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.		050213	1	369
				(2) HWY. 394 - CR 80 (ANTIOCH ROAD) (S)				

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

CONSTRUCTION PLANS FOR STATE HIGHWAY

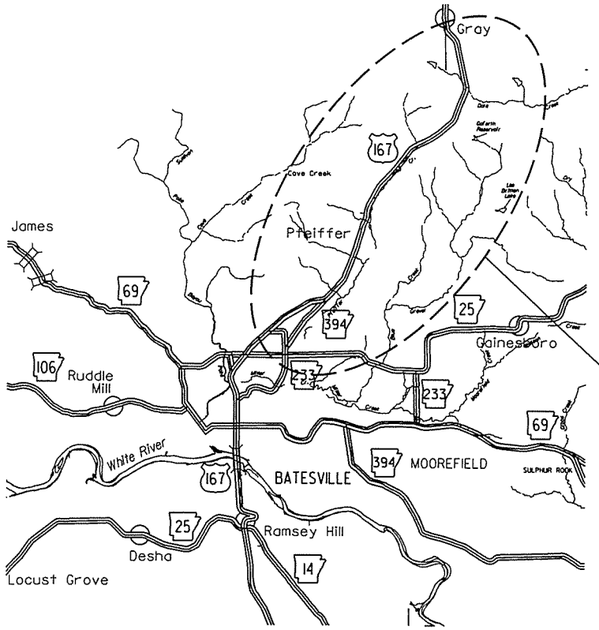
HWY. 394 - CR 80 (ANTIOCH ROAD) (S)

INDEPENDENCE COUNTY

ROUTE 167 SECTION 18

F.A.P. NHPP-0032(22)

JOB 050213

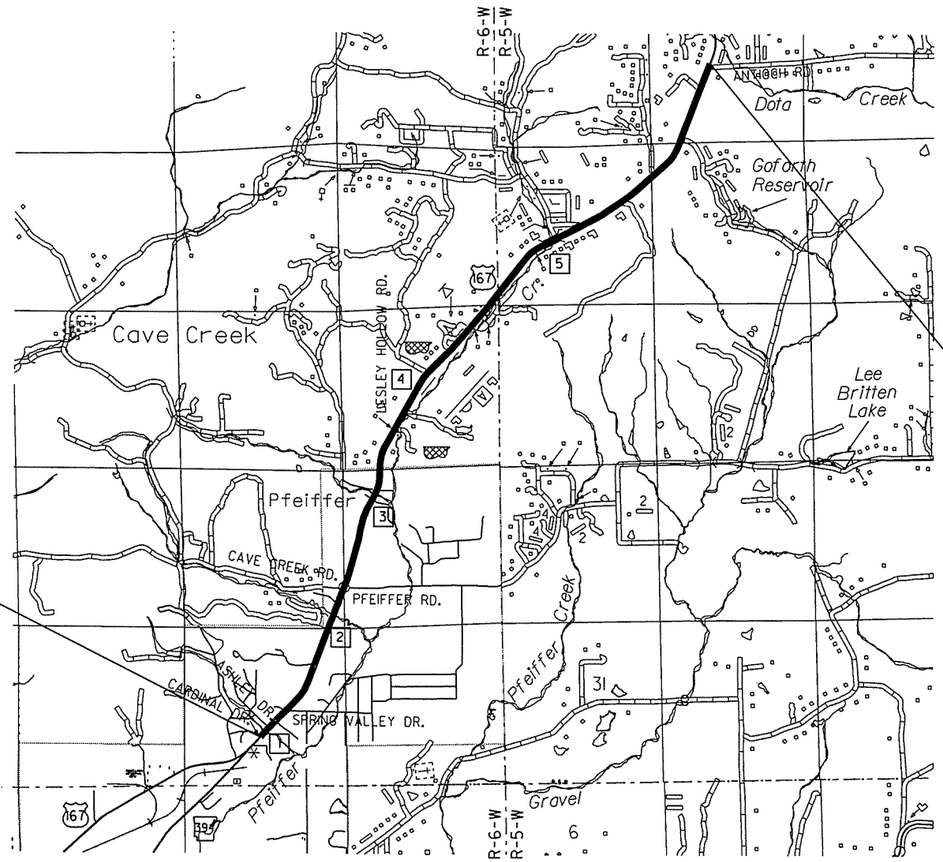


PROJECT LOCATION

VICINITY MAP

0 1/4 1/2 1 MILE

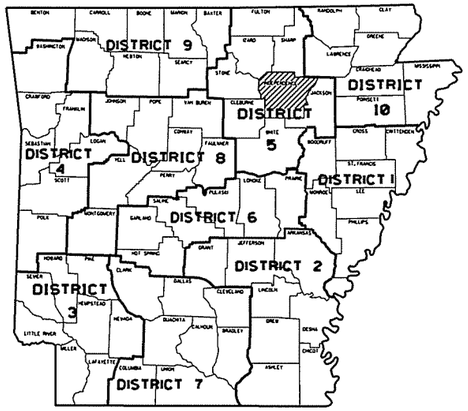
BAR SCALE



STA. 341+00
BEGIN JOB 050213
LOG MILE 3.96

STA. 621+41.21
END JOB 050213
BEGIN JOB 050214
LOG MILE 9.31

N



ARKANSAS HIGHWAY DISTRICT 5

DESIGN TRAFFIC DATA

DESIGN YEAR	2034
2014 ADT	9000
2034 ADT	12000
2034 DHV	1320
DIRECTIONAL DISTRIBUTION	0.60
TRUCKS	8%
DESIGN SPEED	60 MPH

STRUCTURES OVER 20'-0" SPAN

1. STA. 343+42 IN PLACE
   DBL. 10' X 6' X 75' R.C. BOX CULVERT
   WITH 3:1 WINGS LT. AND RT.
   RETAIN & EXTEND 29' LT. & 25' RT.
   050 = 630 C.F.S. D.A. = 192 ACRES
   (SPAN = 22'-1")

2. STA. 389+78 IN PLACE
   TRI. 10' X 5' X 44' R.C. BOX CULVERT
   WITH 3:1 WINGS LT. AND RT.
   RETAIN & EXTEND 38' LT. & 43' RT.
   CONSTRUCT 10' X 5' X 126' R.C. BOX CULVERT
   050 = 1720 C.F.S. D.A. = 1064 ACRES
   (SPAN = 43'-10")

3. STA. 432+61 IN PLACE
   TRI. 10' X 6' X 44' R.C. BOX CULVERT
   WITH 3:1 WINGS LT. AND RT.
   RETAIN & EXTEND 16' LT. & 71' RT.
   CONSTRUCT 10' X 6' X 136' R.C. BOX CULVERT
   050 = 1420 C.F.S. D.A. = 810 ACRES
   (SPAN = 44'-2")

4. STA. 469+97 IN PLACE
   DBL. 8' X 4' X 54' R.C. BOX CULVERT
   ON 30° LT. FWD. SKEW
   WITH 3:1 WINGS LT. AND RT.
   RETAIN & EXTEND 64' LT. & 23' RT.
   CONSTRUCT 8' X 4' X 140' R.C. BOX CULVERT
   050 = 656 C.F.S. D.A. = 336 ACRES
   (SPAN = 30'-9 1/2")

5. STA. 539+70 IN PLACE
   TRI. 8' X 7' X 55' R.C. BOX CULVERT
   WITH 3:1 WINGS LT. AND RT.
   ON 30° LT. FWD. SKEW
   RETAIN & EXTEND 59' LT. & 30' RT.
   CONSTRUCT 8' X 7' X 144' R.C. BOX CULVERT
   050 = 1680 C.F.S. D.A. = 1024 ACRES
   (SPAN = 44'-9 1/8")

BEGINNING OF PROJECT	MID POINT OF PROJECT	END OF PROJECT
LATITUDE = N 35°48'37"	LATITUDE = N 35°50'39"	LATITUDE = N 35°52'15"
LONGITUDE = W 91°36'12"	LONGITUDE = W 91°34'56"	LONGITUDE = W 91°33'00"

LENGTH OF PROJECT CALCULATED ALONG C.L. HWY. 167

GROSS LENGTH OF PROJECT	28041.21	FEET OR	5.311	MILES
NET " " ROADWAY	27855.58	"	5.276	"
NET " " BRIDGES	185.63	"	0.035	"
NET " " PROJECT	28041.21	"	5.311	"

P.E. JOB 050269
NON-PART.

APPROVED

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

2/18/14

DEPUTY DIRECTOR
AND CHIEF ENGINEER

R050213.DGN 2/18/2014

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) INDEX OF SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14

INDEX OF SHEETS

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

2/20/2014

R050213.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.		050213	3	369

(2) GOVERNING SPECS. AND GENERAL NOTES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-24-14

GOVERNING SPECIFICATIONS

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

NUMBER	TITLE
ERRATA_____	ERRATA FOR THE BOOK OF STANDARD SPECIFICATIONS
FHWA-1273__	REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS
FHWA-1273__	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - NOTICE TO CONTRACTORS
FHWA-1273__	SUPPLEMENT - SPECIFIC EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITIES (23 U.S.C. 140)
FHWA-1273__	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - GOALS AND TIMETABLES
FHWA-1273__	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - FEDERAL STANDARDS
FHWA-1273__	SUPPLEMENT - TRAINING PROGRAM - JOB 050213
FHWA-1273__	SUPPLEMENT - POSTERS AND NOTICES REQUIRED FOR FEDERAL-AID PROJECTS
FHWA-1273__	SUPPLEMENT - WAGE RATE DETERMINATION
108-1_____	LIQUIDATED DAMAGES
410-1_____	CONSTRUCTION REQUIREMENTS AND ACCEPTANCE OF ASPHALT CONCRETE PLANT MIX COURSES
620-1_____	MULCH COVER
JOB 050213__	ARCHEOLOGICAL MONITORING AND TREE REMOVAL
JOB 050213__	BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB 050213__	BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB 050213__	CONSTRUCTION IN SPECIAL FLOOD HAZARD AREAS
JOB 050213__	CULVERT CLEAN OUT
JOB 050213__	EXTENSION FOR PIPE CULVERTS
JOB 050213__	GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
JOB 050213__	MANDATORY USE OF INTERNET BIDDING
JOB 050213__	MODIFICATION OF EXISTING REINFORCED CONCRETE BOX CULVERTS
JOB 050213__	NESTING SITES OF MIGRATORY BIRDS
JOB 050213__	PARTNERING REQUIREMENTS
JOB 050213__	PLASTIC PIPE
JOB 050213__	PRE-BID ON SITE INVESTIGATION OF SOIL CONDITIONS
JOB 050213__	PROSECUTION AND PROGRESS
JOB 050213__	SITE USE (A + C METHOD)
JOB 050213__	SOIL STABILIZATION
JOB 050213__	STORM WATER POLLUTION PREVENTION PLAN
JOB 050213__	SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB 050213__	UTILITY ADJUSTMENTS
JOB 050213__	VALUE ENGINEERING
JOB 050213__	WARM MIX ASPHALT
JOB 050213__	WATER POLLUTION CONTROL & RESTRAINING CONDITION

GENERAL NOTES

1. GRADE LINE DENOTES FINISHED GRADE WHERE SHOWN ON PLANS.
2. ALL PIPE LINES, POWER, TELEPHONE AND TELEGRAPH LINES TO BE MOVED OR LOWERED BY THE RESPECTIVE OWNERS AS PER AGREEMENT WITH SUCH OWNERS.
3. ANY EQUIPMENT OR APPURTENANCE THAT INTERFERES WITH THE PROPOSED CONSTRUCTION AND WHICH MAY BE THE PROPERTY OF UTILITY SERVICE ORGANIZATIONS SHALL BE MOVED BY THE OWNERS UNLESS OTHERWISE PROVIDED.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING U. S. MAILBOXES WITHIN THE PROJECT LIMITS IN SUCH A MANNER THAT THE PUBLIC MAY RECEIVE CONTINUED MAIL SERVICE. PAYMENT WILL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE VARIOUS BID ITEMS.
5. ALL LAND MONUMENTS LOCATED WITHIN THE CONSTRUCTION AREA SHALL BE PROTECTED IN ACCORDANCE WITH SECTION 107.12 OF THE STANDARD SPECIFICATIONS.
6. ALL TREES THAT DO NOT DIRECTLY INTERFERE WITH THE PROPOSED CONSTRUCTION SHALL BE SPARED AS DIRECTED BY THE ENGINEER. CARE AND DISCRETION SHALL BE USED TO INSURE THAT ALL TREES NOT TO BE REMOVED SHALL BE HARMED AS LITTLE AS POSSIBLE DURING THE CONSTRUCTION OPERATIONS.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A FENCE TO CONTROL LIVESTOCK IN AREAS WHERE PASTURES ARE SEVERED. WIRE FENCE MAY BE CONSTRUCTED INITIALLY, OR IN LIEU THEREOF, THE CONTRACTOR AT HIS OWN EXPENSE, MAY ELECT TO PROVIDE TEMPORARY FENCING SUITABLE TO CONTAIN LIVESTOCK.
8. THIS PROJECT IS COVERED UNDER A SECTION 404 NATIONWIDE 14 PERMIT. REFER TO SECTION 110 OF THE STANDARD SPECIFICATIONS, EDITION OF 2014, FOR PERMIT REQUIREMENTS.
9. ALL FLEXIBLE BASE AND ASPHALTIC PAVEMENTS REMOVED SHALL BE PAID FOR UNDER THE ITEM NO. 210 - UNCLASSIFIED EXCAVATION.
10. THE EXISTING ASPHALT PAVEMENT TO BE REMOVED FROM THE REMAINING PAVEMENT SHALL BE SEPARATED BY SAWING ALONG A NEAT LINE. AFTER SAWING, THE PAVEMENT TO BE REMOVED SHALL BE CAREFULLY REMOVED IN A MANNER THAT WILL NOT DAMAGE THE PAVEMENT THAT IS TO REMAIN. ANY DAMAGE OF THE ASPHALT PAVEMENT THAT IS TO REMAIN IN PLACE SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.

9/4/2014

R050213.DGN

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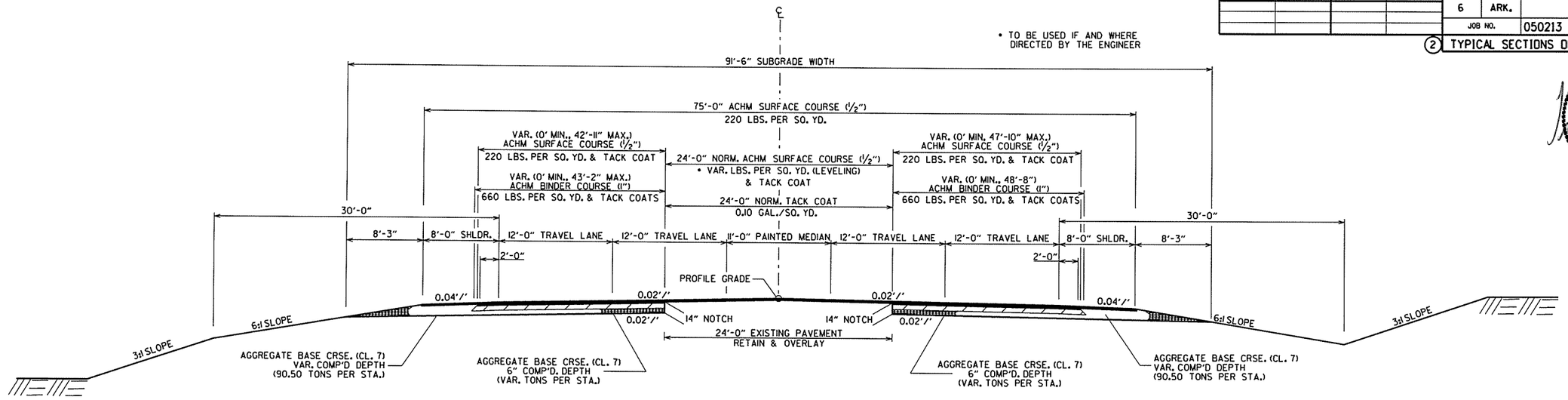
				6	ARK.			
				JOB NO.		050213	4	369

(2) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14



HWY. 167
TYPICAL SECTION OF IMPROVEMENT
NOTCH AND WIDEN

STA. 341+00.00 TO STA. 350+52.00
**STA. 352+10.00 TO STA. 353+96.00
**STA. 361+50.00 TO STA. 362+55.00
**STA. 368+88.00 TO STA. 377+42.00
STA. 386+69.00 TO STA. 392+45.00

**STA. 398+33.00 TO STA. 398+90.00
**STA. 404+84.00 TO STA. 406+18.00
**STA. 410+92.00 TO STA. 411+94.00
**STA. 429+09.00 TO STA. 430+39.50

**STA. 431+88.00 TO STA. 447+84.00
STA. 453+74.00 TO STA. 508+78.89
STA. 509+75.79 TO STA. 563+79.00
STA. 572+58.50 TO STA. 574+75.00

STA. 577+14.00 TO STA. 578+35.90
STA. 583+29.10 TO STA. 584+03.25
STA. 590+40.00 TO STA. 593+37.15
STA. 600+90.00 TO STA. 610+41.21

** LEVELING WIDTH DIFFERS FROM NORM.

NOTES:

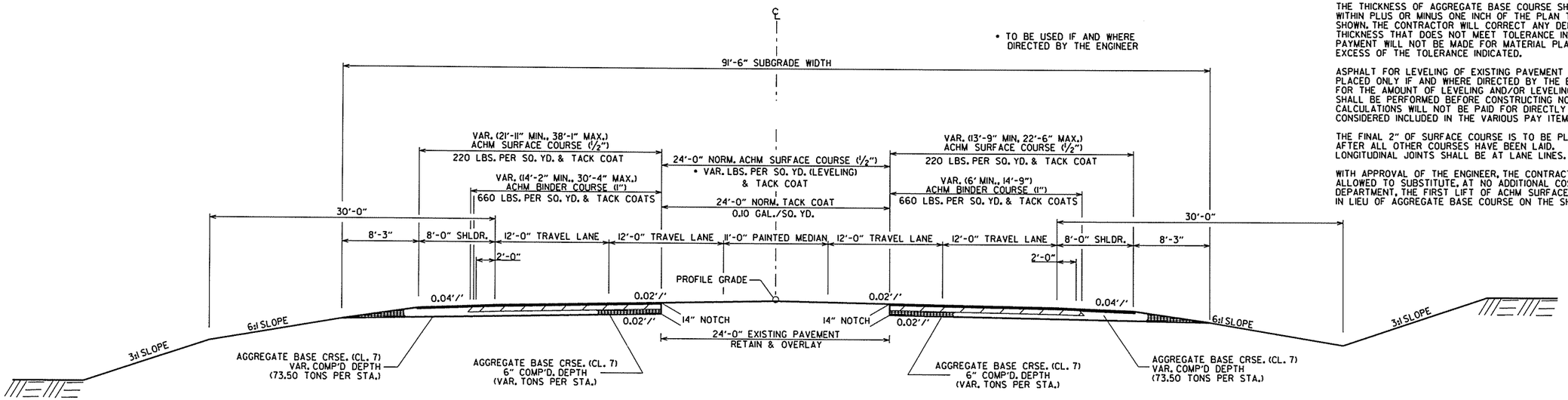
REFER TO CROSS SECTIONS FOR DEVIATION FROM THE NORMAL SLOPES. NO CHANGES SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.

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

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

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

WITH 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
TYPICAL SECTION OF IMPROVEMENT
NOTCH AND WIDEN
STA. 610+41.21 TO STA. 621+41.21

2/18/2014

R050213.DGN

TYPICAL SECTIONS OF IMPROVEMENT

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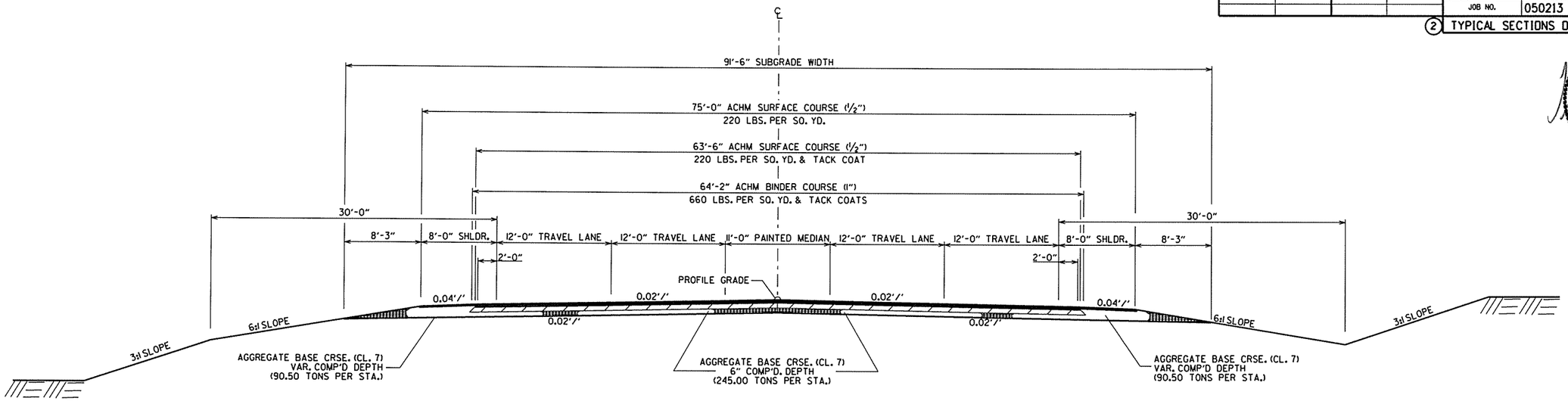
(2) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14



HWY. 167
TYPICAL SECTION OF IMPROVEMENT
FULL DEPTH SECTION

STA. 350+52.00 TO STA. 352+10.00
STA. 353+96.00 TO STA. 361+50.00
STA. 362+55.00 TO STA. 368+88.00
STA. 377+42.00 TO STA. 386+69.00
STA. 392+45.00 TO STA. 398+33.00
STA. 398+90.00 TO STA. 404+84.00
STA. 406+18.00 TO STA. 410+92.00
STA. 411+94.00 TO STA. 429+09.00
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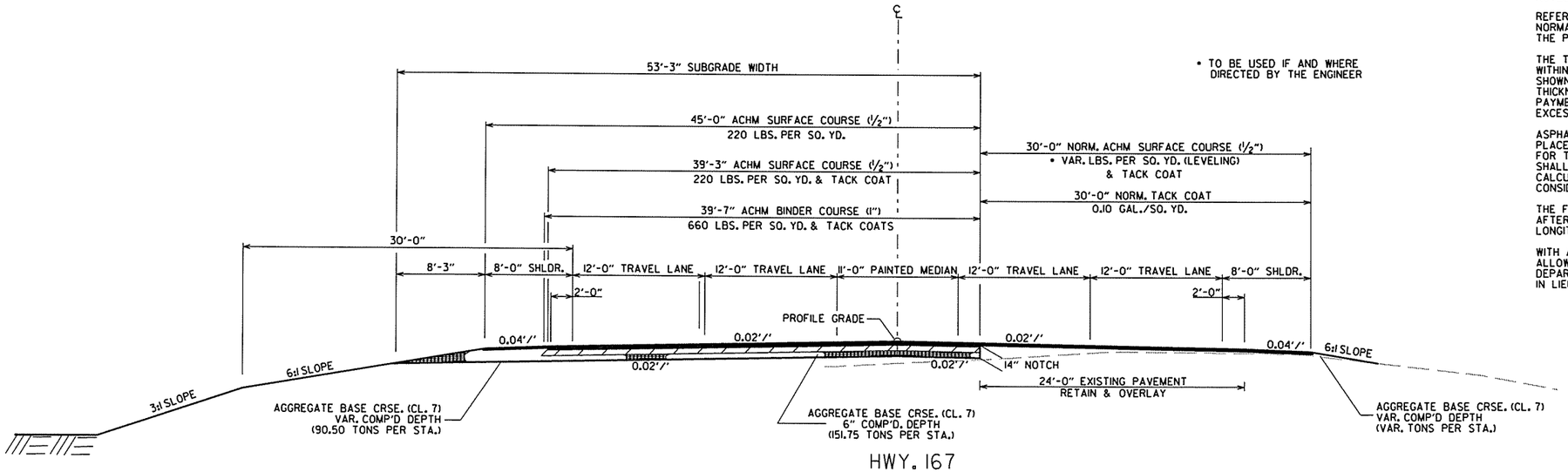
STA. 563+79.00 TO STA. 572+58.50
STA. 574+75.00 TO STA. 577+14.00
STA. 578+35.90 TO STA. 583+29.10
STA. 584+03.25 TO STA. 590+40.00
STA. 593+37.15 TO STA. 600+90.00



• TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER

HWY. 167
TYPICAL SECTION OF IMPROVEMENT
NOTCH AND WIDEN SECTION WITH OVERLAY ON RT.
STA. 508+78.89 TO STA. 509+75.79

NOTES:

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

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

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

WITH 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.

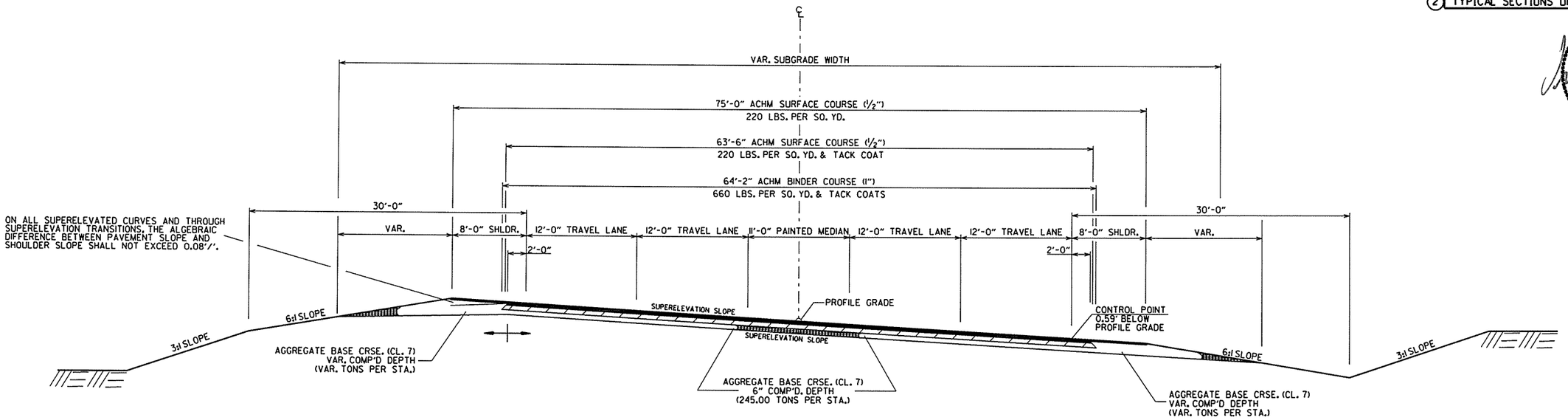
2/18/2014

R050213.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.		050213	6	369

(2) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-14



HWY. 167
TYPICAL SECTION OF IMPROVEMENT
SUPERELEVATION SECTION

NOTES:

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

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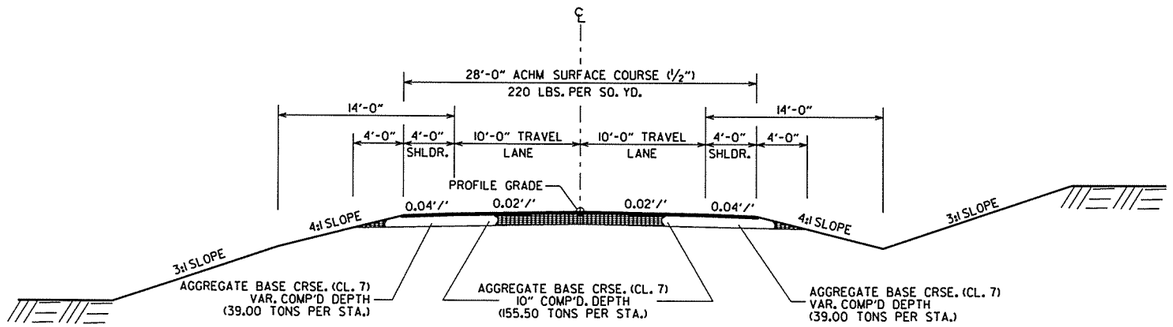

SIDE ROADS
TYPICAL SECTION OF IMPROVEMENT

5/16/2014

R050213.DGN

TYPICAL SECTIONS OF IMPROVEMENT

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
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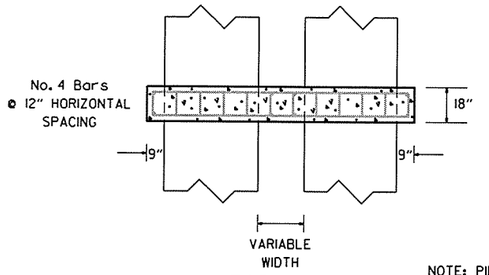
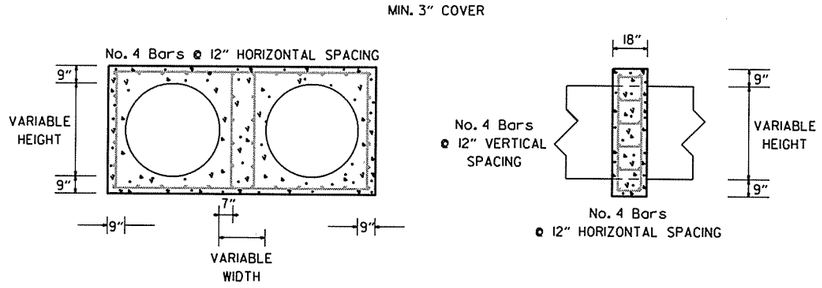
				JOB NO.		050213	7	369

(2) SPECIAL DETAILS



TOP VIEW

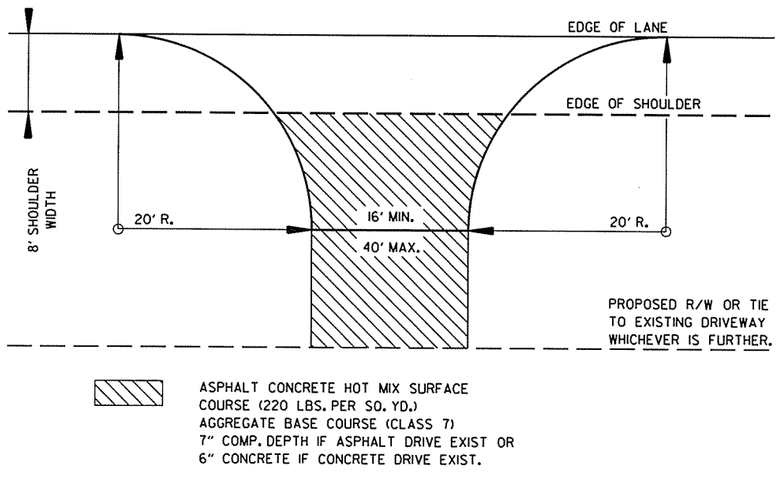
NOTE: PIPE COLLAR TO BE UTILIZED AS APPROVED BY THE ENGINEER.



FRONT VIEW

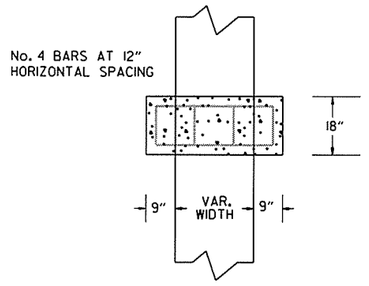
SIDE VIEW

PIPE EXTENSION
REINFORCED CONCRETE COLLAR DETAIL

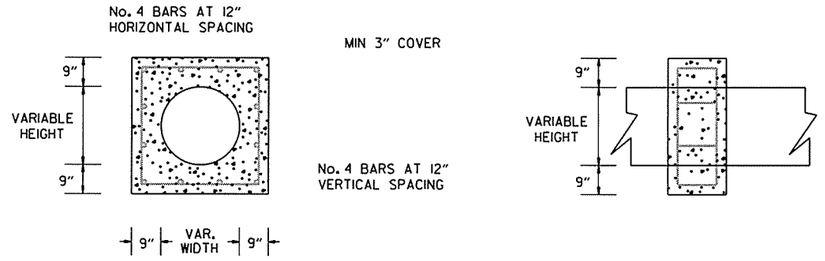


NOTE: TURNOUTS AND PRIVATE DRIVES SHALL BE MODIFIED WHERE NECESSARY TO MEET LOCAL CONDITIONS AS DIRECTED BY THE ENGINEER.

DETAIL FOR DRIVEWAY TURNOUTS



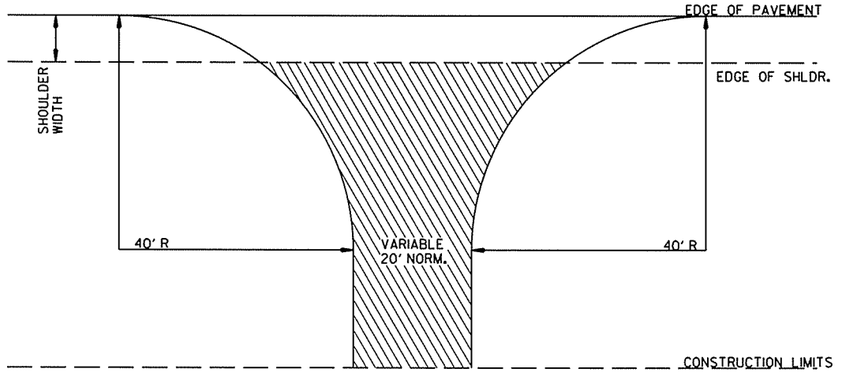
TOP VIEW



FRONT VIEW

SIDE VIEW

PIPE EXTENSION
REINFORCED CONCRETE COLLAR DETAIL



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

DETAIL FOR COUNTY ROAD TURNOUTS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14

2/18/2014

R050213.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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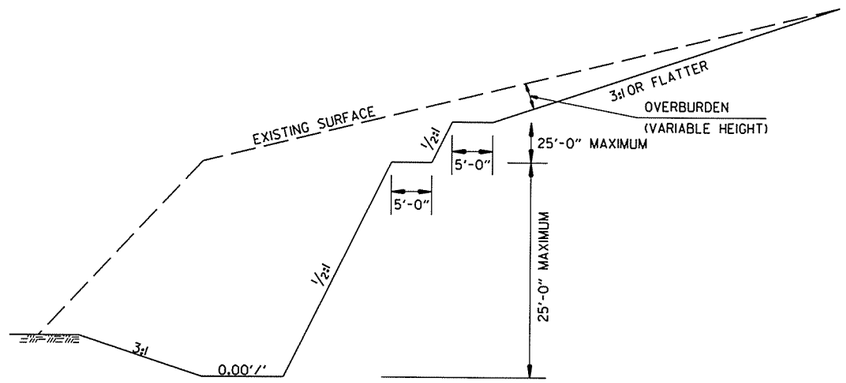
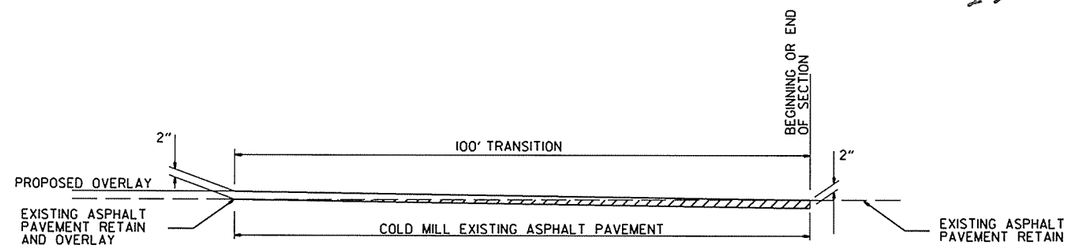
				JOB NO.		050213	8	369

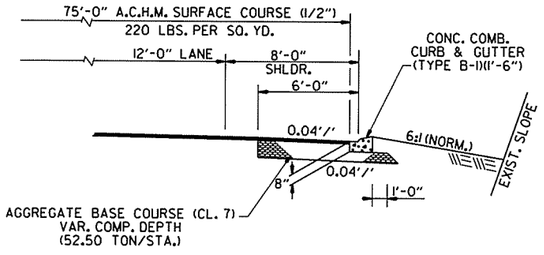
(2) SPECIAL DETAILS



DETAIL FOR BENCHING IN SOLID ROCK

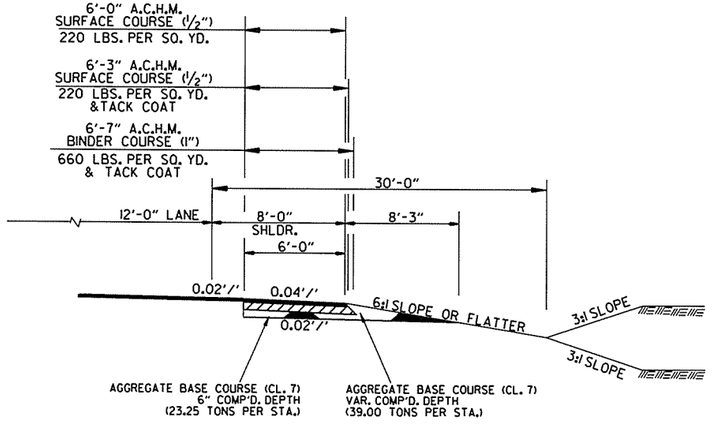


DETAIL FOR TRANSITIONS



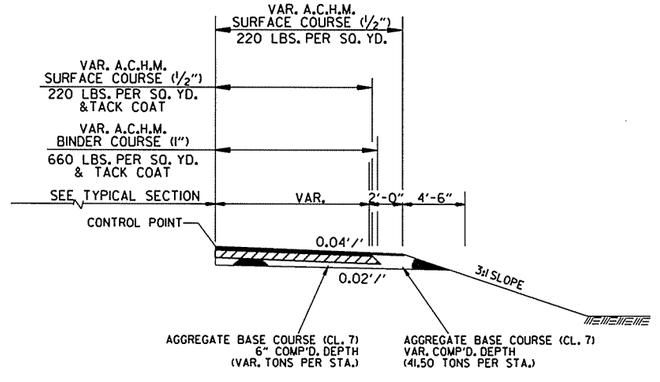
DETAIL FOR CONCRETE CURB AND GUTTER

STA. 342+01.00 TO STA. 343+00.00 RT.
STA. 504+90.00 TO STA. 508+00.00 LT.



DETAIL FOR FULL DEPTH SHOULDER
(SHOWN IN THE DIRECTION OF TRAFFIC)

STA. 535+00.00 TO STA. 544+34.93 LT.



DETAIL FOR TEMPORARY WIDENING
(SHOWN IN THE DIRECTION OF TRAFFIC)

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14

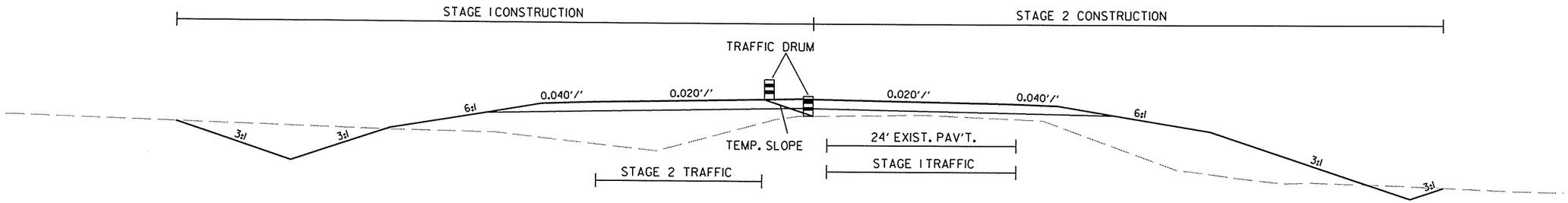
2/18/2014

R050213.DGN

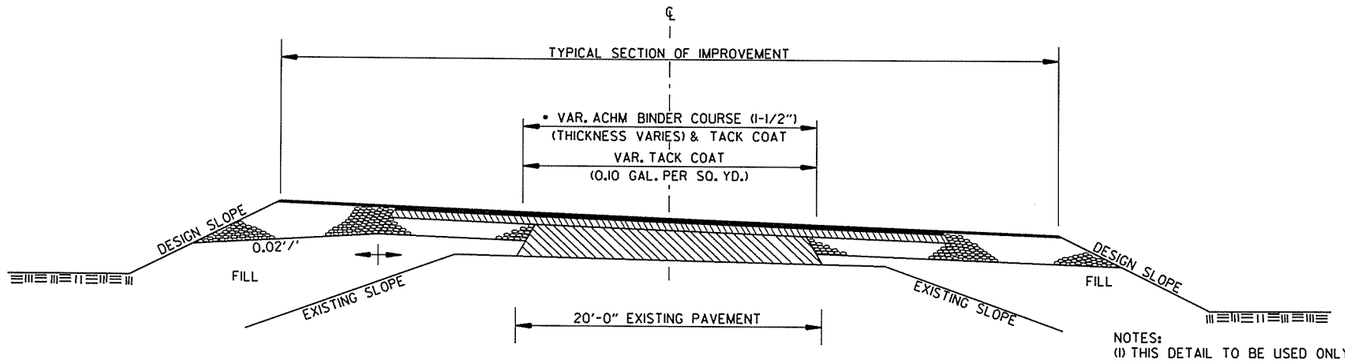
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050213	9	369

(2) SPECIAL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14



DETAIL FOR STAGE CONSTRUCTION



• 6" AGGREGATE BASE COURSE (CLASS 7)
TO BE REPLACED WITH A.C.H.M. BINDER COURSE (1")

METHOD OF RAISING GRADE

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

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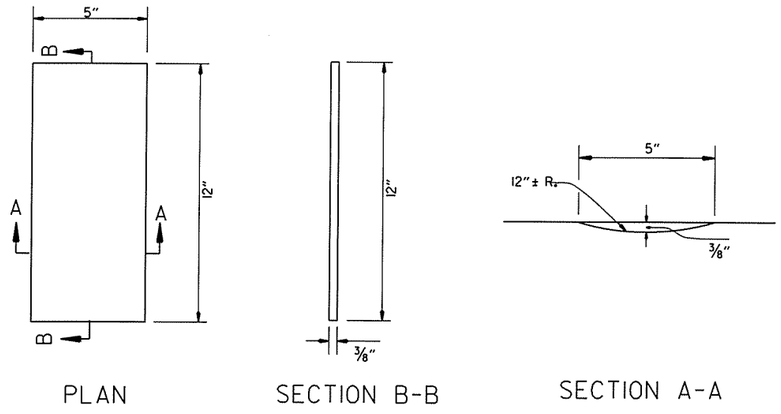
R050213.DGN

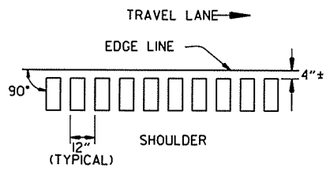
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050213	10	369

(2) SPECIAL DETAILS

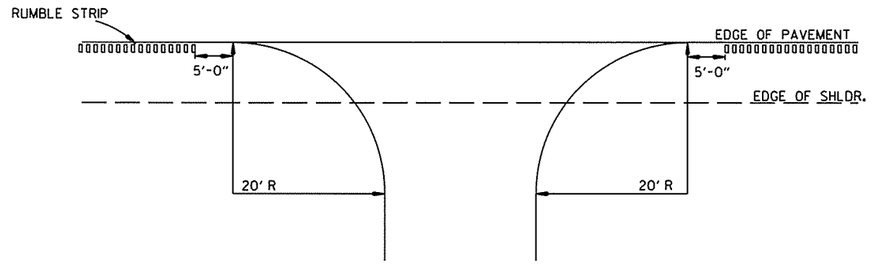
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14



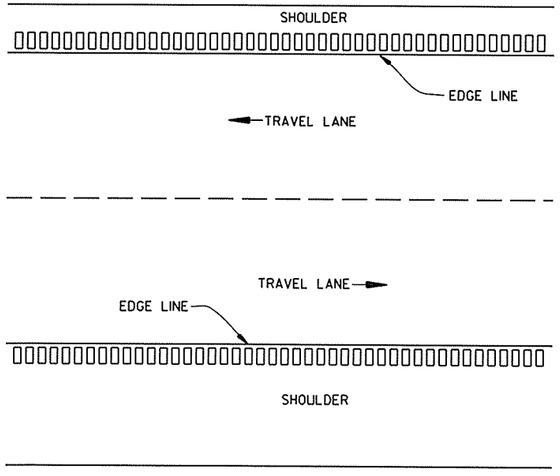
DETAILS OF RUMBLE STRIPS



LOCATION PLAN OF RUMBLE STRIPS
LEFT OR RIGHT SHOULDER

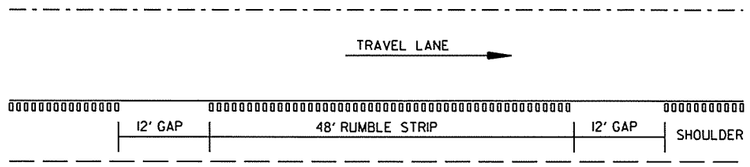


DETAIL FOR RUMBLE STRIP GAP
AT DRIVEWAY TURNOUTS



GENERAL NOTES

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



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.

2/18/2014

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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.		050213	11	369

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14

REVISION BOX

DATE OF REVISION	REVISION

LEGEND

E-6 = ROCK DITCH CHECK
E-11 = SILT FENCE

STA. 341+00.00
BEGIN JOB 050213
LOG MILE 3.96

CARDINAL DRIVE
MILLER DRIVE
ASHLEY DRIVE
C.L. HWY. 167
PROPOSED R/W
CONST. LIMITS
EXISTING R/W
T.C.E.
PAVED DRAIN
POB
PC
PT
PI
N 44°30'22" E
N 42°48'35" E
N 46°19'06" E
S 86°46'55" E
PROPOSED R.O.W.

2/18/2014
R050213.DGN

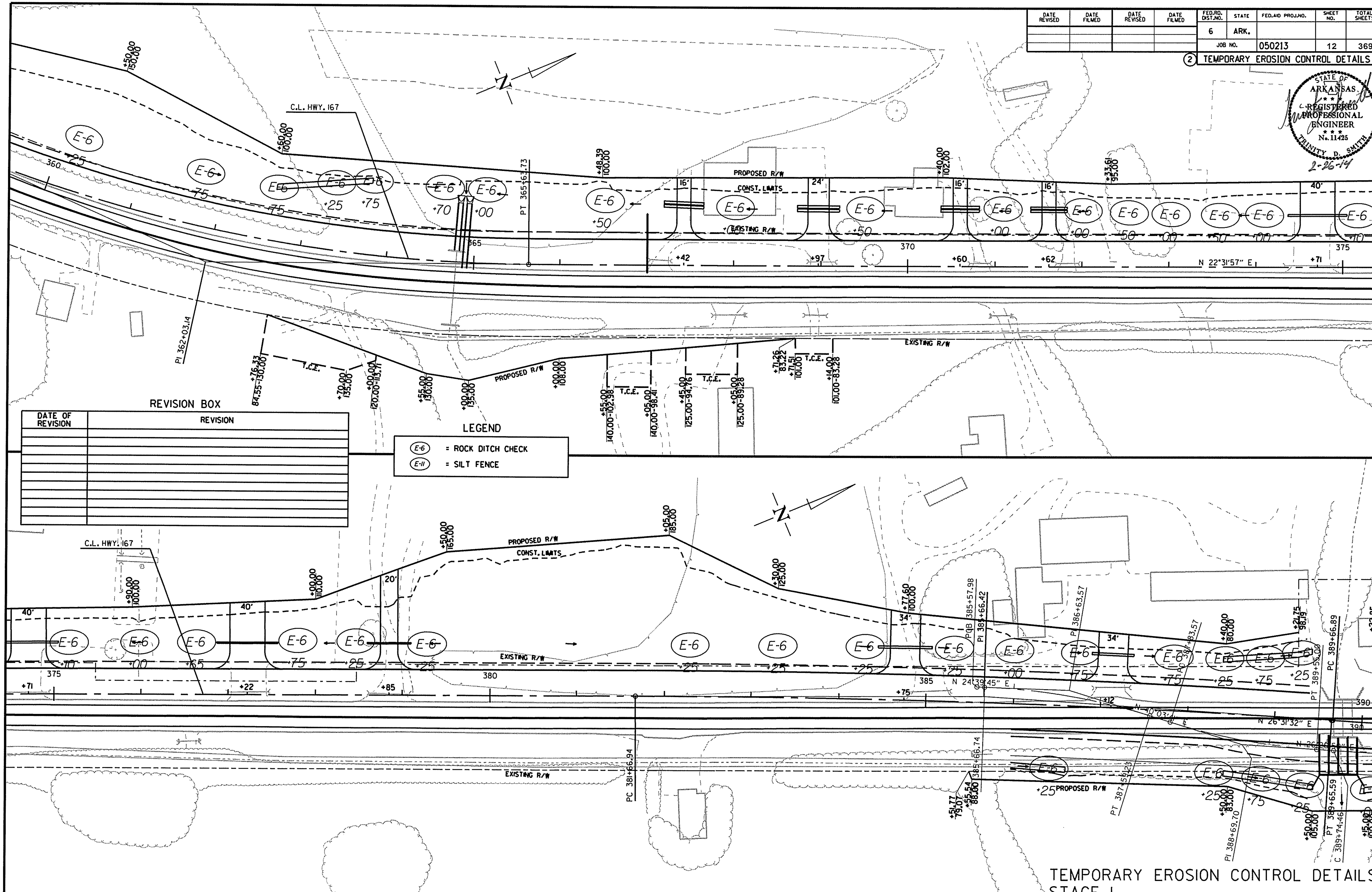
TEMPORARY EROSION CONTROL DETAILS
STAGE I

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.		050213	12	369

(2) TEMPORARY EROSION CONTROL DETAILS

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

2-26-14



REVISION BOX

DATE OF REVISION	REVISION

LEGEND

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

2/18/2014

R050213.DGN

TEMPORARY EROSION CONTROL DETAILS
STAGE I

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.		050213	13	369

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14

REVISION BOX

DATE OF REVISION	REVISION

LEGEND

E-6 = ROCK DITCH CHECK
E-11 = SILT FENCE

TEMPORARY EROSION CONTROL DETAILS
STAGE I

2/18/2014

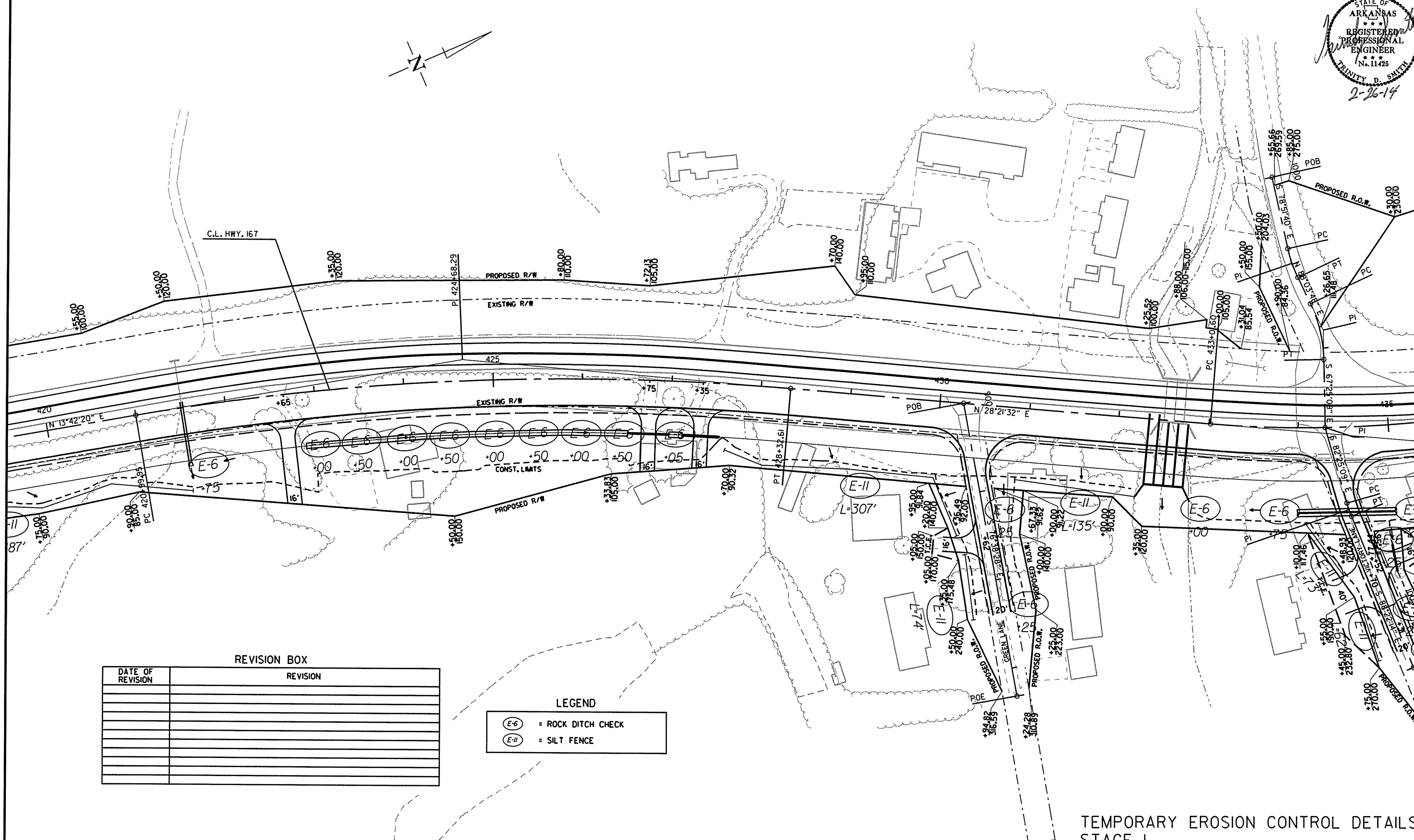
R050213.DGN

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.		050213	14	369

(2) TEMPORARY EROSION CONTROL DETAILS

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

2-26-14



REVISION BOX

DATE OF REVISION	REVISION

LEGEND

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

TEMPORARY EROSION CONTROL DETAILS
STAGE I

2/18/2014

R050213.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.		050213	15	369

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14

REVISION BOX

DATE OF REVISION	REVISION

LEGEND

E-6 = ROCK DITCH CHECK

E-11 = SILT FENCE

TEMPORARY EROSION CONTROL DETAILS
STAGE I

2/18/2014

R050213.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.		050213	16	369

2 TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14

REVISION BOX

DATE OF REVISION	REVISION

LEGEND

E-6 = ROCK DITCH CHECK
E-11 = SILT FENCE

C.L. HWY. 167
PROPOSED R/W
EXISTING R/W
CONST. LIMITS
PROPOSED R.O.W.
LESLEY HOLLOW ROAD
PC 473+60.65
PI 476+36.87
PT 478+09.28
PC 487+09.32
PI 490+77.66
PI 494+44.82
POE
T.C.E.
N 47°09'47" E

TEMPORARY EROSION CONTROL DETAILS
STAGE I

2/18/2014
R050213.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.		050213	17	369

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14

C.L. HWY. 167

PROPOSED R/W

CONST. LIMITS

EXISTING R/W

N 41°39'04" E

N 40°03'45" E

T.C.E.

PT 512+62.37

PC 509+26.30

PI 509+44.69

REVISION BOX

DATE OF REVISION	REVISION

LEGEND

(E-6) = ROCK DITCH CHECK
(E-7) = DROP INLET SILT FENCE
(E-11) = SILT FENCE

2/18/2014

R050213.DGN

TEMPORARY EROSION CONTROL DETAILS
STAGE I

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.		050213	18	369

② TEMPORARY EROSION CONTROL DETAILS

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

2-26-14

REVISION BOX

DATE OF REVISION	REVISION

LEGEND

(E-6) = ROCK DITCH CHECK

(E-II) = SILT FENCE

TEMPORARY EROSION CONTROL DETAILS
STAGE I

2/18/2014

R050213.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.		050213	19	369

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14

REVISION BOX

DATE OF REVISION	REVISION

LEGEND

E-6 = ROCK DITCH CHECK
E-11 = SILT FENCE

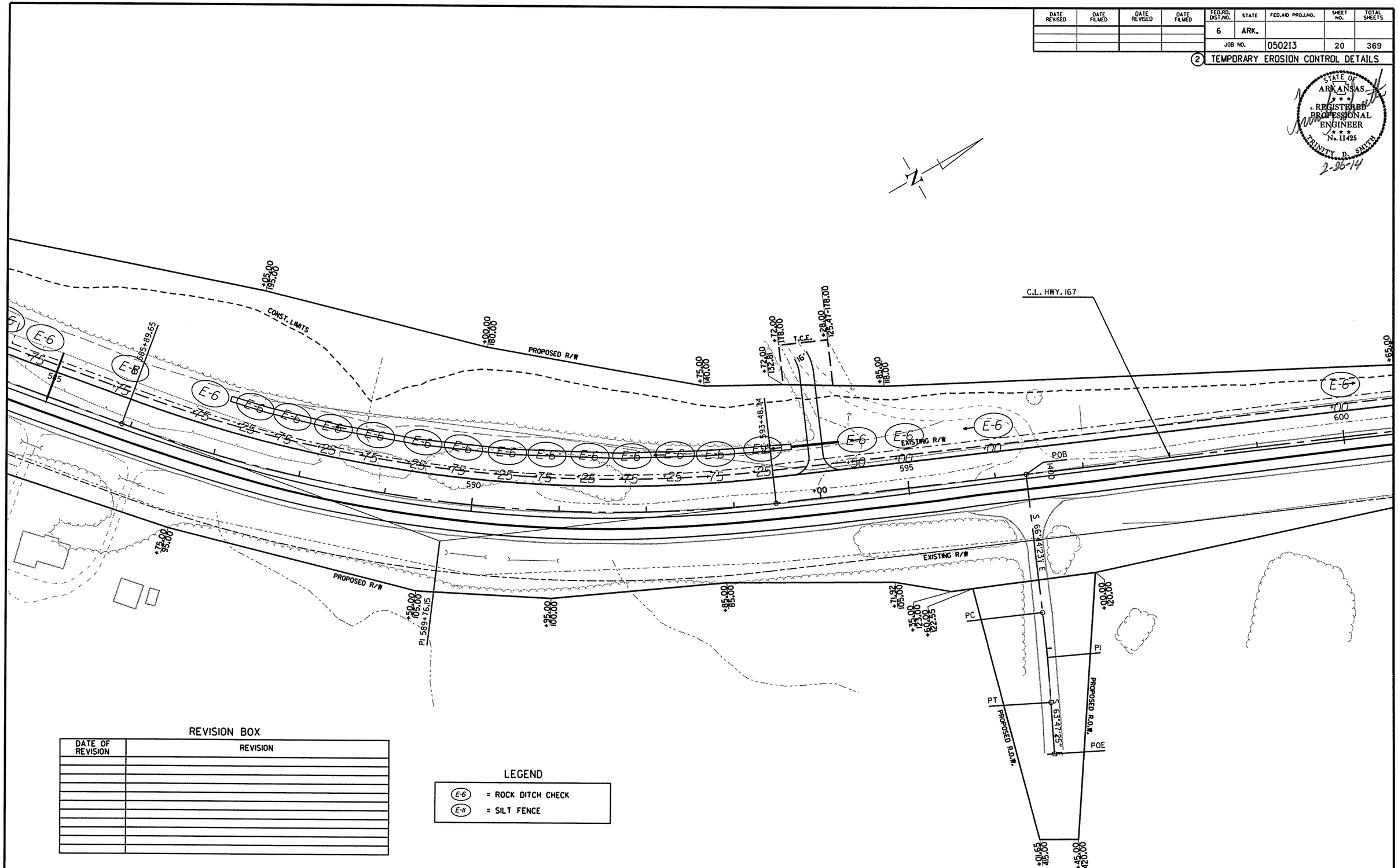
TEMPORARY EROSION CONTROL DETAILS
STAGE I

2/18/2014
R050213.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.		050213	20	369

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14



REVISION BOX

DATE OF REVISION	REVISION

LEGEND

E-6 = ROCK DITCH CHECK
E-11 = SILT FENCE

TEMPORARY EROSION CONTROL DETAILS
STAGE I

2/18/2014

R050213.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.		050213	21	369

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14

C.L. HWY. 167

PROPOSED R/W

CONST. LIMITS

EXISTING R/W

N 23°15'37" E

N 24°30'49" E

N 23°01'37" E

T.C.E.

REVISION BOX

DATE OF REVISION	REVISION

LEGEND

E-6 = ROCK DITCH CHECK

E-11 = SILT FENCE

STA. 621+41.21
END JOB 050213
& BEGIN JOB 050214
LOG MILE 9.31

PC 615+20.34

PI 616+45.68

PC 618+43.86

PT 621+41.21

PT 617+71.02

PI 619+92.55

PDE 625+01.48

ANTIOCH ROAD

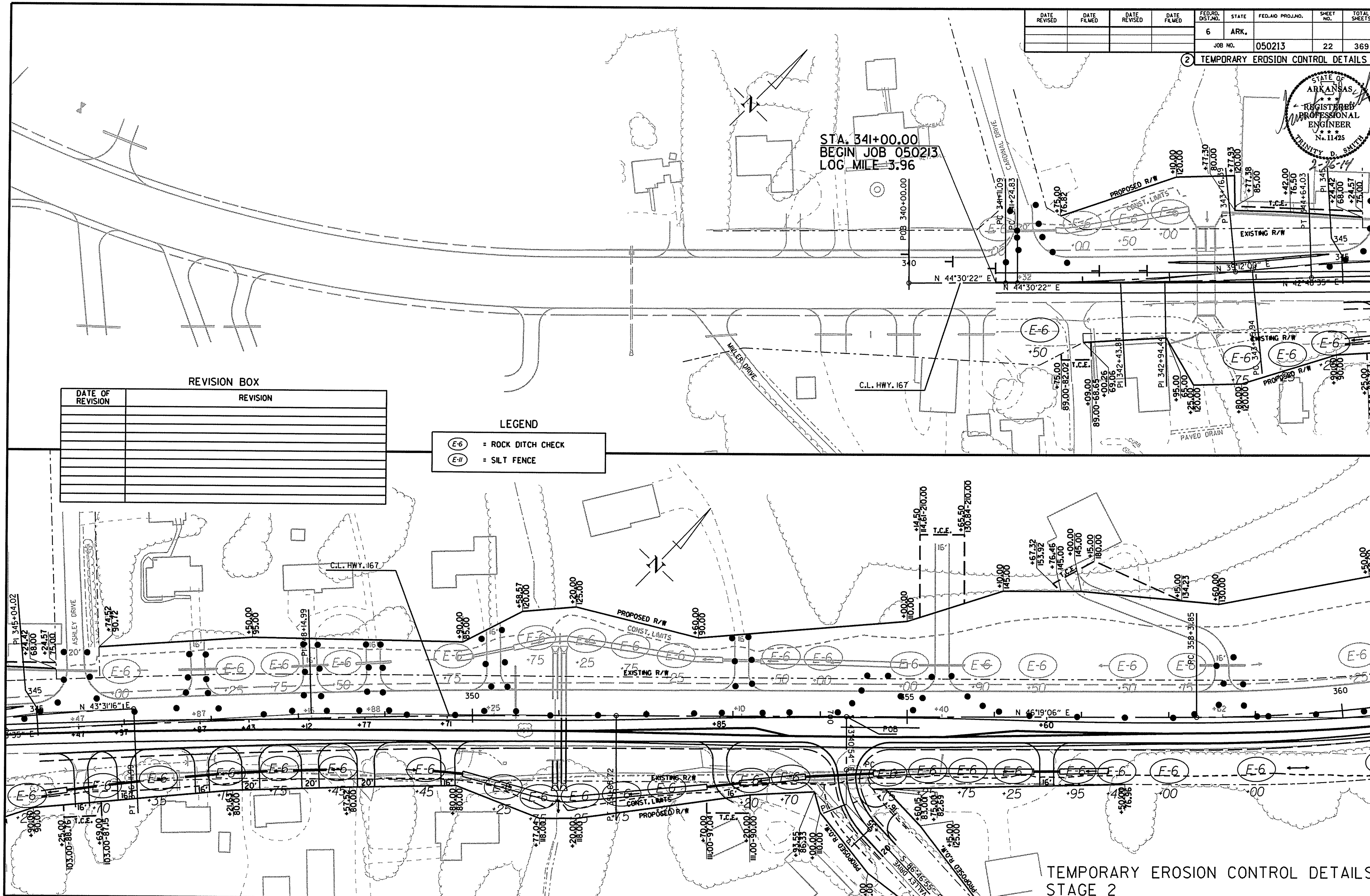
2/18/2014

R050213.DGN

TEMPORARY EROSION CONTROL DETAILS
STAGE I

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.		050213	22	369

(2) TEMPORARY EROSION CONTROL DETAILS



REVISION BOX

DATE OF REVISION	REVISION

LEGEND

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

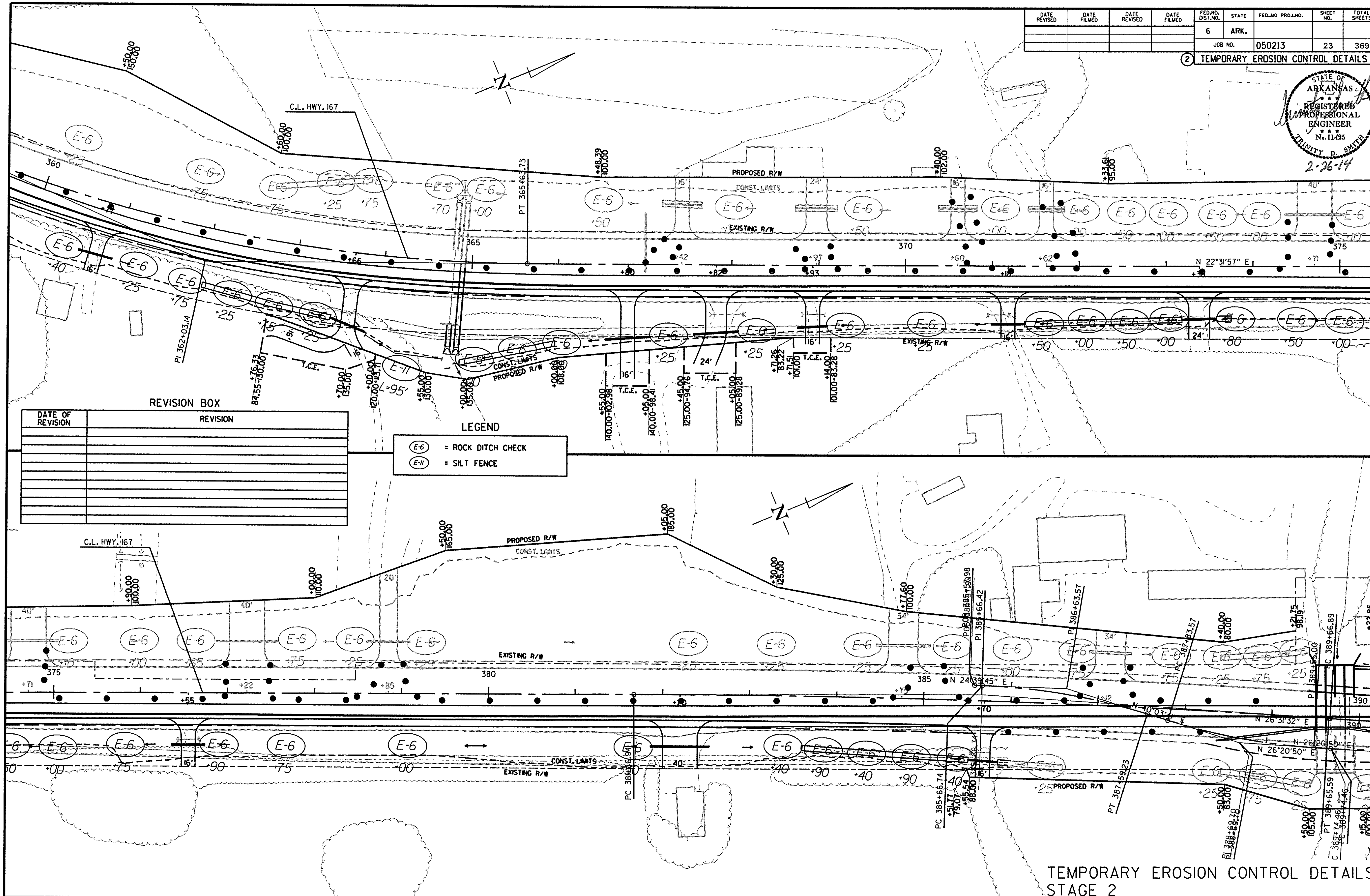
TEMPORARY EROSION CONTROL DETAILS
STAGE 2

2/18/2014

R050213.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.		050213	23	369

(2) TEMPORARY EROSION CONTROL DETAILS



REVISION BOX

DATE OF REVISION	REVISION

LEGEND

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

TEMPORARY EROSION CONTROL DETAILS
STAGE 2

2/18/2014

R050213.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.		050213	24	369

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14

REVISION BOX

DATE OF REVISION	REVISION

LEGEND

E-6 = ROCK DITCH CHECK

E-11 = SILT FENCE

TEMPORARY EROSION CONTROL DETAILS
STAGE 2

2/18/2014

R050213.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050213	25	369

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14

C.L. HWY. 167

PROPOSED R/W
CONST. LIMITS
EXISTING R/W

E-6 = ROCK DITCH CHECK
E-11 = SILT FENCE

REVISION BOX

DATE OF REVISION	REVISION

2/18/2014

R050213.DGN

TEMPORARY EROSION CONTROL DETAILS
STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050213	26	369

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14

REVISION BOX

DATE OF REVISION	REVISION

LEGEND

E-6 = ROCK DITCH CHECK

E-11 = SILT FENCE

TEMPORARY EROSION CONTROL DETAILS
STAGE 2

2/18/2014

R050213.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.		050213	27	369

2 TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14

REVISION BOX

DATE OF REVISION	REVISION

LEGEND

E-6 = ROCK DITCH CHECK

E-11 = SILT FENCE

TEMPORARY EROSION CONTROL DETAILS
STAGE 2

2/18/2014

R050213.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.		050213	28	369

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14

C.L. HWY. 167

PROPOSED R/W

CONST. LIMITS

EXISTING R/W

N 41°39'04" E

N 40°03'45" E

PC 505+26.90

PI 509+44.66

PT 512+62.37

T.C.E.

REVISION BOX

DATE OF REVISION	REVISION

LEGEND

E-6 = ROCK DITCH CHECK
E-7 = DROP INLET SILT FENCE
E-11 = SILT FENCE

2/18/2014

R050213.DGN

TEMPORARY EROSION CONTROL DETAILS
STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050213	29	369

② TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14

REVISION BOX

DATE OF REVISION	REVISION

LEGEND

E-6 = ROCK DITCH CHECK
E-11 = SILT FENCE

TEMPORARY EROSION CONTROL DETAILS
STAGE 2

2/18/2014

R050213.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.		050213	30	369

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14

REVISION BOX

DATE OF REVISION	REVISION

LEGEND

E-6 = ROCK DITCH CHECK
E-11 = SILT FENCE

2/18/2014

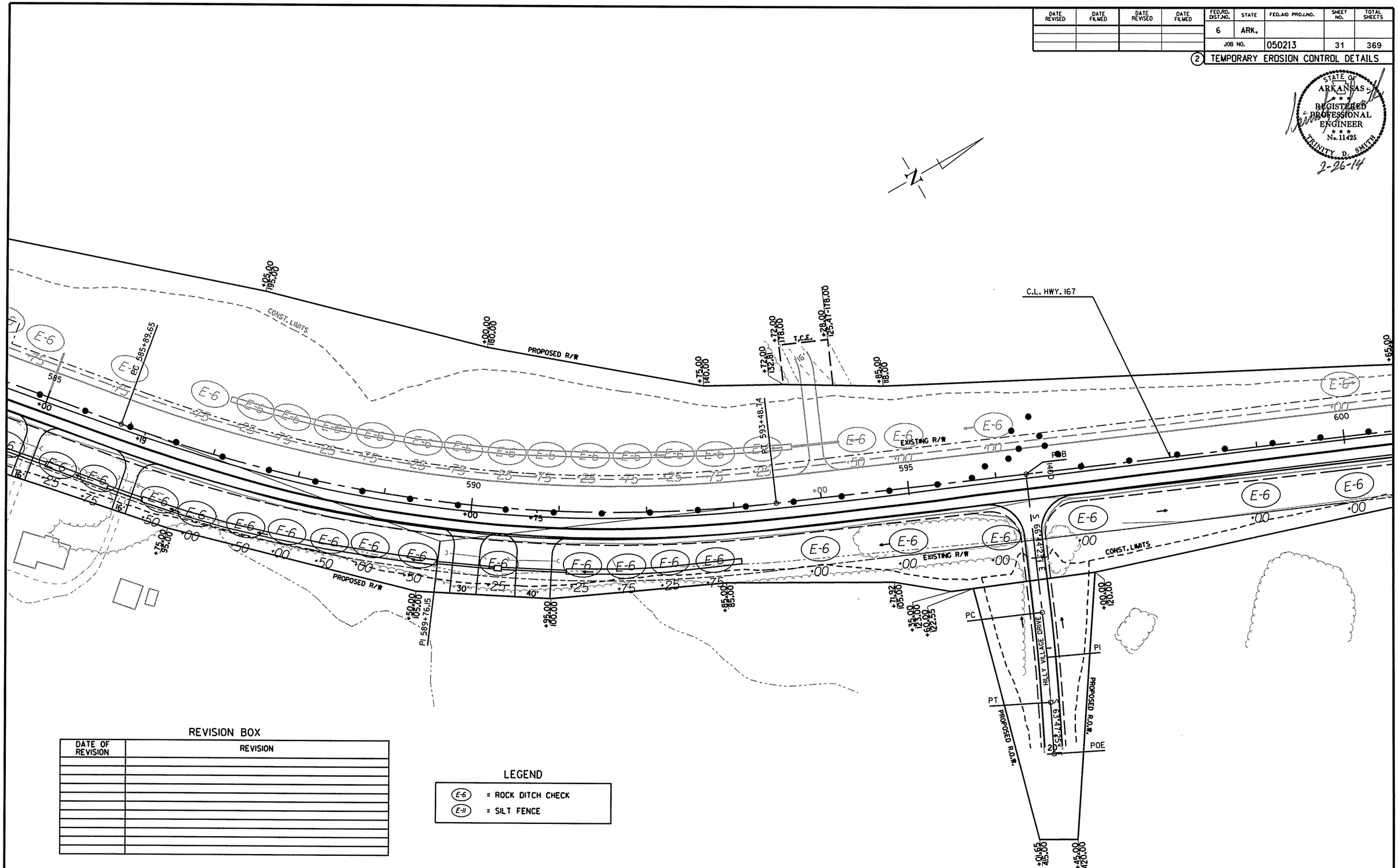
R050213.DGN

TEMPORARY EROSION CONTROL DETAILS
STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050213	31	369

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
1-26-14



REVISION BOX

DATE OF REVISION	REVISION

LEGEND

E-6 = ROCK DITCH CHECK
E-11 = SILT FENCE

TEMPORARY EROSION CONTROL DETAILS
STAGE 2

2/18/2014
R050213.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.		050213	32	369

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14

C.L. HWY. 167

N 23°15'37" E

PROPOSED R/W

CONST. LIMITS

EXISTING R/W

L=313'

L=177'

T.C.E.

REVISION BOX

DATE OF REVISION	REVISION

LEGEND

E-6 = ROCK DITCH CHECK

E-11 = SILT FENCE

STA. 621+41.21
END JOB 050213
& BEGIN JOB 050214
LOG MILE 9.31

N 23°52'38" E

N 24°30'49" E

N 28°23'33"

N 23°02'21" E

N 23°01'37" E

L=208'

ANTIOCH ROAD

TEMPORARY EROSION CONTROL DETAILS
STAGE 2

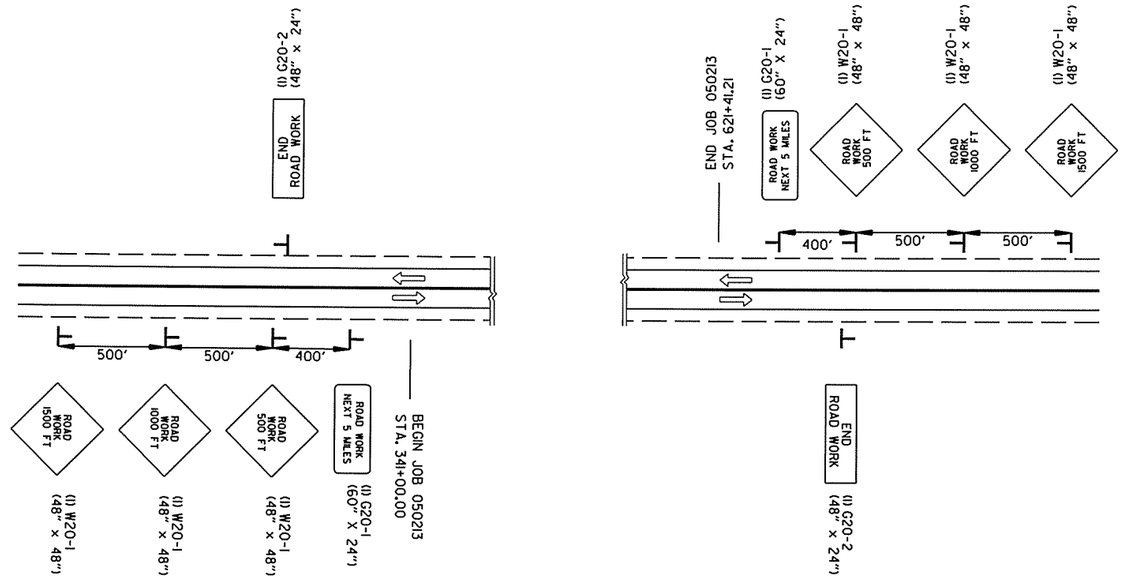
2/18/2014

R050213.DGN

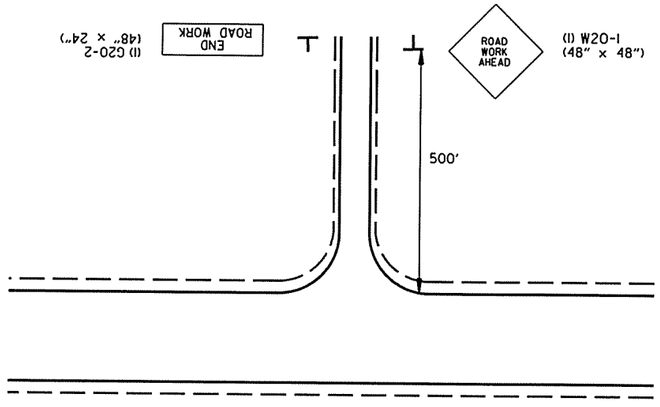
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050213	33	369

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-14



ADVANCE WARNING (ALL STAGES)



ADVANCE WARNING - SIDE ROADS (ALL STAGES)

STA. 341+32.00, CARDINAL DRIVE
STA. 341+95.00, INDCO LANE
STA. 354+30.00, SPRING VALLEY DRIVE
STA. 399+50.00, CAVE CREEK ROAD
STA. 399+50.00, PFEIFFER ROAD
STA. 430+26.00, GREEN LANE
STA. 434+30.00, SWEET GUM ROAD
STA. 434+30.00, VICTORY LANE
STA. 478+10.00, LESLEY HOLLOW ROAD
STA. 541+50.00, WEAVER CHAPEL ROAD
STA. 580+80.00, WILDERNESS DRIVE
STA. 596+35.00, HILLY VILLAGE DRIVE
NOTE: ALL STATIONS BASED OFF HWY. 167.

SHOULDER CLOSED	(5) RSP-1 (48" X 30")	ALL STAGES TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER
DO NOT PASS	(2) R4-1 (24" X 30")	ALL STAGES TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER
BUMP	(2) W8-1 (30" X 30")	STAGE 2 TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER
	(1) W1-4aL (48" X 48")	STAGE 2 STA. 336+11.09 R.M.L. STA. 351+11.99 L.M.L. STA. 434+18.05 R.M.L. STA. 451+17.14 L.M.L.
	(1) W1-4aR (48" X 48")	STAGE 2 STA. 380+66.77 R.M.L. STA. 397+85.22 L.M.L. STA. 611+35.46 R.M.L. STA. 626+41.23 L.M.L.

8/11/2014

R050213.DGN

MAINTENANCE OF TRAFFIC DETAILS
ADVANCE WARNING

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.		050213	34	369

(2) MAINTENANCE OF TRAFFIC DETAILS

STAGE I CONSTRUCTION SEQUENCE

INSTALL ADVANCE WARNING SIGNS AND END ROAD WORK SIGNS AS SHOWN ON THIS SHEET. INSTALL ROAD WORK AHEAD (W20-1) SIGN AS SHOWN ON THE MAINTENANCE OF TRAFFIC - ADVANCE WARNING SHEET.

APPLY LEVELING COURSE TO EXISTING LANES IF AND WHERE DIRECTED BY THE ENGINEER.

APPLY CONSTRUCTION PAVEMENT MARKINGS AS SHOWN IN THE STAGE I MAINTENANCE OF TRAFFIC DETAILS.

USE VERTICAL PANELS AND TRAFFIC DRUMS SPACED 55' ON CENTER TO DELINEATE THE WORK ZONE. USE TRAFFIC DRUMS TO DELINEATE DRIVEWAYS.

