
D = 5°15'00"
T = 535.75'
L = 996.07'
P.C. 486+75.20
P.T. 496+71.27
e = 0.098'/'
Ls = 400'

HWY. 167 S. RT. LANE-SHIFT
P.I. 492+27.20
Δ = 52°17'38"RT.
D = 5°15'00"
T = 535.75'
L = 996.07'
P.C. 486+91.44
P.T. 496+87.51

HWY. 167 S. LT. LANE-SHIFT
P.I. 491+94.72
Δ = 52°17'38"RT.
D = 5°15'00"
T = 535.75'
L = 996.07'
P.C. 486+58.96
P.T. 496+55.03

EQUATIONS
HWY. 167 S. LT. LANE-SHIFT 497+22.37 BACK 5.5' LT. = HWY. 167 C.L. 497+04.94 AHEAD
HWY. 167 S. RT. LANE-SHIFT 496+87.51 BACK 5.5' RT. = HWY. 167 C.L. 497+04.94 AHEAD

491+00.00 210.36
K-177.97
VC-200'
e=-0.28'
-0.13%
LT. MAIN LANES
K-1886.79
VC-200'
e-0.03'
0.00%
497+22.37 BK 209.83
496+00.00 209.83
496+00.00 209.83
496+87.51 BK 209.83
497+04.94 AHD 209.94

HWY. 167 C.L. 483+75.20 BEGIN SUPERELEVATION N.C.
HWY. 167 S. LT. LANE-SHIFT 487+75.20 MAX. SUPERELEVATION 0.098'/'
HWY. 167 S. LT. LANE-SHIFT 493+22.37 MAX. SUPERELEVATION 0.098'/'
HWY. 167 S. LT. LANE-SHIFT 497+22.37 END SUPERELEVATION N.C.

208.10
K-394.09
VC-200'
e-0.13'
-0.05%
0.46%
RT. MAIN LANES
K-437.16
VC-200'
e=-0.11'
492+00.00 208.00

HWY. 167 C.L. 483+75.20 BEGIN SUPERELEVATION N.C.
HWY. 167 S. RT. LANE-SHIFT 487+75.20 MAX. SUPERELEVATION 0.098'/'
HWY. 167 S. RT. LANE-SHIFT 492+87.51 MAX. SUPERELEVATION 0.098'/'
HWY. 167 S. RT. LANE-SHIFT 496+87.51 END SUPERELEVATION N.C.

-0.11% LT.DT.GR.
-0.08% RT.DT.GR.
+00.00 LT.DT.GR. LT. ELEV. 205.00
+00.00 LT.DT.GR. LT. ELEV. 204.79
+00.00 RT.DT.GR. RT. ELEV. 197.48

BRIDGE STA. 498+03.50
ELEV. 209.94

BRIDGE STA. 499+64.50
ELEV. 209.94

FOR THE CONSTRUCTION OF TEMPORARY RAMPS OR HAUL ROADS. THIS STREAM IS CLASSIFIED AS AN INTERMITTENT STREAM. THE STREAM BANK ELEVATIONS ARE 201 FT. MSL.
REFER TO SECTION 110.06 (c) OF THE 2003 STANDARD SPECIFICATIONS.

HWY. 167 C.L. (5-LANE SECTION)
2:1
050 DESIGN H.W. ELEVATION 204.50
500+50.00 209.94
K-600.00
VC-150'
e=-0.05'
-0.25%
K-600.00
VC-150'
e-0.05'
0.00%
502+50.00 209.44
209.44

TBM 915: CH. SQ. SE HW
4.68' LT. STA. 498+12.52 ELEV. 207.67

490+00 491+00 492+00 493+00 494+00 495+00 496+00 497+00 498+00 499+00 500+00 501+00 502+00 503+00 504+00 505+00

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				6	ARK.			
				JOB NO.		070289	106	365

(2) PLAN AND PROFILE SHEETS

LIMITS OF SPECIAL FLOOD HAZARD AREA
STA. 445+00 TO STA. 517+34

REMOVAL AND DISPOSAL OF GUARDRAIL

STA.	STA.	SIDE	LIN. FT.
508+62	510+63	LT.	201
508+63	510+64	RT.	201
511+38	512+71	LT.	133
511+38	513+74	RT.	236
514+80	517+13	LT.	233
514+80	517+13	RT.	233
518+18	520+20	LT.	202
518+18	520+20	RT.	202

STA.	STA.	SIDE	GUARDRAIL (TYPE A) LIN. FT.	THRIE BEAM GUARDRAIL TERMINAL	GUARDRAIL TERMINAL (TYPE 2)	TERMINAL ANCHOR POST (TYPE 1)
508+05.75	510+24.50	RT.	150	1 EA.	1 EA.	
508+80.75	510+24.50	LT.	125	1 EA.		1 EA.
518+36.50	520+55.25	LT.	150	1 EA.	1 EA.	
518+36.50	519+80.25	RT.	125	1 EA.		1 EA.

STA. 513+74 - STA. 514+80 - IN PLACE
106' X 28' BRIDGE (LM 7.45)
CONSISTING OF CONC. TEE BEAMS SUPPORTED BY CONC. PILE BENTS
REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 9) = 1.00 LUMP SUM
BR. NO. 00790

STA 513+67.50 TO STA. 514+88.50 - CONSTRUCT
121.00' X 75' CLEAR RDWY. BRIDGE
CONTINUOUS COMPOSITE INTEGRAL W-BEAM UNIT (37'-46'-37')
BR. NO. 07241

STA. 517+13 - STA. 518+19 - IN PLACE
106' X 28' BRIDGE (LM 7.52)
CONSISTING OF CONC. TEE BEAMS SUPPORTED BY CONC. PILE BENTS
REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 10) = 1.00 LUMP SUM
BR. NO. 00789

STA 517+05.50 TO STA. 518+26.50 - CONSTRUCT
121.00' X 75' CLEAR RDWY. BRIDGE
CONTINUOUS COMPOSITE INTEGRAL W-BEAM UNIT (37'-46'-37')
BR. NO. 07242

CONCRETE BARRIER WALL (PARAPET TYPE A)

STA.	STA.	SIDE	LIN. FT.
511+65.50	513+57.50	LT.	192
511+65.50	513+57.50	RT.	192
514+78.50	516+95.50	LT.	217
514+78.50	516+95.50	RT.	217

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12

END FLOOD HAZARD AREA
STANDING WATER
CONST. LIMITS
EXIST R/W
PROPOSED R/W
MORO CREEK REL IEF
MORO CREEK
MORO CREEK
HWY. 167 C.L.
N 40°35'28" E
CLEAN-OUT PIPE 12" ALUM. FES PIPE T-35
505
510
515
520
80'
59'
80'
30'
30'
-00.00 96.52
-00.00 111.52
-00.00 110.00
-50.00 115.00
-00.00 90.00

STA. 510+67 - STA. 511+38 - IN PLACE
71' X 28' BRIDGE (LM 7.40)
CONSISTING OF CONC. TEE BEAMS SUPPORTED BY CONC. PILE BENTS
REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 8) = 1.00 LUMP SUM
BR. NO. 00791

STA 510+34.50 TO STA. 511+55.50 - CONSTRUCT
121.00' X 75' CLEAR RDWY. BRIDGE
CONTINUOUS COMPOSITE INTEGRAL W-BEAM UNIT (37'-46'-37')
BR. NO. 07240

BRIDGE STA. 510+34.50 ELEV. 209.44
BRIDGE STA. 511+55.50 ELEV. 209.44
BRIDGE STA. 513+67.50 ELEV. 209.44
BRIDGE STA. 514+88.50 ELEV. 209.44
BRIDGE STA. 517+05.50 ELEV. 209.44
BRIDGE STA. 518+26.50 ELEV. 209.44

230 225 220 215 210 205 200 195 190 185 180

209.44
0.00%
2:1
050 DESIGN H.W. ELEVATION 204.90
-00.00 RT.DT.GR. RT.ELEV. 195.52
-0.11% RT.DT.GR.
-75.00 RT.DT.GR. RT.ELEV. 195.00
-00.00 RT.DT.GR. RT.ELEV. 196.66
0.78% RT.DT.GR.
-00.00 RT.DT.GR. RT.ELEV. 197.44
0.44% RT.DT.GR.
520+00.00 209.44
K=1358.78 VC=200' e=-0.04'

FOR THE CONSTRUCTION OF TEMPORARY RAMPS OR HAUL ROADS. THIS STREAM IS CLASSIFIED AS AN INTERMITTENT STREAM. THE STREAM BANK ELEVATIONS ARE 200 FT. MSL. REFER TO SECTION 110.06 (c) OF THE 2003 STANDARD SPECIFICATIONS.

FOR THE CONSTRUCTION OF TEMPORARY RAMPS OR HAUL ROADS. THIS STREAM IS CLASSIFIED AS AN INTERMITTENT STREAM. THE STREAM BANK ELEVATIONS ARE 200 FT. MSL. REFER TO SECTION 110.06 (c) OF THE 2003 STANDARD SPECIFICATIONS.

FOR THE CONSTRUCTION OF TEMPORARY RAMPS OR HAUL ROADS. THIS STREAM IS CLASSIFIED AS AN PERENNIAL STREAM. THE STREAM BANK ELEVATIONS ARE 200 FT. MSL. REFER TO SECTION 110.06 (c) OF THE 2003 STANDARD SPECIFICATIONS.

505+00 506+00 507+00 508+00 509+00 510+00 511+00 512+00 513+00 514+00 515+00 516+00 517+00 518+00 519+00 520+00

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(2) PLAN AND PROFILE SHEETS

STA.	STA.	SIDE	GUARDRAIL (TYPE A) LIN. FT.	THRIE BEAM GUARDRAIL TERMINAL	GUARDRAIL TERMINAL (TYPE 2)	TERMINAL ANCHOR POST (TYPE 1)
530+62.75	532+81.50	RT.	150	1 EA.	1 EA.	
531+47.75	532+81.50	LT.	125	1 EA.		1 EA.
534+62.50	536+81.25	LT.	150	1 EA.	1 EA.	
534+62.50	536+06.25	RT.	125	1 EA.		1 EA.

REMOVAL AND DISPOSAL OF GUARDRAIL STA.	STA.	SIDE	LIN. FT.
530+96	533+01	LT.	205
530+96	533+01	RT.	205
534+43	536+43	LT.	200
534+43	536+43	RT.	200

STA. 533+01 - STA. 534+43 - IN PLACE
142' X 28' BRIDGE (LM 0.21)
CONSISTING OF CONC. TEE BEAMS SUPPORTED BY CONC. PILE BENTS
REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 11) = 1.00 LUMP SUM
BR. NO. 00788

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12

EXIST R/W
CONST. LIMITS
STANDING WATER
MORO CREEK RELIEF
POB 536+00.00
520
525
530
535
HWY. 167 C.L.
N 40°35'28" E
CONST. LIMITS
EXIST R/W
PROPOSED R/W
-00.00 90.00
-54.60 56.49

STA 532+91.50 TO STA. 534+52.50 - CONSTRUCT
161.00' X 75' CLEAR RDWY. BRIDGE
CONTINUOUS COMPOSITE INTEGRAL W-BEAM UNIT (50'-60'-50')
BR. NO. 07243

BRIDGE STA. 532+91.50 ELEV. 209.94
BRIDGE STA. 534+52.50 ELEV. 209.94

FOR THE CONSTRUCTION OF TEMPORARY RAMPS OR HAUL ROADS. THIS STREAM IS CLASSIFIED AS AN INTERMITTENT STREAM. THE STREAM BANK ELEVATIONS ARE 200 FT. MSL.
REFER TO SECTION 110.06 (c) OF THE 2003 STANDARD SPECIFICATIONS.

K-1358.78
VC-200'
e=-0.04'
-0.15%
K-205.18
VC-150'
e-0.14'
0.58%
K-256.91
VC=150'
e=-0.11'
0.00%
532+00.00 209.94
535+00.00 209.94
528+90.00 208.13
0.44% RT.DT.GR.
-0.24% RT.DT.GR.
-00.00 RT.DT.GR. RT.ELEV. 198.75
-00.00 RT.DT.GR. RT.ELEV. 197.90
-00.00 RT.DT.GR. RT.ELEV. 196.00
050 DESIGN H.W. ELEVATION 204.90
2:1
2:1

BM 916: CH. SQ. BR. END
4.51' LT. STA. 532+99.71 ELEV. 207.43

235 230 225 220 215 210 205 200 195 190 185

520+00 521+00 522+00 523+00 524+00 525+00 526+00 527+00 528+00 529+00 530+00 531+00 532+00 533+00 534+00 535+00

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(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12

EQUATIONS
HWY. 167 C.L. 535+00.00 BACK = HWY. 167 N. LT. LANE-SHIFT 535+00.00 AHEAD 5.50' LT.
HWY. 167 C.L. 535+00.00 BACK = HWY. 167 N. RT. LANE-SHIFT 535+00.00 AHEAD 5.50' RT.
HWY. 167 N. LT. LANE-SHIFT 544+65.88 BACK 30' LT. = HWY. 167 C.L. 544+80.26 AHEAD
HWY. 167 N. RT. LANE-SHIFT 544+94.64 BACK 30' RT. = HWY. 167 C.L. 544+80.26 AHEAD

HWY. 167 N. LT. LANE-SHIFT
P.I. 540+21.80
Δ = 44°06'10"LT.
D = 5°15'00"
T = 442.07'
L = 840.05'
P.C. 535+79.72
P.T. 544+19.77

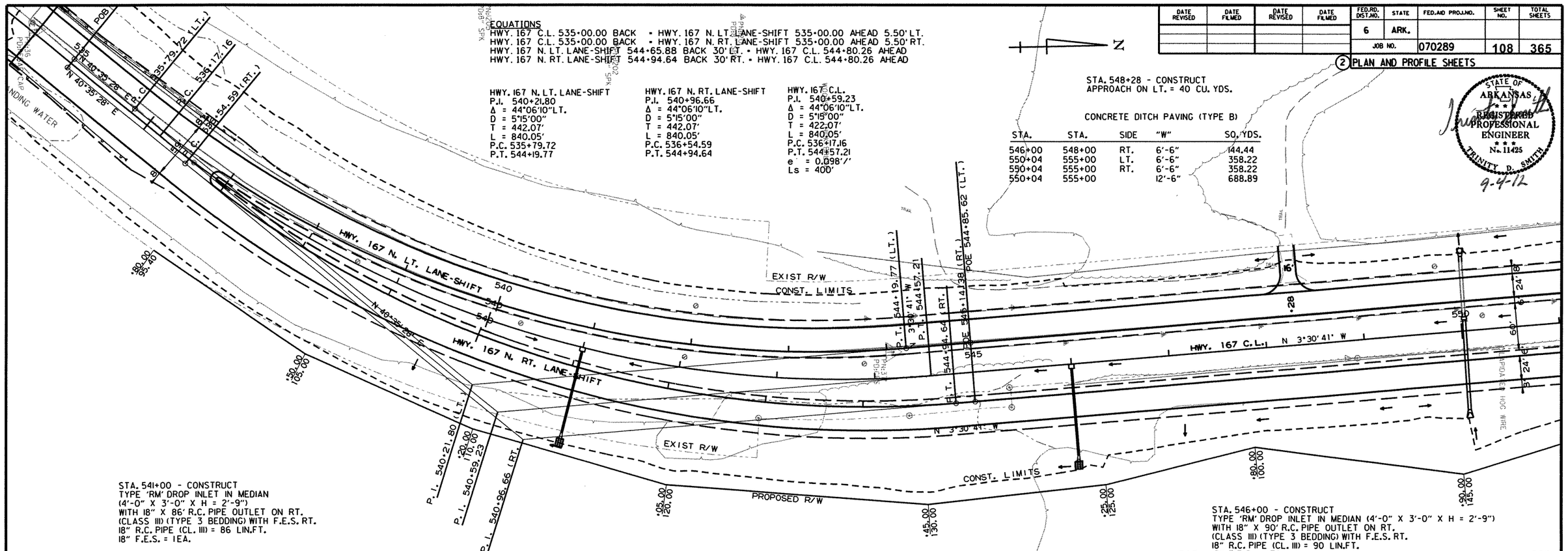
HWY. 167 N. RT. LANE-SHIFT
P.I. 540+96.66
Δ = 44°06'10"LT.
D = 5°15'00"
T = 442.07'
L = 840.05'
P.C. 536+54.59
P.T. 544+94.64

HWY. 167 C.L.
P.I. 540+59.23
Δ = 44°06'10"LT.
D = 5°15'00"
T = 422.07'
L = 840.05'
P.C. 536+17.16
P.T. 544+57.21
e = 0.098'/'
Ls = 400'

STA. 548+28 - CONSTRUCT
APPROACH ON LT. = 40 CU. YDS.

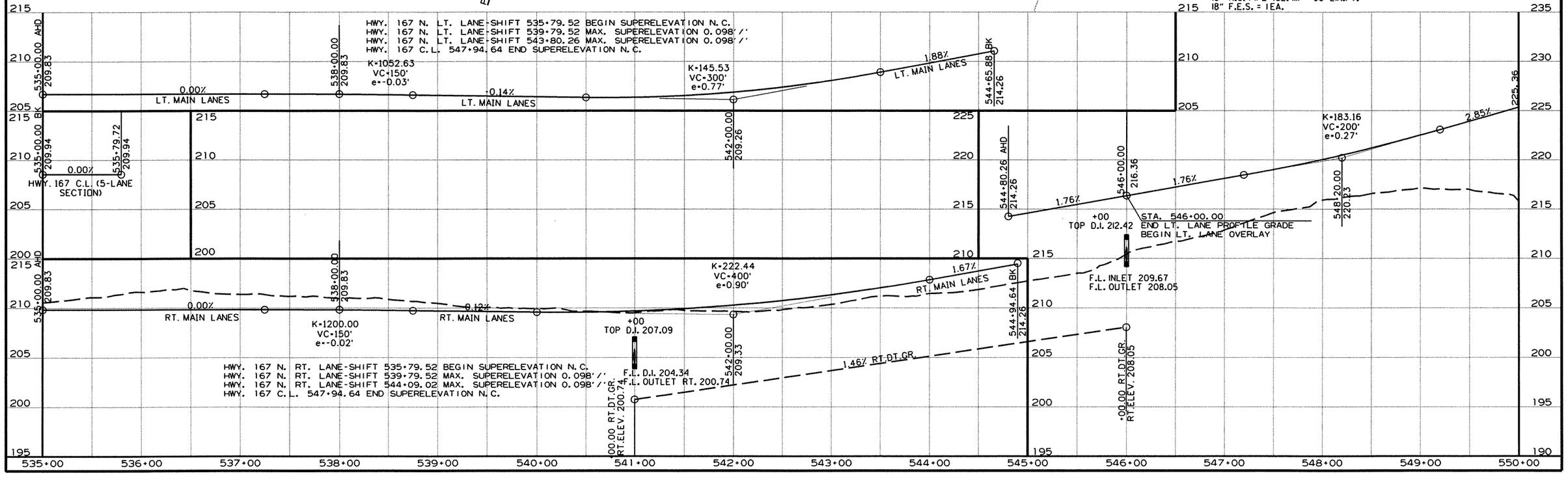
CONCRETE DITCH PAVING (TYPE B)

STA.	STA.	SIDE	"W"	SQ. YDS.
546+00	548+00	RT.	6'-6"	144.44
550+04	555+00	LT.	6'-6"	358.22
550+04	555+00	RT.	6'-6"	358.22
550+04	555+00		12'-6"	688.89



STA. 541+00 - CONSTRUCT
TYPE 'RM' DROP INLET IN MEDIAN
(4'-0" X 3'-0" X H = 2'-9")
WITH 18" X 86' R.C. PIPE OUTLET ON RT.
(CLASS III) (TYPE 3 BEDDING) WITH F.E.S. RT.
18" R.C. PIPE (CL. III) = 86 LIN.FT.
18" F.E.S. = 1EA.

STA. 546+00 - CONSTRUCT
TYPE 'RM' DROP INLET IN MEDIAN (4'-0" X 3'-0" X H = 2'-9")
WITH 18" X 90' R.C. PIPE OUTLET ON RT.
(CLASS III) (TYPE 3 BEDDING) WITH F.E.S. RT.
18" R.C. PIPE (CL. III) = 90 LIN.FT.
18" F.E.S. = 1EA.



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(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-28-13

STA. 550+04 - CONSTRUCT
TYPE 'RM' DROP INLET IN MEDIAN
4'-0" x 3'-0" x H = 5'-1"
W/ 36" x 106' R.C. PIPE OUTLET ON RT.
& 36" X 59' R.C. PIPE OUTLET ON LT.
W/ F.E.S. RT.
(USE TYPE 3 BEDDING)
050 = 34 CFS D.A. = 30 ACRES
36" R.C. PIPE (CL. III) = 165 LIN.FT.
36" F.E.S. = 1EA.

STA. 550+04 - IN PLACE
36" X 72' R.C. PIPE CULVERT
W/ HEADWALLS LT. & RT.
REMOVE

STA. 557+23
CONST. APPR. ON LT. = 60 CU. YDS.

CONCRETE DITCH PAVING (TYPE A)

STA.	STA.	SIDE	"W"	"B"	SQ. YDS.
559+00	562+00	LT.	16'-6"	10'-0"	550.00

CONCRETE DITCH PAVING (TYPE B)

STA.	STA.	SIDE	"W"	SQ. YDS.
564+50	567+00	LT.	6'-6"	180.56

GARDEN

EXIST R/W
CONST. LIMITS
HWY. 167 C.L.
N 3°30'41" W
EXIST R/W
CONST. LIMITS
PROPOSED R/W
16'
40'
20'
210' TURN LANE
200' TAPER
200' TAPER
210' TURN LANE
LEVEE
T.C.E.
T.C.E.
24' B
24' B
60'
60'
24' B
24' B

REMOVAL AND DISPOSAL OF FENCE

STA.	STA.	SIDE	LIN. FT.
557+80	560+72	RT.	292

STA. 557+55
CONST. APPR. = 60 CU. YDS.

WIRE FENCE

STA.	STA.	SIDE	TYPE	LIN. FT.
557+80	560+72	RT.	C	292

STA. 563+43 - IN PLACE
5' X 4' X 84' R.C. BOX CULVERT
RETAIN AND EXTEND 2' LT. & 100' RT.
TO A COMPLETED LENGTH OF 186'
CONSTRUCT TYPE 'TM' DROP INLET 2' LT. C.L.
4'-0" X 3'-0" x H = 3'-11½"
050 = 59 CFS D.A. = 56 ACRES

+90.00 145.00
+50.00 110.00
+50.00 100.00
+50.00 120.00
+85.00 115.65
+50.00 115.00
+70.00 160.00
+60.00 125.00
T.C.E. 15.00 124.49
+40.00 120.00
103.00
100.00 103.16

250 245 240 235 230 225 220 215 210 205 200

225.36
2.85%
+04 TOP D.I. 219.15
4.97% RT.DT.GR.
+00.00 RT.DT.GR. RT.ELEV. 219.47
F.L. D.I. 214.19
F.L. INLET RT. 214.70
F.L. OUTLET LT. 214.00
+04.00 RT.DT.GR. RT.ELEV. 214.70
+00.00 RT.DT.GR. RT.ELEV. 232.29
556+00.00 242.46
0.10% RT.DT.GR.
K=155.34
VC=800'
e=-5.15'
+55.00 RT.DT.GR. RT.ELEV. 232.54
-2.30%
K=141.03
VC=550'
e=2.68'
+43 TOP D.I. 222.89
563+60.00 224.98
-2.01% RT.DT.GR.
+00.00 RT.DT.GR. RT.ELEV. 217.24
F.L. INLET RT. 214.41
F.L. OUTLET LT. 213.42
+41.00 RT.DT.GR. RT.ELEV. 214.41

550+00 551+00 552+00 553+00 554+00 555+00 556+00 557+00 558+00 559+00 560+00 561+00 562+00 563+00 564+00 565+00

BM 917: SQ. SW COR. WEST HW
84.91' LT. STA. 563+38.18 ELEV. 218.10

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(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-28-13

STA. 567+15
CONST. APPR. = 75 CU. YDS.

STA. 569+78 - IN PLACE
24" X 24' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
24" X 30' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPR. = 50 CU. YDS.

CONCRETE DITCH PAVING (TYPE B)

STA.	STA.	SIDE	"W"	SQ. YDS.
572+19	573+00	LT.	6'-6"	58.50
577+00	580+00	LT.	6'-6"	216.67
577+00	581+00	RT.	9'-6"	422.22

STA. 568+00 - CONSTRUCT
TYPE 'RM' DROP INLET IN MEDIAN (4'-0" X 3'-0" X H = 2'-6")
WITH 18" X 84' R.C. PIPE OUTLET ON RT.
(CLASS III)(TYPE 3 BEDDING) WITH F.E.S. RT.
18" R.C. PIPE (CL. III) = 84 LIN.FT.
18" F.E.S. = 1EA.

STA. 568+67
CONST. APPR. = 60 CU. YDS.
REMOVAL AND DISPOSAL OF FENCE

STA.	STA.	SIDE	LIN. FT.
568+80	571+79	RT.	299

WIRE FENCE

STA.	STA.	SIDE	TYPE	LIN. FT.
568+80	571+79	RT.	C	299

P.I. 569+29.39
Δ = 5°40'28"RT.
D = 1°00'00"
T = 283.96'
L = 567.45'
P.C. 566+45.43
P.T. 572+12.88
e = 0.030'/'
Ls = 350'

STA. 572+19 - IN PLACE
24" X 83' R.C. PIPE CULVERT
W/ F.E.S. LT. & RT.
REMOVE 2' LT.
WITH F.E.S. LT.
(USE TYPE 3 BEDDING)
CONNECT TO DROP INLET
24" F.E.S. = 1EA.

STA. 572+19 - CONSTRUCT
TYPE 'RM' DROP INLET IN MEDIAN
8'-0" X 3'-0" X H = 4'-4"
W/ 24" X 86' R.C. PIPE INLET ON RT.
W/ F.E.S. RT.
(USE TYPE 3 BEDDING)
050 = 9 CFS D.A. = 7 ACRES
24" R.C. PIPE (CL. III) = 87 LIN.FT.
24" F.E.S. = 1EA.

STA. 579+10 - IN PLACE
6' X 6' X 66' R.C. BOX CULVERT
RETAIN AND EXTEND 12' LT. & 102' RT.
TO A COMPLETED LENGTH OF 180'
CONSTRUCT TYPE 'TM' DROP INLET IN MEDIAN
4'-0" X 3'-0" X H = 3'-4"
050 = 58 CFS D.A. = 51 ACRES

STA. 563+82.93 BEGIN SUPERELEVATION N.C.
STA. 567+32.93 MAX. SUPERELEVATION 0.030'/'
STA. 571+25.38 MAX. SUPERELEVATION 0.030'/'
STA. 574+75.38 END SUPERELEVATION N.C.

FOR THE CONSTRUCTION OF TEMPORARY RAMPS OR HAUL ROADS. THIS STREAM IS CLASSIFIED AS AN INTERMITTENT STREAM. THE STREAM BANK ELEVATIONS ARE 219 FT. MSL.
REFER TO SECTION 110.06 (c) OF THE 2003 STANDARD SPECIFICATIONS.

K-141.03
VC-550'
e-2.68'
1.60%
+00
TOP D.I. 227.37
0.21% RT.DT.GR.
F.L. D.I. 224.87
F.L. OUTLET RT. 224.70
-0.49% RT.DT.GR.
-2.13% LT.DT.GR.
-0.06% LT.DT.GR.
+19
TOP D.I. 229.67
F.L. D.I. 225.34
F.L. INLET RT. 226.64
F.L. OUTLET LT. 224.04
-0.65%
K-177.81
VC-400'
e--1.12'
570+30.00
235.70
K-140.68
VC-450'
e-1.80'
-4.99% RT.DT.GR.
-6.27% LT.DT.GR.
-5.98% LT.DT.GR.
+10
TOP D.I. 225.66
+00
TOP D.I. 225.8
18"x85' R.C.PIPE
@ 3.27% GR.
F.L. INLET RT. 216.44
F.L. OUTLET LT. 215.11
F.L. D.I. 218.56
+00.00 RT.DT.GR. RT.ELEV. 224.28
+00.00 RT.DT.GR. RT.ELEV. 224.70
+67.00 RT.DT.GR. RT.ELEV. 228.37
+00.00 LT.DT.GR. LT.ELEV. 226.57
+19.00 RT.DT.GR. LT.ELEV. 224.04 RT.ELEV. 226.64
+00.00 LT.DT.GR. LT.ELEV. 227.33
+00.00 RT.DT.GR. RT.ELEV. 226.92
+00.00 LT.DT.GR. LT.ELEV. 222.01
+10.00 RT.DT.GR. LT.ELEV. 215.11 RT.ELEV. 216.44
+00.00 LT.DT.GR. LT.ELEV. 220.49

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				6	ARK.			
				JOB NO.		070289	111	365

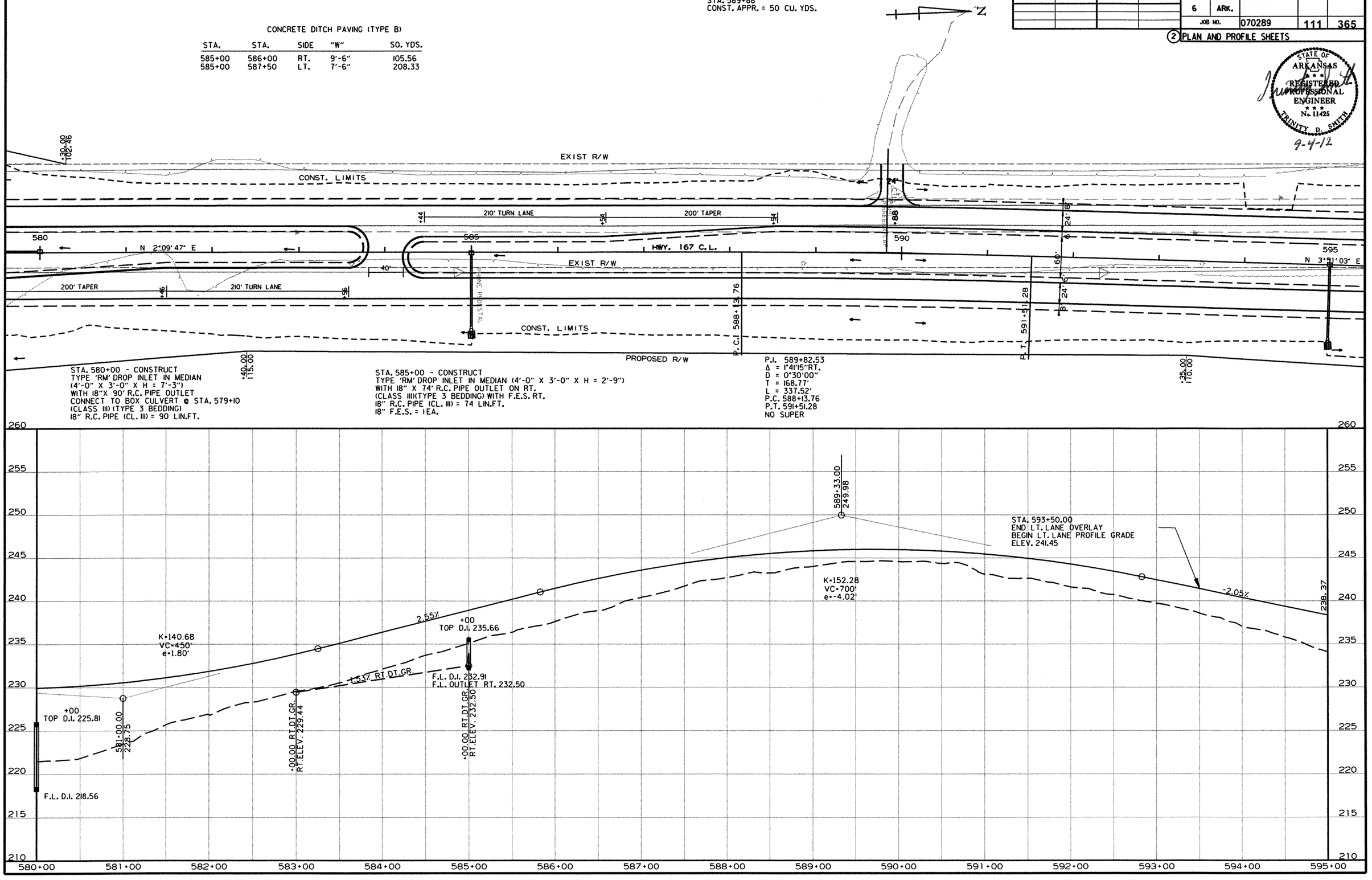
(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12

STA. 589+88
CONST. APPR. = 50 CU. YDS.

CONCRETE DITCH PAVING (TYPE B)

STA.	STA.	SIDE	"W"	SQ. YDS.
585+00	586+00	RT.	9'-6"	105.56
585+00	587+50	LT.	7'-6"	208.33



STA. 580+00 - CONSTRUCT
TYPE 'RM' DROP INLET IN MEDIAN
(4'-0" X 3'-0" X H = 7'-3")
WITH 18"X 90' R.C. PIPE OUTLET
CONNECT TO BOX CULVERT @ STA. 579+10
(CLASS III) (TYPE 3 BEDDING)
18" R.C. PIPE (CL. III) = 90 LIN.FT.

STA. 585+00 - CONSTRUCT
TYPE 'RM' DROP INLET IN MEDIAN (4'-0" X 3'-0" X H = 2'-9")
WITH 18" X 74' R.C. PIPE OUTLET ON RT.
(CLASS III)(TYPE 3 BEDDING) WITH F.E.S. RT.
18" R.C. PIPE (CL. III) = 74 LIN.FT.
18" F.E.S. = 1EA.

P.I. 589+82.53
Δ = 1°41'15"RT.
D = 0°30'00"
T = 168.77'
L = 337.52'
P.C. 588+13.76
P.T. 591+51.28
NO SUPER

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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.		070289	112	365

(2) PLAN AND PROFILE SHEETS

STA. 597+78 - IN PLACE
5' X 5' X 49' R.C. BOX CULVERT
RETAIN AND EXTEND 127' RT
TO A COMPLETED LENGTH OF 176'
Q50 = 21 CFS D.A. = 16 ACRES

STA. 599+70
CONST. APPR. = 10 CU. YDS.

STA. 599+70 - CONSTRUCT
TYPE 'RM' DROP INLET IN MEDIAN (4'-0" X 3'-0" X H = 4'-1")
WITH 18" X 46' R.C. PIPE CULVERT
(CLASS III) (TYPE 3 BEDDING)
CONNECT TO BOX CULVERT @ STA. 600+28
18" R.C. PIPE (CL. III) = 46 LIN.FT.

STA. 600+28 - IN PLACE
DBL. 10' X 6' X 48' R.C. BOX CULVERT
RETAIN AND EXTEND 132' RT
TO A COMPLETED LENGTH OF 180'
CONSTRUCT TYPE 'TM' DROP INLET IN MEDIAN
4'-0" X 3'-0" X H = 0'-6"
Q50 = 140 CFS D.A. = 64 ACRES
(SPAN 22'-1")

STA. 605+00 - CONSTRUCT
TYPE 'RM' DROP INLET IN MEDIAN (4'-0" X 3'-0" X H = 2'-9")
WITH 18" X 86' R.C. PIPE INLET ON LT.
(CLASS III) (TYPE 3 BEDDING) WITH F.E.S. LT.
18" R.C. PIPE (CL. III) = 86 LIN.FT.
18" F.E.S. = 1EA.

CONCRETE DITCH PAVING (TYPE B)

STA.	STA.	SIDE	"W"	SQ. YDS.
600+28	601+00	RT.	6'-6"	52.00
600+28	602+00	LT.	9'-6"	181.56
604+00	608+50		12'-6"	625.00

P.I. 600+01.17
Δ = 1°41'16"LT.
D = 0°30'00"
T = 168.77'
L = 337.52'
P.C. 598+32.40
P.T. 601+69.92
NO SUPER

P.I. 611+45.94
Δ = 12°13'14"LT.
D = 02°15'00"
T = 272.60'
L = 543.13'
P.C. 608+73.34
P.T. 614+16.47
e = 0.061'/'
Ls = 350'

STATE OF ARKANSAS
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EXIST R/W
CONST. LIMITS
P.C. 598+32.40
P.T. 601+69.92
P.C. 608+73.34
595
N 3°31'03" E
600
EXIST R/W
HWY. 167 C.L.
605
N 2°09'47" E
610
24'-8"
6'
24'-6"
8'
60'
.70
.74
15'
200' TAPER
+46
210'
CONST. LIMITS
P.I. 600+01.17
PROPOSED R/W
+95.00
130.00
+90.00
105.00
+40.00
115.00
+90.00
105.00
+60.00
115.00

STA. 595+00 - CONSTRUCT
TYPE 'RM' DROP INLET IN MEDIAN
(4'-0" X 3'-0" X H = 2'-6")
WITH 18" X 82' R.C. PIPE OUTLET ON RT.
(CLASS III) (TYPE 3 BEDDING) WITH F.E.S. RT.
18" R.C. PIPE (CL. III) = 82 LIN.FT.
18" F.E.S. = 1EA.

STA. 601+14 - CONSTRUCT
APPROACH ON RT. = 65 CU. YDS.

FOR THE CONSTRUCTION OF TEMPORARY RAMPS OR HAUL ROADS, THIS STREAM IS CLASSIFIED AS AN INTERMITTENT STREAM. THE STREAM BANK ELEVATIONS ARE 225 FT. MSL.
REFER TO SECTION 110.06 (c) OF THE 2003 STANDARD SPECIFICATIONS.

STA. 606+10.84 BEGIN SUPERELEVATION N.C.
STA. 609+60.84 MAX. SUPERELEVATION 0.061'/'
STA. 613+28.97 MAX. SUPERELEVATION 0.061'/'
STA. 616+78.97 END SUPERELEVATION N.C.

K=136.42
VC=825'
e=6.24'

K=153.33
VC=1150'
e=-10.78'

-2.05%
-0.83% MED.DT.GR.
-2.33% RT.DT.GR.
0.08% MED.DT.GR.
4.15% LT.DT.GR.
4.00%
4.00%
238.37
246.09
246.09
+00 TOP D.I. 234.14
F.L. D.I. 231.64
F.L. OUTLET RT. 231.47
+00.00 RT.DT.GR. RT.ELEV. 231.47
+00.00 MED.DT.GR. MED.ELEV. 232.09
+78 TOP D.I. 227.49
18"x46' R.C.PIPE 2.61%
F.L. D.I. 223.40
F.L. INLET RT. 225.00
F.L. OUTLET LT. 224.35
+78.00 MED.DT.GR. +78.00 RT.DT.GR. RT.ELEV. 225.00 MED.ELEV. 230.62
+28 TOP D.I. 229.30
F.L. INLET RT. 222.26
F.L. OUTLET LT. 221.73
601+00.00 226.09
+28.00 MED.DT.GR. +28.00 LT.DT.GR. LT.ELEV. 221.73 MED.ELEV. 229.30
+00.00 MED.DT.GR. +00.00 LT.DT.GR. LT.ELEV. 228.87 MED.ELEV. 229.43
+00 TOP D.I. 237.91
F.L. D.I. 235.16
F.L. OUTLET LT. 233.61

595+00 596+00 597+00 598+00 599+00 600+00 601+00 602+00 603+00 604+00 605+00 606+00 607+00 608+00 609+00 610+00

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				6	ARK.			
				JOB NO.		070289	113	365

(2) PLAN AND PROFILE SHEETS

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REGISTERED PROFESSIONAL ENGINEER
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TRINITY D. SMITH
9-4-12

P.I. 611+45.94
Δ = 12°13'14"LT.
D = 02°15'00"
T = 272.60'
L = 543.13'
P.C. 608+73.34
P.T. 614+16.47
e = 0.061'/'
Ls = 350'

GARNER CEMETERY

STA. 611+96
CONST. CO.RD. = 180 CU. YDS.

CONCRETE DITCH PAVING (TYPE B)

STA.	STA.	SIDE	"W"	SQ. YDS.
616+00	618+00	LT.	6'-6"	144.44
616+00	619+00		12'-6"	416.67
619+00	621+00	LT.	6'-6"	144.44
620+00	622+00	RT.	9'-6"	211.11

STA. 618+00 - CONSTRUCT
TYPE 'RM' DROP INLET IN MEDIAN (4'-0" X 3'-0" X H = 2'-9")
WITH 18" X 88' R.C. PIPE INLET ON LT.
(CLASS III) (TYPE 3 BEDDING) WITH F.E.S. LT.
18" R.C. PIPE (CL. III) = 88 LIN.FT.
18" F.E.S. = 1EA.

STA. 623+00 - CONSTRUCT
TYPE 'RM' DROP INLET IN MEDIAN (4'-0" X 3'-0" X H = 2'-9")
WITH 18" X 92' R.C. PIPE INLET ON LT.
(CLASS III) (TYPE 3 BEDDING) WITH F.E.S. LT.
18" R.C. PIPE (CL. III) = 92 LIN.FT.
18" F.E.S. = 1EA.

EXIST R/W
PROPOSED R/W
CONST. LIMITS
210' TURN LANE
200' TAPER
EXIST R/W
HWY. 167 C.L.
N 10°03'26" W
N 2°09'47" E
N 2°12'48" E
210' TURN LANE
CONST. LIMITS
PROPOSED R/W
P.I. 611+16.47
P.I. 622+76.69
P.I. 620+02.96
P.T. 611+45.94
P.T. 625+48.32
P.C.E.
P.D.E.
610
615
620
625

STA. 611+40 - CONSTRUCT
APPROACH ON RT. = 180 CU. YDS.

STA. 620+57 - IN PLACE
6' X 5' X 52' R.C. BOX CULVERT
RETAIN AND EXTEND
70' LT. ON 10° LT. FWD. SKEW AND
78' RT. ON 25° LT. FWD. SKEW
CONSTRUCT TYPE 'TM' DROP INLET IN MEDIAN
4'-0" X 3'-0" X H = 3'-0"
Q50 = 43 CFS D.A. = 37 ACRES

P.I. 622+76.69
Δ = 12°16'14"RT.
D = 02°15'00"
T = 273.73'
L = 545.36'
P.C. 620+02.96
P.T. 625+48.32
e = 0.061'/'
Ls = 350'

STA. 606+10.84 BEGIN SUPERELEVATION N.C.
STA. 609+60.84 MAX. SUPERELEVATION 0.061'/'
STA. 613+28.97 MAX. SUPERELEVATION 0.061'/'
STA. 616+78.97 END SUPERELEVATION N.C.

STA. 617+40.46 BEGIN SUPERELEVATION N.C.
STA. 620+90.46 MAX. SUPERELEVATION 0.061'/'
STA. 624+60.82 MAX. SUPERELEVATION 0.061'/'
STA. 628+10.82 END SUPERELEVATION N.C.

K-153.33
VC-1150'
e=-10.78'

K-146.81
VC-600'
e=-3.07'

STA. 624+00.00
END RT. LANE PROFILE GRADE
BEGIN RT. LANE OVERLAY
ELEV. 240.35

K-168.81
VC-300'
e=-0.67'

3.50%
-2.41% LT.DT.GR.
-4.46% LT.DT.GR.
-3.70% RT.DT.GR.
2.59% RT.DT.GR.
0.59%

+00 TOP D.I. 244.86
F.L. D.I. 242.11
F.L. OUTLET LT. 240.67
+00.00 LT.DT.GR. LT. ELEV. 240.67
+00.00 LT.DT.GR. LT. ELEV. 238.26
+57 TOP D.I. 238.07
621+00.00 238.59
+00.00 LT.DT.GR. LT. ELEV. 229.35
F.L. INLET RT. 229.79
F.L. OUTLET LT. 229.35
+57.00 RT.DT.GR. RT.ELEV. 229.79
+00.00 RT.DT.GR. RT.ELEV. 231.90
+00.00 RT.DT.GR. RT.ELEV. 233.50
+00 TOP D.I. 235.80
F.L. D.I. 233.05
F.L. OUTLET LT. 232.48

BM 919: CH. SQ. EAST HW
19.98' RT. STA. 620+54.13 ELEV. 236.27

610+00 611+00 612+00 613+00 614+00 615+00 616+00 617+00 618+00 619+00 620+00 621+00 622+00 623+00 624+00 625+00

275 270 265 260 255 250 245 240 235 230 225

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				6	ARK.			
				JOB NO.		070289	114	365

(2) PLAN AND PROFILE SHEETS

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REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12

STA. 625+47 - CONSTRUCT APPROACH ON LT. = 35 CU. YDS.

STA. 627+15 - CONSTRUCT TYPE 'RM' DROP INLET IN MEDIAN 4'-0" x 3'-0" x H = 3'-1" W/ 24" x 86' R.C. PIPE OUTLET ON LT. W/ F.E.S. LT. (USE TYPE 3 BEDDING) Q50 = 9 CFS D.A. = 6 ACRES 24" R.C. PIPE (CL. III) = 86 LIN.FT. 24" F.E.S. = 1EA.

STA. 627+15 - IN PLACE 24" X 58' R.C. PIPE CULVERT W/ HEADWALLS LT. AND RT. EXTEND 16' LT. AND 2' RT. TO A COMPLETED LENGTH OF 76' W/ F.E.S. RT. (USE TYPE 3 BEDDING) CONNECT TO DROP INLET @ STA. 627+15 Q50 = 9 CFS D.A. = 6 ACRES 24" R.C. PIPE (CL. III) = 26 LIN.FT. 24" F.E.S. = 1EA.

CONCRETE DITCH PAVING (TYPE B)

STA.	STA.	SIDE	"W"	SQ. YDS.
626+00	627+15	LT.	6'-6"	83.06

N

CONST. LIMITS
PROPOSED R/W
EXIST R/W
100' TRANSITION
HWY. 167 C.L.
N 2°12'48" E
CONST. LIMITS
PROPOSED R/W
EXIST R/W
CONSTRUCTED UNDER JOB 070290

P.I. 622+76.69
Δ = 12°16'14"RT.
D = 02°15'00"
T = 273.73'
L = 545.36'
P.C. 620+02.96
P.T. 625+48.32
e = 0.061'/'
Ls = 350'

STA. 625+06
CONST. APPR. = 75 CU. YDS.

P.I. 630+05.20
Δ = 0°00'00"

END JOB 070289
STA. 629+05.14
LOG MILE 2.11
BEGIN JOB 070290
ELEV. 237.97

626+00.00 241.53
K=168.81
VC=300'
e=-0.67'
-1.19%
+15 TOP D.I. 236.10
-2.17% RT.DT.GR.
-2.87% LT.DT.GR.
-1.58% RT.DT.GR.
-1.18% LT.DT.GR.
F.L. D.I. 235.02
F.L. INLET RT. 233.96
F.L. OUTLET LT. 232.18
K=137.70
VC=390'
e=1.38'
631+40.72 235.09
1.64%
CONSTUCTED UNDER 070290
635+00.00 240.99
2.44% RT.DT.GR.
96.22 RT.DT.GR. RT.ELEV. 243.28
49.22 RT.DT.GR. RT.ELEV. 225.50'
80.88 RT.DT.GR. RT.ELEV. 236.46 LT.ELEV. 237.78
15.88 RT.DT.GR. RT.ELEV. 233.96 LT.ELEV. 233.78
80.88 RT.DT.GR. RT.ELEV. 231.04 LT.ELEV. 230.00

625+00 626+00 627+00 628+00 629+00 630+00 631+00 632+00 633+00 634+00 635+00 636+00 637+00 638+00 639+00 640+00

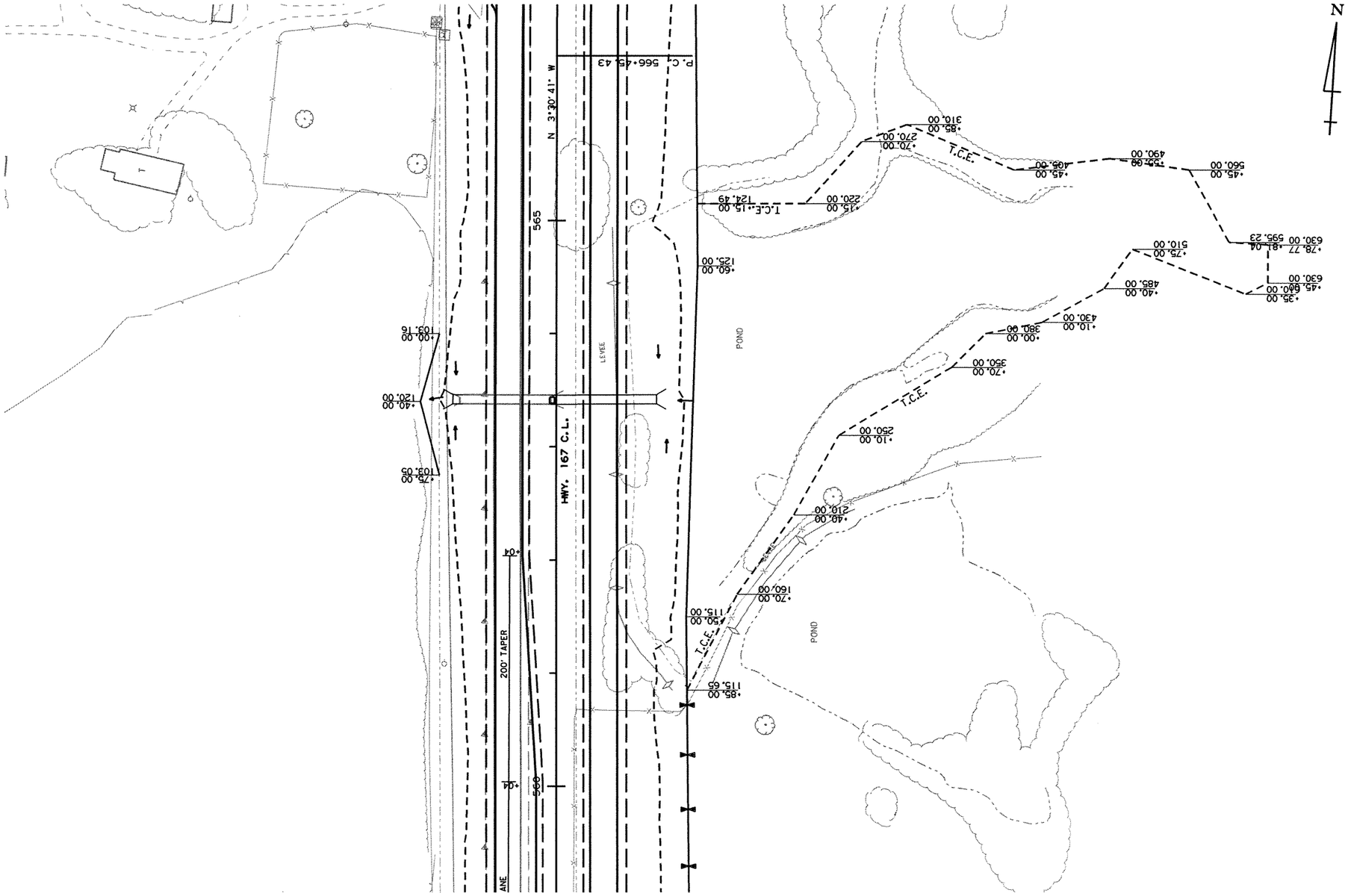
265 260 255 250 245 240 235 230 225 220 215

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				6	ARK.			
				JOB NO.		070289	115	365

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-12



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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.		070289	116	365
				(1) A7237		- 070289 -	52783	

For R/W Data see Rdwy. Plans

Toe of fill slope

Toe of cut slope

Excavate Channel to Elev. 202.0

GUICE CREEK RELIEF

Excavate Existing Embankment as shown. Approx. 259 cubic yards of Excavation.

Dumped Riprap 1'-6" thick placed on Filter Blanket. Top of Riprap Elev. 205.5. See Std. Dwg. No. 189IF. Typ. at both ends of Bridge.

Existing Bridge No. 00794

Tangent Distance greater than 500'

Approx. 12.29 mi. to Jct. S.H. 48

Tangent Distance greater than 500'

Approx. 2.1 mi. to Jct. S.H. 273

C.L. Bridge No. A7237

C.L. Lanes

Profile Grade Line

C.L. Median & C.L. Construction

N 11°42'09" W

Test Hole (Typ.)

Use Type B Approach Gutters (w=6'-0" inside, w=8'-0" outside) at both ends of Bridge. For details, see Std. Dwg. 2016B.

The proposed bridge is positioned to avoid interference with the existing substructure. The Contractor shall verify the location of the existing substructure before constructing the new substructure. Any adjustments necessary to fit the proposed bridge shall be submitted to the Engineer for approval.

C.L. Bridge No. B7237

Underground Telephone Cable

Toe of fill slope

Toe of fill slope

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

BORING LEGEND

A1-Moist, Medium Stiff, Brown and Gray Clay with Sand
B1-Moist, Very Loose, Brown and Dark Gray Silty Sand
C1-Wet, Medium Dense, Gray Sand
D1-Wet, Medium Dense, Gray Sand with Gravel
E1-Wet, Medium Dense, Gray Sand with Clay
F1-Wet, Medium Dense, Gray Gravel with Clay Seams
G1-Moist, Hard, Gray Clay with Gravel
H1-Moist, Medium Dense, Gray Sand with Clay
J1-Wet, Medium Dense, Gray Sand with Clay with Trace of Organic Matter
K1-Wet, Dense, Gray Sand
L1-Moist, Hard, Gray Sandy Clay
M1-Moist, Very Stiff, Gray Clay
N1-Moist, Very Stiff, Gray Clay with Trace of Organic Matter
P1-Wet, Loose, Brown and Gray Sand with Clay
Q1-Wet, Loose, Gray Sand with Clay and Gravel
R1-Wet, Very Loose, Gray Sand with Trace of Clay
S1-Wet, Very Loose, Gray Sand with Gravel
T1-Moist, Very Stiff, Gray Clay with Trace of Sand
U1-Moist, Hard, Gray Clay with Sand
V1-Wet, Dense, Gray Sand with Trace of Organic Matter
W1-Moist, Hard, Gray Clay

"N" VALUES

Sta. 456+09 - 13' Left of C.L. of Constr.

3.8- 4.8, N=3
8.8- 9.8, N=8
15.5- 16.5, N=18
20.5- 21.5, N=21
25.5- 26.5, N=22
30.5- 31.5, N=38
35.5- 36.5, N=18
40.5- 41.5, N=27
45.5- 46.5, N=49
50.5- 51.5, N=32
55.5- 56.5, N=26
60.5- 61.5, N=26
65.5- 66.5, N=28

Sta. 457+27 - 1' Right of C.L. Constr.

4.0- 5.0, N=5
9.0- 10.0, N=8
15.5- 16.5, N=4
20.5- 21.5, N=19
25.5- 26.5, N=28
30.5- 31.5, N=21
35.5- 36.5, N=39
40.5- 41.5, N=30
45.5- 46.5, N=41
50.5- 51.5, N=29
55.5- 56.5, N=58
60.5- 61.5, N=31

PLAN

Total Length of Bridge = 111'-0"
110'-0" Continuous Composite Integral W-Beam Unit (34'-42'-34')
6" 6"
End of beam
End of beam
Beg. Br. Sta. 456+16.50
C.L. Deck @ C.L. Bent to low seat of cop = 3'-3⅝"
C.L. Bent Sta. 456+51.00
Design H.W. to low steel = 1.5'
C.L. Deck @ C.L. Bent to low seat of cop = 3'-3⅝"
C.L. Bent Sta. 456+93.00
3'-0½" C.L. Deck to Low Steel
End Br. Sta. 457+27.50
Concrete Parapet Rail
Slope Intercept Sta. 456+09.50
Slope Intercept Sta. 457+34.50
Guard Rail, see Rdwy. Plans
Proposed Grade Line @ C.L. Bridge "A"
Existing Ground Line @ C.L. Bridge "A"
Elev. 203.8
Elev. 201.5
Fix.
Int.
Fix.
Int.
41' Piles
41' Piles
050 Design H.W. Elevation 205.1'
Stations shown are along C.L. Bridge.
Level Grade - C.L. Bridge Deck Elev. 209.68
Bent No. 1 2 3 4
Sta. 456+09 13' Left of C.L. of Constr.
Sta. 457+27 1' Right of C.L. of Constr.

ELEVATION

PRINT DATE: 7/20/2012

GENERAL NOTES

BENCH MARK: TBM 913 Chiseled Sq. Center HW, 89.21' Lt. of C.L. Constr. Sta. 440+57.44, Elev. 209.35.

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2003 edition) with applicable supplemental specifications and special provisions. Unless otherwise noted, section and subsection numbers in the plans refer to the Construction Specifications.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications 5th Edition (2010), with 2010 Interims.

LIVE LOADING: HL-93

SEISMIC ZONE : 2 S_{D1} = 0.244 SITE CLASS = E

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 M31 or M53, GR. 60)	fy = 60,000 psi
Structural Steel (AASHTO M270, Gr. 36)	Fy = 36,000 psi
Structural Steel (AASHTO M270, Gr. 50W)	Fy = 50,000 psi

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

CONCRETE PILING: Piling for Bents 1 and 4 shall be 16" square prestressed concrete and shall be driven to a minimum ultimate bearing capacity of 145 tons per pile. Piling in Bents 2 and 3 shall be 24" square prestressed concrete and shall be driven to a minimum ultimate bearing capacity of 315 tons per pile. All piling shall be driven with an approved air, steam, or diesel hammer. Piling in end bents shall be driven after embankment to bottom of cap is in place. Piling in Bents 1 and 4 shall have a tip elevation of 180 or lower. Piling in Bents 2 and 3 shall have a tip elevation of 171 or lower. Length of piling shown are for estimating quantities and for use in determining payment for cut-off and build-up in accordance with the standard specifications. Drive one 46' test pile in Bent 1 and one 46' test pile in Bent 3.

DRIVING SYSTEM: The driving system approval and the ultimate bearing capacity determination for piling shall be based on the requirements of subsection 805.09(b) "Method B - Wave Equation Analysis (WEAP)". It is estimated that the minimum required rated energy of the hammer to obtain the minimum ultimate bearing capacity on 16" square piles will be 40,000 foot pounds per blow and on 24" square piles shall be 83,000 foot pounds per blow.

PREBORING: Preboring is required for all piling at bents 1 & 4. Prebored holes at Bents 1 and 4 shall have a diameter 6" greater than the greatest cross-sectional dimension of the pile for a depth of 10' below the bottom of the cap. The void space around the pile after completion of driving shall be backfilled with sand or pea gravel. The Contractor shall be responsible for keeping prebored holes free of debris prior to backfilling, which may require the use of temporary casing or other approved methods. Any related cost for backfilling and temporary casing will not be paid for separately but shall be considered subsidiary to the Item "Preboring". Preboring will be paid for in accordance with Section 805.

BRIDGE DECK: The concrete bridge deck shall be given a tine finish as specified for final finishing in subsection 802.19 for Class 5 Tined Bridge Roadway Surface Finish.

PIPE UNDER DRAIN: One Pipe Under drain with outlet protectors shall be installed behind each bridge end in accordance with Section 611. Pipe Under drains will not be paid for directly but shall be considered subsidiary to "Unclassified Excavation".

DETAIL DRAWINGS:	DRAWING NO.
End Bents	52784
Intermediate Bents	52785
110' Integral W-Beam Unit	52787 - 52791
Type "B" Special Shoes	52788
Concrete Piling	14964 & 52786
Type B Approach Gutters	2016B

EXISTING BRIDGE: Existing Bridge No. 00794 (Log Mile 6.36) is 28'wide and 106' long and consists of concrete tee beams supported by concrete pile bents.

REMOVAL AND SALVAGE: After Bridge No. B7237 is complete and opened to traffic, the Contractor shall remove existing Bridge No. 00794 in accordance with Section 205. All salvageable guard rail and guard rail posts, as determined by the Engineer, shall remain the property of the Department. The Contractor shall coordinate with the Engineer to provide temporary storage and on site loading onto Department equipment for removal of all salvaged items. All other material from the existing bridge shall become the property of the Contractor.

MAINTENANCE OF TRAFFIC: See Roadway Plans.

HYDRAULIC DATA

FLOOD DESCRIPTION	FREQUENCY	(2) TOTAL DISCHARGE	DISCHARGE THRU BRIDGE OPENING	(1) NATURAL WATER SURFACE ELEVATION	WATER SURFACE ELEVATION W/ BACKWATER
	YEARS	CFS	CFS	FEET	FEET
Design	50	4,400	1,470	205.0	205.2
Base	100	5,440	1,870	205.9	206.1
Overtopping	118	5,600	1,750	206.0	206.3
Extreme	500	8,550	2,300	208.1	208.3

(1) Unconstricted water surface elevation without structure and roadway approaches.

(2) Includes Bridge Nos. A7238 & B7238.

Estimated 100-Year backwater elevation with Existing Structures in place is 206.0 ft.

Proposed Low Bridge Member Elevation = 206.6

Drainage area = 18.1 square miles (Includes structures over Guice Creek).

Historical H.W. Elev. = 206.0 ft.

STATE OF ARKANSAS Carl J. Fuselier REGISTERED PROFESSIONAL ENGINEER No. 7510 7/23/12 CARL J. FUSELIER

BRIDGE ENGINEER

LAYOUT OF BRIDGE "A" OVER GUICE CREEK RELIEF HWY. 273-PETERS RD. (CR 24) (F) DALLAS COUNTY

ROUTE 167 SEC. 7

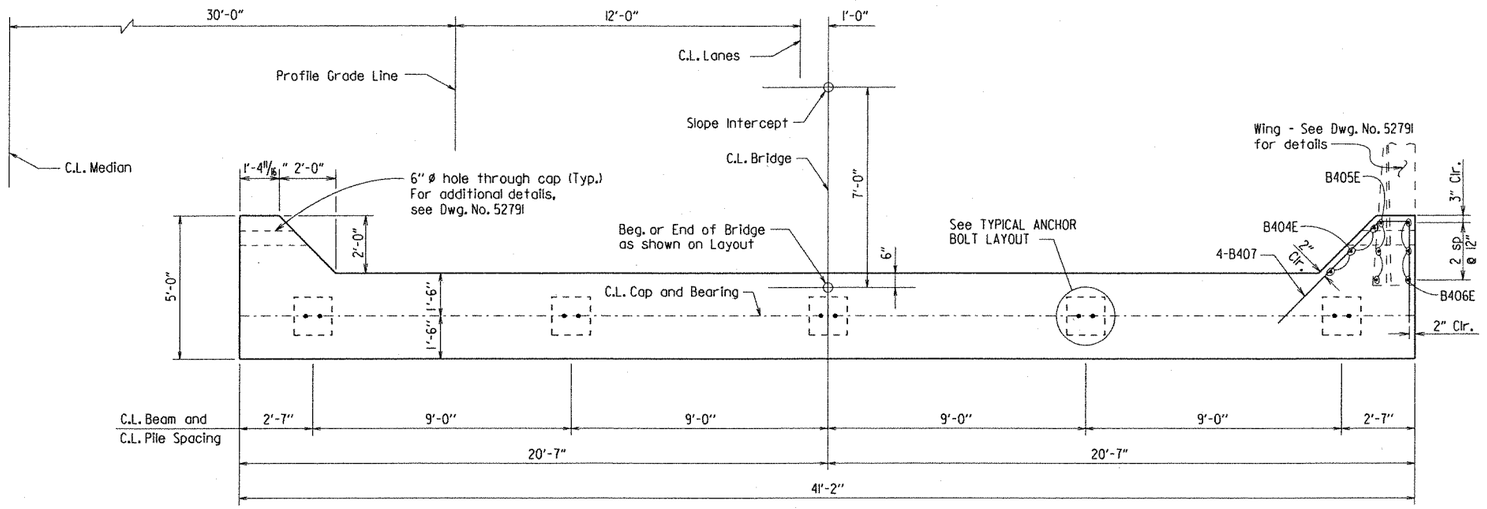
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 10/20/2011 FILENAME: b070289x3_II.dgn
CHECKED BY: CMJ DATE: 7/16/12 SCALE: 1"=20'
DESIGNED BY: CSL DATE: Sept. 2011

BRIDGE NO. A7237 DRAWING NO. 52783

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.		070289	117	365
				①		A&B7237 - END BENTS - 52784		



PLAN

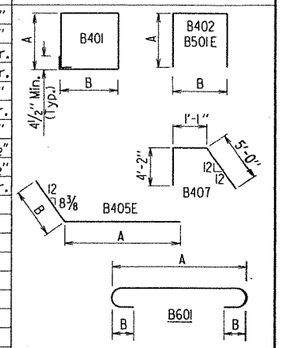
Bridge A - Looking Back
Bridge B - Looking Ahead
Scale: 3/8" = 1'-0"

① Bars B405E and B406E shall be embedded 2'-10" into cap.

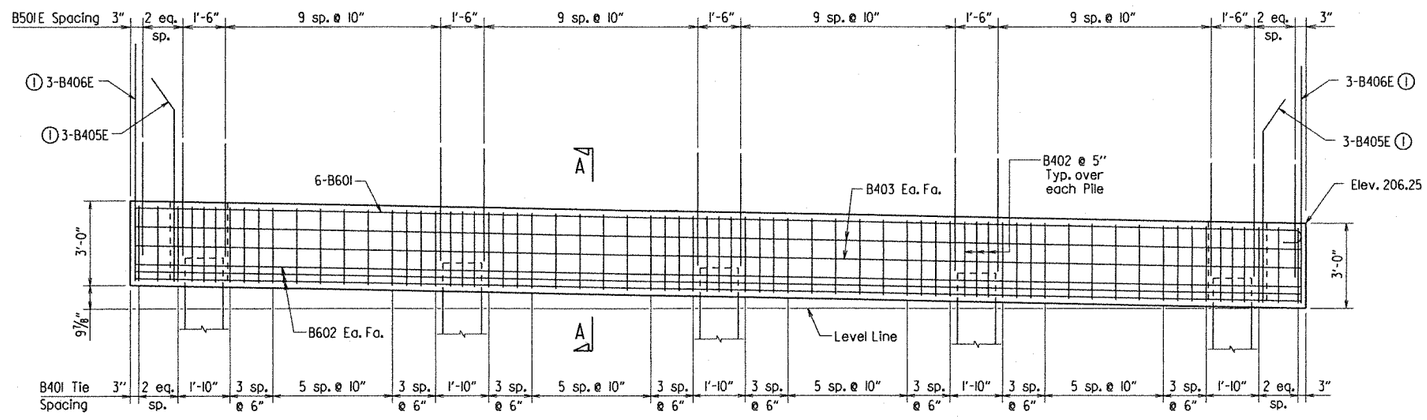
BAR LIST - PER BENT

Mark	No. Req'd.	Length	A	B	Pin Dia.
B401	54	11'-0"	2'-8"	2'-8"	2"
B402	15	7'-10"	2'-8"	2'-8"	2"
B403	4	40'-10"	-	-	Str.
B404E	6	4'-5"	-	-	Str.
B405E	6	7'-3"	6'-1"	1'-2"	2"
B406E	6	8'-5"	-	-	Str.
B407	8	10'-2"	-	-	2"
B501E	46	9'-6"	3'-6"	2'-8"	2 1/2"
B601	6	42'-2"	40'-10"	6"	4 1/2"
B602	6	40'-10"	-	-	Str.

Bending Diagrams

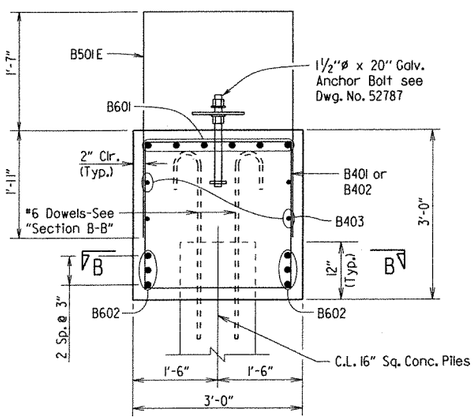


Dimensions are out to out of bars



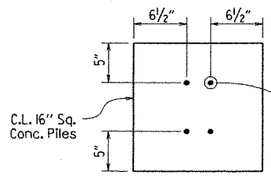
ELEVATION

Bridge A - Looking Back
Bridge B - Looking Ahead
Scale: 3/8" = 1'-0"



SECTION A-A

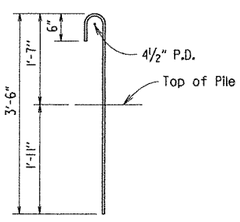
No Scale



After driving, grill and grout #6 dowels 1'-11" into piles using an approved non-shrink or an epoxy grout listed on the OPL. Diameter of holes and installation procedure shall be as recommended by the grout manufacturer. Dowel bars, drilling and grout shall not be paid for directly but shall be considered subsidiary to the item "Concrete Piling - 16" Square".

SECTION B-B

No Scale



#6 Dowel Bar

GENERAL NOTES

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

All reinforcing steel shall conform to AASHTO M 31 or M 53, Gr. 60. (Yield strength = 60,000 psi.)

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

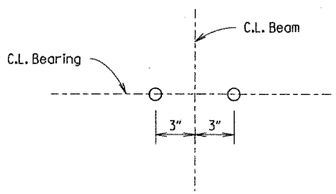
For anchor bolt details, see Dwg. No. 52787.

Bars with "E" suffix are Epoxy Coated.

Dowel bars in piles shall be located in such a way to avoid interference with Anchor Bolts.

Granular backfill and pipe underdrain required behind end bent caps. See Dwg. No. 52787.

For additional information, see Layout.



TYPICAL ANCHOR BOLT LAYOUT

3/4" = 1'-0"

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
CARL J. FUSELIER 7/23/12

BRIDGE ENGINEER

DETAILS OF BENTS 1 AND 4 GUICE CREEK RELIEF

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

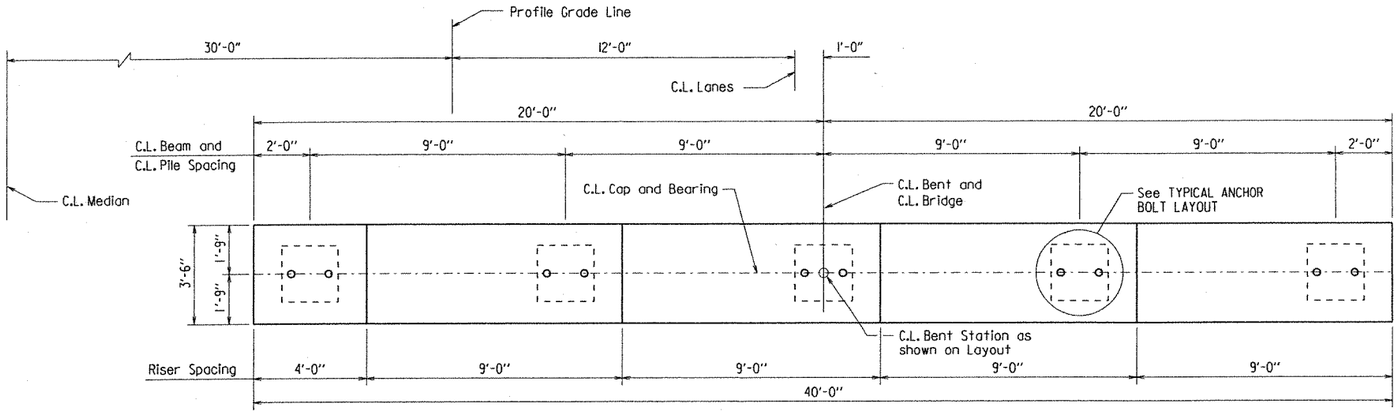
LITTLE ROCK, ARK.

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DESIGNED BY: CMW DATE: 4/12

BRIDGE NO. A&B7237 DRAWING NO. 52784

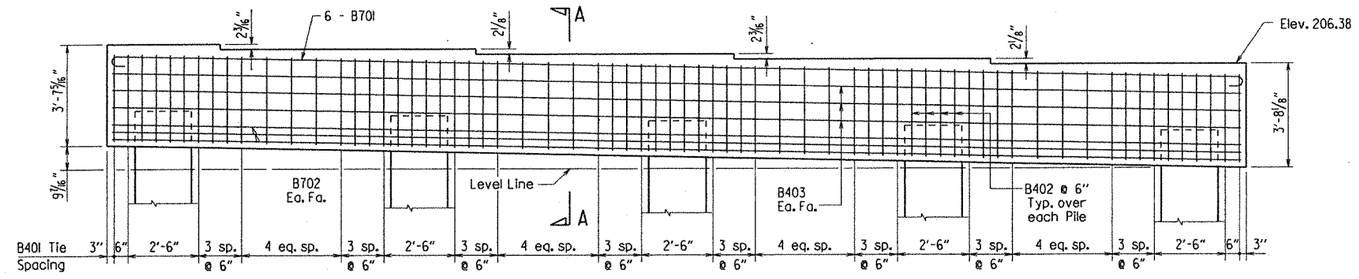
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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070289	118	365
				(1)		A&B7237 - INT. BENTS - 52785		



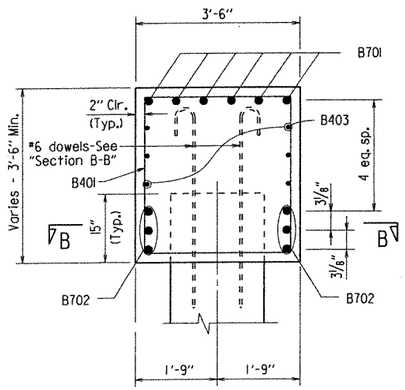
PLAN

Bridge A - Looking Back
Bridge B - Looking Ahead
Scale: 3/8" = 1'-0"



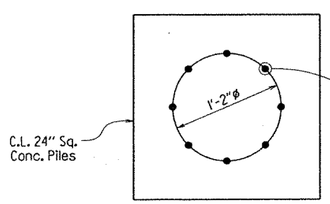
ELEVATION

Bridge A - Looking Back
Bridge B - Looking Ahead
Scale: 3/8" = 1'-0"



SECTION A-A

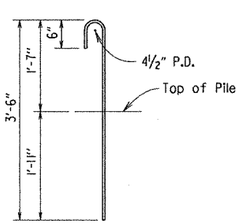
No Scale



After driving, grill and grout #6 dowels 1'-11" into piles using an approved non-shrink or an epoxy grout listed on the QPL. Diameter of holes and installation procedure shall be as recommended by the grout manufacturer. Dowel bars, drilling and grout shall not be paid for directly but shall be considered subsidiary to the item "Concrete Piling - 24" Square".

SECTION B-B

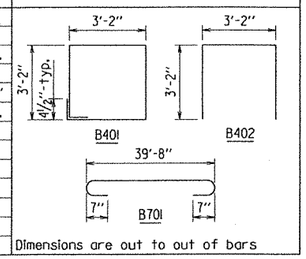
No Scale



#6 Dowel Bar

BAR LIST - PER BENT

Mark	No. Req'd.	Length	Pin Dia.	Bending Diagrams
B401	48	13'-0"	2"	
B402	20	9'-4"	2"	
B403	6	39'-8"	Str.	
B701	6	41'-4"	5 1/4"	
B702	6	39'-8"	Str.	



Dimensions are out to out of bars

GENERAL NOTES:

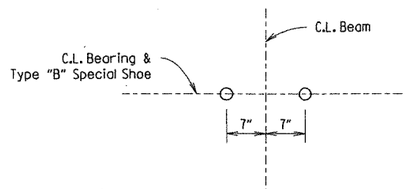
All concrete shall be Class "S" and be poured in the dry. All exposed corners are to be chamfered 3/4" unless otherwise noted.

All reinforcing steel shall conform to AASHTO M31 or M53, Grade 60.

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, see Dwg. No. 52788.

Dowel bars in piles shall be located in such a way to avoid interference with Anchor Bolts.

For additional information, See Layout.



For details of Type "B" Special Shoe and Anchor Bolts, see Dwg. No. 52788.

TYPICAL ANCHOR BOLT LAYOUT

3/4" = 1'-0"

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
7/23/12
CARL J. FUSELIER

BRIDGE ENGINEER

DETAILS OF BENTS 2 AND 3 GUICE CREEK RELIEF

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

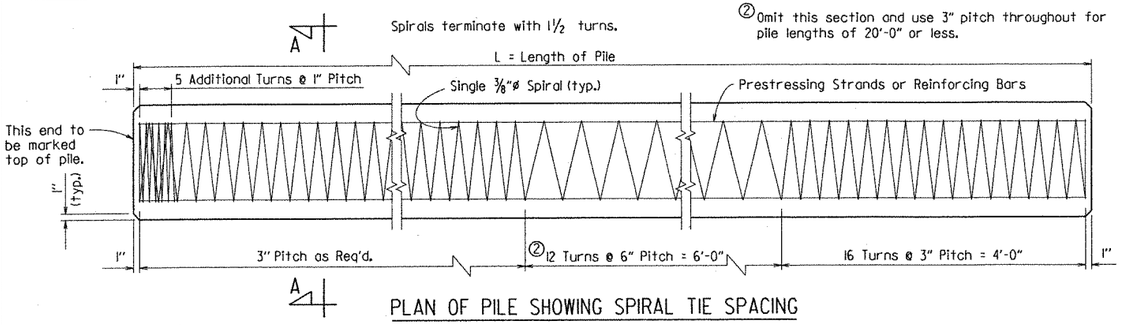
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CHECKED BY: DHP DATE: 7-16-12 SCALE: As Shown
DESIGNED BY: CMW DATE: 4/12

BRIDGE NO. A&B7237 DRAWING NO. 52785

PRINT DATE: 7/16/2012

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.		070289	119	365

(1) A&B7237, A&B7238, 070239 - 070243 - CONCRETE PILES - 52786



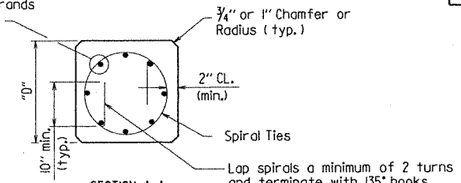
(2) Omit this section and use 3" pitch throughout for pile lengths of 20'-0" or less.

For anchorage of pile to bent, see Bent Details.

PLAN OF PILE SHOWING SPIRAL TIE SPACING

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

(5) Prestressing Strands at equal spacing



SECTION A-A

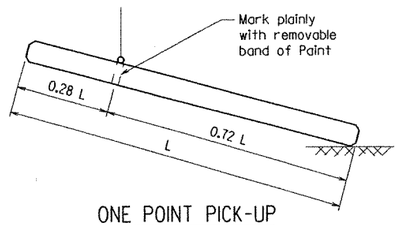
(5) See table "Prestressed Concrete Pile Properties" for actual number of strands per pile size.

PRESTRESSED CONCRETE PILE PROPERTIES

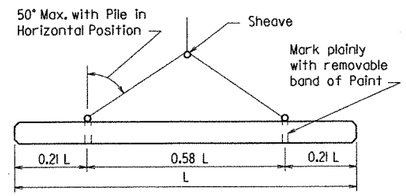
	Grade	Strand Diameter	(1) No. of Strands per Size "D" 24" Sq.	Minimum Ultimate Tensile Strength Per Strand (Lbs.)	Initial Prestressing Force Per Strand (Lbs.)
Low Relaxation	250	7/16"	24	27,000	20,300
		½"	18	36,000	27,000
	270	7/16"	21	31,000	23,300
		½"	16	41,300	31,000

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

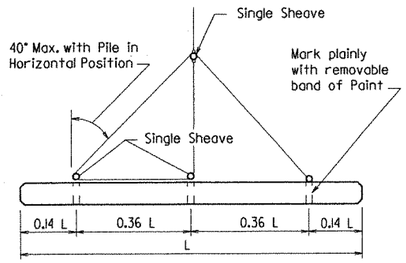
"B" = 0.75 Low Relaxation



ONE POINT PICK-UP



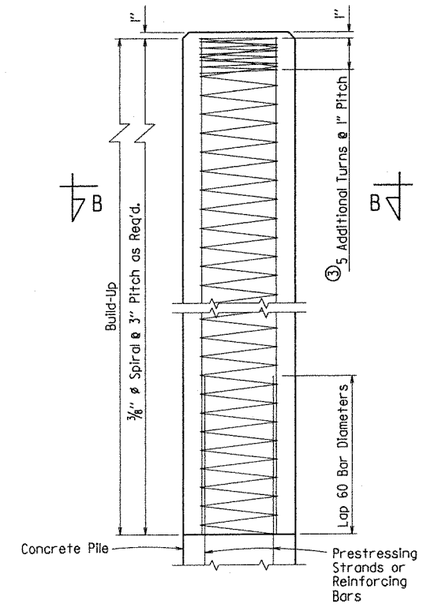
TWO POINT PICK-UP



THREE POINT PICK-UP

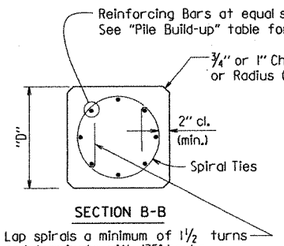
MAXIMUM PICKUP LENGTHS "L"

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



BUILD-UP

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



SECTION B-B

BUILD-UP PILE REINFORCING

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

PILE BUILD-UP

GENERAL NOTES:

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2003 Edition) with applicable Supplemental Specifications and Special Provisions.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications, Fourth Edition.

SEISMIC PERFORMANCE ZONES: 1 & 2

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

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

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

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

SPIRAL REINFORCING: Spiral reinforcing shall be steel wire meeting the requirements of AASHTO M 32 or M 225 or shall be plain round steel bars meeting the requirements of AASHTO M 31 or M 53, Gr. 60.

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

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

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

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

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

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

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

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

STATE OF ARKANSAS
Carl J. Puselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
7/23/12
CARL J. PUSELIER

BRIDGE ENGINEER

DETAILS OF 24" SQUARE PRESTRESSED CONCRETE PILES

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: CMW DATE: 05/09/2012 FILENAME: b070289_piling.dgn

CHECKED BY: RBR DATE: 7-16-12 SCALE: No Scale

DESIGNED BY: Std. DATE: —

BRIDGE NO. A&B7237, A&B7238, 070239 - 070243 DRAWING NO. 52786

PRINT DATE: 7/16/2012

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.		070289	120	365
				(1) A&B7237		SPAN DETAILS		52787

SLAB REINFORCING

Transverse:
S502E @ 15" o.c. bent up over beams
S601E @ 15" o.c. in top
S501E @ 15" o.c. in bottom
S701E @ 15" o.c. in top at both gutterlines - placed around ends of S502E. See "REINFORCING PLAN", Dwg. No. 52789

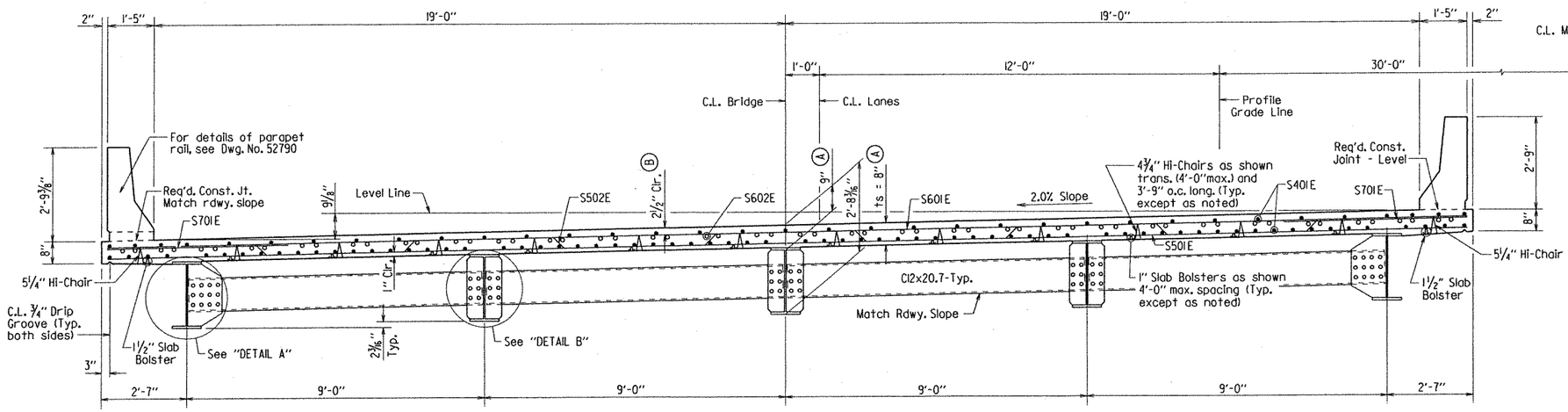
Longitudinal:
S401E as shown (18" max.)
S602E as shown over int. supports (see Reinf. Plan)
S503E as shown at ends of unit (see Reinf. Plan)

At Contractor's Option, in lieu of providing bar S502E, one #5 bar top and bottom may be substituted for each bar. Payment for reinforcing will be based on the weight of bar S502E. Bars in top and bottom shall be Epoxy Coated.

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

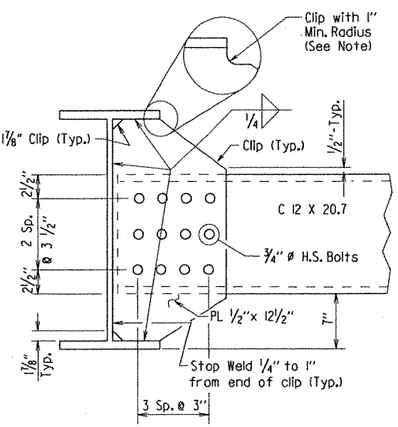
(A) See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE."

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



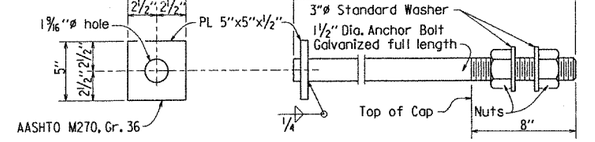
TYPICAL ROADWAY SECTION

Bridge A - Looking Ahead
Bridge B - Looking Back
Scale: 1/2" = 1'-0"



DETAIL A
No Scale

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

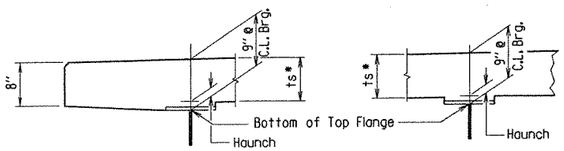


Anchor Bolts and Nuts to be according to subsection 807.07. Washers shall be a standard washer. Anchor Bolts, Washers, and Nuts shall be paid for at the unit price bid for "Structural Steel in Beam Spans (M270, Gr. 50W)". All Anchor Bolts shall be Grade 55.

Use lower nut and washer to adjust to grade. Snug tight top nut and washer after grade is adjusted.

ANCHOR BOLT DETAIL FOR END BENTS
No Scale

NOTE: ts = Slab thickness as shown in "Typical Roadway Section"



EXTERIOR BEAM

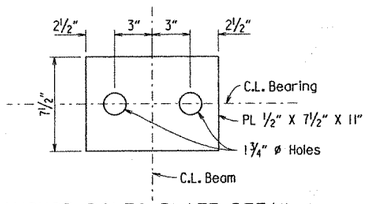
INTERIOR BEAM

*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.

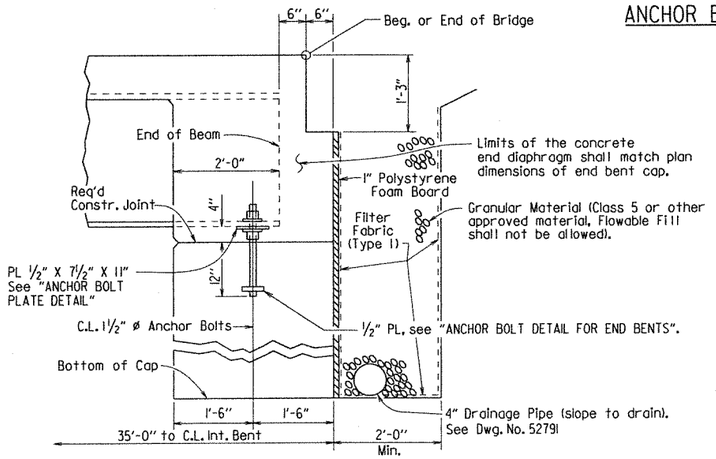
Haunch dimension may vary within the following limits to maintain the grade and slab thickness tolerance : Minimum - occurs when top flange contacts bottom reinforcing steel; Maximum - top flange thickness plus 1¾". No increase in concrete and structural steel quantities will be made to maintain tolerances.

Tolerances shown are applicable only when removable deck forming is used. See Std. Dwg. No. 149911 for tolerances when permanent steel deck forms are used. Payment for concrete shall be based on removable deck forming.

ADJUSTMENT FOR SLAB THICKNESS TOLERANCE
No Scale



ANCHOR BOLTS PLATE DETAIL
No Scale



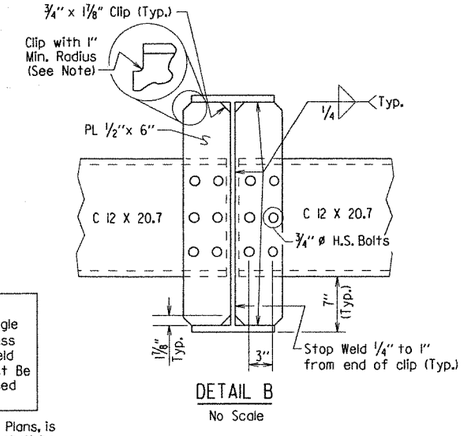
SECTION AT END BENT
No Scale

For additional details of pipe under drain see Std. Dwg. PU-1 and Section 611 of the Standard Specifications. Pipe under drains, outlet protectors, granular materials, drain pipe, filter fabric and polystyrene foam board will not be measured or paid for separately, but will be considered subsidiary to the unit price bid for "Unclassified Excavation".

TABLE FOR WELD

Material Thickness Of Thicker Part Joined (Inches)	Minimum Size Of Fillet Weld (Inches)	Single Pass Weld Must Be Used
To ¾" inclusive	¼"	
Over ¾"	5/16"	

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.



DETAIL B
No Scale

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
7/23/12
CARL J. FUSELIER

BRIDGE ENGINEER

SHEET 1 OF 5

DETAILS OF 110'-0" INTEGRAL W-BEAM UNIT GUICE CREEK RELIEF

ROUTE SEC.

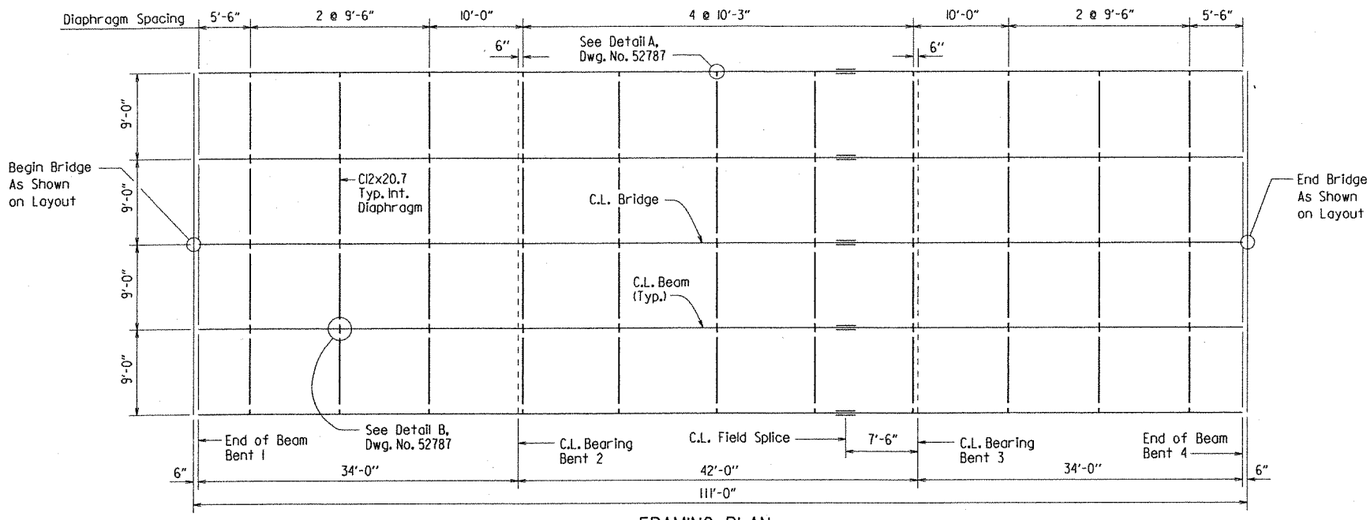
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CMW DATE: 10/14/2011 FILENAME: b070289_sl.dgn
CHECKED BY: DHP DATE: 7-16-12 SCALE: As shown
DESIGNED BY: CMW DATE: 12/11

BRIDGE NO. A&B7237 DRAWING NO. 52787

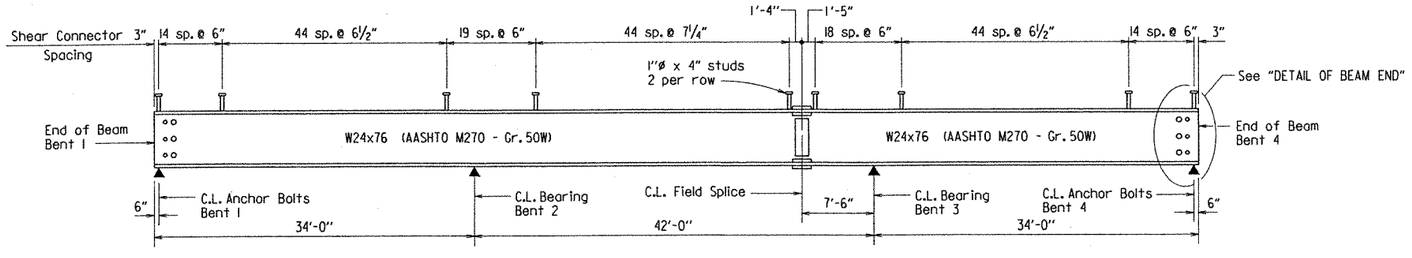
PRINT DATE: 7/16/2012

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.		070289	121	365
				(1) A&B7237		SPAN DETAILS		52788



FRAMING PLAN

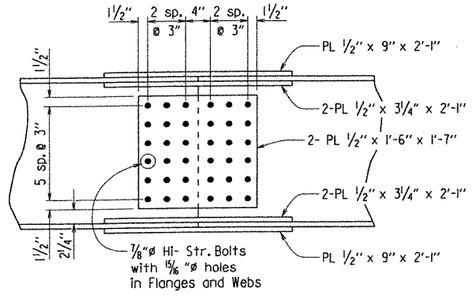
Scale: 1/8" = 1'-0"



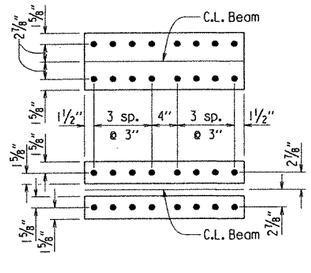
TYPICAL BEAM ELEVATION

No Scale

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



WEB SPLICE

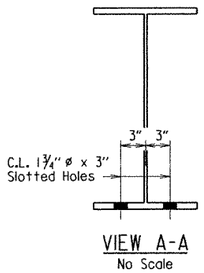


FLANGE SPLICE

All field splice plates shall be AASHTO M270, Gr. 50W
All field splice bolts shall be ⅞"ø H.S. Bolts
All field splice bolt holes shall be 15/16 "ø

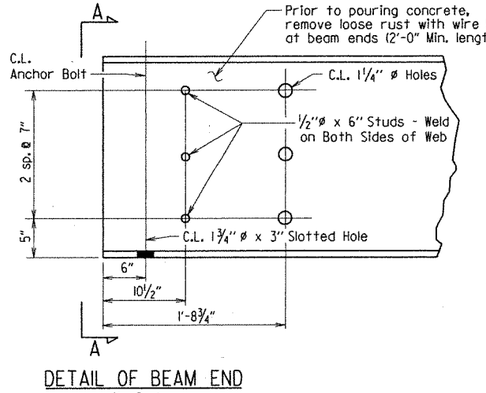
FIELD SPLICE DETAIL

No Scale



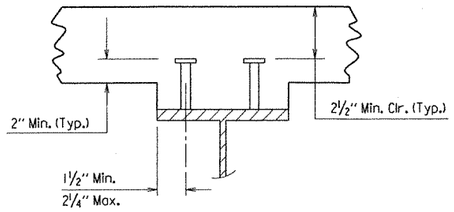
VIEW A-A

No Scale



DETAIL OF BEAM END

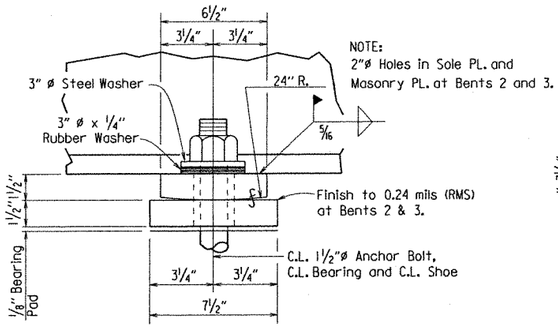
No Scale



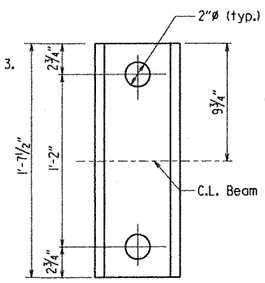
Stud Shear Connectors shown shall be 1"ø x 4" long, granular flux filled, solid fluxed or equal, and automatically end welded to the beam flange in accordance with the recommendations of the Manufacturer.

SHEAR CONNECTOR DETAIL

No Scale



NOTE:
2"ø Holes in Sole PL. and Masonry PL. at Bents 2 and 3.



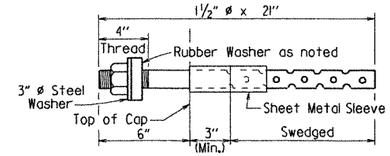
NOTE: Plates for Type "B" Special Shoes shall be M270, GR. 50W.

ELEVATION TYPE "B" SPECIAL SHOE

BENTS: 2 and 3
No Scale

PLAN TYPE "B" SPECIAL SHOE

BENTS: 2 and 3
No Scale



Anchor Bolts, Nuts and Washers to be according to subsection 807.07. Indentations shall be circular with rounded bottoms and staggered as shown above. Rubber washer shall be closed cell expanded rubber, meeting the requirements of ASTM D1056 - 85 2B2 E2, and shall be considered subsidiary to the item of "Structural Steel in Beam Spans (M270, Gr. 50W)". Anchor Bolts, Nuts and Washers shall be paid for at the unit price bid for "Structural Steel in Beam Spans (M270, Gr. 50W)". Anchor bolts shall be Grade 55.

Anchor Bolts may be cast in place or drilled and grouted into place. If Anchor Bolts are to be cast in place, the Galvanized Sheet Metal Sleeves will not be required. If Anchor Bolts are to be drilled and grouted in place, the Galvanized Sheet Metal Sleeves shall be cast in place as shown. Sleeves shall be dry packed with styrofoam, urethane foam or approved equal prior to pouring of concrete. After pouring of the cap and prior to erection of Structural Steel, the dry pack shall be removed and holes for the anchor bolts shall be accurately drilled into the masonry. Bolts placed in drilled holes shall be accurately set and fixed using a 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)."

ANCHOR BOLT DETAIL FOR INTERMEDIATE BENTS

BENTS: 2 and 3
No Scale

SHEET 2 OF 5

DETAILS OF 110'-0" INTEGRAL W-BEAM UNIT
GUICE CREEK RELIEF

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
7/23/12
CARL J. FUSELIER

BRIDGE ENGINEER

DRAWN BY: CMW DATE: 10/14/11
CHECKED BY: DHP DATE: 7-16-12
DESIGNED BY: CMW DATE: 12/11

FILENAME: b070289_sl.dgn
SCALE: As shown

BRIDGE NO. A&B7237

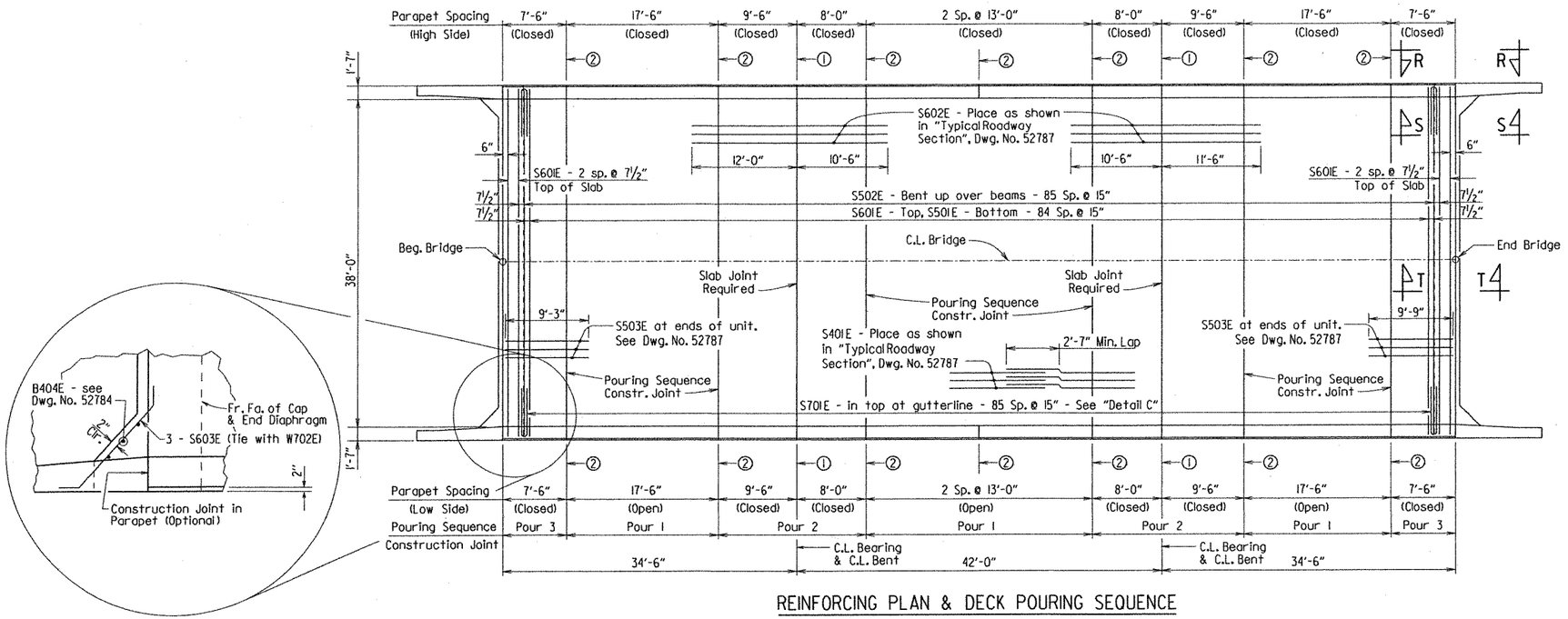
DRAWING NO. 52788

PRINT DATE: 7/16/2012

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.		070289	122	365
				(1) A&B7237		SPAN DETAILS		52789

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

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



REINFORCING PLAN & DECK POURING SEQUENCE

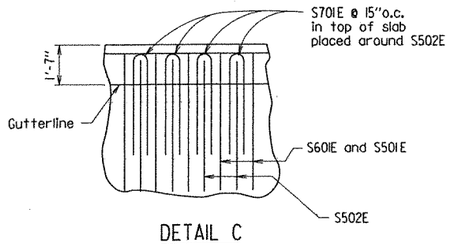
For View R-R, View S-S and Section T-T see Dwg. No. 52791.

Pours with the same number may be placed simultaneously or separately. All Pours (1) must be placed before Pours (2) can be placed. All Pours (2) must be placed before Pours (3). 48 hours shall elapse between the end of a pour and the start of the next pour. 72 hours shall elapse between the end of a pour and the start of an adjacent pour.

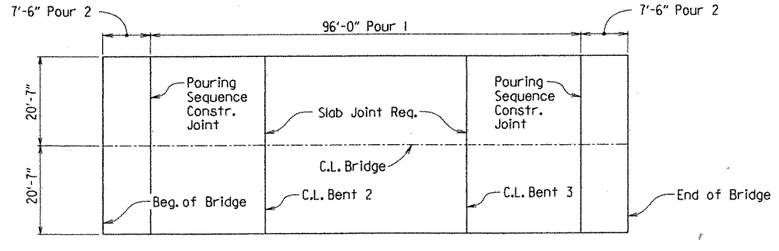
Any railing pours made before the entire slab unit has been placed must be approved by the Engineer.

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

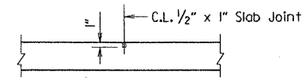
The Contractor must obtain approval from the Engineer for any deviations from the pouring sequence shown.



DETAIL C
No Scale



ALTERNATE POURING SEQUENCE
No Scale



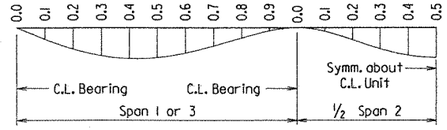
Use 1/2" x 1" Type 3, 4 or 6 Joint Sealer. See subsections 501.02(h) and 501.05(j). Backer rod will not be required. Joint Sealer shall be measured and paid for as Class S(AE) Concrete-Bridge. Slab Joints shall extend to the outside edge of the deck slab. Slab joints shall be installed before the parapet railing is poured. If slab joints are to be sawed, they shall be sawed as soon as the slab has sufficiently set to allow sawing of the joints without damaging the slab. Slab joints shall be placed at all pouring sequence construction joints and required slab joint locations.

SLAB JOINT DETAIL
No Scale

TABLE OF DEAD LOAD DEFLECTIONS (INCHES)

Span	Point of Deflection	Structural Steel		Structural Steel + Slab		Structural Steel + Slab + Parapet	
		Interior	Exterior	Interior	Exterior	Interior	Exterior
1 or 3	0.0	0.000	0.000	0.000	0.000	0.000	0.000
	0.1	0.007	0.006	0.071	0.056	0.071	0.057
	0.2	0.013	0.012	0.130	0.104	0.131	0.106
	0.3	0.017	0.015	0.170	0.136	0.172	0.140
	0.4	0.019	0.017	0.186	0.149	0.189	0.154
	0.5	0.018	0.016	0.179	0.143	0.182	0.148
	0.6	0.015	0.014	0.149	0.119	0.151	0.123
	0.7	0.011	0.010	0.105	0.084	0.106	0.086
	0.8	0.006	0.005	0.056	0.045	0.056	0.045
	0.9	0.002	0.001	0.015	0.012	0.014	0.011
1/2 Span 2	0.0	0.000	0.000	0.000	0.000	0.000	0.000
	0.1	0.003	0.003	0.035	0.028	0.039	0.035
	0.2	0.010	0.009	0.103	0.083	0.113	0.098
	0.3	0.017	0.015	0.174	0.139	0.189	0.162
	0.4	0.022	0.020	0.226	0.180	0.244	0.209
C.L. Unit →	0.5	0.023	0.021	0.244	0.195	0.263	0.226

Table is symmetrical about C.L. Unit



DEAD LOAD DEFLECTIONS DIAGRAM (TYP.)

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

STATE OF ARKANSAS
Carl Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
CARL FUSELIER 7/23/12

BRIDGE ENGINEER

SHEET 3 OF 5

DETAILS OF 110'-0" INTEGRAL W-BEAM UNIT GUICE CREEK RELIEF

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

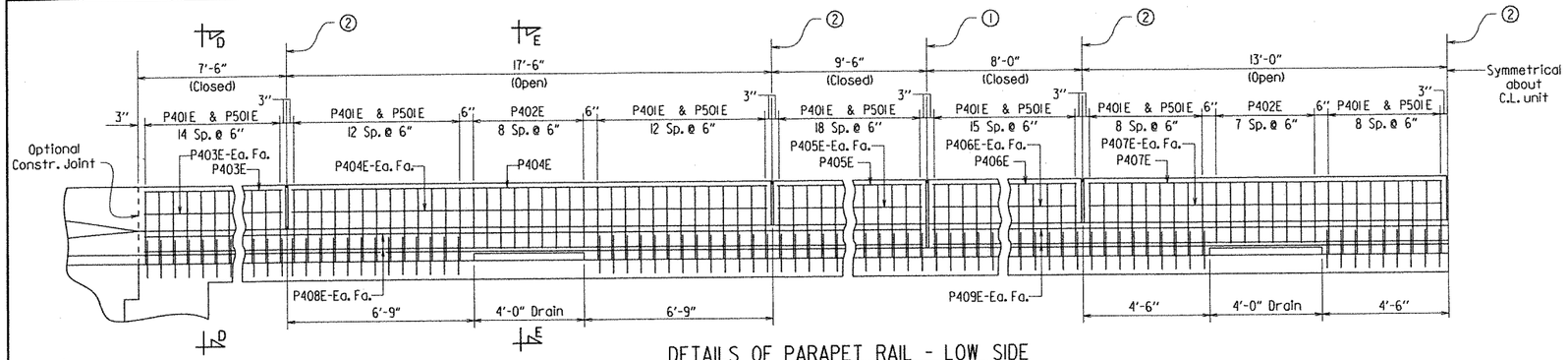
DRAWN BY: CMW DATE: 10/14/2011
CHECKED BY: DHP DATE: 7-16-12
DESIGNED BY: CMW DATE: 10/11

FILENAME: b070289_sl.dgn
SCALE: 1/8" = 1'-0" or as shown

BRIDGE NO. A&B7237 DRAWING NO. 52789

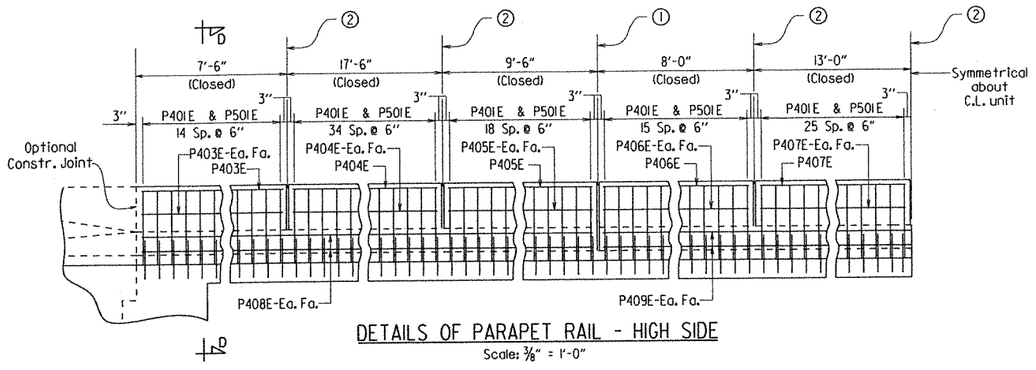
PRINT DATE: 7/16/2012

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.		070289	123	365
				①	A&B7237	SPAN DETAILS		52790



DETAILS OF PARAPET RAIL - LOW SIDE

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

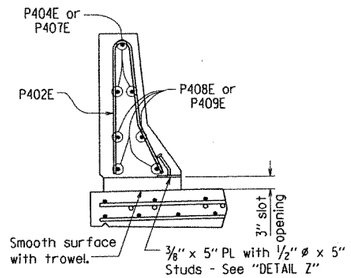


DETAILS OF PARAPET RAIL - HIGH SIDE

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

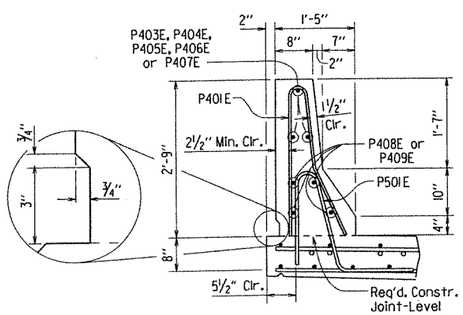
① C.L. Full-Depth Parapet Joint (1/4" to 1" Max.) as shown in "Reinforcing Plan & Deck Pouring Sequence" Dwg. No. 52789. Stop 4" from top of slab.

② C.L. Partial-Depth Parapet Joint (1/4" to 1" Max.) as shown in "Reinforcing Plan & Deck Pouring Sequence" Dwg. No. 52789. Stop 1'-2" from top of slab.



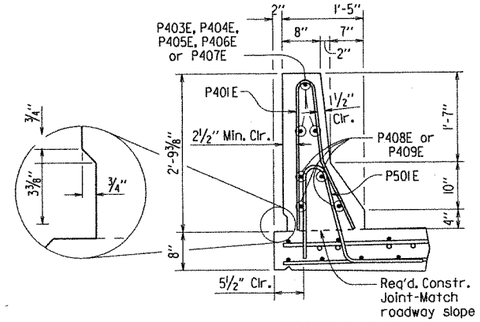
SECTION E-E

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



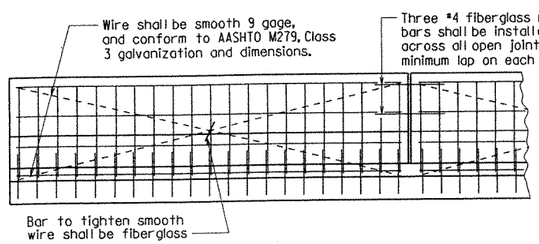
SECTION D-D

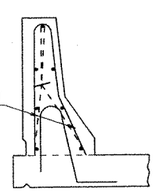
High Side
Scale: 3/4" = 1'-0"



SECTION D-D

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



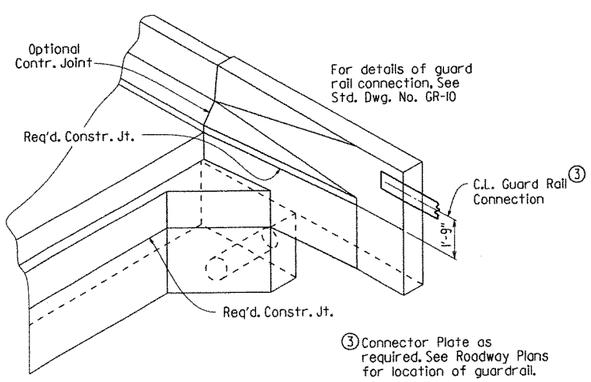


All panels shall be braced as required to prevent racking. All open joints shall be sawed as soon as practicalto a minimum width of 1/4". To control cracking before sawing all joints must be grooved before the concrete is set. Sawing of the joints must be controlled so it will follow the grooved joint.

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

DETAILS OF OPTIONAL SLIPFORMING OF CONCRETE PARAPET RAIL

No Scale



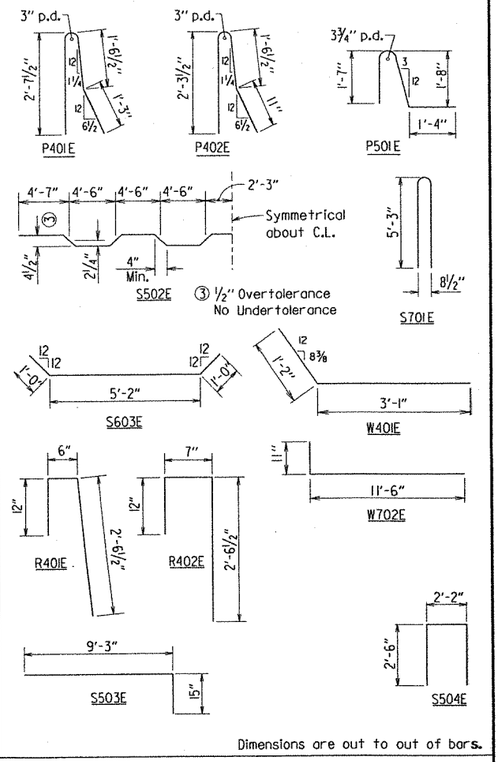
ISOMETRIC VIEW OF INTEGRAL BENT

No Scale

BAR LIST - PER BRIDGE

MARK	NO. REQ'D.	LENGTH	P.D.
S401E	309	38'-6"	Str.
S402E	18	40'-10"	Str.
P401E	410	5'-6"	3"
P402E	34	4'-10"	3"
P403E	12	7'-2"	Str.
P404E	12	17'-2"	Str.
P405E	12	9'-2"	Str.
P406E	12	7'-8"	Str.
P407E	12	12'-8"	Str.
P408E	16	34'-2"	Str.
P409E	8	41'-8"	Str.
S501E	84	40'-10"	Str.
S502E	85	41'-6"	Str.
S503E	112	10'-5"	2 1/2"
S504E	92	7'-0"	2 1/2"
P501E	410	4'-8"	3 3/4"
S601E	90	40'-10"	Str.
S602E	112	22'-6"	Str.
S603E	12	7'-2"	4 1/2"
S701E	170	10'-9"	Str.
R401E	16	3'-11"	2"
R402E	16	4'-0"	2"
R403E	24	9'-8"	Str.
R404E	24	2'-0"	Str.
R601E	32	5'-5"	Str.
R602E	12	5'-0"	Str.
W401E	20	4'-3"	2"
W402E	20	5'-5"	Str.
W701E	12	11'-6"	Str.
W702E	48	12'-3"	5 1/4"

BENDING DIAGRAMS

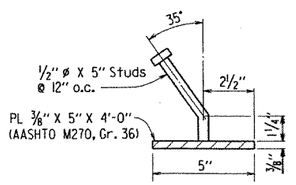


Dimensions are out to out of bars.

NOTE: Bars marked with an "E" suffix shall be epoxy coated.

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

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



DETAIL Z

No Scale

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
7/23/12
CARL J. FUSELIER

BRIDGE ENGINEER

SHEET 4 OF 5

DETAILS OF 110'-0" INTEGRAL W-BEAM UNIT GUICE CREEK RELIEF

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: CMW DATE: 10/14/2011 FILENAME: b070289_sl.dgn

CHECKED BY: DHP DATE: 7-16-12 SCALE: As shown

DESIGNED BY: CMW DATE: 12/11

BRIDGE NO. A&B7237 DRAWING NO. 52790

PRINT DATE: 7/16/2012

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.		070289	124	365
				① A&B7237		SPAN DETAILS		52791

GENERAL NOTES

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2003 Edition) with applicable supplemental specifications and special provisions.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications 5th Edition (2010), with 2010 Interims.

LIVE LOADING: HL-93

MATERIALS AND STRENGTHS:
Concrete: All concrete shall be Class S(AE) with a minimum 28 day strength f'c = 4000 psi.
Reinforcing Steel: Reinforcing steel shall conform to AASHTO M31 or M53, Grade 60 (Yield Strength = 60,000 psi.).
Structural Steel: Structural steel shall conform to AASHTO M270, Gr. 50W (Fy = 50,000 psi.) or AASHTO M270, Gr.36 (Fy = 36,000 psi.).

STRUCTURAL STEEL:
All Structural Steel shall be AASHTO M270, Gr. 50W unless otherwise noted. All structural steel shall be paid for as "Structural Steel in Beam Spans (M270, Gr.50W)". Structural Steel completely embedded in concrete may be AASHTO M270. Gr. 36 or Gr. 50. AASHTO M270, Gr.50W steel shall not be painted. All exposed surfaces shall be cleaned in accordance with subsection 807.84(e) unless noted otherwise.

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

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

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.

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

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

All beams shall be blocked in their true position in the shop with the webs horizontal in groups as specified in subsection 807.54 (b)(1). The camber, length of sections, distance between bearings, and opening of joints shall be measured with thebeams in their true position and this information shall become part of the permanent record of this job. The component parts shall be match marked in this assembly and those marks shall be shown on the erection diagram. All beam dimensions are based on a temperature of 60 degrees F. A tolerance of 1/4" (plus or minus) allowed for camber.

Field connections shall be bolted with high-strength bolts. Bolts shall be 3/4"ø, except as noted, and open holes shall be 15/16 "ø unless otherwise noted. Holes for 3/4"ø bolts may be 13/16 "ø if a washer is supplied for use under both the nut and the head of the bolt. For field splices, bolts shall be 1/8"ø bolts. Open holes shall be 15/16 "ø. Bolt spacing shall be 3" for 7/8"ø bolts unless otherwise noted. Bolts shall be placed with heads on the outside face of the exterior beam web and on the bottom of the beam flanges.

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

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

Bearings shall be seated in accordance with subsection 807.66. This work and material will not be paid for directly but will be considered subsidiary to the item "Structural Steel in Beam Spans (M270, Gr. 50W)".

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

CONCRETE:
All concrete shall be Class S(AE) with a minimum 28 day compressive strength f'c = 4000 psi. Concrete shall be poured in the dry and all exposed corners to be chamfered 3/4" 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.14991 for allowable modifications and for tolerances when Permanent Steel Bridge Deck Forms are used. Concrete in bridge superstructure shall be placed, consolidated, and screeded off for the entire pour before any concrete has taken its initial set. This may require the use of a retarding agent. The concrete diaphragms at end bents shall be poured monolithic with the slab.

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

Removable forms shall be used for concrete diaphragms.

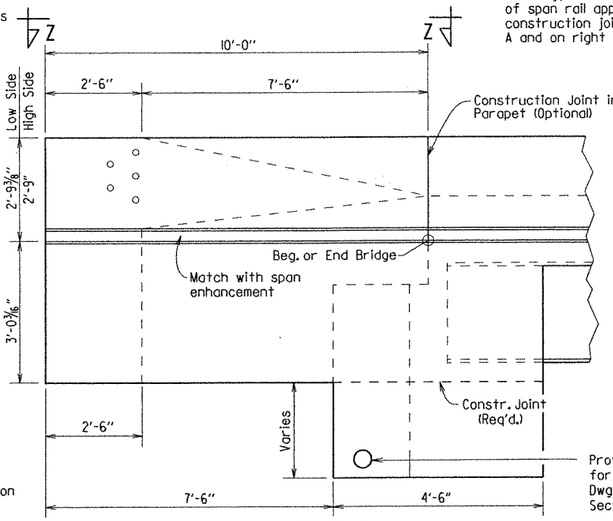
CLASS I PROTECTIVE SURFACE TREATMENT: Class I protective surface treatment shall be applied to the roadway surface and to the roadway face and top of the concrete parapet rail.

LOAD DISTRIBUTION:

Dead Load:

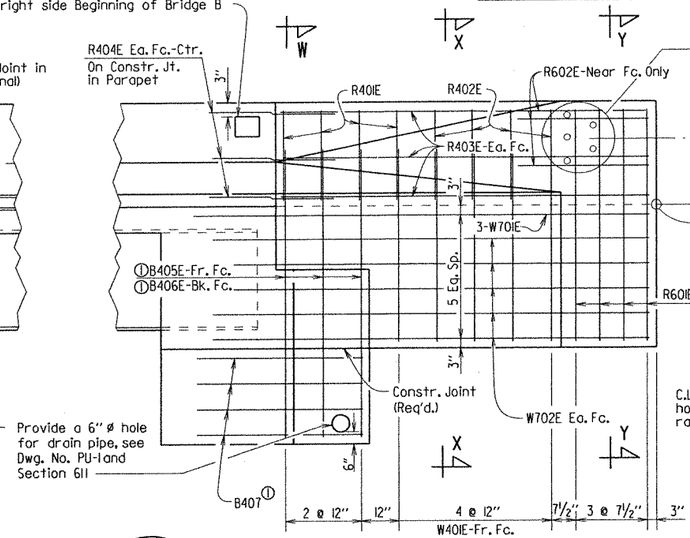
A. To W-Beam	Beam No.		
	Beam 1 & 5	708	plf + Wt. of Structural Steel
	Beam 2, 3 & 4	900	plf + Wt. of Structural Steel
B. To Composite Beam	Beam No.		
	Beam 1 & 5	377	plf ②
	Beam 2, 3 & 4	312	plf ②

② Includes 182 plf future wearing surface.

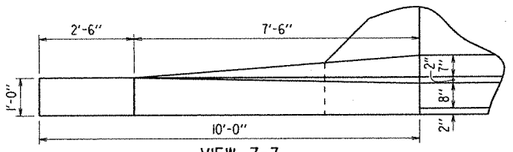


VIEW R-R
No Scale

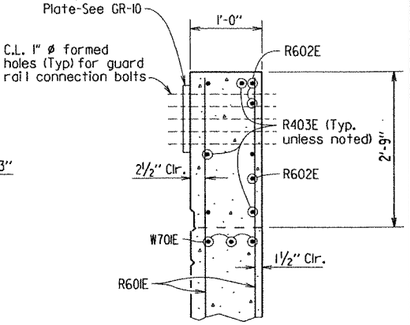
Place Type D Bridge Name Plate on front face of span rail approx. 2'-0" from optional construction joint on left side End of Bridge A and on right side Beginning of Bridge B



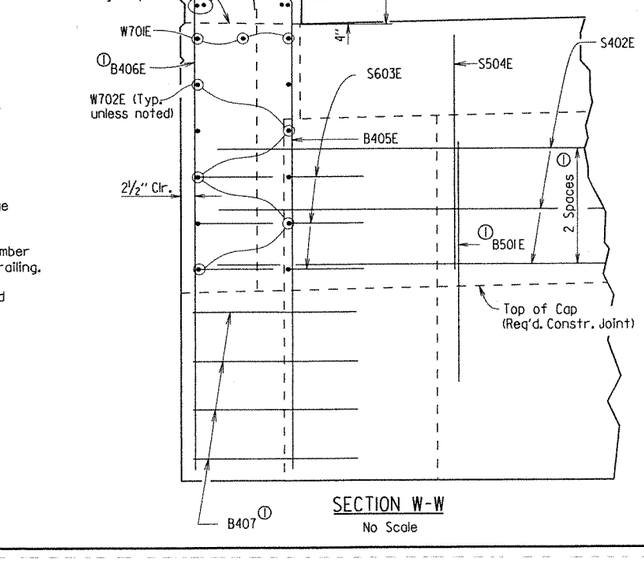
VIEW S-S
½" = 1'-0"



VIEW Z-Z
No Scale

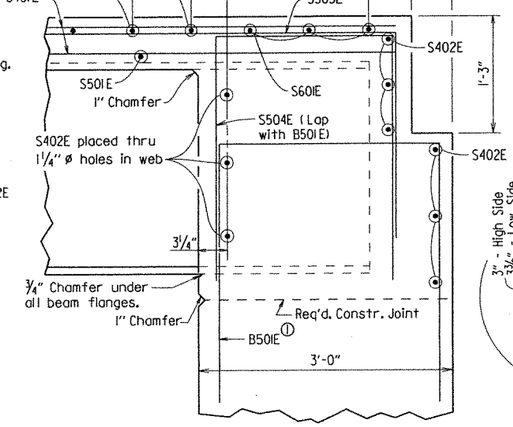


SECTION Y-Y
No Scale

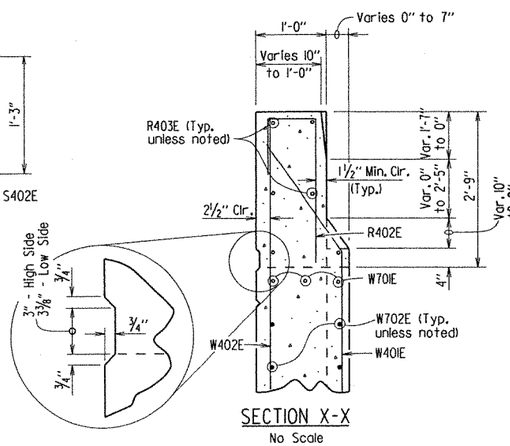


SECTION W-W
No Scale

①See End Bent Details on Dwg. No. 52784 for reinforcing and additional details.



SECTION T-T
No Scale



SECTION X-X
No Scale

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
CARL J. FUSELIER
7/22/12

BRIDGE ENGINEER

SHEET 5 OF 5

DETAILS OF 110'-0" INTEGRAL W-BEAM UNIT GUICE CREEK RELIEF

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

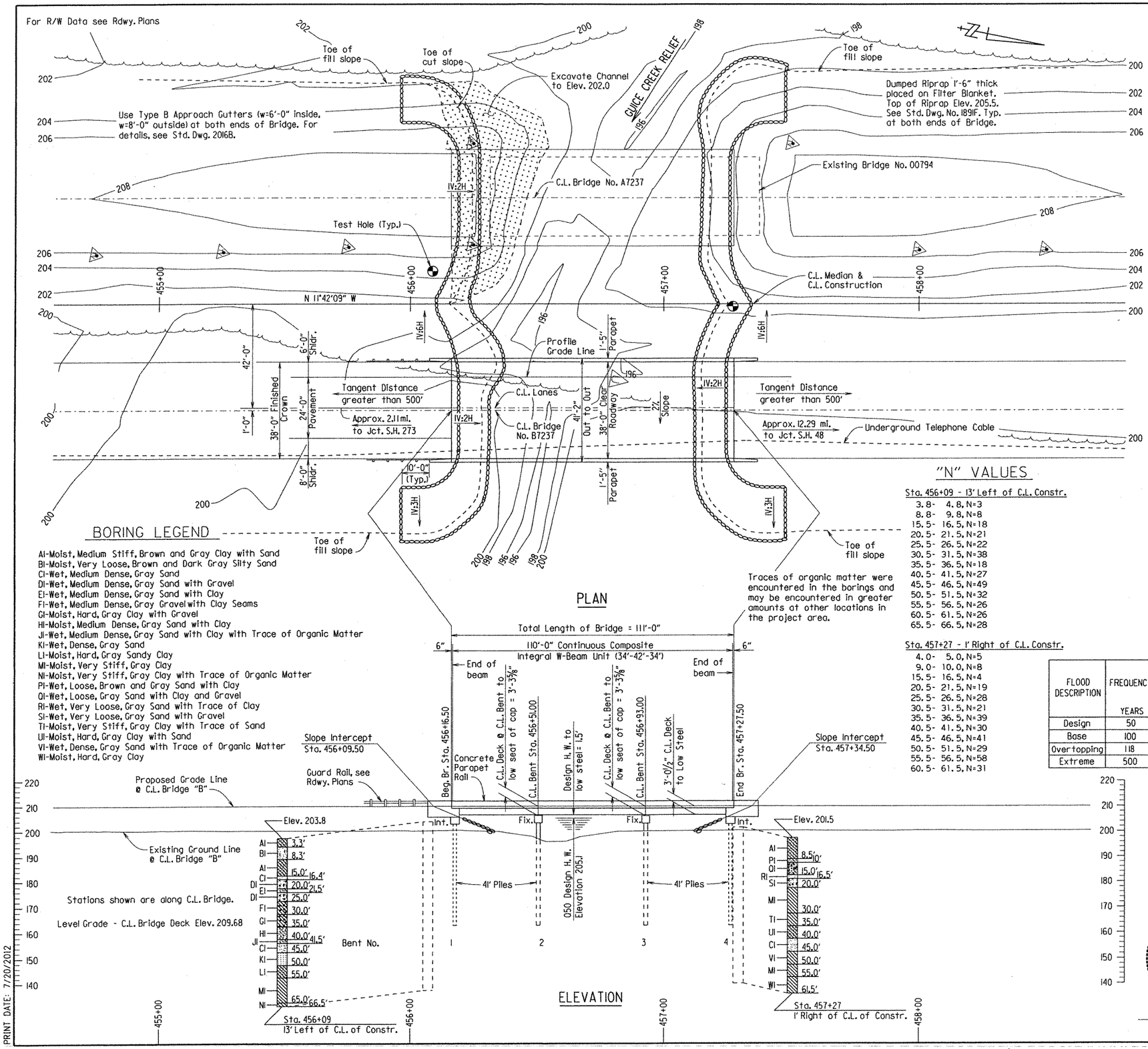
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CHECKED BY: DHP DATE: 7-16-12 SCALE: As shown
DESIGNED BY: CMW DATE: 12/11

BRIDGE NO. A&B7237 DRAWING NO. 52791

PRINT DATE: 7/20/2012

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.		070289	125	365
				①	B7237 - LAYOUT - 52792			

For R/W Data see Rdwy. Plans



BORING LEGEND

Al-Moist, Medium Stiff, Brown and Gray Clay with Sand
Bl-Moist, Very Loose, Brown and Dark Gray Silty Sand
Cl-Wet, Medium Dense, Gray Sand
Dl-Wet, Medium Dense, Gray Sand with Gravel
El-Wet, Medium Dense, Gray Sand with Clay
Fl-Wet, Medium Dense, Gray Gravel with Clay Seams
Gl-Moist, Hard, Gray Clay with Gravel
Hl-Moist, Medium Dense, Gray Sand with Clay
Jl-Wet, Medium Dense, Gray Sand with Clay with Trace of Organic Matter
Kl-Wet, Dense, Gray Sand
Ll-Moist, Hard, Gray Sandy Clay
Ml-Moist, Very Stiff, Gray Clay
Nl-Moist, Very Stiff, Gray Clay with Trace of Organic Matter
Pl-Wet, Loose, Brown and Gray Sand with Clay
Ql-Wet, Loose, Gray Sand with Clay and Gravel
Rl-Wet, Very Loose, Gray Sand with Trace of Clay
Sl-Wet, Very Loose, Gray Sand with Gravel
Tl-Moist, Very Stiff, Gray Clay with Trace of Sand
Ul-Moist, Hard, Gray Clay with Sand
Vl-Wet, Dense, Gray Sand with Trace of Organic Matter
Wl-Moist, Hard, Gray Clay

"N" VALUES

Sta. 456+09 - 13' Left of C.L. Constr.

3.8- 4.8, N=3
8.8- 9.8, N=8
15.5- 16.5, N=18
20.5- 21.5, N=21
25.5- 26.5, N=22
30.5- 31.5, N=38
35.5- 36.5, N=18
40.5- 41.5, N=27
45.5- 46.5, N=49
50.5- 51.5, N=32
55.5- 56.5, N=26
60.5- 61.5, N=26
65.5- 66.5, N=28

Sta. 457+27 - 1' Right of C.L. Constr.

4.0- 5.0, N=5
9.0- 10.0, N=8
15.5- 16.5, N=4
20.5- 21.5, N=19
25.5- 26.5, N=28
30.5- 31.5, N=21
35.5- 36.5, N=39
40.5- 41.5, N=30
45.5- 46.5, N=41
50.5- 51.5, N=29
55.5- 56.5, N=58
60.5- 61.5, N=31

PLAN

ELEVATION

HYDRAULIC DATA

FLOOD DESCRIPTION	FREQUENCY	② TOTAL DISCHARGE	DISCHARGE THRU BRIDGE OPENING	① NATURAL WATER SURFACE ELEVATION	WATER SURFACE ELEVATION W/ BACKWATER
	YEARS	CFS	CFS	FEET	FEET
Design	50	4,400	1,470	205.0	205.2
Base	100	5,440	1,870	205.9	206.1
Overtopping	118	5,600	1,750	206.0	206.3
Extreme	500	8,550	2,300	208.1	208.3

① Unconstricted water surface elevation without structure and roadway approaches.

② Includes Bridge Nos. A7238 & B7238.

Estimated 100-Year backwater elevation with Existing Structures in place is 206.0 ft.

Proposed Low Bridge Member Elevation = 206.6

Drainage area = 18.1 square miles (Includes structures over Guice Creek).

Historical H.W. Elev. = 206.0 ft.

GENERAL NOTES

BENCH MARK: TBM 913 Chiseled Sq. Center HW, 89.21' Lt. of C.L. Constr. Sta. 440+57.44, Elev. 209.35.

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2003 edition) with applicable supplemental specifications and special provisions. Unless otherwise noted, section and subsection numbers in the plans refer to the Construction Specifications.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications 5th Edition (2010), with 2010 interims.

LIVE LOADING: HL-93

SEISMIC ZONE : 2 S_{D1} = 0.244 SITE CLASS = E

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 M31 or M53, GR. 60)	fy = 60,000 psi
Structural Steel (AASHTO M270, Gr. 36)	Fy = 36,000 psi
Structural Steel (AASHTO M270, Gr. 50W)	Fy = 50,000 psi

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

CONCRETE PILING: Piling for Bents 1 and 4 shall be 16" square prestressed concrete and shall be driven to a minimum ultimate bearing capacity of 145 tons per pile. Piling in Bents 2 and 3 shall be 24" square prestressed concrete and shall be driven to a minimum ultimate bearing capacity of 315 tons per pile. All piling shall be driven with an approved air, steam, or diesel hammer. Piling in end bents shall be driven after embankment to bottom of cap is in place. Piling in Bents 1 and 4 shall have a tip elevation of 180 or lower. Piling in Bents 2 and 3 shall have a tip elevation of 171 or lower. Length of piling shown are for estimating quantities and for use in determining payment for cut-off and build-up in accordance with the standard specifications. Drive one 46' test pile in Bent 2 and one 46' test pile in Bent 4.

DRIVING SYSTEM: The driving system approval and the ultimate bearing capacity determination for piling shall be based on the requirements of subsection 805.09(b) "Method B - Wave Equation Analysis (WEAP)". It is estimated that the minimum required rated energy of the hammer to obtain the minimum ultimate bearing capacity on 16" square piles will be 40,000 foot pounds per blow and on 24" square piles shall be 83,000 foot pounds per blow.

PREBORING: Preboring is required for all piling at bents 1 & 4. Prebored holes at Bents 1 and 4 shall have a diameter 6" greater than the greatest cross-sectional dimension of the pile for a depth of 10' below the bottom of the cap. The void space around the pile after completion of driving shall be backfilled with sand or pea gravel. The Contractor shall be responsible for keeping prebored holes free of debris prior to backfilling, which may require the use of temporary casing or other approved methods. Any related cost for backfilling and temporary casing will not be paid for separately but shall be considered subsidiary to the item "Preboring". Preboring will be paid for in accordance with Section 805.

BRIDGE DECK: The concrete bridge deck shall be given a tine finish as specified for final finishing in subsection 802.19 for Class 5 Tined Bridge Roadway Surface Finish.

PIPE UNDER DRAIN: One Pipe Under drain with outlet protectors shall be installed behind each bridge end in accordance with Section 611. Pipe Under drains will not be paid for directly but shall be considered subsidiary to "Unclassified Excavation".

DETAIL DRAWINGS:	DRAWING NO.
End Bents	52784
Intermediate Bents	52785
110' Integral W-Beam Unit	52787 - 52791
Type "B" Special Shoes	52788
Concrete Piling	14964 & 52786
Type B Approach Gutters	2016B

MAINTENANCE OF TRAFFIC: See Roadway Plans.