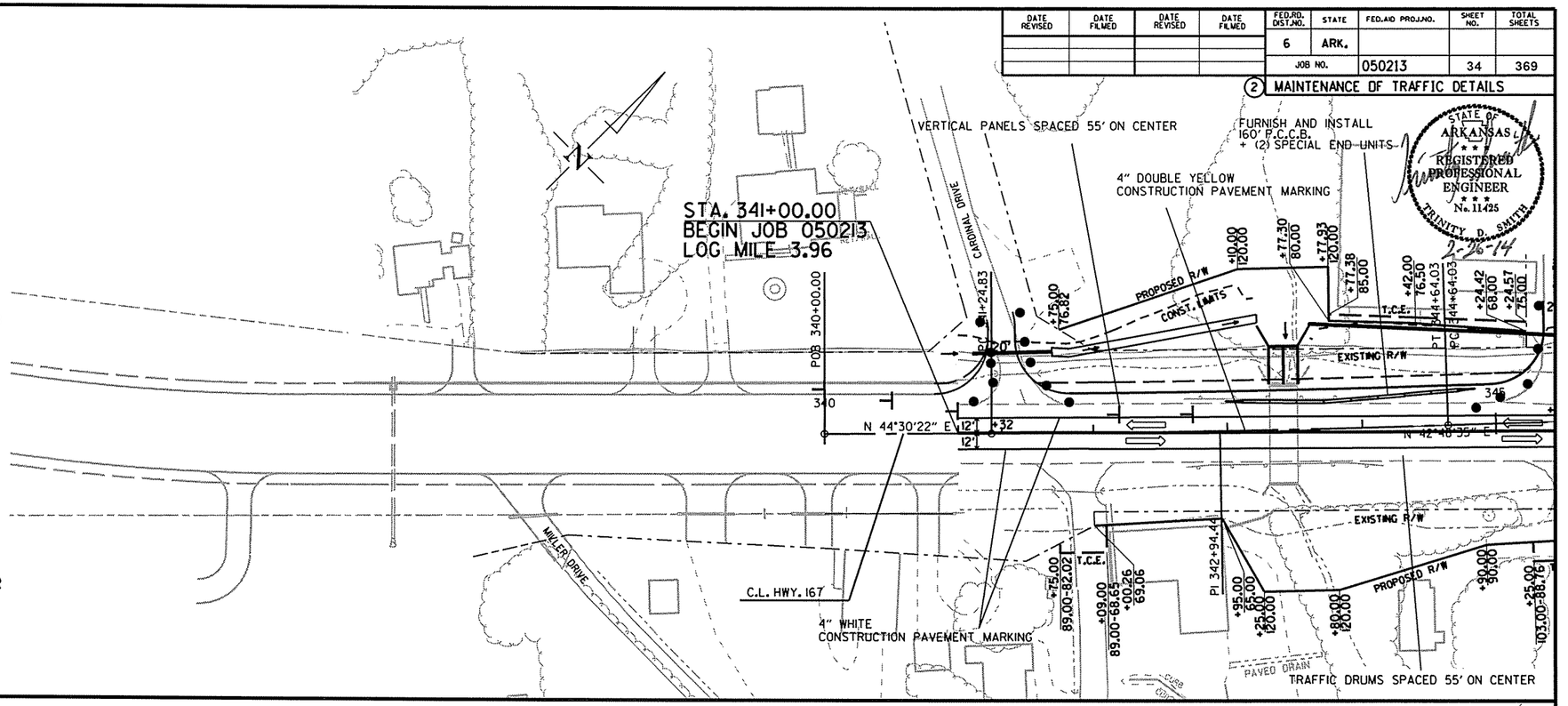
CONSTRUCT PORTIONS OF HWY. 167 AND CROSS DRAINS AS SHOWN: LT. OF C.L. FROM STA. 341+00 TO STA. 389+38.91, RT. OF C.L. FROM STA. 386+00 TO STA. 450+00, AND LT. OF C.L. FROM STA. 443+00 TO STA. 621+41.21.

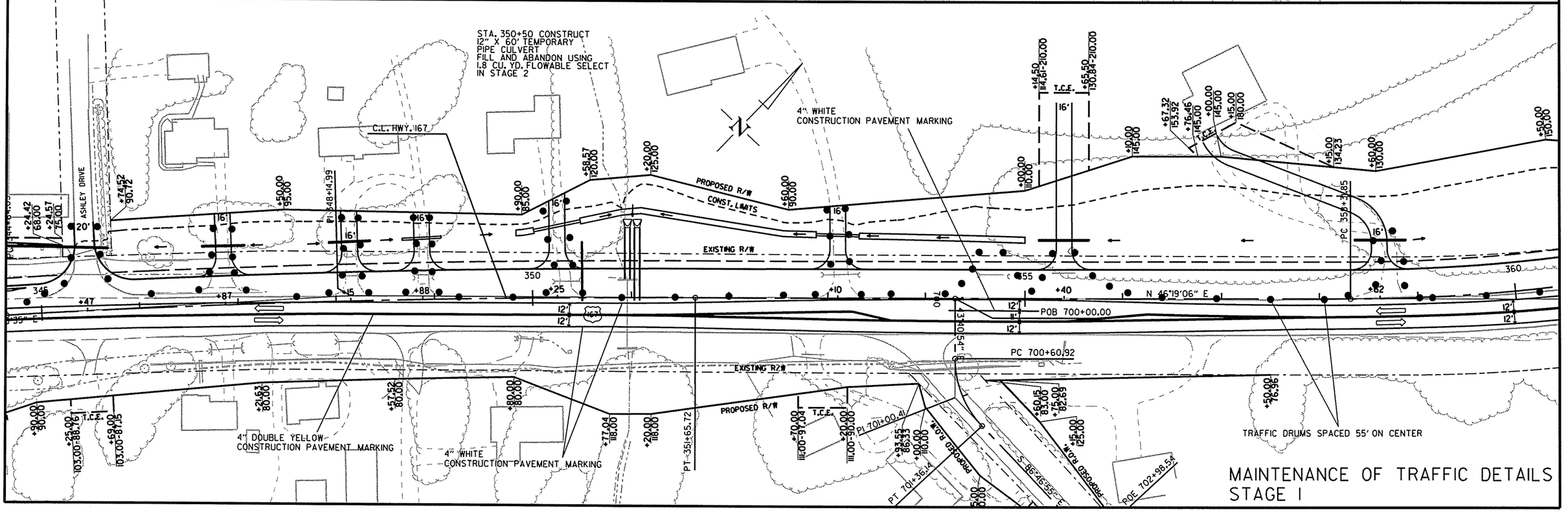
STAGE I QUANTITIES

SIGNS = 608 SQ. FT.
TRAFFIC DRUMS = 973 EACH
VERTICAL PANELS = 211 EACH
FURNISHING AND INSTALLING P.C.C.B. = 982 LIN. FT.
CONSTRUCTION PAVEMENT MARKINGS = 113549 LIN. FT.

NOTE: THE QUANTITY OF VERTICAL PANELS PROVIDED IN THE CONTRACT IS FOR ONE SIDE OF THEROADWAY FOR 2 MILES. THIS IS THE MAXIMUM QUANTITY REQUIRED TO ALLOW THE CONTRACTOR TO NOTCH ONE MILE, BACKFILL TO A POINT WHERE THE VERTICAL DIFFERENTIAL IS 4" OR LESS, ANDTHEN NOTCH ANOTHER ONE-MILE SECTION. THIS IS THE MAXIMUM NUMBER OF VERTICAL PANELSTHAT WILL BE PAID FOR. REFER TO SECTION 603.02 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION REQUIREMENTS.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
TRINITY D. SMITH
No. 11425
2-26-14





MAINTENANCE OF TRAFFIC DETAILS
STAGE I

2/18/2014
R050213.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050213	35	369

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14

STA. 367+00 CONSTRUCT 12'-0" X 68' TEMPORARY PIPE CULVERT FILL AND ABANDON USING 2.0 CU. YD. FLOWABLE SELECT IN STAGE 2

TRAFFIC DRUMS SPACED 55' ON CENTER

C.L. HWY. 167

+50.00 150.00

+60.00 100.00

360

PI 362+03.14

4" DOUBLE YELLOW CONSTRUCTION PAVEMENT MARKING

PT 365+63.73

365

+48.39 100.00

PROPOSED R/W

CONST. LIMITS

EXISTING R/W

16'

24'

16'

16'

40'

+40.00 102.00

+33.61 95.00

370

375

+42

+97

+60

+62

+71

N 22°31'57" E

+76.33 84.55-130.00

T.C.E.

+70.00 135.00

+00.00 120.00-115.71

+55.00 130.00

+00.00 135.00

PROPOSED R/W

+00.00 108.00

+55.00 140.00-102.98

T.C.E.

+05.00 140.00-98.41

+45.00 125.00-94.76

T.C.E.

+05.00 125.00-89.28

+71.26 83.22

+71.51 101.00

T.C.E.

+14.00 101.00-85.28

EXISTING R/W

4" WHITE CONSTRUCTION PAVEMENT MARKING

C.L. HWY. 167

+30.00 100.00

+00.00 110.00

+50.00 165.00

PROPOSED R/W

CONST. LIMITS

20'

40'

40'

EXISTING R/W

375

380

+71

+22

+85

PC 381+66.94

+05.00 185.00

+30.00 125.00

+77.60 100.00

34'

PQB 385+57.98

PI 385+66.42

385

N 24°39'45" E

+79

PC 386+63.57

PI 386+83.57

34'

+40.00 80.00

+21.75 98.19

+22.85 86.00

FURNISH AND INSTALL 60' P.C.C.B. + (2) SPECIAL END UNITS

PT 389+55.00

PC 389+66.89

390

+12

N 40°03'

N 26°31'32" E

385+66.74

PROPOSED R/W

PT 387+56.23

+51.77 79.07

+55.54 88.60

+50.00 83.00

+50.00 105.00

PT 388+65.59

C 389+74.46

+5.00 100.00

PI 390+31.09

PI 388+69.70

4" DOUBLE YELLOW CONSTRUCTION PAVEMENT MARKING

TRAFFIC DRUMS SPACED 55' ON CENTER

4" WHITE CONSTRUCTION PAVEMENT MARKING

MAINTENANCE OF TRAFFIC DETAILS STAGE 1

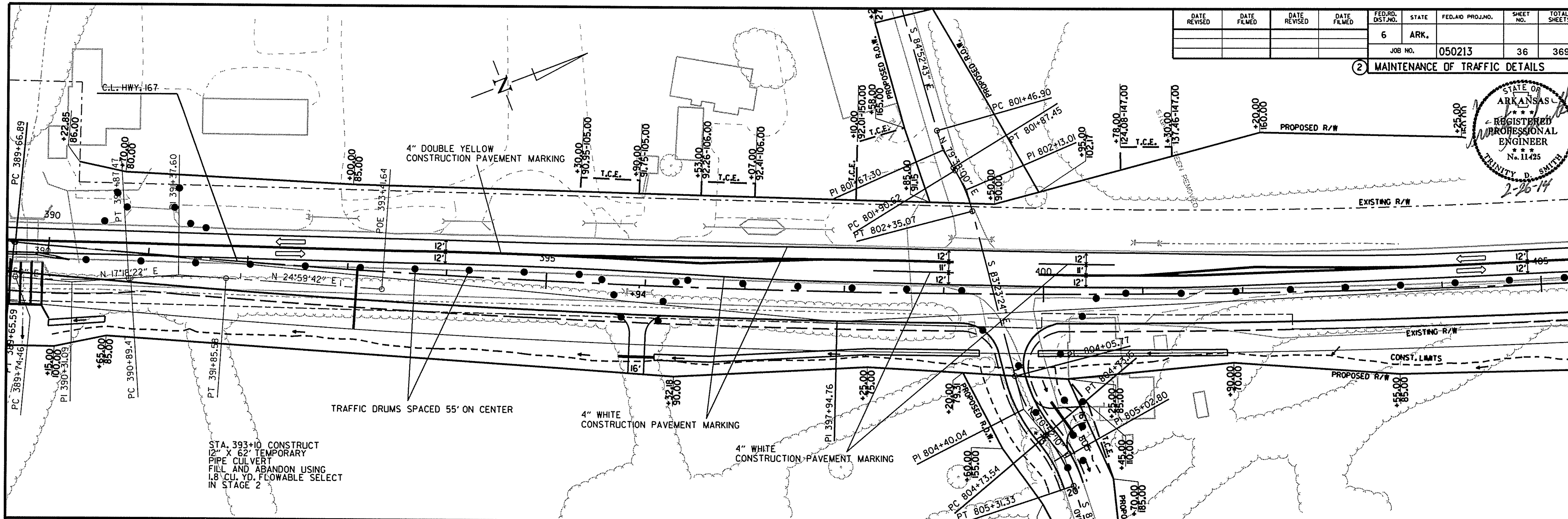
2/18/2014

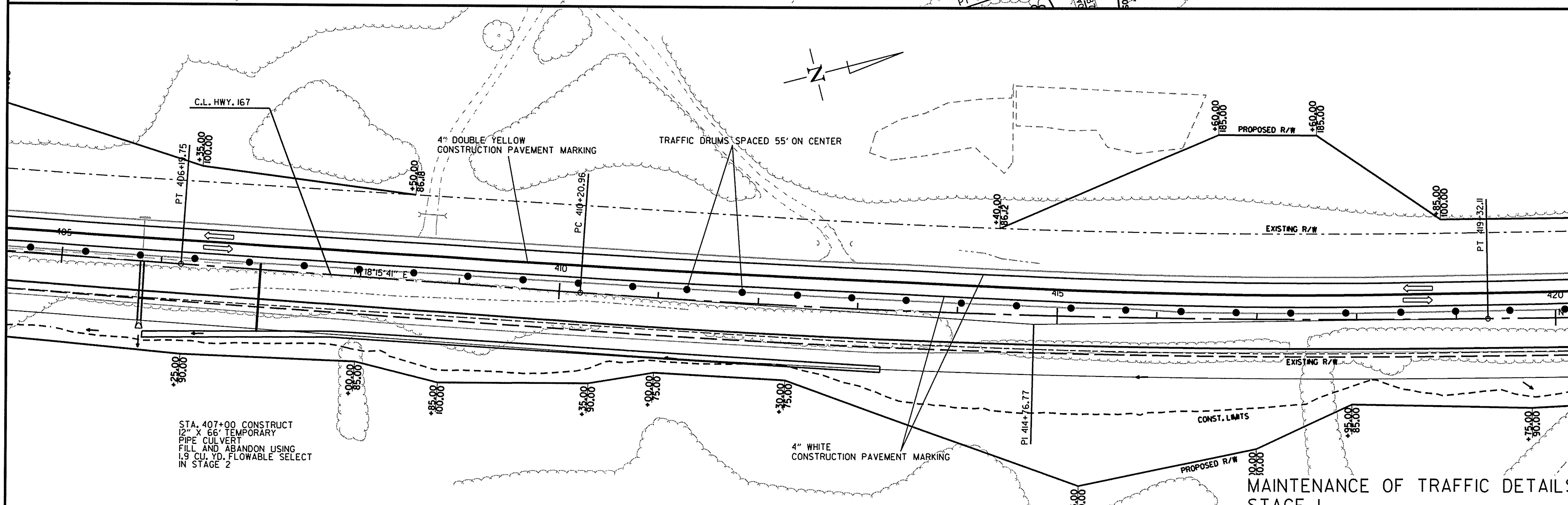
R050213.DGN

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.		050213	36	369

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 2-26-14





MAINTENANCE OF TRAFFIC DETAILS
STAGE 1

2/18/2014

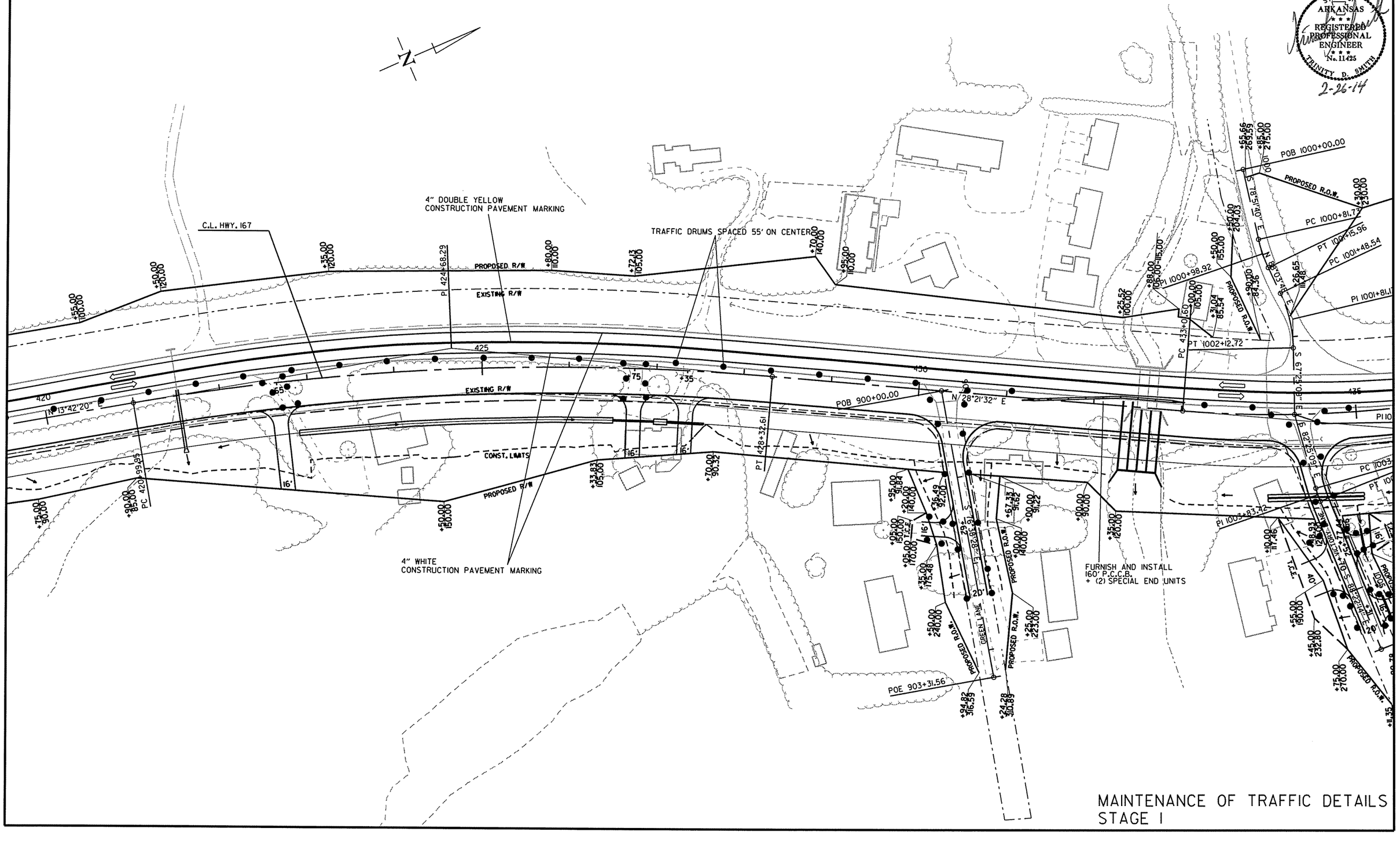
R050213.DGN

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.		050213	37	369

② MAINTENANCE OF TRAFFIC DETAILS

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

2-26-14



MAINTENANCE OF TRAFFIC DETAILS
STAGE I

2/18/2014

R050213.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.		050213	38	369

2 MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14

POB 1000+00.00
PROPOSED R.O.W.
PC 1000+81.73
PT 1001+15.96
PC 1001+48.54
PI 1001+81.13
PI 1002+88.20
PC 1003+75.62
PT 1003+91.20
PI 435+78.03
PT 1438+46.01
PI 447+21.83
PC 443+01.14
C.L. HWY. 167
TRAFFIC DRUMS SPACED 55' ON CENTER
4" DOUBLE YELLOW CONSTRUCTION PAVEMENT MARKING
4" WHITE CONSTRUCTION PAVEMENT MARKING
PROPOSED R/W
EXISTING R/W
CONST. LIMITS
100' LANE TAPER
100' LANE TAPER
N 3°51'36" E
N 30°42'15" E
435
440
445
450
455
460
465
PROPOSED R/W
CONST. LIMITS
C.L. HWY. 167
EXISTING R/W
PROPOSED R/W
EXISTING R/W
T.C.E.
T.C.E.
4" DOUBLE YELLOW CONSTRUCTION PAVEMENT MARKING
4" WHITE CONSTRUCTION PAVEMENT MARKING
TRAFFIC DRUMS SPACED 55' ON CENTER
N 30°42'15" E

MAINTENANCE OF TRAFFIC DETAILS STAGE I

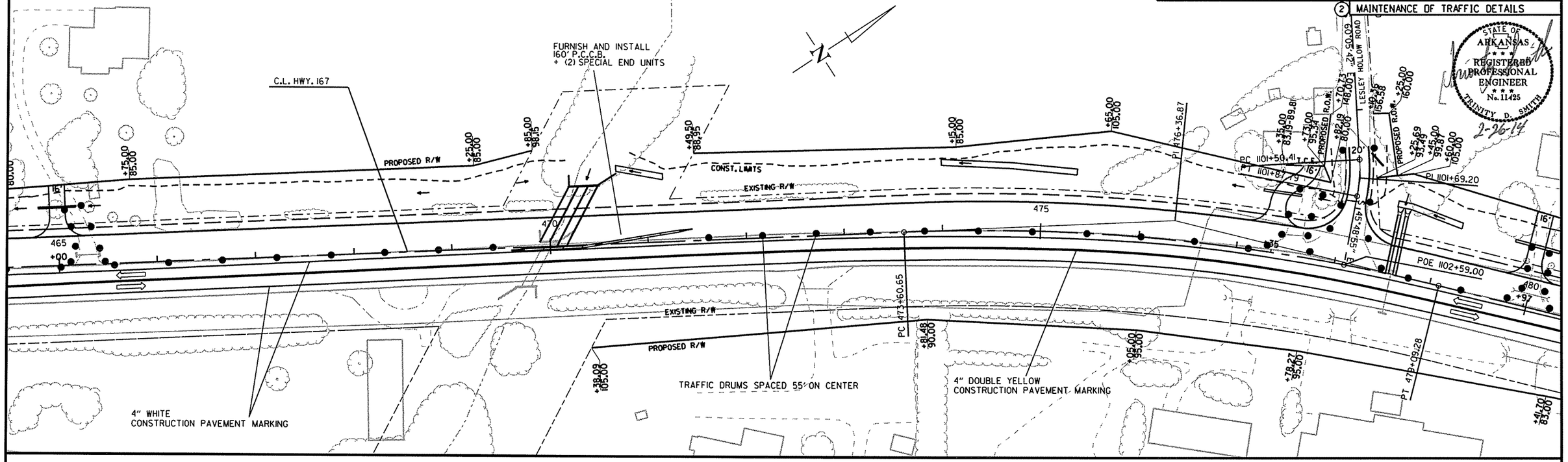
2/18/2014

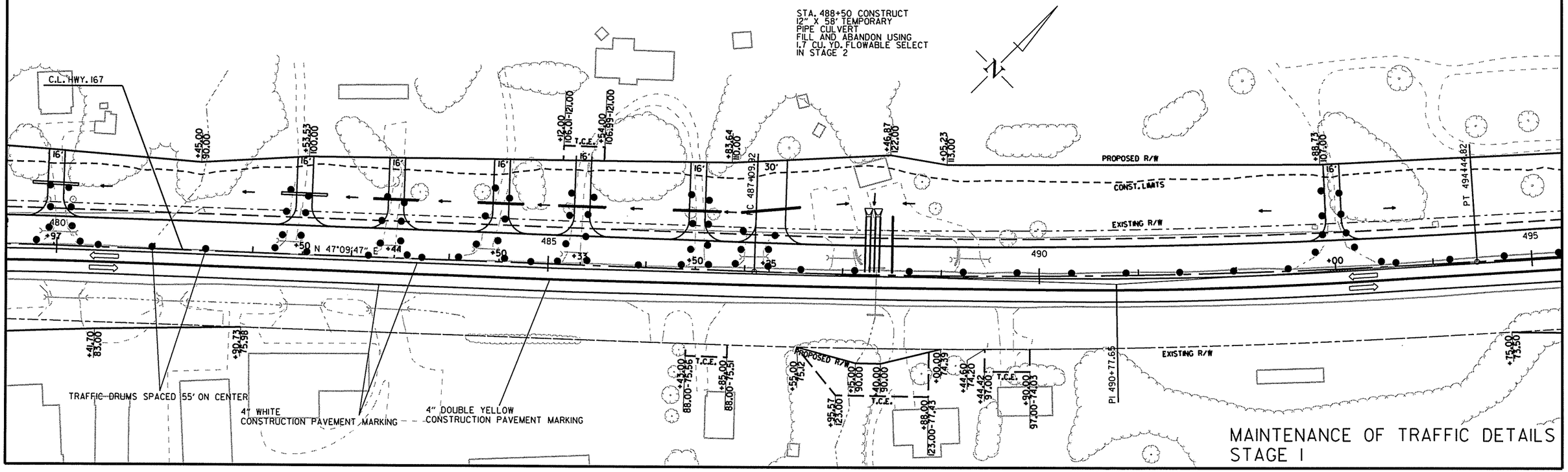
R050213.DGN

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.		050213	39	369

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14





MAINTENANCE OF TRAFFIC DETAILS
STAGE I

2/18/2014

R050213.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.		050213	40	369

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14

C.L. HWY. 167

TRAFFIC DRUMS SPACED 55' ON CENTER

PROPOSED R/W

CONST. LIMITS

EXISTING R/W

N 41°39'04" E

4" WHITE CONSTRUCTION PAVEMENT MARKING

4" DOUBLE YELLOW CONSTRUCTION PAVEMENT MARKING

PC 506+26.90

PI 509+44.69

PT 512+62.37

N 40°03'45" E

T.C.E.

MAINTENANCE OF TRAFFIC DETAILS
STAGE I

2/18/2014

R050213.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.		050213	41	369

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
7-26-14

C.L. HWY. 167
PROPOSED R/W
CONST. LIMITS
EXISTING R/W
PT 531+79.28
PC 528+74.15
PT 531+75.42
TRAFFIC DRUMS SPACED 55' ON CENTER
4" DOUBLE YELLOW CONSTRUCTION PAVEMENT MARKING
4" WHITE CONSTRUCTION PAVEMENT MARKING
T.C.E.
530
535
540
525

FURNISH AND INSTALL
160' P.C.C.B.
+2 SPECIAL END UNITS
PI 1201+57.66
PC 1201+43.12
PT 1201+72.20
POE 1202+86.41
WEAVER CHAPEL ROAD
PROPOSED R.O.W.
C.L. HWY. 167
64°06'49" E
545
550
555
4" WHITE CONSTRUCTION PAVEMENT MARKING
TRAFFIC DRUMS SPACED 55' ON CENTER
4" DOUBLE YELLOW CONSTRUCTION PAVEMENT MARKING

MAINTENANCE OF TRAFFIC DETAILS STAGE I

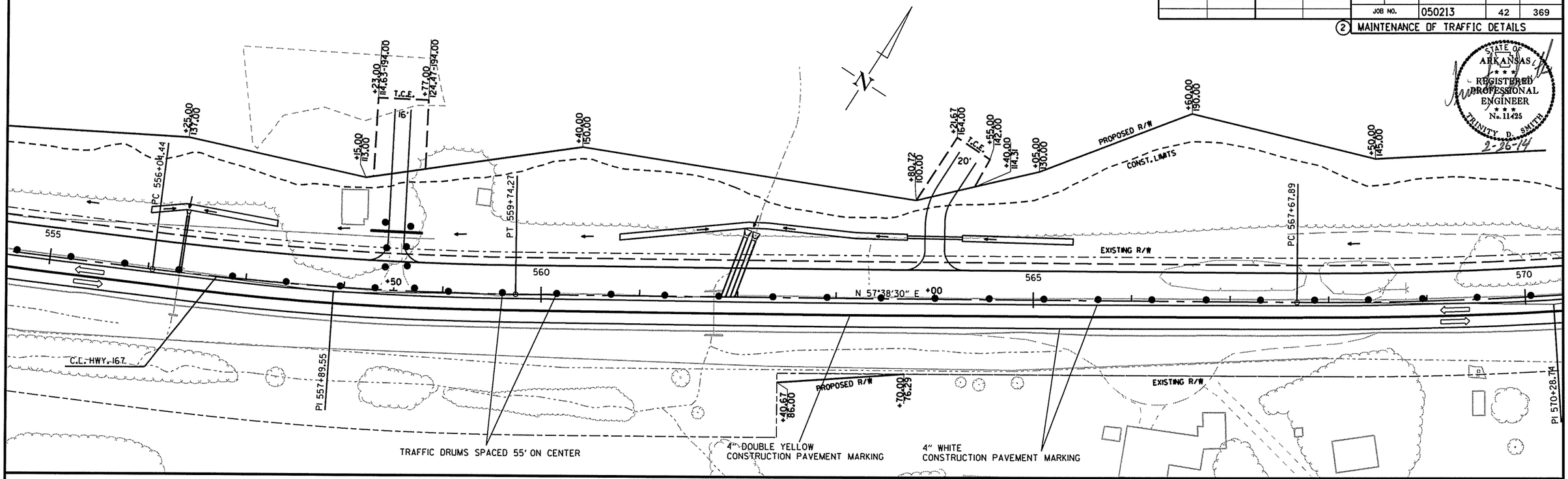
2/18/2014

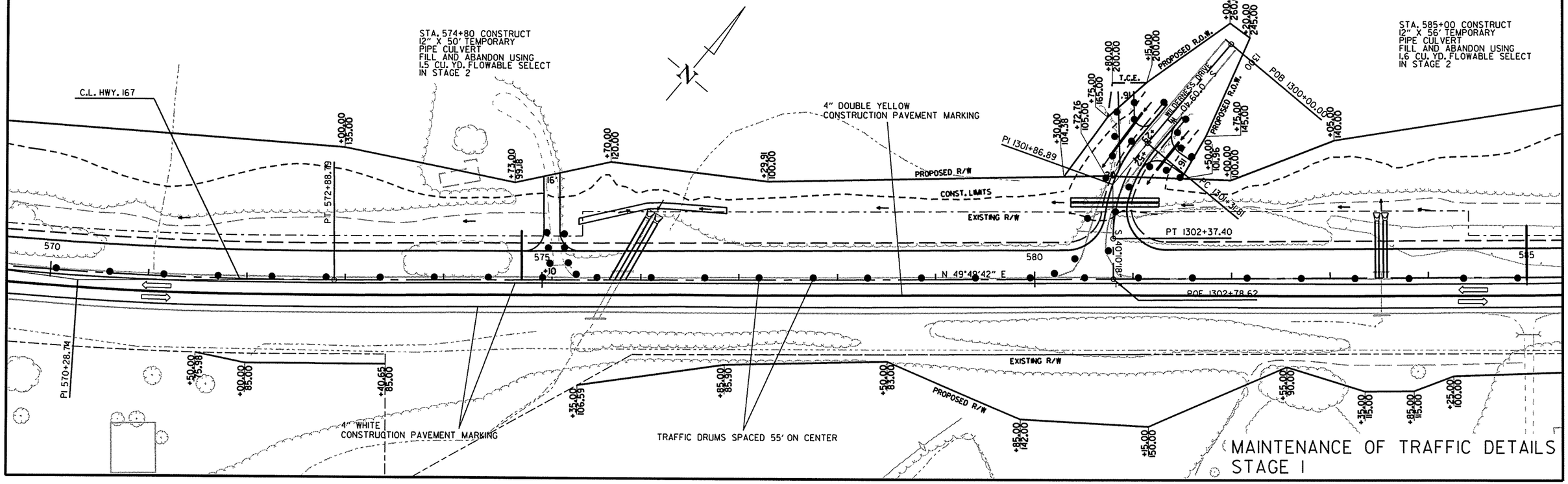
R050213.DGN

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.		050213	42	369

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14





MAINTENANCE OF TRAFFIC DETAILS
STAGE 1

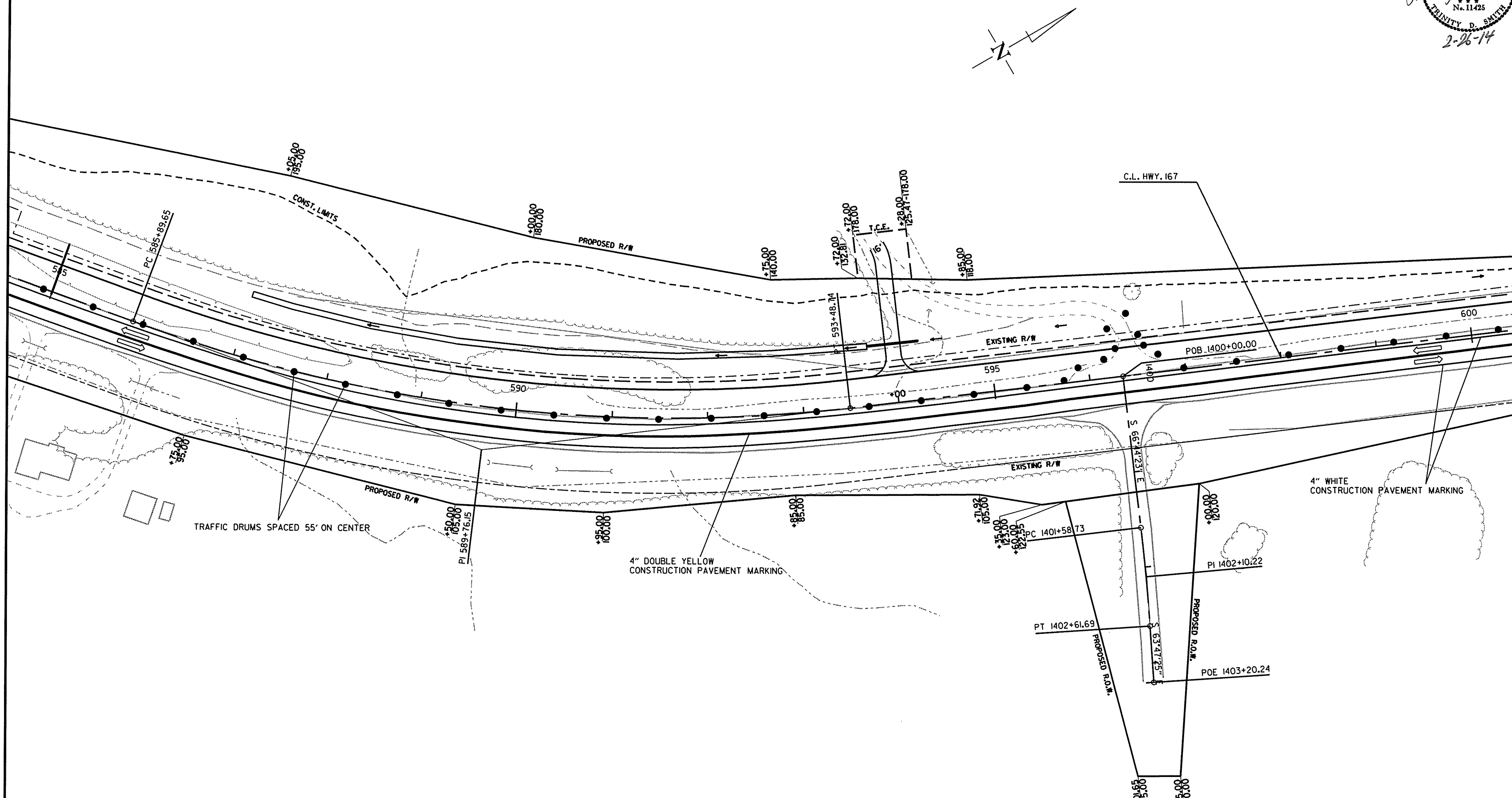
2/18/2014

R050213.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.		050213	43	369

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14



MAINTENANCE OF TRAFFIC DETAILS
STAGE I

2/18/2014

R050213.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.		050213	44	369

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14

C.L. HWY. 167

+65.00 75.00

600

N 23°15'37" E

605

+40.00 75.00

+15.74 100.00

+55.00 100.00

+38.89 80.00

PROPOSED R/W

CONST. LIMITS

EXISTING R/W

610

+85.00

22'

615

+17

107

PROPOSED R/W

+55.00 74.21

TRAFFIC DRUMS SPACED 55' ON CENTER

4" WHITE CONSTRUCTION PAVEMENT MARKING

+00.00 72.89

+25.00 85.00

+55.00 85.00

+80.00 72.89

+00.00 155.00

T.C.E.

T.C.E.

T.C.E.

+35.00 150.00

+00.00 240.00

EXISTING R/W

4" DOUBLE YELLOW CONSTRUCTION PAVEMENT MARKING

TRAFFIC DRUMS SPACED 55' ON CENTER

4" WHITE CONSTRUCTION PAVEMENT MARKING

STA. 621+41.21
END JOB 050213
& BEGIN JOB 050214
LOG MILE 9.31

PROPOSED R/W

PI 618+45.68

+50.00 90.00

RC 618+43.86

PT 621+41.21

+78.40 100.00

+94.22 60.39

CONST. LIMITS

EXISTING R/W

PDE 625+01.48

615

620

625

N 24°30'49" E

N 23°01'37" E

12'

12'

12'

12'

EXISTING R/W

PC 615+20.84

+80.00 89.58

PT 617+71.02

+25.00 82.55

+55.00 85.00

+25.00 115.00

T.C.E.

+00.00 78.00

+75.00 115.00

+75.00 81.91

PROPOSED R/W

+88.85 98.50

PI 619+92.55

+10.00 95.00

+54.23 90.00

+42.13 59.55

C.L. HWY. 167

4" DOUBLE YELLOW CONSTRUCTION PAVEMENT MARKING

VERTICAL PANELS SPACED 55' ON CENTER

MATTOCH ROAD

MAINTENANCE OF TRAFFIC DETAILS
STAGE I

2/18/2014

R050213.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.		050213	45	369

(2) MAINTENANCE OF TRAFFIC DETAILS

STAGE 2 CONSTRUCTION SEQUENCE

INSTALL ADVANCE WARNING SIGNS AS SHOWN ON THE MAINTENANCE OF TRAFFIC - ADVANCE WARNING SHEET.

APPLY CONSTRUCTION PAVEMENT MARKINGS AS SHOWN IN THE STAGE 2 MAINTENANCE OF TRAFFIC DETAILS AND SHIFT TRAFFIC ONTO THE PROPOSED ROADWAY CONSTRUCTED IN STAGE 1.

USE VERTICAL PANELS AND TRAFFIC DRUMS SPACED 55' ON CENTER TO DELINEATE THE WORK ZONE. USE TRAFFIC DRUMS TO DELINEATE DRIVEWAYS.

CONSTRUCT THE FINAL PORTIONS OF HWY. 167 AND CROSS DRAINS AS SHOWN; RT. OF C.L. FROM STA. 341+00 TO STA. 386+00, LT. OF C.L. FROM STA. 389+38.91 TO STA. 443+00, AND RT. OF C.L. FROM STA. 450+00 TO STA. 621+41.21.

APPLY CONSTRUCTION PAVEMENT MARKINGS AS SHOWN IN THE STAGE 2B MAINTENANCE OF TRAFFIC DETAILS AND SHIFT TRAFFIC ONTO THE PROPOSED ROADWAY CONSTRUCTED IN STAGE 2.

REMOVE TEMPORARY WIDENING FROM STA. 388+24.92 TO STA. 390+99.69 RT. OF C.L.

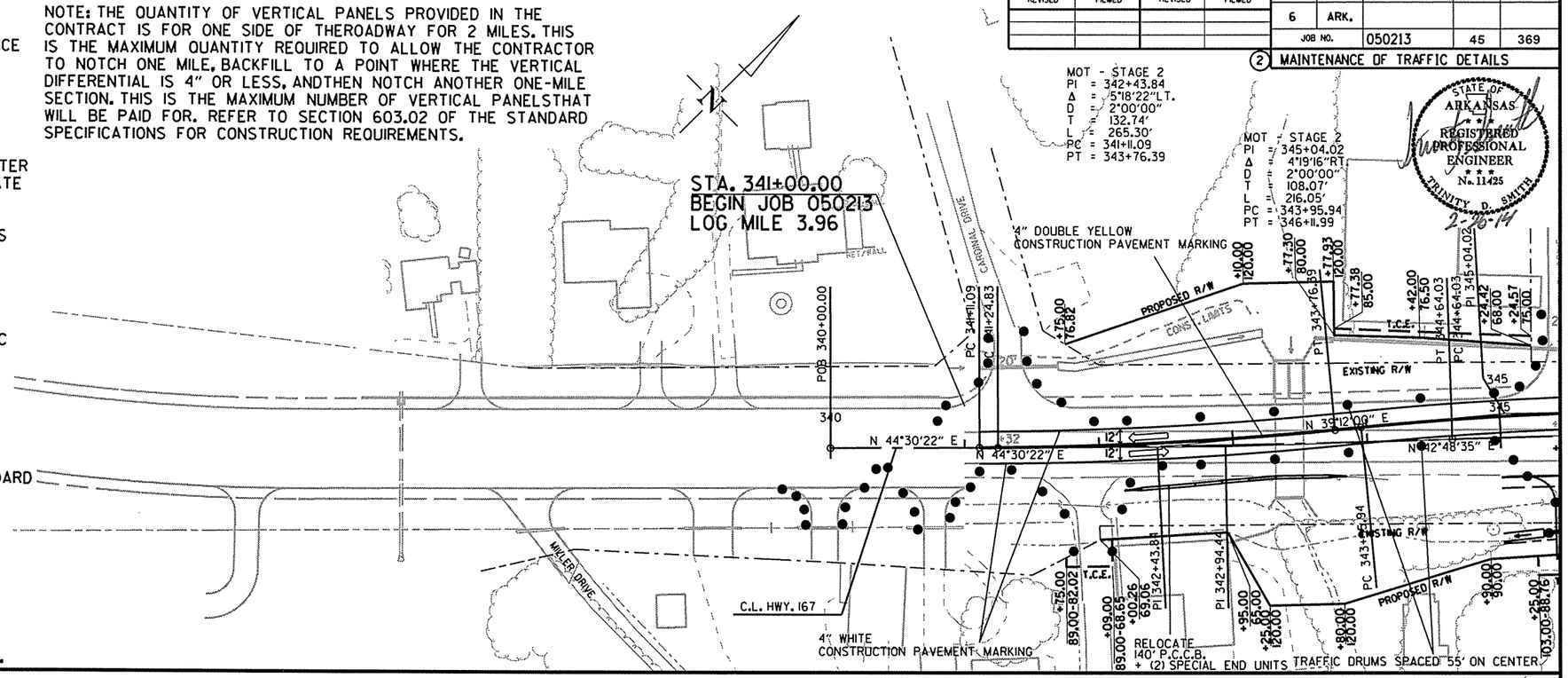
APPLY FINAL 2" LIFT OF A.C.H.M. SURFACE COURSE AND INSTALL PERMANENT PAVEMENT MARKINGS AS SHOWN IN THE PERMANENT PAVEMENT MARKINGS DETAILS AND REFER TO STANDARD DRAWING PM-1.

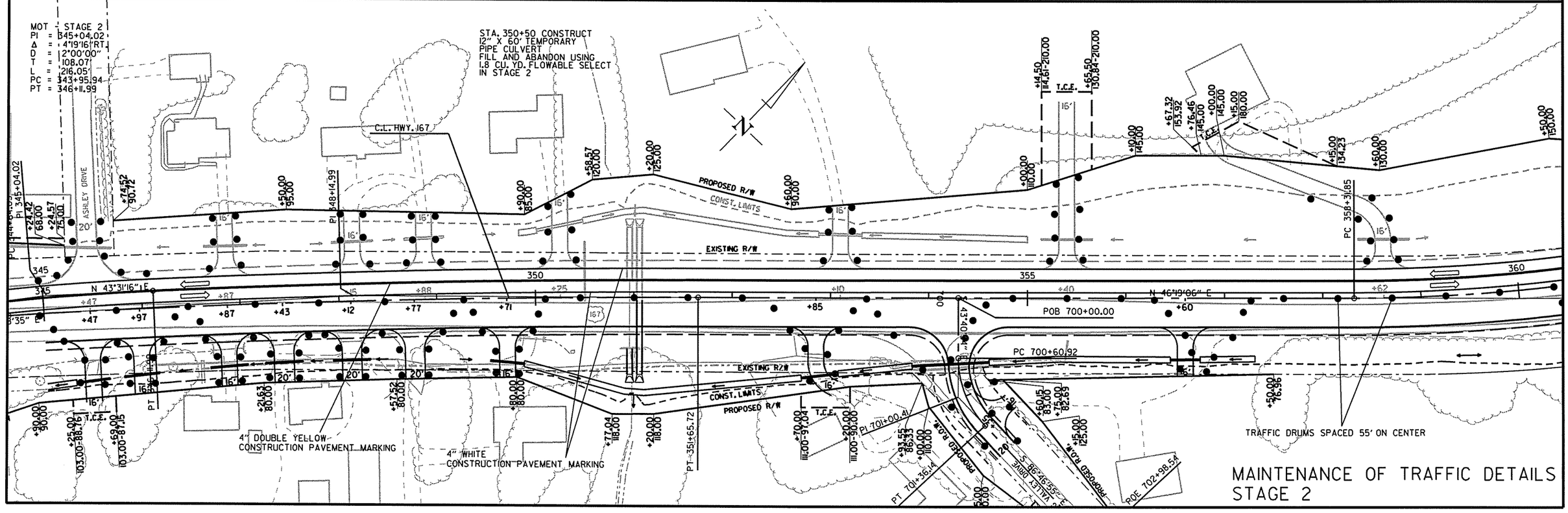
STAGE 2 QUANTITIES

SIGNS = 620.5 SQ. FT.
TRAFFIC DRUMS = 1503 EACH
VERTICAL PANELS = 211 EACH
RELOCATING P.C.C.B. = 892 LIN. FT.
INSTALLING T.I.A.B. = 2 EACH
CONSTRUCTION PAVEMENT MARKINGS = 115058 LIN. FT.
REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS = 8389 LIN. FT.

NOTE: THE QUANTITY OF VERTICAL PANELS PROVIDED IN THE CONTRACT IS FOR ONE SIDE OF THEROADWAY FOR 2 MILES. THIS IS THE MAXIMUM QUANTITY REQUIRED TO ALLOW THE CONTRACTOR TO NOTCH ONE MILE, BACKFILL TO A POINT WHERE THE VERTICAL DIFFERENTIAL IS 4" OR LESS, ANDTHEN NOTCH ANOTHER ONE-MILE SECTION. THIS IS THE MAXIMUM NUMBER OF VERTICAL PANELSTHAT WILL BE PAID FOR. REFER TO SECTION 603.02 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION REQUIREMENTS.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-18-14





MAINTENANCE OF TRAFFIC DETAILS
STAGE 2

2/18/2014

R050213.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.		050213	46	369

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14

STA. 367+00 CONSTRUCT 12'-0" X 68' TEMPORARY PIPE CULVERT FILL AND ABANDON USING 2.0 CU. YD. FLOWABLE SELECT IN STAGE 2

TRAFFIC DRUMS SPACED 55' ON CENTER

C.L. HWY. 167

PROPOSED R/W

CONST. LIMITS

EXISTING R/W

PT 365+63.73

PI 362+03.14

4" DOUBLE YELLOW CONSTRUCTION PAVEMENT MARKING

4" WHITE CONSTRUCTION PAVEMENT MARKING

T.C.E.

N 22°31'57" E

MOT - STAGE 2
PI = 386+63.57
Δ = 15°23'57"RT.
D = 8°00'00"
T = 96.83'
L = 191.91'
PC = 385+66.74
PT = 387+59.23

MOT - STAGE 2
PI = 388+69.70
Δ = 13°42'52"LT.
D = 8°00'00"
T = 86.13'
L = 171.43'
PC = 397+83.57
PT = 389+55.00

MOT - STAGE 2
PI = 390+31.09
Δ = 9°02'28"LT.
D = 8°00'00"
T = 56.62'
L = 113.01'
PC = 389.74.46
PT = 390+87.47

RELOCATE 200' P.C.C.B. + (2) SPECIAL END UNITS.

N 24°39'45" E

N 10°03'41" E

N 26°31'32" E

N 26°20'50" E

2/18/2014

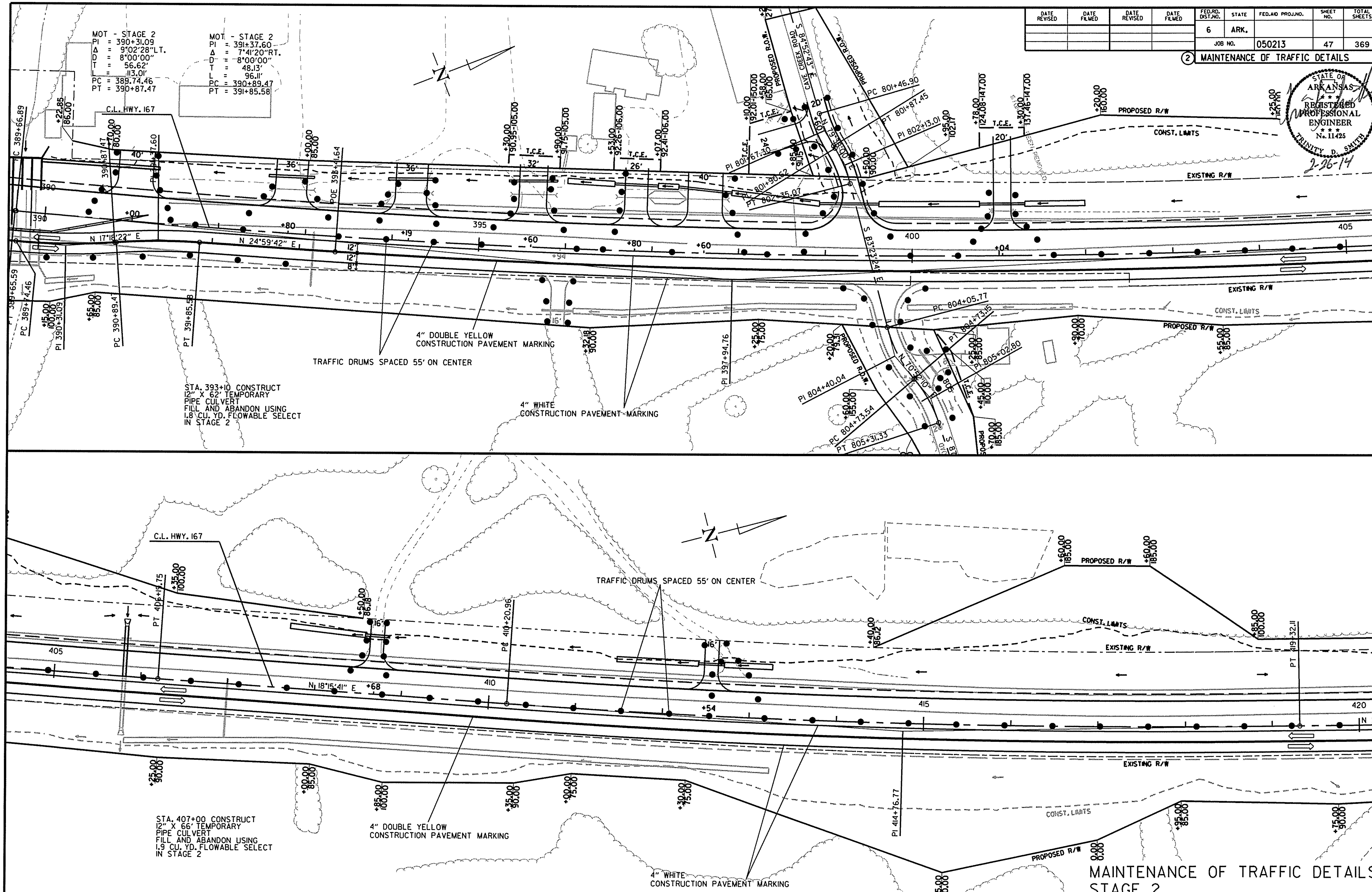
R050213.DGN

MAINTENANCE OF TRAFFIC DETAILS
STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050213	47	369

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 2-26-14



MOT - STAGE 2
PI = 390+31.09
Δ = 9°02'28"LT.
D = 8°00'00"
T = 56.62'
L = 113.01'
PC = 389+74.46
PT = 390+87.47
MOT - STAGE 2
PI = 391+37.60
Δ = 7°41'20"RT.
D = 8°00'00"
T = 48.13'
L = 96.11'
PC = 390+89.47
PT = 391+85.58
C.L. HWY. 167
N 17°18'22" E
N 24°59'42" E
CAVE CREEK ROAD
PROPOSED R/W
CONST. LIMITS
EXISTING R/W
T.C.E.
4" DOUBLE YELLOW CONSTRUCTION PAVEMENT MARKING
TRAFFIC DRUMS SPACED 55' ON CENTER
STA. 393+10 CONSTRUCT 12" X 62' TEMPORARY PIPE CULVERT FILL AND ABANDON USING 1.8 CU. YD. FLOWABLE SELECT IN STAGE 2
4" WHITE CONSTRUCTION PAVEMENT MARKING
PI 397+94.76
PC 804+05.77
PT 804+73.15
PI 805+02.80
PI 804+40.04
PC 804+73.54
PT 805+31.33
PC 801+46.90
PT 801+87.45
PI 802+13.01
PI 801+67.30
PT 801+90.52
PT 802+35.07
C.L. HWY. 167
N 18°15'41" E
PT 406+19.75
PC 410+20.96
PI 414+76.77
PT 419+32.11
TRAFFIC DRUMS SPACED 55' ON CENTER
STA. 407+00 CONSTRUCT 12" X 66' TEMPORARY PIPE CULVERT FILL AND ABANDON USING 1.9 CU. YD. FLOWABLE SELECT IN STAGE 2
4" DOUBLE YELLOW CONSTRUCTION PAVEMENT MARKING
4" WHITE CONSTRUCTION PAVEMENT MARKING

MAINTENANCE OF TRAFFIC DETAILS STAGE 2

2/18/2014

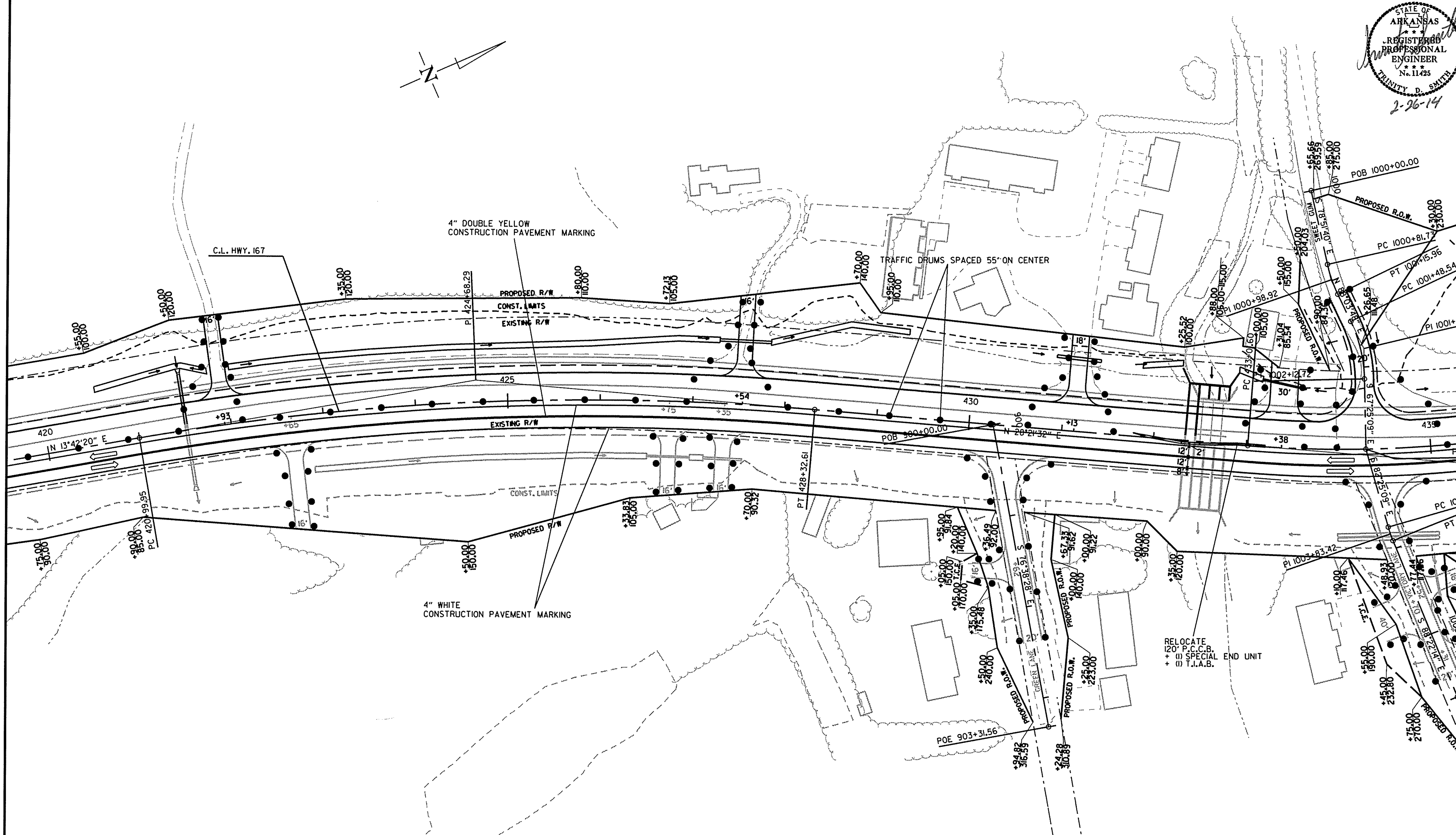
R050213.DGN

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.		050213	48	369

(2) MAINTENANCE OF TRAFFIC DETAILS

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

2-26-14



N
4" DOUBLE YELLOW CONSTRUCTION PAVEMENT MARKING
C.L. HWY. 167
TRAFFIC DRUMS SPACED 55' ON CENTER
PROPOSED R/W
CONST. LIMITS
EXISTING R/W
4" WHITE CONSTRUCTION PAVEMENT MARKING
N 13°42'20" E
N 28°21'32" E
PC 420+99.95
PI 424+68.29
PT 428+32.61
POB 900+00.00
POE 903+31.56
POB 1000+00.00
PC 1000+81.73
PI 1000+98.92
PT 1001+15.96
PC 1001+48.54
PI 1001+81.17
PI 1003+83.42
GREEN LANE
SWEET GUM
HICKORY LANE
RELOCATE
120' P.C.C.B.
+ (1) SPECIAL END UNIT
+ (1) T.I.A.B.

MAINTENANCE OF TRAFFIC DETAILS
STAGE 2

2/18/2014

R050213.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.		050213	49	369

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14

POB 1000+00.00
PROPOSED R.O.W.
PC 1000+81.73
PT 1001+15.96
PC 1001+48.54
PI 1001+81.13
C.L. HWY. 167
PI 1002+88.20
PC 1003+75.62
PT 1003+91.20
PI 435+78.03
MOT - STAGE 2
PI = 440+14.64
Δ = 7°42'57"LT.
D = 4°00'00"
T = 96.60'
L = 192.90'
PC = 439+18.05
PT = 441+10.95
PC 439+18.05
PT 441+10.95
PI 440+14.64
PC 441+63.38
PC 443+01.12
PI 443+87.87
PT 446+08.74
PI 447+21.83
POE 446+17.14
N 3°51'36" E
N 13°57'32" E
PROPOSED R/W
EXISTING R/W
CONST. LIMITS
4" DOUBLE YELLOW CONSTRUCTION PAVEMENT MARKING
4" WHITE CONSTRUCTION PAVEMENT MARKING
TRAFFIC DRUMS SPACED 55' ON CENTER
150' LANE TAPER
150' LANE TAPER

TRAFFIC DRUMS SPACED 55' ON CENTER
C.L. HWY. 167
CONST. LIMITS
PROPOSED R/W
EXISTING R/W
4" DOUBLE YELLOW CONSTRUCTION PAVEMENT MARKING
4" WHITE CONSTRUCTION PAVEMENT MARKING
N 30°42'15" E
T.C.E.
150' LANE TAPER

MAINTENANCE OF TRAFFIC DETAILS STAGE 2

2/18/2014

R050213.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.		050213	50	369

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14

C.L. HWY. 167

RELOCATE
140' P.C.C.B.
+ (1) SPECIAL END UNIT
+ (1) T.I.A.B.

PROPOSED R/W

CONST. LIMITS

EXISTING R/W

LESLEY HOLLOW ROAD

PC 1101+50.41 T.C.E.
PT 1101+87.79

PI 1101+69.20

PI 476+36.87

POE 1102+59.80

PROPOSED R/W

EXISTING R/W

CONST. LIMITS

PC 473+60.65

PT 473+09.28

4" WHITE
CONSTRUCTION PAVEMENT MARKING

4" DOUBLE YELLOW
CONSTRUCTION PAVEMENT MARKING

TRAFFIC DRUMS SPACED 55' ON CENTER

STA. 488+50 CONSTRUCT
12" X 58' TEMPORARY
PIPE CULVERT
FILL AND ABANDON USING
1.7 CU. YD. FLOWABLE SELECT
IN STAGE 2

C.L. HWY. 167

4" WHITE
CONSTRUCTION PAVEMENT MARKING

PROPOSED R/W

CONST. LIMITS

EXISTING R/W

PC 487+09.32

PT 494+44.82

PI 490+77.65

4" DOUBLE YELLOW
CONSTRUCTION PAVEMENT MARKING

TRAFFIC DRUMS SPACED 55' ON CENTER

MAINTENANCE OF TRAFFIC DETAILS
STAGE 2

2/18/2014

R050213.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.		050213	51	369

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14

C.L. HWY. 167

4" DOUBLE YELLOW CONSTRUCTION PAVEMENT MARKING

PROPOSED R/W

CONST. LIMITS

EXISTING R/W

N 41°39'04" E

4" WHITE CONSTRUCTION PAVEMENT MARKING

TRAFFIC DRUMS SPACED 55' ON CENTER

T.C.E.

PT 512+62.37

PI 509+44.69

N 40°03'45" E

2/18/2014

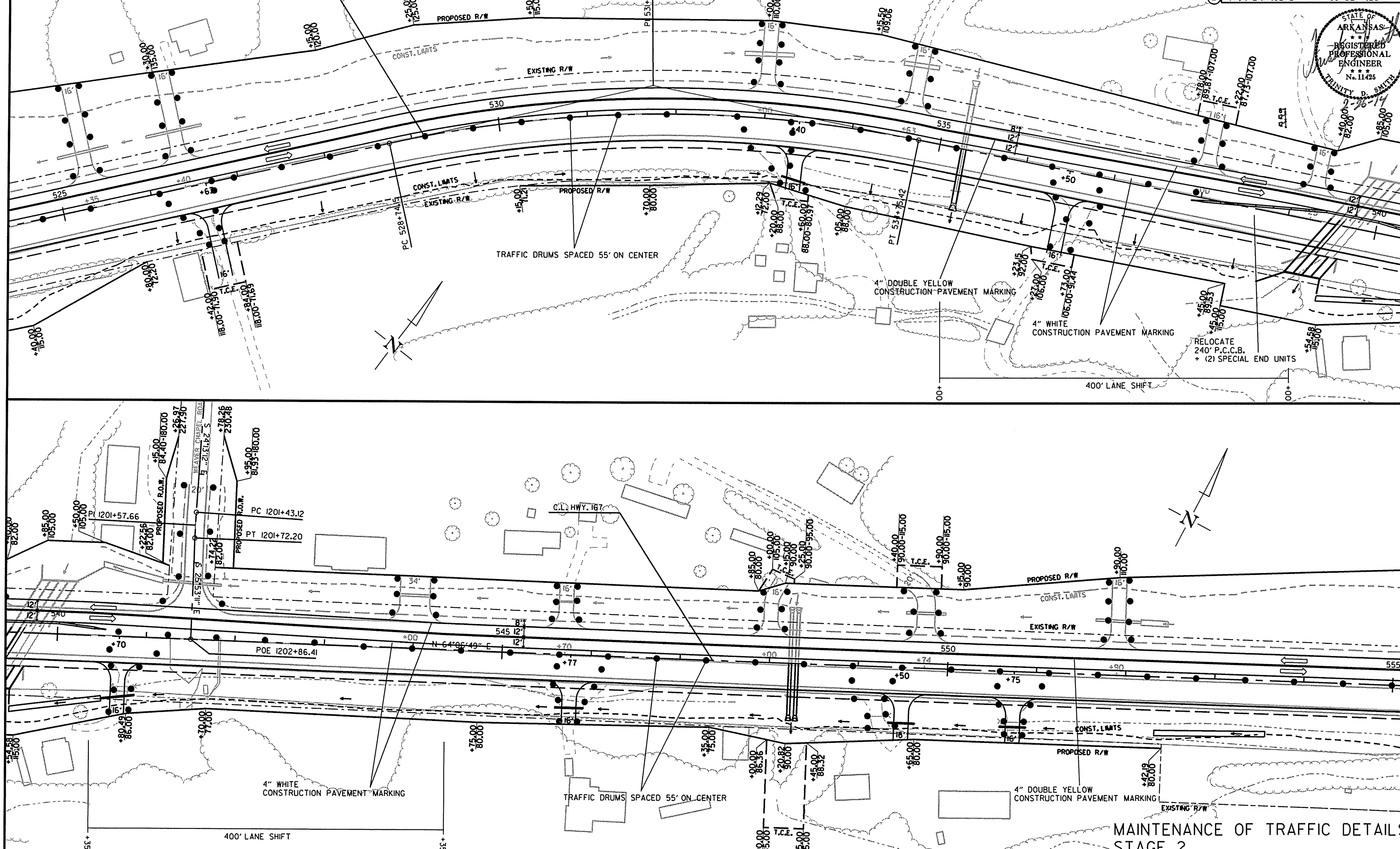
R050213.DGN

MAINTENANCE OF TRAFFIC DETAILS
STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050213	52	369

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 2-26-14



MAINTENANCE OF TRAFFIC DETAILS
STAGE 2

2/18/2014

R050213.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.		050213	53	369

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14

4" DOUBLE YELLOW CONSTRUCTION PAVEMENT MARKING

4" WHITE CONSTRUCTION PAVEMENT MARKING

TRAFFIC DRUMS SPACED 55' ON CENTER

STA. 574+80 CONSTRUCT 12" X 50' TEMPORARY PIPE CULVERT FILL AND ABANDON USING 1.5 CU. YD. FLOWABLE SELECT IN STAGE 2

STA. 585+00 CONSTRUCT 12" X 56' TEMPORARY PIPE CULVERT FILL AND ABANDON USING 1.6 CU. YD. FLOWABLE SELECT IN STAGE 2

MAINTENANCE OF TRAFFIC DETAILS
STAGE 2

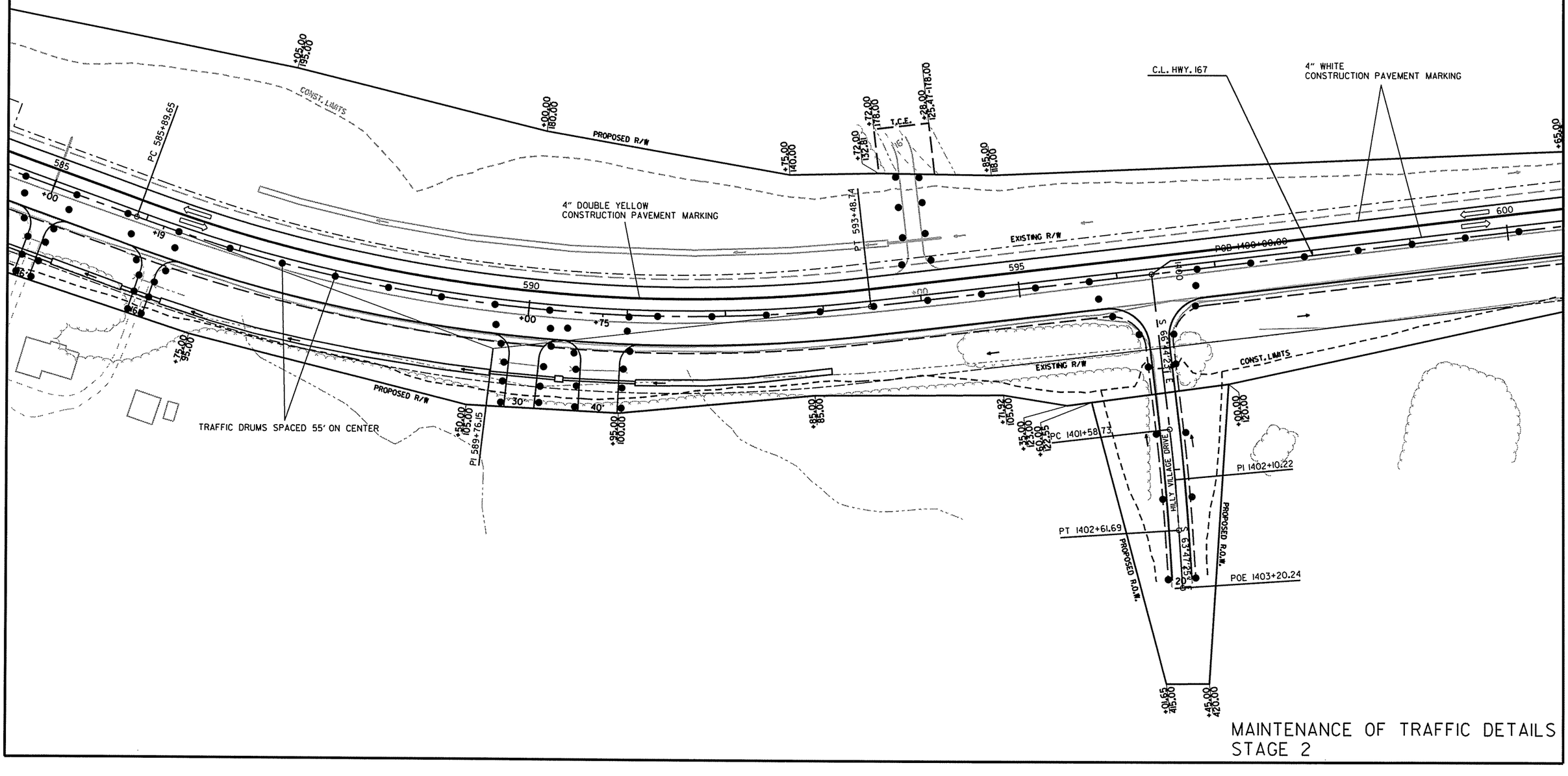
2/18/2014

R050213.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.		050213	54	369

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14



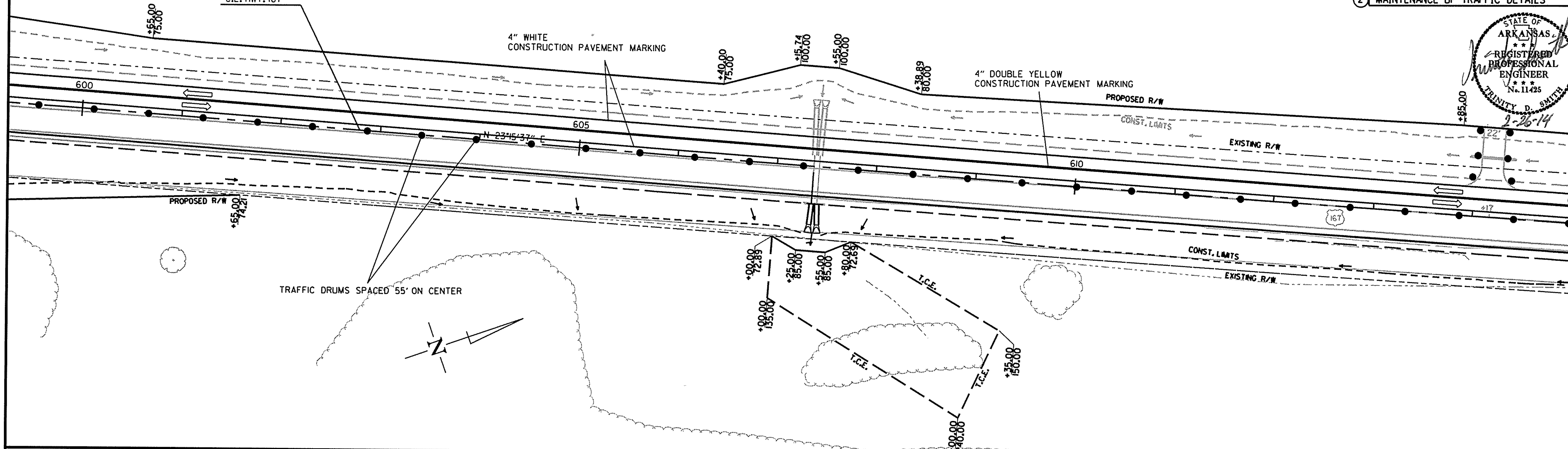
MAINTENANCE OF TRAFFIC DETAILS
STAGE 2

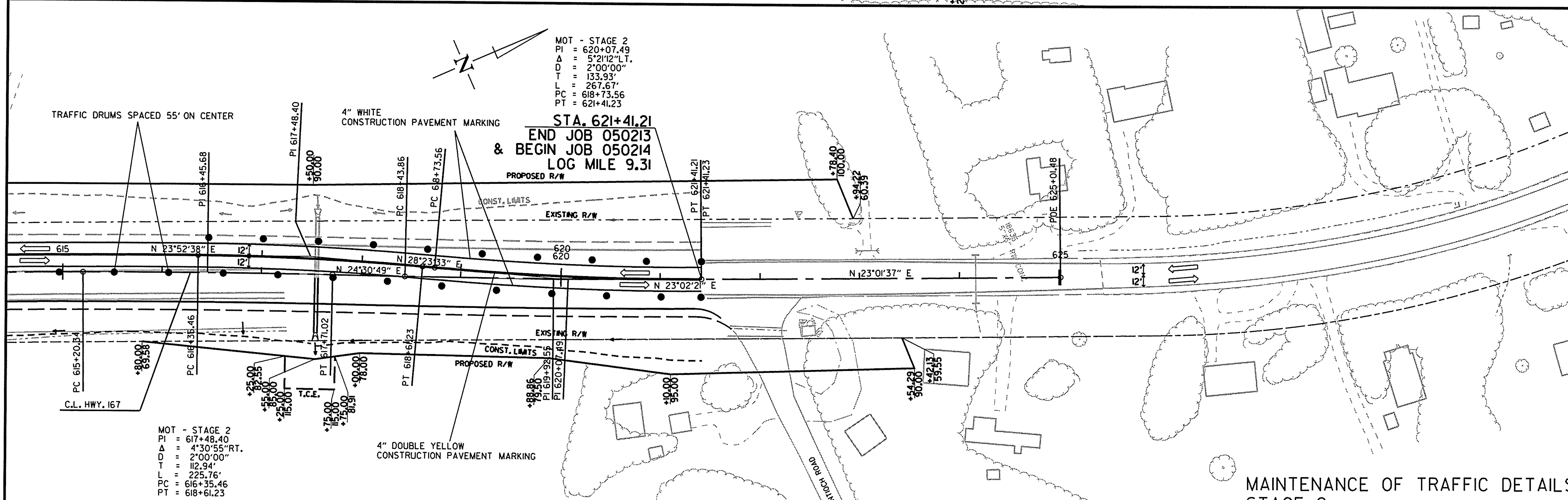
2/18/2014

R050213.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.		050213	55	369

(2) MAINTENANCE OF TRAFFIC DETAILS





MAINTENANCE OF TRAFFIC DETAILS
STAGE 2

2/18/2014

R050213.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.		050213	56	369

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-25-14

C.L. HWY. 167

PROPOSED R/W
CONST. LIMITS
EXISTING R/W

4" DOUBLE YELLOW CONSTRUCTION PAVEMENT MARKING

TRAFFIC DRUMS SPACED 55' ON CENTER

4" WHITE CONSTRUCTION PAVEMENT MARKING

MOT - STAGE 2B
PI = 387+47.53
Δ = 7°13'15"RT.
D = 2°00'00"
T = 180.76'
L = 361.05'
PC = 385+66.77
PT = 389+27.82

MOT - STAGE 2B
PI = 391+13.22
Δ = 6°53'18"LT.
D = 2°00'00"
T = 172.42'
L = 344.42'
PC = 389+40.80
PT = 392+85.22

MOT - STAGE 2B
PI = 391+13.22
Δ = 6°53'18"LT.
D = 2°00'00"
T = 172.42'
L = 344.42'
PC = 389+40.80
PT = 392+85.22

C.L. HWY. 167

PROPOSED R/W
CONST. LIMITS
EXISTING R/W

4" DOUBLE YELLOW CONSTRUCTION PAVEMENT MARKING

TRAFFIC DRUMS SPACED 55' ON CENTER

4" WHITE CONSTRUCTION PAVEMENT MARKING

MAINTENANCE OF TRAFFIC DETAILS
STAGE 2B

2/18/2014

R050213.DGN

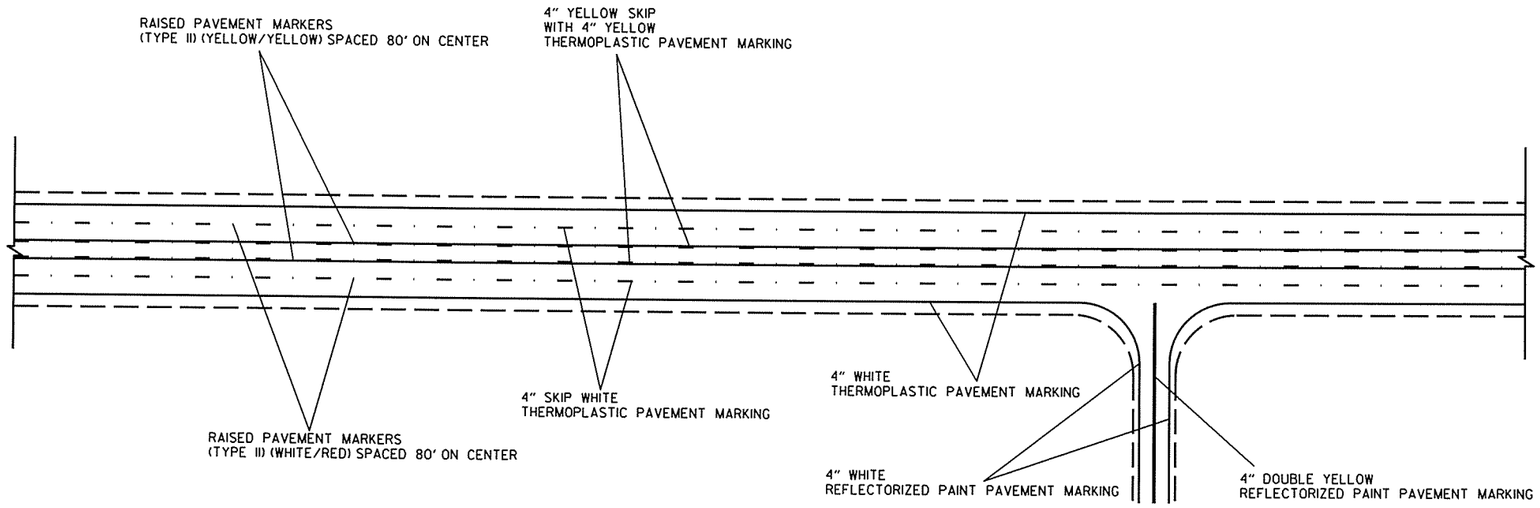
PERMANENT PAVEMENT MARKINGS

THERMOPLASTIC PAVEMENT MARKINGS WHITE (4") = 69119 LIN. FT.
THERMOPLASTIC PAVEMENT MARKINGS YELLOW (4") = 70103 LIN. FT.
THERMOPLASTIC PAVEMENT MARKINGS ARROWS = 2 EACH
REFLECTORIZED PAINT PAVEMENT MARKINGS WHITE (4") = 5900 LIN. FT.
REFLECTORIZED PAINT PAVEMENT MARKINGS YELLOW (4") = 5489 LIN. FT.
RAISED PAVEMENT MARKERS TYPE II (WHITE/RED) = 685 EACH
RAISED PAVEMENT MARKERS TYPE II (YELLOW/YELLOW) = 701 EACH

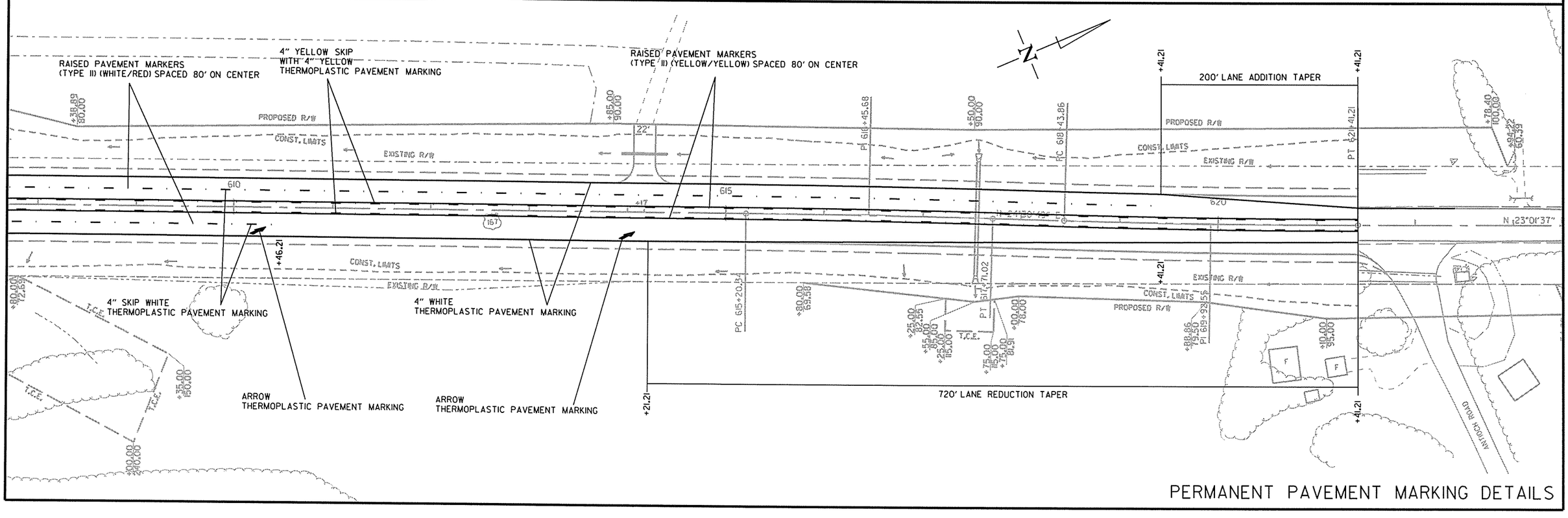
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050213	57	369

(2) PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
3-5-14



TYPICAL PERMANENT PAVEMENT MARKING LAYOUT



PERMANENT PAVEMENT MARKING DETAILS

3/5/2014

R050213.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.		050213	58	369

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
3-5-14

ADVANCE WARNING SIGNS AND DEVICES

SIGN NUMBER	DESCRIPTION	SIGN SIZE	STAGE 1	STAGE 2	MAXIMUM NUMBER REQUIRED	TOTAL SIGNS REQUIRED		VERTICAL PANELS	TRAFFIC DRUMS	FURNISHING & INSTALLING PRECAST CONC. BARRIER	RELOCATING PRECAST CONCRETE BARRIER	TEMPORARY IMPACT ATTENUATION BARRIER	TEMP. IMPACT ATTEN.BARR. (REPAIR)
			LIN.FT. - EACH			NO.	SQ. FT.	EACH		LIN.FT.		EACH	
W20-1	ROAD WORK 1500 FT.	48"x48"	2	2	2	2	32.0						
W20-1	ROAD WORK 1000 FT.	48"x48"	2	2	2	2	32.0						
W20-1	ROAD WORK 500 FT.	48"x48"	2	2	2	2	32.0						
W20-1	ROAD WORK AHEAD	48"x48"	12	12	12	12	192.0						
G20-2	END ROAD WORK	48"x24"	14	14	14	14	112.0						
G20-1	ROAD WORK NEXT 5 MILES	60"x24"	2	2	2	2	20.0						
W1-4AR	REVERSE CURVE RT.	48"x48"	4	4	4	4	64.0						
W1-4AL	REVERSE CURVE LT.	48"x48"	4	4	4	4	64.0						
R4-1	DO NOT PASS	24"x30"	2	2	2	2	10.0						
RSP-1	SHOULDER CLOSED	48"x30"	5	5	5	5	50.0						
W8-1	BUMP	30"x30"		2	2	2	12.5						
	VERTICAL PANELS		211	211	211	211		211					
	TRAFFIC DRUMS		973	1603	1603	1603			1603				
	FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER		982		982					982			
	RELOCATING PRECAST CONCRETE BARRIER			892	892						892		
	TEMPORARY IMPACT ATTENUATION BARRIER			2	2							2	
	TEMPORARY IMPACT ATTENUATION BARRIER (REPAIR)			2	2								2
TOTALS:							620.5	211	1603	982	892	2	2

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

NOTE: THE QUANTITY OF VERTICAL PANELS PROVIDED IN THE CONTRACT IS FOR ONE SIDE OF THE ROADWAY FOR 2 MILES. THIS IS THE MAXIMUM QUANTITY REQUIRED TO ALLOW THE CONTRACTOR TO NOTCH ONE MILE, BACKFILL TO A POINT WHERE THE VERTICAL DIFFERENTIAL IS 4" OR LESS, AND THEN NOTCH ANOTHER ONE-MILE SECTION. THIS IS THE MAXIMUM NUMBER OF VERTICAL PANELS THAT WILL BE PAID FOR. REFER TO SECTION 603.02 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION REQUIREMENTS.