LAYOUT OF BRIDGE "B" OVER GUICE CREEK RELIEF HWY. 273-PETERS RD. (CR 24) (F) DALLAS COUNTY

ROUTE 167 SEC. 7

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 7510 CARL T. PUSELJER

BRIDGE ENGINEER

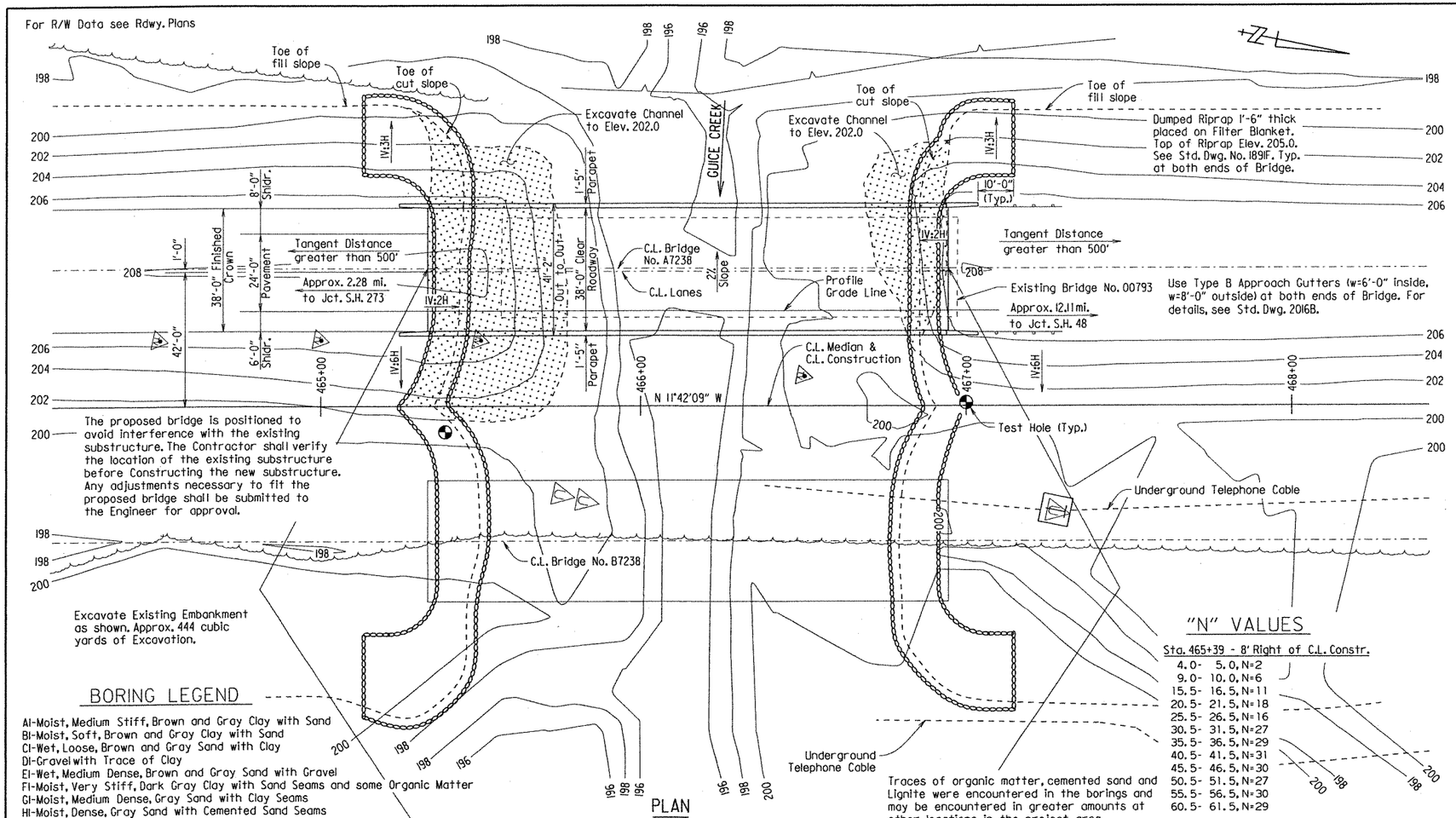
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CHECKED BY: CMJ DATE: 7/16/12 SCALE: 1"=20'
DESIGNED BY: CSA DATE: Sept 2011

BRIDGE NO. B7237 DRAWING NO. 52792

PRINT DATE: 7/20/2012

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.		070289	126	365
				①	A7238	- 070289 -	52793	

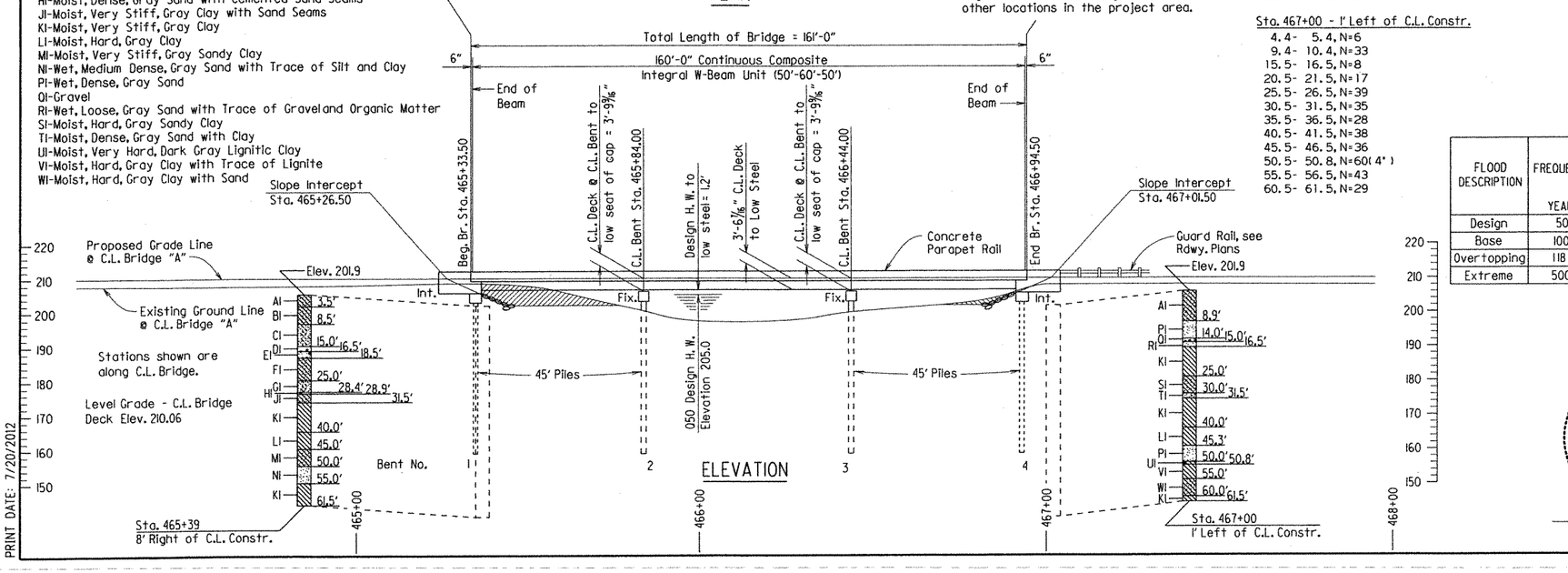
For R/W Data see Rdwy. Plans



BORING LEGEND

AI-Moist, Medium Stiff, Brown and Gray Clay with Sand
BI-Moist, Soft, Brown and Gray Clay with Sand
CI-Wet, Loose, Brown and Gray Sand with Clay
DI-Gravel with Trace of Clay
EI-Wet, Medium Dense, Brown and Gray Sand with Gravel
FI-Moist, Very Stiff, Dark Gray Clay with Sand Seams and some Organic Matter
GI-Moist, Medium Dense, Gray Sand with Clay Seams
HI-Moist, Dense, Gray Sand with Cemented Sand Seams
JI-Moist, Very Stiff, Gray Clay with Sand Seams
KI-Moist, Very Stiff, Gray Clay
LI-Moist, Hard, Gray Clay
MI-Moist, Very Stiff, Gray Sandy Clay
NI-Wet, Medium Dense, Gray Sand with Trace of Silt and Clay
PI-Wet, Dense, Gray Sand
QI-Gravel
RI-Wet, Loose, Gray Sand with Trace of Gravel and Organic Matter
SI-Moist, Hard, Gray Sandy Clay
TI-Moist, Dense, Gray Sand with Clay
UI-Moist, Very Hard, Dark Gray Lignitic Clay
VI-Moist, Hard, Gray Clay with Trace of Lignite
WI-Moist, Hard, Gray Clay with Sand

PLAN



"N" VALUES

Sta. 465+39 - 8' Right of C.L. Constr.

4.0- 5.0, N=2
9.0- 10.0, N=6
15.5- 16.5, N=11
20.5- 21.5, N=18
25.5- 26.5, N=16
30.5- 31.5, N=27
35.5- 36.5, N=29
40.5- 41.5, N=31
45.5- 46.5, N=30
50.5- 51.5, N=27
55.5- 56.5, N=30
60.5- 61.5, N=29

Sta. 467+00 - 1' Left of C.L. Constr.

4.4- 5.4, N=6
9.4- 10.4, N=33
15.5- 16.5, N=8
20.5- 21.5, N=17
25.5- 26.5, N=39
30.5- 31.5, N=35
35.5- 36.5, N=28
40.5- 41.5, N=38
45.5- 46.5, N=36
50.5- 50.8, N=60(4")
55.5- 56.5, N=43
60.5- 61.5, N=29

GENERAL NOTES

BENCH MARK: TBM 913 Chiseled Sq. Center HW, 89.2' Lt. of C.L. Constr. Sta. 440+57.44, Elev. 209.35.

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2003 edition) with applicable supplemental specifications and special provisions. Unless otherwise noted, section and subsection numbers in the plans refer to the Construction Specifications.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications 5th Edition (2010), with 2010 Interims.

LIVE LOADING: HL-93

SEISMIC ZONE : 2 S_{DI} = 0.244 SITE CLASS = E

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 M31 or M53, GR. 60)	fy = 60,000 psi
Structural Steel (AASHTO M270, Gr. 36)	Fy = 36,000 psi
Structural Steel (AASHTO M270, Gr. 50W)	Fy = 50,000 psi

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

CONCRETE PILING: Piling for Bents 1 and 4 shall be 16" square prestressed concrete and shall be driven to a minimum ultimate bearing capacity of 145 tons per pile. Piling in Bents 2 and 3 shall be 24" square prestressed concrete and shall be driven to a minimum ultimate bearing capacity of 315 tons per pile. All piling shall be driven with an approved air, steam, or diesel hammer. Piling in end bents shall be driven after embankment to bottom of cap is in place. Piling in Bents 1 and 4 shall have a tip elevation of 178 or lower. Piling in Bents 2 and 3 shall have a tip elevation of 172 or lower. Length of piling shown are for estimating quantities and for use in determining payment for cut-off and build-up in accordance with the standard specifications. Drive one 50' test pile in Bent 1 and one 50' test pile in Bent 3.

DRIVING SYSTEM: The driving system approval and the ultimate bearing capacity determination for piling shall be based on the requirements of subsection 805.09(b) "Method B - Wave Equation Analysis (WEAP)". It is estimated that the minimum required rated energy of the hammer to obtain the minimum ultimate bearing capacity on 16" square piles will be 40,000 foot pounds per blow and on 24" square piles shall be 83,000 foot pounds per blow.

PREBORING: Preboring is required for all piling at bents 1 & 4. Prebored holes at Bents 1 and 4 shall have a diameter 6" greater than the greatest cross-sectional dimension of the pile for a depth of 10' below the bottom of the cap. The void space around the pile after completion of driving shall be backfilled with sand or pea gravel. The Contractor shall be responsible for keeping prebored holes free of debris prior to backfilling, which may require the use of temporary casing or other approved methods. Any related cost for backfilling and temporary casing will not be paid for separately but shall be considered subsidiary to the item "Preboring". Preboring will be paid for in accordance with Section 805.

BRIDGE DECK: The concrete bridge deck shall be given a tine finish as specified for final finishing in subsection 802.19 for Class S Tined Bridge Roadway Surface Finish.

PIPE UNDER DRAIN: One Pipe Under drain with outlet protectors shall be installed behind each bridge end in accordance with Section 611. Pipe Under drains will not be paid for directly but shall be considered subsidiary to "Unclassified Excavation".

DETAIL DRAWINGS:	DRAWING NO.
End Bents	52794
Intermediate Bents	52795
160' Integral W-Beam Unit	52796 - 52800
Type "B" Special Shoes	52797
Concrete Piling	14964 & 52786
Type B Approach Gutters	2016B

EXISTING BRIDGE: Existing Bridge No. 00793 (Log Mile 6.54) is 28' wide and 141' long and consists of concrete tee beams supported by concrete pile bents.

REMOVAL AND SALVAGE: After Bridge No. B7238 is complete and opened to traffic, the Contractor shall remove existing Bridge No. 00793 in accordance with Section 205. All salvageable guard rail and guard rail posts, as determined by the Engineer, shall remain the property of the Department. The Contractor shall coordinate with the Engineer to provide temporary storage and on site loading onto Department equipment for removal of all salvaged items. All other material from the existing bridge shall become the property of the Contractor.

MAINTENANCE OF TRAFFIC: See Roadway Plans.

HYDRAULIC DATA

FLOOD DESCRIPTION	FREQUENCY	②TOTAL DISCHARGE	DISCHARGE THRU BRIDGE OPENING	①NATURAL WATER SURFACE ELEVATION	WATER SURFACE ELEVATION W/ BACKWATER
	YEARS	CFS	CFS	FEET	FEET
Design	50	4,400	2,930	205.0	205.2
Base	100	5,440	3,570	205.9	206.1
Overtopping	118	5,600	3,850	206.0	206.3
Extreme	500	8,550	6,250	208.1	208.3

① Unconstricted water surface elevation without structure and roadway approaches.

② Includes Bridge Nos. A7237 & B7237.

Estimated 100-Year backwater elevation with Existing Structures in place is 206.0 ft.

Proposed Low Bridge Member Elevation = 206.2

Drainage area = 18.1 square miles (Includes structures over Guice Creek Relief).

Historical H.W. Elev. = 206.0 ft.

STATE OF ARKANSAS
Carl J. Fusselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
7/23/12
CARL J. FUSSELIER

BRIDGE ENGINEER

LAYOUT OF BRIDGE "A" OVER GUICE CREEK
HWY. 273-PETERS RD. (CR 24) (F)
DALLAS COUNTY

ROUTE 167 SEC. 7

ARKANSAS STATE HIGHWAY COMMISSION

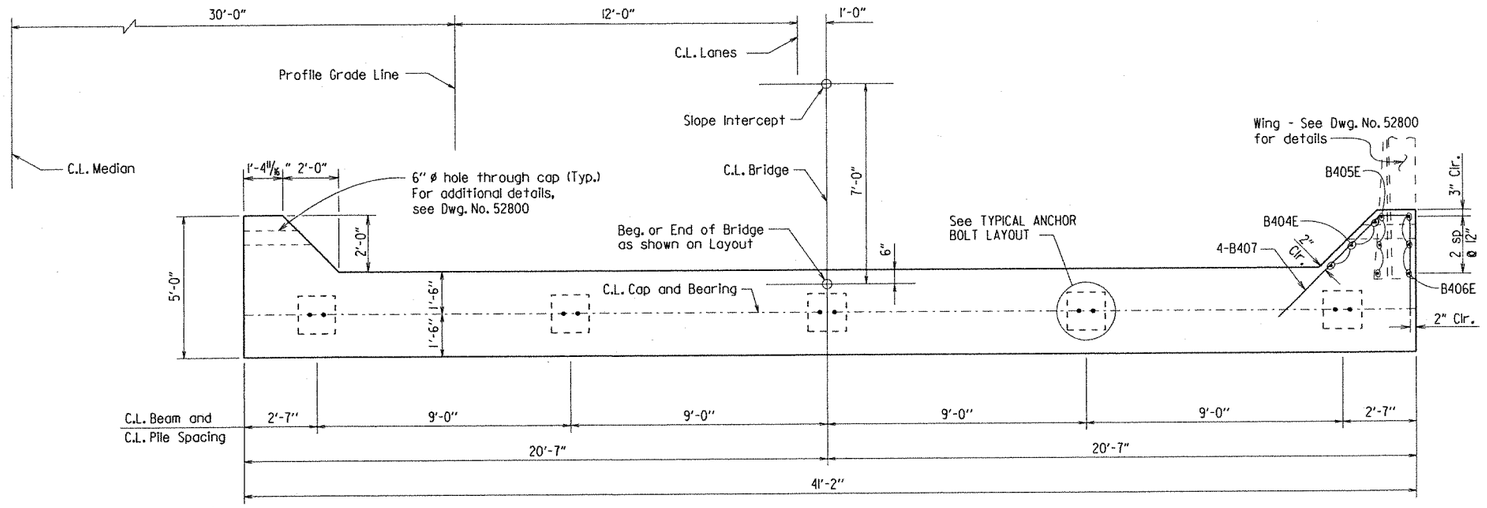
LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 10/20/2011 FILENAME: b070289x5_11.dgn
CHECKED BY: CMW DATE: 7/16/12 SCALE: 1"=20'
DESIGNED BY: CSL DATE: Sept. 2011

BRIDGE NO. A7238 DRAWING NO. 52793

PRINT DATE: 7/20/2012

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.		070289	127	365
				①		A&B7238 - END BENTS - 52794		



PLAN

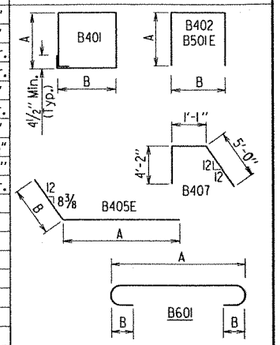
Bridge A - Looking Back
Bridge B - Looking Ahead
Scale: 3/8" = 1'-0"

① Bars B405E and B406E shall be embedded 2'-10" into cap.

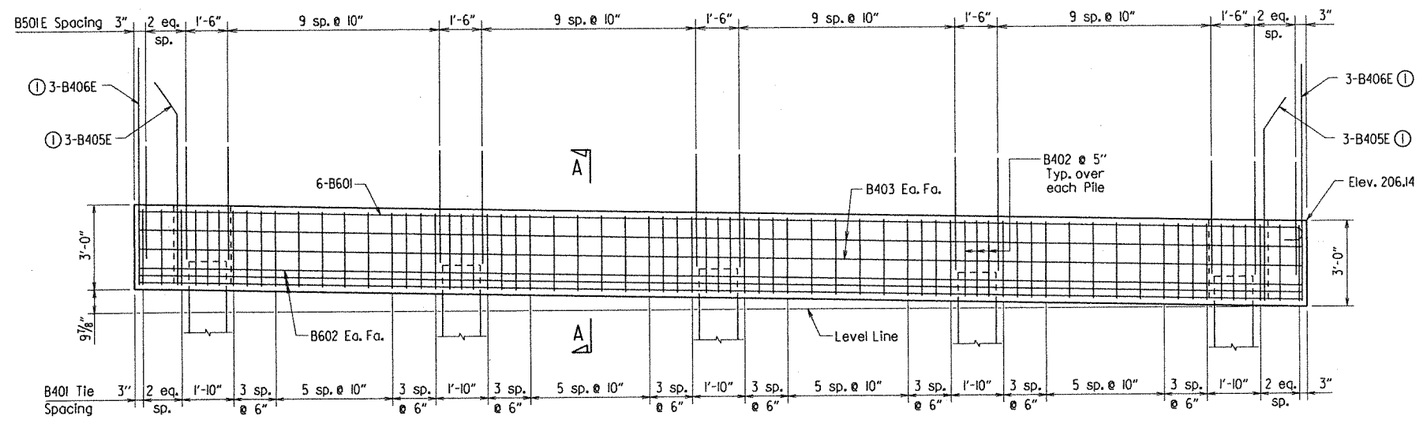
BAR LIST - PER BENT

Mark	No. Req'd.	Length	A	B	Pin Dia.
B401	54	11'-0"	2'-8"	2'-8"	2"
B402	15	7'-10"	2'-8"	2'-8"	2"
B403	4	40'-10"	-	-	Str.
B404E	6	4'-11"	-	-	Str.
B405E	6	7'-9"	6'-7"	1'-2"	2"
B406E	6	8'-11"	-	-	Str.
B407	8	10'-2"	-	-	2"
B501E	46	10'-6"	4'-0"	2'-8"	2 1/2"
B601	6	42'-2"	40'-10"	6"	4 1/2"
B602	6	40'-10"	-	-	Str.

Bending Diagrams

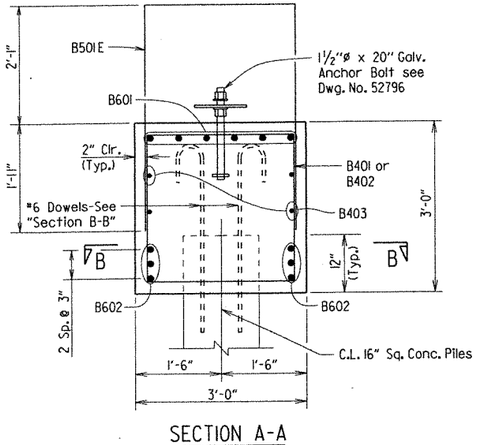


Dimensions are out to out of bars



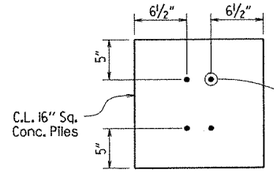
ELEVATION

Bridge A - Looking Back
Bridge B - Looking Ahead
Scale: 3/8" = 1'-0"



SECTION A-A

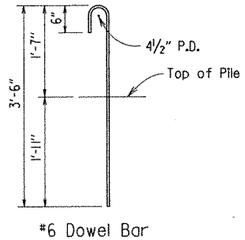
No Scale



SECTION B-B

No Scale

After driving, grill and grout *6 dowels 1'-11" into piles using an approved non-shrink or an epoxy grout listed on the QPL. Diameter of holes and installation procedure shall be as recommended by the grout manufacturer. Dowel bars, drilling and grout shall not be paid for directly but shall be considered subsidiary to the item "Concrete Piling - 16" Square".



#6 Dowel Bar

GENERAL NOTES

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

All reinforcing steel shall conform to AASHTO M 31 or M 53, Gr. 60. (Yield strength = 60,000 psi.)

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

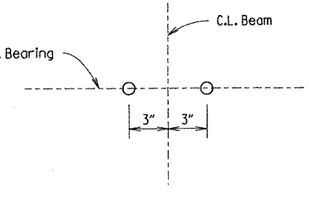
For anchor bolt details, see Dwg. No. 52796.

Bars with "E" suffix are Epoxy Coated.

Dowel bars in piles shall be located in such a way to avoid interference with Anchor Bolts.

Granular backfill and pipe underdrain required behind end bent caps. See Dwg. No. 52796.

For additional information, see Layout.



TYPICAL ANCHOR BOLT LAYOUT

3/4" = 1'-0"

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7510
7/23/12
CARL J. FUSELIER

BRIDGE ENGINEER

DETAILS OF BENTS 1 AND 4 GUICE CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

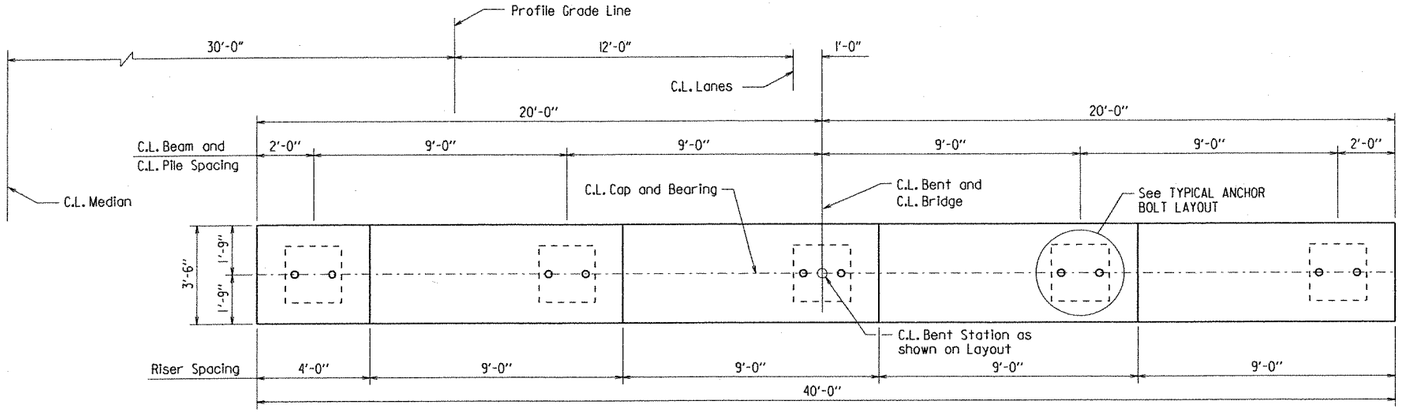
LITTLE ROCK, ARK.

DRAWN BY: CMW DATE: 04/25/2012 FILENAME: b070289_bi.dgn
CHECKED BY: DHP DATE: 7-16-12 SCALE: As Shown
DESIGNED BY: CMW DATE: 4/12

BRIDGE NO. A&B7238 DRAWING NO. 52794

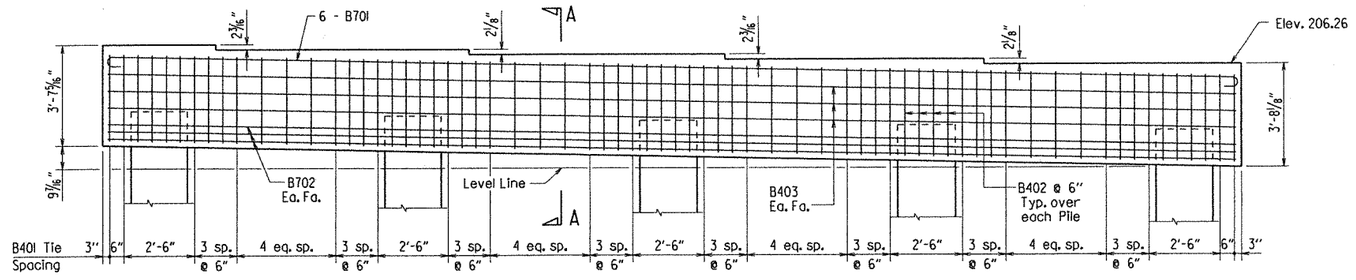
PRINT DATE: 7/16/2012

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.		070289	128	365
				(1)		A&B7238 - INT. BENTS - 52795		



PLAN

Bridge A - Looking Back
Bridge B - Looking Ahead
Scale: 3/8" = 1'-0"

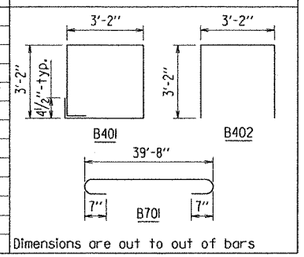


ELEVATION

Bridge A - Looking Back
Bridge B - Looking Ahead
Scale: 3/8" = 1'-0"

BAR LIST - PER BENT

Mark	No. Req'd.	Length	Pin Dia.	Bending Diagrams
B401	48	13'-0"	2"	
B402	20	9'-4"	2"	
B403	6	39'-8"	Str.	
B701	6	41'-4"	5 1/4"	
B702	6	39'-8"	Str.	



Dimensions are out to out of bars

GENERAL NOTES:

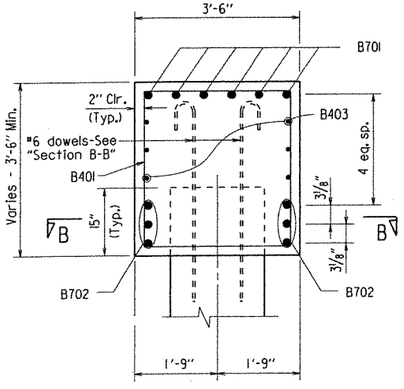
All concrete shall be Class "S" and be poured in the dry. All exposed corners are to be chamfered 3/4" unless otherwise noted.

All reinforcing steel shall conform to AASHTO M31 or M53, Grade 60.

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, see Dwg. No. 52797.

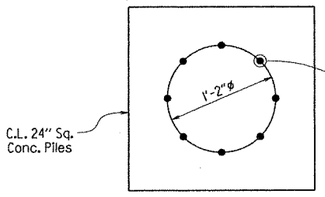
Dowel bars in piles shall be located in such a way to avoid interference with Anchor Bolts.

For additional information, See Layout.



SECTION A-A

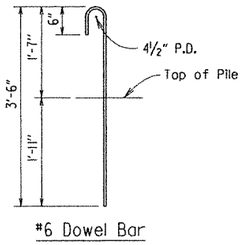
No Scale



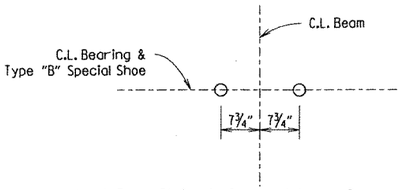
After driving, grill and grout #6 dowels 1'-11" into piles using an approved non-shrink or an epoxy grout listed on the OPL. Diameter of holes and installation procedure shall be as recommended by the grout manufacturer. Dowel bars, drilling and grout shall not be paid for directly but shall be considered subsidiary to the item "Concrete Piling - 24" Square".

SECTION B-B

No Scale



#6 Dowel Bar



For details of Type "B" Special Shoe and Anchor Bolts, see Dwg. No. 52797.

TYPICAL ANCHOR BOLT LAYOUT

3/4" = 1'-0"

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7510
7/23/12
CARL J. FUSELIER

BRIDGE ENGINEER

DETAILS OF BENTS 2 AND 3 GUICE CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: CMW DATE: 04/25/2012 FILENAME: b070289_b2.dgn
CHECKED BY: DHP DATE: 7-16-12 SCALE: As Shown
DESIGNED BY: CMW DATE: 4/12

BRIDGE NO. A&B7238 DRAWING NO. 52795

PRINT DATE: 7/16/2012

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.		070289	129	365
				(1) A&B7238		SPAN DETAILS		52796

SLAB REINFORCING

Transverse:
S502E @ 15" o.c. bent up over beams
S601E @ 15" o.c. in top
S501E @ 15" o.c. in bottom
S701E @ 15" o.c. in top at both gutterlines - placed around ends of S502E. See "REINFORCING PLAN", Dwg. No. 52798

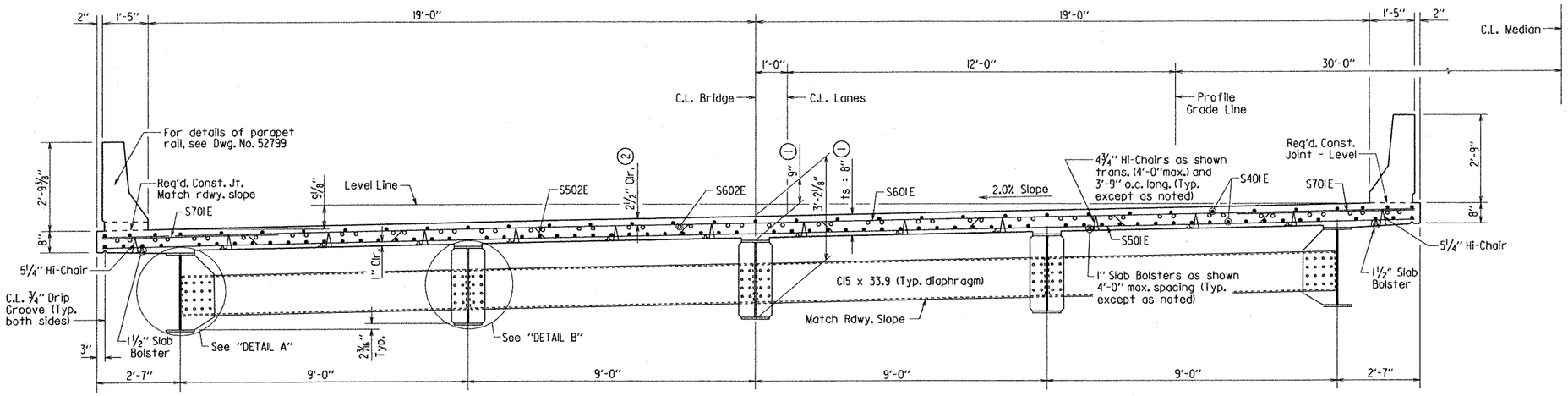
Longitudinal:
S401E as shown (18" max.)
S602E as shown over int. supports (see Reinf. Plan)
S503E as shown at ends of unit (see Reinf. Plan)

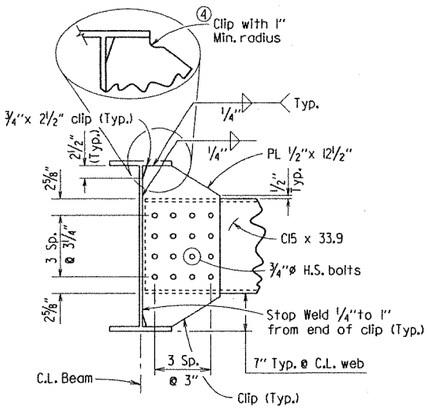
At Contractor's Option, in lieu of providing bar S502E, one #5 bar top and bottom may be substituted for each bar. Payment for reinforcing will be based on the weight of bar S502E. Bars in top and bottom shall be Epoxy Coated.

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

(1) See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE."

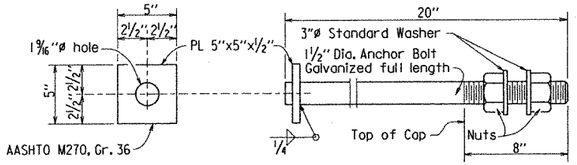
(2) Tolerance: Minus = 1/4"; Plus equal to the amount of slab thickening used to meet slab thickness tolerance. See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE."





DETAIL A
No Scale

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

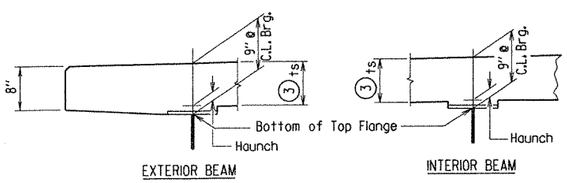


Anchor Bolts and Nuts to be according to subsection 807.07. Washers shall be a standard washer. Anchor Bolts, Washers, and Nuts shall be paid for at the unit price bid for "Structural Steel in Beam Spans (M270, Gr. 50W)". All Anchor Bolts shall be Grade 55.

Use lower nut and washer to adjust to grade. Snug tight top nut and washer after grade is adjusted.

ANCHOR BOLT DETAIL FOR END BENTS
No Scale

NOTE: ts = Slab thickness as shown in "Typical Roadway Section"



(3) 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.

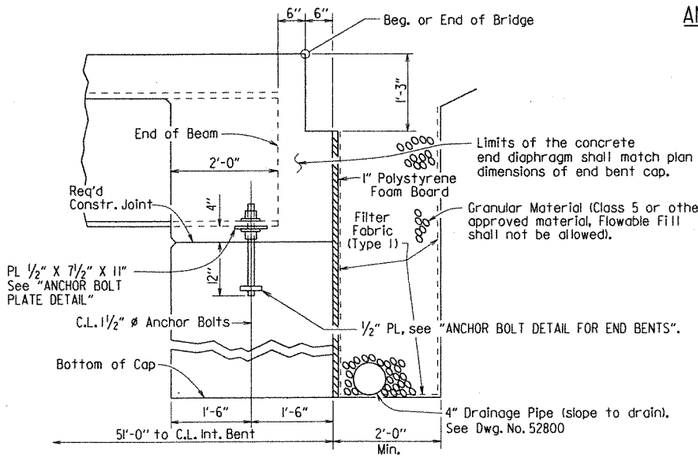
Haunch dimension may vary within the following limits to maintain the grade and slab thickness tolerance : Minimum - occurs when top flange contacts bottom reinforcing steel; Maximum - top flange thickness plus 1 3/4". No increase in concrete and structural steel quantities will be made to maintain tolerances.

Tolerances shown are applicable only when removable deck forming is used. See Std. Dwg. No. 149911 for tolerances when permanent steel deck forms are used. Payment for concrete shall be based on removable deck forming.

ADJUSTMENT FOR SLAB THICKNESS TOLERANCE
No Scale

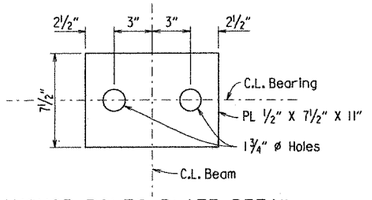
TYPICAL ROADWAY SECTION

Bridge A - Looking Ahead
Bridge B - Looking Back
Scale: 1/2" = 1'-0"



SECTION AT END BENT
No Scale

For additional details of pipe under drain see Std. Dwg. PU-1and Section 611 of the Standard Specifications. Pipe under drains, outlet protectors, granular materials, drain pipe, filter fabric and polystyrene foam board will not be measured or paid for separately, but will be considered subsidiary to the unit price bid for "Unclassified Excavation".

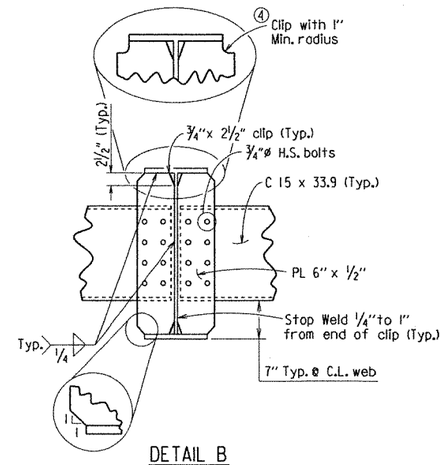


ANCHOR BOLTS PLATE DETAIL
No Scale

TABLE FOR WELD

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

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.



DETAIL B
No Scale

STATE OF ARKANSAS
Carl E. Ausley
REGISTERED PROFESSIONAL ENGINEER
No. 7510
CARL E. FUSELIER
7/23/12

BRIDGE ENGINEER

SHEET 1 OF 5

DETAILS OF 160'-0" INTEGRAL W-BEAM UNIT GUICE CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

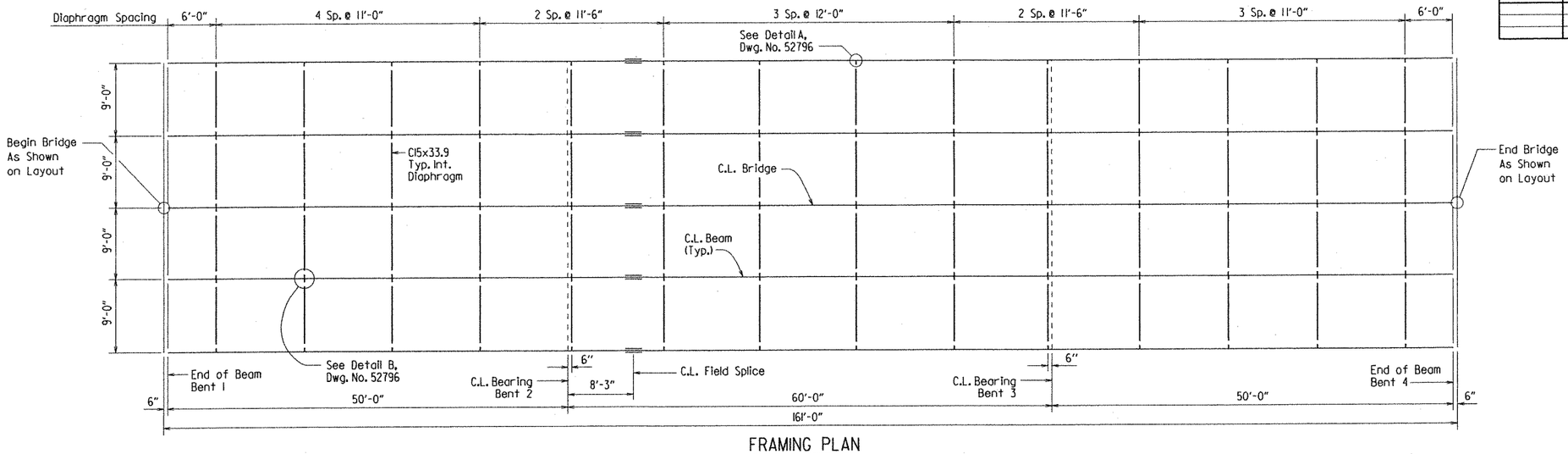
LITTLE ROCK, ARK.

DRAWN BY: CMW DATE: 12/21/2011 FILENAME: b070289_sl.dgn
CHECKED BY: DHP DATE: 7-16-12 SCALE: As shown
DESIGNED BY: CMW DATE: 12/11

BRIDGE NO. A&B7238 DRAWING NO. 52796

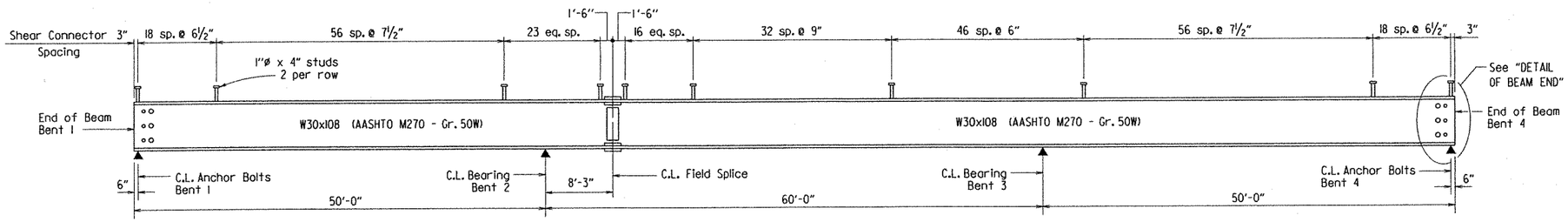
PRINT DATE: 7/16/2012

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.		070289	130	365
				(1)	A&B7238	SPAN DETAILS		52797



FRAMING PLAN

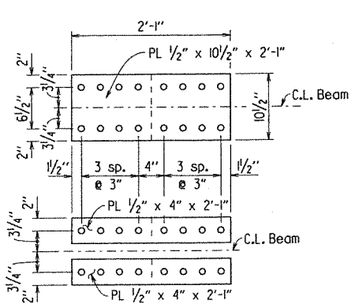
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TYPICAL BEAM ELEVATION

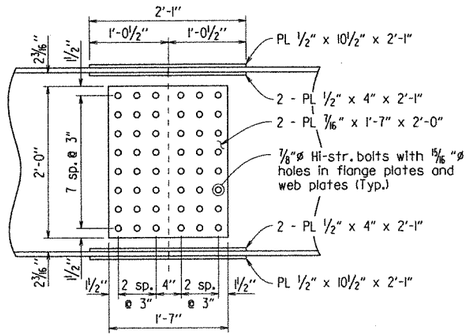
No Scale

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



FLANGE SPLICE

Top & Bottom

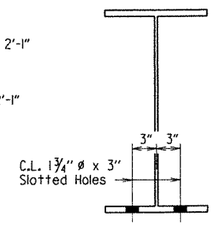


WEB SPLICE

DETAILS OF FIELD SPLICE

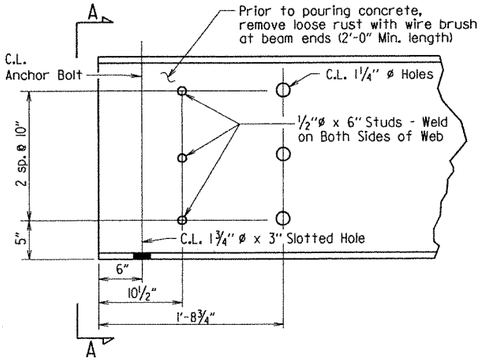
No Scale

All field splice plates shall be AASHTO M270, Gr. 50W
All field splice bolts shall be ⅞"ø H.S. Bolts
All field splice bolt holes shall be 15/16 "ø



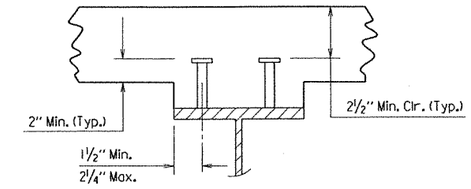
VIEW A-A

No Scale



DETAIL OF BEAM END

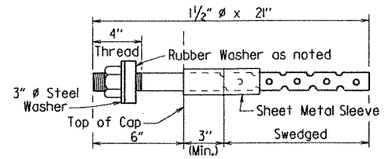
No Scale



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

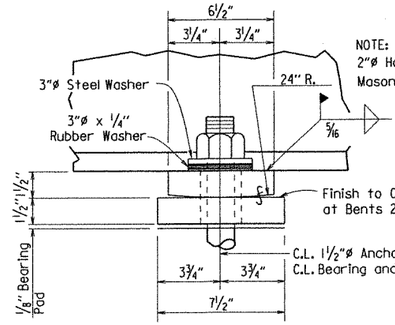


Anchor Bolts, Nuts and Washers to be according to subsection 807.07. Indentations shall be circular with rounded bottoms and staggered as shown above. Rubber washer shall be closed cell expanded rubber, meeting the requirements of ASTM D1056 - 85 2B2 E2, and shall be considered subsidiary to the item of "Structural Steel in Beam Spans (M270, Gr. 50W)". Anchor Bolts, Nuts and Washers shall be paid for at the unit price bid for "Structural Steel in Beam Spans (M270, Gr. 50W)". Anchor bolts shall be Grade 55.

Anchor Bolts may be cast in place or drilled and grouted into place. If Anchor Bolts are to be cast in place, the Galvanized Sheet Metal Sleeves will not be required. If Anchor Bolts are to be drilled and grouted in place, the Galvanized Sheet Metal Sleeves shall be cast in place as shown. Sleeves shall be dry packed with styrofoam, urethane foam or approved equal prior to pouring of concrete. After pouring of the cap and prior to erection of Structural Steel, the dry pack shall be removed and holes for the anchor bolts shall be accurately drilled into the masonry. Bolts placed in drilled holes shall be accurately set and fixed using a GPL 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)."

ANCHOR BOLT DETAIL FOR INTERMEDIATE BENTS

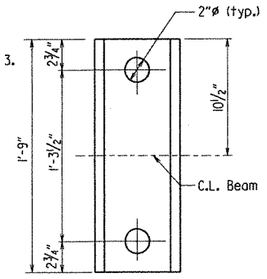
BENTS: 2 and 3
No Scale



NOTE: Plates for Type "B" Special Shoes shall be M270, GR. 50W.

ELEVATION TYPE "B" SPECIAL SHOE

BENTS: 2 and 3
No Scale



PLAN TYPE "B" SPECIAL SHOE

BENTS: 2 and 3
No Scale

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
7/23/12
CARL J. FUSELIER

BRIDGE ENGINEER

SHEET 2 OF 5

DETAILS OF 160'-0" INTEGRAL W-BEAM UNIT

GUICE CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: CMW	DATE: 12/21/2011	FILENAME: b070289_sl.dgn	
CHECKED BY: DHP	DATE: 7-16-12	SCALE: As shown	
DESIGNED BY: CMW	DATE: 12/11		

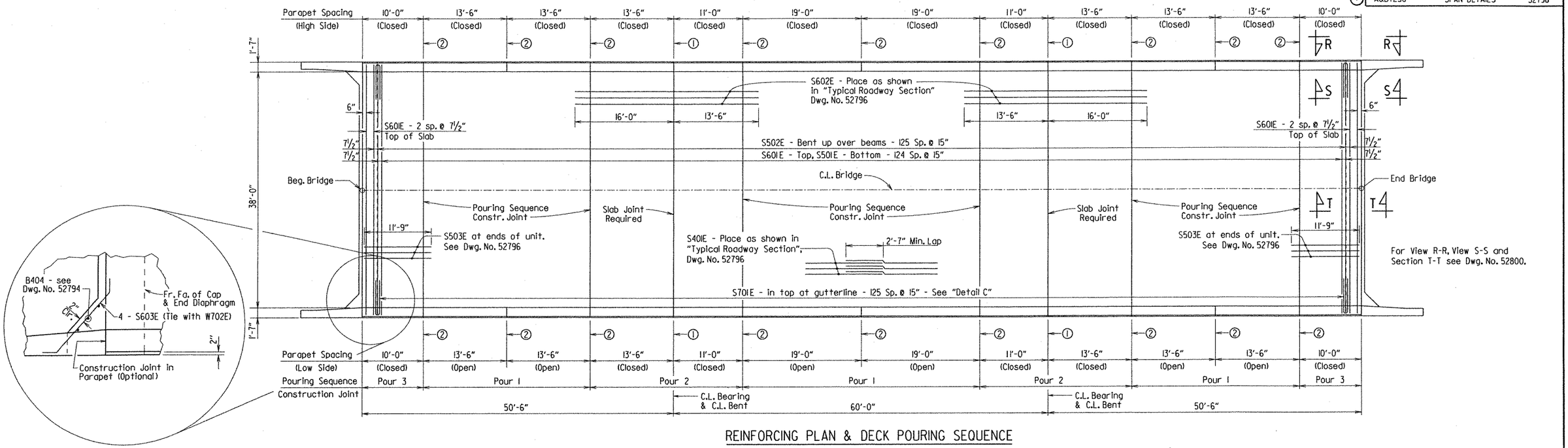
BRIDGE NO. A&B7238 DRAWING NO. 52797

PRINT DATE: 7/16/2012

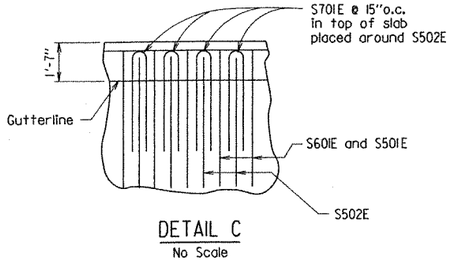
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070289	131	365
				(1)	A&B7238	SPAN DETAILS		52798

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

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



REINFORCING PLAN & DECK POURING SEQUENCE



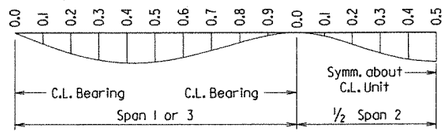
DETAIL C
No Scale

Pours with the same number may be placed simultaneously or separately. All Pours (1) must be placed before Pours (2) can be placed. All Pours (2) must be placed before Pours (3). 48 hours shall elapse between the end of a pour and the start of the next pour. 72 hours shall elapse between the end of a pour and the start of an adjacent pour.

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

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

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



DEAD LOAD DEFLECTIONS DIAGRAM (TYP.)

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.

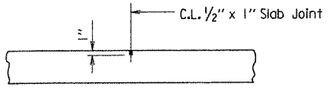
TABLE OF DEAD LOAD DEFLECTIONS (INCHES)

Span	Point of Deflection	Structural Steel		Structural Steel + Slab		Structural Steel + Slab + Parapet	
		Interior	Exterior	Interior	Exterior	Interior	Exterior
1 or 3	0.0	0.000	0.000	0.000	0.000	0.000	0.000
	0.1	0.024	0.021	0.172	0.138	0.173	0.140
	0.2	0.043	0.039	0.317	0.255	0.321	0.262
	0.3	0.057	0.051	0.417	0.335	0.424	0.346
	0.4	0.063	0.056	0.461	0.369	0.470	0.383
	0.5	0.061	0.055	0.446	0.357	0.455	0.371
	0.6	0.052	0.046	0.378	0.303	0.385	0.315
	0.7	0.038	0.034	0.273	0.219	0.277	0.226
	0.8	0.021	0.019	0.153	0.122	0.154	0.124
	0.9	0.007	0.006	0.048	0.039	0.047	0.037
½ Span 2	0.0	0.000	0.000	0.000	0.000	0.000	0.000
	0.1	0.007	0.006	0.055	0.044	0.064	0.058
	0.2	0.023	0.021	0.181	0.146	0.202	0.180
	0.3	0.040	0.037	0.317	0.255	0.349	0.306
	0.4	0.053	0.049	0.416	0.334	0.456	0.398
	0.5	0.058	0.053	0.452	0.363	0.494	0.431

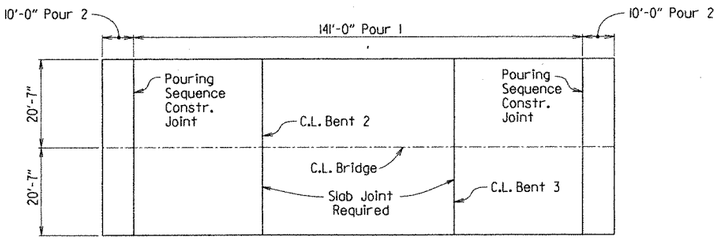
C.L. Unit

Table is symmetrical about C.L. Unit

Use Type 3, 4, or 6 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 SEAE) Concrete-Bridge. Slab joints shall extend to the outside edge of the deck slab. Slab joints shall be installed before the parapet railing is poured. If slab joints are to be sawed, they shall be sawed as soon as the concrete has sufficiently set to allow sawing of the joint without damage to the slab. Slab joints shall be placed at all pouring sequence construction joints and required slab joint locations. Slab joints shall align with parapet open joints.



SLAB JOINT DETAIL
No Scale



ALTERNATE POURING SEQUENCE
No Scale

STATE OF ARKANSAS
Carl J. Pusellier
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CARL J. PUSELLIER

BRIDGE ENGINEER

SHEET 3 OF 5

DETAILS OF 160'-0" INTEGRAL W-BEAM UNIT GUICE CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: CMW DATE: 12/21/2011 FILENAME: b070289_sl.dgn

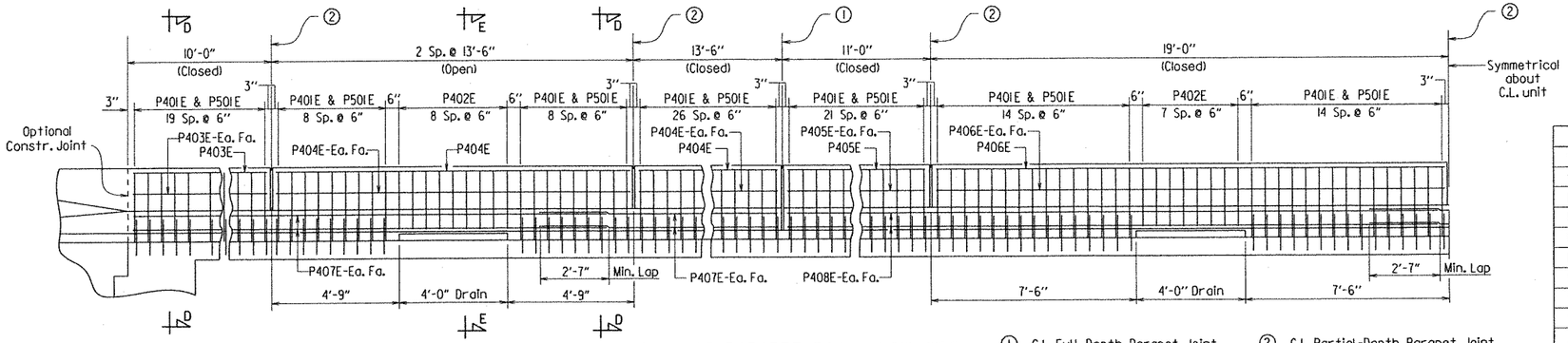
CHECKED BY: DHP DATE: 7-16-12 SCALE: 1/8" = 1'-0" or as shown

DESIGNED BY: CMW DATE: 12/11

BRIDGE NO. A&B7238 DRAWING NO. 52798

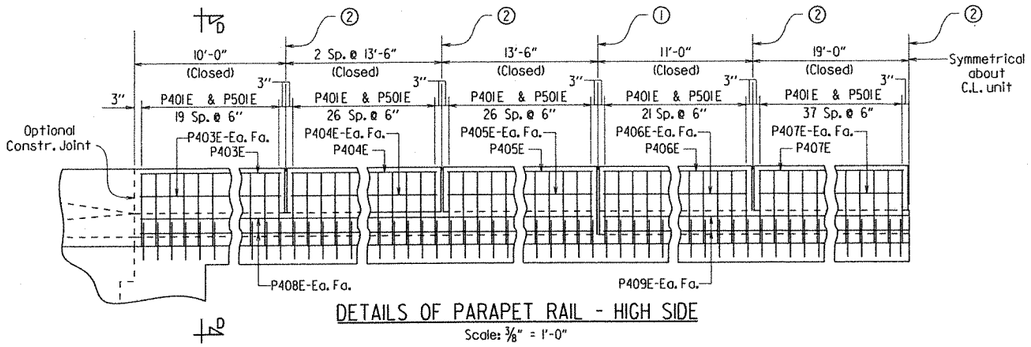
PRINT DATE: 7/16/2012

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.		070289	132	365
				①	A&B7238	SPAN DETAILS		52799



DETAILS OF PARAPET RAIL - LOW SIDE

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

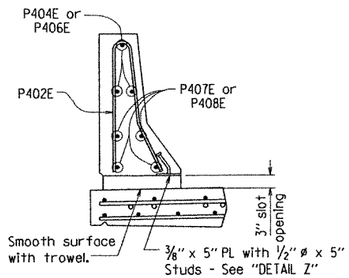


DETAILS OF PARAPET RAIL - HIGH SIDE

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

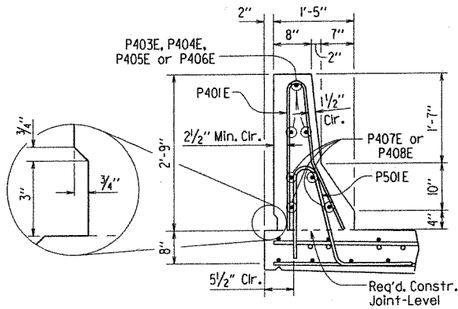
① C.L. Full-Depth Parapet Joint (1/4" to 1" Max.) as shown in "Reinforcing Plan & Deck Pouring Sequence" Dwg. No. 52798. Stop 4" from top of slab.

② C.L. Partial-Depth Parapet Joint (1/4" to 1" Max.) as shown in "Reinforcing Plan & Deck Pouring Sequence" Dwg. No. 52798. Stop 1'-2" from top of slab.



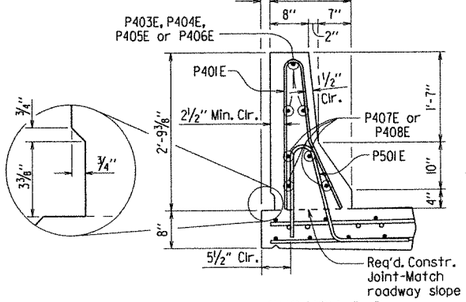
SECTION E-E

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



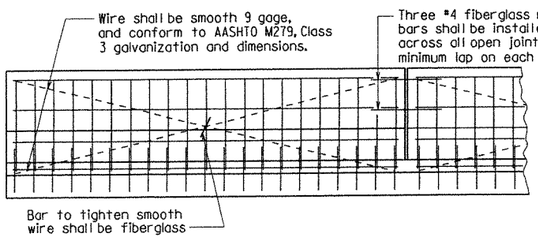
SECTION D-D

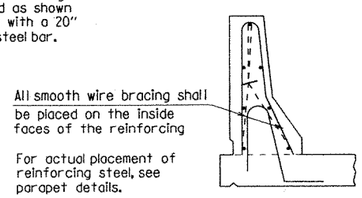
High Side
Scale: 3/4" = 1'-0"



SECTION D-D

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



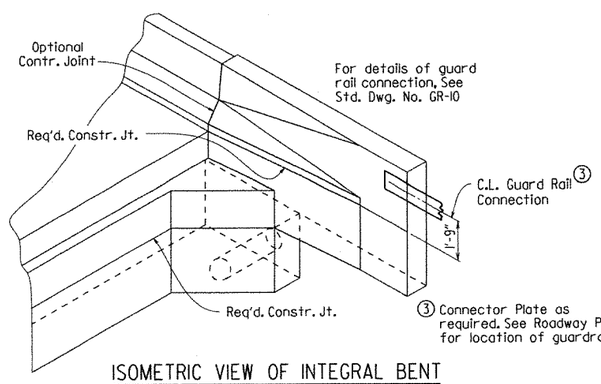


All panels shall be braced as required to prevent racking. All open joints shall be sawed as soon as practical to a minimum width of 1/4". To control cracking before sawing all joints must be grooved before the concrete is set. Sawing of the joints must be controlled so it will follow the grooved joint.

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

DETAILS OF OPTIONAL SLIPFORMING OF CONCRETE PARAPET RAIL

No Scale



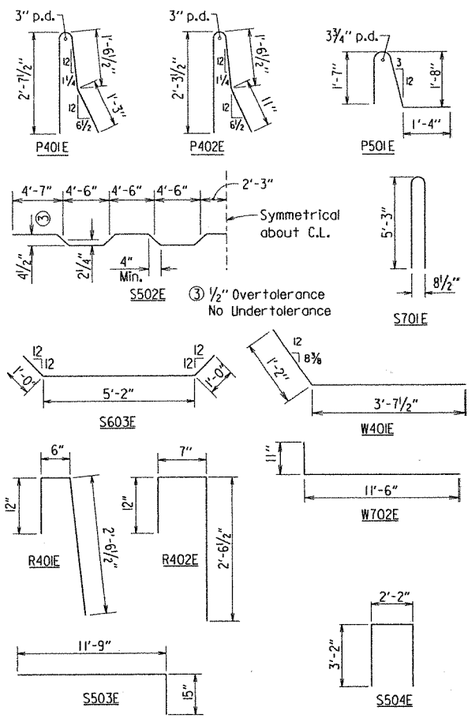
ISOMETRIC VIEW OF INTEGRAL BENT

No Scale

BAR LIST - PER BRIDGE

MARK	NO. REQ'D.	LENGTH	P.D.
S401E	515	34'-3"	Str.
S402E	18	40'-10"	Str.
P401E	592	5'-6"	3"
P402E	52	4'-10"	3"
P403E	12	9'-8"	Str.
P404E	36	13'-2"	Str.
P405E	12	10'-8"	Str.
P406E	12	18'-8"	Str.
P407E	32	26'-5"	Str.
P408E	16	31'-2"	Str.
S501E	125	40'-10"	Str.
S502E	126	41'-6"	Str.
S503E	112	12'-11"	2 1/2"
S504E	92	7'-10"	2 1/2"
P501E	592	4'-8"	3 3/4"
S601E	131	40'-10"	Str.
S602E	112	29'-6"	Str.
S603E	16	7'-2"	4 1/2"
S701E	252	10'-6"	Str.
R401E	16	3'-11"	2"
R402E	16	4'-0"	2"
R403E	24	9'-8"	Str.
R404E	24	2'-0"	Str.
R601E	32	5'-11"	Str.
R602E	12	5'-0"	Str.
W401E	20	4'-10"	2"
W402E	20	5'-11"	Str.
W701E	12	11'-6"	Str.
W702E	48	12'-3"	5 1/4"

BENDING DIAGRAMS

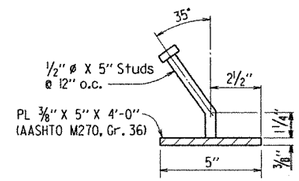


Dimensions are out to out of bars.

NOTE: Bars marked with an "E" suffix shall be epoxy coated.

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

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



DETAIL Z

No Scale

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BRIDGE ENGINEER

SHEET 4 OF 5

DETAILS OF 160'-0" INTEGRAL W-BEAM UNIT GUICE CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: CMW DATE: 12/21/2011 FILENAME: b070289_sl.dgn
CHECKED BY: DHP DATE: 7-16-12 SCALE: As shown
DESIGNED BY: CMW DATE: 12/11

BRIDGE NO. A&B7238 DRAWING NO. 52799

PRINT DATE: 7/16/2012

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.		070289	133	365
				① A&B7238		SPAN DETAILS		52800

GENERAL NOTES

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2003 Edition) with applicable supplemental specifications and special provisions.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications 5th Edition (2010), with 2010 Interims.

LIVE LOADING: HL-93

MATERIALS AND STRENGTHS:
Concrete: All concrete shall be Class S(AE) with a minimum 28 day strength f'c = 4000 psi.
Reinforcing Steel: Reinforcing steel shall conform to AASHTO M31 or M53, Grade 60 (Yield Strength = 60,000 psi.).
Structural Steel: Structural steel shall conform to AASHTO M270, Gr. 50W (Fy = 50,000 psi.) or AASHTO M270, Gr.36 (Fy = 36,000 psi.).

STRUCTURAL STEEL:
All Structural Steel shall be AASHTO M270, Gr. 50W unless otherwise noted. All structural steel shall be paid for as "Structural Steel in Beam Spans (M270, Gr.50W)". Structural Steel completely embedded in concrete may be AASHTO M270. Gr. 36 or Gr. 50. AASHTO M270, Gr.50W steel shall not be painted. All exposed surfaces shall be cleaned in accordance with subsection 807.84(e) unless noted otherwise.

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

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

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.

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

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

All beams shall be blocked in their true position in the shop with the webs horizontal in groups as specified in subsection 807.54 (b)(1). The camber, length of sections, distance between bearings, and opening of joints shall be measured with thebeams in their true position and this information shall become part of the permanent record of this job. The component parts shall be match marked in this assembly and those marks shall be shown on the erection diagram. All beam dimensions are based on a temperature of 60 degrees F. A tolerance of 1/4" (plus or minus) allowed for camber.

Field connections shall be bolted with high-strength bolts. Bolts shall be 3/4"ø, except as noted, and open holes shall be 15/16 "ø unless otherwise noted. Holes for 3/4"ø bolts may be 15/16 "ø if a washer is supplied for use under both the nut and the head of the bolt. For field splices, bolts shall be 7/8"ø bolts. Open holes shall be 15/16 "ø. Bolt spacing shall be 3" for 7/8"ø bolts unless otherwise noted. Bolts shall be placed with heads on the outside face of the exterior beam web and on the bottom of the beam flanges.

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

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

Bearings shall be seated in accordance with subsection 807.66. This work and material will not be paid for directly but will be considered subsidiary to the item "Structural Steel in Beam Spans (M270, Gr. 50W)".

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

CONCRETE:
All concrete shall be Class S(AE) with a minimum 28 day compressive strength f'c = 4000 psi. Concrete shall be poured in the dry and all exposed corners to be chamfered 3/4" 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. 14991 for allowable modifications and for tolerances when Permanent Steel Bridge Deck Forms are used. Concrete in bridge superstructure shall be placed, consolidated, and screeded off for the entire pour before any concrete has taken its initial set. This may require the use of a retarding agent. The concrete diaphragms at end bents shall be poured monolithic with the slab.

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

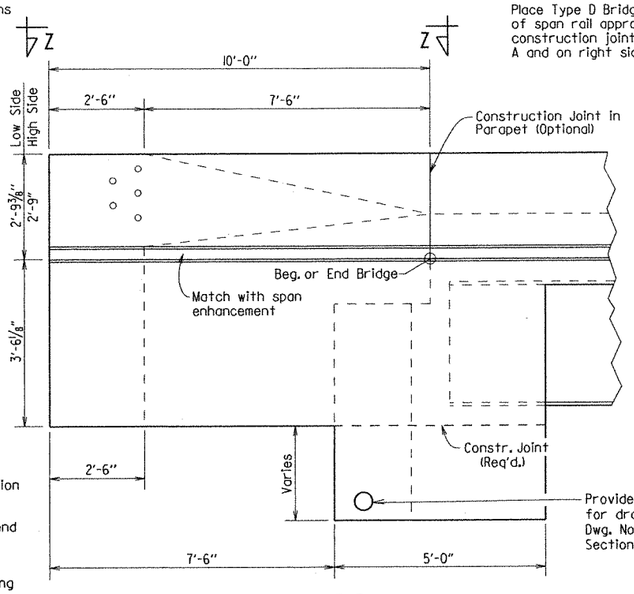
Removable forms shall be used for concrete diaphragms.

CLASS I PROTECTIVE SURFACE TREATMENT: Class I protective surface treatment shall be applied to the roadway surface and to the roadway face and top of the concrete parapet rail.

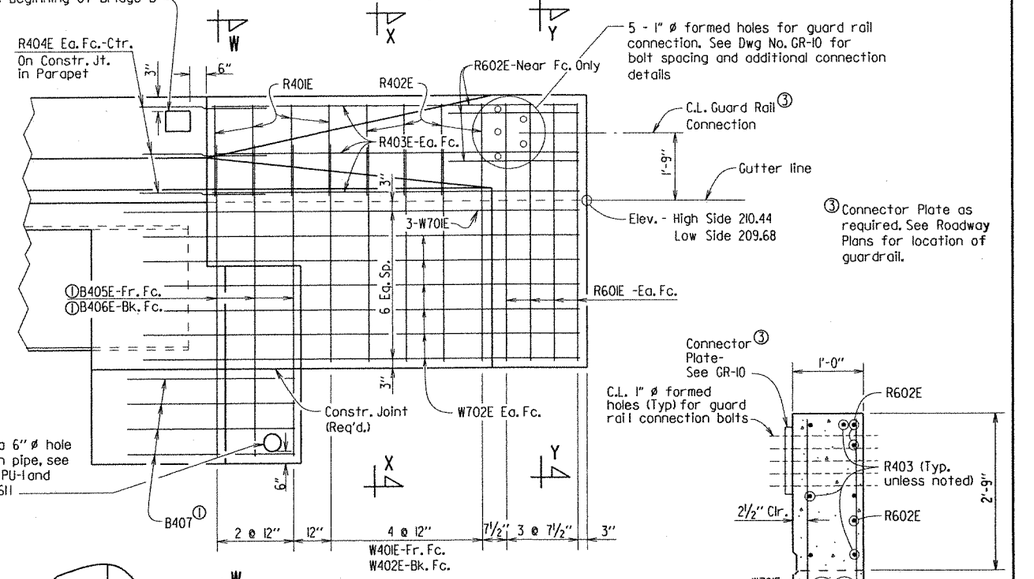
LOAD DISTRIBUTION:
Dead Load:

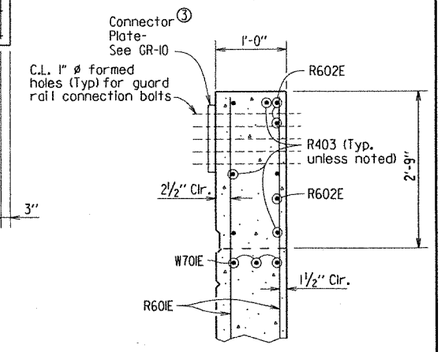
A. To W-Beam	Beam No.		
	Beam 1 & 5	708	plf + Wt. of Structural Steel
	Beam 2, 3 & 4	900	plf + Wt. of Structural Steel
B. To Composite Beam	Beam No.		
	Beam 1 & 5	377	plf ②
	Beam 2, 3 & 4	312	plf ②

② Includes 182 plf future wearing surface.

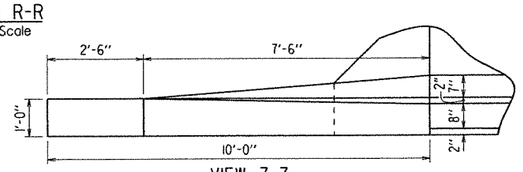


Place Type D Bridge Name Plate on front face of span rail approx. 2'-0" from optional construction joint on left side End of Bridge A and on right side Beginning of Bridge B





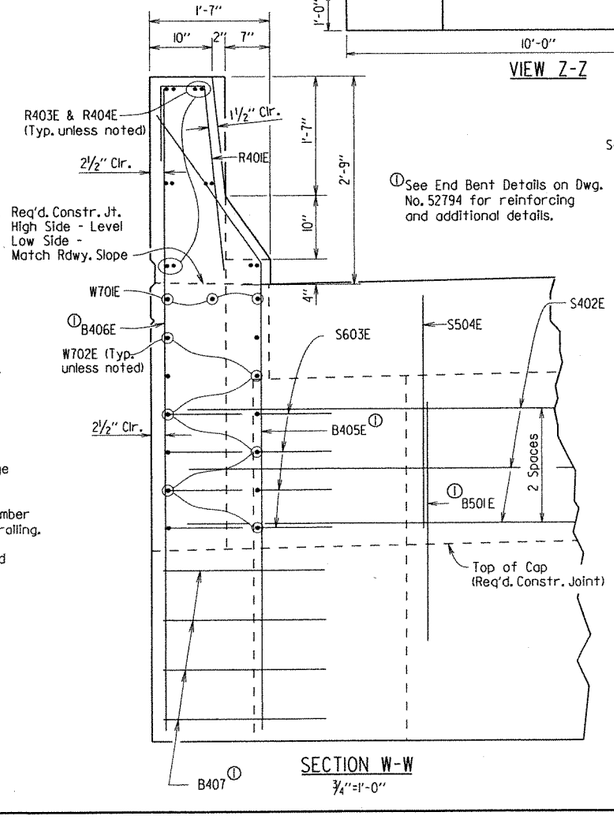
SECTION Y-Y
No Scale



VIEW Z-Z

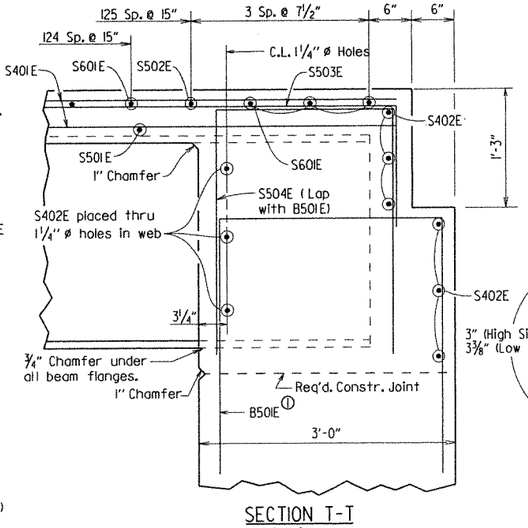
VIEW R-R
No Scale

VIEW S-S
1/2" = 1'-0"

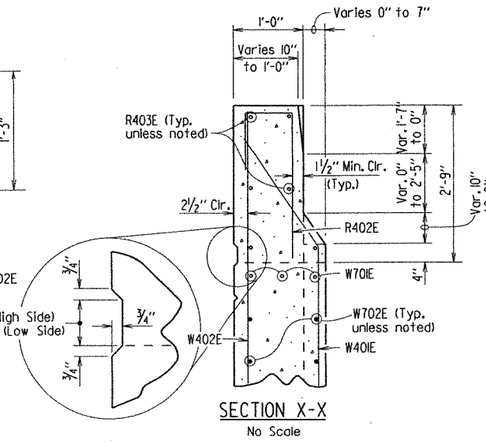


SECTION W-W
3/4"=1'-0"

①See End Bent Details on Dwg. No. 52794 for reinforcing and additional details.



SECTION T-T
No Scale



SECTION X-X
No Scale

STATE OF ARKANSAS
Carl J. Puseller
REGISTERED PROFESSIONAL ENGINEER
No. 7510
CARL J. PUSELLER
7/23/12

BRIDGE ENGINEER

SHEET 5 OF 5

DETAILS OF 160'-0" INTEGRAL W-BEAM UNIT GUICE CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

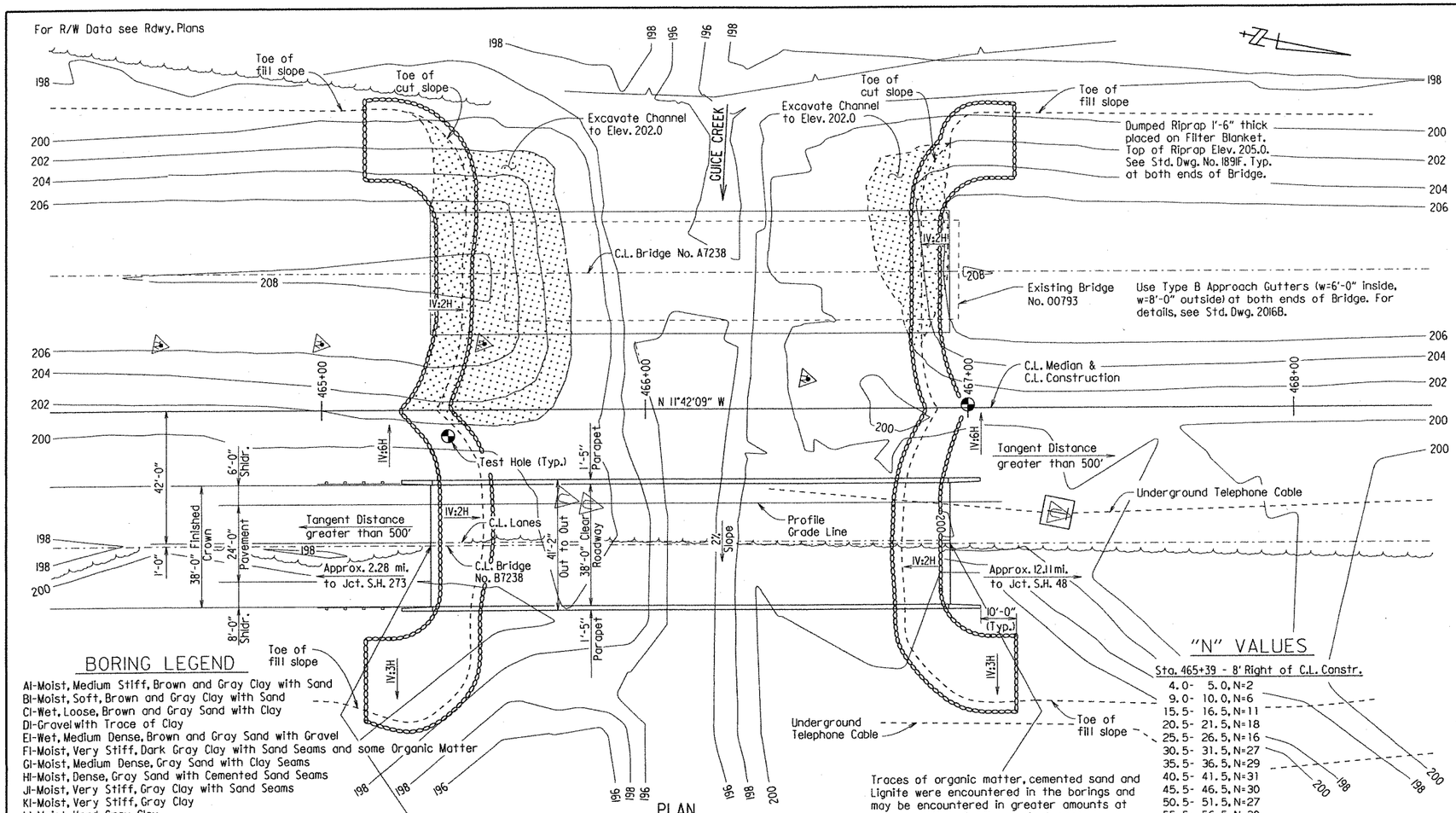
DRAWN BY: CMW DATE: 12/21/2011 FILENAME: b070289_sl.dgn
CHECKED BY: DHP DATE: 7-16-12 SCALE: As shown
DESIGNED BY: CMW DATE: 12/11

BRIDGE NO. A&B7238 DRAWING NO. 52800

PRINT DATE: 7/20/2012

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.		070289	134	365
				(1) B7238	-	LAYOUT	-	52801

For R/W Data see Rdwy. Plans



BORING LEGEND

Al-Moist, Medium Stiff, Brown and Gray Clay with Sand
Bl-Moist, Soft, Brown and Gray Clay with Sand
Cl-Wet, Loose, Brown and Gray Sand with Clay
Dl-Gravel with Trace of Clay
El-Wet, Medium Dense, Brown and Gray Sand with Gravel
Fl-Moist, Very Stiff, Dark Gray Clay with Sand Seams and some Organic Matter
Gl-Moist, Medium Dense, Gray Sand with Clay Seams
Hl-Moist, Dense, Gray Sand with Cemented Sand Seams
Jl-Moist, Very Stiff, Gray Clay with Sand Seams
Kl-Moist, Very Stiff, Gray Clay
Ll-Moist, Hard, Gray Clay
Ml-Moist, Very Stiff, Gray Sandy Clay
Nl-Wet, Medium Dense, Gray Sand with Trace of Silt and Clay
Pl-Wet, Dense, Gray Sand
Ql-Gravel
Rl-Wet, Loose, Gray Sand with Trace of Gravel and Organic Matter
Sl-Moist, Hard, Gray Sandy Clay
Tl-Moist, Dense, Gray Sand with Clay
Ul-Moist, Very Hard, Dark Gray Lignitic Clay
Vl-Moist, Hard, Gray Clay with Trace of Lignite
Wl-Moist, Hard, Gray Clay with Sand

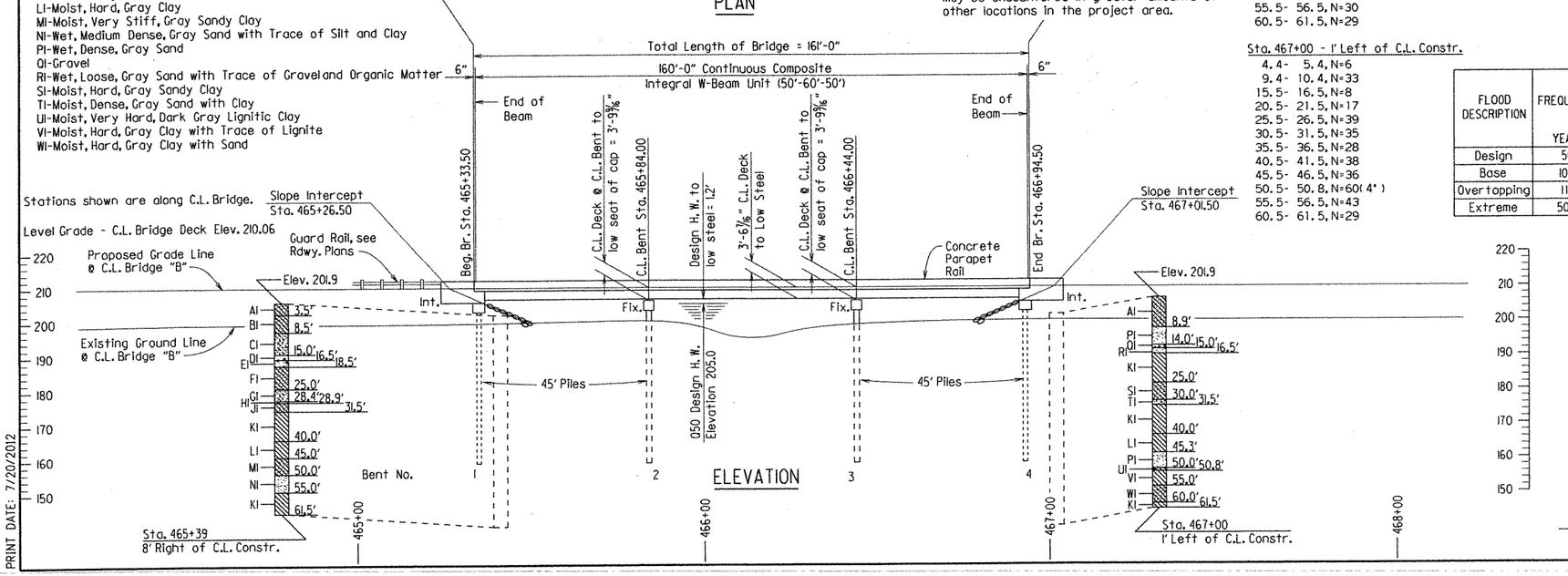
"N" VALUES

Sta. 465+39 - 8' Right of C.L. Constr.

4.0- 5.0	N=2
9.0- 10.0	N=6
15.5- 16.5	N=11
20.5- 21.5	N=18
25.5- 26.5	N=16
30.5- 31.5	N=27
35.5- 36.5	N=29
40.5- 41.5	N=31
45.5- 46.5	N=30
50.5- 51.5	N=27
55.5- 56.5	N=30
60.5- 61.5	N=29

Sta. 467+00 - 1' Left of C.L. Constr.

4.4- 5.4	N=6
9.4- 10.4	N=33
15.5- 16.5	N=8
20.5- 21.5	N=17
25.5- 26.5	N=39
30.5- 31.5	N=35
35.5- 36.5	N=28
40.5- 41.5	N=38
45.5- 46.5	N=36
50.5- 50.8	N=60(4")
55.5- 56.5	N=43
60.5- 61.5	N=29



HYDRAULIC DATA

FLOOD DESCRIPTION	FREQUENCY	(2) TOTAL DISCHARGE	DISCHARGE THRU BRIDGE OPENING	(1) NATURAL WATER SURFACE ELEVATION	WATER SURFACE ELEVATION W/ BACKWATER
	YEARS	CFS	CFS	FEET	FEET
Design	50	4,400	2,930	205.0	205.2
Base	100	5,440	3,570	205.9	206.1
Overtopping	118	5,600	3,850	206.0	206.3
Extreme	500	8,550	6,250	208.1	208.3

(1) Unconstricted water surface elevation without structure and roadway approaches.

(2) Includes Bridge Nos. A7237 & B7237.

Estimated 100-Year backwater elevation with Existing Structures in place is 206.0 ft.

Proposed Low Bridge Member Elevation = 206.2

Drainage area = 18.1 square miles (Includes structures over Guice Creek Relief).

Historical H.W. Elev. = 206.0 ft.

GENERAL NOTES

BENCH MARK: TBM 913 Chiseled Sq. Center HW, 89.21' Lt. of C.L. Constr. Sta. 440+57.44, Elev. 209.35.

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2003 edition) with applicable supplemental specifications and special provisions. Unless otherwise noted, section and subsection numbers in the plans refer to the Construction Specifications.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications 5th Edition (2010), with 2010 Interims.

LIVE LOADING: HL-93

SEISMIC ZONE : 2 S_{DI} = 0.244 SITE CLASS = E

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 M31 or M53, GR. 60)	fy = 60,000 psi
Structural Steel (AASHTO M270, Gr. 36)	Fy = 36,000 psi
Structural Steel (AASHTO M270, Gr. 50W)	Fy = 50,000 psi

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

CONCRETE PILING: Piling for Bents 1 and 4 shall be 16" square prestressed concrete and shall be driven to a minimum ultimate bearing capacity of 145 tons per pile. Piling in Bents 2 and 3 shall be 24" square prestressed concrete and shall be driven to a minimum ultimate bearing capacity of 315 tons per pile. All piling shall be driven with an approved air, steam, or diesel hammer. Piling in end bents shall be driven after embankment to bottom of cap is in place. Piling in Bents 1 and 4 shall have a tip elevation of 178 or lower. Piling in Bents 2 and 3 shall have a tip elevation of 172 or lower. Length of piling shown are for estimating quantities and for use in determining payment for cut-off and build-up in accordance with the standard specifications. Drive one 50' test pile in Bent 2 and one 50' test pile in Bent 4.

DRIVING SYSTEM: The driving system approval and the ultimate bearing capacity determination for piling shall be based on the requirements of subsection 805.09(b) "Method B - Wave Equation Analysis (WEAP)". It is estimated that the minimum required rated energy of the hammer to obtain the minimum ultimate bearing capacity on 16" square piles will be 40,000 foot pounds per blow and on 24" square piles shall be 83,000 foot pounds per blow.

PREBORING: Preboring is required for all piling at bents 1 & 4. Prebored holes at Bents 1 and 4 shall have a diameter 6" greater than the greatest cross-sectional dimension of the pile for a depth of 10' below the bottom of the cap. The void space around the pile after completion of driving shall be backfilled with sand or pea gravel. The Contractor shall be responsible for keeping prebored holes free of debris prior to backfilling, which may require the use of temporary casing or other approved methods. Any related cost for backfilling and temporary casing will not be paid for separately but shall be considered subsidiary to the item "Preboring". Preboring will be paid for in accordance with Section 805.

BRIDGE DECK: The concrete bridge deck shall be given a tine finish as specified for final finishing in subsection 802.19 for Class 5 Tined Bridge Roadway Surface Finish.

PIPE UNDER DRAIN: One Pipe Under drain with outlet protectors shall be installed behind each bridge end in accordance with Section 611. Pipe Under drains will not be paid for directly but shall be considered subsidiary to "Unclassified Excavation".

DETAIL DRAWINGS:

	DRAWING NO.
End Bents	52794
Intermediate Bents	52795
160' Integral W-Beam Unit	52796 - 52800
Type "B" Special Shoes	52797
Concrete Piling	14964 & 52786
Type B Approach Gutters	2016B

MAINTENANCE OF TRAFFIC: See Roadway Plans.

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
7/23/12
CARL J. FUSELIER
BRIDGE ENGINEER

LAYOUT OF BRIDGE "B" OVER GUICE CREEK
HWY. 273-PETERS RD. (CR 24) (F)
DALLAS COUNTY

ROUTE 167 SEC. 7

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 10/20/2011 FILENAME: b070289x6_11.dgn
CHECKED BY: CMW DATE: 7/16/12 SCALE: 1"=20'
DESIGNED BY: CSL DATE: Sept 2011

BRIDGE NO. B7238 DRAWING NO. 52801

PRINT DATE: 7/20/2012

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.		070289	135	365
				① 07239	-	LAYOUT	-	52802

For R/W Data see Rdwy. Plans

Use Type Special I Approach Gutters (w=8'-0") at both ends of Bridge. For details, see Dwg. No. 52844.

Excavate Existing Embankment as shown. Approx. 215 cubic yards of Excavation.

MORO CREEK RELIEF

Dumped Riprap 1'-6" thick placed on Filter Blanket. Top of Riprap Elev. 205.0. See Std. Dwg. No. 1891F. Typ. at both ends of Bridge.

Toe of fill slope

Toe of cut slope

Excavate Channel to Elev. 203.0

Excavate Channel to Elev. 202.0

The proposed bridge is positioned to avoid interference with the existing substructure. The Contractor shall verify the location of the existing substructure before constructing the new substructure. Any adjustments necessary to fit the proposed bridge shall be submitted to the Engineer for approval.

Existing Bridge No. 00792

Test Hole (Typ.)

Tangent Distance 123.23'

Tangent Distance greater than 500'

Approx. 2.90 mi. to Jct. S.H. 273

Approx. 11.49 mi. to Jct. S.H. 48

N 40°35'28" E

C.L. Bridge & C.L. Constr.

Longitudinal Construction Joint

8'-0" Shldr.

12'-0" Lane

1'-0" Lane Median

75'-0" Finished crown

59'-0" Pavement

178'-2" Out to Out

75'-0" Clear Roadway

1'-5" Parapet

44'-7" Stage 2 Constr.

33'-7" Stage 1 Constr.

2% Slope

10'-0" (Typ.)

IV:2H

IV:3H

497+00

498+00

499+00

500+00

501+00

PLAN

BORING LEGEND

Al-Wet, Medium Stiff, Brown and Gray Clay with Sand
Bl-Wet, Soft, Brown and Gray Sandy Clay
Cl-Wet, Medium Stiff, Brown and Gray Sandy Clay
Dl-Wet, Loose, Brown and Gray Sand with Gravel
El-Moist, Very Stiff, Brown and Gray Clay with Sand
Fl-Moist, Very Stiff, Brown and Gray Clay
Gl-Moist, Dense, Gray Sand with Clay
Hl-Moist, Hard, Gray Clay with Sand
Jl-Moist, Hard, Gray Clay
Kl-Moist, Medium Dense, Gray Sand with Clay
Ll-Moist, Very Hard to Hard, Gray Clay with Trace of Sand
Ml-Moist, Hard, Gray Sandy Clay
Nl-Wet, Medium Stiff, Gray and Brown Clay
Pl-Wet, Soft, Gray Clay
Ql-Moist, Medium Stiff, Gray and Brown Sandy Clay
Rl-Wet, Medium Dense, Gray Sand with Gravel
Sl-Moist, Very Stiff, Gray Clay
Tl-Wet, Medium Dense, Gray Sand
Ul-Wet, Very Loose, Gray Sand
Vl-Moist, Very Stiff, Gray Sandy Clay
Wl-Moist, Very Stiff, Dark Brown Sandy Clay
Xl-Moist, Very Stiff, Gray Clay with Sand

"N" VALUES

Sta. 498+01 - 21' Right of C.L. Constr.

4.0- 5.0, N=4
9.0- 10.0, N=6
15.5- 16.5, N=16
20.5- 21.5, N=20
25.5- 26.5, N=38
30.5- 31.5, N=49
35.5- 36.5, N=33
40.5- 41.5, N=37
45.5- 46.5, N=30
50.5- 51.5, N=61
55.5- 56.5, N=36
60.5- 61.5, N=39

Sta. 499+64 - 14' Left of C.L. Constr.

5.0- 6.0, N=5
10.0- 11.0, N=4
15.0- 16.0, N=11
20.0- 21.0, N=13
25.0- 26.0, N=28
30.0- 31.0, N=2
35.5- 36.5, N=29
40.5- 41.5, N=27
45.5- 46.5, N=22
50.5- 51.5, N=28
55.5- 56.5, N=35
60.5- 61.5, N=34
65.5- 66.5, N=34
70.5- 71.5, N=42

Total Length of Bridge = 161'-0"

6" 160'-0" Continuous Composite Integral W-Beam Unit (50'-60'-50') 6"

End of Beam

End of Beam

Beg. Br. Sta. 498+03.50

C.L. Deck @ C.L. Bent to low seat of cap = 4'-2"

C.L. Bent Sta. 498+54.00

3'-10⅞" C.L. Deck to Low Steel

Design H.W. to low steel = 11'

C.L. Deck @ C.L. Bent to low seat of cap = 4'-2"

C.L. Bent Sta. 499+40.00

End Br. Sta. 499+64.50

Slope Intercept Sta. 497+96.50

Slope Intercept Sta. 499+71.50

Concrete Parapet Rail

Guard Rail, see Rdwy. Plans (Typ.)

Stations shown are along C.L. Bridge and C.L. Construction.

Proposed Grade Line @ C.L. Construction

Existing Ground Line @ C.L. Construction

Elev. 200.0

Elev. 207.1

Int.

Fix.

Fix.

Int.

Level Grade - C.L. Bridge Deck Elev. at working point 209.94.

For details of Stage Construction, see Dwg. No. 52803.

47' Piles

47' Piles

050 Design H.W. Elevation 204.9

Al 3.5'
Bl 8.5' 10.0'
Cl
Dl 15.0'
El 20.0'
Fl 25.0' 26.5'
Gl 30.0'
Hl
Jl 45.0'
Kl 50.0'
Ll
Ml 60.0' 61.5'

Nl 9.5'
Pl 14.5'
Ql 19.5'
Rl 24.5' 25.3'
Sl
Tl 29.5'
Ul 35.0'
Vl
Wl 38.5' 40.0'
Xl 45.0'
Sl 50.0'
Kl 55.0'
Gl 60.0'
Jl 71.5'

Bent No. 1 2 3 4

Sta. 498+01 21' Right of C.L. Constr.

Sta. 499+64 14' Left of C.L. Constr.

ELEVATION

HYDRAULIC DATA

FLOOD DESCRIPTION	FREQUENCY	②TOTAL DISCHARGE	DISCHARGE THRU BRIDGE OPENING	①NATURAL WATER SURFACE ELEVATION	WATER SURFACE ELEVATION W/ BACKWATER
	YEARS	CFS	CFS	FEET	FEET
Design	50	18,500	3,718	204.8	205.1
Base	100	22,900	4,702	205.7	206.0
Overtopping	313	34,300	7,074	207.7	208.5
Extreme	500	36,000	7,488	207.9	208.7

①Unconstricted water surface elevation without structure and roadway approaches.

②Includes Bridge Nos. 07239 thru 07243.

Estimated 100-Year backwater elevation with Existing Structures in place is 206.2 ft.

Proposed Low Bridge Member Elevation = 206.0

Drainage area = 131.0 square miles (Includes Moro Creek and relief structures).

Historical H.W. Elev. = 206.0 ft.

GENERAL NOTES

BENCH MARK: TBM 915 Chiseled Sq. SE HW, 4.68' Lt. of C.L. Constr. Sta. 498+12.52, Elev. 207.67.

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2003 edition) with applicable supplemental specifications and special provisions. Unless otherwise noted, section and subsection numbers in the plans refer to the Construction Specifications.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications 5th Edition (2010), with 2010 Interims.

LIVE LOADING: HL-93

SEISMIC ZONE : 2 S_{DI} = 0.244 SITE CLASS = E

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 M31 or M53, GR. 60)	fy = 60,000 psi
Structural Steel (AASHTO M270, Gr. 36)	Fy = 36,000 psi
Structural Steel (AASHTO M270, Gr. 50W)	Fy = 50,000 psi

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

CONCRETE PILING: Piling for Bents 1 and 4 shall be 16" square prestressed concrete and shall be driven to a minimum ultimate bearing capacity of 145 tons per pile. Piling in Bents 2 and 3 shall be 24" square prestressed concrete and shall be driven to a minimum ultimate bearing capacity of 315 tons per pile. All piling shall be driven with an approved air, steam, or diesel hammer. Piling in end bents shall be driven after embankment to bottom of cap is in place. Piling in Bents 1 and 4 shall have a tip elevation of 178 or lower. Piling in Bents 2 and 3 shall have a tip elevation of 169 or lower. Length of piling shown are for estimating quantities and for use in determining payment for cut-off and build-up in accordance with the standard specifications. Drive one 52' test pile in Bent 1 and one 52' test pile in Bent 3.

DRIVING SYSTEM: The driving system approval and the ultimate bearing capacity determination for piling shall be based on the requirements of subsection 805.09(b) "Method B - Wave Equation Analysis (WEAP)". It is estimated that the minimum required rated energy of the hammer to obtain the minimum ultimate bearing capacity on 16" square piles will be 40,000 foot pounds per blow and on 24" square piles shall be 83,000 foot pounds per blow.

PREBORING: Preboring is required for all piling at bents 1 & 4. Prebored holes at Bents 1 and 4 shall have a diameter 6" greater than the greatest cross-sectional dimension of the pile for a depth of 10' below the bottom of the cap. The void space around the pile after completion of driving shall be backfilled with sand or pea gravel. The Contractor shall be responsible for keeping prebored holes free of debris prior to backfilling, which may require the use of temporary casing or other approved methods. Any related cost for backfilling and temporary casing will not be paid for separately but shall be considered subsidiary to the item "Preboring". Preboring will be paid for in accordance with Section 805.

BRIDGE DECK: The concrete bridge deck shall be given a tine finish as specified for final finishing in subsection 802.19 for Class S Tined Bridge Roadway Surface Finish.

PIPE UNDER DRAIN: One Pipe Under drain with outlet protectors shall be installed behind each bridge end in accordance with Section 611. Pipe Under drains will not be paid for directly but shall be considered subsidiary to "Unclassified Excavation".

DETAIL DRAWINGS:	DRAWING NO.
Stage Construction	52803
End Bents	52804
Intermediate Bents	52805
160' Integral W-Beam Unit	52806 - 52811
Type "B" Special Shoes	52811
Concrete Piling	14964 & 52786
Type Special I Approach Gutters	52844

EXISTING BRIDGE: Existing Bridge No. 00792 (Log Mile 7.16) is 28' wide and 141' long and consists of concrete tee beams supported by concrete pile bents.

REMOVAL AND SALVAGE: After Stage I Construction is complete and opened to traffic, the Contractor shall remove existing Bridge No. 00792 in accordance with Section 205. All salvageable guard rail and guard rail posts, as determined by the Engineer, shall remain the property of the Department. The Contractor shall coordinate with the Engineer to provide temporary storage and on site loading onto Department equipment for removal of all salvaged items. All other material from the existing bridge shall become the property of the Contractor.

MAINTENANCE OF TRAFFIC: See Roadway Plans.

STATE OF ARKANSAS Carl J. Fuselier REGISTERED PROFESSIONAL ENGINEER No. 7510 7/23/12 CARL J. FUSELIER

BRIDGE ENGINEER

LAYOUT OF BRIDGE OVER MORO CREEK RELIEF (LOG MI. 7.16) HWY. 273-PETERS RD. (CR 24) (F) DALLAS COUNTY

ROUTE 167 SEC. 7

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

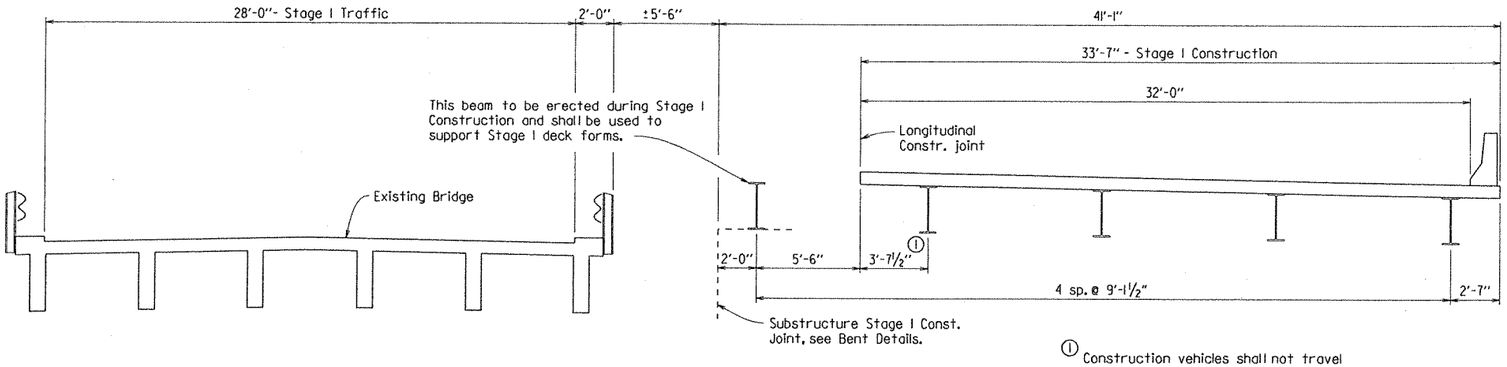
DRAWN BY: MRE DATE: 10/20/2011 FILENAME: b070289x7_11.dgn
CHECKED BY: CMW DATE: 7/10/12 SCALE: 1"=20'
DESIGNED BY: CSL DATE: Sept 2011

BRIDGE NO. 07239 DRAWING NO. 52802

PRINT DATE: 7/20/2012

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.		070289	136	365

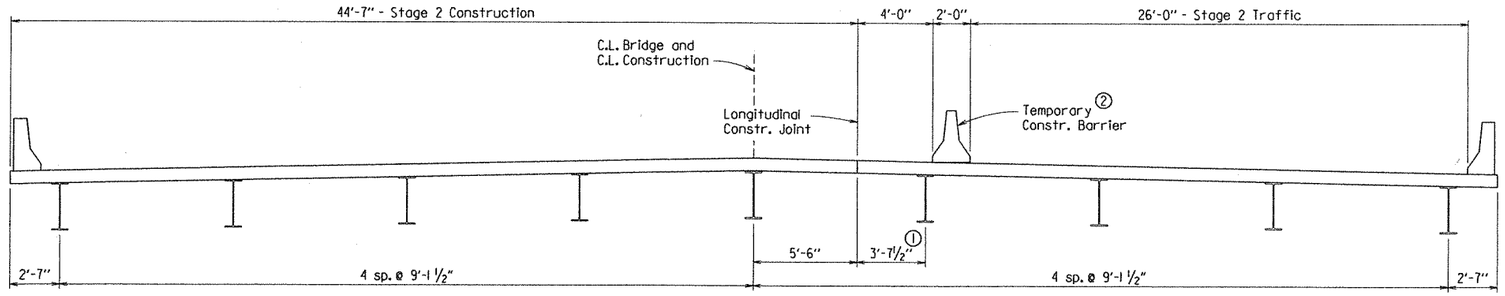
(1) 07239 - 07243 - STAGE CONSTRUCTION - 52803



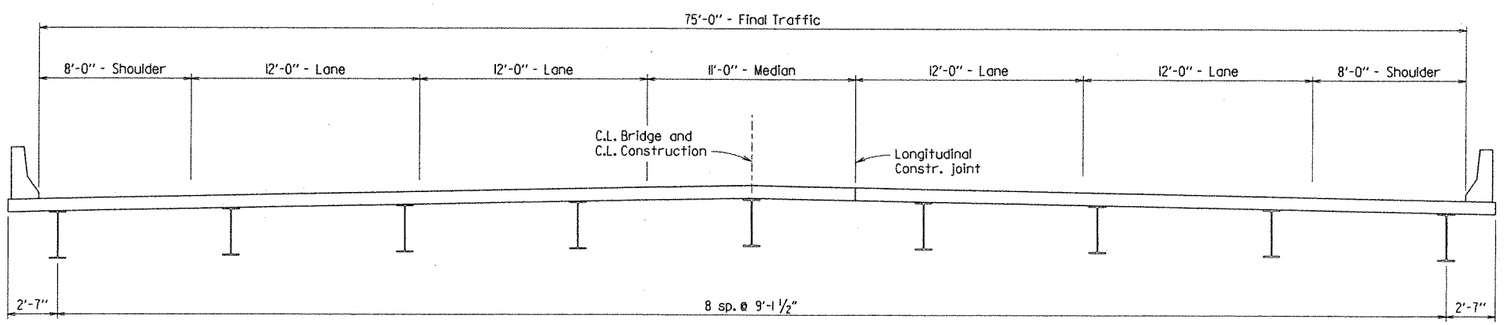
STAGE 1
Looking Ahead

(1) Construction vehicles shall not travel on the cantilever portion of the deck.

(2) Do not attach Temporary Constr. Barrier to new deck.



STAGE 2
Looking Ahead



FINAL
Looking Ahead

Details which relate to Maintenance of Traffic are shown on bridge plans for information only. See Roadway plans for Maintenance of Traffic.

For Details of Temporary Barrier, see Dwg. No. TC-4 and TC-5.

STATE OF ARKANSAS
Carl J. Fuselier
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No. 7510
7/23/12
CARL J. FUSELIER

BRIDGE ENGINEER

DETAILS OF STAGE CONSTRUCTION FOR BRIDGES OVER MORO CREEK AND MORO CREEK RELIEF

ROUTE 167 SEC. 7 & 8

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

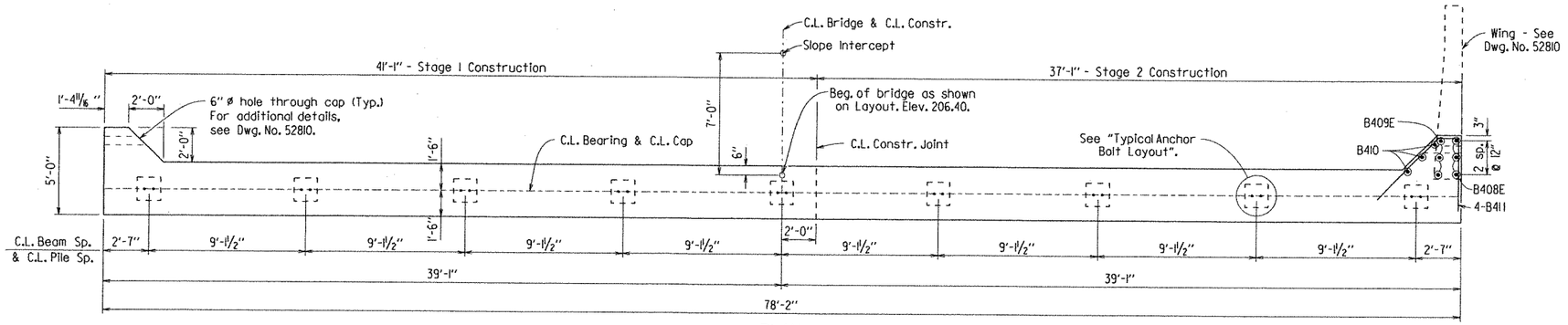
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CHECKED BY: CMW DATE: 7/16/13 SCALE: 1/4" = 1'-0"
DESIGNED BY: — DATE: —

BRIDGE NO. 07239 - 07243 DRAWING NO. 52803

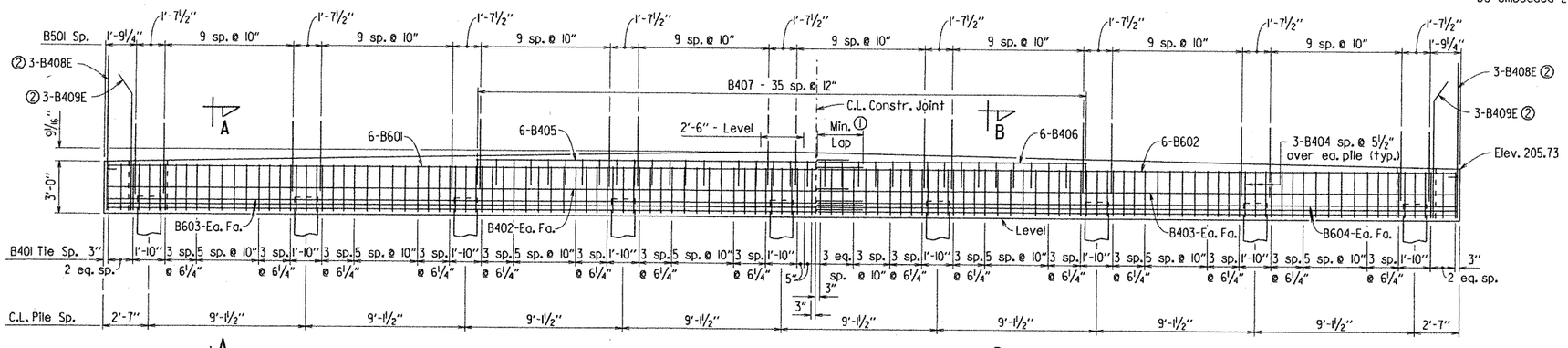
PRINT DATE: 7/17/2012

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.		070289	137	365
①	07239, 07243 - BENTS 1 & 4 -		52804	



PLAN
Bent 1
1/4" = 1'-0"

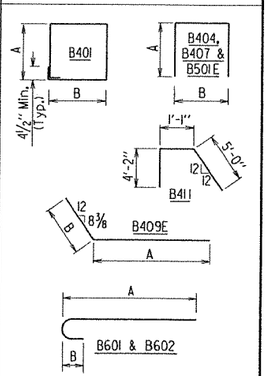


② Bars B408E and B409E shall be embedded 2'-10" into cap.

BAR LIST (PER BENT)

Mark	No. Req'd.	Length	A	B	Pin Dia.
B401	103	11'-0"	2'-8"	2'-8"	2"
B402	2	42'-10"	-	-	Str.
B403	2	36'-9"	-	-	Str.
B404E	27	7'-10"	2'-8"	2'-8"	2"
B405	6	21'-6"	-	-	Str.
B406	6	15'-6"	-	-	Str.
B407	36	5'-6"	1'-6"	2'-8"	2"
B408E	6	8'-11"	-	-	Str.
B409E	6	7'-10"	6'-8"	1'-2"	2"
B410	6	4'-11"	-	-	Str.
B411	8	10'-2"	-	-	2"
B501E	82	10'-6"	4'-0"	2'-8"	2 1/2"
B601	6	44'-5"	43'-9"	6"	4 1/2"
B602	6	37'-5"	36'-9"	6"	4 1/2"
B603	6	43'-9"	-	-	Str.
B604	6	36'-9"	-	-	Str.

Bending Diagrams



Dimensions are out to out of bars

GENERAL NOTES

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

All reinforcing steel shall conform to AASHTO M 31 or M 53, Gr. 60. (Yield strength = 60,000 psi.)

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

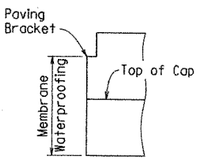
For anchor bolt details, see Dwg. No. 52810.

Bars with "E" suffix are Epoxy Coated.

Dowel bars in piles shall be located in such a way to avoid interference with Anchor Bolts.

Granular backfill and pipe underdrain required behind end bent caps. See Dwg. No. 52808.

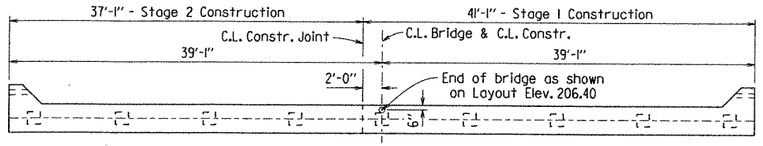
For additional information, see Layout.



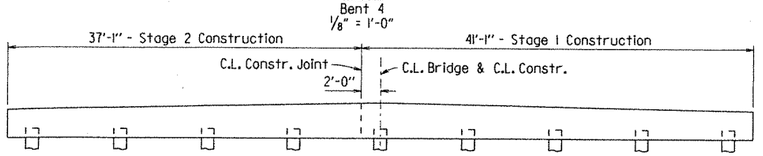
Membrane waterproofing Type "C" or approved equal, see Section 815. Membrane waterproofing shall extend from the bottom of the cap to the paving bracket.

Payment for membrane to be considered subsidiary to Class "S" Concrete - Bridge.

CONSTRUCTION JOINT DETAIL
No Scale

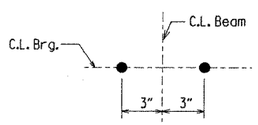


PLAN
Bent 4
1/8" = 1'-0"



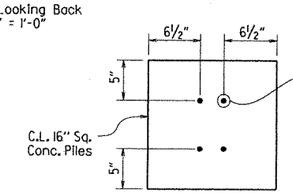
ELEVATION
Bent 4: Looking Ahead
1/8" = 1'-0"

Dimensions and details at Bent 4 are the same as Bent 1 except as shown.



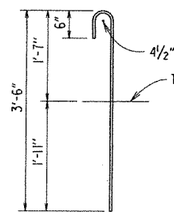
TYPICAL ANCHOR BOLT LAYOUT
No Scale

ELEVATION
Bent 1: Looking Back
1/4" = 1'-0"

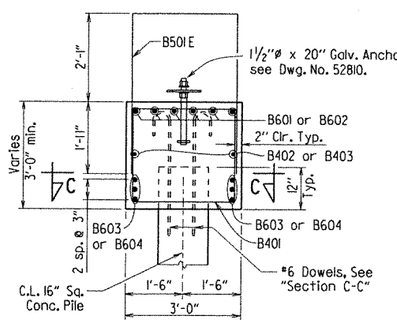


After driving, grill and grout #6 dowels 1'-11" into piles using an approved non-shrink or an epoxy grout listed on the QPL. Diameter of holes and installation procedure shall be as recommended by the grout manufacturer. Dowel bars, drilling and grout shall not be paid for directly but shall be considered subsidiary to the item "Concrete Piling - 16" Square".

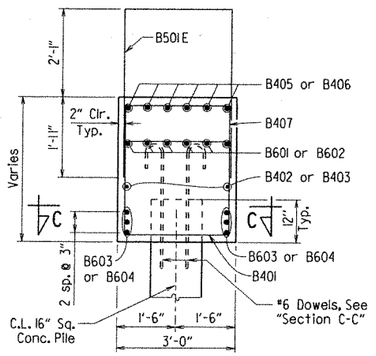
SECTION C-C
No Scale



#6 Dowel Bar



SECTION A-A
No Scale



SECTION B-B
No Scale

① Min. Lap: 1'-9" #4 bar
2'-7" #6 bar

STATE OF ARKANSAS
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DETAILS OF BENTS 1 AND 4
MORO CREEK RELIEF

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

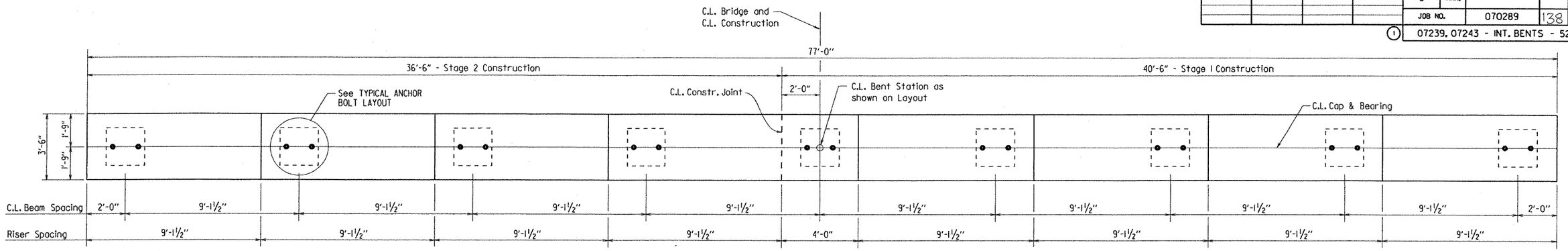
LITTLE ROCK, ARK.

DRAWN BY: RBR DATE: 12/22/2011 FILENAME: b070289_bl.dgn
CHECKED BY: DHP DATE: 7-16-12 SCALE: As Shown
DESIGNED BY: CMW DATE: 4/12

BRIDGE NO. 07239, 07243 DRAWING NO. 52804

PRINT DATE: 23-JUL-2012

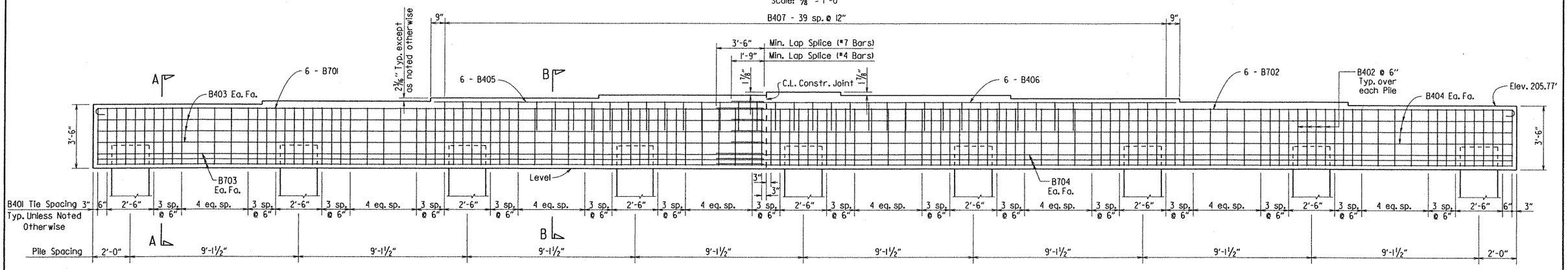
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				6	ARK.			
				JOB NO.		070289	138	365
				(1) 07239, 07243 - INT. BENTS - 52805				

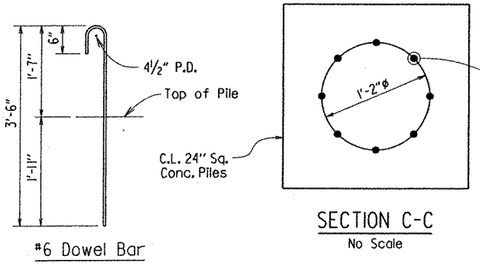


PLAN

Looking Ahead

Scale: ⅜" = 1'-0"





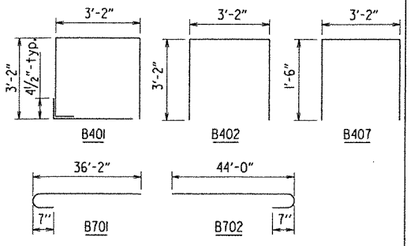
SECTION C-C

No Scale

After driving, grill and grout #6 dowels 1'-11" into piles using an approved non-shrink or an epoxy grout listed on the QPL. Diameter of holes and installation procedure shall be as recommended by the grout manufacturer. Dowel bars, drilling and grout shall not be paid for directly but shall be considered subsidiary to the item "Concrete Piling - 24" Square".

BAR LIST - PER BENT

Mark	No. Req'd.	Length	Pin Dia.	Bending Diagrams
B401	92	13'-0"	2"	
B402	36	9'-4"	2"	
B403	6	36'-2"	Str.	
B404	6	42'-3"	Str.	
B405	6	17'-11"	Str.	
B406	6	24'-0"	Str.	
B407	40	6'-0"	2"	
B701	6	37'-0"	5¼"	
B702	6	44'-10"	5¼"	
B703	6	36'-2"	Str.	
B704	6	44'-0"	Str.	

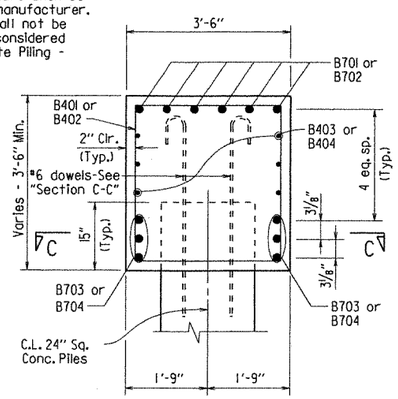


Dimensions are out to out of bars

ELEVATION

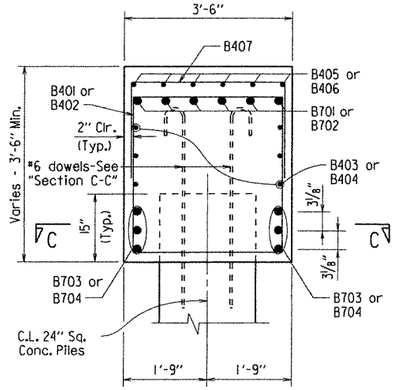
Looking Ahead

Scale: ⅜" = 1'-0"



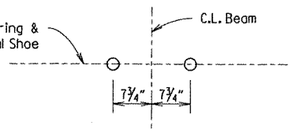
SECTION A-A

No Scale



SECTION B-B

No Scale



For details of Type "B" Special Shoe and Anchor Bolts, see Dwg. No. 52811.

TYPICAL ANCHOR BOLT LAYOUT

¾" = 1'-0"

GENERAL NOTES:

All concrete shall be Class "S" and be poured in the dry. All exposed corners are to be chamfered ¾" unless otherwise noted.

All reinforcing steel shall conform to AASHTO M31 or M53, Grade 60.

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, see Dwg. No. 52811.

Dowel bars in piles shall be located in such a way to avoid interference with Anchor Bolts.

For additional information, See Layout.

STATE OF ARKANSAS
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7/23/12
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BRIDGE ENGINEER

DETAILS OF BENTS 2 AND 3 MORO CREEK RELIEF

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: CMW DATE: 04/25/2012 FILENAME: b070289_b2.dgn

CHECKED BY: DHP DATE: 7-16-12 SCALE: As Shown

DESIGNED BY: CMW DATE: 4/12

BRIDGE NO. 07239, 07243 DRAWING NO. 52805

PRINT DATE: 7/20/2012

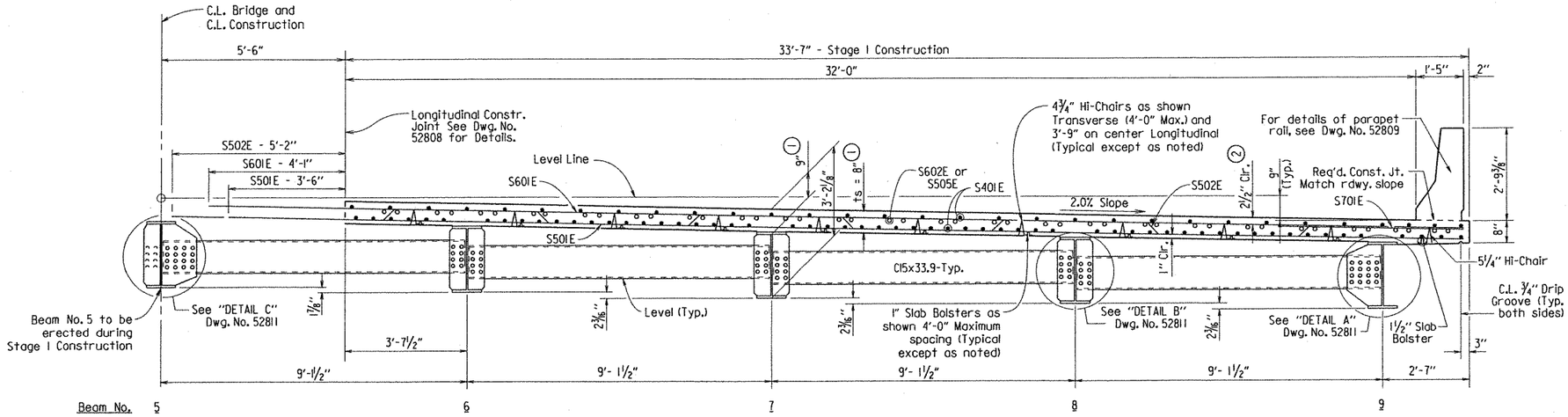
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				6	ARK.			
				JOB NO.		070289	139	365
				(1) 07239, 07243		SPAN DETAILS		52806

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

At Contractor's option, in lieu of providing bar S502E & S504E, one #5 bar top and bottom may be substituted for each bar. Payment for reinforcing will be based on the weight of bar S502E & S504E. Bars in top and bottom shall be epoxy coated.

(1) See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE."

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



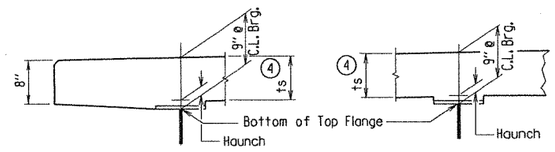
TYPICAL SECTION - STAGE I CONSTRUCTION

Looking Ahead
Scale: ½" = 1'-0"

The superstructure details shown are for use when removable deck forming is used and are the basis for measurement of Clas S(AE) Concrete. See Standard Drawing No. 14991 for allowable modifications and for tolerances when permanent steel bridge deck forms are used. If permanent steel bridge deck forms are used they shall be continuous between beams 5 & 6.

(3) See Rounding Detail

NOTE: ts = Slab thickness as shown in "Typical Section"



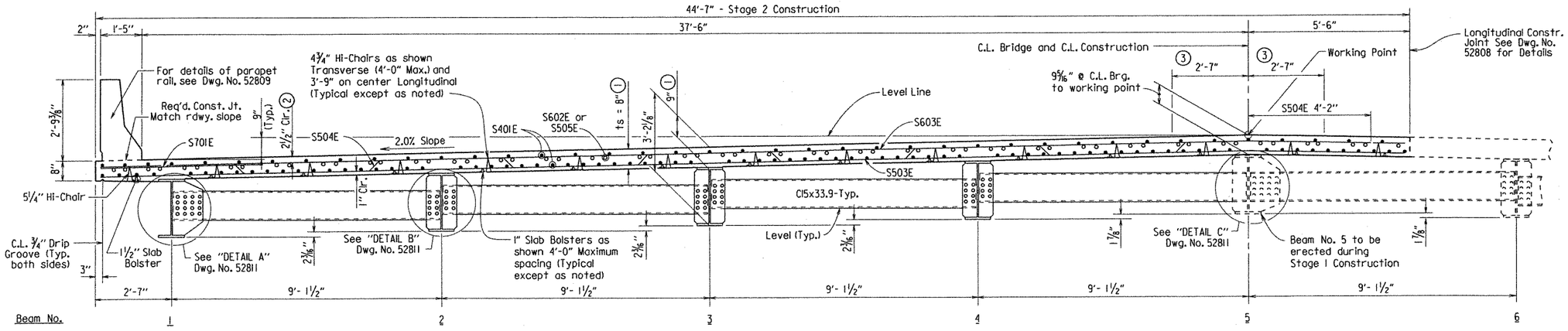
(4) Tolerance when removable deck forming is used is + ½", - ¼". Haunch forming is required and shall be adjusted to maintain slab thickness tolerance.

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

Tolerances shown are applicable only when removable deck forming is used. See Std. Dwg. No. 14991 for tolerances when permanent steel deck forms are used. Payment for concrete shall be based on removable deck forming.

ADJUSTMENT FOR SLAB THICKNESS TOLERANCE

No Scale



TYPICAL SECTION - STAGE 2 CONSTRUCTION

Looking Ahead
Scale: ½" = 1'-0"

SLAB REINFORCING

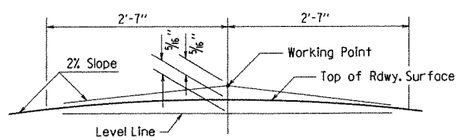
Transverse:
S502E and S504E @ 15" o.c. bent up over beams
S601E and S603E @ 15" o.c. in top
S501E and S503E @ 15" o.c. in bottom
S701E @ 15" o.c. in top at both gutterlines - placed around ends of S502E and S504E.
See "REINFORCING PLAN", Dwg. No. 52808

Longitudinal:
S401E as shown (18" max)
S602E as shown over int. supports
S505E as shown at end bents

Min. Lap Splice for #4 epoxy bars = 2'-7"
Min. Lap Splice for #5 epoxy bars = 3'-3"
Min. Lap Splice for #6 epoxy bars = 3'-10"

Bars with an "E" suffix are epoxy coated

For weld table see Dwg. No. 52811



NOTE: Working Point matches Theoretical Roadway Grade.

ROUNDING DETAIL

No Scale

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
7/23/12
CARL J. FUSELIER

BRIDGE ENGINEER

SHEET 1 OF 6

DETAILS OF 160'-0" INTEGRAL W-BEAM UNIT MORO CREEK RELIEF

ROUTE SEC.

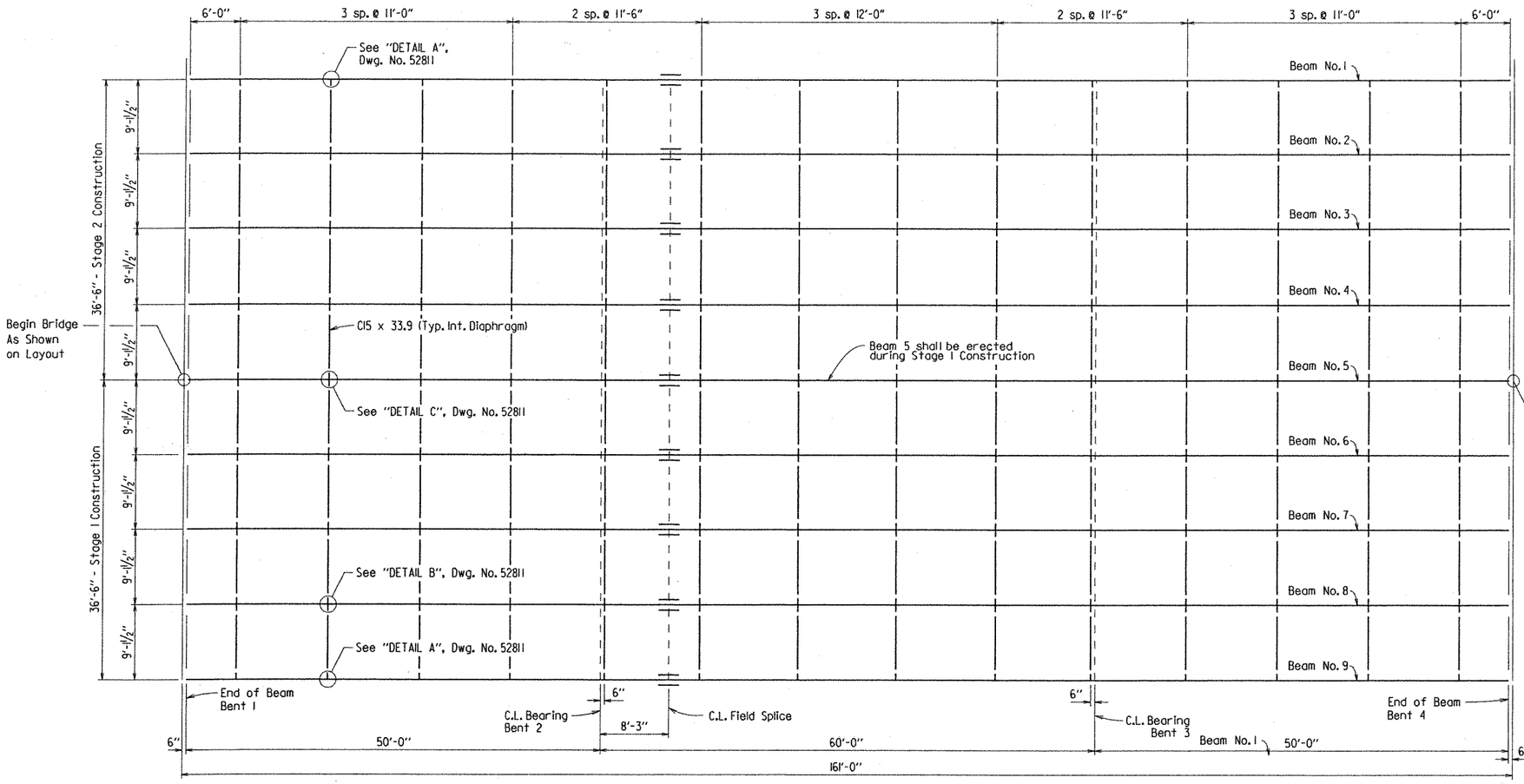
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

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CHECKED BY: DHP DATE: 7-16-12 SCALE: As shown
DESIGNED BY: RBR DATE: 11/11

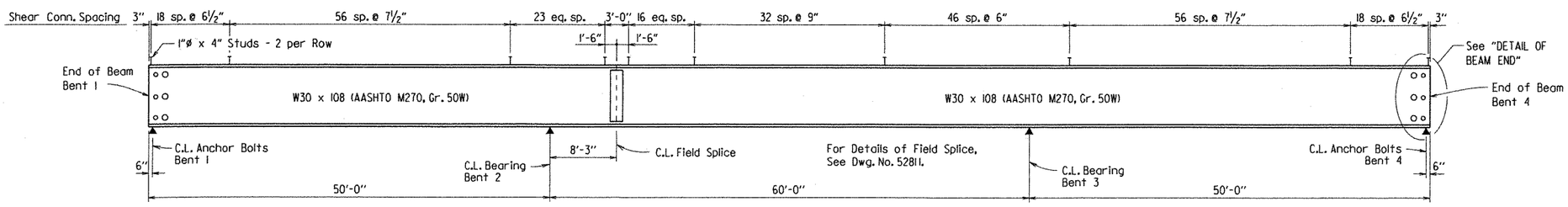
BRIDGE NO. 07239, 07243 DRAWING NO. 52806

PRINT DATE: 7/16/2012

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.		070289	140	365
				07239, 07243		SPAN DETAILS		52807

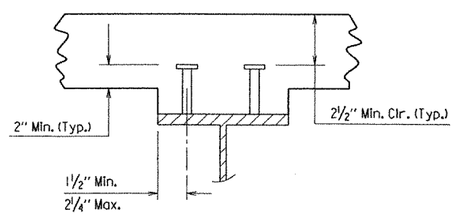


FRAMING PLAN
⅛" = 1'-0"



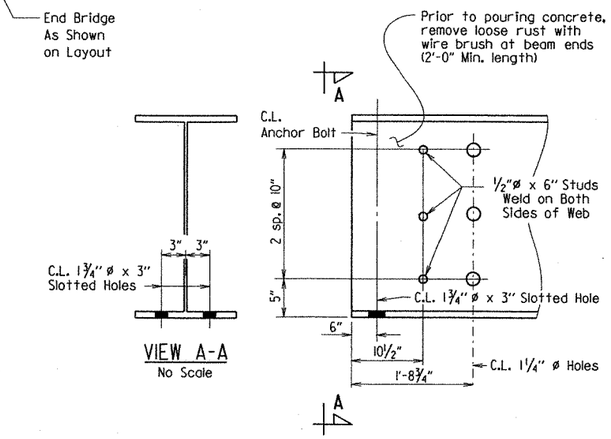
TYPICAL BEAM ELEVATION
No Scale

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



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



DETAIL OF BEAM END
No Scale

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
7/23/12
CARL J. FUSELIER
BRIDGE ENGINEER

SHEET 2 OF 6

DETAILS OF 160'-0" INTEGRAL W-BEAM UNIT MORO CREEK RELIEF

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: RBR DATE: 12/09/2011 FILENAME: b070289_sl.dgn
CHECKED BY: DHP DATE: 7-16-12 SCALE: As shown
DESIGNED BY: RBR DATE: 11/11

BRIDGE NO. 07239, 07243 DRAWING NO. 52807

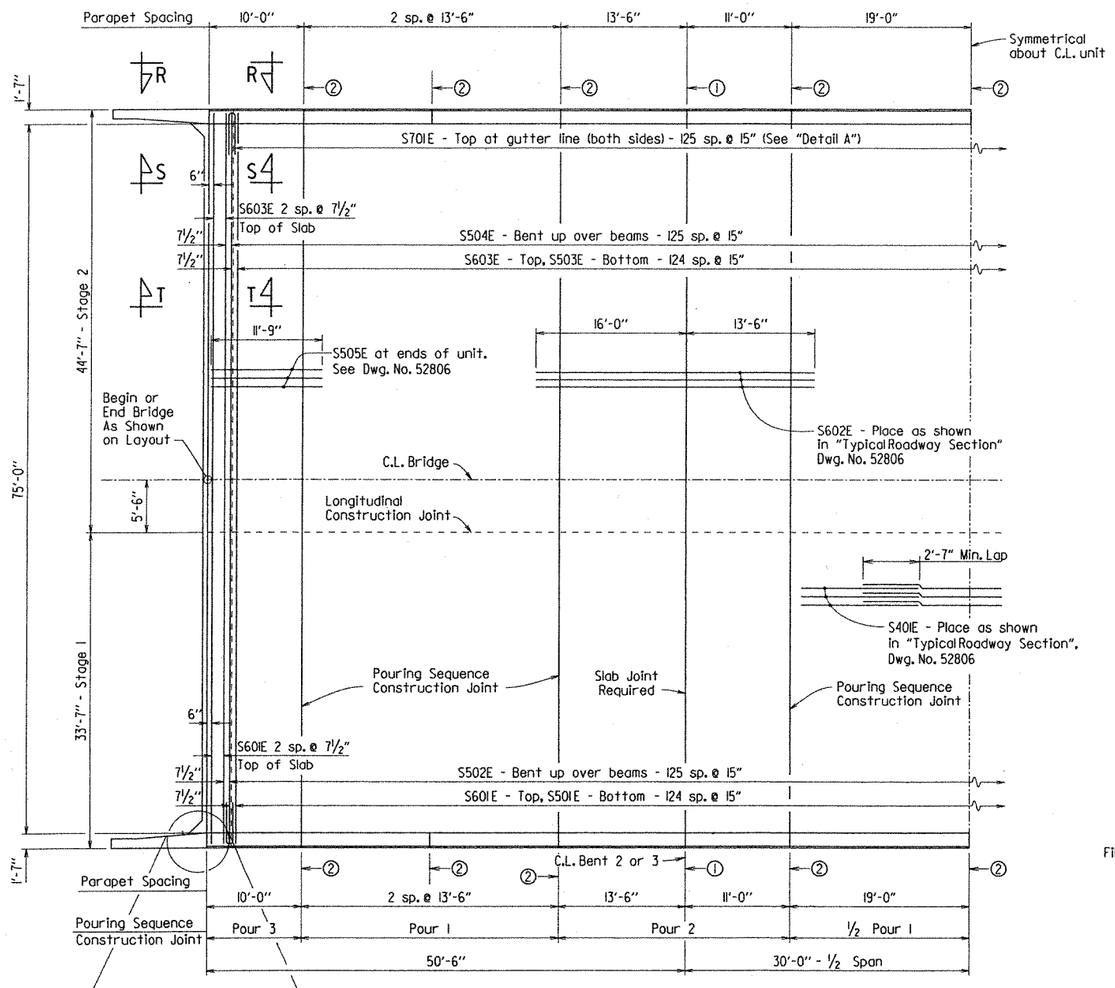
PRINT DATE: 7/16/2012

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				6	ARK.			
				JOB NO.		070289	141	365
				(1) 07239, 07243		SPAN DETAILS		52808

For View R-R, View S-S & Section T-T, see Dwg. No. 52810

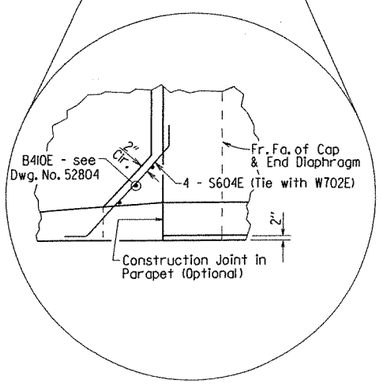
① C.L. Full Depth Parapet Joint (¼" to 1" Max.) Stop 4" from top of slab.

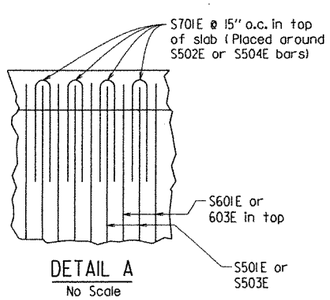
② C.L. Partial Depth Parapet Joint (¼" to 1" Max.) Stop 1'-6" from top of slab.