CONSTRUCTION PAVEMENT MARKINGS AND PERMANENT PAVEMENT MARKINGS

DESCRIPTION	STAGE 1	STAGE 2	END OF JOB	CONSTRUCTION PAVEMENT MARKINGS	REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS	RAISED PAVEMENT MARKERS		THERMOPLASTIC PAVEMENT MARKINGS			REFLECTORIZED PAINT PAVEMENT MARKINGS	
						TYPE II (WHITE/RED)	TYPE II (YEL/YEL)	4" WHITE	4" YELLOW	ARROWS	4" WHITE	4" YELLOW
	LIN.FT. - EACH			LIN.FT.	LIN.FT.	EACH		LIN.FT.		EACH	LIN.FT.	
CONSTRUCTION PAVEMENT MARKINGS	113549	115058		228607								
REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS		8389			8389							
RAISED PAVEMENT MARKERS TYPE II (WHITE/RED)			685			685						
RAISED PAVEMENT MARKERS TYPE II (YEL/YEL)			701				701					
THERMOPLASTIC PAVEMENT MARKINGS WHITE (4")			69119					69119				
THERMOPLASTIC PAVEMENT MARKINGS YELLOW (4")			70103						70103			
THERMOPLASTIC PAVEMENT MARKINGS ARROWS			2							2		
REFLECTORIZED PAINT PAVEMENT MARKINGS WHITE (4")			5900								5900	
REFLECTORIZED PAINT PAVEMENT MARKINGS YELLOW (4")			5489									5489
TOTALS:				228607	8389	685	701	69119	70103	2	5900	5489

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

3/5/2014

R050213.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.		050213	59	369

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-14

REMOVAL AND DISPOSAL OF ITEMS

STATION	LOCATION	DESCRIPTION	SIGN	SIGN FOUNDATIONS	LUMINAIRE POLE AND FOUNDATION	WELL	STORM CELLAR	SEPTIC SYSTEM	HOUSE FOUNDATION	PLANTERS
			EACH	EACH	EACH	EACH	EACH	EACH	LIN. FT.	EACH
344+50	LT	SIGN BASE		1						
344+50	RT	WELL				1				
344+94	LT	CITGO SIGN WITH BASE	1	1						
345+22	LT	SIGN BASE		1						
346+80	LT	LUMINAIRE			1					
346+96	LT	LUMINAIRE			1					
347+50	LT	BRICK PLANTER								1
354+21	LT	FAITH BAPTIST SIGN	1	1						
367+62	LT	BLOCK FOUNDATION							80	
374+25	LT	DAYTRONICS SIGN	1	1						
474+95	LT	NO TRUCKS SIGN	1	1						
393+00	LT	SIGN BASE		1						
398+10	LT	SIGN	1	1						
401+10	RT	STORM CELLAR					1			
401+58	RT	PFEIFFER COMMUNITY SIGN	1	1						
401+70	LT	SIGN	1	1						
404+69	LT	ECONOLODGE SIGN	1	1						
421+97	RT	WELL				1				
426+74	RT	WELL				1				
430+37	LT	GREENS TAX SERVICE SIGN	1	1						
431+36	LT	VICTORY BAPTIST CHURCH SIGN	1	1						
432+68	LT	A-1 MUFFLER SIGN	1	1						
465+40	LT	WELL				1				
474+16	RT	BILLBOARD SIGN	1	2						
479+10	RT	BLANK SIGN	1	1						
488+16	LT	SEPTIC SYSTEM						1		
494+00	LT	WELL				1				
535+31	LT	SIGN	1	1						
541+77	LT	SIGN	1	1						
541+77	LT	SIGN	1	1						
558+98	LT	WELL				1				
569+93	RT	BILLBOARD SIGN	1	1						
574+00	LT	SEPTIC SYSTEM						1		
574+19	LT	WELL				1	1			
574+50	LT	WELL				1				
597+12	RT	SIGN 'COWBOY CHURCH'	1	1						
613+75	LT	SIGN 'TOM'S BODY SHOP'	1	2						
622+57	RT	SIGN	1	1						
TOTALS:			20	25	2	8	2	2	80	1

EROSION CONTROL

STATION	STATION	LOCATION	PERMANENT EROSION CONTROL						TEMPORARY EROSION CONTROL									
			SEEDING	LIME	MULCH COVER	WATER	SECOND SEEDING APPLICATION	TOPSOIL FURNISHED AND PLACED	TEMPORARY SEEDING	MULCH COVER	WATER	SAND BAG DITCH CHECKS (E-5)	ROCK DITCH CHECKS (E-6)	DROP INLET SILT FENCE (E-7)	SILT FENCE (E-11)	SEDIMENT BASIN (E-14)	OBLITERATION OF SEDIMENT BASIN	*SEDIMENT REMOVAL & DISPOSAL
			ACRE	TON	ACRE	M.GAL.	ACRE	CU.YD.	ACRE	ACRE	M.GAL.	BAG	CU.YD.	LIN.FT.	LIN.FT.	CU.YD.	CU.YD.	CU. YD.
ENTIRE	PROJECT	STAGE 1							51.81	51.81	1056.9		999	22	1325			383
ENTIRE	PROJECT	STAGE 2							36.37	36.37	741.9		672		6888			479
ENTIRE	PROJECT	END OF JOB	62.60	125.20	62.60	6385.2	62.60											280
*ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.			15.65	31.30	15.65	1684.5	15.65	7000				3080	420		2053	1064	1064	1140
TOTALS:			78.25	156.50	78.25	8069.7	78.25	7000	88.18	88.18	1798.8	3080	2091	22	10266	1064	1064	2282

BASIS OF ESTIMATE:
LIME .....2 TONS / ACRE OF SEEDING
WATER.....102.0 M.G. / ACRE OF SEEDING.
WATER.....20.4 M.G. / ACRE OF TEMPORARY SEEDING.
SAND BAG DITCH CHECKS.....22 BAGS / LOCATION
ROCK DITCH CHECKS.....3 CU.YD./LOCATION
DROP INLET SILT FENCE.....22 LIN. FT./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.

8/29/2014

R050213.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.		050213	59A	369

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-14

REMOVAL AND DISPOSAL OF CULVERTS (BOX 1 OF 2)

STATION	DESCRIPTION	PIPE CULVERTS EACH
341+32	18" X 30' C.M. LT. SIDE DRAIN	1
341+95	18" X 64' C.M. RT. SIDE DRAIN	1
345+47	18" X 41' C.M. LT. SIDE DRAIN	1
345+47	18" X 32' C.M. RT. SIDE DRAIN	1
346+87	15" X 32' STEEL LT. SIDE DRAIN	1
346+87	18" X 32' C.M. RT. SIDE DRAIN	1
347+43	15" X 24' C.M. RT. SIDE DRAIN	1
348+12	18" X 24' C.M. RT. SIDE DRAIN	1
348+15	18" X 17' R.C. LT. SIDE DRAIN	1
348+88	18" X 17' R.C. LT. SIDE DRAIN	1
349+92	15" X 24' C.M. RT. SIDE DRAIN	1
350+25	20" X 26' C.M. LT. SIDE DRAIN	1
352+85	18" X 24' C.M. RT. SIDE DRAIN	1
353+10	18" X 36' C.M. LT. SIDE DRAIN	1
354+30	18" X 40' C.M. RT. SIDE DRAIN	1
355+40	18" X 24' C.M. LT. SIDE DRAIN	1
363+66	15" X 37' R.C. RT. SIDE DRAIN	1
367+14	24" X 24' C.M. LT. SIDE DRAIN	1
367+82	15" X 37' C.M. RT. SIDE DRAIN	1
368+93	18" X 24' C.M. RT. SIDE DRAIN	1
368+97	24" X 31' C.M. LT. SIDE DRAIN	1
370+84	24" X 25' C.M. LT. SIDE DRAIN	1
371+08	21" X 25' R.C. RT. SIDE DRAIN	1
371+84	24" X 24' R.C. LT. SIDE DRAIN	1
373+38	18" X 40' C.M. RT. SIDE DRAIN	1
374+71	24" X 60' C.M. LT. SIDE DRAIN	1
376+55	18" X 25' C.M. RT. SIDE DRAIN	1
377+22	18" X 49' C.M. LT. SIDE DRAIN	1
378+85	18" X 45' C.M. LT. SIDE DRAIN	1
385+05	15" X 50' C.M. LT. SIDE DRAIN	1
385+70	18" X 24' C.M. RT. SIDE DRAIN	1
387+12	12" X 40' C.M. LT. SIDE DRAIN	1
391+00	18" X 49' C.M. LT. SIDE DRAIN	1
392+80	18" X 49' C.M. LT. SIDE DRAIN	1
394+19	18" X 47' R.C. LT. SIDE DRAIN	1
395+60	18" X 49' R.C. LT. SIDE DRAIN	1
395+94	24" X 25' C.M. RT. SIDE DRAIN	1
397+22	24" X 129' C.M. LT. SIDE DRAIN	1
399+27	18" X 40' C.M. LT. SIDE DRAIN	1
401+04	18" X 25' C.M. LT. SIDE DRAIN	1
405+81	30" X 48' R.C. PIPE CULVERT	1
408+68	18" X 24' C.M. LT. SIDE DRAIN	1
421+52	30" X 53' R.C. PIPE CULVERT	1
426+75	18" X 29' R.C. RT SIDE DRAIN	1
427+35	24" X 20" C.M. RT. SIDE DRAIN	1
431+13	15" X 40' C.M. LT. SIDE DRAIN	1
433+38	15" X 39' C.M. LT. SIDE DRAIN	1
434+55	18" X 35' C.M. RT. SIDE DRAIN	1
437+50	36" X 56' R.C. PIPE CULVERT	1
442+32	24" X 24' C.M. LT. SIDE DRAIN	1
448+27	15" X 25' C.M. LT. SIDE DRAIN	1
448+73	18" X 23' C.M. RT. SIDE DRAIN	1
SUBTOTAL (BOX 1 OF 2):		**52**

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

REMOVAL AND DISPOSAL OF CULVERTS (BOX 2 OF 2)

462+95	18" X 23' C.M. RT. SIDE DRAIN	1
465+30	18" X 25' C.M. LT. SIDE DRAIN	1
472+74	24" X 34' C.M. RT. SIDE DRAIN	1
477+12	36" X 24' C.M. RT. SIDE DRAIN	1
477+30	18" X 24' C.M. LT. SIDE DRAIN	1
478+19	36" X 24' C.M. RT. SIDE DRAIN	1
478+59	24" X 44' R.C. PIPE CULVERT	1
480+11	18" X 39' C.M. RT. SIDE DRAIN	1
480+02	18" X 34' C.M. LT. SIDE DRAIN	1
481+20	18" X 23' C.M. RT. SIDE DRAIN	1
482+37	18" X 20' C.M. LT. SIDE DRAIN	1
482+50	18" X 39' C.M. RT. SIDE DRAIN	1
483+44	18" X 21' C.M. LT. SIDE DRAIN	1
483+44	18" X 42' C.M. RT. SIDE DRAIN	1
484+36	18" X 20' C.M. LT. SIDE DRAIN	1
485+27	18" X 22' C.M. LT. SIDE DRAIN	1
487+07	18" X 22' STEEL LT. SIDE DRAIN	1
488+02	18" X 31' STEEL LT. SIDE DRAIN	1
488+34	48" X 47' R.C. PIPE CULVERT	1
489+31	18" X 31' STEEL LT. SIDE DRAIN	1
496+31	24" X 56' R.C. PIPE CULVERT	1
500+23	24" X 44' R.C. PIPE CULVERT	1
500+59	18" X 44' C.M. LT. SIDE DRAIN	1
502+88	15" X 40' C.M. LT. SIDE DRAIN	1
507+06	36" X 47' R.C. PIPE CULVERT	1
511+37	24" X 42' PLASTIC LT. SIDE DRAIN	1
513+72	30" X 48' R.C. PIPE CULVERT	1
516+25	24" X 23' C.M. LT. SIDE DRAIN	1
522+40	24" X 76' R.C. PIPE CULVERT	1
534+63	24" X 42' C.M. RT. SIDE DRAIN	1
535+27	24" X 68' R.C. PIPE CULVERT	1
540+70	24" X 24' C.M. RT. SIDE DRAIN	1
541+50	18" X 30' C.M. LT. SIDE DRAIN	1
542+30	24" X 40' C.M. LT. SIDE DRAIN	1
543+92	18" X 40' C.M. LT. SIDE DRAIN	1
545+47	12" X 33' C.M. LT. SIDE DRAIN	1
548+24	18" X 45' R.C. PIPE CULVERT	1
549+25	15" X 24' C.M. RT. SIDE DRAIN	1
550+72	18" X 34' R.C. LT. SIDE DRAIN	1
550+75	12" X 25' C.M. RT. SIDE DRAIN	1
551+90	18" X 20' R.C. LT. SIDE DRAIN	1
556+32	15" X 49' R.C. PIPE CULVERT	1
561+76	36" X 46' R.C. PIPE CULVERT	1
575+10	12" X 17' R.C. LT. SIDE DRAIN	1
575+76	DBL. 36" X 56' R.C. PIPE CULVERT	2
580+80	18" X 30' C.M. LT. SIDE DRAIN	1
583+52	36" X 45' R.C. PIPE CULVERT	1
585+00	15" X 22' R.C. RT. SIDE DRAIN	1
586+19	15" X 21' R.C. RT. SIDE DRAIN	1
590+00	18" X 40' R.C. RT. SIDE DRAIN	1
590+75	18" X 55' R.C. RT. SIDE DRAIN	1
617+55	24" X 45' R.C. PIPE CULVERT	1
SUBTOTAL (BOX 1 OF 2):		**52**
SUBTOTAL (BOX 2 OF 2):		**53**
TOTAL:		**105**

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

CLEARING AND GRUBBING

STATION	STATION	LOCATION	CLEARING STATION	GRUBBING STATION
342+00	368+00	LT. AND RT. OF HWY. 167	26	26
370+00	491+00	LT. AND RT. OF HWY. 167	121	121
492+00	500+00	LT. AND RT. OF HWY. 167	8	8
501+00	541+00	LT. AND RT. OF HWY. 167	40	40
544+00	546+00	RT. OF HWY. 167	2	2
547+00	597+00	LT. AND RT. OF HWY. 167	50	50
619+00	622+00	RT. OF HWY. 167	3	3
TOTALS:			**250**	**250**

5/15/2014

R050213.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.		050213	60	369

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-14

REMOVAL AND DISPOSAL OF FENCE AND GUARD CABLE

STATION	STATION	LOCATION / DESCRIPTION	FENCE	GATES	GUARD CABLE
			LIN. FT.	EACH	LIN. FT.
343+66	343+77	LT. OF HWY. 167	39		
350+57	350+74	RT. OF HWY. 167	23		
350+77	351+19	RT. OF HWY. 167	121		
351+65	352+28	RT. OF HWY. 167	80		
363+00	364+20	LT. OF HWY. 167	120		
365+78	366+69	LT. OF HWY. 167	104		
385+20	386+97	LT. OF HWY. 167 / 6" I-BEAM POST WITH CABLE FENCING			180
387+30	389+52	LT. OF HWY. 167 / 5' CHAINLINK FENCE WITH 3 STARAND BARB-WIRE	225		
391+36	399+49	RT. OF HWY. 167	852		
401+97	421+71	RT. OF HWY. 167	1977		
414+73	418+79	LT. OF HWY. 167	403		
420+65	424+78	LT. OF HWY. 167	415		
425+74	426+74	LT. OF HWY. 167	115		
431+47	432+31	RT. OF HWY. 167	131		
440+23	448+65	RT. OF HWY. 167	824		
448+81	450+53	RT. OF HWY. 167	164		
451+94	454+24	RT. OF HWY. 167	229		
456+20	464+40	LT. OF HWY. 167	850		
466+20	466+90	LT. OF HWY. 167 / 3 RAIL BOARD WOOD FENCING	115		
466+22	476+27	LT. OF HWY. 167	1077		
472+51	472+53	RT. OF HWY. 167	22		
472+80		RT. OF HWY. 167 / 6 RAIL METAL FARM GATE		1	
472+88	473+82	RT. OF HWY. 167	110		
473+82	476+38	RT. OF HWY. 167	245		
477+77	477+81	LT. OF HWY. 167	99		
484+90	486+86	LT. OF HWY. 167 / 2 BOARD FENCE WITH 10 ROCK COLUMNS	320		
504+83	506+64	LT. OF HWY. 167	241		
506+78	508+31	LT. OF HWY. 167	286		
511+61	512+37	RT. OF HWY. 167	77		
513+78	514+55	RT. OF HWY. 167	86		
518+25	525+80	RT. OF HWY. 167	755		
528+82	533+60	LT. OF HWY. 167	563		
530+15	533+23	RT. OF HWY. 167	293		
549+58	551+49	RT. OF HWY. 167	182		
576+30	584+93	RT. OF HWY. 167	563		
576+42	580+54	LT. OF HWY. 167	419		
582+40	584+90	RT. OF HWY. 167	50		
621+28	621+60	RT. OF HWY. 167 / 6 WOOD POST CABLE FENCE	36		
TOTALS:			12211	1	180

EARTHWORK

STATION	STATION	LOCATION / DESCRIPTION	PRESPLITTING	UNCLASSIFIED EXCAVATION	COMPACTED EMBANKMENT	* SOIL STABILIZATION
			SQ. YD.	CU. YD.		TON
ENTIRE	PROJECT	STAGE 1-MAIN LANES		448084	85480	
ENTIRE	PROJECT	STAGE 2-MAIN LANES		105253	46190	
388+24.92	390+99.69	MAIN LANES-TEMP WIDENING		1358	1358	
ENTIRE	PROJECT	APPROACHES		3785	18725	
* 413+45.29	418+68.95	LT. AND RT. OF HWY. 167	1519			
* 422+95.00	426+55.00	RT. OF HWY. 167	897			
ENTIRE	PROJECT	SPRING VALLEY DRIVE		122	137	
ENTIRE	PROJECT	CAVE CREEK ROAD		493	89	
ENTIRE	PROJECT	PFEIFFER ROAD		573		
ENTIRE	PROJECT	GREEN LANE		56	1214	
ENTIRE	PROJECT	SWEET GUM ROAD		3342	46	
ENTIRE	PROJECT	VICTORY LANE		129	1162	
ENTIRE	PROJECT	LESLEY HOLLOW ROAD		67	16	
ENTIRE	PROJECT	WEAVER CHAPEL ROAD		131	92	
ENTIRE	PROJECT	WILDERNESS DRIVE		112	196	
ENTIRE	PROJECT	HILLY VILLAGE DRIVE		4013	7	
389+86		CHANNEL CHANGE		10929		
432+61		CHANNEL CHANGE		10710		
469+97		CHANNEL CHANGE		8603		
488+34		CONSTRUCT OUTLET		70		
507+06		CONSTRUCT OUTLET		5		
513+72		CONSTRUCT OUTLET		10		
539+70		CHANNEL CHANGE		15728		
548+24		CONSTRUCT OUTLET		5		
607+40		CONSTRUCT OUTLET		175		
617+55		CONSTRUCT OUTLET		5		
* ENTIRE	PROJECT	TO BE USED IF AND WHERE	500			25
		DIRECTED BY THE ENGINEER				
TOTALS:			2916	613758	154712	25

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

PAVEMENT REPAIR OVER CULVERTS (ASPHALT)

STATION	LOCATION	WIDTH	LENGTH	TON
		FEET		
389+86	HWY. 167	16	24	38
405+81	HWY. 167	10.25	24	24
432+61	HWY. 167	16	24	38
437+50	HWY. 167	18.5	24	43
459+97	HWY. 167	11.4	24	27
469+97	HWY. 167	14	24	33
478+59	HWY. 167	17.3	24	41
488+34	HWY. 167	20.8	24	49
496+31	HWY. 167	9.1	24	21
500+23	HWY. 167	17.3	24	41
507+06	HWY. 167	9.7	24	23
513+72	HWY. 167	11.4	24	27
522+40	HWY. 167	9.7	24	23
535+27	HWY. 167	12	24	28
539+70	HWY. 167	14	24	33
548+24	HWY. 167	17.3	24	41
556+32	HWY. 167	8.5	24	20
561+90	HWY. 167	19.7	24	46
583+52	HWY. 167	18.5	24	43
617+55	HWY. 167	9.7	24	23
TOTAL:				662

AVG. DEPTH = 16"
BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....94.5% MIN. AGGR.....5.5% ASPHALT BINDER
MAXIMUM NUMBER OF GYRATIONS = 115 FOR PG 64-22

BENCH MARKS

STATION	LOCATION	BENCH MARKS
		EACH
343+42	WINGWALL OF R.C. BOX CULVERT	1
389+86	WINGWALL OF R.C. BOX CULVERT	1
432+61	WINGWALL OF R.C. BOX CULVERT	1
469+97	WINGWALL OF R.C. BOX CULVERT	1
539+70	WINGWALL OF R.C. BOX CULVERT	1
TOTAL:		5

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

CULVERT CLEAN OUT

STATION	LOCATION	EACH
1101+28	LESLEY HOLLOW ROAD	1
TOTAL:		1

SELECTED PIPE BEDDING

LOCATION	SELECTED PIPE BEDDING
	CU.YD.
ENTIRE PROJECT TO BE USED IF	
AND WHERE DIRECTED BY THE	450
ENGINEER	
TOTAL:	450

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

8/29/2014

R050213.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.		050213	61	369
				(2)	QUANTITIES			

4" PIPE UNDERDRAIN

STATION	STATION	LOCATIONS	4" PIPE UNDERDRAINS	UNDERDRAIN OUTLET PROTECTORS
			LIN.FT.	EACH
* ENTIRE PROJECT TO BE USED IF AND			14000	56
WHERE DIRECTED BY THE ENGINEER				
TOTALS:			14000	56

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

MAILBOXES

LOCATION	MAILBOXES	MAILBOX SUPPORTS (SINGLE)	MAILBOX SUPPORTS (DOUBLE)
		EACH	
ENTIRE PROJECT	75	59	8
TOTALS:	75	59	8

FENCING

STATION	STATION	LOCATION	WIRE FENCE (TYPE C)	WIRE FENCE (TYPE D)	* 4' CHAIN LINK FENCE	* 6' CHAIN LINK FENCE	* 16'-0" GATES
			LIN.FT.				EACH
343+66	343+77	LT. OF HWY. 167				43	
350+57	350+74	RT. OF HWY. 167			18		
350+77	351+19	RT. OF HWY. 167	34				
351+34	352+27	RT. OF HWY. 167	94				
363+00	364+20	LT. OF HWY. 167		120			
365+78	366+69	LT. OF HWY. 167		93			
388+57	389+06	LT. OF HWY. 167				50	
391+36	399+49	RT. OF HWY. 167		773			1
401+97	421+71	RT. OF HWY. 167	2032				1
440+23	448+65	RT. OF HWY. 167		822			
448+81	450+53	RT. OF HWY. 167		164			
451+94	454+24	RT. OF HWY. 167		229			
456+10	464+37	LT. OF HWY. 167	914				
466+22	476+27	LT. OF HWY. 167	1173				
472+88	473+82	RT. OF HWY. 167		91			
473+82	476+38	RT. OF HWY. 167				244	
504+83	506+64	LT. OF HWY. 167	172				
506+78	508+31	LT. OF HWY. 167	135				
511+61	512+37	RT. OF HWY. 167	78				
513+78	514+55	RT. OF HWY. 167		80			
518+25	525+80	RT. OF HWY. 167		765			
528+82	533+60	LT. OF HWY. 167		501			1
530+15	533+23	RT. OF HWY. 167		292			
549+58	551+49	RT. OF HWY. 167	175				2
576+30	584+93	RT. OF HWY. 167		628			1
576+42	580+54	LT. OF HWY. 167		413			
TOTALS:			4807	4971	18	337	6

* DENOTES ALTERNATE BID ITEM.

CONCRETE DITCH PAVING

STATION	STATION	LOCATION	LENGTH	"W"	CONC. DITCH PAVING (TYPE B)	SOLID SODDING	WATER
			LIN. FT.	FEET	SQ. YD.	SQ. YD.	M. GAL.
341+69	343+23	LT. OF C.L.	154.62	6	103.13	68.72	0.87
343+73	345+30	RT. OF C.L.	162.91	6	108.82	72.40	0.91
349+84	355+00	LT. OF C.L.	381.35	6	286.23	169.49	2.14
349+88	357+31	RT. OF C.L.	601.22	6	399.77	267.21	3.37
362+00	363+49	RT. OF C.L.	152.13	6	101.42	67.61	0.85
362+60	363+72	LT. OF C.L.	110.84	6	73.89	49.26	0.62
364+96	366+00	RT. OF C.L.	113.16	6	75.44	50.29	0.63
371+37	373+75	RT. OF C.L.	198.11	6	132.07	88.05	1.11
383+59	386+59	RT. OF C.L.	266.38	6	177.58	118.39	1.49
388+28	389+39	LT. OF C.L.	102.90	6	68.60	45.73	0.58
388+44	389+49	RT. OF C.L.	104.60	6	69.74	46.49	0.59
390+07	390+63	RT. OF C.L.	56.27	6	37.51	25.01	0.32
395+99	402+00	LT. OF C.L.	365.22	6	243.48	162.32	2.05
396+12	399+36	RT. OF C.L.	326.37	6	217.58	145.05	1.83
399+96	401+84	RT. OF C.L.	189.66	6	126.44	84.29	1.06
405+86	413+25	RT. OF C.L.	741.75	6	494.50	329.67	4.15
407+67	408+54	LT. OF C.L.	86.75	6	57.83	38.56	0.49
411+45	413+25	LT. OF C.L.	149.06	6	99.38	66.25	0.83
420+60	421+83	LT. OF C.L.	125.33	6	83.40	55.70	0.70
422+05	429+29	LT. OF C.L.	685.98	6	457.32	304.88	3.84
422+86	427+13	RT. OF C.L.	373.29	6	248.86	165.91	2.09
431+83	432+26	LT. OF C.L.	43.42	6	28.95	19.30	0.24
432+87	433+13	LT. OF C.L.	27.13	6	18.09	12.06	0.15
437+13	438+18	RT. OF C.L.	111.91	6	74.60	49.74	0.63
437+97	438+38	LT. OF C.L.	40.90	6	27.27	18.18	0.23
458+97	460+68	LT. OF C.L.	172.47	6	114.98	76.65	0.97
468+77	469+34	RT. OF C.L.	61.74	6	41.16	27.44	0.35
469+83	470+75	RT. OF C.L.	93.00	6	62.00	41.33	0.52
470+70	471+17	LT. OF C.L.	48.34	6	32.23	21.48	0.27
474+00	475+35	LT. OF C.L.	139.12	6	92.75	61.83	0.78
478+54	479+19	LT. OF C.L.	69.35	6	46.23	30.82	0.39
483+65	484+85	RT. OF C.L.	120.01	6	80.00	53.34	0.67
495+66	497+08	LT. OF C.L.	142.28	6	94.86	63.24	0.80
513+28	519+47	LT. OF C.L.	548.50	6	365.66	243.78	3.07
513+30	514+55	RT. OF C.L.	126.24	6	84.16	56.11	0.71
521+90	523+21	LT. OF C.L.	132.59	6	88.40	58.93	0.74
539+49	540+51	RT. OF C.L.	103.99	6	69.33	46.22	0.58
540+50	541+16	LT. OF C.L.	68.29	6	45.53	30.35	0.38
552+15	552+46	LT. OF C.L.	30.74	6	20.50	13.66	0.17
552+34	553+58	RT. OF C.L.	124.54	6	83.02	55.35	0.70
555+96	557+27	LT. OF C.L.	129.78	6	86.52	57.68	0.73
560+79	565+40	LT. OF C.L.	406.08	6	270.72	180.48	2.27
561+70	564+61	RT. OF C.L.	290.35	6	193.57	129.04	1.63
575+37	576+88	LT. OF C.L.	152.30	6	101.54	67.69	0.85
575+42	577+26	RT. OF C.L.	185.61	6	123.74	82.49	1.04
583+60	593+04	RT. OF C.L.	743.87	6	495.92	330.61	4.17
586+98	593+71	LT. OF C.L.	645.98	6	430.66	287.10	3.62
TOTALS:					6835.38	4536.18	57.18

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

COLD MILLING ASPHALT PAVEMENT

	STATION	STATION	LOCATION	AVG. WIDTH	COLD MILLING ASPHALT PAVEMENT
				FEET	SQ. YD.
*	340+00.00	341+00.00	MAIN LANES	75	833.33
*	621+41.21	622+41.21	MAIN LANES	49.5	550.00
**	405+75	406+20	LEFT MAIN LANE	12	60.00
**	429+20	430+85	RIGHT MAIN LANE	12	220.00
**	461+25	480+20	MAIN LANES	24	5053.33
**	486+90	490+90	LEFT MAIN LANE	12	533.33
**	497+00	499+75	MAIN LANES	24	733.33
**	504+00	511+25	MAIN LANES	24	1933.33
**	521+50	522+75	RIGHT MAIN LANE	12	166.67
**	522+75	527+50	MAIN LANES	24	1266.67
**	561+00	561+75	LEFT MAIN LANE	12	100.00
**	562+50	563+00	RIGHT MAIN LANE	12	66.67
**	563+00	566+75	MAIN LANES	24	1000.00
**	577+60	578+40	MAIN LANES	24	213.33
**	586+25	587+50	MAIN LANES	24	333.33
**	592+50	593+50	LEFT MAIN LANE	12	133.33
TOTAL:					13196.65

*AVERAGE MILLING DEPTH 1".
**AVERAGE MILLING DEPTH 2".

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14

2/18/2014

R050213.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.		050213	62	369

(2) QUANTITIES

RUMBLE STRIPS IN ASPHALT SHOULDERS

STATION	STATION	LOCATION	RUMBLE STRIPS IN ASPHALT SHOULDERS
			LIN.FT.
341+00.00	621+41.21	RT. SHOULDER	17759.21
341+00.00	621+41.21	LT. SHOULDER	17191.21
TOTAL:			34950.42

ACHM PATCHING OF EXISTING ROADWAY

DESCRIPTION	TON
ENTIRE PROJECT - TO BE USED IF AND WHERE	125
DIRECTED BY THE ENGINEER	
TOTAL:	125

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

ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC

LOCATION	TON	TACK COAT
		GALLON
ENTIRE PROJECT - TO BE USED IF AND WHERE	133	266
DIRECTED BY THE ENGINEER		
TOTALS:	133	266

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

BASIS OF ESTIMATE:
ASPHALT CONCRETE.....25 TON / MILE.
TACK COAT.....50 GAL. / MILE.

FLOWABLE SELECT MATERIAL

STATION	LOCATION	CU. YD.
350+50	12" X 60' TEMPORARY CULVERT	1.8
367+00	12" X 68' TEMPORARY CULVERT	2.0
393+10	12" X 62' TEMPORARY CULVERT	1.8
407+00	12" X 66' TEMPORARY CULVERT	1.9
488+50	12" X 58' TEMPORARY CULVERT	1.7
574+80	12" X 50' TEMPORARY CULVERT	1.5
585+00	12" X 56' TEMPORARY CULVERT	1.6
TOTAL:		12.3

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14

CONCRETE COMBINATION CURB AND GUTTER

STATION	STATION	LOCATION	TYPE B-1 (1' 6")
			LIN. FT.
342+04	343+00	RT. OF HWY. 167	114
504+90	508+00	LT. OF HWY. 167	310
TOTAL:			424

STRUCTURES

STATION	DESCRIPTION	REINFORCED CONCRETE PIPE CULVERT (CLASS III) LIN. FT. 24"	30"	36"	42"	48"	54"	60"	44"X27"	SIDE DRAIN LIN. FT. 12"	18"	24"	42"	48"	FLARED END SECTIONS FOR R.C. PIPE CULVERTS EACH 24"	30"	36"	42"	48"	54"	60"	44"X27"	TEMPORARY PIPE CULVERTS LIN. FT.	DROP INLETS TYPE 12" E EACH	SPAN	HEIGHT	LENGTH	CLASS S CONCRETE ROADWAY CU.YD.	REINF. STEEL-ROADWAY (GRADE 60) POUND	UNCL.EXC. FOR STR.-ROADWAY CU.YD.	SOLID SODDING SQ.YD.	WATER M.GAL	STD. DWG. NOS.
350+50	12" TEMPORARY PIPE CULVERT																						60									
350+96	EXTEND 60" X 70' R.C. PIPE CULVERT AND INSTALL 60" X 150' R.C. PIPE CULVERT							232													4									96	1.21	FES-1, FES-2, PCC-1,
354+30	18" x 40' RT. SIDE DRAIN										40																					PCC-1, PCM-1, PCP-1, PCP-2
364+80	EXTEND 60" X 85' R.C. PIPE CULVERT AND INSTALL 60" X 168' R.C. PIPE CULVERT							252													4									96	1.21	FES-1, FES-2, PCC-1,
367+00	12" TEMPORARY PIPE CULVERT																						68									
393+10	12" TEMPORARY PIPE CULVERT																						62									
399+27	24" X 68' LT. SIDE DRAIN											68																				PCC-1, PCM-1, PCP-1, PCP-2
405+81	42" X 118' R.C. PIPE CULVERT				118													2												46	0.58	FES-1, FES-2, PCC-1,
407+00	12" TEMPORARY PIPE CULVERT																						66									
421+52	30" X 120' R.C. PIPE CULVERT		120													2														26	0.33	FES-1, FES-2, PCC-1,
437+50	DBL. 42" X 154' R.C. PIPE CULVERT				308													4												50	0.63	FES-1, FES-2, PCC-1,
434+55	DBL. 42" X 110' RT. SIDE DRAIN												220																			PCC-1, PCM-1, PCP-1, PCP-2
451+77	EXTEND 24" X 48' R.C. PIPE CULVERT	80													2															16	0.20	FES-1, FES-2, PCC-1,
459+97	EXTEND 54" X 45' R.C. PIPE CULVERT AND INSTALL 54" X 118' R.C. PIPE CULVERT						200													4									74	0.93	FES-1, FES-2, PCC-1,
480+11	DBL. 36" X 120' R.C. PIPE CULVERT			240													4													36	0.45	FES-1, FES-2, PCC-1,
488+34	DBL. 54" X 126' R.C. PIPE CULVERT						252													4										74	0.93	FES-1, FES-2, PCC-1,
488+50	12" TEMPORARY PIPE CULVERT																						58									
496+31	30" X 120' R.C. PIPE CULVERT		120													2														26	0.33	FES-1, FES-2, PCC-1,
500+23	DBL. 36" X 116' R.C. PIPE CULVERT		232														4													36	0.45	FES-1, FES-2, PCC-1,
507+06	CONSTRUCT D.I. W/ 36" X 142' INLET AND 36" X 98' OUTLET			240													2								1					34	0.43	FES-1, FES-2, FPC-9, PCC-1,
511+97	EXTEND 36" X 44' R.C. PIPE CULVERT			80													2													34	0.43	FES-1, FES-2, PCC-1,
513+72	54" X 120' R.C. PIPE CULVERT						120													2										70	0.88	FES-1, FES-2, PCC-1,
522+40	36" X 142' R.C. PIPE CULVERT			142													2													34	0.43	FES-1, FES-2, PCC-1,
535+27	60" X 132' R.C. PIPE CULVERT							132													2									90	1.13	FES-1, FES-2, PCC-1,
541+50	24" X 66' LT. SIDE DRAIN											66																				PCC-1, PCM-1, PCP-1, PCP-2
548+24	DBL. 44" X 27" X 116' R.C. ARCH PIPE CULVERT								232													4									36	0.45	FES-1, FES-2, PCC-1,
556+32	24" X 132' R.C. PIPE CULVERT	132													2															16	0.20	FES-1, FES-2, PCC-1,
561+90	DBL. 48" X 134' R.C. PIPE CULVERT					268													4											62	0.78	FES-1, FES-2, PCC-1,
574+80	12" TEMPORARY PIPE CULVERT																						50									
575+76	DBL. 54" X 146' R.C. PIPE CULVERT						292													4										74	0.93	FES-1, FES-2, PCC-1,
580+80	DBL. 48" X 90' LT. SIDE DRAIN												180																			PCC-1, PCM-1, PCP-1, PCP-2
583+52	DBL. 42" X 116' R.C. PIPE CULVERT				232													4												50	0.63	FES-1, FES-2, PCC-1,
585+00	12" TEMPORARY PIPE CULVERT																						56									
607+40	EXTEND DBL. 48" X 49' R.C. PIPE CULVERT					156													4											62	0.78	FES-1, FES-2, PCC-1,
617+55	36" X 116' R.C. PIPE CULVERT			116													2													34	0.43	FES-1, FES-2, PCC-1,
1101+28	EXTEND 12" CMP									18																						PCC-1, PCM-1
SUBTOTALS:		212	472	818	658	424	864	616	232	18	40	134	220	180	4	4	16	10	8	14	10	4	420	1						1172	14.75	
	STRUCTURES OVER 20' - 0" SPAN																															
343+42	EXTEND DBL. 10' X 6' R.C. BOX CULVERT 29' LT. & 25' RT.																								10	6	60	126.32	18487	1045	224	2.82	R-200X-0, W-X003-1, PBC-1, RCB-1, RCB-2, RCB-3
389+78	EXTEND TRI. 10' X 5' X 44' R.C. BOX CULVERT 39' LT. & 43' RT. AND CONSTRUCT 10' X 5' X 126' R.C. BOX CULVERT																								10	5	126	353.23	569360	176	299	3.77	R-100X-0, R300X-X2, W-X003-1, PBC-1, RCB-1, RCB-2, RCB-3
432+61	EXTEND TRI. 10' X 6' X 44' R.C. BOX CULVERT 16' LT. & 71' RT. AND CONSTRUCT 10' X 6' X 136' R.C. BOX CULVERT																								10	6	135	442.05	61179	208	155	1.95	R-100X-X3, R300X-X2, W-X003-1, PBC-1, RCB-1, RCB-2, RCB-3
469+97	EXTEND DBL. 8' X 4' X 54' R.C. BOX CULVERT 64' LT. & 23' RT. AND CONSTRUCT 8' X 4' X 140' R.C. BOX CULVERT, 30° LT. FWD. SKEW																								8	4	140	221.38	33640	123	258	3.25	R-130X-0, R230X-01, W-X303-1, PBC-1, RCB-1, RCB-2, RCB-3
539+70	EXTEND TRI. 8' X 7' X 55' R.C. BOX CULVERT 59' LT. & 30' RT. AND CONSTRUCT 8' X 7' X 144' R.C. BOX CULVERT, 30° LT. FWD. SKEW																								8	7	144	382.20	54457	178	186	2.34	R-130X-0, R330X-01, W-X303-1, PBC-1, RCB-1, RCB-2, RCB-3
SUBTOTALS:																												1525.18	737123	1730	1122	14.13	
TOTALS:		212	472	818	658	424	864	616	232	18	40	134	220	180	4	4	16	10	8	14	10	4	420	1				1525.18	737123	1730	2294	28.88	

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.

2/18/2014

R050213.DGN

QUANTITIES

R050213.DGN 2/18/2014

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
					JOB NO.	050213	63	369

(2) QUANTITIES

DRIVEWAYS & TURNOUTS

STATION	SIDE	LOCATION	WIDTH	PORTLAND CEMENT CONCRETE DRIVEWAY	ACHM SURFACE COURSE (1/2") 220 LBS. PER SQ. YD. (PG 64-22)		AGGREGATE BASE COURSE (CLASS 7)	SIDE DRAINS							STANDARD DRAWINGS
								18"	24"	30"	36"	42"	48"	54"	
			FEET	SQ. YD.	SQ. YD.	TON	TON	LIN. FT.							
341+32	LT.	CARDINAL DRIVE	20		145.3	16.0	59.3	58							PCC-1, PCM-1, PCP-1, PCP-2
341+95	RT.	INDCO LANE	20		126.1	13.9	51.5								
345+47	LT.	ASHLEY DRIVE	20		151.5	16.7	61.9	40							PCC-1, PCM-1, PCP-1, PCP-2
345+47	RT.	HWY. 167	16		100.5	11.1	41.0	34							PCC-1, PCM-1, PCP-1, PCP-2
345+97	RT.	HWY. 167	16		89.4	9.8	36.5	36							PCC-1, PCM-1, PCP-1, PCP-2
346+87	RT.	HWY. 167	16		82.0	9.0	33.5	38							PCC-1, PCM-1, PCP-1, PCP-2
346+87	LT.	HWY. 167	16	77.30	24.7	2.7	10.1	44							PCC-1, PCM-1, PCP-1, PCP-2
347+43	RT.	HWY. 167	20		98.0	10.8	40.0	38							PCC-1, PCM-1, PCP-1, PCP-2
348+12	RT.	HWY. 167	20		98.2	10.8	40.1	38							PCC-1, PCM-1, PCP-1, PCP-2
348+15	LT.	HWY. 167	16		100.6	11.1	41.1	42							PCC-1, PCM-1, PCP-1, PCP-2
348+77	RT.	HWY. 167	20		98.0	10.8	40.0								
348+88	LT.	HWY. 167	16		94.9	10.4	38.8		40						PCC-1, PCM-1, PCP-1, PCP-2
349+71	RT.	HWY. 167	16		78.9	8.7	32.2	34							PCC-1, PCM-1, PCP-1, PCP-2
350+25	LT.	HWY. 167	16		119.5	13.1	48.8			48					PCC-1, PCM-1, PCP-1, PCP-2
352+85	RT.	HWY. 167	16	90.00	24.7	2.7	10.1	38							PCC-1, PCM-1, PCP-1, PCP-2
353+10	LT.	HWY. 167	16		104.9	11.5	42.8		44						PCC-1, PCM-1, PCP-1, PCP-2
355+40	LT.	HWY. 167	16		292.3	32.2	119.4	52							PCC-1, PCM-1, PCP-1, PCP-2
356+60	RT.	HWY. 167	16		76.8	8.4	31.4	30							PCC-1, PCM-1, PCP-1, PCP-2
358+62	LT.	HWY. 167	16		301.6	33.2	123.2	52							PCC-1, PCM-1, PCP-1, PCP-2
360+77	RT.	HWY. 167	16		84.0	9.2	34.3	40							PCC-1, PCM-1, PCP-1, PCP-2
363+66	RT.	HWY. 167	16		148.0	16.3	60.4	44							PCC-1, PCM-1, PCP-1, PCP-2
366+80	RT.	HWY. 167	16		171.6	18.9	70.1	52							PCC-1, PCM-1, PCP-1, PCP-2
367+42	LT.	HWY. 167	16		113.1	12.4	46.2				92				PCC-1, PCM-1, PCP-1, PCP-2
367+82	RT.	HWY. 167	24		215.0	23.7	87.8	52							PCC-1, PCM-1, PCP-1, PCP-2
368+93	RT.	HWY. 167	16		98.5	10.8	40.2	34							PCC-1, PCM-1, PCP-1, PCP-2
368+97	LT.	HWY. 167	24		164.4	18.1	67.1				96				PCC-1, PCM-1, PCP-1, PCP-2
370+60	LT.	HWY. 167	16	83.50	24.7	2.7	10.1				92				PCC-1, PCM-1, PCP-1, PCP-2
371+18	RT.	HWY. 167	16		85.3	9.4	34.8	38							PCC-1, PCM-1, PCP-1, PCP-2
371+62	LT.	HWY. 167	16		106.7	11.7	43.6			84					PCC-1, PCM-1, PCP-1, PCP-2
373+38	RT.	HWY. 167	24		127.0	14.0	51.9	40							PCC-1, PCM-1, PCP-1, PCP-2
374+71	LT.	HWY. 167	40		273.7	30.1	111.8		68						PCC-1, PCM-1, PCP-1, PCP-2
376+55	RT.	HWY. 167	16		86.5	9.5	35.3	38							PCC-1, PCM-1, PCP-1, PCP-2
377+22	LT.	HWY. 167	40		309.1	34.0	126.2	70							PCC-1, PCM-1, PCP-1, PCP-2
378+85	LT.	HWY. 167	20		233.8	25.7	95.5	50							PCC-1, PCM-1, PCP-1, PCP-2
382+20	RT.	HWY. 167	40		213.4	23.5	87.1	68							PCC-1, PCM-1, PCP-1, PCP-2
384+75	LT.	HWY. 167	34		241.5	26.6	98.6			62					PCC-1, PCM-1, PCP-1, PCP-2
385+70	RT.	HWY. 167	16		92.9	10.2	37.9	34							PCC-1, PCM-1, PCP-1, PCP-2
387+12	LT.	HWY. 167	34		185.9	20.4	75.9			48					PCC-1, PCM-1, PCP-1, PCP-2
391+00	LT.	HWY. 167	40		195.9	21.5	80.0								
392+80	LT.	HWY. 167	36		192.1	21.1	78.4			52					PCC-1, PCM-1, PCP-1, PCP-2
394+19	LT.	HWY. 167	36		207.8	22.9	84.9			54					PCC-1, PCM-1, PCP-1, PCP-2
395+60	LT.	HWY. 167	32		205.3	22.6	83.8		56						PCC-1, PCM-1, PCP-1, PCP-2
395+94	RT.	HWY. 167	16		95.3	10.5	38.9	36							PCC-1, PCM-1, PCP-1, PCP-2
396+80	LT.	HWY. 167	26		170.4	18.7	69.6		50						PCC-1, PCM-1, PCP-1, PCP-2
397+60	LT.	HWY. 167	40		246.7	27.1	100.7		62						PCC-1, PCM-1, PCP-1, PCP-2
401+04	LT.	HWY. 167	20		224.1	24.7	91.5		52						PCC-1, PCM-1, PCP-1, PCP-2
408+68	LT.	HWY. 167	16		90.2	9.9	36.8			28					PCC-1, PCM-1, PCP-1, PCP-2
412+54	LT.	HWY. 167	16		92.1	10.1	37.6		30						PCC-1, PCM-1, PCP-1, PCP-2
421+93	LT.	HWY. 167	16		148.3	16.3	60.6								
422+65	RT.	HWY. 167	16		154.2	17.0	63.0								
426+75	RT.	HWY. 167	16		116.4	12.8	47.5	46							PCC-1, PCM-1, PCP-1, PCP-2
427+35	RT.	HWY. 167	16		104.8	11.5	42.8		42						PCC-1, PCM-1, PCP-1, PCP-2
427+54	LT.	HWY. 167	16		146.5	16.1	59.8			56					PCC-1, PCM-1, PCP-1, PCP-2
431+13	LT.	HWY. 167	18		135.2	14.9	55.2				48				PCC-1, PCM-1, PCP-1, PCP-2
433+38	LT.	HWY. 167	30		161.3	17.7	65.9	48							PCC-1, PCM-1, PCP-1, PCP-2
440+10	RT.	HWY. 167	16		90.6	10.0	37.0	34							PCC-1, PCM-1, PCP-1, PCP-2
442+32	LT.	HWY. 167	16		93.5	10.3	38.2				76				PCC-1, PCM-1, PCP-1, PCP-2
448+27	LT.	HWY. 167	16		108.6	11.9	44.3		46						PCC-1, PCM-1, PCP-1, PCP-2
448+73	RT.	HWY. 167	16		87.5	9.6	35.7	36							PCC-1, PCM-1, PCP-1, PCP-2
455+17	RT.	HWY. 167	16		144.6	15.9	59.0								
456+22	RT.	HWY. 167	16		121.8	13.4	49.7								
462+95	RT.	HWY. 167	16		76.2	8.4	31.1	28							PCC-1, PCM-1, PCP-1, PCP-2
465+00	LT.	HWY. 167	16		81.9	9.0	33.4	38							PCC-1, PCM-1, PCP-1, PCP-2
468+57	RT.	HWY. 167	20		91.7	10.1	37.4								
472+74	RT.	HWY. 167	20		131.3	14.4	53.6					72			PCC-1, PCM-1, PCP-1
477+12	RT.	HWY. 167	16		108.3	11.9	44.2					72			PCC-1, PCM-1, PCP-1
477+35	LT.	HWY. 167	16		121.8	13.4	49.7		38						PCC-1, PCM-1, PCP-1, PCP-2
478+19	RT.	HWY. 167	18		117.1	12.9	47.8					68			PCC-1, PCM-1, PCP-1
479+97	LT.	HWY. 167	16		110.5	12.2	45.1			46					PCC-1, PCM-1, PCP-1, PCP-2
480+11	RT.	HWY. 167	32		171.5	18.9	70.0	46							PCC-1, PCM-1, PCP-1, PCP-2
481+20	RT.	HWY. 167	22		105.6	11.6	43.1	34							PCC-1, PCM-1, PCP-1, PCP-2
482+50	RT.	HWY. 167	38		165.6	18.2	67.6	50							PCC-1, PCM-1, PCP-1, PCP-2
482+50	LT.	HWY. 167	16		113.9	12.5	46.5			46					PCC-1, PCM-1, PCP-1, PCP-2
483+44	RT.	HWY. 167	32		139.7	15.4	57.0	42							PCC-1, PCM-1, PCP-1, PCP-2
483+44	LT.	HWY. 167	16		118.2	13.0	48.3	46							PCC-1, PCM-1, PCP-1, PCP-2
484+50	LT.	HWY. 167	16		122.6	13.5	50.1	46							PCC-1, PCM-1, PCP-1, PCP-2
485+33	LT.	HWY. 167	16		126.0	13.9	51.5	48							PCC-1, PCM-1, PCP-1, PCP-2
486+08	RT.	HWY. 167	16		71.1	7.8	29.0								
486+50	LT.	HWY. 167	16		130.9	14.4	53.5	48							PCC-1, PCM-1, PCP-1, PCP-2
486+64	RT.	HWY. 167	16		73.7	8.1	30.1								
487+25	LT.	HWY. 167	20		205.1	22.6	83.7	60							PCC-1, PCM-1, PCP-1, PCP-2
488+65	RT.	HWY. 167	16		136.5	15.0	55.7								
489+67	RT.	HWY. 167	16		91.1	10.0	37.2								
493+00	LT.	HWY. 167	16		126.9	14.0	51.8								
498+00	LT.	HWY. 167	16		156.3	17.2	63.8								
499+70	LT.	HWY. 167	20		222.9	24.5	91.0	62							PCC-1, PCM-1, PCP-1, PCP-2
500+69	RT.	HWY. 167	16		78.5	8.6	32.1								
501+62	RT.	HWY. 167	16		72.1	7.9	29.4								
502+70	LT.	HWY. 167	16		156.2	17.2	63.8		54						PCC-1, PCM-1, PCP-1, PCP-2
503+35	RT.	HWY. 167	16		73.3	8.1	29.9								
504+85	RT.	HWY. 167	16		74.3	8.2	30.3								
505+94	RT.	HWY. 167	16		75.0	8.3	30.6								
506+70	LT.	HWY. 167	16		211.1	23.2	86.2								
510+00	LT.	HWY. 167	30		484.1	53.3	197.7								
512+75	RT.	HWY. 167	16		102.4	11.3	41.8								
516+90	LT.	HWY. 167	16	133.10	24.7	2.7	10.1						80		PCC-1, PCM-1, PCP-1
518+07	LT.	HWY. 167	16	144.70	24.7	2.7	10.1		72						PCC-1, PCM-1, PCP-1, PCP-2
525+35	LT.	HWY. 167	16		189.2	20.8	77.3			58					PCC-1, PCM-1, PCP-1, PCP-2
526+40	LT.	HWY. 167	16		175.3	19.3	71.6			64					PCC-1, PCM-1, PCP-1, PCP-2
526+63	RT.	HWY. 167	16		128.7	14.2	52.6								
533+00	LT.	HWY. 167	16		132.8	14.6	54.2							56	PCC-1, PCM-1
533+40	RT.	HWY. 167	16		74.2	8.2	30.3								
534+63	LT.	HWY. 167	16		124.3	13.7	50.8							40	PCC-1, PCM-1
536+50	RT.	HWY. 167	16		106.1	11.7	43.3								
538+00	LT.	HWY. 167	16		109.1	12.0	44.5								
539+25	LT.	HWY. 167	16		83.1	9.1	33.9								
540+70	RT.	HWY. 167	16		93.9	10.3	38.3	38							PCC-1, PCM-1, PCP-1, PCP-2
543+25	LT.	HWY. 167	34		169.6	18.7	69.3			46					PCC-1, PCM-1, PCP-1, PCP-2
545+70	LT.	HWY. 167	16		80.2	8.8	32.7	30							PCC-1, PCM-1, PCP-1, PCP-2
545+77	RT.	HWY. 167	16		75.4	8.3	30.8	32							PCC-1, PCM-1, PCP-1, PCP-2
548+00	LT.	HWY. 167	16		87.8	9.7	35.9								
549+50	RT.	HWY. 167	16		80.8	8.9	33.0	30							PCC-1, PCM-1, PCP-1, PCP-2
549+74	LT.	HWY. 167	20		124.7	13.7	50.9			44					PCC-1, PCM-1, PCP-1, PCP-2
550+75	RT.	HWY. 167	16		78.9	8.7	32.2	30							PCC-1, PCM-1, PCP-1, PCP-2
551+90	LT.	HWY. 167	16		131.7	14.5	53.8			50					PCC-1, PCM-1, PCP-1, PCP-2
558+50	LT.	HWY. 167	16		186.9	20.6	76.3	52							PCC-1, PCM-1, PCP-1, PCP-2
564+00	LT.	HWY. 167	20		259.4	28.5	105.9			56					PCC-1, PCM-1, PCP-1, PCP-2
566+15	RT.	HWY. 167	20		88.2	9.7	36.0								
566+80	RT.	HWY. 167	16		70.9	7.8	29.0								
575+10	LT.	HWY. 167	16		147.0	16.2	60.0								
585+00	RT.	HWY. 167	16		110.6	12.2	45.2					48			PCC-1, PCM-1, PCP-1
586+19	RT.	HWY. 167	16		105.4	11.6	43.0					42			PCC-1, PCM-1, PCP-1
590+00	RT.	HWY. 167	30		218.7	24.1	89.3			66					PCC-1, PCM-1, PCP-1, PCP-2
590+75	RT.	HWY. 167	40		282.7	31.1	115.4			74					PCC-1, PCM-1, PCP-1, PCP-2
594+00	LT.	HWY. 167	16		229.5	25.2	93.7	54							PCC-1, PCM-1, PCP-1, PCP-2
614+17	LT.	HWY. 167	20		119.7	13.2	48.9	46							PCC-1, PCM-1, PCP-1, PCP-2
701+35	LT.	DRIVE ON SPRING VALLEY DRIVE	16		90.3	9.9	36.9								
801+60	RT.	DRIVE ON CAVE CREEK ROAD	24		176.0	19.4	71.9								
804+73	LT.	DRIVE ON PFEIFFER ROAD	16		97.4	10.7	39.8	42							PCC-1, PCM-1, PCP-1, PCP-2
901+62	RT.	DRIVE ON GREEN LANE	16		87.7	9.6	35.8								
1004+52	LT.	DRIVE ON VICTORY LANE	16		73.6	8.1	30.1	30							PCC-1, PCM-1, PCP-1, PCP-2
1004+70	RT.	DRIVE ON VICTORY LANE	40		157.3	17.3	64.2								
1005+31	LT.	DRIVE ON VICTORY LANE	16		38.8	4.3	15.8	28							PCC-1, PCM-1, PCP-1, PCP-2
1301+29	LT.	DRIVE OF WILDERNESS ROAD	16		66.2	7.3	27.0	30							PCC-1, PCM-1, PCP-1, PCP-2
1301+52	RT.	DRIVE ON WILDERNESS ROAD	16		125.1	13.8	51.1	52							PCC-1, PCM-1, PCP-1, PCP-2
1501+27	RT.	DRIVE ON ANTIOCH ROAD	22		156.2	17.2	63.8								
1501+40	LT.	DRIVE ON ANTIOCH ROAD	22		67.2	7.4	27.4								
ENTIRE PROJECT		TEMPORARY DRIVES					4000.0								
TOTALS:				528.60	18009.60	1981.4	11353.5	2376	654	982	404	302	80	96	

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2")....................94.5% MIN. AGGR.................5.5% ASPHALT BINDER
MAXIMUM NUMBER OF GYRATIONS = 115 FOR PG 64-22

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

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14

QUANTITIES

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050213	64	369

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14

BASE AND SURFACING (BOX 1 OF 3)

STATION	STATION	LOCATION	LENGTH	AGGREGATE BASE COURSE (CLASS 7)		TACK COAT (0.10 GAL. PER SQ. YD.)			TACK COAT (0.03 GAL. PER SQ. YD.)				ACHM BINDER COURSE (1")				ACHM SURFACE COURSE (1/2")								
				TON / STATION	TON	TOTAL WID.	SQ.YD.	GALLON	TOTAL WID.	SQ.YD.	GALLON	TOTAL GALLONS	AVG. WID.	SQ.YD.	POUND / SQ. YD.	PG 64-22	AVG. WID.	SQ.YD.	POUND / SQ. YD.	PG 64-22	AVG. WID.	SQ.YD.	POUND / SQ. YD.	PG 64-22	TOTAL PG 64-22
			FEET			FEET			FEET				FEET			TON	FEET			TON	FEET			TON	TON
MAIN LANES																									
340+00.00	341+00.00	TRANSITION	100.0																						
341+00.00	350+52.00	NOTCH AND WIDEN SECTION	952.0	VAR.	3177.8																75.0	833.3	220.0	91.7	91.7
350+52.00	352+10.00	FULL DEPTH SECTION	158.0	426.00	673.1				VAR.	8488.5	254.7	254.7	VAR.	4279.5	660.0	1412.2	VAR.	4209.0	220.0	463.0	75.0	7933.3	220.0	872.7	1335.7
352+10.00	353+96.00	NOTCH AND WIDEN SECTION	186.0	VAR.	578.6				191.83	3367.7	101.0	101.0	64.2	1127.1	660.0	371.9	63.5	1114.8	220.0	122.6	75.0	1316.7	220.0	144.8	267.4
353+96.00	361+50.00	FULL DEPTH SECTION	754.0	426.00	3212.0				VAR.	1399.7	42.0	42.0	VAR.	703.3	660.0	232.1	VAR.	696.4	220.0	76.6	75.0	1550.0	220.0	170.5	247.1
361+50.00	362+55.00	NOTCH AND WIDEN SECTION	105.0	VAR.	367.5				191.83	16071.1	482.1	482.1	64.2	5378.5	660.0	1774.9	63.5	5319.9	220.0	585.2	75.0	6283.3	220.0	691.2	1276.4
362+55.00	368+88.00	FULL DEPTH SECTION	633.0	426.00	2696.6				VAR.	1023.6	30.7	30.7	VAR.	513.7	660.0	169.5	VAR.	509.9	220.0	56.1	75.0	875.0	220.0	96.3	152.4
368+88.00	377+42.00	NOTCH AND WIDEN SECTION	854.0	VAR.	2991.4				191.83	13492.0	404.8	404.8	64.2	4515.4	660.0	1490.1	63.5	4466.2	220.0	491.3	75.0	5275.0	220.0	580.3	1071.6
377+42.00	386+69.00	FULL DEPTH SECTION	927.0	426.00	3949.0				VAR.	8339.8	250.2	250.2	VAR.	4185.7	660.0	1381.3	VAR.	4154.1	220.0	457.0	75.0	7116.7	220.0	782.8	1239.8
386+69.00	392+45.00	NOTCH AND WIDEN SECTION	576.0	VAR.	1914.2				191.83	19758.5	592.8	592.8	64.2	6612.6	660.0	2182.2	63.5	6540.5	220.0	719.5	75.0	7725.0	220.0	849.8	1569.3
392+45.00	398+33.00	FULL DEPTH SECTION	588.0	426.00	2504.9				VAR.	5087.6	152.6	152.6	VAR.	2565.1	660.0	846.5	VAR.	2522.5	220.0	277.5	75.0	4800.0	220.0	528.0	805.5
398+33.00	398+90.00	NOTCH AND WIDEN SECTION	57.0	VAR.	194.2				191.83	12532.9	376.0	376.0	64.2	4194.4	660.0	1384.2	63.5	4148.7	220.0	456.4	75.0	4900.0	220.0	539.0	995.4
398+90.00	404+84.00	FULL DEPTH SECTION	594.0	426.00	2530.4				VAR.	525.5	15.8	15.8	VAR.	263.8	660.0	87.1	VAR.	261.7	220.0	28.8	75.0	475.0	220.0	52.3	81.1
404+84.00	406+18.00	NOTCH AND WIDEN SECTION	134.0	VAR.	466.3				191.83	12660.8	379.8	379.8	64.2	4237.2	660.0	1398.3	63.5	4191.0	220.0	461.0	75.0	4950.0	220.0	544.5	1005.5
406+18.00	410+92.00	FULL DEPTH SECTION	474.0	426.00	2019.2				VAR.	1291.2	38.7	38.7	VAR.	648.1	660.0	213.9	VAR.	643.1	220.0	70.7	75.0	1116.7	220.0	122.8	193.5
410+92.00	411+94.00	NOTCH AND WIDEN SECTION	102.0	VAR.	373.9				191.83	10103.0	303.1	303.1	64.2	3381.2	660.0	1115.8	63.5	3344.3	220.0	367.9	75.0	3950.0	220.0	434.5	802.4
411+94.00	429+09.00	FULL DEPTH SECTION	1715.0	426.00	7305.9				VAR.	1091.0	32.7	32.7	VAR.	547.4	660.0	180.6	VAR.	543.6	220.0	59.8	75.0	850.0	220.0	93.5	153.3
429+09.00	430+39.50	NOTCH AND WIDEN SECTION	130.5	VAR.	458.9				191.83	36554.3	1096.6	1096.6	64.2	12233.7	660.0	4037.1	63.5	12100.3	220.0	1331.0	75.0	14291.7	220.0	1572.1	2903.1
430+39.50	431+88.00	FULL DEPTH SECTION	148.5	426.00	632.6				VAR.	1284.7	38.5	38.5	VAR.	644.8	660.0	212.8	VAR.	639.9	220.0	70.4	75.0	1087.5	220.0	119.6	190.0
431+88.00	447+84.00	NOTCH AND WIDEN SECTION	1596.0	VAR.	5385.8				191.83	3165.2	95.0	95.0	64.2	1059.3	660.0	349.6	63.5	1047.8	220.0	115.3	75.0	1237.5	220.0	136.1	251.4
447+84.00	453+74.00	FULL DEPTH SECTION	590.0	426.00	2513.4				VAR.	14522.8	435.7	435.7	VAR.	7311.3	660.0	2412.7	VAR.	7211.5	220.0	793.3	75.0	13300.0	220.0	1463.0	2256.3
453+74.00	508+78.89	NOTCH AND WIDEN SECTION	5504.9	VAR.	18410.2				191.83	12575.5	377.3	377.3	64.2	4208.7	660.0	1388.9	63.5	4162.8	220.0	457.9	75.0	4916.7	220.0	540.8	998.7
508+78.89	509+75.79	NOTCH AND WIDEN W/ OVERLAY ON RT.	96.9	VAR.	250.2				VAR.	49230.7	1476.9	1476.9	VAR.	24810.2	660.0	8187.4	VAR.	24420.5	220.0	2686.3	75.0	45874.2	220.0	5046.2	7732.5
509+75.79	563+79.00	NOTCH AND WIDEN SECTION	5403.2	VAR.	18002.3				VAR.	858.6	25.8	25.8	VAR.	431.0	660.0	142.2	VAR.	427.6	220.0	47.0	75.0	807.5	220.0	88.8	135.8
563+79.00	572+58.50	FULL DEPTH SECTION	879.5	426.00	3746.7				VAR.	47830.8	1434.9	1434.9	VAR.	24084.3	660.0	7947.8	VAR.	23746.5	220.0	2612.1	75.0	45026.7	220.0	4952.9	7565.0
572+58.50	574+75.00	NOTCH AND WIDEN SECTION	216.5	VAR.	718.1				191.83	18746.1	562.4	562.4	64.2	6273.8	660.0	2070.4	63.5	6205.4	220.0	682.6	75.0	7329.2	220.0	806.2	1488.8
574+75.00	577+14.00	FULL DEPTH SECTION	239.0	426.00	1018.1				VAR.	2483.5	74.5	74.5	VAR.	1540.7	660.0	508.4	VAR.	942.8	220.0	103.7	75.0	1804.2	220.0	198.5	302.2
577+14.00	578+35.90	NOTCH AND WIDEN SECTION	121.9	VAR.	404.4				191.83	5094.2	152.8	152.8	64.2	1704.9	660.0	562.6	63.5	1686.3	220.0	185.5	75.0	1991.7	220.0	219.1	404.6
578+35.90	583+29.10	FULL DEPTH SECTION	493.2	426.00	2101.0				VAR.	1070.5	32.1	32.1	VAR.	539.3	660.0	178.0	VAR.	531.2	220.0	58.4	75.0	1015.8	220.0	111.7	170.1
583+29.10	584+03.25	NOTCH AND WIDEN SECTION	74.2	VAR.	246.5				191.83	10512.3	315.4	315.4	64.2	3518.2	660.0	1161.0	63.5	3479.8	220.0	382.8	75.0	4110.0	220.0	452.1	834.9
584+03.25	590+40.00	FULL DEPTH SECTION	636.8	426.00	2712.8				VAR.	653.7	19.6	19.6	VAR.	329.3	660.0	108.7	VAR.	324.4	220.0	35.7	75.0	618.3	220.0	68.0	103.7
590+40.00	593+37.15	NOTCH AND WIDEN SECTION	297.2	VAR.	984.5				191.83	13573.0	407.2	407.2	64.2	4542.5	660.0	1499.0	63.5	4493.0	220.0	494.2	75.0	5306.7	220.0	583.7	1077.9
593+37.15	600+90.00	FULL DEPTH SECTION	752.8	426.00	3206.9				VAR.	2606.5	78.2	78.2	VAR.	1314.2	660.0	433.7	VAR.	1292.3	220.0	142.2	75.0	2476.7	220.0	272.4	414.6
600+90.00	610+41.21	NOTCH AND WIDEN SECTION	951.2	VAR.	3192.6				191.83	16045.5	481.4	481.4	64.2	5370.0	660.0	1772.1	63.5	5311.4	220.0	584.3	75.0	6273.3	220.0	690.1	1274.4
610+41.21	611+41.21	TRANSITION	100.0										VAR.	8581.4	257.4	257.4	VAR.	4325.9	660.0	1427.5	VAR.	4255.5	220.0	468.1	75.0	7926.7	220.0	871.9	1340.0
610+41.21	621+41.21	NOTCH AND WIDEN SECTION	1100.0	VAR.	3265.6																				75.0	833.3	110.0	45.8	45.8
621+41.21	622+41.21	TRANSITION	100.0										VAR.	11029.7	330.9	330.9	VAR.	4852.8	660.0	1601.4	VAR.	6176.9	220.0	679.5					679.5
																									55.0	611.1	110.0	33.6	33.6
ADDITIONAL FOR LEVELING AND GRADE RAISE																									
341+00.00	350+52.00	GRADE RAISE	952.0			24.0	2538.7	253.9	24.0	5077.4	152.3	406.2	24.0	2538.7	VAR.	1272.7	24.0	2538.7	VAR.	558.5					558.5
352+10.00	353+96.00	LEVELING	186.0			VAR.	610.6	61.1	VAR.	610.6	18.3	79.4					VAR.	610.6	VAR.	177.5					177.5
361+50.00	363+55.00	GRADE RAISE	205.0			VAR.	227.8	22.8	VAR.	683.4	20.5	43.3	VAR.	227.8	VAR.	155.1	VAR.	227.8	VAR.	50.1					50.1
368+88.00	377+42.00	GRADE RAISE	854.0			VAR.	1846.7	184.7	VAR.	3693.4	110.8	295.5	VAR.	1846.7	VAR.	899.8	VAR.	1846.7	VAR.	406.3					406.3
386+69.00	392+45.00	GRADE RAISE	576.0			24.0	1536.0	153.6	24.0	3072.0	92.2	245.8	24.0	1536.0	VAR.	726.5	24.0	1536.0	VAR.	337.9					337.9
398+33.00	398+90.00	GRADE RAISE	57.0			VAR.	138.9	13.9	VAR.	555.6	16.7	30.6	VAR.	138.9	VAR.	100.8	VAR.	138.9	VAR.	30.6					30.6
404+84.00	406+18.00	GRADE RAISE	134.0			VAR.	298.4	29.8	VAR.	1193.6	35.8	65.6	VAR.	298.4	VAR.	230.3	VAR.	298.4	VAR.	65.6					65.6
410+92.00	411+94.00	GRADE RAISE	102.0			VAR.	173.1	17.3	VAR.	865.5	26.0	43.3	VAR.	173.1	VAR.	140.8	VAR.	173.1	VAR.	38.1					38.1
429+09.00	430+39.50	GRADE RAISE	130.5			VAR.	277.0	27.7	VAR.	1108.0	33.2	60.9	VAR.	277.0	VAR.	203.1	VAR.	277.0	VAR.	60.9					60.9
431+88.00	447+84.00	GRADE RAISE	1596.0			VAR.	4035.3	403.5	VAR.	8070.6	242.1	645.6	VAR.	4035.3	VAR.	2116.3	VAR.	4035.3	VAR.	887.8					887.8
453+74.00	508+78.89	GRADE RAISE	5504.9			24.0	14679.7	1468.0	24.0	29359.4	880.8	2348.8	24.0	14679.7	VAR.	5874.9	24.0	14679.7	VAR.	3229.5					3229.5
508+78.89	509+75.79	GRADE RAISE	96.9			24.0	258.4	25.8	24.0	516.8	15.5	41.3	24.0	258.4	VAR.	110.0	24.0	258.4	VAR.	56.8					56.8
509+75.79	563+79.00	GRADE RAISE	5403.2			24.0	14408.5	1440.9	24.0	14408.5	432.3	1873.2					24.0	14408.5	VAR.	4430.4					4430.4
572+58.50	574+75.00	GRADE RAISE	216.5			24.0	577.3	57.7	24.0	1731.9	52.0	109.7	24.0	577.3	VAR.	364.7	24.0	577.3	VAR.	127.0					127.0
577+14.00	578+35.90	GRADE RAISE	121.9			24.0	325.1	32.5	24.0	650.2	19.5	52.0	24.0	325.1	VAR.	145.0	24.0	325.1	VAR.	71.5					71.5
583+29.10	584+03.25	GRADE RAISE	74.2			24.0	197.9	19.8	24.0	1187.4	35.6	55.4	24.0	197.9	VAR.	163.7	24.0	197.9	VAR.	43.5					43.5
590+40.00	593+37.15	GRADE RAISE	297.2			24.0	792.5	79.3	24.0	3962.5	118.9	198.2	24.0	792.5	VAR.	613.0	24.0	792.5	VAR.	174.3					174.3
600+90.00	621+41.21	LEVELING	2051.2			24.0	5469.9	547.0	24.0	5469.9	164.1	711.1					24.0	5469.9	VAR.	1011.7					1011.7
SUBTOTALS:					102205.6		48391.8	4839.3		453868.6	13616.2	18455.5		180150.7		63358.6		199513.4		28381.7		226788.8		24867.3	53249.0

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....94.5% MIN. AGGR.....5.5% ASPHALT BINDER
ACHM BINDER COURSE (1").....95.7% MIN. AGGR.....4.3% ASPHALT BINDER
MAXIMUM NUMBER OF GYRATIONS = 115 FOR PG 64-22

2/18/2014

R050213.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.		050213	65	369

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14

BASE AND SURFACING (BOX 2 OF 3)

STATION	STATION	LOCATION	LENGTH	AGGREGATE BASE COURSE (CLASS 7)		TACK COAT (0.10 GAL. PER SQ. YD.)			TACK COAT (0.03 GAL. PER SQ. YD.)				ACHM BINDER COURSE (1")				ACHM SURFACE COURSE (1/2")								
			FEET	TON / STATION	TON	TOTAL WID. FEET	SQ.YD.	GALLON	TOTAL WID. FEET	SQ.YD.	GALLON	TOTAL GALLONS	AVG. WID. FEET	SQ.YD.	POUND / SQ. YD.	PG 64-22 TON	AVG. WID. FEET	SQ.YD.	POUND / SQ. YD.	PG 64-22 TON	AVG. WID. FEET	SQ.YD.	POUND / SQ. YD.	PG 64-22 TON	TOTAL PG 64-22 TON
ADDITIONAL FOR SUPERELEVATION																									
354+26.85	359+66.85	SUPERELEVATION TRANSITION	540.0	62.13	335.5																				
359+66.85	364+28.73	MAXIMUM SUPERELEVATION	461.9	124.25	573.9																				
364+28.73	369+68.73	SUPERELEVATION TRANSITION	540.0	62.13	335.5																				
417+62.45	422+12.45	SUPERELEVATION TRANSITION	450.0	42.38	190.7																				
422+12.45	425+59.81	MAXIMUM SUPERELEVATION	347.4	84.75	294.4																				
425+59.81	430+09.81	SUPERELEVATION TRANSITION	450.0	42.38	190.7																				
430+09.81	435+76.81	SUPERELEVATION TRANSITION	567.0	75.63	428.8																				
435+76.81	441+43.81	SUPERELEVATION TRANSITION	567.0	75.63	428.8																				
441+43.81	446+38.81	SUPERELEVATION TRANSITION	495.0	62.13	307.5																				
446+38.81	450+03.34	MAXIMUM SUPERELEVATION	364.5	124.25	452.9																				
450+03.34	454+98.34	SUPERELEVATION TRANSITION	495.0	62.13	307.5																				
469+55.65	474+95.65	SUPERELEVATION TRANSITION	540.0	57.88	312.6																				
474+95.65	477+69.60	MAXIMUM SUPERELEVATION	273.9	115.75	317.0																				
477+69.60	483+09.60	SUPERELEVATION TRANSITION	540.0	57.88	312.6																				
483+09.60	488+49.60	SUPERELEVATION TRANSITION	540.0	24.63	133.0																				
488+49.60	493+09.82	MAXIMUM SUPERELEVATION	460.2	49.25	226.6																				
493+09.82	498+49.82	SUPERELEVATION TRANSITION	540.0	24.63	133.0																				
524+01.65	530+31.65	SUPERELEVATION TRANSITION	630.0	72.38	456.0																				
530+31.65	533+17.92	MAXIMUM SUPERELEVATION	286.3	144.75	414.4																				
533+17.92	539+47.92	SUPERELEVATION TRANSITION	630.0	72.38	456.0																				
551+99.44	557+39.44	SUPERELEVATION TRANSITION	540.0	38.63	208.6																				
557+39.44	558+31.08	MAXIMUM SUPERELEVATION	91.6	77.25	70.8																				
558+31.08	563+71.08	SUPERELEVATION TRANSITION	540.0	38.63	208.6																				
563+71.08	569+11.08	SUPERELEVATION TRANSITION	540.0	35.13	189.7																				
569+11.08	571+53.79	MAXIMUM SUPERELEVATION	242.7	70.25	170.5																				
571+53.79	576+93.79	SUPERELEVATION TRANSITION	540.0	35.13	189.7																				
580+17.15	586+47.15	SUPERELEVATION TRANSITION	630.0	65.63	413.5																				
586+47.15	591+91.24	MAXIMUM SUPERELEVATION	544.1	131.25	714.1																				
591+91.24	598+21.24	SUPERELEVATION TRANSITION	630.0	65.63	413.5																				
FULL DEPTH SHOULDERS																									
535+00.00	544+34.93	LEFT SHOULDER	934.9	62.25	582.0				12.83	1332.8	40.0	40.0	6.6	685.6	660.0	226.2	6.3	654.4	220.0	72.0					72.0
TEMPORARY WIDENING																									
387+96.89	392+83.48		486.6	VAR.	230.7				VAR.	752.5	22.6	22.6	VAR.	383.9	660.0	126.7	VAR.	368.6	220.0	40.5	VAR.	228.8	220.0	25.2	65.7
OVERLAY OF EXISTING ROADWAY																									
405+75	406+20	LEFT MAIN LANE	45.0																		12	60.0	220.0	6.6	6.6
429+20	430+85	RIGHT MAIN LANE	165.0																		12	220.0	220.0	24.2	24.2
461+25	480+20	MAIN LANES	1895.0																		24	5053.3	220.0	555.9	555.9
486+90	490+90	LEFT MAIN LANE	400.0																		12	533.3	220.0	58.7	58.7
497+00	499+75	MAIN LANES	275.0																		24	733.3	220.0	80.7	80.7
504+00	511+25	MAIN LANES	725.0																		24	1933.3	220.0	212.7	212.7
521+50	522+75	RIGHT MAIN LANE	125.0																		12	166.7	220.0	18.3	18.3
522+75	527+50	MAIN LANES	475.0																		24	1266.7	220.0	139.3	139.3
561+00	561+75	LEFT MAIN LANE	75.0																		12	100.0	220.0	11.0	11.0
562+50	563+00	RIGHT MAIN LANE	50.0																		12	66.7	220.0	7.3	7.3
563+00	566+75	MAIN LANES	375.0																		24	1000.0	220.0	110.0	110.0
577+60	578+40	MAIN LANES	80.0																		24	213.3	220.0	23.5	23.5
586+25	587+50	MAIN LANES	125.0																		24	333.3	220.0	36.7	36.7
592+50	593+50	LEFT MAIN LANE	100.0																		12	133.3	220.0	14.7	14.7
SUBTOTALS:					9999.1					2085.3	62.6	62.6		1069.5		352.9		1023.0		112.5		12042.0		1324.8	1437.3

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....94.5% MIN. AGGR.....5.5% ASPHALT BINDER
ACHM BINDER COURSE (1").....95.7% MIN. AGGR.....4.3% ASPHALT BINDER
MAXIMUM NUMBER OF GYRATIONS = 115 FOR PG 64-22

2/21/2014

R050213.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.		050213	66	369

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14

BASE AND SURFACING (BOX 3 OF 3)

STATION	STATION	LOCATION	LENGTH	AGGREGATE BASE COURSE (CLASS 7)		TACK COAT							ACHM BINDER COURSE (1")				ACHM SURFACE COURSE (1/2")							
						(0.10 GAL. PER SQ. YD.)			(0.03 GAL. PER SQ. YD.)															
				TON / STATION	TON	TOTAL WID.	SQ.YD.	GALLON	TOTAL WID.	SQ.YD.	GALLON	TOTAL GALLONS	AVG. WID.	SQ.YD.	POUND / SQ. YD.	PG 64-22	AVG. WID.	SQ.YD.	POUND / SQ. YD.	PG 64-22	AVG. WID.	SQ.YD.	POUND / SQ. YD.	PG 64-22	TOTAL PG 64-22
			FEET			FEET			FEET				FEET			TON	FEET			TON	FEET			TON	TON
SPRING VALLEY DRIVE																									
700+29.50	701+70.00	SPRING VALLEY DRIVE	140.5	VAR.	247.5																VAR.	564.4	220.0	62.1	62.1
701+70.00	702+70.00	TRANSITION	100.0																		28.0	311.1	220.0	34.2	34.2
CAVE CREEK ROAD																									
800+30.00	801+30.00	TRANSITION	100.0																		28.0	311.1	220.0	34.2	34.2
801+30.00	803+00.71	CAVE CREEK ROAD	170.7	VAR.	264.7																VAR.	532.7	220.0	58.6	58.6
PFEIFFER ROAD																									
803+40.55	805+31.00	PFEIFFER ROAD	190.4	VAR.	296.3																VAR.	597.7	220.0	65.7	65.7
805+31.00	806+31.00	TRANSITION	100.0																		28.0	311.1	220.0	34.2	34.2
GREEN LANE																									
900+19.92	902+38.00	GREEN LANE	218.1	VAR.	339.5																VAR.	684.2	220.0	75.3	75.3
902+38.00	903+38.00	TRANSITION	100.0																		28.0	311.1	220.0	34.2	34.2
SWEET GUM ROAD																									
1000+15.00	1001+15.00	TRANSITION	100.0																		28.0	311.1	220.0	34.2	34.2
1001+15.00	1002+57.62	SWEET GUM ROAD	142.6	VAR.	227.9																VAR.	479.1	220.0	52.7	52.7
VICTORY LANE																									
1003+07.96	1005+50.00	VICTORY LANE	242.0	VAR.	376.8																VAR.	759.7	220.0	83.6	83.6
1005+50.00	1006+50.00	TRANSITION	100.0																		28.0	311.1	220.0	34.2	34.2
LESLEY HOLLOW ROAD																									
1100+37.00	1101+37.00	TRANSITION	100.0																		28.0	311.1	220.0	34.2	34.2
1101+37.00	1102+29.50	LESLEY HOLLOW ROAD	92.5	VAR.	149.0																VAR.	319.3	220.0	35.1	35.1
WEAVER CHAPEL ROAD																									
1200+12.00	1201+12.00	TRANSITION	100.0																		28.0	311.1	220.0	34.2	34.2
1201+12.00	1202+56.91	WEAVER CHAPEL ROAD	144.9	VAR.	231.3																VAR.	485.8	220.0	53.4	53.4
WILDERNESS DRIVE																									
1299+88.00	1300+88.00	TRANSITION	100.0																		28.0	311.1	220.0	34.2	34.2
1300+88.00	1302+49.12	WILDERNESS DRIVE	161.1	VAR.	259.3																VAR.	567.9	220.0	62.5	62.5
HILLY VILLAGE DRIVE																									
1400+29.50	1403+12.00	HILLY VILLAGE DRIVE	282.5	VAR.	446.0																VAR.	915.0	220.0	100.7	100.7
1403+12.00	1404+12.00	TRANSITION	100.0																		28.0	311.1	220.0	34.2	34.2
SUBTOTALS (BOX 1 OF 3):					102205.6		48391.8	4839.3		453868.6	13616.2	18455.5		180150.7		63358.6		199513.4		28381.7		226788.8		24867.3	53249.0
SUBTOTALS (BOX 2 OF 3):					9999.1					2085.3	62.6	62.6		1069.5		352.9		1023.0		112.5		12042.0		1324.8	1437.3
SUBTOTALS (BOX 3 OF 3):					2838.3																	9016.8		991.7	991.7
TOTALS:					**115043.0**		**48391.8**	**4839.3**		**455953.9**	**13678.8**	**18518.1**		**181220.2**		**63711.5**		**200536.4**		**28494.2**		**247847.6**		**27183.8**	**55678.0**

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....94.5% MIN. AGGR.....5.5% ASPHALT BINDER
ACHM BINDER COURSE (1").....95.7% MIN. AGGR.....4.3% ASPHALT BINDER
MAXIMUM NUMBER OF GYRATIONS = 115 FOR PG 64-22

2/21/2014

R050213.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.		050213	67	369

(2) SUMMARY OF QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-14

SUMMARY OF QUANTITIES (BOX 1 OF 2)

ITEM NUMBER	ITEM	QUANTITY	UNIT
201	CLEARING	250	STATION
201	GRUBBING	250	STATION
202	REMOVAL AND DISPOSAL OF FENCE	12211	LIN. FT.
202	REMOVAL AND DISPOSAL OF GATES	1	EACH
202	REMOVAL AND DISPOSAL OF SIGNS	20	EACH
202	REMOVAL AND DISPOSAL OF SIGN FOUNDATIONS	25	EACH
202	REMOVAL AND DISPOSAL OF LUMINAIRE POLE AND FOUNDATION	2	EACH
202	REMOVAL AND DISPOSAL OF WELL	8	EACH
202	REMOVAL AND DISPOSAL OF PLANTERS	1	EACH
202	REMOVAL AND DISPOSAL OF STORM CELLAR	2	EACH
202	REMOVAL AND DISPOSAL OF SEPTIC SYSTEM	2	EACH
202	REMOVAL AND DISPOSAL OF HOUSE FOUNDATION	80	LIN. FT.
202	REMOVAL AND DISPOSAL OF PIPE CULVERTS	105	EACH
202	REMOVAL AND DISPOSAL OF GUARD CABLE	180	LIN. FT.
206	FLOWABLE SELECT MATERIAL	12	CU. YD.
210	UNCLASSIFIED EXCAVATION	613758	CU. YD.
210	COMPACTED EMBANKMENT	154712	CU. YD.
210	PRESPLITTING	2916	SQ. YD.
SP & 210	SOIL STABILIZATION	25	TON
303	AGGREGATE BASE COURSE (CLASS 7)	126397	TON
401	TACK COAT	18784	GAL.
SP, SS, & 406	MINERAL AGGREGATE IN ACHM BINDER COURSE (1")	60972	TON
SP, SS, & 406	ASPHALT BINDER (PG 64-22) IN ACHM BINDER COURSE (1")	2740	TON
SP, SS, & 407	MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2")	54488	TON
SP, SS, & 407	ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2")	3171	TON
412	COLD MILLING ASPHALT PAVEMENT	13197	SQ. YD.
SP & 414	ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC	133	TON
SP & 415	ACHM PATCHING OF EXISTING ROADWAY	125	TON
505	PORTLAND CEMENT CONCRETE DRIVEWAY	528.60	SQ. YD.
601	MOBILIZATION	1.00	LUMP SUM
SP & 602	FURNISHING FIELD OFFICE	1	EACH
603	MAINTENANCE OF TRAFFIC	1.00	LUMP SUM
603	12" TEMPORARY CULVERT	420	LIN. FT.
604	SIGNS	621	SQ. FT.
604	TRAFFIC DRUMS	1603	EACH
604	FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER	982	LIN. FT.
604	RELOCATING PRECAST CONCRETE BARRIER	892	LIN. FT.
604	CONSTRUCTION PAVEMENT MARKINGS	228607	LIN. FT.
604	REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS	8389	LIN. FT.
604	VERTICAL PANELS	211	EACH
605	CONCRETE DITCH PAVING (TYPE B)	6835	SQ. YD.
SP & 606	24" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	212	LIN. FT.
SP & 606	30" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	472	LIN. FT.
SP & 606	36" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	818	LIN. FT.
SP & 606	42" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	658	LIN. FT.
SP & 606	48" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	424	LIN. FT.
SP & 606	54" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	864	LIN. FT.
SP & 606	60" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	616	LIN. FT.
606	44" X 27" REINFORCED CONCRETE ARCH PIPE CULVERTS (CLASS III)	232	LIN. FT.
606	12" SIDE DRAIN	18	LIN. FT.
SP & 606	18" SIDE DRAIN	2416	LIN. FT.
SP & 606	24" SIDE DRAIN	788	LIN. FT.
SP & 606	30" SIDE DRAIN	982	LIN. FT.
SP & 606	36" SIDE DRAIN	404	LIN. FT.
SP & 606	42" SIDE DRAIN	522	LIN. FT.
SP & 606	48" SIDE DRAIN	260	LIN. FT.
606	54" SIDE DRAIN	96	LIN. FT.
606	24" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS	4	EACH
606	30" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS	4	EACH
606	36" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS	16	EACH
606	42" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS	10	EACH
606	48" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS	8	EACH
606	54" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS	14	EACH
606	60" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS	10	EACH
606	44" X 27" FLARED END SECTIONS FOR REINFORCED CONCRETE ARCH PIPE CULVERTS	4	EACH
606	SELECTED PIPE BEDDING	450	CU. YD.
609	DROP INLETS (TYPE E)	1	EACH
611	UNDERDRAIN OUTLET PROTECTORS	56	EACH
611	4" PIPE UNDERDRAINS	14000	LIN. FT.
615	PAVEMENT REPAIR OVER CULVERTS (ASPHALT)	662	TON
619	WIRE FENCE (TYPE C)	4807	LIN. FT.
619	WIRE FENCE (TYPE D)	4971	LIN. FT.