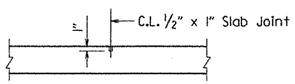
REINFORCING PLAN & DECK POURING SEQUENCE

Required slab joints and pouring sequence joints shall align with parpet open joints at the gutter line.



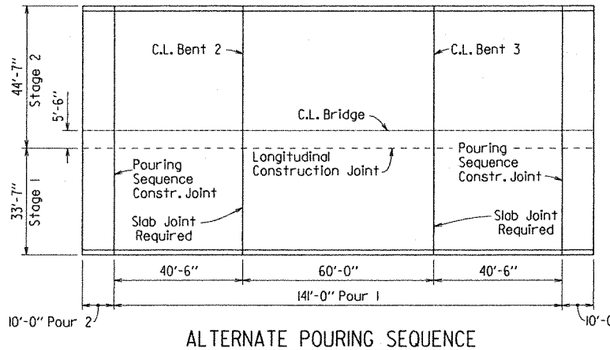


DETAIL A
No Scale



Use ½" x 1" Type 3, 4 or 6 Joint Sealer. See subsections 501.02(h) and 501.05(j). Backer rod will not be required. Joint Sealer shall be measured and paid for as Class S(AE) Concrete-Bridge. Slab Joints shall extend to the outside edge of the deck slab. Slab joints shall be installed before the parapet railing is poured. If slab joints are to be sawed, they shall be sawed as soon as the slab has sufficiently set to allow sawing of the joints without damaging the slab. Slab joints shall be placed at all pouring sequence construction joints and required slab joint locations.

SLAB JOINT DETAIL
No Scale



ALTERNATE POURING SEQUENCE

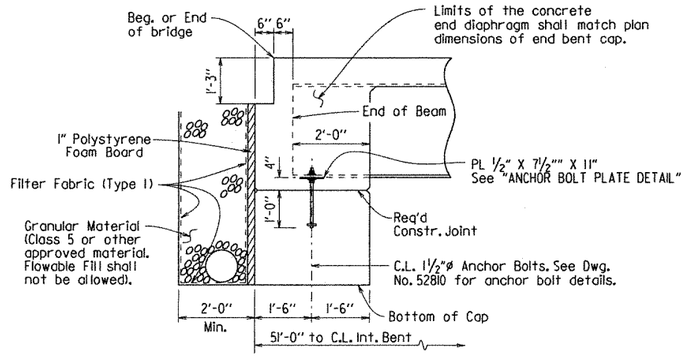
No Scale

Pours with the same number may be placed simultaneously or separately. All Pours (1) must be placed before Pours (2) can be placed. All Pours (2) must be placed before Pours (3). 48 hours shall elapse between the end of a pour and the start of the next pour. 72 hours shall elapse between the end of a pour and the start of an adjacent pour.

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

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

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

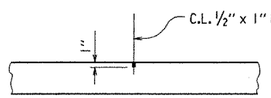


SECTION AT END BENT

No Scale

For additional details of pipe under drain see Std. Dwg. PU-1 and Section 611 of the Standard Specifications. Pipe under drains, outlet protectors, granular materials, drain pipe, filter fabric and polystyrene foam board will not be measured or paid for separately, but will be considered subsidiary to the unit price bid for "Unclassified Excavation".

For details of steel reinforcing in concrete diaphragm at end bent see Drawing No. 52810



Use ½" x 1" Type 3, 4, or 6 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. This joint shall be formed.

LONGITUDINAL CONSTRUCTION JOINT DETAIL
Not to Scale

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
7/23/12
CARL J. FUSELIER

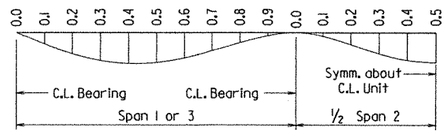
BRIDGE ENGINEER

TABLE OF DEAD LOAD DEFLECTIONS (INCHES)

Span	Point of Deflection	Structural Steel		Structural Steel + Slab		Structural Steel + Slab + Parapet	
		Interior	Exterior	Interior	Exterior	Interior	Exterior
1 or 3	0.0	0.000	0.000	0.000	0.000	0.000	0.000
	0.1	0.024	0.022	0.179	0.143	0.180	0.145
	0.2	0.045	0.040	0.330	0.264	0.332	0.271
	0.3	0.059	0.053	0.434	0.347	0.437	0.358
	0.4	0.066	0.058	0.480	0.383	0.484	0.397
	0.5	0.063	0.056	0.465	0.371	0.469	0.385
	0.6	0.054	0.048	0.395	0.315	0.398	0.327
	0.7	0.039	0.035	0.286	0.228	0.288	0.235
	0.8	0.022	0.019	0.160	0.128	0.161	0.130
	0.9	0.007	0.006	0.052	0.041	0.051	0.039
½ Span 2	0.0	0.000	0.000	0.000	0.000	0.000	0.000
	0.1	0.007	0.007	0.054	0.043	0.058	0.057
	0.2	0.025	0.022	0.181	0.145	0.190	0.178
	0.3	0.043	0.039	0.318	0.254	0.332	0.305
	0.4	0.057	0.051	0.419	0.334	0.436	0.397
	0.5	0.062	0.055	0.455	0.363	0.473	0.430

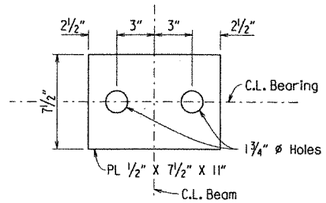
C.L. Unit

Table is symmetrical about C.L. Unit



DEAD LOAD DEFLECTIONS DIAGRAM (TYP.)

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



ANCHOR BOLTS PLATE DETAIL

No Scale

SHEET 3 OF 6

DETAILS OF 160'-0" INTEGRAL W-BEAM UNIT MORO CREEK RELIEF

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: RBR DATE: 12/09/2011 FILENAME: b070289_sl.dgn

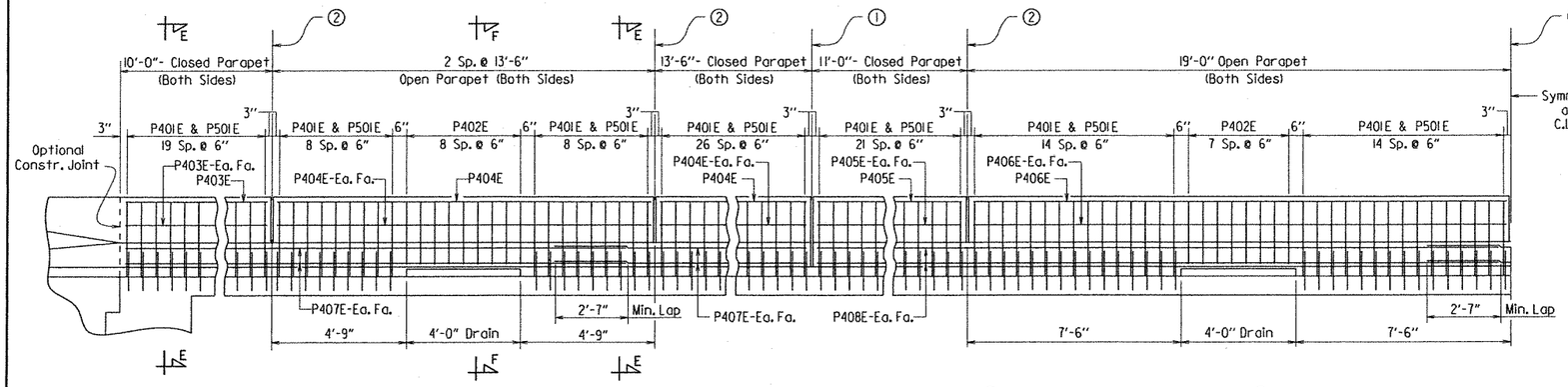
CHECKED BY: DHP DATE: 7-16-12 SCALE: ⅛" = 1'-0" or as shown

DESIGNED BY: RBR DATE: 11/11

BRIDGE NO. 07239, 07243 DRAWING NO. 52808

PRINT DATE: 7/16/2012

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.		070289	142	365
				① 07239, 07243		SPAN DETAILS		52809

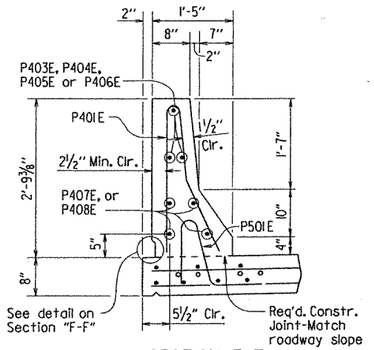


DETAILS OF PARAPET RAIL

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

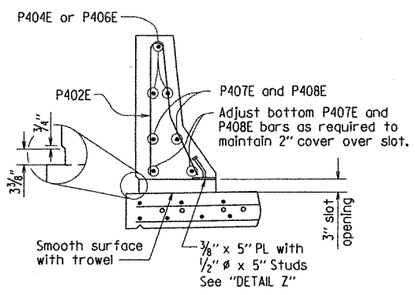
① C.L. Full-Depth Parapet Joint (1/4" to 1" Max.) as shown in "Reinforcing Plan & Deck Pouring Sequence" Dwg. No. 52808. Stop 4" from top of slab.

② C.L. Partial-Depth Parapet Joint (1/4" to 1" Max.) as shown in "Reinforcing Plan & Deck Pouring Sequence" Dwg. No. 52808. Stop 1'-2" from top of slab.



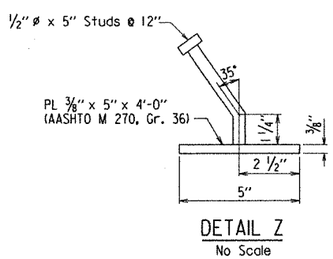
SECTION E-E

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



SECTION F-F

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



DETAIL Z

No Scale

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

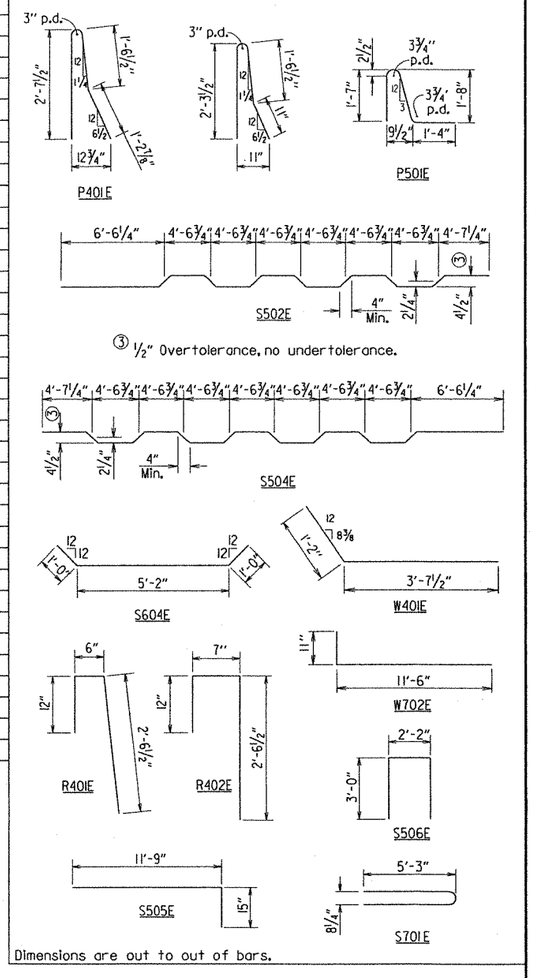
Parapet studs shall be 5" long., granular flux filled, solid fluxed or equal, and automatically end welded to the plate. Studs and plates shall meet the requirements of Section 807 and shall be measured and paid for as "Structural Steel in Beam Spans (M270, Gr. 50W)."

BAR LIST - PER BRIDGE

MARK	NO. REQ'D	LENGTH	P.D.
P401E	540	5'-6"	3"
P402E	104	4'-10"	3"
P403E	12	9'-8"	Str.
P404E	36	13'-2"	Str.
P405E	12	10'-8"	Str.
P406E	12	18'-8"	Str.
P407E	32	26'-5"	Str.
P408E	16	31'-2"	Str.
P501E	540	4'-8"	3"
S401E	1035	34'-3"	Str.
S402E	18	36'-3"	Str.
S403E	18	44'-3"	Str.
S501E	125	36-11"	Str.
S502E	126	39'-3"	3"
S503E	125	44'-3"	Str.
S504E	126	43'-11"	3"
S505E	208	12'-11"	2 1/2"
S506E	172	8'-0"	2 1/2"
S601E	131	37'-6"	Str.
S602E	208	29'-6"	Str.
S603E	131	44'-3"	Str.
S604E	16	7'-2"	4 1/2"
S701E	252	10'-9"	6 1/2"
R401E	16	3'-11"	2"
R402E	16	4'-0"	2"
R403E	24	9'-8"	Str.
R404E	24	2'-0"	Str.
R601E	32	5'-11"	Str.
R602E	12	5'-0"	Str.
W401E	20	4'-10"	2"
W402E	20	5'-11"	Str.
W701E	12	11'-6"	Str.
W702E	48	12'-3"	5 1/4"

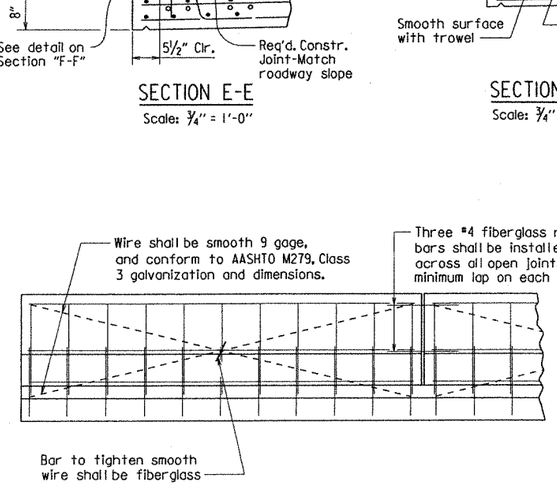
NOTE: Bars designated with an "E" suffix shall be epoxy coated.

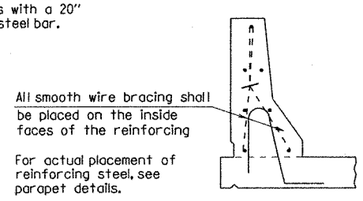
BENDING DIAGRAMS



③ 1/2" Overtolerance, no undertolerance.

Dimensions are out to out of bars.



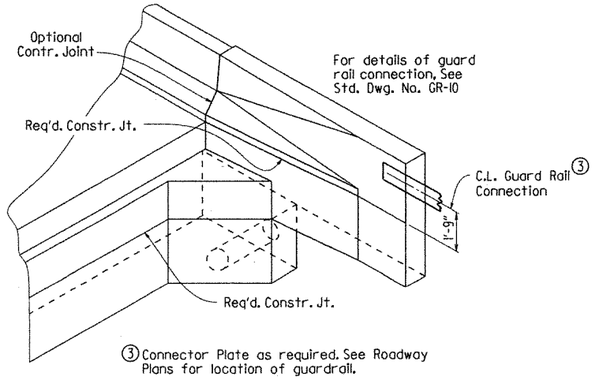


All panels shall be braced as required to prevent racking. All open joints shall be sawed as soon as practical to a minimum width of 1/4". To control cracking before sawing all joints must be grooved before the concrete is set. Sawing of the joints must be controlled so it will follow the grooved joint.

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

DETAILS OF OPTIONAL SLIP FORMING OF CONCRETE PARAPET RAIL

No Scale



③ Connector Plate as required. See Roadway Plans for location of guardrail.

ISOMETRIC VIEW OF INTEGRAL BENT

No Scale

STATE OF ARKANSAS Carl L. Fuselier REGISTERED PROFESSIONAL ENGINEER No. 7510 7/23/12 CARL L. FUSELIER

BRIDGE ENGINEER

SHEET 4 OF 6

DETAILS OF 160'-0" INTEGRAL W-BEAM UNIT MORO CREEK RELIEF

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: RBR DATE: 12/09/2011 FILENAME: b070289_sl.dgn

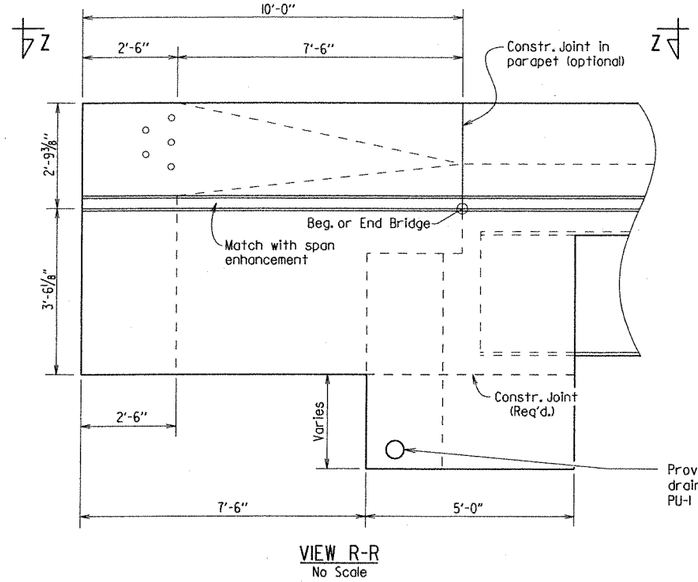
CHECKED BY: DHP DATE: 7-16-12 SCALE: As shown

DESIGNED BY: RBR DATE: 11/11

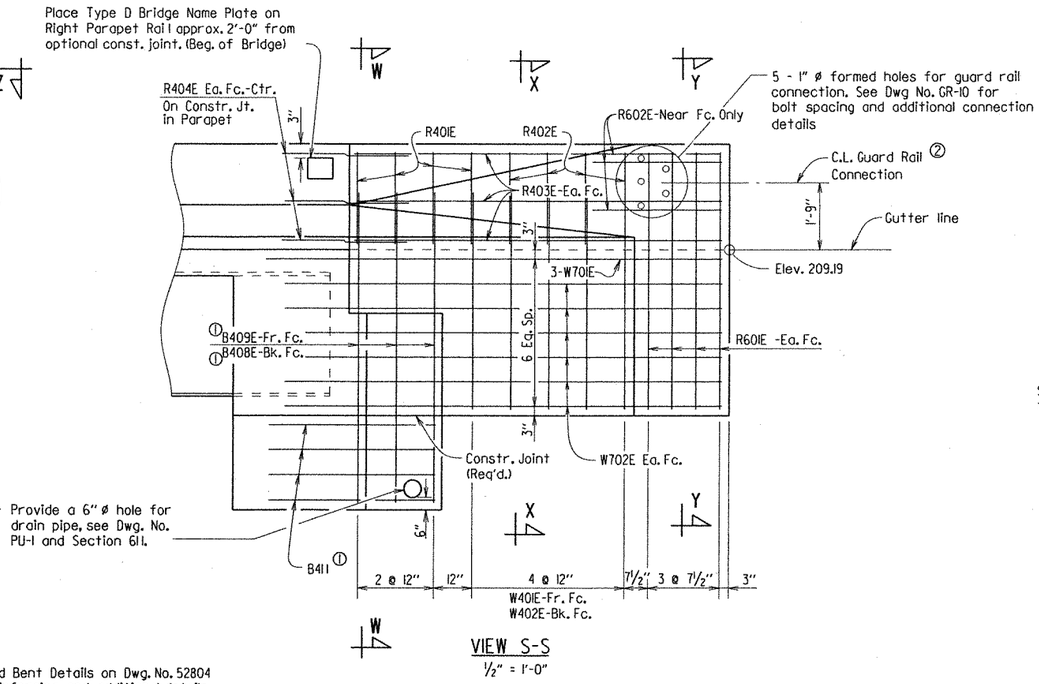
BRIDGE NO. 07239, 07243 DRAWING NO. 52809

PRINT DATE: 7/16/2012

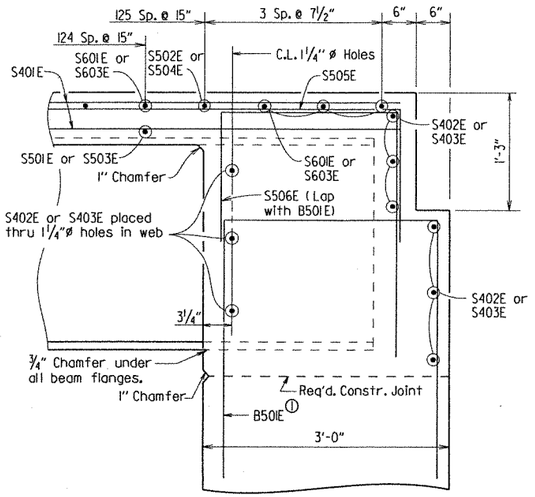
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070289	143	365
				① 07239, 07243		SPAN DETAILS		52810



VIEW R-R
No Scale

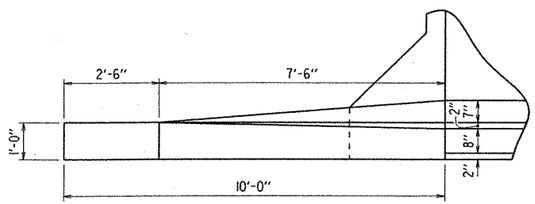


VIEW S-S
½" = 1'-0"



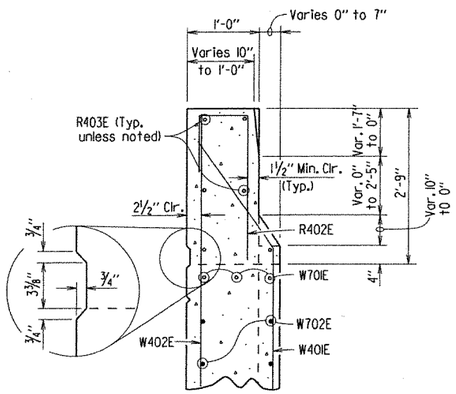
SECTION T-T
No Scale

① See End Bent Details on Dwg. No. 52804 for reinforcing and additional details.

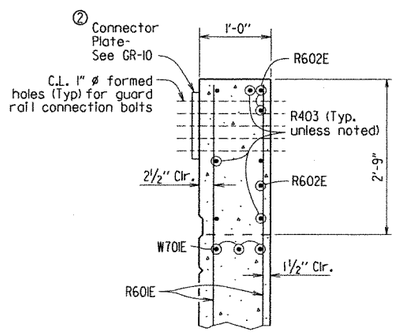


VIEW Z-Z
No Scale

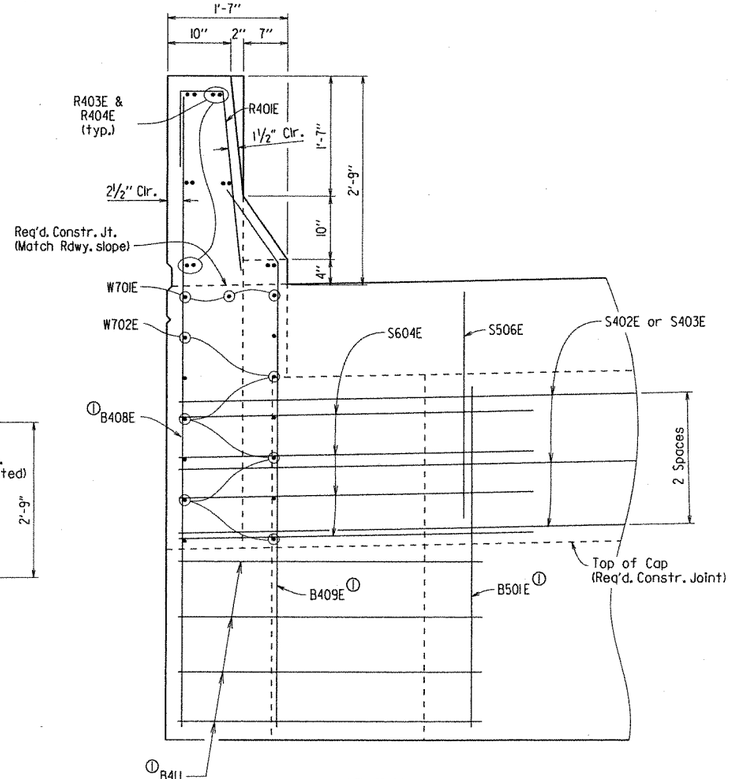
② Connector Plate as required. See Roadway Plans for location of guardrail.



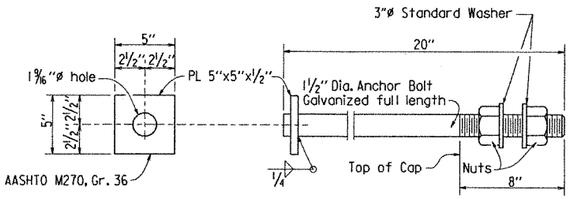
SECTION X-X
No Scale



SECTION Y-Y
No Scale



SECTION W-W
¾"=1'-0"



Anchor Bolts and Nuts to be according to subsection 807.07. Washers shall be a standard washer. Anchor Bolts, Washers, and Nuts shall be paid for at the unit price bid for "Structural Steel in Beam Spans (M270, Gr. 50W)". All anchor bolts shall be Grade 55.

Use lower nut and washer to adjust to grade. Snug tight top nut and washer after grade is adjusted.

ANCHOR BOLT DETAIL FOR END BENTS
No Scale

STATE OF ARKANSAS
Carl E. Fusselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
7/23/12
CARL E. FUSSELIER

BRIDGE ENGINEER

SHEET 5 OF 6

DETAILS OF 160'-0" INTEGRAL W-BEAM UNIT MORO CREEK RELIEF

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: RBR DATE: 12/09/2011 FILENAME: b070289_sl.dgn
CHECKED BY: DHP DATE: 7-16-12 SCALE: ½" = 1'-0" or as shown
DESIGNED BY: RBR DATE: 11/11

BRIDGE NO. 07239, 07243 DRAWING NO. 52810

PRINT DATE: 7/23/2012

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.		070289	144	365
				① 07239, 07243		SPAN DETAILS		52811

GENERAL NOTES

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2003 Edition) with applicable supplemental specifications and special provisions.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications 5th Edition (2010), with 2010 Interims.

LIVE LOADING: HL-93

MATERIALS AND STRENGTHS:
Concrete: All concrete shall be Class S(AE) with a minimum 28 day strength f'c = 4000 psi.
Reinforcing Steel: Reinforcing steel shall conform to AASHTO M31 or M53, Grade 60 (Yield Strength = 60,000 psi.).
Structural Steel: Structural steel shall conform to AASHTO M270, Gr. 50W (Fy = 50,000 psi.) or AASHTO M270, Gr.36 (Fy = 36,000 psi.).

STRUCTURAL STEEL:
All Structural Steel shall be AASHTO M270, Gr. 50W unless otherwise noted. All structural steel shall be paid for as "Structural Steel in Beam Spans (M270, Gr.50W)". Structural Steel completely embedded in concrete may be AASHTO M270, Gr. 36 or Gr. 50. AASHTO M270, Gr.50W steel shall not be painted. All exposed surfaces shall be cleaned in accordance with subsection 807.84(e) unless noted otherwise.

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

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

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.

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

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

All beams shall be blocked in their true position in the shop with the webs horizontal in groups as specified in subsection 807.54 (b)(1). The camber, length of sections, distance between bearings, and opening of joints shall be measured with thebeams in their true position and this information shall become part of the permanent record of this job. The component parts shall be match marked in this assembly and those marks shall be shown on the erection diagram. All beam dimensions are based on a temperature of 60 degrees F. A tolerance of 1/4" (plus or minus) allowed for camber.

Field connections shall be bolted with high-strength bolts. Bolts shall be 3/4"ø, except as noted, and open holes shall be 15/16 "ø unless otherwise noted. Holes for 3/4"ø bolts may be 15/16 "ø if a washer is supplied for use under both the nut and the head of the bolt. For field splices, bolts shall be 7/8"ø bolts. Open holes shall be 15/16 "ø. Bolt spacing shall be 3" for 7/8"ø bolts unless otherwise noted. Bolts shall be placed with heads on the outside face of the exterior beam web and on the bottom of the beam flanges.

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

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

Bearings shall be seated in accordance with subsection 807.66. This work and material will not be paid for directly but will be considered subsidiary to the item "Structural Steel in Beam Spans (M270, Gr. 50W)".

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

CONCRETE:
All concrete shall be Class S(AE) with a minimum 28 day compressive strength f'c = 4000 psi. Concrete shall be poured in the dry and all exposed corners to be chamfered 3/4" 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. 14991 for allowable modifications and for tolerances when Permanent Steel Bridge Deck Forms are used. Concrete in bridge superstructure shall be placed, consolidated, and screeded off for the entire pour before any concrete has taken its initial set. This may require the use of a retarding agent. The concrete diaphragms at end bents shall be poured monolithic with the slab.

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

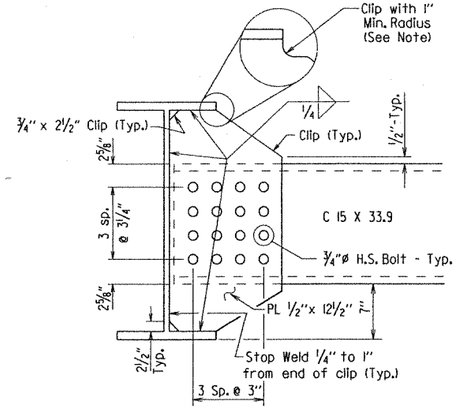
Removable forms shall be used for concrete diaphragms.

CLASS I PROTECTIVE SURFACE TREATMENT: Class I protective surface treatment shall be applied to the roadway surface and to the roadway face and top of the concrete parapet rail.

LOAD DISTRIBUTION:
Dead Load:

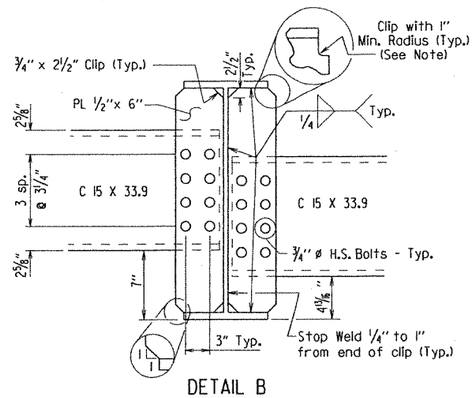
A. To W-Beam	Beam No.		
	Beam 1 & 9	715	
	Beam 2 thru 8	913	plf + Wt. of Structural Steel
B. To Composite Beam	Beam No.		
	Beam 1 & 9	395	plf ①
	Beam 2 thru 8	256	plf ①

① Includes 200 plf future wearing surface.

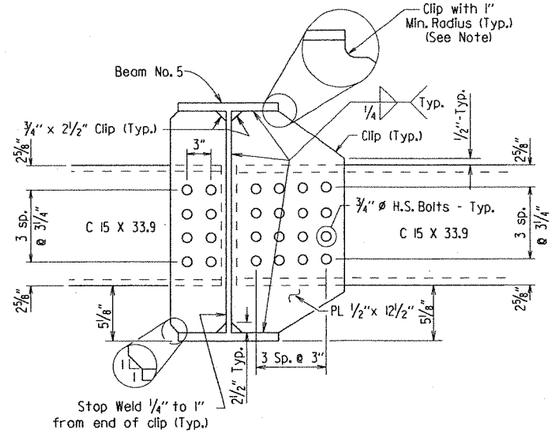


DETAIL A
No Scale

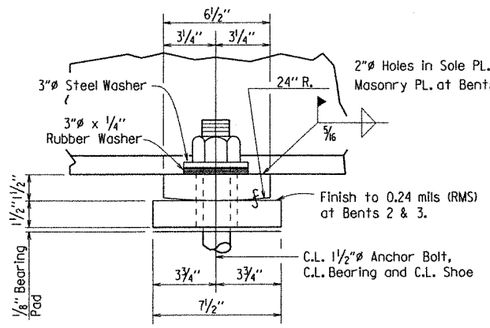
If permanent steel deck forms are used, the fabricator shall clip the plate as necessary to accommodate the deck form support.

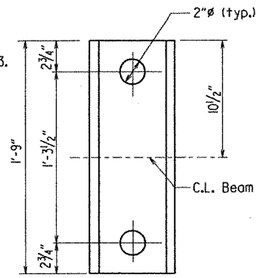


DETAIL B
No Scale



DETAIL C
No Scale

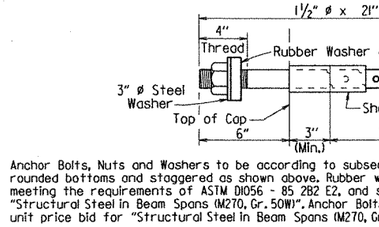




Plates for Type "B" Special Shoes shall be M270, GR. 50W.

ELEVATION TYPE "B" SPECIAL SHOE
BENTS: 2 and 3
No Scale

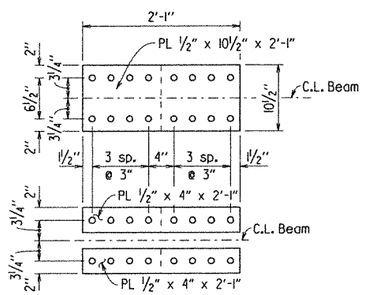
PLAN TYPE "B" SPECIAL SHOE
BENTS: 2 and 3
No Scale



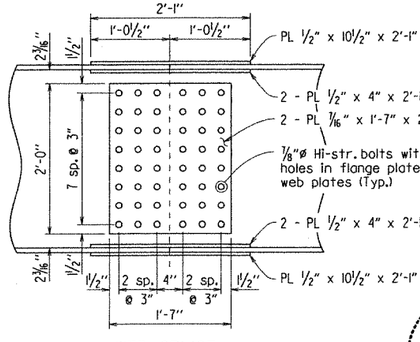
Anchor Bolts, Nuts and Washers to be according to subsection 807.07. Indentations shall be circular with rounded bottoms and staggered as shown above. Rubber washer shall be closed cell expanded rubber, meeting the requirements of ASTM D1056 - 85 2B2 E2, and shall be considered subsidiary to the item of "Structural Steel in Beam Spans (M270, Gr. 50W)". Anchor Bolts, Nuts and Washers shall be paid for at the unit price bid for "Structural Steel in Beam Spans (M270, Gr. 50W)". Anchor bolts shall be Grade 55.

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

ANCHOR BOLT DETAIL FOR INTERMEDIATE BENTS
BENTS: 2 and 3
No Scale



FLANGE SPLICE
Top & Bottom



WEB SPLICE

DETAILS OF FIELD SPLICE
No Scale

All field splice plates shall be AASHTO M270, Gr. 50W
All field splice bolts shall be 7/8"ø H.S. Bolts
All field splice bolt holes shall be 15/16 "ø

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"	

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
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
7/23/12
CARL J. FUSELIER

BRIDGE ENGINEER

SHEET 6 OF 6

DETAILS OF 160'-0" INTEGRAL W-BEAM UNIT MORO CREEK RELIEF

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: RBR DATE: 12/09/2011 FILENAME: b070289_sl.dgn
CHECKED BY: DHP DATE: 7-16-12 SCALE: 1/2" = 1'-0" or as shown
DESIGNED BY: RBR DATE: 11/11

BRIDGE NO. 07239, 07243 DRAWING NO. 52811

PRINT DATE: 7/23/2012

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.		070289	145	365
				①	07240	- LAYOUT -	52812	

For R/W Data see Rdwy. Plans

Use Type Special 1 Approach Gutters (w=8'-0") at Beginning of Bridge. For details, see Dwg. No. 52844.

MORO CREEK RELIEF

Dumped Riprap 1'-6" thick placed on Filter Blanket. Top of Riprap Elev. 205.0. See Std. Dwg. No. 1891F. Typ. at both ends of Bridge.

Use Type Special 2 Approach Gutters (w=8'-0") at End of Bridge. For details, see Dwg. No. 52845.

Toe of fill slope

Toe of cut slope

Excavate Channel to Elev. 200.0

The proposed bridge is positioned to avoid interference with the existing substructure. The Contractor shall verify the location of the existing substructure before constructing the new substructure. Any adjustments necessary to fit the proposed bridge shall be submitted to the Engineer for approval.

Existing Bridge No. 00791

Concrete Barrier Wall (Parapet Type A) see Rdwy. Plans

Tangent Distance greater than 500'

Test Hole Typ.

Approx. 3.14 mi. to Jct. S.H. 273

Approx. 11.27 mi. to Jct. S.H. 48

C.L. Bridge & C.L. Constr.

N 40°35'28" E

Longitudinal Construction Joint

Stage 1 Constr.

Stage 2 Constr.

Finished crown 75'-0"

59'-0" Pavement

Lane Median Lane

Roadway

Excavate Existing Embankment as shown. Approx. 724 cubic yards of Excavation.

PLAN

BORING LEGEND

AI-Moist, Medium Stiff, Brown Clay with some Gravel
BI-Moist, Soft, Brown and Gray Clay
CI-Moist, Hard, Gray Clay with Sand
DI-Wet, Dense, Gray Sand with Gravel
EI-Wet, Medium Dense, Gray Gravel with Sand
FI-Wet, Medium Dense, Gray Sand with Gravel
GI-Wet, Very Stiff, Gray Silty Clay with some Gravel
HI-Moist, Very Stiff, Gray Sandy Clay
JI-Moist, Very Stiff, Gray Clay
KI-Wet, Hard, Gray Clay
LI-Moist, Hard, Gray Clay Sandy Clay
MI-Moist, Hard, Gray Clay with some Organic Matter
NI-Moist, Very Hard, Gray and Black Lignitic Clay
PI-Moist, Dense, Gray Sand with Clay
QI-Moist, Medium Stiff, Brown and Gray Clay
RI-Wet, Soft, Gray Clay
SI-Moist, Stiff, Gray Clay with Sand
TI-Wet, Medium Dense, Gray Sand
UI-Moist, Very Stiff, Gray Clay with Sand
VI-Moist, Hard, Gray and Black Lignitic Clay
WI-Moist, Very Stiff, Gray Clay with Trace of Sand
XI-Wet, Dense, Gray Sand with Clay

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

"N" VALUES

Sta. 510+32 - C.L. Constr.	Sta. 511+55 - 12' Left of C.L. Constr.
4.0- 5.0, N=6	5.0- 6.0, N=6
9.0- 10.0, N=4	10.0- 11.0, N=4
15.5- 16.5, N=37	15.0- 16.0, N=10
20.5- 21.5, N=38	20.0- 21.0, N=11
25.5- 26.5, N=19	25.0- 26.0, N=14
30.5- 31.5, N=26	30.0- 31.0, N=18
35.5- 36.5, N=21	35.5- 36.5, N=36
40.5- 41.5, N=23	40.5- 41.5, N=24
45.5- 46.5, N=55	45.5- 46.5, N=24
50.5- 51.5, N=36	50.5- 51.5, N=32
55.5- 56.5, N=39	55.5- 56.5, N=27
60.5- 61.5, N=39	60.5- 61.5, N=30
65.0- 65.4, N=60(5")	65.5- 66.5, N=61
70.5- 71.5, N=36	70.5- 71.5, N=27

Total Length of Bridge = 121'-0"

120-0" Continuous Composite Integral W-Beam Unit (37'-46'-37')

End of Beam

For details of Stage Construction, see Dwg. No. 52803.

Beg. Br. Sta. 510+34.50

End Br. Sta. 511+55.50

Slope Intercept Sta. 510+27.50

Slope Intercept Sta. 511+62.50

Concrete Parapet Rail

Guard Rail, see Rdwy. Plans

Concrete Barrier Wall (Parapet Type A) see Rdwy. Plans

C.L. Deck @ C.L. Bent to low seat of cap = 3'-8⅛"

C.L. Bent Sta. 510+72.00

Design H.W. to low steel = 1.1'

C.L. Bent Sta. 511+18.00

3'-4⅝" C.L. Deck to Low Steel

Proposed Grade Line @ C.L. Construction

Existing Ground Line @ C.L. Construction

Elev. 206.1

Elev. 207.4

Fix.

Int.

Stations shown are along C.L. Bridge and C.L. Construction.

Level Grade - C.L. Deck Elev. at working point 209.44.

46' Piles

050 Design H.W. Elevation 204.9

Bent No.

1 2 3 4

Sta. 510+32 C.L. Constr.

Sta. 511+55 12' Left of C.L. Constr.

ELEVATION

HYDRAULIC DATA

FLOOD DESCRIPTION	FREQUENCY	②TOTAL DISCHARGE	DISCHARGE THRU BRIDGE OPENING	①NATURAL WATER SURFACE ELEVATION	WATER SURFACE ELEVATION W/ BACKWATER
	YEARS	CFS	CFS	FEET	FEET
Design	50	18,500	2,239	204.8	205.1
Base	100	22,900	3,003	205.7	206.0
Overtopping	313	34,300	5,175	207.7	208.5
Extreme	500	36,000	5,425	207.9	208.7

①Unconstricted water surface elevation without structure and roadway approaches.

②Includes Bridge Nos. 07239 thru 07243.

Estimated 100-Year backwater elevation with Existing Structures in place is 206.2 ft.

Proposed Low Bridge Member Elevation = 206.0

Drainage area = 131.0 square miles (Includes Moro Creek and relief structures).

Historical H.W. Elev. = 206.0 ft.

GENERAL NOTES

BENCH MARK: TBM 915 Chiseled Sq. SE HW, 4.68' Lt. of C.L. Constr. Sta. 498+12.52, Elev. 207.67.

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2003 edition) with applicable supplemental specifications and special provisions. Unless otherwise noted, section and subsection numbers in the plans refer to the Construction Specifications.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications 5th Edition (2010), with 2010 Interims.

LIVE LOADING: HL-93

SEISMIC ZONE : 2 S_{DI} = 0.244 SITE CLASS = E

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 M31 or M53, GR. 60)	fy = 60,000 psi
Structural Steel (AASHTO M270, Gr. 36)	Fy = 36,000 psi
Structural Steel (AASHTO M270, Gr. 50W)	Fy = 50,000 psi

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

CONCRETE PILING: Piling for Bents 1 and 4 shall be 16" square prestressed concrete and shall be driven to a minimum ultimate bearing capacity of 145 tons per pile. Piling in Bents 2 and 3 shall be 24" square prestressed concrete and shall be driven to a minimum ultimate bearing capacity of 315 tons per pile. All piling shall be driven with an approved air, steam, or diesel hammer. Piling in end bents shall be driven after embankment to bottom of cap is in place. Piling in Bents 1 and 4 shall have a tip elevation of 177 or lower. Piling in Bents 2 and 3 shall have a tip elevation of 170 or lower. Length of piling shown are for estimating quantities and for use in determining payment for cut-off and build-up in accordance with the standard specifications. Drive one 51' test pile in Bent 2 and one 51' test pile in Bent 4.

DRIVING SYSTEM: The driving system approval and the ultimate bearing capacity determination for piling shall be based on the requirements of subsection 805.09(b) "Method B - Wave Equation Analysis (WEAP)". It is estimated that the minimum required rated energy of the hammer to obtain the minimum ultimate bearing capacity on 16" square piles will be 40,000 foot pounds per blow and on 24" square piles shall be 83,000 foot pounds per blow.

PREBORING: Preboring is required for all piling at bents 1 & 4. Prebored holes at Bents 1 and 4 shall have a diameter 6" greater than the greatest cross-sectional dimension of the pile for a depth of 10' below the bottom of the cap. The void space around the pile after completion of driving shall be backfilled with sand or pea gravel. The Contractor shall be responsible for keeping prebored holes free of debris prior to backfilling, which may require the use of temporary casing or other approved methods. Any related cost for backfilling and temporary casing will not be paid for separately but shall be considered subsidiary to the item "Preboring". Preboring will be paid for in accordance with Section 805.

BRIDGE DECK: The concrete bridge deck shall be given a tine finish as specified for final finishing in subsection 802.19 for Class 5 Tined Bridge Roadway Surface Finish.

PIPE UNDER DRAIN: One Pipe Under drain with outlet protectors shall be installed behind each bridge end in accordance with Section 611. Pipe Under drains will not be paid for directly but shall be considered subsidiary to "Unclassified Excavation".

DETAIL DRAWINGS:	DRAWING NO.
Stage Construction	52803
End Bents	52813 & 52815
Intermediate Bents	52814
120' Integral W-Beam Unit	52816 - 52822
Type "B" Special Shoes	52822
Concrete Piling	14964 & 52786
Type Special 1 Approach Gutters	52844
Type Special 2 Approach Gutters	52845

EXISTING BRIDGE: Existing Bridge No. 00791 (Log Mile 7.40) is 28'wide and 71' long and consists of concrete tee beams supported by concrete pile bents.

REMOVAL AND SALVAGE: After Stage 1 Construction is complete and opened to traffic, the Contractor shall remove existing Bridge No. 00791 in accordance with Section 205. All salvageable guard rail and guard rail posts, as determined by the Engineer, shall remain the property of the Department. The Contractor shall coordinate with the Engineer to provide temporary storage and on site loading onto Department equipment for removal of all salvaged items. All other material from the existing bridge shall become the property of the Contractor.

MAINTENANCE OF TRAFFIC: See Roadway Plans.

STATE OF ARKANSAS Carl J. Fuselier REGISTERED PROFESSIONAL ENGINEER No. 7510 7/23/12 CARL J. FUSELIER

BRIDGE ENGINEER

LAYOUT OF BRIDGE OVER MORO CREEK RELIEF (LOG MI. 7.40) HWY. 273-PETERS RD. (CR 24) (F) DALLAS COUNTY

ROUTE 167 SEC. 7

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 10/20/2011 FILENAME: b070289x8.11.dgn

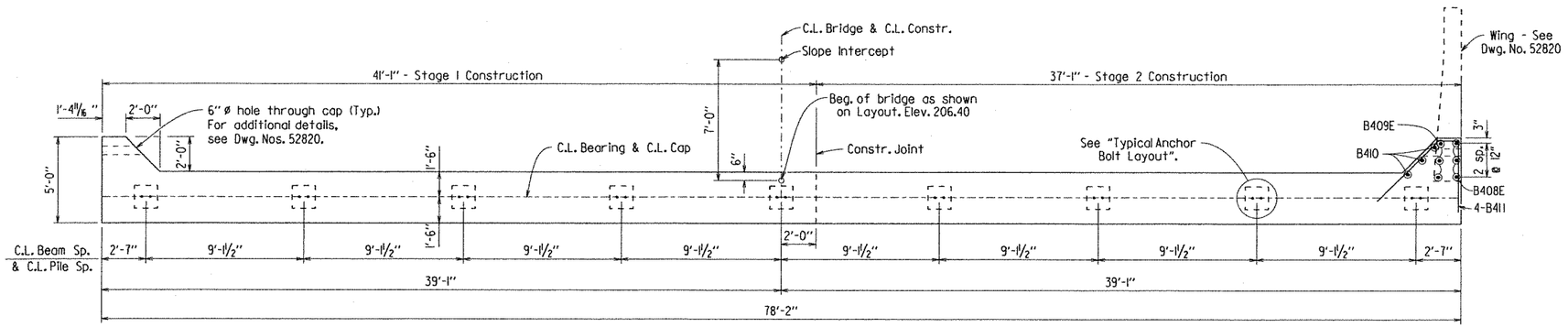
CHECKED BY: CMW DATE: 7/16/12 SCALE: 1"=20'

DESIGNED BY: CSL DATE: Sept. 2011

BRIDGE NO. 07240 DRAWING NO. 52812

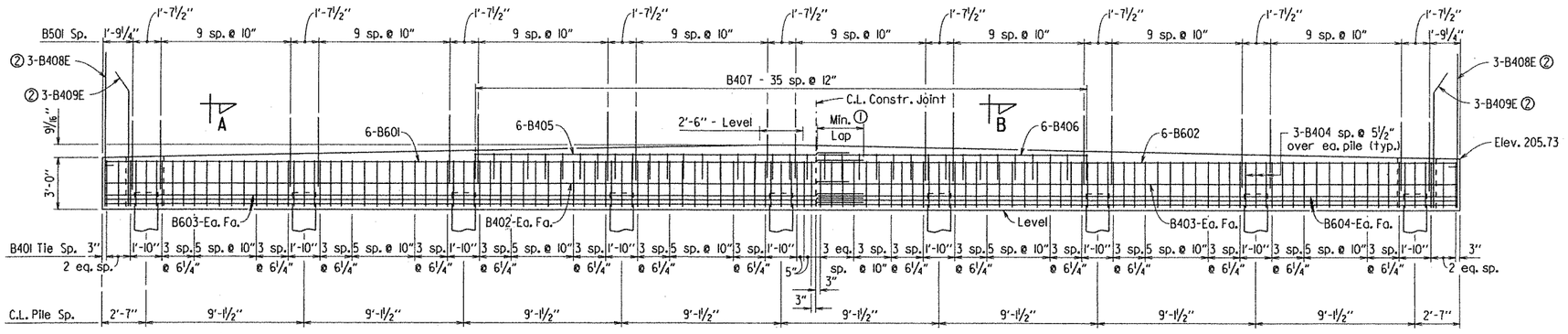
PRINT DATE: 7/20/2012

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.		070289	146	365
				① 07240	-	BENT 1 -		52813



PLAN
1/4" = 1'-0"

② Bars B408E and B409E shall be embedded 2'-10" into cap.



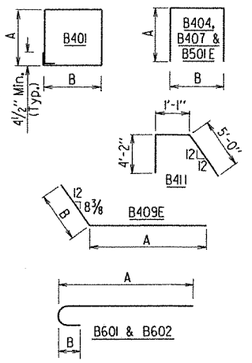
ELEVATION
Bent 1: Looking Back
1/4" = 1'-0"

① Min. Lap: 1'-9" #4 bar
2'-7" #6 bar

BAR LIST

Mark	No. Req'd.	Length	A	B	Pin Dia.
B401	103	11'-0"	2'-8"	2'-8"	2"
B402	2	42'-10"	-	-	Str.
B403	2	36'-9"	-	-	Str.
B404E	27	7'-10"	2'-8"	2'-8"	2"
B405	6	21'-6"	-	-	Str.
B406	6	15'-6"	-	-	Str.
B407	36	5'-6"	1'-6"	2'-8"	2"
B408E	6	8'-5"	-	-	Str.
B409E	6	7'-4"	6'-2"	1'-2"	2"
B410	6	4'-5"	-	-	Str.
B411	8	10'-2"	-	-	2"
B501E	82	9'-6"	3'-6"	2'-8"	2 1/2"
B601	6	44'-5"	43'-9"	6"	4 1/2"
B602	6	37'-5"	36'-9"	6"	4 1/2"
B603	6	43'-9"	-	-	Str.
B604	6	36'-9"	-	-	Str.

Bending Diagrams



Dimensions are out to out of bars

GENERAL NOTES

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

All reinforcing steel shall conform to AASHTO M 31 or M 53, Gr. 60. (Yield strength = 60,000 psi.)

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

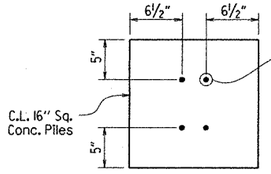
For anchor bolt details, see Dwg. No. 52817.

Bars with "E" suffix are Epoxy Coated.

Dowel bars in piles shall be located in such a way to avoid interference with Anchor Bolts.

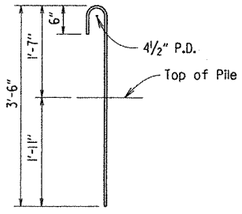
Granular backfill and pipe underdrain required behind end bent caps. See Dwg. No. 52818.

For additional information, see Layout.

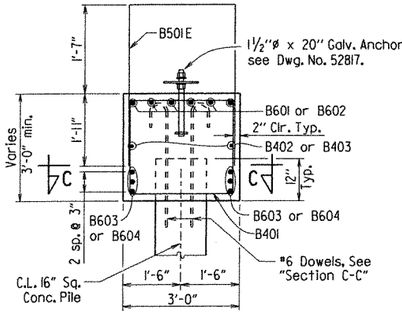


After driving, grill and grout #6 dowels 1'-11" into piles using an approved non-shrink or an epoxy grout listed on the QPL. Diameter of holes and installation procedure shall be as recommended by the grout manufacturer. Dowel bars, drilling and grout shall not be paid for directly but shall be considered subsidiary to the item "Concrete Piling - 16" Square".

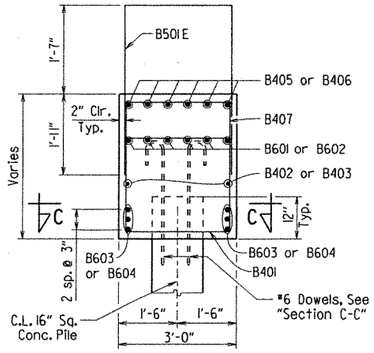
SECTION C-C
No Scale



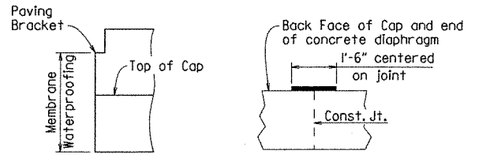
#6 Dowel Bar



SECTION A-A
No Scale



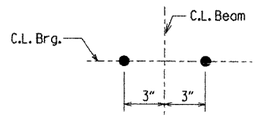
SECTION B-B
No Scale



Membrane waterproofing Type "C" or approved equal, see Section 815. Membrane waterproofing shall extend from the bottom of the cap to the paving bracket.

Payment for membrane to be considered subsidiary to Class "S" Concrete - Bridge.

CONSTRUCTION JOINT DETAIL
No Scale



TYPICAL ANCHOR BOLT LAYOUT
No Scale

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
7/23/12
CARL J. FUSELIER

BRIDGE ENGINEER

DETAILS OF BENT 1
MORO CREEK RELIEF

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

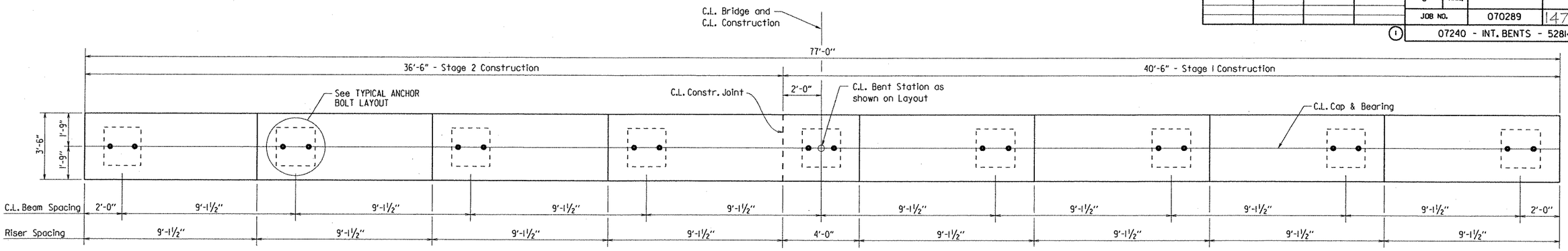
LITTLE ROCK, ARK.

DRAWN BY: RBR DATE: 12/22/2011 FILENAME: b070289_b1.dgn
CHECKED BY: DHP DATE: 7-16-12 SCALE: As Shown
DESIGNED BY: CMW DATE: 4/12

BRIDGE NO. 07240 DRAWING NO. 52813

PRINT DATE: 23-JUL-2012

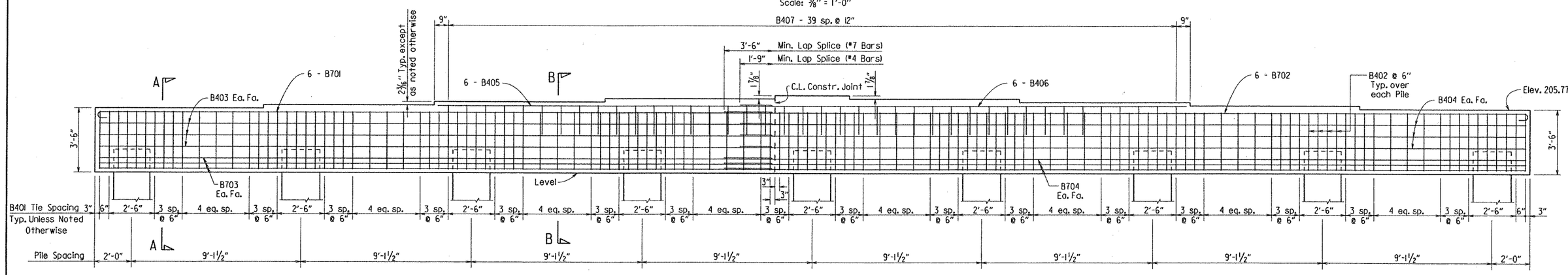
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				6	ARK.			
				JOB NO.		070289	147	365
				(1)		07240 - INT. BENTS - 52814		

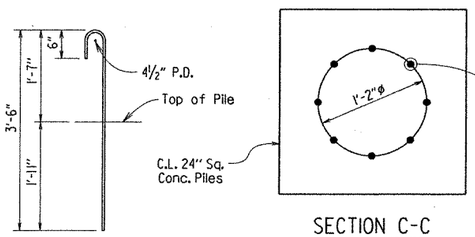


PLAN

Looking Ahead

Scale: ⅜" = 1'-0"





#6 Dowel Bar

SECTION C-C

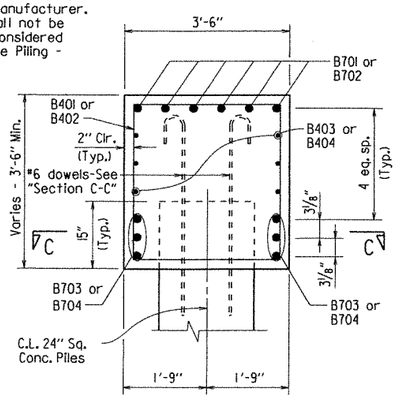
No Scale

After driving, grill and grout #6 dowels 1'-11" into piles using an approved non-shrink or an epoxy grout listed on the QPL. Diameter of holes and installation procedure shall be as recommended by the grout manufacturer. Dowel bars, drilling and grout shall not be paid for directly but shall be considered subsidiary to the item "Concrete Piling - 24" Square".

ELEVATION

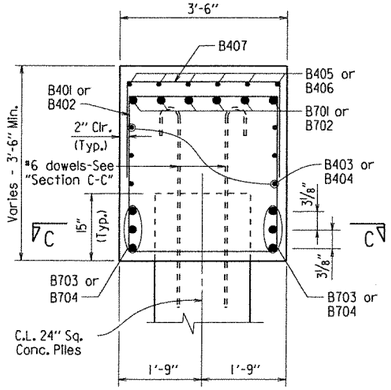
Looking Ahead

Scale: ⅜" = 1'-0"



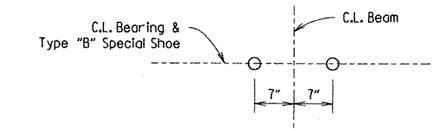
SECTION A-A

No Scale



SECTION B-B

No Scale



For details of Type "B" Special Shoe and Anchor Bolts, see Dwg. No. 52822.

TYPICAL ANCHOR BOLT LAYOUT

¾" = 1'-0"

GENERAL NOTES:

All concrete shall be Class "S" and be poured in the dry. All exposed corners are to be chamfered ¾" unless otherwise noted.

All reinforcing steel shall conform to AASHTO M31 or M53, Grade 60.

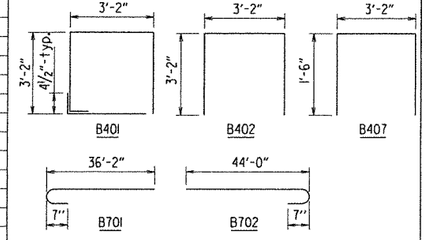
Anchor Bolts may be cast in place or drilled and grouted into place. If Anchor Bolts are to be cast in place, the Galvanized Sheet Metal Sleeves will not be required, see Dwg. No. 52822.

Dowel bars in piles shall be located in such a way to avoid interference with Anchor Bolts.

For additional information, See Layout.

BAR LIST - PER BENT

Mark	No. Req'd.	Length	Pin Dia.	Bending Diagrams
B401	92	13'-0"	2"	
B402	36	9'-4"	2"	
B403	6	36'-2"	Str.	
B404	6	42'-3"	Str.	
B405	6	17'-11"	Str.	
B406	6	24'-0"	Str.	
B407	40	6'-0"	2"	
B701	6	37'-0"	5¼"	
B702	6	44'-10"	5¼"	
B703	6	36'-2"	Str.	
B704	6	44'-0"	Str.	



Dimensions are out to out of bars

PRINT DATE: 7/20/2012

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
7/23/12
CARL J. FUSELIER

BRIDGE ENGINEER

DETAILS OF BENTS 2 AND 3 MORO CREEK RELIEF

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

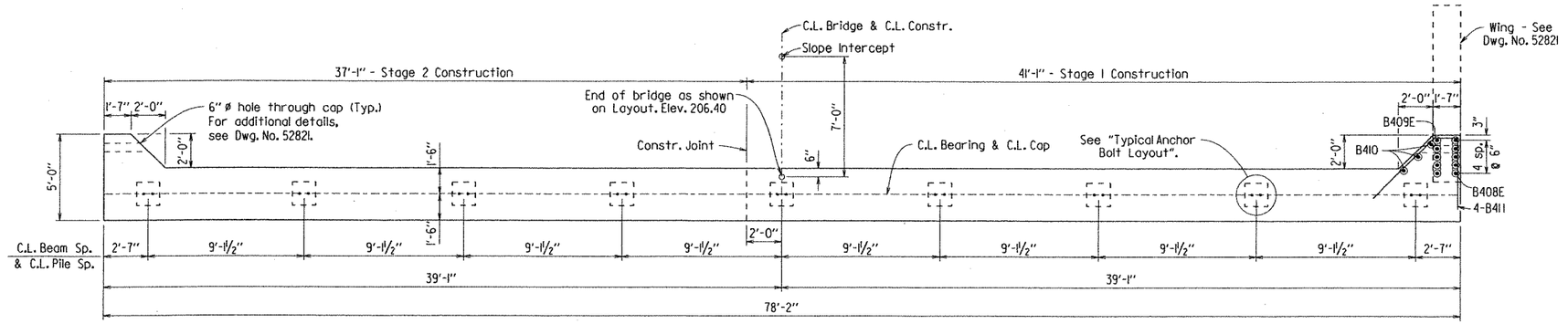
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CHECKED BY: DHP DATE: 7-16-12 SCALE: As Shown

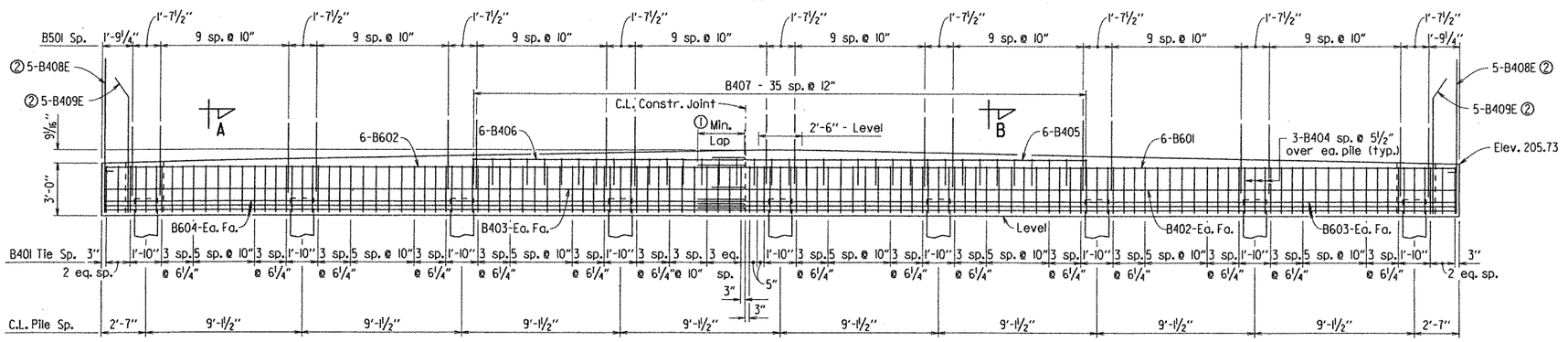
DESIGNED BY: CMW DATE: 4/12

BRIDGE NO. 07240 DRAWING NO. 52814

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.		070289	148	365
				① 07240	-	BENT 4 -	52815	



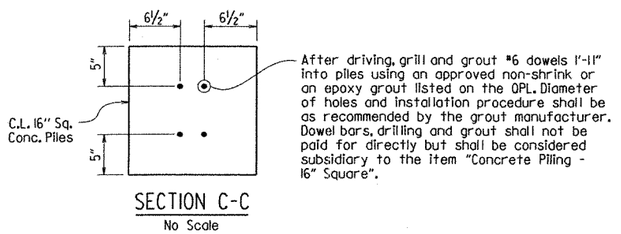
PLAN
1/4" = 1'-0"



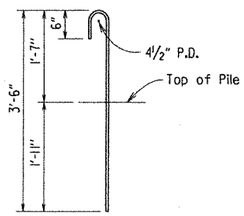
② Bars B408E and B409E shall be embedded 2'-10" into cap.

ELEVATION
Looking Ahead
1/4" = 1'-0"

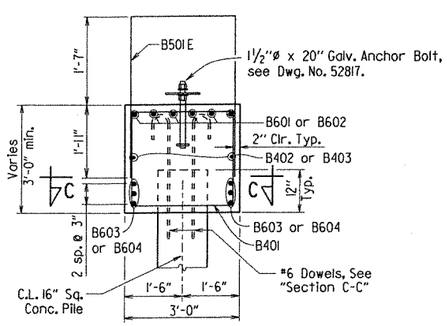
① Min. Lap: 1'-9" #4 bar
2'-7" #6 bar



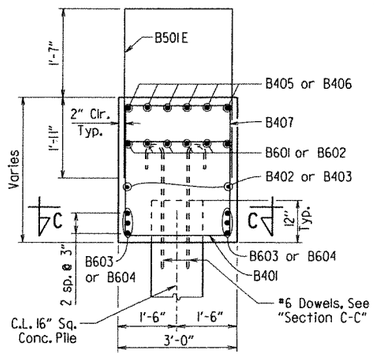
SECTION C-C
No Scale



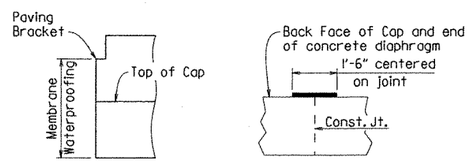
#6 Dowel Bar



SECTION A-A
No Scale



SECTION B-B
No Scale



Membrane waterproofing Type "C" or approved equal, see Section 815. Membrane waterproofing shall extend from the bottom of the cap to the paving bracket.

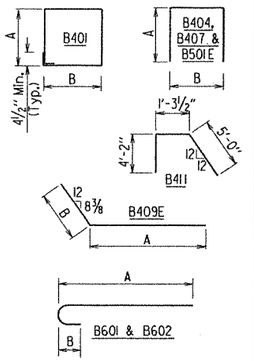
Payment for membrane to be considered subsidiary to Class "S" Concrete - Bridge.

CONSTRUCTION JOINT DETAIL
No Scale

BAR LIST

Mark	No. Req'd.	Length	A	B	Pin Dia.
B401	103	11'-0"	2'-8"	2'-8"	2"
B402	2	42'-10"	-	-	Str.
B403	2	36'-9"	-	-	Str.
B404E	27	7'-10"	2'-8"	2'-8"	2"
B405	6	21'-6"	-	-	Str.
B406	6	15'-6"	-	-	Str.
B407	36	5'-6"	1'-6"	2'-8"	2"
B408E	10	8'-5"	-	-	Str.
B409E	10	7'-4"	6'-2"	1'-2"	2"
B410	6	4'-5"	-	-	Str.
B411	8	10'-5"	-	-	2"
B501E	82	9'-6"	3'-6"	2'-8"	2½"
B601	6	44'-5"	43'-9"	6"	4½"
B602	6	37'-5"	36'-9"	6"	4½"
B603	6	43'-9"	-	-	Str.
B604	6	36'-9"	-	-	Str.

Bending Diagrams



Dimensions are out to out of bars

GENERAL NOTES

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

All reinforcing steel shall conform to AASHTO M 31 or M 53, Gr. 60. (Yield strength = 60,000 psi.)

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

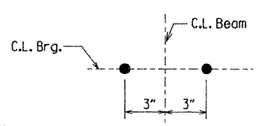
For anchor bolt details, see Dwg. No. 52817.

Bars with "E" suffix are Epoxy Coated.

Dowel bars in piles shall be located in such a way to avoid interference with Anchor Bolts.

Granular backfill and pipe underdrain required behind end bent caps. See Dwg. No. 52818.

For additional information, see Layout.



TYPICAL ANCHOR BOLT LAYOUT
No Scale

STATE OF ARKANSAS
Carl J. Puseliier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
7/23/12
CARL J. PUSELIER

BRIDGE ENGINEER

DETAILS OF BENT 4
MORO CREEK RELIEF

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: RBR DATE: 12/22/2011 FILENAME: b070289_bl.dgn
CHECKED BY: DHP DATE: 7-16-12 SCALE: As Shown
DESIGNED BY: CMW DATE: 4/12

BRIDGE NO. 07240 DRAWING NO. 52815

PRINT DATE: 23-JUL-2012

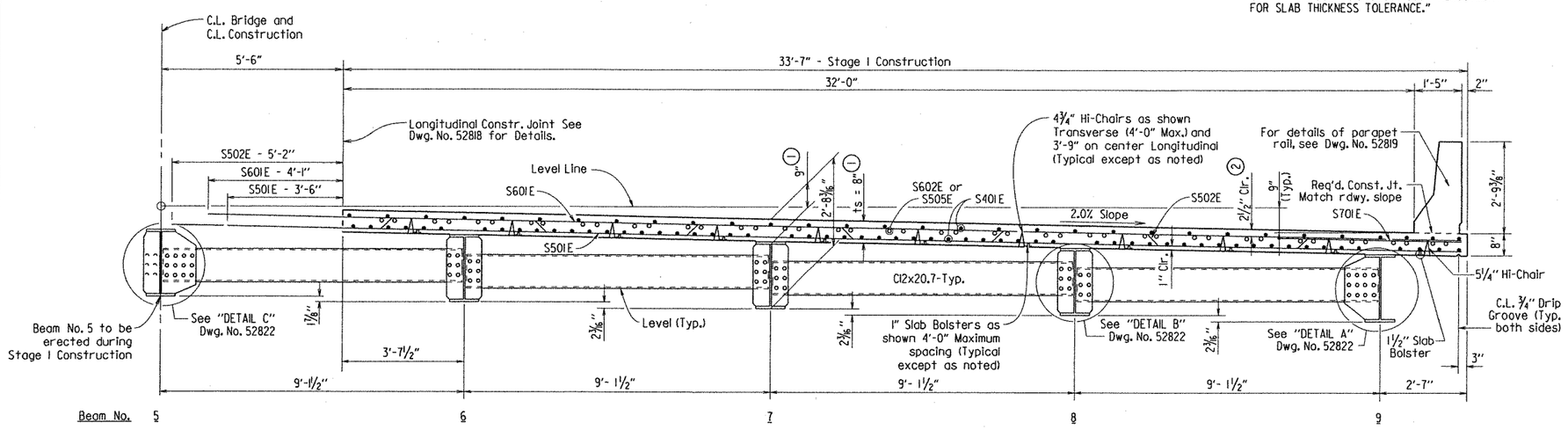
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				6	ARK.			
				JOB NO.		070289	149	365
				(1) 07240		SPAN DETAILS		52816

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

At Contractor's option, in lieu of providing bar S502E & S504E, one #5 bar top and bottom may be substituted for each bar. Payment for reinforcing will be based on the weight of bar S502E & S504E. Bars in top and bottom shall be epoxy coated.

(1) See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE."

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

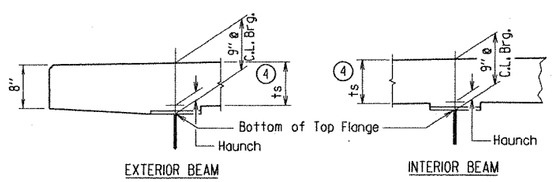


TYPICAL SECTION - STAGE I CONSTRUCTION

Looking Ahead
Scale: ½" = 1'-0"

The superstructure details shown are for use when removable deck forming is used and are the basis for measurement of Clas S(AE) Concrete. See Standard Drawing No. 14991 for allowable modifications and for tolerances when permanent steel bridge deck forms are used. If permanent steel bridge deck forms are used they shall be continuous between beams 5 & 6.

NOTE: ts = Slab thickness as shown in "Typical Section"



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

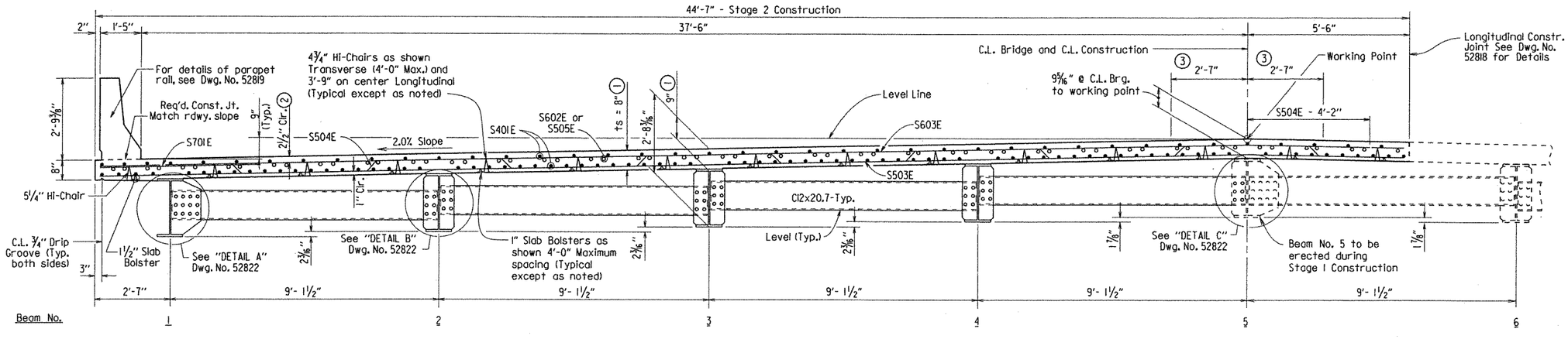
Haunch dimension may vary within the following limits to maintain the grade and slab thickness tolerance : Minimum - occurs when top flange contacts bottom reinforcing steel; Maximum - top flange thickness plus 1¾". No increase in concrete and structural steel quantities will be made to maintain tolerances.

Tolerances shown are applicable only when removable deck forming is used. See Std. Dwg. No. 14991 for tolerances when permanent steel deck forms are used. Payment for concrete shall be based on removable deck forming.

ADJUSTMENT FOR SLAB THICKNESS TOLERANCE

No Scale

(3) See Rounding Detail



TYPICAL SECTION - STAGE 2 CONSTRUCTION

Looking Ahead
Scale: ½" = 1'-0"

SLAB REINFORCING

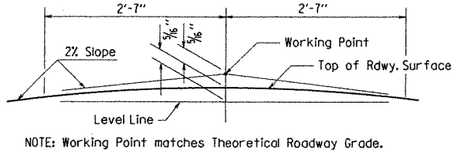
Transverse:
S502E and S504E @ 15" o.c. bent up over beams
S601E and S603E @ 15" o.c. in top
S501E and S503E @ 15" o.c. in bottom
S701E @ 15" o.c. in top at both gutterlines - placed around ends of S502E and S504E.
See "REINFORCING PLAN", Dwg. No. 52818

Longitudinal:
S401E as shown (18" max.)
S602E as shown over int. supports
S505E as shown at end bents

Min. Lap Splice for #4 epoxy bars = 2'-7"
Min. Lap Splice for #5 epoxy bars = 3'-3"
Min. Lap Splice for #6 epoxy bars = 3'-10"

Bars with an "E" suffix are epoxy coated

For weld table see Dwg. No. 52822



NOTE: Working Point matches Theoretical Roadway Grade.

ROUNDING DETAIL

No Scale

STATE OF ARKANSAS
CARL J. FUSELIER
REGISTERED PROFESSIONAL ENGINEER
No. 7510
7/23/12

BRIDGE ENGINEER

SHEET 1 OF 7

DETAILS OF 120'-0" INTEGRAL W-BEAM UNIT MORO CREEK RELIEF

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

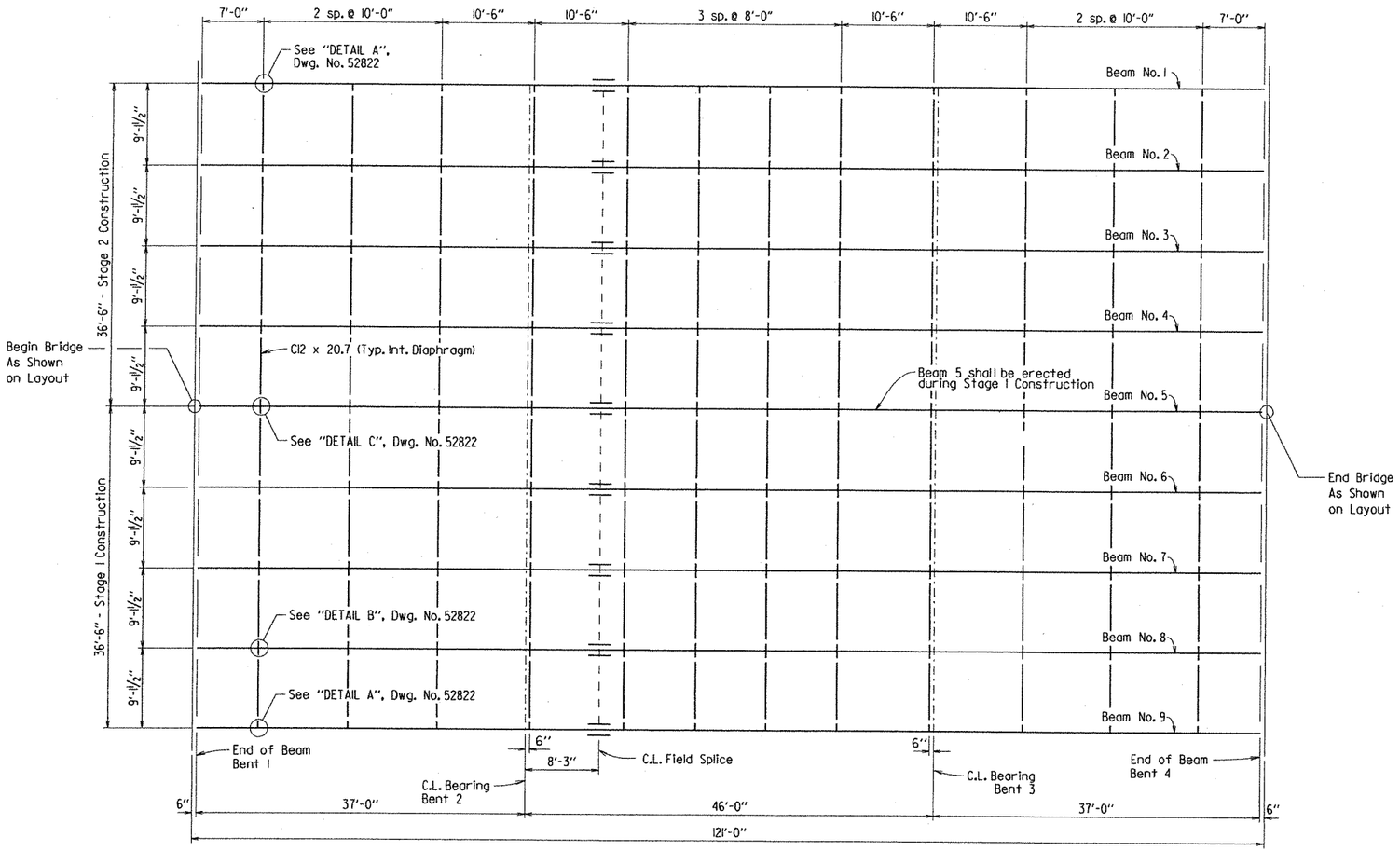
LITTLE ROCK, ARK.

DRAWN BY: RBR DATE: 12/09/2011
CHECKED BY: DHP DATE: 7-16-12
DESIGNED BY: RBR DATE: 11/11
FILENAME: b070289_sl.dgn
SCALE: As shown

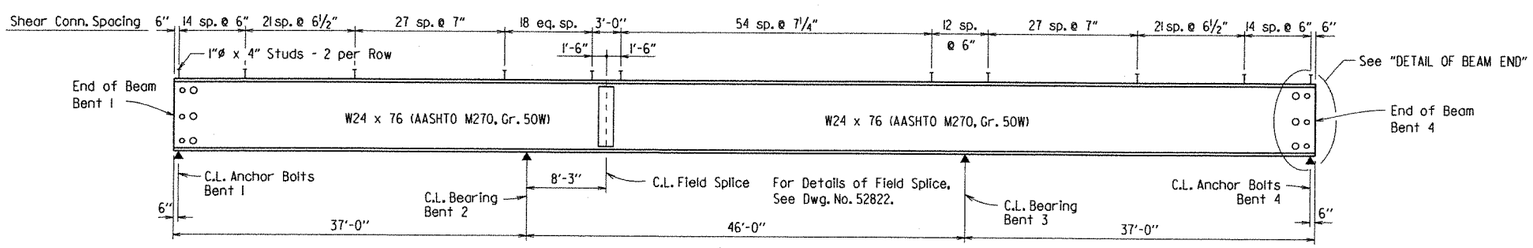
BRIDGE NO. 07240 DRAWING NO. 52816

PRINT DATE: 7/16/2012

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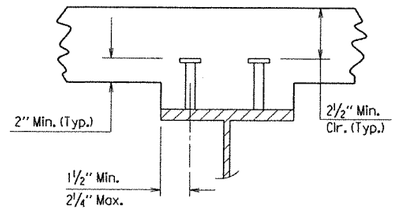


FRAMING PLAN
1/8" = 1'-0"



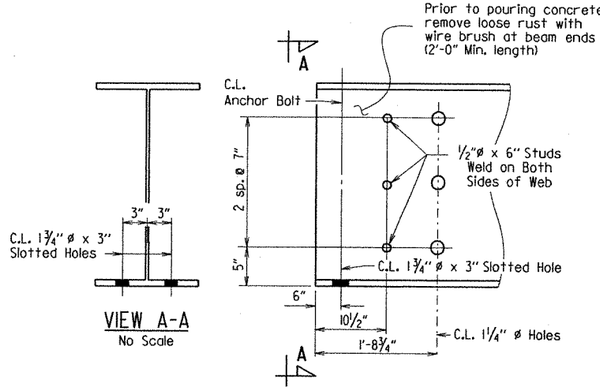
TYPICAL BEAM ELEVATION
No Scale

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



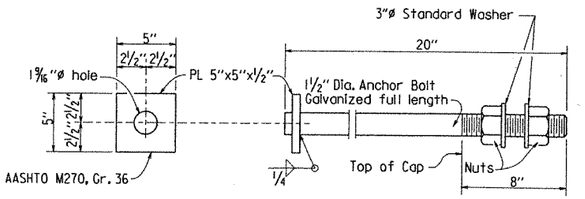
Stud Shear Connectors shown shall be 1"ø x 4" long, granular flux filled, solid fluxed or equal, and automatically end welded to the beam flange in accordance with the recommendations of the Manufacturer.

SHEAR CONNECTOR DETAIL
No Scale



VIEW A-A
No Scale

DETAIL OF BEAM END
No Scale



Anchor Bolts and Nuts to be according to subsection 807.07. Washers shall be a standard washer. Anchor Bolts, Washers, and Nuts shall be paid for at the unit price bid for "Structural Steel in Beam Spans (M270, Gr. 50W)". All anchor bolts shall be Grade 55.

Use lower nut and washer to adjust to grade. Snug tight top nut and washer after grade is adjusted.

ANCHOR BOLT DETAIL FOR END BENTS
No Scale

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
7/23/12
CARL J. FUSELIER

BRIDGE ENGINEER

SHEET 2 OF 7

DETAILS OF 120'-0" INTEGRAL W-BEAM UNIT MORO CREEK RELIEF

ROUTE SEC.

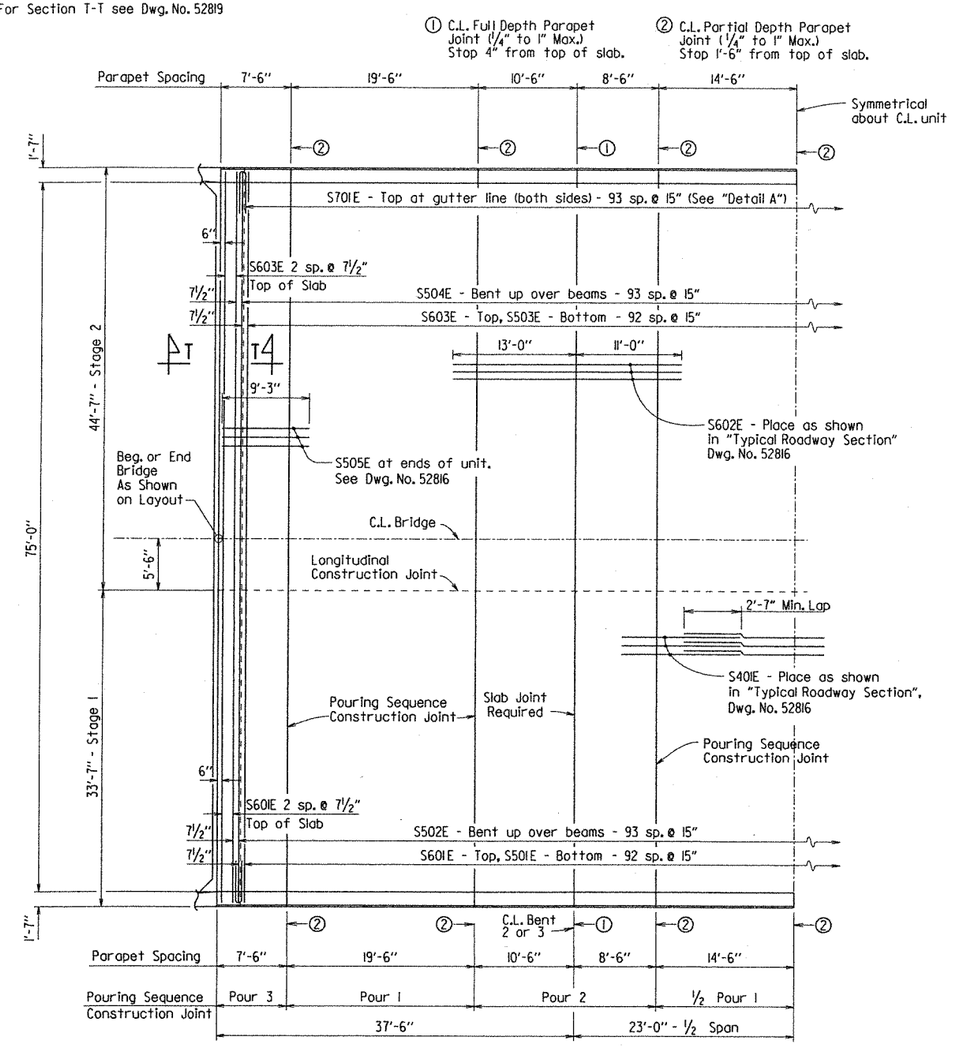
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: RBR DATE: 12/09/2011 FILENAME: b070289_sl.dgn
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DESIGNED BY: RBR DATE: 11/11
BRIDGE NO. 07240 DRAWING NO. 52817

PRINT DATE: 7/16/2012

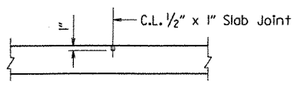
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				6	ARK.			
				JOB NO.		070289	151	365
				1 07240		SPAN DETAILS	52818	

For Section T-T see Dwg. No. 52819



REINFORCING PLAN & DECK POURING SEQUENCE

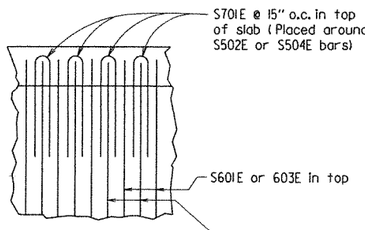
Required slab joints and pouring sequence joints shall align with parpet open joints at the gutter line.



Use ½" x 1" Type 3, 4 or 6 Joint Sealer. See subsections 501.02(h) and 501.05(j). Backer rod will not be required. Joint Sealer shall be measured and paid for as Class S(AE) Concrete-Bridge. Slab Joints shall extend to the outside edge of the deck slab. Slab joints shall be installed before the parapet railing is poured. If slab joints are to be sawed, they shall be sawed as soon as the slab has sufficiently set to allow sawing of the joints without damaging the slab. Slab joints shall be placed at all pouring sequence construction joints and required slab joint locations.

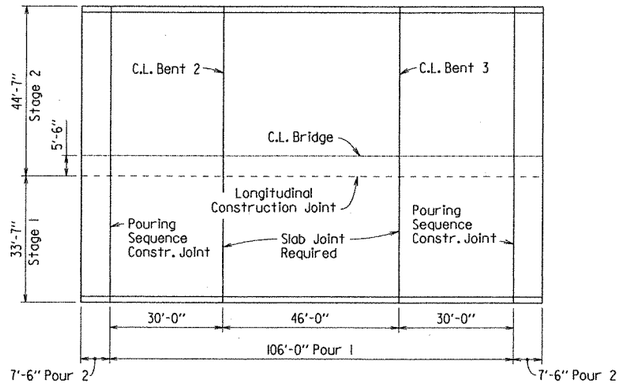
SLAB JOINT DETAIL

No Scale



DETAIL A

No Scale



ALTERNATE POURING SEQUENCE

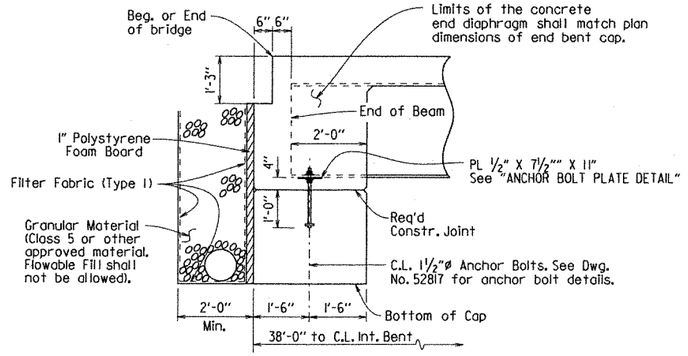
No Scale

Pours with the same number may be placed simultaneously or separately. All Pours (1) must be placed before Pours (2) can be placed. All Pours (2) must be placed before Pours (3). 48 hours shall elapse between the end of a pour and the start of the next pour. 72 hours shall elapse between the end of a pour and the start of an adjacent pour.

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

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

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

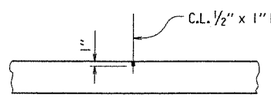


SECTION AT END BENT

No Scale

For additional details of pipe under drain see Std. Dwg. PU-1 and Section 611 of the Standard Specifications. Pipe under drains, outlet protectors, granular materials, drain pipe, filter fabric and polystyrene foam board will not be measured or paid for separately, but will be considered subsidiary to the unit price bid for "Unclassified Excavation".

For details of steel reinforcing in concrete diaphragm at end bent see Drawing No. 52819



Use ½" x 1" Type 3, 4, or 6 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. This joint shall be formed.

LONGITUDINAL CONSTRUCTION JOINT DETAIL

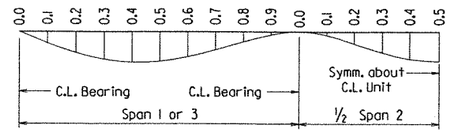
Not to Scale

TABLE OF DEAD LOAD DEFLECTIONS (INCHES)

Span	Point of Deflection	Structural Steel		Structural Steel + Slab		Structural Steel + Slab + Parapet	
		Interior	Exterior	Interior	Exterior	Interior	Exterior
1 or 3	0.0	0.000	0.000	0.000	0.000	0.000	0.000
	0.1	0.010	0.009	0.103	0.082	0.103	0.083
	0.2	0.019	0.017	0.190	0.151	0.191	0.154
	0.3	0.024	0.022	0.249	0.198	0.251	0.204
	0.4	0.027	0.024	0.273	0.217	0.275	0.224
	0.5	0.026	0.023	0.262	0.208	0.264	0.215
	0.6	0.022	0.019	0.219	0.174	0.220	0.180
	0.7	0.015	0.014	0.154	0.123	0.155	0.126
	0.8	0.008	0.007	0.082	0.065	0.082	0.065
	0.9	0.002	0.002	0.022	0.018	0.022	0.016
½ Span 2	0.0	0.000	0.000	0.000	0.000	0.000	0.000
	0.1	0.005	0.004	0.051	0.040	0.053	0.049
	0.2	0.015	0.013	0.150	0.119	0.156	0.141
	0.3	0.025	0.022	0.253	0.202	0.262	0.235
	0.4	0.032	0.029	0.328	0.261	0.339	0.302
	0.5	0.035	0.031	0.355	0.283	0.367	0.327

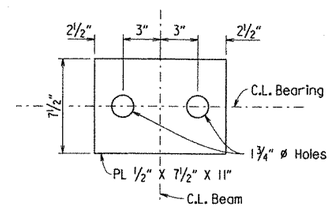
C.L. Unit

Table is symmetrical about C.L. Unit



DEAD LOAD DEFLECTIONS DIAGRAM (TYP.)

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



ANCHOR BOLTS PLATE DETAIL

No Scale

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
7/23/12
CARL J. FUSELIER

BRIDGE ENGINEER

SHEET 3 OF 7

DETAILS OF 120'-0" INTEGRAL W-BEAM UNIT MORO CREEK RELIEF

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

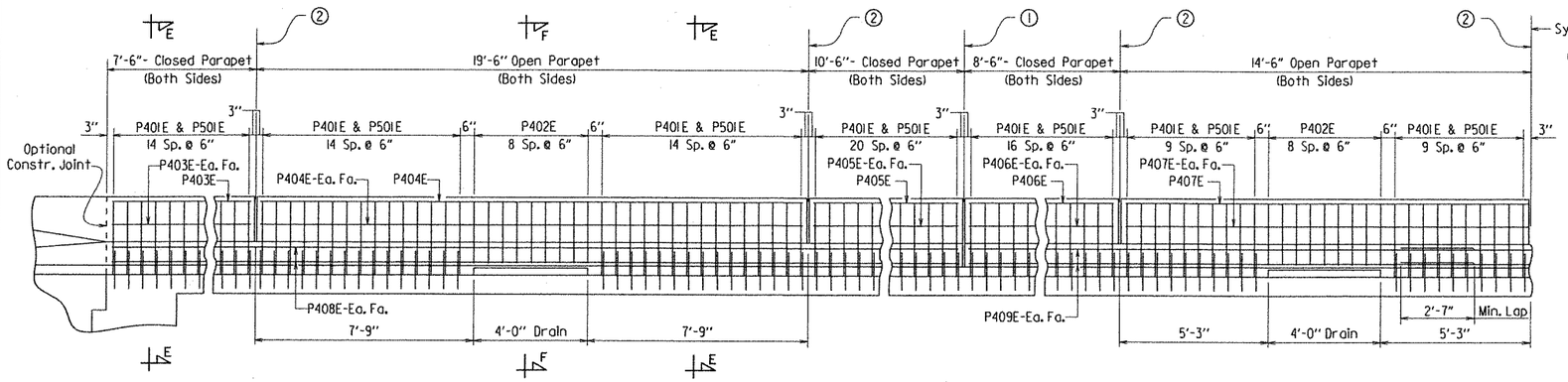
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CHECKED BY: DHP DATE: 7-16-12
DESIGNED BY: RBR DATE: 11/11
FILENAME: b070289_sl.dgn
SCALE: 1/8" = 1'-0" or as shown

BRIDGE NO. 07240

DRAWING NO. 52818

PRINT DATE: 7/16/2012

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.		070289	152	365
				①	07240	SPAN DETAILS	52819	

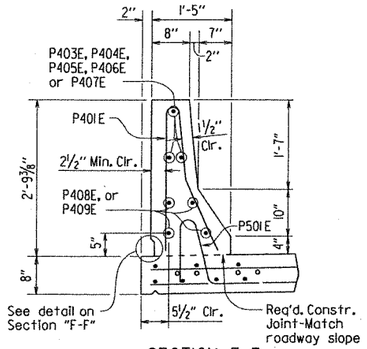


DETAILS OF PARAPET RAIL

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

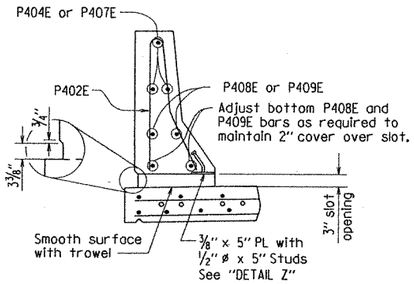
① C.L. Full-Depth Parapet Joint (1/4" to 1" Max.) as shown in "Reinforcing Plan & Deck Pouring Sequence" Dwg. No. 52818. Stop 4" from top of slab.

② C.L. Partial-Depth Parapet Joint (1/4" to 1" Max.) as shown in "Reinforcing Plan & Deck Pouring Sequence" Dwg. No. 52818. Stop 1'-2" from top of slab.



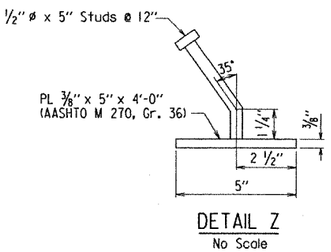
SECTION E-E

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



SECTION F-F

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

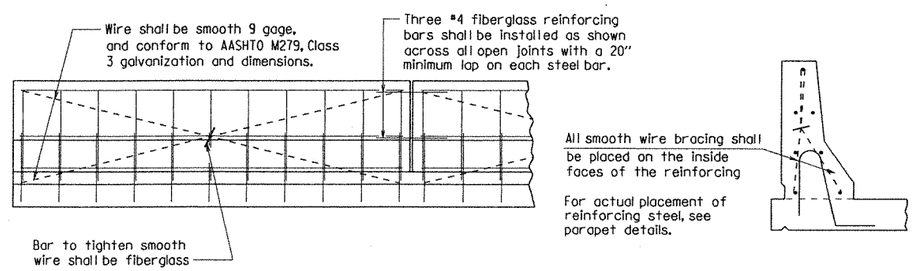


DETAIL Z

No Scale

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

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

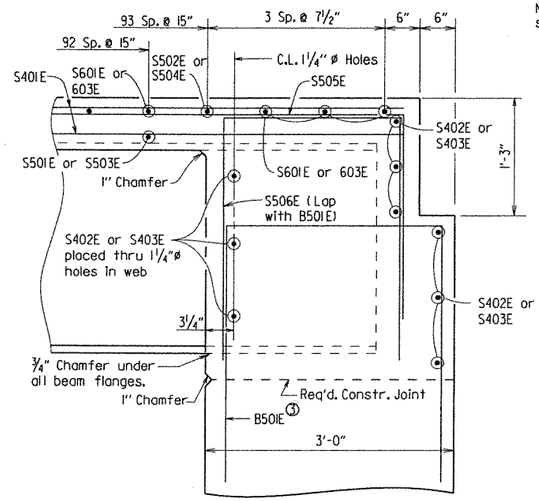


All panels shall be braced as required to prevent racking. All open joints shall be sawed as soon as practical to a minimum width of 1/4". To control cracking before sawing all joints must be grooved before the concrete is set. Sawing of the joints must be controlled so it will follow the grooved joint.

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

DETAILS OF OPTIONAL SLIP FORMING OF CONCRETE PARAPET RAIL

No Scale



SECTION T-T

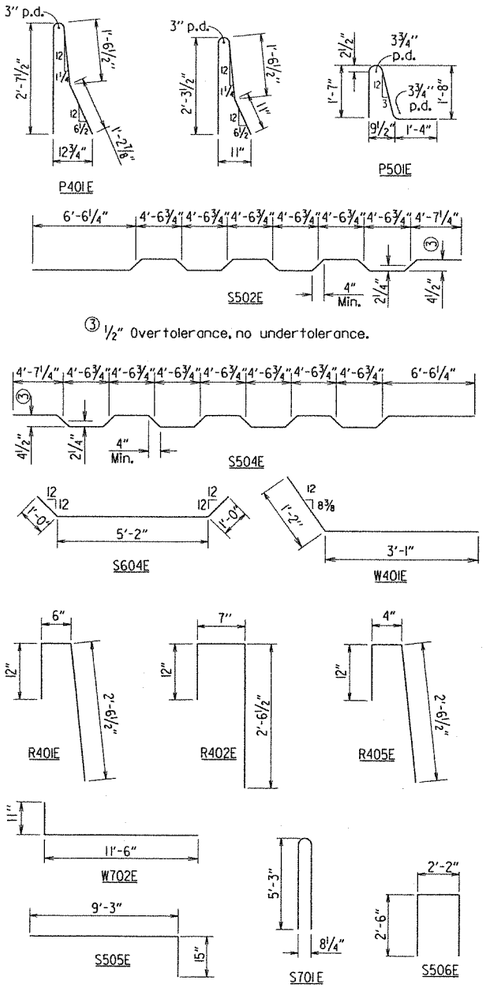
No Scale

BAR LIST

MARK	NO. REQ'D	LENGTH	P.D.
P401E	412	5'-6"	3"
P402E	72	4'-10"	3"
P403E	12	7'-2"	Str.
P404E	12	19'-2"	Str.
P405E	12	10'-2"	Str.
P406E	12	8'-2"	Str.
P407E	12	14'-2"	Str.
P408E	16	37'-2"	Str.
P409E	16	24'-2"	Str.
P501E	412	4'-8"	3"
S401E	828	32'-1"	Str.
S402E	18	36'-3"	Str.
S403E	18	44'-3"	Str.
S501E	93	36-11"	Str.
S502E	94	39'-3"	3"
S503E	93	44'-3"	Str.
S504E	94	43'-11"	3"
S505E	208	10'-5"	2½"
S506E	172	7'-0"	2½"
S601E	99	37'-6"	Str.
S602E	208	24'-0"	Str.
S603E	99	44'-3"	Str.
S604E	12	7'-2"	4½"
S701E	188	10'-9"	6½"
R401E	8	3'-11"	2"
R402E	8	4'-0"	2"
R403E	24	9'-8"	Str.
R404E	24	2'-0"	Str.
R405E	40	3'-9"	2"
R601E	16	5'-5"	Str.
R602E	6	5'-0"	Str.
W401E	40	4'-3"	2"
W402E	40	5'-5"	Str.
W701E	12	11'-6"	Str.
W702E	40	12'-3"	5¼"

NOTE: Bars designated with an "E" suffix shall be epoxy coated.

BENDING DIAGRAMS



③ See End Bent Details on Dwg. No. 52813 for reinforcing and additional details.

STATE OF ARKANSAS Carl J. Fuselier REGISTERED PROFESSIONAL ENGINEER No. 7510 7/23/12 CARL J. FUSELIER

BRIDGE ENGINEER

SHEET 4 OF 7

DETAILS OF 120'-0" INTEGRAL W-BEAM UNIT MORO CREEK RELIEF

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

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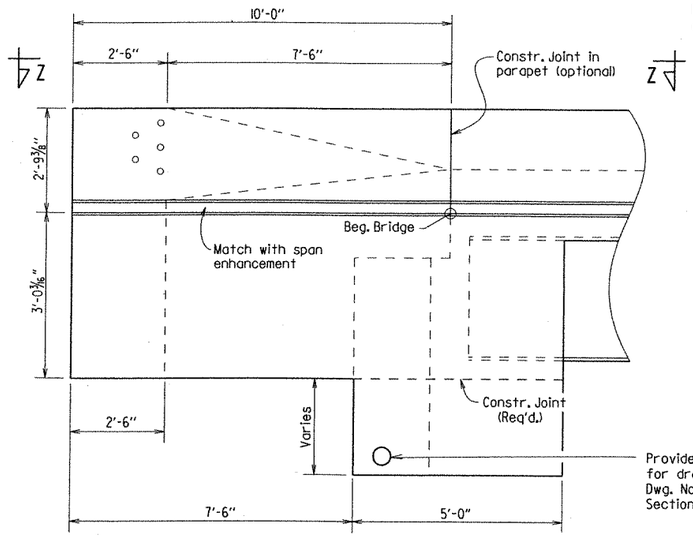
CHECKED BY: DHP DATE: 7-16-12 SCALE: As shown

DESIGNED BY: RBR DATE: 11/11

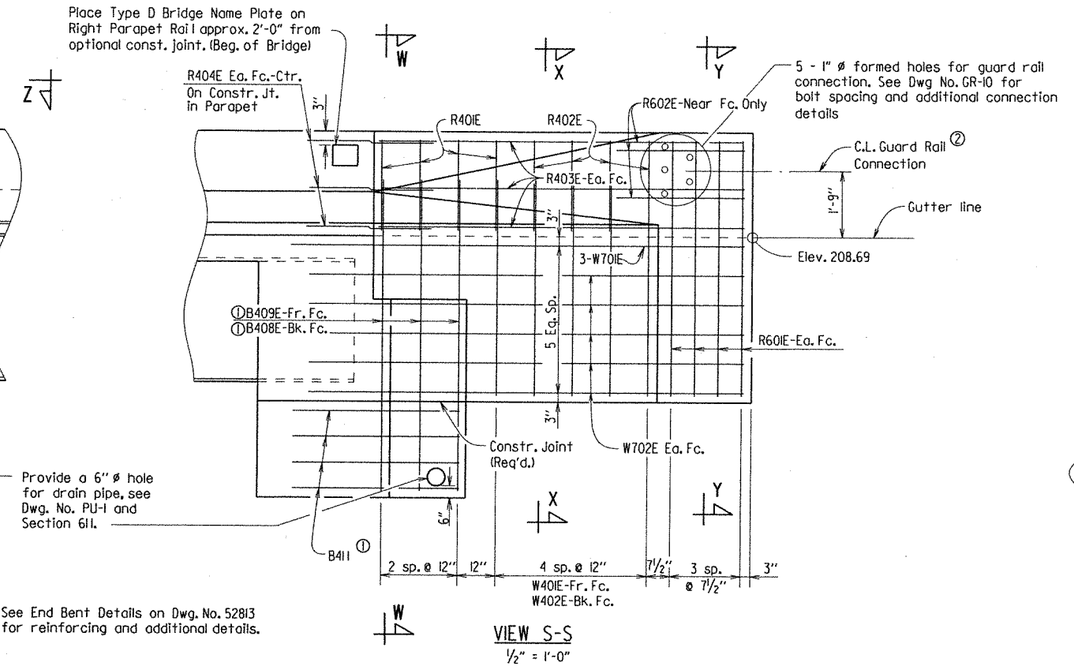
BRIDGE NO. 07240 DRAWING NO. 52819

PRINT DATE: 7/23/2012

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.		070289	153	365
				①	07240	SPAN DETAILS	52820	

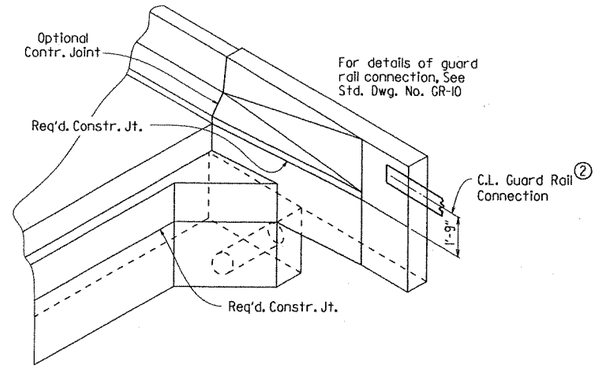


VIEW R-R
No Scale

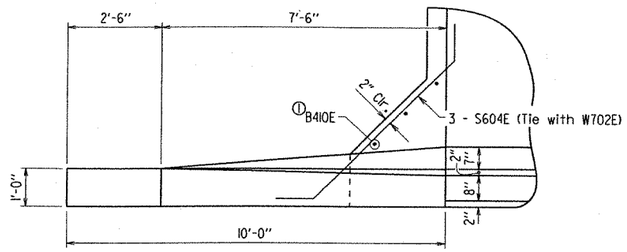


① See End Bent Details on Dwg. No. 52813 for reinforcing and additional details.

VIEW S-S
½" = 1'-0"

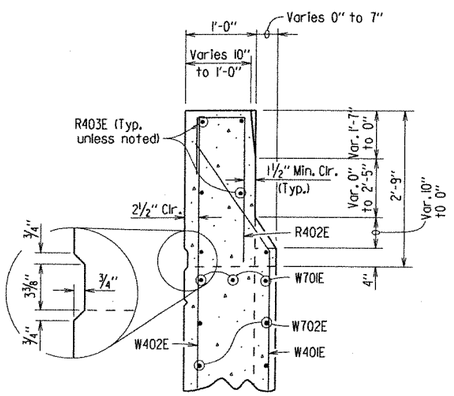


ISOMETRIC VIEW OF INTEGRAL BENT
No Scale

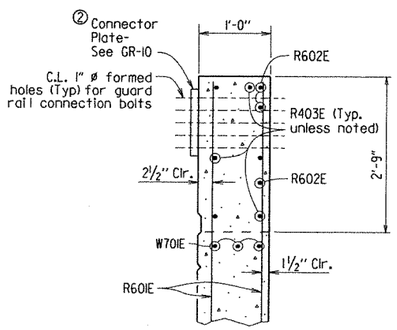


VIEW Z-Z
No Scale

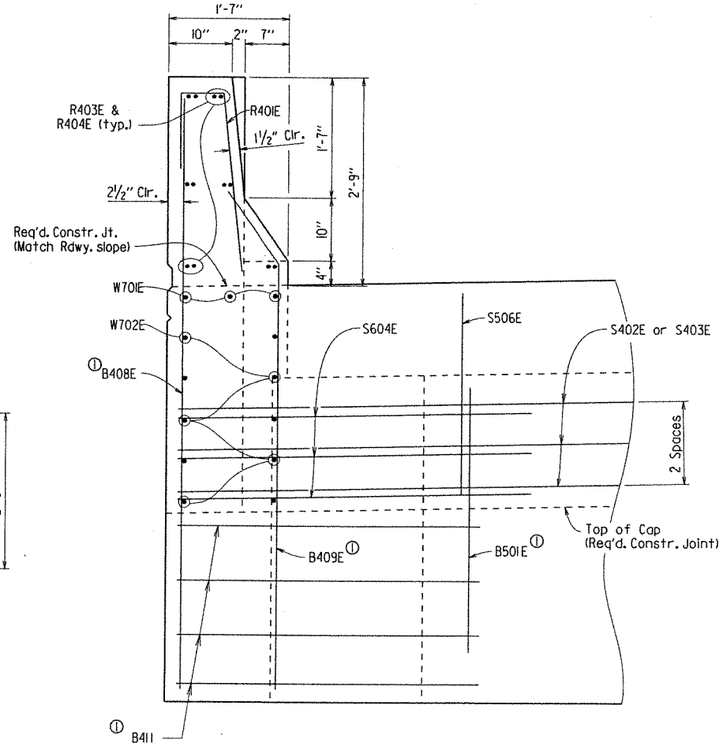
② Connector Plate as required. See Roadway Plans for location of guardrail.



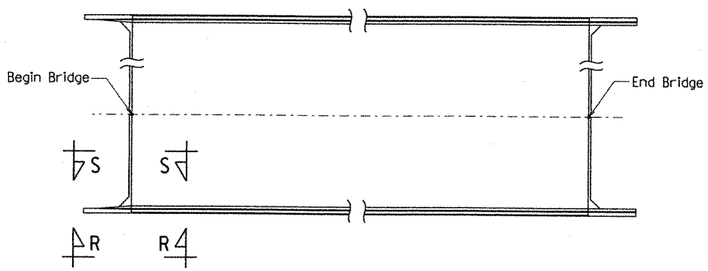
SECTION X-X
No Scale



SECTION Y-Y
No Scale



SECTION W-W
¾"=1'-0"



DETAIL LOCATION SKETCH
No Scale

STATE OF ARKANSAS
Carl L. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
7/23/12
CARL L. FUSELIER
BRIDGE ENGINEER

SHEET 5 OF 7

DETAILS OF 120'-0" INTEGRAL W-BEAM UNIT MORO CREEK RELIEF

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

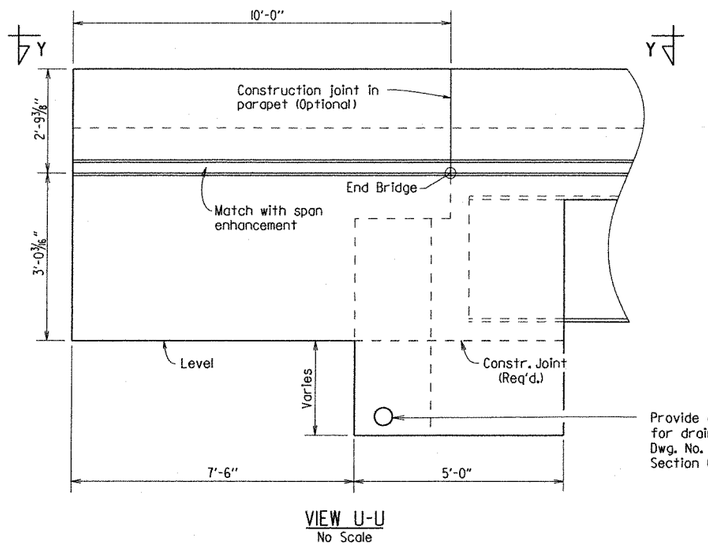
LITTLE ROCK, ARK.

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CHECKED BY: DHP DATE: 7-16-12 SCALE: As shown
DESIGNED BY: RBR DATE: 11/11

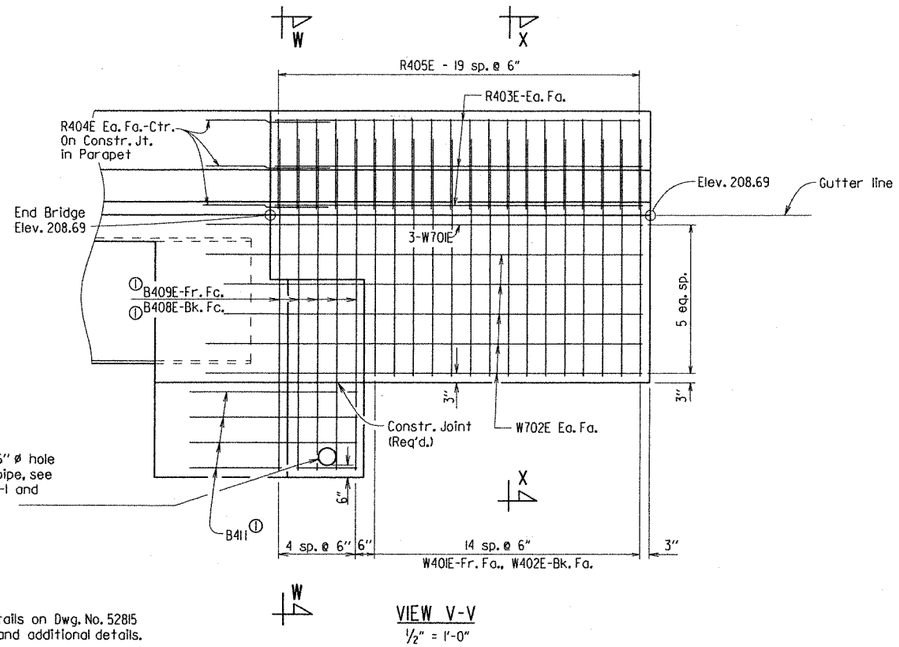
BRIDGE NO. 07240 DRAWING NO. 52820

PRINT DATE: 7/23/2012

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.		070289	154	365
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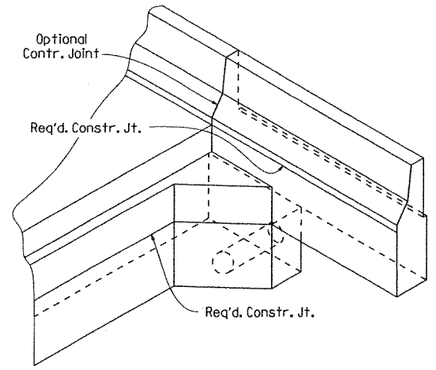


VIEW U-U
No Scale

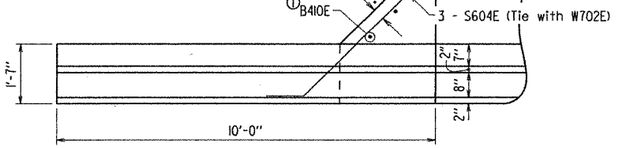


VIEW V-V
½" = 1'-0"

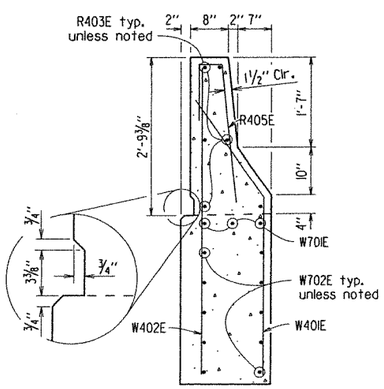
ⓘSee End Bent Details on Dwg. No. 52815 for reinforcing and additional details.



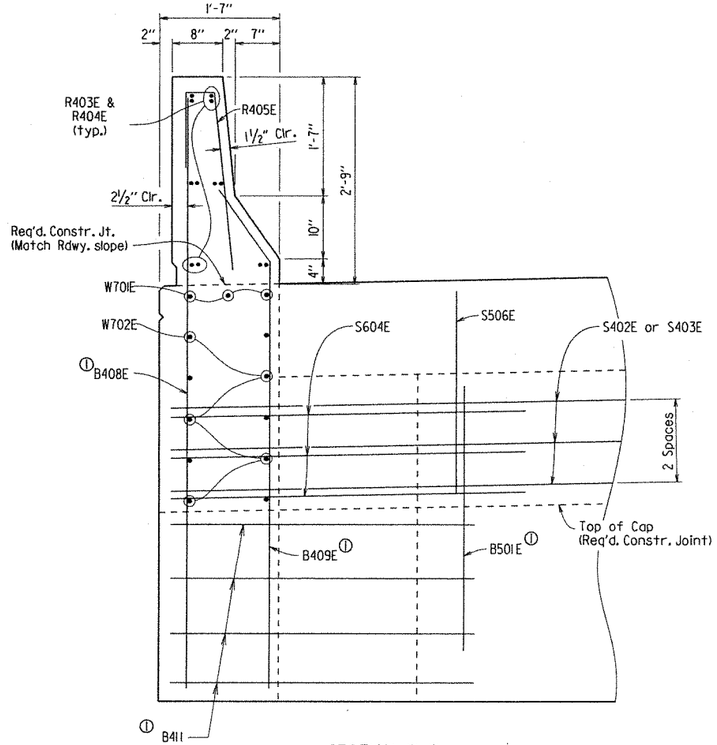
ISOMETRIC VIEW OF INTEGRAL BENT
No Scale



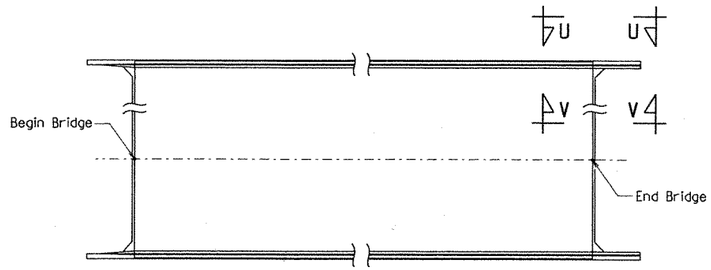
VIEW Y-Y
No Scale



SECTION X-X
No Scale



SECTION W-W
¾"=1'-0"



DETAIL LOCATION SKETCH
No Scale

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
7/23/12
CARL J. FUSELIER

BRIDGE ENGINEER

SHEET 6 OF 7

DETAILS OF 120'-0" INTEGRAL W-BEAM UNIT MORO CREEK RELIEF

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: RBR DATE: 12/09/2011 FILENAME: b070289_sl.dgn
CHECKED BY: DHP DATE: 7-16-12 SCALE: As shown
DESIGNED BY: RBR DATE: 11/11

BRIDGE NO. 07240 DRAWING NO. 52821

PRINT DATE: 7/20/2012

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.		070289	155	365
				①	07240	SPAN DETAILS		52822

GENERAL NOTES

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2003 Edition) with applicable supplemental specifications and special provisions.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications 5th Edition (2010), with 2010 interims.

LIVE LOADING: HL-93

MATERIALS AND STRENGTHS:
Concrete: All concrete shall be Class S(AE) with a minimum 28 day strength f'c = 4000 psi.
Reinforcing Steel: Reinforcing steel shall conform to AASHTO M31 or M53, Grade 60 (Yield Strength = 60,000 psi.).
Structural Steel: Structural steel shall conform to AASHTO M270, Gr. 50W (Fy = 50,000 psi.) or AASHTO M270, Gr.36 (Fy = 36,000 psi.).

STRUCTURAL STEEL:
All Structural Steel shall be AASHTO M270, Gr. 50W unless otherwise noted. All structural steel shall be paid for as "Structural Steel in Beam Spans (M270, Gr.50W)". Structural Steel completely embedded in concrete may be AASHTO M270. Gr. 36 or Gr. 50. AASHTO M270, Gr.50W steel shall not be painted. All exposed surfaces shall be cleaned in accordance with subsection 807.84(e) unless noted otherwise.

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

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

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.

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

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

All beams shall be blocked in their true position in the shop with the webs horizontal in groups as specified in subsection 807.54 (b)(1). The camber, length of sections, distance between bearings, and opening of joints shall be measured with thebeams in their true position and this information shall become part of the permanent record of this job. The component parts shall be match marked in this assembly and those marks shall be shown on the erection diagram. All beam dimensions are based on a temperature of 60 degrees F. A tolerance of 1/4" (plus or minus) allowed for camber.

Field connections shall be bolted with high-strength bolts. Bolts shall be 3/4"ø, except as noted, and open holes shall be 11/16 "ø unless otherwise noted. Holes for 3/4"ø bolts may be 15/16 "ø if a washer is supplied for use under both the nut and the head of the bolt. For field splices, bolts shall be 7/8"ø bolts. Open holes shall be 15/16 "ø. Bolt spacing shall be 3" for 7/8"ø bolts unless otherwise noted. Bolts shall be placed with heads on the outside face of the exterior beam web and on the bottom of the beam flanges.

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

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

Bearings shall be seated in accordance with subsection 807.66. This work and material will not be paid for directly but will be considered subsidiary to the item "Structural Steel in Beam Spans (M270, Gr. 50W)".

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

CONCRETE:
All concrete shall be Class S(AE) with a minimum 28 day compressive strength f'c = 4000 psi. Concrete shall be poured in the dry and all exposed corners to be chamfered 3/4" 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. 14991 for allowable modifications and for tolerances when Permanent Steel Bridge Deck Forms are used. Concrete in bridge superstructure shall be placed, consolidated, and screeded off for the entire pour before any concrete has taken its initial set. This may require the use of a retarding agent. The concrete diaphragms at end bents shall be poured monolithic with the slab.

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

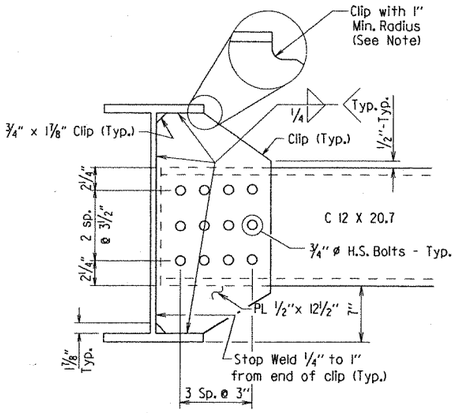
Removable forms shall be used for concrete diaphragms.

CLASS I PROTECTIVE SURFACE TREATMENT: Class I protective surface treatment shall be applied to the roadway surface and to the roadway face and top of the concrete parapet rail.

LOAD DISTRIBUTION:

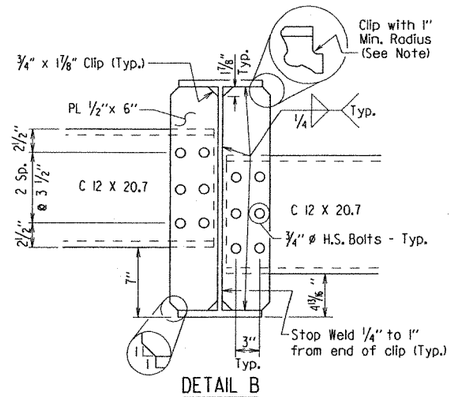
A. To W-Beam	Beam No.		
	Beam 1 & 9	715	
	Beam 2 thru 8	913	plf + Wt. of Structural Steel
B. To Composite Beam	Beam No.		
	Beam 1 & 9	395	plf ①
	Beam 2 thru 8	256	plf ①

① Includes 200 plf future wearing surface.

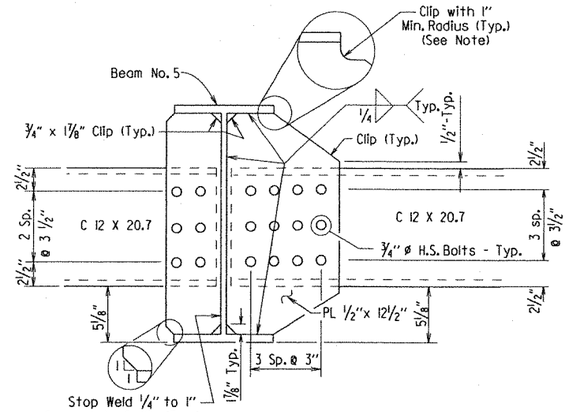


DETAIL A
No Scale

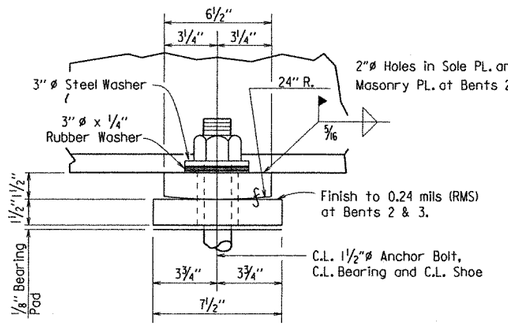
If permanent steel deck forms are used, the fabricator shall clip the plate as necessary to accommodate the deck form support.



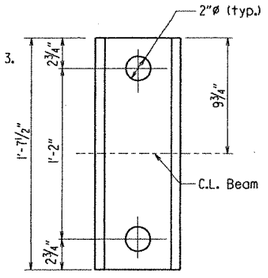
DETAIL B
No Scale



DETAIL C
No Scale

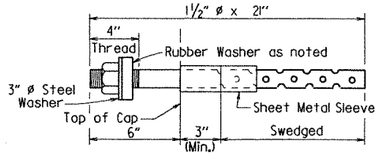


ELEVATION TYPE "B" SPECIAL SHOE
BENTS: 2 and 3
No Scale



PLAN TYPE "B" SPECIAL SHOE
BENTS: 2 and 3
No Scale

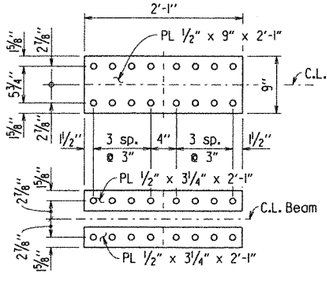
Plates for Type "B" Special Shoes shall be M270, GR. 50W.



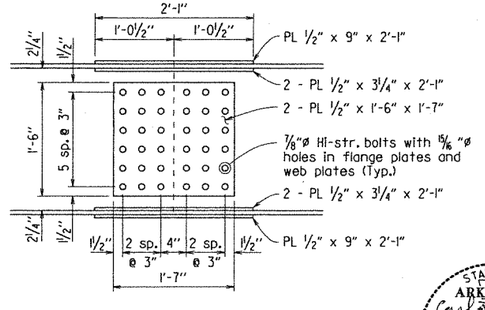
Anchor Bolts, Nuts and Washers to be according to subsection 807.07. Indentations shall be circular with rounded bottoms and staggered as shown above. Rubber washer shall be closed cell expanded rubber, meeting the requirements of ASTM D1056 - 85 2B2 E2, and shall be considered subsidiary to the item of "Structural Steel in Beam Spans (M270, Gr. 50W)". Anchor Bolts, Nuts and Washers shall be paid for at the unit price bid for "Structural Steel in Beam Spans (M270, Gr. 50W)". Anchor bolts shall be Grade 55.

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

ANCHOR BOLT DETAIL FOR INTERMEDIATE BENTS
BENTS: 2 and 3
No Scale



FLANGE SPLICE
Top & Bottom



WEB SPLICE

DETAILS OF FIELD SPLICE
No Scale

All field splice plates shall be AASHTO M270, Gr. 50W
All field splice bolts shall be 7/8"ø H.S. Bolts
All field splice bolt holes shall be 15/16 "ø

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"	

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
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
7/23/12
CARL J. FUSELIER

BRIDGE ENGINEER

SHEET 7 OF 7

DETAILS OF 120'-0" INTEGRAL W-BEAM UNIT MORO CREEK RELIEF

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

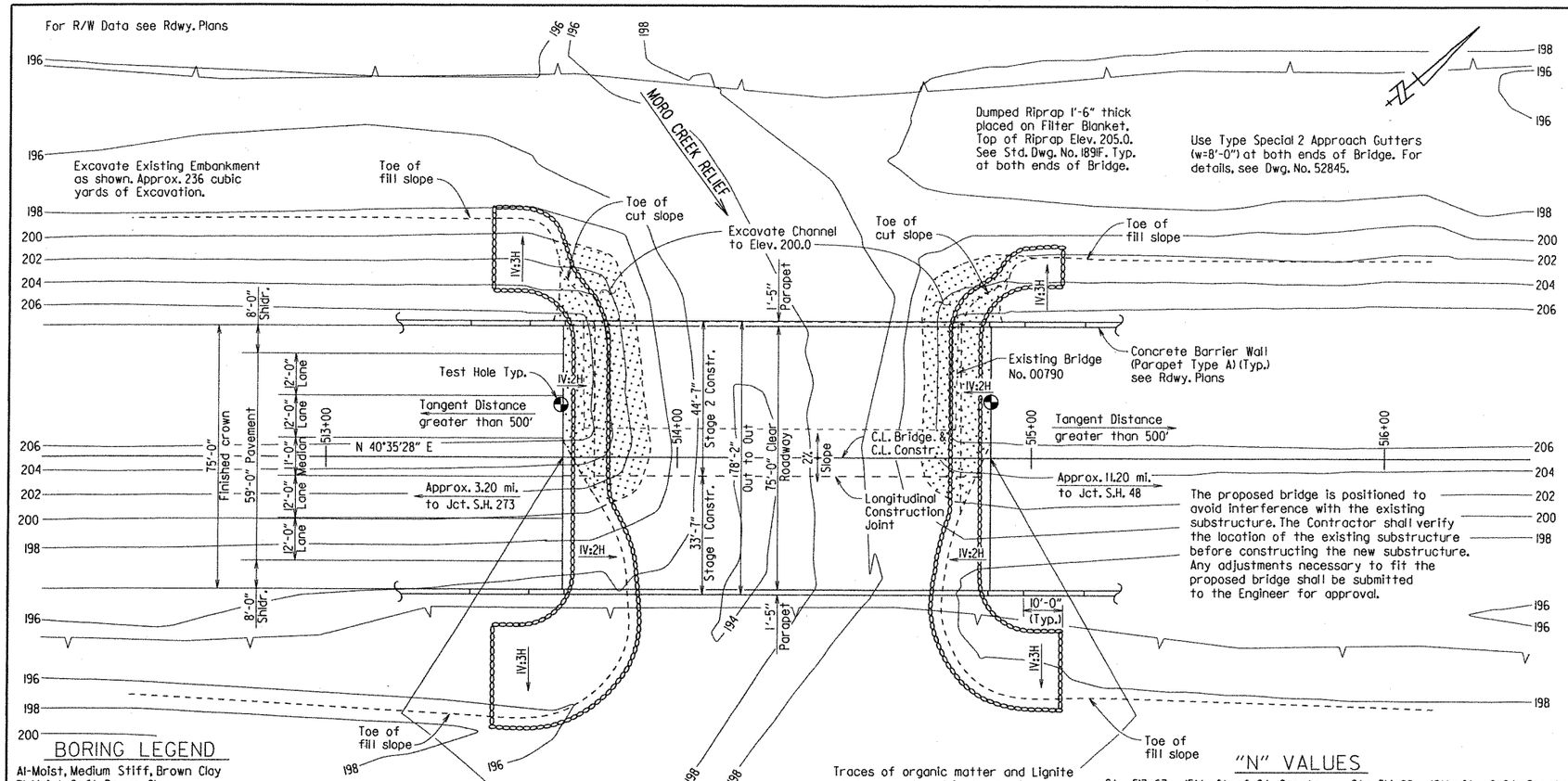
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CHECKED BY: DHP DATE: 7-16-12 SCALE: As shown
DESIGNED BY: RBR DATE: 11/11

BRIDGE NO. 07240 DRAWING NO. 52822

PRINT DATE: 7/23/2012

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.		070289	156	365
				①	07241 - LAYOUT - 52823			

For R/W Data see Rdwy. Plans



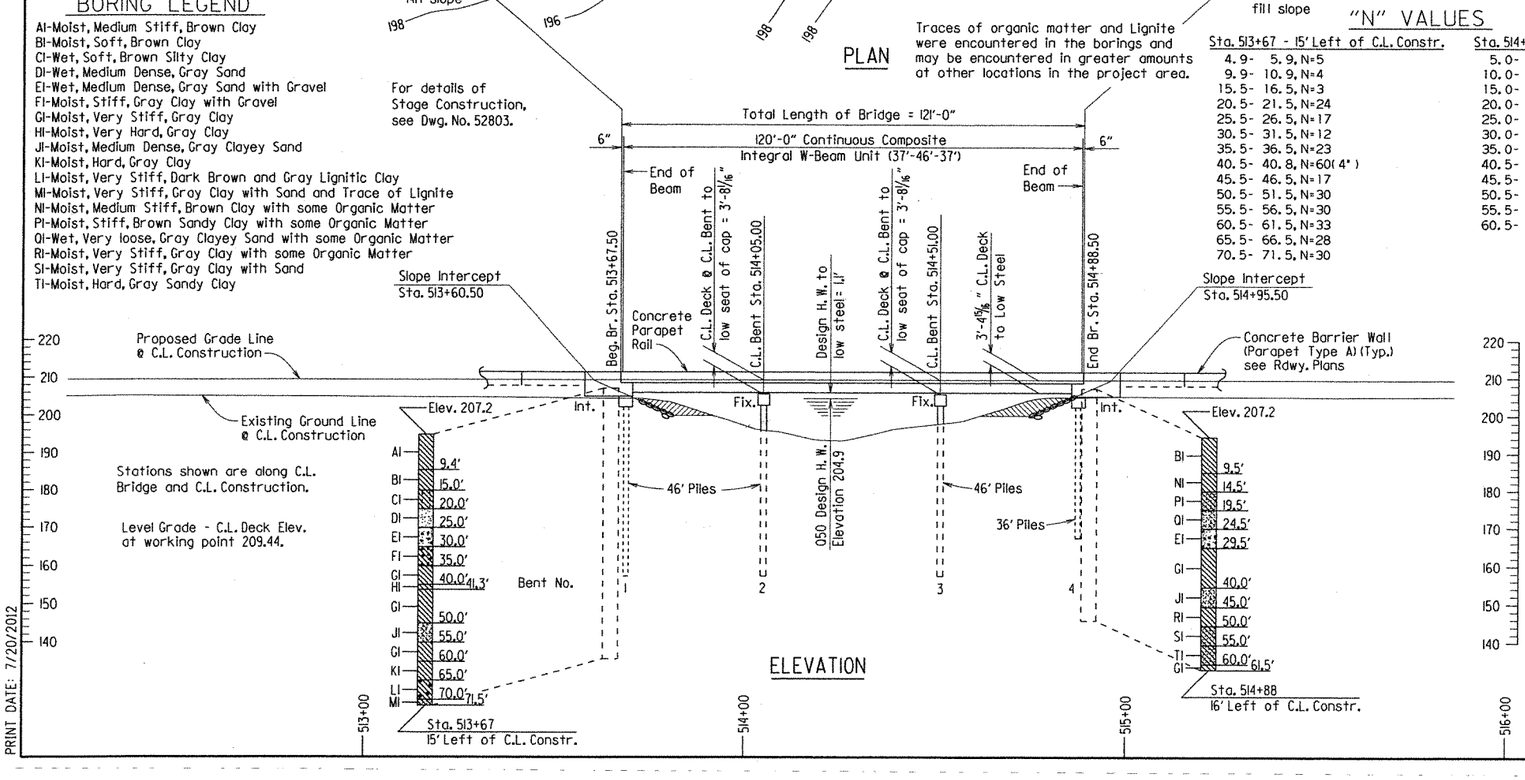
PLAN

BORING LEGEND

AI-Moist, Medium Stiff, Brown Clay
BI-Moist, Soft, Brown Clay
CI-Wet, Soft, Brown Silty Clay
DI-Wet, Medium Dense, Gray Sand
EI-Wet, Medium Dense, Gray Sand with Gravel
FI-Moist, Stiff, Gray Clay with Gravel
GI-Moist, Very Stiff, Gray Clay
HI-Moist, Very Hard, Gray Clay
JI-Moist, Medium Dense, Gray Clayey Sand
KI-Moist, Hard, Gray Clay
LI-Moist, Very Stiff, Dark Brown and Gray Lignitic Clay
MI-Moist, Very Stiff, Gray Clay with Sand and Trace of Lignite
NI-Moist, Medium Stiff, Brown Clay with some Organic Matter
PI-Moist, Stiff, Brown Sandy Clay with some Organic Matter
QI-Wet, Very loose, Gray Clayey Sand with some Organic Matter
RI-Moist, Very Stiff, Gray Clay with some Organic Matter
SI-Moist, Very Stiff, Gray Clay with Sand
TI-Moist, Hard, Gray Sandy Clay

"N" VALUES

Sta. 513+67 - 15' Left of C.L. Constr.	Sta. 514+88 - 16' Left of C.L. Constr.
4.9- 5.9, N=5	5.0- 6.0, N=3
9.9- 10.9, N=4	10.0- 11.0, N=5
15.5- 16.5, N=3	15.0- 16.0, N=9
20.5- 21.5, N=24	20.0- 21.0, N=3
25.5- 26.5, N=17	25.0- 26.0, N=16
30.5- 31.5, N=12	30.0- 31.0, N=19
35.5- 36.5, N=23	35.0- 36.0, N=20
40.5- 40.8, N=60(4")	40.5- 41.5, N=27
45.5- 46.5, N=17	45.5- 46.5, N=16
50.5- 51.5, N=30	50.5- 51.5, N=29
55.5- 56.5, N=30	55.5- 56.5, N=34
60.5- 61.5, N=33	60.5- 61.5, N=29
65.5- 66.5, N=28	
70.5- 71.5, N=30	



ELEVATION

PRINT DATE: 7/20/2012

GENERAL NOTES

BENCH MARK: TBM 915 Chiseled Sq. SE HW, 4.68' Lt. of C.L. Constr. Sta. 498+12.52, Elev. 207.67.

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2003 edition) with applicable supplemental specifications and special provisions. Unless otherwise noted, section and subsection numbers in the plans refer to the Construction Specifications.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications 5th Edition (2010), with 2010 Interims.

LIVE LOADING: HL-93

SEISMIC ZONE : 2 S_{D1} = 0.244 SITE CLASS = E

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 M31 or M53, GR. 60)	fy = 60,000 psi
Structural Steel (AASHTO M270, Gr. 36)	Fy = 36,000 psi
Structural Steel (AASHTO M270, Gr. 50W)	Fy = 50,000 psi

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

CONCRETE PILING: Piling for Bents 1 and 4 shall be 16" square prestressed concrete and shall be driven to a minimum ultimate bearing capacity of 145 tons per pile. Piling in Bents 2 and 3 shall be 24" square prestressed concrete and shall be driven to a minimum ultimate bearing capacity of 315 tons per pile. All piling shall be driven with an approved air, steam, or diesel hammer. Piling in end bents shall be driven after embankment to bottom of cap is in place. Piling in Bents 1 and 4 shall have a tip elevation of 178 or lower. Piling in Bents 2 and 3 shall have a tip elevation of 170 or lower. Length of piling shown are for estimating quantities and for use in determining payment for cut-off and build-up in accordance with the standard specifications. Drive one 51' test pile in Bent 1, one 51' test pile in Bent 3 and one 41' test pile in Bent 4.

DRIVING SYSTEM: The driving system approval and the ultimate bearing capacity determination for piling shall be based on the requirements of subsection 805.09(b) "Method B - Wave Equation Analysis (WEAP)". It is estimated that the minimum required rated energy of the hammer to obtain the minimum ultimate bearing capacity on 16" square piles will be 40,000 foot pounds per blow and on 24" square piles shall be 83,000 foot pounds per blow.

PREBORING: Preboring is required for all piling at bents 1 & 4. Prebored holes at Bents 1 and 4 shall have a diameter 6" greater than the greatest cross-sectional dimension of the pile for a depth of 10' below the bottom of the cap. The void space around the pile after completion of driving shall be backfilled with sand or pea gravel. The Contractor shall be responsible for keeping prebored holes free of debris prior to backfilling, which may require the use of temporary casing or other approved methods. Any related cost for backfilling and temporary casing will not be paid for separately but shall be considered subsidiary to the item "Preboring". Preboring will be paid for in accordance with Section 805.

BRIDGE DECK: The concrete bridge deck shall be given a tine finish as specified for final finishing in subsection 802.19 for Class S Tined Bridge Roadway Surface Finish.

PIPE UNDER DRAIN: One Pipe Under drain with outlet protectors shall be installed behind each bridge end in accordance with Section 611. Pipe Under drains will not be paid for directly but shall be considered subsidiary to "Unclassified Excavation".

DETAIL DRAWINGS:	DRAWING NO.
Stage Construction	52803
End Bents	52824
Intermediate Bents	52825
120' Integral W-Beam Unit	52826 - 52831
Type "B" Special Shoes	52831
Concrete Piling	14964 & 52786
Type Special 2 Approach Gutters	52845

EXISTING BRIDGE: Existing Bridge No. 00790 (Log Mile 7.45) is 28' wide and 106' long and consists of concrete tee beams supported by concrete pile bents.

REMOVAL AND SALVAGE: After Stage 1 Construction is complete and opened to traffic, the Contractor shall remove existing Bridge No. 00790 in accordance with Section 205. All salvageable guard rail and guard rail posts, as determined by the Engineer, shall remain the property of the Department. The Contractor shall coordinate with the Engineer to provide temporary storage and on site loading onto Department equipment for removal of all salvaged items. All other material from the existing bridge shall become the property of the Contractor.

MAINTENANCE OF TRAFFIC: See Roadway Plans.

HYDRAULIC DATA

FLOOD DESCRIPTION	FREQUENCY	②TOTAL DISCHARGE	DISCHARGE THRU BRIDGE OPENING	①NATURAL WATER SURFACE ELEVATION	WATER SURFACE ELEVATION W/ BACKWATER
	YEARS	CFS	CFS	FEET	FEET
Design	50	18,500	2,954	204.8	205.1
Base	100	22,900	3,711	205.7	206.0
Overtopping	313	34,300	5,663	207.7	208.5
Extreme	500	36,000	5,923	207.9	208.7

① Unconstricted water surface elevation without structure and roadway approaches.

② Includes Bridge Nos. 07239 thru 07243.

Estimated 100-Year backwater elevation with Existing Structures in place is 206.2 ft.

Proposed Low Bridge Member Elevation = 206.0

Drainage area = 131.0 square miles (Includes Moro Creek and relief structures).

Historical H.W. Elev. = 206.0 ft.

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
CARL J. FUSELIER
7/23/12

BRIDGE ENGINEER

LAYOUT OF BRIDGE OVER MORO CREEK RELIEF (LOG MI. 7.45) HWY. 273-PETERS RD. (CR 24) (F) DALLAS COUNTY

ROUTE 167 SEC. 7

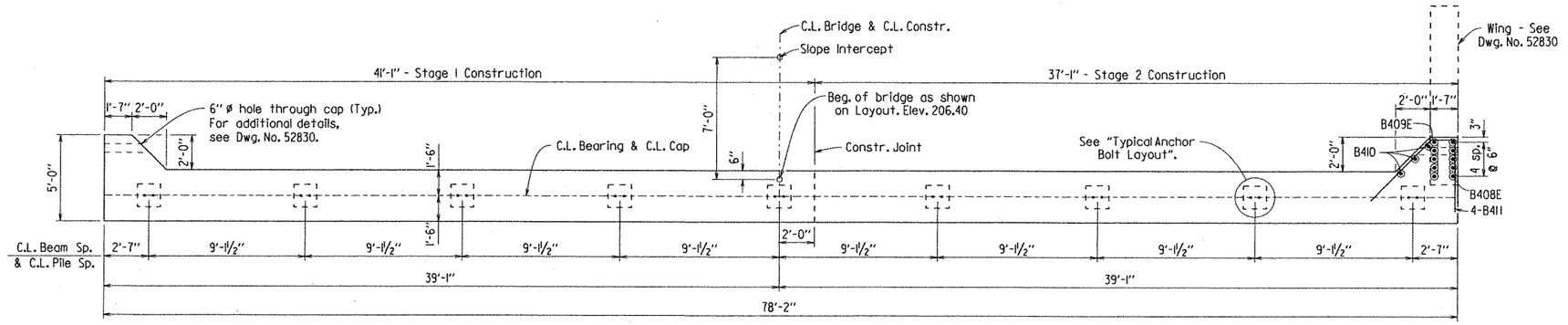
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

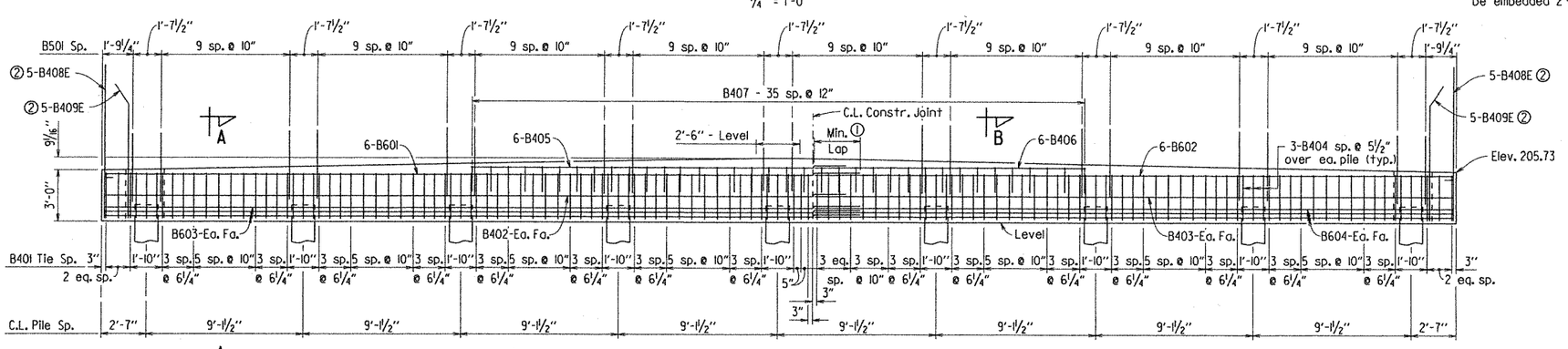
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CHECKED BY: CMW	DATE: 7/16/12	SCALE: 1"=20'	
DESIGNED BY: CSL	DATE: Sept. 2011		

BRIDGE NO. 07241 DRAWING NO. 52823

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.		070289	157	365
				(1) 07241	-	BENTS 1 & 4	-	52824



PLAN
Bent 1
1/4" = 1'-0"

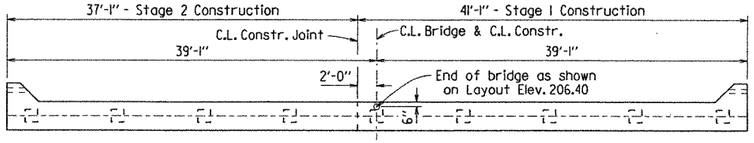


(2) Bars B408E and B409E shall be embedded 2'-10" into cap.

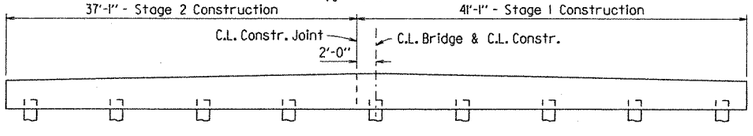
A

B

ELEVATION
Bent 1: Looking Back
1/4" = 1'-0"

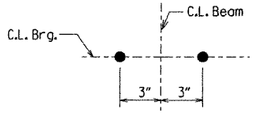


PLAN
Bent 4
1/8" = 1'-0"

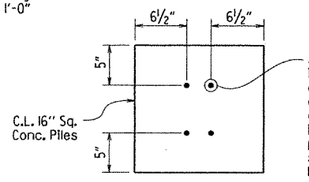


ELEVATION
Bent 4: Looking Ahead
1/8" = 1'-0"

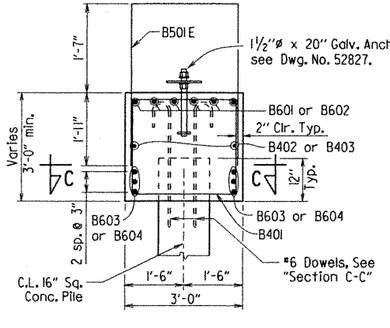
Dimensions and details at Bent 4 are the same as Bent 1 except as shown.



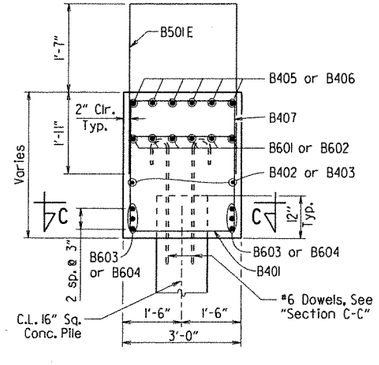
TYPICAL ANCHOR BOLT LAYOUT
No Scale



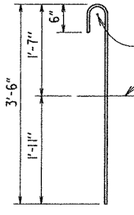
SECTION C-C
No Scale



SECTION A-A
No Scale



SECTION B-B
No Scale



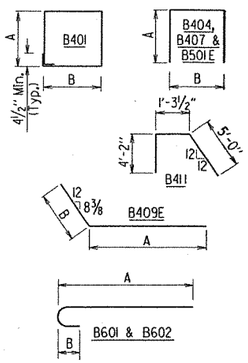
#6 Dowel Bar

(1) Min. Lap: 1'-9" #4 bar
2'-7" #6 bar

BAR LIST (PER BENT)

Mark	No. Req'd.	Length	A	B	Pin Dia.
B401	103	11'-0"	2'-8"	2'-8"	2"
B402	2	42'-10"	-	-	Str.
B403	2	36'-9"	-	-	Str.
B404E	27	7'-10"	2'-8"	2'-8"	2"
B405	6	21'-6"	-	-	Str.
B406	6	15'-6"	-	-	Str.
B407	36	5'-6"	1'-6"	2'-8"	2"
B408E	10	8'-5"	-	-	Str.
B409E	10	7'-4"	6'-2"	1'-2"	2"
B410	6	4'-5"	-	-	Str.
B411	8	10'-5"	-	-	2"
B501E	82	9'-6"	3'-6"	2'-8"	2 1/2"
B601	6	44'-5"	43'-9"	6"	4 1/2"
B602	6	37'-5"	36'-9"	6"	4 1/2"
B603	6	43'-9"	-	-	Str.
B604	6	36'-9"	-	-	Str.

Bending Diagrams



Dimensions are out to out of bars

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

All reinforcing steel shall conform to AASHTO M 31 or M 53, Gr. 60. (Yield strength = 60,000 psi.)

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

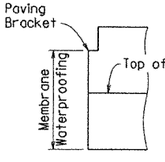
For anchor bolt details, see Dwg. No. 52827.

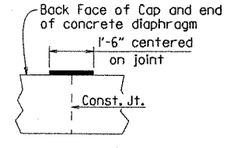
Bars with "E" suffix are Epoxy Coated.

Dowel bars in piles shall be located in such a way to avoid interference with Anchor Bolts.

Granular backfill and pipe underdrain required behind end bent caps. See Dwg. No. 52828.

For additional information, see Layout.





Membrane waterproofing Type "C" or approved equal, see Section 815. Membrane waterproofing shall extend from the bottom of the cap to the paving bracket.

Payment for membrane to be considered subsidiary to Class "S" Concrete - Bridge.

CONSTRUCTION JOINT DETAIL
No Scale

DETAILS OF BENTS 1 AND 4
MORO CREEK RELIEF

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
7/23/12
CARL J. FUSELIER

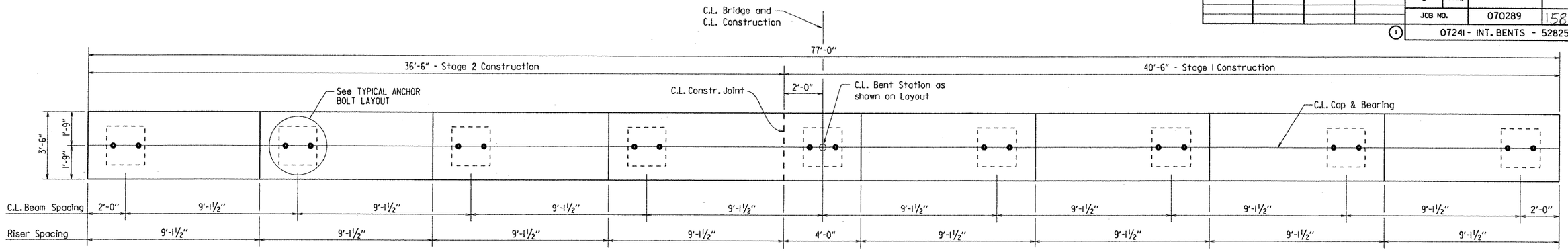
BRIDGE ENGINEER

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CHECKED BY: DHP DATE: 7-16-12 SCALE: 1/4" = 1'-0" or as shown
DESIGNED BY: CWW DATE: 4/18

BRIDGE NO. 07241 DRAWING NO. 52824

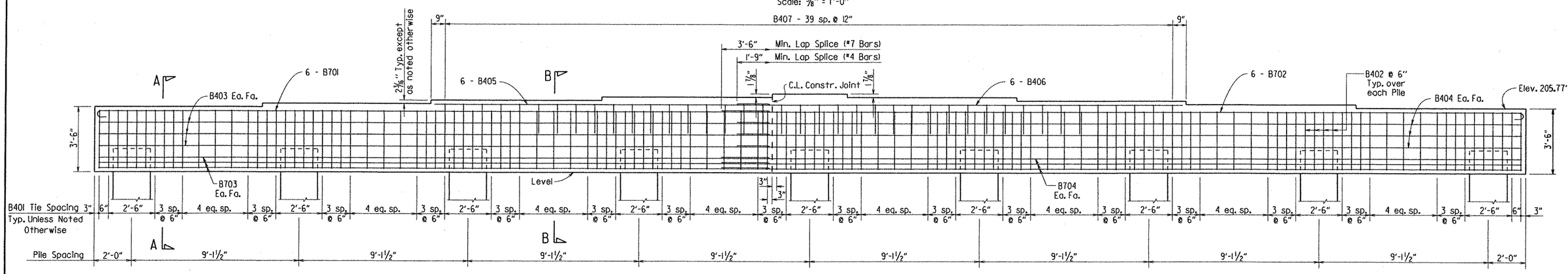
PRINT DATE: 23-JUL-2012

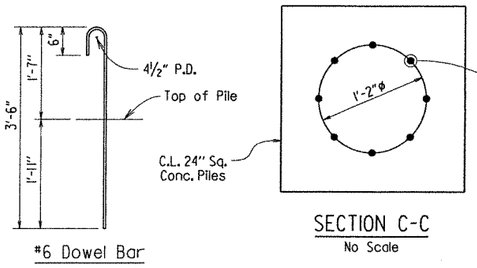
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				6	ARK.			
				JOB NO.		070289	158	365
				(1)		07241 - INT. BENTS - 52825		



PLAN

Looking Ahead
Scale: ⅜" = 1'-0"





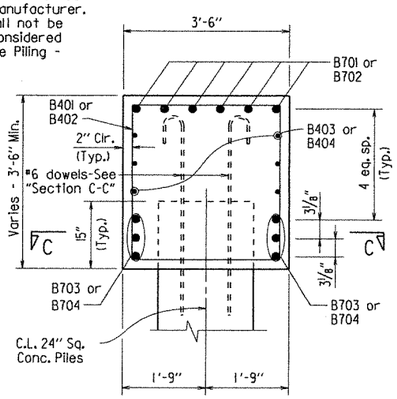
#6 Dowel Bar

SECTION C-C
No Scale

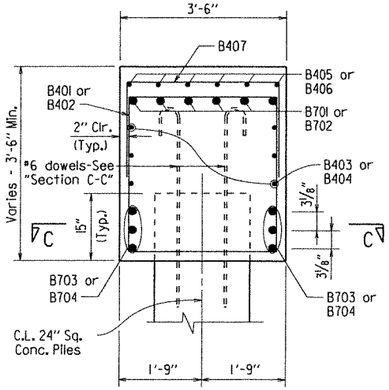
After driving, grill and grout #6 dowels 1'-11" into piles using an approved non-shrink or an epoxy grout listed on the OPL. Diameter of holes and installation procedure shall be as recommended by the grout manufacturer. Dowel bars, drilling and grout shall not be paid for directly but shall be considered subsidiary to the item "Concrete Piling - 24" Square".

ELEVATION

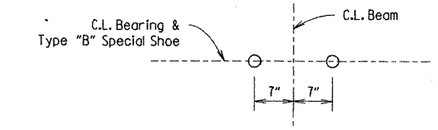
Looking Ahead
Scale: ⅜" = 1'-0"



SECTION A-A
No Scale



SECTION B-B
No Scale



For details of Type "B" Special Shoe and Anchor Bolts, see Dwg. No. 52831.

TYPICAL ANCHOR BOLT LAYOUT

¾" = 1'-0"

GENERAL NOTES:

All concrete shall be Class "S" and be poured in the dry. All exposed corners are to be chamfered ¾" unless otherwise noted.

All reinforcing steel shall conform to AASHTO M31 or M53, Grade 60.

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, see Dwg. No. 52831.

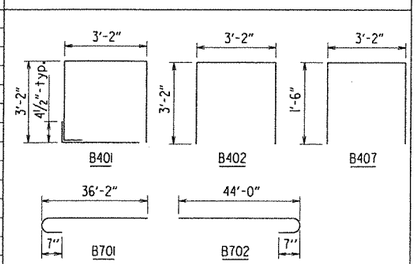
Dowel bars in piles shall be located in such a way to avoid interference with Anchor Bolts.

For additional information, See Layout.

BAR LIST - PER BENT

Mark	No. Req'd.	Length	Pin Dia.
B401	92	13'-0"	2"
B402	36	9'-4"	2"
B403	6	36'-2"	Str.
B404	6	42'-3"	Str.
B405	6	17'-11"	Str.
B406	6	24'-0"	Str.
B407	40	6'-0"	2"
B701	6	37'-0"	5¼"
B702	6	44'-10"	5¼"
B703	6	36'-2"	Str.
B704	6	44'-0"	Str.

Bending Diagrams



Dimensions are out to out of bars

PRINT DATE: 7/20/2012

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
7/23/12
CARL J. FUSELIER

BRIDGE ENGINEER

DETAILS OF BENTS 2 AND 3
MORO CREEK RELIEF

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CMW DATE: 04/25/2012 FILENAME: b070289_b2.dgn
CHECKED BY: DHP DATE: 7-16-12 SCALE: As Shown
DESIGNED BY: CMW DATE: 4/12

BRIDGE NO. 07241 DRAWING NO. 52825

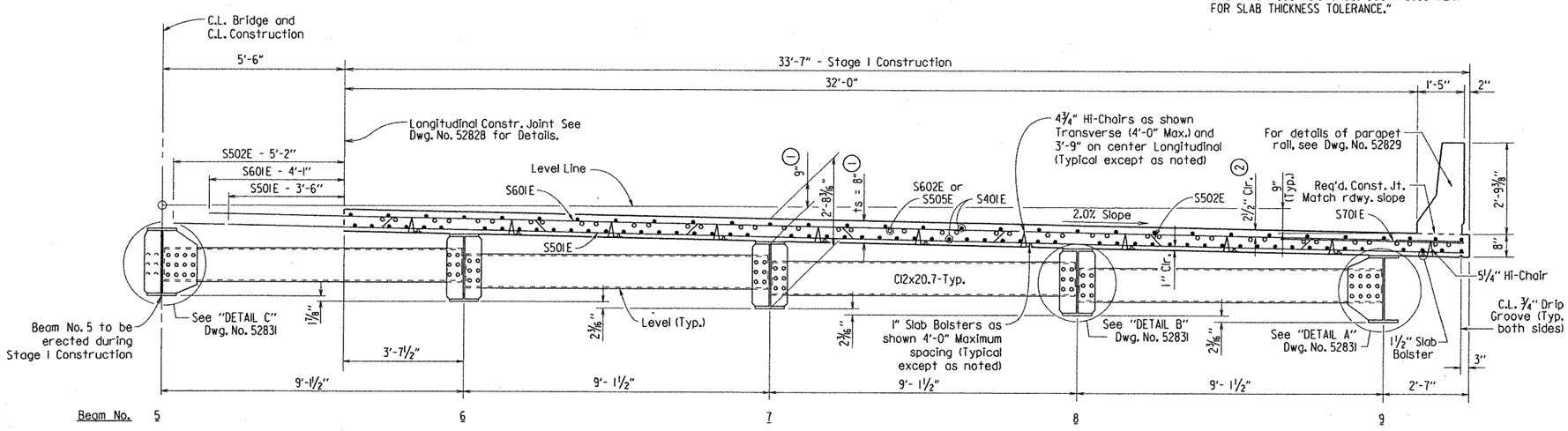
Class I Protective Surface Treatment shall be applied to the roadway surface and to the roadway face and top of the concrete parapet rail.

At Contractor's option, in lieu of providing bar S502E & S504E, one #5 bar top and bottom may be substituted for each bar. Payment for reinforcing will be based on the weight of bar S502E & S504E. Bars in top and bottom shall be epoxy coated.

(1) See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE."

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

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.		070289	159	365
				(1) 07241		SPAN DETAILS		52826

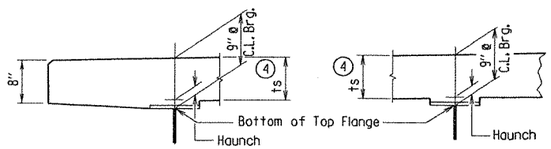


TYPICAL SECTION - STAGE I CONSTRUCTION

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

The superstructure details shown are for use when removable deck forming is used and are the basis for measurement of Clas S(AE) Concrete. See Standard Drawing No. 14991 for allowable modifications and for tolerances when permanent steel bridge deck forms are used. If permanent steel bridge deck forms are used they shall be continuous between beams 5 & 6.

NOTE: ts = Slab thickness as shown in "Typical Section"



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

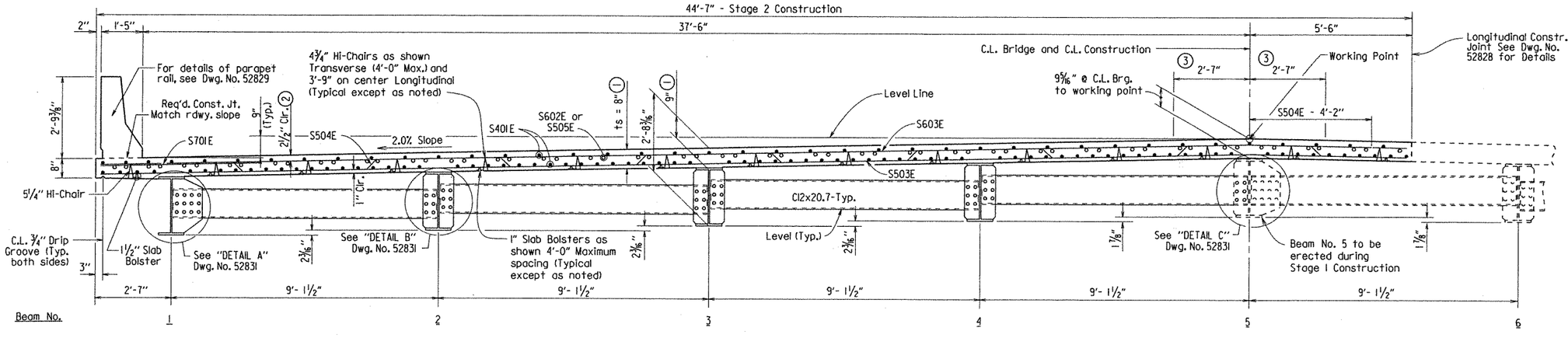
Haunch dimension may vary within the following limits to maintain the grade and slab thickness tolerance : Minimum - occurs when top flange contacts bottom reinforcing steel; Maximum - top flange thickness plus 1¾". No increase in concrete and structural steel quantities will be made to maintain tolerances.

Tolerances shown are applicable only when removable deck forming is used. See Std. Dwg. No. 14991 for tolerances when permanent steel deck forms are used. Payment for concrete shall be based on removable deck forming.

ADJUSTMENT FOR SLAB THICKNESS TOLERANCE

No Scale

(3) See Rounding Detail



TYPICAL SECTION - STAGE 2 CONSTRUCTION

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

SLAB REINFORCING

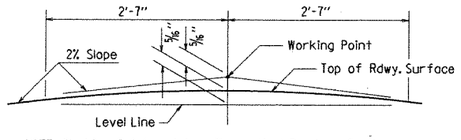
Transverse:
S502E and S504E @ 15" o.c. bent up over beams
S601E and S603E @ 15" o.c. in top
S501E and S503E @ 15" o.c. in bottom
S701E @ 15" o.c. in top at both gutterlines - placed around ends of S502E and S504E.
See "REINFORCING PLAN", Dwg. No. 52828

Longitudinal:
S401E as shown (18" max.)
S602E as shown over int. supports
S505E as shown at end bents

Min. Lap Splice for #4 epoxy bars = 2'-7"
Min. Lap Splice for #5 epoxy bars = 3'-3"
Min. Lap Splice for #6 epoxy bars = 3'-10"

Bars with an "E" suffix are epoxy coated

For weld table see Dwg. No. 52831



NOTE: Working Point matches Theoretical Roadway Grade.

ROUNDING DETAIL

No Scale

STATE OF ARKANSAS
Carl J. Fusselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
7/23/12
CARL J. FUSSELIER

BRIDGE ENGINEER

SHEET 1 OF 6

DETAILS OF 120'-0" INTEGRAL W-BEAM UNIT MORO CREEK RELIEF

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: RBR DATE: 12/09/2011
CHECKED BY: DHP DATE: 7-16-12
DESIGNED BY: RBR DATE: 11-11

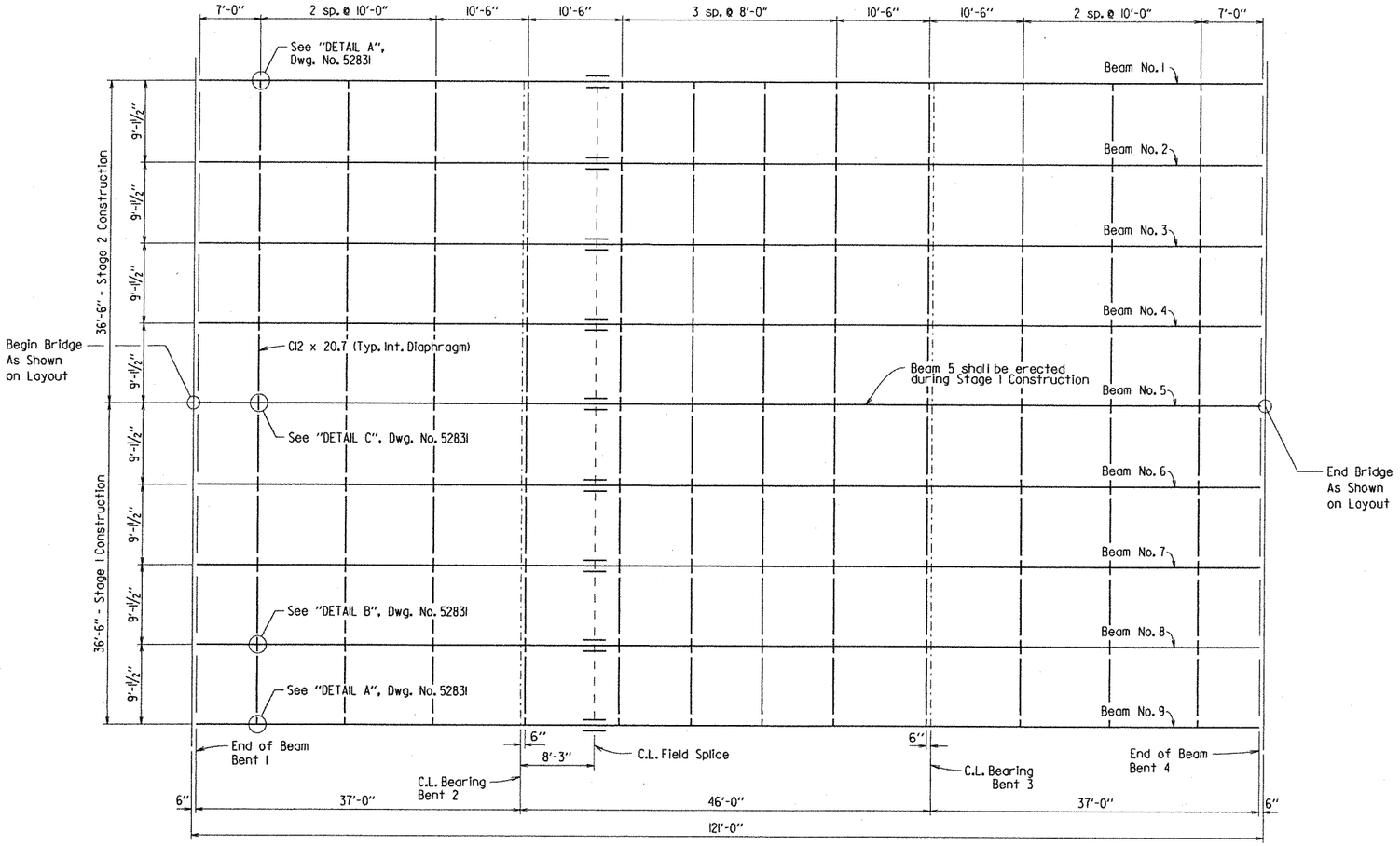
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BRIDGE NO. 07241

DRAWING NO. 52826

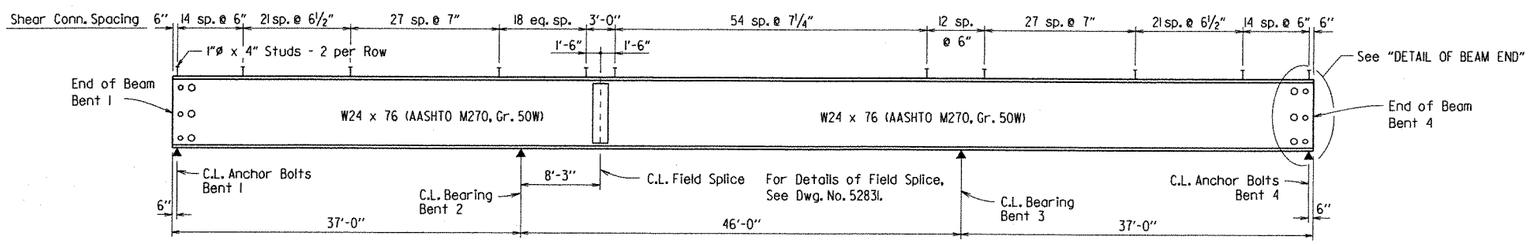
PRINT DATE: 7/16/2012

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				6	ARK.			
				JOB NO.		070289	160	365
				07241		SPAN DETAILS		52827



FRAMING PLAN

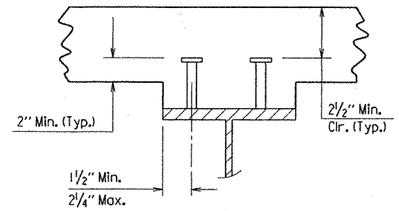
1/8" = 1'-0"



TYPICAL BEAM ELEVATION

No Scale

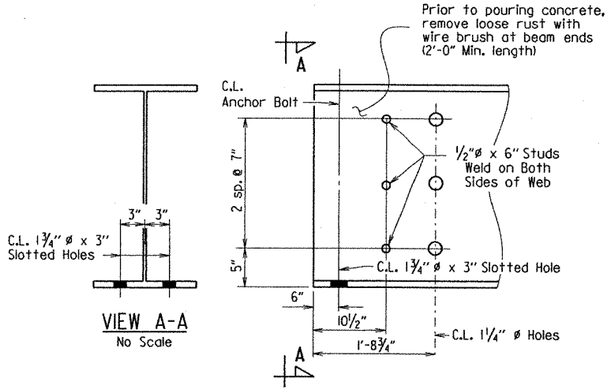
Bolted field splices may be eliminated or shop welded splices may be substituted with the approval of the Engineer. Payment will be made on the basis of plan quantities.



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

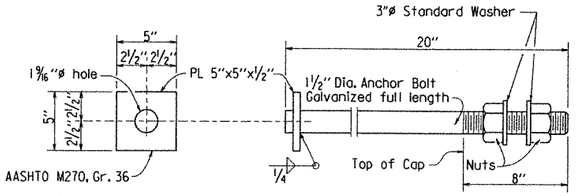


VIEW A-A

No Scale

DETAIL OF BEAM END

No Scale



Anchor Bolts and Nuts to be according to subsection 807.07. Washers shall be a standard washer. Anchor Bolts, Washers, and Nuts shall be paid for at the unit price bid for "Structural Steel in Beam Spans (M270, Gr. 50W)". All anchor bolts shall be Grade 55.

Use lower nut and washer to adjust to grade. Snug tight top nut and washer after grade is adjusted.

ANCHOR BOLT DETAIL FOR END BENTS

No Scale

STATE OF ARKANSAS
Carl L. Fussellier
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No. 7510
7/23/12
CARL L. FUSSELLIER

BRIDGE ENGINEER

SHEET 2 OF 6

DETAILS OF 120'-0" INTEGRAL W-BEAM UNIT MORO CREEK RELIEF

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: RBR DATE: 12/09/2011
CHECKED BY: DHP DATE: 7-16-12
DESIGNED BY: RBR DATE: 11/11

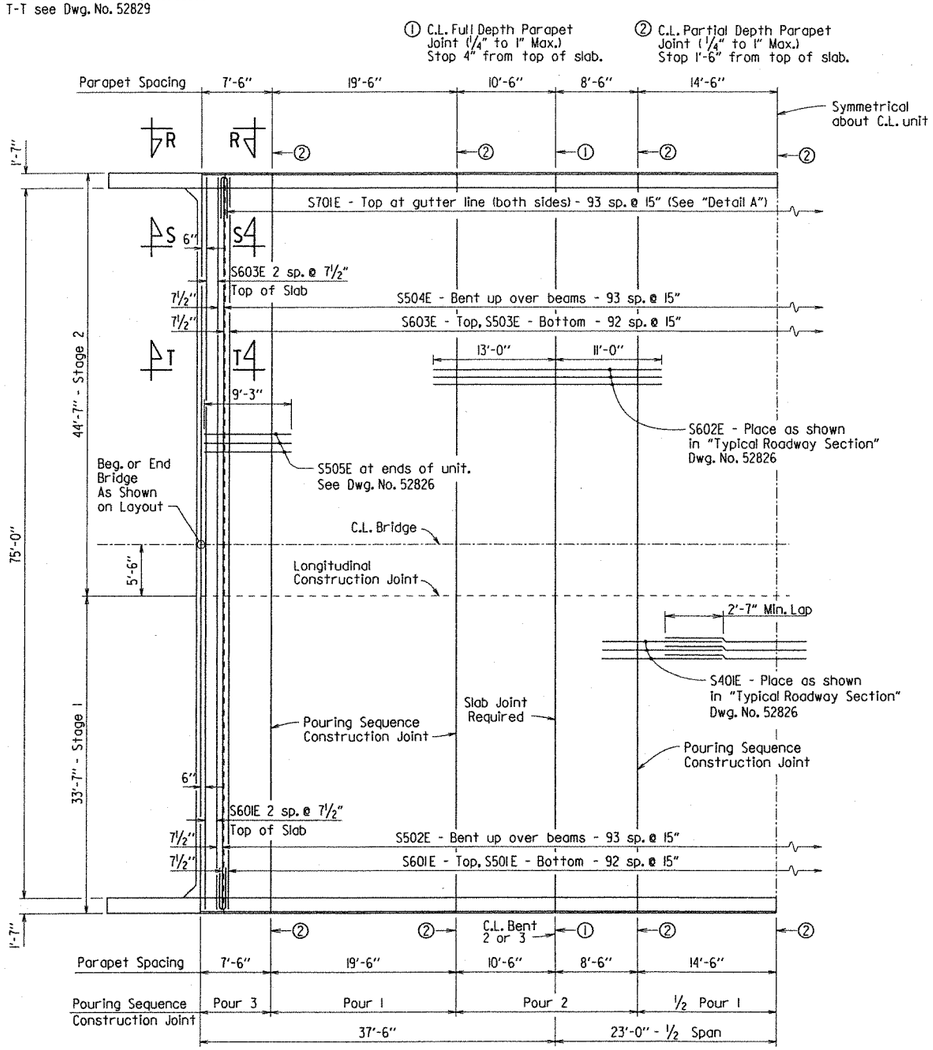
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BRIDGE NO. 07241

DRAWING NO. 52827

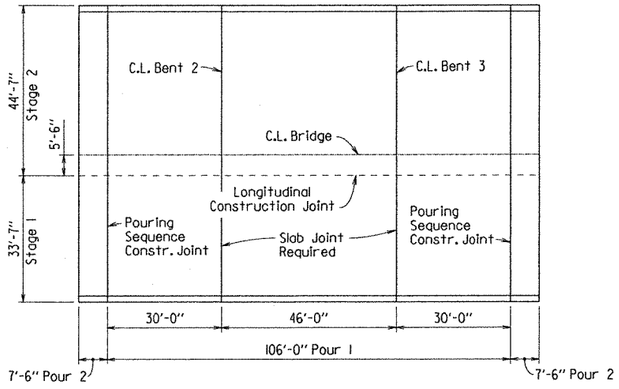
PRINT DATE: 7/16/2012

For View R-R & View S-S see Dwg. No. 52830
For Section T-T see Dwg. No. 52829



REINFORCING PLAN & DECK POURING SEQUENCE

Required slab joints and pouring sequence joints shall align with parpet open joints at the gutter line.



ALTERNATE POURING SEQUENCE

No Scale

Pours with the same number may be placed simultaneously or separately. All Pours (1) must be placed before Pours (2) can be placed. All Pours (2) must be placed before Pours (3). 48 hours shall elapse between the end of a pour and the start of the next pour. 72 hours shall elapse between the end of a pour and the start of an adjacent pour.

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

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

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

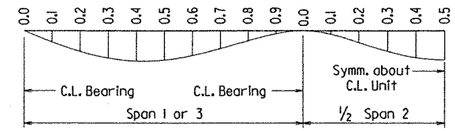
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				6	ARK.			
				JOB NO.		070289	161	365
				①	07241	SPAN DETAILS		52828

TABLE OF DEAD LOAD DEFLECTIONS (INCHES)

Span	Point of Deflection	Structural Steel		Structural Steel + Slab		Structural Steel + Slab + Parapet	
		Interior	Exterior	Interior	Exterior	Interior	Exterior
1 or 3	0.0	0.000	0.000	0.000	0.000	0.000	0.000
	0.1	0.010	0.009	0.103	0.082	0.103	0.083
	0.2	0.019	0.017	0.190	0.151	0.191	0.154
	0.3	0.024	0.022	0.249	0.198	0.251	0.204
	0.4	0.027	0.024	0.273	0.217	0.275	0.224
	0.5	0.026	0.023	0.262	0.208	0.264	0.215
	0.6	0.022	0.019	0.219	0.174	0.220	0.180
	0.7	0.015	0.014	0.154	0.123	0.155	0.126
	0.8	0.008	0.007	0.082	0.065	0.082	0.065
	0.9	0.002	0.002	0.022	0.018	0.022	0.016
½ Span 2	0.0	0.000	0.000	0.000	0.000	0.000	0.000
	0.1	0.005	0.004	0.051	0.040	0.053	0.049
	0.2	0.015	0.013	0.150	0.119	0.156	0.141
	0.3	0.025	0.022	0.253	0.202	0.262	0.235
	0.4	0.032	0.029	0.328	0.261	0.339	0.302
	0.5	0.035	0.031	0.355	0.283	0.367	0.327

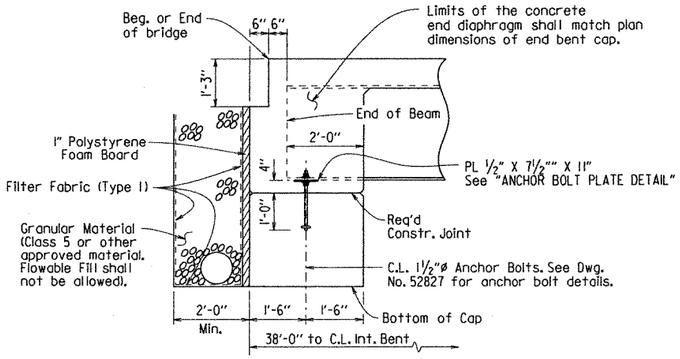
C.L. Unit

Table is symmetrical about C.L. Unit



DEAD LOAD DEFLECTIONS DIAGRAM (TYP.)

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.



SECTION AT END BENT

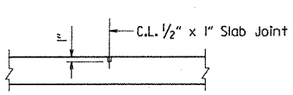
No Scale

For additional details of pipe under drain see Std. Dwg. PU-1 and Section 611 of the Standard Specifications. Pipe under drains, outlet protectors, granular materials, drain pipe, filter fabric and polystyrene foam board will not be measured or paid for separately, but will be considered subsidiary to the unit price bid for "Unclassified Excavation".

For details of steel reinforcing in concrete diaphragm at end bent see Drawing No. 52829

ANCHOR BOLTS PLATE DETAIL

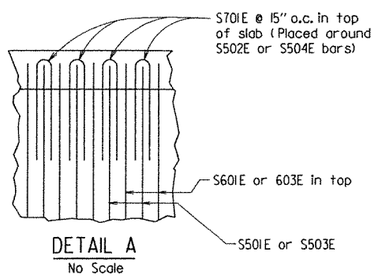
No Scale



Use ½" x 1" Type 3, 4 or 6 Joint Sealer. See subsections 501.02(h) and 501.05(j). Backer rod will not be required. Joint Sealer shall be measured and paid for as Class S(AE) Concrete-Bridge. Slab Joints shall extend to the outside edge of the deck slab. Slab joints shall be installed before the parapet railing is poured. If slab joints are to be sawed, they shall be sawed as soon as the slab has sufficiently set to allow sawing of the joints without damaging the slab. Slab joints shall be placed at all pouring sequence construction joints and required slab joint locations.

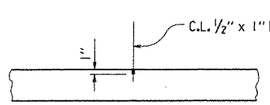
SLAB JOINT DETAIL

No Scale



DETAIL A

No Scale



Use ½" x 1" Type 3, 4, or 6 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. This joint shall be formed.

LONGITUDINAL CONSTRUCTION JOINT DETAIL

Not to Scale

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
CARL J. FUSELIER 7/23/12

BRIDGE ENGINEER

SHEET 3 OF 6

DETAILS OF 120'-0" INTEGRAL W-BEAM UNIT MORO CREEK RELIEF

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

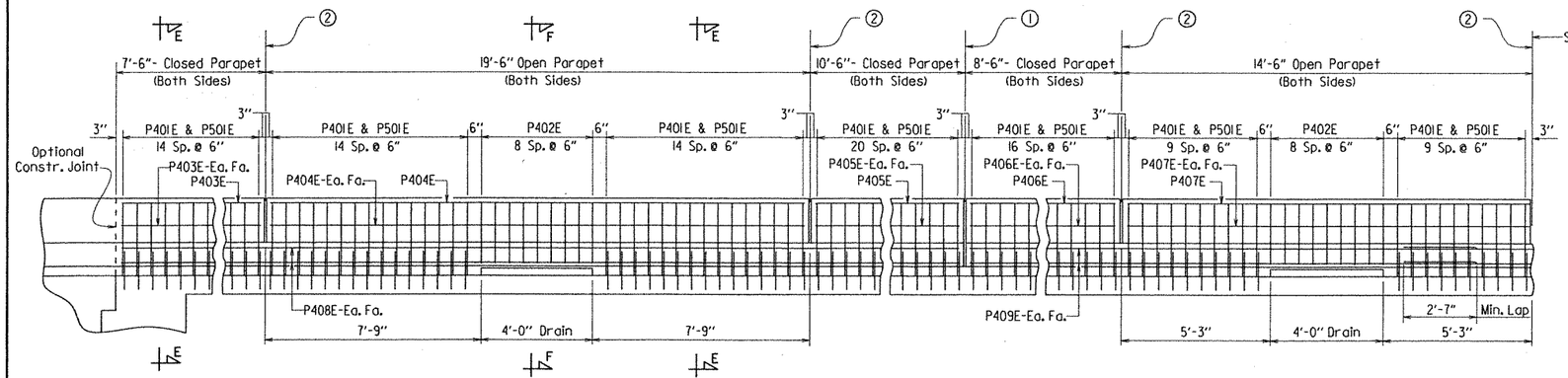
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DESIGNED BY: RBR DATE: 11/11

FILENAME: b070289_sl.dgn
SCALE: 1/8" = 1'-0" or as shown

BRIDGE NO. 07241 DRAWING NO. 52828

PRINT DATE: 7/16/2012

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.		070289	162	365
				① 07241		SPAN DETAILS		52829

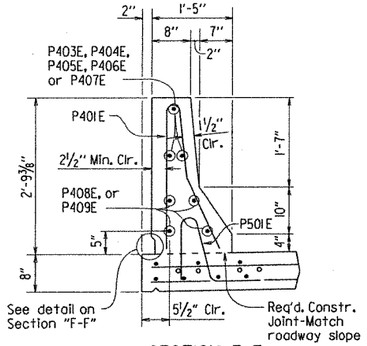


DETAILS OF PARAPET RAIL

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

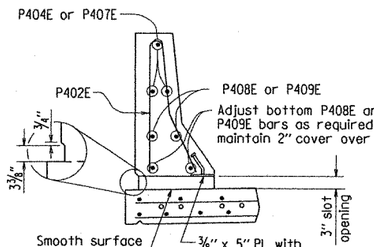
① C.L. Full-Depth Parapet Joint (1/4" to 1" Max.) as shown in "Reinforcing Plan & Deck Pouring Sequence" Dwg. No. 52828. Stop 4" from top of slab.

② C.L. Partial-Depth Parapet Joint (1/4" to 1" Max.) as shown in "Reinforcing Plan & Deck Pouring Sequence" Dwg. No. 52828. Stop 1'-2" from top of slab.



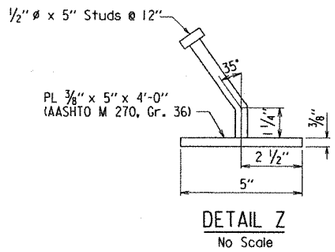
SECTION E-E

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



SECTION F-F

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



DETAIL Z

No Scale

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

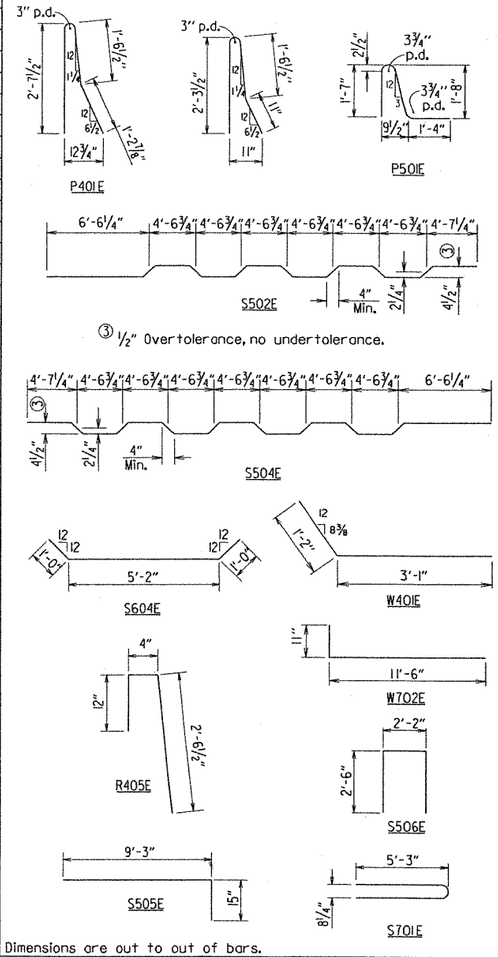
Parapet studs shall be 5" long., granular flux filled, solid fluxed or equal, and automatically end welded to the plate. Studs and plates shall meet the requirements of Section 807 and shall be measured and paid for as "Structural Steel in Beam Spans (M270, Gr. 50W)."

BAR LIST

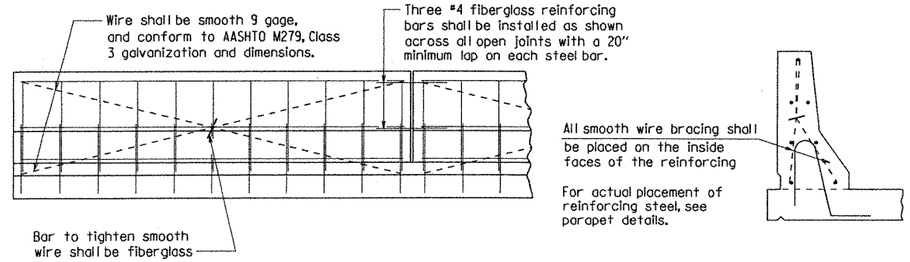
MARK	NO. REQ'D	LENGTH	P.D.
P401E	412	5'-6"	3"
P402E	72	4'-10"	3"
P403E	12	7'-2"	Str.
P404E	12	19'-2"	Str.
P405E	12	10'-2"	Str.
P406E	12	8'-2"	Str.
P407E	12	14'-2"	Str.
P408E	16	37'-2"	Str.
P409E	16	24'-2"	Str.
P501E	412	4'-8"	3"
S401E	828	32'-1"	Str.
S402E	18	36'-3"	Str.
S403E	18	44'-3"	Str.
S501E	93	36-11"	Str.
S502E	94	39'-3"	3"
S503E	93	44'-3"	Str.
S504E	94	43'-11"	3"
S505E	208	10'-5"	2½"
S506E	172	7'-0"	2½"
S601E	99	37'-6"	Str.
S602E	208	24'-0"	Str.
S603E	99	44'-3"	Str.
S604E	12	7'-2"	4½"
S701E	188	10'-9"	6½"
R403E	24	9'-8"	Str.
R404E	24	2'-0"	Str.
R405E	80	3'-9"	2"
W401E	60	4'-3"	2"
W402E	60	5'-5"	Str.
W701E	12	11'-6"	Str.
W702E	40	12'-3"	5¼"

NOTE: Bars designated with an "E" suffix shall be epoxy coated.

BENDING DIAGRAMS



Dimensions are out to out of bars.

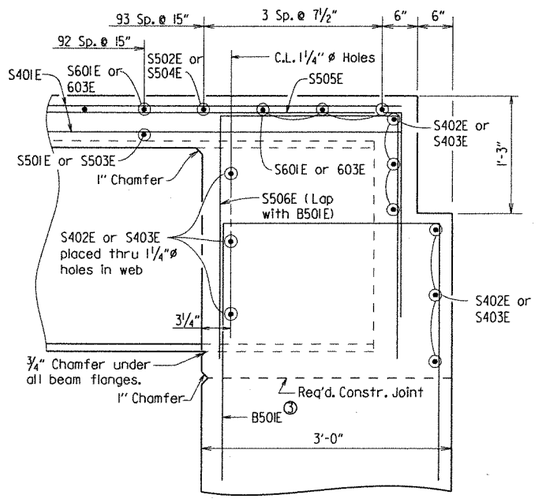


All panels shall be braced as required to prevent racking. All open joints shall be sawed as soon as practical to a minimum width of 1/4". To control cracking before sawing all joints must be grooved before the concrete is set. Sawing of the joints must be controlled so it will follow the grooved joint.

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

DETAILS OF OPTIONAL SLIP FORMING OF CONCRETE PARAPET RAIL

No Scale



SECTION T-T

No Scale

③ See End Bent Details on Dwg. No. 52824 for reinforcing and additional details.

STATE OF ARKANSAS Carl J. Fuselier REGISTERED PROFESSIONAL ENGINEER No. 7510 7/25/12 CARL J. FUSELIER

BRIDGE ENGINEER

SHEET 4 OF 6

DETAILS OF 120'-0" INTEGRAL W-BEAM UNIT MORO CREEK RELIEF

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: RBR DATE: 12/09/2011 FILENAME: b070289_sl.dgn

CHECKED BY: DHP DATE: 7-16-12 SCALE: As shown

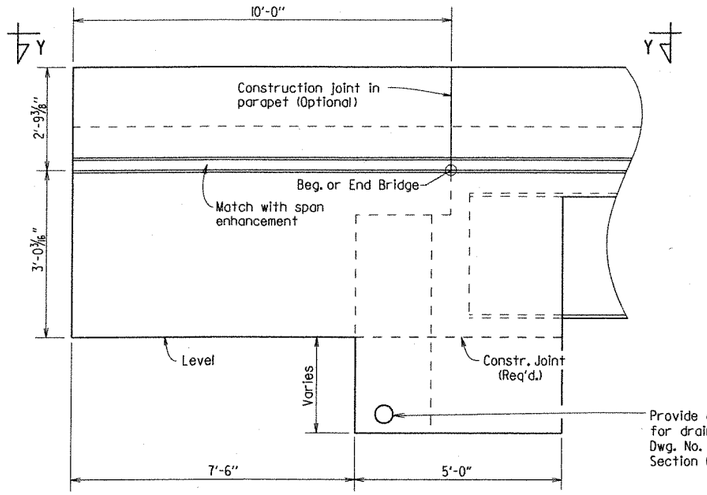
DESIGNED BY: RBR DATE: 11/11

BRIDGE NO. 07241 DRAWING NO. 52829

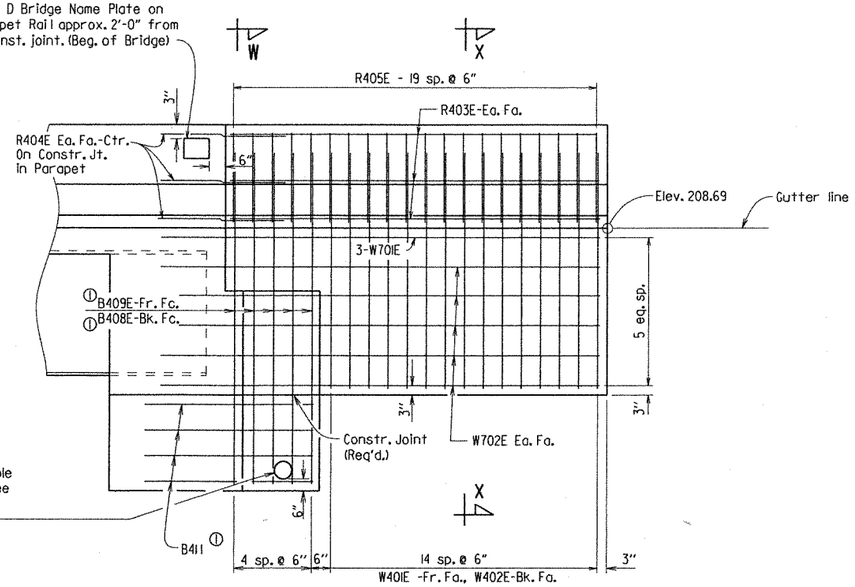
PRINT DATE: 7/20/2012

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.		070289	163	365
				(1) 07241		SPAN DETAILS		52830

Place Type D Bridge Name Plate on Right Parapet Rail approx. 2'-0" from optional const. joint. (Beg. of Bridge)

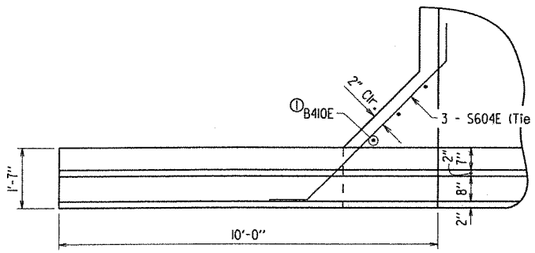


VIEW R-R
No Scale

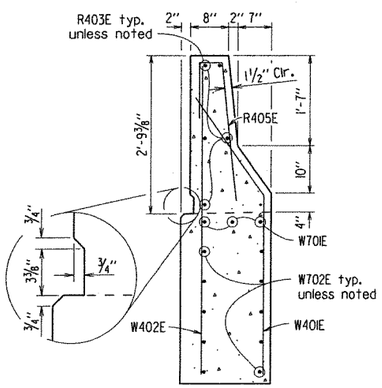


VIEW S-S
½" = 1'-0"

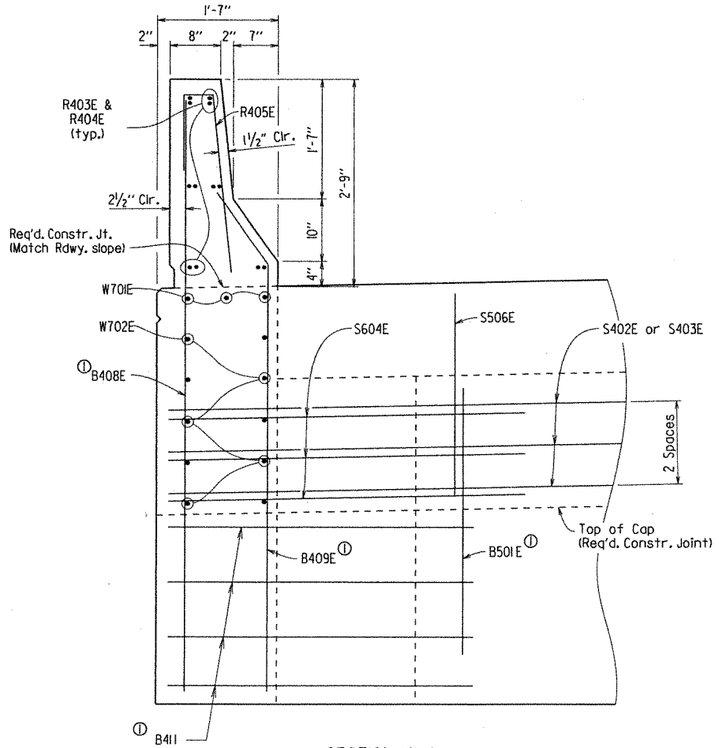
①See End Bent Details on Dwg. No. 52824 for reinforcing and additional details.



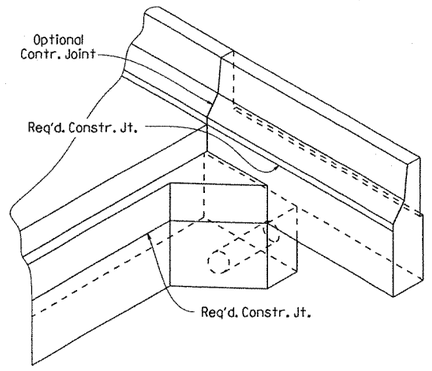
VIEW Y-Y
No Scale



SECTION X-X
No Scale



SECTION W-W
¾"=1'-0"



ISOMETRIC VIEW OF INTEGRAL BENT
No Scale

STATE OF ARKANSAS
CARL J. PUSELLER
REGISTERED PROFESSIONAL ENGINEER
No. 7510
7/23/12

BRIDGE ENGINEER

SHEET 5 OF 6

DETAILS OF 120'-0" INTEGRAL W-BEAM UNIT MORO CREEK RELIEF

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: RBR DATE: 12/09/2011 FILENAME: b070289_sl.dgn
CHECKED BY: DHP DATE: 7-16-12 SCALE: As shown
DESIGNED BY: RBR DATE: 11/11

BRIDGE NO. 07241 DRAWING NO. 52830

PRINT DATE: 7/20/2012

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.		070289	164	365
				07241		SPAN DETAILS		52831

GENERAL NOTES

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2003 Edition) with applicable supplemental specifications and special provisions.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications 5th Edition (2010), with 2010 interims.

LIVE LOADING: HL-93

MATERIALS AND STRENGTHS:
Concrete: All concrete shall be Class S(AE) with a minimum 28 day strength f'c = 4000 psi.
Reinforcing Steel: Reinforcing steel shall conform to AASHTO M31 or M53, Grade 60 (Yield Strength = 60,000 psi.).
Structural Steel: Structural steel shall conform to AASHTO M270, Gr. 50W (Fy = 50,000 psi.) or AASHTO M270, Gr.36 (Fy = 36,000 psi.).

STRUCTURAL STEEL:
All Structural Steel shall be AASHTO M270, Gr. 50W unless otherwise noted. All structural steel shall be paid for as "Structural Steel in Beam Spans (M270, Gr.50W)". Structural Steel completely embedded in concrete may be AASHTO M270. Gr. 36 or Gr. 50. AASHTO M270, Gr.50W steel shall not be painted. All exposed surfaces shall be cleaned in accordance with subsection 807.84(e) unless noted otherwise.

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

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

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.

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

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

All beams shall be blocked in their true position in the shop with the webs horizontal in groups as specified in subsection 807.54 (b)(1). The camber, length of sections, distance between bearings, and opening of joints shall be measured with thebeams in their true position and this information shall become part of the permanent record of this job. The component parts shall be match marked in this assembly and those marks shall be shown on the erection diagram. All beam dimensions are based on a temperature of 60 degrees F. A tolerance of 1/4" (plus or minus) allowed for camber.

Field connections shall be bolted with high-strength bolts. Bolts shall be 3/4"ø, except as noted, and open holes shall be 13/16 "ø unless otherwise noted. Holes for 3/4"ø bolts may be 15/16 "ø if a washer is supplied for use under both the nut and the head of the bolt. For field splices, bolts shall be 7/8"ø bolts. Open holes shall be 15/16 "ø. Bolt spacing shall be 3" for 7/8"ø bolts unless otherwise noted. Bolts shall be placed with heads on the outside face of the exterior beam web and on the bottom of the beam flanges.

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

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

Bearings shall be seated in accordance with subsection 807.66. This work and material will not be paid for directly but will be considered subsidiary to the item "Structural Steel in Beam Spans (M270, Gr. 50W)".

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

CONCRETE:
All concrete shall be Class S(AE) with a minimum 28 day compressive strength f'c = 4000 psi. Concrete shall be poured in the dry and all exposed corners to be chamfered 3/4" 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. 14991 for allowable modifications and for tolerances when Permanent Steel Bridge Deck Forms are used. Concrete in bridge superstructure shall be placed, consolidated, and screeded off for the entire pour before any concrete has taken its initial set. This may require the use of a retarding agent. The concrete diaphragms at end bents shall be poured monolithic with the slab.

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

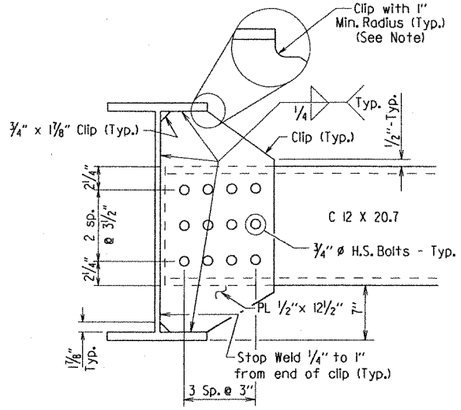
Removable forms shall be used for concrete diaphragms.

CLASS I PROTECTIVE SURFACE TREATMENT: Class I protective surface treatment shall be applied to the roadway surface and to the roadway face and top of the concrete parapet rail.

LOAD DISTRIBUTION:

A. To W-Beam	Beam No.		
	Beam 1 & 9	715	
	Beam 2 thru 8	913	plf + Wt. of Structural Steel
B. To Composite Beam	Beam No.		
	Beam 1 & 9	395	plf ①
	Beam 2 thru 8	256	plf ①

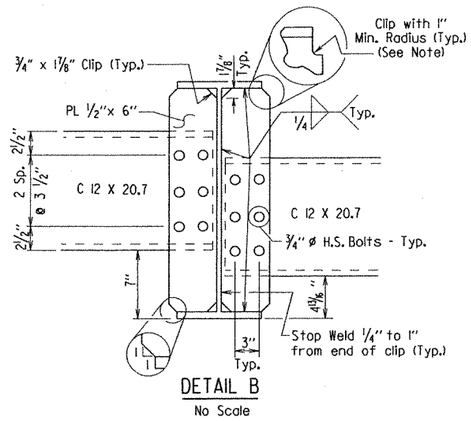
① Includes 200 plf future wearing surface.



DETAIL A

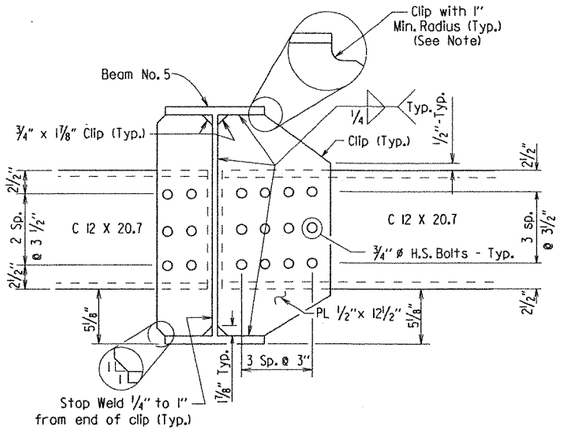
No Scale

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



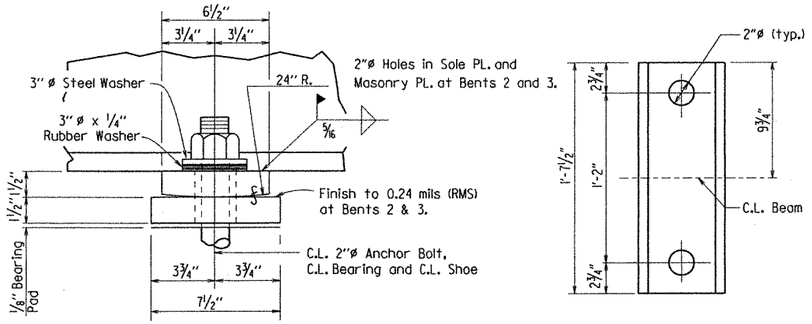
DETAIL B

No Scale



DETAIL C

No Scale



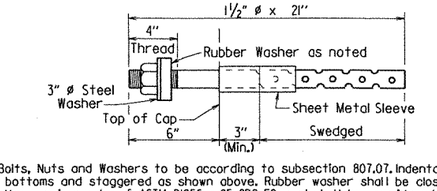
Plates for Type "B" Special Shoes shall be M270, GR. 50W.

ELEVATION TYPE "B" SPECIAL SHOE

BENTS: 2 and 3
No Scale

PLAN TYPE "B" SPECIAL SHOE

BENTS: 2 and 3
No Scale

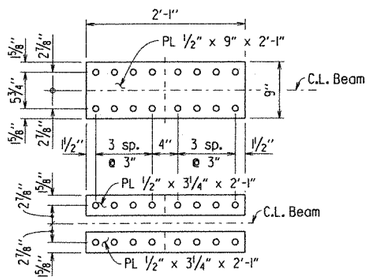


Anchor Bolts, Nuts and Washers to be according to subsection 807.07. Indentations shall be circular with rounded bottoms and staggered as shown above. Rubber washer shall be closed cell expanded rubber, meeting the requirements of ASTM D1056 - 85 2B2 E2, and shall be considered subsidiary to the item of "Structural Steel in Beam Spans (M270, Gr. 50W)". Anchor Bolts, Nuts and Washers shall be paid for at the unit price bid for "Structural Steel in Beam Spans (M270, Gr. 50W)". Anchor bolts shall be Grade 55.

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 MetalSleeves will not be required. If Anchor Bolts are to be drilled and grouted in place, the Galvanized Sheet Metal Sleeves shall be cast in place as shown. Sleeves shall be dry packed with styrofoam, urethane foam or approved equal prior to pouring of concrete. After pouring of the cap and prior to erection of Structural Steel, the dry pack shall be removed and holes for the anchor bolts shall be accurately drilled into the masonry. Bolts placed in drilled holes shall be accurately set and fixed using a 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)."

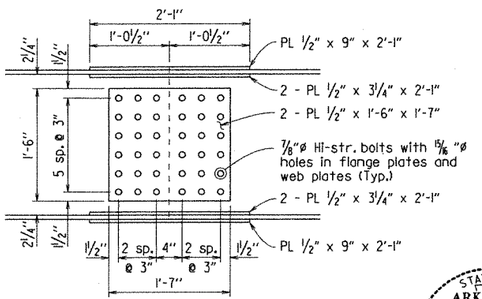
ANCHOR BOLT DETAIL FOR INTERMEDIATE BENTS

BENTS: 2 and 3
No Scale



FLANGE SPLICE

Top & Bottom



WEB SPLICE

DETAILS OF FIELD SPLICE

No Scale

All field splice plates shall be AASHTO M270, Gr. 50W
All field splice bolts shall be 7/8"ø H.S. Bolts
All field splice bolt holes shall be 15/16 "ø

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"	

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
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
7/23/12
CARL J. FUSELIER

BRIDGE ENGINEER

SHEET 6 OF 6

DETAILS OF 120'-0" INTEGRAL W-BEAM UNIT MORO CREEK RELIEF

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

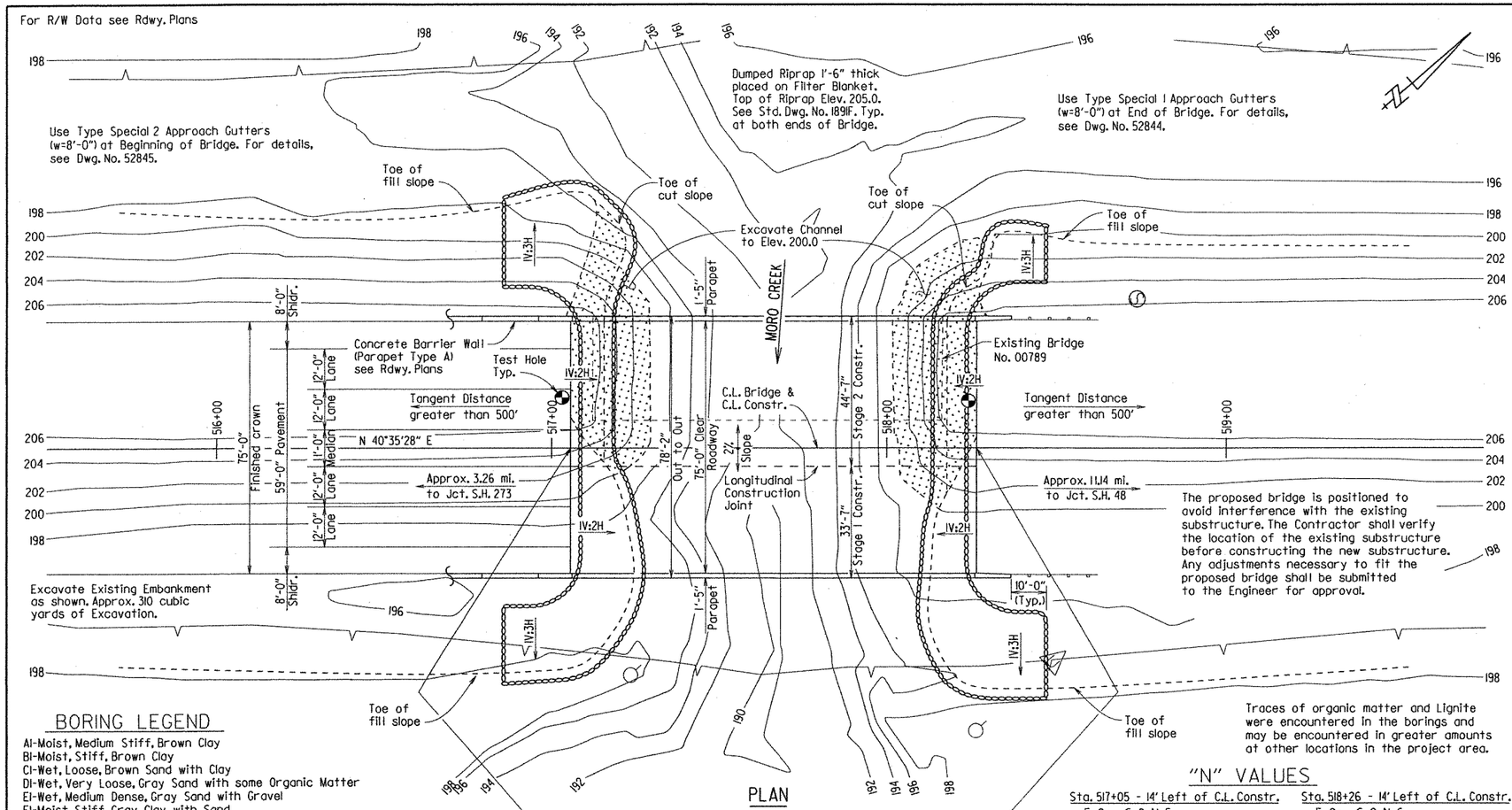
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CHECKED BY: DHP DATE: 7-16-12 SCALE: As shown
DESIGNED BY: RBR DATE: 11/11

BRIDGE NO. 07241 DRAWING NO. 52831

PRINT DATE: 7/23/2012

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.		070289	165	365
				①	07242	- LAYOUT -	52832	

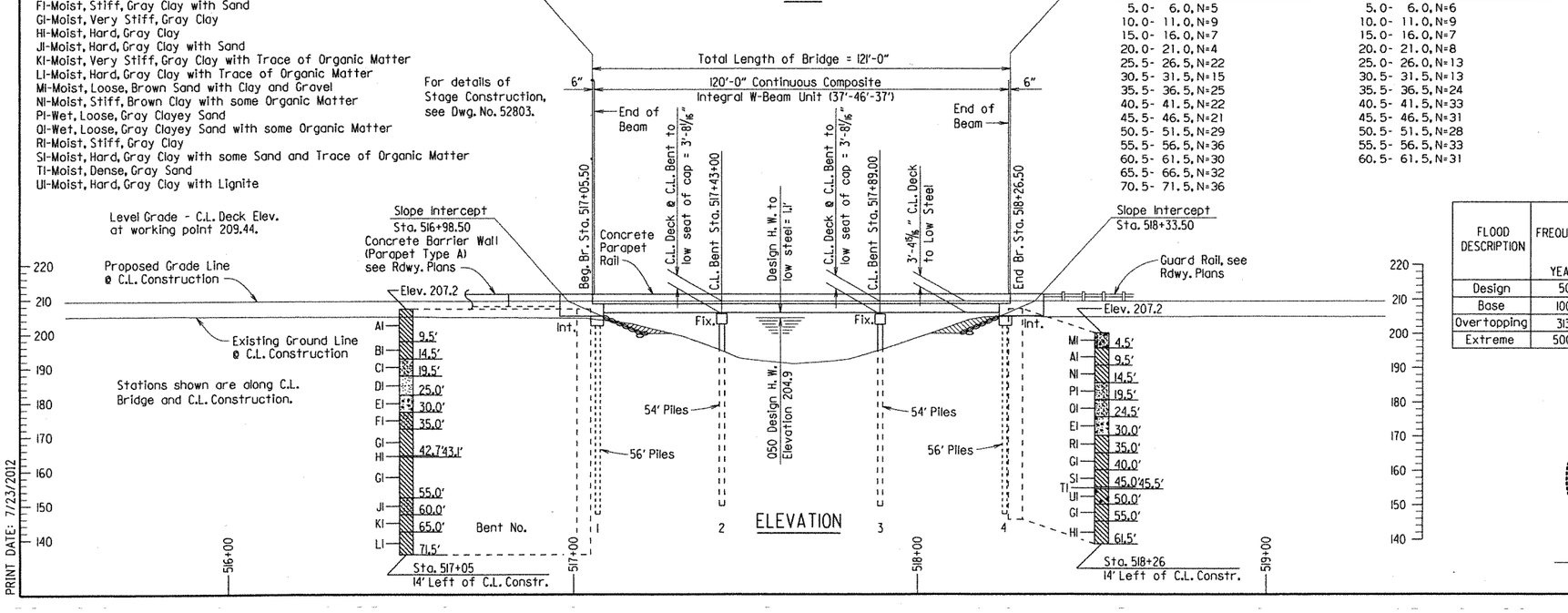
For R/W Data see Rdwy. Plans



BORING LEGEND

AI-Moist, Medium Stiff, Brown Clay
BI-Moist, Stiff, Brown Clay
CI-Wet, Loose, Brown Sand with Clay
DI-Wet, Very Loose, Gray Sand with some Organic Matter
EI-Wet, Medium Dense, Gray Sand with Gravel
FI-Moist, Stiff, Gray Clay with Sand
GI-Moist, Very Stiff, Gray Clay
HI-Moist, Hard, Gray Clay
JI-Moist, Hard, Gray Clay with Sand
KI-Moist, Very Stiff, Gray Clay with Trace of Organic Matter
LI-Moist, Hard, Gray Clay with Trace of Organic Matter
MI-Moist, Loose, Brown Sand with Clay and Gravel
NI-Moist, Stiff, Brown Clay with some Organic Matter
PI-Wet, Loose, Gray Clayey Sand
QI-Wet, Loose, Gray Clayey Sand with some Organic Matter
RI-Moist, Stiff, Gray Clay
SI-Moist, Hard, Gray Clay with some Sand and Trace of Organic Matter
TI-Moist, Dense, Gray Sand
UI-Moist, Hard, Gray Clay with Lignite

For details of Stage Construction, see Dwg. No. 52803.



"N" VALUES

Sta. 517+05 - 14' Left of C.L. Constr.	Sta. 518+26 - 14' Left of C.L. Constr.
5.0- 6.0, N=5	5.0- 6.0, N=6
10.0- 11.0, N=9	10.0- 11.0, N=9
15.0- 16.0, N=7	15.0- 16.0, N=7
20.0- 21.0, N=4	20.0- 21.0, N=8
25.5- 26.5, N=22	25.0- 26.0, N=13
30.5- 31.5, N=15	30.5- 31.5, N=13
35.5- 36.5, N=25	35.5- 36.5, N=24
40.5- 41.5, N=22	40.5- 41.5, N=33
45.5- 46.5, N=21	45.5- 46.5, N=31
50.5- 51.5, N=29	50.5- 51.5, N=28
55.5- 56.5, N=36	55.5- 56.5, N=33
60.5- 61.5, N=30	60.5- 61.5, N=31
65.5- 66.5, N=32	
70.5- 71.5, N=36	

GENERAL NOTES

BENCH MARK: TBM 915 Chiseled Sq. SE HW, 4.68' Lt. of C.L. Constr. Sta. 498+12.52, Elev. 207.67.

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2003 edition) with applicable supplemental specifications and special provisions. Unless otherwise noted, section and subsection numbers in the plans refer to the Construction Specifications.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications 5th Edition (2010), with 2010 Interims.

LIVE LOADING: HL-93

SEISMIC ZONE : 2 S_{DI} = 0.244 SITE CLASS = E

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 M31 or M53, GR. 60)	fy = 60,000 psi
Structural Steel (AASHTO M270, Gr. 36)	Fy = 36,000 psi
Structural Steel (AASHTO M270, Gr. 50W)	Fy = 50,000 psi

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

CONCRETE PILING: Piling for Bents 1 and 4 shall be 16" square prestressed concrete and shall be driven to a minimum ultimate bearing capacity of 145 tons per pile. Piling in Bents 2 and 3 shall be 24" square prestressed concrete and shall be driven to a minimum ultimate bearing capacity of 315 tons per pile. All piling shall be driven with an approved air, steam, or diesel hammer. Piling in end bents shall be driven after embankment to bottom of cap is in place. Piling in Bents 1 and 4 shall have a tip elevation of 179 or lower. Piling in Bents 2 and 3 shall have a tip elevation of 167 or lower. Length of piling shown are for estimating quantities and for use in determining payment for cut-off and build-up in accordance with the standard specifications. Drive one 61' test pile in Bent 2 and one 59' test pile in Bent 4.

DRIVING SYSTEM: The driving system approval and the ultimate bearing capacity determination for piling shall be based on the requirements of subsection 805.09(b) "Method B - Wave Equation Analysis (WEAP)". It is estimated that the minimum required rated energy of the hammer to obtain the minimum ultimate bearing capacity on 16" square piles will be 40,000 foot pounds per blow and on 24" square piles shall be 83,000 foot pounds per blow.

PREBORING: Preboring is required for all piling at bents 1 & 4. Prebored holes at Bents 1 and 4 shall have a diameter 6" greater than the greatest cross-sectional dimension of the pile for a depth of 10' below the bottom of the cap. The void space around the pile after completion of driving shall be backfilled with sand or pea gravel. The Contractor shall be responsible for keeping prebored holes free of debris prior to backfilling, which may require the use of temporary casing or other approved methods. Any related cost for backfilling and temporary casing will not be paid for separately but shall be considered subsidiary to the item "Preboring". Preboring will be paid for in accordance with Section 805.

BRIDGE DECK: The concrete bridge deck shall be given a fine finish as specified for final finishing in subsection 802.19 for Class 5 Tined Bridge Roadway Surface Finish.

PIPE UNDER DRAIN: One Pipe Under drain with outlet protectors shall be installed behind each bridge end in accordance with Section 611. Pipe Under drains will not be paid for directly but shall be considered subsidiary to "Unclassified Excavation".

DETAIL DRAWINGS:

	DRAWING NO.
Stage Construction	52803
End Bents	52833 & 52835
Intermediate Bents	52834
120' Integral W-Beam Unit	52836 - 52842
Type "B" Special Shoes	52842
Concrete Piling	14964 & 52786
Type Special 1 Approach Gutters	52844
Type Special 2 Approach Gutters	52845

EXISTING BRIDGE: Existing Bridge No. 00789 (Log Mile 7.52) is 28'wide and 106' long and consists of concrete tee beams supported by concrete pile bents.

REMOVAL AND SALVAGE: After Stage 1 Construction is complete and opened to traffic, the Contractor shall remove existing Bridge No. 00789 in accordance with Section 205. All salvageable guard rail and guard rail posts, as determined by the Engineer, shall remain the property of the Department. The Contractor shall coordinate with the Engineer to provide temporary storage and on site loading onto Department equipment for removal of all salvaged items. All other material from the existing bridge shall become the property of the Contractor.

MAINTENANCE OF TRAFFIC: See Roadway Plans.

HYDRAULIC DATA

FLOOD DESCRIPTION	FREQUENCY	②TOTAL DISCHARGE	DISCHARGE THRU BRIDGE OPENING	①NATURAL WATER SURFACE ELEVATION	WATER SURFACE ELEVATION W/ BACKWATER
	YEARS	CFS	CFS	FEET	FEET
Design	50	18,500	4,508	204.8	205.1
Base	100	22,900	5,317	205.7	206.0
Overtopping	313	34,300	7,460	207.7	208.5
Extreme	500	36,000	7,821	207.9	208.7

① Unconstricted water surface elevation without structure and roadway approaches.

② Includes Bridge Nos. 07239 thru 07243.

Estimated 100-Year backwater elevation with Existing Structures in place is 206.2 ft.

Proposed Low Bridge Member Elevation = 206.0

Drainage area = 131.0 square miles (Includes relief structures).

Historical H.W. Elev. = 206.0 ft.

STATE OF ARKANSAS
Carl J. Pusellier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
7/23/12
CARL J. PUSELLIER

BRIDGE ENGINEER

LAYOUT OF BRIDGE OVER MORO CREEK
HWY. 273-PETERS RD. (CR 24) (F)
DALLAS AND CLEVELAND COUNTIES

ROUTE 167 SEC. 7 & 8

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

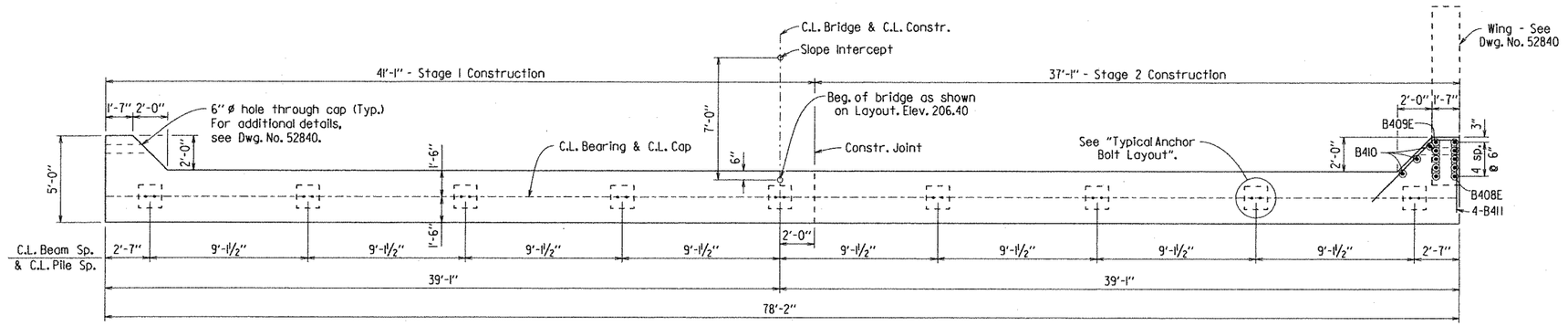
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CHECKED BY: CMW DATE: 7/16/12 SCALE: 1"=20'
DESIGNED BY: CSL DATE: Sept 2011

BRIDGE NO. 07242 DRAWING NO. 52832

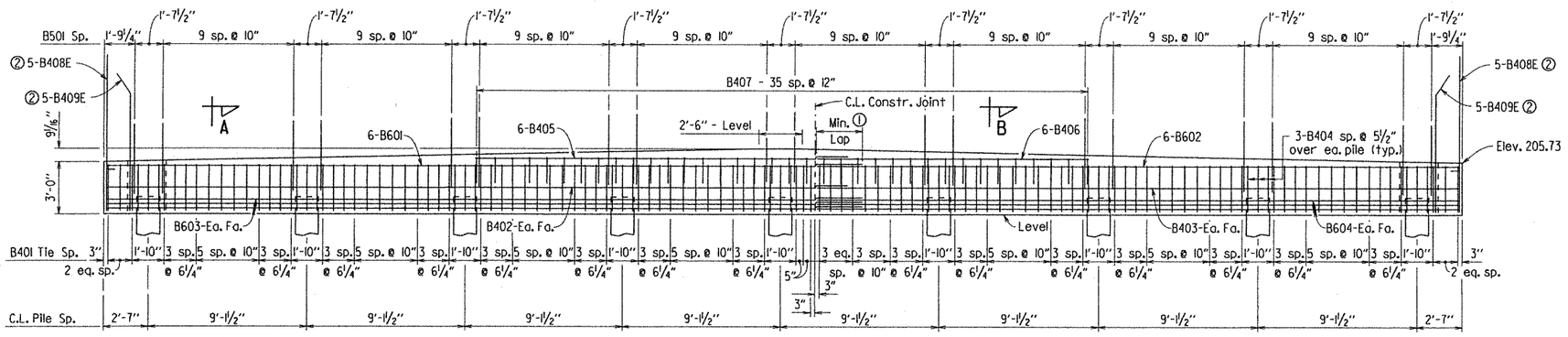
PRINT DATE: 7/23/2012

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.		070289	166	365
① 07242	-	BENT 1	-	52833



PLAN



② Bars B408E and B409E shall be embedded 2'-10" into cap.

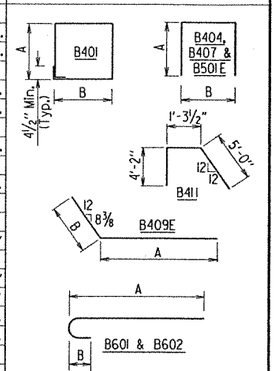
ELEVATION
Bent 1: Looking Back
¼" = 1'-0"

① Min. Lap: 1'-9" #4 bar
2'-7" #6 bar

BAR LIST

Mark	No. Req'd.	Length	A	B	Pin Dia.
B401	103	11'-0"	2'-8"	2'-8"	2"
B402	2	42'-10"	-	-	Str.
B403	2	36'-9"	-	-	Str.
B404E	27	7'-10"	2'-8"	2'-8"	2"
B405	6	21'-6"	-	-	Str.
B406	6	15'-6"	-	-	Str.
B407	36	5'-6"	1'-6"	2'-8"	2"
B408E	10	8'-5"	-	-	Str.
B409E	10	7'-4"	6'-2"	1'-2"	2"
B410	6	4'-5"	-	-	Str.
B411	8	10'-5"	-	-	2"
B501E	82	9'-6"	3'-6"	2'-8"	2½"
B601	6	44'-5"	43'-9"	6"	4½"
B602	6	37'-5"	36'-9"	6"	4½"
B603	6	43'-9"	-	-	Str.
B604	6	36'-9"	-	-	Str.

Bending Diagrams



Dimensions are out to out of bars

GENERAL NOTES

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

All reinforcing steel shall conform to AASHTO M 31 or M 53, Gr. 60. (Yield strength = 60,000 psi.)

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

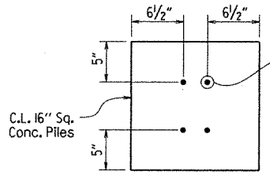
For anchor bolt details, see Dwg. No. 52837.

Bars with "E" suffix are Epoxy Coated.

Dowel bars in piles shall be located in such a way to avoid interference with Anchor Bolts.

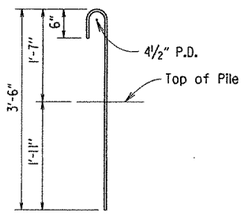
Granular backfill and pipe underdrain required behind end bent caps. See Dwg. No. 52838.

For additional information, see Layout.

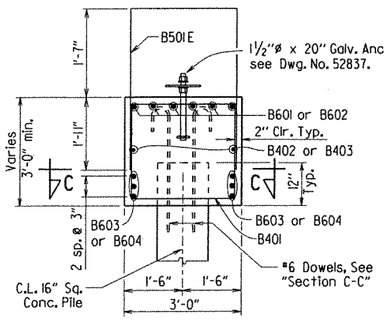


After driving, grill and grout #6 dowels 1'-11" into piles using an approved non-shrink or an epoxy grout listed on the QPL. Diameter of holes and installation procedure shall be as recommended by the grout manufacturer. Dowel bars, drilling and grout shall not be paid for directly but shall be considered subsidiary to the item "Concrete Piling - 16" Square".

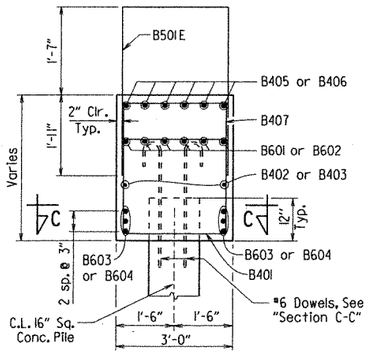
SECTION C-C
No Scale



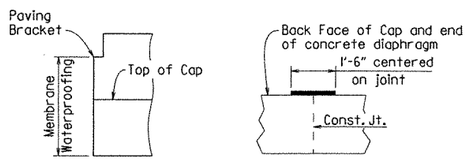
#6 Dowel Bar



SECTION A-A
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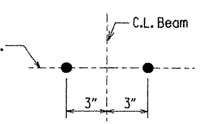
SECTION B-B
No Scale



Membrane waterproofing Type "C" or approved equal, see Section 815. Membrane waterproofing shall extend from the bottom of the cap to the paving bracket.

Payment for membrane to be considered subsidiary to Class "S" Concrete - Bridge.

CONSTRUCTION JOINT DETAIL
No Scale



TYPICAL ANCHOR BOLT LAYOUT
No Scale

STATE OF ARKANSAS
Carl J. Puseller
REGISTERED PROFESSIONAL ENGINEER
No. 7510
7/23/12
CARL J. PUSELLER

BRIDGE ENGINEER

DETAILS OF BENT 1
MORO CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

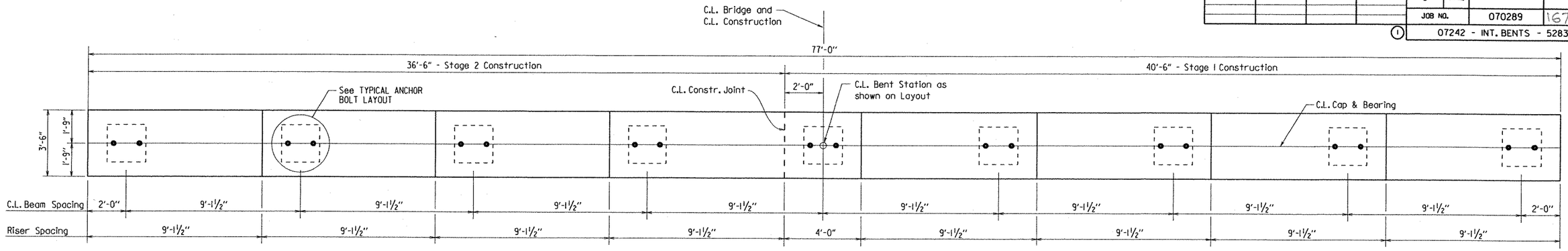
LITTLE ROCK, ARK.

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CHECKED BY: DHP DATE: 7-16-12 SCALE: 1/4" = 1'-0" or as shown
DESIGNED BY: CMW DATE: 4/12

BRIDGE NO. 07242 DRAWING NO. 52833

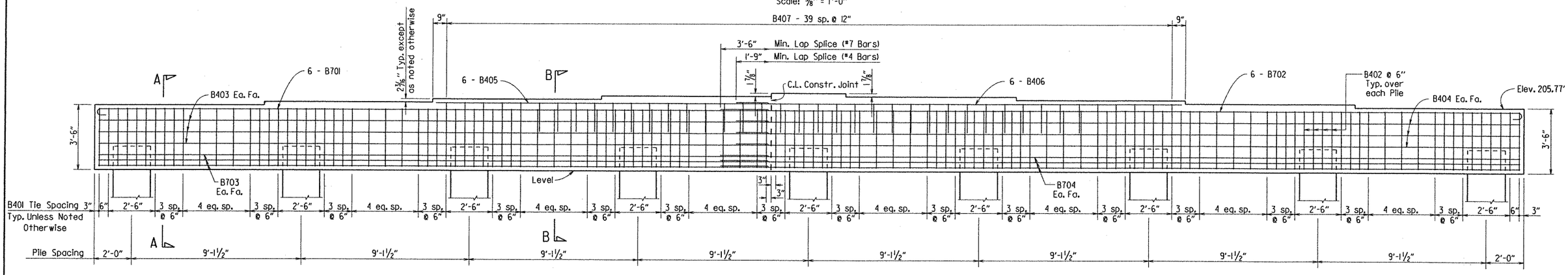
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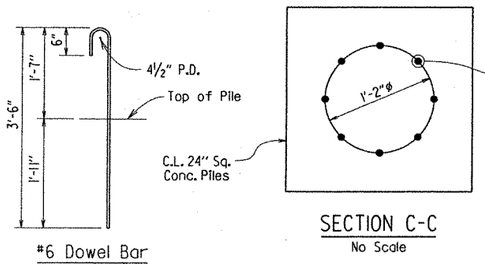
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070289	167	365
				①		07242 - INT. BENTS - 52834		



PLAN

Looking Ahead
Scale: ⅜" = 1'-0"





#6 Dowel Bar

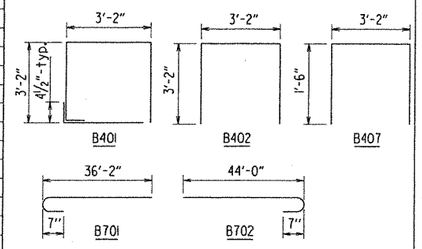
SECTION C-C
No Scale

After driving, grill and grout #6 dowels 1'-11" into piles using an approved non-shrink or an epoxy grout listed on the QPL. Diameter of holes and installation procedure shall be as recommended by the grout manufacturer. Dowel bars, drilling and grout shall not be paid for directly but shall be considered subsidiary to the item "Concrete Piling - 24" Square".

BAR LIST - PER BENT

Mark	No. Req'd.	Length	Pin Dia.
B401	92	13'-0"	2"
B402	36	9'-4"	2"
B403	6	36'-2"	Str.
B404	6	42'-3"	Str.
B405	6	17'-11"	Str.
B406	6	24'-0"	Str.
B407	40	6'-0"	2"
B701	6	37'-0"	5¼"
B702	6	44'-10"	5¼"
B703	6	36'-2"	Str.
B704	6	44'-0"	Str.

Bending Diagrams

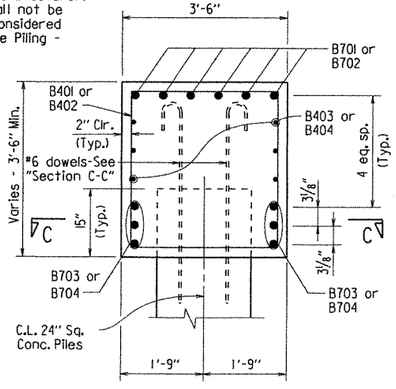


Dimensions are out to out of bars

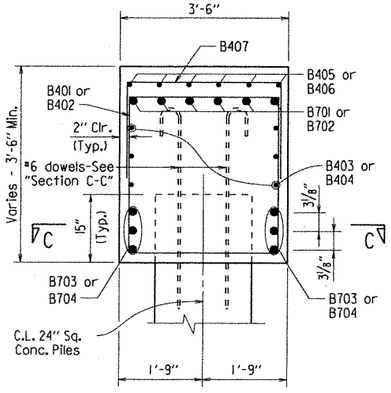
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ELEVATION

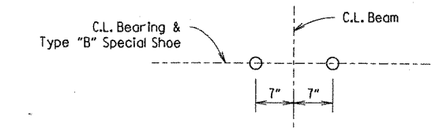
Looking Ahead
Scale: ⅜" = 1'-0"



SECTION A-A
No Scale



SECTION B-B
No Scale



For details of Type "B" Special Shoe and Anchor Bolts, see Dwg. No. 52842.

TYPICAL ANCHOR BOLT LAYOUT

¾" = 1'-0"

GENERAL NOTES:

All concrete shall be Class "S" and be poured in the dry. All exposed corners are to be chamfered ¾" unless otherwise noted.

All reinforcing steel shall conform to AASHTO M31 or M53, Grade 60.

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, see Dwg. No. 52842.

Dowel bars in piles shall be located in such a way to avoid interference with Anchor Bolts.

For additional information, See Layout.

STATE OF ARKANSAS
Carl J. Fusselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
7/23/12
CARL J. FUSSELIER

BRIDGE ENGINEER

DETAILS OF BENTS 2 AND 3 MORO CREEK

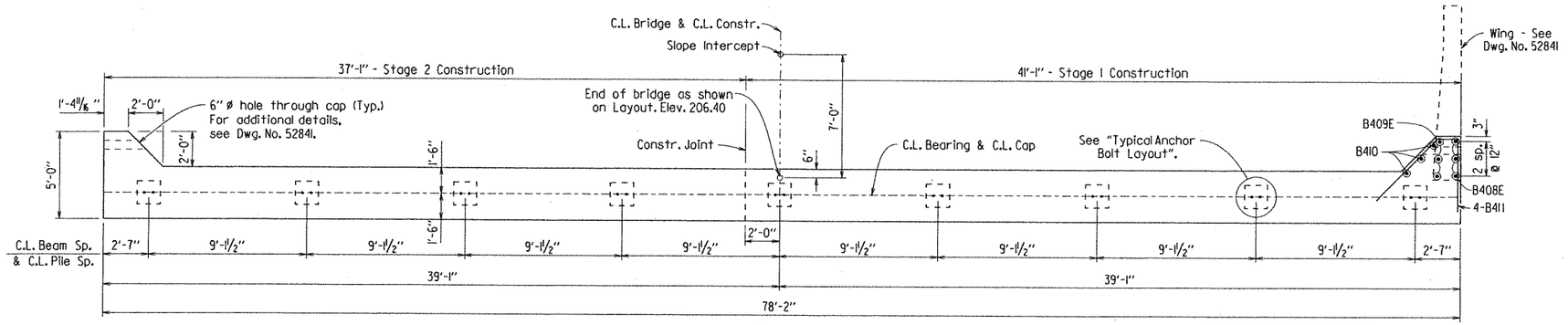
ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

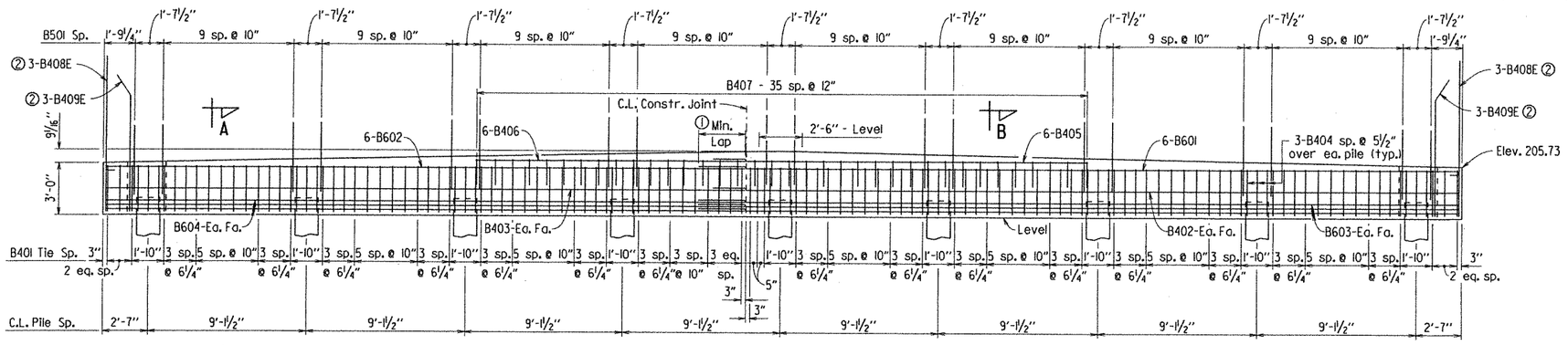
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DESIGNED BY: CMD DATE: 4/12

BRIDGE NO. 07242 DRAWING NO. 52834

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.		070289	168	365
				① 07242	-	BENT 4	-	52835



PLAN



② Bars B408E and B409E shall be embedded 2'-10" into cap.

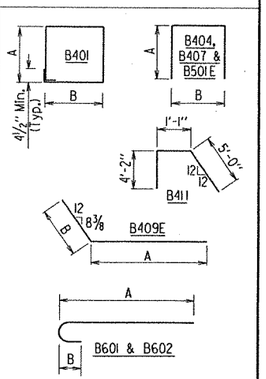
ELEVATION
Looking Ahead
¼" = 1'-0"

① Min. Lap: 1'-9" #4 bar
2'-7" #6 bar

BAR LIST

Mark	No. Req'd.	Length	A	B	Pin Dia.
B401	103	11'-0"	2'-8"	2'-8"	2"
B402	2	42'-10"	-	-	Str.
B403	2	36'-9"	-	-	Str.
B404E	27	7'-10"	2'-8"	2'-8"	2"
B405	6	21'-6"	-	-	Str.
B406	6	15'-6"	-	-	Str.
B407	36	5'-6"	1'-6"	2'-8"	2"
B408E	6	8'-5"	-	-	Str.
B409E	6	7'-4"	6'-2"	1'-2"	2"
B410	6	4'-5"	-	-	Str.
B411	8	10'-2"	-	-	2"
B501E	82	9'-6"	3'-6"	2'-8"	2½"
B601	6	44'-5"	43'-9"	6"	4½"
B602	6	37'-5"	36'-9"	6"	4½"
B603	6	43'-9"	-	-	Str.
B604	6	36'-9"	-	-	Str.

Bending Diagrams



Dimensions are out to out of bars

GENERAL NOTES

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

All reinforcing steel shall conform to AASHTO M 31 or M 53, Gr. 60. (Yield strength = 60,000 psi.)

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

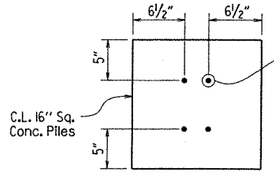
For anchor bolt details, see Dwg. No. 52837.

Bars with "E" suffix are Epoxy Coated.

Dowel bars in piles shall be located in such a way to avoid interference with Anchor Bolts.

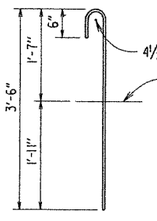
Granular backfill and pipe underdrain required behind end bent caps. See Dwg. No. 52838.

For additional information, see Layout.

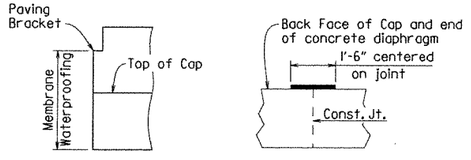


After driving, grill and grout #6 dowels 1'-11" into piles using an approved non-shrink or an epoxy grout listed on the OPL. Diameter of holes and installation procedure shall be as recommended by the grout manufacturer. Dowel bars, drilling and grout shall not be paid for directly but shall be considered subsidiary to the item "Concrete Piling - 16" Square".

SECTION C-C
No Scale



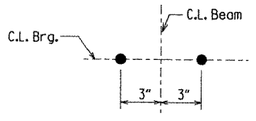
#6 Dowel Bar



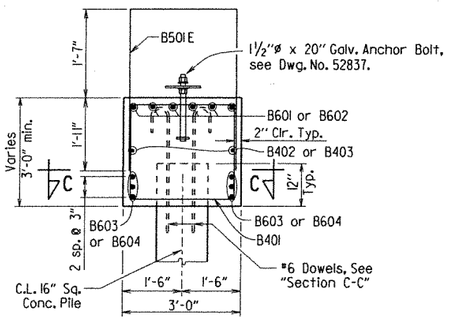
Membrane waterproofing Type "C" or approved equal, see Section 815. Membrane waterproofing shall extend from the bottom of the cap to the paving bracket.

Payment for membrane to be considered subsidiary to Class "S" Concrete - Bridge.

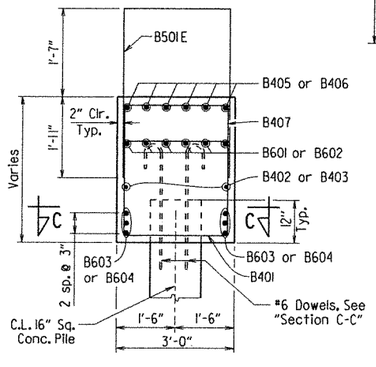
CONSTRUCTION JOINT DETAIL
No Scale



TYPICAL ANCHOR BOLT LAYOUT
No Scale



SECTION A-A
No Scale



SECTION B-B
No Scale

STATE OF ARKANSAS
Carl J. Puseller
REGISTERED PROFESSIONAL ENGINEER
No. 7510
7/23/12
CARL J. PUSELLER

BRIDGE ENGINEER

DETAILS OF BENT 4
MORO CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: RBR DATE: 12/22/2011 FILENAME: b070289_bl.dgn
CHECKED BY: DHP DATE: 7-16-12 SCALE: ¼" = 1'-0" or as shown
DESIGNED BY: CMW DATE: 4/12

BRIDGE NO. 07242 DRAWING NO. 52835

PRINT DATE: 23-JUL-2012

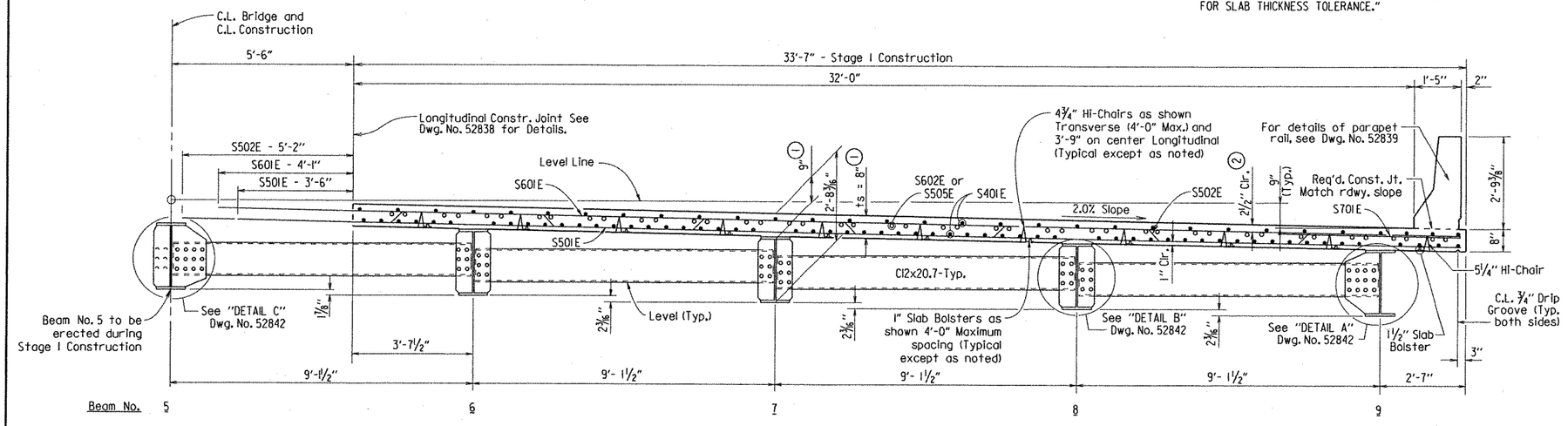
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070289	169	365
				(1) 07242		SPAN DETAILS		52836

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

At Contractor's option, in lieu of providing bar S502E & S504E, one #5 bar top and bottom may be substituted for each bar. Payment for reinforcing will be based on the weight of bar S502E & S504E. Bars in top and bottom shall be epoxy coated.

(1) See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE."

(2) Tolerance: Minus = ¼"; Plus equal to the amount of slab thickening used to meet slab thickness tolerance. See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE."

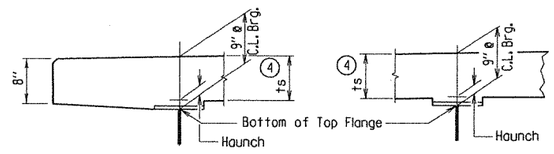


TYPICAL SECTION - STAGE 1 CONSTRUCTION

Looking Ahead
Scale: ½" = 1'-0"

The superstructure details shown are for use when removable deck forming is used and are the basis for measurement of Clas S(AE) Concrete. See Standard Drawing No. 14991 for allowable modifications and for tolerances when permanent steel bridge deck forms are used. If permanent steel bridge deck forms are used they shall be continuous between beams 5 & 6.

NOTE: ts = Slab thickness as shown in "Typical Section"



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

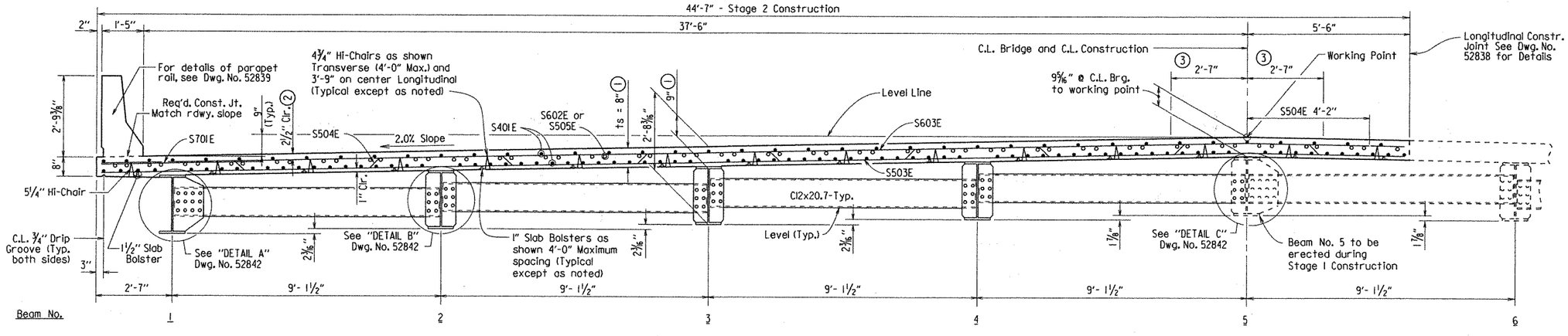
Haunch dimension may vary within the following limits to maintain the grade and slab thickness tolerance : Minimum - occurs when top flange contacts bottom reinforcing steel; Maximum - top flange thickness plus 1¾". No increase in concrete and structural steel quantities will be made to maintain tolerances.

Tolerances shown are applicable only when removable deck forming is used. See Std. Dwg. No. 14991 for tolerances when permanent steel deck forms are used. Payment for concrete shall be based on removable deck forming.

ADJUSTMENT FOR SLAB THICKNESS TOLERANCE

No Scale

(3) See Rounding Detail



TYPICAL SECTION - STAGE 2 CONSTRUCTION

Looking Ahead
Scale: ½" = 1'-0"

SLAB REINFORCING

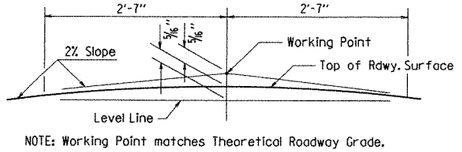
Transverse:
S502E and S504E @ 15" o.c. bent up over beams
S601E and S603E @ 15" o.c. in top
S501E and S503E @ 15" o.c. in bottom
S701E @ 15" o.c. in top at both gutterlines - placed around ends of S502E and S504E.
See "REINFORCING PLAN", Dwg. No. 52838

Longitudinal:
S401E as shown (18" max.)
S602E as shown over int. supports
S505E as shown at end bents

Min. Lap Splice for #4 epoxy bars = 2'-7"
Min. Lap Splice for #5 epoxy bars = 3'-3"
Min. Lap Splice for #6 epoxy bars = 3'-10"

Bars with an "E" suffix are epoxy coated

For weld table see Dwg. No. 52842



NOTE: Working Point matches Theoretical Roadway Grade.

ROUNDING DETAIL

No Scale

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
7/22/12
CARL J. FUSELIER

BRIDGE ENGINEER

SHEET 1 OF 7

DETAILS OF 120'-0" INTEGRAL W-BEAM UNIT MORO CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

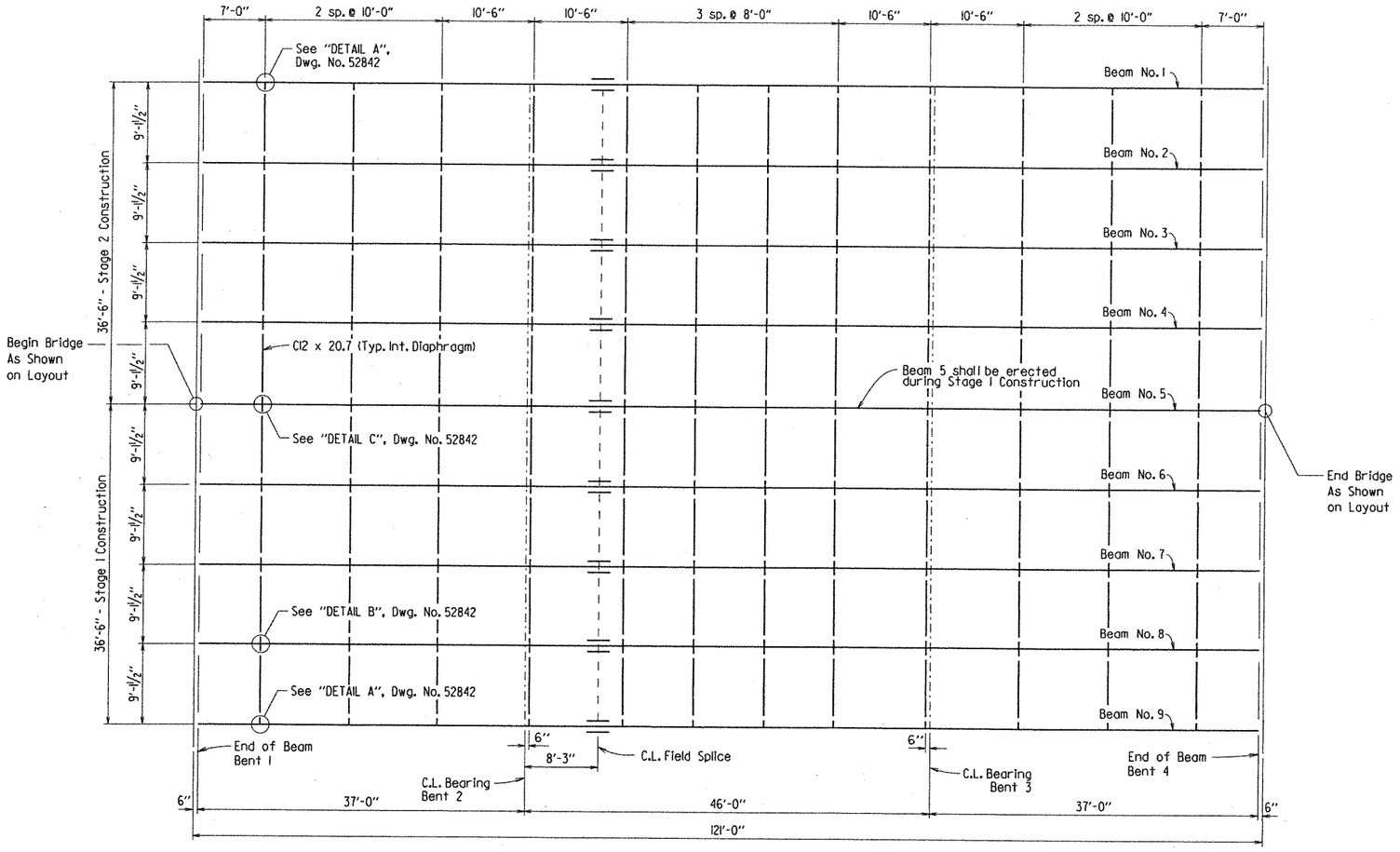
DRAWN BY: RBR DATE: 12/09/2011
CHECKED BY: DHP DATE: 7-16-12
DESIGNED BY: RBR DATE: 11/11
FILENAME: b070289_sl.dgn
SCALE: As shown

BRIDGE NO. 07242

DRAWING NO. 52836

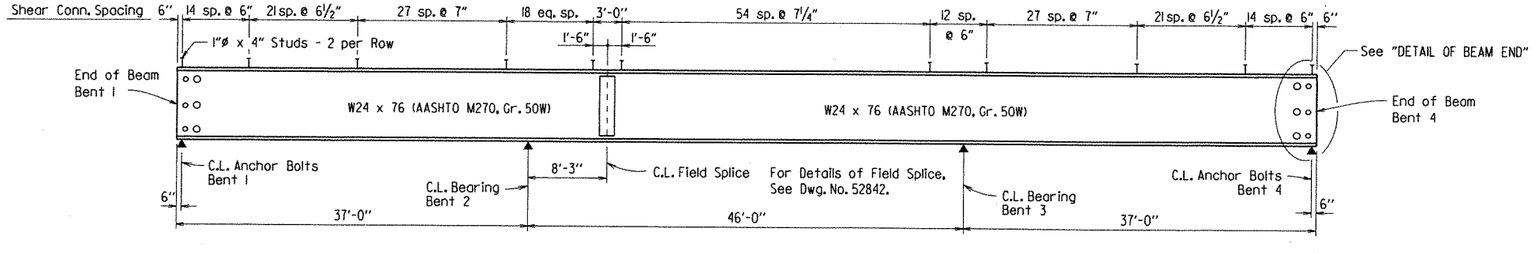
PRINT DATE: 7/16/2012

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.		070289	170	365
				07242		SPAN DETAILS		52837



FRAMING PLAN

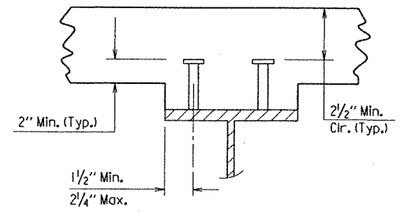
1/8" = 1'-0"



TYPICAL BEAM ELEVATION

No Scale

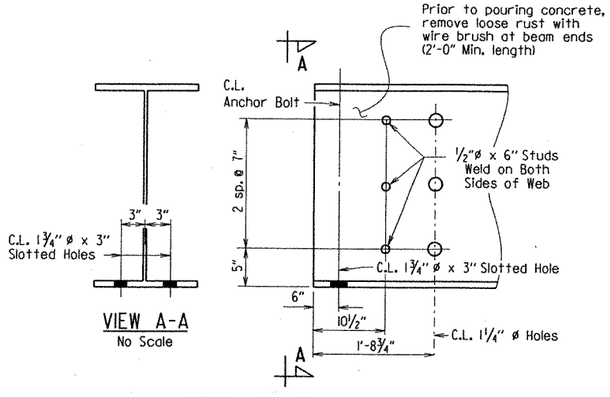
Bolted field splices may be eliminated or shop welded splices may be substituted with the approval of the Engineer. Payment will be made on the basis of plan quantities.



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

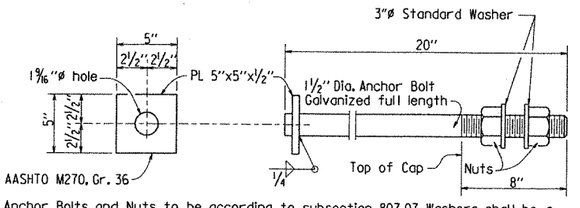


VIEW A-A

No Scale

DETAIL OF BEAM END

No Scale



Anchor Bolts and Nuts to be according to subsection 807.07. Washers shall be a standard washer. Anchor Bolts, Washers, and Nuts shall be paid for at the unit price bid for "Structural Steel in Beam Spans (M270, Gr. 50W)". All anchor bolts shall be Grade 55.

Use lower nut and washer to adjust to grade. Snug tight top nut and washer after grade is adjusted.

ANCHOR BOLT DETAIL FOR END BENTS

No Scale

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7510
CARL J. PUSELLIER
7/23/12

BRIDGE ENGINEER

SHEET 2 OF 7

DETAILS OF 120'-0" INTEGRAL W-BEAM UNIT MORO CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: RBR DATE: 12/09/2011 FILENAME: b070289_sl.dgn

CHECKED BY: DHP DATE: 7-16-12 SCALE: As shown

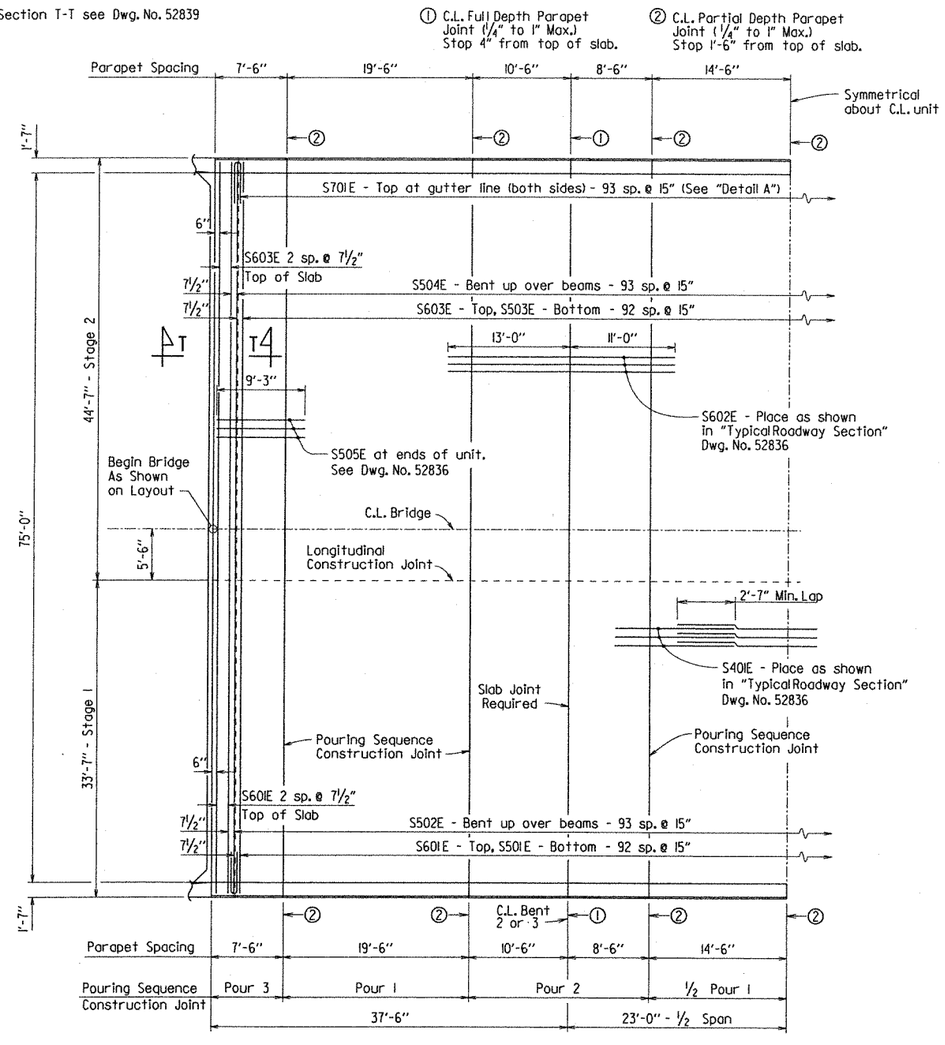
DESIGNED BY: RBR DATE: 11/11

BRIDGE NO. 07242 DRAWING NO. 52837

PRINT DATE: 7/16/2012

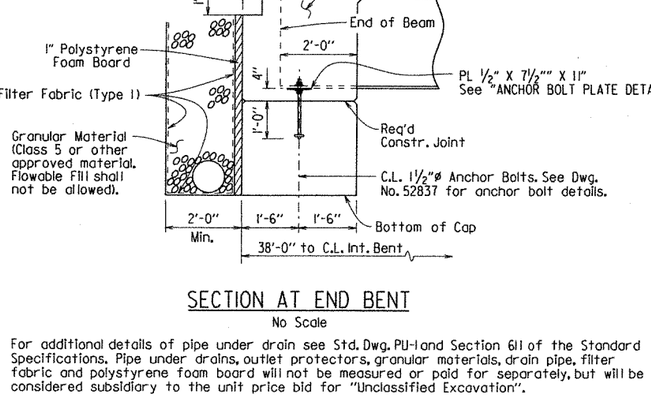
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070289	171	365
				① 07242		SPAN DETAILS		52838

For Section T-T see Dwg. No. 52839



REINFORCING PLAN & DECK POURING SEQUENCE

Note: Required slab joints and pouring sequence joints shall align with parpet open joints at the gutter line.



ALTERNATE POURING SEQUENCE

No Scale

Pours with the same number may be placed simultaneously or separately. All Pours (1) must be placed before Pours (2) can be placed. All Pours (2) must be placed before Pours (3). 48 hours shall elapse between the end of a pour and the start of the next pour. 72 hours shall elapse between the end of a pour and the start of an adjacent pour.

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

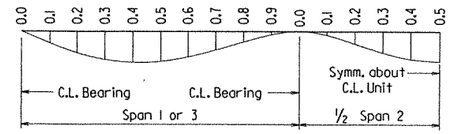
Concrete in bridge superstructure shall be consolidated for the entire pour before any concrete has taken its initial set. This may require the use of a retarding agent.

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

TABLE OF DEAD LOAD DEFLECTIONS (INCHES)

Span	Point of Deflection	Structural Steel		Structural Steel + Slab		Structural Steel + Slab + Parapet	
		Interior	Exterior	Interior	Exterior	Interior	Exterior
1 or 3	0.0	0.000	0.000	0.000	0.000	0.000	0.000
	0.1	0.010	0.009	0.103	0.082	0.103	0.083
	0.2	0.019	0.017	0.190	0.151	0.191	0.154
	0.3	0.024	0.022	0.249	0.198	0.251	0.204
	0.4	0.027	0.024	0.273	0.217	0.275	0.224
	0.5	0.026	0.023	0.262	0.208	0.264	0.215
	0.6	0.022	0.019	0.219	0.174	0.220	0.180
	0.7	0.015	0.014	0.154	0.123	0.155	0.126
	0.8	0.008	0.007	0.082	0.065	0.082	0.065
	0.9	0.002	0.002	0.022	0.018	0.022	0.016
½ Span 2	0.0	0.000	0.000	0.000	0.000	0.000	0.000
	0.1	0.005	0.004	0.051	0.040	0.053	0.049
	0.2	0.015	0.013	0.150	0.119	0.156	0.141
	0.3	0.025	0.022	0.253	0.202	0.262	0.235
	0.4	0.032	0.029	0.328	0.261	0.339	0.302
C.L. Unit →	0.5	0.035	0.031	0.355	0.283	0.367	0.327

Table is symmetrical about C.L. Unit



DEAD LOAD DEFLECTIONS DIAGRAM (TYP.)

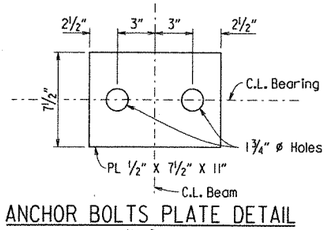
Camber for Dead Load Deflection plus Vertical curve ± ¼" tolerance. Deflections shown are from a chord from C.L. Bearing to C.L. Bearing. Vertical curve corrections not included. Negative sign (-) indicates point above chord.

SECTION AT END BENT

No Scale

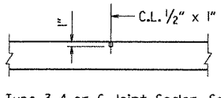
For additional details of pipe under drain see Std. Dwg. PU-1 and Section 611 of the Standard Specifications. Pipe under drains, outlet protectors, granular materials, drain pipe, filter fabric and polystyrene foam board will not be measured or paid for separately, but will be considered subsidiary to the unit price bid for "Unclassified Excavation".

For details of steel reinforcing in concrete diaphragm at end bent see Drawing No. 52839



ANCHOR BOLTS PLATE DETAIL

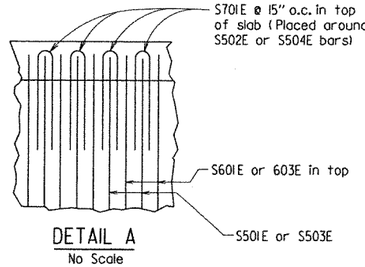
No Scale



Use ½" x 1" Type 3, 4 or 6 Joint Sealer. See subsections 501.02(h) and 501.05(j). Backer rod will not be required. Joint Sealer shall be measured and paid for as Class S(AE) Concrete-Bridge. Slab Joints shall extend to the outside edge of the deck slab. Slab joints shall be installed before the parapet railing is poured. If slab joints are to be sawed, they shall be sawed as soon as the slab has sufficiently set to allow sawing of the joints without damaging the slab. Slab joints shall be placed at all pouring sequence construction joints and required slab joint locations.

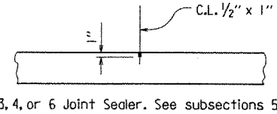
SLAB JOINT DETAIL

No Scale



DETAIL A

No Scale



Use ½" x 1" Type 3, 4, or 6 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. This joint shall be formed.

LONGITUDINAL CONSTRUCTION JOINT DETAIL

Not to Scale

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
7/23/12
CARL J. FUSELIER

BRIDGE ENGINEER

SHEET 3 OF 7

DETAILS OF 120'-0" INTEGRAL W-BEAM UNIT MORO CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

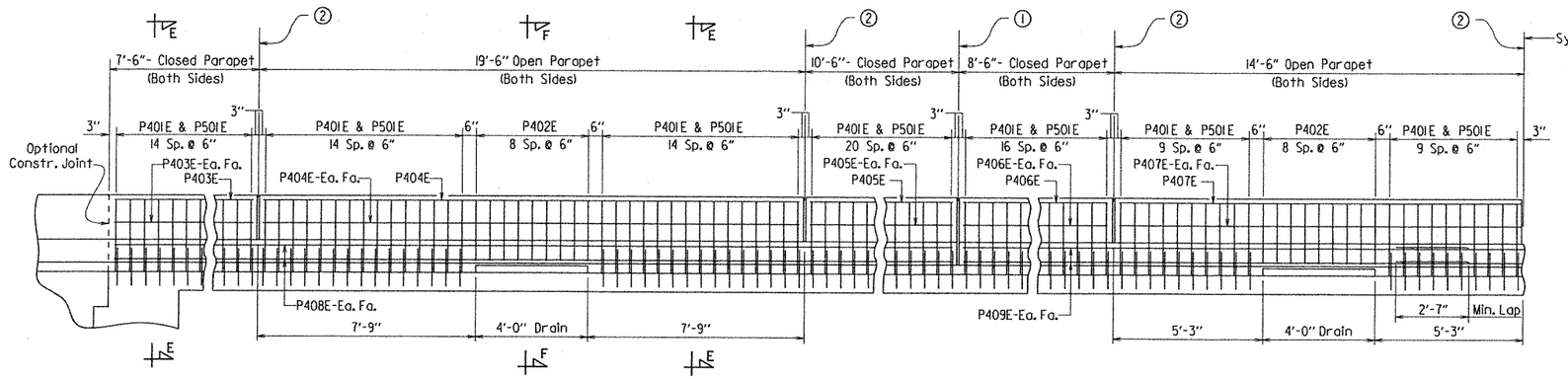
LITTLE ROCK, ARK.

DRAWN BY: RBR DATE: 12/09/2011
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FILENAME: b070289_sl.dgn
SCALE: ⅛" = 1'-0" or as shown

BRIDGE NO. 07242 DRAWING NO. 52838

PRINT DATE: 7/16/2012

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.		070289	172	365
				① 07242		SPAN DETAILS	52839	

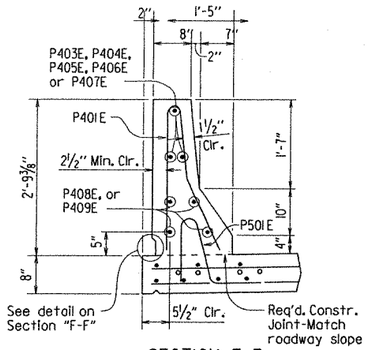


DETAILS OF PARAPET RAIL

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

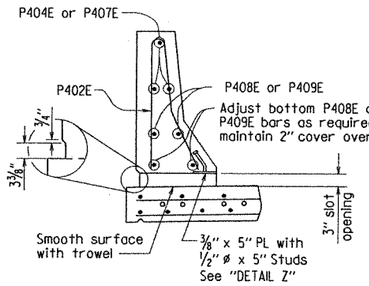
① C.L. Full-Depth Parapet Joint (1/4" to 1" Max.) as shown in "Reinforcing Plan & Deck Pouring Sequence" Dwg. No. 52838. Stop 4" from top of slab.

② C.L. Partial-Depth Parapet Joint (1/4" to 1" Max.) as shown in "Reinforcing Plan & Deck Pouring Sequence" Dwg. No. 52838. Stop 1'-2" from top of slab.



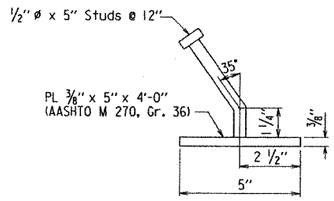
SECTION E-E

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



SECTION F-F

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

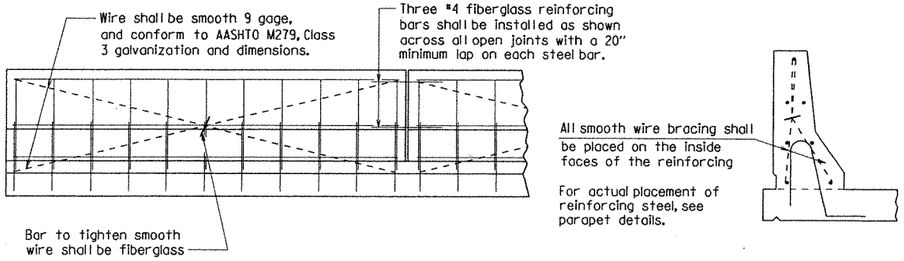


DETAIL Z

No Scale

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

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

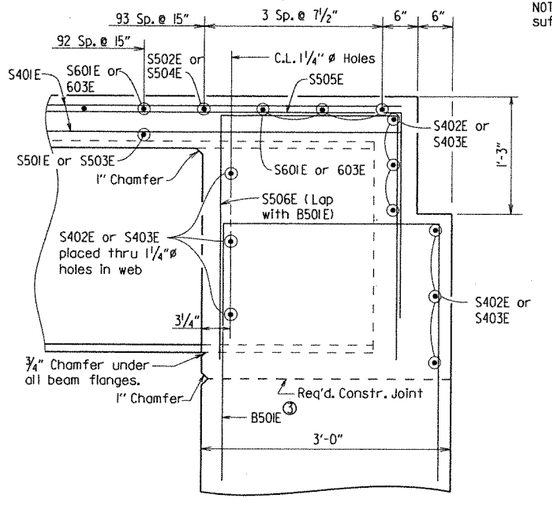


All panels shall be braced as required to prevent racking. All open joints shall be sawed as soon as practical to a minimum width of 1/4". To control cracking before sawing all joints must be grooved before the concrete is set. Sawing of the joints must be controlled so it will follow the grooved joint.