9/2/2014

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050213	68	369

(2) SUMMARY OF QUANTITIES AND REVISIONS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-4-14

SUMMARY OF QUANTITIES (BOX 2 OF 2)

	ITEM NUMBER	ITEM	QUANTITY	UNIT
*	619	4' STEEL CHAIN LINK FENCE (ALTERNATE NO. 1)	18	LIN. FT.
*	619	4' ALUMINUM CHAIN LINK FENCE (ALTERNATE NO. 2)	18	LIN. FT.
*	619	6' STEEL CHAIN LINK FENCE (ALTERNATE NO. 1)	337	LIN. FT.
*	619	6' ALUMINUM CHAIN LINK FENCE (ALTERNATE NO. 2)	337	LIN. FT.
*	619	16' STEEL GATES (ALTERNATE NO. 1)	6	EACH
*	619	16' ALUMINUM GATES (ALTERNATE NO. 2)	6	EACH
	620	LIME	157	TON
	620	SEEDING	78.25	ACRE
	SS & 620	MULCH COVER	166.43	ACRE
	620	WATER	9954.6	M.GAL.
	621	TEMPORARY SEEDING	88.18	ACRE
	621	SILT FENCE	10266	LIN. FT.
	621	SAND BAG DITCH CHECKS	3080	BAG
	621	DROP INLET SILT FENCE	22	LIN. FT.
	621	SEDIMENT BASIN	1064	CU. YD.
	621	OBLITERATION OF SEDIMENT BASIN	1064	CU. YD.
	621	SEDIMENT REMOVAL AND DISPOSAL	2282	CU. YD.
	621	ROCK DITCH CHECKS	2091	CU. YD.
	623	SECOND SEEDING APPLICATION	78.25	ACRE
	624	SOLID SODDING	6830	SQ. YD.
	628	TOPSOIL FURNISHED AND PLACED	7000	CU. YD.
	634	CONCRETE COMBINATION CURB AND GUTTER (TYPE B-1) (1' 6")	424	LIN. FT.
	635	ROADWAY CONSTRUCTION CONTROL	1.00	LUMP SUM
	637	MAILBOXES	75	EACH
	637	MAILBOX SUPPORTS (SINGLE)	59	EACH
	637	MAILBOX SUPPORTS (DOUBLE)	8	EACH
	642	RUMBLE STRIPS IN ASPHALT SHOULDERS	34950	LIN. FT.
	718	REFLECTORIZED PAINT PAVEMENT MARKING WHITE (4")	5900	LIN. FT.
	718	REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (4")	5489	LIN. FT.
	719	THERMOPLASTIC PAVEMENT MARKING WHITE (4")	69119	LIN. FT.
	719	THERMOPLASTIC PAVEMENT MARKING YELLOW (4")	70103	LIN. FT.
	719	THERMOPLASTIC PAVEMENT MARKING (ARROWS)	2	EACH
	721	RAISED PAVEMENT MARKERS (TYPE II)	1386	EACH
	SP	CULVERT CLEAN OUT	1	EACH
	731	TEMPORARY IMPACT ATTENUATION BARRIER	2	EACH
	731	TEMPORARY IMPACT ATTENUATION BARRIER (REPAIR)	2	EACH
		STRUCTURES OVER 20' SPAN		
	801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-ROADWAY	1730	CU. YD.
	802	CLASS S CONCRETE-ROADWAY	1525.18	CU. YD.
	804	REINFORCING STEEL-ROADWAY (GRADE 60)	737123	POUND

*DENOTES ALTERNATE BID ITEMS

REVISIONS

DATE	REVISION	SHEET NUMBER

9/2/2014

R050213.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.		050213	69	369

(2) SURVEY CONTROL DETAILS

Coordinate System: ARKANSAS STATE PLANE - NORTH ZONE BASED ON GPS CONTROL, PROJECTED TO GROUND.
Units: U.S. SURVEY FOOT

Point Name	Northing	Easting	Elev	Feature	Description
30	538892.62	1431015.83	393.16	CTL	REBAR/CAP, 20' E OF N END 18" CMP
31	539268.54	1431462.16	405.64	CTL	REBAR/CAP
32	539938.97	1431839.40	383.71	CTL	REBAR/CAP
33	540594.59	1432034.14	399.94	CTL	REBAR/CAP
34	542039.40	1432647.53	393.17	CTL	REBAR/CAP
35	543101.12	1433138.17	430.69	CTL	REBAR/CAP, NW. OF TB
36	543883.88	1433350.35	446.94	CTL	REBAR/CAP
37	544441.13	1433564.37	472.98	CTL	REBAR/CAP
38	545167.87	1433700.89	465.60	CTL	REBAR/CAP
39	545793.10	1434057.41	428.28	CTL	REBAR/CAP, GREEN LANE
40	546532.45	1434324.54	427.55	CTL	REBAR/CAP
41	547399.85	1434409.85	441.44	CTL	REBAR/CAP, GR DW
42	548089.84	1434845.02	446.93	CTL	REBAR/CAP, S. OFASHP DW
43	548900.96	1435325.40	447.40	CTL	REBAR/CAP
44	549633.86	1435709.03	461.40	CTL	REBAR/CAP, W. 4' WEB&BARB FE
45	550198.34	1436187.60	471.30	CTL	REBAR/CAP
46	550741.06	1436828.50	486.22	CTL	REBAR/CAP, GR DW
47	551191.35	1437252.11	482.55	CTL	REBAR/CAP
48	551608.58	1437637.02	481.33	CTL	REBAR/CAP, N. GR DW TO 1-S-F
49	552846.97	1438702.35	505.89	CTL	REBAR/CAP, ACROSS FROM 1-S-F
50	554059.63	1439744.44	523.04	CTL	REBAR/CAP, E. OF GREEN MTL GT
51	554357.25	1440454.38	520.73	CTL	REBAR/CAP, GR DW, ACROSS FROM 1-[illegible]-M BU
52	554786.69	1441352.84	536.64	CTL	REBAR/CAP
53	555140.99	1442052.41	559.72	CTL	REBAR/CAP
54	555504.46	1442627.04	567.76	CTL	REBAR/CAP, EDGE OF DW TO OLD TIRE SHOP
55	555817.58	1443094.73	588.48	CTL	REBAR/CAP, ACROSS HWY FROM PP
56	556430.82	1443763.62	601.61	CTL	REBAR/CAP, OF CO RD WILDERNESS DR.
57	557040.10	1444493.87	623.66	CTL	REBAR/CAP
58	558631.18	1445174.88	625.03	CTL	REBAR/CAP, OF HW
59	559993.27	1445748.80	636.29	CTL	REBAR/CAP
60	560715.02	1446047.74	624.28	CTL	REBAR/CAP, 6' E OF EP
61	561473.80	1445963.48	619.88	CTL	REBAR/CAP
62	562525.34	1445720.84	629.06	CTL	REBAR/CAP
63	563553.33	1445597.21	655.51	CTL	REBAR/CAP
64	564503.84	1445435.26	663.85	CTL	REBAR/CAP
100	536465.63	1426470.62	390.85	GPS	AHTD GPS 320024, RTK ELEV
101	542741.52	1432914.81	407.72	GPS	AHTD GPS 320030, RTK ELEV
102	541207.42	1432385.01	408.14	GPS	AHTD GPS 320030A, RTK ELEV
103	553516.40	1439282.26	520.46	GPS	AHTD GPS 320031, RTK ELEV
104	552185.33	1438161.38	490.59	GPS	AHTD GPS 320031A, RTK ELEV
105	557770.02	1444880.26	646.78	GPS	AHTD GPS 320018, RTK ELEV
106	559433.91	1445489.56	632.95	GPS	AHTD GP 320032, RTK ELEV
913	538640.96	1430733.99	373.69	TBM	BM-913 CH SQ TOP HW 19'
914	539944.44	1431837.30	383.88	TBM	BM-914 CH SQ TOP HW
915	542822.54	1432968.93	416.25	TBM	TBM-915 CH SQ TOP HW
916	543447.63	1433211.18	431.57	TBM	BM-916 CH SQ TOP HW
917	544954.27	1433643.16	470.19	TBM	BM-917 CH SQ TOP HW, S. GR DW S. GR DW
918	546400.84	1434316.06	425.16	TBM	BM-918 CH SQ TOP HW E. OF
919	547759.05	1434655.62	446.55	TBM	BM-919 CH SQ TOP HW E. CL
920	548489.46	1435031.38	445.65	TBM	BM-920 CH SQ TOP HW W. OF, HWY 167
921	550054.09	1436034.79	468.01	TBM	TBM-921 CH SQ TOP HW 5' W.
922	550686.02	1436779.43	483.97	TBM	TBM-922, HWY 167, 16' S. GR DW
923	551302.28	1437290.76	478.47	TBM	TBM-923, HWY 167, E. OF PP&TB
924	551561.42	1437588.19	480.77	TBM	TBM-924, HWY 167, 30' S. GR DW TO 1-S-F
925	552099.91	1438010.27	490.39	TBM	TBM-925
926	552574.66	1438481.00	494.22	TBM	TBM-926, HWY 167, 60' N. DW TO 2-S-F
927	554099.35	1439953.08	514.90	TBM	TBM-927, HWY 167
929	554714.89	1441094.24	531.27	TBM	TBM-929
930	555064.97	1441823.50	551.20	TBM	TBM-930, HWY 167
931	555341.38	1442290.46	558.98	TBM	TBM-931, EP HWY 167
932	556156.99	1443431.27	585.04	TBM	TBM-932
933	558667.90	1445238.82	623.42	TBM	TBM-933, HWY 167
934	559603.21	1445634.39	632.48	TBM	TBM-934, HWY 167, 33' W. OF CM
935	560069.76	1445838.46	632.31	TBM	TBM-935, 20' S. GR DW TO 1-S-F
936	562050.52	1445768.55	625.11	TBM	CPS IN CP, 42' W OF EP 12' N OF GR DW
937	563474.95	1445517.93	654.31	TBM	CPS IN CP, 48' W OF EP 9' N OF GR DW
938	564589.87	1445326.03	665.19	TBM	CPS IN CP, 40' W OF EP 38 N OF ASPH DW
985	537763.96	1429983.42	388.32	BM	NGS MARK J 165
986	541977.91	1432624.09	392.60	BM	NGS MARK K 165
987	545935.52	1434141.76	424.73	BM	NGS MARK L 165
988	549299.05	1435562.70	455.37	BM	NGS MARK M 165, RTK ELEV
989	553230.38	1439056.69	509.46	BM	NGS MARK N 165
990	554298.28	1440339.33	518.60	BM	NGS MARK P 165
991	556623.01	1444055.33	604.96	BM	NGS MARK Q 165
992	561037.70	1445994.59	618.73	BM	NGS MARK R 165, RTK ELEV

*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 0.9999318851 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 s050213GI.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 - 0301-NORTH ZONE or 0302-SOUTH ZONE
DETERMINED FROM GPS CONTROL POINTS: 320030 - 320030A, 320031 - 320031A, 320033 - 320033A, 670008 - 670008A 320018 - 320019, 320024 - 320032
CONVERGENCE ANGLE: 00 15 44.76 RIGHT AT LT: 35-52-22.3 LG: 91-32-56.4
GRID AZIMUTH = ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE.

HWY. 167

POINT NO.	TYPE	STATION	NORTHING	EASTING
8000	POB	340+00.00	537842.1093	1429983.1200
8001	PC	341+24.83	537931.1354	1430070.6239
8003	PT	344+64.03	538176.5311	1430304.7850
8004	PC	344+64.03	538176.5313	1430304.7852
8006	PT	351+65.72	538676.3811	1430797.0881
8007	PC	358+31.85	539136.4424	1431278.8244
8009	PT	365+63.73	539735.8152	1431689.6138
8010	PC	381+66.94	541216.6397	1432303.9722
8013	PT	389+65.59	541943.0692	1432635.4696
8014	PC	389+66.89	541944.2309	1432636.0495
8016	PT	406+19.75	543471.1286	1433265.1884
8017	PC	410+20.96	543852.1266	1433390.9062
8019	PT	419+32.11	544727.8241	1433641.7346
8020	PC	420+99.95	544890.8840	1433681.5011
8022	PT	428+32.61	545572.8716	1433943.7310
8023	PC	433+01.60	545985.5780	1434166.4969
8025	PT	438+46.01	546504.6397	1434316.4090
8026	PC	443+01.12	546958.7187	1434347.0476
8028	PT	451+27.09	547740.2035	1434590.1853
8029	PC	473+60.65	549660.6519	1435730.6492
8031	PT	479+09.28	550085.9528	1436074.2351
8032	PC	487+09.92	550630.3164	1436661.3338
8034	PT	494+44.82	551155.1179	1437175.3855
8035	PC	506+26.90	552038.3714	1437960.9885
8037	PT	512+62.37	552518.9957	1438376.6860
8038	PC	528+74.15	553752.5533	1439414.0610
8040	PT	534+75.42	554119.3017	1439884.9689
8041	PC	556+04.44	555048.8030	1441800.3679
8043	PT	559+74.27	555228.5017	1442134.2689
8044	PC	567+67.89	555653.4474	1442793.6567
8046	PT	572+88.79	555961.3282	1443213.3237
8047	PC	585+89.65	556800.4892	1444207.3343
8049	PT	593+48.74	557404.8893	1444655.2906
8050	PC	615+20.34	559399.9795	1445512.8724
8052	PT	617+71.02	559629.1828	1445614.3789
8053	PC	618+43.86	559695.4617	1445644.6030
8055	PT	621+41.21	559967.5819	1445764.4538
8056	POE	625+01.48	560299.1451	1445905.3777

SPRING VALLEY DRIVE

POINT NO.	TYPE	STATION	NORTHING	EASTING
8057	POB	700+00.00	538858.9050	1430988.2113
8058	PC	700+60.92	538814.8508	1431030.2834
8060	PT	701+36.14	538784.0735	1431096.9888
8061	POE	702+98.54	538774.9572	1431259.1329

CAVE CREEK ROAD - PFEIFFER ROAD

POINT NO.	TYPE	STATION	NORTHING	EASTING
8062	POB	800+00.00	542860.6911	1432717.7659
8063	PC	801+46.90	542847.5779	1432864.0783
8065	PT	801+87.45	542849.4275	1432904.4601
8066	PC	801+90.62	542849.9992	1432907.5850
8068	PT	802+35.07	542851.4505	1432951.8435
8069	PC	804+05.77	542831.8012	1433121.4066
8071	PT	804+73.15	542839.0880	1433187.8319
8072	PC	804+73.54	542839.2138	1433188.1945
8074	PT	805+31.33	542847.2996	1433245.0603
8075	POE	806+31.28	542842.1639	1433344.8785

GREEN LANE

POINT NO.	TYPE	STATION	NORTHING	EASTING
8076	POB	900+00.00	545743.0539	1434035.5900
8077	POE	903+31.56	545666.4469	1434358.1822

SWEET GUM - VICTORY LANE

POINT NO.	TYPE	STATION	NORTHING	EASTING
8078	POB	1000+00.00	546159.2754	1433942.5406
8079	PC	1000+81.73	546143.4855	1434022.7346
8081	PT	1001+15.96	546140.7455	1434056.7815
8082	PC	1001+48.54	546141.8461	1434089.3346
8084	PT	1002+12.72	546130.4328	1434152.0011
8085	PI	1002+88.20	546101.4514	1434221.6905
8086	PC	1003+75.62	546089.9186	1434308.3477
8088	PT	1003+91.20	546088.6682	1434323.8706
8089	POE	1005+73.39	546083.4873	1434505.9876

LESLEY HOLLOW ROAD

POINT NO.	TYPE	STATION	NORTHING	EASTING
8090	POB	1100+00.00	550163.6694	1435792.0141
8091	PC	1101+50.41	550088.6799	1435922.3979
8093	PT	1101+87.79	550066.2168	1435952.1590
8094	POE	1102+59.00	550016.5888	1436003.2201

WEAVER CHAPEL ROAD

POINT NO.	TYPE	STATION	NORTHING	EASTING
8095	POB	1200+00.00	554673.4286	1440370.9683
8096	PC	1201+43.12	554542.9077	1440429.6813
8098	PT	1201+72.20	554516.5621	1440441.9962
8099	POE	1202+86.41	554413.8120	1440491.8586

WILDERNESS DRIVE

POINT NO.	TYPE	STATION	NORTHING	EASTING
8100	POB	1300+00.00	556732.2101	1443756.2991
8101	PC	1301+31.81	556600.4054	1443755.9283
8103	PT	1302+37.40	556503.2215	1443791.3104
8104	POE	1302+78.62	556471.7234	1443817.9016

HILLY VILLAGE DRIVE

POINT NO.	TYPE	STATION	NORTHING	EASTING
8105	POB	1400+00.00	557667.8821	1444768.3371
8106	PC	1401+58.73	557605.1976	1444914.1673
8108	PT	1402+61.69	557562.1218	1445007.6701
8109	POE	1403+20.24	557536.2623	1445060.2007

M.O.T. - STAGE 2

POINT NO.	TYPE	STATION	NORTHING	EASTING
8110	PC	341+11.09	537921.3383	1430060.9943
8112	PT	343+76.39	538118.8759	1430237.9426
8113	PC	343+95.94	538134.0292	1430250.3013
8115	PT	346+11.99	538296.1484	1430393.0302
8117	POB	385+57.98	541582.4810	1432443.9807
8141	PC	385+66.74	541590.4444	1432447.6372
8143	PT	387+59.23	541752.5471	1432550.3598
8144	PC	387+83.57	541771.1749	1432566.0244
8146	PT	389+55.00	541914.2717	1432659.6798
8147	PC	389+74.46	541931.7121	1432668.3172
8149	PT	390+87.47	542036.5149	1432710.2918
8150	PC	390+89.47	542038.4215	1432710.8859
8152	PT	391+85.58	542127.9903	1432745.5383
8124	POE	393+41.64	542269.4323	1432811.4785
8126	PC	439+18.05	546575.3379	1434338.7191
8128	PT	441+10.95	546768.0904	1434338.7264
8129	PC	441+63.38	546820.4018	1434335.2007
8131	PT	446+08.74	547262.2530	1434374.2580
8132	POE	446+17.14	547270.4005	1434376.2832
8134	PC	616+35.46	559513.0510	1445543.0606
8136	PT	618+61.23	559715.6805	1445642.4812
8137	PC	618+73.56	559726.5316	1445648.3466
8139	PT	621+41.23	559967.6032	1445764.4491

M.O.T. - STAGE 2B

POINT NO.	TYPE	STATION	NORTHING	EASTING
8118	PC	385+66.77	541590.4672	1432447.6477
8120	PT	389+27.82	541908.2327	1432618.5531
8121	PC	389+40.80	541919.2555	1432625.4097
8123	PT	392+85.22	542221.9337	1432789.3347

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14

2/18/2014

R050213.DGN

SURVEY CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050213	70	369

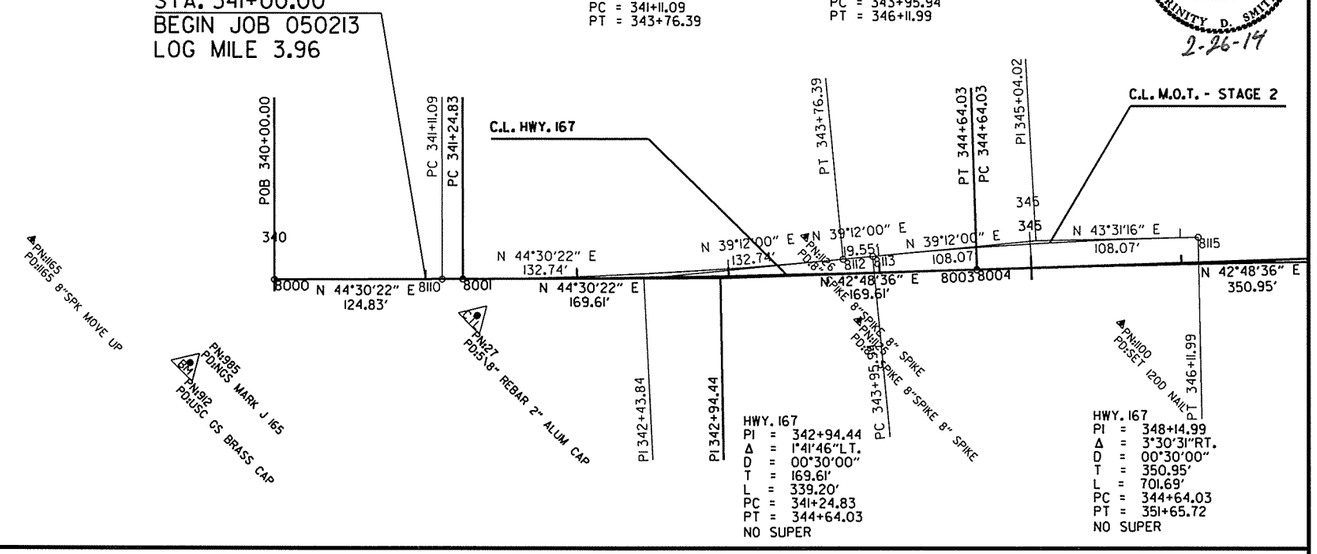
(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14

M.O.T. - STAGE 2
PI = 342+43.84
Δ = 5°18'22"LT.
D = 2°00'00"
T = 132.74'
L = 265.30'
PC = 341+11.09
PT = 343+76.39

M.O.T. - STAGE 2
PI = 345+04.02
Δ = 4°19'16"RT.
D = 2°00'00"
T = 108.07'
L = 216.05'
PC = 343+95.94
PT = 346+11.99

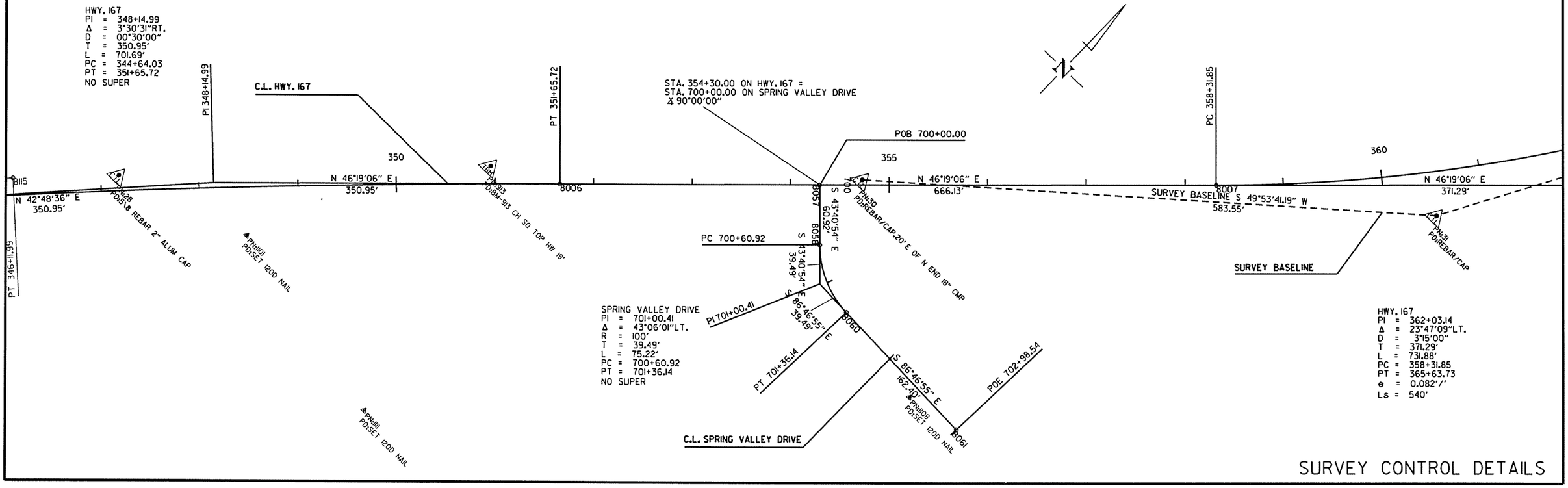
STA. 341+00.00
BEGIN JOB 050213
LOG MILE 3.96



HWY. 167
PI = 342+94.44
Δ = 1°41'46"LT.
D = 00°30'00"
T = 169.61'
L = 339.20'
PC = 341+24.83
PT = 344+64.03
NO SUPER

HWY. 167
PI = 348+14.99
Δ = 3°30'31"RT.
D = 00°30'00"
T = 350.95'
L = 701.69'
PC = 344+64.03
PT = 351+65.72
NO SUPER

HWY. 167
PI = 348+14.99
Δ = 3°30'31"RT.
D = 00°30'00"
T = 350.95'
L = 701.69'
PC = 344+64.03
PT = 351+65.72
NO SUPER



SPRING VALLEY DRIVE
PI = 701+00.41
Δ = 43°06'01"LT.
R = 100'
T = 39.49'
L = 75.22'
PC = 700+60.92
PT = 701+36.14
NO SUPER

HWY. 167
PI = 362+03.14
Δ = 23°47'09"LT.
D = 3°15'00"
T = 371.29'
L = 731.88'
PC = 358+31.85
PT = 365+63.73
e = 0.082'/'
Ls = 540'

C.L. SPRING VALLEY DRIVE

2/18/2014

R050213.DGN

SURVEY CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050213	71	369

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14

HWY. 167
PI = 362+03.14
Δ = 23°47'09"LT.
D = 3°15'00"
T = 371.29'
L = 731.88'
PC = 358+31.85
PT = 365+63.73
e = 0.082'/'
Ls = 540'

C.L. HWY. 167

PNWI52 PDSET 5/8" SPIKE

PNWI51 PDSET 5/8" SPIKE

PNWI50 PDSET 5/8" SPIKE

PT 365+63.73

365 370 375

8009

N 22°31'57" E 371.29'

SURVEY BASELINE S 29°21'55.97" W 769.28'

SURVEY BASELINE S 16°32'35.09" W 683.93'

N 22°31'57" E 1603.21'

PI 362+03.14

PNWI46 PDSET 12DD NAIL

SURVEY BASELINE

PNW32 PDREBAR/CAP

PNW34 PNBM-914 CH SQ TOP HW

PNW33 PDREBAR/CAP

N

MOT - STAGE 2
PI = 386+63.57
Δ = 15°23'57"RT.
D = 8°00'00"
T = 96.83'
L = 191.91'
PC = 385+66.74
PT = 387+59.23

MOT - STAGE 2
PI = 388+69.70
Δ = 13°42'52"LT.
D = 8°00'00"
T = 86.13'
L = 171.43'
PC = 387+83.57
PT = 389+55.00

MOT - STAGE 2
PI = 390+31.09
Δ = 9°02'28"LT.
D = 8°00'00"
T = 56.62'
L = 113.01'
PC = 389+74.46
PT = 390+87.47

MOT - STAGE 2
PI = 391+37.60
Δ = 7°41'20"RT.
D = 8°00'00"
T = 48.13'
L = 96.11'
PC = 390+89.47
PT = 391+85.58

C.L. M.O.T. - STAGE 2B

M.O.T. - STAGE 2B
PI = 387+47.53
Δ = 7°13'15"RT.
D = 2°00'00"
T = 180.76'
L = 361.05'
PC = 385+66.77
PT = 389+27.82

M.O.T. - STAGE 2B
PI = 391+13.22
Δ = 6°53'18"LT.
D = 2°00'00"
T = 172.42'
L = 344.42'
PC = 389+40.80
PT = 392+85.22

C.L. HWY. 167

PC 381+66.94

380 385 390

8010

PNWI53 PDSET 5/8" SPIKE

N 22°31'57" E 399.49'

SURVEY BASELINE S 29°47'36.41" W 706.16'

SURVEY BASELINE S 17°30'42.98" W 872.42'

SURVEY BASELINE

PNW02 PDAHTD GPS 3200304 RTK ELEV

POB 385+57.98

PI 385+66.42

N 24°39'45" E 8.76'

N 24°39'45" E 96.83'

N 24°39'45" E 180.76'

PI 386+63.57

PI 387+47.53

N 40°03'41" E 96.83'

N 31°53'00" E 180.76'

N 31°53'00" E 12.98'

N 26°31'32" E 399.49'

N 40°03'41" E 24.34'

N 40°03'41" E 86.13'

N 26°20'50" E 86.13'

N 26°20'50" E 19.46'

N 26°20'50" E 56.62'

N 31°53'00" E 172.42'

N 26°31'32" E 1.30'

N 17°18'22" E 2.00'

N 26°31'32" E 827.87'

N 17°18'22" E 56.62'

N 17°18'22" E 48.13'

N 24°59'4 48.13'

PC 389+40.80

PC 389+66.89

PI 391+37.60

8117 8118 8141 8120 8121 8143 8144 8013 8014 8146 8147 8149 8150

PNW03 PDSET 12DD NAIL

PNW04 PDREBAR/CAP

MARK K 165

PC 385+66.74

PC 385+66.77

PT 387+59.23

PC 387+83.57

PI 388+69.70

PT 389+27.82

PT 389+55.00

PT 389+65.59

PT 389+74.46

PC 389+74.46

PI 390+31.09

PT 390+87.47

PC 390+89.47

PI 391+13.22

HWY. 167
PI = 385+66.42
Δ = 3°59'35"RT.
D = 00°30'00"
T = 399.48'
L = 798.65'
PC = 381+66.94
PT = 389+65.59
NO SUPER

HWY. 167
PI = 397+94.76
Δ = 8°15'51"LT.
D = 00°30'00"
T = 827.87'
L = 1652.86'
PC = 389+66.89
PT = 406+19.75
NO SUPER

C.L. M.O.T. - STAGE 2

2/18/2014

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SURVEY CONTROL DETAILS

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				6	ARK.			
				JOB NO.		050213	72	369

② SURVEY CONTROL DETAILS

TRINITY D. SMITH
No. 11425
2-26-14

MOT - STAGE 2
PI = 391+37.60
Δ = 7°41'20"RT.
D = 8°00'00"
T = 48.13'
L = 96.11'
PC = 390+89.47
PT = 391+85.58

CAVE CREEK ROAD
PI = 801+67.30
Δ = 15°29'17"LT.
R = 150'
T = 20.40'
L = 40.55'
PC = 801+46.90
PT = 801+87.45
NO SUPER

CAVE CREEK ROAD
PI = 802+13.01
Δ = 16°58'36"RT.
R = 150'
T = 22.39'
L = 44.44'
PC = 801+90.62
PT = 802+35.07
NO SUPER

HWY. 167
PI = 397+94.76
Δ = 8°15'51"LT.
D = 00°30'00"
T = 827.87'
L = 1652.87'
PC = 389+66.89
PT = 406+19.75
NO SUPER

STA. 399+50.00 ON HWY. 167 =
STA. 803+20.65 ON CAVE CREEK ROAD - PFEIFFER ROAD
∡ 75°00'00"

PFEIFFER ROAD
PI = 804+40.04
Δ = 25°44'26"LT.
R = 150'
T = 34.27'
L = 67.39'
PC = 804+05.77
PT = 804+73.15
NO SUPER

PFEIFFER ROAD
PI = 805.02.80
Δ = 22°04'33"RT.
R = 150'
T = 29.26'
L = 57.79'
PC = 804+73.54
PT = 805+31.33
NO SUPER

M.O.T. - STAGE 2B
PI = 391+13.22
Δ = 6°53'18"LT.
D = 2°00'00"
T = 172.42'
L = 344.42'
PC = 389+40.80
PT = 392+85.22

SURVEY CONTROL DETAILS

2/18/2014

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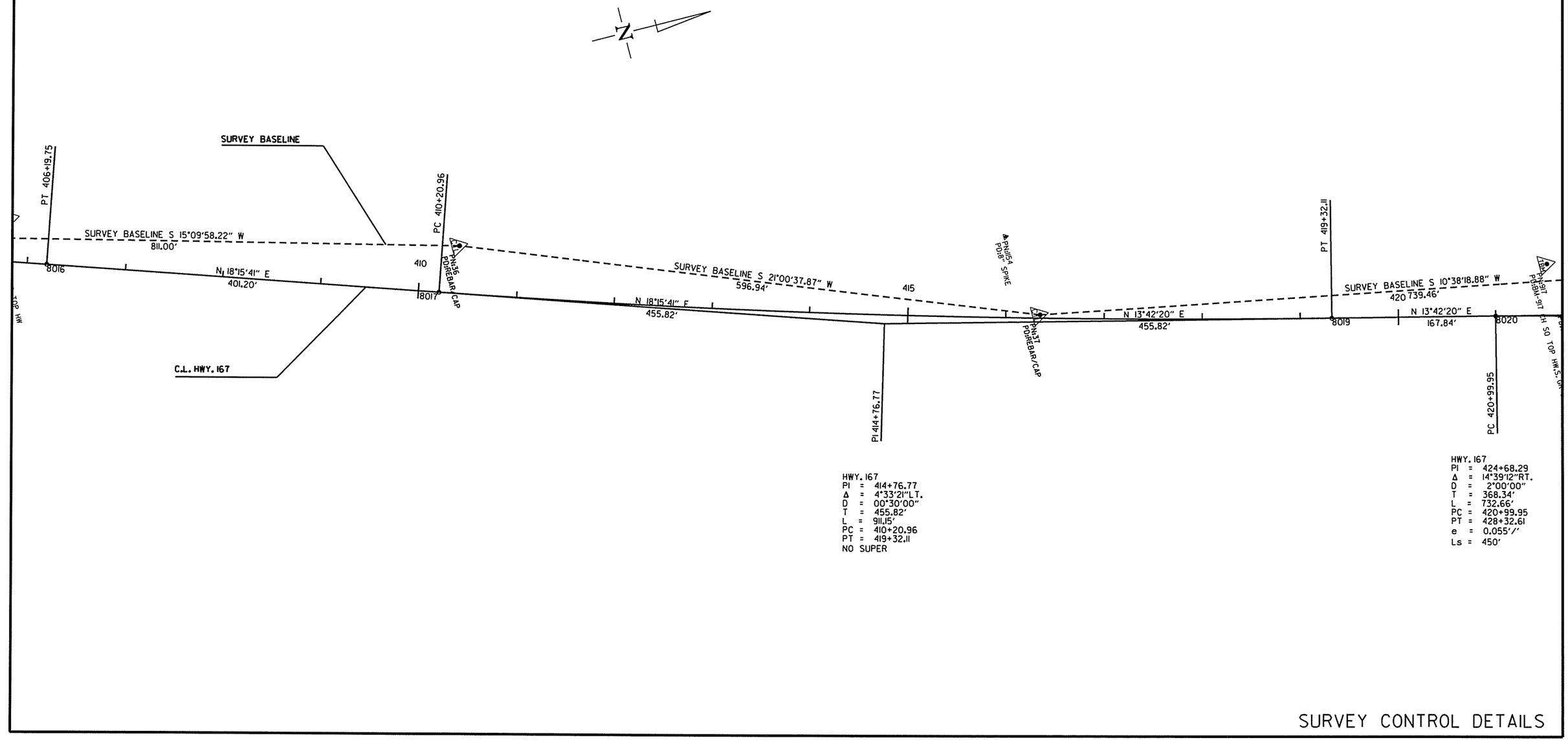
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050213	73	369

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14



HWY. 167
PI = 414+76.77
Δ = 4°33'21"LT.
D = 00°30'00"
T = 455.82'
L = 911.15'
PC = 410+20.96
PT = 419+32.11
NO SUPER

HWY. 167
PI = 424+68.29
Δ = 14°39'12"RT.
D = 2°00'00"
T = 368.34'
L = 732.66'
PC = 420+99.95
PT = 428+32.61
e = 0.055'/'
Ls = 450'

2/18/2014

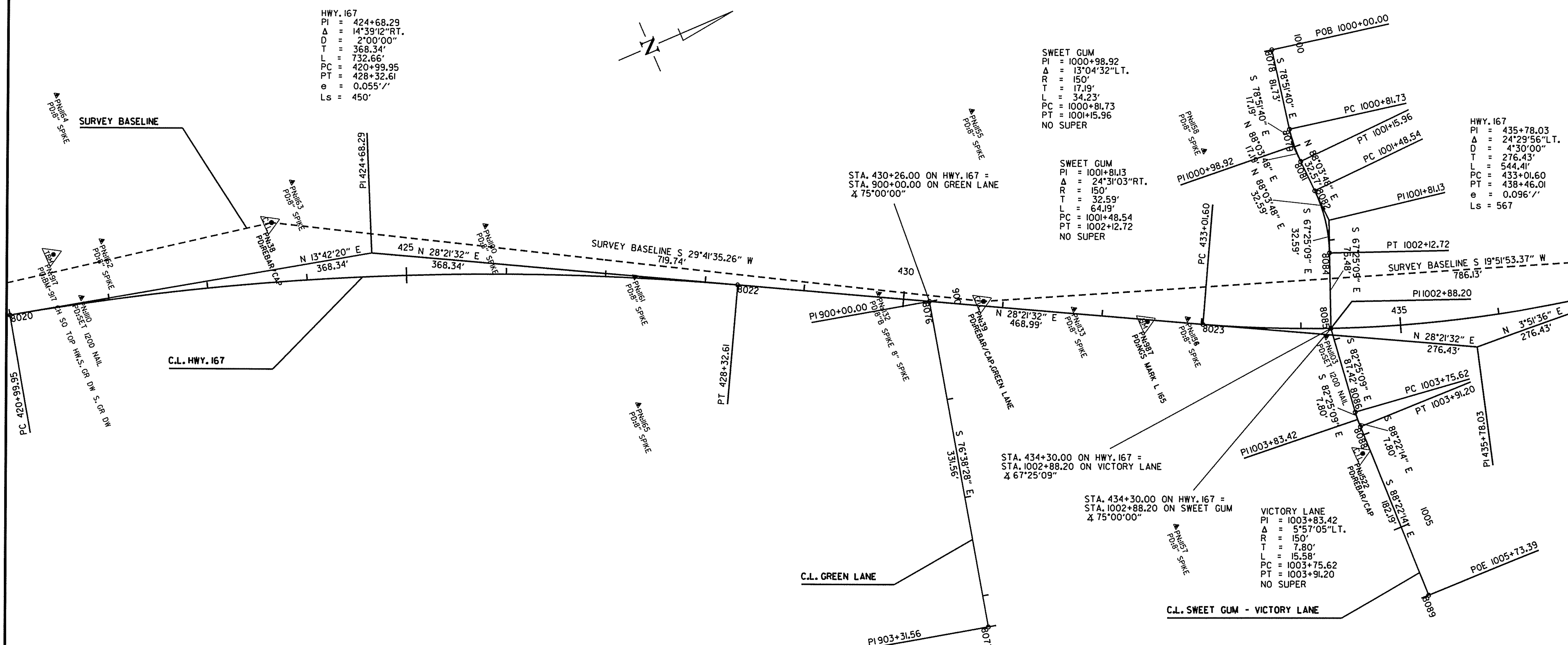
R050213.DGN

SURVEY CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050213	74	369

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14



HWY. 167
PI = 424+68.29
Δ = 14°39'12"RT.
D = 2°00'00"
T = 368.34'
L = 732.66'
PC = 420+99.95
PT = 428+32.61
e = 0.055'/'
Ls = 450'
SURVEY BASELINE
C.L. HWY. 167
SURVEY BASELINE S 29°41'35.26" W
719.74'
N 13°42'20" E
368.34'
N 28°21'32" E
368.34'
PI 424+68.29
PC 420+99.95
PT 428+32.61
8020
8022
STA. 430+26.00 ON HWY. 167 =
STA. 900+00.00 ON GREEN LANE
∡ 75°00'00"
PI 900+00.00
8076
8077
S 76°38'28" E
331.56'
PI 903+31.56
C.L. GREEN LANE
N 28°21'32" E
468.99'
PC 433+01.60
8023
SWEET GUM
PI = 1000+98.92
Δ = 13°04'32"LT.
R = 150'
T = 17.19'
L = 34.23'
PC = 1000+81.73
PT = 1001+15.96
NO SUPER
SWEET GUM
PI = 1001+81.13
Δ = 24°31'03"RT.
R = 150'
T = 32.59'
L = 64.19'
PC = 1001+48.54
PT = 1002+12.72
NO SUPER
POB 1000+00.00
S 78°51'40" E
81.73'
PC 1000+81.73
PT 1001+15.96
PI 1000+98.92
PC 1001+48.54
PI 1001+81.13
PT 1002+12.72
S 67°25'09" E
SURVEY BASELINE S 19°51'53.37" W
786.13'
PI 1002+88.20
N 28°21'32" E
276.43'
N 3°51'36" E
276.43'
HWY. 167
PI = 435+78.03
Δ = 24°29'56"LT.
D = 4°30'00"
T = 276.43'
L = 544.41'
PC = 433+01.60
PT = 438+46.01
e = 0.096'/'
Ls = 567
PI 435+78.03
STA. 434+30.00 ON HWY. 167 =
STA. 1002+88.20 ON VICTORY LANE
∡ 67°25'09"
STA. 434+30.00 ON HWY. 167 =
STA. 1002+88.20 ON SWEET GUM
∡ 75°00'00"
PC 1003+75.62
PT 1003+91.20
PI 1003+83.42
S 82°25'09" E
87.42'
S 88°22'14" E
182.19'
VICTORY LANE
PI = 1003+83.42
Δ = 5°57'05"LT.
R = 150'
T = 7.80'
L = 15.58'
PC = 1003+75.62
PT = 1003+91.20
NO SUPER
POE 1005+73.39
8089
C.L. SWEET GUM - VICTORY LANE

2/18/2014

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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.		050213	75	369

② SURVEY CONTROL DETAILS

TRINITY D. SMITH
No. 11425
2-26-14

HWY. 167
PI = 435+78.03
Δ = 24°29'56"LT.
D = 4°30'00"
T = 276.43'
L = 544.41'
PC = 433+01.60
PT = 438+46.01
e = 0.096'/'
Ls = 567

HWY. 167
PI = 447+21.83
Δ = 26°50'39"RT.
D = 3°15'00"
T = 420.71'
L = 825.97'
PC = 443+01.12
PT = 451+27.09
e = 0.082'/'
Ls = 495

M.O.T. - STAGE 2
PI = 443+87.87
Δ = 17°48'53"RT.
D = 4°00'00"
T = 224.49'
L = 445.37'
PC = 441+63.38
PT = 446+08.74

M.O.T. - STAGE 2
PI = 440+14.64
Δ = 7°42'57"LT.
D = 4°00'00"
T = 96.60'
L = 192.90'
PC = 439+18.05
PT = 441+10.95

2/18/2014

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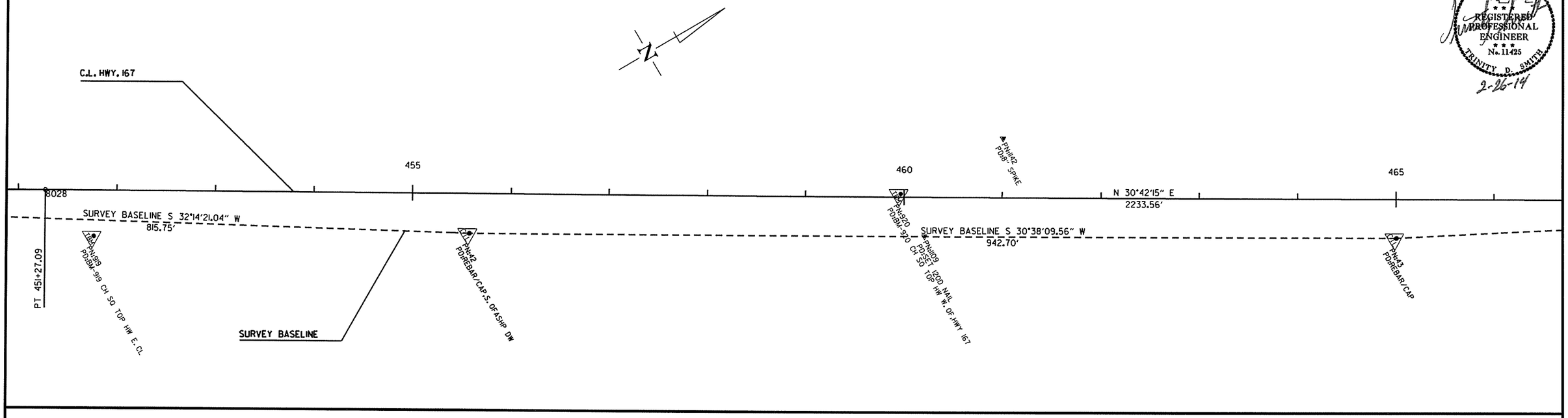
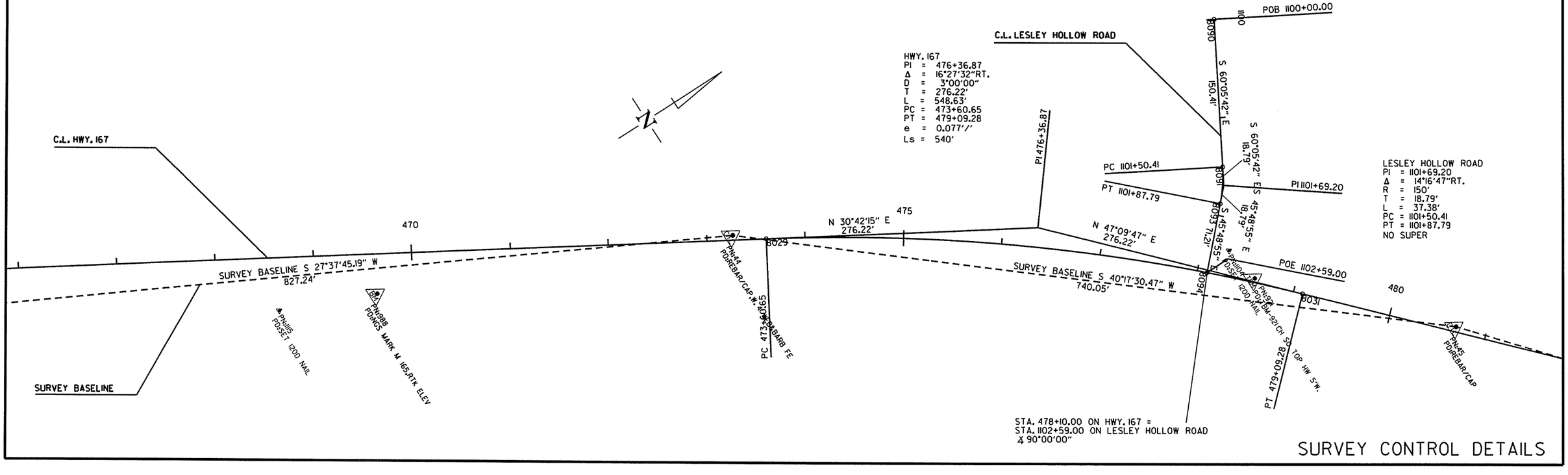
SURVEY CONTROL DETAILS

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.		050213	76	369

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14





SURVEY CONTROL DETAILS

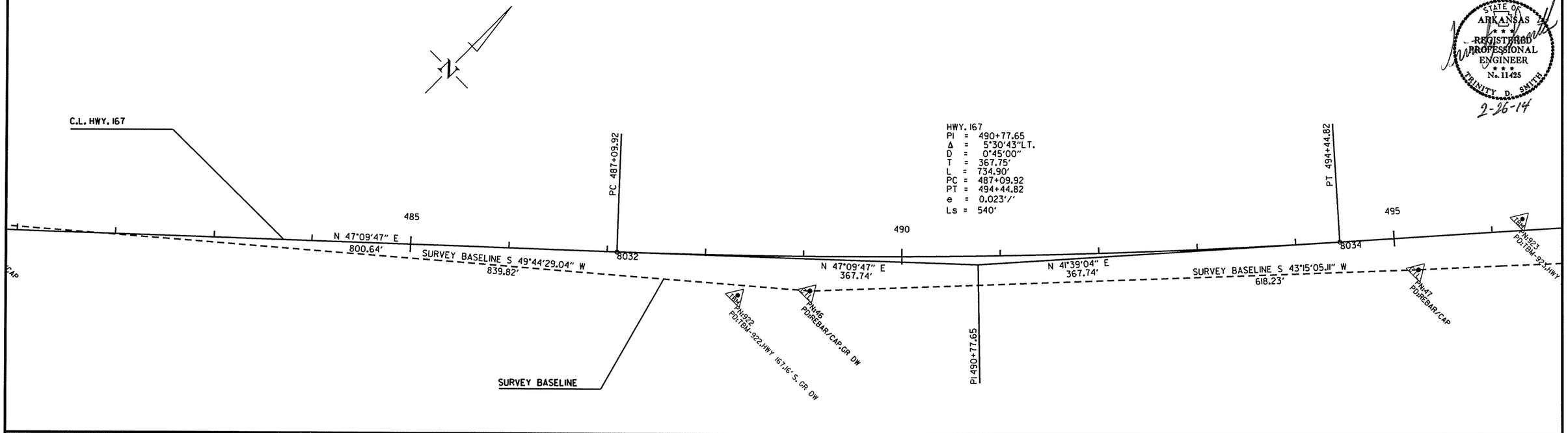
2/18/2014

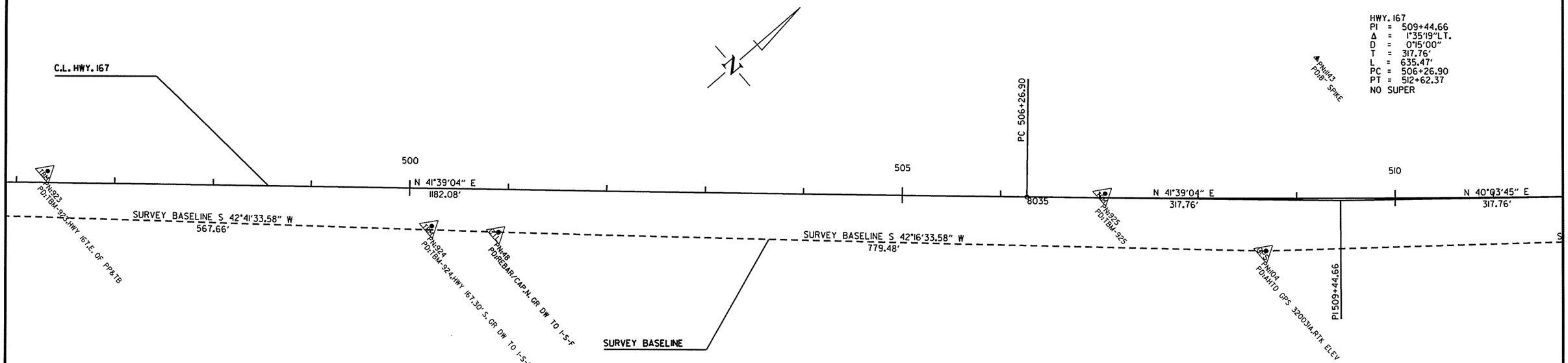
R050213.DGN

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.		050213	77	369

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14





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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.		050213	78	369

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14

HWY. 167
PI = 509+44.66
Δ = 1°35'19"LT.
D = 0°15'00"
T = 317.76'
L = 635.47'
PC = 506+26.90
PT = 512+62.37
NO SUPER

C.L. HWY. 167

PT 512+62.37

40°03'45" E
317.76'

8037

515

520

525

SURVEY BASELINE S 39°16'13.26" W
854.65'

PNH926
PD:TBM-926,HWY 167,60' N, DW TO 2-5-F

SURVEY BASELINE

PNH49
PD:REBAR/CAP ACROSS FROM 1-5-F

N 40°03'45" E
1611.77'

PNH05
PD:SET 120D NAIL

SURVEY BASELINE S 40°54'05.58" W
885.68'

PNH88
PD:MGS MARK N 165

PNH07
PD:AHTD GPS 32003,RTK ELEV

HWY. 167
PI = 531+79.28
Δ = 24°03'04"RT.
D = 4°00'00"
T = 305.13'
L = 601.27'
PC = 528+74.15
PT = 534+75.42
e = 0.093'/'
Ls = 630

PI 531+79.28

C.L. HWY. 167

530

N 40°03'45" E
305.13'

N 64°06'49" E
305.13'

8038

535

8040

PNH50
PD:REBAR/CAP E. OF GREEN MTL GT

SURVEY BASELINE S 40°23'27.01" W
713.23'

PC 528+74.15

SURVEY BASELINE

PT 534+75.42

PNH03
PD:AHTD GPS 32003,RTK ELEV

PNH927
PD:TBM-927,HWY 167

SURVEY BASELINE S 67°15'19.87" W
769.80'

WEAVER CHAPEL ROAD
PI = 1201+57.66
Δ = 1°39'59"LT.
R = 150'
T = 14.54'
L = 29.08'
PC = 1201+43.12
PT = 1201+72.20
NO SUPER

PNH126
PD:SET 120D NAIL

PI 1201+57.66

S 24°13'27" E
14.54'

S 25°53'11" E
14.54'

C.L. WEAVER CHAPEL ROAD

8038

S 25°53'11" E
114.21'

540

8039

PNH1000
PD:BRASS CAP P165

PNH990
PD:MAG MARK P 165

PNH51
PD:REBAR/CAP,GR DW ACROSS FRO

SURVEY CONTROL DETAILS

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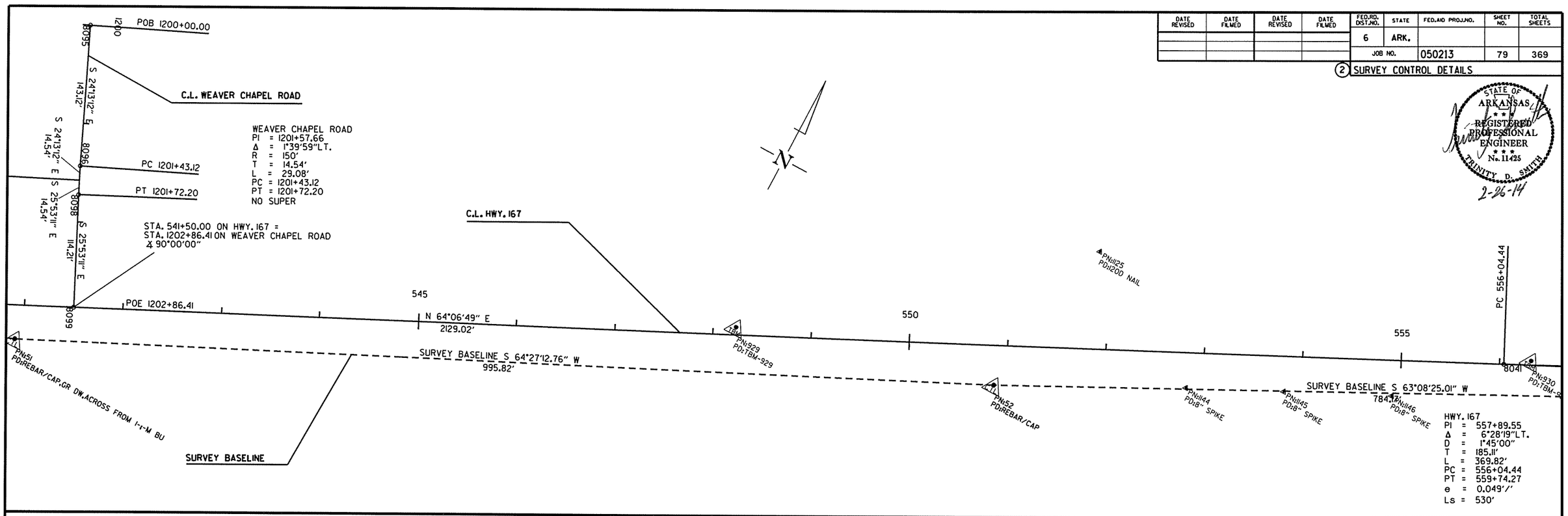
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050213	79	369

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14



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SURVEY CONTROL DETAILS

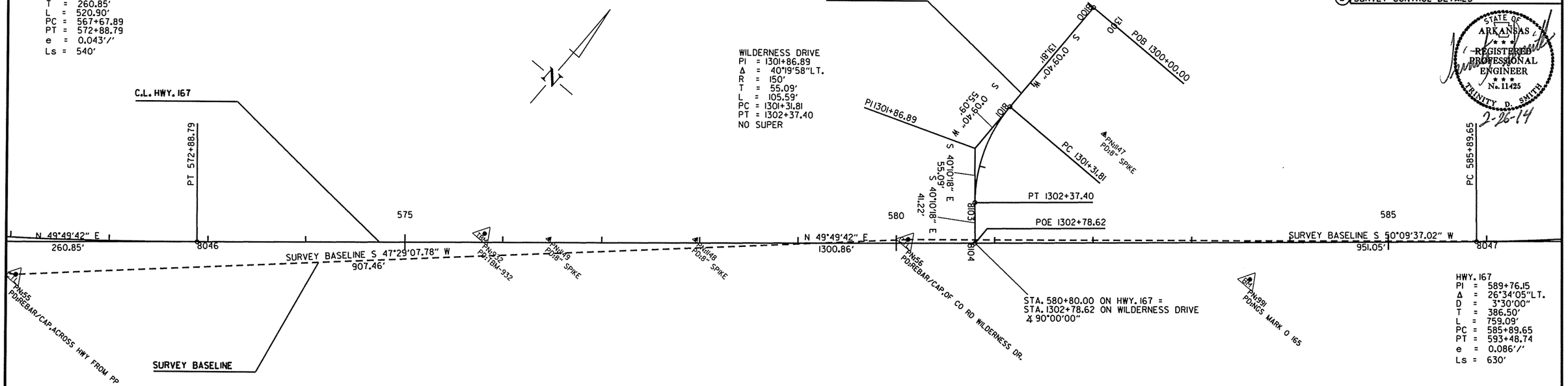
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050213	80	369

(2) SURVEY CONTROL DETAILS

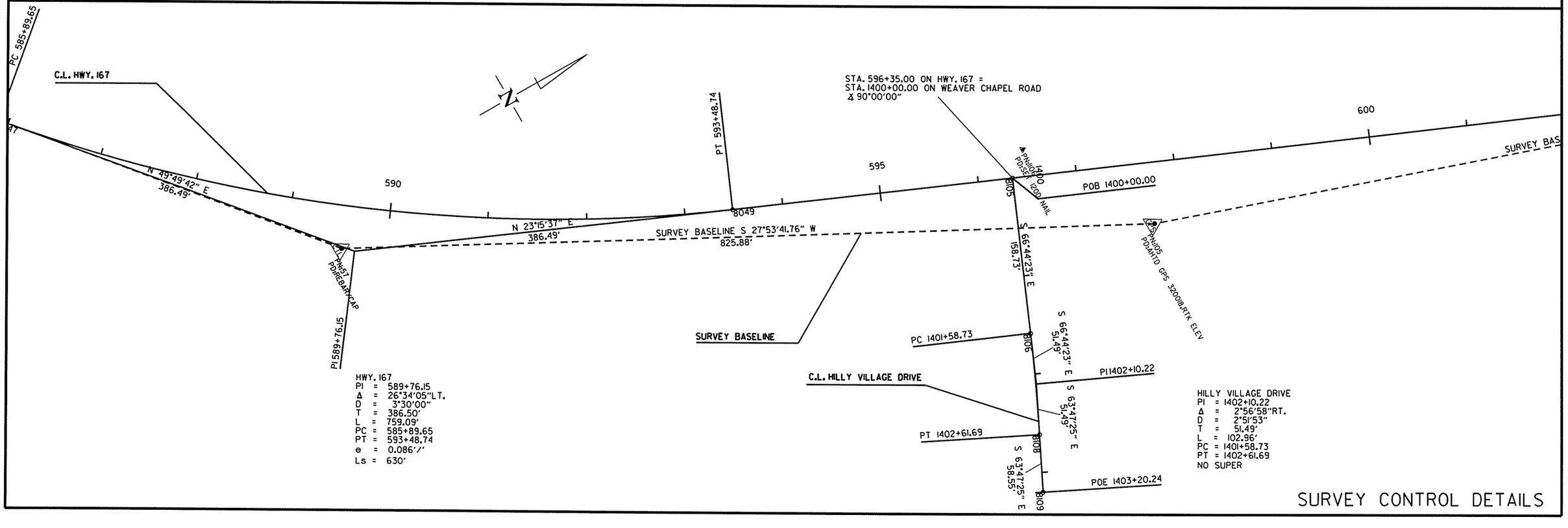
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14

HWY. 167
PI = 570+28.74
Δ = 7°48'48"LT.
D = 1°30'00"
T = 260.85'
L = 520.90'
PC = 567+67.89
PT = 572+88.79
e = 0.043'/'
Ls = 540'

WILDERNESS DRIVE
PI = 1301+86.89
Δ = 40°19'58"LT.
R = 150'
T = 55.09'
L = 105.59'
PC = 1301+31.81
PT = 1302+37.40
NO SUPER



HWY. 167
PI = 589+76.15
Δ = 26°34'05"LT.
D = 3°30'00"
T = 386.50'
L = 759.09'
PC = 585+89.65
PT = 593+48.74
e = 0.086'/'
Ls = 630'



HWY. 167
PI = 589+76.15
Δ = 26°34'05"LT.
D = 3°30'00"
T = 386.50'
L = 759.09'
PC = 585+89.65
PT = 593+48.74
e = 0.086'/'
Ls = 630'

HILLY VILLAGE DRIVE
PI = 1402+10.22
Δ = 2°56'58"RT.
D = 2°51'53"
T = 51.49'
L = 102.96'
PC = 1401+58.73
PT = 1402+61.69
NO SUPER

2/18/2014

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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.		050213	81	369

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14

C.L. HWY. 167

SURVEY BASELINE

SURVEY BASELINE S 18°53'13.44" W
910.17'

N 23°15'37" E
2171.60'

605

PK NAIL
PDREBAR/CAP OF HW

BRASS DISK IN CONC
PD:TBM-933,HWY 167

610

SURVEY BASELINE S 21°24'20.00" W
862.20'

615

PK NAIL
PD:ANGLE GP 320032,RTK ELEV

8050

N 23°15'37" E
125.34'

PI 616+45.68

PC 615+20.34

PC 616+35.46

HWY. 167
PI = 616+45.68
Δ = 1°15'12"RT.
D = 0°30'00"
T = 125.34'
L = 250.68'
PC = 615+20.34
PT = 617+71.02
NO SUPER

M.O.T. - STAGE 2
PI = 617+48.40
Δ = 4°30'55"RT.
D = 2°00'00"
T = 112.94'
L = 225.76'
PC = 616+35.46
PT = 618+61.23

M.O.T. - STAGE 2
PI = 620+07.49
Δ = 5°21'12"LT.
D = 2°00'00"
T = 133.93'
L = 267.67'
PC = 618+73.56
PT = 621+41.23

STA. 621+41.21
END JOB 050213
& BEGIN JOB 050214
LOG MILE 9.31

SURVEY BASELINE

PI 616+45.68

PI 617+48.40

PC 618+43.86

PC 618+73.56

C.L. M.O.T. - STAGE 2

PT 621+41.21

PT 621+41.23

N 23°52'38" E
112.94'

N 28°23'33" E
112.94'

SURVEY BASELINE S 24°51'58.37" W

N 28°23'33" E
12.38'

N 28°23'33" E
133.93'

620

616.52'

N 23°02'21" E
133.93'

SURVEY BASELINE S 22°29'54.31" W
781.21'

'37" E
34'

81.34

N 24°30'49" E
125.34'

8052

N 24°30'49" E
72.85'

8053

8136

8137

N 24°30'49" E
148.68'

N 23°01'37" E
148.68'

8139

8055

PK NAIL
PDREBAR/CAP

PK NAIL
PD:TBM-934,HWY 167,33' W. OF CM

BRASS DISK IN CONC
PD:TBM-935,20' S. GR DW TO I-5-F

PK NAIL
PDREBAR/CAP,6' E OF EP

PC 616+35.46

PT 617+71.02

PT 618+61.23

PI 619+92.55

PT 620+07.49

HWY. 167
PI = 616+45.68
Δ = 1°15'12"RT.
D = 0°30'00"
T = 125.34'
L = 250.68'
PC = 615+20.34
PT = 617+71.02
NO SUPER

C.L. HWY. 167

HWY. 167
PI = 619+92.55
Δ = 1°29'12"LT.
D = 0°30'00"
T = 148.69'
L = 297.35'
PC = 618+43.86
PT = 621+41.21
NO SUPER

2/18/2014

R050213.DGN

SURVEY CONTROL DETAILS

SOIL LOG

STATION	LATITUDE			LONGITUDE			LOCATION	DEPTH	LIQUID LIMIT	PLASTICITY INDEX	AASHTO CLASSIFICATION	COLOR
	DEG	MIN	SEC	DEG	MIN	SEC		FEET				
342+00	35	48	38.20	91	36	10.90	6 RT	0-5	29	14	A-6(7)	BROWN
342+00	35	48	38.20	91	36	10.90	20 RT	0-5	20	7	A-4(1)	BROWN
350+00	35	48	43.70	91	36	4.00	6 LT	0-5	44	28	A-7-6(17)	RED/BROWN
350+00	35	48	43.90	91	36	4.30	15 LT	0-5	30	21	A-6(8)	RED/BROWN
350+00	35	48	44.00	91	36	4.40	25 LT	0-4Z	33	10	A-4(5)	BROWN
358+00	35	48	48.00	91	35	58.50	5 RT	0-5	54	36	A-7-6(31)	RED
358+00	35	48	49.20	91	35	57.00	16 RT	0-5	33	20	A-6(4)	RED
358+00	35	48	49.20	91	35	57.00	30 RT	0-5	44	27	A-7-6(18)	RED
366+00	35	48	55.70	91	35	51.80	6 LT	0-5	43	27	A-7-6(18)	RED
366+00	35	48	55.70	91	35	51.80	15 LT	0-5	44	30	A-7-6(15)	RED
366+00	35	48	55.70	91	35	51.80	30 LT	0-5	36	18	A-6(14)	RED
374+00	35	49	3.00	91	35	47.60	5 RT	0-3.2Z	34	14	A-6(8)	RED
374+00	35	49	2.80	91	35	47.70	14 RT	0-2.0Z	31	13	A-6(6)	RED
374+00	35	49	2.90	91	35	47.60	32 RT	0-5	48	27	A-7-6(24)	RED
382+00	35	49	9.80	91	35	44.40	6 LT	0-3.0Z	26	4	A-4(0)	RED
382+00	35	49	10.30	91	35	44.20	15 LT	0-3.0Z	23	3	A-2-4(0)	RED
391+00	35	49	15.50	91	35	41.20	5 RT	0-5	45	24	A-7-6(21)	RED/BROWN
391+00	35	49	18.40	91	35	39.70	15 RT	0-5	41	22	A-7-6(13)	RED/BROWN
391+00	35	49	18.40	91	35	39.60	34 RT	0-5	40	22	A-6(17)	RED/BROWN
398+00	35	49	24.80	91	35	36.90	11 LT	0-2.0Z	27	10	A-4(5)	RED
398+00	35	49	24.90	91	35	36.70	19 LT	0-5	27	12	A-6(4)	RED
398+00	35	49	24.90	91	35	36.80	30 LT	0-5	32	18	A-6(8)	RED
406+00	35	49	25.80	91	35	36.50	6 RT	0-5	38	21	A-6(12)	RED/BROWN
406+00	35	49	32.10	91	35	32.90	16 RT	0-4.5Z	33	15	A-6(9)	RED/BROWN
406+00	35	49	32.10	91	35	32.80	32 RT	0-5	30	11	A-6(4)	RED/BROWN
414+00	35	49	38.40	91	35	30.70	11 LT	0-5	28	10	A-4(6)	RED/BROWN
414+00	35	49	39.80	91	35	30.30	21 LT	0-5	33	16	A-6(8)	RED/BROWN
414+00	35	49	39.80	91	35	30.30	36 LT	0-4Z	40	19	A-6(13)	RED/BROWN
422+00	35	49	46.00	91	35	27.90	6 RT	0-5	36	18	A-6(10)	RED/BROWN
422+00	35	49	47.30	91	35	27.40	15 RT	0-5	34	17	A-6(6)	RED/BROWN
422+00	35	49	47.20	91	35	27.30	34 RT	0-3.5Z	38	18	A-6(9)	RED/BROWN
430+00	35	49	34.70	91	35	22.80	6 LT	0-5	26	2	A-4(0)	RED/BROWN
430+00	35	49	54.60	91	35	23.90	15 LT	0-4.5Z	24	3	A-4(0)	RED/BROWN
430+00	35	49	54.70	91	35	23.90	33 LT	0-2.0Z	39	7	A-4(1)	RED/BROWN
438+00	35	50	0.70	91	35	20.20	7 RT	0-5	24	7	A-4(1)	RED/BROWN
438+00	35	50	1.70	91	35	19.80	16 RT	0-5	22	5	A-4(0)	RED/BROWN
438+00	35	50	1.70	91	35	14.80	31 RT	0-5	27	8	A-4(3)	RED/BROWN
446+00	35	50	9.20	91	35	19.10	6 LT	0-5	31	13	A-6(7)	RED/BROWN
446+00	35	50	9.60	91	35	19.10	15 LT	0-5	26	10	A-4(3)	RED/BROWN
446+00	35	50	9.60	91	35	19.10	33 LT	0-5	20	8	A-4(2)	RED/BROWN
454+00	35	50	16.50	91	35	14.30	33 RT	0-5	29	10	A-4(6)	RED
454+00	35	50	15.70	91	35	14.90	6 RT	0-5	26	9	A-4(5)	RED
454+00	35	50	16.50	91	35	14.40	17 RT	0-5	25	9	A-4(3)	RED
454+00	35	50	16.50	91	35	14.30	33 RT	0-5	26	8	A-4(4)	RED
462+00	35	50	23.50	91	35	9.60	5 LT	0-5	22	6	A-4(0)	RED/BROWN
462+00	35	50	23.60	91	35	9.70	14 LT	0-5	26	10	A-4(1)	RED/BROWN
462+00	35	50	23.60	91	35	9.70	27 LT	0-5	33	14	A-6(10)	RED/BROWN
470+00	35	50	30.20	91	35	4.40	13 RT	0-5	22	6	A-4(1)	BROWN
470+00	35	50	30.20	91	35	4.30	24 RT	0-5	27	10	A-4(4)	RED/BROWN
470+25	35	50	30.10	91	35	4.40	3 RT	0-3.2Z	23	6	A-4(2)	BROWN
479+00	35	50	37.60	91	34	58.30	30 LT	0-5	29	13	A-6(6)	BROWN/RED
479+00	35	50	37.30	91	34	58.60	5 LT	0-5	26	10	A-4(3)	BROWN
479+00	35	50	37.60	91	34	58.20	15 LT	0-5	24	8	A-4(2)	BROWN
479+00	35	50	37.60	91	34	58.30	30 LT	0-5	32	14	A-6(8)	BROWN/RED
486+00	35	50	41.90	91	34	52.00	6 RT	0-5	30	11	A-6(6)	BROWN
486+00	35	50	42.10	91	34	51.80	15 RT	0-5	24	6	A-4(2)	BROWN
486+00	35	50	42.00	91	34	51.70	36 RT	0-5	31	12	A-6(8)	BROWN
494+00	35	50	47.80	91	34	45.20	6 LT	0-5	32	14	A-6(9)	RED
494+00	35	50	48.00	91	34	45.00	14 LT	0-5	36	16	A-6(12)	RED
494+00	35	50	48.00	91	34	45.10	30 LT	0-5	30	13	A-6(4)	RED
502+00	35	50	53.30	91	34	38.50	6 RT	0-5	24	8	A-4(2)	BROWN
502+00	35	50	53.70	91	34	38.30	15 RT	0-5	22	6	A-4(1)	BROWN
502+00	35	50	53.70	91	34	38.20	33 RT	0-5	34	13	A-6(10)	BROWN
510+00	35	50	58.70	91	34	32.90	5 LT	0-5	24	7	A-4(2)	RED
510+00	35	50	59.80	91	34	32.00	15 LT	0-5	27	10	A-4(5)	RED
510+00	35	50	59.80	91	34	32.10	26 LT	0-5	34	17	A-6(8)	RED
518+00	35	51	2.30	91	54	28.80	6 RT	0-5	27	10	A-4(5)	RED
518+00	35	51	5.60	91	54	25.50	16 RT	0-5	23	6	A-4(1)	RED
518+00	35	51	5.60	91	34	25.50	32 RT	0-5	32	23	A-6(17)	RED
526+00	35	51	11.20	91	34	20.00	5 LT	0-5	26	8	A-4(1)	RED
526+00	35	51	11.80	91	34	19.70	14 LT	0-5	21	4	A-4(0)	RED
526+00	35	51	11.80	91	34	19.70	31 LT	0-5	26	8	A-4(3)	RED
534+00	35	51	16.50	91	54	12.80	6 RT	0-5	25	9	A-4(2)	RED/BROWN
534+00	35	51	16.90	91	54	12.40	16 RT	0-5	25	10	A-4(4)	RED/BROWN
534+00	35	51	16.80	91	34	12.30	38 RT	0-5	38	13	A-6(8)	RED/BROWN
542+00	35	51	20.60	91	34	3.80	5 LT	0-5	28	9	A-2-4(0)	RED/BROWN
542+00	35	51	20.60	91	34	3.70	15 LT	0-5	22	5	A-4(0)	RED/BROWN
542+00	35	51	20.60	91	34	3.70	32 LT	0-5	24	6	A-4(0)	RED/BROWN
550+00	35	51	23.40	91	33	55.50	6 RT	0-5	23	6	A-4(1)	RED
550+00	35	51	23.70	91	33	54.80	16 RT	0-5	26	12	A-6(2)	RED
550+00	35	51	23.70	91	33	54.70	30 RT	0-5	30	6	A-2-4(0)	RED
558+00	35	51	27.40	91	33	46.20	27 LT	0-5	38	19	A-6(11)	RED
558+00	35	51	26.40	91	33	48.00	6 LT	0-2.0Z	34	19	A-6(8)	RED
558+00	35	51	27.40	91	33	46.20	14 LT	0-5	32	17	A-6(5)	RED
558+00	35	51	27.40	91	33	46.20	27 LT	0-5	33	10	A-4(2)	RED
566+00	35	51	30.90	91	33	38.60	6 RT	0-5	29	13	A-6(5)	BROWN
566+00	35	51	31.40	91	33	37.80	15 RT	0-5	24	8	A-4(2)	BROWN
566+00	35	51	31.30	91	33	37.70	32 RT	0-5	20	14	A-6(3)	BROWN
574+00	35	51	35.30	91	33	31.60	6 LT	0-5	34	16	A-6(6)	RED
574+00	35	51	36.20	91	33	30.10	15 LT	0-5	28	13	A-6(5)	RED
574+00	35	51	36.20	91	33	30.10	24 LT	0-5	37	22	A-6(10)	RED/BROWN
582+00	35	51	40.60	91	33	23.00	10 RT	0-2.0Z	32	15	A-2-6(0)	RED
582+00	35	51	41.00	91	33	22.50	19 RT	0-5	43	28	A-7-6(19)	RED/BROWN
582+00	35	51	41.00	91	33	22.40	31 RT	0-5	46	28	A-7-6(20)	RED/BROWN
590+00	35	51	46.30	91	33	16.10	6 LT	0-5	36	18	A-6(6)	RED
590+00	35	51	46.60	91	33	15.60	15 LT	0-5	30	15	A-6(5)	RED
590+00	35	51	46.60	91	33	15.70	26 LT	0-5	32	17	A-6(4)	RED/BROWN
598+00	35	51	53.50	91	33	11.10	30 RT	0-5	35	21	A-6(13)	RED
598+00	35	51	53.10	91	33	11.30	5 RT	0-5	29	15	A-6(6)	RED
598+00	35	51	53.50	91	33	11.10	15 RT	0-5	32	18	A-6(8)	RED
598+00	35	51	53.50	91	33	11.10	30 RT	0-5	32	16	A-6(10)	RED
606+00	35	52	0.60	91	33	7.40	6 LT	0-5	33	19	A-6(7)	RED
606+00	35	52	0.90	91	33	7.60	15 LT	0-5	38	26	A-6(8)	RED
606+00	35	52	0.90	91	33	7.60	33 LT	0-5	24	8	A-4(3)	BROWN
614+00	35	52	0.90	91	33	7.60	6 RT	0-5	22	8	A-4(3)	RED
614+00	35	52	7.80	91	33	3.50	15 RT	0-5	29	15	A-6(6)	RED/BROWN
614+00	35	52	8.10	91	32	3.30	32 RT	0-5	29	10	A-4(4)	RED/BROWN
622+00	35	52	15.60	91	32	59.60	8 LT	0-5	22	5	A-4(1)	BROWN
622+00	35	52	15.50	91	32	60.00	18 LT	0-4.1Z	21	6	A-4(2)	BROWN
622+00	35	52	15.50	91	33		27 LT	0-5	24	7	A-4(2)	BROWN

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

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11435
TIMOTHY D. SMITH
2-26-14

SOIL LOG

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.AID DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.	050213	82	369

2 SOIL LOG

SOIL LOG

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.		050213	83	369

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14

STA. 341+69 TO STA. 343+23 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) ("W"=6') = 103.13 SQ. YD.

STA. 343+66 TO STA. 343+77 LT. OF C.L.
FENCE (6' CHAIN LINK) = 43 LIN. FT.

PI = 342+94.44
Δ = 1°41'46"LT.
D = 00°30'00"
T = 169.61'
L = 339.20'
PC = 341+24.83
PT = 344+64.03
NO SUPER

STA. 341+32 IN PLACE
18" X 30' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 58' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 80 CU. YDS.

100' TRANSITION

POB 340+00.00

PI 341+24.83

N 44°30'22" E

N 42°48'35" E

STA. 341+95 IN PLACE
18" X 64' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
18" X 160' R.C. PIPE CULVERT
CONNECT TO R.C. BOX CULVERT STA. 343+42
CONSTRUCT APPROACH = 85 CU. YDS.
18" R.C. PIPE = 160 LIN. FT.

STA. 341+69 TO STA. 345+30 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B-1) ("W"=6') = 108.82 SQ. YD.

HWY. 167

STA. 343+42 IN PLACE
DBL. 10' X 6' X 75' R.C. BOX CULVERT
WITH 3# WINGS LT. AND RT.
RETAIN & EXTEND 29' LT. & 25' RT.
050 = 630 C.F.S. D.A. = 192 ACRES

STA. 342+04 TO STA. 343+00 RT. SHLDR.
CURB AND GUTTER (TYPE B) = 114 LIN. FT.

STA. 341+00.00
BEGIN JOB 050213
LOG MILE 3.96

P.V.I. 341+00.00
ELEV. 387.33
P.V.C. 341+22.38
ELEV. 387.03

P.V.I. 341+72.38
ELEV. 386.35

P.V.T. 342+22.38
ELEV. 385.36

P.V.C. 344+25.45
ELEV. 381.34

K=158.63
VC=100'
e=-0.08'

-1.98%

K=160.98
VC=850'
e=5.61'

341+82.58
381.52 (LT.)

LT. DITCH GRADE -7.50%

343+23.30
370.97 (LT.)

343+70.00
376.33 (LT.)

LT. DITCH GRADE 0.05%

343+62.81
370.97 (LT.)

LT. DITCH GRADE 0.00%

RT. DITCH GRADE 0.00%

RT. DITCH GRADE 5.00%

+42
F.I. INLET = 370.97
F.I. OUTLET = 369.76

343+21.39
369.76 (RT.)

343+60.37
369.76 (RT.)

343+70.00
364.40 (RT.)

344+91.27
370.46 (RT.)

NOTE: FOR ALL THE CONSTRUCTION OF TEMPORARY WORK RAMPS OR HAUL ROADS, THIS STREAM IS CLASSIFIED AS AN INTERMITTENT STREAM. THE STREAMBANK ELEVATION IS 375.00 FT. M.L.S.

400 395 390 385 380 375 370 365 360 355

330+00 331+00 332+00 333+00 334+00 335+00 336+00 337+00 338+00 339+00 340+00 341+00 342+00 343+00 344+00 345+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.		050213	84	369

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14

STA. 345+47 IN PLACE
18" X 41' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 48' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 150 CU. YDS.

STA. 346+87 IN PLACE
15" X 32' STEEL PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 44' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 125 CU. YDS.

STA. 348+15 IN PLACE
18" X 17' R.C. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 42' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 115 CU. YDS.

STA. 348+88 IN PLACE
18" X 17' R.C. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
24" X 40' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 105 CU. YDS.

STA. 350+25 IN PLACE
20" X 26' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
30" X 48' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 210 CU. YDS.

STA. 353+10 IN PLACE
18" X 136' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
24" X 44' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 135 CU. YDS.

STA. 355+40 IN PLACE
18" X 24' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 52' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 185 CU. YDS.

PI = 348+14.99
Δ = 3°30'31" RT.
D = 00°30'00"
T = 350.95'
L = 701.69'
PC = 344+64.03
PT = 351+65.72
NO SUPER

STA. 349+84 TO STA. 355+00 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) ("W"=6') = 254.23 SQ. YD.

STA. 354+30.00 ONCHWY. 167 =
STA. 700+00.00 ON SPRING VALLEY DRIVE
Δ 90°00'00"

STA. 358+62 CONSTRUCT
18" X 52' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 195 CU. YDS. COMP. EMB.
= 1100 CU. YDS. UNCL. EXC.

PROPOSED R/W
CONST. LIMITS
EXISTING R/W
ASHLEY DRIVE
SPRING VALLEY DRIVE
MINI STORAGE
POB 700+00.00
PC 700+60.92
PI 701+00.41
PT 701+36.14
POE 702+98.54
N 42°48'35" E
N 46°19'06" E
Δ 43°40'54" Rt.

STA. 345+47 IN PLACE
18" X 32' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
18" X 34' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 75 CU. YDS.

STA. 345+97 CONSTRUCT
18" X 36' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 75 CU. YDS.

STA. 346+87 IN PLACE
18" X 32' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
18" X 38' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 75 CU. YDS.

STA. 347+43 IN PLACE
15" X 24' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
18" X 38' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 65 CU. YDS.

STA. 348+12 IN PLACE
18" X 24' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
18" X 38' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 65 CU. YDS.

STA. 348+77 CONSTRUCT
18" X 40' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 75 CU. YDS.

STA. 349+71 CONSTRUCT
18" X 34' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 60 CU. YDS.

STA. 349+92 IN PLACE
15" X 24' C.M. PIPE CULVERT
RT. SIDE DRAIN
W/ HEADWALLS LT. & RT.
REMOVE

STA. 350+96 IN PLACE
60" X 70' R.C. PIPE CULVERT
WITH HEADWALLS LT. AND RT.
REMOVE HDWLS. LT. AND RT. AND
EXTEND R.C. PIPE 54' LT. AND 28' RT.
INSTALL 60" X 150' R.C. PIPE CULVERT
(CLASS III XTYPE 3 BEDDING) WITH F.E.S. LT. AND RT.
050 = 356 C.F.S. D.A. = 105.5 ACRES
60" R.C. PIPE = 240 LIN. FT.
60" F.E.S. = 4 EACH

STA. 352+85 IN PLACE
18" X 24' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
18" X 38' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 110 CU. YDS.

STA. 354+30 IN PLACE
18" X 40' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
18" X 78' PIPE CULVERT
RT. SIDE DRAIN

STA. 350+77 TO STA. 351+19 RT. OF C.L.
FENCE (TYPE C) = 34 LIN. FT.

STA. 350+57 TO STA. 350+74 RT. OF C.L.
FENCE (4' CHAIN LINK) = 18 LIN. FT.

STA. 351+34 TO STA. 352+27 RT. OF C.L.
FENCE (TYPE C) = 94 LIN. FT.

STA. 354+26.85 BEGIN SUPER (N.C.)
STA. 359+66.85 MAX SUPER (0.082'/')
STA. 364+28.73 MAX SUPER (0.082'/')
STA. 369+68.73 END SUPER (N.C.)

STA. 356+60 CONSTRUCT
18" X 30' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 45 CU. YDS.

STA. 349+88 TO STA. 357+31 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) ("W"=6') = 399.77 SQ. YD.

PI = 362+03.14
Δ = 23°47'09" LT.
D = 3°15'00"
T = 371.29'
L = 731.88'
PC = 358+31.85
PT = 365+63.73
e = 0.082'/'
Ls = 540'

HWY. 167

P.V.I. 358+86.42
ELEV. 407.11

P.V.C. 354+11.42
ELEV. 391.44

P.V.T. 352+75.45
ELEV. 386.95

P.V.I. 348+50.45
ELEV. 372.93

K=160.98
VC=850'
e=5.61'

K=163.79
VC=950'
e=-6.89'

F.L. INLET = 368.14
F.L. OUTLET = 365.47

LT. DITCH GRADE 0.05%
LT. DITCH GRADE 0.10%
RT. DITCH GRADE 1.25%
RT. DITCH GRADE -1.00%
LT. DITCH GRADE -0.20%
RT. DITCH GRADE -7.50%
LT. DITCH GRADE -5.00%
LT. DITCH GRADE 0.00%
RT. DITCH GRADE 0.00%
LT. DITCH GRADE 8.00%
RT. DITCH GRADE 6.50%
RT. DITCH GRADE 5.50%
LT. DITCH GRADE 4.00%
RT. DITCH GRADE 7.50%
RT. DITCH GRADE 5.50%
RT. DITCH GRADE 3.00%
RT. DITCH GRADE 2.00%
LT. DITCH GRADE 0.12%
RT. DITCH GRADE -0.25%
LT. DITCH GRADE -0.50%
3.30%

NOTE: FOR ALL THE CONSTRUCTION OF TEMPORARY WORK RAMPS OR HAUL ROADS, THIS STREAM IS CLASSIFIED AS AN INTERMITTENT STREAM. THE STREAMBANK ELEVATION IS 370.00 FT. M.L.S.

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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.		050213	85	369

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14

SPECIAL FLOOD HAZARD AREA

PI = 362+03.14
Δ = 23°47'09.66"LT.
D = 3°15'00"
T = 371.29'
L = 731.88'
PC = 358+31.85
PT = 365+63.73
e = 0.082'/'
Ls = 540'

STA. 360+77 CONSTRUCT
18" X 40' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 90 CU. YDS.

STA. 362+00 TO STA. 363+49 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) ("W"=6') = 101.42 SQ. YD.

STA. 363+66 IN PLACE
15" X 37' R.C. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
18" X 44' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 165 CU. YDS.

STA. 364+80 IN PLACE
60" X 85' R.C. PIPE CULVERT
WITH HEADWALLS LT. AND RT.
REMOVE HDWLS. LT. AND RT. AND
EXTEND R.C. PIPE 56' LT. AND 28' RT.
INSTALL 60" X 168' R.C. PIPE CULVERT
(CLASS IV)(TYPE 3 BEDDING) WITH F.E.S. LT. AND RT.
050 = 428 C.F.S. D.A. = 106.7 ACRES
60" R.C. PIPE = 260 LIN. FT.
60" F.E.S. = 4 EACH

STA. 362+60 TO STA. 363+72 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) ("W"=6') = 110.84 SQ. YD.

STA. 363+00 TO STA. 364+20 LT. OF C.L.
FENCE (TYPE D) = 120 LIN. FT.

STA. 364+96 TO STA. 366+00 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) ("W"=6') = 75.44 SQ. YD.

STA. 366+80 INSTALL
18" X 52' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 325 CU. YDS.

STA. 367+14 IN PLACE
24" X 24' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE

STA. 367+42 CONSTRUCT
DBL. 36" X 46' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 175 CU. YDS.

STA. 365+78 TO STA. 366+69 LT. OF C.L.
FENCE (TYPE D) = 93 LIN. FT.

STA. 367+82 IN PLACE
15" X 37' C.M. PIPE CULVERT
RT. SIDE DRAIN
W/ HEADWALL LT.
REMOVE AND INSTALL
18" X 52' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 220 CU. YDS.

STA. 368+93 IN PLACE
18" X 24' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
18" X 34' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 80 CU. YDS.

STA. 368+97 IN PLACE
24" X 31' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
DBL. 36" X 48' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 165 CU. YDS.

STA. 370+60 CONSTRUCT
DBL. 36" X 44' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 170 CU. YDS.

STA. 370+84 IN PLACE
24" X 25' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE

STA. 371+08 IN PLACE
21" X 25' R.C. PIPE CULVERT
RT. SIDE DRAIN
W/ HEADWALLS LT. & RT.
REMOVE

STA. 371+18 CONSTRUCT
18" X 38' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 90 CU. YDS.

STA. 371+37 TO STA. 373+75 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) ("W"=6') = 132.07 SQ. YD.

STA. 371+62 CONSTRUCT
DBL. 30" X 42' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 140 CU. YDS.

STA. 371+84 IN PLACE
24" X 24' R.C. PIPE CULVERT
LT. SIDE DRAIN
REMOVE

STA. 373+38 IN PLACE
18" X 40' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
18" X 40' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 75 CU. YDS.

STA. 374+71 IN PLACE
24" X 60' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
24" X 68' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 260 CU. YDS.

HWY. 167

STA. 354+26.85 BEGIN SUPER (N.C.)
STA. 359+66.85 MAX SUPER (0.082'/')
STA. 364+28.73 MAX SUPER (0.082'/')
STA. 369+68.73 END SUPER (N.C.)

SPECIAL FLOOD HAZARD AREA
STA. 364+00 TO STA. 366+80

F.I. INLET = 379.46
F.I. OUTLET = 373.88

K=163.79
VC=950'
e=-6.89'

K=144.44
VC=650'
e=3.66'

RT. DITCH GRADE -0.25%
RT. DITCH GRADE -2.50%
RT. DITCH GRADE -4.75%
LT. DITCH GRADE -0.50%
LT. DITCH GRADE -1.50%
LT. DITCH GRADE -9.00%
LT. DITCH GRADE -2.00%
LT. DITCH GRADE 0.00%
RT. DITCH GRADE 0.00%
RT. DITCH GRADE 0.50%
RT. DITCH GRADE 5.00%
LT. DITCH GRADE 1.00%
RT. DITCH GRADE 1.50%
LT. DITCH GRADE 2.00%
RT. DITCH GRADE 3.00%
LT. DITCH GRADE 2.95%
2.00%

ELEV. 400.34

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				6	ARK.			
				JOB NO.		050213	86	369

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14

STA. 377+22 IN PLACE
18" X 49' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 70' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 300 CU. YDS.

STA. 378+85 IN PLACE
18" X 45' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 50' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 195 CU. YDS.

STA. 384+75 CONSTRUCT
30" X 62' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 245 CU. YDS.

STA. 385+05 IN PLACE
15" X 50' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE

STA. 387+12 IN PLACE
12" X 40' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
30" X 48' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 100 CU. YDS.

STA. 388+57 TO STA. 389+06 LT. OF C.L.
FENCE (6' CHAIN LINK) = 50 LIN. FT.

STA. 388+28 TO STA. 389+39 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) ("W"=6') = 68.60 SQ. YD.

PI = 397+94.76
Δ = 8°15'51" LT.
D = 00°30'00"
T = 827.87'
L = 1652.86'
PC = 389+66.89
PT = 406+19.75
NO SUPER

COMMUNITY CHURCH
QUARRY
PROPOSED R/W
CONST. LIMITS
EXISTING R/W
CHINQUAPIN AUTO SALES
PFEIFFER HOMESTEAD
N 22°31'57" E
N 26°31'32" E
PROPOSED R/W

STA. 376+55 IN PLACE
18" X 25' C.M. PIPE CULVERT
RT. SIDE DRAIN
W/ HEADWALLS LT. & RT.
REMOVE AND INSTALL
18" X 38' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 80 CU. YDS.

STA. 382+20 CONSTRUCT
18" X 68' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 225 CU. YDS.

PI = 385+66.42
Δ = 3°59'35" RT.
D = 00°30'00"
T = 399.48'
L = 798.65'
PC = 381+66.94
PT = 389+65.59
NO SUPER

STA. 385+70 IN PLACE
18" X 24' C.M. PIPE CULVERT
RT. SIDE DRAIN
W/ HEADWALL LT.
REMOVE AND INSTALL
18" X 34' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 70 CU. YDS.

HWY. 167

STA. 383+59 TO STA. 386+59 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) ("W"=6') = 177.58 SQ. YD.

SPECIAL FLOOD HAZARD AREA

STA. 389+78 IN PLACE
TRI. 10' X 5' X 44' R.C. BOX CULVERT
WITH 3Ø WINGS LT. AND RT.
RETAIN & EXTEND 38' LT. & 43' RT.
CONSTRUCT 10' X 5' X 126' R.C. BOX CULVERT
Q50 = 1720 C.F.S. D.A. = 1064 ACRES

STA. 388+44 TO STA. 389+49 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) ("W"=6') = 69.74 SQ. YD.

NOTE: FOR ALL THE CONSTRUCTION OF TEMPORARY WORK RAMPS OR HAUL ROADS, THIS STREAM IS CLASSIFIED AS AN INTERMITTENT STREAM. THE STREAMBANK ELEVATION IS 390.00 FT. M.L.S.

SPECIAL FLOOD HAZARD AREA
STA. 388+00 TO STA. 391+50

+78
F.L. INLET = 385.71
F.L. OUTLET = 384.86

ELEV. 400.34
2.00%
P.V.C. 376+46.69
ELEV. 403.27
P.V.I. 379+46.69
ELEV. 409.27
K=171.43
VC=600'
e=-2.63'
P.V.T. 382+46.69
ELEV. 404.77
-1.50%
383+60.19
398.49 (RT.)
383+88.56
398.07 (LT.)
LT. DITCH GRADE -2.00%
RT. DITCH GRADE -3.00%
385+03.00
395.78 (LT.)
386+62.00
389.44 (RT.)
RT. DITCH GRADE -0.50%
P.V.C. 387+67.84
ELEV. 396.96
K=163.64
VC=900'
e=6.19'
LT. DITCH GRADE -1.50%
388+37.66
390.76 (LT.)
388+44.11
388.53 (RT.)
LT. DITCH GRADE -2.00%
RT. DITCH GRADE -3.50%
389+38.66
385.71 (LT.)
389+90.00
385.71 (LT.)
389+90.00
387.70 (LT.)
LT. DITCH GRADE 0.00%
RT. DITCH GRADE 0.00%
389+48.95
384.86 (RT.)

BM: 986 NGS MARK K 165
25.71 LT. OF STA. 389+91.73
ELEVATION = 392.60

420 415 410 405 400 395 390 385 380 375

375+00 376+00 377+00 378+00 379+00 380+00 381+00 382+00 383+00 384+00 385+00 386+00 387+00 388+00 389+00 390+00

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				6	ARK.			
				JOB NO.		050213	87	369

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS — REGISTERED PROFESSIONAL ENGINEER — No. 11425 — TRINITY D. SMITH — 2-26-14

STA. 391+00 IN PLACE
18" X 49' C.M. PIPE CULVERT
LT. SIDE DRAIN
W/ HEADWALLS LT. & RT.
REMOVE AND INSTALL
36" X 138' R.C. PIPE CULVERT
CONSTRUCT APPROACH = 115 CU. YDS.
36" R.C. PIPE = 138 LIN. FT.

STA. 394+19 IN PLACE
18" X 47' R.C. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
30" X 54' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 150 CU. YDS.

STA. 396+80 CONSTRUCT
24" X 50' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 160 CU. YDS.

STA. 395+60 IN PLACE
18" X 49' R.C. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
24" X 56' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 185 CU. YDS.

STA. 397+22 IN PLACE
24" X 129' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE

STA. 397+60 CONSTRUCT
30" X 62' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 180 CU. YDS.

STA. 392+80 IN PLACE
18" X 49' C.M. PIPE CULVERT
LT. SIDE DRAIN
W/ HEADWALL LT.
REMOVE AND INSTALL
30" X 52' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 115 CU. YDS.

STA. 401+04 IN PLACE
18" X 25' C.M. PIPE CULVERT
LT. SIDE DRAIN
W/ HEADWALL LT. & RT.
REMOVE AND INSTALL
24" X 52' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 255 CU. YDS.

STA. 399+27 IN PLACE
18" X 40' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
24" X 68' PIPE CULVERT
LT. SIDE DRAIN

STA. 395+99 TO STA. 402+00 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) ("W"=6') = 243.48 SQ. YD.

SPECIAL FLOOD HAZARD AREA
UNDER CONSTRUCTION
F/K
THE PAWN
AMVETSS POST
POB 800+00.00
PROPOSED R.O.W.
PC 801+46.90
PT 801+87.45
PI 802+13.01
PI 801+67.30
PI 801+96.62
PT 802+35.07
PROPOSED R/W
CONST. LIMITS
EXISTING R/W
T.C.E.
STORM SEWER REMOVED
N 26°31'32" E
N 18°15'41" E
S 84°52'43" E
S 83°22'41" E

STA. 390+07 TO STA. 390+63 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) ("W"=6') = 37.51 SQ. YD.

STA. 391+36 TO STA. 399+49 RT. OF C.L.
FENCE (TYPE D) = 773 LIN. FT.
16'-0" GATE = 1 EACH

STA. 395+94 IN PLACE
24" X 25' C.M. PIPE CULVERT
RT. SIDE DRAIN
W/ HEADWALL RT.
REMOVE AND INSTALL
18" X 36' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 85 CU. YDS.
16'-0" GATE

PI = 397+94.76
Δ = 8°15'51.59" LT.
D = 00°30'00"
T = 827.87'
L = 1652.87'
PC = 389+66.89
PT = 406+19.75
NO SUPER

STA. 399+96 TO STA. 401+84 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) ("W"=6') = 126.44 SQ. YD.

STA. 401+97 TO STA. 421+71 RT. OF C.L.
FENCE (TYPE C) = 2032 LIN. FT.
16'-0" GATE = 1 EACH

HWY. 167

STA. 399+50.00 ON HWY. 167 =
STA. 803+20.65 ON CAVE CREEK ROAD - PFEIFFER ROAD
Δ 75°00'00"

SPECIAL FLOOD HAZARD AREA
STA. 388+00 TO STA. 391+50

STA. 396+12 TO STA. 399+36 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) ("W"=6') = 217.58 SQ. YD.

K=163.64
VC=900'
e=6.19'

K=180.00
VC=450'
e=-1.41'

LT. DITCH GRADE 2.02%
RT. DITCH GRADE 5.00%
LT. DITCH GRADE 0.70%
RT. DITCH GRADE 1.00%
RT. DITCH GRADE 2.00%
RT. DITCH GRADE 1.50%
RT. DITCH GRADE 4.00%
LT. DITCH GRADE 4.50%
RT. DITCH GRADE 6.50%
LT. DITCH GRADE 7.00%
LT. DITCH GRADE 2.00%
4.00%
1.50%

390+68.49 389.29 (LT.)
390+62.26 387.62 (RT.)
390+07.01 384.86 (RT.)
391+90.00 388.90 (RT.)
P.V.I. 392+17.84 ELEV. 390.21
393+30.00 391.70 (RT.)
394+46.92 391.94 (LT.)
395+50.00 395.00 (RT.)
396+00.00 395.00 (LT.)
396+66.80 399.67 (RT.)
P.V.T. 396+67.84 ELEV. 408.21
397+30.55 400.87 (LT.)
398+21.44 409.85 (RT.)
399+00.00 412.74 (LT.)
ELEV. 417.49
P.V.C. 399+92.19 ELEV. 421.18
P.V.I. 402+17.19 ELEV. 430.18
P.V.T. 404+42.19 ELEV. 433.56
ELEV. 434.42

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				6	ARK.			
				JOB NO.		050213	88	369

(2) PLAN AND PROFILE SHEETS

PI = 397+94.76
Δ = 8°15'51.59"LT.
D = 00°30'00"
T = 827.87'
L = 1652.87'
PC = 389+66.89
PT = 406+19.75
NO SUPER

STA. 408+68 IN PLACE
18" X 24' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
30" X 28' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 50 CU. YDS.

STA. 412+54 CONSTRUCT
24" X 30' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 60 CU. YDS.

STA. 407+67 TO STA. 408+54 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) ("W"=6') = 57.83 SQ. YD.

STA. 411+45 TO STA. 413+25 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) ("W"=6') = 99.38 SQ. YD.

PI = 414+76.77
Δ = 4°33'21"LT.
D = 00°30'00"
T = 455.81'
L = 911.15'
PC = 410+20.96
PT = 419+32.11
NO SUPER

STA. 414+40 TO STA. 427+20 LT. OF C.L.
FENCING TO BE REPLACED BY PROPERTY OWNER

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14

PROPOSED R/W
CONST. LIMITS
EXISTING R/W
PT 406+19.75
PC 410+20.96
PT 419+32.11
PI 414+76.77
N 18°15'41" E
N 13°42'20" E
405
410
415
420

STA. 405+81 IN PLACE
30" X 48' R.C. PIPE CULVERT
WITH HEADWALLS LT. AND RT.
REMOVE AND INSTALL
42" X 118' R.C. PIPE CULVERT
(CLASS IIIN TYPE 3 BEDDING) WITH F.E.S. LT. AND RT.
050 = 81 C.F.S. D.A. = 16.4 ACRES
42" R.C. PIPE = 118 LIN. FT.
42" F.E.S. = 2 EACH

STA. 405+86 TO STA. 413+25 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) ("W"=6') = 494.50 SQ. YD.

STA. 401+97 TO STA. 421+71 RT. OF C.L.
FENCE (TYPE C) = 2032 LIN. FT.
16'-0" GATE = 1 EACH

HWY. 167

STA. 417+62.45 BEGIN SUPER (N.C.)
STA. 422+12.45 MAX SUPER (0.055'/')
STA. 425+56.81 MAX SUPER (0.055'/')
STA. 430+06.81 END SUPER (N.C.)

P.V.C. 405+04.54
ELEV. 434.49
ELEV. 434.42
+81
F.L. INLET = 427.35
F.L. OUTLET = 426.85
405+00.00 (LT.) 429.85
405+76.29 427.35 (LT.)
405+83.58 427.35 (LT.)
LT. DITCH GRADE 0.00%
LT. DITCH GRADE 3.28%
RT. DITCH GRADE 5.00%
LT. DITCH GRADE 4.00%
RT. DITCH GRADE 2.50%
LT. DITCH GRADE 2.00%
405+00.00 (RT.) 425.28
405+78.30 426.85 (RT.)
RT. DITCH GRADE 0.00%
405+85.51 426.85 (RT.)
P.V.I. 407+04.54
ELEV. 437.49
407+71.28 436.14 (RT.)
407+67.37 431.94 (LT.)
P.V.T. 409+04.54
ELEV. 445.49
K=160.00
VC=400'
e=1.25'
4.00%
408+50.00 435.25 (LT.)
K=156.25
VC=1250'
e=-12.50'
P.V.C. 411+70.74
ELEV. 456.14
P.V.I. 417+95.74
ELEV. 481.14
K=156.25
VC=1250'
e=-12.50'

2/18/2014
R050213.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.		050213	89	369

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14

STA. 421+52 IN PLACE
30" X 53' R.C. PIPE CULVERT
WITH HEADWALLS LT. AND RT.
REMOVE AND INSTALL
30" X 120' R.C. PIPE CULVERT
(CLASS III(TYPE 3 BEDDING) WITH F.E.S. LT. AND RT.
050 = 36 C.F.S. D.A. = 6.4 ACRES
30" R.C. PIPE = 120 LIN. FT.
30" F.E.S. = 2 EACH

STA. 421+93 CONSTRUCT
APPROACH ON LT. = 140 CU. YDS.

PI = 424+68.29
Δ = 14°39'12"RT.
D = 2°00'00"
T = 368.34'
L = 732.66'
PC = 420+99.95
PT = 428+32.61
e = 0.055'/'
Ls = 450'

STA. 414+40 TO STA. 427+20 LT. OF C.L.
FENCING TO BE REPLACED BY PROPERTY OWNER

STA. 422+05 TO STA. 429+29 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) ("W"=6') = 457.32 SQ. YD.

STA. 420+60 TO STA. 421+83 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) ("W"=6') = 83.40 SQ. YD.

STA. 427+54 INSTALL
30" X 56' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 310 CU. YDS.

STA. 432+87 TO STA. 433+13 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) ("W"=6') = 181.09 SQ. YD.

STA. 431+83 TO STA. 432+26 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) ("W"=6') = 28.95 SQ. YD.

STA. 414+40 TO STA. 427+20 LT. OF C.L.
FENCING TO BE REPLACED BY PROPERTY OWNER

STA. 431+13 IN PLACE
15" X 40' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
36" X 48' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 225 CU. YDS.

STA. 433+38 IN PLACE
15" X 39' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 48' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 100 CU. YDS.

STA. 430+26.00 ON HWY. 167 =
STA. 900+00.00 ON GREEN LANE
Δ 75°00'00"

PI = 435+78.03
Δ = 24°29'56"LT.
D = 4°30'00"
T = 276.43'
L = 544.41'
PC = 433+01.60
PT = 438+46.01
e = 0.096'/'
Ls = 567

STA. 401+97 TO STA. 421+71 RT. OF C.L.
FENCE (TYPE C) = 2032 LIN. FT.
16'-0" GATE = 1 EACH

STA. 422+86 TO STA. 427+13 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) ("W"=6') = 248.86 SQ. YD.

STA. 422+65 CONSTRUCT
APPROACH ON RT. = 180 CU. YDS.

STA. 426+75 IN PLACE
18" X 29' R.C. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
18" X 46' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 160 CU. YDS.

STA. 427+35 IN PLACE
24" X 20' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
24" X 42' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 125 CU. YDS.

STA. 434+30.00 ON HWY. 167 =
STA. 1002+88.20 ON VICTORY LANE
Δ 67°25'09"

STA. 434+30.00 ON HWY. 167 =
STA. 1002+88.20 ON SWEET GUM
Δ 75°00'00"

HWY. 167

STA. 417+62.45 BEGIN SUPER (N.C.)
STA. 422+12.45 MAX SUPER (0.055'/')
STA. 425+56.81 MAX SUPER (0.055'/')
STA. 430+06.81 END SUPER (N.C.)

STA. 430+06.81 BEGIN SUPER (N.C.)
STA. 435+73.81 MAX SUPER (0.096'/')
STA. 441+40.81 END SUPER (N.C.)

SPECIAL FLOOD HAZARD AREA

SPECIAL FLOOD HAZARD AREA

STA. 432+61 IN PLACE
TRI. 10' X 6' X 44' R.C. BOX CULVERT
WITH 3# WINGS LT. AND RT.
RETAIN & EXTEND 16' LT. & 7' RT.
CONSTRUCT 10' X 6' X 136' R.C. BOX CULVERT
050 = 1420 C.F.S. D.A. = 810 ACRES

STA. 434+55 IN PLACE
18" X 35' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
DBL. 42" X 110' PIPE CULVERT
RT. SIDE DRAIN

SPECIAL FLOOD HAZARD AREA
STA. 431+20 TO STA. 443+80

+52
F.L. INLET = 460.21
F.L. OUTLET = 456.75

+61
F.L. INLET = 416.98
F.L. OUTLET = 416.29

NOTE: FOR ALL THE CONSTRUCTION OF TEMPORARY WORK RAMPS OR HAUL ROADS, THIS STREAM IS CLASSIFIED AS AN INTERMITTENT STREAM. THE STREAMBANK ELEVATION IS 420.00 FT. M.L.S.

BM: 987 NGS MARK L 165
2.0I RT. OF STA. 432+45.80
ELEVATION = 424.73

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				6	ARK.			
				JOB NO.		050213	90	369

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14

POB 1000+00.00

PROPOSED R.O.W.

PC 1000+81.73

PT 1001+15.96

PC 1001+48.54

PI 1001+81.13

PI 1002+88.20

PC 1003+75.62

PT 1003+91.20

PI = 435+78.03
Δ = 24°29'56"LT.
D = 4°30'00"
T = 276.43'
L = 544.41'
PC = 433+01.60
PT = 438+46.01
e = 0.096'/'
Ls = 567

STA. 437+50 IN PLACE
36" X 56' R.C. PIPE CULVERT
WITH HEADWALLS LT. AND RT.
REMOVE AND INSTALL
DBL. 42" X 154' R.C. PIPE CULVERT
ON 30° LT. FWD. SKEW
(CLASS III)(TYPE 3 BEDDING) WITH F.E.S. LT. AND RT.
050 = 123 C.F.S. D.A. = 32.9 ACRES
42" R.C. PIPE = 308 LIN. FT.
42" F.E.S. = 4 EACH

STA. 437+97 TO STA. 437+38 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) ("W"=6') = 27.27 SQ. YD.

STA. 437+13 TO STA. 438+18 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) ("W"=6') = 74.60 SQ. YD.

STA. 440+10 INSTALL
18" X 34' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 75 CU. YDS.

STA. 440+23 TO STA. 448+65 RT. OF C.L.
FENCE (TYPE D) = 822 LIN. FT.

STA. 442+32 IN PLACE
24" X 24' C.M. PIPE CULVERT
LT. SIDE DRAIN
W/ HEADWALLS LT. & RT.
REMOVE AND INSTALL
DBL. 36" X 38' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 110 CU. YDS.

STA. 448+27 IN PLACE
15" X 25' C.M. PIPE CULVERT
LT. SIDE DRAIN
W/ HEADWALLS LT. & RT.
REMOVE AND INSTALL
24" X 46' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 160 CU. YDS.

PI 447+21.83

PROPOSED R/W
EXISTING R/W
CONST. LIMITS

PI = 447+21.83
Δ = 26°50'39"RT.
D = 3°15'00"
T = 420.71'
L = 825.97'
PC = 443+01.12
PT = 451+27.09
e = 0.082'/'
Ls = 495

STA. 448+73 IN PLACE
18" X 23' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
18" X 36' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 70 CU. YDS.

STA. 448+81 TO STA. 450+53 RT. OF C.L.
FENCE (TYPE D) = 164 LIN. FT.

HWY. 167

STA. 430+06.81 BEGIN SUPER (N.C.)
STA. 435+73.81 MAX SUPER (0.096'/')
STA. 441+40.81 END SUPER (N.C.)

STA. 441+40.81 BEGIN SUPER (N.C.)
STA. 446+35.81 MAX SUPER (0.082'/')
STA. 450+03.34 MAX SUPER (0.082'/')
STA. 454+98.34 END SUPER (N.C.)

ELEV. 428.28

0.06%

435+75.00
422.07 (LT.)

437+20.59
421.71 (LT.)

LT. DITCH GRADE -0.75%

LT. DITCH GRADE -0.25%

RT. DITCH GRADE 0.79%

436+99.64
419.55 (RT.)

RT. DITCH GRADE 0.00%

LT. DITCH GRADE -2.90%

RT. DITCH GRADE 3.00%

LT. DITCH GRADE 0.00%

+50
F.L. INLET = 419.90
F.L. OUTLET = 419.55

437+82.84
419.90 (LT.)

437+12.53
419.55 (RT.)

438+17.04
422.69 (RT.)

P.V.C. 438+30.19
ELEV. 428.48

LT. DITCH GRADE 4.00%

438+39.71
421.62 (LT.)

437+96.78
419.90 (LT.)

K=323.28
VC=375'
e=0.54'

P.V.I. 440+17.69
ELEV. 428.59

RT. DITCH GRADE 0.50%

LT. DITCH GRADE 1.00%

RT. DITCH GRADE 1.50%

440+90.03
424.05 (RT.)

P.V.T. 442+05.19
ELEV. 430.88

441+75.67
424.98 (LT.)

1.22%

P.V.C. 444+30.38
ELEV. 433.63

443+00.06
427.20 (RT.)

LT. DITCH GRADE 2.50%

RT. DITCH GRADE 1.00%

K=253.38
VC=375'
e=0.69'

445+08.00
433.28 (LT.)

P.V.I. 446+17.88
ELEV. 435.91

446+00.00
430.20 (RT.)

447+11.00
438.36 (LT.)

RT. DITCH GRADE 2.50%

P.V.T. 448+05.38
ELEV. 440.98

448+45.00
441.71 (LT.)

2.70%

LT. DITCH GRADE 2.95%

P.V.C. 449+19.85
ELEV. 444.07

K=166.67
VC=600'
e=-2.70'

435+00 436+00 437+00 438+00 439+00 440+00 441+00 442+00 443+00 444+00 445+00 446+00 447+00 448+00 449+00 450+00

410 415 420 425 430 435 440 445 450 455

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				6	ARK.			
				JOB NO.		050213	91	369

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14

PROPOSED R/W
CONST. LIMITS
EXISTING R/W
PROPOSED R/W
CONST. LIMITS
EXISTING R/W

+37.00 258.97
+40.00 190.00
+55.00 220.00
+5.00 110.00
+85.00 85.00
+39.01 85.00
+39.01 83.00
+50.00 80.00
+68.83 77.80
+75.00 78.71
+50.00 85.00
+90.00 85.00
+44.00 85.00
+38.00 85.00
+46.00 85.00
+39.01 85.00
+39.01 80.00
+30.00 78.69

STA. 451+77 IN PLACE
24" X 48' R.C. PIPE CULVERT
WITH HEADWALLS LT. AND RT.
REMOVE HDWLS. LT. AND RT. AND
EXTEND R.C. PIPE 60' LT. AND 12' RT.
(CLASS III)(TYPE 3 BEDDING) WITH F.E.S. LT. AND RT.
050 = 21 C.F.S. D.A. = 3.5 ACRES
24" R.C. PIPE = 80 LIN. FT.
24" F.E.S. = 2 EACH

STA. 456+10 TO STA. 464+37 LT. OF C.L.
FENCE (TYPE C) = 914 LIN. FT.

STA. 459+97 IN PLACE
54" X 45' R.C. PIPE CULVERT
WITH HEADWALLS LT. AND RT.
REMOVE HDWLS. LT. AND RT. AND
EXTEND R.C. PIPE 56' LT. AND 18' RT.
INSTALL 54" X 118' R.C. PIPE CULVERT
(CLASS III)(TYPE 3 BEDDING) WITH F.E.S. LT. AND RT.
050 = 235 C.F.S. D.A. = 59.1 ACRES
54" R.C. PIPE = 200 LIN. FT.
54" F.E.S. = 4 EACH

STA. 465+00 CONSTRUCT
18" X 38' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 85 CU. YDS.

STA. 458+97 TO STA. 460+68 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) ("W"=6') = 114.98 SQ. YD.

450 455 460 465 +00 +95 +17 +22

N 30°42'15" E

PI = 447+21.83
Δ = 26°50'39"RT.
D = 3°15'00"
T = 420.71'
L = 825.97'
PC = 443+01.12
PT = 451+27.09
e = 0.082'/'
Ls = 495

PT 451+27.09

STA. 448+81 TO STA. 450+53 RT. OF C.L.
FENCE (TYPE D) = 164 LIN. FT.

STA. 451+94 TO STA. 454+24 RT. OF C.L.
FENCE (TYPE D) = 229 LIN. FT.

STA. 455+17 CONSTRUCT
APPROACH ON RT. = 120 CU. YDS.

STA. 456+22 CONSTRUCT
APPROACH ON RT. = 55 CU. YDS.

T.C.E.
T.C.E.

SPECIAL FLOOD HAZARD AREA

STA. 462+95 IN PLACE
18" X 23' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
18" X 28' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 30 CU. YDS.

HWY. 167

STA. 441+40.81 BEGIN SUPER (N.C.)
STA. 446+35.81 MAX SUPER (0.082'/')
STA. 450+03.34 MAX SUPER (0.082'/')
STA. 454+98.34 END SUPER (N.C.)

SPECIAL FLOOD HAZARD AREA
STA. 456+00 TO STA. 464+00

450+23.63 446.98 (LT.)
450+87.57 447.78 (LT.)
451+74.33 445.61 (LT.)
P.V.I. 452+19.85 ELEV. 452.17
K=166.67 VC=600' e=-2.70'
P.V.C. 455+62.98 ELEV. 449.08
P.V.T. 458+62.98 ELEV. 447.73
P.V.C. 462+81.53 ELEV. 447.73
K=161.76 VC=276' e=0.58'

LT. DITCH GRADE 1.25%
LT. DITCH GRADE -2.50%
LT. DITCH GRADE 2.50%
LT. DITCH GRADE 0.50%
-0.90%
K=333.33 VC=300' e=0.34'
0.00%
RT. DITCH GRADE 2.50%

451+42.00 443.75 (RT.)
LT. DITCH GRADE 0.00%
451+78.33 445.61 (LT.)
452+41.23 447.18 (LT.)
453+50.00 447.73 (LT.)
P.V.T. 455+19.85 ELEV. 449.47
P.V.I. 457+12.98 ELEV. 447.73

+77
F.L. INLET = 445.61
F.L. OUTLET = 443.27

458+96.60 443.15 (LT.)
LT. DITCH GRADE -3.50%
460+0.35 440.11 (LT.)
459+83.52 440.11 (LT.)
LT. DITCH GRADE 0.00%
460+00.26 439.20 (RT.)
460+67.91 442.44 (LT.)
LT. DITCH GRADE 3.50%
LT. DITCH GRADE 0.30%
RT. DITCH GRADE 0.86%
461+05.00 440.10 (RT.)
463+25.00 443.21 (LT.)
P.V.I. 464+19.03 ELEV. 447.73

+97
F.L. INLET = 440.11
F.L. OUTLET = 439.20

465 460 455 450 445 440 435 430 425 420

450+00 451+00 452+00 453+00 454+00 455+00 456+00 457+00 458+00 459+00 460+00 461+00 462+00 463+00 464+00 465+00

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				6	ARK.			
				JOB NO.		050213	92	369

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TIMOTHY D. SMITH
2-26-14

STA. 465+30 IN PLACE
18" X 25' C.M. PIPE CULVERT
LT. SIDE DRAIN
W/ HEADWALLS LT. & RT.
REMOVE

STA. 466+22 TO STA. 476+27 LT. OF C.L.
FENCE (TYPE C) = 1173 LIN. FT.

STA. 469+97 IN PLACE
DBL. 8' X 4' X 54' R.C. BOX CULVERT
ON 30° LT. FWD. SKEW
WITH 3:1 WINGS LT. AND RT.
RETAIN & EXTEND 54' LT. & 23' RT.
CONSTRUCT 8' X 4' X 140' R.C. BOX CULVERT
050 = 656 C.F.S. D.A. = 336 ACRES

SPECIAL FLOOD HAZARD AREA

STA. 477+35 CONSTRUCT
24" X 38' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 100 CU. YDS.

PI = 476+36.87
Δ = 16°27'32"RT.
D = 3°00'00"
T = 276.22'
L = 548.63'
PC = 473+60.65
PT = 479+09.28
e = 0.077'/'
Ls = 540'

STA. 477+30 IN PLACE
18" X 24' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE

STA. 478+54 TO STA. 479+19 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) ("W"=6') = 46.23 SQ. YD.

STA. 470+70 TO STA. 471+17 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) ("W"=6') = 32.23 SQ. YD.

STA. 474+00 TO STA. 475+35 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) ("W"=6') = 92.75 SQ. YD.

PROPOSED R/W
CONST. LIMITS
EXISTING R/W
N 30°42'15" E
N 47°09'47" E
PC 1101+50.41
PT 1101+87
PI 1101+69.20
PI 476+36.87
POE 1102+59.00
LESLEY HOLLOW ROAD
PROPOSED R/W
SHEDS
CANOPY
BARBER'S WRECKER
GATE
POWER POLE
TELEPHONE PEDESTAL
MARK "X" IRON ROD
MARK "X" IRON PIN
PK NAIL
CAP
465
470
475
480

STA. 468+77 TO STA. 469+34 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) ("W"=6') = 41.16 SQ. YD.

STA. 468+57 CONSTRUCT
APPROACH ON RT. = 40 CU. YDS.

STA. 469+83 TO STA. 470+75 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) ("W"=6') = 62.09 SQ. YD.

STA. 472+88 TO STA. 473+82 RT. OF C.L.
FENCE (TYPE D) = 91 LIN. FT.

STA. 472+74 IN PLACE
24" X 34' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
DBL. 42" X 36' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 100 CU. YDS.

STA. 473+82 TO STA. 476+38 RT. OF C.L.
FENCE (6' CHAIN LINK) = 244 LIN. FT.

STA. 477+12 IN PLACE
36" X 24' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
DBL. 42" X 36' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 110 CU. YDS.

STA. 478+10.00 ON HWY. 167 =
STA. 1102+59.00 ON LESLEY HOLLOW ROAD
Δ 90°00'00"

STA. 480+11 IN PLACE
18" X 39' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
18" X 46' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 75 CU. YDS.

HWY. 167

STA. 469+55.65 BEGIN SUPER (N.C.)
STA. 474+95.65 MAX SUPER (0.077'/')
STA. 477+69.60 MAX SUPER (0.077'/')
STA. 483+09.60 END SUPER (N.C.)

STA. 478+19 IN PLACE
36" X 24' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
DBL. 42" X 36' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 100 CU. YDS.

STA. 478+59 IN PLACE
24" X 44' R.C. PIPE CULVERT
WITH HEADWALLS LT. AND RT.
REMOVE AND INSTALL
DBL. 36" X 120' R.C. PIPE CULVERT
(CLASS III(TYPE 3 BEDDING) WITH F.E.S. LT. AND RT.
050 = 94 C.F.S. D.A. = 20.0 ACRES
36" R.C. PIPE = 240 LIN. FT.
36" F.E.S. = 4 EACH

SPECIAL FLOOD HAZARD AREA
STA. 467+00 TO STA. 471+25

P.V.T. 465+56.53
ELEV. 450.07
1.70%
RT. DITCH GRADE -3.00%
469+10.91
451.57 (LT.)
LT. DITCH GRADE -1.50%
468+76.59
450.93 (RT.)
469+33.62
449.22 (RT.)
RT. DITCH GRADE 0.00%
469+82.52
449.22 (RT.)
470+21.07
449.92 (LT.)
RT. DITCH GRADE 3.00%
470+75.00
451.99 (RT.)
470+69.97
449.92 (LT.)
LT. DITCH GRADE 10.00%
P.V.C. 471+29.31
ELEV. 459.80
471+17.20
454.64 (LT.)
LT. DITCH GRADE 0.00%
P.V.I. 472+29.31
ELEV. 461.50
P.V.T. 473+29.31
ELEV. 462.80
LT. DITCH GRADE 2.00%
474+00.00
460.30 (LT.)
RT. DITCH GRADE 1.50%
473+85.00
456.64 (RT.)
LT. DITCH GRADE 4.00%
475+34.25
465.67 (LT.)
RT. DITCH GRADE 1.00%
LT. DITCH GRADE 1.25%
1.30%
477+90.00
468.86 (LT.)
478+26.25
469.41 (LT.)
478+51.80
465.58 (LT.)
LT. DITCH GRADE -15.00%
LT. DITCH GRADE 0.00%
RT. DITCH GRADE 0.00%
478+51.56
461.31 (RT.)
478+66.41
461.31 (RT.)
LT. DITCH GRADE 5.00%
478+65.63
465.58 (LT.)
479+18.57
468.23 (LT.)
LT. DITCH GRADE 1.20%
P.V.C. 479+51.45
ELEV. 470.89
RT. DITCH GRADE 2.50%
K=222.22
VC=200'
e=0.22'
K=161.76
VC=275'
e=0.58'
K=500.00
VC=200'
e=-0.10'

BM: 988 NGS MARK M 165,RTK ELEV
40.23 RT. OF STA. 469+63.99
ELEVATION = 455.37

+97
F.L. INLET = 449.92
F.L. OUTLET = 449.22

+59
F.L. INLET = 465.58
F.L. OUTLET = 461.31

NOTE: FOR ALL THE CONSTRUCTION OF TEMPORARY WORK RAMPS OR HAUL ROADS, THIS STREAM IS CLASSIFIED AS AN INTERMITTENT STREAM. THE STREAMBANK ELEVATION IS 452.00 FT. M.L.S.

465+00 466+00 467+00 468+00 469+00 470+00 471+00 472+00 473+00 474+00 475+00 476+00 477+00 478+00 479+00 480+00

435 440 445 450 455 460 465 470 475 480

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(2) PLAN AND PROFILE SHEETS

STA. 479+97 CONSTRUCT 30" X 46' PIPE CULVERT LT. SIDE DRAIN
CONSTRUCT APPROACH = 170 CU. YDS.

STA. 480+02 IN PLACE 18" X 34' C.M. PIPE CULVERT LT. SIDE DRAIN REMOVE

STA. 482+37 IN PLACE 18" X 20' C.M. PIPE CULVERT LT. SIDE DRAIN REMOVE

STA. 482+50 CONSTRUCT 30" X 46' PIPE CULVERT LT. SIDE DRAIN
CONSTRUCT APPROACH = 180 CU. YDS.

STA. 484+36 IN PLACE 18" X 20' C.M. PIPE CULVERT LT. SIDE DRAIN REMOVE

STA. 484+50 CONSTRUCT 18" X 46' PIPE CULVERT LT. SIDE DRAIN
CONSTRUCT APPROACH = 175 CU. YDS.

STA. 485+27 IN PLACE 18" X 22' C.M. PIPE CULVERT LT. SIDE DRAIN REMOVE

STA. 485+33 CONSTRUCT 18" X 48' PIPE CULVERT LT. SIDE DRAIN
CONSTRUCT APPROACH = 190 CU. YDS.

STA. 487+07 IN PLACE 18" X 22' STEEL PIPE CULVERT LT. SIDE DRAIN REMOVE

STA. 487+25 CONSTRUCT 18" X 60' PIPE CULVERT LT. SIDE DRAIN
CONSTRUCT APPROACH = 330 CU. YDS.

STA. 489+31 IN PLACE 18" X 37' C.M. PIPE CULVERT LT. SIDE DRAIN W/ HEADWALL LT. REMOVE

STA. 483+44 IN PLACE 18" X 21' C.M. PIPE CULVERT LT. SIDE DRAIN REMOVE AND INSTALL 18" X 46' PIPE CULVERT LT. SIDE DRAIN
CONSTRUCT APPROACH = 175 CU. YDS.

STA. 486+50 CONSTRUCT 18" X 48' PIPE CULVERT LT. SIDE DRAIN
CONSTRUCT APPROACH = 190 CU. YDS.

STA. 488+02 IN PLACE 18" X 31' STEEL PIPE CULVERT LT. SIDE DRAIN W/ HEADWALL RT. REMOVE

PI = 490+77.65
Δ = 5°30'43"LT.
D = 0°45'00"
T = 367.73'
L = 734.90'
PC = 487+09.92
PT = 494+44.82
e = 0.023'/'
Ls = 540'

STA. 493+00 CONSTRUCT APPROACH ON LT. = 175 CU. YDS.

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STA. 481+20 IN PLACE 18" X 23' C.M. PIPE CULVERT RT. SIDE DRAIN REMOVE AND INSTALL 18" X 34' PIPE CULVERT RT. SIDE DRAIN
CONSTRUCT APPROACH = 50 CU. YDS.

STA. 482+50 IN PLACE 18" X 39' C.M. PIPE CULVERT RT. SIDE DRAIN REMOVE AND INSTALL 18" X 50' PIPE CULVERT RT. SIDE DRAIN
CONSTRUCT APPROACH = 80 CU. YDS.

STA. 483+65 TO STA. 484+85 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) ("W"=6') = 80.00 SQ. YD.

STA. 483+44 IN PLACE 18" X 42' C.M. PIPE CULVERT RT. SIDE DRAIN REMOVE AND INSTALL 18" X 42' PIPE CULVERT RT. SIDE DRAIN
CONSTRUCT APPROACH = 55 CU. YDS.

STA. 486+64 CONSTRUCT APPROACH ON RT. = 25 CU. YDS.

STA. 486+08 CONSTRUCT APPROACH ON RT. = 25 CU. YDS.

STA. 488+65 CONSTRUCT APPROACH ON RT. = 75 CU. YDS.

STA. 489+67 CONSTRUCT APPROACH ON RT. = 40 CU. YDS.

HWY. 167

STA. 469+55.65 BEGIN SUPER (N.C.)
STA. 474+95.65 MAX SUPER (0.077'/')
STA. 477+69.60 MAX SUPER (0.077'/')
STA. 483+09.60 END SUPER (N.C.)

STA. 488+34 IN PLACE 48" X 47' R.C. PIPE CULVERT WITH HEADWALLS LT. AND RT. REMOVE AND INSTALL DBL. 54" X 126' R.C. PIPE CULVERT (CLASS III (TYPE 3 BEDDING) WITH F.E.S. LT. AND RT.
Q50 = 314 C.F.S. D.A. = 67.7 ACRES
54" R.C. PIPE = 252 LIN. FT.
54" F.E.S. = 4 EACH
CONSTRUCT OUTLET = 70 CU. YD. UNCLAS. EXC.

STA. 483+09.60 BEGIN SUPER (N.C.)
STA. 488+49.60 MAX SUPER (0.023'/')
STA. 493+09.82 MAX SUPER (0.023'/')
STA. 498+49.82 END SUPER (N.C.)

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(2) PLAN AND PROFILE SHEETS

STA. 496+31 IN PLACE
24" X 56' R.C. PIPE CULVERT
WITH HEADWALLS LT. AND RT.
REMOVE AND INSTALL
30" X 120' R.C. PIPE CULVERT
(CLASS III)(TYPE 3 BEDDING) WITH F.E.S. LT. AND RT.
050 = 26 C.F.S. D.A. = 5.3 ACRES
30" R.C. PIPE = 120 LIN. FT.
30" F.E.S. = 2 EACH

STA. 498+00 CONSTRUCT
APPROACH ON LT. = 225 CU. YDS.

STA. 499+70 CONSTRUCT
18" X 62' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 370 CU. YDS.

STA. 500+59 IN PLACE
18" X 44' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE

STA. 502+70 CONSTRUCT
24" X 54' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 330 CU. YDS.

STA. 502+88 IN PLACE
15" X 40' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE

PI = 509+44.66
Δ = 1°35'19" LT.
D = 0°15'00"
T = 317.76'
L = 635.47'
PC = 506+26.90
PT = 512+62.37
NO SUPER

STA. 506+70 CONSTRUCT
APPROACH ON LT. = 175 CU. YDS.

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STA. 495+66 TO STA. 497+08 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) ("W"=6') = 94.86 SQ. YD.

STA. 504+83 TO STA. 506+64 LT. OF C.L.
FENCE (TYPE C) = 172 LIN. FT.

STA. 504+90 TO STA. 508+00 LT. SHLDR.
CURB AND GUTTER (TYPE B-I) = 310 LIN. FT.

STA. 506+78 TO STA. 508+31 LT. OF C.L.
FENCE (TYPE C) = 135 LIN. FT.

SHEDS

PROPOSED R/W
CONST. LIMITS
EXISTING R/W
N 41°39'04" E
N 40°03'45" E
C.M.P.
T.C.E.
PC 506+26.90

SPECIAL FLOOD HAZARD AREA

STA. 501+62 CONSTRUCT
APPROACH ON RT. = 30 CU. YDS.

STA. 500+69 CONSTRUCT
APPROACH ON RT. = 30 CU. YDS.

STA. 503+35 CONSTRUCT
APPROACH ON RT. = 25 CU. YDS.

STA. 504+85 CONSTRUCT
APPROACH ON RT. = 25 CU. YDS.

STA. 505+94 CONSTRUCT
APPROACH ON RT. = 25 CU. YDS.

STA. 507+06 IN PLACE
36" X 47' R.C. PIPE CULVERT
WITH HEADWALLS LT. AND RT.
REMOVE AND CONSTRUCT
DROP INLET (TYPE E) 38.25' LT.
WITH 36" X 142' R.C. PIPE INLET
(CLASS III)(TYPE 3 BEDDING) WITH F.E.S. LT.
AND 36" X 98' R.C. PIPE OUTLET
(CLASS III)(TYPE 3 BEDDING) WITH F.E.S. RT.
36" R.C. PIPE = 240 LIN. FT.
36" F.E.S. = 2 EACH
DROP INLET (TYPE E) = 4' X 4'
(H = 7'-6")
050 = 53 C.F.S. D.A. = 10.0 ACRES
CONSTRUCT OUTLET = 5 CU. YD. UNCLAS. EXC.

NOTE: RESTRAINING CONDITION FROM STA. 508+79.35 TO STA. 509+75.57. SEE THE SPECIAL PROVISION "ARCHEOLOCIAL MONITORING AND CEDAR TREE REMOVAL".

HWY. 167

STA. 483+09.60 BEGIN SUPER (N.C.)
STA. 488+49.60 MAX SUPER (0.023'/')
STA. 493+09.82 MAX SUPER (0.023'/')
STA. 498+49.82 END SUPER (N.C.)

SPECIAL FLOOD HAZARD AREA
STA. 495+00 TO STA. 522+75

STA. 500+23 IN PLACE
24" X 44' R.C. PIPE CULVERT
WITH HEADWALLS LT. AND RT.
REMOVE AND INSTALL
DBL. 36" X 116' R.C. PIPE CULVERT
(CLASS III)(TYPE 3 BEDDING) WITH F.E.S. LT. AND RT.
050 = 84 C.F.S. D.A. = 18.2 ACRES
36" R.C. PIPE = 232 LIN. FT.
36" F.E.S. = 4 EACH

P.V.I. 495+80.84 ELEV. 482.37
K=166.67
VC=300'
e=0.68'
P.V.T. 497+30.84 ELEV. 482.67
P.V.C. 499+73.54 ELEV. 483.16
P.V.I. 502+23.54 ELEV. 483.66
K=243.90
VC=500'
e=1.28'
P.V.T. 504+73.54 ELEV. 489.28
P.V.C. 504+96.11 ELEV. 489.79
2.25%
P.V.I. 506+96.11 ELEV. 494.29
K=208.33
VC=400'
e=-0.96'
P.V.T. 508+96.11 ELEV. 494.95
0.33%
ELEV. 495.29
L.T. DITCH GRADE 2.95%

496+28.30 475.48 (L.T.)
L.T. DITCH GRADE 0.00%
496+38.88 475.48 (L.T.)
L.T. DITCH GRADE 3.50%
497+07.68 478.06 (L.T.)
498+22.06 478.28 (L.T.) 0.20%
500+11.83 477.24 (L.T.)
L.T. DITCH GRADE 0.00%
500+26.17 477.24 (L.T.)
L.T. DITCH GRADE -0.55%
L.T. DITCH GRADE 1.32%
L.T. DITCH GRADE 1.25%
L.T. DITCH GRADE 2.50%
RT. DITCH GRADE 0.36%
RT. DITCH GRADE -0.00%
L.T. DITCH GRADE -5.00%
495+66.35 478.58 (L.T.)
496+34.19 475.18 (RT.)
500+11.83 476.54 (RT.)
500+26.17 476.54 (RT.)
501+33.72 478.66 (L.T.)
502+98.00 480.71 (L.T.)
503+83.13 482.84 (L.T.)
508+50.00 488.00 (L.T.)
509+34.74 490.50 (L.T.)

+31
F.L. INLET = 475.48
F.L. OUTLET = 475.18

+23
F.L. INLET = 477.24
F.L. OUTLET = 476.54

+06
F.L. INLET = 488.00
F.L. OUTLET = 485.08

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(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14

STA. 510+00 CONSTRUCT APPROACH ON LT. = 255 CU. YDS.

STA. 511+37 IN PLACE
24" X 42' PLASTIC PIPE CULVERT
LT. SIDE DRAIN
REMOVE

STA. 516+25 IN PLACE
24" X 23' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE

STA. 518+07 CONSTRUCT
24" X 72' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 490 CU. YDS.

STA. 513+28 TO STA. 519+47 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) ("W"=6') = 365.66 SQ. YD.

STA. 521+90 TO STA. 523+21 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) ("W"=6') = 88.40 SQ. YD.

SPECIAL FLOOD HAZARD AREA

STA. 511+61 TO STA. 512+37 RT. OF C.L.
FENCE (TYPE C) = 78 LIN. FT.

PI = 509+44.66
Δ = 1°35'19" LT.
D = 0°15'00"
T = 317.76'
L = 635.47'
PC = 506+26.90
PT = 512+62.37
NO SUPER

STA. 512+75 CONSTRUCT APPROACH ON RT. = 65 CU. YDS.

STA. 513+30 TO STA. 514+55 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) ("W"=6') = 84.16 SQ. YD.

STA. 513+78 TO STA. 514+55 RT. OF C.L.
FENCE (TYPE D) = 80 LIN. FT.

STA. 518+25 TO STA. 525+80 RT. OF C.L.
FENCE (TYPE D) = 765 LIN. FT.

STA. 522+40 IN PLACE
24" X 76' R.C. PIPE CULVERT
WITH HEADWALLS LT. AND RT.
REMOVE AND INSTALL
36" X 142' R.C. PIPE CULVERT
(CLASS III (TYPE 3 BEDDING) WITH F.E.S. LT. AND RT.
Q50 = 63 C.F.S. D.A. = 12.9 ACRES
36" R.C. PIPE = 142 LIN. FT.
36" F.E.S. = 2 EACH

HWY. 167

STA. 511+97 IN PLACE
36" X 44' R.C. PIPE CULVERT
WITH HEADWALLS LT. AND RT.
REMOVE HDWLS. LT. AND RT. AND
EXTEND R.C. PIPE 56' LT. AND 16' RT.
(CLASS III (TYPE 3 BEDDING) WITH F.E.S. LT. AND RT.
Q50 = 19 C.F.S. D.A. = 4.2 ACRES
36" R.C. PIPE = 80 LIN. FT.
36" F.E.S. = 2 EACH

STA. 513+72 IN PLACE
30" X 48' R.C. PIPE CULVERT
WITH HEADWALLS LT. AND RT.
REMOVE AND INSTALL
54" X 120' R.C. PIPE CULVERT
(CLASS III (TYPE 3 BEDDING) WITH F.E.S. LT. AND RT.
Q50 = 165 C.F.S. D.A. = 30.3 ACRES
54" R.C. PIPE = 120 LIN. FT.
54" F.E.S. = 2 EACH
CONSTRUCT OUTLET = 10 CU. YD. UNCLAS. EXC.

STA. 524+01.65 BEGIN SUPER (N.C.)
STA. 530+31.65 MAX SUPER (0.093'/')
STA. 533+17.92 MAX SUPER (0.093'/')
STA. 539+47.92 END SUPER (N.C.)

SPECIAL FLOOD HAZARD AREA
STA. 495+00 TO STA. 522+75

+97
F.L. INLET = 489.85
F.L. OUTLET = 489.79

+97
F.L. INLET = 488.49
F.L. OUTLET = 488.05

+40
F.L. INLET = 513.00
F.L. OUTLET = 504.04

BM: 989 NGS MARK N 165
62.57 RT. OF STA. 522+44.49
ELEVATION = 509.46

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(2) PLAN AND PROFILE SHEETS

STA. 525+35 CONSTRUCT
30" X 58' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 285 CU. YDS. COMP. EMB.
= 505 CU. YDS. UNCL. EXC.
NOTE: DRIVEWAY CONNECTION OUTSIDE OF R.O.W. SHALL BE CONSTRUCTED BY PROPERTY OWNER.

STA. 526+40 CONSTRUCT
30" X 64' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 370 CU. YDS. COMP. EMB.
= 290 CU. YDS. UNCL. EXC.
NOTE: DRIVEWAY CONNECTION OUTSIDE OF R.O.W. SHALL BE CONSTRUCTED BY PROPERTY OWNER.

STA. 528+82 TO STA. 533+60 LT. OF C.L.
FENCE (TYPE D) = 501 LIN. FT.
16'-0" GATE = 1 EACH

STA. 533+00 CONSTRUCT
54" X 56' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 415 CU. YDS.

STA. 534+63 IN PLACE
24" X 42' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
54" X 40' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 210 CU. YDS.

STA. 538+00 CONSTRUCT
APPROACH ON LT. = 100 CU. YDS.
STA. 539+25 CONSTRUCT
APPROACH ON LT. = 45 CU. YDS.

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PROPOSED R/W
CONST. LIMITS
EXISTING R/W
PI 531+79.28
PC 528+74.15
PT 534+75.42
530
535
525
540
N 40°03'45" E
N 64°06'49" E
SPECIAL FLOOD HAZARD AREA

STA. 518+25 TO STA. 525+80 RT. OF C.L.
FENCE (TYPE D) = 765 LIN. FT.

STA. 526+63 CONSTRUCT
APPROACH ON RT. = 35 CU. YDS.

STA. 530+15 TO STA. 533+23 RT. OF C.L.
FENCE (TYPE D) = 292 LIN. FT.

PI = 531+79.28
Δ = 24°03'04" RT.
D = 4°00'00"
T = 305.13'
L = 601.27'
PC = 528+74.15
PT = 534+75.42
e = 0.093'/'
Ls = 630

STA. 533+40 CONSTRUCT
18" X 28' PIPE CULVERT
RT. SIDE DRAIN
APPROACH ON RT. = 20 CU. YDS.

STA. 535+27 IN PLACE
24" X 68' R.C. PIPE CULVERT
WITH HEADWALLS LT. AND RT.
REMOVE AND INSTALL
60" X 132' R.C. PIPE CULVERT
(CLASS IIIX TYPE 3 BEDDING) WITH F.E.S. LT. AND RT.
050 = 205 C.F.S. D.A. = 47.3 ACRES
60" R.C. PIPE = 132 LIN. FT.
60" F.E.S. = 2 EACH

STA. 536+50 CONSTRUCT
APPROACH ON RT. = 45 CU. YDS.

STA. 539+70 IN PLACE
TRI. 8' X 7' X 55' R.C. BOX CULVERT
WITH 3# WINGS LT. AND RT.
ON 30° LT. FWD. SKEW
RETAIN & EXTEND 59' LT. & 30' RT.
CONSTRUCT 8' X 7' X 144' R.C. BOX CULVERT
050 = 1680 C.F.S. D.A. = 1024 ACRES

HWY. 167

STA. 524+01.65 BEGIN SUPER (N.C.)
STA. 530+31.65 MAX SUPER (0.093'/')
STA. 533+17.92 MAX SUPER (0.093'/')
STA. 539+47.92 END SUPER (N.C.)

STA. 539+49 TO STA. 540+51 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) ("W"=6') = 69.33 SQ. YD.

SPECIAL FLOOD HAZARD AREA
STA. 525+00 TO STA. 564+00

ELEV. 523.80
1.25%
P.V.C. 525+29.91
ELEV. 524.18
K=194.44
VC=350'
e=-0.79'
P.V.I. 527+04.91
ELEV. 526.36
P.V.T. 528+79.91
ELEV. 525.40
530+48.70
525.86 (LT.)
P.V.C. 531+90.42
ELEV. 523.69
K=777.78
VC=350'
e=0.20'
P.V.I. 533+65.42
ELEV. 522.73
P.V.T. 535+40.42
ELEV. 522.56
ELEV. 522.10
539+79.72
511.00 (LT.)

LT. DITCH GRADE 1.40%
LT. DITCH GRADE 2.50%
LT. DITCH GRADE 0.25%
-0.55%
LT. DITCH GRADE -2.00%
-0.10%
RT. DITCH GRADE -1.50%
RT. DITCH GRADE -0.50%
LT. DITCH GRADE -2.90%
LT. DITCH GRADE 0.00%
LT. DITCH GRADE 0.30%
RT. DITCH GRADE 0.00%
RT. DITCH GRADE 5.00%
LT. DITCH GRADE 0.00%

526+66.00
521.71 (LT.)
528+07.74
525.25 (LT.)
529+90.00
519.05 (RT.)
530+31.03
518.44 (RT.)
533+31.00
516.94 (RT.)
533+73.00
519.37 (LT.)
534+38.00
516.16 (LT.)
535+21.72
513.73 (LT.)
535+30.72
513.73 (LT.)
537+80.00
514.48 (LT.)
538+78.65
508.83 (RT.)
539+48.51
508.83 (RT.)

+27
F.L. INLET = 513.73
F.L. OUTLET = 511.39

+70
F.L. INLET = 511.00
F.L. OUTLET = 508.83

NOTE: FOR ALL THE CONSTRUCTION OF TEMPORARY WORK RAMPS OR HAUL ROADS, THIS STREAM IS CLASSIFIED AS AN INTERMITTENT STREAM. THE STREAMBANK ELEVATION IS 514.00 FT. M.L.S.

BM: 990 NGS MARK P 165
37.35 RT. OF STA. 539+62.33
ELEVATION = 518.60

BM: 17000 BRASS CAP P165
37.35 RT. OF STA. 539+62.44
ELEVATION = 518.59

525+00 526+00 527+00 528+00 529+00 530+00 531+00 532+00 533+00 534+00 535+00 536+00 537+00 538+00 539+00 540+00

495 500 505 510 515 520 525 530 535 540

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(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14

STA. 542+30 IN PLACE
24" X 40' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE

STA. 543+92 IN PLACE
18" X 40' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE

STA. 545+47 IN PLACE
12" X 33' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE

STA. 548+00 CONSTRUCT
APPROACH ON LT. = 55 CU. YDS.

STA. 549+74 CONSTRUCT
30" X 44' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 120 CU. YDS.

STA. 544+00 INSTALL
30" X 46' C.M. PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 85 CU. YDS.

STA. 545+70 CONSTRUCT
18" X 30' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 40 CU. YDS.

STA. 550+72 IN PLACE
18" X 34' R.C. PIPE CULVERT
LT. SIDE DRAIN
REMOVE

STA. 541+50 IN PLACE
18" X 30' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
24" X 66' PIPE CULVERT
LT. SIDE DRAIN

STA. 551+90 IN PLACE
18" X 20' R.C. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
30" X 50' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 265 CU. YDS.

PI 1201+57.66
PC 1201+43.12
PT 1201+72.20
PROPOSED R.O.W.
WEAVER CHAPEL ROAD
S 27°13'12" E

STA. 540+50 TO STA. 541+16 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) ("W"=6') = 45.53 SQ. YD.

STA. 552+15 TO STA. 552+46 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) ("W"=6') = 20.50 SQ. YD.

POE 1202+86.41
N 64°06'49" E
PROPOSED R/W
CONST. LIMITS
EXISTING R/W
T.C.E.
CANOPY
RUINS
F
R

STA. 541+50.00 ON HWY. 167 =
STA. 1202+86.41 ON WEAVER CHAPEL ROAD
@ 90°00'00"

SPECIAL FLOOD HAZARD AREA

STA. 540+70 IN PLACE
24" X 24' C.M. PIPE CULVERT
RT. SIDE DRAIN
W/ HEADWALLS LT. & RT.
REMOVE AND INSTALL
18" X 38' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 85 CU. YDS.

STA. 545+77 CONSTRUCT
18" X 32' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 60 CU. YDS.

STA. 549+50 CONSTRUCT
18" X 30' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 45 CU. YDS.

STA. 549+25 IN PLACE
15" X 24' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE

STA. 550+75 IN PLACE
12" X 25' C.M. PIPE CULVERT
RT. SIDE DRAIN
W/ HEADWALLS LT. & RT.
REMOVE AND INSTALL
18" X 30' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 45 CU. YDS.

16'-0" GATE

STA. 552+34 TO STA. 553+58 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) ("W"=6') = 83.02 SQ. YD.

HWY. 167

STA. 548+24 IN PLACE
18" X 45' R.C. PIPE CULVERT
WITH HEADWALLS LT. AND RT.
REMOVE AND INSTALL
DBL. 44" X 27" X 116' R.C. ARCH PIPE CULVERT
(CLASS III TYPE 3 BEDDING) WITH F.E.S. LT. AND RT.
Q50 = 56 C.F.S. D.A. = 13.5 ACRES
44" X 27" R.C. ARCH PIPE = 232 LIN. FT.
44" X 27" F.E.S. = 4 EACH
CONSTRUCT OUTLET = 5 CU. YD. UNCLAS. EXC.

STA. 549+58 TO STA. 551+49 RT. OF C.L.
FENCE (TYPE C) = 175 LIN. FT.
16'-0" GATE = 2 EACH

STA. 551+99.44 BEGIN SUPER (N.C.)
STA. 557+39.44 MAX SUPER (0.049'/')
STA. 558+31.08 MAX SUPER (0.049'/')
STA. 563+71.08 END SUPER (N.C.)

SPECIAL FLOOD HAZARD AREA
STA. 525+00 TO STA. 564+00

ELEV. 522.10
P.V.C. 540+27.34
ELEV. 522.07
-0.10%
RT. DITCH GRADE 5.00%
540+81.22
515.47 (RT.)
RT. DITCH GRADE 2.50%
541+80.10
517.94 (RT.)
LT. DITCH GRADE 7.06%
LT. DITCH GRADE 1.75%
LT. DITCH GRADE 0.00%
540+49.58
511.00 (LT.)
541+20.89
516.04 (LT.)
K=195.12
VC=400'
e=1.03'
P.V.I. 542+27.34
ELEV. 521.87
542+90.51
519.00 (LT.)
P.V.T. 544+27.34
ELEV. 525.77
1.95%
548+20.49
528.35 (LT.)
548+34.37
528.85 (LT.)
LT. & RT. DITCH GRADE 0.00%
548+19.96
527.97 (RT.)
548+34.13
527.97 (RT.)
+24
F.L. INLET = 528.35
F.L. OUTLET = 527.97
LT. DITCH GRADE 2.00%
RT. DITCH GRADE 2.00%
549+15.29
529.92 (LT.)
RT. DITCH GRADE 2.12%
549+40.64
530.23 (RT.)
551+79.00
535.20 (LT.)
P.V.C. 552+02.28
ELEV. 540.88
LT. DITCH GRADE 4.00%
552+45.72
537.20 (LT.)
552+33.50
536.09 (RT.)
RT. DITCH GRADE 4.00%
K=187.50
VC=300'
e=0.60'
P.V.I. 553+52.28
ELEV. 543.81
553+58.00
541.07 (RT.)

555 550 545 540 535 530 525 520 515 510

540+00 541+00 542+00 543+00 544+00 545+00 546+00 547+00 548+00 549+00 550+00 551+00 552+00 553+00 554+00 555+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.		050213	98	369

(2) PLAN AND PROFILE SHEETS

STA. 556+32 IN PLACE
15" X 49' R.C. PIPE CULVERT
WITH HEADWALLS LT. AND RT.
REMOVE AND INSTALL
24" X 132' R.C. PIPE CULVERT
(CLASS III(TYPE 3 BEDDING) WITH F.E.S. LT. AND RT.
050 = 19 C.F.S. D.A. = 4.5 ACRES
24" R.C. PIPE = 132 LIN. FT.
24" F.E.S. = 2 EACH

STA. 555+96 TO STA. 557+27 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) ("W"=6') = 86.52 SQ. YD.

STA. 558+50 CONSTRUCT
18" X 52' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 245 CU. YDS.

STA. 560+79 TO STA. 565+40 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) ("W"=6') = 270.72 SQ. YD.

STA. 561+76 REMOVE
36" X 46' R.C. PIPE CULVERT
WITH HEADWALLS LT. AND RT.

STA. 561+90 INSTALL
DBL. 48" X 134' R.C. PIPE CULVERT
ON 20° LT. FWD. SKEW
(CLASS III(TYPE 3 BEDDING) WITH F.E.S. LT. AND RT.
050 = 209 C.F.S. D.A. = 50.9 ACRES
48" R.C. PIPE = 268 LIN. FT.
48" F.E.S. = 4 EACH

STA. 564+00 CONSTRUCT
30" X 56' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 265 CU. YDS.

PI = 570+28.74
Δ = 7°48'48.31"LT.
D = 1°30'00"
T = 260.85'
L = 520.89'
PC = 567+67.89
PT = 572+88.79
e = 0.043'/'
Ls = 540'

STA. 568+68 IN PLACE
15" X 25' R.C. PIPE CULVERT
LT. SIDE DRAIN
REMOVE

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PI = 557+89.55
Δ = 6°28'19"LT.
D = 1°45'00"
T = 185.11'
L = 369.85'
PC = 556+04.44
PT = 559+74.27
e = 0.049'/'
Ls = 540'

STA. 561+71 TO STA. 564+61 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) ("W"=6') = 193.57 SQ. YD.

STA. 566+15 CONSTRUCT
APPROACH ON RT. = 15 CU. YDS.

STA. 566+80 CONSTRUCT
APPROACH ON RT. = 10 CU. YDS.

HWY. 167

STA. 551+99.44 BEGIN SUPER (N.C.)
STA. 557+39.44 MAX SUPER (0.049'/')
STA. 558+31.08 MAX SUPER (0.049'/')
STA. 563+71.08 END SUPER (N.C.)

SPECIAL FLOOD HAZARD AREA
STA. 525+00 TO STA. 564+00

STA. 563+71.08 BEGIN SUPER (N.C.)
STA. 569+11.08 MAX SUPER (0.043'/')
STA. 571+53.79 MAX SUPER (0.043'/')
STA. 576+93.79 END SUPER (N.C.)

NOTE: FOR ALL THE CONSTRUCTION OF TEMPORARY WORK RAMPS OR HAUL ROADS, THIS STREAM IS CLASSIFIED AS AN INTERMITTENT STREAM. THE STREAMBANK ELEVATION IS 555.00 FT. M.L.S.

P.V.I. 555+02.28
ELEV. 549.13
3.55%
P.V.C. 555+08.76
ELEV. 549.36
K=187.50
VC=300'
e=0.60'
555+95.96
547.66 (LT.)
556+32.01
546.60 (LT.)
556+36.80
546.60 (LT.)
LT. DITCH GRADE -2.95%
LT. DITCH GRADE 0.00%
557+21.06
551.12 (LT.)
LT. DITCH GRADE 5.00%
P.V.I. 557+96.26
ELEV. 559.57
K=176.92
VC=575'
e=-2.34'
+32
F.L. INLET = 546.60
F.L. OUTLET = 544.04
560+79.09
555.84 (LT.)
RT. DITCH GRADE 0.00%
561+55.59
551.60 (RT.)
561+71.25
551.60 (RT.)
P.V.I. 560+83.76
ELEV. 560.43
P.V.C. 561+05.91
ELEV. 560.50
0.30%
+90
F.L. INLET = 552.08
F.L. OUTLET = 551.60
562+49.38
555.51 (RT.)
RT. DITCH GRADE 5.00%
LT. DITCH GRADE -2.95%
LT. DITCH GRADE 5.00%
LT. DITCH GRADE -0.00%
562+22.13
552.08 (LT.)
562+06.47
552.08 (LT.)
K=154.93
VC=550'
e=2.44'
563+66.57
558.84 (RT.)
P.V.I. 563+80.91
ELEV. 561.32
RT. DITCH GRADE 3.50%
564+80.56
561.73 (RT.)
LT. DITCH GRADE 3.50%
564+22.20
559.18 (LT.)
LT. DITCH GRADE 2.50%
RT. DITCH GRADE 2.50%
563+06.04
556.28 (LT.)
565+40.00
563.30 (LT.)
P.V.T. 566+55.91
ELEV. 571.91
3.85%
RT. DITCH GRADE 4.37%
566+60.00
570.75 (RT.)
566+84.00
571.80 (RT.)
P.V.C. 567+52.36
ELEV. 575.62
K=166.67
VC=500'
e=-1.87'
RT. DITCH GRADE 4.55%
567+97.00
576.55 (RT.)
568+08.00
577.05 (RT.)
RT. DITCH GRADE 2.50%
569+68.00
582.35 (RT.)
569+92.00
582.95 (RT.)

555+00 556+00 557+00 558+00 559+00 560+00 561+00 562+00 563+00 564+00 565+00 566+00 567+00 568+00 569+00 570+00

590 585 580 575 570 565 560 555 550 545

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				6	ARK.			
				JOB NO.		050213	99	369

(2) PLAN AND PROFILE SHEETS

PI = 570+28.74
Δ = 7°48'48"LT.
D = 1°30'00"
T = 260.85'
L = 520.90'
PC = 567+67.89
PT = 572+88.79
e = 0.043'/'
Ls = 540'

STA. 575+10 IN PLACE
12" X 17' R.C. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND CONSTRUCT
APPROACH ON LT. = 145 CU. YDS.

STA. 575+37 TO STA. 576+88 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) ("W"=6') = 101.54 SQ. YD.