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

DETAILS OF OPTIONAL SLIP FORMING OF CONCRETE PARAPET RAIL

No Scale



SECTION T-T

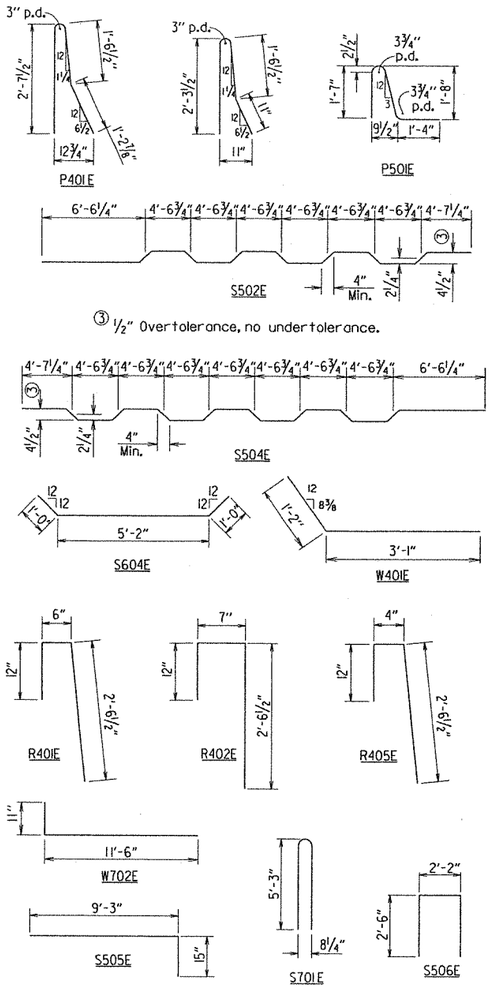
No Scale

BAR LIST

MARK	NO. REQ'D	LENGTH	P.D.
P401E	412	5'-6"	3"
P402E	72	4'-10"	3"
P403E	12	7'-2"	Str.
P404E	12	19'-2"	Str.
P405E	12	10'-2"	Str.
P406E	12	8'-2"	Str.
P407E	12	14'-2"	Str.
P408E	16	37'-2"	Str.
P409E	16	24'-2"	Str.
P501E	412	4'-8"	3"
S401E	828	32'-1"	Str.
S402E	18	36'-3"	Str.
S403E	18	44'-3"	Str.
S501E	93	36-11"	Str.
S502E	94	39'-3"	3"
S503E	93	44'-3"	Str.
S504E	94	43'-11"	3"
S505E	208	10'-5"	2½"
S506E	172	7'-0"	2½"
S601E	99	37'-6"	Str.
S602E	208	24'-0"	Str.
S603E	99	44'-3"	Str.
S604E	12	7'-2"	4½"
S701E	188	10'-9"	6½"
R401E	8	3'-11"	2"
R402E	8	4'-0"	2"
R403E	24	9'-8"	Str.
R404E	24	2'-0"	Str.
R405E	40	3'-9"	2"
R601E	16	5'-5"	Str.
R602E	6	5'-0"	Str.
W401E	40	4'-3"	2"
W402E	40	5'-5"	Str.
W701E	12	11'-6"	Str.
W702E	40	12'-3"	5¼"

NOTE: Bars designated with an "E" suffix shall be epoxy coated.

BENDING DIAGRAMS



Dimensions are out to out of bars.

③ See End Bent Details on Dwg. No. 52833 for reinforcing and additional details.

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
CARL J. FUSELIER
7/23/12

BRIDGE ENGINEER

SHEET 4 OF 7

DETAILS OF 120'-0" INTEGRAL W-BEAM UNIT MORO CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

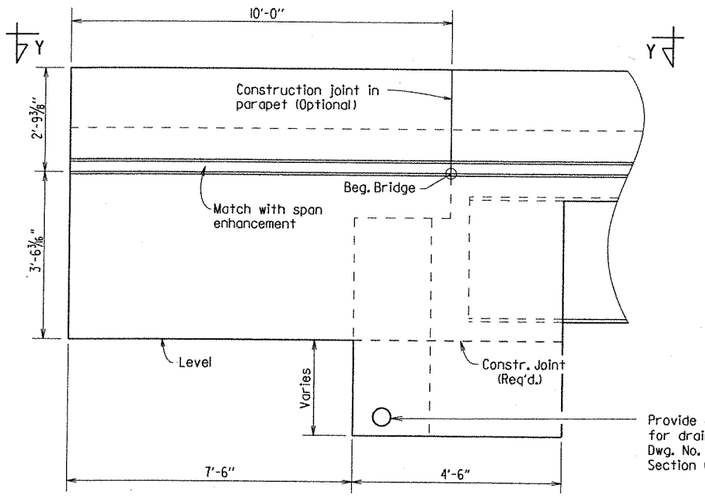
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FILENAME: b070289_sl.dgn
SCALE: As shown

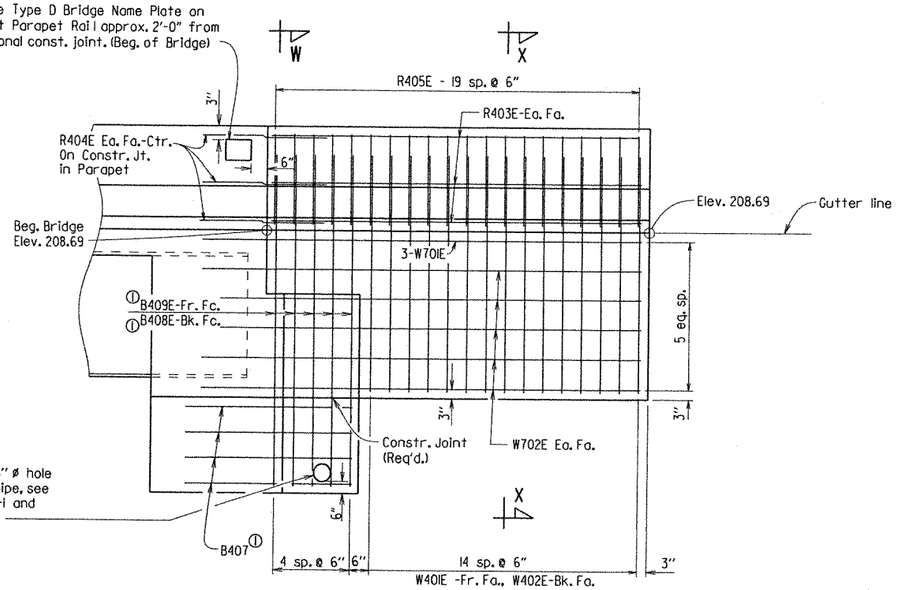
BRIDGE NO. 07242 DRAWING NO. 52839

PRINT DATE: 7/20/2012

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.		070289	173	365
				(1) 07242		SPAN DETAILS		52840

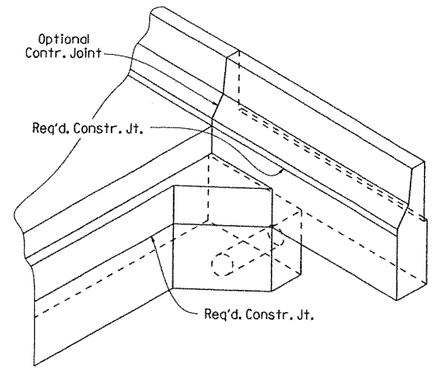


VIEW R-R
No Scale



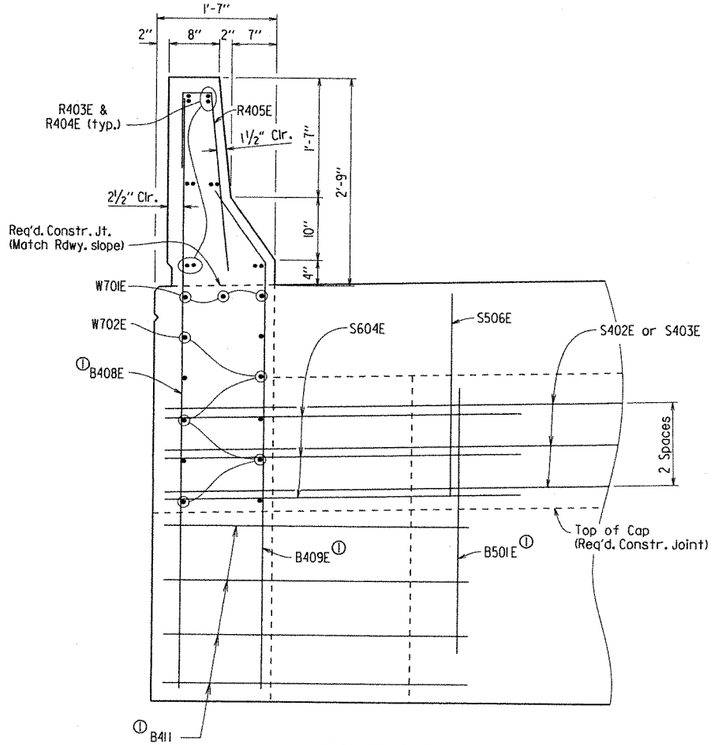
VIEW S-S
1/2" = 1'-0"

① See End Bent Details on Dwg. No. 52833 for reinforcing and additional details.

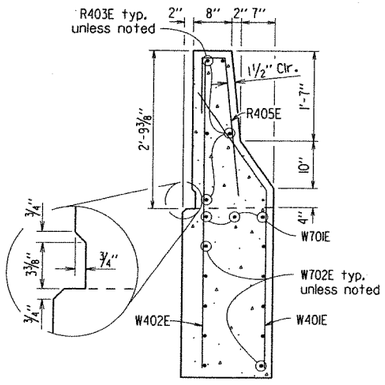


ISOMETRIC VIEW OF INTEGRAL BENT
No Scale

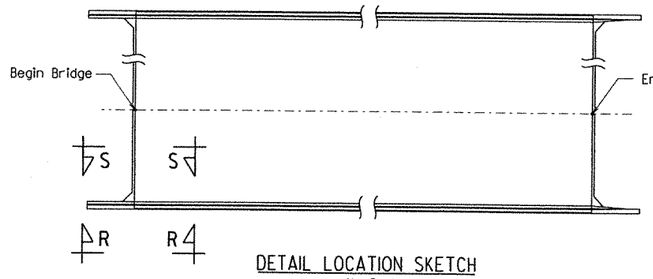
VIEW Y-Y
No Scale



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



SECTION X-X
No Scale



DETAIL LOCATION SKETCH
No Scale

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7510
7/22/12
CARL L. FUSELIER
BRIDGE ENGINEER

SHEET 5 OF 7

DETAILS OF 120'-0" INTEGRAL W-BEAM UNIT MORO CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

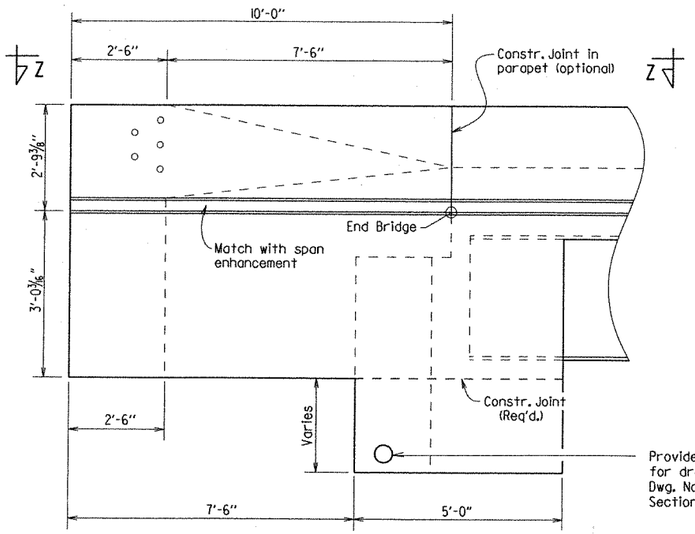
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CHECKED BY: DHP DATE: 7-16-12
DESIGNED BY: RBR DATE: 11/11
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SCALE: As shown

BRIDGE NO. 07242

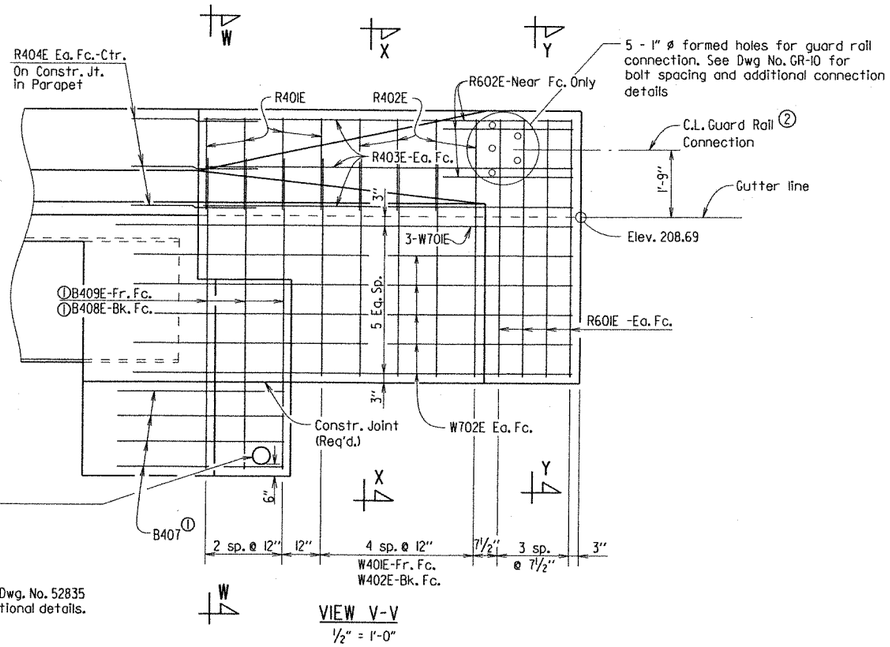
DRAWING NO. 52840

PRINT DATE: 7/20/2012

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.		070289	174	365
				① 07242		SPAN DETAILS	52841	

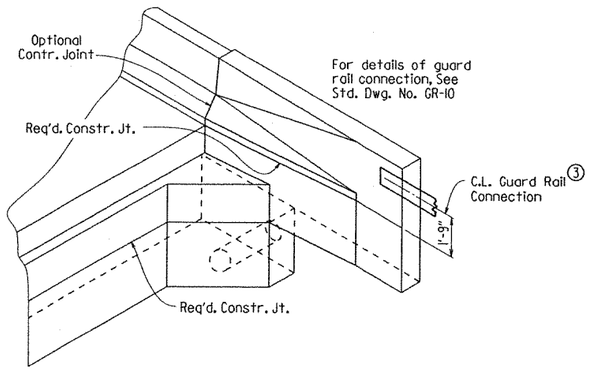


VIEW U-U
No Scale

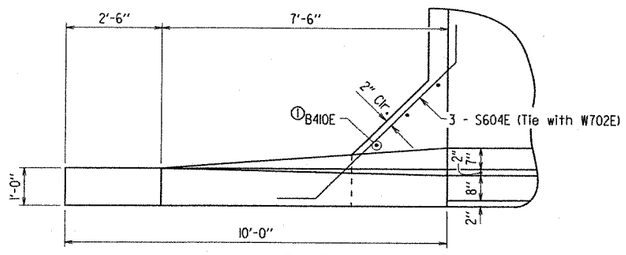


VIEW V-V
½" = 1'-0"

① See End Bent Details on Dwg. No. 52835 for reinforcing and additional details.

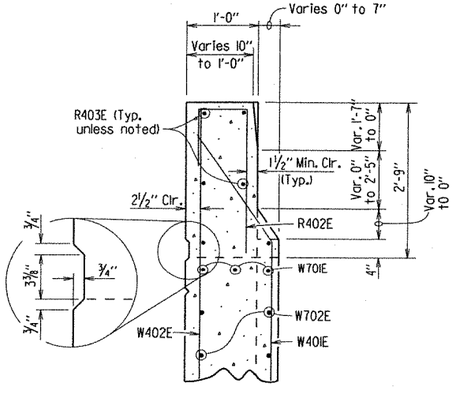


ISOMETRIC VIEW OF INTEGRAL BENT
No Scale

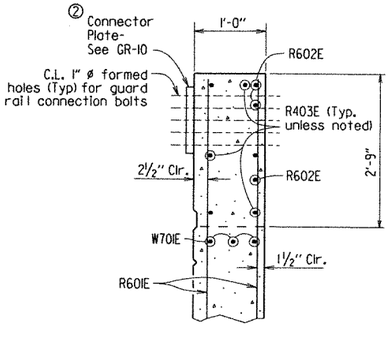


VIEW Z-Z
No Scale

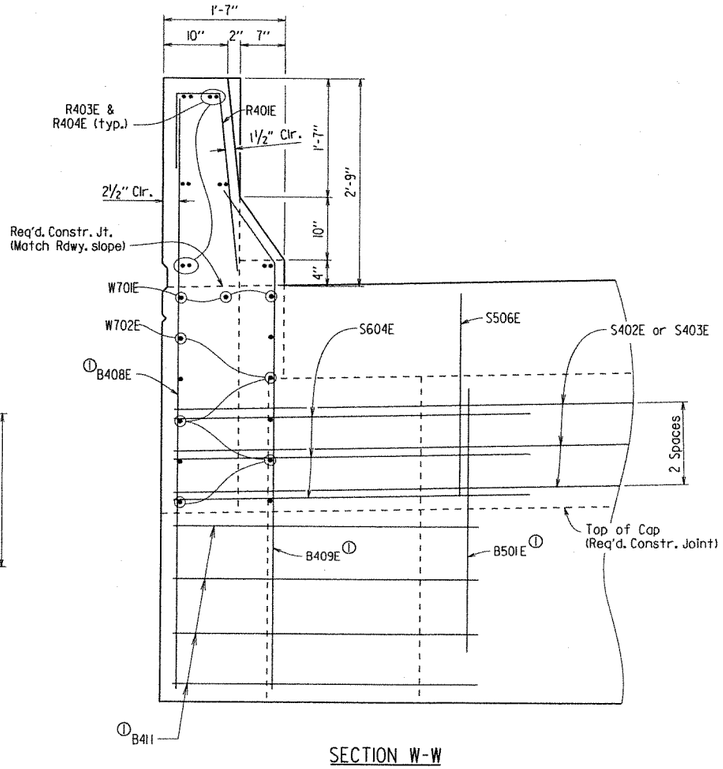
② Connector Plate as required. See Roadway Plans for location of guardrail.



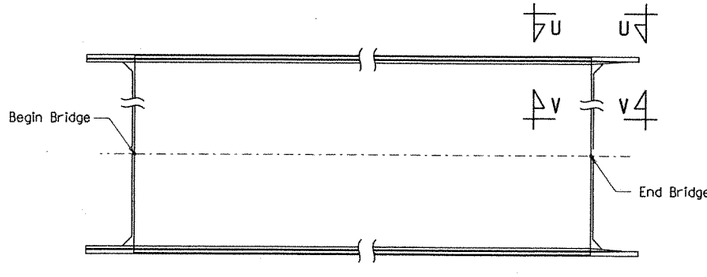
SECTION X-X
No Scale



SECTION Y-Y
No Scale



SECTION W-W
¾"=1'-0"



DETAIL LOCATION SKETCH
No Scale

PRINT DATE: 7/23/2012

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7510
7/23/12
CARL J. FUSELIER
BRIDGE ENGINEER

SHEET 6 OF 7

DETAILS OF 120'-0" INTEGRAL W-BEAM UNIT MORO CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: RBR DATE: 12/09/2011 FILENAME: b070289_sl.dgn
CHECKED BY: DHP DATE: 7/16/12 SCALE: ½" = 1'-0" or as shown
DESIGNED BY: RBR DATE: 11/11

BRIDGE NO. 07242 DRAWING NO. 52841

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.		070289	175	365
				① 07242		SPAN DETAILS		52842

GENERAL NOTES

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2003 Edition) with applicable supplemental specifications and special provisions.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications 5th Edition (2010), with 2010 Interims.

LIVE LOADING: HL-93

MATERIALS AND STRENGTHS:
Concrete: All concrete shall be Class S(AE) with a minimum 28 day strength f'c = 4000 psi.
Reinforcing Steel: Reinforcing steel shall conform to AASHTO M31 or M53, Grade 60 (Yield Strength = 60,000 psi.).
Structural Steel: Structural steel shall conform to AASHTO M270, Gr. 50W (Fy = 50,000 psi.) or AASHTO M270, Gr.36 (Fy = 36,000 psi.).

STRUCTURAL STEEL:
All Structural Steel shall be AASHTO M270, Gr. 50W unless otherwise noted. All structural steel shall be paid for as "Structural Steel in Beam Spans (M270, Gr.50W)". Structural Steel completely embedded in concrete may be AASHTO M270, Gr. 36 or Gr. 50. AASHTO M270, Gr.50W steel shall not be painted. All exposed surfaces shall be cleaned in accordance with subsection 807.84(e) unless noted otherwise.

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

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

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.

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

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

All beams shall be blocked in their true position in the shop with the webs horizontal in groups as specified in subsection 807.54 (b)(1). The camber, length of sections, distance between bearings, and opening of joints shall be measured with thebeams in their true position and this information shall become part of the permanent record of this job. The component parts shall be match marked in this assembly and those marks shall be shown on the erection diagram. All beam dimensions are based on a temperature of 60 degrees F. A tolerance of 1/4" (plus or minus) allowed for camber.

Field connections shall be bolted with high-strength bolts. Bolts shall be 3/4"ø, except as noted, and open holes shall be 15/16 "ø unless otherwise noted. Holes for 3/4"ø bolts may be 15/16 "ø if a washer is supplied for use under both the nut and the head of the bolt. For field splices, bolts shall be 7/8"ø bolts. Open holes shall be 15/16 "ø. Bolt spacing shall be 3" for 7/8"ø bolts unless otherwise noted. Bolts shall be placed with heads on the outside face of the exterior beam web and on the bottom of the beam flanges.

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

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

Bearings shall be seated in accordance with subsection 807.66. This work and material will not be paid for directly but will be considered subsidiary to the item "Structural Steel in Beam Spans (M270, Gr. 50W)".

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

CONCRETE:
All concrete shall be Class S(AE) with a minimum 28 day compressive strength f'c = 4000 psi. Concrete shall be poured in the dry and all exposed corners to be chamfered 3/4" 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. 14991 for allowable modifications and for tolerances when Permanent Steel Bridge Deck Forms are used. Concrete in bridge superstructure shall be placed, consolidated, and screeded off for the entire pour before any concrete has taken its initial set. This may require the use of a retarding agent. The concrete diaphragms at end bents shall be poured monolithic with the slab.

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

Removable forms shall be used for concrete diaphragms.

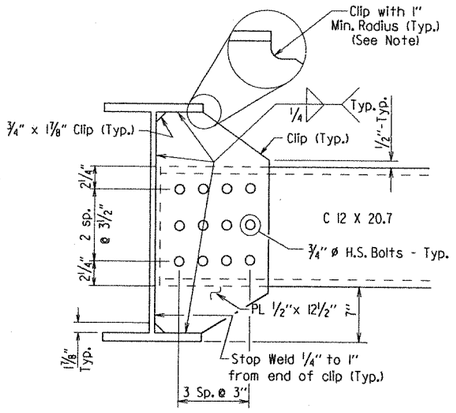
CLASS I PROTECTIVE SURFACE TREATMENT: Class I protective surface treatment shall be applied to the roadway surface and to the roadway face and top of the concrete parapet rail.

LOAD DISTRIBUTION:
Dead Load:

A. To W-Beam	Beam No.		
	Beam 1 & 9	715	
	Beam 2 thru 8	913	plf + Wt. of Structural Steel
B. To Composite Beam	Beam No.		
	Beam 1 & 9	395	plf ①
	Beam 2 thru 8	256	plf ①

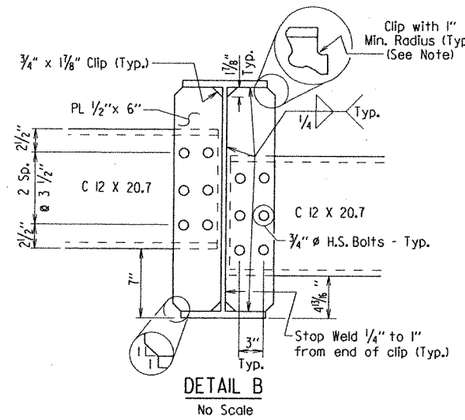
① Includes 200 plf future wearing surface.

PRINT DATE: 7/23/2012

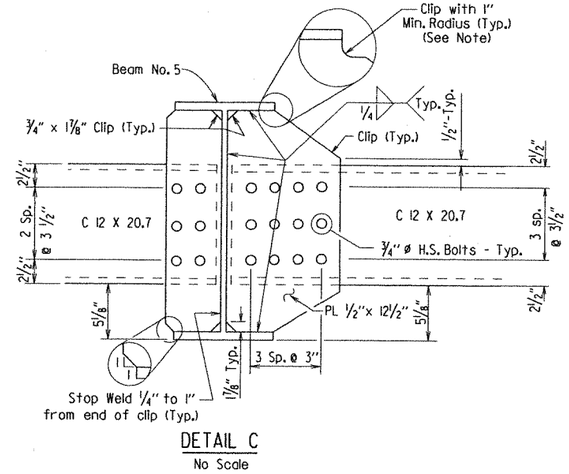


DETAIL A
No Scale

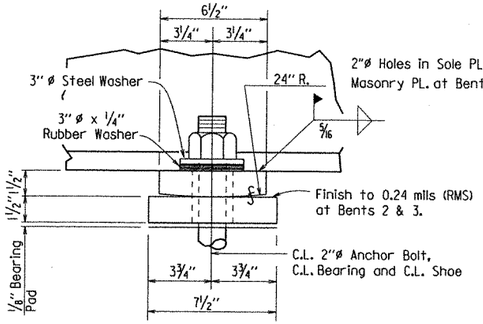
If permanent steel deck forms are used, the fabricator shall clip the plate as necessary to accommodate the deck form support.

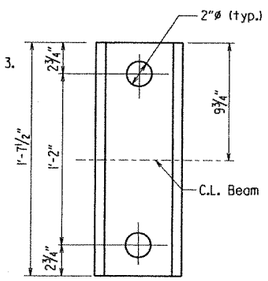


DETAIL B
No Scale



DETAIL C
No Scale



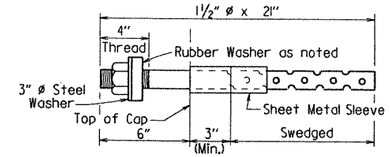


2"ø Holes in Sole PL. and Masonry PL. at Bents 2 and 3.

Plates for Type "B" Special Shoes shall be M270, GR. 50W.

ELEVATION TYPE "B" SPECIAL SHOE
BENTS: 2 and 3
No Scale

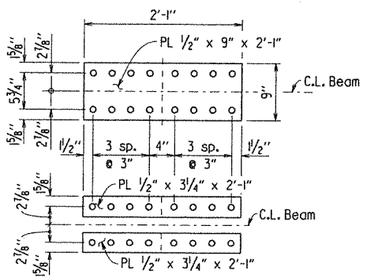
PLAN TYPE "B" SPECIAL SHOE
BENTS: 2 and 3
No Scale



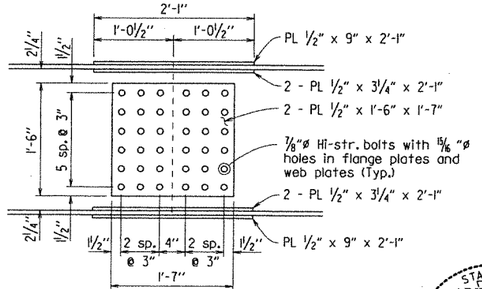
Anchor Bolts, Nuts and Washers to be according to subsection 807.07. Indentations shall be circular with rounded bottoms and staggered as shown above. Rubber washer shall be closed cell expanded rubber, meeting the requirements of ASTM D1056 - 85 2B2 E2, and shall be considered subsidiary to the item of "Structural Steel in Beam Spans (M270, Gr. 50W)". Anchor Bolts, Nuts and Washers shall be paid for at the unit price bid for "Structural Steel in Beam Spans (M270, Gr. 50W)". Anchor bolts shall be Grade 55.

Anchor Bolts may be cast in place or drilled and grouted into place. If Anchor Bolts are to be cast in place, the Galvanized Sheet Metal Sleeves will not be required. If Anchor Bolts are to be drilled and grouted in place, the Galvanized Sheet Metal Sleeves shall be cast in place as shown. Sleeves shall be dry packed with styrofoam, urethane foam or approved equal prior to pouring of concrete. After pouring of the cap and prior to erection of Structural Steel, the dry pack shall be removed and holes for the anchor bolts shall be accurately drilled into the masonry. Bolts placed in drilled holes shall be accurately set and fixed using a 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)."

ANCHOR BOLT DETAIL FOR INTERMEDIATE BENTS
BENTS: 2 and 3
No Scale



FLANGE SPLICE
Top & Bottom



WEB SPLICE

DETAILS OF FIELD SPLICE
No Scale

All field splice plates shall be AASHTO M270, Gr. 50W
All field splice bolts shall be 7/8"ø H.S. Bolts
All field splice bolt holes shall be 15/16 "ø

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"	

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
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
7/23/12
CARL J. FUSELIER

BRIDGE ENGINEER

SHEET 7 OF 7

DETAILS OF 120'-0" INTEGRAL W-BEAM UNIT
MORO CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

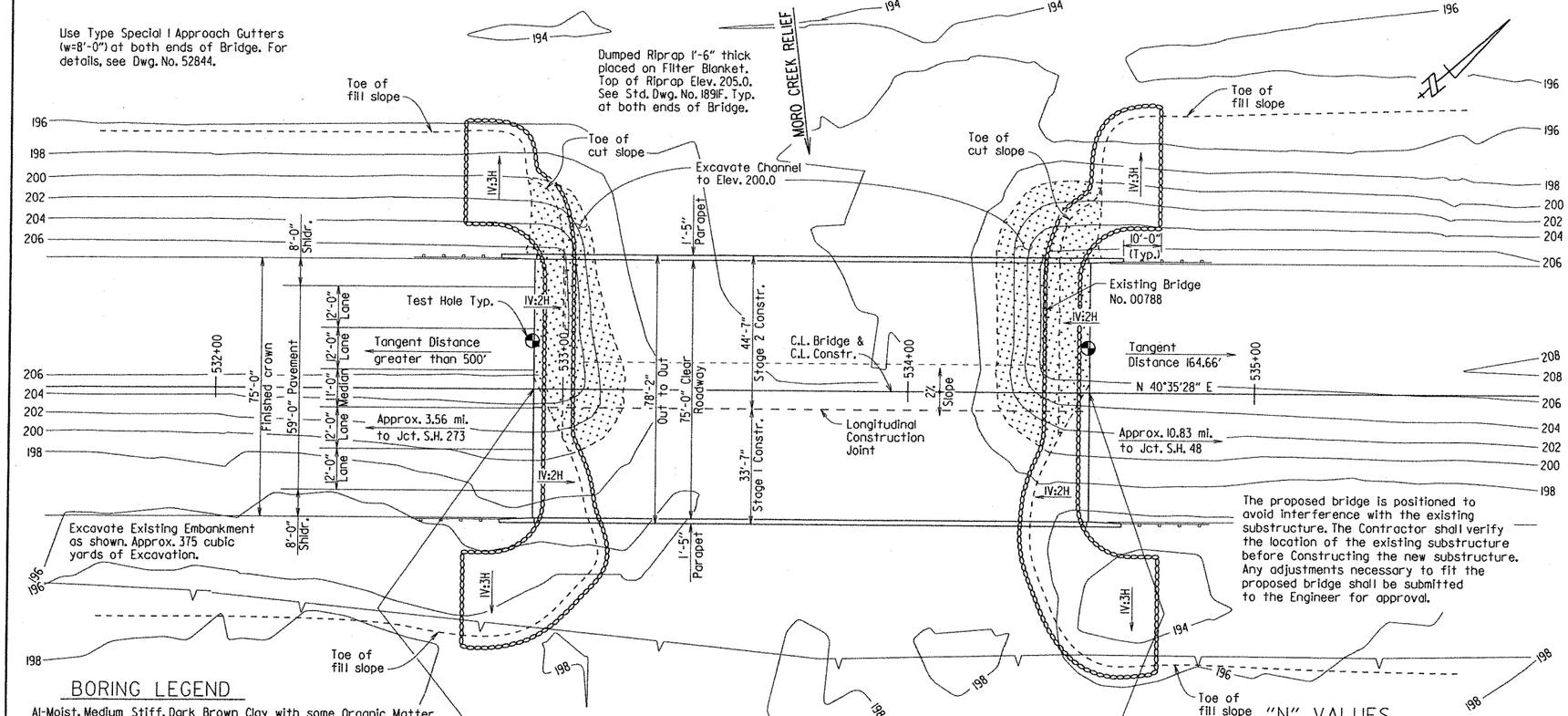
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CHECKED BY: DHP DATE: 7-16-12 SCALE: As shown
DESIGNED BY: RBR DATE: 11/11

BRIDGE NO. 07242 DRAWING NO. 52842

For R/W Data see Rdwy. Plans

Use Type Special I Approach Gutters (w=8'-0") at both ends of Bridge. For details, see Dwg. No. 52844.

Dumped Riprap 1'-6" thick placed on Filter Blanket. Top of Riprap Elev. 205.0. See Std. Dwg. No. 1891F. Typ. at both ends of Bridge.



PLAN

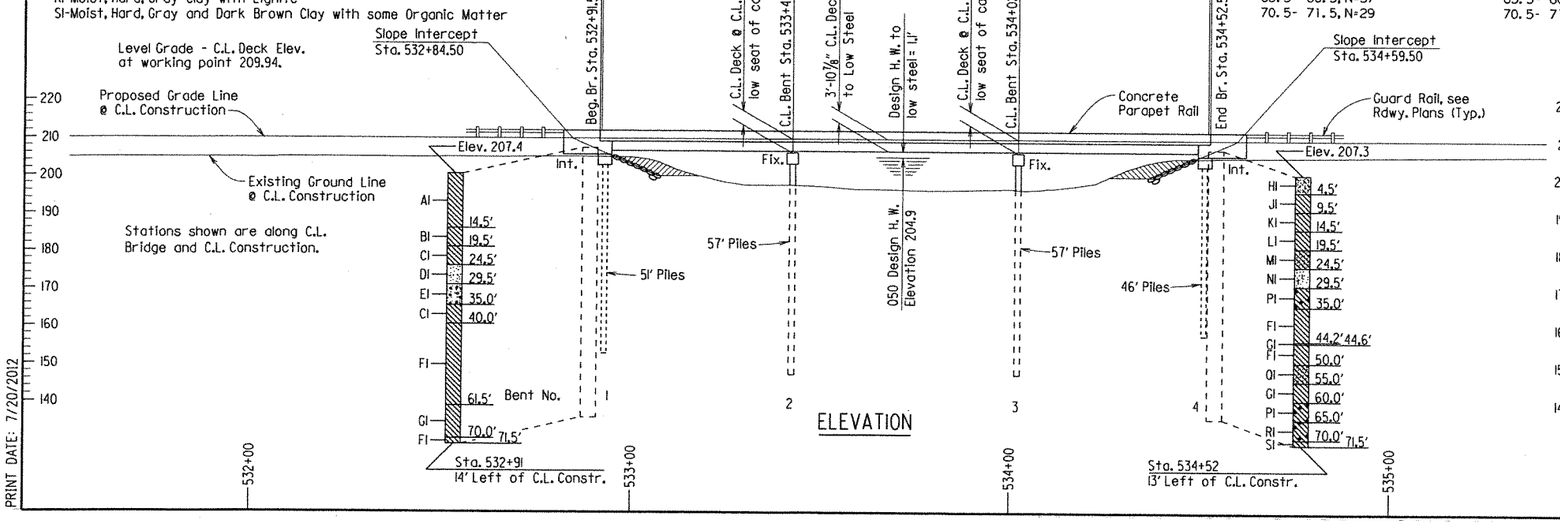
BORING LEGEND

Al-Moist, Medium Stiff, Dark Brown Clay with some Organic Matter
Bl-Moist, Medium Stiff, Light Gray Clay
Cl-Moist, Medium Stiff, Gray Clay
Dl-Wet, Loose, Gray Sand
El-Wet, Loose, Gray Sand with Gravel
Fl-Moist, Very Stiff, Gray Clay
Gl-Moist, Hard, Gray Clay
Hl-Moist, Loose, Brown Sand with Clay
Jl-Moist, Medium Stiff, Gray and Brown Clay
Kl-Moist, Medium Stiff, Brown and Gray Clay with some Organic Matter
Ll-Moist, Stiff, Gray Clay with some Organic Matter
Ml-Moist, Stiff, Gray and Brown Clay with Sand
Nl-Wet, Loose, Gray Silty Sand with some Gravel
Pl-Moist, Very Stiff, Gray and Dark Brown Lignitic Clay
Ql-Moist, Hard, Gray Sandy Clay
Rl-Moist, Hard, Gray Clay with Lignite
Sl-Moist, Hard, Gray and Dark Brown Clay with some Organic Matter

For details of Stage Construction, see Dwg. No. 52803.

"N" VALUES

Sta. 532+91 - 14' Left of C.L. Constr.	Sta. 534+52 - 13' Left of C.L. Constr.
5.0- 6.0, N=5	5.0- 6.0, N=6
10.0- 11.0, N=6	10.0- 11.0, N=7
15.0- 16.0, N=8	15.0- 16.0, N=9
20.0- 21.0, N=7	20.0- 21.0, N=9
25.0- 26.0, N=9	25.0- 26.0, N=5
30.0- 31.0, N=8	30.0- 31.0, N=20
35.5- 36.5, N=8	35.5- 36.5, N=23
40.5- 41.5, N=19	40.5- 41.5, N=26
45.5- 46.5, N=22	45.5- 46.5, N=24
50.5- 51.5, N=25	50.5- 51.5, N=32
55.5- 56.5, N=27	55.5- 56.5, N=34
60.5- 61.5, N=25	60.5- 61.5, N=30
65.5- 66.5, N=37	65.5- 66.5, N=33
70.5- 71.5, N=29	70.5- 71.5, N=33



ELEVATION

PRINT DATE: 7/20/2012

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.		070289	176	365
				① 07243	-	LAYOUT	-	52843

GENERAL NOTES

BENCH MARK: BM 916 Chiseled Sq. BR END, 4.5' Lt. of C.L. Constr. Sta. 532+99.71, Elev. 207.43.

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2003 edition) with applicable supplemental specifications and special provisions. Unless otherwise noted, section and subsection numbers in the plans refer to the Construction Specifications.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications 5th Edition (2010), with 2010 Interims.

LIVE LOADING: HL-93

SEISMIC ZONE : 2 S_{DI} = 0.244 SITE CLASS = E

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 M31 or M53, GR. 60)	fy = 60,000 psi
Structural Steel (AASHTO M270, Gr. 36)	Fy = 36,000 psi
Structural Steel (AASHTO M270, Gr. 50W)	Fy = 50,000 psi

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

CONCRETE PILING: Piling for Bents 1 and 4 shall be 16" square prestressed concrete and shall be driven to a minimum ultimate bearing capacity of 145 tons per pile. Piling in Bents 2 and 3 shall be 24" square prestressed concrete and shall be driven to a minimum ultimate bearing capacity of 315 tons per pile. All piling shall be driven with an approved air, steam, or diesel hammer. Piling in end bents shall be driven after embankment to bottom of cap is in place. Piling in Bents 1 and 4 shall have a tip elevation of 178 or lower. Piling in Bents 2 and 3 shall have a tip elevation of 169 or lower. Length of piling shown are for estimating quantities and for use in determining payment for cut-off and build-up in accordance with the standard specifications. Drive one 56' test pile in Bent 1 and one 62' test pile in Bent 3.

DRIVING SYSTEM: The driving system approval and the ultimate bearing capacity determination for piling shall be based on the requirements of subsection 805.09(b) "Method B - Wave Equation Analysis (WEAP)". It is estimated that the minimum required rated energy of the hammer to obtain the minimum ultimate bearing capacity on 16" square piles will be 40,000 foot pounds per blow and on 24" square piles shall be 83,000 foot pounds per blow.

PREBORING: Preboring is required for all piling at bents 1 & 4. Prebored holes at Bents 1 and 4 shall have a diameter 6" greater than the greatest cross-sectional dimension of the pile for a depth of 10' below the bottom of the cap. The void space around the pile after completion of driving shall be backfilled with sand or pea gravel. The Contractor shall be responsible for keeping prebored holes free of debris prior to backfilling, which may require the use of temporary casing or other approved methods. Any related cost for backfilling and temporary casing will not be paid for separately but shall be considered subsidiary to the item "Preboring". Preboring will be paid for in accordance with Section 805.

BRIDGE DECK: The concrete bridge deck shall be given a tine finish as specified for final finishing in subsection 802.19 for Class S Tined Bridge Roadway Surface Finish.

PIPE UNDER DRAIN: One Pipe Under drain with outlet protectors shall be installed behind each bridge end in accordance with Section 611. Pipe Under drains will not be paid for directly but shall be considered subsidiary to "Unclassified Excavation".

DETAIL DRAWINGS:	DRAWING NO.
Stage Construction	52803
End Bents	52804
Intermediate Bents	52805
160' Integral W-Beam Unit	52806 - 52811
Type "B" Special Shoes	52811
Concrete Piling	14964 & 52786
Type Special I Approach Gutters	52845

EXISTING BRIDGE: Existing Bridge No. 00788 (Log Mile 0.21) is 28'wide and 142' long and consists of concrete tee beams supported by concrete pile bents.

REMOVAL AND SALVAGE: After Stage I Construction is complete and opened to traffic, the Contractor shall remove existing Bridge No. 00788 in accordance with Section 205. All salvageable guard rail and guard rail posts, as determined by the Engineer, shall remain the property of the Department. The Contractor shall coordinate with the Engineer to provide temporary storage and on site loading onto Department equipment for removal of all salvaged items. All other material from the existing bridge shall become the property of the Contractor.

MAINTENANCE OF TRAFFIC: See Roadway Plans.

HYDRAULIC DATA

FLOOD DESCRIPTION	FREQUENCY	②TOTAL DISCHARGE	DISCHARGE THRU BRIDGE OPENING	①NATURAL WATER SURFACE ELEVATION	WATER SURFACE ELEVATION W/ BACKWATER
	YEARS	CFS	CFS	FEET	FEET
Design	50	18,500	5,081	204.8	205.1
Base	100	22,900	6,167	205.7	206.0
Overtopping	313	34,300	8,928	207.7	208.5
Extreme	500	36,000	9,343	207.9	208.7

① Unconstricted water surface elevation without structure and roadway approaches.

② Includes Bridge Nos. 07239 thru 07243.

Estimated 100-Year backwater elevation with Existing Structures in place is 206.2 ft.

Proposed Low Bridge Member Elevation = 206.0

Drainage area = 131.0 square miles (Includes Moro Creek and relief structures).

Historical H.W. Elev. = 206.0 ft.

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
CARL J. FUSELIER 7/23/12

BRIDGE ENGINEER

LAYOUT OF BRIDGE OVER MORO CREEK RELIEF (LOG MI. 0.21) HWY. 273-PETERS RD. (CR 24) (F) CLEVELAND COUNTY

ROUTE 167 SEC. 8

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

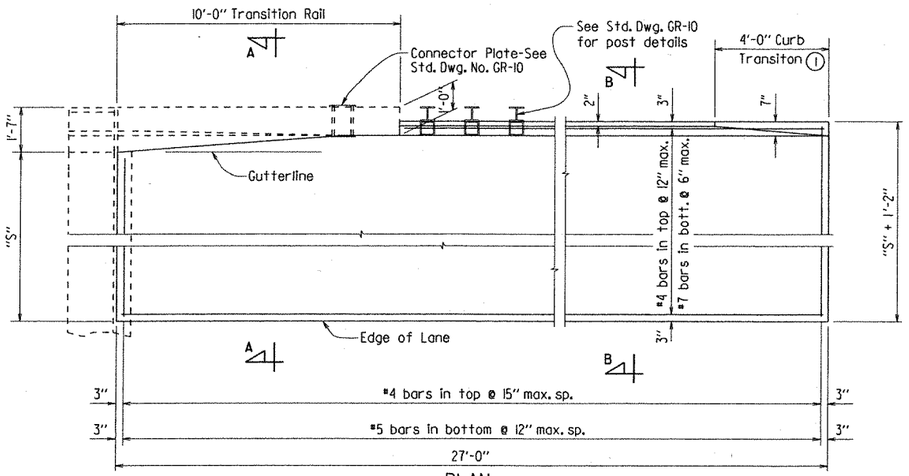
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CHECKED BY: CMW DATE: 7/16/12 SCALE: 1"=20'
DESIGNED BY: CSL DATE: Sept. 2011

BRIDGE NO. 07243 DRAWING NO. 52843

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.		070289	177	365

(1) 07239, 07240 07242, 07243 - APPR. GUTTER DETAIL - 52844

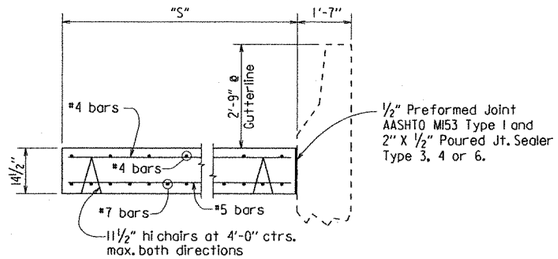
Note: See Rdwy. Plans for Guardrail locations



PLAN

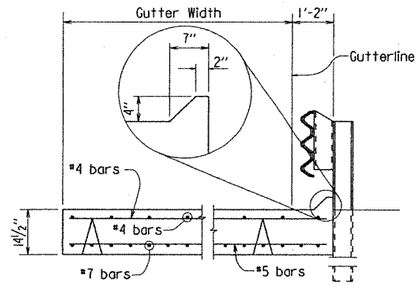
Scale: 3/8" = 1'-0"

"S" = Distance from gutterline to edge of lane.



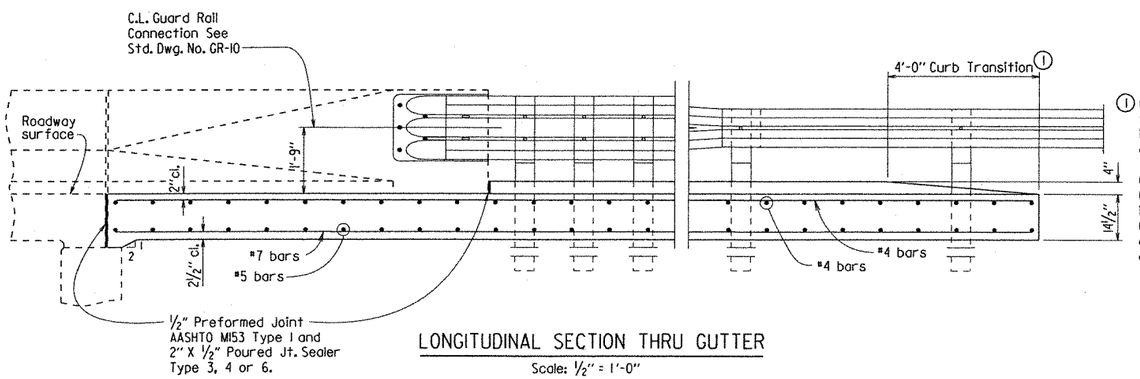
SECTION A-A

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



SECTION B-B

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



LONGITUDINAL SECTION THRU GUTTER

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

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

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

GENERAL NOTES

Concrete shall be Class S(AE) (f'c = 4,000 psi).

Reinforcing steel shall conform to AASHTO M31 or M53, Grade 60 (fy = 60,000 psi.) Fabricate bar lengths to provide 2" minumum cover at each end.

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

QUANTITIES FOR ONE SQUARE APPROACH GUTTER

"S"	Concrete	Reinforcing Steel
8'-0"	10.80 cu.yd.	1550 lb.

STATE OF ARKANSAS
Carl J. Fusselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
7/23/12
CARL J. FUSSELIER

BRIDGE ENGINEER

DETAILS OF TYPE SPECIAL I APPROACH GUTTER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: CMW DATE: 04/23/2012 FILENAME: b070289_gl.dgn

CHECKED BY: DHP DATE: 7-16-12 SCALE: AS NOTED

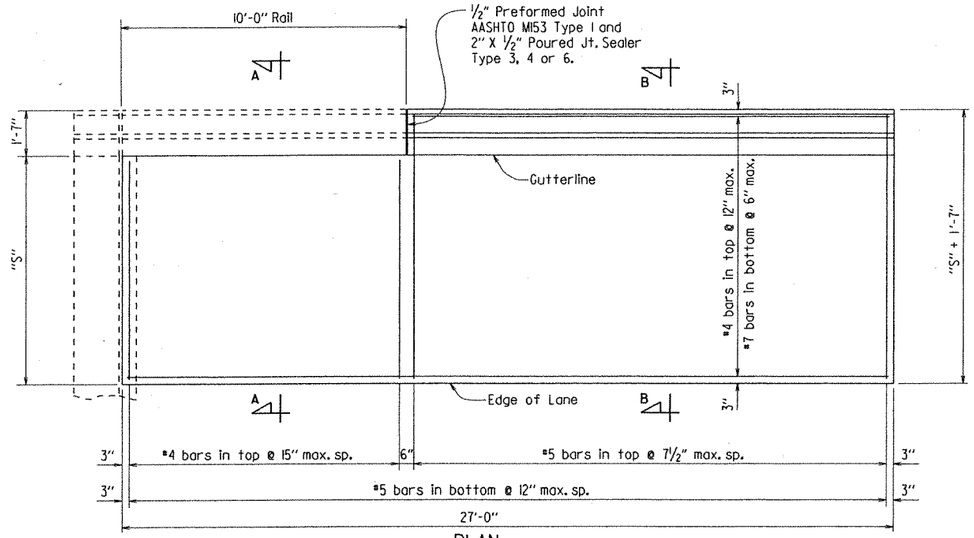
DESIGNED BY: Std. DATE: —

BRIDGE NO. 07239, 07240 07242, 07243 DRAWING NO. 52844

PRINT DATE: 7/16/2012

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
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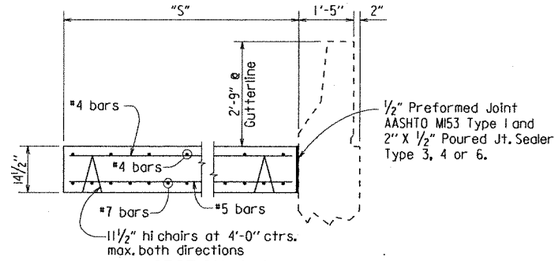
(1) 07240 - 07242 - APPR. GUTTER DETAIL - 52845



PLAN

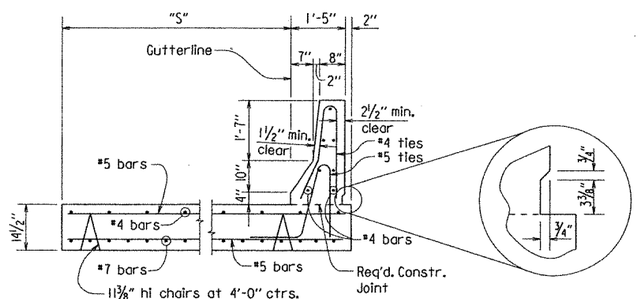
Scale: ⅜" = 1'-0"

"S" = Distance from gutterline to edge of lane.



SECTION A-A

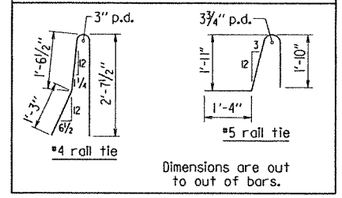
Scale: ½" = 1'-0"



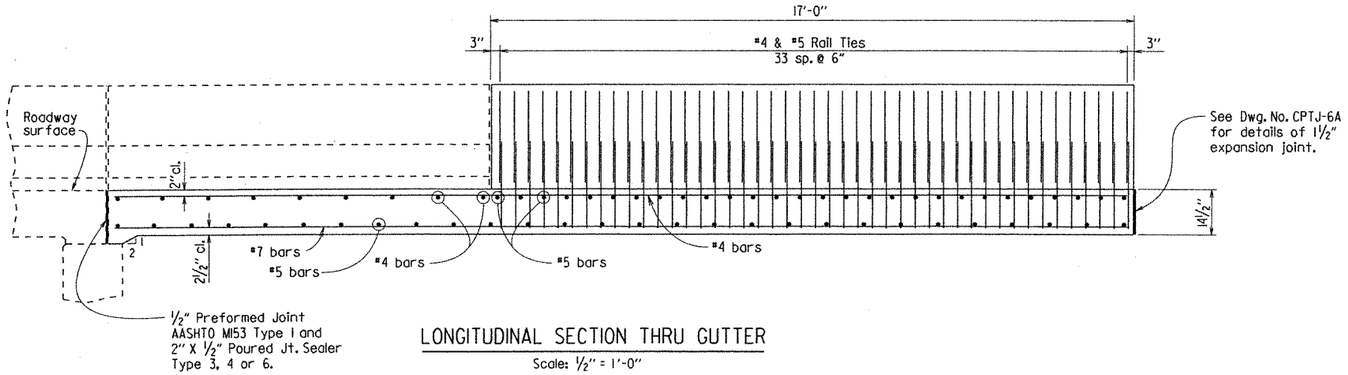
SECTION B-B

Scale: ½" = 1'-0"

BENDING DIAGRAMS



Dimensions are out to out of bars.



LONGITUDINAL SECTION THRU GUTTER

Scale: ½" = 1'-0"

GENERAL NOTES

Concrete shall be Class S(AE) (f'c = 4,000 psi).

Reinforcing steel shall conform to AASHTO M31 or M53, Grade 60 (fy = 60,000 psi.) Fabricate bar lengths to provide 2" minumum cover at each end.

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

QUANTITIES FOR ONE SQUARE APPROACH GUTTER

"S"	Concrete	Reinforcing Steel
8'-0"	12.50 cu.yd.	2170 lb.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7510
7/23/12
CARL J. FUSELIER

BRIDGE ENGINEER

DETAILS OF TYPE SPECIAL 2 APPROACH GUTTER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

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CHECKED BY: DHP DATE: 7-16-12 SCALE: AS NOTED

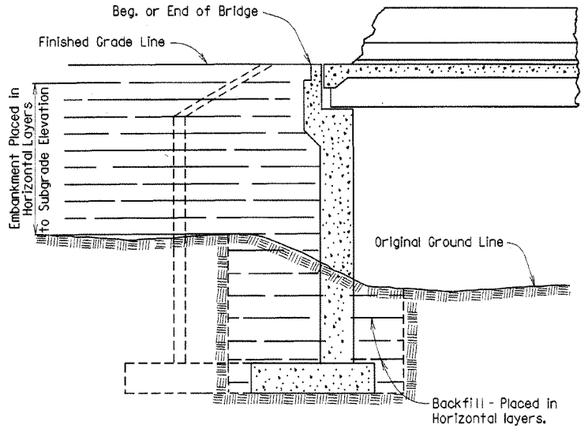
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BRIDGE NO. 07240 - 07242 DRAWING NO. 52845

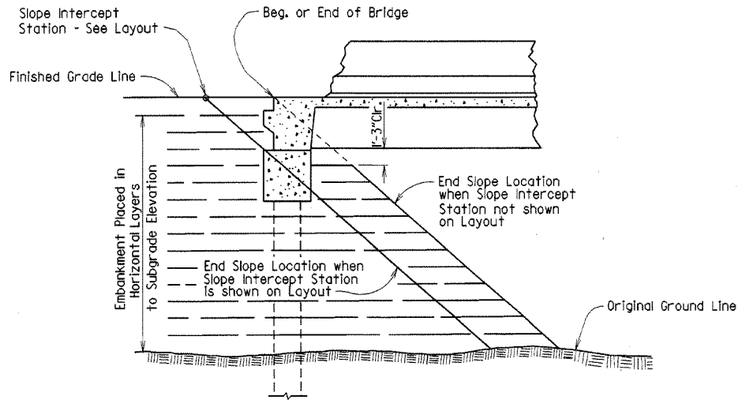
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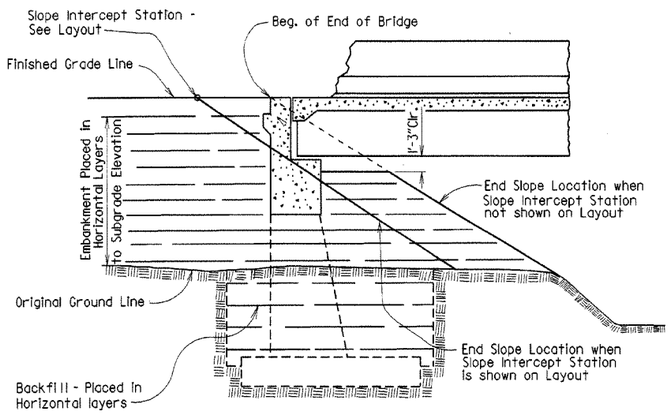
EMBANKMENT & BACKFILL I888A



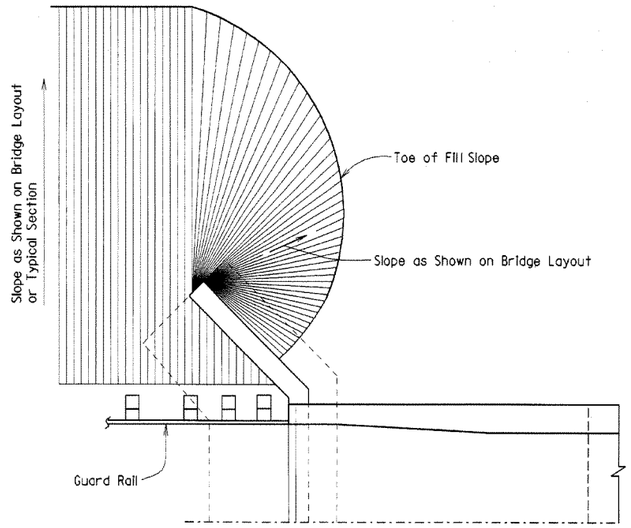
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT VERTICAL WALL ABUTMENTS



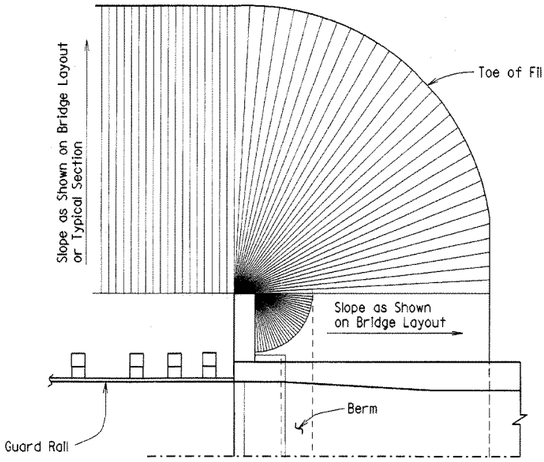
EMBANKMENT CONSTRUCTION AT SPILL-THROUGH PILE END BENTS



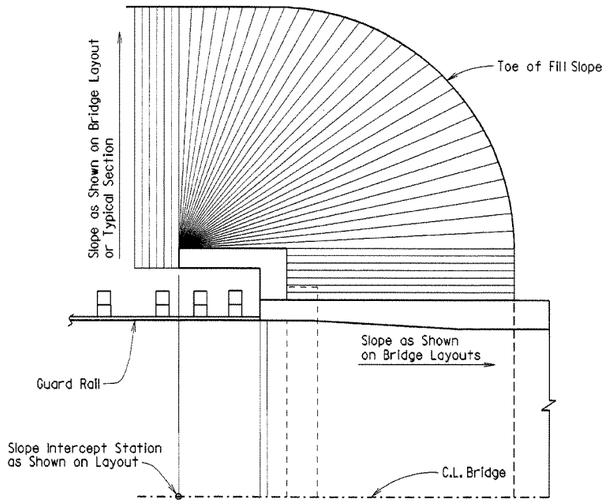
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT SPILL-THROUGH END BENTS



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 4 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 of the Specifications for construction requirements.

⚠ Revised and redrawn MJT 04-10-2003
Chk'd. By: CJF 04-10-2003

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 4337
CHARLES P. BRAND

BRIDGE ENGINEER

EMBANKMENT CONSTRUCTION AND BACKFILL AT BRIDGE ENDS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

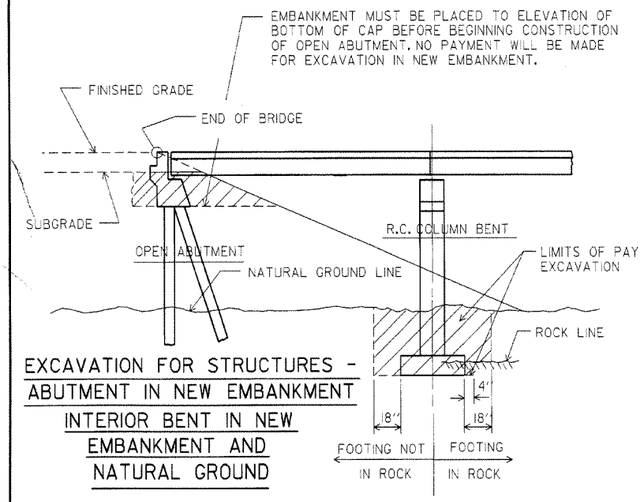
LITTLE ROCK, ARK.

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DESIGNED BY: STD. DATE: ——

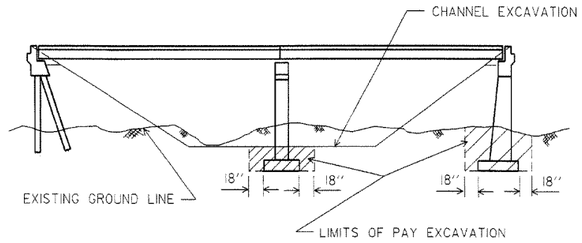
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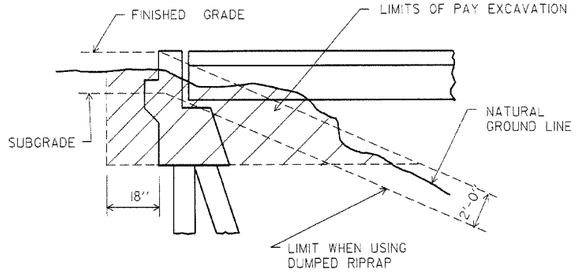
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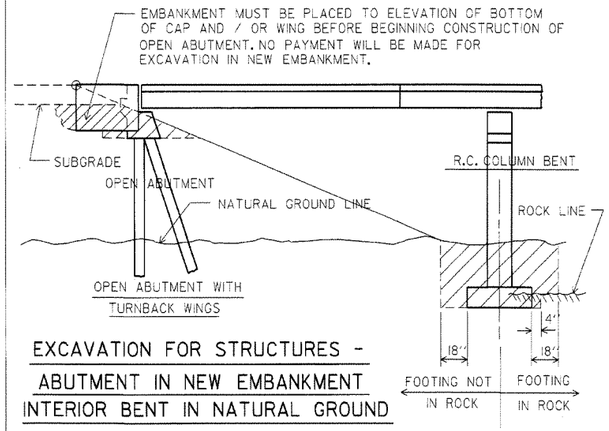
EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NEW EMBANKMENT AND NATURAL GROUND



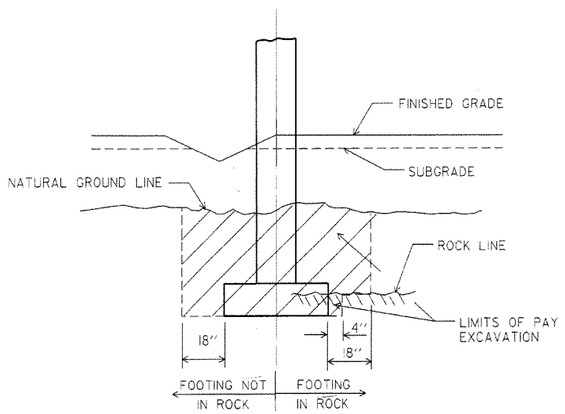
EXCAVATION FOR STRUCTURES - BRIDGE LOCATION WITH DESIGNATED CHANNEL CHANGE



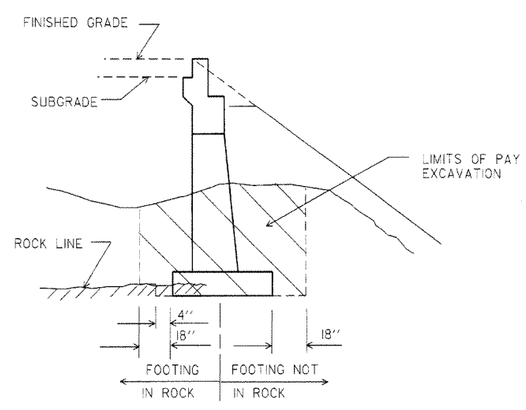
EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND



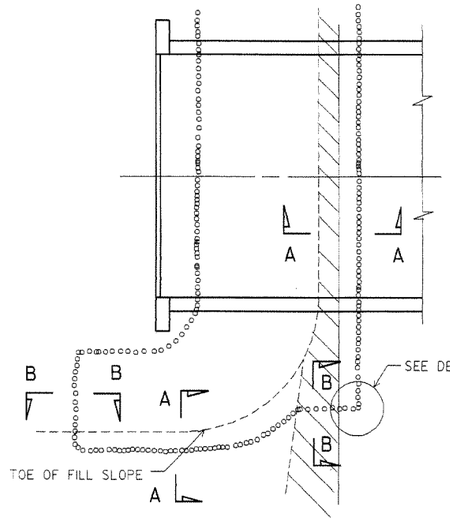
EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NATURAL GROUND



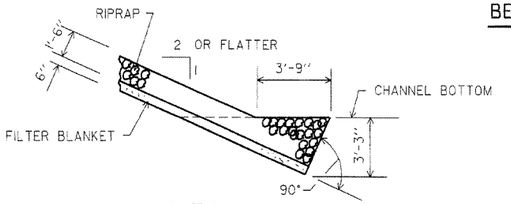
EXCAVATION FOR STRUCTURES - BENT IN ROADWAY FILL SECTION AND NATURAL GROUND



EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND AND NEW EMBANKMENT

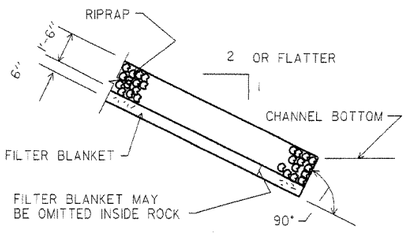


PLAN OF DUMPED RIPRAP



SECTION A-A

(TOE EXCAVATION IN SOIL)



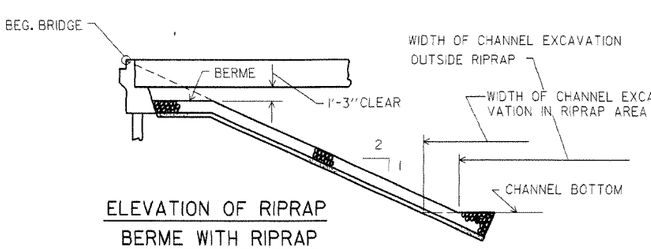
SECTION A-A

(TOE EXCAVATION IN ROCK)

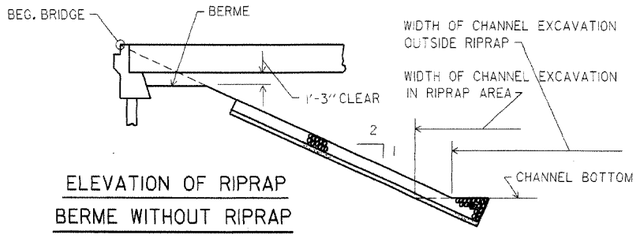
NOTE : USE THIS TYPE OF TOE WHEN ROCK IS ENCOUNTERED WHICH IS IN A STABLE CONDITION.

NOTE : IN LIEU OF AN AGGREGATE FILTER BLANKET, A SYNTHETIC FIBER GEOTEXTILE FABRIC COMPLYING WITH THE REQUIREMENTS OF SUBSECTION 816.02(e) MAY BE USED.

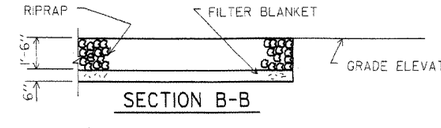
NOTE : DETAILS FOR COMPUTING EXCAVATION FOR STRUCTURES ARE INCLUDED FOR INFORMATION AS TO HOW PLAN QUANTITIES WERE CALCULATED AND FOR USE WHEN ADJUSTING QUANTITIES WHEN CHANGING FOOTING ELEVATION.



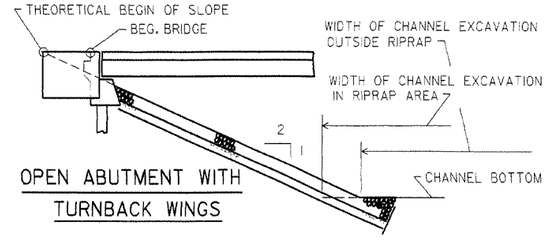
ELEVATION OF RIPRAP BERME WITH RIPRAP



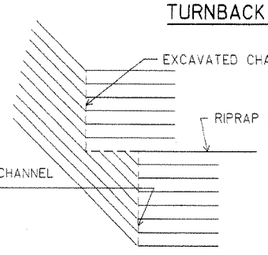
ELEVATION OF RIPRAP BERME WITHOUT RIPRAP



SECTION B-B



OPEN ABUTMENT WITH TURNBACK WINGS



DETAIL C

⚠ Revised and redrawn MJT 04-10-2003
Chk'd. By: CJF 04-10-2003

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 4337
CHARLES F. BRAND
BRIDGE ENGINEER

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

ROUTE SEC.

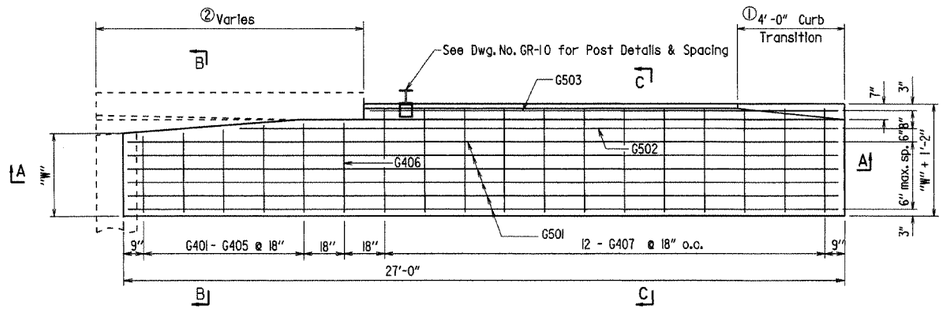
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: MJT DATE: 04-10-2003 FILENAME: B1891F.STD
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DESIGNED BY: STD. DATE: —

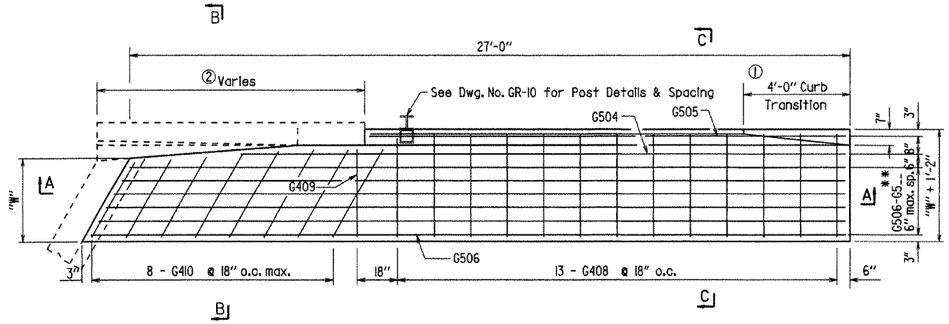
BRIDGE NO. DRAWING NO. 1891F

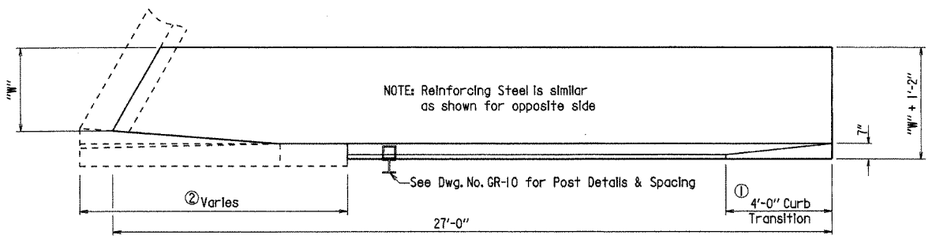
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4-10-2003				6	ARK.		181	
07-14-2010				JOB NO.				
				TYPE B GUTTERS				2016B



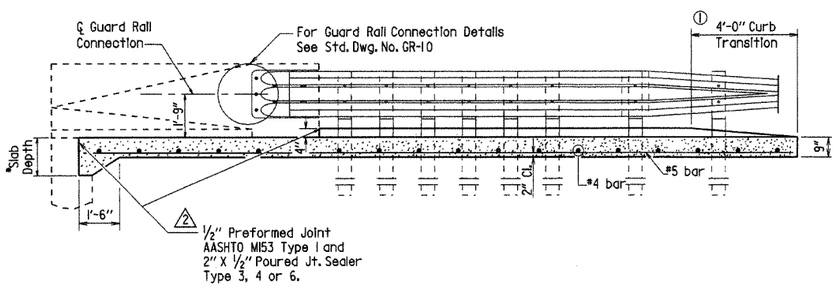
HALF PLAN OF APPROACH GUTTERS FOR SQUARE BRIDGE

② Length varies. See End Bent details for actual length.
Quantities shown are for 10'-0" Transition Rail.





PLAN OF APPROACH GUTTERS FOR SKEWED BRIDGE

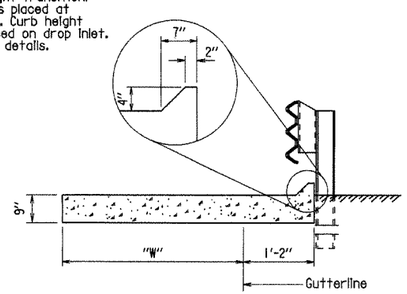


SECTION A - A

* Slab Depth Varies - See Span and Bent Details

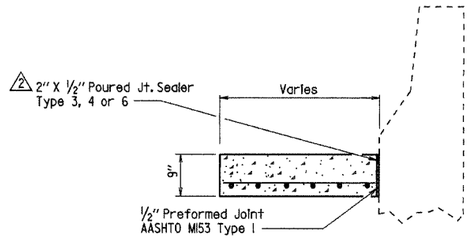
① Construct gutter curb with height-transition as shown if drop inlet is not placed at end of gutter.

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



SECTION C - C

N.T.S.



SECTION B - B

N.T.S.

QUANTITIES FOR ONE SQUARE APPROACH GUTTER

"W" Width (ft.)	Reinforcing Steel (lbs.)	Concrete (cubic yards)
3	252	3.00
4	319	3.75
6	459	5.25
8	590	6.75

***BAR LIST ②
TYPE B GUTTER

Mark	No. Required for Width "W"				Length	Square or Skewed
	3'-0"	4'-0"	6'-0"	8'-0"		
G401 - G405	1 each	1 each	1 each	1 each	"W" - 3" to "W" + 3"	Square
G406	1	1	1	1	"W" + 3"	Square
G407	12	12	12	12	"W" + 10"	Square
G408	13	13	13	13	"W" + 10"	Skewed
G409	1	1	1	1	"W" + 3"	Skewed
G410	8	8	8	8	*	Skewed
G501	6	8	12	16	26'-8"	Square
G502	1	1	1	1	22'-2"	Square
G503	1	1	1	1	17'-8"	Square
G504	1	1	1	1	*	Skewed
G505	1	1	1	1	*	Skewed
G506-G5_ **	1 each	1 each	1 each	1 each	*	Skewed

* Bar Lengths vary with Skew.

** G512 for "W" = 3'
G514 for "W" = 4'
G518 for "W" = 6'
G522 for "W" = 8'

*** Special bar list required when skew angle exceeds 40° for W = 8'; 50° for W = 6'; or 60° for W = 4'.

GENERAL NOTES

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

Reinforcement Steel shall conform to AASHTO M31 or M53, Grade 60 (fy = 60,000 psi).

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

⚠1 Revised and redrawn 4-10-2003. By KDH Ck. By: CJF 4-10-2003

⚠2 Added joint sealer type & revised transition rail length 07-14-2010 by MJT Checked by: CJF 07-14-2010

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 4337
CHARLES P. BRAND

BRIDGE ENGINEER

DETAILS OF STANDARD TYPE B APPROACH GUTTERS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 4-10-2003 FILENAME: B2016B.STD
CHECKED BY: CJF DATE: 4-10-2003 SCALE: 3/8" = 1'-0"
DESIGNED BY: STD DATE:

BRIDGE NO. DRAWING NO. 2016B

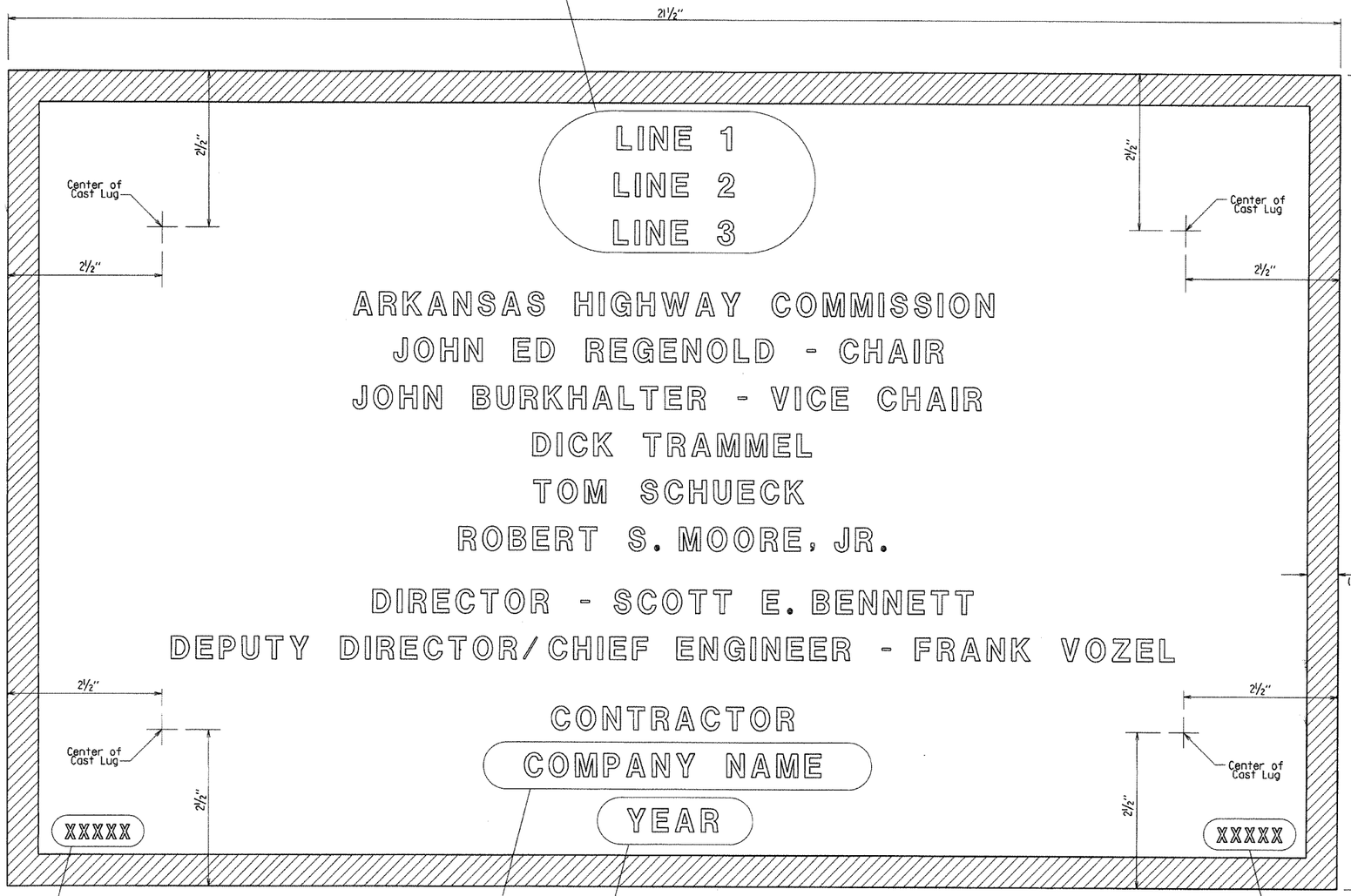
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED
9-8-11			
1-3-13			
1-10-13			

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
6	ARK.		182	
JOB NO.				

(1) NAME PLATE 2387

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

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



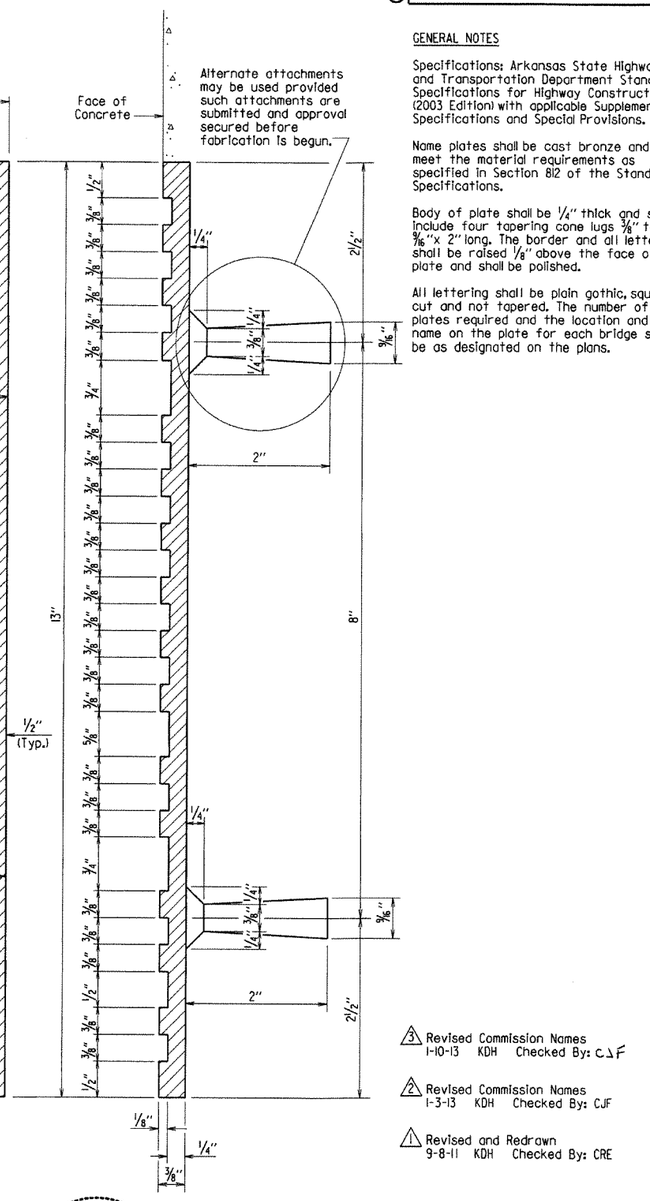
Place the design live loading here using 1/8" raised letters and numerals 1/4" high. Examples : HS 20 HL-93

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

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

Place the Bridge number here using 1/8" raised letters and numerals 1/4" high. Examples : A1234 05432

TYPICAL BRIDGE NAME PLATE



GENERAL NOTES

Specifications: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction, (2003 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 of the Standard Specifications.

Body of plate shall be 1/4" thick and shall include four tapering cone lugs 3/8" to 9/16" x 2" long. The border and all lettering shall be raised 1/8" above the face of plate and shall be polished.

All lettering shall be plain gothic, square cut and not tapered. The number of plates required and the location and name on the plate for each bridge shall be as designated on the plans.

3 Revised Commission Names 1-10-13 KDH Checked By: CJF

2 Revised Commission Names 1-3-13 KDH Checked By: CJF

1 Revised and Redrawn 9-8-11 KDH Checked By: CRE

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

BRIDGE ENGINEER

DETAILS OF STANDARD TYPE D BRIDGE NAME PLATE

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 9-8-11
CHECKED BY: CRE DATE: 9-8-11
DESIGNED BY: STD. DATE: ——

FILENAME: b2387_std.dgn
SCALE: 1'-0" = 1'-0" OR AS NOTED

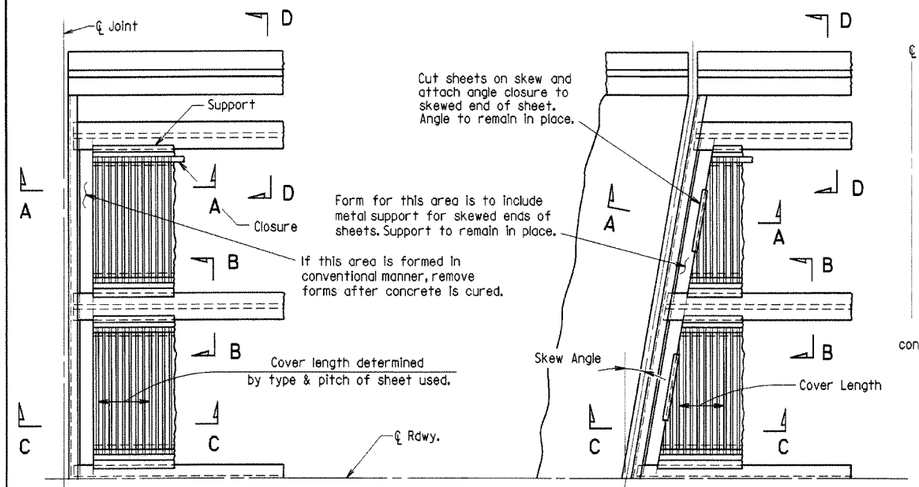
BRIDGE NO.

DRAWING NO. 2387

PRINT DATE: 1/16/2013

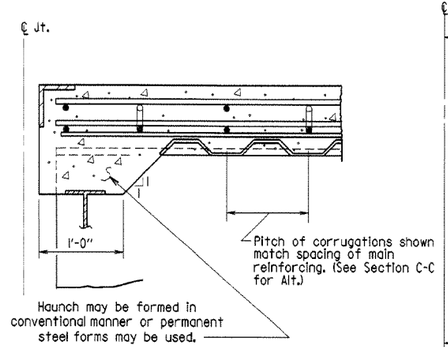
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
11-27-96						6	ARK.		183	
04-10-2003						JOB NO.				

① BR. DECK FORMS 14991

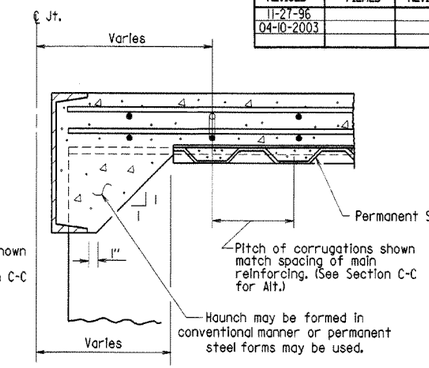


PART PLAN - SQUARE SPAN
3/8" = 1'-0"

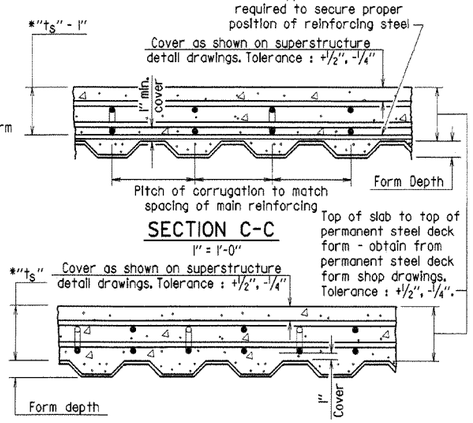
PART PLAN - SKEWED SPAN
3/8" = 1'-0"



SECTION A-A
N.T.S.
(Angle at end of span)

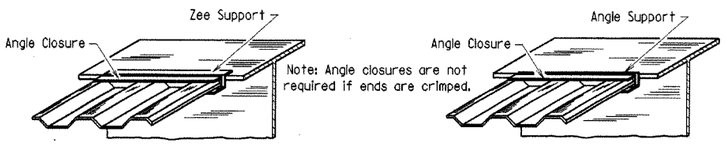


SECTION A-A
N.T.S.
(Channel at end of span)

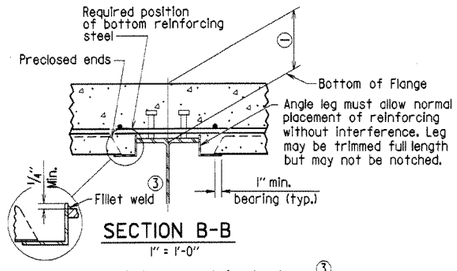


SECTION C-C
1" = 1'-0"

SECTION C-C - ALTERNATE
1" = 1'-0"
(Applicable when corrugations do not match spacing of main reinforcement)

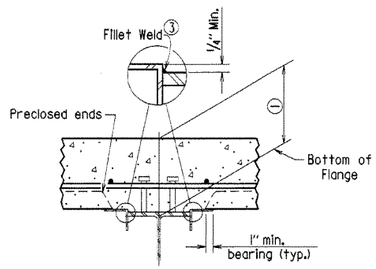


SKETCH OF PERMISSIBLE SUPPORTS
N.T.S.

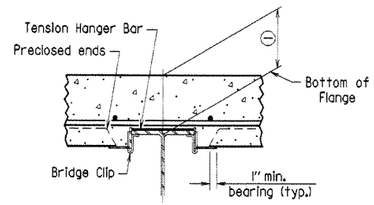


SECTION B-B
1" = 1'-0"
(Showing permissible support for tension flange where shear connectors are used, and for all compression flanges)

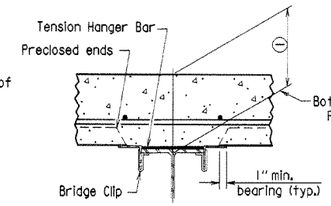
③ Minimum weld: 1/8" x 1" @ 18". More weld may be required; maximum length per weld = 1 1/2" (typ.)



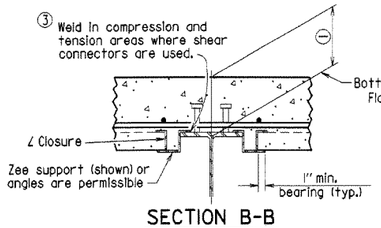
SECTION B-B
1" = 1'-0"
(Showing permissible support for tension flange where shear connectors are used and for all compression flanges)



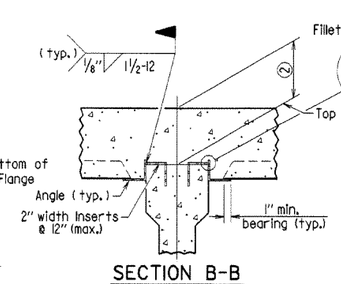
SECTION B-B
1" = 1'-0"
(Showing permissible support for tension flange where shear connectors are not used)



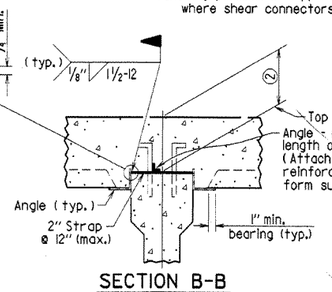
SECTION B-B
1" = 1'-0"
(Showing permissible support for tension flange where shear connectors are not used)



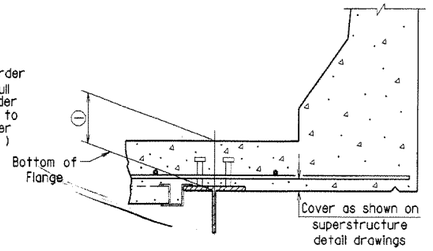
SECTION B-B
1" = 1'-0"
(Showing ∠ Closure)



SECTION B-B
(FOR CONCRETE GIRDERS)
1" = 1'-0"
(Showing support by insert cast in girder)



SECTION B-B
(FOR CONCRETE GIRDERS)
1" = 1'-0"
(Showing support by Strap)



SECTION D-D
1" = 1'-0"
Note: Only Bottom Reinforcing is shown.

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

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

⚠2 Revised for 2003 AHTD Construction Specifications and CPB Seal. MJT 04-10-2003
Chk'd. By: CPB 04-10-2003

⚠1 Redrawn and revised 11/27/96; MJT

*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) of the Standard Specifications. Detailed plans, including detailed calculations and manufacturer's technical brochure, shall be submitted to and approved by the Bridge 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 Bridge 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 Bridge 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.

⚠2 Specifications: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2003 Edition), with applicable supplemental specifications and special provisions.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 4337
CHARLES P. BRAND
BRIDGE ENGINEER

DETAILS OF PERMISSIBLE TYPE PERMANENT STEEL BRIDGE DECK FORMS FOR STEEL & CONCRETE GIRDER SPANS

ROUTE SEC.

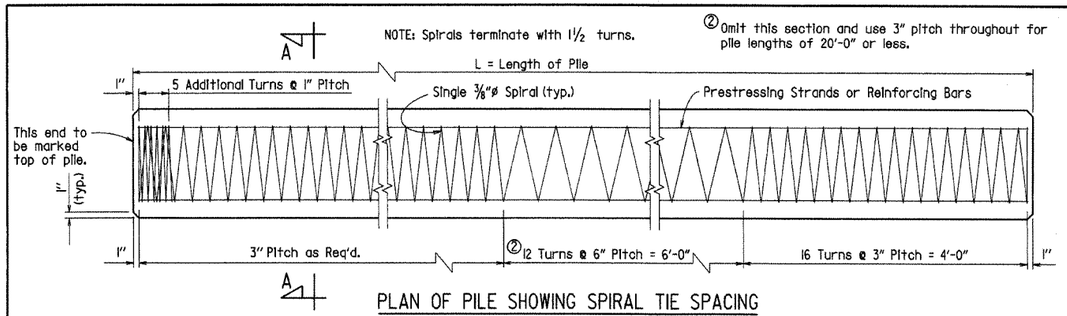
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: MJT DATE: 10-17-96
CHECKED BY: CPB DATE: 10-17-96
DESIGNED BY: STD. DATE: —
SCALE: as noted

BRIDGE NO. DRAWING NO. 14991

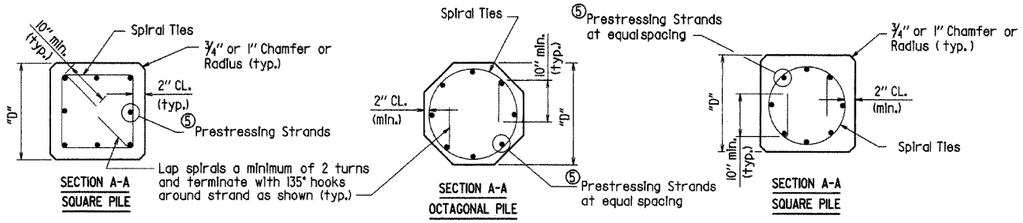
BI499I.STD



PLAN OF PILE SHOWING SPIRAL TIE SPACING

For anchorage of pile to bent, see Bent Details.

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



PRESTRESSED CONCRETE PILES

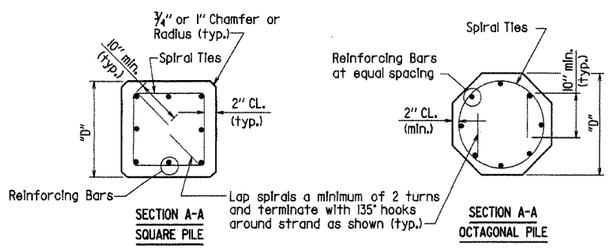
① Number based on initial pre-stress force of "B" x Ultimate Tensile Stress, Prestress Losses and min. 700 psi Unit Prestress on concrete after Losses.

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

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

PRESTRESSED CONCRETE PILE PROPERTIES

	Grade	Strand Diameter	① Number of Strands per Size "D" 16" Oct.	18" Oct.	④ 14" Sq.	16" Sq.	18" Sq.	Minimum Ultimate Tensile Strength Per Strand (Lbs.)	Initial Prestressing Force Per Strand (Lbs.)
Stress-Relieved	250	⅞"	11	13	10	13	16	27,000	18,900
		½"	8	10	8	10	12	36,000	25,200
	270	⅞"	9	11	8	12	14	31,000	21,700
		½"	7	9	6	8	10	41,300	28,900
Low Relaxation	250	⅞"	9	11	8	11	14	27,000	20,200
		½"	7	9	6	8	10	36,000	27,000
	270	⅞"	8	10	7	9	12	31,000	23,300
		½"	6	8	6	7	9	41,300	31,000

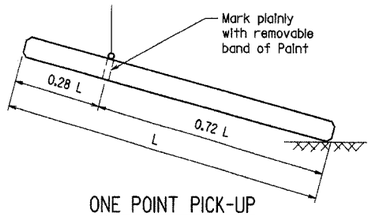


NON-PRESTRESSED CONCRETE PILES

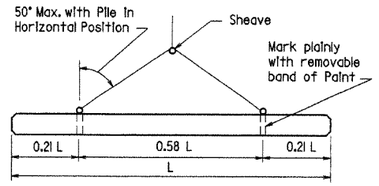
NON-PRESTRESSED PILE REINFORCING

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

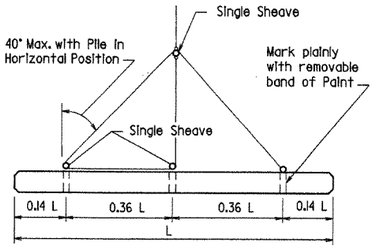
④ 14" sq. piles to be used in Seismic Performance Zone 1 only.



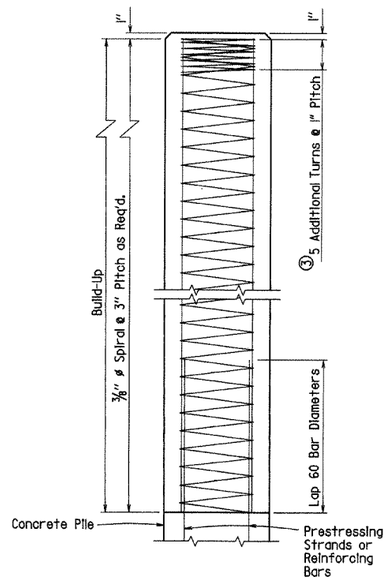
ONE POINT PICK-UP



TWO POINT PICK-UP



THREE POINT PICK-UP



BUILD-UP

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

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
12-10-2009				6	ARK.		184	
				JOB NO.				
				①		CONCRETE PILES		14964

MAXIMUM PICKUP LENGTHS "L"

Type of Pick-Up	Prestressed 16" Oct.	18" Oct.	Non-Prestressed 16" or 18" Oct.	Prestressed ④ 14" Sq.	16" Sq.	18" Sq.	Non-Prestressed ④ 14" Sq.	16" Sq.	18" Sq.
One Point	52'	55'	46'	55'	59'	63'	52'	51'	55'
Two Point	75'	80'	67'	79'	84'	90'	75'	74'	79'
Three Point	105'	112'	93'	110'	117'	126'	104'	103'	111'

GENERAL NOTES:

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2003 Edition) with applicable Supplemental Specifications and Special Provisions.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications, Fourth Edition.

SEISMIC PERFORMANCE ZONES: 1 & 2

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

SPIRAL REINFORCING: Spiral reinforcing shall be steel wire meeting the requirements of AASHTO M 32 or M 225 or shall be plain round steel bars meeting the requirements of AASHTO M 31 or M 53, Gr. 60.

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

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

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

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

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

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

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

ADDITIONAL NOTES FOR PRESTRESSED PILES ONLY:

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

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

ADDITIONAL NOTES FOR NON-PRESTRESSED PILES ONLY:

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

All longitudinal reinforcing bars shall be deformed bars and shall conform to the requirements of AASHTO M 31 or M 53, GR. 60.

⚠ Added paragraph to General Notes KDH 12-10-2009
Checked by: CJF Date: 12-10-2009

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 4337
CHARLES P. BRAND
BRIDGE ENGINEER

STANDARD DETAILS OF CONCRETE PILES IN SEISMIC PERFORMANCE ZONES 1 & 2

ROUTE SEC.

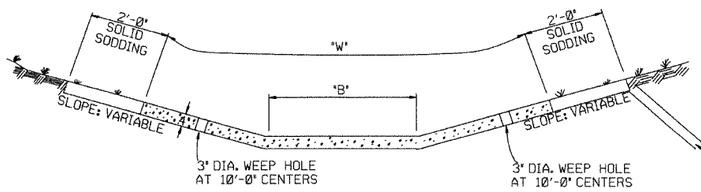
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KWY DATE: 1-17-08 FILENAME: bl4964_std.dgn
CHECKED BY: JAC DATE: 1-17-08 SCALE: no scale
DESIGNED BY: Std. DATE: ——

BRIDGE NO. DRAWING NO. 14964

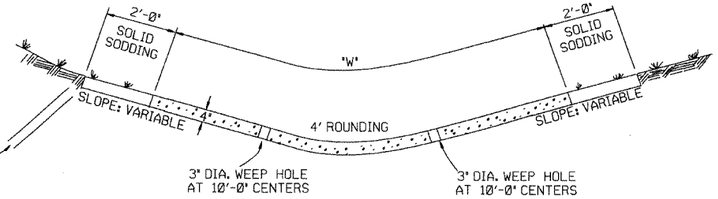
REFER TO TABULATION OF QUANTITIES FOR "W" & "B" DIMENSIONS



TYPE A

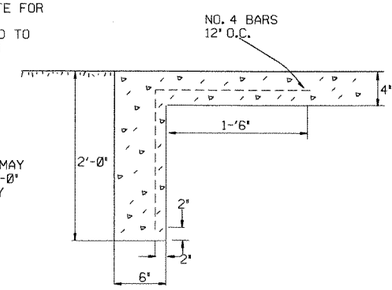
EXCAVATE TO NEAT LINES TO CONSTRUCT DITCH PAVING AND SOLID SODDING.

REFER TO TABULATION OF QUANTITIES FOR "W" DIMENSIONS



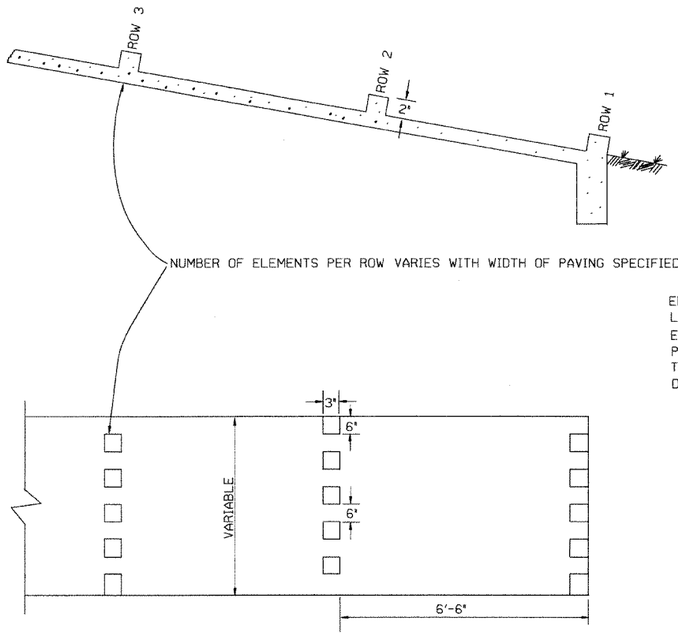
TYPE B

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.

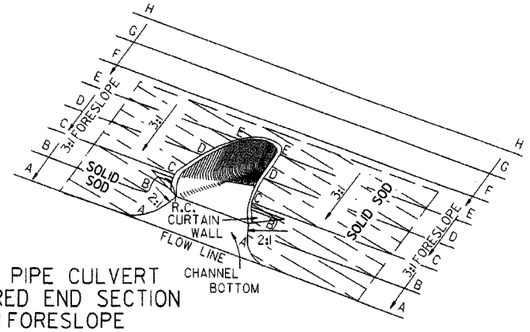
1" WIDE TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE DITCH PAVING AT 45' INTERVALS. THE SPACE SHALL BE FILLED WITH APPROVED JOINT FILLER COMPLYING WITH AASHTO M213.

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

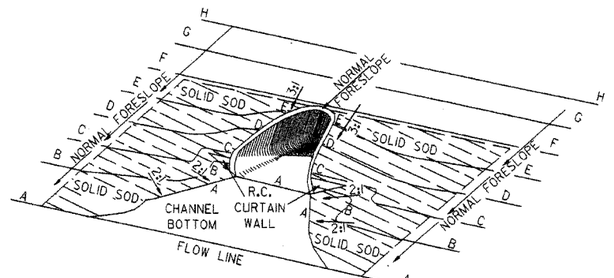
ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE DITCH PAVING

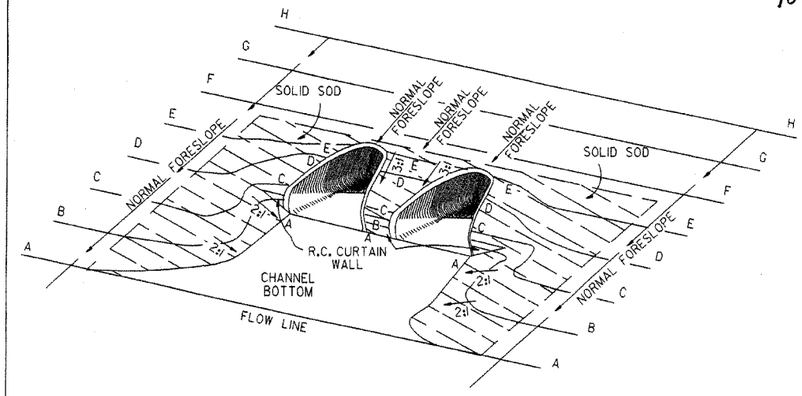
STANDARD DRAWING CDP-1



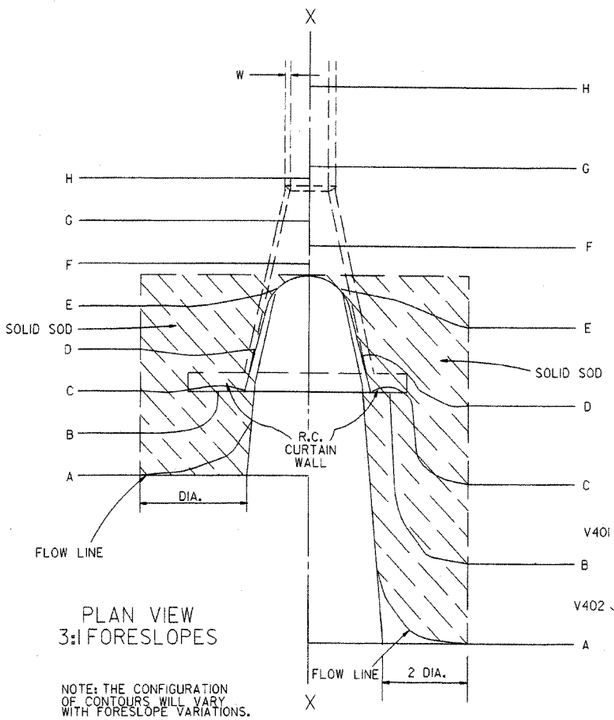
TYPICAL PIPE CULVERT
WITH FLARED END SECTION
& 3:1 FORESLOPE



TYPICAL PIPE CULVERT
WITH FLARED END SECTION
& FLATTENED ADJACENT SLOPES



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



PLAN VIEW
3:1 FORESLOPES

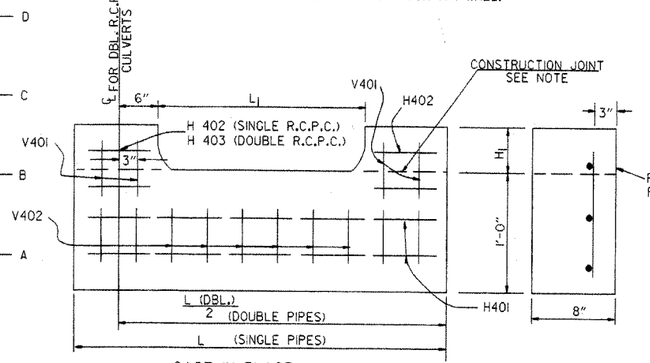
NOTE: THE CONFIGURATION OF CONTOURS WILL VARY WITH FORESLOPE VARIATIONS.

PLAN VIEW
FLATTENED FORESLOPES

R.C. CURTAIN WALL DIMENSIONS & QUANTITIES

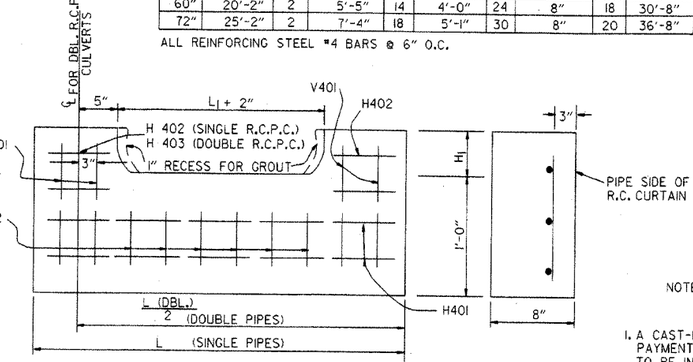
PIPE DIA.	H_1	L_1	L	L (DBL.) / 2	SINGLE R.C.P.C. CONC.	SINGLE R.C.P.C. REINF. STEEL	DOUBLE R.C.P.C. CONC.	DOUBLE R.C.P.C. REINF. STEEL
					CU. YDS.	LBS.	CU. YDS.	LBS.
18"	11½"	3'-5"	8'-0"	6'-3"	0.31	27.7	0.45	39.5
24"	1'-0½"	4'-6"	9'-6"	7'-6"	0.37	33.4	0.53	48.0
30"	1'-3½"	5'-7"	11'-0"	9'-0"	0.45	39.0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

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



CAST-IN-PLACE

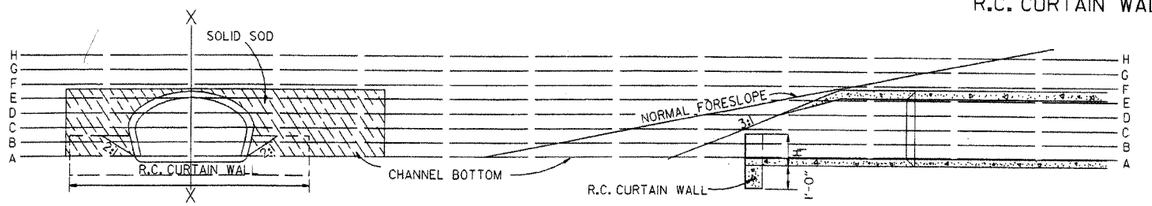
NOTE: THE PORTION OF THE R.C. CURTAIN WALL BENEATH THE FLARED END SECTION (LOWER 1'-0") SHALL BE PLACED MONOLITHICALLY. THE FLARED END SECTION SHALL THEN BE SET IN PLACE & THE REMAINING PORTIONS OF THE R.C. CURTAIN WALL PLACED.



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



END VIEW

SECTIONAL VIEW "X-X"

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.

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	159

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

GENERAL NOTES

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

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

ARKANSAS STATE HIGHWAY COMMISSION

FLARED END SECTION

STANDARD DRAWING FES-1

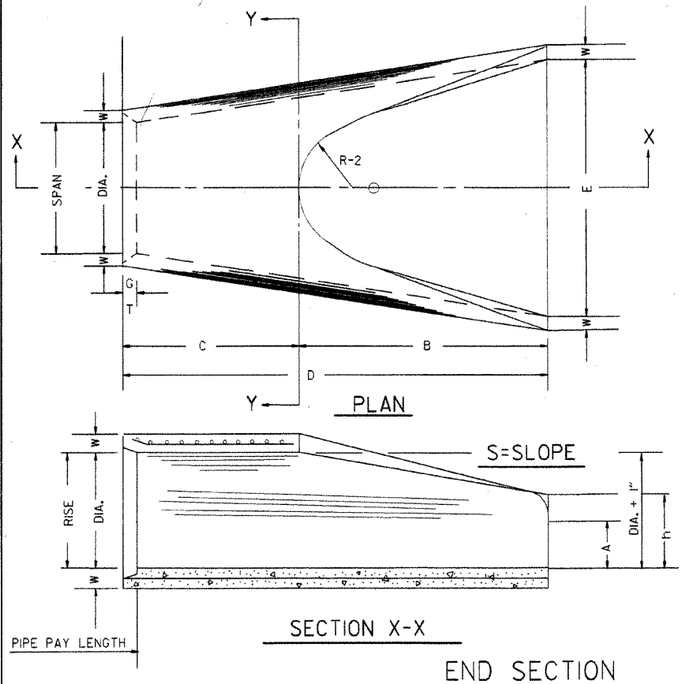
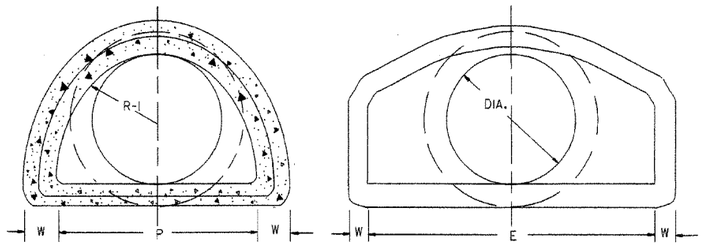


TABLE OF DIMENSIONS

DIA.	WALL	A	B	C	D	E	S	DIA. + 1"	P	R-1	R-2	G-T	WT.	h
18"	2½"	9"	2'-3"	3'-10"	6'-1"	3'-0"	3:1	19"	29"	15½"	12"	2"	1000	1'-0½"
24"	3"	9½"	3'-7½"	2'-6"	6'-11½"	4'-0"	3:1	25"	33 3/16"	16 11/16"	14"	2½"	1600	1'-11½"
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 13/16"	24 5/16"	20"	3½"	4100	1'-8"
42"	4½"	1'-9"	5'-3"	2'-11"	8'-2"	6'-6"	3:1	43"	53⅜"	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 11/16"	24"	4"	9270	3'-5"
72"	7"	3'-10"	6'-6"	1'-10"	8'-4"	9'-0"	3:1	73"	77 13/16"	38 5/16"	24"	5"	13250	4'-6"



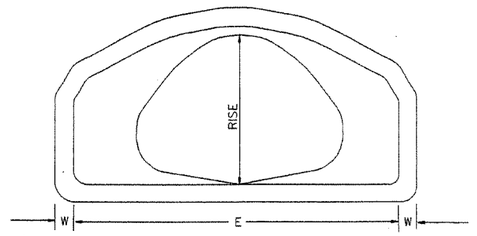
NOTE: TONGUE END ON UPSTREAM SECTION
GROOVE END ON DOWNSTREAM SECTION

END SECTION FOR REINFORCED CONCRETE PIPE CULVERTS

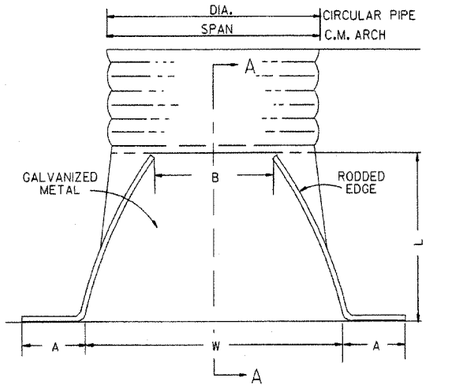
ARCH PIPE

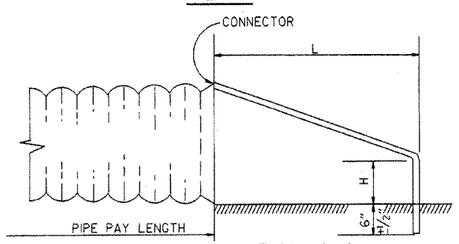
EQUIV. DIA.	• SPAN		• RISE		W	A	B	C	D	E	P	R2	G-T	S
	AASHTO M 206	AHD NOMINAL	AASHTO M 206	AHD NOMINAL										
	INCHES													
15	18	18	11	11	2"	4"	2'-0"	4'-0"	6'-0"	3'-0"	29"	12"	1½"	2½:1
18	22	22	13½	14	2½"	5"	2'-0"	4'-1"	6'-1"	3'-6"	32⅛"	13"	2½"	2½:1
21	26	26	15½	16	2¾"	7"	2'-3"	3'-10"	6'-1"	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 13/16"	20"	3"	2½:1
36	43¾	44	26⅝	27	4"	10½"	4'-0"	2'-11½"	6'-1½"	6'-6"	54 3/16"	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"	70 5/16"	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.

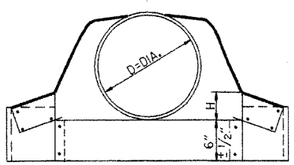


END VIEW
CONCRETE ARCH PIPE

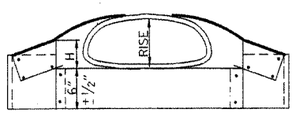




NOTE: ALTERNATE CONNECTIONS TO THE PIPE CULVERTS, IN ACCORDANCE WITH MANUFACTURER'S STANDARD PRACTICES, MAY BE MADE SUBJECT TO THE APPROVAL OF THE ENGINEER.



CIRCULAR PIPE



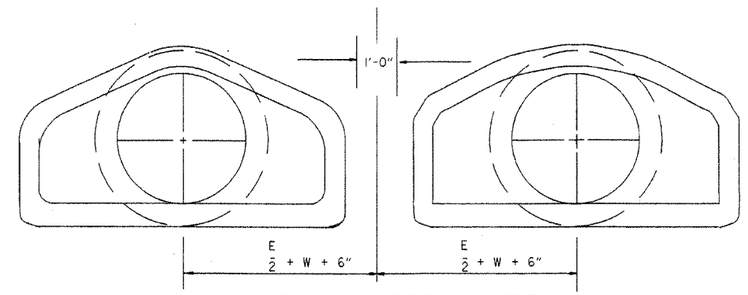
C.M. ARCH PIPE

CIRCULAR PIPE

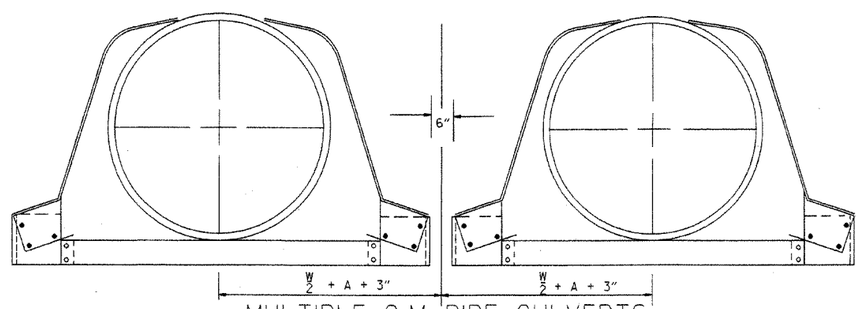
D. DIA.	GAUGE	A 1" ±	B. MAX.	H 1" ±	L 1½" ±	W 2" ±	S
		INCHES					
12	16	6	6	6	21	24	2½:1
15	16	7	8	6	26	30	2½:1
18	16	8	10	6	31	36	2½:1
21	16	9	12	6	36	42	2½:1
24	16	10	13	6	41	48	2½:1
30	14	12	16	8	51	60	2½:1
36	14	14	19	9	60	72	2½:1
42	12	16	22	11	69	84	2½:1
48	12	18	27	12	78	90	2½:1
54	12	18	30	12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



MULTIPLE R.C. PIPE CULVERTS



MULTIPLE C.M. PIPE CULVERTS

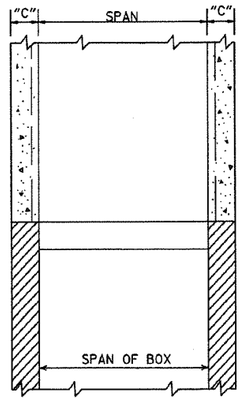
END SECTIONS FOR CORRUGATED METAL PIPE CULVERTS

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

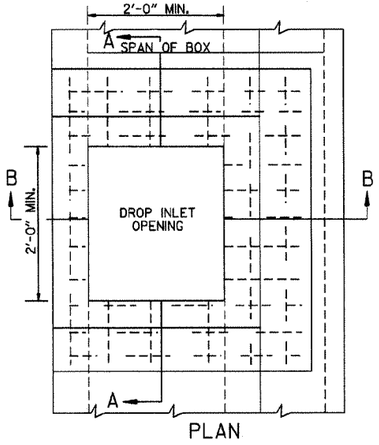
ARKANSAS STATE HIGHWAY COMMISION

FLARED END SECTION

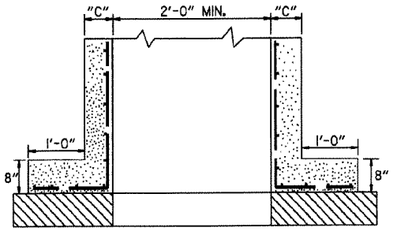
STANDARD DRAWING FES-2



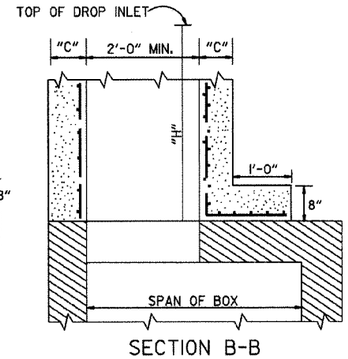
SECTION B-B



PLAN

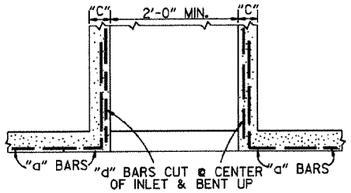


SECTION A-A

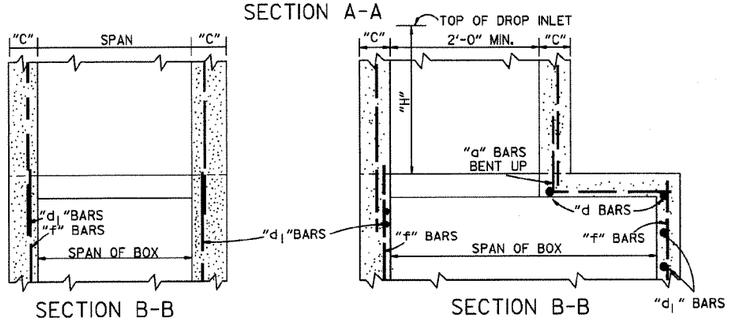


SECTION B-B

METHOD OF CONSTRUCTING DROP INLET ON EXISTING R.C. BOX CULVERT



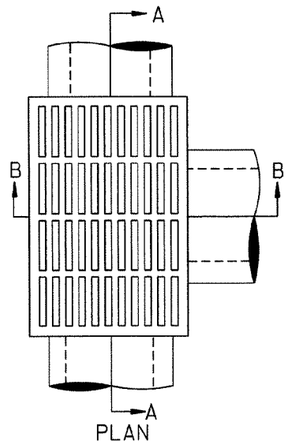
SECTION A-A



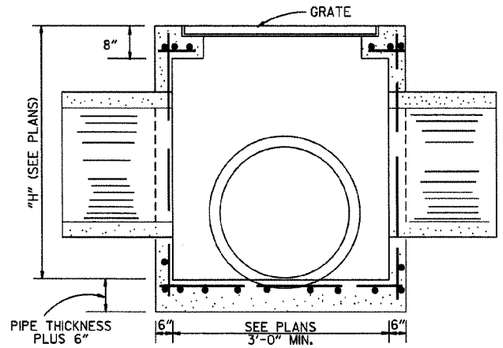
SECTION B-B SECTION B-B

METHOD OF CONSTRUCTING DROP INLET ON NEW R.C. BOX CULVERT

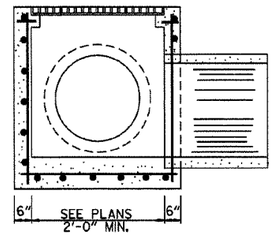
NOTE: "C" DIMENSIONS AND REINFORCING BAR SIZES, SHALL CONFORM TO THOSE SHOWN ON STANDARD DRAWING FOR DROP INLET.



PLAN



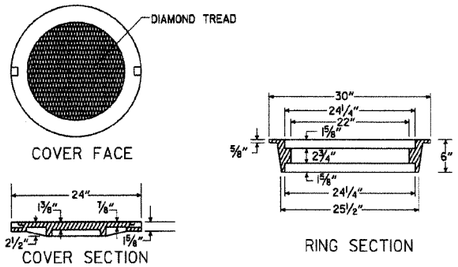
SECTION A-A



SECTION B-B

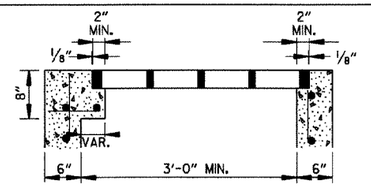
NOTE: REINF. BARS TO BE #4 BARS ON 6" CTRS. WITH 1½" MIN. COVER. THIS TYPE DROP INLET TO BE USED WHERE NOT SUBJECTED TO TRAFFIC.

DROP INLET (TYPE E)

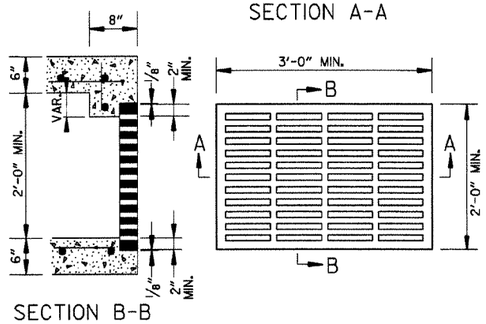


APPROXIMATE TOTAL WEIGHT = 333 LBS.

HEAVY DUTY RING & COVER



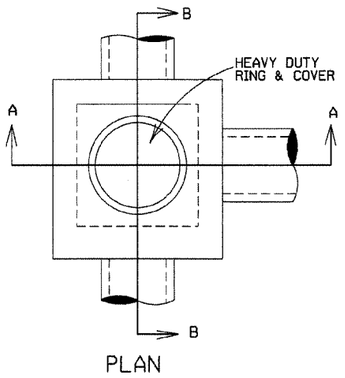
SECTION A-A



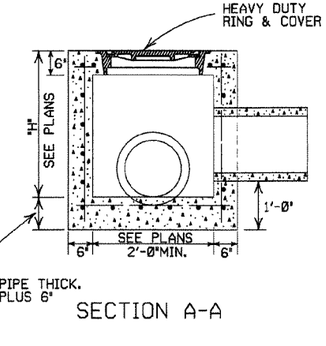
SECTION B-B

APPROXIMATE MINIMUM WATERWAY OPENING = 260 SQ. IN.

GRATE FOR TYPE E DROP INLET

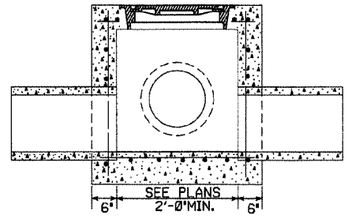


PLAN



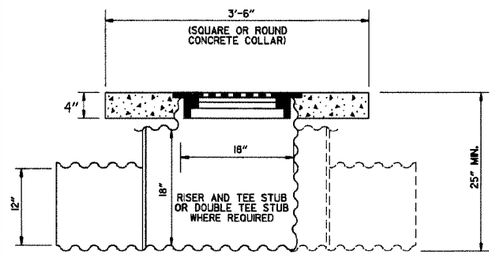
SECTION A-A

NOTE: REINF. BARS TO BE #4 BARS ON 6" CTRS. WITH 1½" MIN. COVER. THIS TYPE JUNCTION BOX TO BE USED WHERE NOT SUBJECTED TO TRAFFIC.

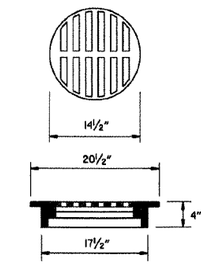


SECTION B-B

JUNCTION BOX (TYPE E)



NOTE: CONCRETE COLLAR TO BE CAST IN PLACE. 12" PIPE CULVERTS TO BE MEASURED AND PAID FOR AS " 12" SIDE DRAIN ".



USE NEENAH R-5901-C OR EQUIVALENT BICYCLE SAFE FRAME AND GRATE

DETAIL OF YARD DRAIN

GENERAL NOTES:

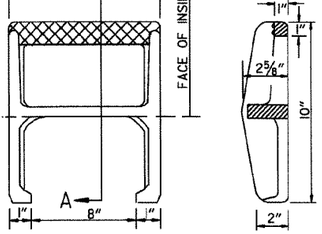
1. ALL EXPOSED CORNERS SHALL BE ¾" CHAMFERED.
2. STEPS SHALL BE INSTALLED ON 16" CENTERS ON ALL INLETS 4'-0" HIGH OR OVER, OR AS APPROVED BY THE ENGINEER.
3. EXPANSION JOINT MATERIAL SHALL BE ¾" PREFORMED FIBER.
4. GRATE OR GRATE AND FRAME SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS AASHTO M 105 CLASS 35B. GRATE MAY BE USED WITHOUT FRAME.
5. GRATE AND FRAME SHALL NOT BE PAINTED.
6. GRATE SHALL BE BICYCLE SAFE.
7. HEAVY DUTY RING SHALL ALWAYS BE INSTALLED WITH FLANGE ON TOP.
8. HEAVY DUTY RING AND COVER SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS AASHTO M105 CLASS 35B & AASHTO M306.
9. HEAVY DUTY RING AND COVER SHALL NOT BE PAINTED.
10. DIMENSIONS SHOWN FOR RING AND COVER ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR CASTINGS WITH THE APPROVAL OF THE ENGINEER. REQUESTING APPROVAL FOR CASTING DESIGNS MAY BE MADE BY REFERRING TO PREVIOUSLY APPROVED DRAWINGS.

DATE REV.	REVISION	DATE FILMED
11-16-01	ADDED NOTE 10	
1-12-00	REVISED HEAVY DUTY RING & COVER	
7-02-98	CHANGED GRATE DETAIL, DELETED DI(TYPE D), REPLACED RING & COVER W/HEAVY DUTY RING & COVER, ADDED JUNCTION BOX (TYPE E)	
6-26-97	ADDED DIMENSION TO TYPE IV-A	
10-18-96	ADDED DETAIL OF YARD DRAIN	
8-15-91	DELETE TYPE IV GRATE	
7-15-88	REVISED STEP DETAIL	
5-20-83	REVISED DETAILS OF GRATES (TYPE IV & IV-A)	
2-4-83	ADDED GENERAL NOTE NO. 4	
3-2-81	ADDED TYPE IV-A GRATE	
5-22-74	DELETED INLET (TYPE F) & GRATE (TYPE III)	
10-2-72	REVISED AND REDRAWN	

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF DROP INLETS & JUNCTION BOXES

STANDARD DRAWING FPC-9

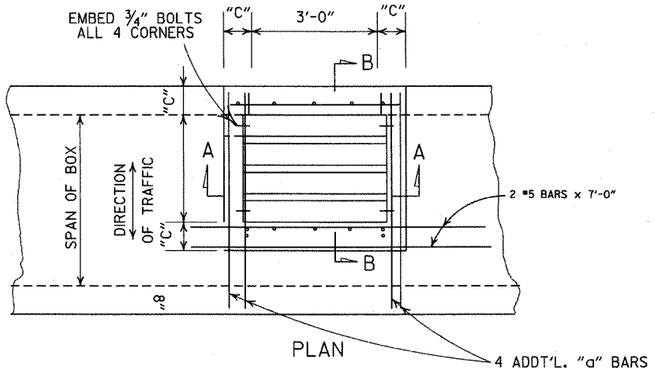


APPROX. WEIGHT = 11 LBS. (CAST IRON)

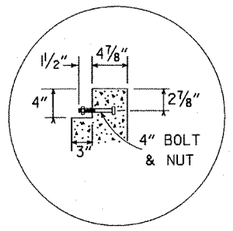
PLAN

NOTE: THIS DETAIL IS TYPICAL. OTHERS MAY BE USED WITH PRIOR APPROVAL OF THE ENGINEER.

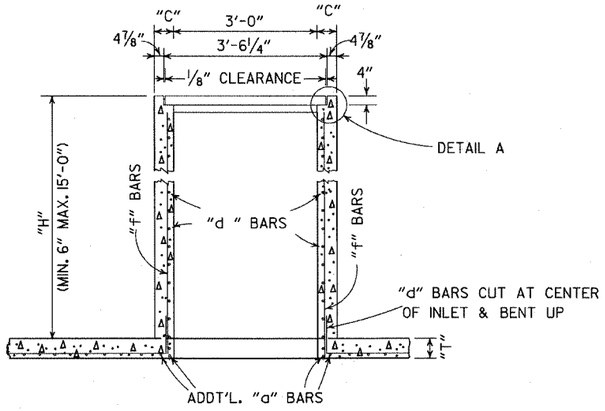
DETAIL OF STEP FOR DROP INLET



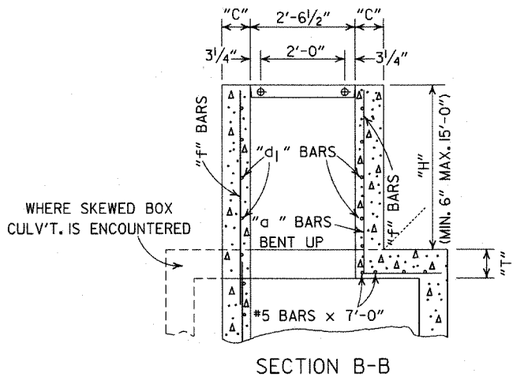
PLAN



DETAIL A



SECTION A-A

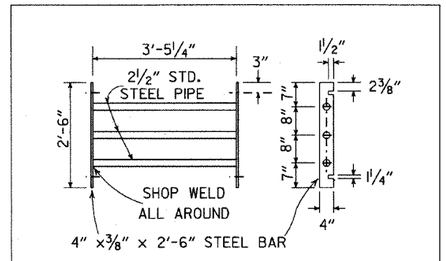


SECTION B-B

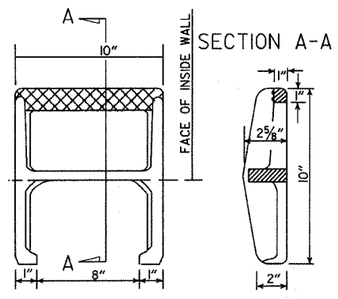
NOTE: ADDT'L.REINF. STEEL TO BE INCLUDED IN UNIT PRICE BID PER TYPE "TM" D.I.

DIMENSIONS & REINF. BARS FOR D.I. TO BE THE SAME AS THOSE SHOWN ON APPLICABLE STD. BARREL DRAWING FOR R.C. BOX CULVERTS.

DROP INLET TYPE "TM" FOR REINFORCED CONC. BOX CULVERTS



GRATE DETAIL



APPROX. WEIGHT = 11LBS. (CAST IRON)

PLAN

NOTE: THIS DETAIL IS TYPICAL. OTHERS MAY BE USED WITH PRIOR APPROVAL OF THE ENGINEER.

DETAIL OF STEP FOR DROP INLET

GENERAL NOTES:

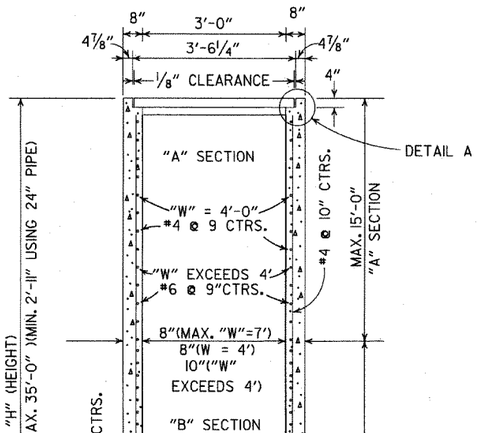
1. STEEL PIPE FOR GRATES AND BOLTS SHALL CONFORM TO THE REQUIREMENTS OF SECTION 807. BOLTS SHALL CONFORM TO ONE OF THE FOLLOWING: ASTM A193, GRADE B8 CLASS 1 OR 2, ASTM A307 OR AASHTO M 164.
2. STEEL PIPE FOR GRATES SHALL BE "STANDARD WEIGHT" PIPE CONFORMING TO ASTM A53 NATIONAL STANDARD PIPE.
3. BOLTS, NUTS, WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M 232 OR AASHTO M 298, CLASS 40 OR 50.
4. ALL EXPOSED CORNERS TO HAVE ¾" CHAMFER.
5. ALL #4 AND #5 REINFORCING BARS TO HAVE 1½" COVER. LARGER SIZES TO HAVE 2" COVER.
6. THE COMPLETE PIPE GRATE SHALL BE PAINTED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

TABLE OF "W" DIMENSIONS

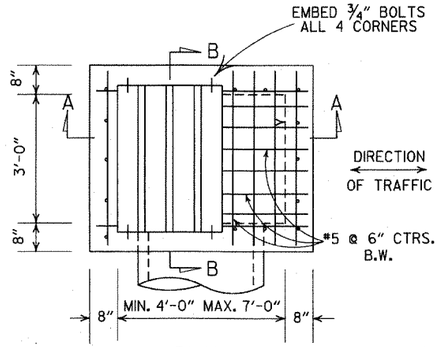
189

I.D. PIPE	SKEW OF CROSS DRAIN		
	STRAIGHT	30°	45°
	"W"	"W"	"W"
24"	4'-0"	4'-0"	4'-0"
30"	4'-0"	4'-0"	4'-5"
36"	4'-0"	4'-3"	5'-3"
42"	4'-3"	4'-11"	6'-1"
48"	4'-10"	5'-7"	6'-11"

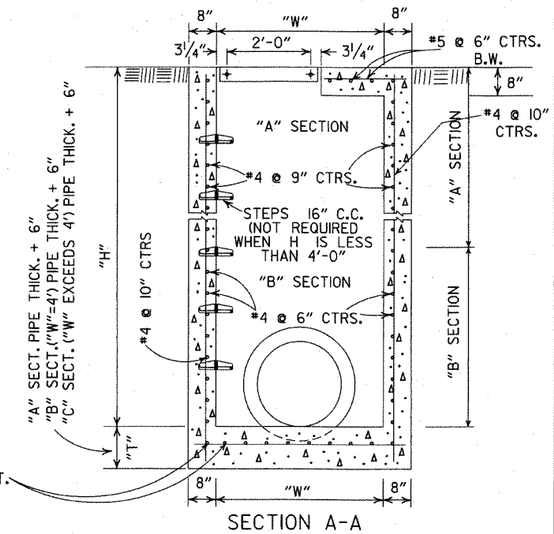
NOTE: DIMENSIONS SHOWN ABOVE ARE FOR PIPES INTERSECTING DROP INLET ON ONE SIDE ONLY. FOR SKEWED PIPES INTERSECTING BOTH SIDES OF DROP INLET, "W" WILL NEED TO BE INCREASED OR AXIS OF INTERSECTING PIPES WILL NEED TO BE SHIFTED.



SECTION B-B



PLAN



SECTION A-A

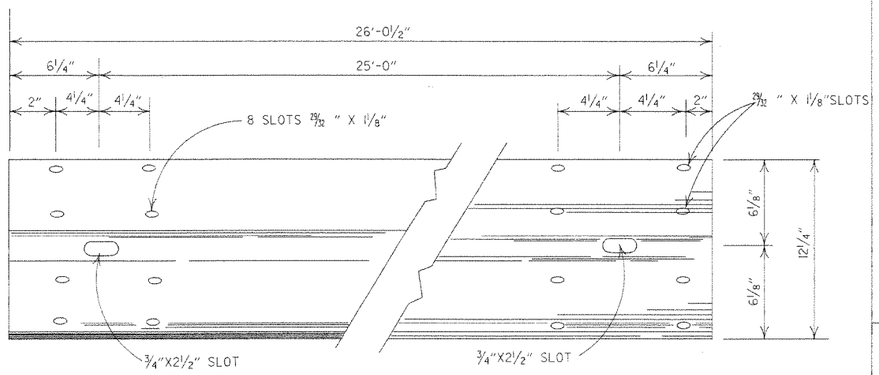
DROP INLET(TYPE RM)

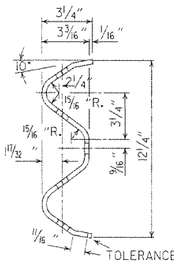
8-22-02	ADDED & REVISED DIMENSION TO SECTION A-A	
1-12-00	CORRECTED DIMENSION ON SECTION B-B	
11-06-97	ADDED DIMENSION TO SECTION A-A	
10-18-96	REVISED ASTM REF. TO AASHTO AND ADDED NOTE TO TABLE OF "W" DIMENSIONS	
10-1-92	ADDED DIRECTION OF TRAFFIC	10-1-92
8-15-91	ADDED NOTE ABOUT PAINTING OF GRATE	8-15-91
11-30-89	ALTERED DETAIL A	11-30-89
7-15-88	REVISED STEP DETAIL,TM & RM D.I. & GRATE DETAIL	719-7-15-88
10-2-72	REVISED AND REDRAWN	542-10-2-72
REVISED		DATE FILMED

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF DROP INLETS

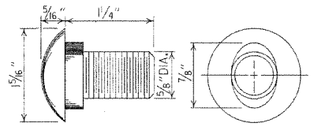
STANDARD DRAWING FPC-9D



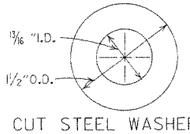


DETAILS OF W-BEAM GUARD RAIL

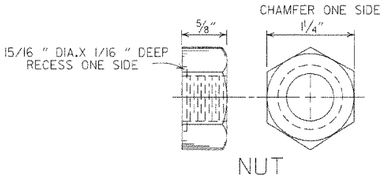
RAIL SECTION OF CLOSELY SIMILAR DIMENSIONS AND COMPARABLE STRENGTH MAY BE SUBSTITUTED IF APPROVED BY THE ENGINEER.



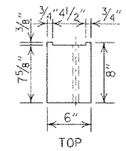
SPLICE BOLT
POST BOLT - SAME EXCEPT LENGTH



CUT STEEL WASHER

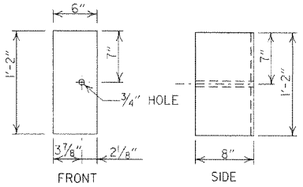


NUT

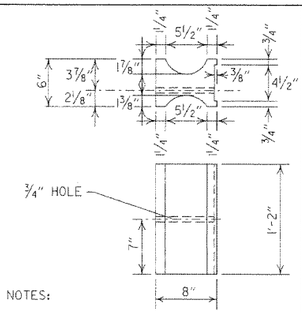


WOOD BLOCKOUT USED WITH WOOD POSTS SHALL BE 6"x8"x1'-2" WITH NO NOTCH REQUIRED.

TOP



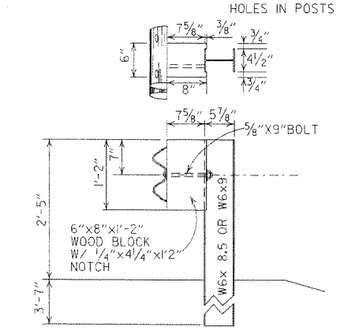
WOOD BLOCKOUT (W-BEAM)



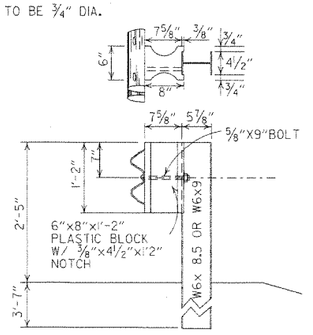
NOTES:
1. SIMILAR SHAPED PLASTIC BLOCKOUTS MAY BE USED AS LONG AS THEY MEET NCHRP-350 TEST LEVEL 3 SPECIFICATIONS OR REQUIREMENTS FOR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).
2. DIMENSIONS ARE SUBJECT TO MANUFACTURERS TOLERANCES.

PLASTIC BLOCKOUT (W-BEAM)

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

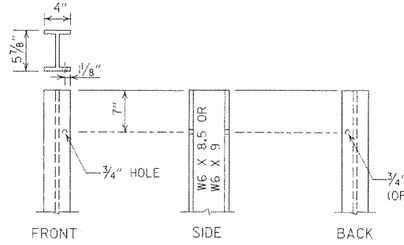


WOOD BLOCKOUT CONNECTIONS

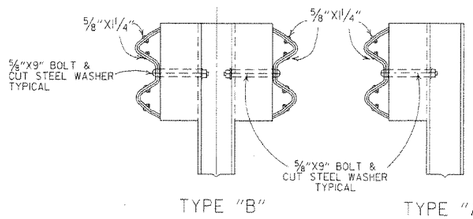


PLASTIC BLOCKOUT CONNECTIONS

DETAILS OF STEEL LINE POST CONNECTIONS (W-BEAM)



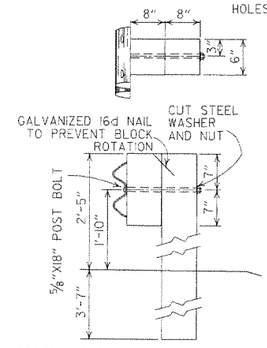
STEEL POST



TYPE "B" TYPE "A"

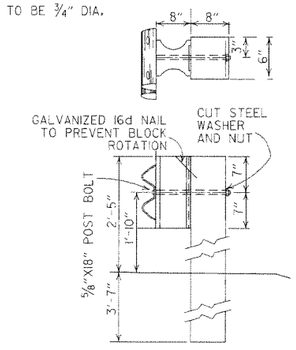
DETAILS OF STEEL LINE POST CONNECTIONS (W-BEAM)

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



POSTS AND BLOCKS TO BE ROUGH SAWN 6"X8" WITH A TOLERANCE OF + OR - 1/4".

WOOD BLOCKOUT CONNECTIONS



PLASTIC BLOCKOUT CONNECTIONS

DETAILS OF WOOD LINE POST CONNECTIONS (W-BEAM)

-GENERAL NOTES-

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

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

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

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

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

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

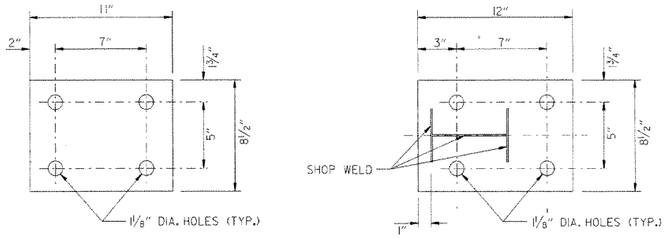
CONTRACTOR SHALL HAVE THE OPTION OF USING WOOD BLOCKOUTS FOR W-BEAM GUARD RAIL OR PLASTIC BLOCKOUTS, AS LONG AS BLOCKOUT USED MEETS NCHRP-350 TEST LEVEL 3 SPECIFICATIONS OR REQUIREMENTS FOR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) FOR W-BEAM GUARD RAIL.

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

ARKANSAS STATE HIGHWAY COMMISSION

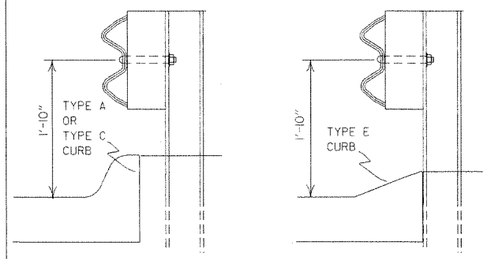
GUARD RAIL DETAILS

STANDARD DRAWING GR-8



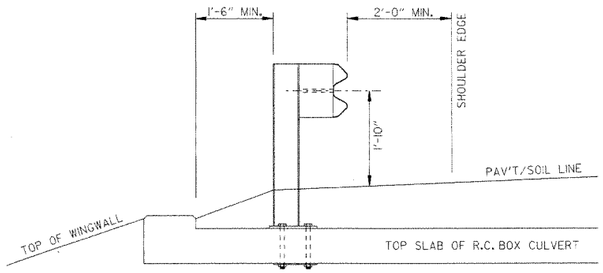
WASHER PLATE BASE PLATE

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

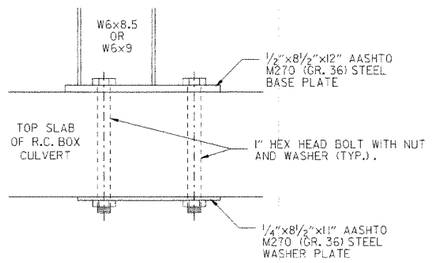


DETAIL OF GUARD RAIL PLACEMENT BEHIND CURB (W-BEAM)

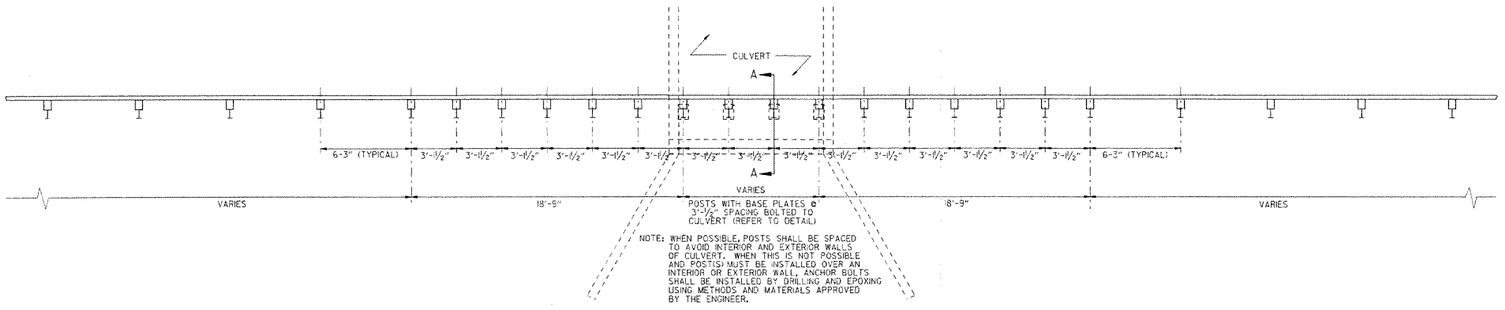
FOR DESIGN SPEEDS OF 50 MPH OR LESS ALL CURB FACES, AS SHOWN ON STD. DRWG. CG-1, MAY BE USED. FOR DESIGN SPEEDS OF 55 MPH OR MORE TYPE "E" CURB FACE SHALL BE USED.



SECTION A-A



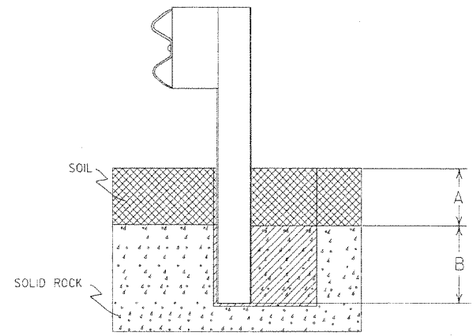
DETAIL OF CONNECTION



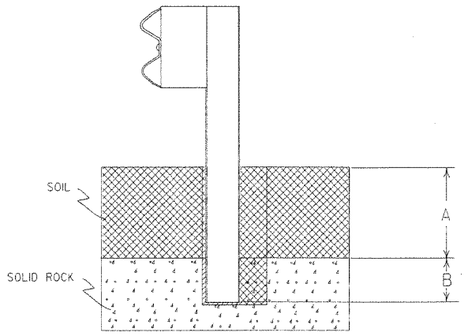
PLAN LAYOUT OF TYPE A GUARD RAIL AT LOW-FILL CULVERTS

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

Case 1

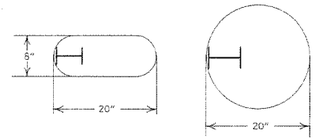


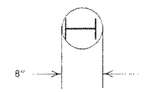
Case 2



Plan View Steel Posts

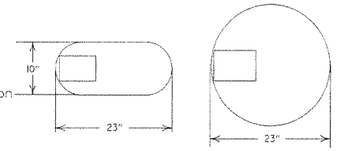
Either hole configuration acceptable

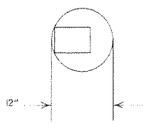




Plan View Wood Posts

Either hole configuration acceptable





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

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

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

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

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

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

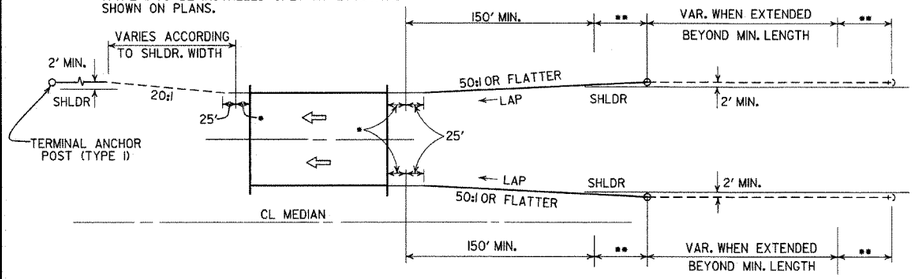
DATE	REVISION	DATE FILM
7-14-10	RAISED HEIGHT OF GUARD RAIL 1"	
4-12-07	REVISED DETAIL OF GUARD RAIL PLACEMENT BEHIND CURB	
11-10-05	ADDED GUARD RAIL PLACEMENT BEHIND CURB; REVISED DETAIL OF CONNECTION	
11-18-04	REVISED POST PLACEMENT IN ROCK & CULVERT CONNECTION DETAILS. ADDED DETAIL FOR GUARD RAIL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

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GUARD RAIL DETAILS

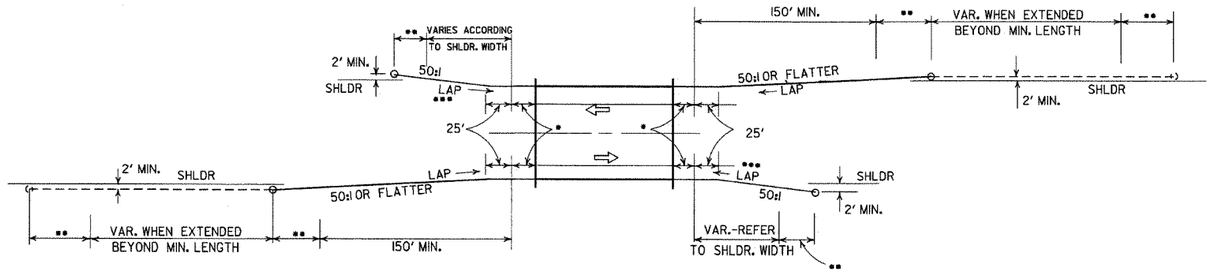
STANDARD DRAWING GR-8A

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



ONE-WAY TRAFFIC

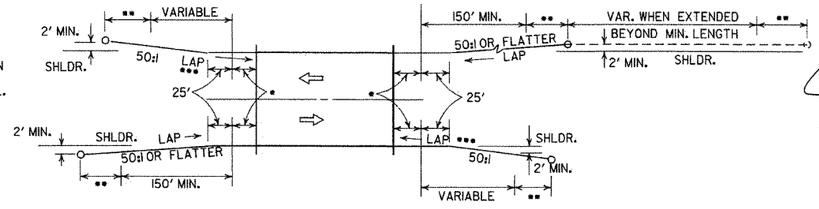
••• LAP OF GUARD RAIL SHALL BE AS SHOWN FOR A DISTANCE OF UP TO 200', CHANGE TO LAP IN DIRECTION OF TRAVEL.



TWO-WAY TRAFFIC

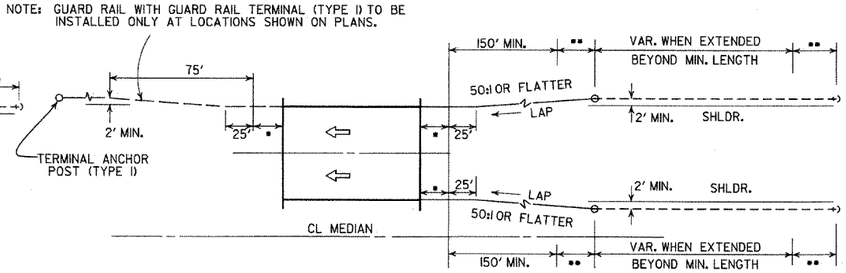
METHODS OF INSTALLATION OF GUARD RAIL AT LESS THAN FULL SHOULDER WIDTH BRIDGES USING GUARD RAIL TERMINAL (TYPE 2)

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



TWO-WAY TRAFFIC

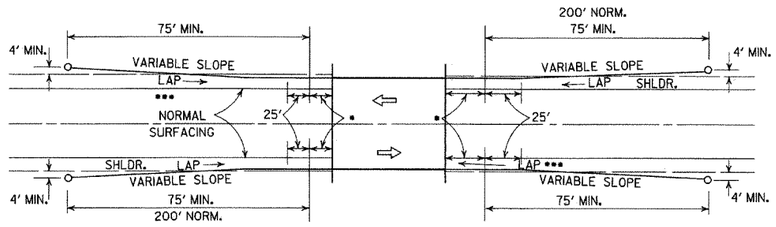
NOTE: GUARD RAIL WITH GUARD RAIL TERMINAL (TYPE I) TO BE INSTALLED ONLY AT LOCATIONS SHOWN ON PLANS.



ONE-WAY TRAFFIC

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

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



LEGEND

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

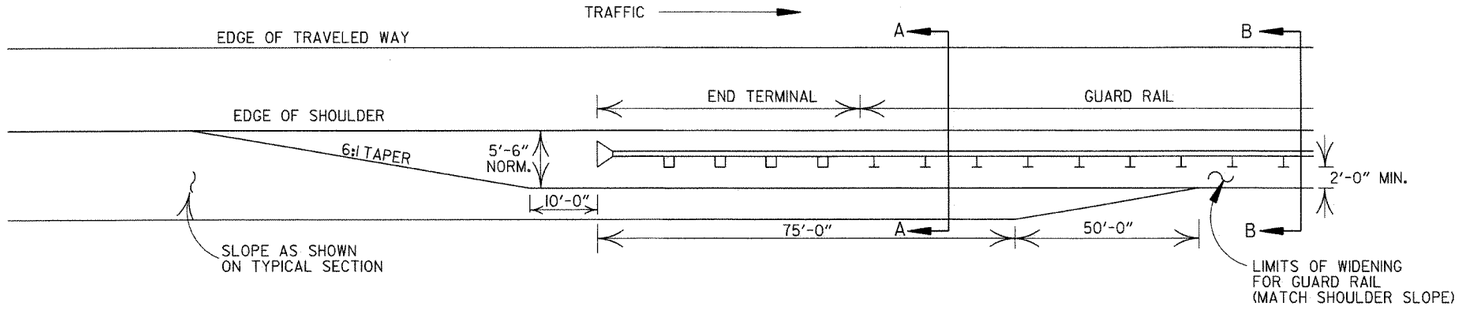
METHOD OF INSTALLATION OF GUARD RAIL USING GUARD RAIL TERMINAL (TYPE I) (FULL SHOULDER WIDTH OR LESS BRIDGES)

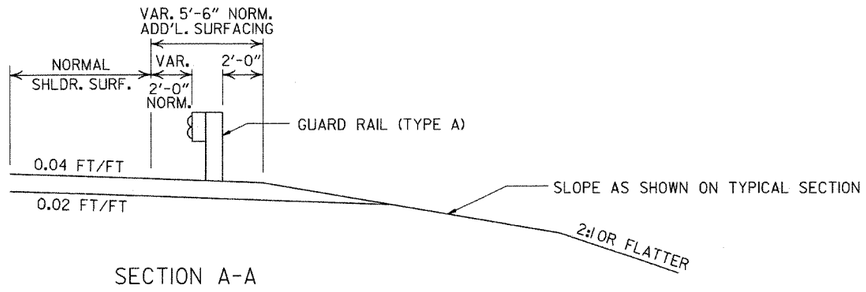
DATE	REVISION	DATE FILM
4-17-08	REVISED LAYOUTS	
11-10-05	REMOVED GUARD RAIL NOTES AND DETAILS	
11-16-01	DELETED NOTE-METHOD OF INSTALLATION OF GUARD RAIL USING GUARD RAIL TERM. (TY. I)	
1-12-00	ADDED CONSTRUCTION NOTE	1-12-00
6-26-97	REVISED LAYOUT	
10-1-92	REDRAWN & REVISED	10-1-92
	ADDED NOTE	
10-9-87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

ARKANSAS STATE HIGHWAY COMMISSION

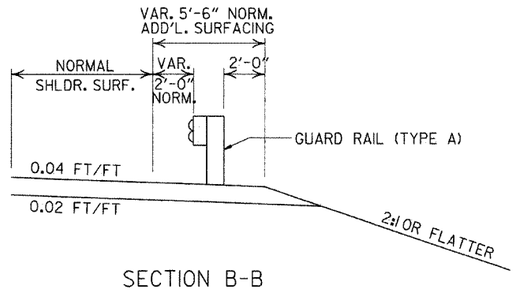
GUARD RAIL DETAILS

STANDARD DRAWING GR-9





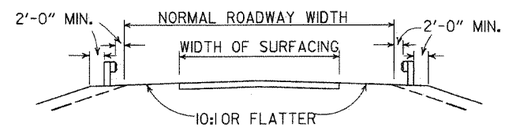
SECTION A-A



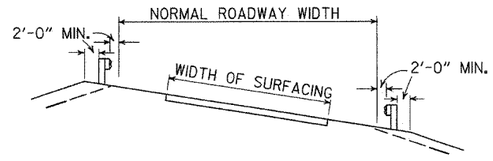
SECTION B-B

DETAILS OF WIDENING FOR GUARD RAIL

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

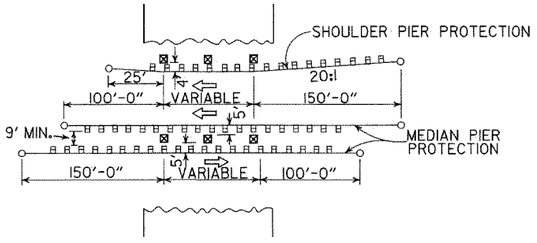


SECTION ON TANGENT



SECTION ON CURVE

DETAILS SHOWING POSITION OF GUARD RAIL ON HIGHWAY



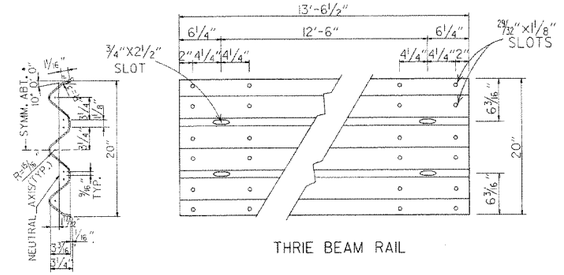
METHOD OF INSTALLATION OF GUARD RAIL AT FIXED OBSTACLE

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

ARKANSAS STATE HIGHWAY COMMISSION

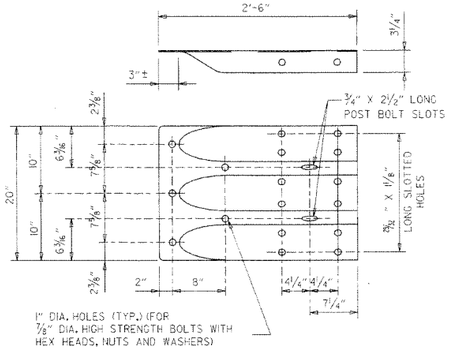
GUARD RAIL DETAILS

STANDARD DRAWING GR-9A



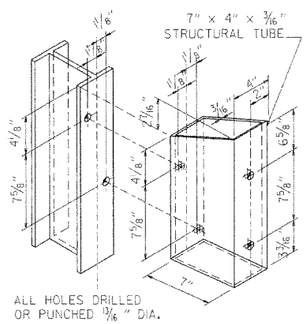
THRIE BEAM RAIL

SECTION THRU
THRIE BEAM RAIL



1" DIA. HOLES (TYP.) (FOR ⅞" DIA. HIGH STRENGTH BOLTS WITH HEX HEADS, NUTS AND WASHERS)

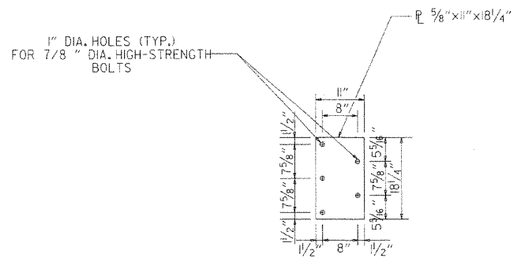
SPECIAL END SHOE



ALL HOLES DRILLED OR PUNCHED ⅛" DIA.

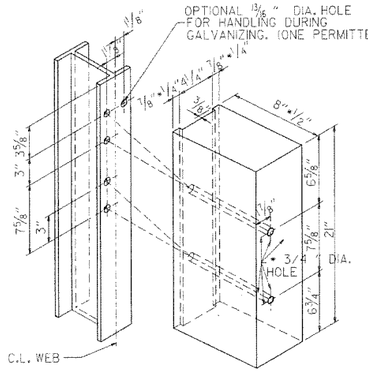
STRUCTURAL STEEL TUBING BLOCKOUT DETAIL

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



CONNECTOR PLATE

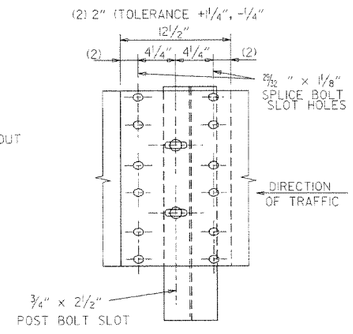
CONNECTOR PLATE SHALL BE AASHTO M270, GR. 36 AND SHALL BE GALVANIZED AFTER FABRICATION. GALVANIZING SHALL CONFORM TO SUBSECTION 807.19 OF THE STANDARD SPECIFICATIONS. CONNECTOR PLATE TO BE BOLTED TO SPECIAL END SHOE USING ⅞" DIA. HIGH STRENGTH BOLTS, WITH THE HEADS PLACED ON THE TRAFFIC FACE. WASHERS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



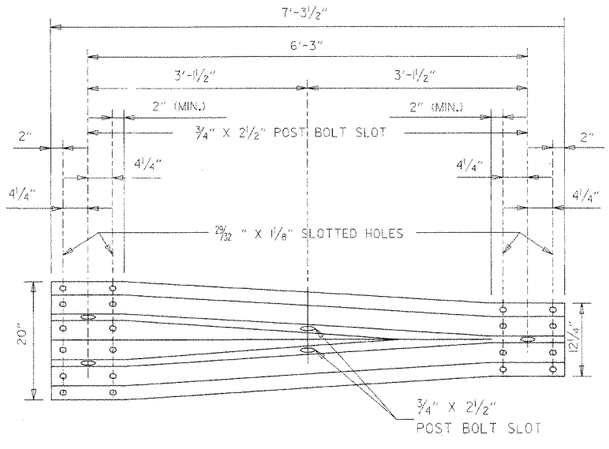
ALL HOLES 13/16" DIAMETER EXCEPT AS NOTED

HOLE PUNCHING DETAIL
FOR STEEL POST & WOOD
OR PLASTIC BLOCKOUTS

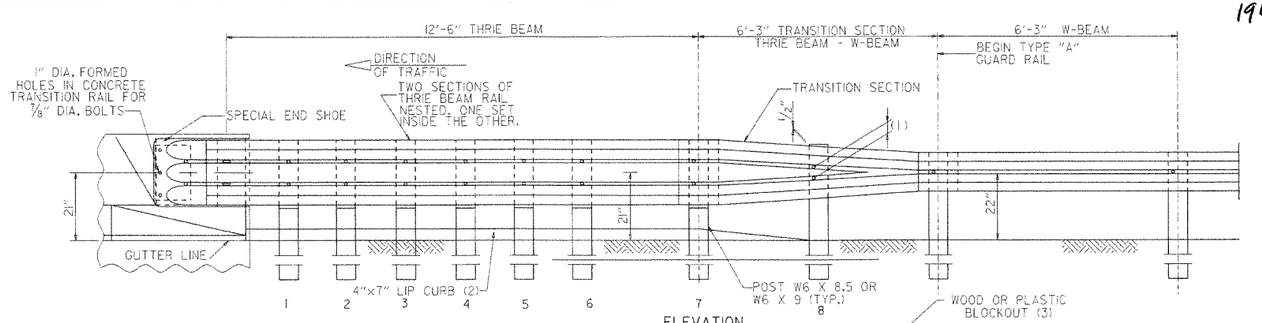
NOTE: BLOCKS SHALL BE THE SAME TYPE THROUGHOUT THE PROJECT LIMITS.



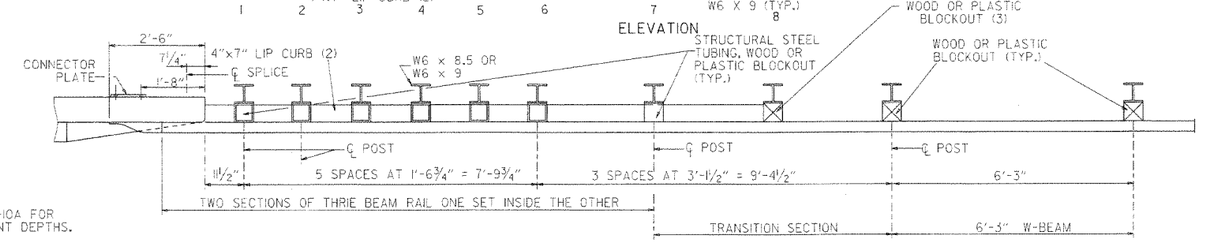
THRIE BEAM RAIL
SPLICE AT POST



TRANSITION SECTION

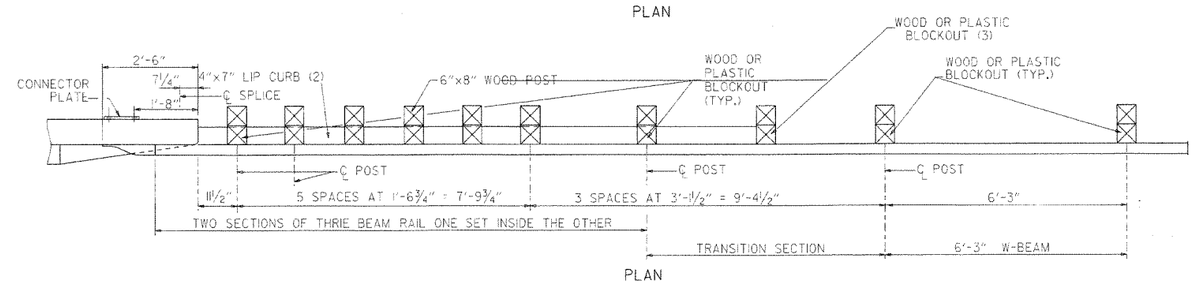


ELEVATION



PLAN

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



PLAN

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

THRIE BEAM GUARD RAIL CONNECTION AT BRIDGE ENDS

GENERAL NOTES:

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

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

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

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

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

REFER TO STD. DRWG. GR-10A FOR POST DETAILS.

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

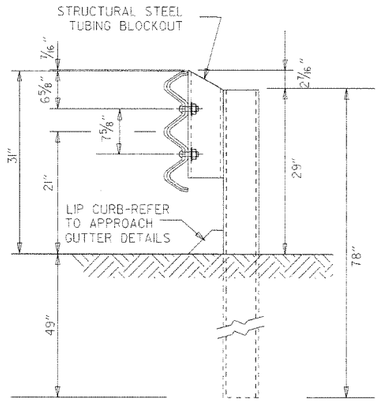
THRIE BEAM POSTS SHALL BE SAME MATERIAL AS W-BEAM POSTS FOR ENTIRE JOB.

DATE	REVISION	DATE FILM
7-14-10	RAISED HEIGHT OF W-BEAM 1"	
11-29-07	ADDED PLASTIC BLOCKOUTS	
11-10-05	ADDED NOTE FOR ATTACHING STEEL BLOCKOUT	
11-18-04	REVISED GENERAL NOTES	
10-9-03	REVISED GENERAL NOTES	
4-10-03	REVISED GENERAL NOTES	
8-22-02	REVISED NOTE (2)	
6-29-00	MOVED DIMENSION LINES	
5-18-00	ADDED NOTE	
3-30-00	DRAWN & ISSUED	

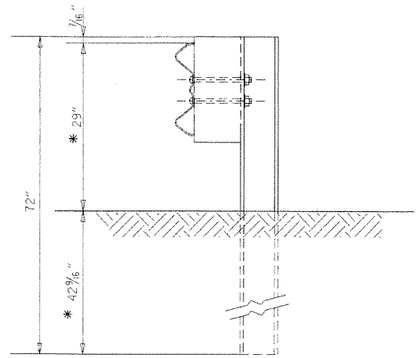
ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR-10

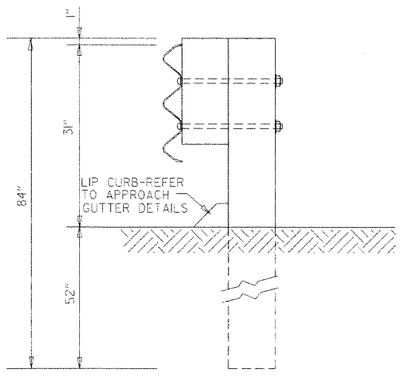


THRIE BEAM RAIL WITH STEEL TUBING BLOCKOUT
AND STEEL POST
POSTS 1-7

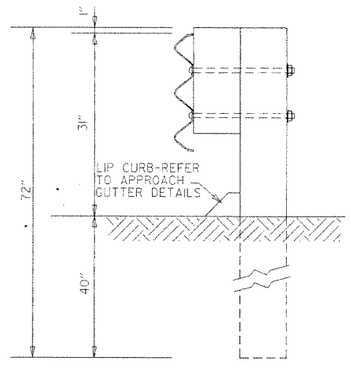


W-BEAM TO THRIE BEAM TRANSITION RAIL
WITH WOOD OR PLASTIC BLOCKOUT AND STEEL POST
POST 8

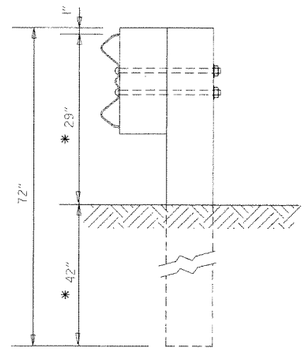
* NOTE:
THESE DIMENSIONS WILL NEED TO BE ADJUSTED IN THE FIELD TO MAKE THE TRANSITION FROM 21" MID POINT OF THRIE BEAM TO 22" MID POINT OF W-BEAM.



THRIE BEAM RAIL
WITH WOOD OR PLASTIC
BLOCKOUTS & WOOD POSTS
POSTS 1-6



THRIE BEAM RAIL
WITH WOOD OR PLASTIC
BLOCKOUT & WOOD POST
POST 7



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

GENERAL NOTES:

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

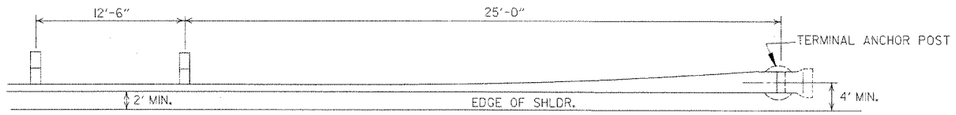
WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7 F (1400 f) OR NO. 1 1350 f SOUTHERN PINE.

DATE	REVISION	DATE FILM
7-14-10	REVISED POST 8 DIMENSIONS	
11-29-07	ADDED PLASTIC BLOCKOUTS	
6-22-02	REVISED LIP CURB NOTE	
3-30-00	DRAWN & ISSUED	

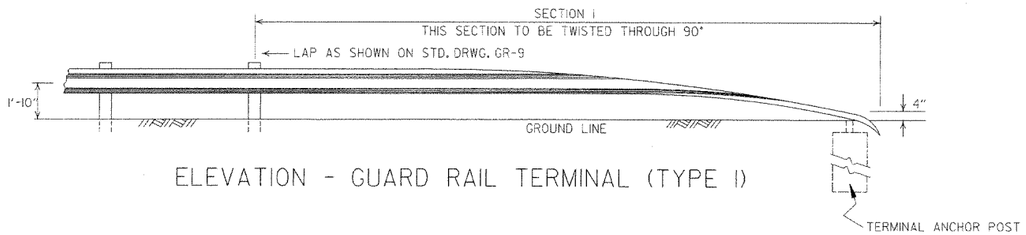
ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR-10A

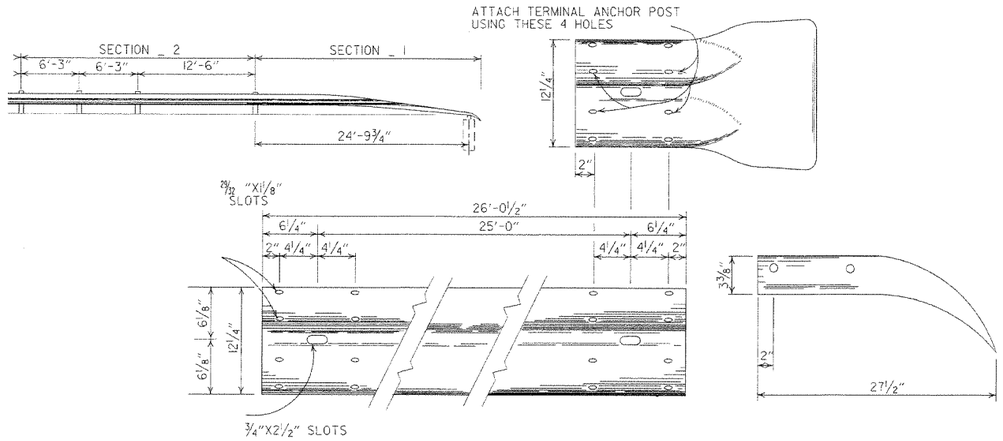


PLAN - GUARD RAIL TERMINAL (TYPE I)



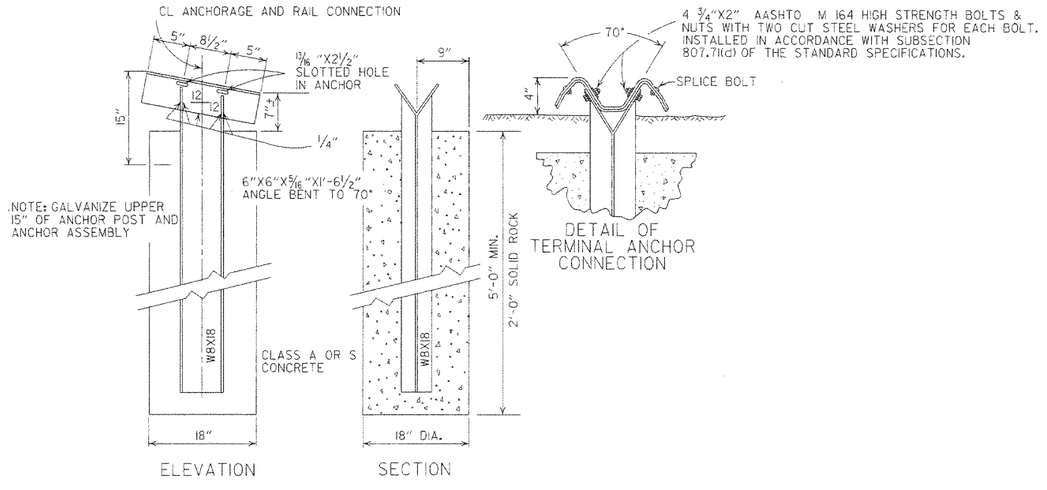
ELEVATION - GUARD RAIL TERMINAL (TYPE I)

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



SECTION 1

TERMINAL SECTION



NOTE: RAIL MEMBERS MAY BE BOLTED TO ANGLE AT TERMINAL ANCHOR AND THE TWO ASSEMBLIES POSITIONED TO PROPER ALIGNMENT PRIOR TO PLACING CONCRETE AROUND 8 WF 17 POST IF CONTRACTOR SO DESIRES.

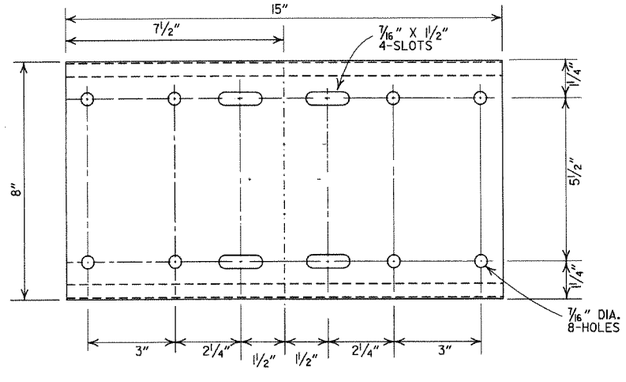
DETAIL OF TERMINAL ANCHOR POST (TYPE I)

DATE	REVISION	DATE FILM
7-14-10	RAISED HEIGHT OF GUARD RAIL 1"	
6-26-97	REVISED LAP NOTE	
10-18-96	REVISED ASTM REF. TO AASHTO	
11-3-94	DIMENSION TERMINAL DETAIL	
11-11-92	ADDED NOTE FOR PAYMENT	11-11-92
10-1-92	DRAWN & ISSUED	10-1-92

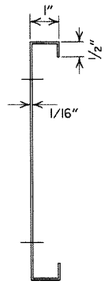
ARKANSAS STATE HIGHWAY COMMISSION

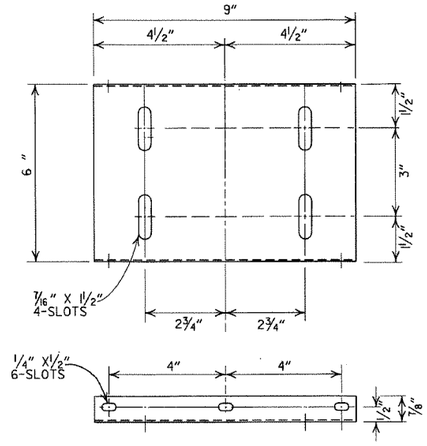
GUARD RAIL DETAILS

STANDARD DRAWING GRT-1

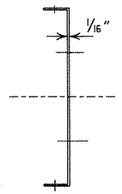


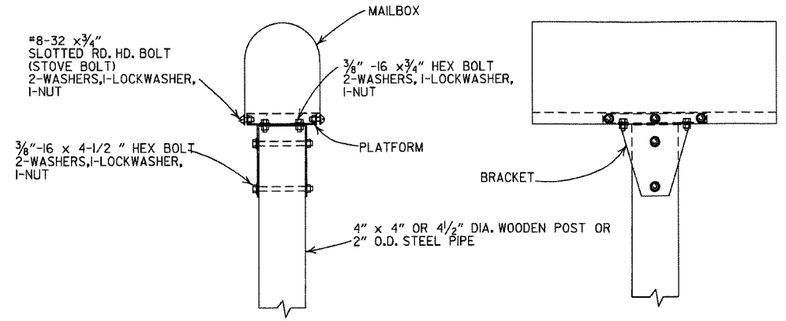
SHELF



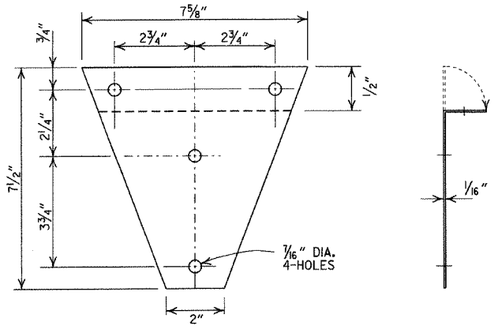


PLATFORM

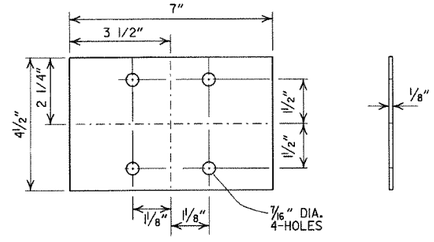




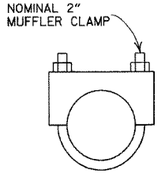
SINGLE INSTALLATION



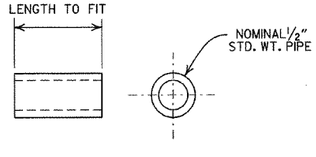
BRACKET



ANTI-TWIST PLATE



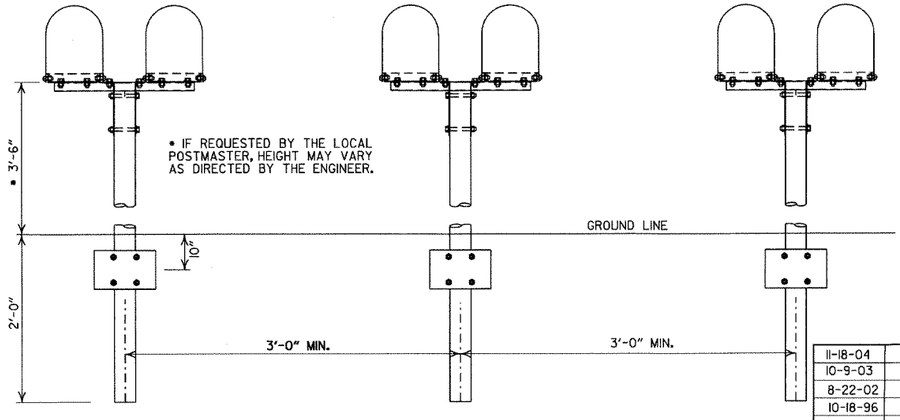
CLAMP



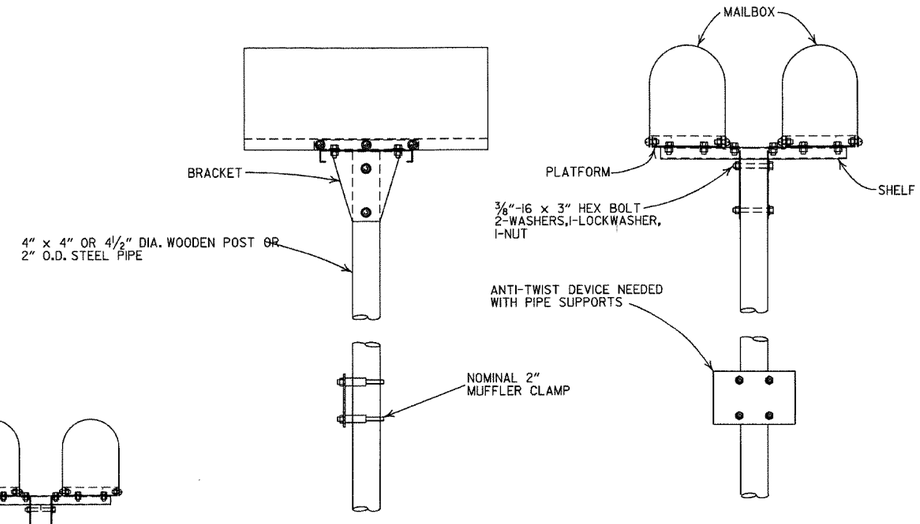
SPACER

GENERAL NOTES

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



SPACING FOR MULTIPLE POST INSTALLATION



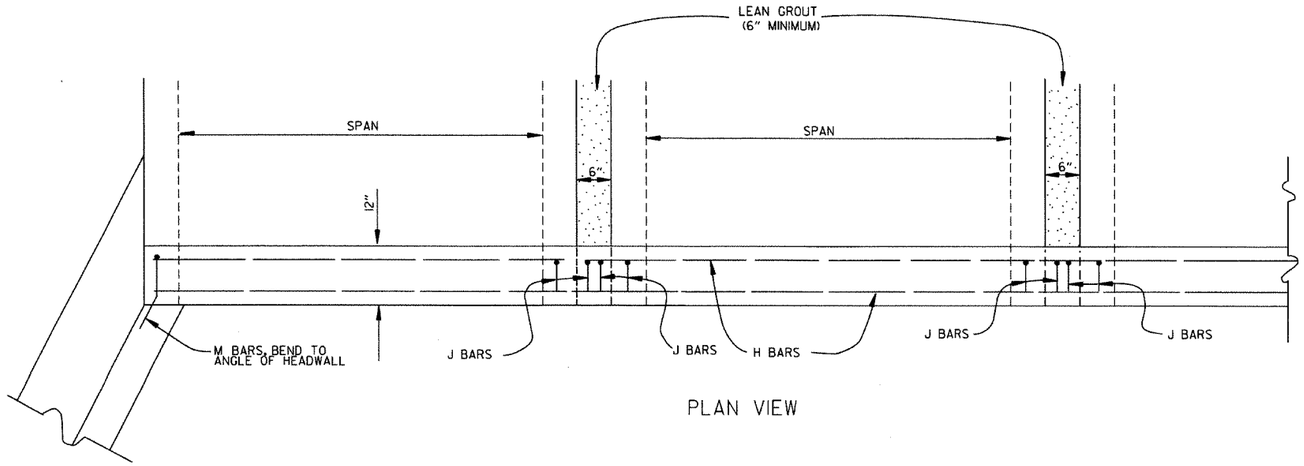
DOUBLE INSTALLATION

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

ARKANSAS STATE HIGHWAY COMMISSION

MAILBOX DETAILS

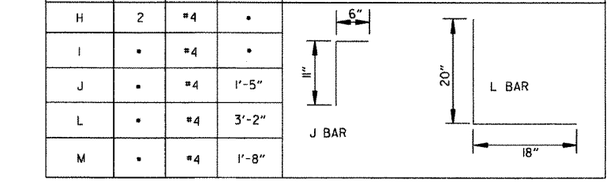
STANDARD DRAWING MB-1



PLAN VIEW

BAR LIST

BAR	NO.	SIZE	LENGTH	BAR BENDING DIAGRAM
H	2	#4	•	
I	•	#4	•	
J	•	#4	1'-5"	
L	•	#4	3'-2"	
M	•	#4	1'-8"	



• NOTE: LENGTH AND NUMBER OF BARS VARIES WITH SIZE OF CULVERT

GENERAL NOTES

WINGS, CURTAIN WALLS AND APRONS SHALL BE TIED TO THE PRECAST CULVERT SECTION BY CASTING BARS IN CULVERT END SECTIONS AS SHOWN OR BY DOWELING AND GROUTING. J BARS AND M BARS SHALL BE EMBEDDED A MINIMUM OF 10" IN PRECAST BOX.

WINGS, FOOTINGS, APRONS AND CURTAIN WALLS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE APPLICABLE WING DRAWING, STEEL AND CONCRETE QUANTITIES WILL BE ADJUSTED TO FIT THE IN-PLACE WIDTH & HEIGHT OF THE PRECAST CONCRETE BOX CULVERTS.

ALL EXPOSED CORNERS TO HAVE 3/4" CHAMFERS.

WINGWALLS AND FOOTINGS MAY BE ADJUSTED IN THE FIELD AS DIRECTED BY THE ENGINEER.

ALL CONCRETE, REINFORCING STEEL, LEAN GROUT, MEMBRANE WATERPROOFING, DRAINAGE FILL MATERIAL, GEOTEXTILE FILTER FABRIC, LABOR, MATERIALS AND EQUIPMENT REQUIRED FOR INSTALLING PRECAST BOX CULVERTS WILL NOT BE PAID FOR DIRECTLY BUT WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID FOR THE ITEMS AS SPECIFIED IN SECTION 607 OF THE STANDARD SPECIFICATIONS.

LEAN GROUT SHALL CONSIST OF A SAND CEMENT MIXTURE MEETING THE FOLLOWING REQUIREMENTS:
PORTLAND CEMENT SHALL BE TYPE I AND SHALL MEET THE REQUIREMENTS OF AASHTO M 85.
SAND SHALL MEET THE REQUIREMENTS OF FINE AGGREGATE AS SPECIFIED IN SECTION 802.02 OF THE STANDARD SPECIFICATIONS.
THE SAND CEMENT MIXTURE SHALL CONSIST OF NOT LESS THAN 1.5 SACKS OF PORTLAND CEMENT PER TON OF MATERIAL MIXTURE.
THE MIXTURE SHALL CONTAIN SUFFICIENT WATER TO HYDRATE THE CEMENTS. THE SAND CEMENT MIXTURE SHALL BE PLACED IN MAXIMUM 8 INCH THICK LIFTS, LOOSE MEASURE, AND THOROUGHLY RODDED AND TAMPED AROUND BOX TO THOROUGHLY FILL ALL VOIDS.

MEMBRANE WATERPROOFING CONFORMING TO THE REQUIREMENTS OF SECTION 815 OF THE STANDARD SPECIFICATIONS SHALL BE APPLIED TO ALL BOX CULVERT JOINTS.

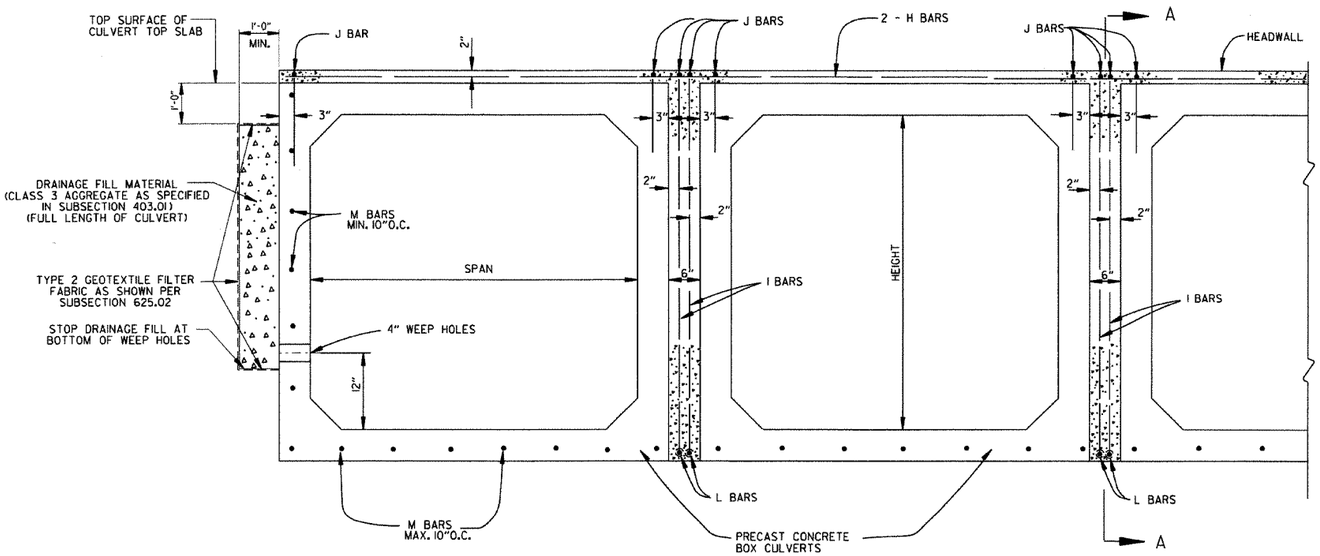
THE MEMBRANE WATERPROOFING WILL BE REQUIRED ON THE TOP EXTERNAL JOINT AND SHALL EXTEND 1 FOOT DOWN THE SIDES OF THE CULVERT.

IN OUTER BARRELS, ONE WEEP HOLE IS REQUIRED IN EXTERIOR WALLS OF EACH PRECAST CULVERT SECTION. WEEP HOLES SHALL HAVE A MAXIMUM HORIZONTAL SPACING OF 10'-0" IN THE ASSEMBLED CULVERT AND SHALL BE SPACED TO CLEAR ALL REINFORCING STEEL. THE DRAIN OPENING SHALL BE 4" DIAMETER AND SHALL BE PLACED 12" ABOVE THE TOP OF THE BOTTOM SLAB.

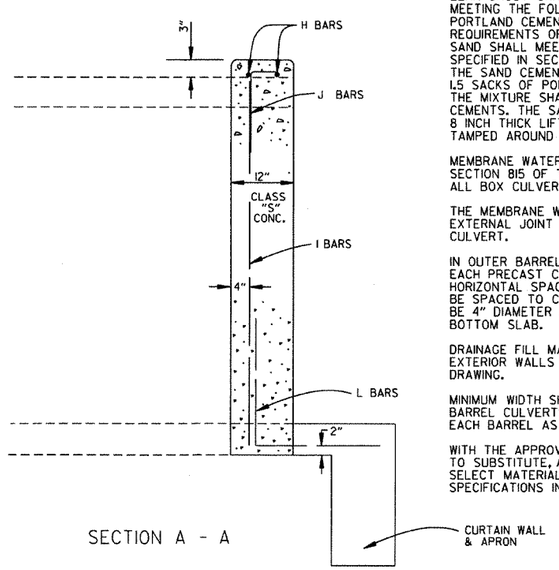
DRAINAGE FILL MATERIAL WITH GEOTEXTILE FABRIC IS REQUIRED AT THE EXTERIOR WALLS OF THE ASSEMBLED CULVERT. SEE DETAILS ON THIS DRAWING.

MINIMUM WIDTH SHALL BE 12" (6" ON EACH SIDE OF JOINT). ON MULTIPLE BARREL CULVERTS, MEMBRANE WATERPROOFING SHALL BE APPLIED TO EACH BARREL AS DESCRIBED ABOVE.

WITH THE APPROVAL OF THE ENGINEER, THE CONTRACTOR WILL BE ALLOWED TO SUBSTITUTE, AT NO ADDITIONAL COST TO THE DEPARTMENT, FLOWABLE SELECT MATERIAL CONFORMING TO SECTION 206 OF THE STANDARD SPECIFICATIONS IN LIEU OF LEAN GROUT.



END VIEW



SECTION A - A

DATE	REVISION	DATE FILMED
12-15-11	ADDED NOTE & DTLS FOR WEEP HOLE AND DRAINAGE FILL	
10-15-09	ADDED GENERAL NOTE	
11-10-05	REVISED SPACING OF "M" BARS	
4-10-03	REVISED GENERAL NOTES	
10-18-96	CORRECTED AASHTO REF.	
10-1-92	ADDED NOTE FOR MEMBRANE WATERPROOFING	
8-15-91	ADDED NOTE FOR LEAN GROUT	
11- 8-90	REVISED FOR 1991 SPECS	
11-30-89	ISSUED; JABE	

ARKANSAS STATE HIGHWAY COMMISSION

PRECAST CONCRETE BOX CULVERTS

STANDARD DRAWING PBC-1

REINFORCED CONCRETE ARCH PIPE DIMENSIONS

EQUIV. DIA.	SPAN		RISE	
	AASHTO M 206	AHTD NOMINAL	AASHTO M 206	AHTD NOMINAL
INCHES	INCHES			
15	18	18	11	11
18	22	22	13½	14
21	26	26	15½	16
24	28½	29	18	18
30	36¼	36	22½	23
36	43⅜	44	26⅝	27
42	51⅛	51	31 5/16	31
48	58½	59	36	36
54	65	65	40	40
60	73	73	45	45
72	88	88	54	54
84	102	102	62	62
90	115	115	72	72
96	122	122	77½	77
108	138	138	87⅛	87
120	154	154	96⅞	97
132	168¾	169	106½	107

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

REINFORCED CONCRETE HORIZONTAL ELLIPTICAL PIPE DIMENSIONS

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

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

CONSTRUCTION SEQUENCE

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

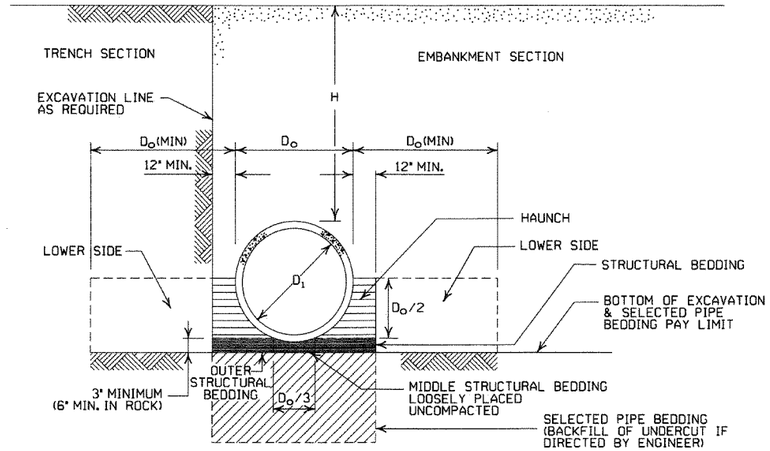
- LEGEND -

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 (2003 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
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
		2⅔ INCH BY ½ INCH CORRUGATION RIVETED OR HELICAL LOCK-SEAM				
12	1	45	45			
18	2	30	30	52		
24	2	22	22	39	41	
30	2		18	31	32	34
36	2.5		15	26	27	28
42	2			43	43	44
48	2			40	41	43
54	2			35	37	38
60	2				33	34
66	2					31
72	2					29

CORRUGATED METAL PIPE ARCHES

EQUIV. DIA. (INCHES)	PIPE DIMENSION SPAN X RISE (INCHES)	MINUMUM CORNER RADIUS (INCHES)	STEEL				ALUMINUM		
			MIN. THICKNESS REQUIRED INCHES	① MIN. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 1		MAX. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 1	MIN. THICKNESS REQUIRED INCHES	① MIN. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 1	MAX. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 1
			2 ⅔ INCH BY ½ INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM				2 ⅔ INCH BY ½ INCH CORRUGATION RIVETED OR HELICAL LOCK-SEAM		
15	17x13	3	0.064	2		15	0.060	2	15
18	21x15	3	0.064	2		15	0.060	2	15
21	24x18	3	0.064	2.25		15	0.060	2.25	15
24	28x20	3	0.064	2.5		15	0.075	2.5	15
30	35x24	3	0.079	3		12	0.075	3	12
36	42x29	3½	0.079	3		12	0.105	3	12
42	49x33	4	0.079	3		12	0.105	3	12
48	57x38	5	0.109	3		13	0.135	3	13
54	64x43	6	0.109	3		14	0.135	3	14
60	71x47	7	0.138	3		15	0.164	3	15
66	77x52	8	0.168	3		15			
72	83x57	9	0.168	3		15			
			② 3 INCH BY 1 INCH OR 5 INCH BY 1 INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM						
				INSTALLATION TYPE 2	INSTALLATION TYPE 1	INSTALLATION TYPE 2	INSTALLATION TYPE 1		
36	40x31	5	0.079	3	2	12	15		
42	46x36	6	0.079	3	2	13	15		
48	53x41	7	0.079	3	2	13	15		
54	60x46	8	0.079	3	2	13	15		
60	66x51	9	0.079	3	2	13	15		
66	73x55	12	0.079	3	2	15	15		
72	81x59	14	0.079	3	2	15	15		
78	87x63	14	0.079	3	2	15	15		
84	95x67	16	0.109	3	2	15	15		
90	103x71	16	0.109	3	2	15	15		
96	112x75	18	0.109	3	2	15	15		
102	117x79	18	0.109	3	2	15	15		
108	128x83	18	0.138	3	2	15	15		

CONSTRUCTION SEQUENCE

1. PLACE STRUCTURAL BEDDING MATERIAL TO GRADE. DO NOT COMPACT.
2. INSTALL PIPE TO GRADE.
3. COMPACT STRUCTURAL BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE.
4. COMPLETE STRUCTURAL BACKFILL OPERATION BY WORKING FROM SIDE TO SIDE OF THE PIPE. THE SIDE TO SIDE STRUCTURAL BACKFILL DIFFERENTIAL SHALL NOT EXCEED 24 INCHES OR 1/3 THE SIZE OF THE PIPE. WHICHEVER IS LESS.

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

INSTALLATION TYPE	MATERIAL REQUIREMENTS FOR STRUCTURAL BACKFILL AND STRUCTURAL BEDDING
TYPE 1	AGGREGATE BASE COURSE (CLASS 4, 5, 6, OR 7)
TYPE 2	SELECTED MATERIALS (CLASS SM-1, SM-2, OR SM-4) OR TYPE 1 INSTALLATION MATERIAL ③

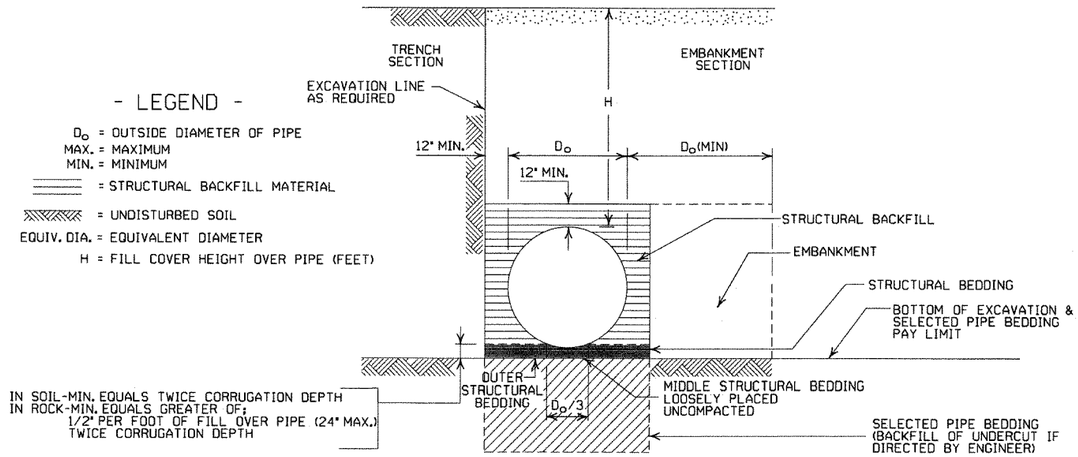
③ SM-3 WILL NOT BE ALLOWED.

EQUIVALENT METAL THICKNESSES AND GAUGES

METAL THICKNESS IN INCHES			GAUGE NUMBER
STEEL			
ZINC COATED	UNCOATED	ALUMINUM	
0.064	0.0598	0.060	16
0.079	0.0747	0.075	14
0.109	0.1046	0.105	12
0.138	0.1345	0.135	10
0.168	0.1644	0.164	8

- LEGEND -

D_o = OUTSIDE DIAMETER OF PIPE
MAX. = MAXIMUM
MIN. = MINIMUM
= STRUCTURAL BACKFILL MATERIAL
= UNDISTURBED SOIL
EQUIV. DIA. = EQUIVALENT DIAMETER
H = FILL COVER HEIGHT OVER PIPE (FEET)



EMBANKMENT AND TRENCH INSTALLATIONS

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

GENERAL NOTES

1. METAL PIPE CULVERT CONSTRUCTION SHALL CONFORM TO ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (2003 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
12-15-11	REVISED FOR LRFD DESIGN SPECS	
3-30-00	REVISED INSTALLATIONS	
11-06-97	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

METAL PIPE CULVERT FILL HEIGHTS & BEDDING

STANDARD DRAWING PCM-1

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

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

SM3 WILL NOT BE ALLOWED.

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

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

MULTIPLE INSTALLATION OF HIGH DENSITY POLYETHYLENE PIPES

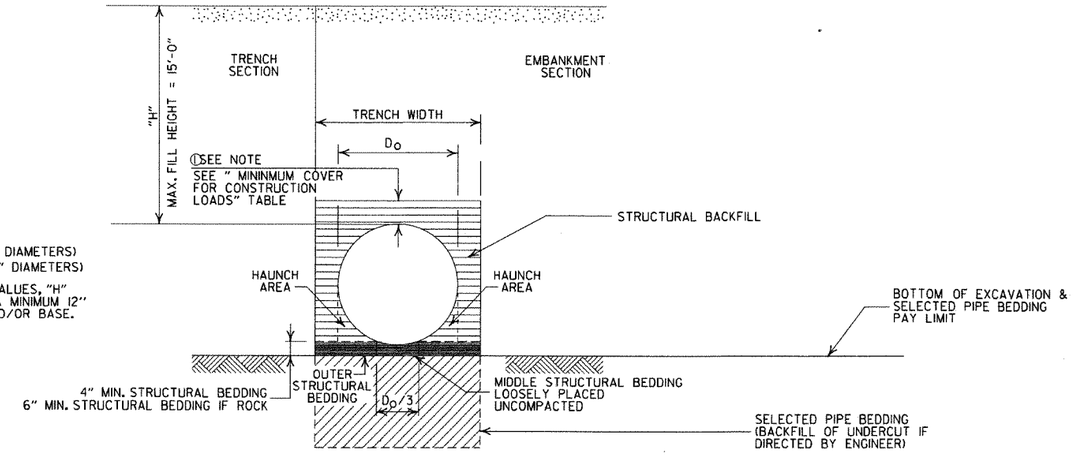
PIPE DIAMETER	CLEAR DISTANCE BETWEEN PIPES
18"	1'-6"
24"	2'-0"
30"	2'-6"
36"	3'-0"
42"	3'-6"
48"	4'-0"

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

PIPE DIAMETER	TRENCH WIDTH (FEET) "H" < 10'-0"	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, 2003 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
12-15-11	REVISED GENERAL NOTES & MINIMUM COVER NOTE	
11-17-10	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

PLASTIC PIPE CULVERT
(HIGH DENSITY POLYETHYLENE)

STANDARD DRAWING PCP-1

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

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

SM3 WILL NOT BE ALLOWED.

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

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

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

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

MULTIPLE INSTALLATION OF PVC PIPES

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

MAXIMUM FILL HEIGHT BASED ON STRUCTURAL BACKFILL

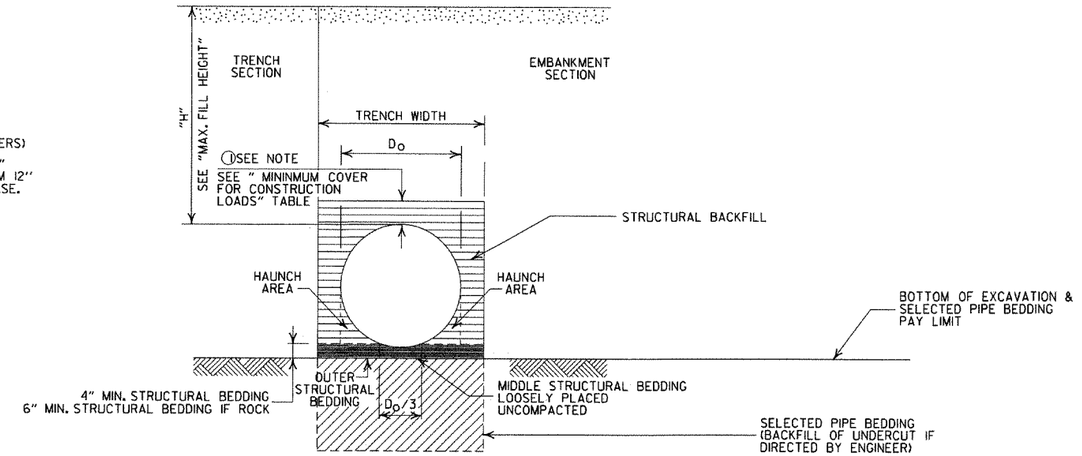
PIPE DIAMETER	"H"
18"	45'-0"
24"	45'-0"
30"	40'-0"
36"	40'-0"

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

MINIMUM COVER FOR CONSTRUCTION LOADS

PIPE DIAMETER	② MIN. COVER (FEET) FOR INDICATED CONSTRUCTION LOADS 18.0-50.0 (KIPS)	50.0-75.0 (KIPS)	75.0-110.0 (KIPS)	110.0-175.0 (KIPS)
18" THRU 36"	2'-0"	2'-6"	3'-0"	3'-0"

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



TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

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

CONSTRUCTION SEQUENCE

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

GENERAL NOTES

1. PIPE SHALL CONFORM TO ASTM F949, CELL CLASS 12454. INSTALLATION SHALL CONFROM TO JOB SPECIAL PROVISION "PLASTIC PIPE" AND SECTION 606 OF THE STANDARD SPECIFICIATIONS FOR HIGHWAY CONSTRUCTION, 2003 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

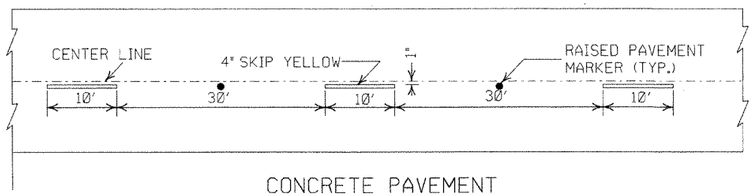
= UNDISTURBED SOIL

DATE	REVISION	DATE FILMED
12-15-11	REV GENERAL NOTES & MINIMUM COVER NOTE; DELETED SM3 MATERIAL	
11-17-10	ISSUED	

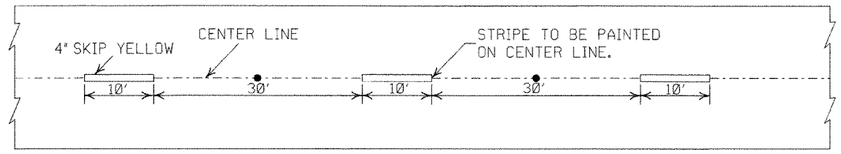
ARKANSAS STATE HIGHWAY COMMISSION

PLASTIC PIPE CULVERT (PVC F949)

STANDARD DRAWING PCP-2

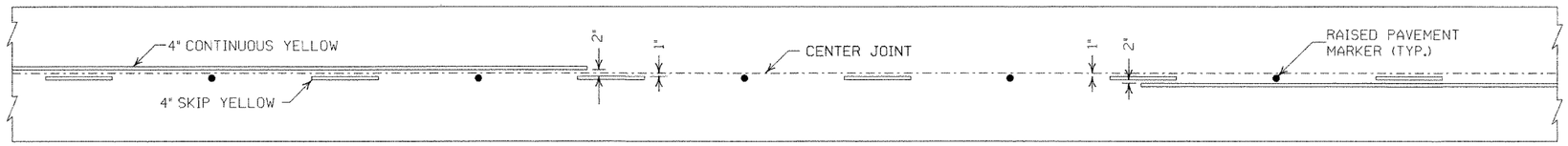


CONCRETE PAVEMENT

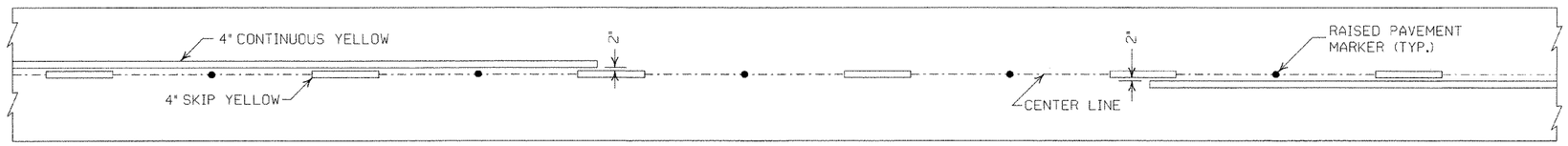


ASPHALT PAVEMENT

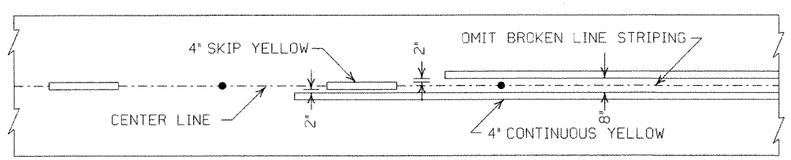
BROKEN LINE STRIPING



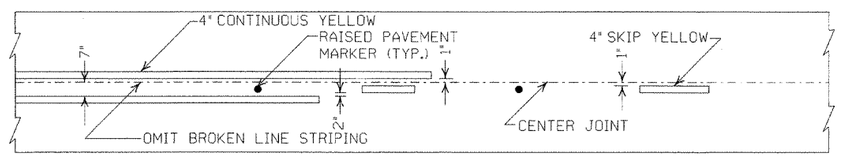
SOLID LINE STRIPING ON CONCRETE PAVEMENT



SOLID LINE STRIPING ON ASPHALT PAVEMENT

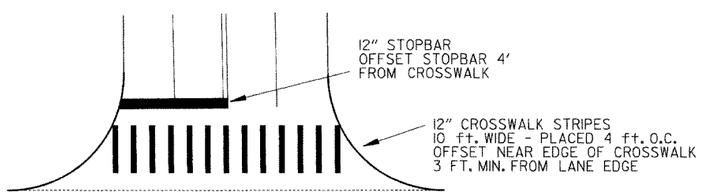


ASPHALT PAVEMENT



CONCRETE PAVEMENT

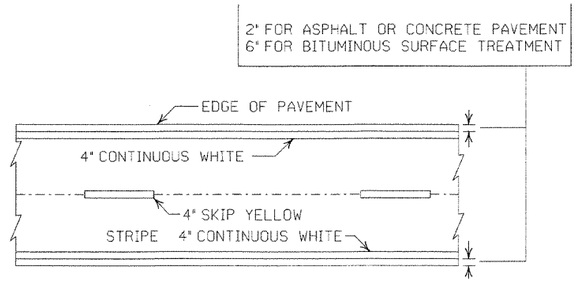
STRIPING AT ADJACENT NO PASSING LANES



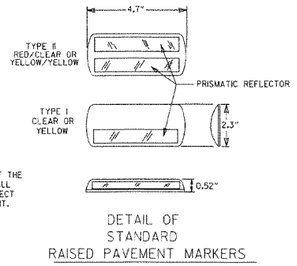
CROSSWALK AND STOPBAR DETAILS

NOTES:

1. ALL LINES SHALL HAVE A WIDTH OF 4 INCHES.
2. THE THICKNESS AND RATE OF PAINT APPLICATION SHALL BE AS SPECIFIED IN SECTION 718 OF THE STANDARD SPECIFICATIONS.
3. THIS DRAWING SHALL BE USED IN CONJUNCTION WITH THE LATEST REVISED ADDITION OF THE 'MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.'
4. RAISED PAVEMENT MARKERS SHALL BE CENTERED BETWEEN SKIP LINES ON 40 FEET SPACING UNLESS OTHERWISE SHOWN ON THE PLANS.



PAVEMENT EDGE LINE MARKING



NOTE:
THE RED LENS OF THE TYPE II R.P.M. SHALL FACE THE INCORRECT TRAFFIC MOVEMENT.

DETAIL OF STANDARD RAISED PAVEMENT MARKERS

GENERAL NOTES:

THIS DRAWING SHOULD BE CONSIDERED AS TYPICAL ONLY AND THE FINAL LOCATION OF THE STRIPING AND RAISED PAVEMENT MARKERS SHALL BE DETERMINED BY THE ENGINEER.

THIS DRAWING SHOULD BE USED IN CONJUNCTION WITH THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", LATEST REVISION.

NOTE:

DIMENSIONS SHOWN FOR RAISED PAVEMENT MARKERS ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR MARKERS WITH THE APPROVAL OF THE ENGINEER. REQUESTING APPROVAL FOR SIMILAR MARKERS MAY BE MADE BY REFERRING TO THE AHTD QUALIFIED PRODUCTS LIST.

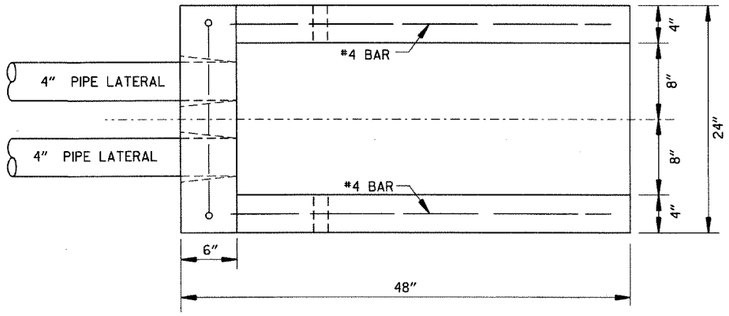
DATE	REVISION	FILMED
11-17-10	REVISED GENERAL NOTES & REMOVED PLOWABLE PVMT MRKRS	
11-18-04	REVISED NOTE 2 & GENERAL NOTES	
8-22-02	ADDED CROSSWALK & STOPBAR DTLS.	
7-02-98	ADDED DETAILS OF STD. RAISED PAV'T. MARKERS	
4-26-96	REV. NOTES 3&4; ADDED R.P.M.	
9-30-80	DRAWN	1-9-30-80

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PAVEMENT MARKING DETAILS

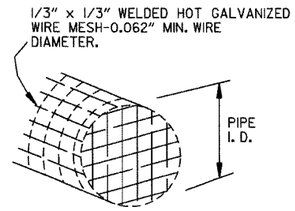
STANDARD DRAWING PM-1

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.

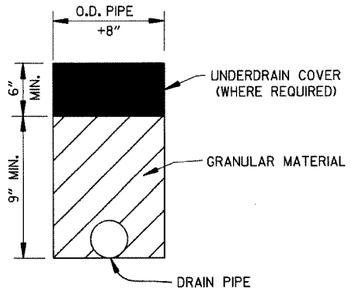


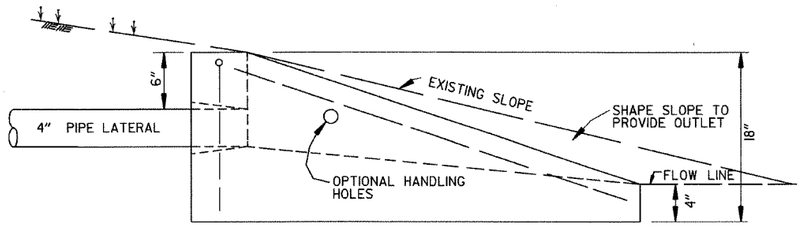
PLAN VIEW

DETAIL OF HOLE FOR 4" PIPE

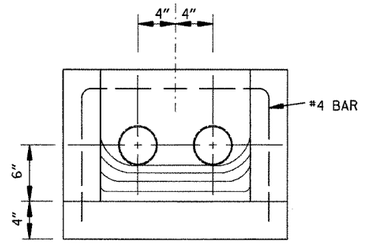


DETAIL OF RODENT SCREEN

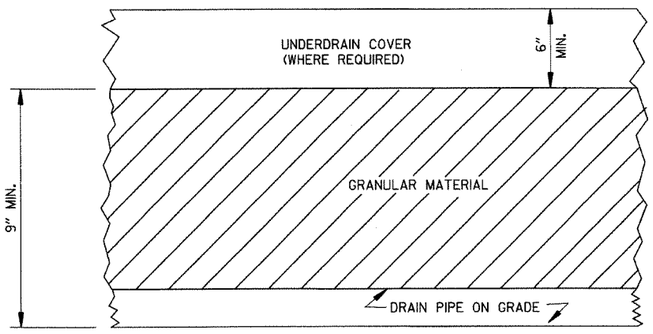




SIDE VIEW

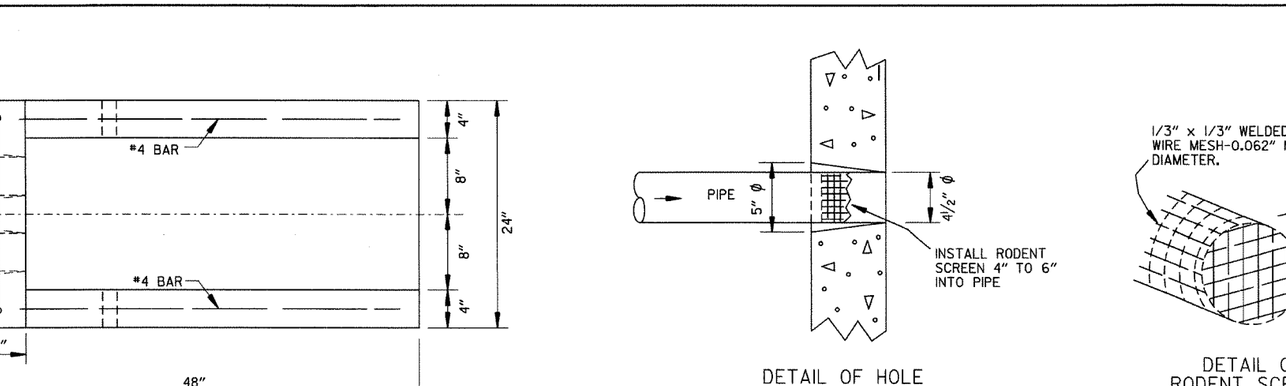


FRONT VIEW



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

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DETAILS OF PIPE UNDERDRAIN

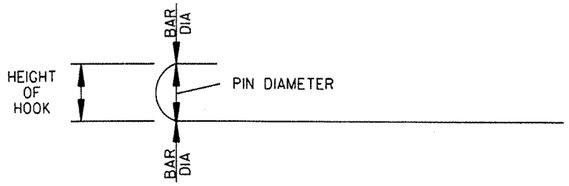
STANDARD DRAWING PU-1

7-20-95 INSTD.PUI

STEEL FABRICATION: REINFORCING STEEL FABRICATION SHALL CONFORM TO THE DIMENSIONS LISTED IN THE TABLE BELOW:

BAR SIZE	PIN DIAMETER	HOOK EXTENSION "K"
3	2¼"	4"
4	3 "	4½"
5	3¾"	5"
6	4½"	6"
7	5¼"	7"
8	6"	8"

IF THE OVERALL HEIGHT OF THE HOOK (SEE DIAGRAM BELOW) FOR A "b", "b1", "b2" or "b3" BENT BAR IS GREATER THAN THE CORRESPONDING TOP OR BOTTOM SLAB THICKNESS, LESS 2¾ INCHES, EACH BENT BAR SHALL BE REPLACED WITH ONE HOOKED BAR AND ONE STRAIGHT BAR, USING LENGTHS AS SHOWN IN THE TABLE BELOW. THE TWO BARS SHALL BE THE SAME DIAMETER AS, AND PLACED AT THE SAME SPACING AS, THE "b", "b1", "b2" OR "b3" BENT BARS THEY REPLACE.



NOTE: DIMENSIONS OF BARS ARE MEASURED OUT TO OUT OF BARS.

OVERALL HEIGHT OF HOOKED BAR DIAGRAM

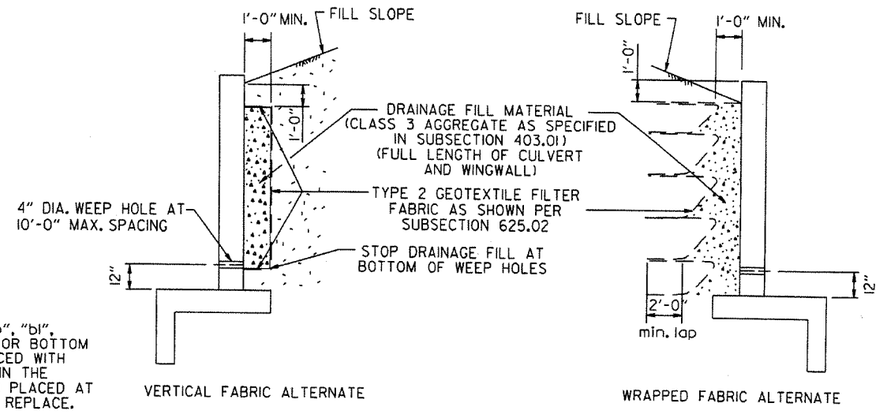
THE HOOKED BARS SHALL BE PLACED IN THE BOTTOM OF THE TOP SLAB AND THE TOP OF THE BOTTOM SLAB. THE STRAIGHT BARS SHALL BE PLACED IN THE TOP OF THE TOP SLAB AND THE BOTTOM OF THE BOTTOM SLAB. SEE TABLE BELOW FOR LENGTHS OF REPLACEMENT HOOKED AND STRAIGHT BARS.

FOR SKEWED CULVERTS, THE REPLACEMENT STRAIGHT BAR MAY HAVE TO BE CUT IN FIELD TO FIT.

REPLACEMENT BAR LENGTHS TABLE

BAR SIZE: "b", "b1", "b2" OR "b3"	LENGTH OF HOOKED BAR	LENGTH OF STRAIGHT BAR
#4	L + 1' - 0"	SEE "c" BAR LENGTH
#5	L + 1' - 2"	SEE "c" BAR LENGTH
#6	L + 1' - 4"	SEE "c" BAR LENGTH
#7	L + 1' - 8"	SEE "c" BAR LENGTH
#8	L + 1' - 10"	SEE "c" BAR LENGTH
#9	L + 2' - 6"	SEE "c" BAR LENGTH

L = "OW" - 3 INCHES



WINGWALL & CULVERT DRAINAGE DETAIL

REINFORCED CONCRETE BOX CULVERT GENERAL NOTES

CONCRETE SHALL BE CLASS S WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3500 PSI.

REINFORCING STEEL SHALL BE AASHTO M 31 OR M 53, GRADE 60.

CONSTRUCTION AND MATERIALS FOR WINGWALL & CULVERT DRAINAGE, INCLUDING WEEP HOLES AND GRANULAR MATERIAL, SHALL BE SUBSIDIARY TO THE BID ITEM, "CLASS S CONCRETE".

MEMBRANE WATERPROOFING SHALL CONFORM TO THE REQUIREMENTS OF SECTION 815 OF THE STANDARD SPECIFICATIONS.

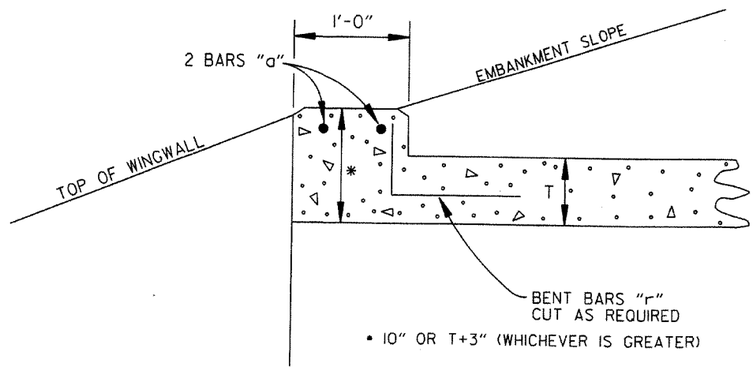
MEMBRANE WATERPROOFING SHALL BE APPLIED TO ALL CONSTRUCTION JOINTS IN THE TOP SLAB AND THE SIDEWALLS OF R.C. BOX CULVERTS AS DIRECTED BY THE ENGINEER. NO PAYMENT SHALL BE MADE FOR THIS ITEM, BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS BID FOR THE R.C. BOX CULVERT.

REINFORCING STEEL TOLERANCES: THE TOLERANCES FOR REINFORCING STEEL SHALL MEET THOSE LISTED IN "MANUAL OF STANDARD PRACTICE" PUBLISHED BY CONCRETE REINFORCING STEEL INSTITUTE (CRSI) EXCEPT THAT THE TOLERANCE FOR TRUSS BARS SUCH AS FIGURE 3 ON PAGE 7-4 OF THE CRSI MANUAL SHALL BE MINUS ZERO TO PLUS ½ INCH.

WEEP HOLES IN BOX CULVERT WALLS SHALL HAVE A MAXIMUM HORIZONTAL SPACING OF 10'-0" AND SHALL BE SPACED TO CLEAR ALL REINFORCING STEEL. THE DRAIN OPENING SHALL BE 4" DIAMETER AND SHALL BE PLACED 12" ABOVE THE TOP OF THE BOTTOM SLAB.

WEEP HOLES IN WINGWALLS SHALL HAVE A MAXIMUM HORIZONTAL SPACING OF 10'-0" AND SHALL BE SPACED TO CLEAR ALL REINFORCING STEEL. THERE SHALL BE A MINIMUM OF TWO (2) WEEP HOLES IN EACH WINGWALL. THE DRAIN OPENING SHALL BE 4" DIAMETER AND SHALL BE PLACED 12" ABOVE THE TOP OF THE WINGWALL FOOTING.

THE REQUIREMENTS SHOWN ON THIS DRAWING SHALL SUPERCEDE THE CORRESPONDING REQUIREMENTS ON ALL REINFORCED CONCRETE BOX CULVERT STANDARD DRAWINGS.



NOTE: FOR ALL SKEWED R.C. BOX CULVERTS THE LENGTH "K" OF THE MODIFIED HEADWALL SHALL BE EQUAL TO THE ROADWAY LENGTH "RL". THE ENDS OF THE HEADWALL SHALL BE CONSTRUCTED PARALLEL TO THE SKEW ANGLE OF THE BOX CULVERT.

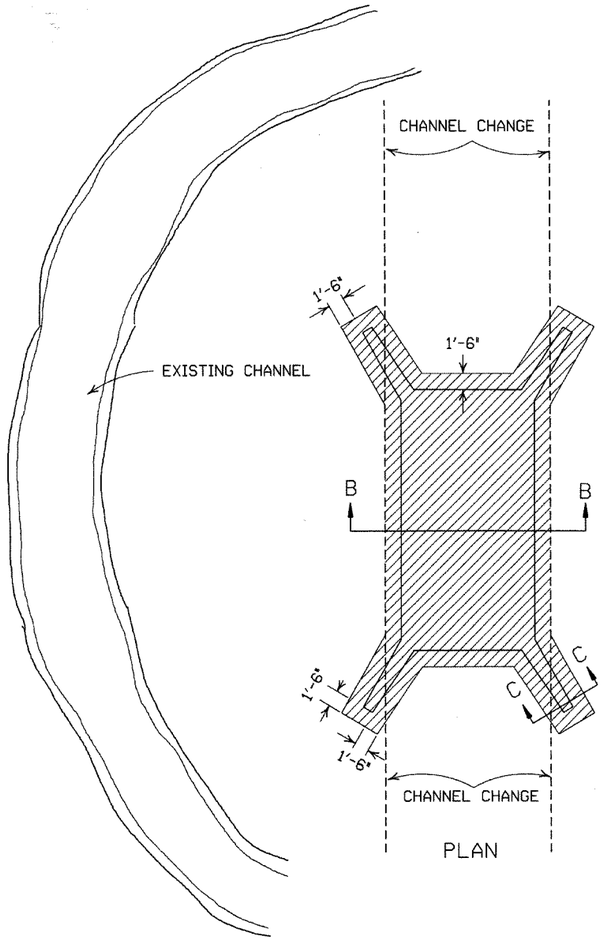
R.C. BOX CULVERT HEADWALL MODIFICATIONS

DATE	REVISION	DATE FILMED
7/26/12	REV. DRAINAGE FILL MATERIAL & DETAIL	
12/15/11	REQUIRE WEEP HOLES IN BOX CULVERT WALLS	
5-25-06	REV. GEN. NOTES AND DETAILS FOR WEEP HOLES; BAR DIAGRAM	
11-16-01	ADDED WINGWALL DRAINAGE DETAIL/EDITED GEN. NOTES	
10-18-96	REV. ASTM REF. TO AASHTO & ADDED BAR DIAGRAM	
10-12-95	MOVED SOLID SODDING DETAIL TO RCB-2	
6-2-94	ADDED SOLID SODDING PLAN DETAIL	
8-5-93	REVISED PIN DIAMETER TO SPECS.	
8-15-91	DRAWN AND ISSUED	

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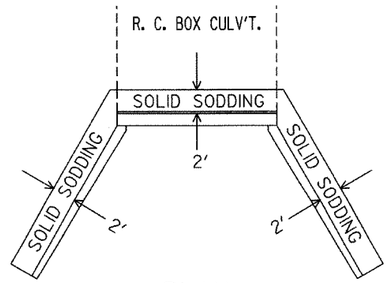
REINFORCED CONCRETE BOX CULVERT DETAILS

STANDARD DRAWING RCB-1



PLAN

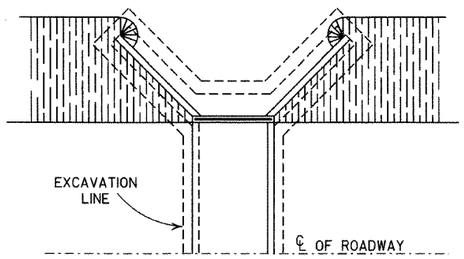
SOLID SODDING



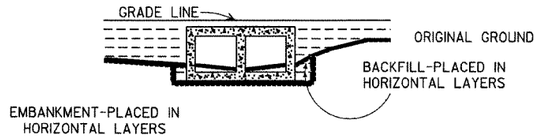
PLAN

PARTIAL SECTION SHOWING SOLID SODDING AT HEADWALLS AND WING WALLS

NOTE: LENGTH MEASURED ALONG THE CENTER OF 2' STRIP OF SOLID SODDING.

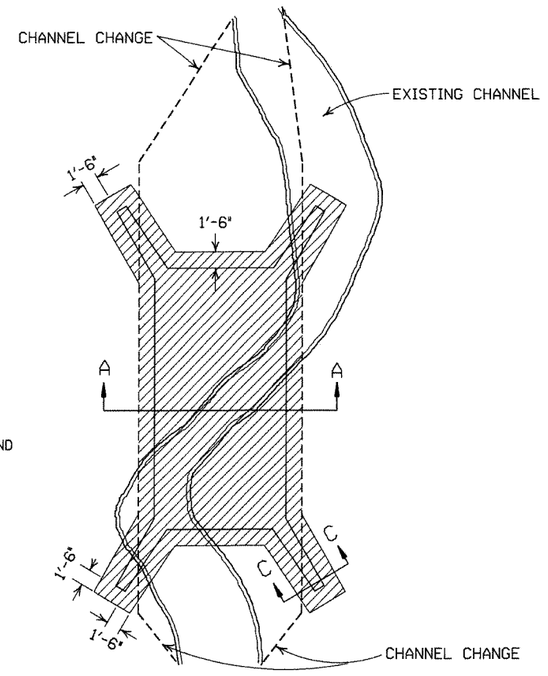


PLAN

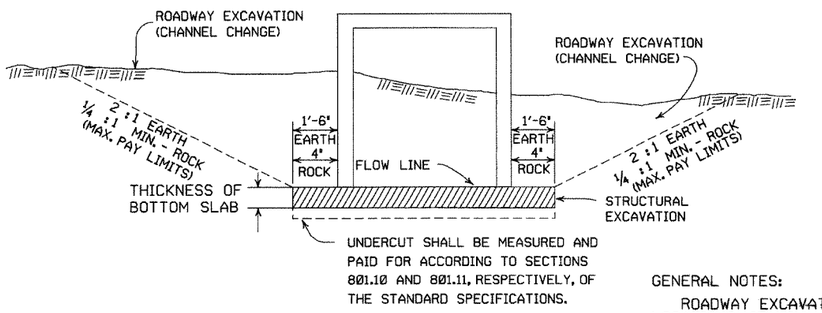


LONGITUDINAL SECTION

BACKFILL DETAILS FOR BOX CULVERT

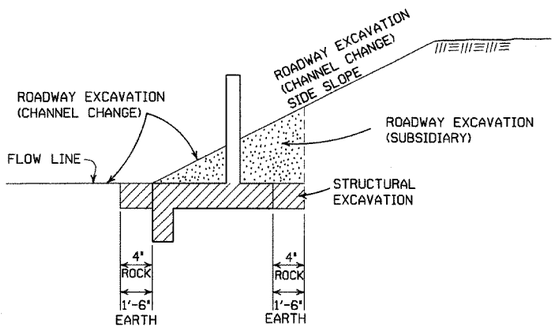


PLAN

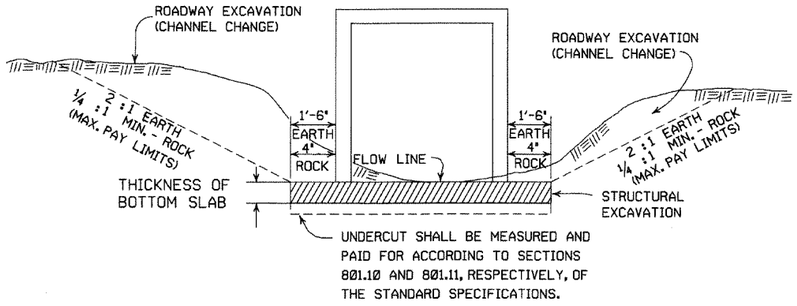


SECTION B-B

DETAILS FOR NEW CHANNELS



SECTION C-C



SECTION A-A

DETAILS THROUGH EXISTING CHANNELS

GENERAL NOTES:

ROADWAY EXCAVATION (CHANNEL CHANGE) WILL BE PAID FOR AT R.C. BOX CULVERT LOCATIONS. IT WILL BE PAID TO THE LIMITS ACTUALLY CUT AND WILL BE CONFINED TO THAT PORTION OF THE INDICATED AREA THAT IS ABOVE THE FLOW LINE. ROADWAY EXCAVATION (CHANNEL CHANGE) SHALL BE MEASURED BY CROSS SECTIONS AND VOLUMES COMPUTED BY AVERAGE END AREA METHOD. ALL CHANNEL CHANGES SHALL BE BROUGHT TO GRADE PRIOR TO MAKING ANY EXCAVATION FOR STRUCTURES.

EXCAVATION FOR STRUCTURES WILL BE PAID FOR AT ALL R.C. BOX CULVERT LOCATIONS. IT WILL BE PAID TO THE LIMITS SHOWN AND SHALL BE CONFINED TO THAT PORTION OF THE INDICATED AREA THAT IS BELOW THE CHANNEL FLOW LINE.

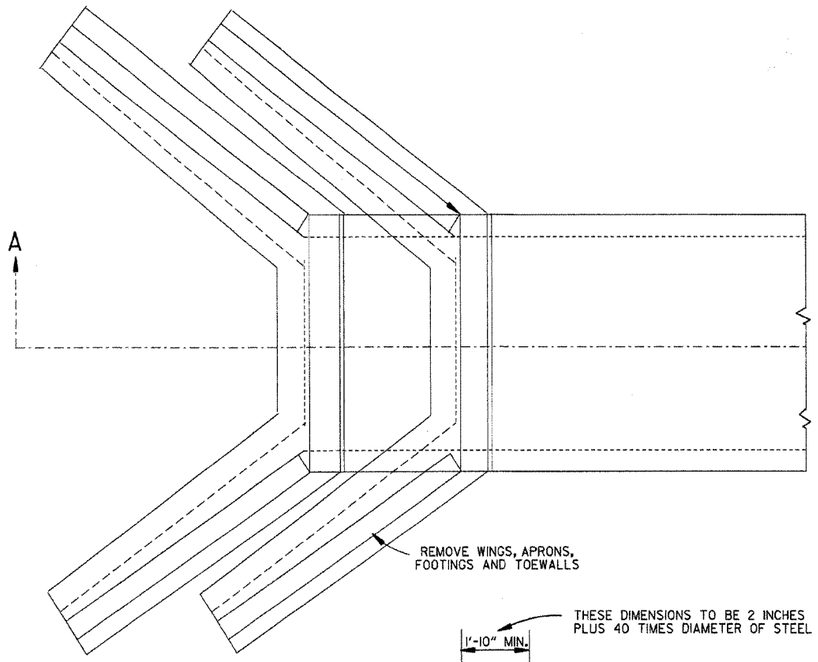
ROADWAY EXCAVATION SHOWN IN SECTION C-C ABOVE AS SUBSIDIARY WILL NOT BE MEASURED OR PAID FOR DIRECTLY, BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS OF EXCAVATION.

DATE	REVISION	FILMED
11-20-03	REVISED SECTION A-A NOTE	
8-22-02	REVISED SECTION B-B NOTE	
10-12-95	COMBINED 1891B AND 1888A	
1-4-83	REVISED GENERAL NOTES	674-1-4-83
	AND ADDED MAXIMUM PAY	
	LIMIT NOTES.	
2-2-76	EXCAV. PAY LIMITS	917-2-2-76
10-2-72	REVISED AND REDRAWN	564-10-16-72

ARKANSAS STATE HIGHWAY COMMISSION

EXCAVATION PAY LIMITS, BACKFILL, & SOLID SODDING FOR BOX CULVERTS

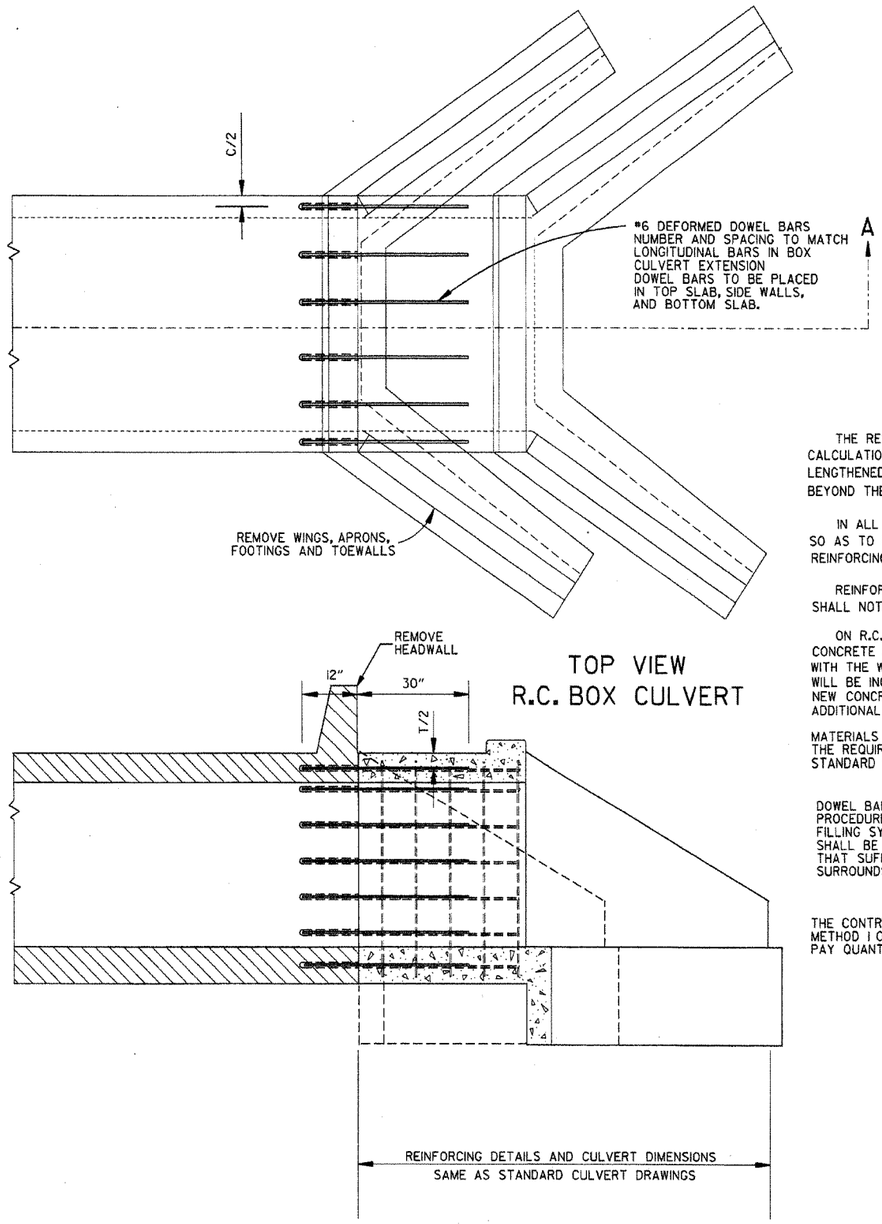
STANDARD DRAWING RCB-2



TOP VIEW
R.C. BOX CULVERT

SECTION A-A

METHOD 1



TOP VIEW
R.C. BOX CULVERT

SECTION A-A

METHOD 2

GENERAL NOTES

	USE FOR METHOD
THE RESIDENT ENGINEER WILL MAKE INDIVIDUAL CALCULATIONS OF QUANTITIES FOR EACH STRUCTURE LENGTHENED, MAKING NO ALLOWANCE FOR OVERBREAKAGE BEYOND THE LINES INDICATED.	1
IN ALL INSTANCES CONCRETE SHALL BE REMOVED SO AS TO PERMIT FULL 40 DIAMETER SPLICE OF REINFORCING STEEL.	1
REINFORCING STEEL REMOVED FROM EXISTING STRUCTURE SHALL NOT BE REUSED IN CONSTRUCTING EXTENSION.	1&2
ON R.C. BOX CULVERTS THAT HAVE AN EXISTING CONCRETE APRON; THE CONCRETE APRON SHALL BE REMOVED WITH THE WINGS. THE COST OF REMOVING ALL OLD CONCRETE WILL BE INCLUDED IN THE PRICE BID PER CUBIC YARD FOR NEW CONCRETE OF THE CLASS SPECIFIED AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.	1&2
MATERIALS FOR SECURING DOWEL BARS SHALL MEET THE REQUIREMENTS OF SECTION 507.02 OF THE STANDARD SPECIFICATIONS.	2
DOWEL BARS SHALL BE INSTALLED AS FOLLOWS: THE DRILLING PROCEDURE SHALL BE APPROVED BY THE ENGINEER, THE FILLING SYSTEM SHALL BE APPROVED BY THE ENGINEER, AND SHALL BE AN INJECTION-TYPE SYSTEM WHICH WILL INSURE THAT SUFFICIENT MATERIAL IS INJECTED SO IT COMPLETELY SURROUNDS THE BARS AND FILLS THE HOLES.	2
THE CONTRACTOR SHALL HAVE THE OPTION OF USING EITHER METHOD 1 OR METHOD 2. REGARDLESS OF WHICH METHOD IS USED, PAY QUANTITIES WILL BE CALCULATED BASED ON METHOD 1.	1&2

NOTE:
NO PART OF THIS STANDARD IS TO BE USED FOR ANY DETAILS RELATIVE TO NEW CONSTRUCTION.

SEE STANDARD DRAWING LISTED IN TABULATION OF STRUCTURES FOR ALL NEW CONSTRUCTION DETAILS.

DATE	REVISION	DATE FILM
10-12-95	CHANGED DRAWING # FROM 144-A	
4-1-93	ADDED GENERAL NOTE	
10-1-92	ADDED ALT. METHOD OF EXTENSION	
11-30-89	REDRAWN	
1-4-83	ELIMINATED CONCRETE CLASS	
12-20-56	RETRACED	

ARKANSAS STATE HIGHWAY COMMISSION

METHOD OF EXTENDING EXISTING R.C. BOX CULVERTS

STANDARD DRAWING RCB-3

SUPERELEVATION TABLE FOR ONE - 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	65 MPH e	65 MPH Ls (FT) MINIMUM	65 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.			N.C.		
0° 30′	N.C.			N.C.			N.C.			N.C.			0.023			0.025			0.028		
0° 45′	N.C.			N.C.			R.C.			0.022			0.030			0.033			0.037		
1° 00′	N.C.			N.C.			0.021			0.026			0.037			0.041			0.046		
1° 15′	N.C.			R.C.			0.026			0.032			0.043			0.048			0.054		
1° 30′	N.C.			0.021			0.031			0.037			0.049			0.055			0.062		
1° 45′	N.C.			0.025			0.036			0.043			0.055			0.062			0.070		
2° 00′	R.C.			0.028			0.040			0.048			0.061			0.069			0.078		
2° 15′	R.C.			0.031			0.045			0.053			0.067			0.075			0.085		
2° 30′	0.021			0.034			0.049			0.058			0.072			0.081			0.091		
2° 45′	0.023			0.037			0.053			0.063			0.077			0.087			0.098		
3° 00′	0.025	150		0.040	175		0.057	200		0.067	225		0.082	250		0.090	250		0.100	275	
3° 15′	0.027			0.043			0.061			0.072			0.086			0.095					
3° 30′	0.029			0.046			0.065	205		0.076	255		0.090	295		0.099	330				
3° 45′	0.031		250	0.049			0.069	215		0.080	265		0.093	305		0.104	345				
4° 00′	0.033			0.051			0.072	225		0.083	270		0.096	315		0.108	360				
4° 30′	0.037			0.056			0.078	240		0.087	280		0.098	320							
5° 00′	0.040			0.061			0.083	250		0.091	295										
5° 30′	0.043			0.066	185		0.088	260		0.094	300										
6° 00′	0.046			0.070	190		0.092	270		0.096	305										
6° 30′	0.050			0.074	200		0.095	280		0.100	315										
7° 00′	0.053			0.078	210		0.098	285													
7° 30′	0.056			0.081	215		0.099	290													
8° 00′	0.058			0.084	220	300	0.100	290													
8° 30′	0.061			0.087	225																
9° 00′	0.063			0.089	230																
10° 00′	0.068	160		0.094	235																
11° 00′	0.072	170		0.097	250																
12° 00′	0.076	175		0.099	250																
13° 00′	0.080	180		0.100	250																
14° 00′	0.083	190																			
15° 00′	0.086	195																			
16° 00′	0.089	200																			
17° 00′	0.091	200																			
18° 00′	0.093	205																			
19° 00′	0.095	210																			
20° 00′	0.097	215	300																		
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 = 4° 15′ | D MAX = 3° 30′

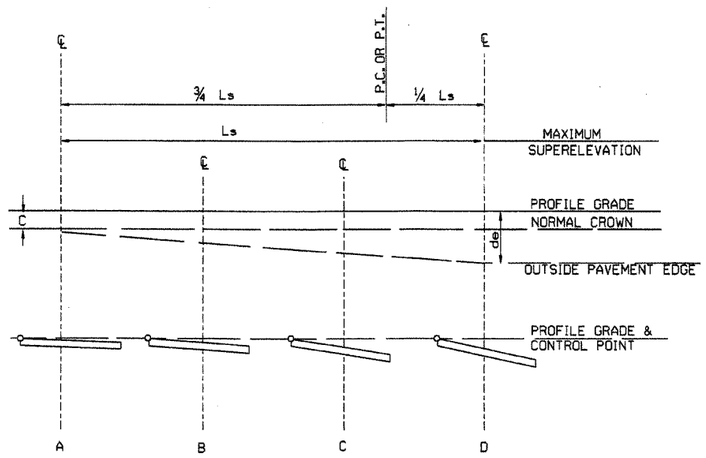
GENERAL NOTES

1. ON PAVEMENT WITH ONE-WAY TRAFFIC, THE SUPERELEVATION SHALL BE REVOLVED ON THE PROFILE GRADE POINT.
2. SUPERELEVATION VALUES SHOWN ON THE CROSS SECTIONS ARE VALUES (+) OR (-) TO BE ADDED OR SUBTRACTED FROM THE POINT OF CONTROL.
3. LENGTHS FOR L_s MAY BE ROUNDED IN MULTIPLES OF 25 FT. OR 50 FT. TO PERMIT SIMPLER CALCULATIONS.
4. MINIMUM L_s VALUES MAY BE USED FOR RAMPS; DESIRABLE VALUES SHALL APPLY TO MAIN LANES.
5. DIVIDED PAVEMENTS WIDER THAN 4 LANES SHALL HAVE ADDITIONAL TRANSITION LENGTHS AS FOLOWS:

6 LANE DIVIDED---------+20%
8 LANE DIVIDED---------+50%

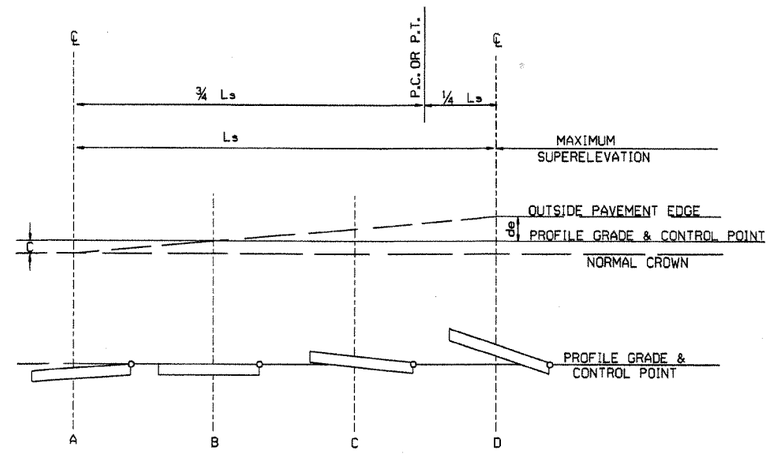
ABBREVIATIONS

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



ONE-WAY TRAFFIC
INSIDE LANE

SUPERELEVATION FORMULA = $S = -\frac{L(de-C)}{Ls} - C$



ONE-WAY TRAFFIC
OUTSIDE LANE

SUPERELEVATION FORMULA = $S = +\frac{L(de+C)}{Ls} - C$

DATE	REVISION	DATE FILMED
01-09-87	ISSUED	578-1-15-87

ARKANSAS STATE HIGHWAY COMMISSION

TABLES AND METHOD OF SUPERELEVATION FOR ONE-WAY TRAFFIC

STANDARD DRAWING SE-1

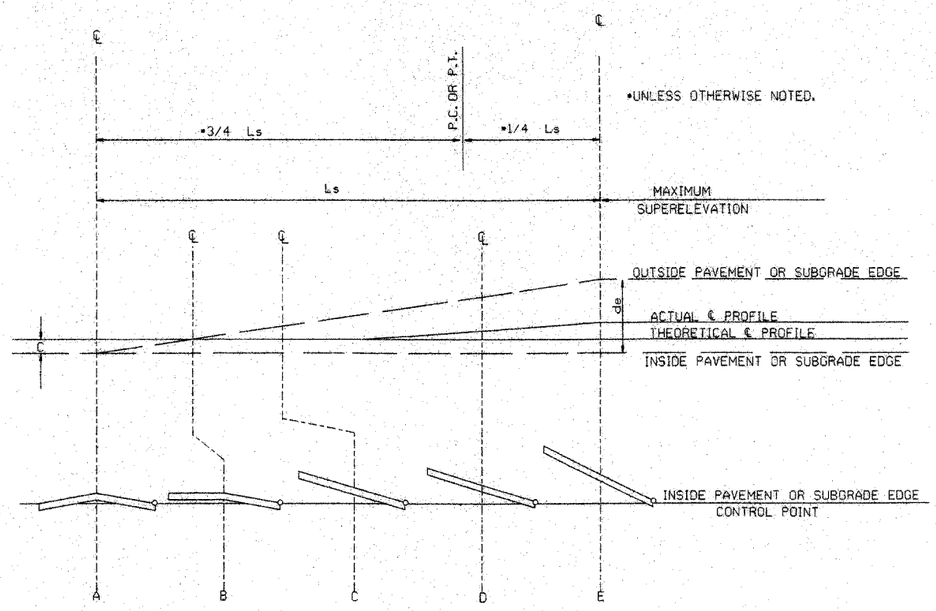
SUPERELEVATION TABLE FOR TWO - WAY TRAFFIC

DEGREE OF CURVE	30 MPH e	30 MPH Ls (FT) MINIMUM	30 MPH Ls (FT) DESIRABLE	40 MPH e	40 MPH Ls (FT) MINIMUM	40 MPH Ls (FT) DESIRABLE	50 MPH e	50 MPH Ls (FT) MINIMUM	50 MPH Ls (FT) DESIRABLE	55 MPH e	55 MPH Ls (FT) MINIMUM	55 MPH Ls (FT) DESIRABLE	60 MPH e	60 MPH Ls (FT) MINIMUM	60 MPH Ls (FT) DESIRABLE	70 MPH e	70 MPH Ls (FT) MINIMUM	70 MPH Ls (FT) DESIRABLE
0° 15′	N. C.			N. C.			N. C.			N. C.			N. C.			N. C.		
0° 30′	N. C.			N. C.			N. C.			N. C.			N. C.			N. C.		
0° 45′	N. C.			N. C.			R. C.			0.022			0.023			0.028		
1° 00′	N. C.			N. C.			0.021			0.026			0.030			0.037	275	300
1° 15′	N. C.			R. C.			0.026			0.032			0.037			0.046		
1° 30′	N. C.			0.021			0.031	200		0.037	225		0.043	250		0.054		
1° 45′	N. C.			0.025	175		0.036			0.043			0.049			0.062		
2° 00′	R. C.			0.028			0.040			0.048			0.055			0.070		
2° 15′	R. C.			0.031			0.045		250	0.053			0.061			0.078	300	350
2° 30′	0.021			0.034			0.049			0.058			0.067			0.085	315	
2° 45′	0.023			0.037		200	0.053			0.063			0.072			0.091	335	
3° 00′	0.025			0.040			0.057			0.067	230		0.077	260		0.096	350	400
3° 15′	0.027	150		0.043			0.061			0.072	245		0.082	275		0.098	360	
3° 30′	0.029			0.046			0.065	205		0.076	255		0.086	285		0.100	360	
3° 45′	0.031		200	0.049			0.069	215		0.080	265		0.090	295	350			
4° 00′	0.033			0.051			0.072	225		0.083	270		0.093	305				
4° 30′	0.037			0.056			0.078	240		0.087	280		0.096	315				
5° 00′	0.040			0.061			0.083	250		0.091	295		0.098	320				
5° 30′	0.043			0.066	185		0.088	260		0.094	300	350						
6° 00′	0.046			0.070	190		0.092	270		0.096	305							
6° 30′	0.050			0.074	200		0.095	280	300	0.100	315							
7° 00′	0.053			0.078	210		0.098	285										
7° 30′	0.056			0.081	215		0.099	290										
8° 00′	0.058			0.084	220		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	260													
13° 00′	0.080	180		0.100	250													
14° 00′	0.083	190																
15° 00′	0.086	195																
16° 00′	0.089	200																
17° 00′	0.091	200																
18° 00′	0.093	205																
19° 00′	0.095	210																
20° 00′	0.097	215	250															
21° 00′	0.098	215																
22° 00′	0.099	215																
23° 00′	0.099	215																
24° 00′	0.100	220																

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

ABBREVIATIONS

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



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

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

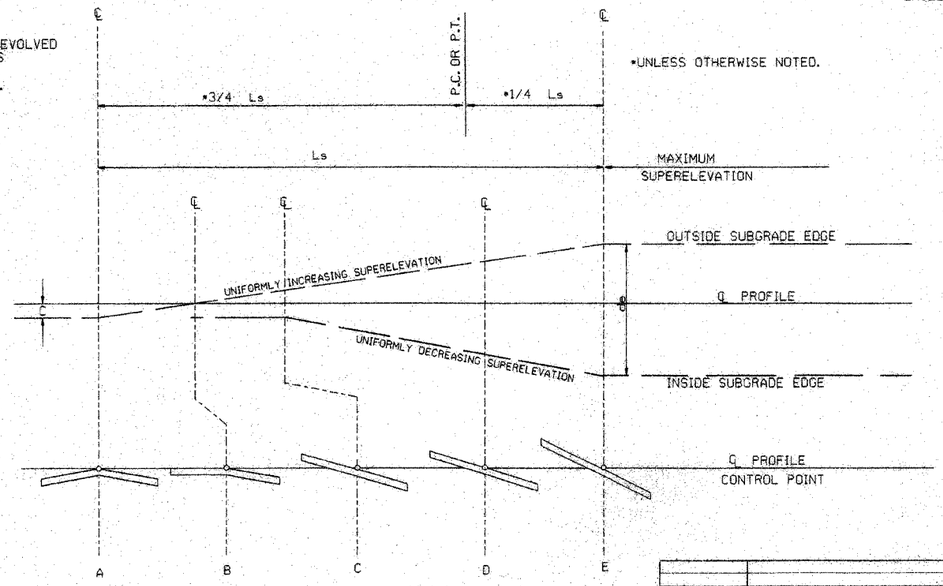
GENERAL NOTES

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

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

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

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



STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND CENTER LINE

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

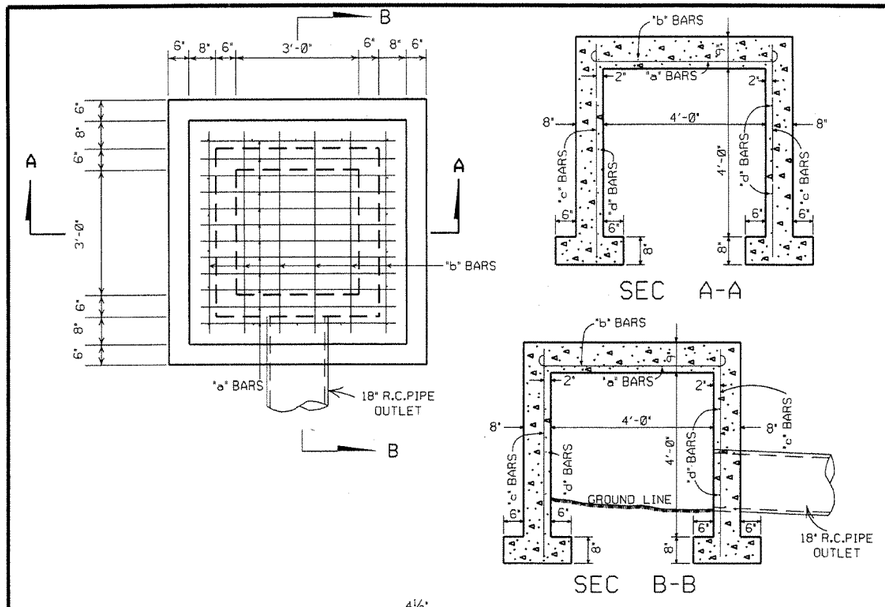
DATE	REVISION	DATE FILMED
10-18-96	ADDED FORMULA	10-18-96
01-09-87	ISSUED	534-1-9-87

ARKANSAS STATE HIGHWAY COMMISSION

TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC

STANDARD DRAWING SE-2

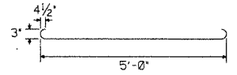
FILE STDSE2.DGN



STEEL SCHEDULE

BARS	NUMBER	LENGTH	SPACING
'a'	11	6'-0"	5"
'b'	6	6'-0"	10"
'c'	16	5'-1"	12"
'd'	16	5'-0"	12"

ALL STEEL TO BE #4 BARS



"a" & "b" BARS

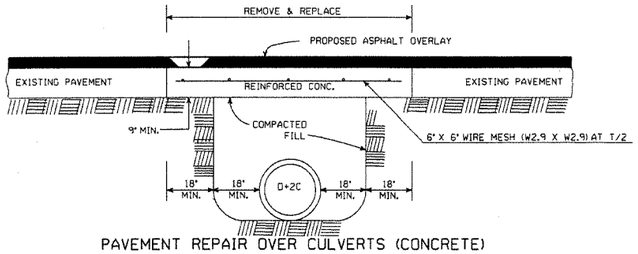
QUANTITIES

CONCRETE 3.40 CU. YDS.
REINFORCING STEEL 176 LB.

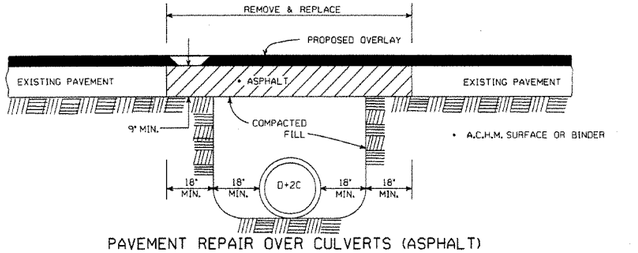
GENERAL NOTE:

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



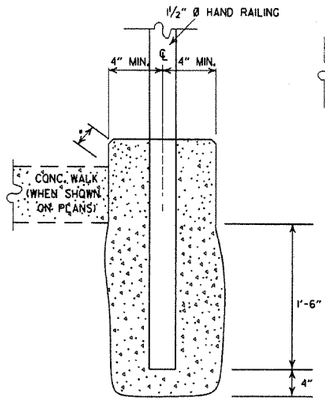
PAVEMENT REPAIR OVER CULVERTS (CONCRETE)



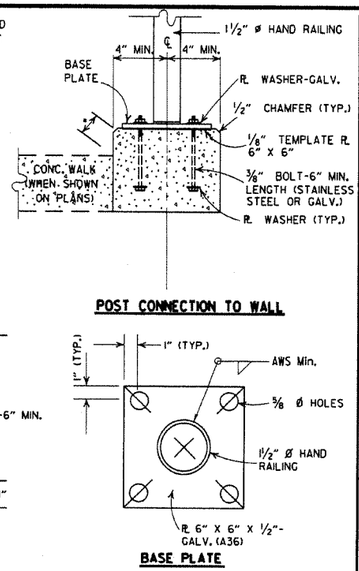
PAVEMENT REPAIR OVER CULVERTS (ASPHALT)

DETAIL SHOWING REPAIR OF EXISTING PAVEMENT AT CULVERT INSTALLATIONS

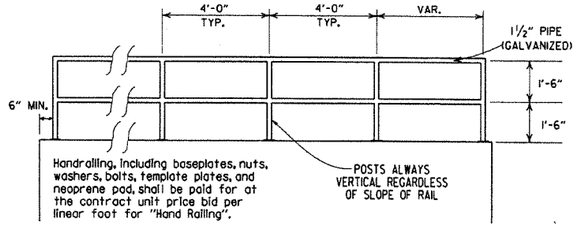
• A 2" MIN. HIGH CURB IS REQUIRED WHEN CONCRETE WALK IS ADJACENT TO THE HAND RAILING. PAYMENT FOR CURB SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR CONCRETE WALKS.



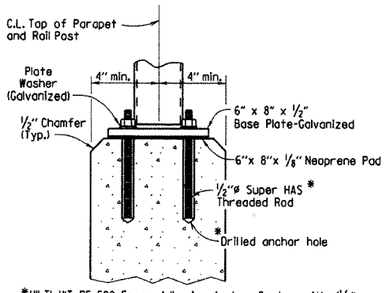
DETAIL OF HAND RAILING SET IN CONCRETE



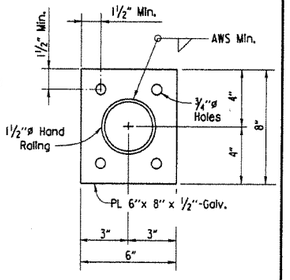
POST CONNECTION DETAILS



Hand railing shall conform to Section 633.



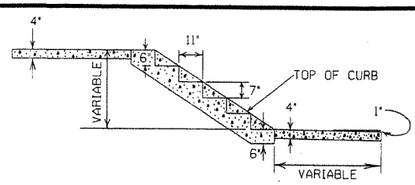
POST CONNECTION TO WALL

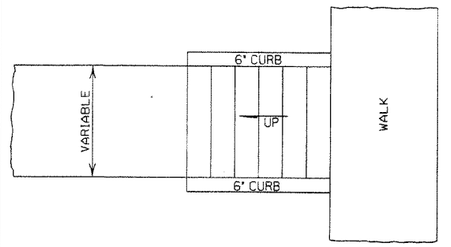


BASE PLATE

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
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	649-7-15-88
	ADDED HDWL. MODS, DEL. PIPE UNDERDRAINS	
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

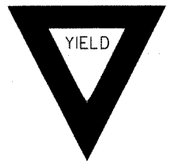
STANDARD DRAWING SI - 1

R1-1



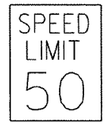
STANDARD 30"X30"
EXPRESSWAY 36"X36"
SPECIAL 48"X48"

R1-2



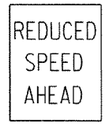
STD. 36"X36"X36"
EXPWY. 48"X48"X48"
FWY. 60"X60"X60"

R2-1



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

R2-5A



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

R2-5C



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

R4-1



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

R4-2



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

R5-1



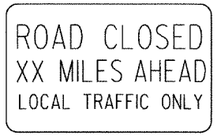
STD. 30"X30"
EXPWY. 36"X36"
SPECIAL 48"X48"

R11-2



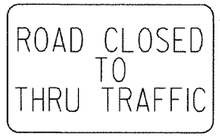
48"X30"

R11-3A



60"X30"

R11-4



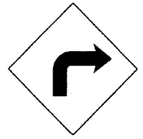
60"X30"

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



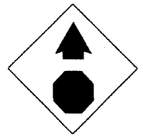
STD. 48"X24"
SPECIAL 60"X30"

W1-8



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

W3-1



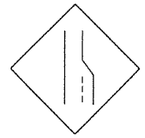
STD. 36"X36"
SPECIAL 48"X48"

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



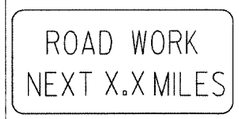
STD. 36"X36"
FWY. 48"X48"

W8-9



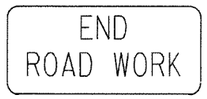
STD. 36"X36"
FWY. 48"X48"

G20-1



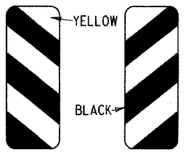
60"X24"

G20-2



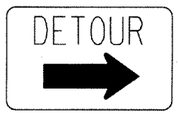
48"X24"

OM-3L OM-3R



12"X36"

M4-9



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

M4-10



48"X18"

R55-1

FINES DOUBLE
IN WORK ZONES *

WHEN WORKERS
ARE PRESENT **

36"X60"

* USE 6" C LETTERS
** USE 4" D LETTERS

ADVANCE DISTANCES
(XXXX)

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

GENERAL NOTES:

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

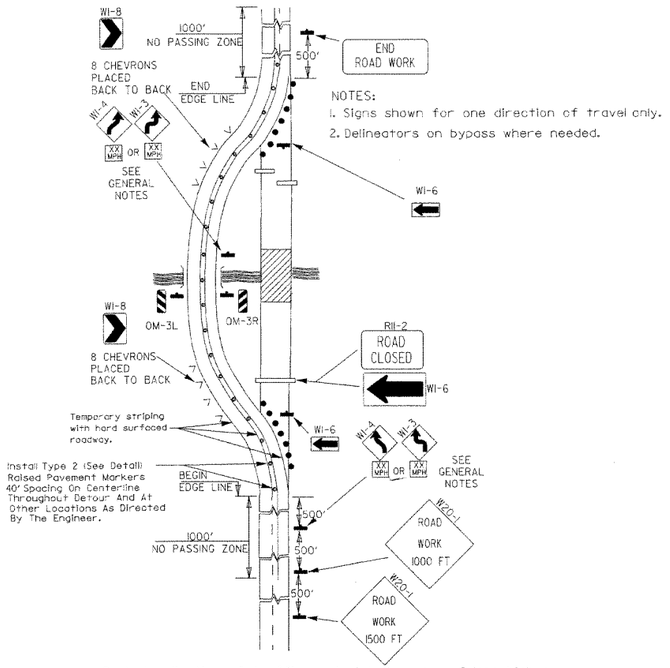
• NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE REQUIREMENTS SHOWN IN NOTES 4 & 5, BUT MEET THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH), WILL BE ACCEPTED. COMPLIANCE WITH THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY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

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

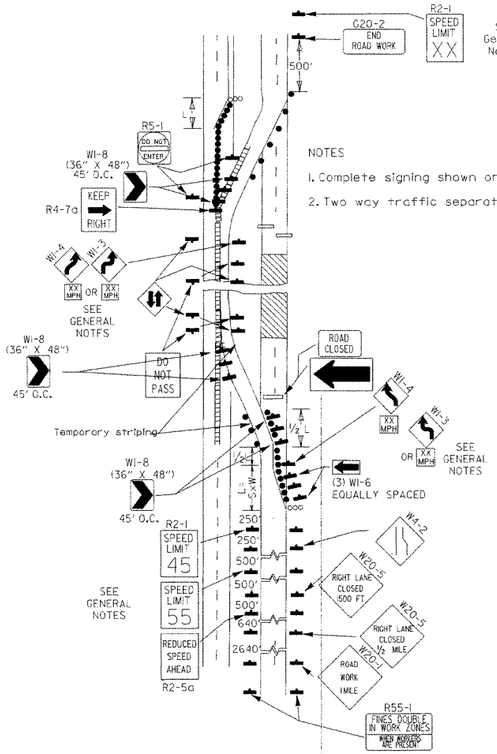
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

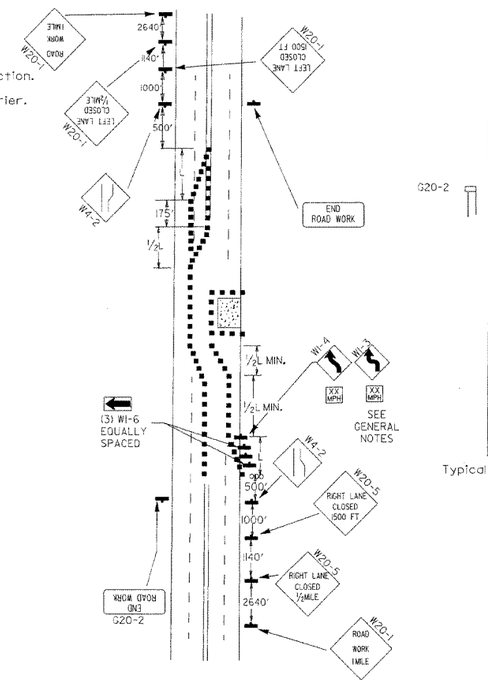
STANDARD DRAWING TC-1



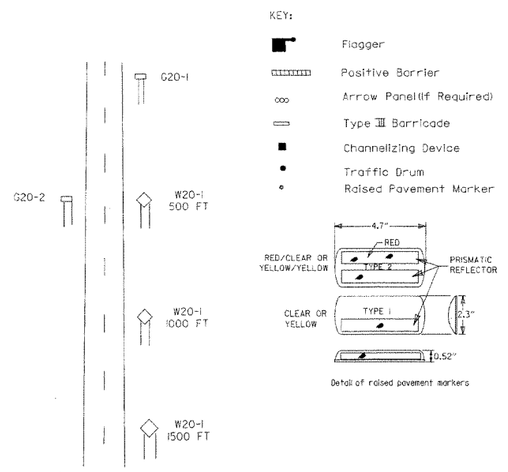
(A) Typical application of traffic control devices on a 2-lane highway where the entire roadway is closed and a bypass detour is provided.



(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

Taper formulae:

$L = S \times W$ for speeds of 45mph or more.

$L = \frac{WS^2}{60}$ for speeds of 40mph or less.

Where:

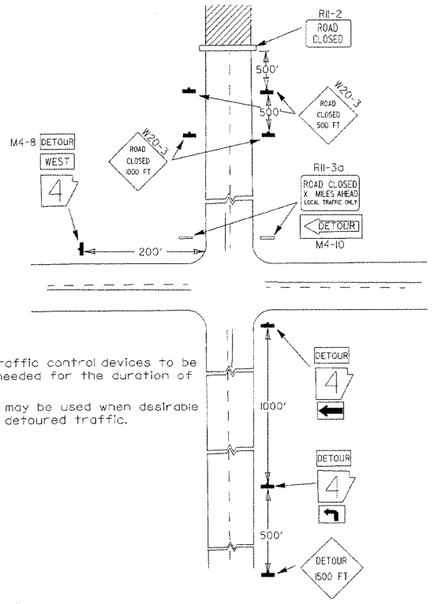
L= Minimum length of taper.

S= Numerical value of posted speed limit prior to work or 85th percentile speed.

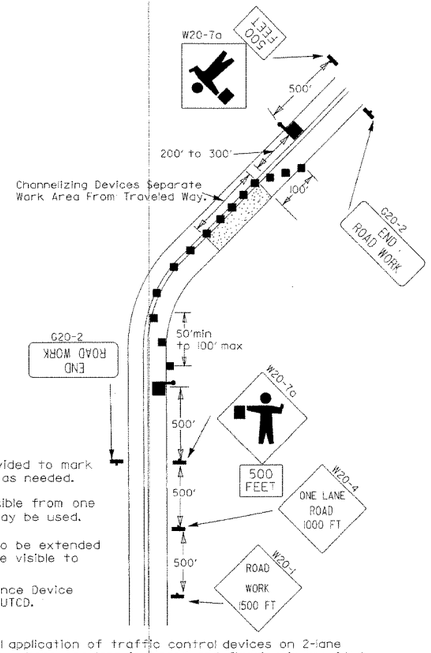
W= Width of offset.