STA. 575+76 IN PLACE
DBL. 36" X 56' R.C. PIPE CULVERT
WITH HEADWALLS LT. AND RT.
REMOVE AND INSTALL
DBL. 54" X 146' R.C. PIPE CULVERT
ON 30° LT. FWD. SKEW
(CLASS III(TYPE 3 BEDDING) WITH F.E.S. LT. AND RT.
050 = 343 C.F.S. D.A. = 86.6 ACRES
54" R.C. PIPE = 292 LIN. FT.
54" F.E.S. = 4 EACH

STA. 576+42 TO STA. 580+54 LT. OF C.L.
FENCE (TYPE D) = 413 LIN. FT.

STA. 580+80 IN PLACE
18" X 30' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
DBL 48" X 90' PIPE CULVERT
LT. SIDE DRAIN

STA. 580+80.00 ON HWY. 167 =
STA. 1302+78.62 ON WILDERNESS DRIVE
Δ 90°00'00"

STA. 575+42 TO STA. 577+26 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) ("W"=6') = 123.74 SQ. YD.

STA. 576+30 TO STA. 584+93 RT. OF C.L.
FENCE (TYPE D) = 628 LIN. FT.
16'-0" GATE = 1 EACH

STA. 583+52 IN PLACE
36" X 45' R.C. PIPE CULVERT
WITH HEADWALLS LT. AND RT.
REMOVE AND INSTALL
DBL. 42" X 116' R.C. PIPE CULVERT
(CLASS III(TYPE 3 BEDDING) WITH F.E.S. LT. AND RT.
050 = 177 C.F.S. D.A. = 39.1 ACRES
42" R.C. PIPE = 232 LIN. FT.
42" F.E.S. = 4 EACH

STATE OF ARKANSAS
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No. 11425
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PROPOSED R/W
CONST. LIMITS
EXISTING R/W
PROPOSED R.O.W.
WILDERNESS DRIVE
N 49°49'42" E
PI 1301+86.89
PC 1301+31.91
PT 1302+37.40
POB 1300+00.00
POE 1302+78.62
T.C.E.
16'-0" GATE
HWY. 167

STA. 563+71.08 BEGIN SUPER (N.C.)
STA. 569+11.08 MAX SUPER (0.043'/')
STA. 571+53.79 MAX SUPER (0.043'/')
STA. 576+93.79 END SUPER (N.C.)

STA. 581+17.15 BEGIN SUPER (N.C.)
STA. 587+47.15 MAX SUPER (0.086'/')
STA. 591+91.24 MAX SUPER (0.086'/')
STA. 598+21.24 END SUPER (N.C.)

P.V.I. 570+02.36
ELEV. 585.25
K=166.67
VC=500'
e=-1.87'
P.V.T. 572+52.36
ELEV. 587.37'
0.85%
P.V.C. 574+24.03
ELEV. 588.83
P.V.I. 575+74.03
ELEV. 590.11
K=166.67
VC=300'
e=0.67'
575+31.35
585.60 (LT.)
+76
F.L. INLET = 581.75
F.L. OUTLET = 580.46
P.V.T. 577+24.03
ELEV. 594.08
2.65%
P.V.C. 579+13.34
ELEV. 599.10
P.V.I. 580+63.34
ELEV. 603.01'
K=193.55
VC=300'
e=-0.58'
P.V.T. 582+13.34
ELEV. 604.72
1.10%
P.V.C. 583+08.55
ELEV. 605.77
583+44.65
600.54 (RT.)
583+60.15
600.54 (RT.)
+52
F.L. INLET = 600.54
F.L. OUTLET = 597.47
K=240.00
VC=600'
e=1.88'
582+58.82
602.26 (RT.)
584+85.84
603.13 (LT.)
582+12.15
595.48 (LT.)
583+44.65
597.47 (LT.)
583+60.15
597.47 (LT.)
577+26.35
589.68 (RT.)
576+87.73
584.99 (LT.)
576+22.85
581.75 (LT.)
576+07.41
581.75 (LT.)
575+26.43
580.46 (RT.)
575+41.87
580.46 (RT.)
RT. DITCH GRADE 0.00%
LT. DITCH GRADE 0.00%
RT. DITCH GRADE 5.00%
LT. DITCH GRADE 5.00%
LT. DITCH GRADE 2.00%
RT. DITCH GRADE -2.00%
RT. DITCH GRADE 2.25%
LT. DITCH GRADE 4.50%
LT. DITCH GRADE 1.50%
RT. DITCH GRADE -0.00%
LT. DITCH GRADE 0.00%

BM: 991 NGS MARK O 165
37.56 RT. OF STA. 583+59.01
ELEVATION = 604.96

570+00 571+00 572+00 573+00 574+00 575+00 576+00 577+00 578+00 579+00 580+00 581+00 582+00 583+00 584+00 585+00
620 615 610 605 600 595 590 585 580 575

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				6	ARK.			
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(2) PLAN AND PROFILE SHEETS

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PI = 589+76.15
Δ = 26°34'05"LT.
D = 3°30'00"
T = 386.50'
L = 759.09'
PC = 585+89.65
PT = 593+48.74
e = 0.086'/'
Ls = 630'

STA. 594+00 CONSTRUCT
18" X 54' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 280 CU. YDS.

STA. 586+98 TO STA. 593+71 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) ("W"=6') = 430.66 SQ. YD.

STA. 596+35.00 ON HWY. 167 =
STA. 1400+00.00 ON WEAVER CHAPEL ROAD
Δ 90°00'00"

STA. 583+60 TO STA. 593+04 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) ("W"=6') = 495.92 SQ. YD.

STA. 586+19 IN PLACE
15" X 21' R.C. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
42" X 42' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 175 CU. YDS.

STA. 590+00 IN PLACE
18" X 40' R.C. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
30" X 66' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 320 CU. YDS.

STA. 590+75 IN PLACE
18" X 55' R.C. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
30" X 74' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 375 CU. YDS.

HWY. 167

STA. 581+17.15 BEGIN SUPER (N.C.)
STA. 587+47.15 MAX SUPER (0.086'/')
STA. 591+91.24 MAX SUPER (0.086'/')
STA. 598+21.24 END SUPER (N.C.)

P.V.I. 596+61.44
ELEV. 646.97

585+00.00 (RT.) 603.68
P.V.I. 586+08.55 ELEV. 609.07
587+00.00 (RT.) 609.68
587+01.72 606.36 (LT.)
P.V.I. 589+08.55 ELEV. 619.87
P.V.C. 591+61.44 ELEV. 628.97
593+03.49 633.22 (RT.)
593+69.09 629.72 (LT.)
595+19.05 636.45 (RT.)
595+07.16 633.17 (LT.)

RT. DITCH GRADE 3.00%
LT. DITCH GRADE 1.50%
RT. DITCH GRADE 3.60%
RT. DITCH GRADE 3.90%
LT. DITCH GRADE 3.50%
RT. DITCH GRADE 1.50%
LT. DITCH GRADE 2.50%

K=240.00
VC=600'
e=1.88'

K=163.93
VC=1000'
e=-7.63'

645 640 635 630 625 620 615 610 605 600

585+00 586+00 587+00 588+00 589+00 590+00 591+00 592+00 593+00 594+00 595+00 596+00 597+00 598+00 599+00 600+00

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				6	ARK.			
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(2) PLAN AND PROFILE SHEETS

STA. 607+40 IN PLACE
DBL. 48" X 49' R.C. PIPE CULVERT
WITH HEADWALLS LT. AND RT.
REMOVE HDWLS. LT. AND RT. AND
EXTEND R.C. PIPE 48' LT. AND 22' RT.
(CLASS III-TYPE 3 BEDDING) WITH F.E.S. LT. AND RT.
050 = 142 C.F.S. D.A. = 46.9 ACRES
48" R.C. PIPE = 156 LIN. FT.
48" F.E.S. = 4 EACH
CONSTRUCT OUTLET = 175 CU. YD. UNCLAS. EXC.

STA. 614+04 IN PLACE
12" X 42' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE
STA. 614+17 CONSTRUCT
18" X 46' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 125 CU. YDS.

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2-26-14

+55.00 75.00
+40.00 75.00
+45.74 100.00
+55.00 100.00
+38.89 80.00
+85.00 90.00
600
605
610
615
N 23°15'37" E
PROPOSED R/W
CONST. LIMITS
EXISTING R/W
22'
+17
167
+65.00 74.21
+00.00 92.89
+25.00 85.00
+55.00 85.00
+80.00 72.89
T.C.E.
+00.00 155.00
+35.00 150.00
+00.00 240.00

HWY. 167

650
645
640
635
630
625
620
615
610
605

K=163.93
VC=1000'
e=-7.63'
-2.50%
P.V.T. 601+61.44
ELEV. 634.47
P.V.C. 602+75.26
ELEV. 631.63
K=166.67
VC=450'
e=1.52'
P.V.I. 605+00.26
ELEV. 626.00
606+42.93
621.92 (LT.)
607+31.27
619.31 (LT.)
P.V.T. 607+25.26
ELEV. 626.45
607+47.94
619.31 (LT.)
LT. DITCH GRADE -2.95%
LT. DITCH GRADE -2.95%
LT. DITCH GRADE 0.60%
0.20%
608+42.92
622.11 (LT.)
P.V.C. 609+05.36
ELEV. 626.81
K=173.91
VC=200'
e=0.29'
P.V.I. 610+05.36
ELEV. 627.01
P.V.T. 611+05.36
ELEV. 628.36
1.35%
P.V.C. 614+02.59
ELEV. 632.38
K=333.33
VC=200'
e=-0.15'
RT. DITCH GRADE -0.00%
607+31.92
618.63 (RT.)
607+48.59
618.63 (RT.)
+40
F.L. INLET = 619.31
F.L. OUTLET = 618.63

600+00 601+00 602+00 603+00 604+00 605+00 606+00 607+00 608+00 609+00 610+00 611+00 612+00 613+00 614+00 615+00

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				6	ARK.			
				JOB NO.		050213	102	369

(2) PLAN AND PROFILE SHEETS

STA. 617+55 IN PLACE
24" X 45' R.C. PIPE CULVERT
WITH HEADWALLS LT. AND RT.
REMOVE AND INSTALL
36" X 116' R.C. PIPE CULVERT
(CLASS III)(TYPE 3 BEDDING) WITH F.E.S. LT. AND RT.
050 = 40 C.F.S. D.A. = 9.1 ACRES
36" R.C. PIPE = 116 LIN. FT.
36" F.E.S. = 2 EACH
CONSTRUCT OUTLET = 5 CU. YD. UNCLAS. EXC.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-26-14

PROPOSED R/W
CONST. LIMITS
EXISTING R/W
100' TRANSITION
615
620
625
N 23°15'37" E
N 24°30'49" E
N 23°01'37" E
PC 615+20.34
PI 616+45.68
RC 618+43.86
PT 621+41.21
PDE 625+01.48
PT 617+71.02
PI 619+92.55
+50.00 90.00
+80.00 69.58
+25.00 132.55
+55.00 85.00
+25.00 115.00
+75.00 115.00
+50.00 87.91
+90.00 78.00
+88.86 79.50
+10.00 95.00
+78.40 100.00
+94.22 60.39
+41.21
+54.23 90.00
+42.13 59.55
T.C.E.
ANTIOCH ROAD
HWY. 167

PI = 616+45.68
Δ = 1°15'12"RT.
D = 0°30'00"
T = 125.34'
L = 250.68'
PC = 615+20.34
PT = 617+71.02
NO SUPER

PI = 619+92.55
Δ = 1°29'12"LT.
D = 0°30'00"
T = 148.69'
L = 297.35'
PC = 618+43.86
PT = 621+41.21
NO SUPER

STA. 621+41.21
END JOB 050213
& BEGIN JOB 050214
LOG MILE 9.31

P.V.I. 615+02.59
ELEV. 633.73
P.V.T. 616+02.59
ELEV. 634.48
P.V.C. 619+86.52
ELEV. 637.36
P.V.I. 622+74.02
ELEV. 639.51
P.V.T. 625+61.52
ELEV. 631.55
P.V.I. 627+75.83
ELEV. 625.61

K=333.33
VC=200'
e=-0.15'
K=163.35
VC=575'
e=-2.53'

0.75%
-2.95%
-2.77%

616+89.09 630.55 (LT.)
617+51.74 628.70 (LT.)
617+58.36 628.70 (LT.)
618+65.98 631.87 (LT.)
618+85.13 632.02 (RT.)
619+84.16 632.76 (RT.)
621+41.21 633.00 (RT.)
621+90.00 633.07 (RT.)
617+51.70 628.28 (RT.)
617+58.40 628.28 (RT.)

LT. DITCH GRADE -2.95%
LT. DITCH GRADE 2.95%
RT. DITCH GRADE 2.95%
LT. DITCH GRADE 0.00%
RT. DITCH GRADE -0.00%
RT. DITCH GRADE 0.15%
RT. DITCH GRADE 0.15%

+55
F.L. INLET = 628.70
F.L. OUTLET = 628.28

655 650 645 640 635 630 625 620 615 610

615+00 616+00 617+00 618+00 619+00 620+00 621+00 622+00 623+00 624+00 625+00 626+00 627+00 628+00 629+00 630+00

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(2) PLAN AND PROFILE SHEETS

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REGISTERED PROFESSIONAL ENGINEER
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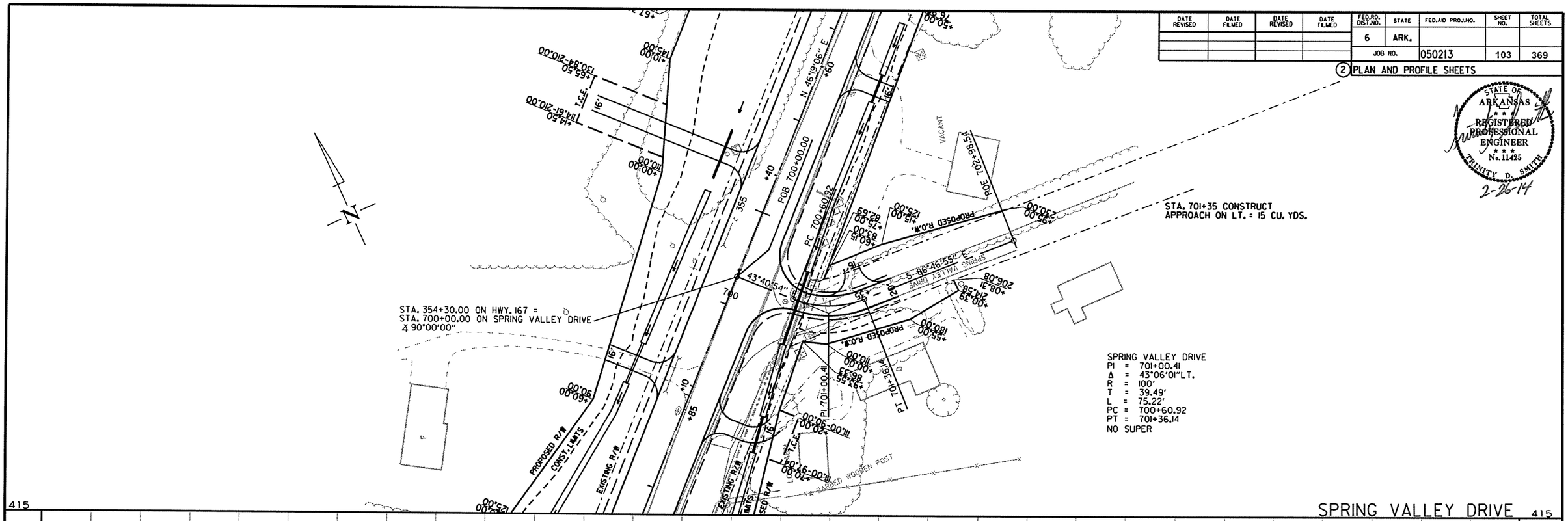
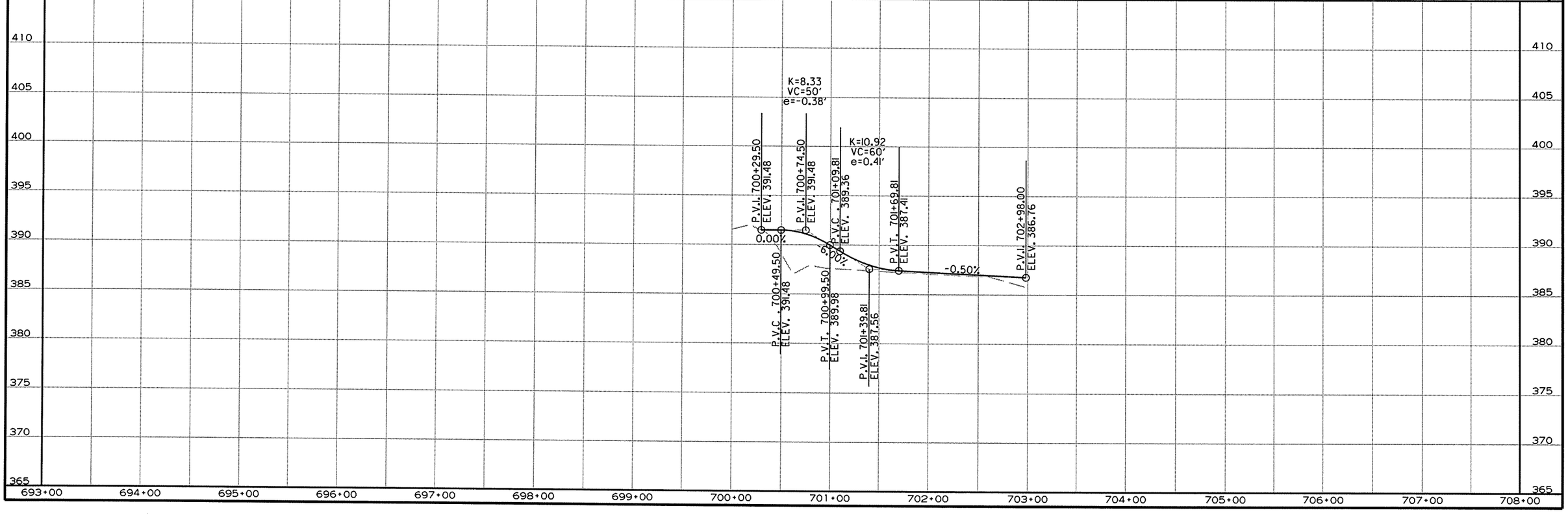
2-26-14





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(2) PLAN AND PROFILE SHEETS

CAVE CREEK ROAD
PI = 801+67.30
Δ = 15°29'17"LT.
R = 150'
T = 20.40'
L = 40.55'
PC = 801+46.90
PT = 801+87.45
NO SUPER

CAVE CREEK ROAD
PI = 802+13.01
Δ = 16°58'36"RT.
R = 150'
T = 22.39'
L = 44.44'
PC = 801+90.62
PT = 802+35.07
NO SUPER

PFEIFFER ROAD
PI = 804+40.04
Δ = 25°44'26"LT.
R = 150'
T = 34.27'
L = 67.39'
PC = 804+05.77
PT = 804+73.15
NO SUPER

PFEIFFER ROAD
PI = 805.02.80
Δ = 22°04'33"RT.
R = 150'
T = 29.26'
L = 57.79'
PC = 804+73.54
PT = 805+31.33
NO SUPER

STA. 804+73 CONSTRUCT
18" X 42' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 15 CU. YDS.

STA. 801+60 CONSTRUCT
APPROACH ON LT. = 20 CU. YDS.

STA. 399+50.00 ON HWY. 167 =
STA. 803+20.65 ON CAVE CREEK ROAD - PFEIFFER ROAD
Δ 75°00'00"

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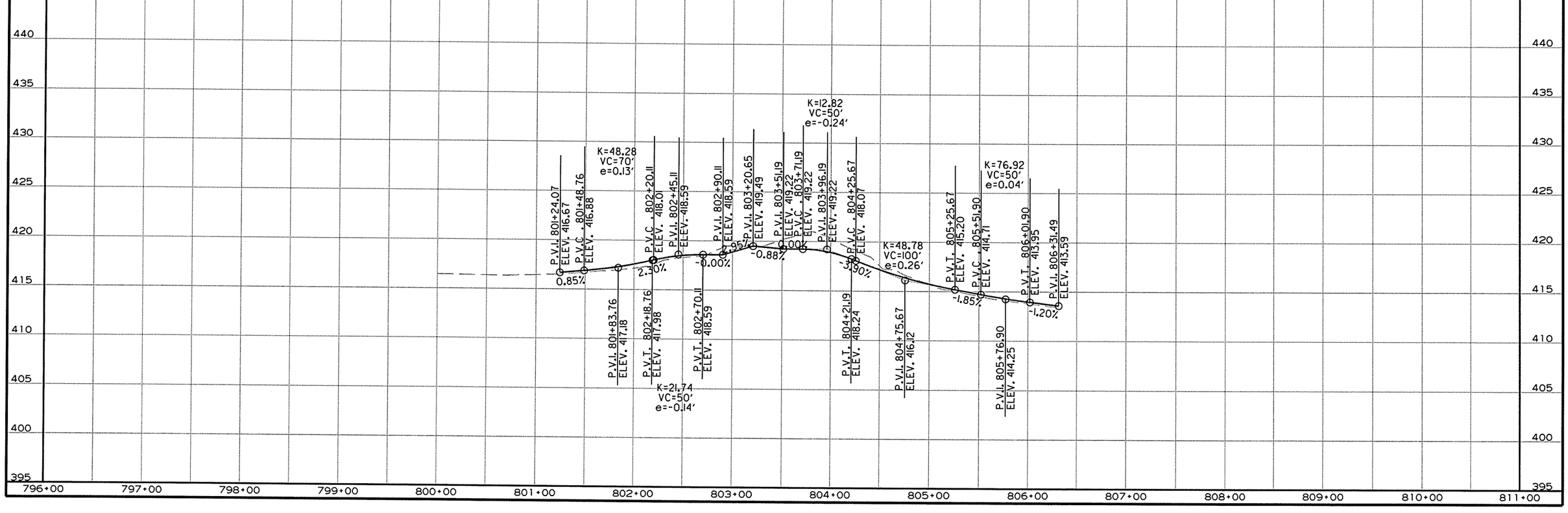
CAVE CREEK ROAD - PFEIFFER ROAD



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(2) PLAN AND PROFILE SHEETS

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2-26-14

STA. 430+26.00 ON HWY. 167 =
STA. 900+00.00 ON GREEN LANE
Δ 75°00'00"

SPECIAL FLOOD HAZARD AREA

STA. 901+62 CONSTRUCT APPROACH ON LT. = 35 CU. YDS.

POB 900+00.00

POE 903+31.56

PT 438+32.61

N 28°27'32" E

S 76°38'28" E

GREEN LANE

P.V.I. 900+00.00 ELEV. 432.72
0.20%
P.V.I. 900+30.54 ELEV. 432.66
P.V.C. 900+50.54 ELEV. 432.66
P.V.I. 900+75.54 ELEV. 432.66
K=5.00 VC=50' e=-0.62'
-10.00%
P.V.T. 901+00.54 ELEV. 430.16
P.V.C. 901+38.62 ELEV. 426.35
K=11.98 VC=100' e=1.04'
P.V.I. 901+88.62 ELEV. 421.35
P.V.T. 902+38.62 ELEV. 420.53
-1.65%
P.V.I. 902+89.81 ELEV. 419.68

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(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
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2-26-14

SWEET GUM
PI = 1001+81.13
Δ = 24°31'03"RT.
R = 150'
T = 32.59'
L = 64.19'
PC = 1001+48.54
PT = 1002+12.72
NO SUPER

SWEET GUM
PI = 1000+98.92
Δ = 13°04'32"LT.
R = 150'
T = 17.19'
L = 34.23'
PC = 1000+81.73
PT = 1001+15.96
NO SUPER

STA. 1004+52 CONSTRUCT APPROACH ON LT. = 50 CU. YDS.

STA. 1005+31 CONSTRUCT APPROACH ON LT. = 10 CU. YDS.

STA. 1004+70 CONSTRUCT APPROACH ON LT. = 65 CU. YDS.

VICTORY LANE
PI = 1003+83.42
Δ = 5°57'05"LT.
R = 150'
T = 7.80'
L = 15.58'
PC = 1003+75.62
PT = 1003+91.20
NO SUPER

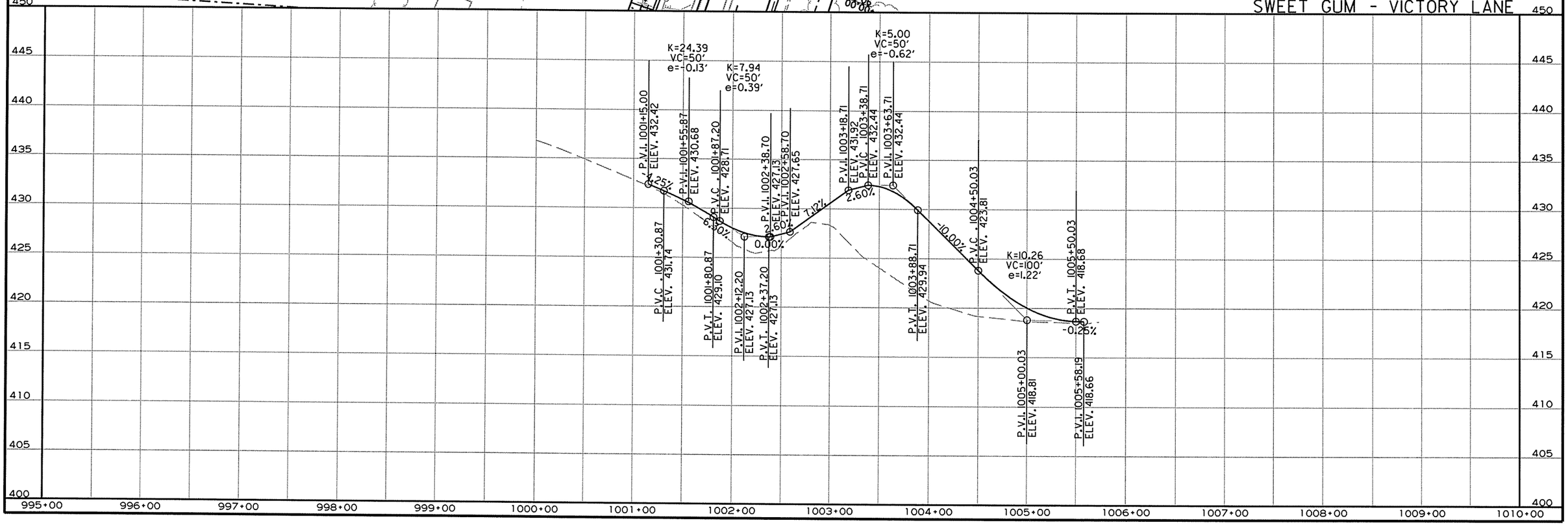
STA. 434+30.00 ON HWY. 167 = STA. 1002+88.20 ON VICTORY LANE
Δ 67°25'09"

STA. 434+30.00 ON HWY. 167 = STA. 1002+88.20 ON SWEET GUM
Δ 75°00'00"

SPECIAL FLOOD HAZARD AREA

SPECIAL FLOOD HAZARD AREA

SWEET GUM - VICTORY LANE



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(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
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No. 11425
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2-26-14

STA. 1101+28 IN PLACE
12" X 48" CM PIPE CULVERT
EXTEND 18' LT.
12" PIPE CULVERT = 18 LIN. FT.

LESLEY HOLLOW ROAD
PI = 1101+69.20
Δ = 14°16'47"RT.
R = 150'
T = 18.79'
L = 37.38'
PC = 1101+50.41
PT = 1101+87.79
NO SUPER

POB 1100+00.00
1100
LESLEY HOLLOW ROAD
S 60°05'42" E
PC 1101+50.41
PI 1101+69.20
PT 1101+87.79
POE 1102+59.00
PT 478+09.28
PT 476+36.87
45°48'55"
120'
PROPOSED R.O.W.
PARKING
CANOPY
SHEDS

SPECIAL FLOOD HAZARD AREA

STA. 478+10.00 ON HWY. 167 =
STA. 1102+59.00 ON LESLEY HOLLOW ROAD
∡ 90°00'00"

LESLEY HOLLOW ROAD

K=14.25
VC=50'
e=0.22'

K=15.09
VC=40'
e=-0.13'

P.V.I. 1101+05.96
ELEV. 475.22
-3.51%
P.V.C. 1101+37.40
ELEV. 474.12
P.V.I. 1101+62.40
ELEV. 473.24
0.00%
P.V.T. 1101+87.40
ELEV. 473.24
P.V.C. 1101+89.50
ELEV. 473.24
P.V.I. 1102+09.50
ELEV. 473.24
-1.30%
P.V.I. 1102+67.14
ELEV. 470.00
P.V.T. 1102+29.50
ELEV. 472.71

500 495 490 485 480 475 470 465 460 455 450

1095+00 1096+00 1097+00 1098+00 1099+00 1100+00 1101+00 1102+00 1103+00 1104+00 1105+00 1106+00 1107+00 1108+00 1109+00 1110+00

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(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
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SPECIAL FLOOD HAZARD AREA

POB 1200+00.00
1200
PC 1201+43.12
PT 1201+72.20
POE 1202+86.41
PROPOSED R.O.W.
+95.00 BL 93-180.00
+78.26 230.48
+74.22 82.00
+70.00 77.00
WEAVER CHAPEL ROAD
S 24°13'21" E
S 22°53'11" E
20'
+26.97 227.90
+15.00 84.40-180.00
+22.56 82.00
PI 1201+57.66
+50.00 105.00
+85.00 105.00
+40.00 82.00
+80.49 86.00
+54.58 85.00
16'
340'
+70
+25

STA. 541+50.00 ON HWY. 167 =
STA. 1202+86.41 ON WEAVER CHAPEL ROAD
Δ 90°00'00"

WEAVER CHAPEL ROAD
PI = 1201+57.66
Δ = 1°39'59"LT.
R = 150'
T = 14.54'
L = 29.08'
PC = 1201+43.12
PT = 1201+72.20
NO SUPER

WEAVER CHAPEL ROAD

545 540 535 530 525 520 515 510 505 500 495

K=8.33
VC=50'
e=-0.37'

P.V.I. 1200+77.11
ELEV. 518.06
-0.29%
P.V.C. 1201+12.21
ELEV. 517.96
K=111.12
VC=70'
e=0.55'
6.00%
P.V.T. 1201+82.21
ELEV. 519.96
P.V.C. 1201+86.91
ELEV. 520.24
P.V.I. 1202+11.91
ELEV. 521.74
P.V.I. 1202+56.91
ELEV. 521.74
0.00%
LT. DITCH GRADE -0.36%
P.V.I. 1201+47.21
ELEV. 517.86
1201+60.98
517.33 (LT.)
1202+24.37
517.10 (LT.)
P.V.T. 1202+36.91
ELEV. 521.74

1194+00 1195+00 1196+00 1197+00 1198+00 1199+00 1200+00 1201+00 1202+00 1203+00 1204+00 1205+00 1206+00 1207+00 1208+00 1209+00

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				(2) PLAN AND PROFILE SHEETS				

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STA. 1301+20 INSTALL
18" X 28' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 15 CU. YDS.

STA. 1301+52 INSTALL
18" X 52' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 30 CU. YDS.

WILDERNESS DRIVE
PI = 1301+86.89
Δ = 40°19'58"LT.
R = 150'
T = 55.09'
L = 105.59'
PC = 1301+31.81
PT = 1302+37.40
NO SUPER

STA. 580+80.00 ON HWY. 167 =
STA. 1302+78.62 ON WILDERNESS DRIVE
Δ 90°00'00"

WILDERNESS DRIVE

K=9.09
VC=50'
e=-0.34'

K=10.84
VC=90'
e=0.93'

P.V.I. 1300+70.00
ELEV. 600.06
P.V.C. 1300+88.00
ELEV. 599.56
-2.80%

P.V.I. 1301+33.00
ELEV. 598.30

P.V.T. 1301+78.00
ELEV. 600.77

P.V.C. 1301+79.12
ELEV. 600.84

P.V.I. 1302+04.12
ELEV. 602.21

5.50%

P.V.T. 1302+29.12
ELEV. 602.21

P.V.I. 1302+49.12
ELEV. 602.21

-0.00%

LT. DITCH GRADE

RT. DITCH GRADE

-3.53%

-4.74%

1301+90.00
593.80 (LT.)

1301+20.00
596.27 (LT.)

1301+20.00
596.27 (RT.)

1302+10.00
592.00 (RT.)

625
620
615
610
605
600
595
590
585
580
575

1294+00 1295+00 1296+00 1297+00 1298+00 1299+00 1300+00 1301+00 1302+00 1303+00 1304+00 1305+00 1306+00 1307+00 1308+00 1309+00

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(2) PLAN AND PLOT SHEETS

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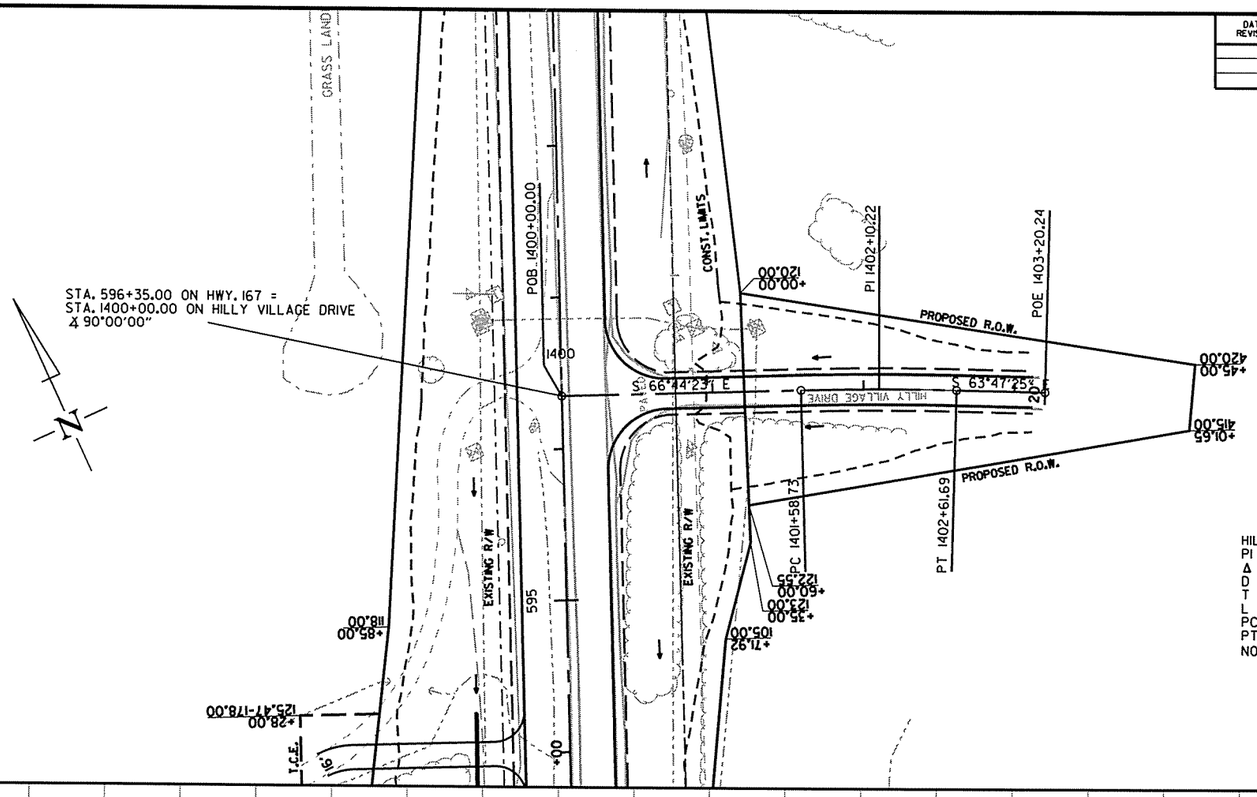
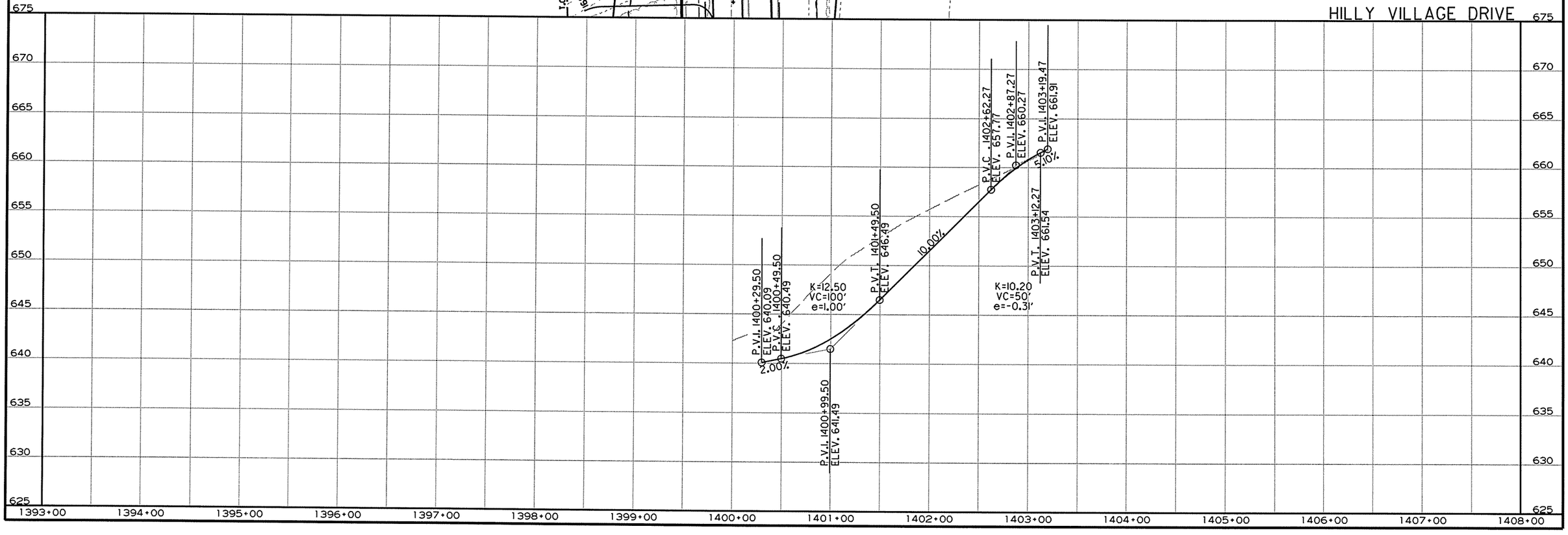
2-26-14



HILLY VILLAGE DRIVE
PI = 1402+10.22
Δ = 2°56'58"RT.
D = 2°51'53"
T = 51.49'
L = 102.96'
PC = 1401+58.73
PT = 1402+61.69
NO SUPER



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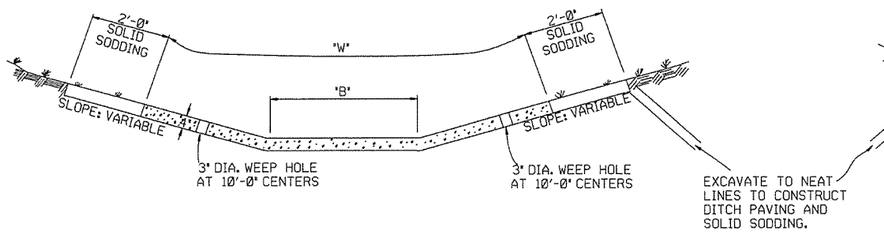
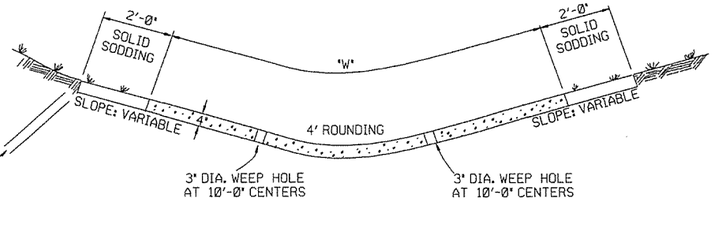
REFER TO TABULATION OF QUANTITIES FOR 'W' & 'B' DIMENSIONS



TYPE A

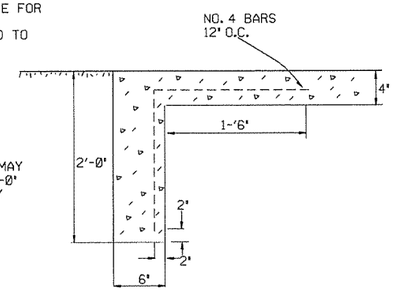
REFER TO TABULATION OF QUANTITIES FOR 'W' DIMENSIONS



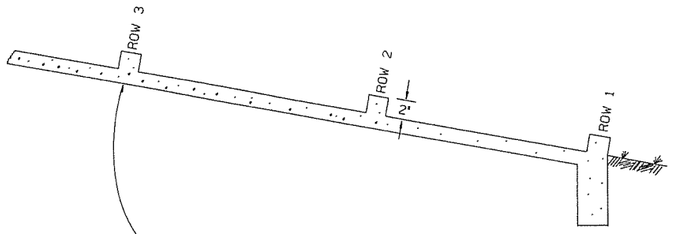
TYPE B

THE STEEL AND ADDITIONAL CONCRETE FOR THE WALLS SHALL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID FOR 'CONCRETE DITCH PAVING.'

TOE WALL DEPTH MAY BE ALTERED TO 1'-0" WHEN DIRECTED BY THE ENGINEER IN ROCK EXCAVATION

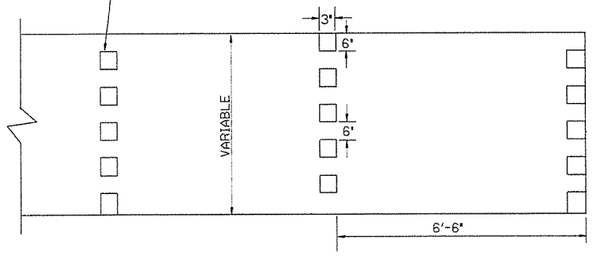


TOE WALL DETAIL FOR CONCRETE DITCH PAVING



NUMBER OF ELEMENTS PER ROW VARIES WITH WIDTH OF PAVING SPECIFIED

ENERGY DISSIPATORS TO BE USED FOR THE ENTIRE LENGTH OF DITCH WHEN SLOPE OF DITCH PAVING EXCEEDS 7%. THE DISSIPATORS WILL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED TO BE UNCLUDED IN THE PRICE BID FOR CONCRETE DITCH PAVING.



ENERGY DISSIPATORS
(NO SCALE)

GENERAL NOTES:

THE FULL WIDTH OF EACH SECTION SHALL BE POURED MONOLITHICALLY.

TOE WALLS TO BE CONSTRUCTED FULL WIDTH AT EACH END OF DITCH PAVING, AND POURED MONOLITHICALLY.

SOLID SOD ALONG DITCH PAVING TO BE PLACED WITHIN 14 DAYS OF DITCH PAVING CONSTRUCTION.

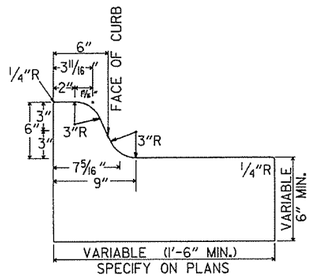
1" WIDE TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE DITCH PAVING AT 45' INTERVALS. THE SPACE SHALL BE FILLED WITH APPROVED JOINT FILLER COMPLYING WITH AASHTO M213.

DATE	REVISION	DATE FILM'D
11-17-10	ADDED GENERAL NOTE	
6-2-94	ADDED GENERAL NOTE ABOUT SOLID SODDING	
11-30-8	ELIMINATED MIN. ROWS OF ELEMENTS	111-30-89
7-15-88	REVISED DISSIPATOR NOTE	653-7-15-88
4-3-87	REVISED ENERGY DISSIPATOR	671-4-3-87
1-9-87	MODIFIED NOTE ON ENERGY DISS.	532-1-9-87
11-3-86	ADDED NOTE TO ENERGY DISS.	599-12-1-86
11-1-84	ENERGY DISSIPATOR DETAILS ADDED	508-11-1-84
11-1-84	EXCAVATION DETAILS ADDED TYPED A & B	
10-2-72	REVISED AND REDRAWN	508-10-2-72

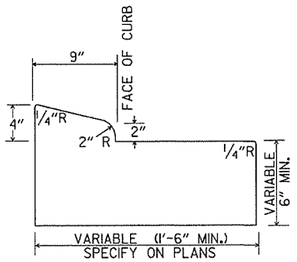
ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE DITCH PAVING

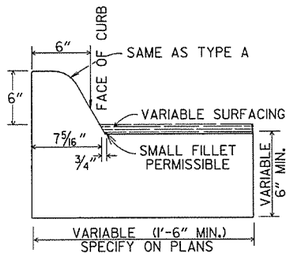
STANDARD DRAWING CDP-1



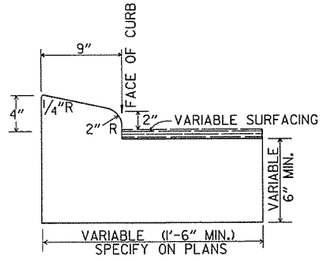
TYPE A



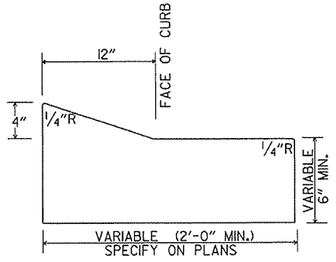
TYPE B-1



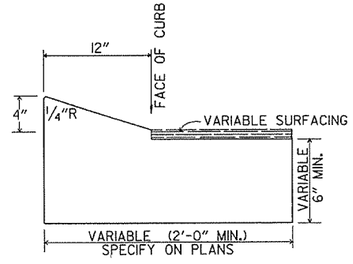
TYPE C



TYPE B-2

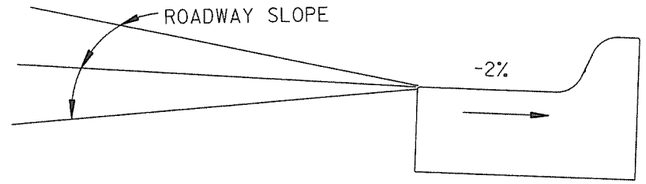


TYPE E-1



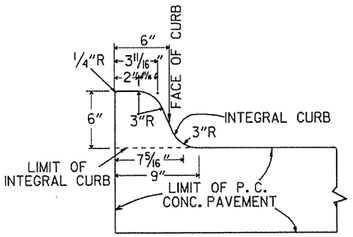
TYPE E-2

CONCRETE COMBINATION CURB AND GUTTER

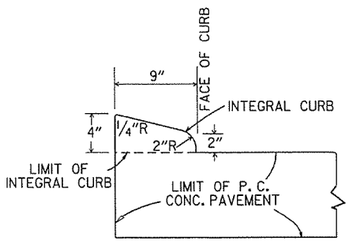


DETAIL OF GUTTER SLOPE

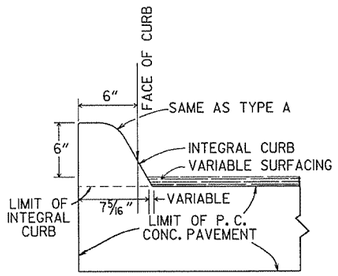
GUTTER SHALL BE CONSTRUCTED ON 2% SLOPE AWAY FROM ROADWAY, REGARDLESS OF ROADWAY SLOPE.



TYPE A

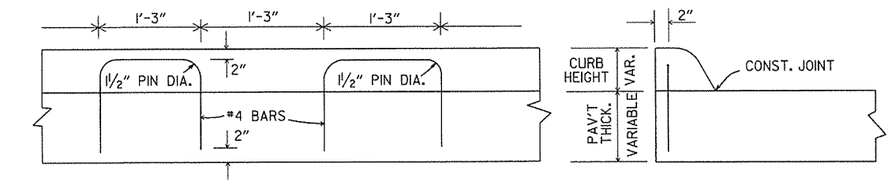


TYPE B



TYPE C

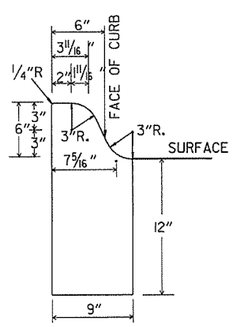
INTEGRAL CURB



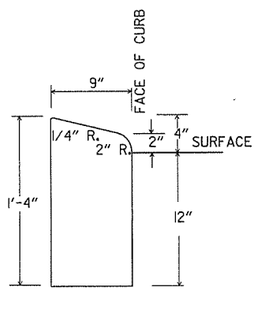
LONGITUDINAL SECTION

ELEVATION

ALTERNATE CONSTRUCTION METHOD FOR INTEGRAL CURB



TYPE A



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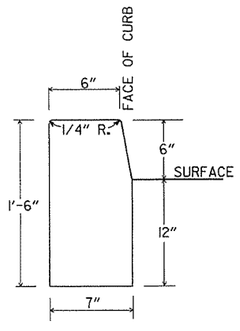
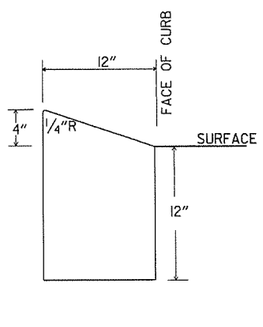
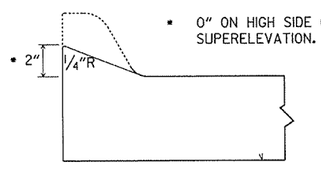


TYPE D



TYPE E

CONCRETE CURB



NOTE: USE MODIFIED CURB AS SPECIFIED ON STD. DR-1. COMPENSATION FOR MODIFIED CURB WILL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE TYPE OF CURB OR CURB AND GUTTER SPECIFIED.

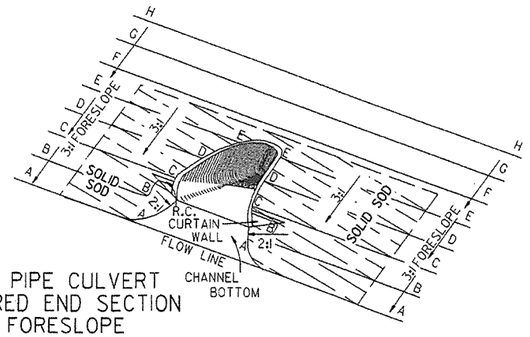
DETAILS OF MODIFIED CURB

DATE	REVISION	DATE FILMED
11-29-07	REVISED GUTTER SLOPE & MODIFIED CURB DETAILS	
11-10-05	ADDED DETAILS OF TYPE E CURBS	
11-16-01	REVISED CONCRETE CURB TYPE B	
11-18-98	REVISED MODIFIED CURB	
6-2-94	ADDED NOTE TO SPECIAL MODIFIED CURB	
8-5-93	CORRECTED GUTTER SLOPE	8-5-93
10-1-92	ADDED DETAILS OF GUTTER SLOPE	10-1-92
5-24-90	ADDED DETAILS OF MODIFIED CURB	5-24-90
11-30-89	VARIBLE DEPTH TYPE A & B	11-30-89
7-15-88	REVISED MODIFIED CURB	630-7-15-88
11-1-73	REVISED MODIFIED CURB	500-11-1-73
10-2-72	REVISED AND REDRAWN	512-10-2-72

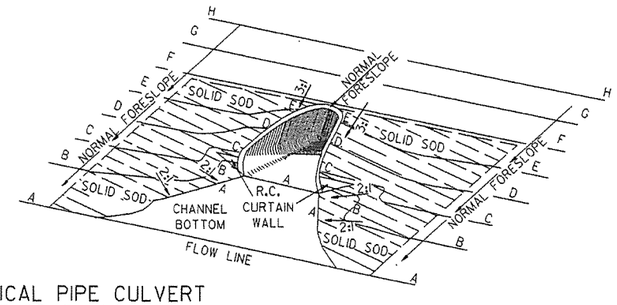
ARKANSAS STATE HIGHWAY COMMISSION

CURBING DETAILS

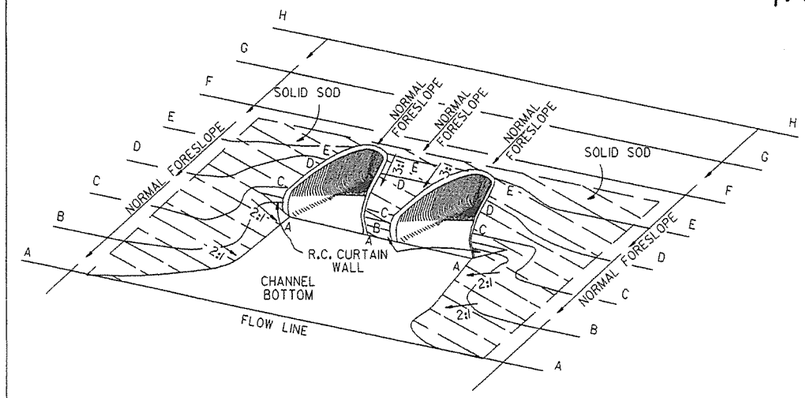
STANDARD DRAWING CG-1



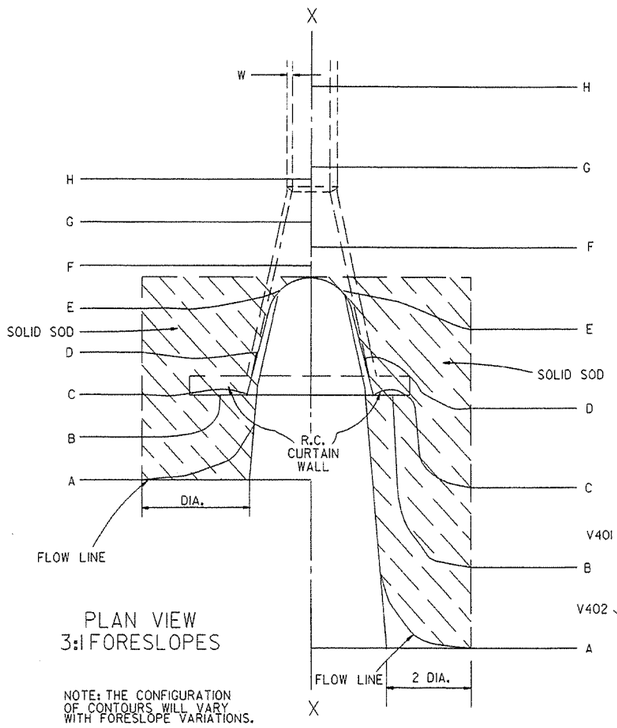
TYPICAL PIPE CULVERT
WITH FLARED END SECTION
& 3:1 FORESLOPE



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

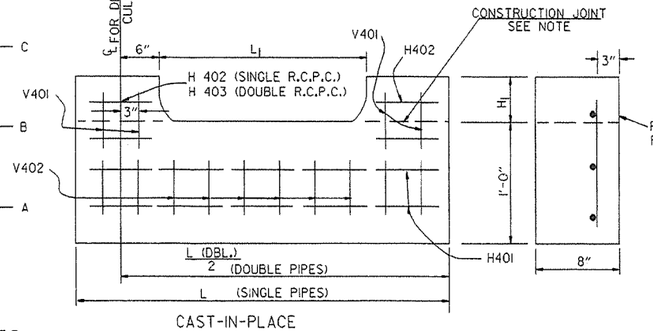
NOTE: THE CONFIGURATION OF CONTOURS WILL VARY WITH FORESLOPE VARIATIONS.

PLAN VIEW
FLATTENED FORESLOPES

R.C. CURTAIN WALL DIMENSIONS & QUANTITIES

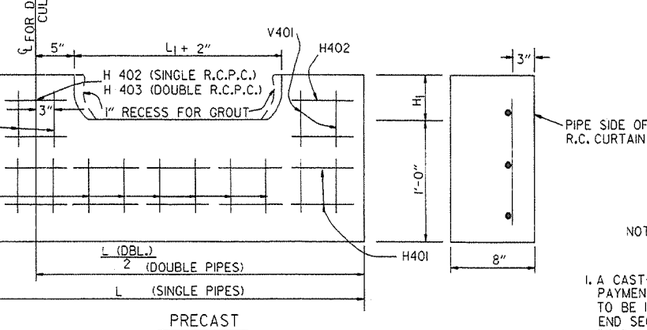
PIPE DIA.	H_1	L_1	L	L (DBL.)/2	SINGLE R.C.P.C. CONC.	SINGLE R.C.P.C. REINF. STEEL	DOUBLE R.C.P.C. CONC.	DOUBLE R.C.P.C. REINF. STEEL
					CU. YDS.	LBS.	CU. YDS.	LBS.
18"	11½"	3'-5"	8'-0"	6'-3"	0.31	27.7	0.45	39.5
24"	1'-0½"	4'-6"	9'-6"	7'-6"	0.37	33.4	0.53	48.0
30"	1'-3½"	5'-7"	11'-0"	9'-0"	0.45	39.0	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

REINFORCING STEEL SCHEDULE

PIPE DIA.	SINGLE R.C. PIPE CULVERT H401 L	H401 NO.	H402 L	H402 NO.	V401 L	V401 NO.	V402 L	V402 NO.	DOUBLE R.C. PIPE CULVERT H401 L	H401 NO.	H402 L	H402 NO.	H403 L	H403 NO.	V401 L	V401 NO.	V402 L	V402 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.

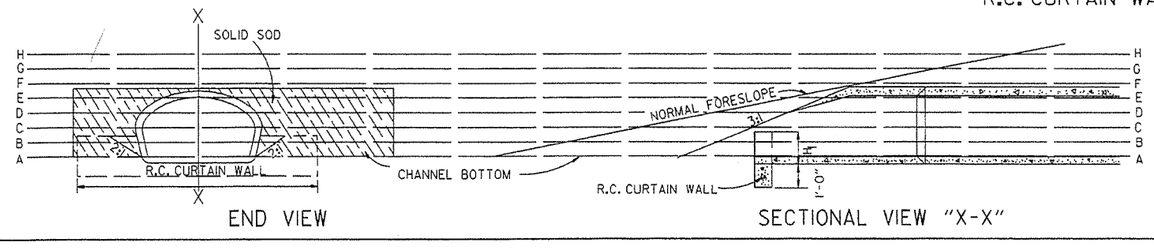
SOLID SODDING

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"	36	57	85	37	59	87
60"	45	62	104	48	65	107
72"	64	92	156	67	95	159

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

GENERAL NOTES

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



END VIEW

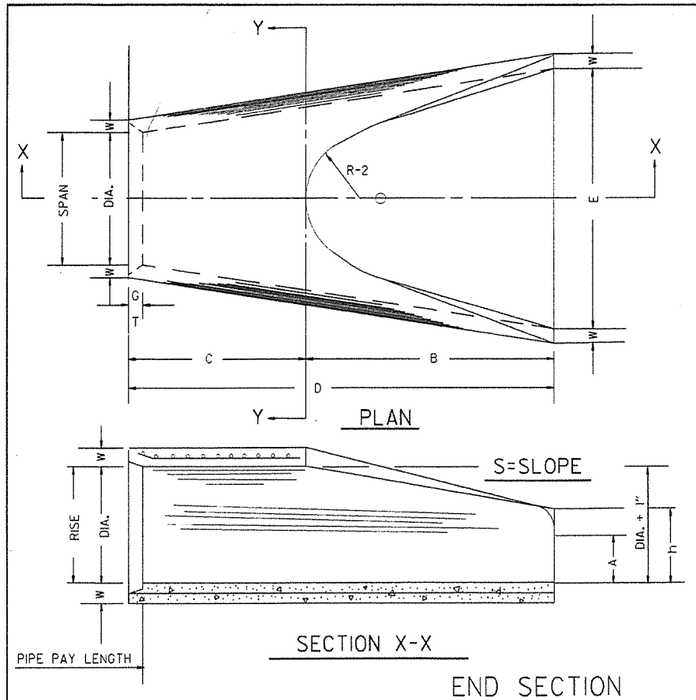
SECTIONAL VIEW "X-X"

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

ARKANSAS STATE HIGHWAY COMMISSION

FLARED END SECTION

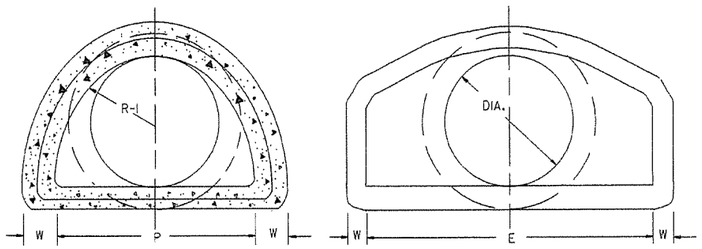
STANDARD DRAWING FES-1



END SECTION FOR REINFORCED CONCRETE PIPE CULVERTS

TABLE OF DIMENSIONS

DIA.	WALL	A	B	C	D	E	S	DIA. ± 1"	P	R-1	R-2	G-T	WT.	h
18"	2½"	9"	2'-3"	3'-10"	6'-1"	3'-0"	3:1	19"	29"	15½"	12"	2"	1000	1'-0½"
24"	3"	9½"	3'-7½"	2'-6"	6'-1½"	4'-0"	3:1	25"	33 3/16"	16 13/16"	14"	2½"	1600	1'-1½"
30"	3½"	1'-0"	4'-6"	1'-7 3/4"	6'-1 3/4"	5'-0"	3:1	31"	37"	18½"	15"	3¼"	1940	1'-4 5/8"
36"	4"	1'-3"	5'-3"	2'-10 3/4"	8'-1 3/4"	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"	53⅞"	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"

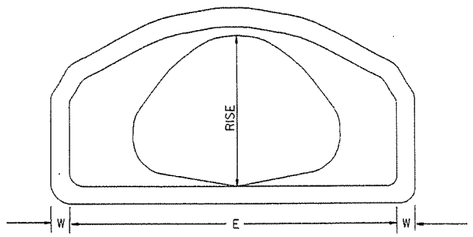


NOTE: TONGUE END ON UPSTREAM SECTION
GROOVE END ON DOWNSTREAM SECTION

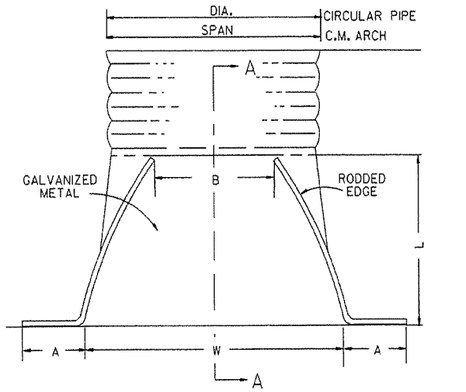
ARCH PIPE

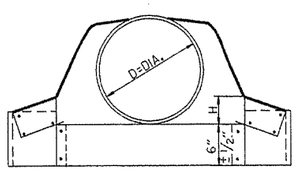
EQUIV. DIA.	• SPAN AASHTO M 206	• SPAN AHD NOMINAL	• RISE AASHTO M 206	• RISE AHD NOMINAL	W	A	B	C	D	E	P	R2	G-T	S
	INCHES													
15	18	18	11	11	2"	4"	2'-0"	4'-0"	6'-0"	3'-0"	29"	12"	1½"	2½:1
18	22	22	13½	14	2½"	5"	2'-0"	4'-1"	6'-1"	3'-6"	32⅛"	13"	2½"	2½:1
21	26	26	15½	16	2¾"	7"	2'-3"	3'-10"	6'-1"	4'-0"	34⅛"	14"	2½"	2½:1
24	28½	29	18	18	3"	9"	2'-3"	3'-10"	6'-1"	5'-0"	36 13/16"	15"	2½"	2½:1
30	36¼	36	22½	23	3½"	10"	3'-1"	3'-0½"	6'-1½"	6'-0"	47 13/16"	20"	3"	2½:1
36	43¾	44	26⅝	27	4"	10½"	4'-0"	2'-1½"	6'-1½"	6'-6"	54⅝"	22"	3½"	2½:1
42	51⅛	51	31 5/16	31	4½"	11½"	4'-7"	1-10¼"	6'-5¼"	7'-2"	59½"	23"	3¾"	2½:1
48	58½	59	36	36	5"	1'-3"	5'-3"	2'-10¾"	8'-1¾"	7'-10"	70⅝"	24"	4¼"	2½:1
54	65	65	40	40	5½"	1'-7"	5'-3"	2'-11"	8'-2"	8'-6"	72 1/16"	24"	4¾"	2¼:1
60	73	73	45	45	6"	1'-10"	5'-6"	2'-8"	8'-2"	9'-0"	77 13/16"	24"	5"	2¼:1

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

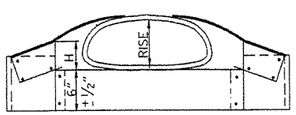


END VIEW
CONCRETE ARCH PIPE





CIRCULAR PIPE



C.M. ARCH PIPE

CIRCULAR PIPE

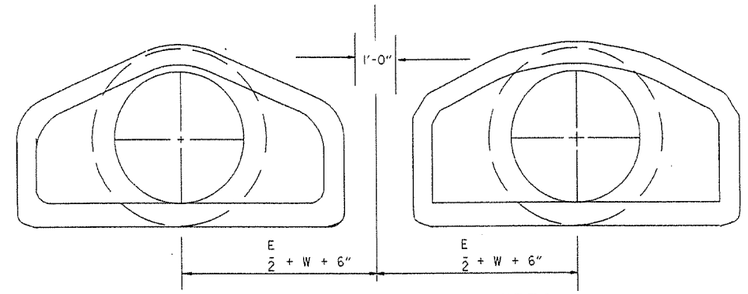
D. DIA.	GAUGE	A 1" ±	B. MAX.	H 1" ±	L 1½" ±	W 2" ±	S
		INCHES					
12	16	6	6	6	21	24	2½:1
15	16	7	8	6	26	30	2½:1
18	16	8	10	6	31	36	2½:1
21	16	9	12	6	36	42	2½:1
24	16	10	13	6	41	48	2½:1
30	14	12	16	8	51	60	2½:1
36	14	14	19	9	60	72	2½:1
42	12	16	22	11	69	84	2½:1
48	12	18	27	12	78	90	2½:1
54	12	18	30	12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

C.M. ARCH PIPE

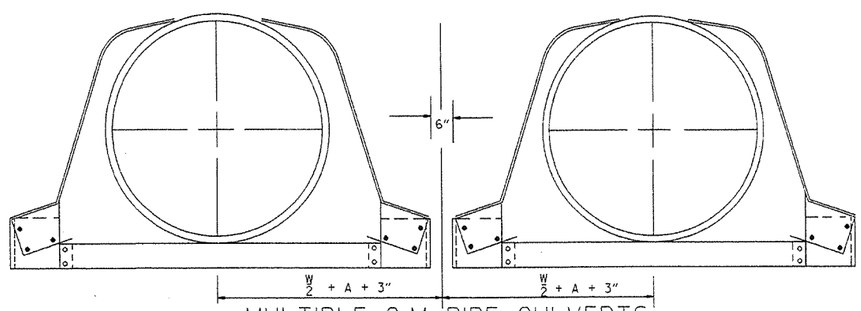
EQUIV. DIA.	SPAN	RISE	A 1" ±	B MAX.	H 1" ±	L 1½" ±	W 2" ±	S	GAUGE
	INCHES								
15"	17	13	7	9	6	19	30	2½:1	16
18"	21	15	7	10	6	23	36	2½:1	16
21"	24	18	8	12	6	28	42	2½:1	16
24"	28	20	9	14	6	32	48	2½:1	16
30"	35	24	10	16	6	39	60	2½:1	14
36"	42	29	12	18	8	46	75	2½:1	14
42"	49	33	13	21	9	53	85	2½:1	12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

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

END SECTIONS FOR CORRUGATED METAL PIPE CULVERTS



MULTIPLE R.C. PIPE CULVERTS



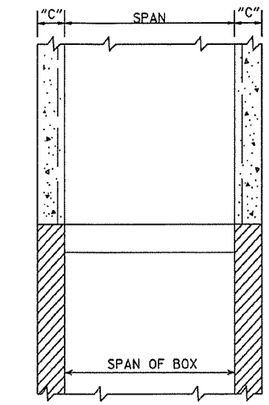
MULTIPLE C.M. PIPE CULVERTS

DATE	REVISION	FILMED
10-18-96	REVISED ASTM REF. TO AASHTO	16-18-96
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

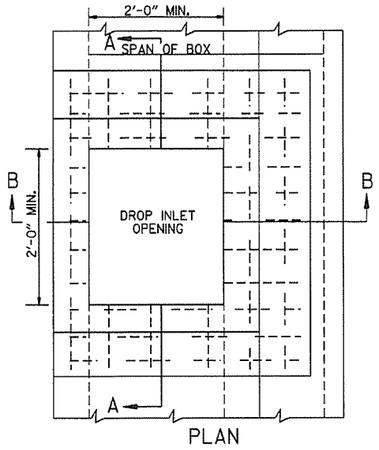
ARKANSAS STATE HIGHWAY COMMISION

FLARED END SECTION

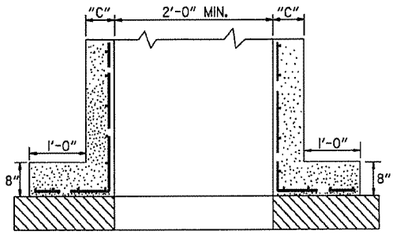
STANDARD DRAWING FES-2



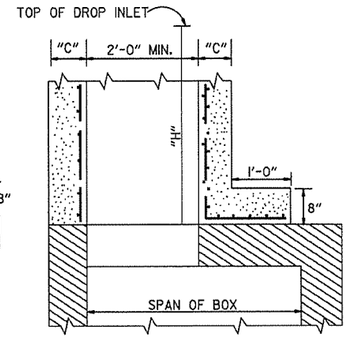
SECTION B-B



PLAN

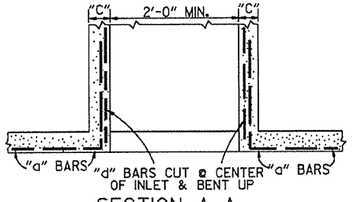


SECTION A-A

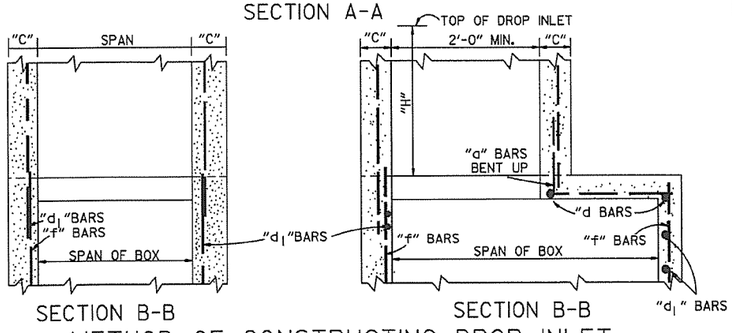


SECTION B-B

METHOD OF CONSTRUCTING DROP INLET ON EXISTING R.C. BOX CULVERT



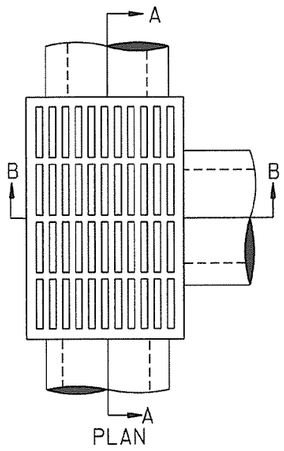
SECTION A-A



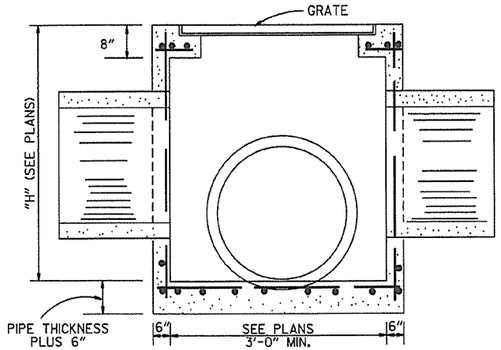
SECTION B-B SECTION B-B

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.

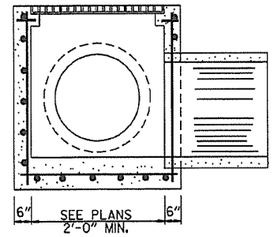


PLAN



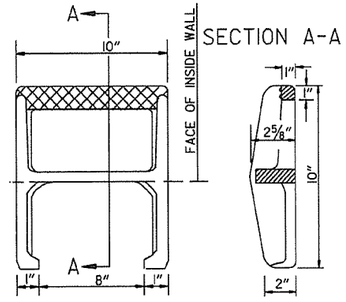
SECTION A-A

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.



SECTION B-B

DROP INLET (TYPE E)



SECTION A-A

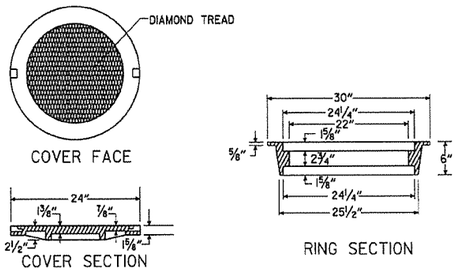
115

APPROX. WEIGHT = 11 LBS. (CAST IRON)

PLAN

NOTE: THIS DETAIL IS TYPICAL. OTHERS MAY BE USED WITH PRIOR APPROVAL OF THE ENGINEER.

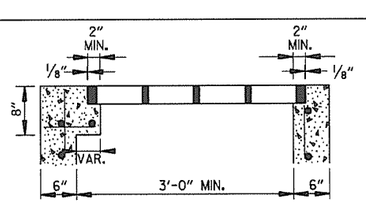
DETAIL OF STEP FOR DROP INLET



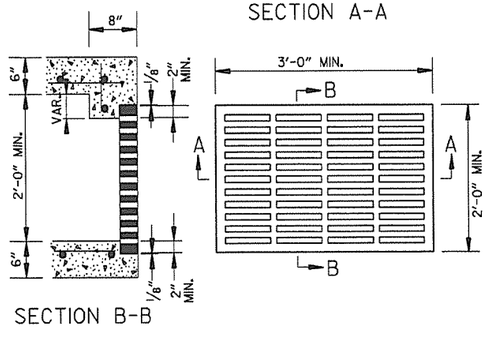
COVER SECTION RING SECTION

APPROXIMATE TOTAL WEIGHT = 333 LBS.

HEAVY DUTY RING & COVER



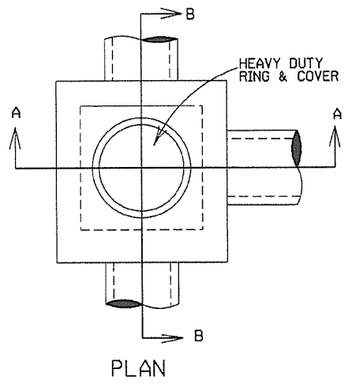
SECTION A-A



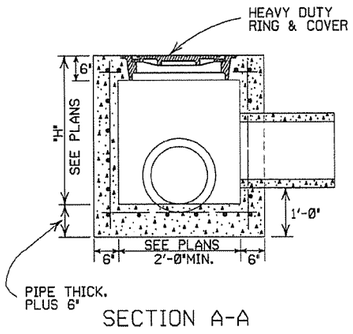
SECTION B-B

APPROXIMATE MINIMUM WATERWAY OPENING = 260 SQ. IN.

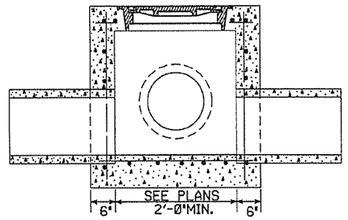
GRATE FOR TYPE E DROP INLET



PLAN



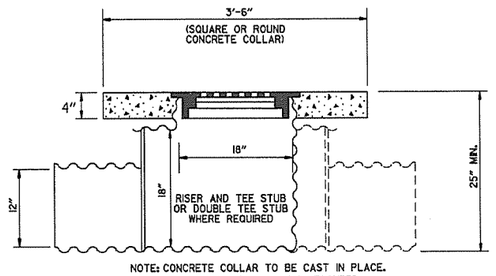
SECTION A-A



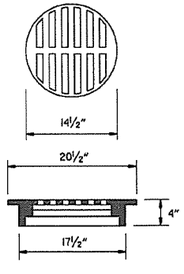
SECTION B-B

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.

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:

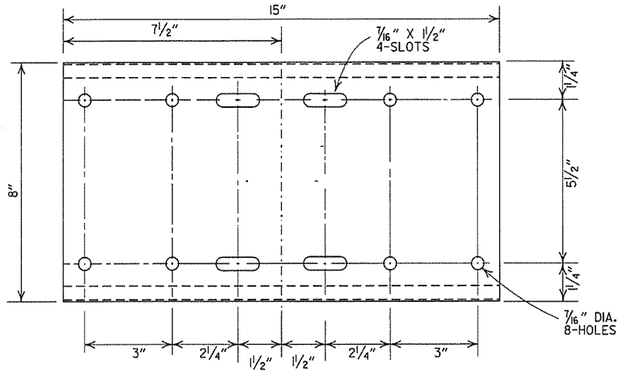
1. ALL EXPOSED CORNERS SHALL BE ¾" CHAMFERED.
2. STEPS SHALL BE INSTALLED ON 16" CENTERS ON ALL INLETS 4'-0" HIGH OR OVER, OR AS APPROVED BY THE ENGINEER.
3. EXPANSION JOINT MATERIAL SHALL BE ¾" PREFORMED FIBER.
4. GRATE OR GRATE AND FRAME SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS 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	

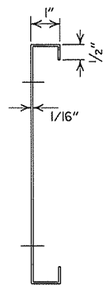
ARKANSAS STATE HIGHWAY COMMISSION

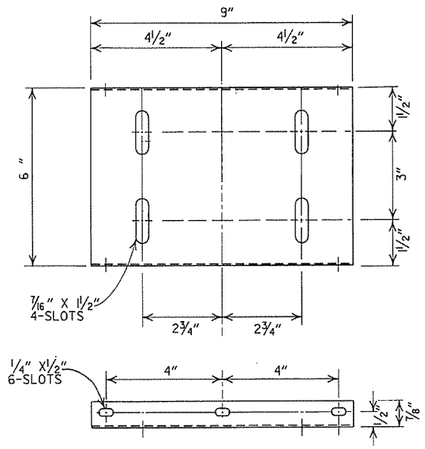
DETAILS OF DROP INLETS & JUNCTION BOXES

STANDARD DRAWING FPC-9

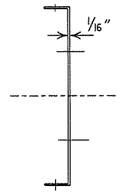


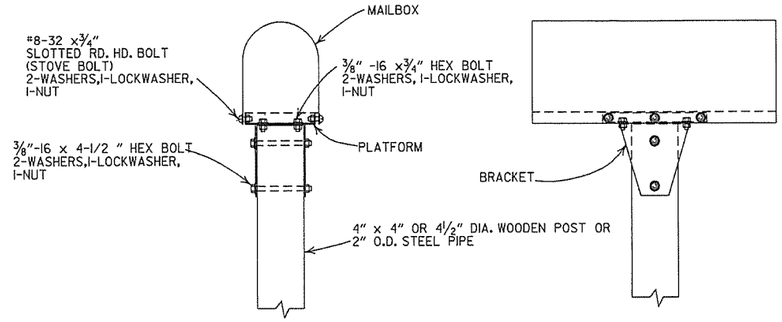
SHELF



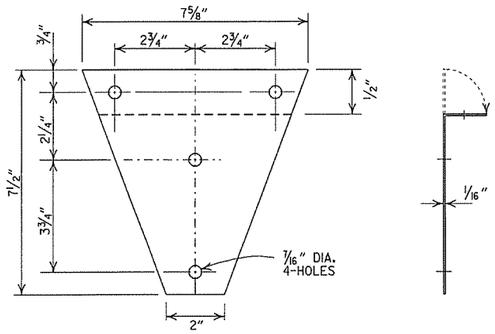


PLATFORM





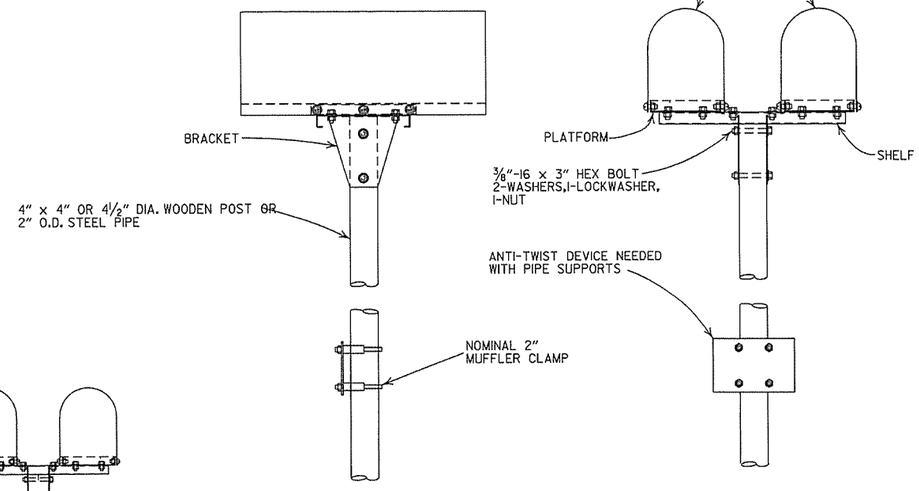
SINGLE INSTALLATION



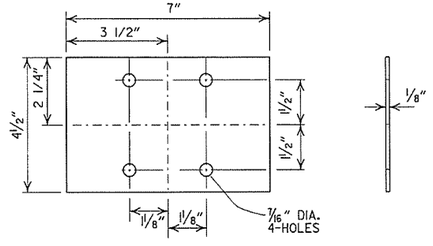
BRACKET

GENERAL NOTES

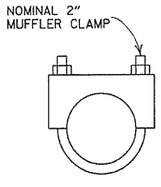
1. MAILBOX POSTS MAY BE WOOD OR METAL. WOOD POSTS SHALL BE PRESSURE TREATED FOR GROUND CONTACT IN ACCORDANCE WITH SECTION 637.02 OF THE STANDARD SPECIFICATIONS.
2. ANTI-TWIST PLATES SHALL BE USED ONLY ON METAL POSTS.
3. MAILBOX SHELF, BRACKET & PLATFORM SHALL BE GALVANIZED OR PAINTED STEEL, HOWEVER TREATED 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 X¾" 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.