GENERAL NOTES:

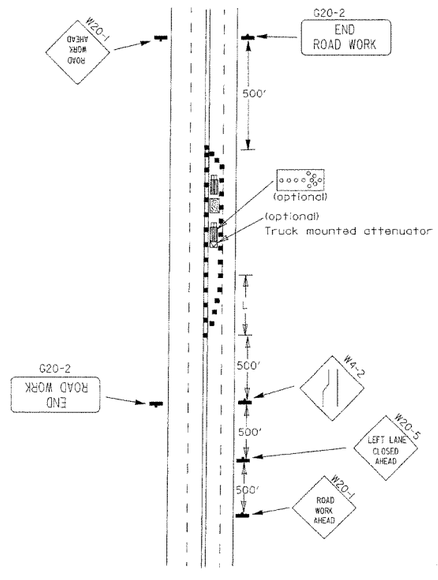
1. Advisory speed posted on WI-3 or WI-4 curve warning signs to be determined at site. Use WI-4 when speed is greater than 30mph and WI-3 when 30mph or less.
2. When the existing speed limit is 55mph and the plans require a speed limit of 45mph, the R2-1(55) shall be omitted and the R2-5A shall be installed at that location. Additional R2-1 45mph speed limit signs shall be installed at a maximum of 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.



(D) Typical application - roadway closed beyond detour point.



(E) Typical application of traffic control devices on 2-lane highway where one lane is closed and flagging is provided.



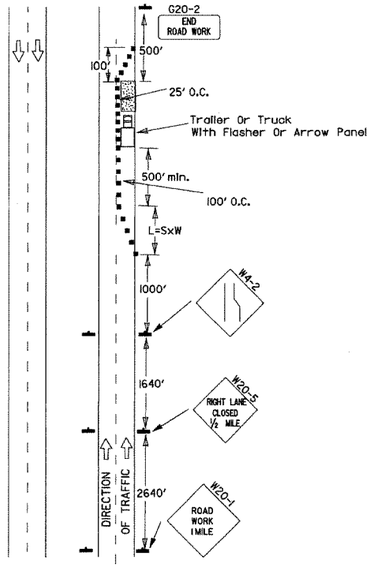
(F) Typical application - 4-lane undivided roadway with inside lane closed.

DATE	REVISION	FILMED
3-8-10	ADDED (AFAD)	
11-20-08	REVISED SIGN DESIGNATIONS	
11-18-04	ADDED GENERAL NOTE	
10-18-96	ADDED R55-1	
4-26-96	CORRECTED (a) BEHIND G20-2	
6-8-95	CORRECTED SIGN IDENT. ON WI-4A	6-8-95
2-2-95	REVISED PER PART VI, MUTCD, SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	

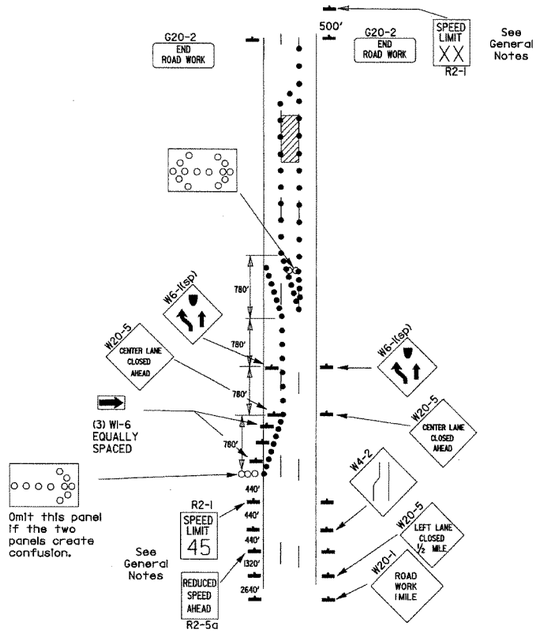
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

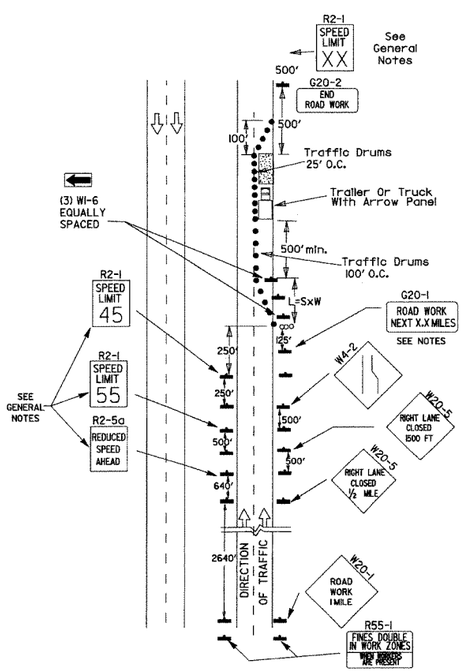
STANDARD DRAWING TC-2



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



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



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

KEY:

○○○ Arrow Panel (If Required)

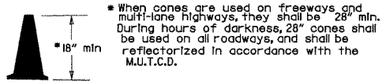
■ Channelizing Device

● Traffic drum

GENERAL NOTES:

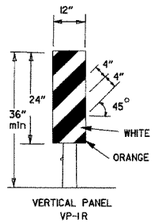
1. A speed limit reduction may be implemented ONLY when designated in the plan or when recommended by the Roadway Design Division.
2. When the existing speed limit is 55mph and the plans require a speed limit of 45mph, the R2-1(55) shall be omitted and the R2-5A shall be installed at that location. Additional R2-1 45mph speed limit signs shall be installed at a maximum of 1 mile intervals. At the end of the work area a R2-1(XX) shall be installed to match original speed limit.
3. When the existing speed limit is 65mph and the plans require a speed limit of 55mph, the R2-1(45) shall be omitted. Additional R2-1 55mph speed limit signs shall be installed at a maximum of 1 mile intervals. At the end of the work area a R2-1(XX) shall be installed to match original speed limit.
4. The maximum spacing between channelizing devices in a taper should be approximately equal in feet to the speed limit. Beyond the taper, maximum spacing shall be two times the speed limit or as directed by the Engineer.
5. Warning lights and/or flags may be mounted to signs or channelizing devices at night as needed.
6. Pavement markings no longer applicable which might create confusion in the minds of vehicle operators shall be removed or obliterated as soon as practicable.
7. The G20-1 sign will be required on jobs of over two miles in length. When the lane closure is not at the beginning of the project, the G20-1 sign shall be erected 125' in advance of the job limit. Additional W20-1 (1 MILE) signs are not required in advance of lane closures that begin inside the project limits.
8. Flaggers shall use STOP/SLOW paddles for controlling traffic through work zones. Flags may be used only for emergency situations.
9. All plastic drums and cones shall meet the requirements of NCHRP-350 or Manual For Assessing Safety Hardware (MASH).
10. Trailer mounted devices such as arrow panels and portable changeable message signs shall be delineated by affixing conspicuity material in a continuous line on the face of the trailer. When placed on or adjacent to the shoulder and not behind a positive barrier, these devices shall be delineated by placing five (5) traffic drums, equally spaced along the traffic side of the device.

Channelizing devices



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

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



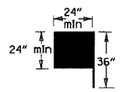
TRAFFIC CONTROL DEVICES
FOR
VERTICAL PAVEMENT DIFFERENTIALS

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.

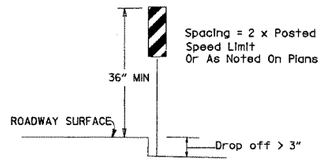
When the shoulder area is used as part of the traveled lane and there is insufficient width to place drums on the remaining shoulder width, then vertical panels shall be used.

FLAG

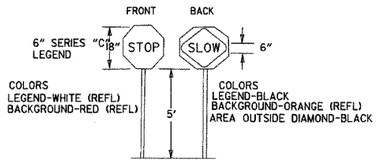


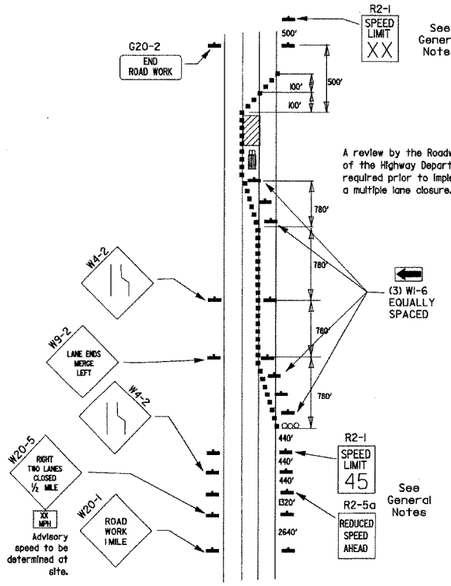
Flag shall be of good grade red material

VERTICAL PANEL PLACEMENT



STOP SLOW PADDLE





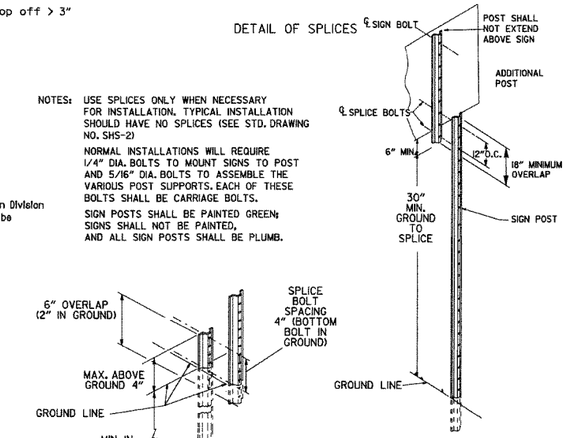
(D) Typical application - closing multiple lanes of a multilane highway.

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

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

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

DETAIL OF SPLICES



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

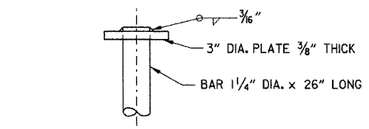
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

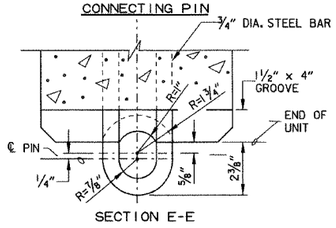
STANDARD DRAWING TC-3

REINFORCING BAR TABLE PER BARRIER UNIT

MARK	LOCATION	BAR SIZE	(NO. BARS)	SKETCH
H-1	HORIZONTAL IN BARRIER TIED INSIDE V-1 BARS	#5	(6)	19'-3"
H-2	CENTERED ABOVE DRAIN SLOTS LONG. & TRANSVERSELY	#5	(6)	6'-6"
H-3	TIED ABOVE H-1 BARS TO SUPPORT H-2, TIED TO V-1	#4	(2)	1'-6"
S-1	OVER LIFT HOLES	#4	(2)	2'-5", 90°, 3 3/8" R, LIFTING HOLE
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°, ±9 1/2", 2'-1 3/8", 4 3/8"

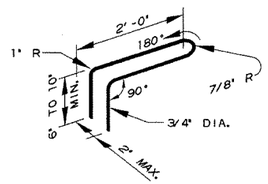


CONNECTING PIN

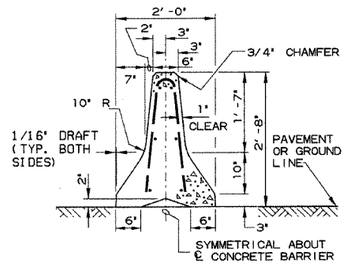


SECTION E-E

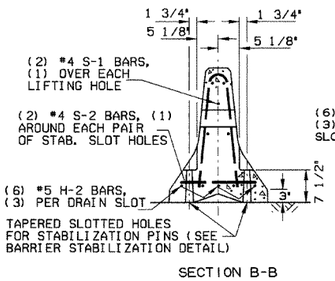
CONNECTION DETAILS



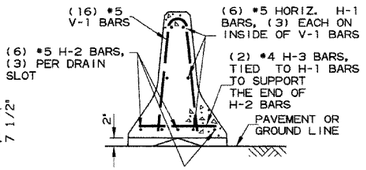
CONNECTION LOOP



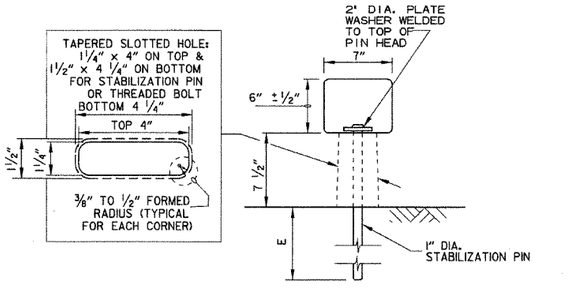
SECTION A-A



SECTION B-B



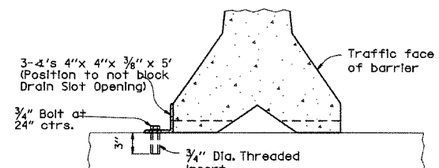
SECTION C-C



BARRIER STABILIZATION DETAIL

ROADWAY SECTION

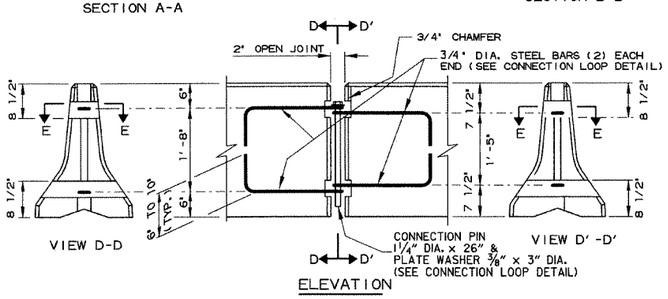
(E) 4" - Concrete Pavement
8" - Asphalt Pavement
12" - Shoulder Areas



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

BARRIER STABILIZATION DETAIL

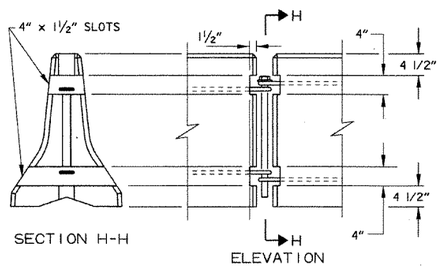
BRIDGE DECKS



VIEW D-D

VIEW D'-D'

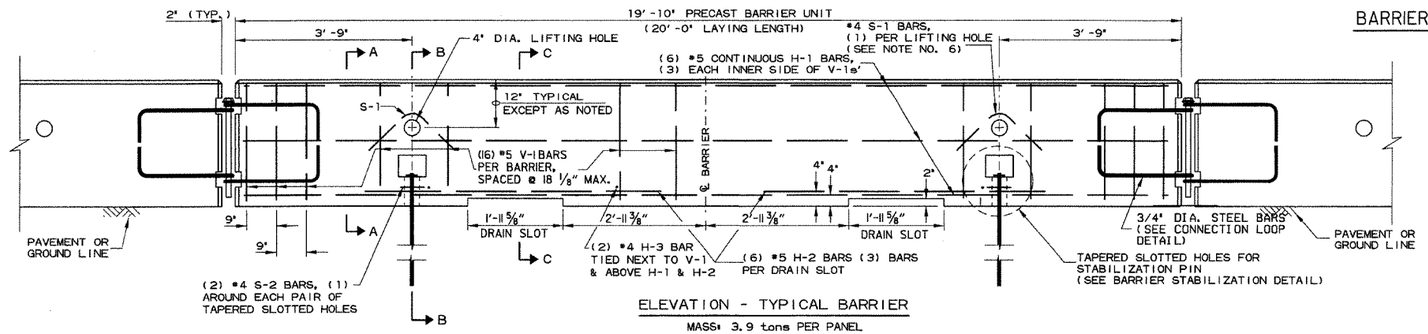
ELEVATION



SECTION H-H

ELEVATION

BARRIER REMOVAL SLOT DETAILS



ELEVATION - TYPICAL BARRIER

MASS: 3.9 tons PER PANEL

General Notes

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

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

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

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

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

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

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

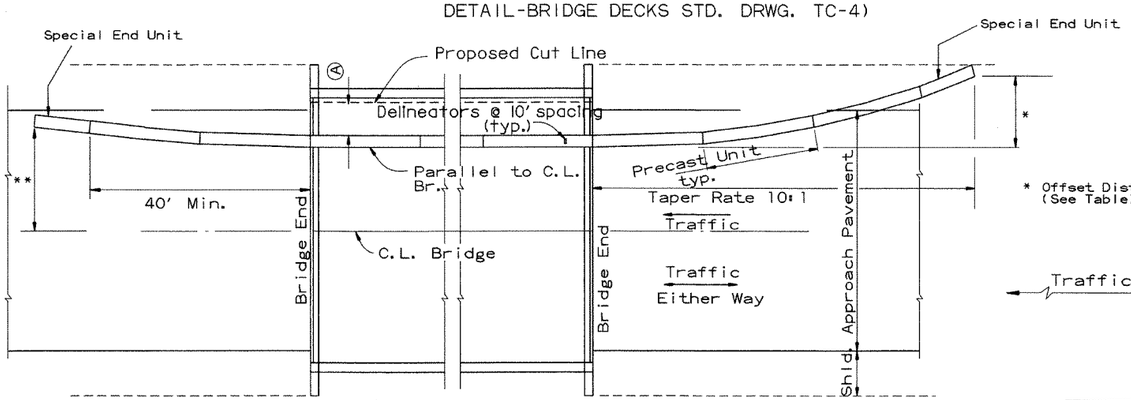
DATE	REVISION	FILMED
10-15-09	ADDED REFERENCE TO MASH	
8-5-09	REV. NOTE 3 CONCERNING DRAIN SLOTS	
11-29-07	REVISED NOTE 3	
5-25-06	DELETED GENERAL NOTE 7	
11-18-04	REVISED BARRIER STABILIZATION DETAIL BRIDGE DECKS	
4-10-03	REVISED GENERAL NOTE 2	
8-22-02	ISSUED NEW DRAWING	

ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION - TEMPORARY PRECAST BARRIER

STANDARD DRAWING TC-4

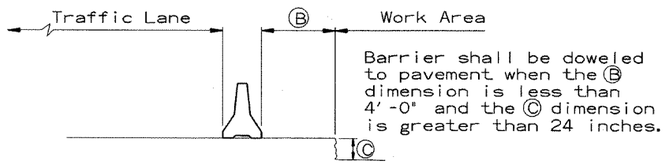
Ⓐ 4 feet or greater preferred. If less than 4 feet, Precast Units shall be connected to slab (SEE BARRIER STABILIZATION DETAIL-BRIDGE DECKS STD. DRWG. TC-4)



* Offset Distance (See Table)

BARRIER PLACEMENT ALONG BRIDGE WITH OFFSET

No Scale

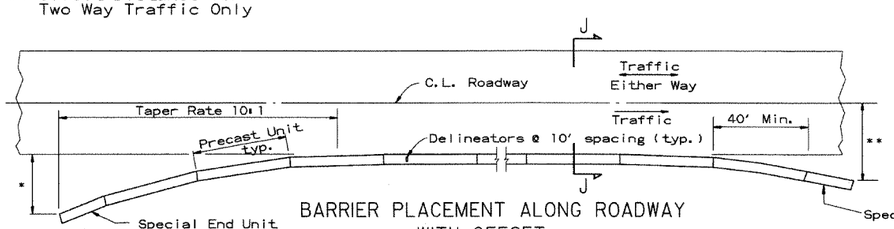


Barrier shall be doweled to pavement when the Ⓑ dimension is less than 4'-0" and the Ⓒ dimension is greater than 24 inches.

SECTION J-J

No Scale

** Offset Distance for Two Way Traffic Only



BARRIER PLACEMENT ALONG ROADWAY WITH OFFSET

No Scale

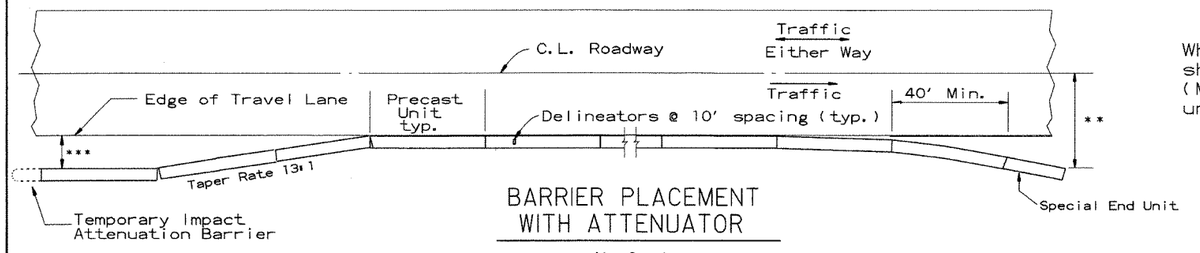
* Offset Distance (See Table)

** Offset Distance For Two Way Traffic Only

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.

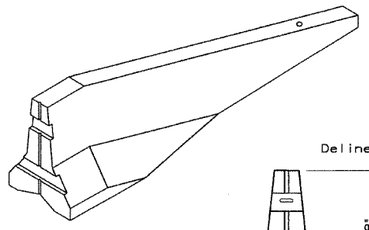


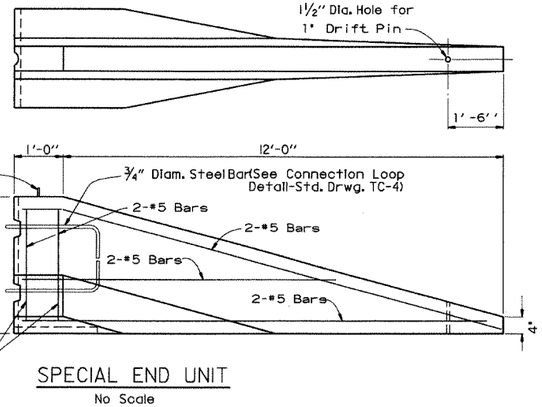
BARRIER PLACEMENT WITH ATTENUATOR

No Scale

** Offset Distance For Two Way Traffic Only

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





SPECIAL END UNIT

No Scale

General Notes

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

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

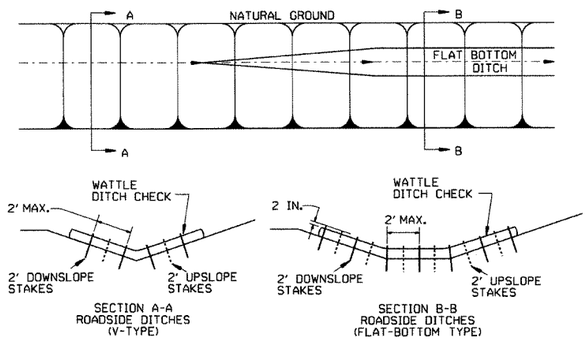
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION - TEMPORARY PRECAST BARRIER

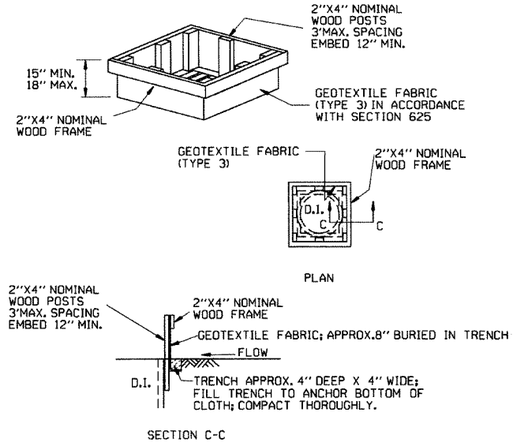
STANDARD DRAWING TC-5

GENERAL NOTES

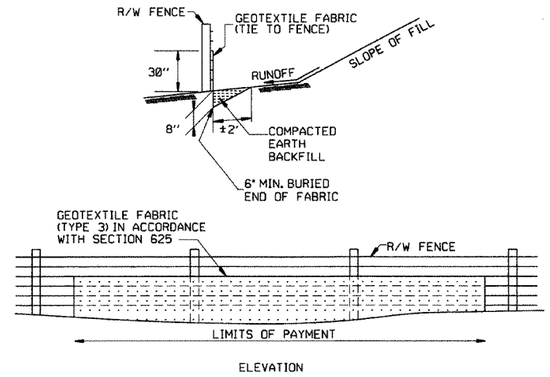
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.



WATTLE DITCH CHECK (E-1)



DROP INLET SILT FENCE (E-7)



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

GENERAL NOTES

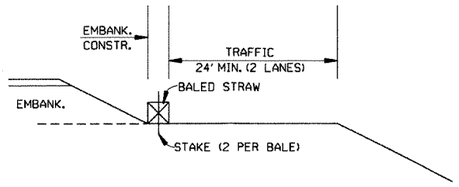
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST, OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

GENERAL NOTES

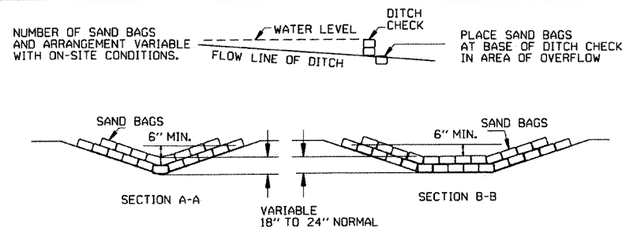
1. STRAW BALES SHALL BE INSTALLED SO THAT THE BINDINGS ARE ORIENTED AROUND THE SIDES RATHER THAN ALONG THE TOPS AND BOTTOMS OF THE BALES. THE BALES SHALL BE A MINIMUM OF 30 INCHES IN LENGTH.

2. NO GAPS SHALL BE LEFT BETWEEN BALES.

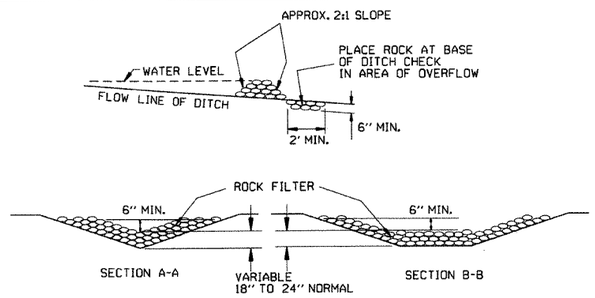
3. BALED STRAW FILTER BARRIERS COMPLETED AND ACCEPTED WILL BE MEASURED BY THE BALE IN PLACE AS AUTHORIZED BY THE ENGINEER AND WILL BE PAID FOR AT THE CONTRACT UNIT PRICE BID PER BALE FOR BALED STRAW DITCH CHECKS.



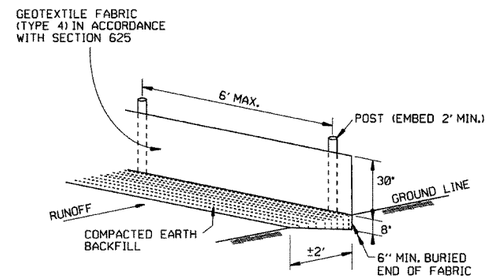
BALED STRAW FILTER BARRIER (E-2)



SAND BAG DITCH CHECK (E-5)



ROCK DITCH CHECK (E-6)



SILT FENCE (E-11)

GENERAL NOTES

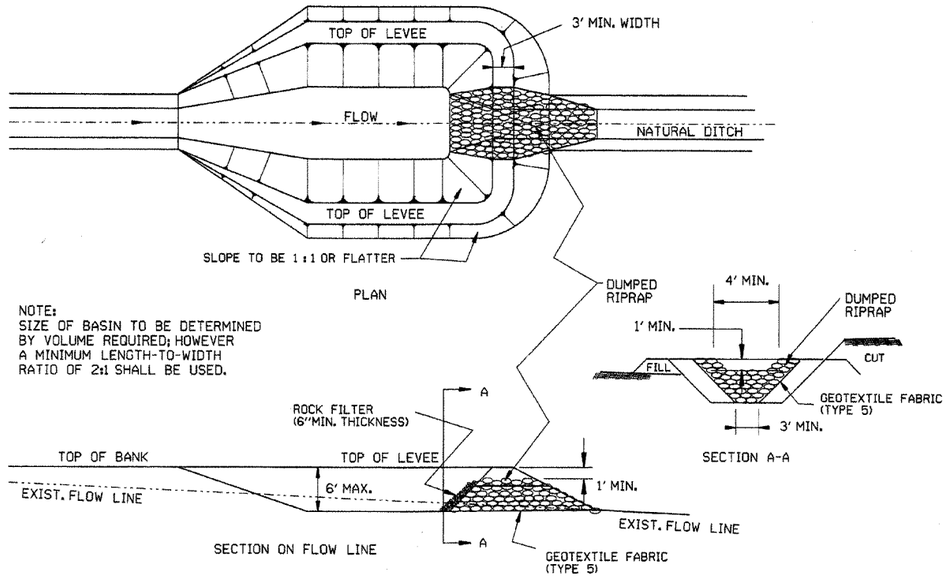
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

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

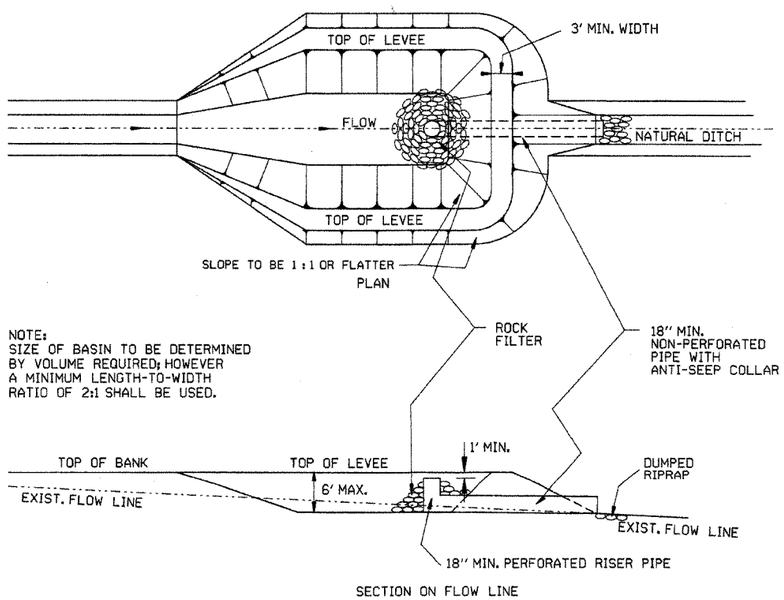
ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

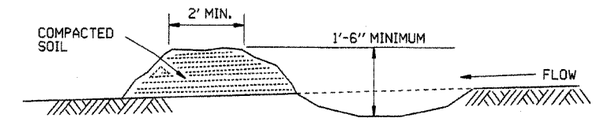
STANDARD DRAWING TEC-1



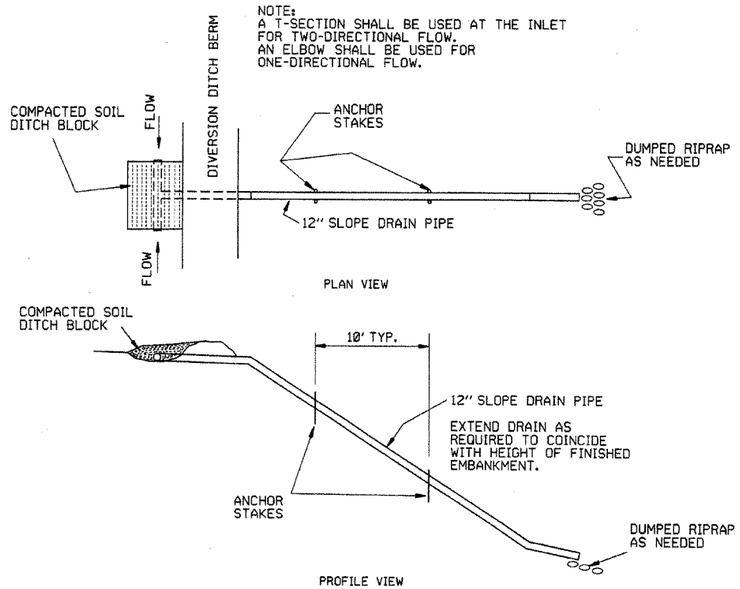
SEDIMENT BASIN WITH RIPRAP OUTLET (E-9)



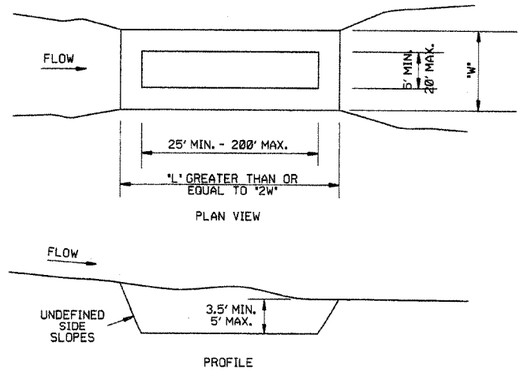
SEDIMENT BASIN WITH PIPE OUTLET (E-10)



DIVERSION DITCH (E-8)



SLOPE DRAIN (E-12)



SEDIMENT BASIN (E-14)

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

ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

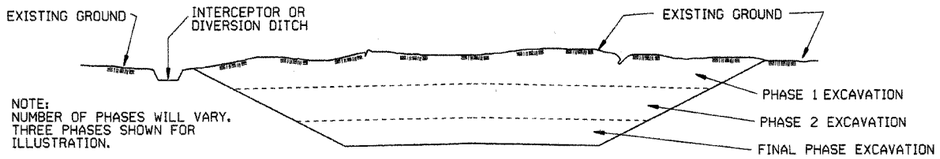
STANDARD DRAWING TEC-2

CLEARING AND GRUBBING

CONSTRUCTION SEQUENCE

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

EXCAVATION



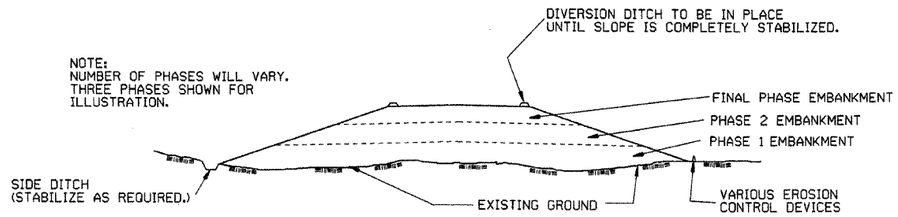
GENERAL NOTE

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

CONSTRUCTION SEQUENCE

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

EMBANKMENT



GENERAL NOTE

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

CONSTRUCTION SEQUENCE

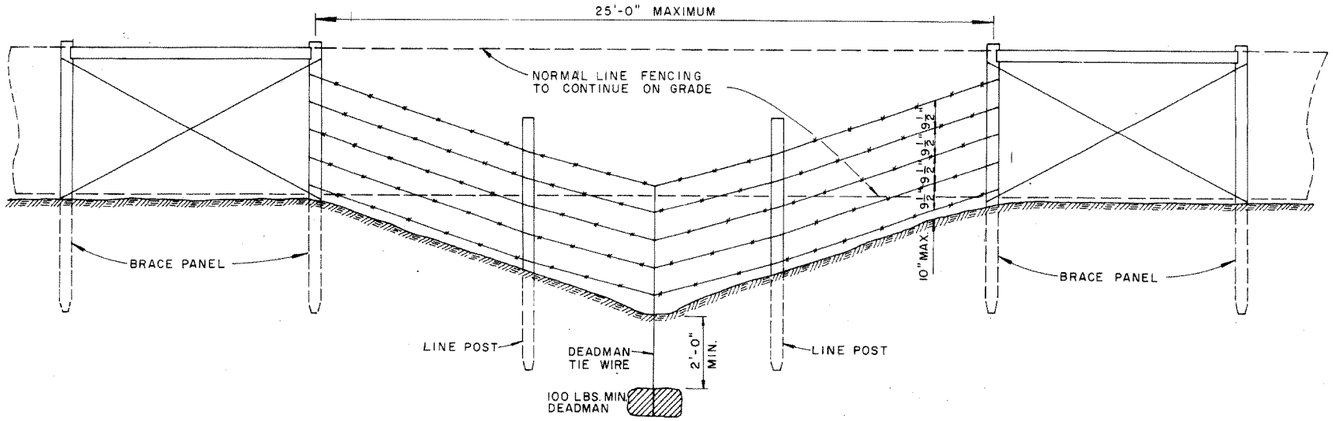
1. CONSTRUCT DIVERSION DITCHES, DITCH CHECKS, SEDIMENT BASINS, SILT FENCES, OR OTHER EROSION CONTROL DEVICES AS SPECIFIED.
2. PLACE PHASE 1 EMBANKMENT WITH PERMANENT OR TEMPORARY SEEDING. PROVIDE DIVERSION DITCHES AND SLOPE DRAINS IF EMBANKMENT CONSTRUCTION IS TO BE TEMPORARILY ABANDONED FOR A PERIOD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

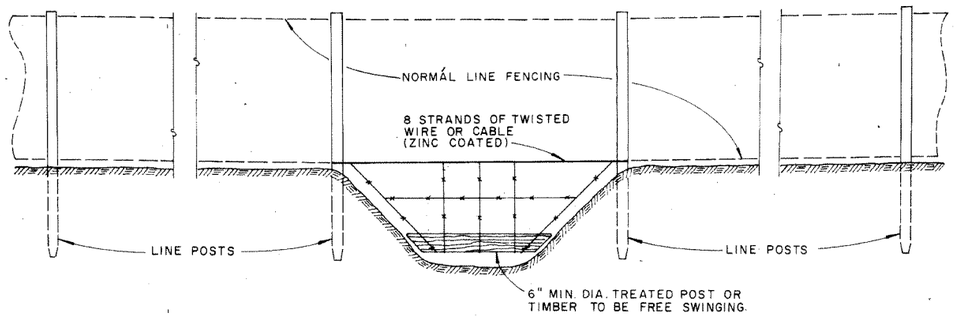
DATE	REVISION	FILMED
11-03-94	CORRECTED SPELLING	
6-2-94	Drawn & Issued	6-2-94

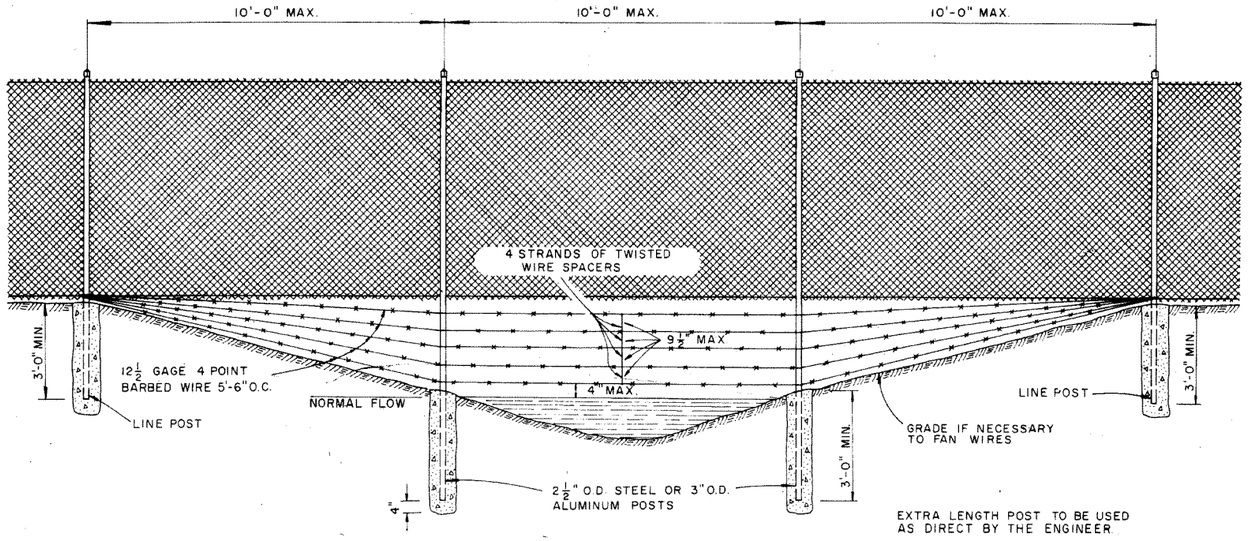
ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

STANDARD DRAWING TEC-3







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 FILMD.
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

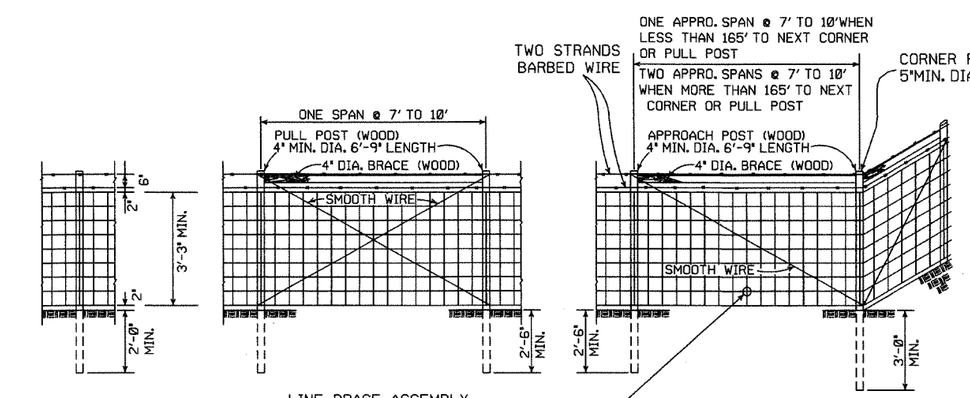
WIRE FENCE WATER GAPS

STANDARD DRAWING

WF-2

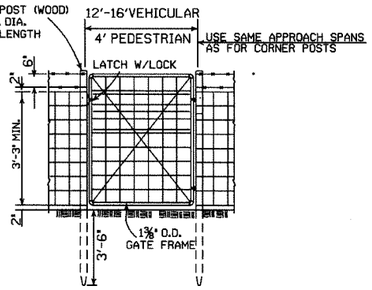
1M—11-71—67001—PPASC

TYPE C FENCE (WOOD POSTS)

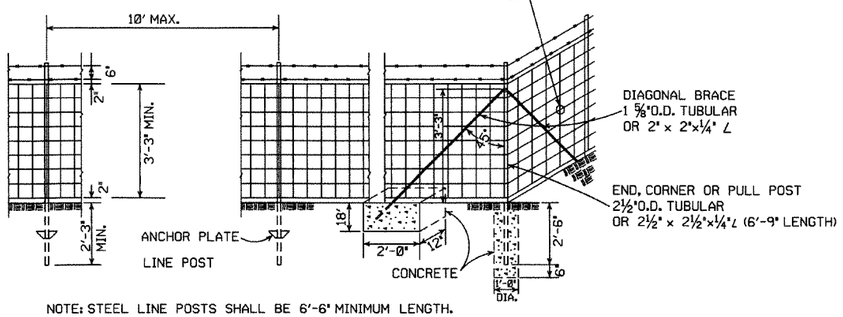


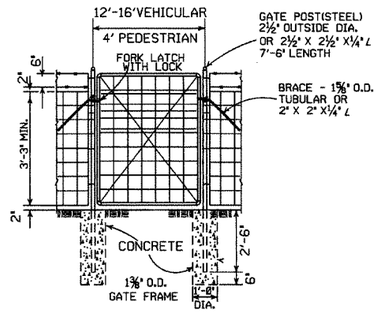
LINE POST
3" MIN. DIA. 6'-3" LENGTH
MAX. SPACING TO BE 10'-0"

LINE BRACE ASSEMBLY
MAX. SPACING TO BE 330'

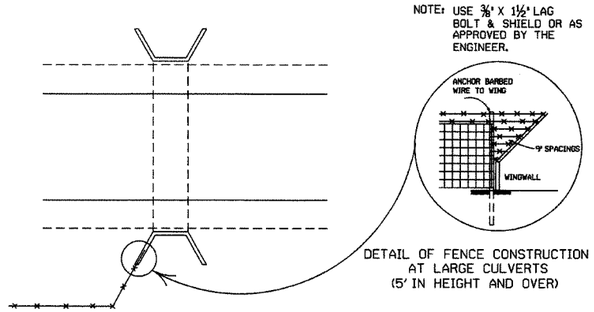


OTHER APPROVED TIES WILL BE PERMITTED





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.

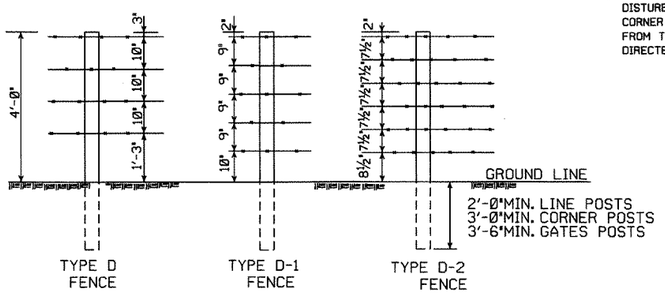
SPLICE FOR BARBED WIRE BETWEEN PULL POST ASSEMBLY SHALL BE BY THE 'EYE METHOD' AS DESCRIBED AS FOLLOWS: THE ENDS OF THE BARBED WIRE SHALL BE BENT TO FORM A LOOP. THE LOOPS SHALL BE CONNECTED. AFTER THE LOOPS ARE CONNECTED THE ENDS OF THE WIRE SHALL BE WRAPPED AROUND THE PROJECTING WIRES A MINIMUM OF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

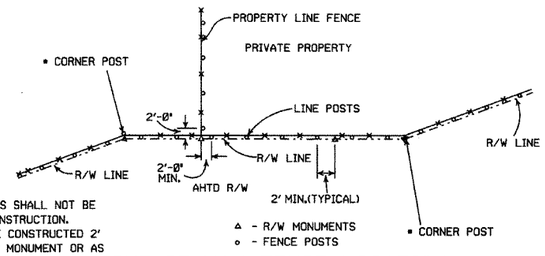
STAPLE AT LEAST TOP, BOTTOM AND ALTERNATE WIRES OF WOVEN FABRIC FOR WOOD LINE POSTS.

TYPE C FENCE (STEEL POSTS)

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

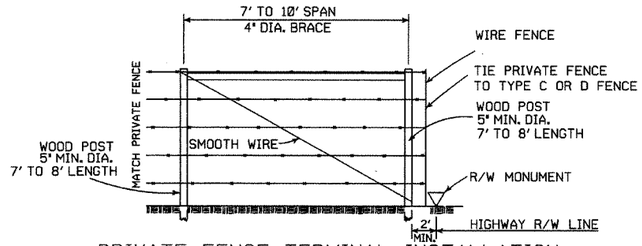


NOTE: SPACING AND SIZE (EXCEPT LENGTH) OF POSTS, APPROACH SPANS, PULL POST ASSEMBLIES, AND CORNER BRACING FOR TYPE D FENCE SHALL CONFORM TO TYPE C FENCE. USE GALVANIZED STAPLES ON WOOD POSTS AND APPROVED FASTENERS ON STEEL POSTS.

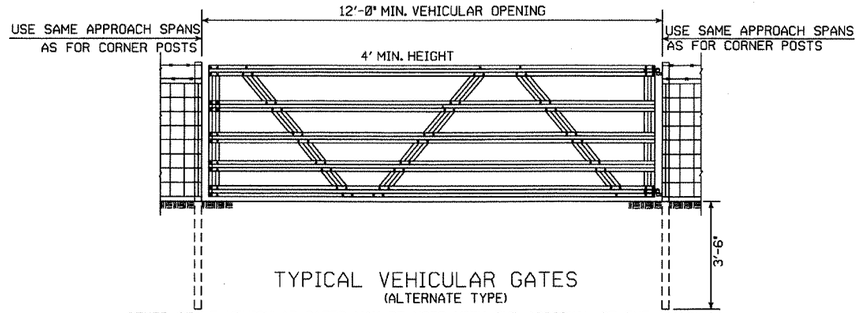


• NOTE: RIGHT-OF-WAY MONUMENTS SHALL NOT BE DISTURBED BY FENCE CONSTRUCTION. CORNER POSTS SHALL BE CONSTRUCTED 2' FROM THE RIGHT-OF-WAY MONUMENT OR AS DIRECTED BY THE ENGINEER.

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.

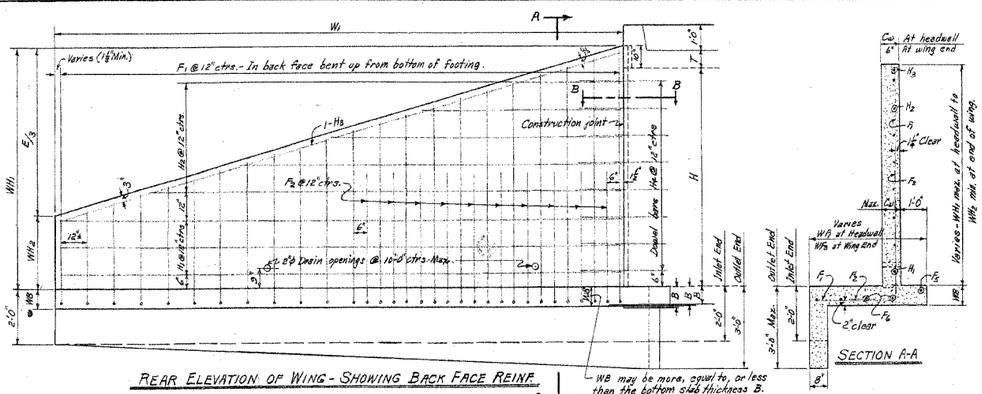
DATE	REVISION	FILMED
8-22-02	REVISED GENERAL NOTES	
10-18-96	REVISED AASHTO	
11-22-95	REVISED R-O-W LOCATION DETAIL	
6-2-94	REVISED BARB WIRE AND ADDED CORNER POST NOTES	6-2-94
8-5-93	REVISED R/W INSTALLATION FENCE	8-5-93
10-1-92	ADDED STAPLE NOTE	10-1-92
8-15-91	ADDED TYPE D-2 FENCE	8-15-91
11-30-89	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

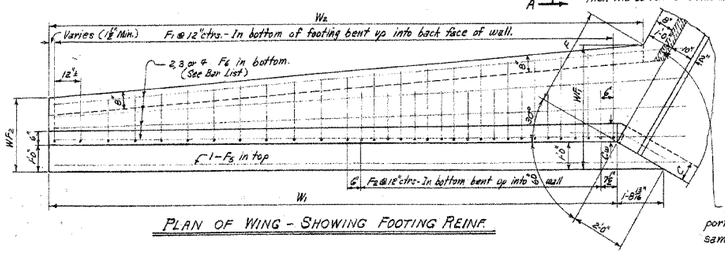
WIRE FENCE
TYPE C AND D

STANDARD DRAWING WF-4

FAP. ROAD DIST. NO.	STATE PROJECT	FED. AID PROJECT	COUNTY	SHEET NO.	TOTAL SHEETS
6				221	
JOB NO.					

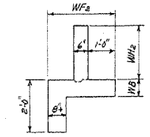


REAR ELEVATION OF WING - SHOWING BACK FACE REINF.

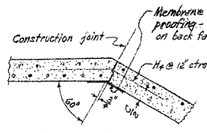


PLAN OF WING - SHOWING FOOTING REINF.

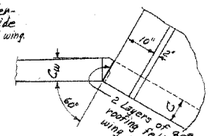
SECTION A-A



END VIEW OF WING



SECTION B-B THRU CONSTRUCTION JOINT



DETAIL AT TOP OF WING

NOTE:- Payment for membrane waterproofing and roofing felt to be included in the price bid for Class S Concrete.

When B is more than WB, the shaded portion of the apron shall be made the same thickness as the barrel base B.

WING DIMENSIONS

CLEAR HEIGHT OF BOX	THICKNESS OF WING FOOTING	THICKNESS OF WING AT HEADWALL = C	WINGWALL HEIGHTS		WIDTHS OF WING FOOTINGS		PERPENDICULAR FOOTING DIMENSION	PERPENDICULAR DIST FROM HEAD TO END OF WING	LENGTH OF WING WALLS	INSIDE FOOTING DIMENSION	* QUANTITY PER WING CLASS S CONCRETE	
			AT HEADWALL	AT END OF WING	AT HEADWALL	AT END OF WING					INLET END	OUTLET END
H	WB	Cw	WH1	WH2	W5	W6	F	E	W1	W2	CU.YD.	CU.YD.
2'	7"	6"	2'-10"	0'-8"	2'-9"	2'-1"	0'-11⅜"	6'-6"	7'-6"	7'-1⅝"	0.889	0.986
3'	7"	6"	3'-10"	1'-0"	2'-8"	2'-1½"	1'-3⅜"	8'-6"	9'-3⅛"	9'-2⅝"	1.338	1.466
4'	7"	6"	4'-10"	1'-4"	3'-0"	2'-3"	1'-3"	10'-6"	12'-1⅛"	12'-1⅝"	1.868	2.027
5'	7"	6"	5'-10"	1'-8"	3'-4"	2'-4½"	2'-1⅝"	12'-6"	14'-5⅛"	14'-7⅛"	2.976	2.668
		7"	5'-11"	1'-8"	3'-4"	2'-5½"	2'-1⅝"	12'-6"	14'-5⅛"	14'-7⅛"	2.982	2.772
6'	8"	7"	6'-10"	2'-0"	3'-8"	2'-6"	2'-6⅛"	14'-6"	16'-9"	17'-1⅛"	3.990	3.661
		7½"	6'-10"	2'-0"	3'-8"	2'-6"	2'-6⅝"	14'-6"	16'-9"	17'-1⅝"	3.811	3.732
		8"	6'-10"	2'-0"	3'-8"	2'-6"	2'-6⅝"	14'-6"	16'-9"	17'-1⅝"	3.583	3.803
7'	8½"	7½"	7'-10"	2'-4"	4'-2"	2'-7½"	3'-1⅛"	16'-6"	19'-0⅝"	19'-0⅝"	4.505	4.758
		8"	7'-10"	2'-4"	4'-2"	2'-7½"	3'-1⅛"	16'-6"	19'-0⅝"	19'-0⅝"	4.597	4.851
8'	9"	8"	8'-10"	2'-8"	4'-8"	2'-9"	3'-1⅝"	18'-6"	21'-6⅝"	22'-0"	5.761	6.097

* Quantity per wing does not include headwall or that portion of apron or toewall for the length W5.

APRON DIMENSION W3

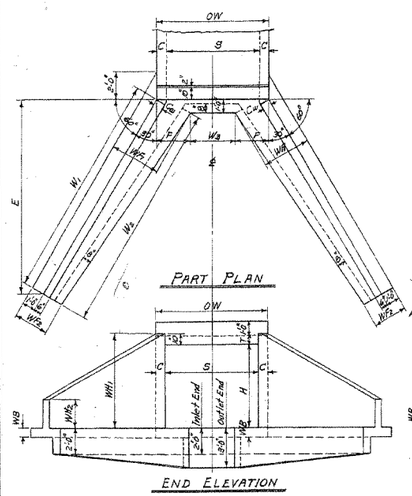
W3 = (CW - 2F)

CLEAR SPAN	CLEAR HEIGHT	FOOTING DIMENSION	SINGLE BARREL CULVERT		DOUBLE BARREL CULVERT		TRIPLE BARREL CULVERT		QUADRUPLE BARREL CULVERT		QUINTUPLE BARREL CULVERT	
S	H	2 F.	OW	W3	OW	W3	OW	W3	OW	W3	OW	W3
4'	2'	1'-11½"	5'-0"	3'-0½"	9'-8"	7'-8½"	14'-4"	12'-4½"	19'-0"	17'-0½"	23'-8"	21'-8½"
	3'	2'-8½"	5'-0"	2'-3½"	9'-8"	6'-11½"	14'-4"	11'-7½"	19'-0"	16'-3½"	23'-8"	20'-11½"
	4'	3'-6"	5'-0"	1'-6"	9'-8"	6'-2"	14'-4"	10'-10"	19'-0"	15'-6"	23'-8"	20'-2"
	5'	4'-3⅜"	5'-0"	0'-8½"	9'-8"	5'-4½"	14'-4"	10'-0⅜"	19'-0"	14'-9⅜"	23'-8"	19'-1⅜"
	6'	5'-0½"	5'-2"	0'-1½"	9'-11"	4'-10½"	14'-8"	9'-7½"	19'-5"	14'-2½"	24'-2"	19'-1⅝"
5'	3'	2'-8½"	6'-0"	3'-3½"	11'-8"	8'-11½"	17'-4"	14'-1⅞"	23'-0"	20'-3⅜"	28'-8"	25'-11⅝"
	4'	3'-6"	6'-0"	2'-6"	11'-8"	8'-2"	17'-4"	13'-10"	23'-0"	19'-6"	28'-8"	25'-2"
	5'	4'-3½"	6'-0"	1'-8½"	11'-8"	7'-4½"	17'-4"	13'-0⅜"	23'-0"	18'-9⅜"	28'-8"	24'-7⅜"
	6'	5'-0½"	6'-2"	1'-1½"	11'-11"	6'-10½"	17'-8"	12'-7½"	23'-5"	18'-2½"	29'-2"	24'-7⅝"
	7'	6'-2½"	6'-3"	0'-0½"	12'-1"	5'-10½"	17'-11"	11'-8⅜"	23'-9"	17'-6⅜"	29'-7"	23'-6⅝"
6'	3'	2'-8½"	7'-0"	4'-3½"	13'-8"	10'-11⅝"	20'-4"	17'-7⅛"	27'-0"	24'-3⅜"	33'-8"	30'-11⅝"
	4'	3'-6"	7'-0"	3'-6"	13'-8"	10'-2"	20'-4"	16'-10"	27'-0"	23'-6"	33'-8"	30'-2"
	5'	4'-3½"	7'-0"	2'-8½"	13'-9"	9'-4½"	20'-4"	16'-0⅜"	27'-0"	22'-9⅜"	33'-8"	29'-1⅜"
	6'	5'-0½"	7'-2"	2'-1½"	13'-11"	8'-10½"	20'-8"	15'-7⅛"	27'-5"	22'-2⅝"	34'-2"	29'-1⅝"
	7'	6'-2½"	7'-3"	1'-0½"	14'-1"	7'-10½"	20'-11"	14'-6⅜"	27'-9"	21'-0⅝"	34'-7"	28'-0⅝"
	8'	7'-4"	7'-4"	0'-0"	14'-2"	6'-10"	21'-0"	13'-8"	27'-10"	20'-6"	34'-8"	27'-4"
7'	4'	3'-6"	8'-0"	4'-6"	15'-8"	14'-2"	24'-1"	22'-10"	35'-0"	33'-4"	45'-8"	43'-2"
	5'	4'-3½"	8'-0"	3'-8½"	15'-9"	13'-4½"	24'-1"	21'-10⅜"	35'-1"	31'-9⅜"	45'-8"	41'-1⅜"
	6'	5'-0½"	8'-2"	3'-1½"	15'-11"	12'-10½"	24'-5"	20'-11⅞"	35'-5"	30'-3⅝"	46'-2"	39'-1⅝"
	7'	6'-2½"	8'-3"	2'-0½"	16'-1"	11'-10½"	24'-8"	19'-11⅞"	35'-9"	28'-9⅝"	46'-7"	37'-0⅝"
	8'	7'-4"	8'-4"	1'-0"	16'-2"	10'-10"	24'-11"	18'-11⅞"	36'-0"	27'-4"	46'-8"	35'-4"
8'	5'	4'-3½"	10'-2"	5'-0⅜"	19'-11"	15'-7⅛"	29'-8"	25'-4⅜"	39'-5"	35'-1⅜"	51'-2"	46'-10⅜"
	6'	5'-0½"	10'-3"	4'-3½"	20'-1"	15'-0⅜"	29'-11"	24'-6⅜"	39'-9"	34'-3⅜"	51'-7"	44'-7⅜"
	7'	6'-2½"	10'-3"	3'-1½"	20'-1"	13'-10⅜"	29'-11"	23'-2⅜"	39'-9"	32'-7⅜"	51'-7"	42'-11⅜"
	8'	7'-4"	10'-4"	2'-0"	20'-2"	12'-10"	30'-0"	22'-2"	39'-10"	32'-1"	51'-8"	42'-4"
9'	5'	4'-3⅜"	11'-2"	6'-10⅜"	21'-11"	17'-7⅛"	32'-8"	28'-4⅜"	43'-5"	39'-1⅜"	56'-2"	51'-10⅜"
	6'	5'-0½"	11'-3"	6'-2½"	22'-1"	17'-0⅜"	32'-11"	27'-10½"	43'-9"	38'-8½"	56'-7"	50'-6½"
	7'	6'-2½"	11'-3"	5'-0½"	22'-1"	15'-10⅜"	32'-11"	26'-8½"	43'-9"	37'-1⅝"	56'-7"	48'-10⅝"
	8'	7'-4"	11'-4"	4'-0"	22'-2"	14'-10"	33'-0"	25'-8"	43'-10"	36'-6"	56'-8"	47'-4"
11'	6'	5'-0½"	13'-4"	7'-3½"	26'-2"	19'-1⅞"	36'-0"	30'-11⅝"	47'-10"	42'-9⅛"		
	7'	6'-2½"	13'-4"	6'-1½"	26'-2"	17'-11⅞"	36'-0"	29'-9⅝"	47'-10"	41'-7⅛"		
	8'	7'-4"	13'-5"	5'-0"	26'-3"	16'-10"	36'-0"	28'-8"	47'-11"	40'-6"		
12'	6'	5'-0½"	13'-8"	8'-3½"	26'-8"	21'-1⅝"	37'-0"	33'-1⅛"	51'-0"	46'-3⅝"		
	7'	6'-2½"	13'-8"	7'-1½"	26'-8"	19'-11⅝"	37'-0"	32'-0⅛"	51'-0"	45'-1⅝"		
	8'	7'-4"	13'-8"	6'-0"	26'-8"	18'-10"	37'-0"	30'-11"	51'-0"	44'-0"		

QUANTITIES

CLEAR SPAN	CLEAR HEIGHT	THICKNESS OF WINGS AT HEADWALL	THICKNESS OF WING FOOTING	⊛ REINFORCING STEEL - FOR 4 WINGS	CLASS S CONCRETE - 4 WINGS HEADWALLS, WINGWALLS, FOOTINGS, TOE WALLS AND APRONS				
					SINGLE BARREL CULVERT	DOUBLE BARREL CULVERT	TRIPLE BARREL CULVERT	QUADRUPLE BARREL CULVERT	QUINTUPLE BARREL CULVERT
S	H	Cw	WB	LB.	CU.YD.	CU.YD.	CU.YD.	CU.YD.	CU.YD.
4'	2'	6"	7"	108.0	4.50	5.46	6.42	7.38	8.34
	3'	6"	7"	169.9	6.26	7.21	8.17	9.13	10.09
	4'	6"	7"	254.6	8.33	9.28	10.24	11.20	12.16
	5'	6"	7"	352.8	10.72	11.68	12.64	13.60	14.56
	6'	7"	8"	583.1	14.55	15.53	16.52	17.51	18.49
5'	3'	6"	7"	164.9	6.97	7.68	8.79	9.36	11.12
	4'	6"	7"	254.6	8.54	9.70	10.87	10.03	12.20
	5'	6"	7"	357.8	10.94	12.10	13.26	14.93	15.59
	6'	7"	8"	583.1	14.77	15.96	17.15	18.34	19.54
	7'	7½"	8½"	1139.6	18.94	20.15	21.37	22.59	23.80
6'	3'	6"	7"	164.9	6.68	8.06	9.42	10.80	12.18
	4'	6"	7"	254.6	8.75	10.14	11.49	12.87	14.25
	5'	6"	7"	357.8	11.15	12.53	13.89	15.27	16.65
	6'	7"	8"	583.1	14.98	16.39	17.78	19.18	20.59
	7'	7½"	8½"	1139.6	19.15	20.58	22.00	23.43	24.86
	8'	8"	9"	1925.6	25.09	25.53	26.96	28.39	29.83
7'	4'	6"	7"	254.6	8.97	10.58	12.15	13.76	15.35
	5'	6"	7"	357.8	11.36	12.97	14.58	16.15	17.75
	6'	7"	8"	583.1	15.20	16.82	18.42	20.04	21.66
	7'	7½"	8½"	1139.6	19.38	21.02	22.69	24.28	25.92
	8'	8"	9"	1925.6	24.32	25.97	27.60	29.25	30.89
8'	4'	6"	7"	254.6	9.19	11.03	12.82	14.65	16.45
	5'	7"	7"	357.8	12.03	13.89	15.70	17.55	19.34
	6'	7"	8"	583.1	15.92	17.27	19.09	20.93	22.75
	7'	7½"	8½"	1139.6	19.59	21.46	23.30	25.16	26.99
	8'	8"	9"	1925.6	24.54	26.41	28.24	30.11	31.94
9'	5'	7"	7"	357.8	12.26	1939	16.87	18.95	20.47
	6'	7½"	8"	583.1	15.99	18.04	20.09	22.19	24.23
	7'	7½"	8½"	1139.6	19.81	21.91	23.96	26.06	28.10
	8'	8"	9"	1925.6	24.76	26.86	28.91	31.00	33.05
10'	5'	7"	7"	357.8	12.49	14.80	17.65	19.24	21.52
	6'	7½"	8"	583.1	16.17	18.50	20.77	22.99	25.28
	7'	7½"	8½"	1139.6	20.09	22.37	24.64	26.87	29.15
	8'	8"	9"	1925.6	24.98	27.31	29.58	31.81	34.10
11'	6'	8"	8"	583.1	16.03	19.27	21.76	24.23	
	7'	8"	8½"	1139.6	20.69	23.22	25.71	28.18	
	8'	8"	9"	1925.6	25.19	27.77	30.27	32.74	
12'	6'	8"	8"	583.1	16.92	19.75	22.95	25.18	
	7'	8"	8½"	1139.6	20.87	23.69	26.90	29.13	
	8'	8"	9"	1925.6	25.92	28.25	30.96	33.69	

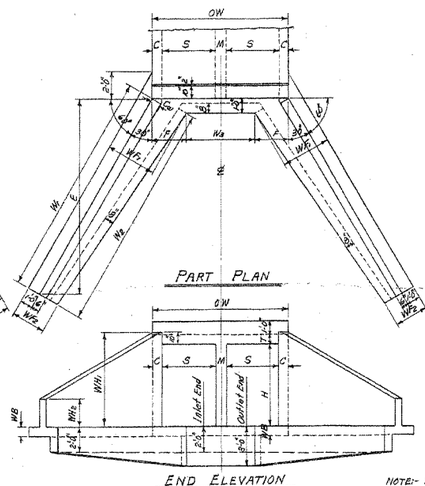
⊛ For reinforcing steel in Headwalls and Aprons, See Details of Standard Barrel Sections for R.C. Box Culverts for the desired Span and Height.



PART PLAN

END ELEVATION

SINGLE BARREL CULVERT

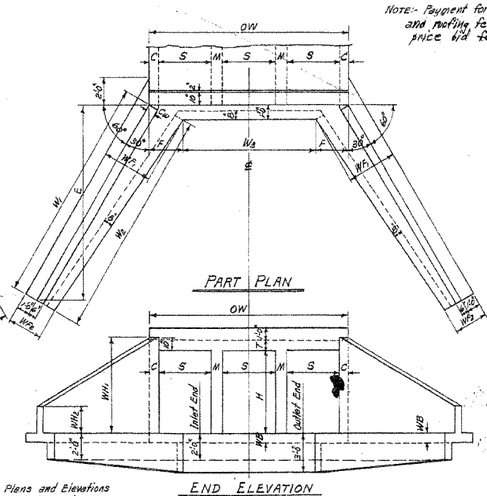


PART PLAN

END ELEVATION

DOUBLE BARREL CULVERT

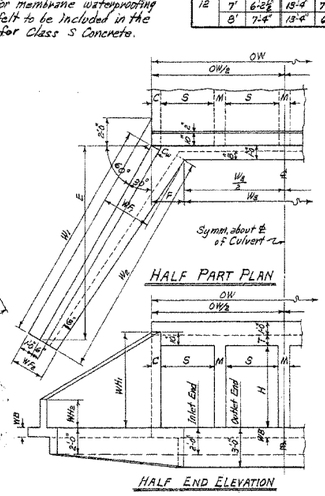
NOTE:- Plans and Elevations are not to scale.



PART PLAN

END ELEVATION

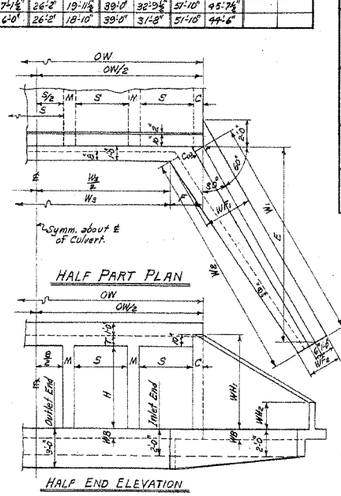
TRIPLE BARREL CULVERT



HALF PART PLAN

HALF END ELEVATION

QUADRUPLE BARREL CULVERT



HALF PART PLAN

HALF END ELEVATION

QUINTUPLE BARREL CULVERT

MEMBRANE:- A membrane waterproofing 12" wide, consisting of three mopings of waterproofing asphalt and two alternate layers of treated cotton fabric shall be applied to the back face of wing to cover the construction joints in wings.

NOTE:- This drawing to be used in conjunction with Standard Barrel Sections, Drawing Nos. as listed below.

SINGLES	DOUBLES	TRIPLES	QUADRUPLES	QUINTUPLES
R-100X-0	R-200X-0	R-300X-0	R-400X-0	R-500X-0
R-100X-X1	R-200X-X1	R-300X-X1	R-400X-X1	R-500X-X1
R-100X-X2	R-200X-X2	R-300X-X2	R-400X-X2	
	R-200X-X3	R-300X-X3		

CLASS S CONCRETE

BAR LIST FOR ONE WING - 4 REQUIRED

CLEAR HEIGHT	F1 BENT: In bottom of footing, bent up into back face of wing. One bar of each length.						F2 BENT: In bottom of footing, bent up into back face of wing. Alt. with F1 bars.						F3 STRAIGHT: Longitudinal in top of wing footing heel.			F4 STRAIGHT: Longitudinal in bottom of wing footing toe.			H1 STRAIGHT: Horizontal in back face of wing.			H2 STRAIGHT: Horizontal in back face of wing. One bar of each length.					H3 STRAIGHT: In back face of wing at top-on slope.			H4 BENT: Dowels thru construction joint at headwall.				QUANTITY REINFORCING STEEL PER WING	BAR BENDING DIAGRAMS
				LENGTHS VARY																					LENGTHS VARY											
H	SIZE	SPACING	NO. REQ'D	MIN.	MAX.	X	Y	SIZE	SPACING	NO. REQ'D	LENGTH	X	Y	SIZE	NO. REQ'D	LENGTH	SIZE	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH	MAX.	MIN.	SIZE	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH	X	LB.	
2'	#3	12"	8	1'-6"	3'-10"	0'-8"	1'-0"	0'-11"	2'-11"	—	—	—	—	—	—	#3	1	9'-8"	#3	2	6'-6"	#3	12"	1	7'-2"	#3	18"	1	—	9'-8"	#8	1	7'-4"	#3	12"	2	2'-8"	1'-4"	27.0	F1 & F2 Bent, 3" Pin, Y, X, H6, 7, X, Y, 12, Note:- Dimensions are to bar centers.
3'	#3	12"	10	2'-2"	5'-2"	0'-8"	1'-3"	1'-5"	4'-0"	—	—	—	—	—	—	#3	1	12'-0"	#3	2	11'-0"	#3	12"	1	9'-6"	#3	18"	2	7'-6"	9'-0"	#8	1	9'-9"	#3	12"	3	2'-8"	1'-4"	41.1	
4'	#3	12"	13	2'-9"	6'-6"	0'-11"	1'-7"	1'-8"	5'-0"	—	—	—	—	—	—	#3	1	14'-9"	#3	3	13'-6"	#3	12"	1	11'-10"	#3	12"	3	10'-11"	9'-0"	#3	1	12'-2"	#3	12"	9	2'-8"	1'-4"	63.7	
5'	#3	12"	15	2'-11"	7'-10"	1'-1"	1'-11"	1'-11"	6'-0"	#3	12"	9	3'-6"	1'-1"	2'-6"	#3	1	16'-8"	#3	3	16'-0"	#3	12"	2	14'-2"	#3	12"	3	10'-11"	9'-0"	#3	1	14'-7"	#3	12"	5	2'-8"	1'-4"	89.5	
6'	#4	12"	17	3'-6"	9'-3"	1'-2"	2'-3"	2'-5"	7'-1"	#3	12"	9	4'-6"	1'-4"	3'-3"	#3	1	19'-5"	#3	3	18'-6"	#3	12"	2	16'-6"	#3	12"	4	14'-6"	9'-0"	#3	1	17'-0"	#3	12"	6	2'-8"	1'-6"	145.8	
7'	#4	12"	20	3'-9"	10'-9"	1'-3"	2'-9"	2'-7"	8'-1"	#4	12"	7	5'-6"	1'-7"	4'-0"	#4	1	21'-6"	#4	4	21'-0"	#4	12"	2	18'-9"	#4	12"	5	17'-9"	9'-0"	#4	1	19'-5"	#4	12"	7	3'-6"	1'-9"	283.7	
8'	#4	12"	22	4'-4"	12'-5"	1'-5"	3'-2"	3'-0"	9'-2"	#4	12"	10	6'-6"	1'-10"	4'-9"	#4	1	23'-8"	#4	4	23'-8"	#4	12"	3	21'-1"	#4	12"	5	17'-9"	9'-0"	#4	1	21'-10"	#4	12"	8	3'-6"	1'-9"	356.4	

Designed By:- W.C.H. 8-20-62. Checked By:- RMS 1-9-63
Drawn By:- W.C.H. 12-4-62. Checked By:- RMS 1-31-63
Quantities By:- W.C.H. 12-14-62. Recalculated By:- RMS 2-27-63

REVISIONS:- Membrane added. 8-10-66 W.C.H.

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF STANDARD WINGS FOR REINFORCED CONCRETE BOX CULVERTS

4', 5', 6', 7', 8', 9', 10', 11' & 12' SPANS — 3:1 SLOPES

SINGLES, DOUBLES, TRIPLES, QUADRUPLES & QUINTUPLES. — ALL DEPTHS OF COVER FOR H = 8'-0" OR LESS

STANDARD DRAWING NO. W-X003-1

RESHOT 3-4-93

FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			222	
JOB No.					

BAR LIST FOR BARREL SECTION 60'-0" IN LENGTH

DEPTH OF COVER	CLEAR SPAN	CLEAR HEIGHT	"a" bars STRAIGHT In Top and Bottom Slabs of Barrel. 2 Add'l in Apron and Headwall - Each. SIZE	"a" bars STRAIGHT In Top and Bottom Slabs of Barrel. 2 Add'l in Apron and Headwall - Each. SPACING	"a" bars STRAIGHT In Top and Bottom Slabs of Barrel. 2 Add'l in Apron and Headwall - Each. NUMBER REQ'D 3:1	"a" bars STRAIGHT In Top and Bottom Slabs of Barrel. 2 Add'l in Apron and Headwall - Each. NUMBER REQ'D 4:1	"a" bars STRAIGHT In Top and Bottom Slabs of Barrel. 2 Add'l in Apron and Headwall - Each. LENGTH	"b" bars BENT - See Diagram below. Alternate with "a" bars. SIZE	"b" bars BENT - See Diagram below. Alternate with "a" bars. SPACING	"b" bars BENT - See Diagram below. Alternate with "a" bars. NO. REQ'D	"b" bars BENT - See Diagram below. Alternate with "a" bars. LENGTH	X	"d" bars STRAIGHT Longitudinal in Top Slab of Barrel SIZE	"d" bars STRAIGHT Longitudinal in Top Slab of Barrel SPACING	"d" bars STRAIGHT Longitudinal in Top Slab of Barrel NO. REQ'D	"d" bars STRAIGHT Longitudinal in Top Slab of Barrel LENGTH	"d'" bars STRAIGHT Longitudinal in Sidewalls SIZE	"d'" bars STRAIGHT Longitudinal in Sidewalls SPACING	"d'" bars STRAIGHT Longitudinal in Sidewalls NO. REQ'D	"d'" bars STRAIGHT Longitudinal in Sidewalls LENGTH	"e" bars. STRAIGHT Longitudinal in Bottom Slab of Barrel SIZE	"e" bars. STRAIGHT Longitudinal in Bottom Slab of Barrel SPACING	"e" bars. STRAIGHT Longitudinal in Bottom Slab of Barrel NO. REQ'D	"e" bars. STRAIGHT Longitudinal in Bottom Slab of Barrel LENGTH	"f" bars STRAIGHT Verticals in Side walls SIZE	"f" bars STRAIGHT Verticals in Side walls SPACING	"f" bars STRAIGHT Verticals in Side walls NUMBER REQ'D 3:1	"f" bars STRAIGHT Verticals in Side walls NUMBER REQ'D 4:1	"f" bars STRAIGHT Verticals in Side walls LENGTH
D	S	H																										
0'-0" TO 5'-0" MAXIMUM	1 @ 4'	2'	#5	13"	120	120	4'-9"	#6	13"	110	110	5'-10"	4'-8"	#5	10½"	6	#4	12"	4	#4	12"	5	#4	12"	5	120	120	2'-11"
		3'			120	120	4'-9"			110	110	5'-10"	4'-8"			6			6			6			6			120	120	3'-11"
		4'			120	120	4'-9"			110	110	5'-10"	4'-8"			6			8			8			8			120	120	4'-11"
		5'			120	120	4'-9"			110	110	5'-10"	4'-8"			6			10			10			5			120	120	5'-11"
		6'			120	120	4'-11"			110	110	6'-0"	4'-10"			6			12			12			5			120	120	6'-11"
	1 @ 5'	3'	#6	13"	120	120	5'-9"	#6	13"	110	110	6'-10"	5'-8"	#5	10½"	7	#4	12"	6	#4	12"	6	#4	12"	6	120	120	4'-0"
		4'			120	120	5'-9"			110	110	6'-10"	5'-8"			8			8			8			6			120	120	5'-0"
		5'			120	120	5'-9"			110	110	6'-10"	5'-8"			7			10			10			6			120	120	6'-0"
		6'			120	120	5'-11"			110	110	7'-0"	5'-10"			7			12			12			6			120	120	7'-0"
		7'			120	120	6'-0"			110	110	7'-1"	5'-11"			7			14			14			6			120	120	8'-0"
	1 @ 6'	3'	#6	12"	128	128	6'-9"	#6	12"	118	118	7'-10"	6'-8"	#5	10½"	8	#4	12"	6	#4	12"	7	#4	12"	6	120	120	4'-1"
		4'			128	128	6'-9"			118	118	7'-10"	6'-8"			8			8			8			7			120	120	5'-1"
		5'			128	128	6'-9"			118	118	7'-10"	6'-8"			8			10			10			7			120	120	6'-1"
		6'			128	128	6'-11"			118	118	8'-0"	6'-10"			8			12			12			7			120	120	7'-1"
		7'			128	128	7'-0"			118	118	8'-1"	6'-11"			8			14			14			7			120	120	8'-1"
		8'			128	128	7'-1"			118	118	8'-2"	7'-0"			8			16			16			7	#5	12"	120	120	9'-1"
	1 @ 7'	4'	#6	11"	140	140	7'-9"	#6	11"	130	130	8'-10"	7'-8"	#5	10½"	9	#4	12"	8	#4	12"	8	#4	12"	8	120	120	5'-2"
		5'			140	140	7'-9"			130	130	8'-10"	7'-8"			9			10			10			8			120	120	6'-2"
		6'			140	140	7'-11"			130	130	9'-0"	7'-10"			9			12			12			8			120	120	7'-2"
		7'			140	140	8'-0"			130	130	9'-1"	7'-11"			9			14			14			8			120	120	8'-2"
		8'			140	140	8'-1"			130	130	9'-2"	8'-0"			9			16			16			8			120	120	9'-2"
		9'			140	140	8'-3"			130	130	9'-4"	8'-2"			9			18			18			8	#5	12"	120	120	10'-2"
	1 @ 8'	4'	#6	11"	128	128	8'-9"	#6	11"	118	118	9'-10"	8'-8"	#5	10"	11	#4	12"	8	#4	12"	9	#4	12"	9	120	120	5'-8"
		5'			128	128	8'-11"			118	118	10'-0"	8'-10"			10			10			10			9			120	120	6'-8"
		6'			128	128	8'-11"			118	118	10'-0"	8'-10"			11			12			12			9			120	120	7'-8"
		7'			128	128	9'-0"			118	118	10'-1"	8'-11"			11			14			14			9			120	120	8'-8"
		8'			128	128	9'-1"			118	118	10'-2"	9'-0"			11			16			16			9			144	144	9'-8"
		9'			128	128	9'-3"			118	118	10'-4"	9'-2"			11			18			18			9	#5	12"	120	120	10'-8"
		10'			128	128	9'-5"			118	118	10'-6"	9'-4"			11			20			20			9		11"	132	132	11'-8"
	1 @ 9'	5'	#7	12"	140	140	9'-11"	#6	11"	130	130	11'-0"	9'-10"	#5	10"	12	#4	12"	10	#4	12"	10	#4	12"	10	120	120	6'-5"
		6'			140	140	10'-0"			130	130	11'-1"	9'-11"			12			12			12			10			120	120	7'-5"
		7'			140	140	10'-0"			130	130	11'-1"	9'-11"			12			14			14			10			120	120	8'-5"
		8'			140	140	10'-1"			130	130	11'-2"	10'-0"			12			16			16			10			144	144	9'-5"
		9'			140	140	10'-3"			130	130	11'-4"	10'-2"			12			18			18			10			120	120	10'-5"
		10'			140	140	10'-5"			130	130	11'-6"	10'-4"			12			20			20			10	#5	11"	132	132	11'-5"
		11'			140	140	10'-7"			130	130	11'-8"	10'-6"			12			22			22			10		12"	144	144	12'-5"
	1 @ 10'	5'	#7	12"	128	128	10'-11"	#7	11"	118	118	12'-2"	10'-10"	#5	9½"	13	#4	12"	10	#4	12"	11	#4	12"	11	120	120	6'-6"
		6'			128	128	11'-0"			118	118	12'-3"	10'-11"			13			12			13			11			120	120	7'-6"
		7'			128	128	11'-0"			118	118	12'-3"	10'-11"			13			14			14			11			120	120	8'-6"
		8'			128	128	11'-1"			118	118	12'-4"	11'-0"			13			16			16			11			144	144	9'-6"
		9'			128	128	11'-3"			118	118	12'-6"	11'-2"			13			18			18			11			120	120	10'-6"
		10'			128	128	11'-5"			118	118	12'-8"	11'-4"			13			20			20			11	#5	11"	132	132	11'-6"
		11'			128	128	11'-7"			118	118	12'-10"	11'-6"			13			22			22			11		10"	144	144	12'-6"
		12'			128	128	11'-9"			118	118	13'-0"	11'-8"			13			24			24			11	#6	12"	120	120	13'-6"
	1 @ 11'	6'	#7	12"	140	140	12'-1"	#7	11"	130	130	13'-4"	12'-0"	#5	9½"	15	#4	12"	12	#4	12"	12	#4	12"	12	#4	12"	7'-7"
		7'			140	140	12'-1"			130	130	13'-5"	12'-0"			15			14			14			12			120	120	8'-7"
		8'			140	140	12'-1"			130	130	13'-6"	12'-0"			15			16			16			12		10"	144	144	9'-7"
		9'			140	140	12'-3"			130	130	13'-8"	12'-2"			15			18			18			12		12"	120	120	10'-7"
		10'			140	140	12'-5"			130	130	13'-9"	12'-4"			15			20			20			12	#5	11"	132	132	11'-7"
		11'			140	140	12'-7"			130	130	13'-10"	12'-6"			15			22			22			12		10"	144	144	12'-7"
		12'			140	140	12'-9"			130	130	14'-0"	12'-8"			15			24			24			12	#6	12"	120	120	13'-7"
	1 @ 12'	6'	#8	12"	128	128	13'-1"	#7	12"	118	118	14'-2"	13'-0"	#5	9½"	16	#4	12"	12	#4	12"	13	#4	12"	13	#4	12"	7'-9"
		7'			128	128	13'-1"			118	118	14'-3"	13'-0"			16			14			14			13			120	120	8'-9"
		8'			128	128	13'-1"			118	118	14'-4"	13'-0"			16			16			16			13		10"	144	144	9'-9"
		9'			128	128	13'-3"			118	118	14'-6"	13'-2"			16			18			18			13		12"	120	120	10'-9"
		10'			128	128	13'-5"			118	118	14'-8"	13'-4"			16			20			20			13	#5	11"	132	132	11'-9"
		11'			128	128	13'-7"			118	118	14'-10"	13'-6"			16			22			22			13		10"	144	144	12'-9"
		12'			128	128	13'-9"			118	118	15'-0"	13'-8"			16			24			24			13	#6	12"	120	120	13'-9"

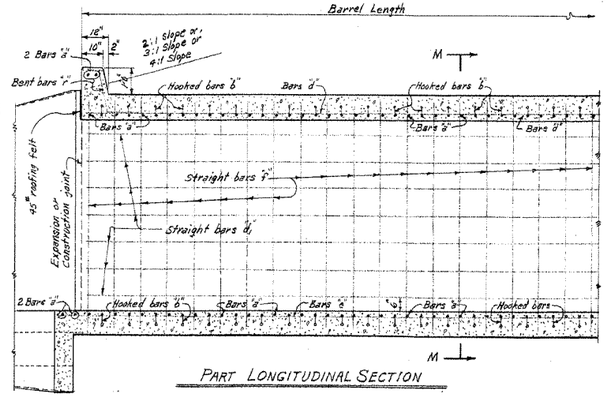
DIMENSIONS — BARREL DIMENSIONS

MAX. DESIGN DEPTH OF COVER	CLEAR SPAN	CLEAR HEIGHT	SQ. FT. OPENING	OVERALL WIDTH	THICKNESS OF TOP SLAB	THICKNESS OF SIDEWALLS	THICKNESS OF BOTTOM SLAB	OVERALL HEIGHT
D	S	H	A	OW	T	C	B	OH
5'-0"	1 @ 4'	2'	8	5'-0"	7"	6"	6½"	3'-1½"
		3'	12	5'-0"		6"		4'-1½"
		4'	16	5'-0"		6"		5'-1½"
		5'	20	5'-0"		6"		6'-1½"
		6'	24	5'-2"		7"		7'-1½"
	1 @ 5'	3'	15	6'-0"	7½"	6"	7"	4'-2½"
		4'	20	6'-0"		6"		5'-2½"
		5'	25	6'-0"		6"		6'-2½"
		6'	30	6'-2"		7"		7'-2½"
		7'	35	6'-3"		7½"		8'-2½"
	1 @ 6'	3'	18	7'-0"	8"	6"	8"	4'-3½"
		4'	24	7'-0"		6"		5'-3½"
		5'	30	7'-0"		6"		6'-3½"
		6'	36	7'-2"		7"		7'-3½"
		7'	42	7'-3"		7½"		8'-3½"
		8'	48	7'-4"		8"		9'-3½"
	1 @ 7'	4'	28	8'-0"	8½"	6"	8½"	5'-5"
		5'	35	8'-0"		6"		6'-5"
		6'	42	8'-2"		7"		7'-5"
		7'	49	8'-3"		7½"		8'-5"
		8'	56	8'-4"		8"		9'-5"
		9'	63	8'-6"		9"		10'-5"
	1 @ 8'	4'	32	9'-0"	9"	6"	9"	5'-7"
		5'	40	9'-2"		7"		6'-7"
		6'	48	9'-3"		7"		7'-7"
		7'	56	9'-5"		7½"		8'-7"
		8'	64	9'-6"		8"		9'-7"
		9'	72	9'-8"		9"		10'-7"
		10'	80	9'-9"		10"		11'-7"
	1 @ 9'	5'	45	10'-2"	9½"	7"	10"	6'-8"
		6'	54	10'-3"		7½"		7'-8"
		7'	63	10'-5"		7½"		8'-8"
		8'	72	10'-6"		8"		9'-8"
		9'	81	10'-8"		9"		10'-8"
		10'	90	10'-9"		10"		11'-8"
		11'	99	10'-10"		11"		12'-8"
	1 @ 10'	5'	50	11'-2"	10½"	7"	11"	6'-9½"
		6'	60	11'-3"		7½"		7'-9½"
		7'	70	11'-5"		7½"		8'-9½"
		8'	80	11'-6"		8"		9'-9½"
		9'	90	11'-8"		9"		10'-9½"
		10'	100	11'-9"		10"		11'-9½"
		11'	110	11'-10"		11"		12'-9½"
		12'	120	12'-0"		12"		13'-9½"
	1 @ 11'	6'	66	12'-3"	11"	8"	11½"	7'-10½"
		7'	77	12'-4"		8"		8'-10½"
		8'	88	12'-6"		8"		9'-10½"
		9'	99	12'-7"		9"		10'-10½"
		10'	110	12'-8"		10"		11'-10½"
		11'	121	12'-10"		11"		12'-10½"
		12'	132	13'-0"		12"		13'-10½"
	1 @ 12'	6'	72	13'-3"	12"	8"	12½"	8'-0"
		7'	84	13'-4"		8"		9'-0"
		8'	96	13'-5"		9"		10'-0"
		9'	108	13'-6"		9"		11'-0"
		10'	120	13'-8"		10"		12'-0"
		11'	132	13'-10"		11"		13'-0"
		12'	144	14'-0"		12"		14'-0"

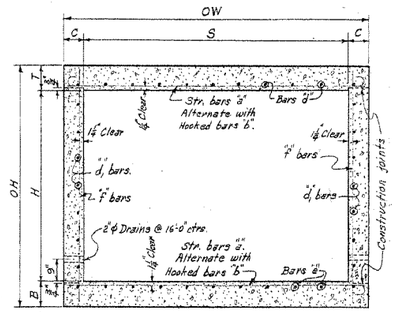
QUANTITIES — UNIT QUANTITIES

CLASS S CONC. PER LIN. FT. OF BARREL	REINFORCING STEEL PER LIN. FT. OF BARREL	REINFORCING STEEL ADDITIONAL PER LAP	REINFORCING STEEL ADDITIONAL TWO HEADWALLS & APRONS
CU.YD	LB.	LB.	LB.
0.282	41.89	17.95	66.35
0.319	44.16	19.62	66.35
0.354	46.83	21.29	66.35
0.394	49.50	22.96	66.35
0.474	52.96	24.63	67.75
0.380	55.55	22.19	101.27
0.417	58.23	23.86	101.27
0.454	60.90	25.53	101.27
0.535	64.49	27.20	103.27
0.604	67.63	28.87	104.27
0.446	66.23	26.76	118.94
0.483	68.96	26.93	118.96
0.520	71.64	28.10	118.96
0.602	75.31	29.77	120.96
0.671	78.98	31.44	121.97
0.746	88.47	33.11	122.97
0.568	81.32	29.01	136.88
0.605	84.00	30.68	136.88
0.688	87.74	32.35	138.88
0.757	90.98	34.02	139.88
0.832	96.65	35.69	140.88
0.996	105.59	37.36	142.89
0.676	95.26	38.32	194.67
0.754	99.12	39.99	196.80
0.797	101.79	36.66	196.80
0.867	105.05	38.33	198.16
0.942	110.81	40.00	199.52
1.057	118.92	41.67	202.85
1.189	126.67	43.34	204.97
0.844	114.72	32.56	219.61
0.910	118.04	39.23	220.97
0.957	120.71	40.90	220.97
1.033	126.54	42.57	222.33
1.148	135.80	44.24	223.06
1.276	142.68	45.91	224.78
1.416	150.40	47.58	230.51
0.957	130.64	40.13	242.64
1.024	133.99	41.80	244.00
1.071	136.66	43.47	244.00
1.147	142.55	45.14	245.36
1.263	151.92	46.81	248.09
1.391	158.89	48.48	248.81
1.532	166.71	50.15	253.54
1.685	178.67	51.82	256.26
1.153	156.16	46.12	268.62
1.202	157.83	47.79	268.62
1.252	162.06	49.46	268.62
1.366	172.60	51.13	271.34
1.497	179.70	52.80	274.07
1.638	187.67	54.47	276.79
1.792	199.79	56.14	279.52
1.284	172.20	48.69	357.62
1.333	179.87	50.36	357.62
1.383	180.15	52.03	357.62
1.500	189.85	53.70	361.18
1.630	197.07	55.37	364.74
1.772	205.16	57.04	368.30
1.926	217.95	58.71	371.86

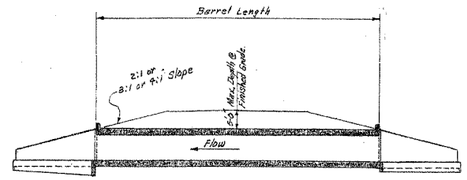
W-X002-1, W-X003-1 or W-X004-1 and W-X002-2, W-X003-2 or W-X004-2



PART LONGITUDINAL SECTION



TYPICAL SECTION M-M



LONGITUDINAL SECTION

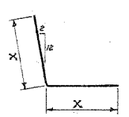
BAR SIZE	PIN DIAM.	K	ADD FOR 2 HOOKS	BENDING DIAGRAM Bars "b".
#6	3"	5"	1'-2"	K, 1½, Pin Diam., X
#7	3½"	5⅜"	1'-4"	

NOTE:- Dimensions are to centers of bars.

DOWEL BARS FOR TWO HEADWALLS

SPAN	SIZE	SPACING	NO. REQ'D	LENGTH	X
4'	#4	11"±	12	2'-6"	1'-3"
5'	#4	11"±	14	2'-7"	1'-3⅛"
6'	#4	11"±	16	2'-8"	1'-4"
7'	#4	11"±	18	2'-9"	1'-4⅞"
8'	#4	11⅝"±	20	2'-11"	1'-5⅝"
9'	#4	11⅝"±	22	3'-0"	1'-6"
10'	#4	11⅝"±	24	3'-1"	1'-6⅝"
11'	#4	12"±	26	3'-2"	1'-7"
12'	#4	12"±	28	3'-3"	1'-7⅝"

Bars "e" Dowel bars in Headwalls.



GENERAL NOTES:-

CONCRETE:- All concrete to be Class S, and shall be poured in the dry. All exposed corners to have ¾" chamfers.

REINFORCING STEEL:- Reinforcing to be deformed bars of intermediate or hard grade.

BAR LAP:- In computing the quantities of steel from the tables add one lap for each additional 33'-0" length of barrel over 32'-0". Lap longitudinal bars 30 diameters.

CONSTRUCTION JOINTS:- Construction joints between wingwalls, sidewalls and slabs shall be only where shown on plans.

SPECIFICATIONS:- Arkansas State Highway Commission Standard Specifications for Highway Construction and applicable Special Provisions.

DESIGN LIVE LOAD

H20-S16 LOADING A.A.S.H.O. 1961

AND

SPECIAL MILITARY LOADING

Two 24,000 Lb. Axles @ 9'-0" ctrs.

UNIT STRESSES:-

Class S Concrete (n=10) 1200 #/□"

Reinforcing Steel 20,000 #/□"

NOTE:- This drawing to be used in conjunction with Standard Drawing Nos. W-X003-1 or W-X003-2 and W-X004-1 or W-X004-2. Also Drawing Nos. W-X002-1 or W-X002-2.

CLASS S CONCRETE

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF STANDARD BARREL SECTIONS FOR REINFORCED CONCRETE BOX CULVERTS

4', 5', 6', 7', 8', 9', 10', 11' & 12' SPANS — 3:1 OR 4:1 SLOPES

SINGLES — UNDER 5'-0" COVER

STANDARD DRAWING NO. R-100X-0

Designed By:- W.C.H. 1-23-63. Checked By:- RBMS-5-28-63

Drawn By:- W.C.H. 2-8-63. Checked By:- RBMS-5-29-63

Quantities By:- W.C.H. 2-12-63. Checked By:- RBMS-5-29-63

RESHOT 3-4-93

FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			223	
JOB No.					

BAR LIST FOR VARIOUS SECTIONS OF BARREL

SECTION & BAR GROUP	LENGTH OF SECTIONS	DEPTH OF COVER	CLEAR SPAN	CLEAR HEIGHT	'a' bars STRAIGHT: In Top and Bottom Slabs of Barrel. 2 Add'l in Apron and Headwall - Each. SIZE	SPACING	NUMBER REQ'D 3:1	NUMBER REQ'D 4:1	LENGTH	'b' bars BENT - See Diagram at Right. In Top and Bottom Slabs of Barrel Alternate with 'a' bars. SIZE	SPACING	NUMBER REQ'D	LENGTH	X	'd' bars STRAIGHT: Longitudinal in Top Slab of Barrel SIZE	SPACING	NO. REQ'D	LENGTH	'd' bars. STRAIGHT: Longitudinal in Sidewalls SIZE	SPACING	NO. REQ'D	LENGTH	'd' bars. STRAIGHT: Longitudinal in Bottom Slab of Barrel SIZE	SPACING	NO. REQ'D	LENGTH	'f' bars STRAIGHT: Verticals in Sidewalls SIZE	SPACING	NUMBER REQ'D 3:1	NUMBER REQ'D 4:1	LENGTH
SECTION 'A' & BAR GROUP 'A'	3:1 = 32'-0" 4:1 = 32'-0"	0' TO 10'-0"	/ @ 4'-0"	3'			48	68	4'-9"			44	64	5'-7"			6					6					5			44	64	3'-10"
				4'			48	68	4'-9"			44	64	5'-7"			8					8					5			44	64	4'-10"
				5'			48	68	4'-9"			44	64	5'-7"			10					10					5			44	64	5'-10"
				6'			48	68	4'-11"			44	64	5'-9"			12					12					5			44	64	6'-10"
			/ @ 5'-0"	3'			48	68	5'-9"			44	64	6'-8"			6					6					6			44	64	3'-11"
				4'			48	68	5'-9"			44	64	6'-8"			8					8					6			44	64	4'-11"
				5'	#5	12"	48	68	5'-9"	#5	12"	44	64	6'-8"	#4	12"	6	#4	12"	6	#4	12"	6	#4	12"	6	44	64	5'-11"
				6'			48	68	5'-11"			44	64	6'-10"			12					12					6			44	64	6'-11"
				7'			48	68	6'-0"			44	66	6'-11"			14					19					6			44	66	7'-11"
			/ @ 6'-0"	4'			48	68	4'-9"			44	64	7'-10"	#4	12"	8					8					7			44	64	5'-0"
				5'			48	68	6'-3"			44	64	7'-10"			10					10					7			44	64	6'-2"
				6'	#5	12"	48	68	6'-11"	#6	12"	44	64	8'-0"		12"	12	#4	18"	10	33'-3" for 32'-0" Section.	12	#4	12"	7	39'-3" for 32'-0" Section	7	12"	44	64	7'-8"
				7'			48	68	7'-8"			44	64	8'-7"			14					19					7			44	64	8'-11"
				8'			48	68	7'-11"			44	64	8'-11"			16					19					7			44	64	9'-3"
SECTION 'B' & BAR GROUP 'B'	3:1 = 11'-0" 4:1 = 14'-0"	10'-0" TO 15'-0"	/ @ 4'-0"	3'			22	32	4'-9"			22	32	5'-8"			6					6					5			22	32	3'-10"
				4'			22	32	4'-9"			22	32	5'-8"			8					8					5			22	32	4'-10"
				5'			22	32	4'-9"			22	32	5'-8"			10					10					5			22	32	5'-10"
				6'			22	32	4'-11"			22	32	5'-10"			12					12					5			22	32	6'-10"
			/ @ 5'-0"	3'			22	32	5'-9"			22	32	6'-10"			6					6					6			22	32	3'-11"
				4'			22	32	5'-9"			22	32	6'-10"			8					8					6			22	32	4'-11"
				5'	#5	12"	22	32	5'-9"	#6	12"	22	32	6'-10"	#5	12"	10	#4	12"	6	#4	12"	6	#4	12"	6	22	32	5'-11"
				6'			22	32	5'-11"			22	32	7'-0"			12					12					6			22	32	6'-11"
				7'			22	32	6'-0"			22	32	7'-1"			14					19					6			22	32	7'-11"
			/ @ 6'-0"	4'			22	32	5'-9"			22	32	7'-10"	#4	12"	8					8					7			22	32	5'-1"
				5'			22	32	6'-9"			22	32	7'-10"			10					10					7			22	32	6'-3"
				6'	#6	12"	22	32	6'-11"	#6	12"	22	32	8'-0"	#5	12"	12	#4	12"	7	#4	12"	7	#4	12"	7	22	32	7'-1"
				7'			22	32	7'-1"			22	32	8'-1"			14					19					7			22	32	8'-3"
				8'			22	32	7'-2"			22	32	8'-2"			16					19					7			22	32	9'-1"
SECTION 'C' & BAR GROUP 'C'	3:1 = 11'-0" 4:1 = 16'-0"	15'-0" TO 20'-0"	/ @ 4'-0"	3'			22	32	4'-9"			22	32	5'-9"			6					6					5			22	32	4'-10"
				4'			22	32	4'-9"			22	32	5'-8"			8					8					5			22	32	4'-10"
				5'	#5	12"	22	32	4'-9"	#5	12"	22	32	5'-8"	#4	12"	10	#4	12"	6	#4	12"	6	#4	12"	6	22	32	5'-10"
				6'			22	32	4'-11"			22	32	5'-10"			12					12					5			22	32	6'-10"
			/ @ 5'-0"	3'			24	36	5'-9"			24	36	6'-10"			6					6					6			24	36	4'-10"
				4'			24	36	5'-9"			24	36	6'-10"			8					8					6			24	36	5'-0"
				5'	#5	11"	24	36	5'-9"	#6	11"	24	36	6'-10"	#5	12"	10	#4	12"	6	#4	12"	6	#4	12"	6	24	36	6'-10"
				6'			24	36	5'-11"			24	36	7'-0"			12					12					6			24	36	6'-11"
				7'			24	36	6'-1"			24	36	7'-1"			14					19					6			24	36	7'-11"
			/ @ 6'-0"	4'			24	36	6'-9"			24	36	7'-10"	#4	12"	8					8					7			24	36	5'-1"
				5'			24	36	6'-9"			24	36	7'-10"			10					10					7			24	36	6'-3"
				6'	#6	11"	24	36	6'-11"	#6	11"	24	36	8'-0"	#5	12"	12	#4	12"	7	#4	12"	7	#4	12"	7	24	36	7'-1"
				7'			24	36	7'-0"			24	36	8'-1"			14					19					7			24	36	8'-3"
				8'			24	36	7'-1"			24	36	8'-2"			16					19					7			24	36	9'-1"
SECTION 'D' & BAR GROUP 'D'	3:1 = 11'-0" 4:1 = 16'-0"	20'-0" TO 25'-0"	/ @ 4'-0"	3'			22	32	4'-9"			22	32	5'-8"			6					6					5			22	32	4'-10"
				4'			22	32	4'-9"			22	32	5'-8"			8					8					5			22	32	4'-10"
				5'	#5	11"	22	32	4'-9"	#5	11"	22	32	5'-8"	#4	12"	10	#4	12"	6	#4	12"	6	#4	12"	6	22	32	5'-10"
				6'			22	32	4'-11"			22	32	5'-10"			12					12					5			22	32	6'-10"
			/ @ 5'-0"	3'			22	32	5'-9"			22	32	6'-10"			6					6					6			22	32	4'-10"
				4'			22	32	5'-9"			22	32	6'-10"			8					8					6			22	32	5'-0"
				5'	#6	12"	22	32	5'-9"	#6	12"	22	32	6'-11"	#5	12"	10	#4	12"	6	#4	12"	6	#4	12"	6	22	32	6'-0"
				6'			22	32	5'-11"			22	32	7'-1"			12					12					6			22	32	7'-0"
				7'			22	32	6'-1"			22	32	7'-2"			14					19					6			22	32	8'-0"
			/ @ 6'-0"	4'			24	36	6'-9"			24	36	7'-10"	#4	12"	8					8					7			24	36	5'-2"
				5'			24	36	6'-9"			24	36	7'-10"			10					10					7			24	36	6'-4"
				6'	#7	11"	24	36	7'-0"	#6	11"	24	36	8'-1"	#5	12"	12	#4	12"	7	#4	12"	7	#4	12"	7	24	36	7'-2"
				7'			24	36	7'-1"			24	36	8'-2"			14					19					7			24	36	8'-4"
				8'			24	36	7'-2"			24	36	8'-3"			16					19					7			24	36	9'-2"
SECTION 'E' & BAR GROUP 'E'	3:1 = 11'-0" 4:1 = 16'-0"	25'-0" TO 30'-0"	/ @ 4'-0"	3'			22	32	4'-9"			22	32	5'-8"			6					6					5			22	32	4'-10"
				4'			22	32	4'-9"			22	32	5'-8"			8					8					5			22	32	5'-0"
				5'	#6	12"	22	32	4'-10"	#5	12"	22	32	5'-9"	#4	12"	10	#4	12"	6	#4	12"	6	#4	12"	6	22	32	5'-11"
				6'			22	32	5'-0"			22	32	5'-11"			12					12					6			22	32	7'-0"
			/ @ 5'-0"	3'			24	36	5'-9"			24	36	6'-10"			6					6					6			24	36	5'-0"
				4'			24	36	5'-9"			24	36	6'-10"			8					8					6			24	36	5'-2"
				5'	#6	11"	24	36	5'-10"	#6	11"	24	36	7'-0"	#5	12"	10	#4	12"	6	#4	12"	6	#4	12"	6	24	36	7'-0"
				6'			24	36	6'-0"			24	36	7'-2"			12					12					6			24	36	7'-2"
				7'			24	36	6'-1"			24	36	7'-3"			14					19					6			24	36	8'-4"
			/ @ 6'-0"	4'			24	36	6'-9"			24	36	7'-10"	#4	12"	8					8					7			24	36	5'-3"
				5'			24	36	6'-9"			24	36	7'-10"			10					10					7			24	36	6'-5"
				6'	#7	11"	24	36	6'-11"	#6	11"	24	36	8'-2"	#5	12"	12	#4	12"	7	#4	12"	7	#4	12"	7	24	36	7'-3"
				7'			24	36	7'-0"			24	36	8'-3"			14					19					7			24	36	8'-5"
				8'			24	36	7'-1"			24	36	8'-4"			16					19					7			24	36	9'-3"
SECTION 'F' & BAR GROUP 'F'	3:1 = 11'-0" 4:1 = 16'-0"	30'-0" TO 35'-0"	/ @ 4'-0"	3'			20	30	4'-9"			20	30	5'-10"			6					5					5			20	30	4'-10"
				4'			20	30	4'-9"			20	30	5'-10"			8					8					5			20	30	5'-0"
				5'	#6	12"	20	30	4'-11"	#6	12"	20	30	6'-0"	#5	12"	10	#4	12"	5	#4	12"	5	#4	12"	5	20	30	6'-0"
				6'			20	30	5'-1"			20	30	6'-2"			12					12					5			20	30	7'-0"
			/ @ 5'-0"	3'			22	32	5'-9"			22	32	6'-10"			6					6					6			22	32	5'-0"
				4'			22	32	5'-9"			22	32	6'-11"			8					8					6			22	32	5'-2"
				5'	#7	12"	22	32	5'-11"	#6	12"	22	32	7'-1"	#5	12"	10	#4	12"	6	#4	12"	6	#4	12"	6	22	32	7'-2"
				6'			22	32	6'-1"			22	32	7'-3"			12					12					6			22	32	7'-4"
				7'			22	32	6'-3"			22	32	7'-4"			14					19					6			22	32	8'-6"
			/ @ 6'-0"	4'			24	36	5'-9"			24	36	6'-10"	#4	12"	8					8					7			24	36	5'-4"
				5'			24	36	5'-9"			24	36	6'-10"			10					10					7			24	36	6'-6"
				6'	#7	11"	24	36	5'-11"	#6	11"	24	36	7'-1"	#5	12"	12	#4	12"	7	#4	12"	7	#4	12"	7	24	36	7'-4"
				7'			24	36	6'-0"			24	36	7'-2"			14					19					7			24	36	8'-6"
				8'			24	36	6'-1"			24	36	7'-3"			16					19					7			24	36	9'-4"
SECTION 'G' & BAR GROUP 'G'	3:1 = 11'-0" 4:1 = 16'-0"	35'-0" TO 40'-0"	/ @ 4'-0"	3'			20	30	4'-9"			20	30	5'-10"			6					5					5			20	30	5'-0"
				4'			20	30	4'-9"			20	30	5'-10"			8					8					5			20	30	5'-2"
				5'	#7	12"	20	30	4'-11"	#6	12"	20	30	6'-0"	#5	12"	10	#4	12"	5	#4	12"	5	#4	12"	5	20	30	6'-2"
				6'			20	30	5'-1"			20	30	6'-2"			12					12					5			20	30	7'-2"
			/ @ 5'-0"	3'			22	32	5'-9"			22	32	6'-10"			6					6					6			22	32	5'-2"
				4'			22	32	5'-9"			22	32	6'-11"			8					8					6			22	32	5'-4"
				5'	#7	12"	22	32	5'-11"	#6	12"	22	32	7'-1"	#5	12"	10	#4	12"	6	#4	12"	6	#4	12"	6	22	32	7'-4"
				6'			22	32	6'-1"			22	32	7'-3"			12					12					6			22	32	7'-6"
				7'			22	32	6'-3"			22	32	7'-4"			14					19					6			22	32	8'-8"
			/ @ 6'-0"	4'			24	36	5'-9"			24	36	6'-10"	#4	12"	8					8					7			24	36	5'-6"
				5'			24	36	5'-9"			24	36	6'-10"			10					10					7			24	36	6'-8"
				6'	#7	11"	24	36	5'-11"	#6	11"	24	36	7'-1"	#5	12"	12	#4	12"	7	#4	12"	7	#4	12"	7	24	36	7'-6"
				7'			24	36	6'-0"			24	36	7'-2"			14					19					7			24	36	8'-8"
				8'			24	36	6'-1"			24	36	7'-3"			16					19					7			24	36	9'-6"

NOTE:- Bars for each Section to be marked with the Section Letter, thus for Section B, the bars should be marked Ba, Bb, Bc, Bd, Be and Bf.

Designed By:- W.C.H. 9-5-62 Checked By:- J.S.M. 11-12-62
Drawn By:- W.C.H. 10-10-62 Checked By:- J.S.M. 11-8-62
Quantities By:- W.C.H. 11-9-62 Checked By:- J.S.M. 11-16-62

DIMENSIONS AND QUANTITIES

MAX. DESIGN DEPTH OF COVER	BARREL DIMENSIONS: CLEAR SPAN	CLEAR HEIGHT	30 FT. DRAWING: OVERALL WIDTH	THICKNESS OF TOP SLAB	THICKNESS OF SIDEWALLS	THICKNESS OF BOTTOM SLAB	OVERALL HEIGHT	UNIT QUANTITIES: CLASS S CONC. PER LIN. FT. OF BARREL	REINFORCING STEEL PER LIN. FT. OF BARREL	ADDITIONAL PER LAP	ADDITIONAL TWO HEADWALLS & APRONS
D	S	H	A	OW	T	C	B	OH	CU.YD.	LB.	LB.	LB.
SECTION 'A' - 10'-0"	/ @ 4'-0"	3'	12	5'-0"	6½"	6"	6½"	4'-1"	0.312	29.62	13.86	51.44
		4'	16	5'-0"		6"		5'-1"	0.349	32.29	15.03	51.44
		5'	20	5'-0"		6"		6'-1"	0.386	34.96	16.70	51.44
		6'	24	5'-2"		7"		7'-1"	0.467	38.08	18.37	52.33
	/ @ 5'-0"	3'	15	6'-0"	7"	6"	7"	4'-2"	0.370	43.76	15.03	79.37
		4'	20	6'-0"		6"		5'-2"	0.907	45.83	16.70	79.37
		5'	25	6'-0"		6"		6'-2"	0.446	98.50	18.37	79.37
		6'	30	6'-2"		7"		7'-2"	0.526	51.87	20.04	80.77
		7'	35	6'-3"		7½"		8'-2"	0.594	52.00	21.71	81.76
	/ @ 6'-0"	4'	24	7'-0"	7½"	6"	7½"	5'-3"	0.972	58.99	18.37	93.29
		5'	30	7'-0"		6"		6'-3"	0.509	61.66	20.04	93.29
		6'	36	7'-2"		7"		7'-5"	0.591	65.18	21.71	94.68
		7'	42	7'-3"		7½"		8'-5"	0.660	70.41	23.38	95.37
		8'	48	7'-4"		8"		9'-3"	0.735	73.83	25.05	96.07
SECTION 'B' - 15'-0"	/ @ 4'-0"	3'	12	5'-0"	6½"	6"	6½"	4'-1"	0.312	33.98	13.86	
		4'	16	5'-0"		6"		5'-1"	0.349	36.65	15.03	
		5'	20	5'-0"		6"		6'-1"	0.386	39.32	16.70	
		6'	24	5'-2"		7"		7'-1"	0.467	44.39	18.37	
	/ @ 5'-0"	3'	15	6'-0"	7"	6"	7"	4'-2"	0.370	49.78	15.03	
		4'	20	6'-0"		6"		5'-2"	0.407	52.45	16.70	
		5'	25	6'-0"		6"		6'-2"	0.444	55.12	18.37	
		6'	30	6'-2"		7"		7'-2"	0.526	59.48	20.04	
		7'	35	6'-3"		7½"		8'-2"	0.594	67.68	21.71	
	/ @ 6'-0"	4'	24	7'-0"	8"	6"	8½"	5'-2½"	0.499	65.30	18.37	
		5'	30	7'-0"		6"		6'-2½"	0.536	66.63	20.04	
		6'	36	7'-2"		7"		7'-4½"	0.619	73.59	21.71	
		7'	42	7'-3"		7½"		8'-4½"	0.688	82.91	23.38	
		8'	48	7'-4"		8"		9'-4½"	0.763	98.19	25.05	
SECTION 'C' - 20'-0"	/ @ 4'-0"	3'	12	5'-0"	6½"	6"	6½"	4'-1½"	0.316	37.54	13.36	
		4'	16	5'-0"		6"		5'-1½"	0.353	40.21	15.03	
		5'	20	5'-0"		6"		6'-1½"	0.390	99.99	16.70	
		6'	24	5'-2"		7"		7'-1½"	0.471	51.38	18.37	
	/ @ 5'-0"	3'	15	6'-0"	7"	6"	7½"	4'-3¾"	0.394	52.85	15.03	
		4'	20	6'-0"		6"		5'-3¾"	0.931	55.52	16.70	
		5'	25	6'-0"		6"		6'-3¾"	0.968	58.92	18.37	
		6'	30	6'-2"		7"		7'-3¾"	0.550	67.09	20.04	
		7'	35	6'-3"		7½"		8'-3¾"	0.618	78.27	21.71	
	/ @ 6'-0"	4'	24	7'-0"	8"	6"	8½"	5'-5¾"	0.526	69.89	18.37	
		5'	30	7'-0"		6"		6'-5¾"	0.501	61.61	18.37	
		6'	36	7'-2"		7"		7'-5¾"	0.585	71.20	20.04	
		7'	35	6'-4"		7½"		8'-5¾"	0.668	81.05	21.71	
SECTION 'D' - 25'-0"	/ @ 4'-0"	3'	12	5'-0"	6½"	6"	6½"	4'-3"	0.327	39.63	13.36	
		4'	16	5'-0"		6"		5'-3"	0.369	42.30	15.03	
		5'	20	5'-0"		6"		6'-3"	0.901	99.97	16.70	
		6'	24	5'-2"		7"		7'-3"	0.983	55.19	18.37	
	/ @ 5'-0"	3'	15	6'-0"	7"	6"	7½"	4'-4½"	0.417	55.28	15.03	
		4'	20	6'-0"		6"		5'-4½"	0.459	57.95	16.70	
		5'	25	6'-0½"		6"		6'-4½"	0.501	61.61	18.37	
		6'	30	6'-2½"		7"		7'-4½"	0.585	71.20	20.04	
		7'	35	6'-4"		7½"		8'-4½"	0.668	81.05	21.71	
	/ @ 6'-0"	4'	24	7'-0"	8½"	6"	8½"	5'-7"	0.559	72.95	18.37	
		5'	30	7'-0"		6"		6'-7"	0.616	76.21	20.04	
		6'	36	7'-2½"		7"		7'-7"	0.691	85.22	21.71	
		7'	42	7'-4"		7½"		8'-7"	0.776	97.23	23.38	
		8'	48	7'-5½"		8"		9'-7"	0.869	108.02	25.05	
SECTION 'E' - 30'-0"	/ @ 4'-0"	3'	12	5'-0"	6½"	6"	6½"	4'-3"	0.393	42.12	13.36	
		4'	16	5'-0"		6"		5'-3"	0.380	44.79	15.03	
		5'	20	5'-1"		6"		6'-3"	0.936	52.39	16.70	
		6'	24	5'-3"		7"		7'-3"	0.521	63.09	18.37	
	/ @ 5'-0"	3'	15	6'-0"	7"	6"	7½"	4'-6"	0.449	58.96	15.03	
		4'	20	6'-0"		6"		5'-6"	0.991	61.61	16.70	
		5'	25	6'-1½"		6"		6'-6"	0.549	66.77	18.37	
		6'	30	6'-3½"		7"		7'-6"	0.637	75.68	20.04	
		7'	35	6'-5"		7½"		8'-6"	0.725	88.37	21.71	
	/ @ 6'-0"	4'	24	7'-0"	8"	6"	8½"	5'-8½"	0.591	79.04	20.04	
		5'	30	7'-0"		7"		6'-8½"	0.669	83.78	21.71	
		6'	36	7'-2"		8"		7'-8½"	0.760	92.53	23.38	
		7'	42	7'-3½"		8½"		8'-8½"	0.850	104.99	25.05	
		8'	48	7'-5"		9"		9'-8½"	0.949	115.61	26.72	
SECTION 'F' - 35'-0"	/ @ 4'-0"	3'	12	5'-0"	6½"	6"	6½"	4'-6"	0.358	43.69	13.36	
		4'	16	5'-0"		6"		5'-6"	0.395	48.16	15.03	
		5'	20	5'-2"		7"		6'-6"	0.471	56.35	16.70	
		6'	24	5'-4"		8"		7'-6"	0.560	67.17	18.37	
	/ @ 5'-0"	3'	15	6'-0"	7"	6"	7½"	4'-7"	0.963	63.18	16.70	
		4'	20	6'-0½"		6½"		5'-7"	0.509	66.11	18.37	
		5'	25	6'-2½"		7½"		6'-7"	0.588	71.65	20.04	
		6'	30	6'-4½"		8½"		7'-7"	0.679	80.70	21.71	
		7'	35	6'-6"		9"		8'-7"	0.770	93.59	23.38	
	/ @ 6'-0"	4'	24	7'-1"	8½"	6½"	8½"	5'-10"	0.661	85.81	21.71	
		5'	30	7'-1"		7½"		6'-10"	0.724	91.60	23.38	
		6'	36	7'-5"	10½"	8½"	11½"	7'-10"	0.818	99.56	25.05	
		7'	42	7'-7"		9½"		8'-10"	0.925	112.23	26.72	
		8'	48	7'-8½"		10½"		9'-10"	1.030	123.01	28.39	
SECTION 'G' - 40'-0"	/ @ 4'-0"	3'	12	5'-0"	6½"	6"	6½"	4'-5"	0.373	49.38	15.03	
		4'	16	5'-1"	8½"	6½"	8½"	5'-5"	0.927	52.56	16.70	
		5'	20	5'-8"		7½"		6'-5"	0.507	60.85	18.37	
		6'	24	5'-5½"		8½"		7'-5"	0.599	71.86	20.04	
	/ @ 5'-0"	3'	15	6'-0"	9½"	6"	10½"	4'-8"	0.481	67.30	16.70	
		4'	20	6'-1½"		6½"		5'-8"	0.595	70.89	18.37	
		5'	25	6'-3½"		7½"		6'-8"	0.628	76.56	20.04	
		6'	30	6'-5½"		8½"		7'-8"	0.723	85.28	21.71	
		7'	35	6'-7"		9½"		8'-8"	0.817	98.84	23.38	

| BAR SIZE | PIN DIAM. | K | ADD FOR 2 H

FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			224	
JOB No.					

BAR LIST FOR BARREL SECTION 60'0" IN LENGTH

DEPTH OF COVER D	CLEAR SPAN S	CLEAR HEIGHT H	"a" bars STRAIGHT In Top and Bottom Slab of Barrel. 2 Add'l in Apron and Headwall.-Each. SIZE	"a" bars STRAIGHT SPACING	"a" bars STRAIGHT NUMBER REQ'D 3:1	"a" bars STRAIGHT NUMBER REQ'D 4:1	"a" bars STRAIGHT LENGTH	"b" bars BENT - See Diagram below. In Bottom of Top Slab bent up over Division Wall - hooked. Alternate with "a" and "c" bars. SIZE	"b" bars BENT SPACING	"b" bars BENT NUMBER REQ'D 3:1	"b" bars BENT NUMBER REQ'D 4:1	"b" bars BENT LENGTH	"b" bars BENT X	"b" bars BENT Y	"b" bars BENT Z	"b2" bars BENT - See Diagram below. In Bottom of Top Slab bent down under Division Wall - hooked. Alternate with "a" and "c" bars. SIZE	"b2" bars BENT SPACING	"b2" bars BENT NUMBER REQ'D 3:1	"b2" bars BENT NUMBER REQ'D 4:1	"b2" bars BENT LENGTH	"b2" bars BENT X	"b2" bars BENT Y	"b2" bars BENT Z	"c" bars STRAIGHT In Top and Bottom Slab of Barrel. Alternate with "b" and "b2" bars. SIZE	"c" bars STRAIGHT SPACING	"c" bars STRAIGHT NUMBER REQ'D 3:1	"c" bars STRAIGHT NUMBER REQ'D 4:1	"c" bars STRAIGHT LENGTH	"d" bars Longitudinal in Top Slab of Barrel SIZE	"d" bars Longitudinal in Top Slab of Barrel SPACING	"d" bars Longitudinal in Top Slab of Barrel NO. REQ'D	"d" bars Longitudinal in Top Slab of Barrel LENGTH	"d1" bars STRAIGHT Longitudinal in Sidewalls and Division Walls. SIZE	"d1" bars STRAIGHT Longitudinal in Sidewalls and Division Walls. SPACING	"d1" bars STRAIGHT Longitudinal in Sidewalls and Division Walls. NO. REQ'D	"d1" bars STRAIGHT Longitudinal in Sidewalls and Division Walls. LENGTH	"e" bars Longitudinal in Bottom of Barrel SIZE	"e" bars Longitudinal in Bottom of Barrel SPACING	"e" bars Longitudinal in Bottom of Barrel NO. REQ'D	"e" bars Longitudinal in Bottom of Barrel LENGTH	"f" bars STRAIGHT Vertical in Sidewalls and Division Walls. SIZE	"f" bars STRAIGHT Vertical in Sidewalls and Division Walls. SPACING	"f" bars STRAIGHT Vertical in Sidewalls and Division Walls. NUMBER REQ'D 3:1	"f" bars STRAIGHT Vertical in Sidewalls and Division Walls. NUMBER REQ'D 4:1	"f" bars STRAIGHT Vertical in Sidewalls and Division Walls. LENGTH
0'-0" TO 5'-0" MAXIMUM.	2 @ 4'	2'			128	128	9'-5"			59	59	10'-6"	0'-3"	2'-2⅝"	3'-9"			59	59	10'-6"	0'-2⅝"	2'-3⅜"	3'-6"			120	120	4'-8"																										
		3'			128	128	9'-5"			59	59	10'-6"	0'-3"	2'-2⅝"	3'-9"			59	59	10'-6"	0'-2⅝"	2'-3⅜"	3'-6"			120	120	4'-8"																										
		4'			128	128	9'-5"			59	59	10'-6"	0'-3"	2'-2⅝"	3'-9"			59	59	10'-6"	0'-2⅝"	2'-3⅜"	3'-6"			120	120	4'-8"																										
		5'			128	128	9'-5"			59	59	10'-6"	0'-3"	2'-2⅝"	3'-9"			59	59	10'-6"	0'-2⅝"	2'-3⅜"	3'-9"			120	120	4'-8"																										
		6'			128	128	9'-6"			59	59	10'-9"	0'-3"	2'-3⅝"	3'-10"			59	59	10'-9"	0'-2⅝"	2'-4⅝"	3'-10"			120	120	4'-9"																										
	2 @ 5'	3'			128	128	11'-5"			59	59	12'-1"	0'-3⅜"	2'-7⅜"	4'-1"			59	59	12'-1"	0'-3⅜"	2'-8⅜"	4'-1"			120	120	5'-6"																										
		4'			128	128	11'-5"			59	59	12'-1"	0'-3⅜"	2'-7⅜"	4'-1"			59	59	12'-1"	0'-3⅜"	2'-8⅜"	4'-1"			120	120	5'-6"																										
		5'	#5	12"	128	128	11'-5"	#5	12"	59	59	12'-1"	0'-3⅜"	2'-7⅜"	4'-1"	#5	12"	59	59	12'-1"	0'-3⅜"	2'-8⅜"	4'-1"	#6	12"	120	120	5'-8"	#5	11½"	16	14	#4	12"	16	14	#3	18"	14	14	#3	12"	290	290	5'-11"
		6'			128	128	11'-8"			59	59	12'-10"	0'-3⅜"	2'-8⅜"	4'-2"			59	59	12'-10"	0'-3⅜"	2'-9⅜"	4'-2"			120	120	5'-9"			20	14			20	14			14	14			290	290	6'-1"
		7'			128	128	11'-10"			59	59	13'-4"	0'-3⅜"	2'-9⅜"	4'-2⅝"			59	59	12'-11"	0'-3⅜"	2'-10⅜"	4'-2⅝"			120	120	5'-10"			24	14			24	14			14	14			290	290	6'-3"
		8'			128	128	12'-0"			59	59	13'-7"	0'-3⅜"	2'-10⅜"	4'-3"			59	59	13'-7"	0'-3⅜"	2'-11⅜"	4'-3"			120	120	5'-11"			28	14			28	14			14	14			290	290	6'-4"
		3'			140	140	13'-5"			65	65	14'-7"	0'-4"	3'-0⅝"	4'-10"			65	65	14'-7"	0'-4"	3'-0⅝"	4'-10"			132	132	6'-5"																										
		4'			140	140	13'-5"			65	65	14'-7"	0'-4"	3'-0⅝"	4'-10"			65	65	14'-7"	0'-4"	3'-0⅝"	4'-10"			132	132	6'-5"																										
	2 @ 6'	5'	#6	11"	140	140	13'-5"	#5	11"	65	65	14'-7"	0'-4"	3'-0⅝"	4'-10"	#5	11"	65	65	14'-7"	0'-4"	3'-0⅝"	4'-10"	#6	11"	132	132	6'-5"	#5	11½"	18	16	#4	12"	20	16	#4	12"	18	18	#3	12"	290	290	6'-8"
		6'			140	140	13'-8"			65	65	14'-10"	0'-4"	3'-1⅛"	4'-11"			65	65	14'-10"	0'-4"	3'-1⅛"	4'-11"			132	132	6'-8"			18	18			24	18			18	18			290	290	6'-11"
		7'			140	140	13'-10"			65	65	15'-0"	0'-4"	3'-1⅝"	4'-11⅝"			65	65	15'-0"	0'-4"	3'-2⅛"	4'-11⅝"			132	132	6'-10"			18	18			28	18			18	18			290	290	7'-2"
		8'			140	140	13'-11"			65	65	15'-1"	0'-4"	3'-2⅛"	5'-0"			65	65	15'-1"	0'-4"	3'-2⅝"	5'-0"			132	132	6'-10"			18	18			32	18			18	18	10"	288	288	9'-0"
		3'			128	128	15'-5"			59	59	16'-3"	0'-4½"	3'-5"	5'-3"			59	59	16'-3"	0'-4½"	3'-5"	5'-3"			120	120	7'-8"			20	20			20	20			20	20			290	290	7'-1"
		4'			128	128	15'-6"			59	59	16'-3"	0'-4½"	3'-5"	5'-3"			59	59	16'-3"	0'-4½"	3'-5"	5'-3"			120	120	7'-8"			20	20			20	20			20	20			290	290	7'-4"
	2 @ 7'	5'	#6	12"	128	128	15'-8"	#5	12"	59	59	16'-9"	0'-4½"	3'-5"	5'-3"	#5	11½"	59	59	16'-9"	0'-4½"	3'-5"	5'-3"	#6	12"	120	120	7'-9"	#5	11½"	20	20	#4	12"	24	20	#4	12"	20	20	#3	12"	290	290	7'-7"
		6'			128	128	15'-8"			59	59	17'-0"	0'-4½"	3'-6"	5'-3"			59	59	17'-0"	0'-4½"	3'-6"	5'-3"			120	120	7'-9"			20	20			24	20			20	20			290	290	7'-10"
		7'			128	128	15'-10"			59	59	17'-2"	0'-4½"	3'-7"	5'-3½"			59	59	17'-2"	0'-4½"	3'-7"	5'-3½"			120	120	7'-10"			20	20			28	20			20	20			290	290	8'-1"
		8'			128	128	15'-11"			59	59	17'-3"	0'-4½"	3'-7"	5'-3½"			59	59	17'-3"	0'-4½"	3'-7"	5'-3½"			120	120	7'-10"			20	20			32	20			20	20	10"	288	288	9'-1"
		9'			128	128	16'-2"			59	59	17'-6"	0'-4½"	3'-8"	5'-4"			59	59	17'-6"	0'-4½"	3'-8"	5'-4"			120	120	7'-11"			20	20			36	20			20	20	#5	12"	290	290	10'-1"
		4'			140	140	17'-5"			65	65	18'-10"	0'-5"	3'-10"	6'-4"			65	65	18'-10"	0'-5"	3'-10"	6'-4"			132	132	8'-8"			22	22			22	22			22	22			290	290	5'-5"
		5'			140	140	17'-8"			65	65	19'-1"	0'-5"	3'-11"	6'-5"			65	65	19'-1"	0'-5"	3'-11"	6'-5"			132	132	8'-9"			23	22			23	22			22	22			290	290	6'-2"
		6'			140	140	17'-8"			65	65	19'-1"	0'-5"	3'-11"	6'-5"			65	65	19'-1"	0'-5"	3'-11"	6'-5"			132	132	8'-9"			23	22			24	22			22	22			290	290	7'-2"
	2 @ 8'	7'	#6	11"	140	140	17'-10"	#6	11"	65	65	19'-3"	0'-5"	4'-0"	6'-5½"	#6	11"	65	65	19'-3"	0'-5"	4'-0"	6'-5½"	#6	11"	132	132	8'-10"	#5	11½"	23	22	#4	12"	28	22	#4	12"	22	22	#3	12"	290	290	7'-5"
		8'			140	140	17'-11"			65	65	19'-4"	0'-5"	4'-0"	6'-6"			65	65	19'-4"	0'-5"	4'-0"	6'-6"			132	132	8'-10"			23	22			32	22			22	22	10"	288	288	9'-5"
		9'			140	140	18'-2"			65	65	19'-7"	0'-5"	4'-1"	6'-7"			65	65	19'-7"	0'-5"	4'-1"	6'-7"			132	132	8'-11"			23	22			36	22			22	22	#5	12"	290	290	10'-2"
		10'			140	140	18'-5"			65	65	19'-10"	0'-5"	4'-2"	6'-8"			65	65	19'-10"	0'-5"	4'-2"	6'-8"			132	132	9'-0"			23	22			40	22			22	22	11"	264	264	11'-2"
		5'			140	140	19'-8"			65	65	21'-1"	0'-5½"	4'-4"	7'-2"			65	65	21'-1"	0'-5½"	4'-5⅜"	7'-2"			132	132	9'-3"			26	25			20	25			25	25			240	240	6'-3"
		6'			140	140	19'-10"			65	65	21'-3"	0'-5½"	4'-5"	7'-2½"			65	65	21'-3"	0'-5½"	4'-6"	7'-2½"			132	132	9'-10"			26	25			24	25			25	25	#4	12"	240	240	7'-3"
	2 @ 9'	7'			140	140	19'-10"			65	65	21'-3"	0'-5½"	4'-5"	7'-2½"			65	65	21'-3"	0'-5½"	4'-6"	7'-2½"			132	132	9'-10"			26	25			28	25			25	25			240	240	8'-3"
		8'	#6	11"	140	140	19'-11"	#6	11"	65	65	21'-4"	0'-5½"	4'-5"	7'-3"	#6	11"	65	65	21'-4"	0'-5½"	4'-6"	7'-3"	#6	11"	132	132	9'-10"	#5	11½"	26	25	#4	12"	32	25	#4	12"	25	25	#3	12"	240	240	8'-6"
		9'			140	140	20'-2"			65	65	21'-7"	0'-5½"	4'-5⅞"	7'-3"			65	65	21'-7"	0'-5½"	4'-6⅝"	7'-3"			132	132	9'-11"			26	25			36	25			25	25	10"	288	288	9'-3"
		10'			140	140	20'-5"			65	65	21'-10"	0'-5½"	4'-6"	7'-5"			65	65	21'-10"	0'-5½"	4'-6⅝"	7'-5"			132	132	10'-0"			26	25			40	25			25	25	#5	12"	240	240	10'-0"
		11'			140	140	20'-7"			65	65	22'-0"	0'-5½"	4'-7"	7'-6"			65	65	22'-0"	0'-5½"	4'-7"	7'-6"			132	132	10'-0"			26	25			44	25			25	25	11"	264	264	11'-3"
		5'			128	128	21'-8"			59	59	23'-2"	0'-6"	4'-3"	7'-11"			59	59	23'-2"	0'-6⅝"	4'-8"	7'-11"			120	120	10'-3"			28	27			20	27			27	27			240	240	6'-4"
		6'			128	128	21'-10"			59	59	23'-3"	0'-6"	4'-3⅛"	7'-11⅛"			59	59	23'-3"	0'-6⅝"	4'-9"	7'-11⅛"			120	120	10'-4"			28	27			24	27			27	27	#4	12"	240	240	6'-9"
	2 @ 10'	7'			128	128	21'-10"			59	59	23'-3"	0'-6"	4'-3⅛"	7'-11⅛"			59	59	23'-3"	0'-6⅝"	4'-9"	7'-11⅛"			120	120	10'-4"			28	27			28	27			27	27			240	240	8'-3"
		8'	#6	12"	128	128	21'-11"	#6	12"	59	59	23'-4"	0'-6"	4'-3½"	8'-0"	#6	12"	59	59	23'-4"	0'-6⅝"	4'-10"	8'-0"	#7	12"	120	120	10'-10"	#5	11½"	28	28	#4	12"	32	28	#4	12"	27	27	#3	12"	240	240	9'-0"
		9'			128	128	22'-2"			59	59	23'-5"	0'-6"	4'-3⅞"	8'-0"			59	59	23'-5"	0'-6⅝"	4'-10"	8'-0"			120	120	10'-11"			28	28			36	28			28	28			240	240	9'-3"
		10'			128	128	22'-5"			59	59	23'-11"	0'-6"	4'-4"	8'-1"			59	59	23'-11"	0'-6⅝"	4'-11"	8'-1"			120	120	11'-0"			28	28			40	28			28	28			240	240	9'-6"
		11'			128	128	22'-7"			59	59	24'-1"	0'-6"	5'-0"	8'-3"			59	59	24'-1"	0'-6⅝"	4'-11"	8'-3"			120	120	11'-0"			28	28			44	28			28	28			240	240	9'-9"
		12'			128	128	22'-9"			59	59	24'-3"	0'-6"	5'-0"	8'-4"			59	59	24'-3"	0'-6⅝"	5'-0"	8'-4"			120	120	11'-0"			28	28			48	28			28	28			240	240	9'-11"
		6'			128	128	23'-11"			59	59	25'-5"	0'-6½"	5'-3"	8'-9"			59	59	25'-6"	0'-7⅛"	5'-1"	8'-9"			120	120	11'-10"			30	30			24	30			30	30			240	240	7'-4"
		7'			128	128	23'-11"			59	59	25'-5"	0'-6½"	5'-3"	8'-9"			59	59	25'-6"	0'-7⅛"	5'-1"	8'-9"			120	120	11'-10"			30	30			28	30			30	30			240	240	8'-4"
	2 @ 11'	8'			128	128	23'-11"			59	59	25'-5"	0'-6½"	5'-3"	8'-9"			59	59	25'-6"	0'-7⅛"	5'-1"	8'-9"			120	120	11'-10"			30	30	#4	12"	32	30			30	30			240	240	8'-9"
		9'	#7	12"	128	128	24'-2"	#6	12"	59	59	25'-8"	0'-6½"	5'-3½"	8'-10"	#7	12"	59	59	25'-9"	0'-7⅛"	5'-2⅜"	8'-10"	#7	12"	120	120	11'-11"	#5	11½"	30	30	#4	12"	36	30	#4	12"	29	30	#3	12"	240	240	9'-1"
		10'			128	128	24'-5"			59	59	25'-11"	0'-6½"	5'-4"	8'-11"			59	59	26'-0"	0'-7⅛"	5'-3"	8'-11"			120	120	12'-0"			30	30			40	30			30	30			240	240	9'-4"
		11'			128	128	24'-7"			59	59	26'-1"	0'-6½"	5'-5"	9'-0"			59	59	26'-2"	0'-7⅛"	5'-3"	9'-0"			120	120	12'-0"			30	30			44	30			30	30			240	240	9'-7"
		12'			128	128	24'-9"			59	59	26'-3"	0'-6½"	5'-5"	9'-1"			59	59	26'-4"	0'-7⅛"	5'-3"	9'-1"			120	120	12'-0"			30	30			48	30			30	30			240	240	9'-10"
		6'			140	140	25'-11"			65	65	27'-5"	0'-7"	5'-8"	9'-4"			65	65	27'-7"	0'-8⅛"	5'-5"	9'-4"			132	132	12'-10"			32	32			24	32			32	32			290	290	7'-7"
		7'			140	140	25'-11"			65	65	27'-5"	0'-7"	5'-8"	9'-5"			65	65	27'-7"	0'-8⅛"	5'-5"	9'-5"			132	132	12'-10"			32	32			28	32			32	32			290	290	8'-0"
	2 @ 12'	8'			140	140	25'-11"			65	65	27'-5"	0'-7"	5'-8"	9'-5"			65	65	27'-7"	0'-8⅛"	5'-5"	9'-5"			132	132	12'-10"			32	32	#4	12"	36	32	#4	12"	32	32			290	290	8'-3"
		9'	#7	11"	140	140	26'-2"	#6	11"	65	65	27'-10"	0'-7"	5'-9"	9'-6"	#7	11"	65	65	28'-0"	0'-8⅛"	5'-6"	9'-6"	#7	11"	132	132	13'-0"	#5	11½"	32	32	#4	12"	40	32	#4	12"	33	32	#3	12"	290	290	8'-6"
		10'			140	140	26'-5"			65	65	28'-1"	0'-7"	5'-10"	9'-8"			65	65	28'-3"	0'-8⅛"	5'-6"	9'-8"			132	132	13'-0"			32	32			44	32			32	32			290	290	8'-9"
		11'			140	140	26'-7"			65	65	28'-3"	0'-7"	5'-10"	9'-9"			65	65	28'-5"	0'-8⅛"	5'-7"	9'-9"			132	132	13'-0"			32	32			48	32			32	32			290	290	8'-10"
		12'			140	140	26'-9"			65	65	28'-3"	0'-7"	5'-10"	9'-10"			65	65	28'-5"	0'-8⅛"	5'-7"	9'-10"			132	132	13'-0"			32	32			52	32			32	32			290	290	8'-11"

Designed by:- W.C.H. 1-17-63.
Drawn by:- W.C.H. 2-15-63.
Quantities by:- W.C.H. 2-19-63.