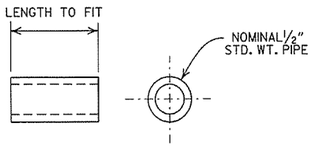
DOUBLE INSTALLATION



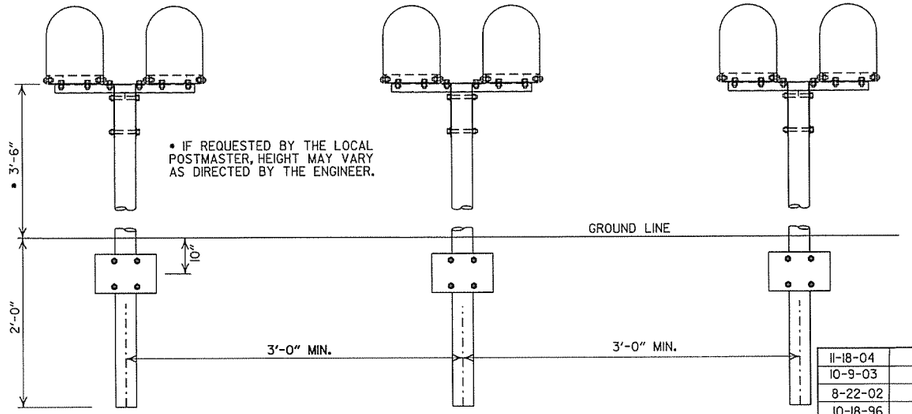
ANTI-TWIST PLATE



CLAMP



SPACER



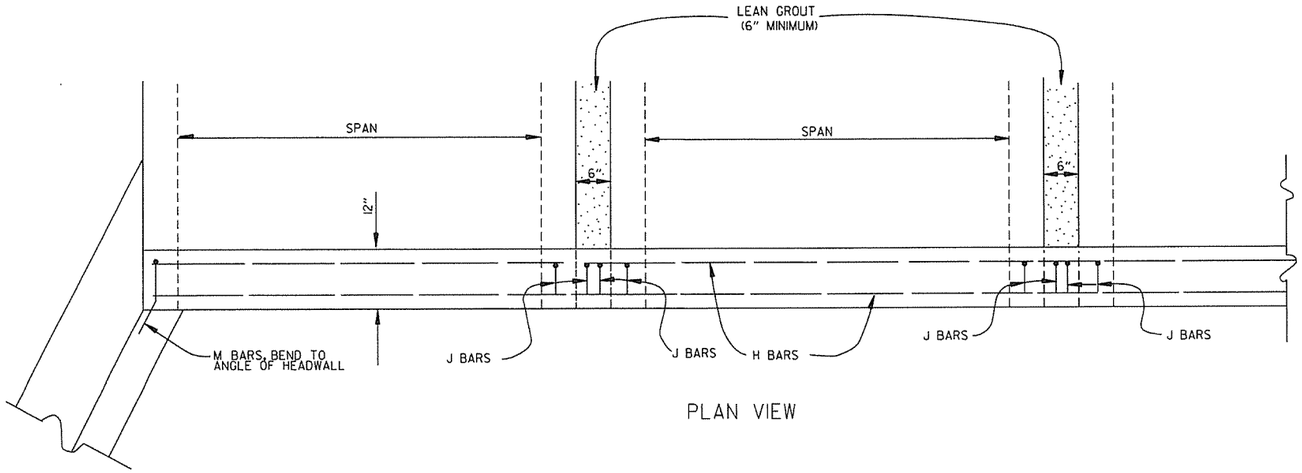
SPACING FOR MULTIPLE POST INSTALLATION

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

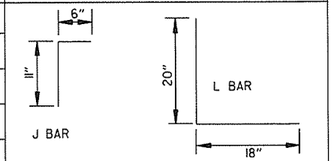
STANDARD DRAWING MB-1



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 ¾" 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.

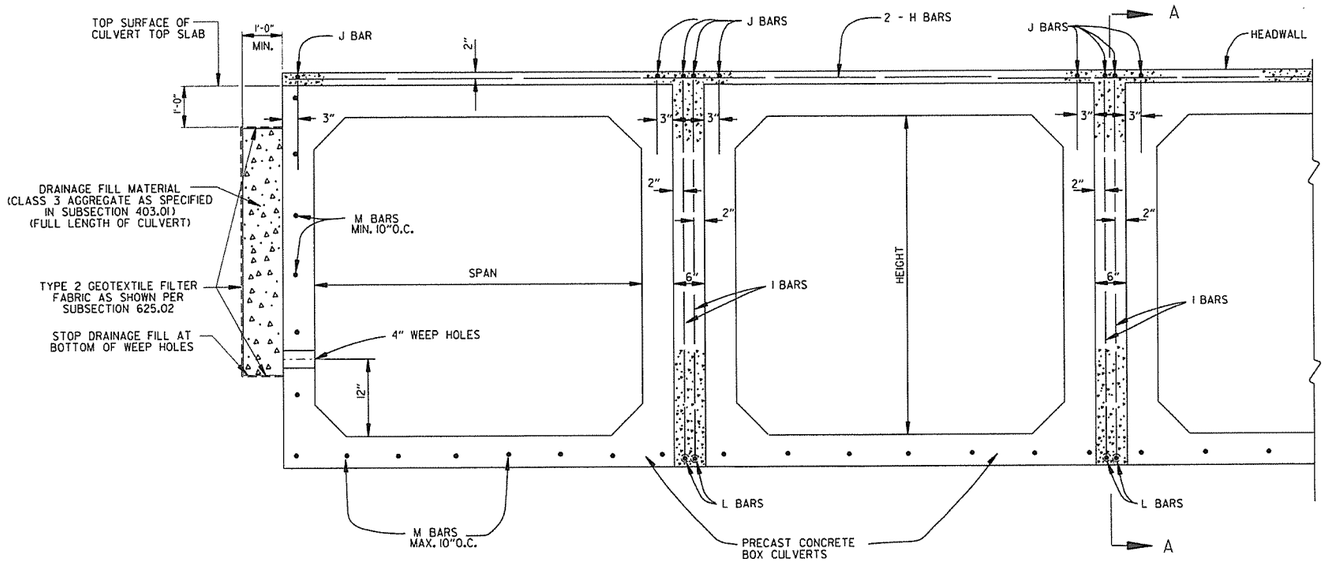
THE MEMBRANE WATERPROOFING WILL BE REQUIRED ON THE TOP EXTERNAL JOINT AND SHALL EXTEND 1 FOOT DOWN THE SIDES OF THE CULVERT.

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.

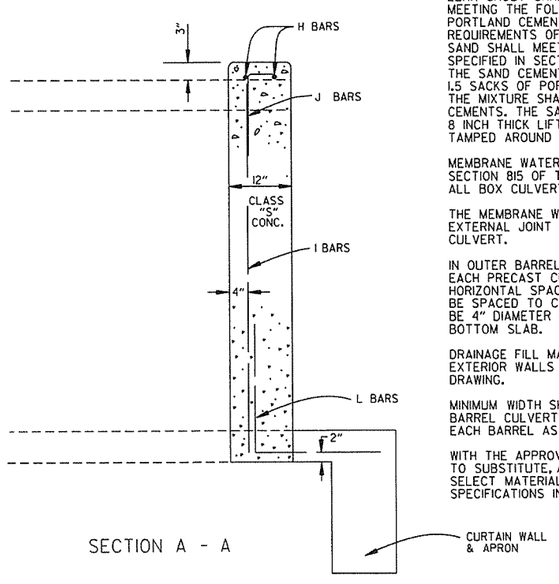
DRAINAGE FILL MATERIAL WITH GEOTEXTILE FABRIC IS REQUIRED AT THE EXTERIOR WALLS OF THE ASSEMBLED CULVERT, SEE DETAILS ON THIS DRAWING.

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	31⅝	31
48	58½	59	36	36
54	65	65	40	40
60	73	73	45	45
72	88	88	54	54
84	102	102	62	62
90	115	115	72	72
96	122	122	77½	77
108	138	138	87⅛	87
120	154	154	96⅞	97
132	168¾	169	106½	107

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

REINFORCED CONCRETE HORIZONTAL ELLIPTICAL PIPE DIMENSIONS

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

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

CONSTRUCTION SEQUENCE

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

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

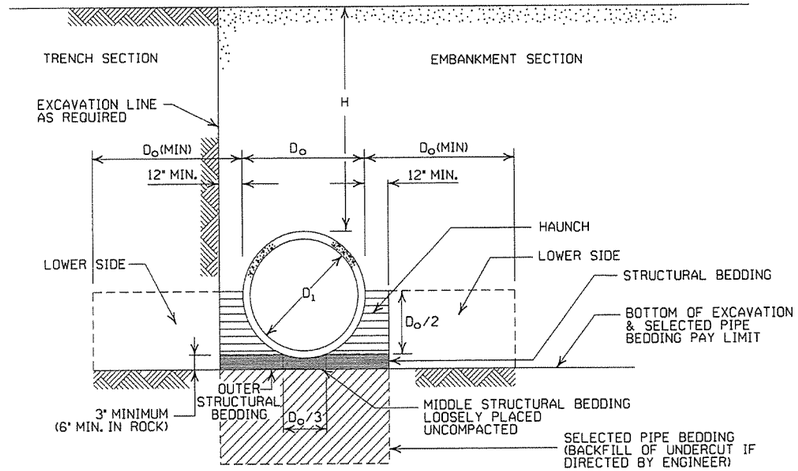
- LEGEND -

D_1 = NORMAL INSIDE DIAMETER OF PIPE
D_o = OUTSIDE DIAMETER OF PIPE
H = FILL COVER HEIGHT OVER PIPE (FEET)
MIN. = MINIMUM
▨ = UNDISTURBED SOIL

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

*SM-3 WILL NOT BE ALLOWED.

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



EMBANKMENT AND TRENCH INSTALLATIONS

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

GENERAL NOTES

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE PIPE CULVERT FILL HEIGHTS & BEDDING

STANDARD DRAWING PCC-1

CORRUGATED STEEL PIPE (ROUND)

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

CORRUGATED ALUMINUM PIPE (ROUND)

PIPE DIAMETER (INCHES)	① MINUMUM COVER TOP OF PIPE TO TOP OF GROUND "H" (FEET)	MAX. FILL HEIGHT "H" ABOVE TOP OF PIPE (FEET)				
		METAL THICKNESS IN INCHES				
		0.060	0.075	0.105	0.135	0.164
		2 ⅔ INCH BY ½ INCH CORRUGATION RIVETED OR HELICAL LOCK-SEAM				
12	1	45	45			
18	2	30	30	52		
24	2	22	22	39	41	
30	2		18	31	32	34
36	2.5		15	26	27	28
42	2			43	43	44
48	2			40	41	43
54	2			35	37	38
60	2				33	34
66	2					31
72	2					29

CONSTRUCTION SEQUENCE

1. PLACE STRUCTURAL BEDDING MATERIAL TO GRADE. DO NOT COMPACT.
2. INSTALL PIPE TO GRADE.
3. COMPACT STRUCTURAL BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE.
4. COMPLETE STRUCTURAL BACKFILL OPERATION BY WORKING FROM SIDE TO SIDE OF THE PIPE. THE SIDE TO SIDE STRUCTURAL BACKFILL DIFFERENTIAL SHALL NOT EXCEED 24 INCHES OR 1/3 THE SIZE OF THE PIPE, WHICHEVER IS LESS.

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

INSTALLATION TYPE	MATERIAL REQUIREMENTS FOR STRUCTURAL BACKFILL AND STRUCTURAL BEDDING
TYPE 1	AGGREGATE BASE COURSE (CLASS 4, 5, 6, OR 7)
TYPE 2	SELECTED MATERIALS (CLASS SM-1, SM-2, OR SM-4) OR TYPE 1 INSTALLATION MATERIAL ③

③ SM-3 WILL NOT BE ALLOWED.

EQUIVALENT METAL THICKNESSES AND GAUGES

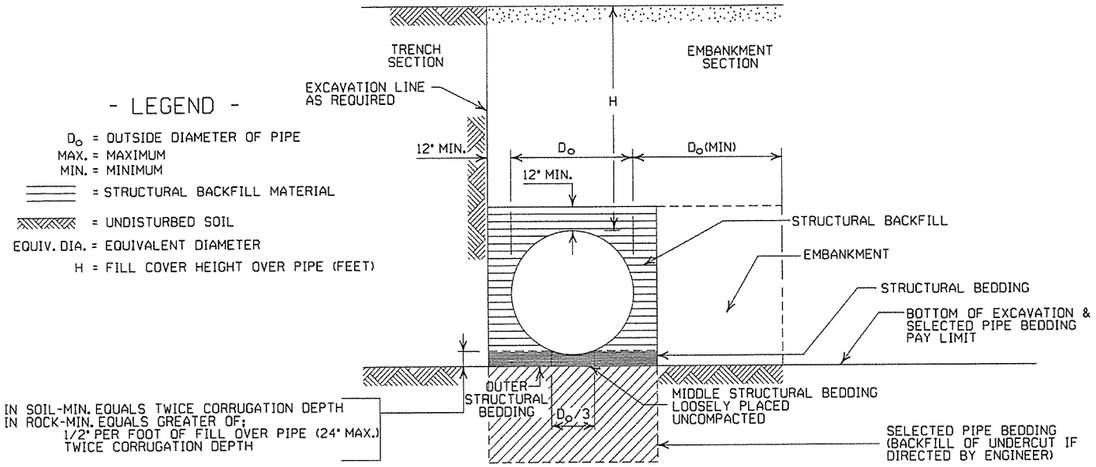
METAL THICKNESS IN INCHES			GAUGE NUMBER
STEEL			
ZINC COATED	UNCOATED	ALUMINUM	
0.064	0.0598	0.060	16
0.079	0.0747	0.075	14
0.109	0.1046	0.105	12
0.138	0.1345	0.135	10
0.168	0.1644	0.164	8

CORRUGATED METAL PIPE ARCHES

EQUIV. DIA. (INCHES)	PIPE DIMENSION SPAN X RISE (INCHES)	MINUMUM CORNER RADIUS (INCHES)	STEEL				ALUMINUM			
			MIN. THICKNESS REQUIRED INCHES	① MIN. HEIGHT OF FILL, "H" (FT.)		MAX. HEIGHT OF FILL, "H" (FT.)	MIN. THICKNESS REQUIRED INCHES	① MIN. HEIGHT OF FILL, "H" (FT.)		MAX. HEIGHT OF FILL, "H" (FT.)
				INSTALLATION		INSTALLATION		INSTALLATION		INSTALLATION
				TYPE 1		TYPE 1		TYPE 1		TYPE 1
			2 ⅔ INCH BY ½ INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM				2 ⅔ INCH BY ½ INCH CORRUGATION RIVETED OR HELICAL LOCK-SEAM			
15	17x13	3	0.064	2		15	0.060	2		15
18	21x15	3	0.064	2		15	0.060	2		15
21	24x18	3	0.064	2.25		15	0.060	2.25		15
24	28x20	3	0.064	2.5		15	0.075	2.5		15
30	35x24	3	0.079	3		12	0.075	3		12
36	42x29	3½	0.079	3		12	0.105	3		12
42	49x33	4	0.079	3		12	0.105	3		12
48	57x38	5	0.109	3		13	0.135	3		13
54	64x43	6	0.109	3		14	0.135	3		14
60	71x47	7	0.138	3		15	0.164	3		15
66	77x52	8	0.168	3		15				
72	83x57	9	0.168	3		15				
			② 3 INCH BY 1 INCH OR 5 INCH BY 1 INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM							
				INSTALLATION		INSTALLATION				
				TYPE 2	TYPE 1	TYPE 2	TYPE 1			
36	40x31	5	0.079	3	2	12	15			
42	46x36	6	0.079	3	2	13	15			
48	53x41	7	0.079	3	2	13	15			
54	60x46	8	0.079	3	2	13	15			
60	66x51	9	0.079	3	2	13	15			
66	73x55	12	0.079	3	2	15	15			
72	81x59	14	0.079	3	2	15	15			
78	87x63	14	0.079	3	2	15	15			
84	95x67	16	0.109	3	2	15	15			
90	103x71	16	0.109	3	2	15	15			
96	112x75	18	0.109	3	2	15	15			
102	117x79	18	0.109	3	2	15	15			
108	128x83	18	0.138	3	2	15	15			

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

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



EMBANKMENT AND TRENCH INSTALLATIONS

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

GENERAL NOTES

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

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

ARKANSAS STATE HIGHWAY COMMISSION

METAL PIPE CULVERT FILL HEIGHTS & BEDDING

STANDARD DRAWING PCM-1

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

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

SM3 WILL NOT BE ALLOWED.

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

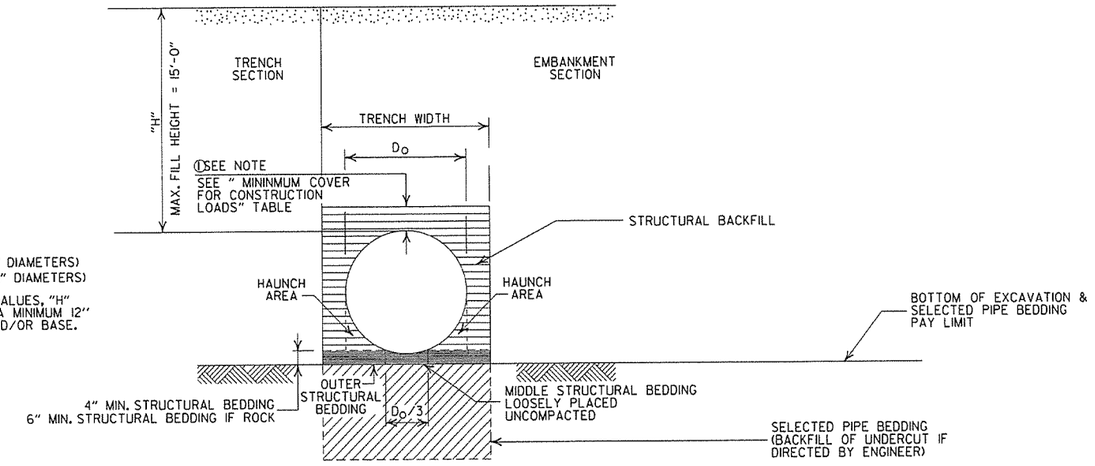
STRUCTURAL BACKFILL AND STRUCTURAL BEDDING MATERIAL WILL NOT BE PAID FOR SEPARATELY, BUT COMPENSATION WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID PER LINEAR FOOT OF HDPE PIPE.

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

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

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

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



TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

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

MULTIPLE INSTALLATION OF HIGH DENSITY POLYETHYLENE PIPES

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

MINIMUM COVER FOR CONSTRUCTION LOADS

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

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

CONSTRUCTION SEQUENCE

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

GENERAL NOTES

1. PIPE SHALL CONFORM TO AASHTO M294, TYPE S. INSTALLATION SHALL CONFROM TO JOB SPECIAL PROVISION "PLASTIC PIPE" AND SECTION 606 OF THE STANDARD SPECIFICIATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION).
2. PLASTIC PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) WITH 2010 INTERIMS.
3. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PLUS A SUFFICIENT WIDTH TO ENSURE WORKING ROOM TO PROPERLY AND SAFELY PLACE AND COMPACT HAUNCHING AND OTHER BACKFILL MATERIAL.
4. IMPERVIOUS MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
5. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH (BELOW THE AREA IDENTIFIED AS "STRUCTURAL BEDDING" ABOVE) WILL BE EXCAVATED AND REPLACED WITH SELECTED PIPE BEDDING. THE QUANTITY OF MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE SELECTED PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS "SELECTED PIPE BEDDING."
6. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED ABOVE AS STRUCTURAL BACKFILL), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."
7. FOR PIPE TYPES THAT ARE NOT SMOOTH ON THE OUTSIDE (CORRUGATED OR PROFILE WALLS), BACKFILL GRADATIONS SHOULD BE SELECTED THAT WILL PERMIT THE FILLING OF THE CORRUGATION OR PROFILE VALLEY.
8. HIGH DENSITY POLYETHYLENE PIPES OF DIAMETERS OTHER THAN SHOWN WILL NOT BE ALLOWED.
9. JOINTS FOR HDPE PIPE SHALL MEET THE REQUIREMENTS FOR SOIL TIGHTNESS AS SPECIFIED IN AASHTO SECTION 26.4.2.4 AND 30.4.2 "AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS." JOINTS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

- LEGEND -

H = FILL HEIGHT (FT.)
Ø = OUTSIDE DIAMETER OF PIPE
MAX. = MAXIMUM
MIN. = MINIMUM

= STRUCTURAL BACKFILL MATERIAL

= UNDISTURBED SOIL

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

ARKANSAS STATE HIGHWAY COMMISSION

PLASTIC PIPE CULVERT (HIGH DENSITY POLYETHYLENE)

STANDARD DRAWING PCP-1

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

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

SM3 WILL NOT BE ALLOWED.

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

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

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

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

MULTIPLE INSTALLATION OF PVC PIPES

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

MAXIMUM FILL HEIGHT BASED ON STRUCTURAL BACKFILL

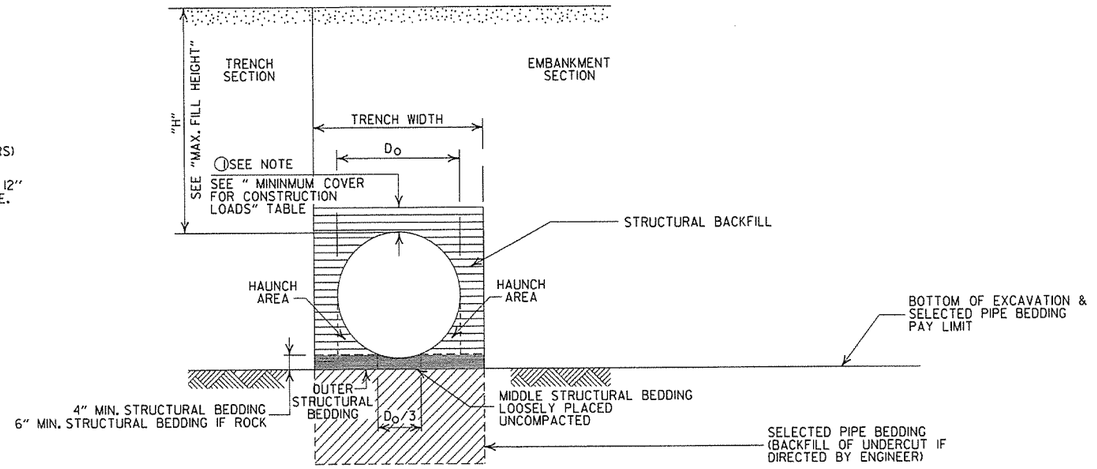
PIPE DIAMETER	"H"
18"	45'-0"
24"	45'-0"
30"	40'-0"
36"	40'-0"

① NOTE:
12" MIN. (18" - 36" DIAMETERS)
MINIMUM COVER VALUE, "H" SHALL INCLUDE A MINIMUM 12" OF PAVEMENT AND/OR BASE.

MINIMUM COVER FOR CONSTRUCTION LOADS

PIPE DIAMETER	② MIN. COVER (FEET) FOR INDICATED CONSTRUCTION LOADS			
	18.0-50.0 (KIPS)	50.0-75.0 (KIPS)	75.0-110.0 (KIPS)	110.0-175.0 (KIPS)
18" THRU 36"	2'-0"	2'-6"	3'-0"	3'-0"

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



TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

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

CONSTRUCTION SEQUENCE

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

GENERAL NOTES

1. PIPE SHALL CONFORM TO ASTM F949, CELL CLASS 12454. INSTALLATION SHALL CONFROM TO JOB SPECIAL PROVISION "PLASTIC PIPE" AND SECTION 606 OF THE STANDARD SPECIFICIATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION).
2. PLASTIC PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) WITH 2010 INTERIMS.
3. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PLUS A SUFFICIENT WIDTH TO ENSURE WORKING ROOM TO PROPERLY AND SAFELY PLACE AND COMPACT HAUNCHING AND OTHER BACKFILL MATERIAL.
4. IMPERVIOUS MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
5. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH (BELOW THE AREA IDENTIFIED AS "STRUCTURAL BEDDING" ABOVE) WILL BE EXCAVATED AND REPLACED WITH SELECTED PIPE BEDDING. THE QUANTITY OF MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE SELECTED PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS "SELECTED PIPE BEDDING."
6. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED ABOVE AS STRUCTURAL BACKFILL), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."
7. FOR PIPE TYPES THAT ARE NOT SMOOTH ON THE OUTSIDE (CORRUGATED OR PROFILE WALLS), BACKFILL GRADATIONS SHOULD BE SELECTED THAT WILL PERMIT THE FILLING OF THE CORRUGATION OR PROFILE VALLEY.
8. PVC PIPES OF DIAMETERS OTHER THAN SHOWN WILL NOT BE ALLOWED.
9. JOINTS FOR PVC PIPE SHALL MEET THE REQUIREMENTS FOR SOIL TIGHTNESS AS SPECIFIED IN AASHTO SECTION 26.4.2.4 AND 30.4.2 "AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS." JOINTS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

- LEGEND -

H = FILL HEIGHT (FT.)
D_O = OUTSIDE DIAMETER OF PIPE
MAX. = MAXIMUM
MIN. = MINIMUM

= STRUCTURAL BACKFILL MATERIAL

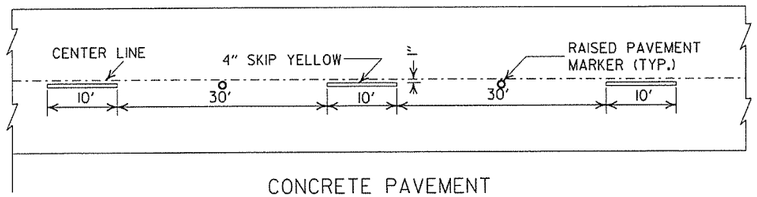
= UNDISTURBED SOIL

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

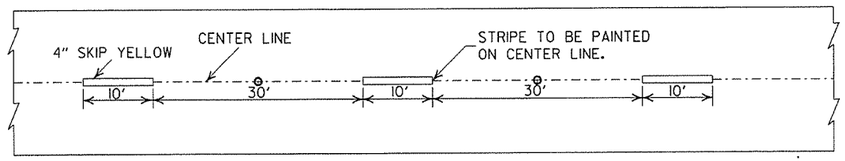
ARKANSAS STATE HIGHWAY COMMISSION

PLASTIC PIPE CULVERT
(PVC F949)

STANDARD DRAWING PCP-2

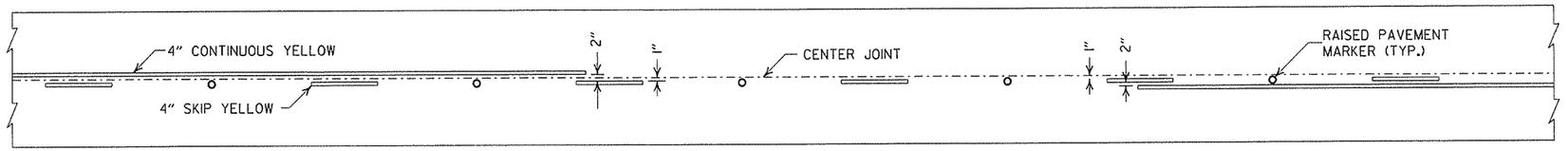


CONCRETE PAVEMENT

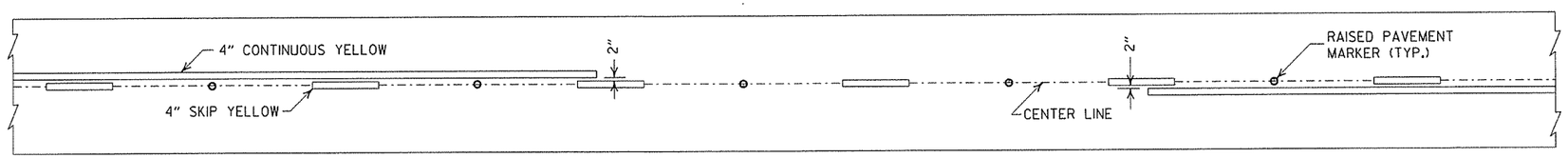


ASPHALT PAVEMENT

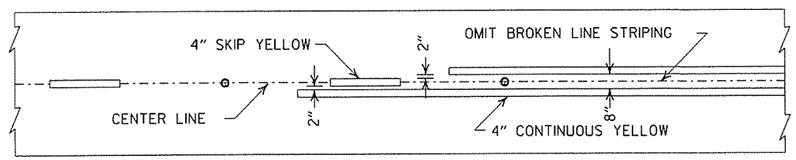
BROKEN LINE STRIPING



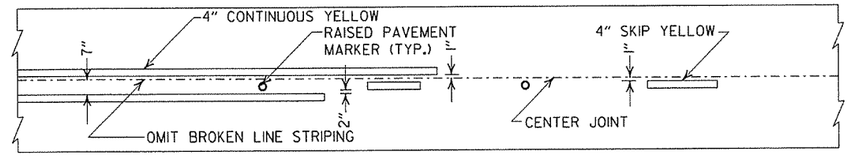
SOLID LINE STRIPING ON CONCRETE PAVEMENT



SOLID LINE STRIPING ON ASPHALT PAVEMENT



ASPHALT PAVEMENT



CONCRETE PAVEMENT

GENERAL NOTES:

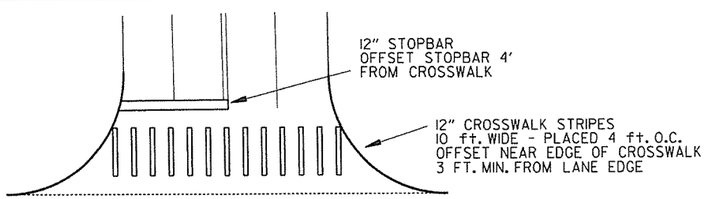
THIS DRAWING SHOULD BE CONSIDERED AS TYPICAL ONLY AND THE FINAL LOCATION OF THE STRIPING AND RAISED PAVEMENT MARKERS SHALL BE DETERMINED BY THE ENGINEER.

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.

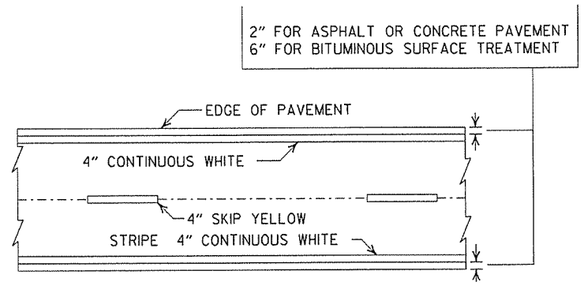
STRIPING AT ADJACENT NO PASSING LANES



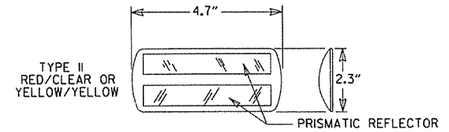
CROSSWALK AND STOPBAR DETAILS

NOTES:

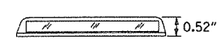
1. ALL LINES SHALL HAVE A WIDTH OF 4 INCHES.
2. THE THICKNESS AND RATE OF PAINT APPLICATION SHALL BE AS SPECIFIED IN SECTION 718 OF THE STANDARD SPECIFICATIONS.
3. THIS DRAWING SHALL BE USED IN CONJUNCTION WITH THE LATEST REVISED ADDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES."
4. RAISED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

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

ARKANSAS STATE HIGHWAY COMMISSION

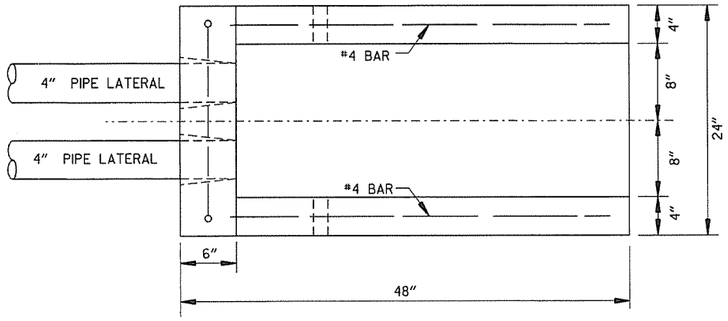
PAVEMENT MARKING DETAILS

STANDARD DRAWING PM-1

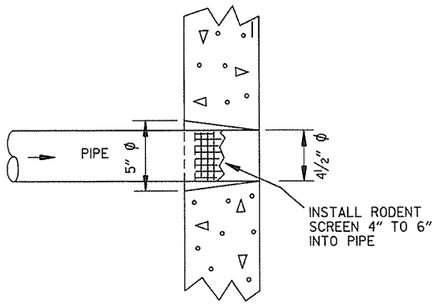
NOTE:
1. GRANULAR BACKFILL TO BE SUBSIDIARY TO PIPE UNDERDRAIN.

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

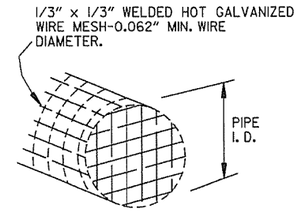
3. GRANULAR MATERIAL SHALL BE WRAPPED WITH GEOTEXTILE FABRIC. LAP FABRIC 12" OR THE WIDTH OF THE TRENCH AT THE TOP.



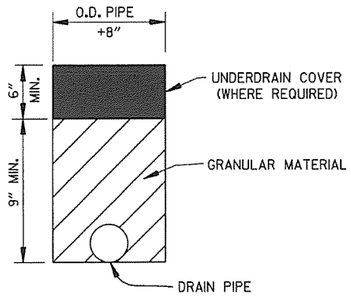
PLAN VIEW

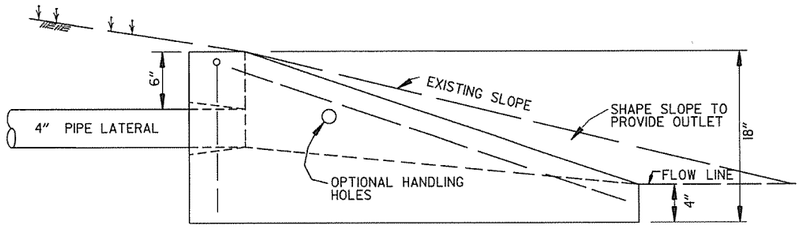


DETAIL OF HOLE FOR 4" PIPE

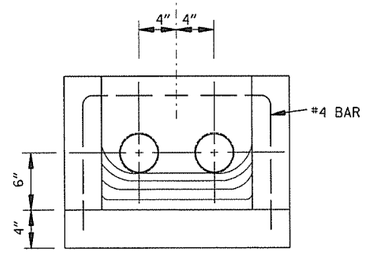


DETAIL OF RODENT SCREEN

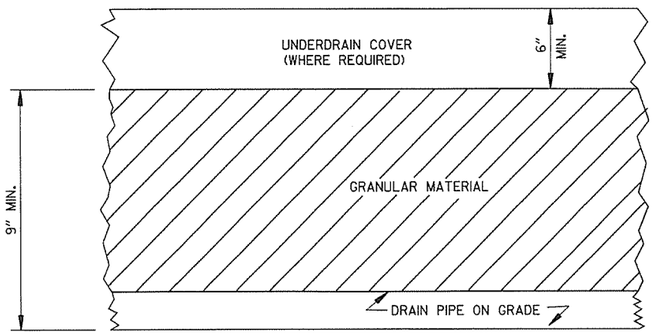




SIDE VIEW

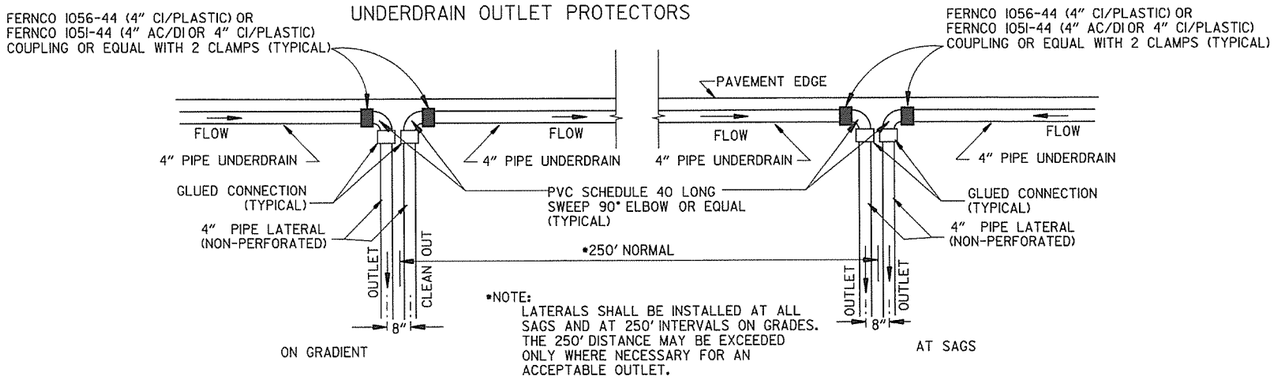


FRONT VIEW



DETAILS OF PIPE UNDERDRAIN

UNDERDRAIN OUTLET PROTECTORS



DETAIL OF PIPE UNDERDRAIN LATERALS WHEN PLACED ALONG PAVEMENT EDGE

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

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

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF PIPE UNDERDRAIN

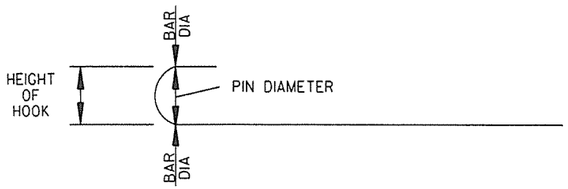
STANDARD DRAWING PU-1

7-20-95 INSTD.PUI

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

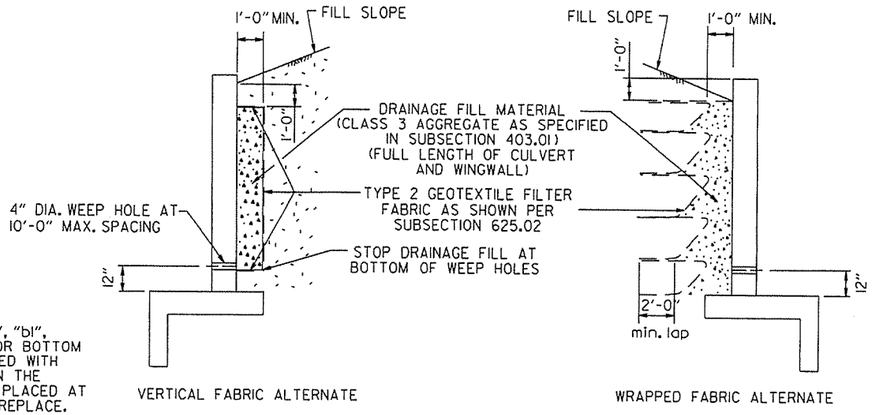
THE HOOKED BARS SHALL BE PLACED IN THE BOTTOM OF THE TOP SLAB AND THE TOP OF THE BOTTOM SLAB. THE STRAIGHT BARS SHALL BE PLACED IN THE TOP OF THE TOP SLAB AND THE BOTTOM OF THE BOTTOM SLAB. SEE TABLE BELOW FOR LENGTHS OF REPLACEMENT HOOKED AND STRAIGHT BARS.

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.

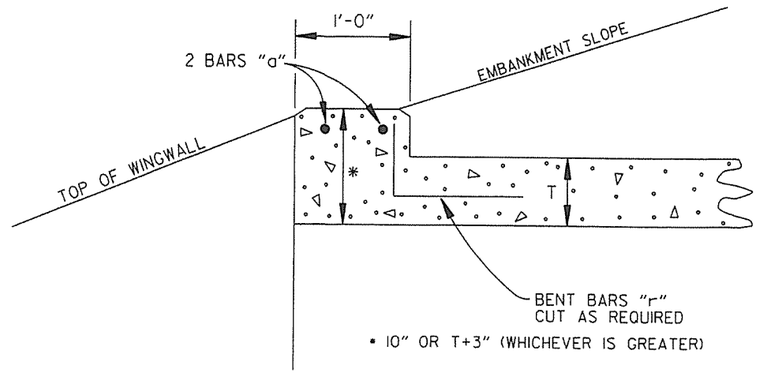
MEMBRANE WATERPROOFING SHALL BE APPLIED TO ALL CONSTRUCTION JOINTS IN THE TOP SLAB AND THE SIDEWALLS OF R.C. BOX CULVERTS AS DIRECTED BY THE ENGINEER. NO PAYMENT SHALL BE MADE FOR THIS ITEM, BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS BID FOR THE R.C. BOX CULVERT.

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.

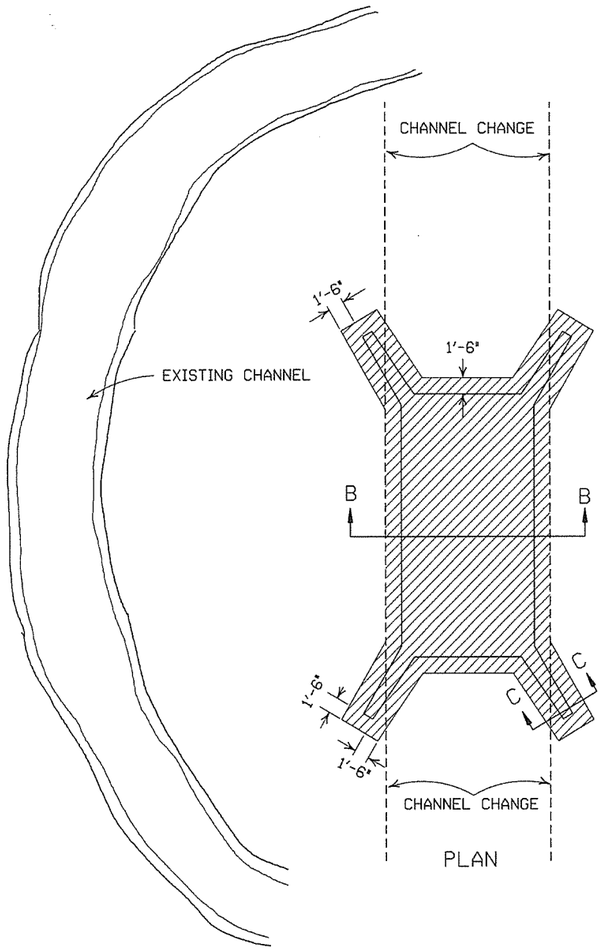
R.C. BOX CULVERT HEADWALL MODIFICATIONS

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	

ARKANSAS STATE HIGHWAY COMMISSION

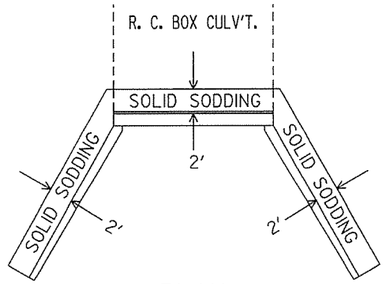
REINFORCED CONCRETE BOX CULVERT DETAILS

STANDARD DRAWING RCB-1



PLAN

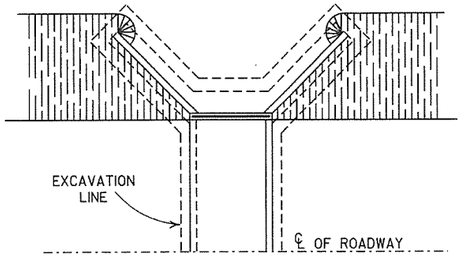
SOLID SODDING



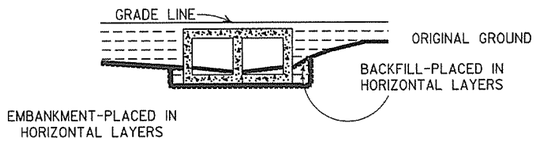
PLAN

PARTIAL SECTION SHOWING SOLID SODDING AT HEADWALLS AND WING WALLS

NOTE: LENGTH MEASURED ALONG THE CENTER OF 2' STRIP OF SOLID SODDING.

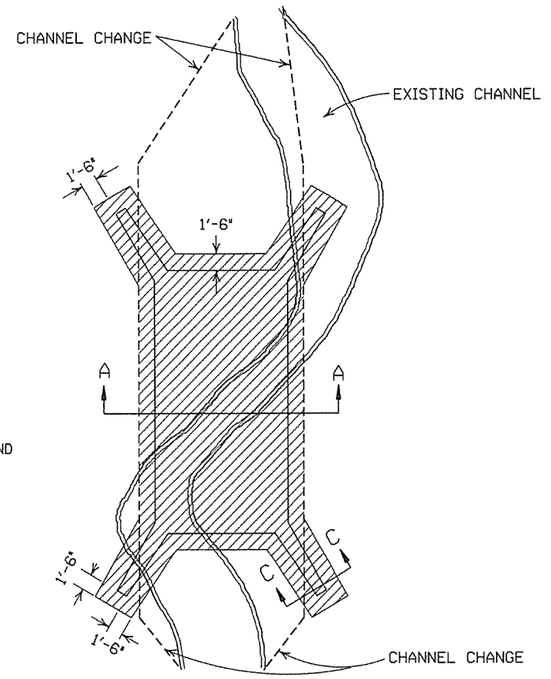


PLAN

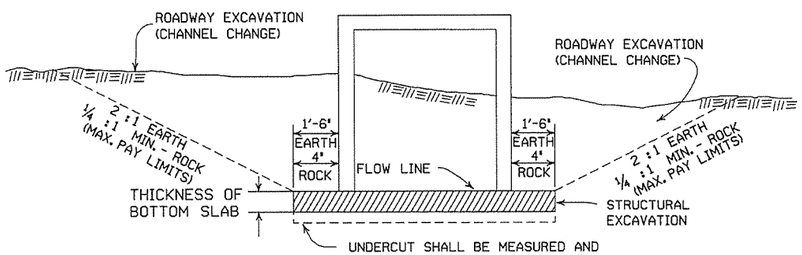


LONGITUDINAL SECTION

BACKFILL DETAILS FOR BOX CULVERT

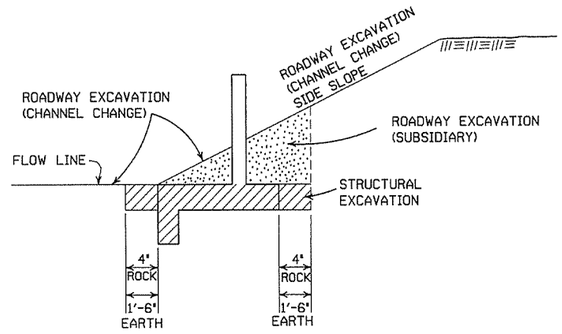


PLAN

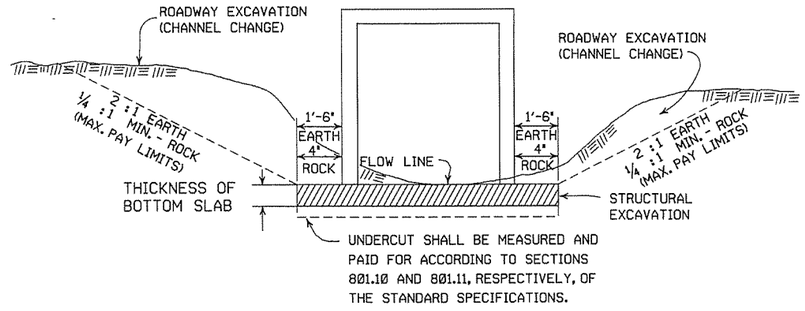


SECTION B-B

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.

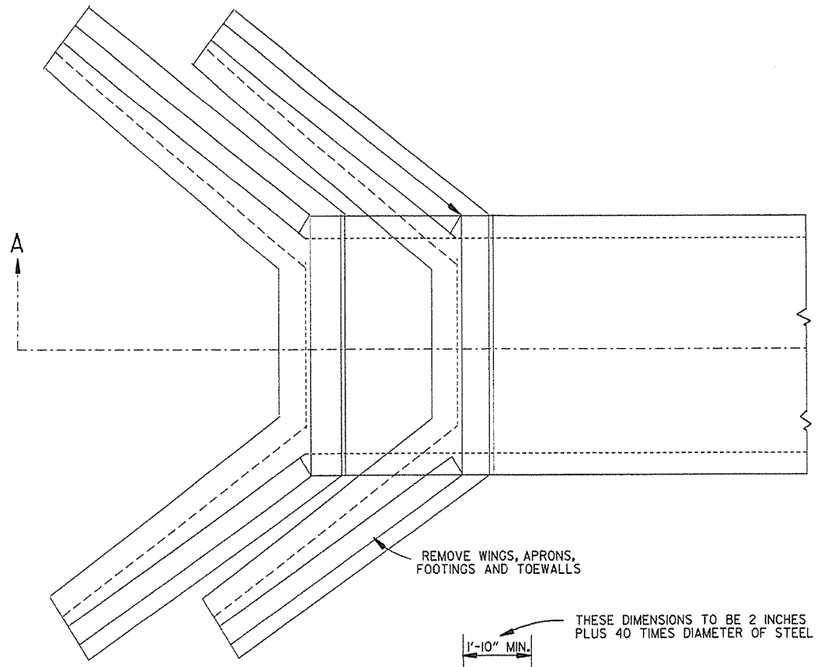
ROADWAY EXCAVATION SHOWN IN SECTION C-C ABOVE AS SUBSIDIARY WILL NOT BE MEASURED OR PAID FOR DIRECTLY, BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS OF EXCAVATION.

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
DATE	REVISION	FILMED

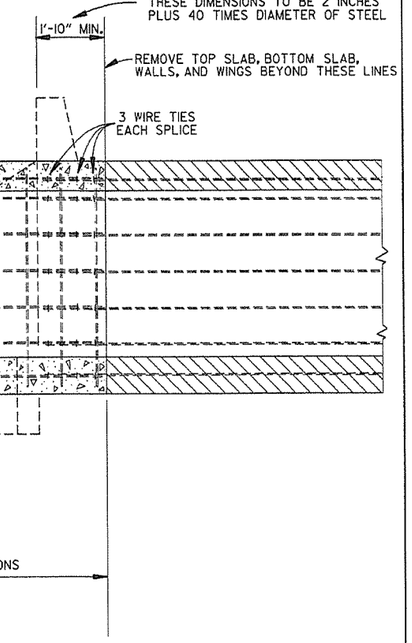
ARKANSAS STATE HIGHWAY COMMISSION

EXCAVATION PAY LIMITS, BACKFILL, & SOLID SODDING FOR BOX CULVERTS

STANDARD DRAWING RCB-2

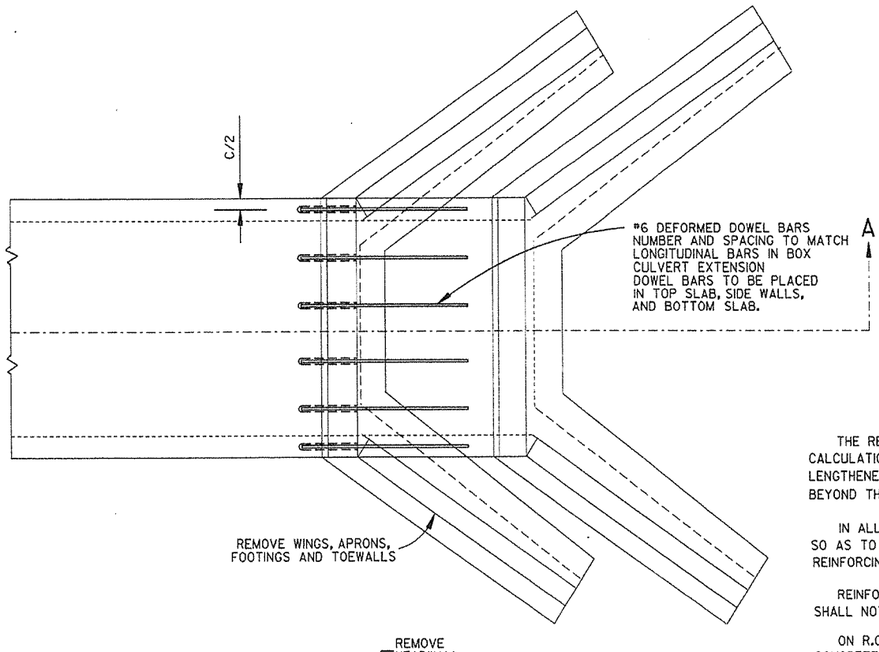


TOP VIEW
R.C. BOX CULVERT

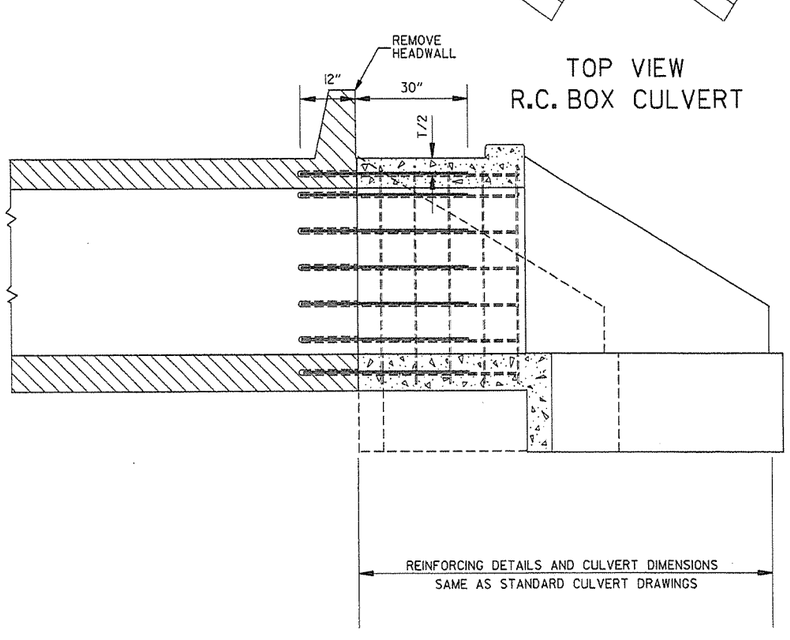


SECTION A-A

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

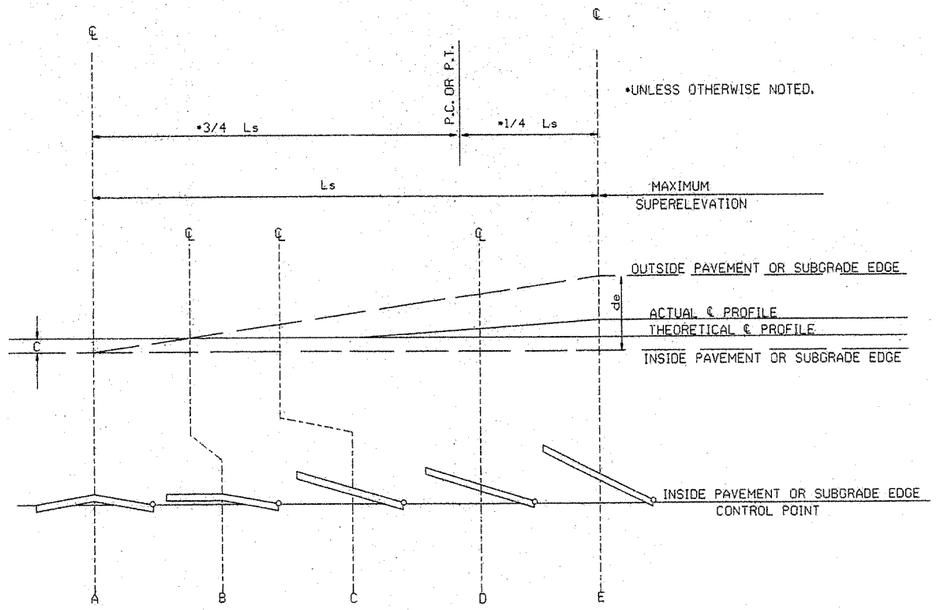
SUPERELEVATION TABLE FOR TWO - WAY TRAFFIC

DEGREE OF CURVE	30 MPH e	30 MPH Ls (FT) MINIMUM	30 MPH Ls (FT) DESIRABLE	40 MPH e	40 MPH Ls (FT) MINIMUM	40 MPH Ls (FT) DESIRABLE	50 MPH e	50 MPH Ls (FT) MINIMUM	50 MPH Ls (FT) DESIRABLE	55 MPH e	55 MPH Ls (FT) MINIMUM	55 MPH Ls (FT) DESIRABLE	60 MPH e	60 MPH Ls (FT) MINIMUM	60 MPH Ls (FT) DESIRABLE	70 MPH e	70 MPH Ls (FT) MINIMUM	70 MPH Ls (FT) DESIRABLE
0° 15′	N.C.			N.C.			N.C.			N.C.			N.C.			N.C.		
0° 30′	N.C.			N.C.			N.C.			N.C.			N.C.			N.C.		
0° 45′	N.C.			N.C.			R.C.			0.022			0.023			0.028		
1° 00′	N.C.			N.C.			0.021			0.026			0.030			0.037	275	300
1° 15′	N.C.			R.C.			0.026			0.032			0.037			0.046		
1° 30′	N.C.			0.021			0.031	200		0.037	225		0.043	250		0.054		
1° 45′	N.C.			0.025	175		0.036			0.043		300	0.049		300	0.062		
2° 00′	R.C.			0.028			0.040			0.048			0.055			0.070		
2° 15′	R.C.			0.031			0.045		250	0.053			0.061			0.078	300	350
2° 30′	0.021			0.034			0.049			0.058			0.067			0.085	315	
2° 45′	0.023			0.037		200	0.053			0.063			0.072			0.091	335	
3° 00′	0.025			0.040			0.057			0.067	230		0.077	260		0.096	350	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	350	0.098	320				
5° 30′	0.043			0.066	185		0.088	260		0.094	300							
6° 00′	0.046			0.070	190		0.092	270		0.096	305							
6° 30′	0.050			0.074	200		0.095	280	300	0.100	315							
7° 00′	0.053			0.078	210		0.098	285										
7° 30′	0.056			0.081	215		0.099	290										
8° 00′	0.058			0.084	220		0.100	290										
8° 30′	0.061			0.087	225	250												
9° 00′	0.063			0.089	230													
10° 00′	0.068	160		0.094	235													
11° 00′	0.072	170		0.097	250													
12° 00′	0.076	175		0.099	250													
13° 00′	0.080	180		0.100	250													
14° 00′	0.083	190																
15° 00′	0.086	195																
16° 00′	0.089	200																
17° 00′	0.091	200																
18° 00′	0.093	205																
19° 00′	0.095	210																
20° 00′	0.097	215	250															
21° 00′	0.098	215																
22° 00′	0.099	215																
23° 00′	0.099	215																
24° 00′	0.100	220																

D MAX = 24° 45′ | D MAX = 13° 15′ | D MAX = 8° 15′ | D MAX = 6° 30′ | D MAX = 5° 15′ | D MAX = 3° 30′

ABBREVIATIONS

NC - NORMAL CROWN
RC - REVERSE CROWN, SUPERELEVATION AT NORMAL CROWN SLOPE
e - RATE OF SUPERELEVATION (FT. PER FT.)
Ls - LENGTH OF SUPERELEVATION TRANSITION (FT.)
L - DISTANCE FROM BEGINNING OF SUPERELEVATION TRANSITION TO ANY POINT (FT.)
d - WIDTH OF PAVEMENT (FT.) OR WIDTH OF SUBGRADE (FT.)
C - NORMAL CROWN (FT.)



STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND INNER SUBGRADE POINT OR INNER PAVEMENT EDGE

NOTE: MAINTAIN NORMAL CROWN ON INSIDE UNTIL SUPERELEVATION EXCEEDS 2C.

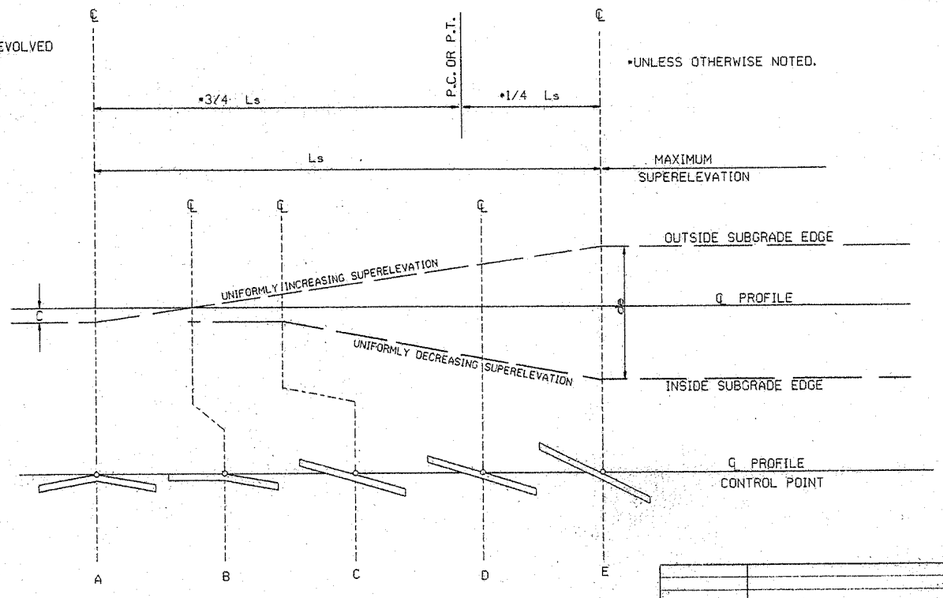
GENERAL NOTES

1. ON PAVEMENT WITH TWO-WAY TRAFFIC, THE SUPERELEVATION SHALL BE REVOLVED ON THE INSIDE PAVEMENT EDGE UNLESS OTHERWISE NOTED ON THE PLANS
2. SUPERELEVATION VALUES SHOWN ON THE CROSS SECTIONS ARE VALUES (+) OR (-) TO BE ADDED TO OR SUBTRACTED FROM THE POINT OF CONTROL.
3. LENGTHS FOR L MAY BE ROUNDED IN MULTIPLES OF 25 FT. OR 50 FT. TO PERMIT SIMPLER CALCULATIONS.
4. PAVEMENTS WIDER THAN 2 LANES SHALL HAVE ADDITIONAL TRANSITION LENGTHS AS FOLLOWS:

3 LANE UNDIVIDED	+20%
4 LANE UNDIVIDED	+50%
5 LANE UNDIVIDED	+80%
6 LANE UNDIVIDED	+100%

NOTE: MAINTAIN NORMAL CROWN ON INSIDE UNTIL SUPERELEVATION EXCEEDS 2C.

RATE OF SUPERELEVATION SHALL BE COMPUTED ON STRAIGHT LINE METHOD USING APPLICABLE Ls.



STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND CENTER LINE

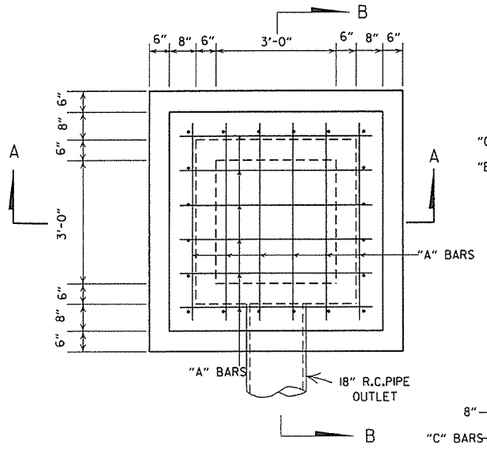
SUPERELEVATION FORMULA = $\frac{Lde}{Ls}$

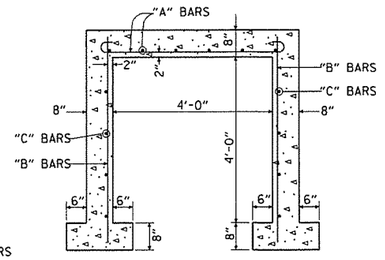
DATE	REVISION	DATE FILMED
10-18-96	ADDED FORMULA	10-18-96
01-09-87	ISSUED	534-1-9-87

ARKANSAS STATE HIGHWAY COMMISSION

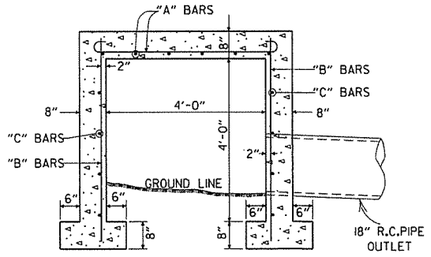
TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC

STANDARD DRAWING SE-2





SEC A-A



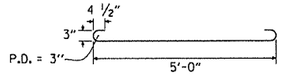
SEC B-B

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

STEEL SCHEDULE

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

ALL STEEL TO BE #4 BARS



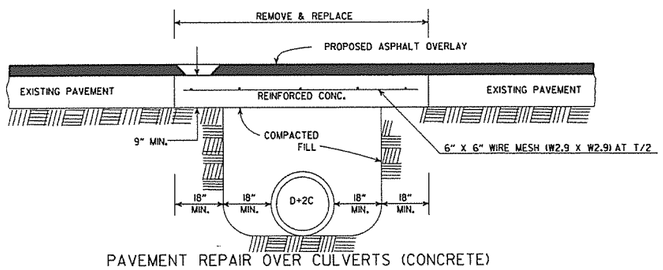
QUANTITIES

CONCRETE 3.31 CU. YDS.
REINFORCING STEEL 168 LB.

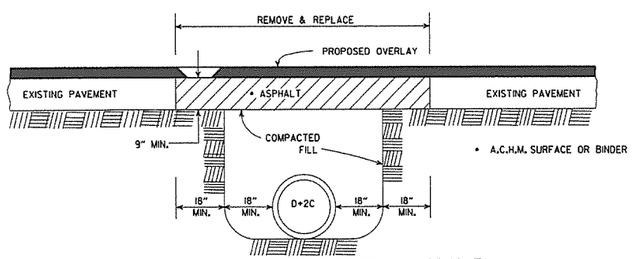
GENERAL NOTE:

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

REINFORCED CONCRETE SPRING BOX



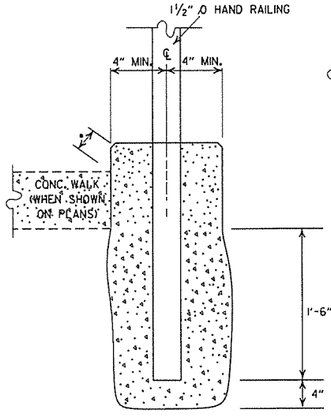
PAVEMENT REPAIR OVER CULVERTS (CONCRETE)



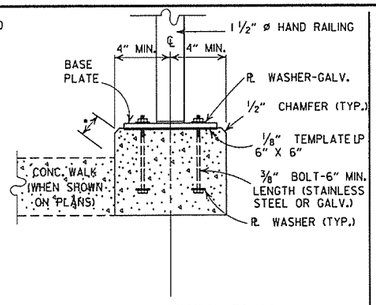
PAVEMENT REPAIR OVER CULVERTS (ASPHALT)

DETAIL SHOWING REPAIR OF EXISTING PAVEMENT AT CULVERT INSTALLATIONS

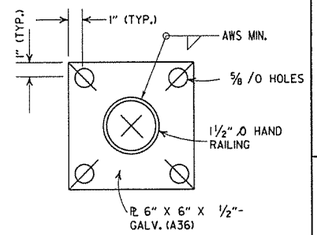
* A 2" MIN. HIGH CURB IS REQUIRED WHEN CONCRETE WALK IS ADJACENT TO THE HAND RAILING. PAYMENT FOR CURB SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR CONCRETE WALKS.



DETAIL OF HAND RAILING SET IN CONCRETE

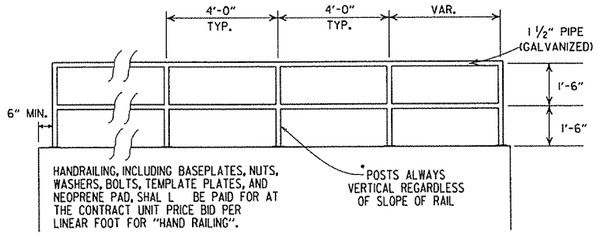


POST CONNECTION TO WALL

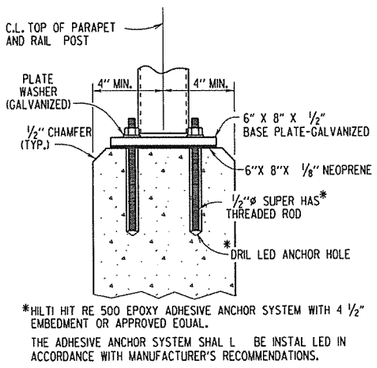


BASE PLATE

POST CONNECTION DETAILS



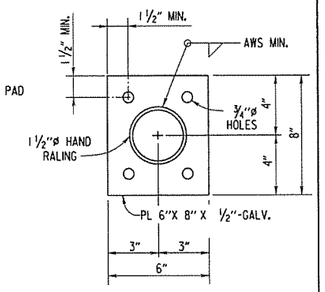
HAND RAILING SHAL L CONFORM TO SECTION 633.



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

THE ADHESIVE ANCHOR SYSTEM SHAL L BE INSTAL LED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

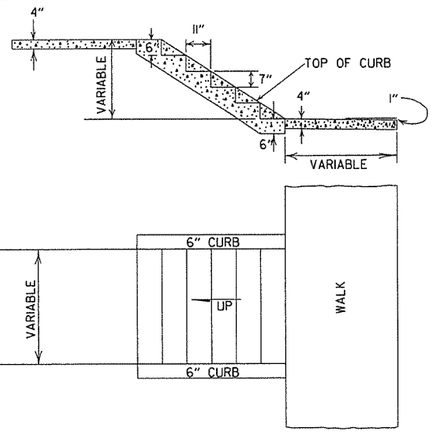
POST CONNECTION TO WALL



BASE PLATE

DETAILS OF ALTERNATE POST ANCHOR SYSTEM
(EPOXY ADHESIVE ANCHORS)

HAND RAILING DETAILS



GENERAL NOTES

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

DETAILS OF CONCRETE STEPS & WALKS

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

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF SPECIAL ITEMS

STANDARD DRAWING SI-1

R1-1

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

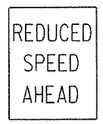
R1-2

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

R2-1

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

R2-5A



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

R2-5C

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

R4-1

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

R4-2

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

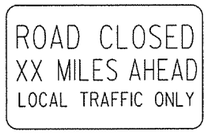
R5-1

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

RII-2

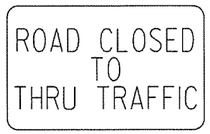
48"X30"

RII-3A



60"X30"

RII-4

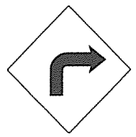


60"X30"

RSP-1

48"X30"

WI-1



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

WI-2

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

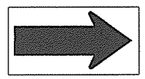
WI-3

STD. 48"X48"

WI-4

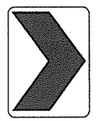
STD. 48"X48"

WI-6



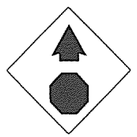
STD. 48"X24"
SPECIAL 60"X30"

WI-8



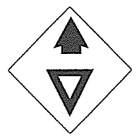
STD. 18"X24"
SPECIAL 24"X30"
EXPWY. 30"X36"
FWY. 36"X48"

W3-1



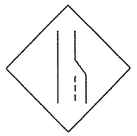
STD. 36"X36"
SPECIAL 48"X48"

W3-2



STD. 36"X36"
SPECIAL 48"X48"

W4-2



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

W5-1

STD. 36"X36"
SPECIAL 48"X48"

W6-3

EXPWY. 36"X36"
SPECIAL 48"X48"

W8-7

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

W9-2

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

WI3-1

STD. 24"X24"

W20-1

STD. 48"X48"

W20-2

STD. 48"X48"

W20-3

STD. 48"X48"

W20-4

STD. 48"X48"

W20-5

STD. 48"X48"

W20-7a

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

W21-2

STD. 30"X30"
SPECIAL 36"X36"

W21-5

STD. 30"X30"
SPECIAL 36"X36"

W24-1

STD. 36"X36"

WI-4b

STD. 48"X48"

R56-1

STD. 18"X18"

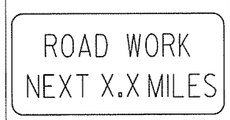
W8-11

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

W8-9

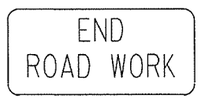
STD. 36"X36"
FWY. 48"X48"

G20-1



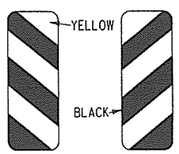
60"X24"

G20-2



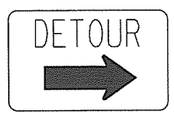
48"X24"

OM-3L OM-3R



12"X36"

M4-9

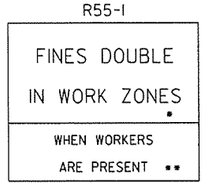


STD. 30"X24"
SPECIAL 48"X36"
SPECIAL 60"X48"

M4-10

48"X18"

R55-1



36"X60"

* USE 6" C LETTERS
** USE 4" D LETTERS

ADVANCE DISTANCES
(XXXX)

500 FT	1/2 MILE
1000 FT	3/4 MILE
1500 FT	1 MILE
	AHEAD

GENERAL NOTES:

1. ALL TRAFFIC CONTROL DEVICES USED ON ROAD CONSTRUCTION SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION, AND TO THE STANDARD HIGHWAY SIGNS, LATEST EDITION, OR AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION.

2. TRAFFIC CONTROL DEVICES SHALL BE SET UP JUST BEFORE THE START OF CONSTRUCTION OPERATIONS AND SHALL BE PROPERLY MAINTAINED DURING THE TIME SUCH CONDITIONS EXIST. THEY SHALL REMAIN IN PLACE ONLY AS LONG AS NEEDED AND REMOVED THEREAFTER.

3. EXISTING SIGNS AND CONSTRUCTION SIGNS SHALL BE KEPT IN PROPER POSITION, AND BE CLEAN AND LEGIBLE AT ALL TIMES. SIGNS THAT DO NOT APPLY TO EXISTING CONDITIONS SHALL BE REMOVED. SIGNS THAT ARE DAMAGED, DEFACED, OR THAT ACCUMULATE DIRT DURING CONSTRUCTION SHALL BE CLEANED, REPAIRED, OR REPLACED.

• 4. SIGNS ARE USUALLY MOUNTED ON A SINGLE POST, ALTHOUGH THOSE WIDER THAN 36" OR LARGER THAN 10 SQ. FT. SHALL BE MOUNTED ON TWO POSTS OR ABOVE A TYPE III BARRICADE.

• 5. SIGN POSTS DIRECT BURIED IN SOIL SHALL BE 2 LB. MINIMUM CHANNEL POST OR 4"x4" WOOD POSTS. CHANNEL POSTS SHALL BE PAINTED GREEN. WOOD POSTS SHALL BE PAINTED WHITE. ALL POSTS SHALL BE NEATLY CONSTRUCTED, AND SHALL BE REPLUMBED, CLEANED, OR REPAIRED AS NEEDED FOR THE DURATION OF THE JOB. THERE SHALL NOT BE MORE THAN 2 POSTS IN A 7' PATH FOR WOOD OR CHANNEL POSTS. ANY CHANNEL POST SPLICE SHALL BE IN ACCORDANCE WITH STANDARD DRAWING TC-3.

6. POST MOUNTED SIGNS IN RURAL AREAS SHALL BE CONSTRUCTED WITH THE NEAR EDGE OF THE SIGN FROM 6 TO 12 FEET FROM THE PAVEMENT EDGE. SIGNS IN URBAN AREAS AND BARRICADE MOUNTED SIGNS SHALL BE MOUNTED A MINIMUM OF 2 FEET FROM THE PAVEMENT EDGE.

7. ALL POST AND BARRICADE MOUNTED SIGNS MOUNTED IN URBAN AREAS SHALL BE MOUNTED A MINIMUM DISTANCE OF 7' FROM THE BOTTOM OF THE SIGN TO THE ROADWAY SURFACE. ALL POST AND BARRICADE MOUNTED SIGNS MOUNTED IN RURAL AREAS SHALL BE MOUNTED A MINIMUM DISTANCE OF 7' FROM THE BOTTOM OF THE SIGN TO THE ROADWAY SURFACE, EXCEPT A MINIMUM OF 6' SHALL BE USED WHEN MOUNTING AN ADVISORY SIGN BELOW A WARNING SIGN. TEMPORARY SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS FOR INTERMEDIATE TERM STATIONARY WORK CONDITIONS. THE SIGNS MINIMUM MOUNTING HEIGHT SHALL BE 5'. RETROREFLECTIVE DEVICES SHALL BE USED. TEMPORARY SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS FOR SHORT-TERM, SHORT DURATION, AND MOBILE CONDITIONS. THEY SHALL BE NO LESS THAN ONE (1) FOOT ABOVE THE TRAVELED WAY. LONG-TERM STATIONARY SIGNS SHALL BE DIRECT BURIED IN SOIL, UNLESS CONDITIONS NECESSITATE THE USE OF PORTABLE SIGNS, OR AS APPROVED BY THE ENGINEER. CONCRETE PADS, CONCRETE OR ROCK BALLAST, OR OTHER SOLID MATERIALS SHALL NOT BE UTILIZED WITH PORTABLE SIGN SUPPORTS.

8. FLAGGERS SHALL USE REFLECTORIZED STOP-SLOW PADDLES. FLAGS MAY BE USED ONLY FOR EMERGENCY SITUATIONS.

9. MOST OF THE SIGNS SHOWN ARE ORIENTED TO THE RIGHT. HOWEVER, THIS DOES NOT PRECLUDE THE USE OF MIRROR IMAGES OF THESE SIGNS WHERE THE REVERSE ORIENTATION MIGHT BETTER CONVEY TO MOTORISTS THE PROPER DIRECTION OF MOVEMENT.

10. R55-1 SIGNS SHALL BE PLACED AT LEAST 1500' BUT NOT MORE THAN 1 MILE IN ADVANCE OF THE WORK ZONE. IF A SPEED LIMIT REDUCTION IS IN EFFECT, THE SIGN SHALL BE PLACED A MINIMUM OF 500' IN ADVANCE OF THE "REDUCED SPEED AHEAD" SIGN.

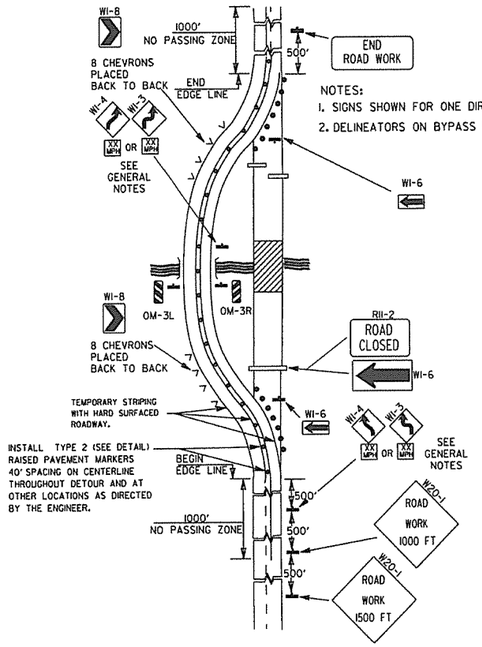
• NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE REQUIREMENTS SHOWN IN NOTES 4 & 5, BUT MEET THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH), WILL BE ACCEPTED. COMPLIANCE WITH THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY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

DATE	REVISION	FILMED
12-15-11	REVISED W24-1	
11-17-10	DELETED W8-9a & ADDED W8-9	
10-15-09	ADDED REFERENCE TO MASH & ADDED SIGN W24-1	
4-17-08	REVISED SIGN DESIGNATIONS	
11-18-04	REVISED NOTES	
10-9-03	REVISED NOTE 1	
11-16-01	REVISED NOTE 7	
9-28-00	REVISED NOTE	
11-18-98	ADDED NOTE	
6-26-97	REVISED NOTE 5	
4-03-97	REVISED NOTE 5	
10-18-96	ADDED CONTROLLED ACCESS HWY. SIGN & TO NOTE 7	
10-12-95	ADDED R55-1	
6-8-95	REVISED TO CORRECT SIGN ILLUSTRATIONS	6-8-95
2-2-95	REVISED PER PART VI, MUTCD SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	

ARKANSAS STATE HIGHWAY COMMISSION

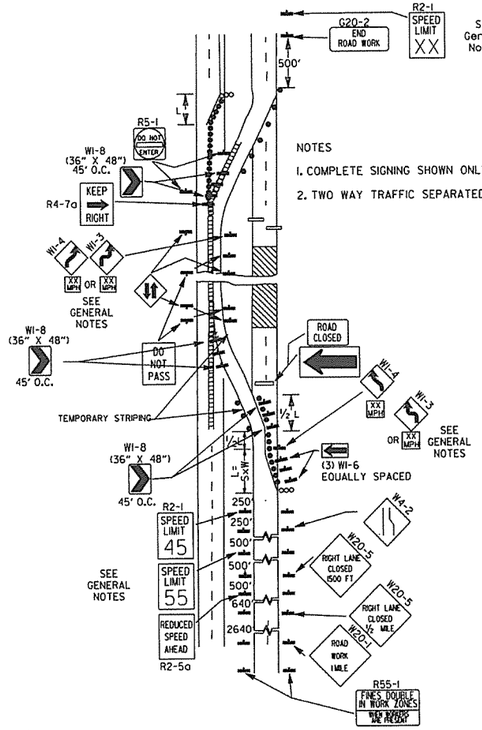
STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-1



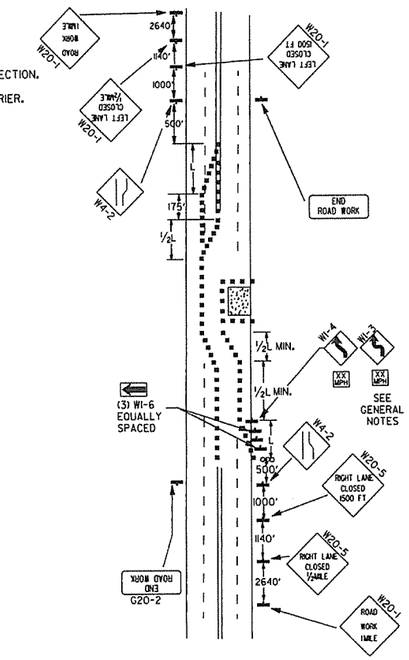
NOTES:
1. SIGNS SHOWN FOR ONE DIRECTION OF TRAVEL ONLY.
2. DELINEATORS ON BYPASS WHERE NEEDED.