Checked by:- TAHS. 5-14-63
Checked by:- TAHS. 5-29-63
Checked by:- TAHS. 5-29-63

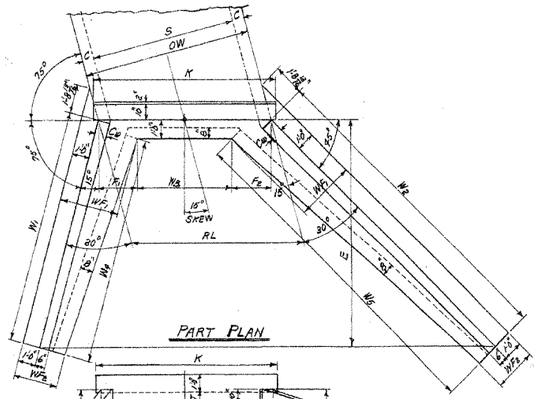
DIMENSIONS / QUANTITIES

MARK. DESIGN. DEPTH OF COVER D	CLEAR SPAN S	CLEAR HEIGHT H	BARREL DIMENSIONS: Sq. Ft. OPENING A	OVERALL WIDTH OW	THICKNESS OF TOP SLAB T	THICKNESS OF SIDEWALLS C	THICKNESS OF DIVISION WALL M	THICKNESS OF BOTTOM SLAB B	OVERALL HEIGHT OH	UNIT QUANTITIES: CLASS S CONC. PER LIN. FT. OF BARREL CU.YD.	REINFORCING STEEL PER LIN. FT. OF BARREL LB.	REINFORCING STEEL ADDITIONAL PER LAP LB.	REINFORCING STEEL ADDITIONAL TWO HEADWALLS & APRONS LB.
0'-0" TO 5'-0"	2 @ 4'	2'	16	9'-8"		6"	8"		3'-0⅝"	0.496	88.15	42.71	189.56
		3'	24	9'-8"		6"	8"		4'-0⅝"	0.558	93.49	44.05	189.56
		4'	32	9'-8"	6½"	6"	8"	6"	5'-0⅝"	0.620	98.84	49.39	189.56
		5'	40	9'-8"		6"	8"		6'-0⅝"	0.682	104.18	52.13	189.56
		6'	48	9'-11"		7"	9"		7'-0⅝"	0.809	110.76	56.07	191.65
	2 @ 5'	3'	30	11'-8"		6"	8"		4'-1⅝"	0.671	123.34	51.19	198.64
		4'	40	11'-8"		6"	8"		5'-1⅝"	0.733	128.68	54.53	198.64
		5'	50	11'-8"	7"	6"	8"	6½"	6'-1⅝"	0.795	134.03	57.87	198.64
		6'	60	11'-11"		7"	9"		7'-1⅝"	0.922	140.89	61.21	201.64
		7'	70	12'-1"		7½"	10"		8'-1⅝"	1.044	147.34	64.55	203.65
	2 @ 6'	3'	36	13'-6"		6"	8"		4'-5⅝"	0.818	198.50	56.34	233.58
		4'	48	13'-8"		6"	8"		5'-5⅝"	0.880	153.85	59.68	233.58
		5'	60	13'-8"	7½"	6"	8"	7½"	6'-5⅝"	0.941	159.19	63.02	233.58
		6'	72	13'-11"		7"	9"		7'-5⅝"	1.070	166.20	66.36	236.59
		7'	84	14'-1"		7½"	10"		8'-5⅝"	1.192	172.74	69.70	238.59
		8'	96	14'-2"		8"	10"		9'-5⅝"	1.298	183.36	73.04	239.59
	2 @ 7'	4'	56	15'-8"		6"	8"		5'-6⅝"	1.021	178.15	69.83	268.97
		5'	70	15'-8"		6"	8"		6'-6⅝"	1.082	183.49	68.17	268.97
		6'	84	15'-11"	8"	7"	9"	8"	7'-6⅝"	1.212	190.59	71.51	271.97
		7'	98	16'-1"		7½"	10"		8'-6⅝"	1.334	197.19	74.85	273.98
		8'	112	16'-2"		8"	10"		9'-6⅝"	1.440	207.89	78.19	274.98
		9'	126	16'-5"		9"	11"		10'-6⅝"	1.616	226.25	81.53	277.98
	2 @ 8'	4'	64	17'-8"		6"	8"		5'-5⅝"	1.174	210.37	71.71	309.80
		5'	80	17'-11"		7"	9"		6'-5⅝"	1.295	217.63	75.05	307.81
		6'	96	17'-11"		7"	9"		7'-5⅝"	1.366	222.97	78.39	307.81
		7'	112	18'-1"	8½"	7½"	10"	8½"	8'-5⅝"	1.989	229.68	81.73	309.81
		8'	128	18'-2"		8"	10"		9'-5⅝"	1.595	290.97	85.07	310.81
		9'	144	18'-5"		9"	11"		10'-5⅝"	1.772	258.08	88.91	313.82
		10'	160	18'-8"		10"	12"		11'-5⅝"	1.967	271.07	91.75	316.82
	2 @ 9'	5'	90	19'-11"		7"	9"		6'-6⅝"	1.977	239.37	82.77	395.92
		6'	108	20'-1"		7½"	10"		7'-6⅝"	1.584	296.06	86.11	397.93
		7'	126	20'-1"		7½"	10"		8'-6⅝"	1.671	251.43	89.95	397.93
		8'	144	20'-2"	9"	8"	10"	9½"	9'-6⅝"	1.778	262.26	92.79	398.93
		9'	162	20'-5"		9"	11"		10'-6⅝"	1.956	273.95	96.13	351.93
		10'	180	20'-8"		10"	12"		11'-6⅝"	2.152	292.97	99.47	354.93
		11'	198	20'-10"		11"	12"		12'-6⅝"	2.328	306.86	102.81	356.94
	2 @ 10'	5'	100	21'-11"		7"	9"		6'-7½"	1.674	279.66	87.92	479.99
		6'	120	22'-1"		7½"	10"		7'-7½"	1.792	286.50	91.26	982.71
		7'	140	22'-1"		7½"	10"		8'-7½"	1.869	291.85	94.60	982.71
		8'	160	22'-2"	9½"	8"	10"	10"	9'-7½"	1.976	302.77	97.94	984.08
		9'	180	22'-5"		9"	11"		10'-7½"	2.155	320.79	101.28	988.16
		10'	200	22'-8"		10"	12"		11'-7½"	2.352	333.99	104.62	992.25
		11'	220	22'-10"		11"	12"		12'-7½"	2.529	348.01	107.96	994.98
		12'	240	23'-0"		12"	12"		13'-7½"	2.718	370.23	111.30	997.70
	2 @ 11'	6'	132	24'-2"		8"	10"		7'-9"	2.048	308.36	96.41	530.63
		7'	154	24'-2"		8"	10"		8'-9"	2.128	314.70	99.76	530.03
		8'	176	24'-2"		8"	10"		9'-9"	2.208	325.12	103.09	530.03
		9'	198	24'-5"	10"	9"	11"	11"	10'-9"	2.388	343.25	106.43	534.12
		10'	220	24'-8"		10"	12"		11'-9"	2.584	356.57	109.77	538.21
		11'	242	24'-10"		11"	12"		12'-9"	2.769	370.67	113.11	540.93
		12'	264	25'-0"		12"	12"		13'-9"	2.954	393.05	116.45	543.66
	2 @ 12'	6'	144	26'-2"		8"	10"		7'-10½"	2.299	353.21	101.55	576.93
		7'	168	26'-2"		8"	10"		8'-10½"	2.379	368.65

Revised 3-5-93

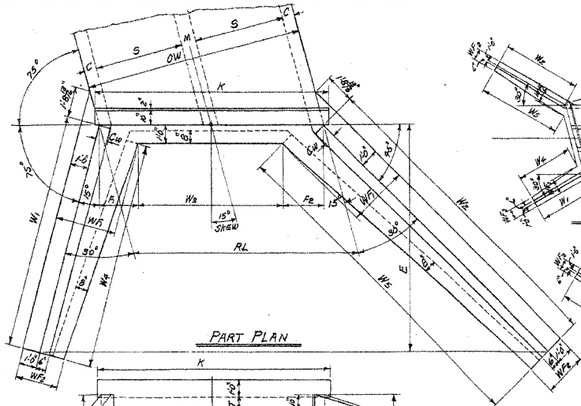
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FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			225	
JOB No.					



SINGLE BARREL CULVERT - 15° SKEW RIGHT FORWARD

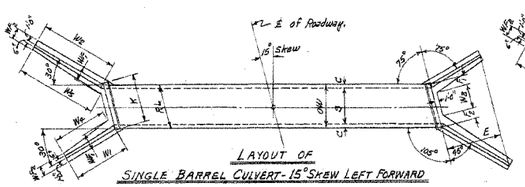
Details of Culvert with 15° Skew Left Forward is reversed, see Layout below.



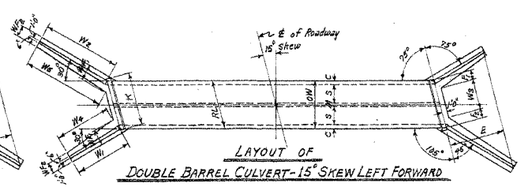
DOUBLE BARREL CULVERT - 15° SKEW RIGHT FORWARD

Details of Culvert with 15° Skew Left Forward is reversed, see Layout below.

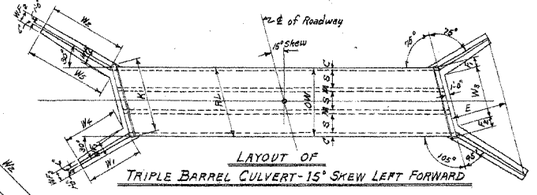
NOTE:- Plans and Elevations are not to scale.



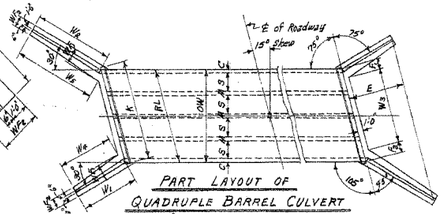
SINGLE BARREL CULVERT - 15° SKEW LEFT FORWARD



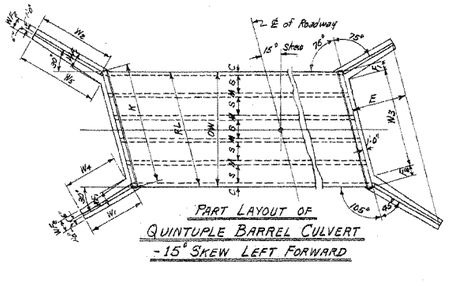
DOUBLE BARREL CULVERT - 15° SKEW LEFT FORWARD



TRIPLE BARREL CULVERT - 15° SKEW LEFT FORWARD

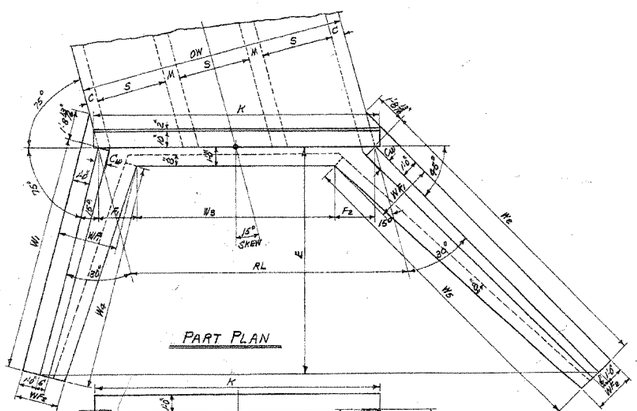


QUADRUPLE BARREL CULVERT - 15° SKEW LEFT FORWARD



QUINTUPLE BARREL CULVERT - 15° SKEW LEFT FORWARD

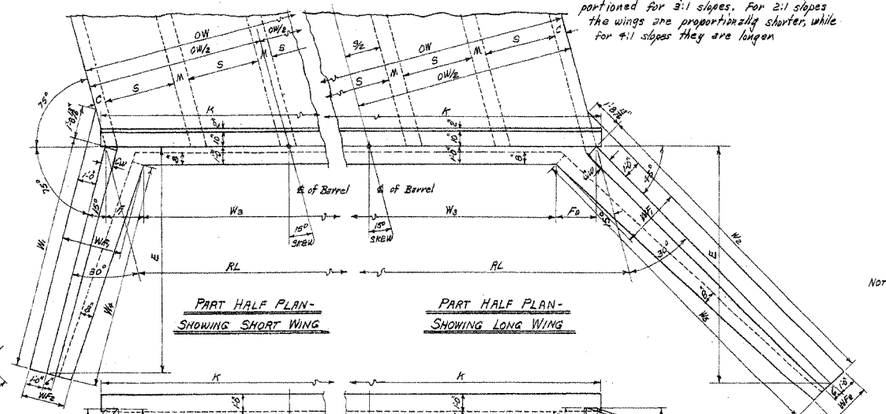
NOTE:- The length of the wings for the Plans, Elevations, and Layouts, as drawn, are proportioned for 3:1 slopes. For 2:1 slopes the wings are proportionally shorter, while for 4:1 slopes they are longer.



NOTE:- Plans and Elevations are not to scale.

TRIPLE BARREL CULVERT - 15° SKEW RIGHT FORWARD

Details of Culvert with 15° Skew Left Forward is reversed, see Layout at top center of sheet.



QUADRUPLE BARREL CULVERT - 15° SKEW RT. FWD.

Details of Culvert with 15° Skew Left Forward is reversed, see Layout at above center.

QUINTUPLE BARREL CULVERT - 15° SKEW RT. FWD.

Details of Culvert with 15° Skew Left Forward is reversed, see Layout above.

ROADWAY LENGTH RL — HEADWALL LENGTH K — APRON DIMENSION W_3

$RL = OW \times 1.035276$ — $K = RL + (6\frac{1}{2}')$ — $W_3 = RL - (F_1 + F_2)$

USE WITH DRAWING No.	CLEAR SPAN	CLEAR HEIGHT	SUM OF SQUARE DIMENSIONS	SINGLE BARREL CULVERT OW	SINGLE BARREL CULVERT RL	SINGLE BARREL CULVERT K	SINGLE BARREL CULVERT W_3	DOUBLE BARREL CULVERT OW	DOUBLE BARREL CULVERT RL	DOUBLE BARREL CULVERT K	DOUBLE BARREL CULVERT W_3	TRIPLE BARREL CULVERT OW	TRIPLE BARREL CULVERT RL	TRIPLE BARREL CULVERT K	TRIPLE BARREL CULVERT W_3	QUADRUPLE BARREL CULVERT OW	QUADRUPLE BARREL CULVERT RL	QUADRUPLE BARREL CULVERT K	QUADRUPLE BARREL CULVERT W_3	QUINTUPLE BARREL CULVERT OW	QUINTUPLE BARREL CULVERT RL	QUINTUPLE BARREL CULVERT K	QUINTUPLE BARREL CULVERT W_3
	S	H	S+S+S+S																				
W-X152-1, W-X153-1 OR W-X154-1 (FOR H=8'0" OR LESS)	4'	2'0"	5'0"	5'2"$\frac{11}{16}$	5'0"$\frac{5}{8}$	3'2"$\frac{5}{8}$	9'6"	18'0"	10'6"$\frac{5}{8}$	8'0"	16'6"	16'10"	15'0"$\frac{1}{2}$	12'10"	19'0"	19'8"	20'2"$\frac{5}{8}$	17'8"	23'8"	24'6"	25'0"$\frac{5}{8}$	22'6"
		2'6"	5'0"	"	"	2'6"$\frac{5}{8}$	9'6"	"	"	7'2"$\frac{5}{8}$	"	16'6"	"	11'0"$\frac{1}{2}$	19'0"	"	"	16'0"$\frac{5}{8}$	"	"	"	21'8"$\frac{5}{8}$
		3'0"	5'0"	"	"	1'6"$\frac{5}{8}$	"	"	"	6'6"$\frac{5}{8}$	"	16'6"	"	11'0"$\frac{1}{2}$	"	"	"	14'6"$\frac{5}{8}$	"	"	"	20'6"$\frac{5}{8}$
		5'0"	5'0"	"	"	0'6"$\frac{5}{8}$	"	"	"	5'6"$\frac{5}{8}$	"	16'6"	"	11'0"$\frac{1}{2}$	"	"	"	15'2"$\frac{5}{8}$	"	"	"	20'0"$\frac{5}{8}$
		6'0"	5'0"	5'2"$\frac{11}{16}$	5'10"$\frac{5}{8}$	0'1"	9'6"	"	"	5'0"	"	16'8"	15'2"$\frac{1}{2}$	15'8"$\frac{1}{2}$	9'11"	19'5"	20'1"$\frac{1}{2}$	20'7"$\frac{1}{2}$	14'10"	24'2"	25'0"$\frac{5}{8}$	25'6"$\frac{1}{2}$	19'9"
	5'	3'0"	6'0"	6'2"$\frac{11}{16}$	6'1"$\frac{5}{8}$	3'4"$\frac{5}{8}$	11'8"	12'1"	12'7"$\frac{5}{8}$	9'3"$\frac{5}{8}$	17'6"	17'11"$\frac{1}{2}$	18'5"$\frac{1}{2}$	15'1"$\frac{1}{2}$	23'0"	23'5"$\frac{1}{2}$	24'1"$\frac{5}{8}$	21'0"	28'8"	29'0"$\frac{5}{8}$	30'0"$\frac{5}{8}$	26'10"$\frac{1}{2}$
		4'0"	6'0"	"	"	2'7"	11'8"	"	"	8'3"$\frac{5}{8}$	"	17'6"	"	"	14'3"$\frac{1}{2}$	23'0"	"	"	20'2"$\frac{1}{2}$	28'8"	"	"	26'4"$\frac{1}{2}$
		5'0"	6'0"	"	"	1'9"$\frac{5}{8}$	11'8"	"	"	7'1"$\frac{5}{8}$	"	17'6"	"	"	18'6"	23'0"	"	"	19'7"$\frac{5}{8}$	28'8"	"	"	25'2"$\frac{5}{8}$
		6'0"	6'0"	6'2"	6'11"$\frac{5}{8}$	1'1"$\frac{5}{8}$	11'11"	12'5"	12'10"$\frac{5}{8}$	7'0"$\frac{5}{8}$	17'8"	18'3"$\frac{1}{2}$	18'10"$\frac{1}{2}$	18'0"$\frac{1}{2}$	23'5"	24'0"$\frac{1}{2}$	24'6"$\frac{5}{8}$	18'11"$\frac{1}{2}$	28'2"	30'2"$\frac{5}{8}$	30'8"$\frac{5}{8}$	24'0"$\frac{1}{2}$
		7'0"	6'0"	6'2"	7'10"$\frac{5}{8}$	0'1"	12'1"	12'6"$\frac{5}{8}$	13'0"$\frac{5}{8}$	6'0"$\frac{5}{8}$	17'11"	18'6"$\frac{5}{8}$	19'1"	17'0"$\frac{1}{2}$	23'9"	24'1"	25'1"$\frac{1}{2}$	18'1"$\frac{5}{8}$	28'7"	30'7"$\frac{5}{8}$	31'2"	24'1"$\frac{5}{8}$
	6'	3'0"	7'0"	7'1"$\frac{5}{8}$	7'9"$\frac{5}{8}$	4'3"$\frac{5}{8}$	13'8"	14'1"$\frac{5}{8}$	14'8"$\frac{5}{8}$	11'4"	20'4"	21'0"$\frac{5}{8}$	21'7"	18'2"$\frac{1}{2}$	27'0"	27'8"$\frac{1}{2}$	28'3"$\frac{5}{8}$	25'1"$\frac{5}{8}$	33'8"	34'6"$\frac{5}{8}$	35'3"$\frac{1}{2}$	32'0"$\frac{5}{8}$
		4'0"	7'0"	"	"	3'7"$\frac{5}{8}$	13'8"	"	"	10'6"$\frac{5}{8}$	20'4"	"	"	17'5"	27'0"	"	"	26'3"$\frac{5}{8}$	33'8"	"	"	31'2"$\frac{5}{8}$
		5'0"	7'0"	"	"	2'3"$\frac{5}{8}$	13'8"	"	"	9'3"$\frac{5}{8}$	20'4"	"	"	16'2"$\frac{1}{2}$	27'0"	"	"	23'6"	33'8"	"	"	30'0"$\frac{5}{8}$
		6'0"	7'0"	7'1"$\frac{5}{8}$	7'11"$\frac{5}{8}$	2'1"$\frac{5}{8}$	13'11"	14'5"$\frac{5}{8}$	14'11"$\frac{5}{8}$	9'1"$\frac{5}{8}$	20'8"	21'4"$\frac{5}{8}$	21'11"$\frac{5}{8}$	16'11"$\frac{1}{2}$	27'5"	28'0"$\frac{5}{8}$	28'8"$\frac{1}{2}$	23'11"$\frac{1}{2}$	34'2"	35'4"$\frac{5}{8}$	35'11"$\frac{1}{2}$	30'1"$\frac{5}{8}$
		7'0"	7'0"	7'1"$\frac{5}{8}$	8'1"$\frac{5}{8}$	1'0"$\frac{5}{8}$	14'1"	14'7"$\frac{5}{8}$	15'1"$\frac{5}{8}$	8'11"$\frac{5}{8}$	20'11"	21'6"$\frac{5}{8}$	22'2"$\frac{5}{8}$	15'2"	27'9"	28'3"$\frac{5}{8}$	29'0"$\frac{1}{2}$	22'3"	34'7"	35'9"$\frac{5}{8}$	36'4"	29'3"$\frac{5}{8}$
		8'0"	7'0"	7'7"$\frac{5}{8}$	8'4"$\frac{5}{8}$	0'1"	14'5"	14'8"	15'2"$\frac{5}{8}$	8'11"$\frac{5}{8}$	21'0"	21'8"$\frac{5}{8}$	22'3"$\frac{5}{8}$	16'0"$\frac{1}{2}$	27'10"	28'3"$\frac{5}{8}$	29'0"$\frac{1}{2}$	21'1"$\frac{1}{2}$	34'8"	35'10"$\frac{5}{8}$	36'5"	28'2"
	7'	3'0"$\frac{5}{8}$	8'0"	8'1"$\frac{5}{8}$	8'9"$\frac{5}{8}$	4'7"$\frac{5}{8}$	15'8"	16'2"$\frac{5}{8}$	16'9"	12'7"	22'9"	23'4"$\frac{5}{8}$	23'10"$\frac{5}{8}$	20'6"$\frac{1}{2}$	31'0"	32'1"$\frac{5}{8}$	32'7"$\frac{5}{8}$	28'5"$\frac{1}{2}$	38'8"	40'0"$\frac{5}{8}$	40'6"$\frac{5}{8}$	36'4"$\frac{5}{8}$
		5'0"	8'0"	"	"	3'0"	15'8"	"	"	11'9"$\frac{5}{8}$	22'9"	"	"	19'8"$\frac{1}{2}$	31'0"	"	"	27'7"$\frac{1}{2}$	38'8"	"	"	35'7"
		6'0"	8'2"	8'5"$\frac{5}{8}$	9'0"	5'2"$\frac{5}{8}$	16'11"	16'6"$\frac{5}{8}$	17'0"$\frac{5}{8}$	11'2"$\frac{5}{8}$	23'6"	24'1"$\frac{5}{8}$	25'0"$\frac{1}{2}$	19'2"$\frac{1}{2}$	31'5"	32'6"$\frac{5}{8}$	33'0"$\frac{5}{8}$	27'3"	39'2"	40'6"$\frac{5}{8}$	41'1"	35'3"$\frac{5}{8}$
		7'0"	8'3"	8'6"$\frac{5}{8}$	9'1"	2'0"$\frac{5}{8}$	16'1"	16'7"$\frac{5}{8}$	17'2"$\frac{5}{8}$	10'2"	23'11"	24'7"$\frac{5}{8}$	25'3"$\frac{1}{2}$	18'3"$\frac{1}{2}$	31'9"	32'10"$\frac{5}{8}$	33'5"	26'9"$\frac{1}{2}$	39'7"	40'11"$\frac{5}{8}$	41'6"$\frac{5}{8}$	34'6"$\frac{5}{8}$
		8'0"	8'4"	8'7"$\frac{5}{8}$	9'2"	0'1"	16'2"	16'8"$\frac{5}{8}$	17'3"$\frac{5}{8}$	9'10"$\frac{5}{8}$	24'0"	24'10"$\frac{5}{8}$	25'6"$\frac{1}{2}$	17'1"$\frac{1}{2}$	31'10"	32'11"$\frac{5}{8}$	33'6"	25'5"$\frac{1}{2}$	39'5"	41'0"$\frac{5}{8}$	41'7"$\frac{5}{8}$	33'4"$\frac{5}{8}$
	8'	3'7"$\frac{5}{8}$	9'0"	9'3"$\frac{5}{8}$	9'10"$\frac{5}{8}$	5'8"$\frac{5}{8}$	17'8"	18'2"$\frac{5}{8}$	18'10"	15'8"	26'4"	27'3"$\frac{5}{8}$	27'10"$\frac{5}{8}$	23'2"$\frac{5}{8}$	35'0"	36'2"$\frac{5}{8}$	36'9"$\frac{5}{8}$	32'7"$\frac{5}{8}$	45'8"	47'2"$\frac{5}{8}$	47'9"	41'7"
		4'0"$\frac{5}{8}$	9'2"	9'5"$\frac{5}{8}$	10'0"$\frac{5}{8}$	5'0"$\frac{5}{8}$	17'11"	18'6"$\frac{5}{8}$	19'1"	14'1"$\frac{5}{8}$	26'8"	27'7"$\frac{5}{8}$	28'1"$\frac{5}{8}$	22'2"	35'5"	36'8"	37'2"$\frac{5}{8}$	32'2"$\frac{5}{8}$	44'8"	46'2"$\frac{5}{8}$	46'9"$\frac{5}{8}$	41'3"$\frac{5}{8}$
		5'0"	9'2"	"	"	4'0"	17'11"	"	"	13'0"$\frac{5}{8}$	26'8"	"	"	21'1"$\frac{1}{2}$	35'5"	"	"	31'0"$\frac{5}{8}$	44'8"	"	"	40'2"$\frac{5}{8}$
		6'0"	9'2"	9'5"$\frac{5}{8}$	10'0"$\frac{5}{8}$	5'10"$\frac{5}{8}$	17'11"	18'6"$\frac{5}{8}$	19'1"	14'11"$\frac{5}{8}$	26'8"	27'7"$\frac{5}{8}$	28'1"$\frac{5}{8}$	22'2"	35'5"	36'8"	37'2"$\frac{5}{8}$	32'2"$\frac{5}{8}$	44'8"	46'2"$\frac{5}{8}$	46'9"$\frac{5}{8}$	41'3"$\frac{5}{8}$
		7'0"	9'2"	"	"	6'9"$\frac{5}{8}$	17'11"	"	"	15'8"$\frac{5}{8}$	26'8"	"	"	23'0"$\frac{1}{2}$	35'5"	"	"	32'11"$\frac{5}{8}$	44'8"	"	"	42'1"$\frac{5}{8}$
		8'0"	9'2"	"	"	7'7"$\frac{5}{8}$	17'11"	"	"	16'6"$\frac{5}{8}$	26'8"	"	"	24'0"$\frac{1}{2}$	35'5"	"	"	33'9"$\frac{5}{8}$	44'8"	"	"	43'0"$\frac{5}{8}$
	9'	3'7"$\frac{5}{8}$	10'0"	10'3"$\frac{5}{8}$	10'10"$\frac{5}{8}$	6'4"$\frac{5}{8}$	19'2"	19'8"$\frac{5}{8}$	20'4"	16'2"$\frac{5}{8}$	28'4"	29'3"$\frac{5}{8}$	29'10"$\frac{5}{8}$	24'9"$\frac{1}{2}$	37'5"	38'8"$\frac{5}{8}$	39'3"$\frac{5}{8}$	34'3"$\frac{5}{8}$	47'8"	49'2"$\frac{5}{8}$	49'9"$\frac{5}{8}$	43'7"$\frac{5}{8}$
		4'0"$\frac{5}{8}$	10'2"	10'5"$\frac{5}{8}$	11'0"$\frac{5}{8}$	6'1"	19'11"	20'7"$\frac{5}{8}$	21'2"	16'2"	29'8"	30'8"$\frac{5}{8}$	31'3"	25'11"	39'5"	40'9"$\frac{5}{8}$	41'4"$\frac{5}{8}$	36'4"$\frac{5}{8}$	49'8"	51'0"$\frac{5}{8}$	51'5"$\frac{5}{8}$	46'1"$\frac{5}{8}$
		5'0"	10'2"	10'5"$\frac{5}{8}$	11'0"$\frac{5}{8}$	6'10"$\frac{5}{8}$	19'11"	20'7"$\frac{5}{8}$	21'2"	16'11"$\frac{5}{8}$	29'8"	30'8"$\frac{5}{8}$	31'3"	26'8"$\frac{1}{2}$	39'5"	40'9"$\frac{5}{8}$	41'4"$\frac{5}{8}$	36'4"$\frac{5}{8}$	49'8"	51'0"$\frac{5}{8}$	51'5"$\frac{5}{8}$	46'1"$\frac{5}{8}$
		6'0"	10'5"	10'8"$\frac{5}{8}$	11'3"$\frac{5}{8}$	7'5"$\frac{5}{8}$	20'1"	20'7"$\frac{5}{8}$	21'2"	16'11"$\frac{5}{8}$	29'11"	30'11"$\frac{5}{8}$	31'6"	25'10"$\frac{1}{2}$	39'9"	41'1"$\frac{5}{8}$	41'8"$\frac{5}{8}$	35'10"$\frac{5}{8}$	49'7"	51'0"$\frac{5}{8}$	51'5"$\frac{5}{8}$	46'0"$\frac{5}{8}$
		7'0"	10'5"	"	"	6'1"$\frac{5}{8}$	20'1"	"	"	16'2"$\frac{5}{8}$	29'11"	"	"	24'5"$\frac{1}{2}$	39'9"	"	"	34'8"	49'7"	"	"	44'0"
		8'0"	10'5"	10'8"$\frac{5}{8}$	11'3"$\frac{5}{8}$	5'10"$\frac{5}{8}$	20'1"	20'7"$\frac{5}{8}$	21'2"	16'2"$\frac{5}{8}$	29'11"	30'11"$\frac{5}{8}$	31'6"	25'10"$\frac{1}{2}$	39'9"	41'1"$\frac{5}{8}$	41'8"$\frac{5}{8}$	35'10"$\frac{5}{8}$	49'7"	51'0"$\frac{5}{8}$	51'5"$\frac{5}{8}$	46'0"$\frac{5}{8}$
	10'	3'7"$\frac{5}{8}$	10'8"	10'11"$\frac{5}{8}$	11'6"$\frac{5}{8}$	6'8"$\frac{5}{8}$	20'4"	21'0"$\frac{5}{8}$	21'5"	18'2"	30'0"	31'0"$\frac{5}{8}$	31'7"$\frac{5}{8}$	28'0"$\frac{1}{2}$	39'10"	41'3"$\frac{5}{8}$	41'10"$\frac{5}{8}$	39'3"$\frac{5}{8}$	49'8"	51'5"	51'10"$\frac{5}{8}$	49'3"$\frac{5}{8}$
		4'0"$\frac{5}{8}$	10'8"	11'1"$\frac{5}{8}$	11'7"	6'4"$\frac{5}{8}$	20'11"	21'7"$\frac{5}{8}$	22'2"	18'5"	31'2"	32'2"$\frac{5}{8}$	32'9"$\frac{5}{8}$	29'4"$\frac{1}{2}$	41'3"	42'8"$\frac{5}{8}$	43'3"$\frac{5}{8}$	40'8"$\frac{5}{8}$	51'2"	52'8"$\frac{5}{8}$	53'3"	50'8"$\frac{5}{8}$
		5'0"	10'8"	"	"	5'2"$\frac{5}{8}$	21'11"	22'6"$\frac{5}{8}$	23'2"$\frac{5}{8}$	18'5"	32'8"	33'8"$\frac{5}{8}$	34'4"$\frac{5}{8}$	29'9"$\frac{1}{2}$	43'5"	44'11"$\frac{5}{8}$	45'6"	40'6"	54'2"	56'1"	56'8"$\frac{5}{8}$	51'7"$\frac{5}{8}$
	12'	3'7"$\frac{5}{8}$	10'11"	11'2"$\frac{5}{8}$	11'9"$\frac{5}{8}$	7'1"$\frac{5}{8}$	21'11"	22'6"$\frac{5}{8}$	23'2"$\frac{5}{8}$	18'5"	32'8"	33'8"$\frac{5}{8}$	34'4"$\frac{5}{8}$	29'9"$\frac{1}{2}$	43'5"	44'11"$\frac{5}{8}$	45'6"	40'6"	54'2"	56'1"	56'8"$\frac{5}{8}$	51'7"$\frac{5}{8}$
		4'0"$\frac{5}{8}$	10'11"	11'2"$\frac{5}{8}$	11'8"	6'6"$\frac{5}{8}$	22'1"	22'10"$\frac{5}{8}$	23'5"$\frac{5}{8}$	19'7"	32'11"	34'1"	34'7"$\frac{5}{8}$	30'2"$\frac{1}{2}$	43'8"	45'3"$\frac{5}{8}$	45'10"	40'10"$\frac{5}{8}$	54'7"	56'6"	57'1"	52'0"
		5'0"	10'11"	"	"	5'4"$\frac{5}{8}$	22'1"	"	"	19'8"$\frac{5}{8}$	32'11"	"	"	30'3"$\frac{5}{8}$	43'8"	"	"	38'9"$\frac{5}{8}$	54'7"	"	"	50'8"
		6'0"	10'11"	11'2"$\frac{5}{8}$	11'8"	7'4"	22'1"	22'10"$\frac{5}{8}$	23'5"$\frac{5}{8}$	19'7"	32'11"	34'1"	34'7"$\frac{5}{8}$	30'2"$\frac{1}{2}$	43'8"	45'3"$\frac{5}{8}$	45'10"	40'10"$\frac{5}{8}$	54'7"	56'6"	57'1"	52'0"
		7'0"	10'11"	"	"	6'3"$\frac{5}{8}$	22'1"	"	"	18'6"$\frac{5}{8}$	32'11"	"	"	30'3"$\frac{5}{8}$	43'8"	"	"	38'9"$\frac{5}{8}$	54'7"	"	"	50'8"
		8'0"	10'11"	"	"	5'0"$\frac{5}{8}$	22'1"	"	"	17'3"$\frac{5}{8}$	32'11"	"	"	29'6"$\frac{1}{2}$	43'8"	"	"	38'0"	54'7"	"	"	49'11"
	6'	5'3"$\frac{5}{8}$	13'4"	13'9"$\frac{5}{8}$	14'4"$\frac{5}{8}$	8'6"$\frac{5}{8}$	26'8"	27'4"$\frac{5}{8}$	27'10"$\frac{5}{8}$	21'1"$\frac{1}{2}$	39'0"	40'0"$\frac{5}{8}$	40'7"$\frac{5}{8}$	32'6"$\frac{1}{2}$	51'10"	53'8"	54'3"$\frac{5}{8}$	46'8"$\frac{5}{8}$	65'1"	67'3"$\frac{5}{8}$	68'0"	59'5"$\frac{5}{8}$
		7'0"	13'4"	"	"	7'3"$\frac{5}{8}$	26'8"	"	"	20'7"$\frac{5}{8}$	39'0"	"	"	33'10"$\frac{5}{8}$	51'10"	"	"	47'2"	65'1"	"	"	61'5"
		8'0"	13'4"	"	"	6'1"	26'8"	"	"	19'4"$\frac{5}{8}$	39'0"	"	"	32'8"	51'10"	"	"	45'11"$\frac{5}{8}$	—	—	—	—
	7'	5'3"$\frac{5}{8}$	13'9"	14'2"$\frac{5}{8}$	14'9"$\frac{5}{8}$	8'11"$\frac{5}{8}$	27'5"	28'1"$\frac{5}{8}$	28'8"$\frac{5}{8}$	21'10"$\frac{5}{8}$	40'1"	41'2"$\frac{5}{8}$	41'9"$\frac{5}{8}$	33'7"$\frac{1}{2}$	53'3"	55'1"$\frac{5}{8}$	55'8"$\frac{5}{8}$	48'0"$\frac{5}{8}$	66'11"	69'1"$\frac{5}{8}$	69'9"	61'1"$\frac{5}{8}$
		7'0"	13'9"	"	"	7'6"$\frac{5}{8}$	27'5"	"	"	21'3"$\frac{5}{8}$	40'1"	"	"	34'5"$\frac{1}{2}$	53'3"	"	"	48'4"$\frac{5}{8}$	66'11"	"	"	62'7"$\frac{5}{8}$
		8'0"	13'9"	"	"	6'4"$\frac{5}{8}$	27'5"	"	"	19'9"$\frac{5}{8}$	40'1"	"	"	33'1"$\frac{1}{2}$	53'3"	"	"	46'6"$\frac{5}{8}$	66'11"	"	"	60'9"$\frac{5}{8}$
	8'	5'3"$\frac{5}{8}$	14'2"	14'7"$\frac{5}{8}$	15'2"$\frac{5}{8}$	9'4"	28'2"	28'9"$\frac{5}{8}$	29'4"$\frac{5}{8}$	22'6"$\frac{5}{8}$	41'2"	42'4"$\frac{5}{8}$	43'0"$\frac{5}{8}$	34'5"$\frac{1}{2}$	54'8"	56'6"$\frac{5}{8}$	57'2"$\frac{5}{8}$	49'4"$\frac{5}{8}$	68'6"	70'9"$\frac{5}{8}$	71'5"	62'9"$\frac{5}{8}$
		7'0"	14'2"	"	"	7'9"$\frac{5}{8}$	28'2"	"	"	21'10"$\frac{5}{8}$	41'2"	"	"	35'4"$\frac{1}{2}$	54'8"	"	"	49'7"$\frac{5}{8}$	68'6"	"	"	64'1"$\frac{5}{8}$
		8'0"	14'2"	"	"	6'7"$\frac{5}{8}$	28'2"	"	"	20'3"$\frac{5}{8}$	41'2"	"	"	34'1"$\frac{1}{2}$	54'8"	"	"	47'10"$\frac{5}{8}$	68'6"	"	"	62'11"$\frac{5}{8}$
	9'	5'3"$\frac{5}{8}$	14'7"	15'0"$\frac{5}{8}$	15'7"$\frac{5}{8}$	9'9"$\frac{5}{8}$	28'11"	29'6"$\frac{5}{8}$	30'1"$\frac{5}{8}$	23'2"$\frac{5}{8}$	42'3"	43'5"$\frac{5}{8}$	44'1"$\frac{5}{8}$	35'3"$\frac{1}{2}$	56'1"	57'11"$\frac{5}{8}$	58'6"$\frac{5}{8}$	50'8"$\frac{5}{8}$	70'3"	72'6"$\frac{5}{8}$	73'2"	64'5"$\frac{5}{8}$
		7'0"	14'7"	"	"	8'1"$\frac{5}{8}$	28'11"	"	"	22'5"$\frac{5}{8}$	42'3"	"	"	36'7"$\frac{1}{2}$	56'1"	"	"	50'11"$\frac{5}{8}$	70'3"	"	"	66'4"$\frac{5}{8}$
		8'0"	14'7"	"	"	7'0"$\frac{5}{8}$	28'11"	"	"	21'8"$\frac{5}{8}$	42'3"	"	"	36'0"	56'1"	"	"	50'2"$\frac{5}{8}$	70'3"	"	"	65'7"$\frac{5}{8}$
	10'	5'3"$\frac{5}{8}$	15'0"	15'5"$\frac{5}{8}$	16'0"$\frac{5}{8}$	10'2"	29'8"	30'4"$\frac{5}{8}$	30'11"$\frac{5}{8}$	23'10"$\frac{5}{8}$	43'4"	44'6"$\frac{5}{8}$	45'2"$\frac{5}{8}$	36'1"$\frac{1}{2}$	57'6"	59'4"$\frac{5}{8}$	60'0"$\frac{5}{8}$	52'0"$\frac{5}{8}$	72'0"	74'3"$\frac{5}{8}$	75'0"	66'1"$\frac{5}{8}$
		7'0"	15'0"	"	"	8'5"$\frac{5}{8}$	29'8"	"	"	23'1"$\frac{5}{8}$	43'4"	"	"	37'5"$\frac{1}{2}$	57'6"	"	"	51'6"$\frac{5}{8}$	72'0"	"	"	67'9"$\frac{5}{8}$
		8'0"	15'0"	"	"	7'4"$\frac{5}{8}$	29'8"	"	"	22'5"$\frac{5}{8}$	43'4"	"	"	37'0"	57'6"	"	"	51'1"$\frac{5}{8}$	72'0"	"	"	67'4"$\frac{5}{8}$
	11'	5'3"$\frac{5}{8}$	15'5"	15'10"$\frac{5}{8}$	16'5"$\frac{5}{8}$	10'7"	30'5"	31'1"$\frac{5}{8}$	31'8"$\frac{5}{8}$	24'6"$\frac{5}{8}$	44'5"	45'7"$\frac{5}{8}$	46'3"$\frac{5}{8}$	37'0"$\frac{1}{2}$	58'11"	60'9"$\frac{5}{8}$	61'4"$\frac{5}{8}$	53'4"$\frac{5}{8}$	73'9"	76'0"$\frac{5}{8}$	76'9"	67'9"$\frac{5}{8}$
		7'0"	15'5"	"	"	8'9"$\frac{5}{8}$	30'5"	"	"	23'9"$\frac{5}{8}$	44'5"	"	"	38'5"$\frac{1}{2}$	58'11"	"	"	52'10"$\frac{5}{8}$	73'9"	"	"	69'4"$\frac{5}{8}$
		8'0"	15'5"	"	"	7'8"$\frac{5}{8}$	30'5"	"	"	23'1"$\frac{5}{8}$	44'5"	"	"	38'0"	58'11"	"	"	52'3"$\frac{5}{8}$	73'9"	"	"	68'8"$\frac{5}{8}$
	12'	5'3"$\frac{5}{8}$	15'10"	16'3"$\frac{5}{8}$	16'10"$\frac{5}{8}$	10'11"	31'2"	31'9"$\frac{5}{8}$	32'4"$\frac{5}{8}$	25'2"$\frac{5}{8}$	45'6"	46'8"$\frac{5}{8}$	47'4"$\frac{5}{8}$	38'0"$\frac{1}{2}$	60'4"	62'2"$\frac{5}{8}$	62'9"$\frac{5}{8}$	54'8"$\frac{5}{8}$	75'6"	77'9"$\frac{5}{8}$	78'5"	69'3"$\frac{5}{8}$
		7'0"	15'10"	"	"	9'1"$\frac{5}{8}$	31'2"	"	"	24'5"$\frac{5}{8}$	45'6"	"	"	39'5"$\frac{1}{2}$	60'4"	"	"	54'2"$\frac{5}{8}$	75'6"	"	"	70'8"$\frac{5}{8}$
		8'0"	15'10"	"	"	8'0"$\frac{5}{8}$	31'2"	"	"	23'9"$\frac{5}{8}$	45'6"	"	"	39'0"	60'4"	"	"	53'5"$\frac{5}{8}$	75'6"	"	"	70'0"$\frac{5}{8}$

Ⓐ Special case for these boxes. See Detail "A" and Table "A" for revised values of F_1, F_2, W_6 and W_8, when apron width is more than 1'0 and $W_3 = 0$. For Details "A" and Table "A" for each slope, see Drawing Nos. W-X152-1, W-X152-2, or W-X153-1, W-X153-2, or W-X154-1, W-X154-2.

NOTE:- This drawing to be used in conjunction with Standard Wing Drawings for 15° Skews for each slope as listed below.

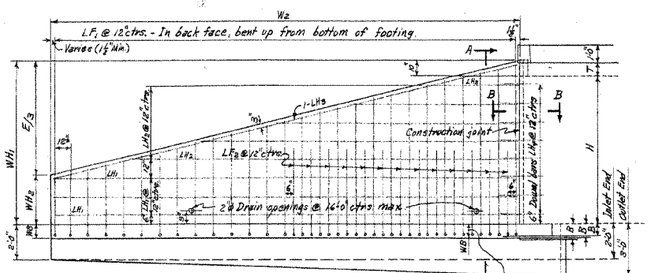
2:1 Slopes	3:1 Slopes	4:1 Slopes
W-X152-1 or W-X152-2	W-X153-1 or W-X153-2	W-X154-1 or W-X154-2.

This drawing to be used in con

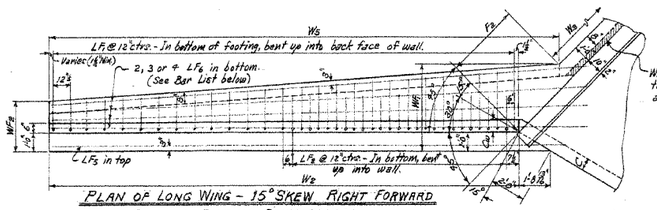
RESHOT 3-8-93

175

FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			226	
JOB No.					

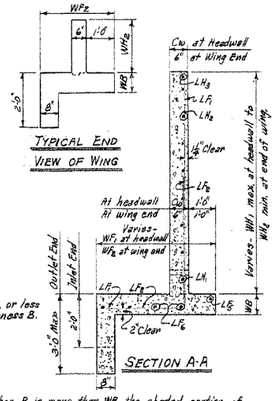


REAR ELEVATION OF LONG WING - 15° SKEW RIGHT FORWARD
SHOWING BACK FACE REINFORCING



PLAN OF LONG WING - 15° SKEW RIGHT FORWARD
SHOWING FOOTING REINFORCING.

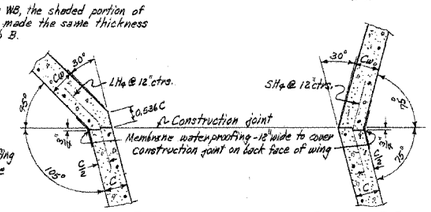
Note:- Payment for membrane waterproofing and roofing felt to be included in the price bid for Class S Concrete.



TYPICAL END VIEW OF WING

SECTION A-A

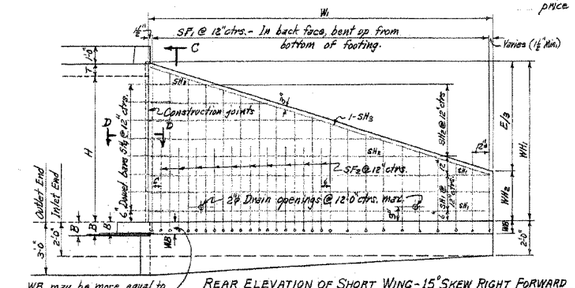
SECTION C-C



SECTION B-B

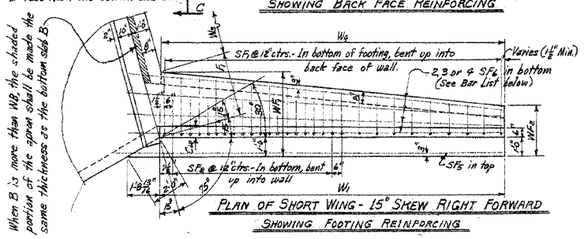
SECTION D-D

SECTIONS THRU CONSTRUCTION JOINTS

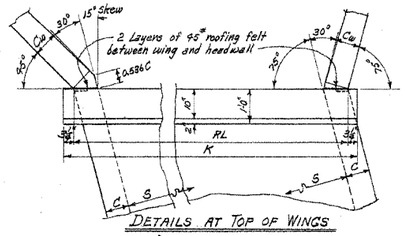


REAR ELEVATION OF SHORT WING - 15° SKEW RIGHT FORWARD
SHOWING BACK FACE REINFORCING

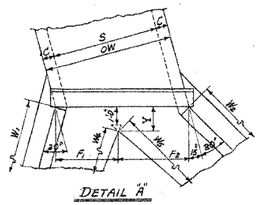
WB may be more, equal to or less than the bottom slab B.



PLAN OF SHORT WING - 15° SKEW RIGHT FORWARD
SHOWING FOOTING REINFORCING



DETAILS AT TOP OF WINGS
15° SKEW RIGHT FORWARD



DETAIL "A"

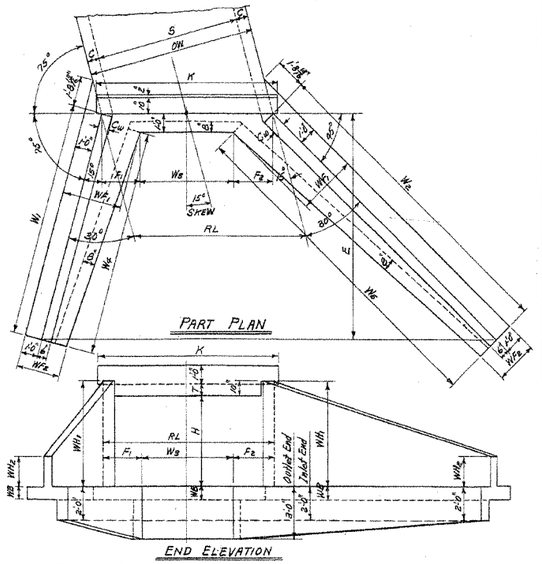
TABLE "A" - DIMENSIONS FOR DETAIL "A"

S	H	F_1	F_2	W_4	W_5	W_3	Y
5'	7'	3'-0"	3'-5⅝"	16'-10⅛"	25'-0⅜"	0"	1'-0⅜"
6'	8'	3'-6"	4'-1⅜"	19'-0⅛"	28'-3⅜"	0"	1'-1"

REGULAR WING DIMENSIONS - 3:1 SLOPES

CLEAR HEIGHT OF BOX	THICKNESS OF WING FOOTING	THICKNESS OF WING AT HEAD = C	WINGWALL HEIGHTS AT HEADWALL	WINGWALL HEIGHTS AT END OF WING	WIDTHS OF WING FOOTINGS AT HEADWALL	WIDTHS OF WING FOOTINGS AT END OF WING	FOOTING DIMENSION PARALLEL WITH HEADWALL SHORT WING	FOOTING DIMENSION PARALLEL WITH HEADWALL LONG WING	PERPENDICULAR DISTANCE FROM HEAD TO END OF WING	LENGTHS OF WINGWALLS SHORT WING	LENGTHS OF WINGWALLS LONG WING	INSIDE FOOTING DIMENSIONS SHORT WING	INSIDE FOOTING DIMENSIONS LONG WING	* QUANTITY PER WING CLASS S CONCRETE INLET END SHORT WING	INLET END LONG WING	OUTLET END SHORT WING	OUTLET END LONG WING
H	WB	C_W	WH_1	WH_2	WF_1	WF_2	F_1	F_2	E	W_1	W_2	W_4	W_5	CU.YD.	CU.YD.	CU.YD.	CU.YD.
2'	7"	6"	2'-1⅝"	0'-8"	2'-0"	1'-1⅜"	0'-10⅝"		6'-6"	6'-8½"	9'-2⅝"	6'-0½"	9'-1⅝"	0.789	1.094	0.876	1.212
3'	7"	6"	3'-1⅝"	1'-0"	2'-6"	2'-1⅝"	1'-5⅝"	1'-4⅜"	8'-6"	8'-9½"	12'-0⅝"	8'-3½"	12'-3⅜"	1.186	1.650	1.300	1.808
4'	7"	6"	4'-1⅝"	1'-4"	3'-0"	2'-3"	1'-9⅝"	1'-10"	10'-6"	10'-10⅝"	14'-10⅝"	10'-0⅝"	15'-5⅛"	1.656	2.305	1.797	2.502
5'	7"	6"	5'-1⅝"	1'-8"	3'-6"	2'-8½"	2'-1⅞"	2'-3⅝"	12'-6"	12'-11⅛"	17'-8½"	12'-6⅛"	18'-7⅛"	2.196	3.059	2.363	3.295
		7"	5'-10"	1'-8"	3'-9"	2'-8½"	2'-1⅞"	2'-3⅝"	12'-6"	12'-11⅛"	17'-8½"	12'-6⅛"	18'-7⅛"	2.287	3.188	2.955	3.429
6'	8"	7"	6'-1⅝"	2'-0"	3'-8"	2'-6"	2'-5⅝"	2'-7¾"	14'-6"	15'-0⅝"	20'-6"	14'-8⅝"	21'-9"	3.052	4.242	3.296	4.517
		7½"	6'-10"	2'-0"	3'-8"	2'-6"	2'-5⅝"	2'-7¾"	14'-6"	15'-0⅝"	20'-6"	14'-8⅝"	21'-9"	3.114	4.329	3.309	4.605
		8"	6'-10"	2'-0"	3'-8"	2'-6"	2'-5⅝"	2'-9⅝"	14'-6"	15'-0⅝"	20'-6"	14'-8⅝"	21'-9"	3.177	4.417	3.371	4.693
* 7'	8½"	7½"	7'-1⅛"	2'-8"	4'-2"	2'-7⅛"	3'-0⅜"	3'-5⅝"	16'-6"	17'-1"	23'-8"	16'-10⅝"	25'-1"	3.998	5.560	4.220	5.877
		8"	7'-1⅛"	2'-8"	4'-2"	2'-7⅛"	3'-0⅜"	3'-5⅝"	16'-6"	17'-1"	23'-8"	16'-10⅝"	25'-1"	4.079	5.675	4.301	5.991
* 8'	9"	8"	8'-1⅛"	2'-8"	4'-8"	2'-9"	3'-4⅜"	4'-2⅝"	18'-6"	19'-1⅝"	26'-2"	19'-1⅛"	28'-5"	5.111	7.111	5.360	7.470

* Quantity per wing does not include headwall or that portion of apron or toewall for the length W_3.
* See Table 'A' for special values of F_1 & F_2 and W_4 & W_5 for Single 5'x7' and 6'x8' Box Culverts.



PART PLAN

END ELEVATION

SINGLE BARREL CULVERT - 15° SKEW RIGHT FORWARD
Details of Culvert with 15° Skew Left Forward is reversed, see Drwg. No. W-X.15

TYPICAL WING DETAILS

Note:- For remainder of General Plans and Elevations of Single, Double, Triple, Quadruple and Quintuple Span Culverts, see Std. Drawing No. W-X.15. For values of RL, K, and W_6 for each box, see the above Std. also.

Membrane:- A membrane waterproofing 18" wide, consisting of three moppings of waterproofing asphalt and two alternate layers of treated cotton fabric shall be applied to the back face of wing to cover the construction joints in wings.

QUANTITIES

CLEAR SPAN S	CLEAR HEIGHT H	THICKNESS OF WING AT HEADWALL C_W	THICKNESS OF WING FOOTING WB	REINFORCING STEEL - LB. PER 4' WINGS	CLASS S CONCRETE - 4 WINGS HEADWALLS, WINGWALLS, FOOTINGS, TOEWALLS AND APRONS: SINGLE BARREL CULVERT CU.YD.	DOUBLE BARREL CULVERT CU.YD.	TRIPLE BARREL CULVERT CU.YD.	QUADRUPLE BARREL CULVERT CU.YD.	QUINTUPLE BARREL CULVERT CU.YD.
4'	2'	6"	7"	117	4.79	5.78	6.77	7.77	8.76
	3'	6"	7"	176	6.65	7.64	8.63	9.63	10.62
	4'	6"	7"	267	8.85	9.84	10.84	11.83	12.82
	5'	6"	7"	379	11.90	12.38	13.38	14.37	15.36
	6'	7"	8"	626	15.95	16.96	17.98	18.51	19.53
5'	3'	6"	7"	176	6.87	8.07	9.28	10.48	11.69
	4'	6"	7"	267	9.08	10.28	11.48	12.69	13.90
	5'	6"	7"	379	11.61	12.81	14.02	15.23	16.44
	6'	7"	8"	626	15.67	16.90	18.14	19.38	20.61
	7'	7½"	8½"	1210	20.11	21.36	22.62	23.88	25.14
6'	3'	6"	7"	176	7.03	8.52	9.92	11.34	12.78
	4'	6"	7"	267	9.29	10.73	12.18	13.56	14.98
	5'	6"	7"	379	11.83	13.26	14.67	16.10	17.53
	6'	7"	8"	626	15.89	17.35	18.79	20.25	21.70
	7'	7½"	8½"	1210	20.33	21.81	23.28	24.76	26.24
	8'	8"	9"	1533	25.56	27.05	28.53	30.02	31.50
7'	4'	6"	7"	267	9.52	11.18	12.81	14.47	16.09
	5'	6"	7"	379	12.05	13.72	15.35	17.01	18.63
	6'	7"	8"	626	16.12	17.80	19.45	21.13	22.78
	7'	7½"	8½"	1210	20.56	22.26	23.94	25.64	27.33
	8'	8"	9"	1533	25.80	27.50	29.20	30.90	32.60
8'	4'	6"	7"	267	9.75	11.65	13.51	15.41	17.23
	5'	7"	7"	379	12.74	14.68	16.55	18.47	20.31
	6'	7"	8"	626	16.39	18.26	20.14	22.06	23.90
	7'	7½"	8½"	1210	20.78	22.72	24.62	26.55	28.42
	8'	8"	9"	1533	26.03	27.96	29.86	31.80	33.71
9'	5'	7"	7"	379	12.99	15.15	17.25	19.40	21.45
	6'	7½"	8"	626	16.89	19.07	21.19	23.34	25.42
	7'	7½"	8½"	1210	21.01	23.19	25.31	27.48	29.54
	8'	8"	9"	1583	26.25	28.42	30.55	32.72	34.78
10'	5'	7"	7"	379	13.25	15.42	17.55	20.24	22.59
	6'	7½"	8"	626	17.13	19.54	21.89	24.20	26.56
	7'	7½"	8½"	1210	21.44	23.66	26.01	28.32	30.68
	8'	8"	9"	1533	26.68	28.89	31.25	33.56	35.92
11'	6'	8"	8"	626	17.67	20.39	22.92	25.48	
	7'	8"	8½"	1210	21.88	24.55	27.13	29.69	
	8'	8"	9"	1533	26.70	29.37	31.96	34.52	
12'	6'	8"	8"	626	17.91	20.64	23.44	26.46	
	7'	8"	8½"	1210	22.11	25.04	27.85	30.67	
	8'	8"	9"	1533	26.93	29.86	32.67	35.49	

* For reinforcing steel in Headwalls and Aprons, see Drawings listed below.

GENERAL NOTES:-

CONCRETE:- All concrete to be Class S, and shall be poured in the dry. All exposed corners to have ¾" chamfers.
REINFORCING STEEL:- Reinforcing steel to be deformed bars of intermediate or hard grade.
CONSTRUCTION JOINTS:- Construction joints between wingwall, footings and sidewalls shall be only where shown on plans.
SPECIFICATIONS:- Arkansas State Highway Commission Standard Specifications for Highway Construction and applicable Special Provisions.
UNIT STRESSES:-
Class S Concrete (n=10) 1200 #/□"
Reinforcing Steel 20,000 #/□"

NOTE:-
This drawing to be used in conjunction with Std. Barrel Sections, Drawing Nos.

SINGLES	DOUBLES	TRIPLES	QUADRUPLES	QUINTUPLES
R-115X-0	R-215X-0	R-315X-0	R-415X-0	R-515X-0
R-115X-1	R-215X-1	R-315X-1	R-415X-1	R-515X-1
	R-215X-2	R-315X-2		

BAR LIST FOR ONE SHORT AND ONE LONG WING - 2 EACH REQUIRED

CLEAR HEIGHT H	WING LOCATION	SF1 & LF1 BENT: In bottom of footing, bent up into back face of wing. One bar of each length. SIZE	SPACING	NO. REQD	LENGTHS VARY MIN.	LENGTHS VARY MAX.	X MIN.	X MAX.	Y MIN.	Y MAX.	SF2 & LF2 BENT: In bottom of footing, bent up into back face of wing. Alt. with F1 bars. SIZE	SPACING	NO. REQD	LENGTH	X	Y	SF3 & LF3 STRAIGHT: Longitudinal in top of wing footing heel. SIZE	NO. REQD	LENGTH	SF4 & LF4 STRAIGHT: Longitudinal in bottom of wing footing toe. SIZE	NO. REQD	LENGTH	SH1 & LH1 STRAIGHT: Horizontal in back face of wing. SIZE	SPACING	NO. REQD	LENGTH	SH2 & LH2 STRAIGHT: Horizontal in back face of wing. One bar of each length. SIZE	SPACING	NO. REQD	LENGTHS VARY MAX.	LENGTHS VARY MIN.	SH3 & LH3 STRAIGHT: In back face of wing at top - on slope. SIZE	NO. REQD	LENGTH	SH4 & LH4 BENT: Dowels thru construction joint at headwall. SIZE	SPACING	NO. REQD	LENGTH	X	BAR BENDING DIAGRAM	QUANTITY: REINFORCING STEEL PER WING - LBS. SHORT WING	LONG WING
H	SHORT OR LONG	SIZE	SPACING	NO. REQD	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	SIZE	SPACING	NO. REQD	LENGTH	X	Y	SIZE	NO. REQD	LENGTH	SIZE	NO. REQD	LENGTH	SIZE	SPACING	NO. REQD	LENGTH	SIZE	SPACING	NO. REQD	LENGTH	SIZE	SPACING	NO. REQD	MAX.	MIN.	SIZE	NO. REQD	LENGTH	SIZE	SPACING	NO. REQD	LENGTH	X	SF1 & SF2 LF1 & LF2 Cw 3"Min. Y X		
2'	Short	#3	12"	7	1'-7"	3'-11"	0'-8"	1'-0"	1'-0"	3'-0"	—	—	—	—	—	—	#3	1	9'-2"	#3	2	7'-10"	#3	12"	1	6'-5"	#3	12"	1	—	3'-6"	#3	1	6'-10"	#3	12"	2	2'-8"	1'-9"			
	Long	#3	12"	10	1'-7"	3'-11"	0'-8"	1'-0"	0'-10"	3'-0"	—	—	—	—	—	—	#3	1	11'-8"	#3	2	10'-10"	#3	12"	1	8'-11"	#3	12"	1	—	4'-8"	#3	1	9'-1"	#3	12"	2	"	"			
3'	Short	#3	12"	9	2'-2"	5'-8"	0'-10"	1'-4"	1'-5"	4'-0"	—	—	—	—	—	—	#3	1	11'-8"	#3	2	10'-0"	#3	12"	2	6'-7"	#3	12"	2	6'-7"	3'-6"	#3	1	9'-0"	#3	12"	3	"	"			
	Long	#3	12"	13	1'-11"	5'-2"	0'-10"	1'-3"	1'-2"	4'-0"	—	—	—	—	—	—	#3	1	14'-6"	#3	2	14'-0"	#3	12"	2	8'-11"	#3	12"	2	8'-11"	4'-8"	#3	1	12'-0"	#3	12"	3	"	"			
4'	Short	#3	12"	11	2'-7"	6'-7"	0'-11"	1'-8"	1'-9"	5'-0"	—	—	—	—	—	—	#3	1	13'-6"	#3	3	12'-2"	#3	12"	3	9'-3"	#3	12"	3	9'-3"	5'-6"	#3	1	11'-2"	#3	12"	4	"	"			
	Long	#3	12"	15	2'-6"	6'-6"	0'-11"	1'-7"	1'-8"	5'-0"	—	—	—	—	—	—	#3	1	17'-9"	#3	3	17'-2"	#3	12"	3	11'-3"	#3	12"	3	11'-3"	6'-8"	#3	1	16'-11"	#3	12"	4	"	"			
5'	Short	#3	12"	13	3'-1"	7'-11"	1'-1"	2'-0"	2'-1"	6'-0"	#3	12"	4	3'-6"	1'-1"	2'-6"	#3	1	15'-5"	#3	3	14'-9"	#3	12"	3	9'-8"	#3	12"	3	9'-8"	6'-6"	#3	1	13'-6"	#3	12"	5	"	"			
	Long	#3	12"	18	3'-0"	7'-10"	1'-1"	1'-11"	2'-0"	6'-0"	#3	12"	5	3'-6"	1'-1"	2'-6"	#3	1	20'-8"	#3	3	20'-0"	#3	12"	3	12'-5"	#3	12"	3	12'-5"	7'-8"	#3	1	17'-10"	#3	12"	5	"	"			
6'	Short	#4	12"	16	3'-4"	9'-4"	1'-2"	2'-4"	2'-5"	7'-1"	#3	12"	4	4'-6"	1'-4"	3'-3"	#3	1	17'-6"	#3	3	16'-6"	#3	12"	4	12'-9"	3'-6"	#3	1	15'-6"	#3	12"	6	"	"														
	Long	#4	12"	21	3'-5"	9'-8"	1'-2"	2'-3"	2'-4"	7'-1"	#3	12"	5	4'-6"	1'-4"	3'-5"	#3	1	23'-0"	#3	3	22'-4"	#3	12"	3	17'-5"	4'-8"	#3	1	20'-9"	#3	12"	6	2'-8"	1'-4"														
7'	Short	#4	12"	18	3'-9"	10'-10"	1'-3"	2'-10"	2'-7"	8'-1"	#4	12"	7	5'-6"	1'-7"	4'-0"	#4	1	19'-7"	#4	4	18'-9"	#4	12"	3	15'-10"	5'-6"	#4	1	17'-8"	#4	12"	7	3'-6"	1'-9"														
	Long	#4	12"	24	3'-10"	10'-8"	1'-3"	2'-8"	2'-8"	8'-1"	#4	12"	9	5'-6"	1'-7"	4'-0"	#4	1	25'-10"	#4	4	26'-10"	#4	12"	3	21'-8"	4'-8"	#4	1	23'-9"	#4	12"	7	"	"														
8'	Short	#4	12"	20	4'-2"	12'-5"	1'-5"	3'-4"	3'-0"	9'-2"	#4	12"	10	6'-6"	1'-10"	4'-9"	#4	1	21'-0"	#4	4	21'-0"	#4	12"	3	18'-11"	6'-6"	#4	1	15'-10"	5'-6"	#4	1	19'-10"	#4	12"	8	"	"			
	Long	#4	12"	27	4'-6"	12'-8"	1'-5"	3'-2"	3'-0"	9'-2"	#4	12"	13	6'-6"	1'-10"	4'-9"	#4	1	28'-9"	#4	4	30'-9"	#4	12"	3	25'-11"	6'-6"	#4	1	21'-8"	4'-8"	#4	1	26'-7"	#4	12"	8	3'-6"	1'-9"			

NOTE:- Bars for short wing shall be marked with prefix letter 'S', while those for long wing shall be marked with letter 'L'.

SF1 & SF2 LF1 & LF2 3"Min. Y X

SH4 & LH4 X 7/12 X

Note:- Dimensions are to bar centers.

CLASS S CONCRETE

ARKANSAS STATE HIGHWAY COMMISSION
DETAILS OF STANDARD WINGS
FOR
REINFORCED CONCRETE BOX CULVERTS
15° SKEW

4', 5', 6', 7', 8', 9', 10', 11' & 12' SPANS — 3:1 SLOPES
SINGLES, DOUBLES, TRIPLES, QUADRUPLES & QUINTUPLES — ALL DEPTHS OF COVER FOR H = 8'-0" OR LESS

STANDARD DRAWING NO. W-X153-1

REVISIONS:- Membrane Added. 5-10-66 W.C.H.

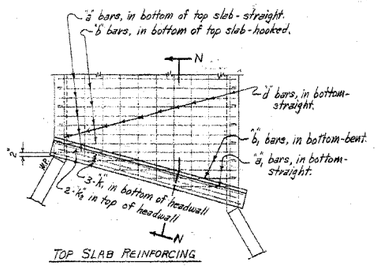
Designed By- W.C.H. 5-18-63 Checked By- RWS. 8-7-63
Drawn By- W.C.H. 6-20-63 Checked By-
Quantities By- W.C.H. 9-23-63

34

RESHOT 3-8-93

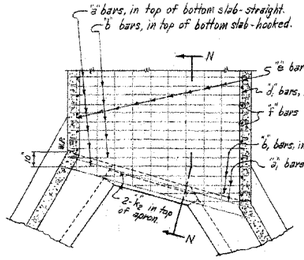
180

FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			227	
JOB No.					



TOP SLAB REINFORCING

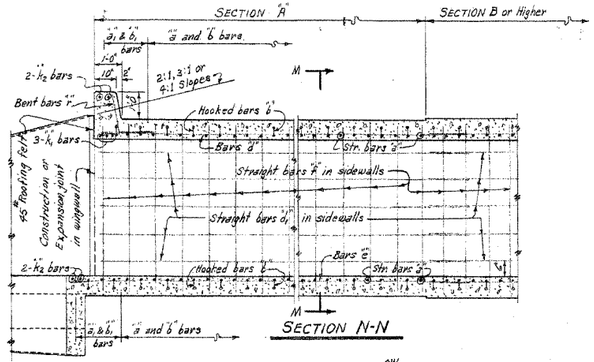
PART PLAN AT END OF CULVERT



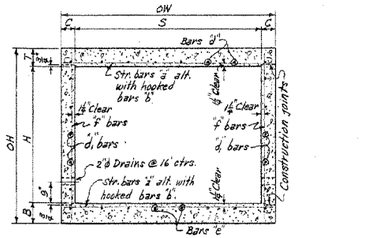
BOTTOM SLAB REINFORCING

PART PLAN AT END OF CULVERT

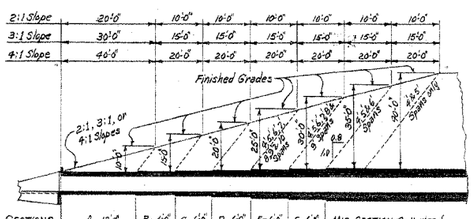
NOTE:- The "d", "d" and "e" bars vary in length. They should extend 1'3" into SECTION B.



SECTION N-N



TYPICAL SECTION M-M

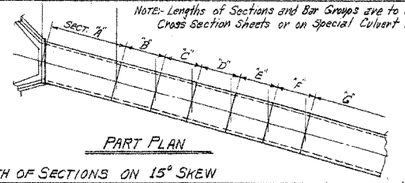


		A	B	C	D	E	F	MID-SECTION G-Varies
2:1 Slope =	Sections	A=12'-0"	B=6'-0"	C=6'-0"	D=6'-0"	E=6'-0"	F=6'-0"	MID-SECTION G-Varies
	Bar Group	A	B	C	D	E	F	G
3:1 Slope =	Sections	A=22'-0"	B=11'-0"	C=11'-0"	D=11'-0"	E=11'-0"	F=11'-0"	MID-SECTION G-Varies
	Bar Group	A	B	C	D	E	F	G
4:1 Slope =	Sections	A=32'-0"	B=16'-0"	C=16'-0"	D=16'-0"	E=16'-0"	F=16'-0"	MID-SECTION G-Varies
	Bar Group	A	B	C	D	E	F	G

These lengths are perpendicular to ℄ of roadway. See Table of Skew Lengths below.

TYPICAL LONGITUDINAL SECTION - SHOWING SECTIONS AND BAR GROUPS FOR VARIOUS DEPTHS OF COVER

NOTE:- Lengths of Sections and Bar Groups are to be shown on Cross Section Sheets or on Special Culvert Layout Sheet.



PART PLAN

LENGTH OF SECTIONS ON 15° SKEW

SLOPE	2:1		3:1		4:1	
SECTIONS	A	B, C, D, E & F	A	B, C, D, E & F	A	B, C, D, E & F
LENGTHS	12'-5"	6'-2½"	22'-9¼"	11'-4⅝"	33'-1½"	16'-6¾"

NOTE:- For Details and Bar Lists for Sections B thru G, see Barrel Drawing Nos. R-100X-X.1 or R-100X-X.2.

SECTIONS AND BAR GROUPS TO BE USED FOR VARIOUS DEPTHS OF COVER

DEPTHS OF COVER	SECTIONS & BAR GROUPS FOR END SECTIONS						MID-SECTION AND BAR GROUP
	A	B	C	D	E	F	
5'-0" to 9'-5"	A						A
10'-0" to 14'-5"	A						B
15'-0" to 19'-5"	A	B					C
20'-0" to 24'-5"	A	B	C				D
25'-0" to 29'-5"	A	B	C	D			E
30'-0" to 34'-5"	A	B	C	D	E		F
35'-0" to 40'-0"	A	B	C	D	E	F	G

OR ALT.

DEPTHS OF COVER	SECTIONS & BAR GROUPS FOR END SECTIONS						MID-SECTION AND BAR GROUP
	A	B	C	D	E	F	
5'-0" to 9'-5"	A						A
10'-0" to 14'-5"	A						B
15'-0" to 19'-5"	A	B					C
20'-0" to 24'-5"	A	B	2@C				D
25'-0" to 29'-5"	A	B	2@C	2@D			E
30'-0" to 34'-5"	A	B	2@C	2@D	2@E		F
35'-0" to 40'-0"	A	B	2@C	2@D	2@E	2@F	G

BAR SIZE	PIN DIAM.	K	ADD FOR 2 HOOKS	BENDING DIAGRAM FOR BARS "b"
#4	2"	4"	0'-10⅝"	K, Pin diam., X
#5	2½"	4½"	0'-11½"	
#6	3"	5"	1'-2"	
#7	3½"	5⅝"	1'-4"	

NOTE:- Dimensions are to centers of bars ("b" and "b1").

BAR SIZE	PIN DIAM.	K	ADD FOR 1 HOOK	BENDING DIAGRAM FOR BARS "b1"
#4	2"	4"	0'-5⅜"	K, Pin diam., X
#5	2½"	4½"	0'-5⅞"	
#6	3"	5"	0'-7"	
#7	3½"	5⅝"	0'-8"	

DOWEL BARS FOR ONE HEADWALL

SPAN	SIZE	SPACING	No. REQ'D	LENGTH	X	Dowel bars "i" in One Headwall.
4'	#4	12"	6	2'-5"	1'-2½"	2, 2, X
5'	#4	12"	7	2'-6"	1'-3"	
6'	#4	12"	8	2'-7"	1'-3½"	
7'	#4	12"	9	2'-8"	1'-4"	
8'	#4	12"	10	2'-10"	1'-5"	
9'	#4	12"	11	3'-0"	1'-6"	
10'	#4	12"	12	3'-2"	1'-7"	

DESIGN LIVE LOAD

H20-S16 LOADING A.A.S.H.O. 1961 AND SPECIAL MILITARY LOADING

Two 24,000 Lb. Axles @ 4'-0" ctrs.

UNIT STRESSES:-

Class S Concrete (n=10) 1200#/□"

Reinforcing Steel 20,000#/□"

NOTE:- This drawing to be used in conjunction with Standard Wing Drawing Nos. W-X152-1 or W-X152-2, W-X153-1 or W-X153-2, and W-X154-1 or W-X154-2. Also W-X15.

For Barrels of 4', 5' & 6' Spans, See Drawing No. R-100X-X.1.

For Barrels of 7', 8', 9' & 10' Spans, See Drawing No. R-100X-X.2.

GENERAL NOTES

CONCRETE:- All concrete to be Class S, and shall be poured in the dry. All exposed corners to have ¾" chamfers.

REINFORCING STEEL:- Reinforcing to be deformed bars of intermediate or hard grade.

CONSTRUCTION JOINTS:- Construction joints between wingwalls, sidewalls and slabs shall be only where shown on plans.

SPECIFICATIONS:- Arkansas State Highway Commission Standard Specifications for Highway Construction and applicable Special Provisions.

CLASS S CONCRETE

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF STANDARD BARREL SECTIONS FOR REINFORCED CONCRETE BOX CULVERTS

15° SKEW ~ SECTIONS "A" ONLY

4', 5', 6', 7', 8', 9' & 10' SPANS SINGLES

2:1, 3:1 OR 4:1 SLOPES OVER 5'-0" COVER

STANDARD DRAWING No. R-115X-1

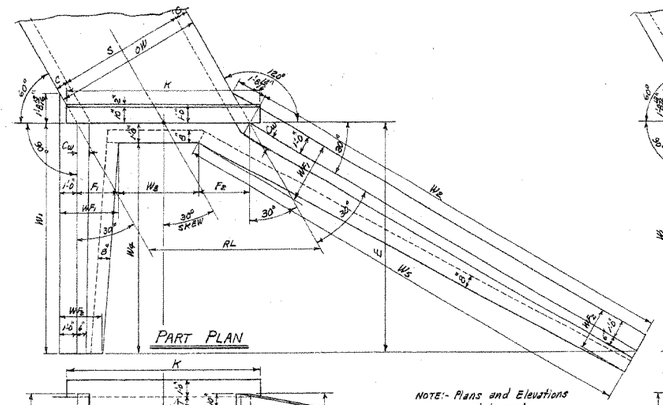
BAR LIST FOR SECTION "A" ON 15° SKEW - ONE END ONLY.

| SECTION & BAR GROUP | LENGTH OF SECTION | DEPTH OF COVER | CLEAR SPAN | CLEAR HEIGHT | "a" bars STRAIGHT In Top and Bottom Slabs of Barrel. SIZE | SPACING | NUMBER REQ'D 2:1 | 3:1 | 4:1 | LENGTH | "a1" bars STRAIGHT In Top and Bottom Slab of Barrel - (Two of each Length.) SIZE | SPACING | NUMBER REQ'D | LENGTH | "b" bars BENT - See Diagrams at Right. In Top and Bottom Slabs of Barrel - hooked. Alternate with "a" bars. SIZE | SPACING | NUMBER REQ'D | LENGTH | X | "b1" bars In Top and Bottom Slabs of Barrel - one end hooked. (Two of each Length.) Alternate with "a1" bars. SIZE | SPACING | NO. REQ'D | LENGTH Max. | Min. | X Max. | Min. | "d" bars STRAIGHT Longitudinal in Top Slab of Barrel. SIZE | SPACING | NO. REQ'D | LENGTH | "d1" bars STRAIGHT Longitudinal in Sidewalls SIZE | SPACING | NO. REQ'D | LENGTH | "e" bars STRAIGHT Longitudinal in Bottom Slab of Barrel. SIZE | SPACING | NO. REQ'D | LENGTH | "f" bars STRAIGHT Verticals in Sidewalls. SIZE | SPACING | NUMBER REQ'D 2:1 | 3:1 | 4:1 | LENGTH | "k" bars STRAIGHT In Bottom of Headwall. SIZE | NO. REQ'D | LENGTH | "k2" bars STRAIGHT In Top of Headwall and Apron. (2 Each) SIZE | NO. REQ'D | LENGTH |
|---|---|---|---|---|---|---|---|---

Reshot 3-8-93

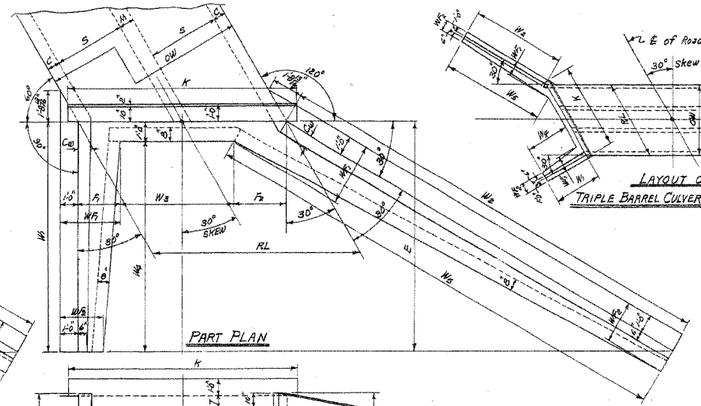
191

FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			228	
JOB No.					



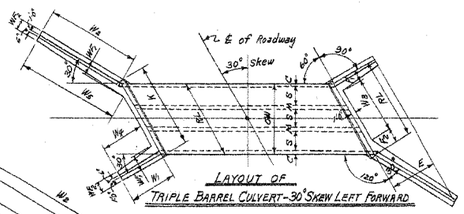
SINGLE BARREL CULVERT-30°SKEW RIGHT FORWARD

Details of Culvert with 30°Skew Left Forward is reversed, see Layout below.

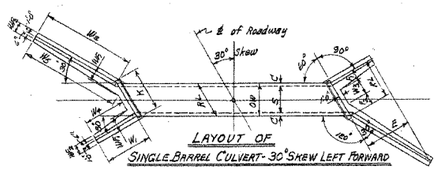


DOUBLE BARREL CULVERT-30°SKEW RIGHT FORWARD

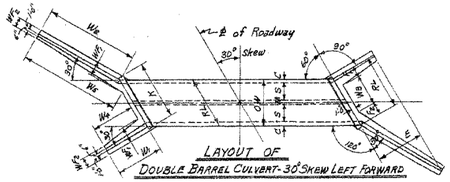
Details of Culvert with 30°Skew Left Forward is reversed, see Layout below.



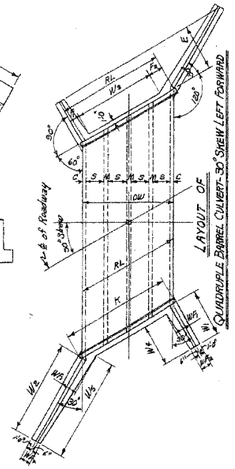
LAYOUT OF TRIPLE BARREL CULVERT-30°SKEW LEFT FORWARD



LAYOUT OF SINGLE BARREL CULVERT-30°SKEW LEFT FORWARD

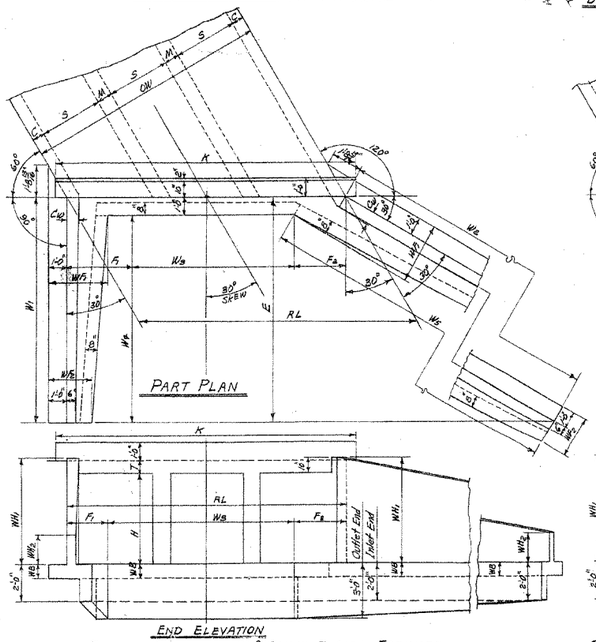


LAYOUT OF DOUBLE BARREL CULVERT-30°SKEW LEFT FORWARD



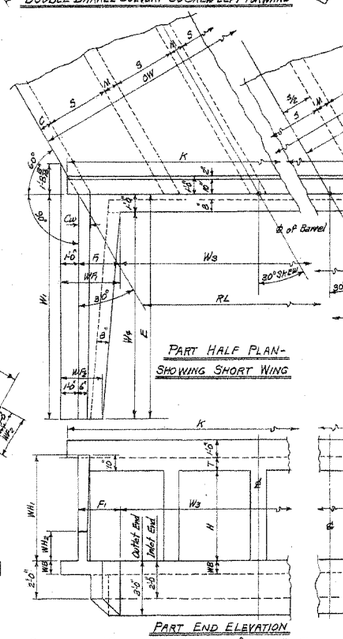
LAYOUT OF QUADRUPLE BARREL CULVERT-30°SKEW LEFT FORWARD

NOTE:- This drawing of the wings for the Plans, Elevations, and Layouts, as drawn, are proportioned for 3:1 slopes. For 2:1 slopes the wings are proportionally shorter, while for 4:1 slopes they are longer.



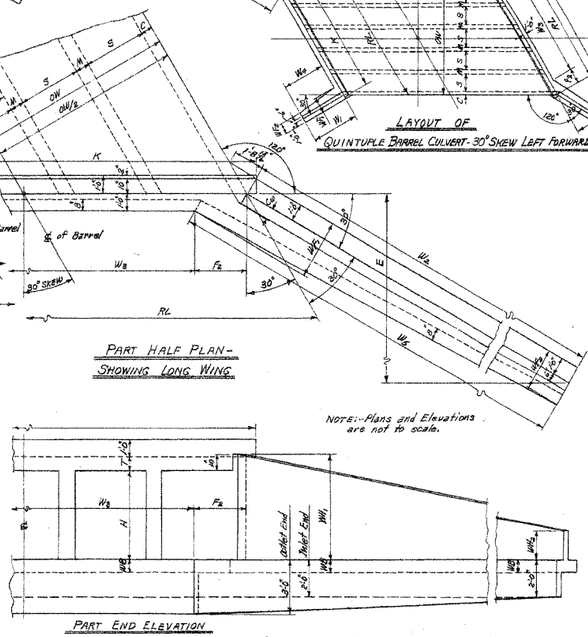
TRIPLE BARREL CULVERT-30° SKEW RIGHT FORWARD

Details of Culvert with 30° Skew Left Forward is reversed, see Layout at top center of sheet.



QUADRUPLE BARREL CULVERT-30°SKEW RT. FWD.

Details of Culvert with 30° Skew Left Forward is reversed, see Layout at above center.



QUINTUPLE BARREL CULVERT-30°SKEW RT. FWD.

Details of Culvert with 30° Skew Left Forward is reversed, see Layout above.

Designed by:- W.C.H. 5-16-63 Checked by:- ZBHS - 8-27-63
Drawn by:- W.C.H. 7-15-63 Checked by:-
Quantities by:- Checked by:-

ROADWAY LENGTH RL — HEADWALL LENGTH K — APRON DIMENSION W_3

RL = OW x 1.1547 — K = RL + (1'-1⅞") — W_3 = RL - (F_1 + F_2)

USE WITH DRAWING No.	CLEAR SPAN S	CLEAR HEIGHT H	SUM OF FOOTING DIMENSIONS F_1&F_2	SINGLE BARREL CULVERT OW	SINGLE BARREL CULVERT RL	SINGLE BARREL CULVERT K	SINGLE BARREL CULVERT W_3	DOUBLE BARREL CULVERT OW	DOUBLE BARREL CULVERT RL	DOUBLE BARREL CULVERT K	DOUBLE BARREL CULVERT W_3	TRIPLE BARREL CULVERT OW	TRIPLE BARREL CULVERT RL	TRIPLE BARREL CULVERT K	TRIPLE BARREL CULVERT W_3	QUADRUPLE BARREL CULVERT OW	QUADRUPLE BARREL CULVERT RL	QUADRUPLE BARREL CULVERT K	QUADRUPLE BARREL CULVERT W_3	QUINTUPLE BARREL CULVERT OW	QUINTUPLE BARREL CULVERT RL	QUINTUPLE BARREL CULVERT K	QUINTUPLE BARREL CULVERT W_3
W-X302-1, W-X303-1 OR W-X304-1. (FOR H=8'0" OR LESS)	4'	2'-3⅜"	5'-0"	5'-0⅝"	6'-11⅝"	8'-1"	3'-7⅞"	9'-1⅛"	11'-2⅝"	12'-3⅜"	5'-10⅜"	13'-2⅛"	16'-6⅝"	17'-3½"	8'-10⅜"	19'-3⅛"	21'-11⅝"	23'-1"	13'-6⅜"	23'-8"	27'-1¾"	28'-5⅜"	25'-0⅜"
		3'	2'-8⅜"	5'-0"	"	"	2'-1"	9'-8"	"	"	7'-10⅜"	14'-3"	"	"	13'-3⅜"	19'-0"	"	"	18'-8"	23'-8"	"	"	29'-0⅜"
		4'	3'-3⅜"	5'-0"	"	"	1'-6"	9'-8"	"	"	6'-10⅜"	14'-3"	"	"	12'-3⅜"	19'-0"	"	"	17'-8"	23'-8"	"	"	23'-10⅜"
		5'	5'-3⅜"	5'-0"	5'-9⅛"	6'-11⅝"	0'-4"	9'-8"	11'-2"	12'-3⅜"	5'-10⅜"	14'-2"	16'-6⅝"	17'-3½"	11'-3⅜"	19'-0"	21'-11⅝"	23'-1"	16'-8"	23'-8"	27'-1¾"	28'-5⅜"	22'-0⅜"
		6'	6'-3⅜"	5'-2"	5'-11⅝"	7'-1½"	Ⓐ 0"	9'-11"	11'-5⅛"	12'-7⅛"	5'-2⅛"	14'-8"	16'-11⅝"	18'-1"	10'-5"	19'-5"	22'-5"	23'-8"	19'-8"	24'-2"	27'-10⅜"	29'-0⅛"	21'-7⅜"
	5'	3'	3'-3⅜"	6'-0"	6'-11⅝"	8'-1"	3'-7⅞"	11'-8"	13'-5⅜"	14'-7½"	10'-2½"	17'-4"	20'-0⅛"	21'-2"	16'-9"	23'-0"	26'-6⅜"	27'-8½"	23'-3½"	28'-8"	33'-1⅛"	34'-3"	29'-10"
		4'	4'-3⅜"	6'-0"	"	"	2'-7⅞"	11'-8"	"	"	9'-2½"	17'-4"	"	"	15'-3"	23'-0"	"	"	22'-3½"	28'-8"	"	"	28'-10"
		5'	5'-3⅜"	6'-0"	6'-11⅝"	8'-1"	1'-2⅞"	11'-8"	13'-5⅜"	14'-7½"	8'-2½"	17'-4"	20'-0⅛"	21'-2"	14'-9"	23'-0"	26'-6⅜"	27'-8½"	23'-3½"	28'-8"	33'-1⅛"	34'-3"	27'-10"
		6'	6'-3⅜"	6'-2"	7'-1½"	8'-3⅝"	0'-10⅛"	11'-11"	13'-9⅛"	14'-11"	7'-5⅛"	17'-8"	20'-4⅝"	21'-6⅜"	14'-1⅛"	23'-5"	27'-0⅛"	28'-2⅛"	20'-9⅛"	29'-2"	33'-8⅛"	34'-10"	27'-5"
		7'	7'-3⅜"	6'-3"	7'-2⅝"	8'-4⅝"	Ⓐ 0"	12'-1"	13'-11⅛"	15'-1⅛"	6'-2⅛"	17'-11"	20'-8⅛"	21'-10"	12'-11"	23'-9"	27'-5⅛"	28'-7"	19'-8"	29'-7"	34'-2"	35'-3⅜"	26'-4⅜"
	6'	3'	3'-3⅜"	7'-0"	8'-1"	9'-2⅞"	4'-3⅜"	13'-8"	15'-9⅜"	16'-11⅛"	12'-6⅜"	20'-4"	23'-5⅛"	24'-7½"	20'-2⅜"	27'-0"	31'-2⅜"	32'-4"	27'-1"	33'-8"	38'-1⅛"	40'-0⅛"	35'-7⅛"
		4'	4'-3⅜"	7'-0"	"	"	3'-3⅜"	13'-8"	"	"	11'-6⅜"	20'-4"	"	"	19'-2⅜"	27'-0"	"	"	26'-1"	33'-8"	"	"	33'-7½"
		5'	5'-3⅜"	7'-0"	8'-1"	9'-2⅞"	2'-3⅜"	13'-8"	15'-9⅜"	16'-11⅛"	10'-6⅜"	20'-8"	23'-5⅛"	24'-7½"	18'-2⅜"	27'-0"	31'-2⅜"	32'-4"	25'-1⅛"	33'-8"	38'-1⅛"	40'-0⅛"	33'-7⅛"
		6'	6'-3⅜"	7'-2"	8'-3⅝"	9'-5⅝"	2'-0"	13'-11"	16'-0⅝"	17'-2⅝"	9'-9⅝"	20'-8"	23'-10⅛"	25'-0⅛"	17'-7⅛"	27'-5"	31'-7⅝"	32'-9⅝"	25'-0⅝"	34'-2"	39'-1⅝"	41'-1"	33'-1½"
		7'	7'-3⅜"	7'-3"	8'-4⅝"	9'-6⅝"	0'-7⅛"	14'-1"	16'-3⅜"	17'-5"	8'-4"	20'-11"	24'-1⅜"	25'-3⅜"	16'-4⅜"	27'-9"	32'-0½"	33'-2½"	24'-3½"	34'-7"	39'-1⅛"	41'-1"	32'-2"
		8'	8'-3⅜"	7'-4"	8'-5⅝"	9'-7½"	Ⓐ 0"	14'-2"	16'-4⅝"	17'-6⅛"	7'-1"	21'-0"	24'-2⅝"	25'-4⅝"	14'-11⅜"	27'-10"	32'-1⅜"	33'-3⅝"	22'-10⅝"	34'-8"	39'-2⅜"	41'-2⅛"	30'-3⅝"
	7'	4'	4'-3⅜"	8'-0"	9'-2⅞"	10'-9⅝"	4'-3⅜"	15'-8"	18'-1⅞"	19'-3"	13'-9⅜"	23'-8"	26'-11⅜"	28'-1⅛"	22'-8"	31'-6"	35'-9½"	36'-11⅝"	30'-6"	38'-8"	44'-0½"	45'-0⅜"	40'-0⅛"
		5'	5'-3⅜"	8'-0"	9'-2⅞"	10'-9⅝"	3'-1⅝"	15'-8"	18'-1⅞"	19'-3"	12'-10⅜"	23'-8"	26'-11⅜"	28'-1⅛"	21'-8"	31'-6"	35'-9½"	36'-11⅝"	29'-6"	38'-8"	44'-0½"	45'-0⅜"	39'-4⅛"
		6'	6'-3⅜"	8'-2"	9'-5⅝"	10'-11⅝"	2'-11"	15'-11"	18'-4⅝"	19'-6⅛"	12'-1⅛"	23'-11"	27'-2⅝"	28'-4⅝"	21'-0⅝"	31'-9"	36'-0⅞"	37'-1⅝"	28'-6⅝"	38'-11"	44'-3½"	45'-3⅜"	38'-11⅛"
		7'	7'-3⅜"	8'-3"	9'-6⅝"	10'-10½"	1'-9"	16'-1"	18'-6⅛"	19'-8⅝"	10'-3⅜"	23'-11"	27'-2⅝"	28'-4⅝"	19'-11⅝"	31'-9"	36'-0⅞"	37'-1⅝"	28'-0⅛"	38'-11"	44'-3½"	45'-3⅜"	37'-11⅜"
		8'	8'-3⅜"	8'-4"	9'-7½"	10'-10⅝"	0'-8⅛"	16'-2"	18'-8"	19'-9⅜"	9'-4⅝"	24'-0"	27'-3⅜"	28'-5⅜"	18'-5⅝"	31'-10"	36'-3⅛"	37'-3⅞"	27'-5"	39'-0"	44'-5"	46'-1½"	36'-6⅝"
	8'	4'	4'-3⅜"	9'-0"	10'-4⅝"	11'-6⅛"	6'-1⅛"	17'-5"	20'-0⅝"	21'-2⅝"	16'-1⅝"	26'-4"	30'-0⅜"	31'-2⅝"	26'-1⅜"	35'-6"	40'-5"	41'-6⅝"	36'-1⅝"	43'-8"	50'-5⅝"	51'-7"	46'-1⅜"
		5'	5'-3⅜"	9'-1"	10'-7"	11'-8⅝"	5'-3⅜"	17'-11"	20'-8⅜"	21'-10"	15'-5"	26'-8"	30'-3⅛"	31'-4⅝"	25'-6⅝"	35'-10"	40'-10⅜"	42'-0"	35'-7⅜"	44'-2"	51'-0"	52'-1⅜"	45'-8⅜"
		6'	6'-3⅜"	9'-2"	10'-7"	11'-8⅝"	4'-3⅜"	17'-11"	20'-8⅜"	21'-10"	14'-5"	26'-9"	30'-3⅛"	31'-4⅝"	24'-6⅝"	35'-5"	40'-10⅜"	42'-0⅛"	34'-7⅜"	44'-2"	51'-0"	52'-1⅜"	44'-8⅜"
		7'	7'-3⅜"	9'-3"	10'-8⅝"	11'-10"	3'-2"	18'-1"	20'-10⅛"	22'-0⅝"	13'-6⅛"	26'-11"	31'-1"	32'-2⅜"	23'-3⅜"	35'-5"	41'-3⅜"	42'-5⅝"	33'-7⅝"	44'-7"	51'-5⅝"	52'-7½"	43'-8⅛"
		8'	8'-3⅜"	9'-4"	10'-9⅝"	11'-11⅛"	1'-6⅜"	18'-2"	20'-11⅜"	22'-1⅛"	11'-8⅜"	27'-0"	31'-2⅜"	32'-4"	21'-11"	35'-10"	41'-9½"	42'-11⅛"	32'-11⅛"	44'-11"	51'-7"	52'-8⅝"	42'-8⅜"
	9'	5'	5'-3⅜"	10'-8"	11'-8⅝"	12'-10⅜"	6'-5⅜"	19'-11"	23'-0"	24'-1⅞"	17'-8⅝"	29'-8"	34'-3⅜"	35'-5"	28'-11⅜"	39'-5"	45'-6⅝"	46'-8"	40'-3"	49'-3"	56'-9⅛"	57'-11⅝"	51'-6"
		6'	6'-3⅜"	10'-8"	11'-10"	13'-0"	5'-6⅜"	20'-1"	23'-2⅝"	24'-4⅛"	16'-11"	29'-11"	34'-6⅝"	35'-8⅜"	28'-3⅝"	39'-8"	45'-9⅝"	47'-0⅜"	39'-5⅝"	49'-7"	57'-1⅜"	58'-5"	50'-11⅜"
		7'	7'-3⅜"	10'-9"	11'-10"	13'-0"	4'-10⅜"	20'-1"	23'-2⅝"	24'-4⅛"	15'-5"	29'-11"	34'-6⅝"	35'-8⅜"	27'-8⅜"	39'-8"	45'-9⅝"	47'-0⅜"	38'-7⅛"	49'-7"	57'-1⅜"	58'-5"	49'-5⅝"
		8'	8'-3⅜"	10'-9"	11'-11"	13'-1"	4'-2⅜"	20'-2"	23'-3⅝"	24'-5⅝"	14'-10⅝"	30'-0"	34'-7⅜"	35'-9⅝"	25'-9⅛"	39'-10"	46'-0"	47'-1⅜"	36'-8⅝"	49'-8"	57'-2⅛"	58'-6"	48'-1"
	10'	5'	5'-3⅜"	11'-8"	12'-10⅝"	14'-0⅝"	7'-7⅛"	21'-10"	25'-3⅜"	26'-5½"	20'-0⅛"	32'-8"	37'-6⅜"	38'-10⅝"	32'-5½"	43'-5"	50'-1⅝"	51'-3⅝"	44'-10⅜"	54'-2"	62'-6½"	63'-8½"	57'-3⅜"
		6'	6'-3⅜"	11'-3"	12'-11⅜"	14'-1⅜"	6'-8⅝"	22'-1"	25'-6"	26'-7⅜"	19'-2⅜"	32'-11"	38'-0⅛"	39'-2"	31'-9"	43'-9"	50'-6⅛"	51'-8"	44'-3"	54'-7"	63'-0⅝"	64'-2⅝"	56'-9"
		7'	7'-3⅜"	11'-3"	12'-11⅜"	14'-1⅜"	5'-12⅜"	22'-1"	25'-6"	26'-7⅜"	17'-10⅜"	32'-11"	38'-0⅛"	39'-2"	30'-3"	43'-9"	50'-6⅛"	51'-8"	42'-9"	54'-7"	63'-0⅝"	64'-2⅝"	55'-8"
		8'	8'-3⅜"	11'-4"	12'-1"	14'-2"	3'-3⅝"	22'-2"	25'-7⅛"	26'-8"	16'-4"	33'-0"	38'-1⅛"	39'-3"	28'-10"	43'-10"	50'-7⅜"	51'-9⅝"	41'-4⅝"	54'-8"	63'-1⅞"	64'-3⅜"	53'-10⅝"
	11'	6'	6'-3⅜"	12'-4"	14'-2⅝"	15'-6⅝"	7'-1⅛"	24'-2"	27'-10⅝"	29'-0⅜"	21'-2⅝"	36'-0"	41'-6⅝"	42'-8⅜"	35'-3⅝"	47'-10"	55'-2⅜"	56'-6⅛"	48'-11⅝"	—	—	—	—
		7'	7'-3⅜"	12'-5"	"	"	6'-5⅜"	24'-2"	"	"	20'-1⅜"	36'-0"	"	"	34'-2⅜"	47'-10"	"	"	47'-5⅝"	—	—	—	—
		8'	9'-3⅜"	12'-6"	"	"	4'-11⅝"	24'-2"	"	"	18'-7⅜"	36'-0"	"	"	32'-3⅝"	47'-10"	"	"	45'-11⅝"	—	—	—	—
	12'	6'	6'-3⅜"	13'-4"	15'-4⅝"	16'-8⅛"	9'-1⅛"	26'-2"	30'-2⅝"	31'-4⅝"	23'-1⅛"	39'-0"	45'-0⅜"	46'-2⅝"	38'-9⅝"	51'-10"	59'-10⅝"	61'-0"	53'-7"	—	—	—	—
		7'	7'-3⅜"	13'-5"	"	"	7'-7⅛"	26'-2"	"	"	22'-5⅜"	39'-0"	"	"	37'-3⅜"	51'-10"	"	"	52'-1⅛"	—	—	—	—
		8'	9'-3⅜"	13'-6"	"	"	6'-1⅝"	26'-2"	"	"	20'-11⅜"	39'-0"	"	"	35'-9⅝"	51'-10"	"	"	50'-7"	—	—	—	—

Ⓐ *Special case for these boxes, See Detail 'A' and Table 'A' for revised values of F_1, F_2, W_2 and W_3, when apron width is more than 1'-0" and W_3=0". For Details 'A' and Tables 'A' for each slope, see Drawing Nos. W-X302-1, W-X302-2, or W-X303-1, W-X303-2, or W-X309-1, W-X309-2.*

NOTE:- This drawing to be used in conjunction with Standard Wing Drawings for 30°Skews for each slope as listed below.

2:1 Slopes	3:1 Slopes	4:1 Slopes
W-X302-1 or W-X302-2	W-X303-1 or W-X303-2	W-X309-1 or W-X309-2.

NOTE:- This drawing to be used in conjunction with Standard Barrel Sections, Drawing Nos.-

SINGLES	DOUBLES	TRIPLES	QUADRUPLES	QUINTUPLES
R-130X-0	R-230X-01	R-330X-01	R-430X-01	R-530X-01
	R-230X-02	R-330X-02	R-430X-02	R-530X-02
R-130X-1	R-230X-1	R-330X-1	R-430X-1	R-530X-1
	R-230X-2	R-330X-2		

CLASS S CONCRETE

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF STANDARD WINGS

FOR

REINFORCED CONCRETE BOX CULVERTS

30° SKEW

4', 5', 6', 7', 8', 9', 10', 11' & 12' SPANS — 2:1, 3:1 & 4:1 SLOPES

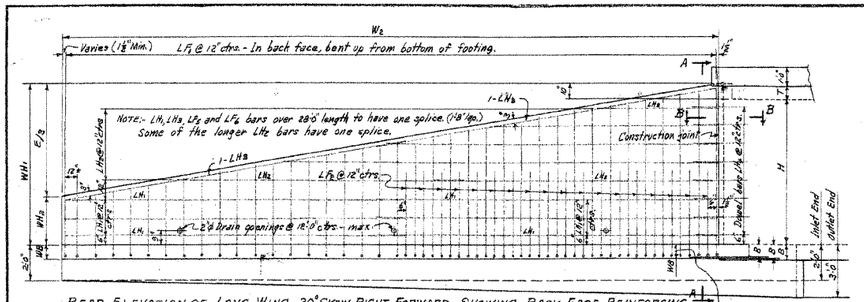
SINGLES, DOUBLES, TRIPLES, QUADRUPLES & QUINTUPLES. — ALL DEPTHS OF COVER H=2', 3', 4', 5', 6', 7', 8', 9', 10', 11' & 12'.

STANDARD DRAWING NO. W-X30

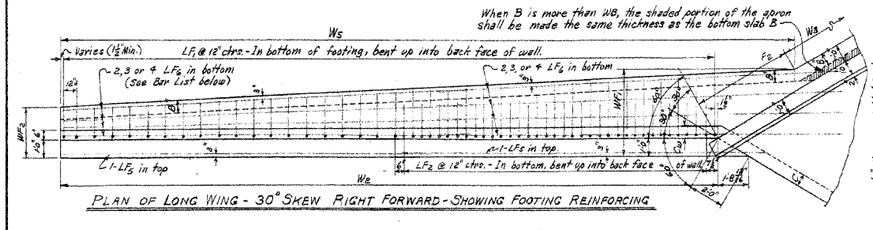
(50)

Reshot 3-8-93

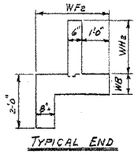
FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			229	
JOB No.					



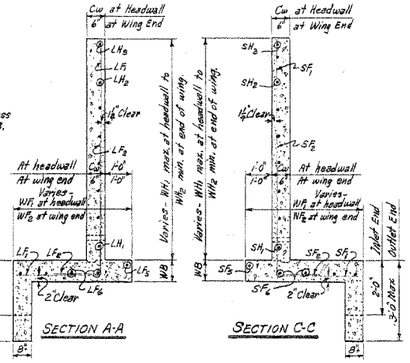
REAR ELEVATION OF LONG WING - 30° SKEW RIGHT FORWARD - SHOWING BACK FACE REINFORCING



PLAN OF LONG WING - 30° SKEW RIGHT FORWARD - SHOWING FOOTING REINFORCING



TYPICAL END VIEW OF WING

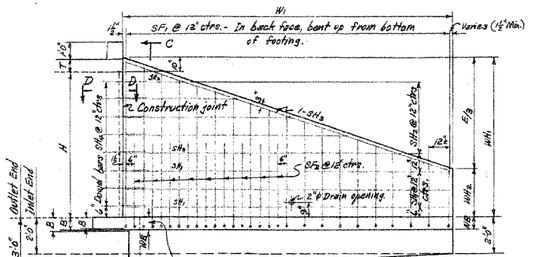


SECTION A-A

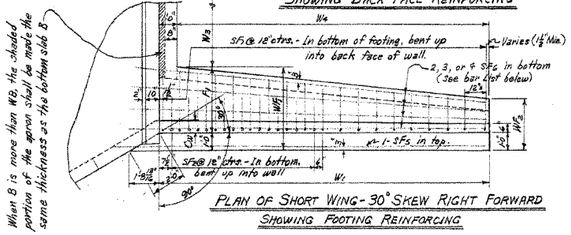
SECTION C-C

When B is more than WB the shaded portion of the apron shall be made the same thickness as the bottom slab B

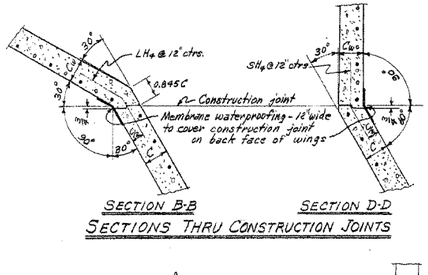
WB may be more, equal to, or less than the bottom slab thickness B.



REAR ELEVATION OF SHORT WING - 30° SKEW RIGHT FORWARD SHOWING BACK FACE REINFORCING



PLAN OF SHORT WING - 30° SKEW RIGHT FORWARD SHOWING FOOTING REINFORCING

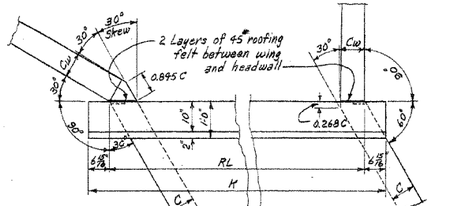


SECTION B-B

SECTION D-D

SECTIONS THRU CONSTRUCTION JOINTS

NOTE:- Payment for membrane waterproofing and roofing felt to be included in the price bid for Class S Concrete.



DETAILS AT TOP OF WINGS - 30° SKEW RIGHT FORWARD

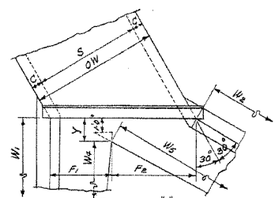
REGULAR WING DIMENSIONS - 3:1 SLOPES

CLEAR HEIGHT OF BOX	THICKNESS OF WING FOOTING	THICKNESS OF WING AT HDWLS & C	WING WALL HEIGHTS AT HEADWALL	WING WALL HEIGHTS AT END OF WING	WIDTHS OF WING FOOTINGS AT HEADWALL	WIDTHS OF WING FOOTINGS AT END OF WING	FOOTING DIMENSION PARALLEL WITH HEADWALL SHORT WING	FOOTING DIMENSION PARALLEL WITH HEADWALL LONG WING	PERPENDICULAR DIST. FROM HDWL. TO END OF WING	LENGTHS OF WINGWALLS SHORT WING	LENGTHS OF WINGWALLS LONG WING	INSIDE FOOTING DIMENSION SHORT WING	INSIDE FOOTING DIMENSION LONG WING	* QUANTITY PER WING CLASS S CONCRETE INLET END SHORT WING	INLET END LONG WING	OUTLET END SHORT WING	OUTLET END LONG WING
H	WB	Cw	WH1	WH2	WF1	WF2	F1	F2	E	W1	W2	W4	W5	Cu.Yd.	Cu.Yd.	Cu.Yd.	Cu.Yd.
2'	7"	6"	2'-10	0'-8	2'-4"	2'-0"	1'-4"	0'-11½"	6'-6"	6'-6"	13'-0"	5'-6"	13'-3⅜"	0.752	1.599	0.836	1.717
3'	7"	6"	3'-10"	1'-0"	2'-8"	2'-1⅜"	1'-8"	1'-1⅞"	8'-6"	8'-6"	17'-0"	7'-6"	17'-10⅜"	1.130	2.340	1.289	2.545
4'	7"	6"	4'-10"	1'-4"	3'-0"	2'-3"	2'-0"	2'-3⅛"	10'-6"	10'-6"	21'-0"	9'-6"	22'-5¼"	1.577	3.270	1.711	3.552
5'	7"	6"	5'-10"	1'-8"	3'-4"	2'-4½"	2'-4"	2'-11⅛"	12'-6"	12'-6"	25'-0"	11'-6"	27'-0½"	2.093	4.391	2.252	4.680
		7"	5'-10"	1'-8"	3'-4"	2'-4½"	2'-4"	2'-11⅛"	12'-6"	12'-6"	25'-0"	11'-6"	27'-0½"	2.179	4.524	2.337	4.862
@ 6'	8"	7"	6'-10"	2'-0"	3'-8"	2'-6"	2'-8"	3'-2⅝"	14'-6"	14'-6"	29'-0"	13'-6"	31'-7¾"	2.908	6.024	3.092	6.419
		7½"	6'-10"	2'-0"	3'-8"	2'-6"	2'-8"	3'-3⅜"	14'-6"	14'-6"	29'-0"	13'-6"	31'-7¾"	2.966	6.147	3.150	6.593
		8"	6'-10"	2'-0"	3'-8"	2'-6"	2'-8"	3'-3⅞"	14'-6"	14'-6"	29'-0"	13'-6"	31'-7⅝"	3.025	6.272	3.208	6.667
@ 7'	8½"	7½"	7'-10	2'-4"	4'-2"	2'-7½"	3'-2"	4'-7⅛"	16'-6"	16'-6"	33'-0"	15'-6"	36'-5⅜"	3.811	7.895	4.018	8.350
		8"	7'-10"	2'-4"	4'-2"	2'-7½"	3'-2"	4'-7⅛"	16'-6"	16'-6"	33'-0"	15'-6"	36'-5⅜"	3.887	8.057	4.095	8.512
@ 8'	9"	8"	8'-10"	2'-8"	4'-8"	2'-9"	3'-8"	5'-2⅛"	18'-6"	18'-6"	37'-0"	17'-6"	41'-4⅜"	4.874	10.097	5.107	10.612

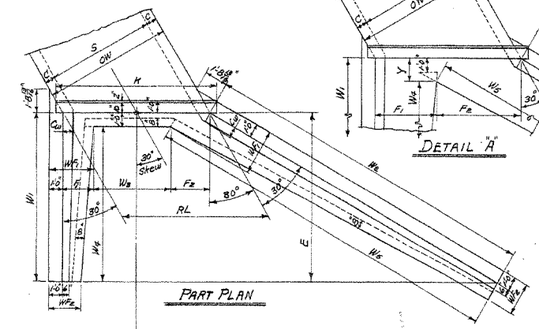
* Quantity per wing does not include headwall or that portion of apron or toewall for the length W3.
@ See Table 'A' for special values of F1 & F2 and W4 & W5 for Single 9'x6', 5'x7' and 6'x8' Box Culverts.

TABLE "A" - DIMENSIONS FOR DETAIL "A"

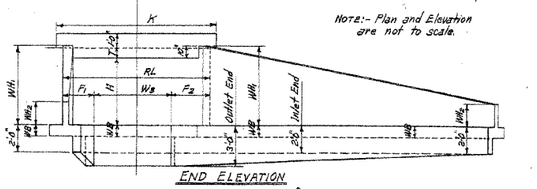
S	H	F1	F2	W3	Y	W4	W5
4'	6'	2'-7⅝"	3'-3⅝"	0"	1'-1⅜"	13'-4⅜"	31'-3⅝"
5'	7'	3'-1⅜"	4'-1"	0"	1'-3⅜"	15'-2⅜"	35'-10⅝"
6'	8'	3'-7⅝"	4'-10⅝"	0"	1'-6⅜"	17'-1⅛"	40'-6"



DETAIL "A"



PART PLAN



END ELEVATION

SINGLE BARREL CULVERT - 30° SKEW RIGHT FORWARD

Details of Culvert with 30° Skew Left Forward is reversed, see Drawing No. W-X.30.

NOTE:- Plan and Elevation are not to scale.

TYPICAL WING DETAILS

NOTE:- For remainder of General Plans and Elevations of Single, Double, Triple, Quadruple and Quintuple Span Culverts, see Std. Drawing No. W-X.30. For values of RL, K and W3 for each box, see above Std. also.

MEMBRANE:- A membrane waterproofing 12" wide, consisting of three mopings of waterproofing asphalt and two alternate layers of treated cotton fabric shall be applied to the back face of wing to cover the construction joints of wings.

REVISIONS:- Membrane added. 5-10-66 W.C.H.

QUANTITIES

CLEAR SPAN	CLEAR HEIGHT	THICKNESS OF WING HEADWALL	THICKNESS OF WING FOOTING	@ STEEL - FOR 4 WINGS	CLASS S CONCRETE - 4 WINGS HEADWALLS, WINGWALLS, FOOTINGS, TOEWALLS AND APRONS				
				REINFORCING	SINGLE BARREL CULVERT	DOUBLE BARREL CULVERT	TRIPLE BARREL CULVERT	QUADRUPLE BARREL CULVERT	QUINTUPLE BARREL CULVERT
S	H	Cw	WB	LB.	Cu.Yd.	Cu.Yd.	Cu.Yd.	Cu.Yd.	Cu.Yd.
4'	2'	6"	7"	141	5.80	6.90	8.01	9.12	10.23
	3'	6"	7"	213	8.08	9.18	10.29	11.40	12.51
	4'	6"	7"	327	10.78	11.88	12.99	14.10	15.21
	5'	6"	7"	460	13.90	15.00	16.11	17.22	18.32
	6'	7"	8"	762	18.05	19.99	21.13	22.27	23.41
5'	3'	6"	7"	213	8.93	9.67	11.01	12.36	13.70
	4'	6"	7"	327	11.03	12.36	13.71	15.06	16.40
	5'	6"	7"	460	14.14	15.98	16.83	18.17	19.52
	6'	7"	8"	762	19.11	20.98	21.86	23.24	24.62
	7'	7½"	8½"	1474	24.51	26.84	27.95	28.75	30.16
6'	3'	6"	7"	213	8.57	10.17	11.73	13.33	14.92
	4'	6"	7"	327	11.27	12.86	14.93	16.09	17.62
	5'	6"	7"	460	14.38	15.98	17.55	19.15	20.73
	6'	7"	8"	762	19.35	20.98	22.59	24.21	25.83
	7'	7½"	8½"	1474	24.79	26.94	28.08	29.73	31.38
	8'	8"	9"	1870	31.15	32.87	34.51	36.17	37.83
7'	4'	6"	7"	327	11.52	13.37	15.19	17.05	18.85
	5'	6"	7"	460	14.63	16.49	18.31	20.16	21.97
	6'	7"	8"	762	19.61	21.98	23.82	25.20	27.04
	7'	7½"	8½"	1474	25.05	26.94	28.82	30.71	32.59
	8'	8"	9"	1870	31.47	32.37	35.25	37.16	39.05
8'	4'	6"	7"	327	11.77	13.89	15.97	18.09	20.12
	5'	7"	7"	460	15.54	17.60	19.70	21.83	23.89
	6'	7"	8"	762	19.96	21.98	24.05	26.17	28.20
	7'	7½"	8½"	1474	25.30	27.96	29.58	31.73	33.81
	8'	8"	9"	1870	31.72	33.88	36.00	38.16	40.27
9'	5'	7"	7"	460	15.72	18.13	20.47	22.87	25.15
	6'	7½"	8"	762	20.50	22.93	25.29	27.71	30.01
	7'	7½"	8½"	1474	25.55	27.98	30.34	32.76	35.07
	8'	8"	9"	1870	31.97	34.39	36.76	39.18	41.49
10'	5'	7"	7"	460	15.98	18.65	21.25	23.80	26.42
	6'	7½"	8"	762	20.74	23.45	26.07	28.69	31.28
	7'	7½"	8½"	1474	25.81	28.50	31.12	33.70	36.34
	8'	8"	9"	1870	32.22	34.91	37.54	40.12	42.76
11'	6'	8"	8"	762	21.39	24.38	27.25	30.11	——
	7'	8"	8½"	1474	26.55	29.53	32.41	35.27	——
	8'	8"	9"	1870	32.49	35.65	38.83	41.19	——
12'	6'	8"	8"	762	21.66	24.93	28.05	31.20	——
	7'	8"	8½"	1474	26.81	30.08	33.21	36.36	——
	8'	8"	9"	1870	32.73	35.99	39.13	42.28	——

@ For reinforcing steel in Headwalls and Aprons, see Drawing Nos. of Barrel Sections listed below.

GENERAL NOTES:-

CONCRETE:- All concrete to be Class S, and shall be poured in the dry. All exposed corners to have ¾" chamfers.

REINFORCING STEEL:- Reinforcing steel to be deformed bars of intermediate or hard grade.

CONSTRUCTION JOINTS:- Construction joints between wingwall, footings and sidewalls shall be only where shown on plans.

SPECIFICATIONS:- Arkansas State Highway Commission Standard Specifications for Highway Construction and applicable Special Provisions.

UNIT STRESSES:-

Class S Concrete (n=10) 1200#/in²
Reinforcing Steel 20,000#/in²

NOTE:-

This drawing to be used in conjunction with Standard Barrel Sections, Drawing Nos.-

SINGLES	DOUBLES	TRIPLES	QUADRUPLES	QUINTUPLES
R-130X-0	R-230X-01	R-330X-01	R-430X-01	R-530X-01
	R-230X-02	R-330X-02	R-430X-02	R-530X-02
R-130X-1	R-230X-1	R-330X-1	R-430X-1	R-530X-1
	R-230X-2	R-330X-2		

CLASS S CONCRETE

BAR LIST FOR ONE SHORT AND ONE LONG WING - 2 EACH REQUIRED

CLEAR HEIGHT	WING	SF1 & LF1 BENT: In bottom of footing, bent up into back face of wing. One bar (or two bars) of each length						SF2 & LF2 BENT: In bottom of footing bent up into back face of wing. Alt. with F1 bars						SF5 & LF5 STRAIGHT: Longitudinal in top of wing footing heel.			SF6 & LF6 STRAIGHT: Longitudinal in bottom of wing footing toe.			SH1 & LH1 STRAIGHT: Horizontal in back face of wing.			SH2 & LH2 STRAIGHT: Horizontal in back face of wing. One bar of each length. *				SH3 & LH3 BENT: In back face of wing at top - on slope.			SH4 & LH4 BENT: Dowels thru construction joint at headwall.				BAR BENDING DIAGRAM	QUANTITY: REINFORCING STEEL PER WING - LBS.	
		LOCATION																																					
H	SHORT OR LONG	SIZE	SPACING	NO. REQ'D	LENGTHS VARY MIN.	LENGTHS VARY MAX.	X MIN.	X MAX.	Y MIN.	Y MAX.	SIZE	SPACING	NO. REQ'D	LENGTH	X	Y	SIZE	NO. REQ'D	LENGTH	SIZE	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTHS VARY MAX.	LENGTHS VARY MIN.	SIZE	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH	X		SHORT WING	LONG WING
2'	Short	#3	12"	7	1'-5"	3'-11"	0'-8"	1'-0"	1'-0"	3'-0"	—	—	—	—	—	—	#3	1	9'-0"	#3	2	8'-0"	#3	12"	1	6'-9"	#3	12"	1	—	3'-3"	#3	1	6'-7"	#3	12"	2	2'-8"	1'-9"	SF1 & SF2 / LF1 & LF2 Y, 5" Pin, X	29.7	45.6
	Long	#3	12"	10	1'-5"	3'-11"	0'-8"	1'-0"	0'-10"	3'-0"	—	—	—	—	—	—	#3	1	15'-6"	#3	2	15'-6"	#3	12"	1	12'-8"	#3	12"	1	—	6'-6"	#3	1	12'-11"	#3	12"	2	"	"			
3'	Short	#3	12"	9	2'-1"	5'-3"	0'-10"	1'-0"	1'-9"	4'-0"	—	—	—	—	—	—	#3	1	11'-8"	#3	2	10'-0"	#3	12"	1	8'-3"	#3	12"	2	6'-3"	3'-3"	#5	1	9'-8"	#3	12"	3	"	"		37.0	69.5
	Long	#3	12"	18	1'-11"	5'-3"	0'-10"	1'-0"	1'-2"	4'-0"	—	—	—	—	—	—	#3	1	19'-6"	#3	2	20'-2"	#3	12"	1	16'-5"	#3	12"	2	12'-6"	6'-6"	#3	1	14'-11"	#3	12"	3	"	"			
4'	Short	#3	12"	11	2'-6"	6'-7"	0'-11"	1'-0"	1'-8"	5'-0"	—	—	—	—	—	—	#3	1	13'-0"	#3	3	12'-0"	#3	12"	1	10'-3"	#3	12"	3	9'-8"	3'-3"	#3	1	11'-9"	#3	12"	4	"	"		56.2	107.2
	Long	#3	12"	22	2'-2"	6'-6"	0'-11"	1'-0"	1'-7"	5'-0"	—	—	—	—	—	—	#3	1	23'-6"	#3	3	24'-0"	#3	12"	1	20'-5"	#3	12"	3	18'-6"	6'-6"	#3	1	21'-0"	#3	12"	4	"	"			
5'	Short	#3	12"	13	2'-11"	7'-11"	1'-0"	2'-0"	2'-0"	6'-0"	#3	12"	3	3'-6"	1'-1"	2'-6"	#3	1	15'-0"	#3	3	14'-0"	#3	12"	2	12'-3"	#3	12"	3	9'-3"	3'-3"	#3	1	12'-11"	#3	12"	4	"	"		78.0	152.2
	Long	#3	12"	26	2'-9"	7'-10"	1'-0"	1'-11"	1'-10"	6'-0"	#3	12"	6	3'-6"	1'-1"	2'-6"	#3	1	27'-6"	#3	6	15'-7"	#3	12"	2	24'-3"	#3	12"	3	18'-6"	6'-6"	#3	1	25'-1"	#3	12"	5	"	"			
6'	Short	#4	12"	15	3'-6"	9'-3"	1'-2"	2'-0"	2'-3"	7'-1"	#3	12"	3	4'-1"	1'-4"	3'-0"	#3	1	17'-0"	#3	3	16'-0"	#3	12"	2	14'-3"	#3	12"	4	12'-3"	3'-3"	#3	1	15'-0"	#3	12"	6	"	"		127.8	253.1
	Long	#4	12"	30	3'-6"	9'-3"	1'-2"	2'-0"	2'-3"	7'-1"	#3	12"	6	4'-1"	1'-4"	3'-0"	#3	2	14'-8"	#3	6	18'-0"	#3	12"	4	15'-2"	#3	12"	4	24'-6"	6'-6"	#3	2	15'-5"	#3	12"	6	2'-8"	1'-9"			
7'	Short	#4	12"	17	3'-11"	10'-10"	1'-3"	2'-0"	2'-9"	8'-1"	#4	12"	6	5'-6"	1'-7"	4'-0"	#4	1	19'-0"	#4	4	18'-0"	#4	12"	2	16'-3"	#4	12"	5	15'-3"	3'-3"	#4	1	17'-1"	#4	12"	7	3'-6"	1'-9"		127.8	489.8
	Long	#4	12"	34	3'-9"	10'-8"	1'-3"	2'-0"	2'-7"	8'-1"	#4	12"	12	5'-6"	1'-7"	4'-0"	#4	2	18'-8"	#4	8	20'-8"	#4	12"	4	17'-2"	#4	12"	5	30'-6"	6'-6"	#4	2	17'-5"	#4	12"	7	"	"			
8'	Short	#4	12"	19	4'-6"	12'-5"	1'-5"	2'-4"	3'-2"	9'-2"	#4	12"	9	6'-6"	1'-10"	4'-9"	#4	1	21'-0"	#4	4	20'-0"	#4	12"	3	18'-3"	#4	12"	5	15'-3"	3'-3"	#4	1	19'-5"	#4	12"	8	"	"		212.0	622.3
	Long	#4	12"	38	4'-6"	12'-3"	1'-5"	3'-2"	3'-0"	9'-2"	#4	12"	18	6'-6"	1'-10"	4'-9"	#4	2	20'-8"	#4	8	22'-9"	#4	12"	6	19'-2"	#4	12"	5	30'-6"	6'-6"	#4	2	19'-6"	#4	12"	8	3'-6"	1'-9"			

NOTE:- Bars for short wing shall be marked with prefix letter 'S', while those for long wing shall be marked with letter 'L'.

* Length without splice. Bars over 28'-0" length may be spliced (1'-8" lap).

Designed By:- W.C.H. 5-13-63 Checked By:- RMS 8-19-63
Drawn By:- W.C.H. 7-26-63 Checked By:- DMT 7-15-64
Quantities By:- W.C.H. 1-7-64 Checked By:- DMT 7-15-64

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF STANDARD WINGS FOR REINFORCED CONCRETE BOX CULVERTS 30° SKEW

4', 5', 6', 7', 8', 9', 10', 11' & 12' SPANS — 3:1 SLOPES

SINGLES, DOUBLES, TRIPLES, QUADRUPLES & QUINTUPLES — ALL DEPTHS OF COVER FOR H = 8'-0" OR LESS

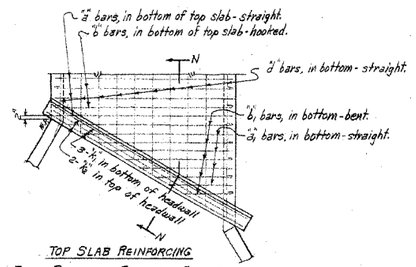
STANDARD DRAWING NO. W-X303-1

(53)

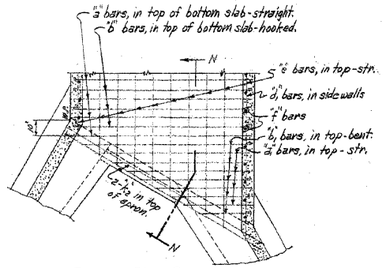
Reshot 3-8-93

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FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			230	
JOB No.					

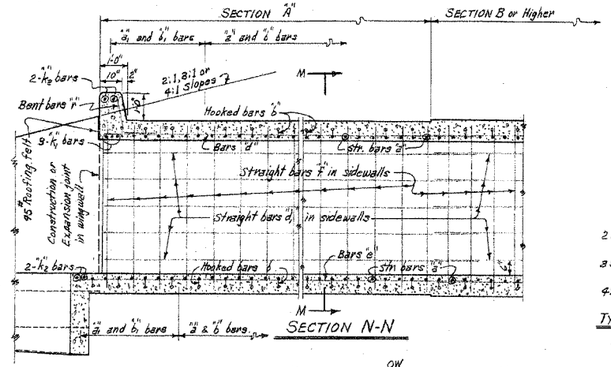


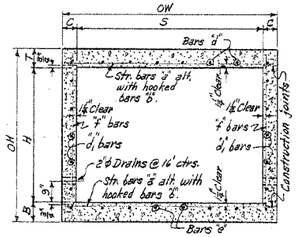
TOP SLAB REINFORCING
PART PLAN AT END OF CULVERT

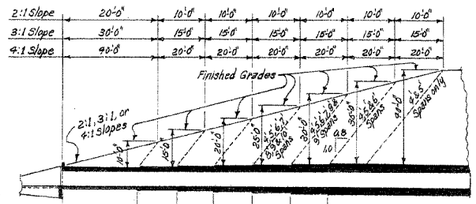


BOTTOM SLAB REINFORCING
PART PLAN AT END OF CULVERT

NOTE:- The "d", "d1" and "a" bars vary in length. They should extend 1'0" min. into Section "B".





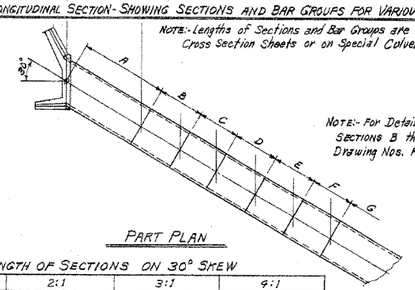


		A	B	C	D	E	F	MID-SECTION G-Varies
2:1 Slope =	Sections	A=12'-0"	B=6'-0	C=6'-0	D=6'-0"	E=6'-0	F=6'-0"	MID-SECTION G-Varies
	Bar Group	A	B	C	D	E	F	G
3:1 Slope =	Sections	A=22'-0"	B=11'-0"	C=11'-0"	D=11'-0"	E=11'-0"	F=11'-0"	MID-SECTION G-Varies
	Bar Group	A	B	C	D	E	F	G
4:1 Slope =	Sections	A=32'-0"	B=16'-0"	C=16'-0"	D=16'-0"	E=16'-0"	F=16'-0"	MID-SECTION G-Varies
	Bar Group	A	B	C	D	E	F	G

These lengths are perpendicular to E of roadway. See Table of Skew Lengths below.

TYPICAL LONGITUDINAL SECTION - SHOWING SECTIONS AND BAR GROUPS FOR VARIOUS DEPTHS OF COVER

NOTE:- Lengths of Sections and Bar Groups are to be shown on Cross Section Sheets or on Special Culvert Layout Sheet.



PART PLAN

NOTE:- For Details and Bar Lists for Sections B thru G, see Barrel Drawing Nos. R-100X-X.1 or R-100X-X.2.

LENGTH OF SECTIONS ON 30° SKEW

SLOPE	2:1		3:1		4:1	
SECTIONS	A	B, C, D, E & F	A	B, C, D, E & F	A	B, C, D, E & F
LENGTHS	13'-10 1/2"	6'-11 1/8"	25'-4 3/8"	12'-8 3/8"	36'-11 5/8"	18'-5 3/4"

NOTE:- Minimum ℄ Length of Section "A" on 30° Skew = (0.288625 ow+2").

SECTIONS AND BAR GROUPS TO BE USED FOR VARIOUS DEPTHS OF COVER

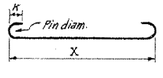
DEPTHS OF COVER	SECTIONS & BAR GROUPS FOR END SECTIONS A	B	C	D	E	F	MID-SECTION AND BAR GROUP
5.0' to 9.5'	A						A
10.0' to 14.5'	A						B
15.0' to 19.5'	A	B					C
20.0' to 24.5'	A	B	C				D
25.0' to 29.5'	A	B	C	D			E
30.0' to 34.5'	A	B	C	D	E		F
35.0' to 40.0'	A	B	C	D	E	F	G

OR ALT.

DEPTHS OF COVER	SECTIONS & BAR GROUPS FOR END SECTIONS A	B	C	D	E	F	MID-SECTION AND BAR GROUP
5.0' to 9.5'	A						A
10.0' to 14.5'	A						B
15.0' to 19.5'	A	B					C
20.0' to 24.5'	A	2@C					D
25.0' to 29.5'	A	B	2@D				E
30.0' to 34.5'	A	2@C	2@E				F
35.0' to 40.0'	A	B	2@D	2@F			G

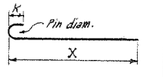
BAR SIZE	PIN DIAM.	K	ADD FOR 2 HOOKS
#4	2"	4"	0'-10 1/8"
#5	2 1/2"	4 1/2"	0'-11 1/8"
#6	3"	5"	1'-0"
#7	3 1/2"	5 1/2"	1'-0"

BENDING DIAGRAM FOR BARS "b"



BAR SIZE	PIN DIAM.	K	ADD FOR 1 HOOK
#4	2"	4"	0'-5 1/8"
#5	2 1/2"	4 1/2"	0'-5 3/8"
#6	3"	5"	0'-7"
#7	3 1/2"	5 1/2"	0'-8"

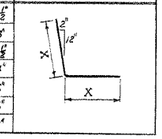
BENDING DIAGRAM FOR BARS "b1"



Note:- Dimensions are to centers of bars. ("b" and "b1")

DOWEL BARS FOR ONE HEADWALL

SPAN	SIZE	SPACING	NO. REQ'D	LENGTH	X
4'	#4	12"c	6	2'-5"	1'-2 1/2"
5'	#4	12"c	8	2'-6"	1'-3"
6'	#4	12"c	9	2'-7"	1'-3 1/2"
7'	#4	12"c	10	2'-8"	1'-4"
8'	#4	12"c	11	2'-10"	1'-5"
9'	#4	12"c	13	3'-0"	1'-6"
10'	#4	12"c	14	3'-2"	1'-7"



DESIGN LIVE LOAD

H20-S16 LOADING A.A.S.H.O. 1961
AND
SPECIAL MILITARY LOADING
Two 24,000 Lb. Axles @ 4'-0" ctrs.

UNIT STRESSES:-
Class S Concrete (n=10) 1200 #/in²
Reinforcing Steel 20,000 #/in²

GENERAL NOTES

CONCRETE:- All concrete to be Class S, and shall be poured in the dry. All exposed corners to have 3/4" chamfers.
REINFORCING STEEL:- Reinforcing to be deformed bars of intermediate or hard grade.
CONSTRUCTION JOINTS:- Construction joints between wingwalls, sidewalls and slabs shall be only where shown on plans.
SPECIFICATIONS:- Arkansas State Highway Commission Standard Specifications for Highway Construction and applicable Special Provisions.

BAR LIST FOR SECTION "A" ON 30° SKEW - ONE END ONLY.

| SECTION & BAR GROUP | LENGTH OF SECTION | DEPTH OF COVER | CLEAR SPAN | CLEAR HEIGHT | "a" bars STRAIGHT In Top and Bottom Slabs of Barrel. SIZE | SPACING | NUMBER REQ'D 2:1 | 3:1 | 4:1 | LENGTH | "a1" bars STRAIGHT In Top and Bottom Slab of Barrel - hooked. (Two of each Length.) SIZE | SPACING | NO. REQ'D | LENGTH | "b" bars BENT - See Diagrams at Right. In Top and Bottom Slabs of Barrel - hooked. SIZE | SPACING | NUMBER REQ'D 2:1 | 3:1 | 4:1 | LENGTH MAX. | MIN. | X MAX. | MIN. | "b1" bars In Top and Bottom Slabs of Barrel - one end hooked. (Two of each Length.) Alternate with "a1" bars. SIZE | SPACING | NO. REQ'D | LENGTH | "d" bars STRAIGHT Longitudinal in Top Slab of Barrel. SIZE | SPACING | NO. REQ'D | LENGTH | "d1" bars STRAIGHT Longitudinal in Sidewalls SIZE | SPACING | NO. REQ'D | LENGTH | "e" bars STRAIGHT Longitudinal in Bottom Slab of Barrel. SIZE | SPACING | NO. REQ'D | LENGTH | "f" bars STRAIGHT Verticals in Sidewalls. SIZE | SPACING | NUMBER REQ'D 2:1 | 3:1 | 4:1 | LENGTH | "k1" bars STRAIGHT In Bottom of Headwall. SIZE | NO. REQ'D | LENGTH | "k2" bars STRAIGHT In Top of Headwall and Apron. (2 Each.) SIZE | NO. REQ'D | LENGTH |
|---|---|---|---|---|---|---|---|---

Reshot 3-8-93 441 ~~231~~

FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			23	
JOB No.					

BAR LIST FOR BARREL SECTION 60'-0" IN LENGTH - TWO 30° SKEWED ENDS.

| DEPTH OF COVER D | CLEAR SPAN S | CLEAR HEIGHT H | "a" bars STRAIGHT In Top and Bottom Slab of Barrel. SIZE | SPACING | No. REQ'D | LENGTH | "a1" bars STRAIGHT In Top and Bottom Slab of Barrel- (four of each Length.) SIZE | SPACING | No. REQ'D | LENGTH | "b" bars BENT - See Diagrams below In Bottom of Top Slab bent up over Division Wall - hooked. Alternate with "a" and "c" bars. SIZE | SPACING | No. REQ'D | LENGTH | X | Y | Z | "b1" bars BENT - See Diagrams below. In Bottom of Top Slab - some bent up over Division Wall - one end hooked. (2 of Each Length.) Alternate with "b", and "c" or "c1" bars. SIZE | SPACING | No. REQ'D | LENGTH | L MAX. | L MIN. | "b2" bars BENT - See Diagrams below. In Top of Bottom Slab bent down under Division Wall - hooked Alternate with "a" and "c" bars SIZE | SPACING | No. REQ'D | LENGTH | X | Y | Z | "b3" bars BENT - See Diagrams below. In Top of Bottom Slab - some bent down under Division Wall - one end hooked. (2 of Each Length.) Alternate with "a", and "c" or "c1" bars. SIZE | SPACING | No. REQ'D | LENGTH | L MAX. | L MIN. | "c" bars STRAIGHT In Top and Bottom Slab of Barrel. Alternate with "b" and "b2" bars. SIZE | SPACING | No. REQ'D | LENGTH | "c1" bars STRAIGHT In Top and Bottom Slab of Barrel. Alt. with "b", "b2" bars (Four of each Length) SIZE | SPACING | No. REQ'D | LENGTH | "d" bars STRAIGHT Longitudinal in Top Slab of Barrel SIZE | SPACING | No. REQ'D | LENGTH | "d1" bars STRAIGHT Longitudinal in Sidewalls and Division Wall. SIZE | SPACING | No. REQ'D | LENGTH | "d2" bars STRAIGHT Longitudinal in Bottom Slab of Barrel. SIZE | SPACING | No. REQ'D | LENGTH | "f" bars STRAIGHT Verticals in Sidewalls and Division Wall. SIZE | SPACING | No. REQ'D | LENGTH | "k" bars In Bottom of Headwalls SIZE | No. REQ'D | LENGTH | "k2" bars. In Top of Headwalls and Aprons. (2 Each) SIZE | No. REQ'D | LENGTH |
|---|---|---|---|---|---