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

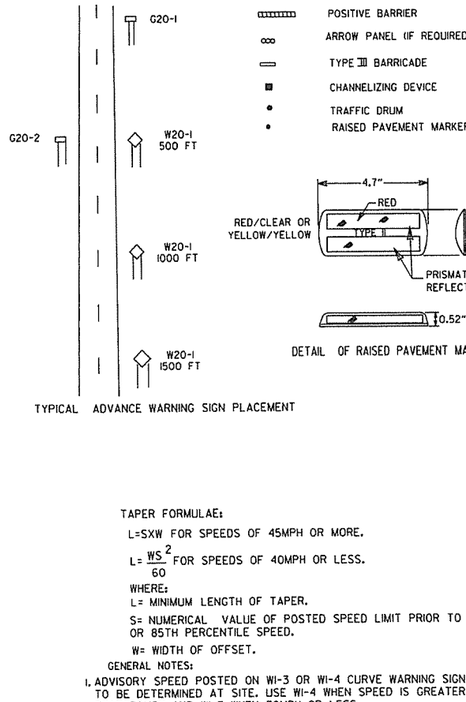


NOTES
1. COMPLETE SIGNING SHOWN ONLY IN CROSSOVER DIRECTION.
2. TWO WAY TRAFFIC SEPARATED WITH POSITIVE BARRIER.

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

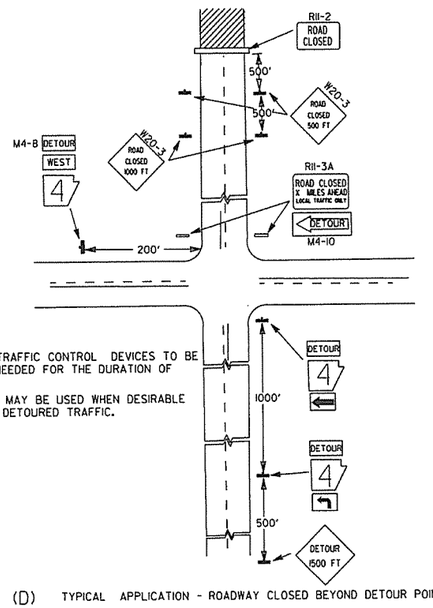


(C) TYPICAL APPLICATION - 4-LANE UNDIVIDED ROADWAY WHERE HALF OF THE ROADWAY IS CLOSED.



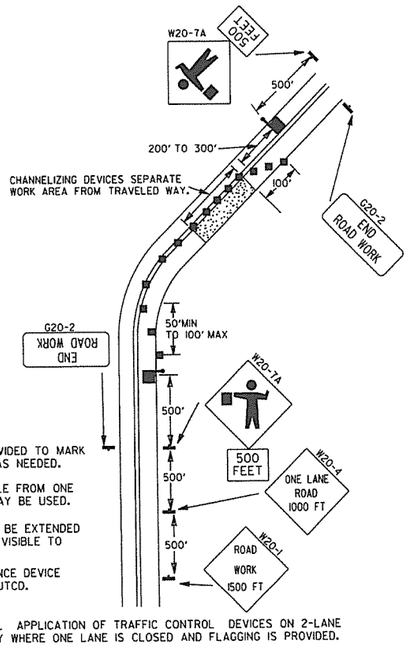
DETAIL OF RAISED PAVEMENT MARKERS

TYPICAL ADVANCE WARNING SIGN PLACEMENT



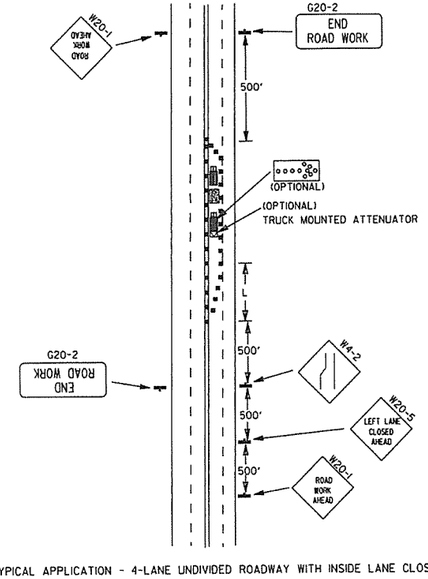
NOTES:
1. REGULATORY TRAFFIC CONTROL DEVICES TO BE MODIFIED AS NEEDED FOR THE DURATION OF THE DETOUR.
2. STREET NAMES MAY BE USED WHEN DESIRABLE FOR DIRECTING DETOURED TRAFFIC.

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



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

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



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

TAPER FORMULAE:

L=SXW FOR SPEEDS OF 45MPH OR MORE.

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

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

GENERAL NOTES:

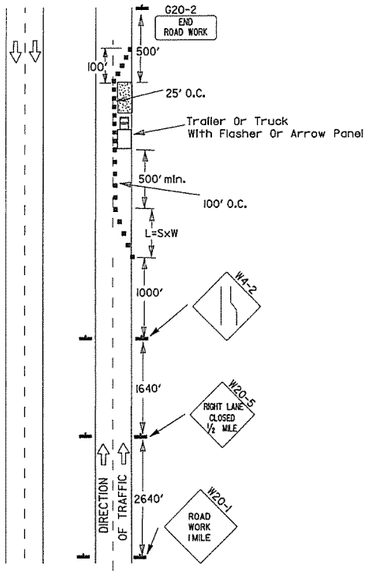
1. ADVISORY SPEED POSTED ON WI-3 OR WI-4 CURVE WARNING SIGNS TO BE DETERMINED AT SITE. USE WI-4 WHEN SPEED IS GREATER THAN 30MPH AND WI-3 WHEN 30MPH OR LESS.
2. WHEN THE EXISTING SPEED LIMIT IS 55MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 45MPH, THE R2-1(55) SHALL BE OMITTED AND THE R2-5A SHALL BE INSTALLED 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.

DATE	REVISION	FILMED
9-12-13	REVISED DETAIL OF RAISED PAVEMENT MARKERS	
3-11-10	ADDED (AFAD)	
11-20-08	REVISED SIGN DESIGNATIONS	
11-18-04	ADDED GENERAL NOTE	
10-18-96	ADDED R55-1	
4-26-96	CORRECTED (a) BEHIND G20-2	
6-8-95	CORRECTED SIGN IDENT. ON W1-4A	6-8-95
2-2-95	REVISED PER PART VI, MUTCD, SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	

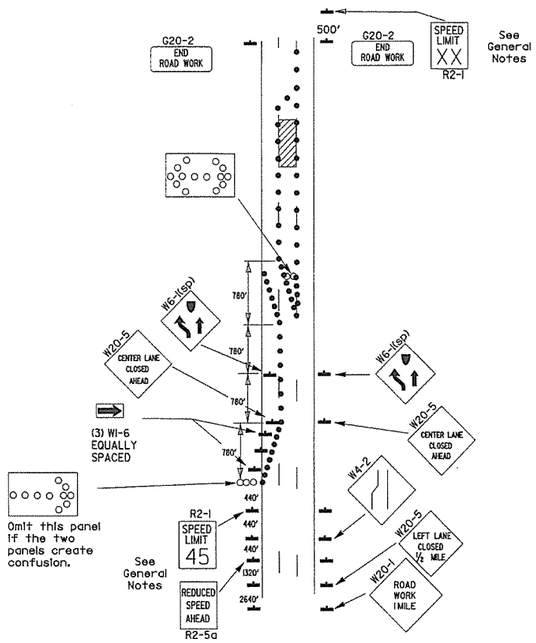
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

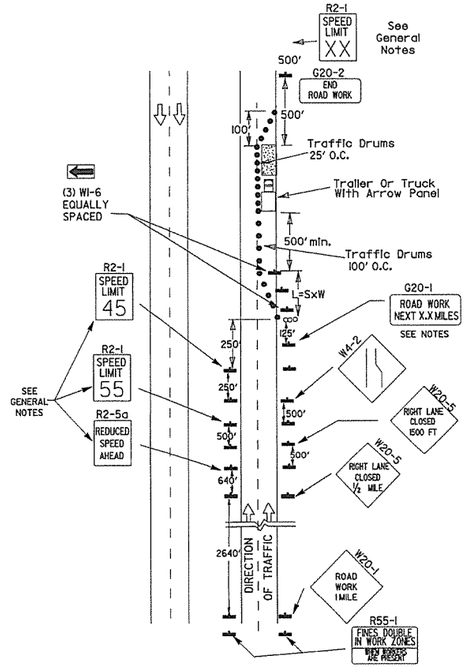
STANDARD DRAWING TC-2



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



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



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

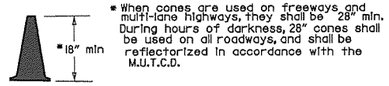
KEY:

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

GENERAL NOTES:

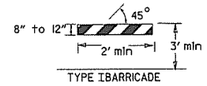
1. A speed limit reduction may be implemented ONLY when designated in the plan or when recommended by the Roadway Design Division.
2. When the existing speed limit is 55mph and the plans require a speed limit of 45mph, the R2-1(55) shall be omitted and the R2-5A shall be installed at that location. Additional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



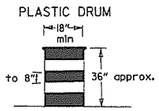
* When cones are used on freeways and multi-lane highways, they shall be 28" min. During hours of darkness, 28" cones shall be used on all roadways, and shall be reflectorized in accordance with the M.U.T.C.D.

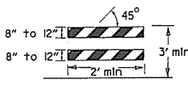
CONES



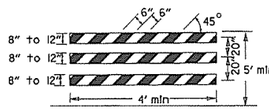
TYPE I BARRICADE

PLASTIC DRUM



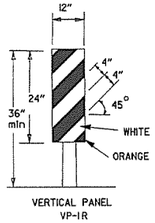


TYPE II BARRICADE



TYPE III BARRICADE

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



VERTICAL PANEL
VP-1R

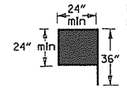
TRAFFIC CONTROL DEVICES FOR VERTICAL PAVEMENT DIFFERENTIALS

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.

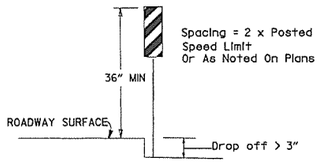
When the shoulder area is used as part of the traveled lane and there is insufficient width to place drums on the remaining shoulder width, then vertical panels shall be used.

FLAG

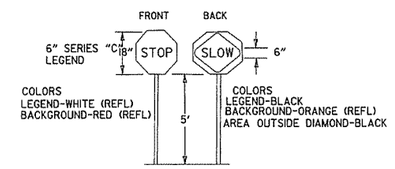


Flag shall be of good grade red material

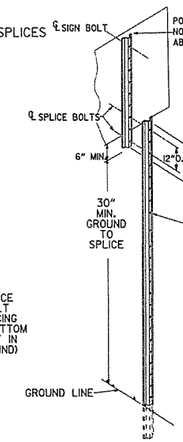
VERTICAL PANEL PLACEMENT



STOP SLOW PADDLE



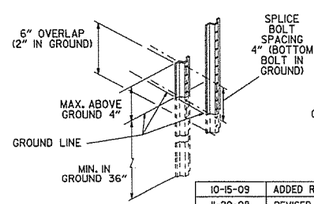
DETAIL OF SPLICES

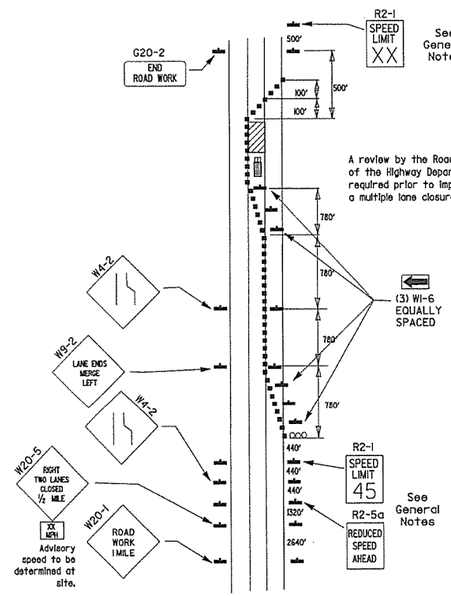


NOTES: USE SPLICES ONLY WHEN NECESSARY FOR INSTALLATION. TYPICAL INSTALLATION SHOULD HAVE NO SPLICES (SEE STD. DRAWING NO. SHS-2)

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

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





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

DATE	REVISION	FILMED
10-15-09	ADDED REFERENCE TO MASH	
11-20-08	REVISED SIGN DESIGNATIONS	
11-18-04	ADDED NOTE	
10-1-98	ADDED NOTE	
4-03-97	ADDED (SP) TO W6-1 & REVISED TRAFFIC CONTROL DEVICES NOTE	
10-18-96	ADDED R55-1	
10-12-95	MOVED UPPER SPLICE	
6-8-95	REVISED SPLICE DETAIL, TEXT	6-8-95
2-2-95	REVISED PER PART VI, MUTCD, SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	

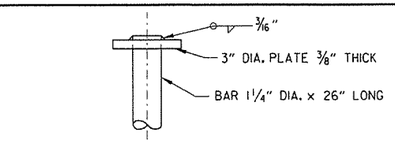
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

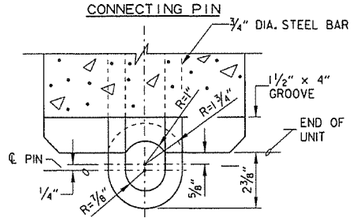
STANDARD DRAWING TC-3

REINFORCING BAR TABLE PER BARRIER UNIT

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

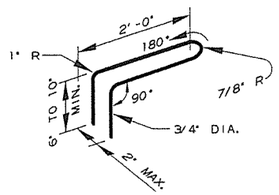


CONNECTING PIN

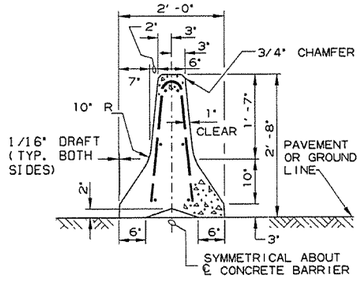


SECTION E-E

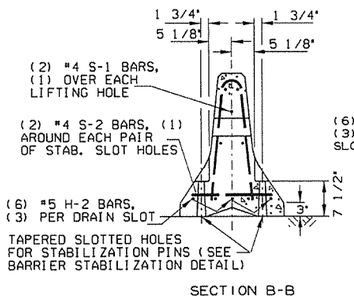
CONNECTION DETAILS



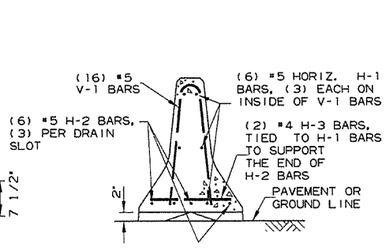
CONNECTION LOOP



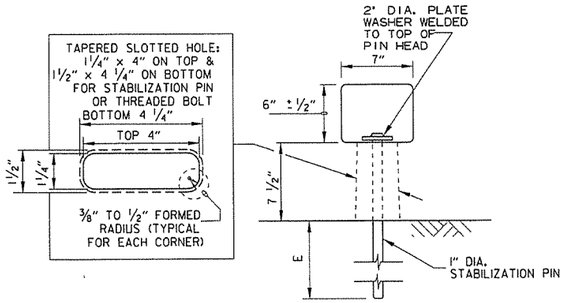
SECTION A-A



SECTION B-B



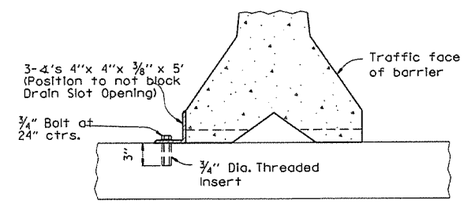
SECTION C-C



BARRIER STABILIZATION DETAIL

ROADWAY SECTION

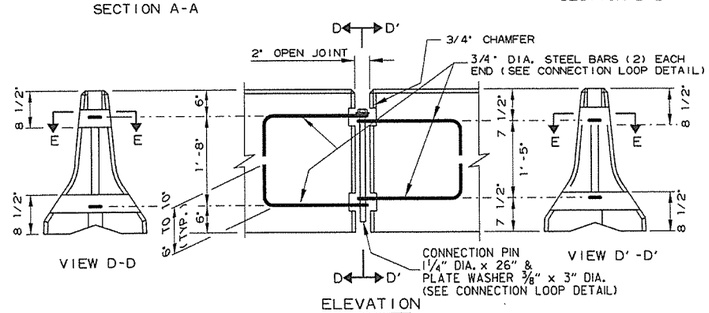
(E) 4" - Concrete Pavement
8" - Asphalt Pavement
12" - Shoulder Areas



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

BARRIER STABILIZATION DETAIL

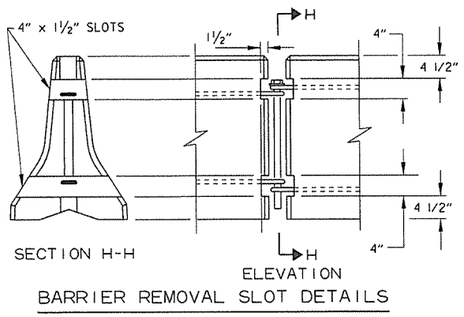
BRIDGE DECKS



VIEW D-D

VIEW D'-D'

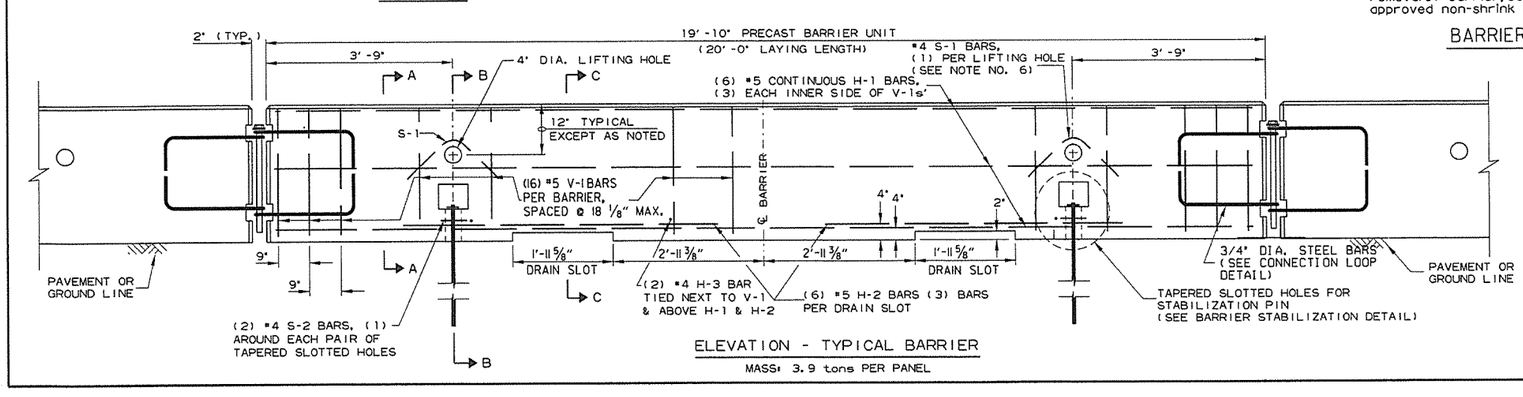
ELEVATION



SECTION H-H

ELEVATION

BARRIER REMOVAL SLOT DETAILS



ELEVATION - TYPICAL BARRIER

MASS: 3.9 tons PER PANEL

General Notes

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

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

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

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

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

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

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

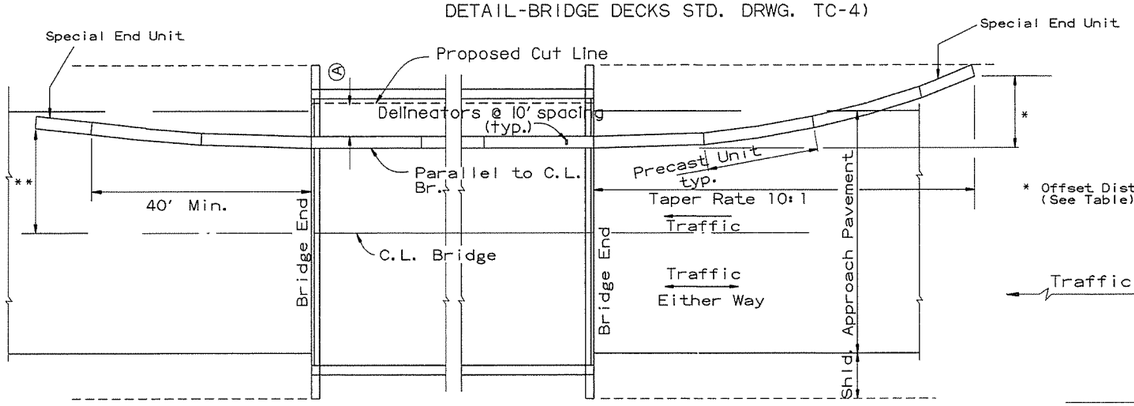
DATE	REVISION	FILMED
2-27-14	REVISED BARRIER STABILIZATION DETAIL	
10-15-09	ADDED REFERENCE TO MASH	
8-5-09	REV. NOTE 3 CONCERNING DRAIN SLOTS	
11-29-07	REVISED NOTE 3	
5-25-06	DELETED GENERAL NOTE 7	
11-18-04	REVISED BARRIER STABILIZATION DETAIL BRIDGE DECKS	
4-10-03	REVISED GENERAL NOTE 2	
8-22-02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

ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION - TEMPORARY PRECAST BARRIER

STANDARD DRAWING TC-4

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

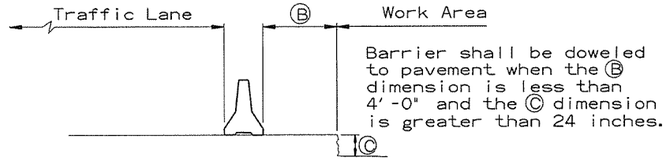


BARRIER PLACEMENT ALONG BRIDGE WITH OFFSET

No Scale

** Offset Distance for Two Way Traffic Only

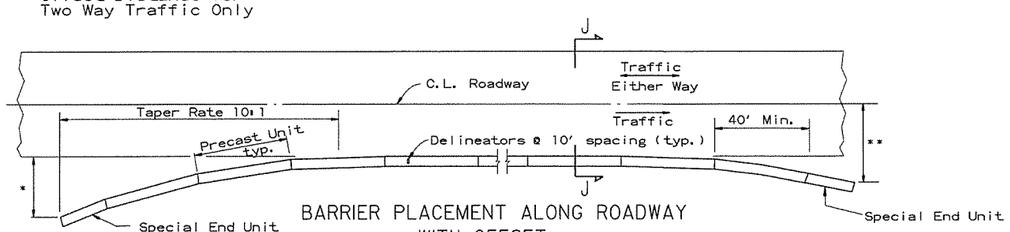
* Offset Distance (See Table)



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

SECTION J-J

No Scale



BARRIER PLACEMENT ALONG ROADWAY WITH OFFSET

No Scale

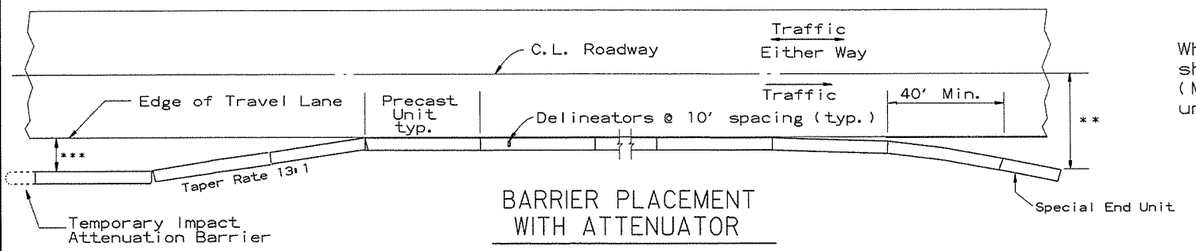
** Offset Distance For Two Way Traffic Only

* Offset Distance (See Table)

Offset Distance Table

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

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

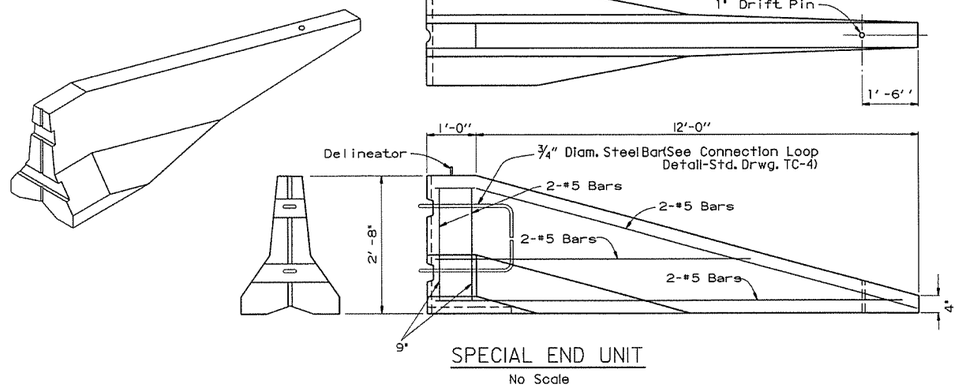


BARRIER PLACEMENT WITH ATTENUATOR

No Scale

** 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	

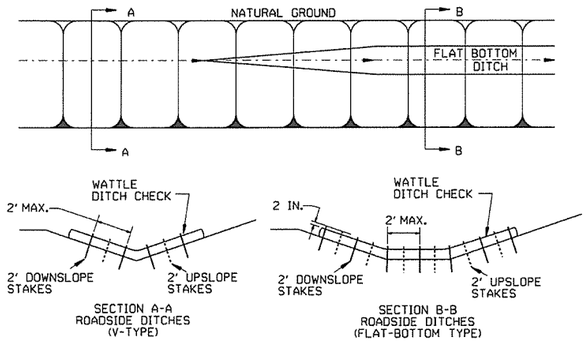
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION - TEMPORARY PRECAST BARRIER

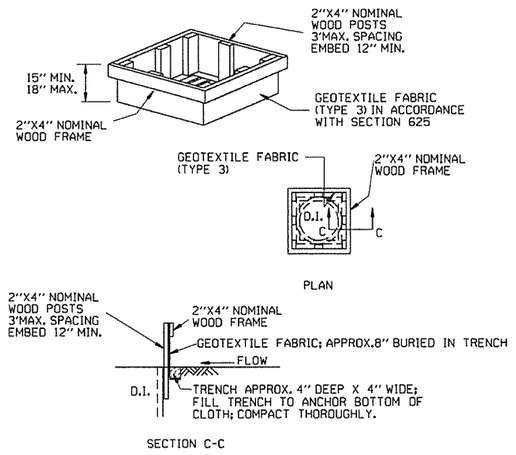
STANDARD DRAWING TC-5

GENERAL NOTES

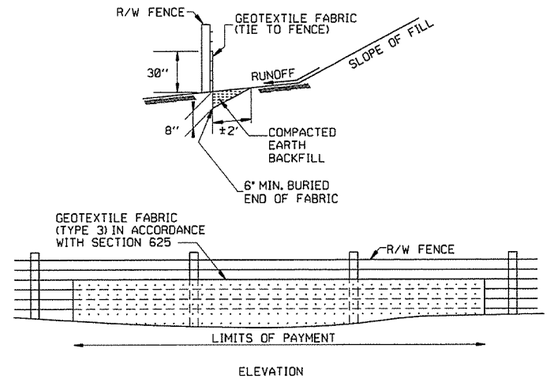
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.



WATTLE DITCH CHECK (E-1)



DROP INLET SILT FENCE (E-7)



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

GENERAL NOTES

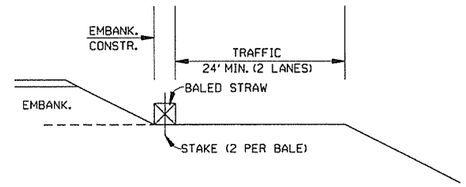
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST, OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

GENERAL NOTES

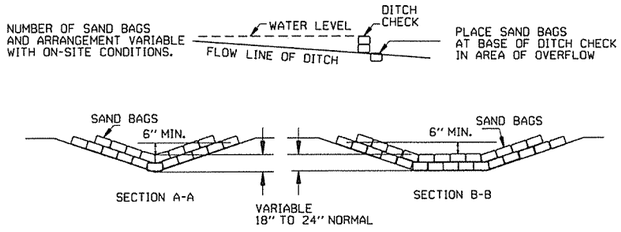
1. STRAW BALES SHALL BE INSTALLED SO THAT THE BINDINGS ARE ORIENTED AROUND THE SIDES RATHER THAN ALONG THE TOPS AND BOTTOMS OF THE BALES. THE BALES SHALL BE A MINIMUM OF 30 INCHES IN LENGTH.

2. NO GAPS SHALL BE LEFT BETWEEN BALES.

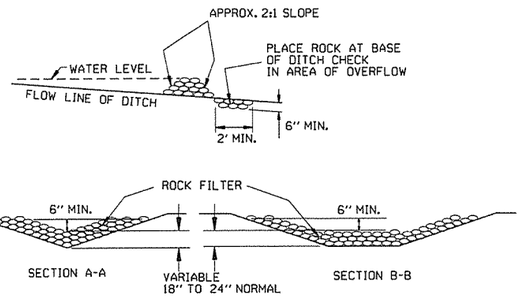
3. BALED STRAW FILTER BARRIERS COMPLETED AND ACCEPTED WILL BE MEASURED BY THE BALE IN PLACE AS AUTHORIZED BY THE ENGINEER AND WILL BE PAID FOR AT THE CONTRACT UNIT PRICE BID PER BALE FOR BALED STRAW DITCH CHECKS.



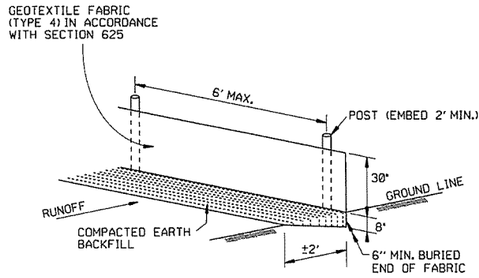
BALED STRAW FILTER BARRIER (E-2)



SAND BAG DITCH CHECK (E-5)



ROCK DITCH CHECK (E-6)



SILT FENCE (E-11)

GENERAL NOTES

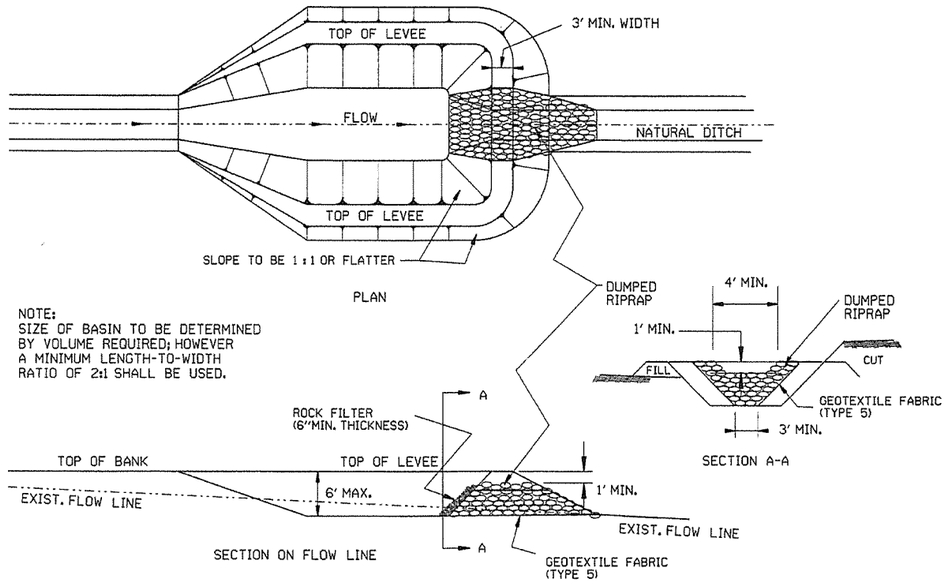
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

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

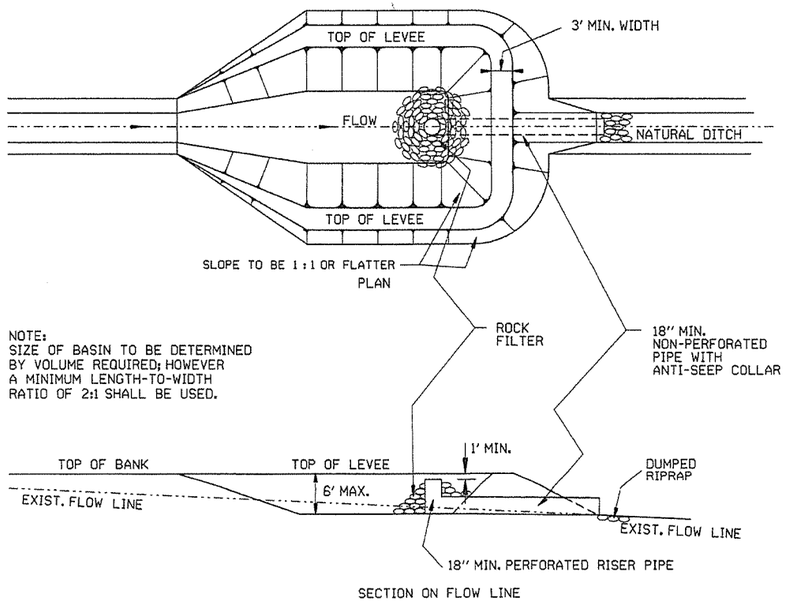
ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

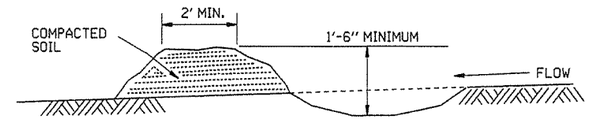
STANDARD DRAWING TEC-1



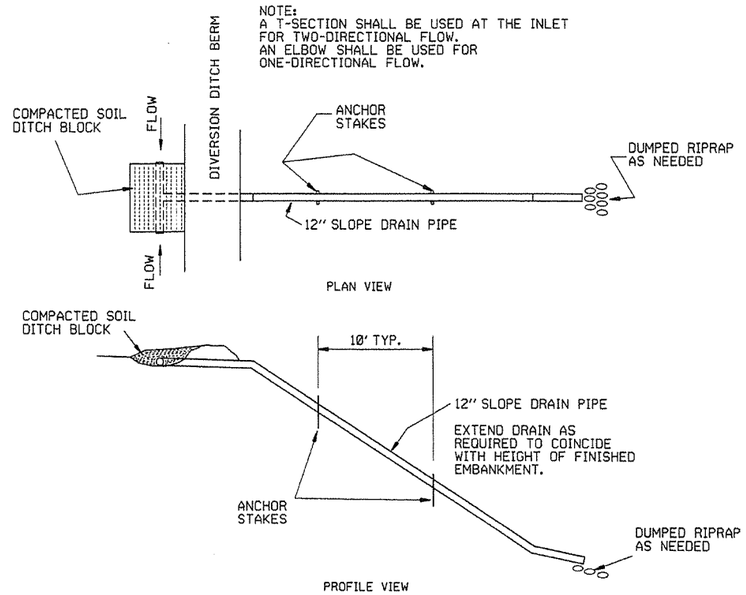
SEDIMENT BASIN WITH RIPRAP OUTLET (E-9)



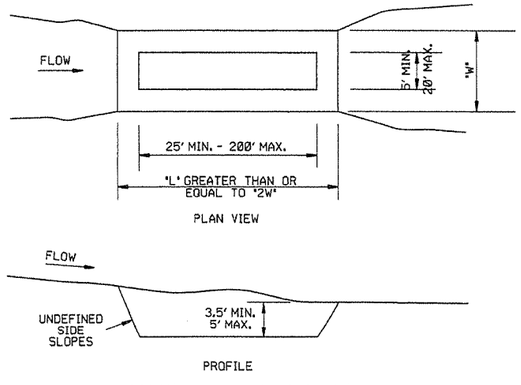
SEDIMENT BASIN WITH PIPE OUTLET (E-10)



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

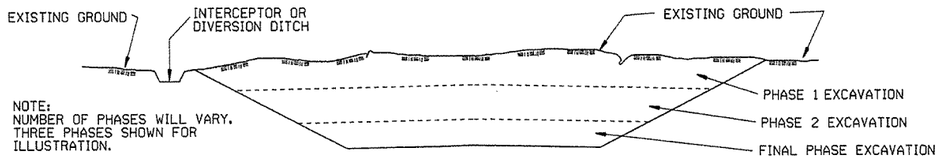
STANDARD DRAWING TEC-2

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



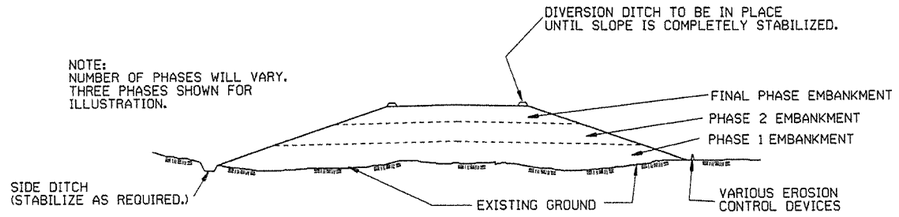
GENERAL NOTE

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

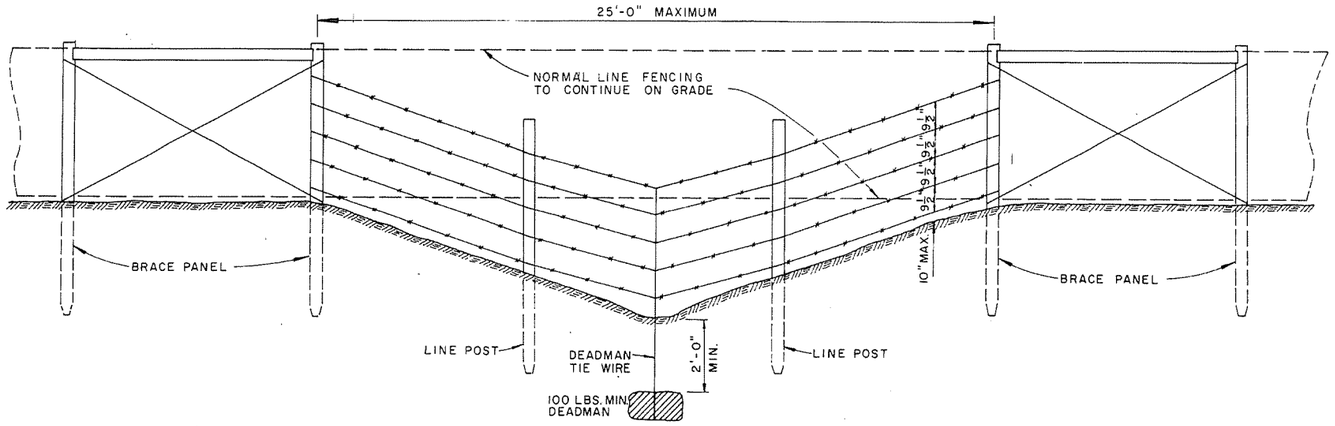
1. CONSTRUCT DIVERSION DITCHES, DITCH CHECKS, SEDIMENT BASINS, SILT FENCES, OR OTHER EROSION CONTROL DEVICES AS SPECIFIED.
2. PLACE PHASE 1 EMBANKMENT WITH PERMANENT OR TEMPORARY SEEDING. PROVIDE DIVERSION DITCHES AND SLOPE DRAINS IF EMBANKMENT CONSTRUCTION IS TO BE TEMPORARILY ABANDONED FOR A PERIOD 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.

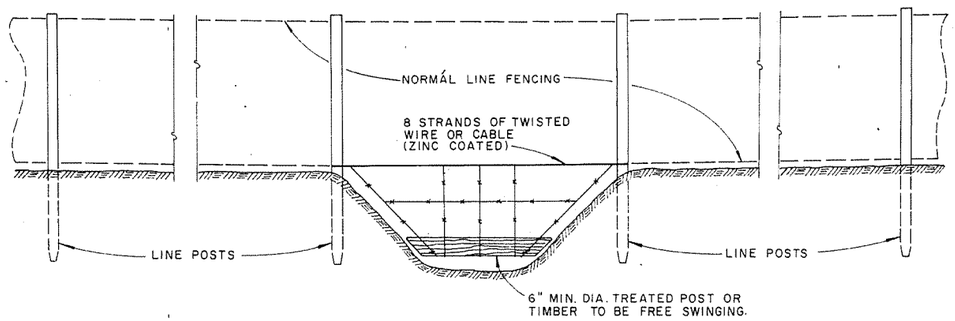
DATE	REVISION	FILMED
11-03-94	CORRECTED SPELLING	
6-2-94	Drawn & Issued	6-2-94

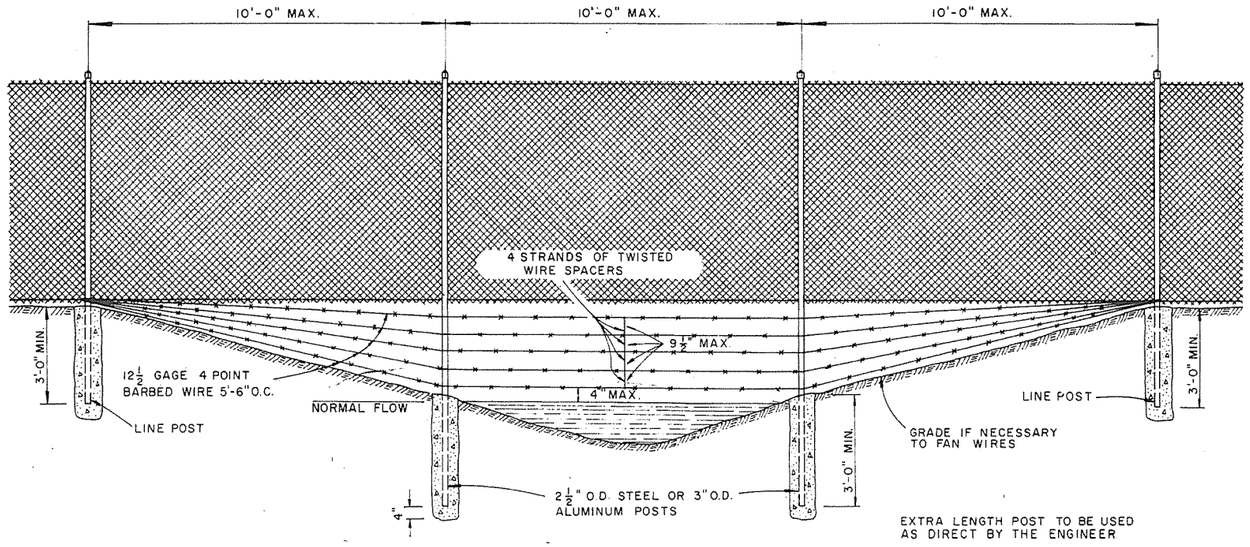
ARKANSAS STATE HIGHWAY COMMISSION

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 FILM'D.
4-20-79	REVISED TOP RAIL & TENSION WIRE	696-4-20-79
10-2-72	REVISED & REDRAWN	529-10-2-72

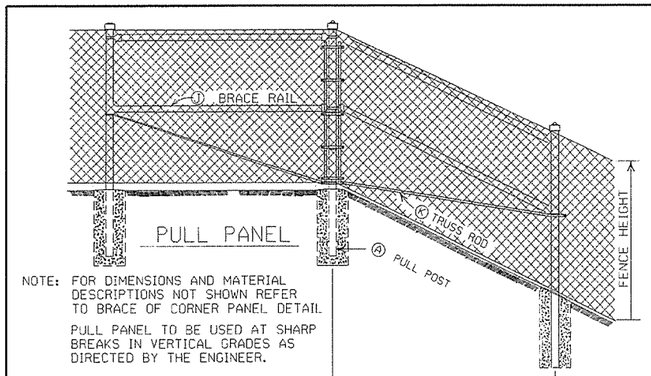
ARKANSAS STATE HIGHWAY COMMISSION

WIRE FENCE WATER GAPS

STANDARD DRAWING

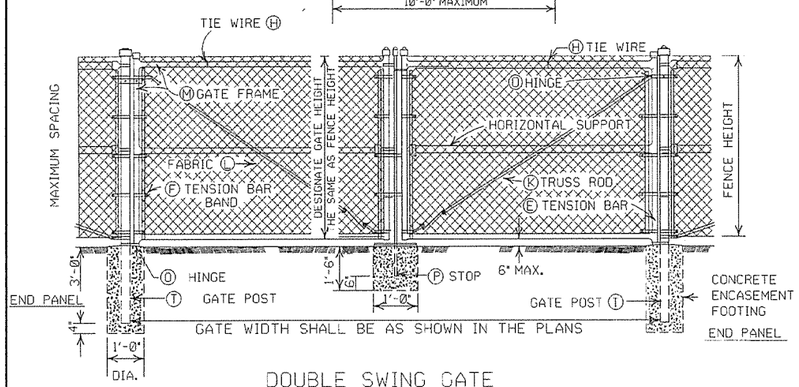
WF-2

1M—11-71—67001—PPASC



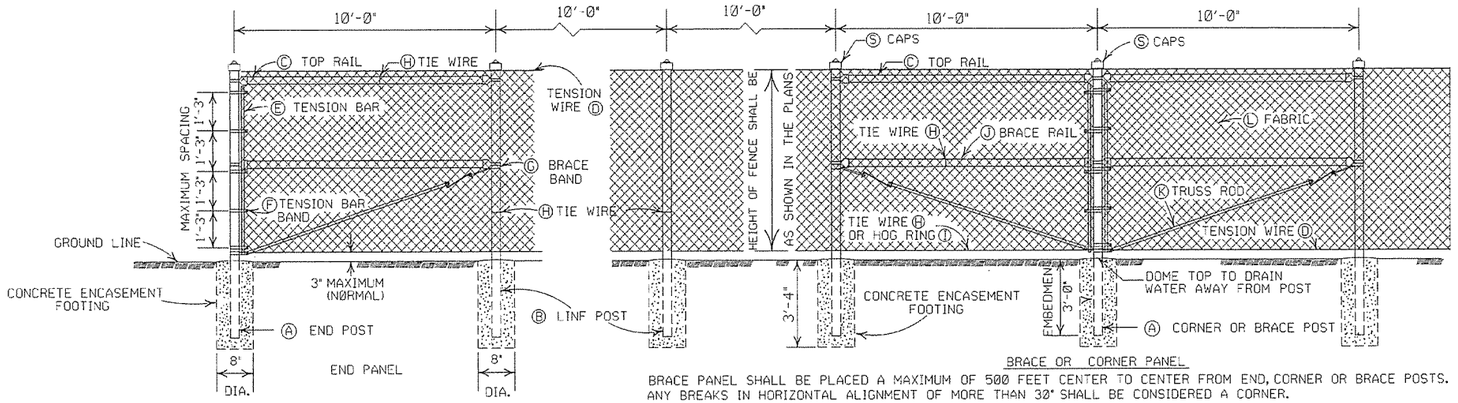
NOTE: FOR DIMENSIONS AND MATERIAL DESCRIPTIONS NOT SHOWN REFER TO BRACE OF CORNER PANEL DETAIL.

PULL PANEL TO BE USED AT SHARP BREAKS IN VERTICAL GRADES AS DIRECTED BY THE ENGINEER.



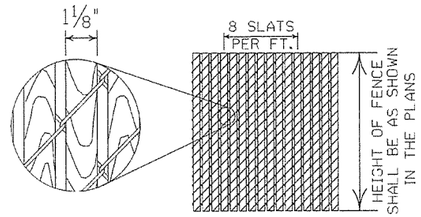
DOUBLE SWING GATE

POST SPACING DETAIL



BRACE OR CORNER PANEL

BRACE PANEL SHALL BE PLACED A MAXIMUM OF 500 FEET CENTER TO CENTER FROM END, CORNER OR BRACE POSTS. ANY BREAKS IN HORIZONTAL ALIGNMENT OF MORE THAN 30° SHALL BE CONSIDERED A CORNER.



1⅛" X ¼" REDWOOD SLATS(LENGTH TO MATCH HEIGHT OF FENCE)

DETAIL OF REDWOOD SLAT INSTALLATION

(WHERE APPLICABLE)

GENERAL NOTES:

(C) CHAIN LINK FENCE BEING PLACED ON PRIVATE PROPERTY SHALL INCLUDE A TOP RAIL. ALL LABOR, MATERIALS, EQUIPMENT, TOOLS, AND INCIDENTALS NECESSARY TO COMPLETE THE WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE BID PER LIN. FT. OF CHAIN LINK FENCE.

(D) TENSION WIRE: SHALL BE SECURED TO ALL TERMINAL, PULL, BRACE OR CORNER POSTS WITH TENSION BAR BANDS.

(J) BRACE RAIL: BRACE RAILS SHALL BE PROVIDED AT ALL TERMINAL, PULL, BRACE OR CORNER POSTS HALFWAY BETWEEN THE TOP RAIL AND GROUND LEVEL WHEN TOPRAIL IS SPECIFIED AND TWELVE INCHES (12") DOWN FROM TOP OF FABRIC WHEN TOP TENSION WIRE IS SPECIFIED. BRACE RAIL SHALL EXTEND FROM SUCH POST TO THE FIRST ADJACENT LINE POST.

(L) FABRIC: SHALL CONFORM TO THE SPECIFICATIONS.

(M) GATE FRAMES: SHALL BE CONSTRUCTED OF TUBULAR MEMBERS ASSEMBLED BY USE OF HEAVY PRESSED STEEL, MALLEABLE FITTINGS OR BY WELDING. ALL GATES SHALL HAVE ONE HORIZONTAL SUPPORT EXTENDING THE WIDTH OF THE GATE AT THE MIDPOINTS OF VERTICAL FRAME MEMBERS. THE COMPLETE FRAME SHALL BE RIGID AND HAVE AMPLE STRENGTH TO BE FREE FROM SAG AND TWIST.

(O) HINGES: SHALL BE OF HEAVY PATTERN, OF ADEQUATE STRENGTH FOR GATE, AND WITH LARGE BEARING SURFACES FOR CLAMPING IN POSITION. THE HINGE SHALL BE OF THE PROPER TYPE TO ALLOW FOR THE DESIGNATED DEGREE OF SWING. THE HINGE SHALL NOT TWIST OR TURN UNDER THE ACTION OF THE GATE. THE GATES SHALL BE CAPABLE OF BEING OPENED AND CLOSED EASILY BY ONE PERSON.

(P) LATCHES AND STOPS: SHALL BE PROVIDED FOR ALL GATES. GATES SHALL HAVE A DROP BAR LATCH. LATCHES SHALL BE ARRANGED FOR LOCKING. THE STOP FOR DROP BAR LATCHES SHALL BE SET IN CONCRETE AND ENGAGE THE PLUNGER OF THE BAR LATCH.

(S) CAPS: ALL POSTS, EXCEPT ROLL FORMED POSTS AND "T" POSTS SHALL BE CAPPED OVER THE EXTERIOR OF THE POST, AND SHALL CONFORM TO ASTM F626.

CONCRETE REQUIRED FOR THE EMBEDMENT OF ALL POSTS SHALL NOT BE PAID FOR DIRECTLY BUT SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID FOR CHAIN LINK FENCE.

POSTS SHALL BE SPACED EQUIDISTANT ON A MAXIMUM OF 10' CENTERS.

EXCAVATION FOR POSTS: IN OTHER THAN ROCK SHALL BE OF THE DIMENSIONS INDICATED. IF ROCK IS ENCOUNTERED BEFORE REACHING THE REQUIRED DEPTH, THE EXCAVATION SHALL BE CONTINUED TO THE DEPTH INDICATED OR 1'-6" INTO THE ROCK, WHICHEVER IS LESS, AND SHALL BE A MINIMUM OF 8 INCHES IN DIAMETER.

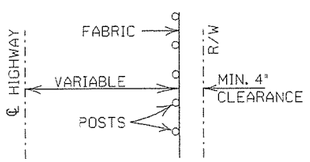
HEIGHT OF FENCE FABRIC	(A) END, PULL CORNER OR BRACE POST	(B) LINE POSTS SIZE	(B) LINE POSTS TIE SPACING	(C) TOP RAIL SIZE	(C) TOP RAIL TIE SPACING	(C) TOP RAIL MIN. LENGTH	(D) TENSION WIRE SIZE	(D) TENSION WIRE TIE SPACING	(E) TENSION BAR SIZE	(E) TENSION BAR LENGTH	(F) TENSION BAR BAND SIZE	(F) TENSION BAR BAND BOLT SIZE	(F) TENSION BAR BAND SPACING	(G) BRACE BAND SIZE	(G) BRACE BAND BOLT SIZE
6' AND LESS	2½" O.D.	2" O.D.	1 TIE EVERY 1'-2" OF FABRIC HEIGHT	1⅝" O.D.	1 TIE EVERY 2'-0"	10'-0"	7 GAUGE COIL SPRING WIRE	1 TIE EVERY 1'-0"	MIN. OF ⅜"X ¾"	MIN. OF 2" LESS THAN FABRIC HEIGHT	MIN. OF ¾" X 0.074	⅝"X 1¼"	1 BAND AT TOP AND BOTTOM 15" MAX. INTERVAL BETWEEN BANDS	MIN. OF ¾" X 0.105	⅝"X 1¼"
OVER 6' TO 12' INCL.	3 "O.D.	2½" O.D.													

HEIGHT OF FENCE FABRIC	(H) TIE WIRE	(I) HOG RING	(J) BRACE RAIL SIZE	(J) BRACE RAIL TIE SPACING	(K) TRUSS ROD	(L) FABRIC SIZE	(L) FABRIC MESH	(L) FABRIC SELVAGE	(M) GATE FRAME SIZE	(M) GATE FRAME TIE SPACING	(N) HORIZONTAL SUPPORT SIZE	(N) HORIZONTAL SUPPORT TIE SPACING	(O) HINGE TYPE 180° SWING	(T) GATE POST GATE WIDTH 12' AND LESS	(T) GATE POST GATE WIDTH OVER 12' TO 24' INCL.
6' AND LESS	MIN. OF 12 GA. STEEL OR 9 GA. ALUM.	SAME GAUGE AS FABRIC	1⅝" O.D.	1 TIE EVERY 2'-0"	MIN. OF ⅝" ROUND WITH TIGHTNERS AND FITTINGS	9 GA.	2"	KNUCK -ING AND/OR TWIST -ING	2" O.D.	1 TIE EVERY 1'-0"	2" O.D.	1 TIE EVERY 1'-0"	OFFSET	3" O.D.	4" O.D.
OVER 6' TO 12' INCL.														4" O.D.	

NOTE: POST SIZES SHOWN ARE FOR STEEL. WHERE ALUMINUM IS PROVIDED, LINE POSTS SHALL HAVE AN OUT SIDE DIAMETER OF 2½" FOR FENCE HEIGHT OF 6' AND LESS, AN OUTSIDE DIAMETER OF 3" FOR FENCE HEIGHT OF 6' TO 12'. END, PULL, CORNER OR BRACE POSTS SHALL HAVE AN OUTSIDE DIAMETER OF 3" FOR FENCE HEIGHT OF 6' AND LESS; AN OUTSIDE DIAMETER OF 3½" FOR FENCE HEIGHTS OF 6' TO 12'. GATE POSTS WHERE GATE WIDTH IS 12' AND LESS SHALL HAVE AN OUTSIDE DIAMETER OF 3½" FOR FENCE HEIGHT OF 6' AND LESS. ALUMINUM TENSION WIRE SHALL BE 0.192" IN DIAMETER. MINIMUM THICKNESS OF MATERIAL FROM WHICH EXPANSION SLEEVES SHALL BE MADE WILL BE 0.078". POSTS AND RAILS MAY HAVE ANY CROSS-SECTIONAL SHAPE THAT WILL MEET THE SPECIFICATIONS.

OTHER DETAILS APPLY TO BOTH STEEL AND ALUMINUM FENCE.

ALL MISCELLANEOUS FITTINGS AND HARDWARE SHALL MEET THE REQUIREMENTS AND PRODUCTION TOLERANCES AS SET FORTH IN THE SPECIFICATIONS. 9 GAUGE ALUMINUM WIRE SHALL BE ACCEPTABLE FOR TIEING FABRIC TO TUBULAR AND ROLL FORMED MEMBERS OF STEEL FENCE.



INSTALLATION MAY BE MODIFIED AS SHOWN IN THE PLANS

TYPICAL INSTALLATION DIAGRAM

POSTS AND RAILS

SIZE O.D.	GRADE 1 AND ALUMINUM ALLOY O.D. INCHES	WALL THICKNESS	LBS. PER LINEAR FT. STEEL	LBS. PER LINEAR FT. ALUMINUM	GRADE 2 O.D. INCHES	WALL THICKNESS	LBS. PER LINEAR FT.
1⅝	1.660	0.140	2.27	0.786	1.660	0.111	1.84
2	1.900	0.145	2.72	0.940	1.900	0.120	2.28
2½	2.375	0.154	3.65	1.264	2.375	0.130	3.11
3	2.875	0.203	5.79	2.004	2.875	0.162	4.64
3½	3.500	0.216	7.58	2.621	3.500	0.160	5.71
4	4.000	0.226	9.11	3.151	4.000	0.160	6.56

TOLERANCES ON DIMENSIONS AND WEIGHTS ACCORDING TO AASHTO M 181

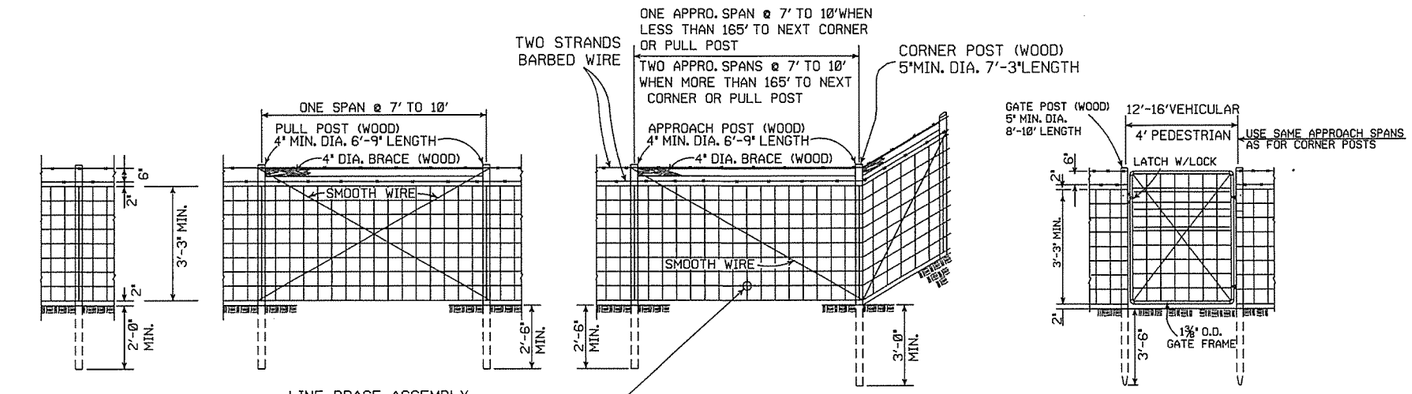
DATE	REVISION	FILMED
11-17-10	REVISED TRUSS ROD	
12-10-09	REVISED POSTS & RAILS TABLE	
5-21-09	ADDED TABLE & GEN. NOTE (C)	
8-22-02	REVISED NOTES, REMOVED TABLE, & REMOVED FENCE ALTERNATE	
4-3-97	REVISED BRACE RAIL NOTE	
10-18-96	REVISED AASHTO & ASTM REF.	
11-3-94	REVISED NOTE (L)	
10-1-92	DELETED ALTERNATE POST	10-1-92
8-15-91	DELETED ROLL FORMED POST DETAIL & ADDED NOTE	8-15-91 8-15-91
11-30-89	DELETED CLASS CONCRETE	11-30 89
11-17-88	REVISED O.D. SIZES	668-11-17-88
10-30-87	GENERAL REVISIONS	548-10-30-87
4-20-79	REVISED TOP RAIL & TENSION WIRE	695-4-20-79
10-2-72	REVISED AND REDRAWN	530-10-2-72

ARKANSAS STATE HIGHWAY COMMISSION

CHAIN LINK FENCE

STANDARD DRAWING WF-3

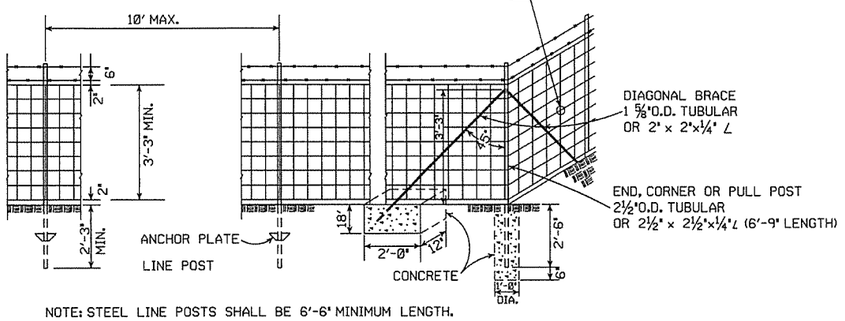
TYPE C FENCE (WOOD POSTS)



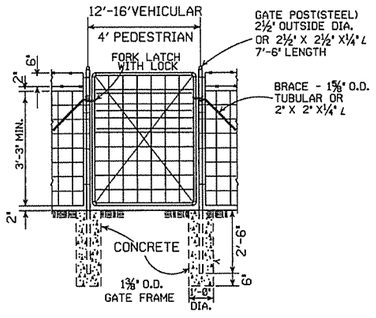
LINE POST
3" MIN. DIA. 6'-3" LENGTH
MAX. SPACING TO BE 10'-0"

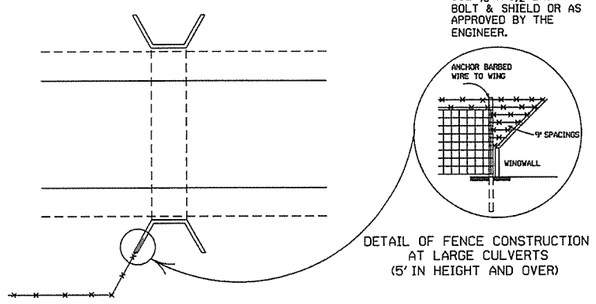
LINE BRACE ASSEMBLY
MAX. SPACING TO BE 330'

OTHER APPROVED TIES WILL BE PERMITTED



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





NOTE: USE ⅜" X 1½" LAG BOLT & SHIELD OR AS APPROVED BY THE ENGINEER.

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

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.

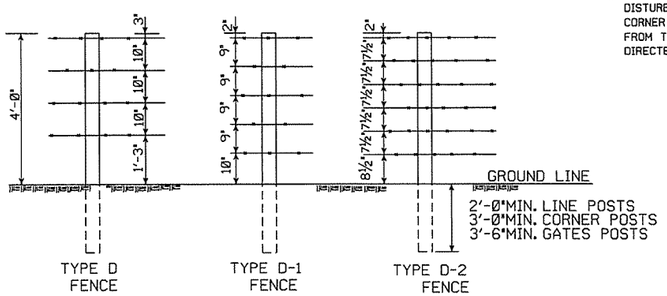
SPLICE FOR BARBED WIRE BETWEEN PULL POST ASSEMBLY SHALL BE BY THE "EYE METHOD" AS DESCRIBED AS FOLLOWS: THE ENDS OF THE BARBED WIRE SHALL BE BENT TO FORM A LOOP. THE LOOPS SHALL BE CONNECTED. AFTER THE LOOPS ARE CONNECTED THE ENDS OF THE WIRE SHALL BE WRAPPED AROUND THE PROJECTING WIRES A MINIMUM OF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

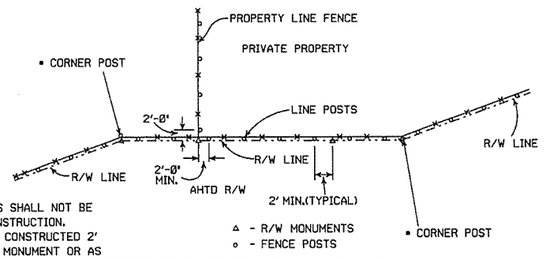
STAPLE AT LEAST TOP, BOTTOM AND ALTERNATE WIRES OF WOVEN FABRIC FOR WOOD LINE POSTS.

TYPE C FENCE (STEEL POSTS)

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

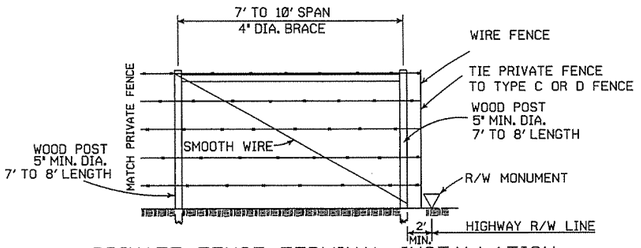


NOTE: SPACING AND SIZE (EXCEPT LENGTH) OF POSTS, APPROACH SPANS, PULL POST ASSEMBLIES, AND CORNER BRACING FOR TYPE D FENCE SHALL CONFORM TO TYPE C FENCE. USE GALVANIZED STAPLES ON WOOD POSTS AND APPROVED FASTENERS ON STEEL POSTS.



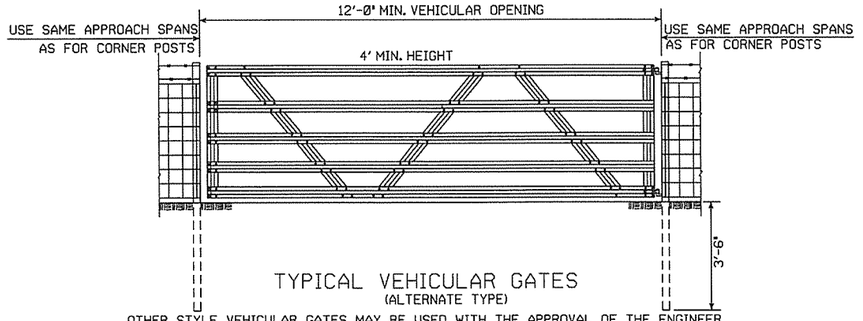
• NOTE: RIGHT-OF-WAY MONUMENTS SHALL NOT BE DISTURBED BY FENCE CONSTRUCTION. CORNER POSTS SHALL BE CONSTRUCTED 2' FROM THE RIGHT-OF-WAY MONUMENT OR AS DIRECTED BY THE ENGINEER.

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.

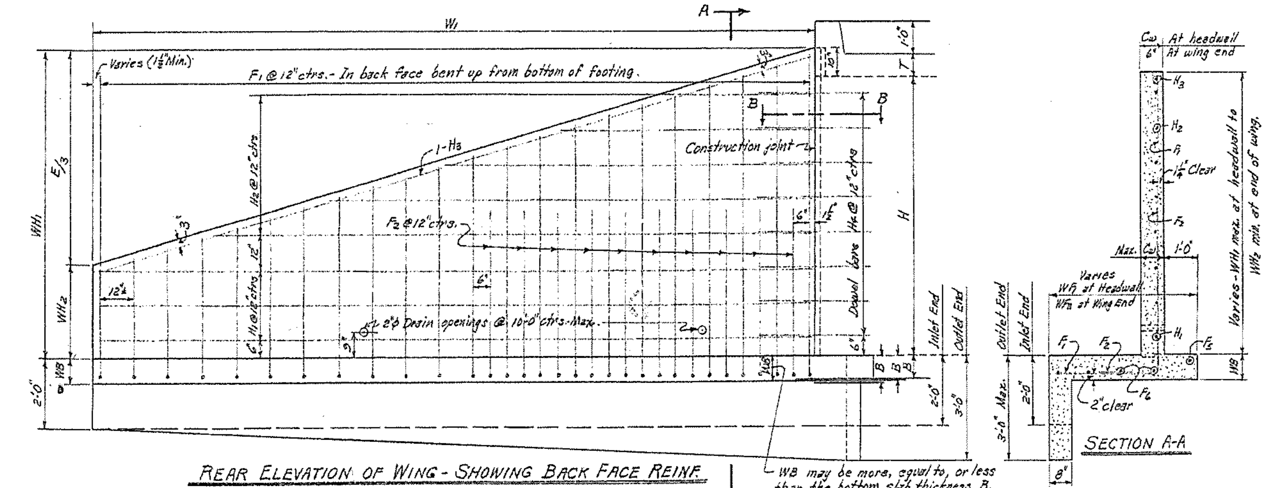
DATE	REVISION	FILMED
8-22-02	REVISED GENERAL NOTES	
10-18-96	REVISED AASHTO	
11-22-95	REVISED R-O-W LOCATION DETAIL	
6-2-94	REVISED BARB WIRE AND ADDED CORNER POST NOTES	6-2-94
8-5-93	REVISED R/W INSTALLATION FENCE	8-5-93
10-1-92	ADDED STAPLE NOTE	10-1-92
8-15-91	ADDED TYPE D-2 FENCE	8-15-91
11-30-89	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

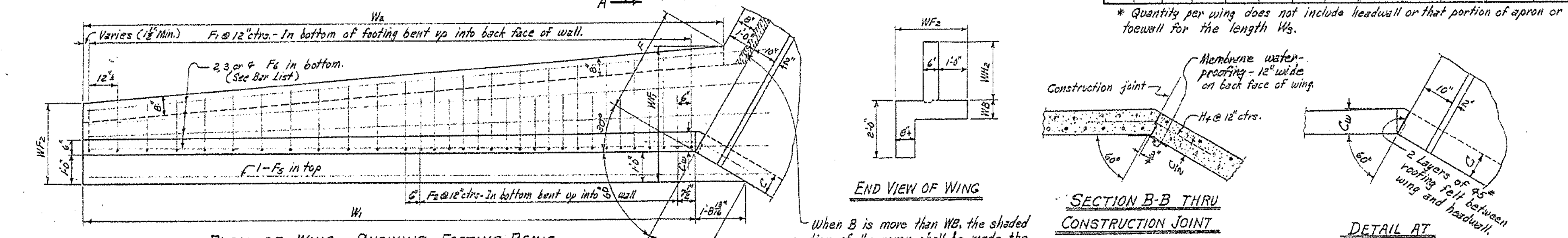
STANDARD DRAWING WF-4

FED. ROAD DIV. NO.	STATE	FED. AID PROJECT		SHEET NO.	TOTAL SHEETS
6	ARK.			140	
JOB No.					



REAR ELEVATION OF WING - SHOWING BACK FACE REINF.

SECTION A-A



PLAN OF WING - SHOWING FOOTING REINF.

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.

WING DIMENSIONS

CLEAR HEIGHT OF BOX	THICKNESS OF WING FOOTING	THICKNESS OF WING AT HEADWALL = 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	PERPENDICULAR FOOTING DIMENSION	PERPENDICULAR DIST. FROM HDWL TO END OF WING	LENGTH OF WINGWALLS	INSIDE FOOTING DIMENSION	* QUANTITY PER WING CLASS S CONCRETE INLET END	OUTLET END
H	WB	Cw	WH1	WH2	WF1	WF2	F	E	W1	W2	CU.YD.	CU.YD.
2'	7"	6"	2'-10"	0'-8"	2'-4"	2'-0"	0'-11¾"	6'-6"	7'-6"	7'-1½"	0.889	0.986
3'	7"	6"	3'-10"	1'-0"	2'-8"	2'-1½"	1'-4⅜"	8'-6"	9'-9¾"	9'-7½"	1.338	1.466
4'	7"	6"	4'-10"	1'-4"	3'-0"	2'-3"	1'-9"	10'-6"	12'-1½"	12'-1½"	1.868	2.027
5'	7"	6"	5'-10"	1'-8"	3'-4"	2'-4½"	2'-1⅝"	12'-6"	14'-5¼"	14'-7½"	2.478	2.668
		7"	5'-10"	1'-8"	3'-4"	2'-4½"	2'-1⅝"	12'-6"	14'-5¼"	14'-7½"	2.582	2.772
6'	8"	7"	6'-10"	2'-0"	3'-8"	2'-6"	2'-6¼"	14'-6"	16'-9"	17'-1½"	3.440	3.661
		7½"	6'-10"	2'-0"	3'-8"	2'-6"	2'-6¼"	14'-6"	16'-9"	17'-1½"	3.511	3.732
		8"	6'-10"	2'-0"	3'-8"	2'-6"	2'-6¼"	14'-6"	16'-9"	17'-1½"	3.582	3.803
7'	8½"	7½"	7'-10"	2'-4"	4'-2"	2'-7½"	3'-1¼"	16'-6"	19'-0½"	19'-8¾"	4.505	4.758
		8"	7'-10"	2'-4"	4'-2"	2'-7½"	3'-1¼"	16'-6"	19'-0½"	19'-8¾"	4.597	4.851
8'	9"	8"	8'-10"	2'-8"	4'-8"	2'-9"	3'-8"	18'-6"	21'-4¼"	22'-4"	5.761	6.097

* Quantity per wing does not include headwall or that portion of apron or toewall for the length W3.

APRON DIMENSION W3

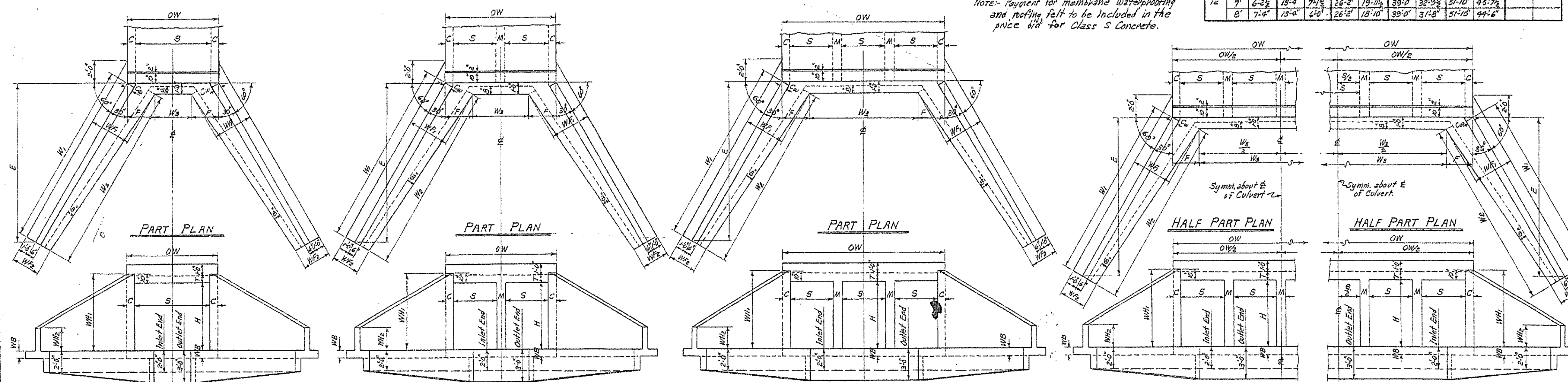
$W_3 = (OW - 2F)$

CLEAR SPAN	CLEAR HEIGHT	2 × FOOTING DIMENSION	SINGLE BARREL CULVERT OW	W3	DOUBLE BARREL CULVERT OW	W3	TRIPLE BARREL CULVERT OW	W3	QUADRUPLE BARREL CULVERT OW	W3	QUINTUPLE BARREL CULVERT OW	W3
S	H	2F	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'-8¾"	5'-0"	2'-3¼"	9'-8"	6'-11¼"	14'-4"	11'-7¼"	19'-0"	16'-3¼"	23'-8"	20'-11¼"
	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'-3¼"	5'-0"	0'-8¾"	9'-8"	5'-4¾"	14'-4"	10'-0¾"	19'-0"	14'-8¾"	23'-8"	19'-4¾"
	6'	5'-0½"	5'-2"	0'-1½"	9'-11"	4'-10½"	14'-8"	9'-7½"	19'-5"	14'-4½"	24'-2"	19'-1½"
5'	3'	2'-8¾"	6'-0"	3'-3¼"	11'-8"	8'-11¼"	17'-4"	14'-7¼"	23'-0"	20'-3¼"	28'-8"	25'-11¼"
	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'-3¼"	6'-0"	1'-8¾"	11'-8"	7'-4¾"	17'-4"	13'-0¾"	23'-0"	18'-8¾"	28'-8"	24'-4¾"
	6'	5'-0½"	6'-2"	1'-1½"	11'-11"	6'-10½"	17'-8"	12'-7½"	23'-5"	18'-4½"	29'-2"	24'-1½"
	7'	6'-2½"	6'-3"	0'-0½"	12'-1"	5'-10½"	17'-11"	11'-8½"	23'-9"	17'-6½"	29'-7"	23'-4½"
6'	3'	2'-8¾"	7'-0"	4'-3¼"	13'-8"	10'-11¼"	20'-4"	17'-7¼"	27'-0"	24'-3¼"	33'-8"	30'-11¼"
	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'-3¼"	7'-0"	2'-8¾"	13'-8"	9'-4¾"	20'-4"	16'-0¾"	27'-0"	22'-8¾"	33'-8"	29'-4¾"
	6'	5'-0½"	7'-2"	2'-1½"	13'-11"	8'-10½"	20'-8"	15'-7½"	27'-5"	22'-4½"	34'-2"	29'-1½"
	7'	6'-2½"	7'-3"	1'-0½"	14'-1"	7'-10½"	20'-11"	14'-8½"	27'-9"	21'-6½"	34'-7"	28'-4½"
	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"	12'-2"	23'-4"	19'-10"	31'-0"	27'-6"	38'-8"	35'-2"
	5'	4'-3¼"	8'-0"	3'-8¾"	15'-8"	11'-4¾"	23'-4"	19'-0¾"	31'-0"	26'-8¾"	38'-8"	34'-4¾"
	6'	5'-0½"	8'-2"	3'-1½"	15'-11"	10'-10½"	23'-8"	18'-7½"	31'-5"	26'-4½"	39'-2"	34'-1½"
	7'	6'-2½"	8'-3"	2'-0½"	16'-1"	9'-10½"	23'-11"	17'-8½"	31'-9"	25'-6½"	39'-7"	33'-4½"
	8'	7'-4"	8'-4"	1'-0"	16'-2"	8'-10"	24'-0"	16'-8"	31'-10"	24'-6"	39'-8"	32'-4"
8'	4'	3'-6"	9'-0"	5'-6"	17'-8"	14'-2"	26'-4"	22'-10"	35'-0"	31'-6"	43'-8"	40'-2"
	5'	4'-3¼"	9'-2"	4'-10¾"	17'-11"	13'-7¾"	26'-8"	22'-4¾"	35'-5"	31'-1¾"	44'-2"	39'-10¾"
	6'	5'-0½"	9'-2"	4'-1½"	17'-11"	12'-10½"	26'-8"	21'-7½"	35'-5"	30'-4½"	44'-2"	39'-1½"
	7'	6'-2½"	9'-3"	3'-0½"	18'-1"	11'-10½"	26'-11"	20'-8½"	35'-9"	29'-6½"	44'-7"	38'-4½"
	8'	7'-4"	9'-4"	2'-0"	18'-2"	10'-10"	27'-0"	19'-8"	35'-10"	28'-6"	44'-8"	37'-4"
9'	5'	4'-3¼"	10'-2"	5'-10¾"	19'-11"	15'-7¾"	29'-8"	25'-4¾"	39'-5"	35'-1¾"	49'-2"	44'-10¾"
	6'	5'-0½"	10'-3"	5'-2½"	20'-1"	15'-0½"	29'-11"	24'-10½"	39'-9"	34'-8½"	49'-7"	44'-6½"
	7'	6'-2½"	10'-3"	4'-0½"	20'-1"	13'-10½"	29'-11"	23'-8½"	39'-9"	33'-6½"	49'-7"	43'-4½"
	8'	7'-4"	10'-4"	3'-0"	20'-2"	12'-10"	30'-0"	22'-8"	39'-10"	32'-6"	49'-8"	42'-4"
10'	5'	4'-3¼"	11'-2"	6'-10¾"	21'-11"	17'-7¾"	32'-8"	28'-4¾"	43'-5"	39'-1¾"	54'-2"	49'-10¾"
	6'	5'-0½"	11'-3"	6'-2½"	22'-1"	17'-0½"	32'-11"	27'-10½"	43'-9"	38'-8½"	54'-7"	49'-6½"
	7'	6'-2½"	11'-3"	5'-0½"	22'-1"	15'-10½"	32'-11"	26'-8½"	43'-9"	37'-6½"	54'-7"	48'-4½"
	8'	7'-4"	11'-4"	4'-0"	22'-2"	14'-10"	33'-0"	25'-8"	43'-10"	36'-6"	54'-8"	47'-4"
11'	6'	5'-0½"	12'-4"	7'-3½"	24'-2"	19'-1½"	36'-0"	30'-11½"	47'-10"	42'-9½"		
	7'	6'-2½"	12'-4"	6'-1½"	24'-2"	17'-11½"	36'-0"	29'-9½"	47'-10"	41'-7½"		
	8'	7'-4"	12'-4"	5'-0"	24'-2"	16'-10"	36'-0"	28'-8"	47'-10"	40'-6"		
12'	6'	5'-0½"	13'-4"	8'-3½"	26'-2"	21'-1½"	39'-0"	33'-11½"	51'-10"	46'-9½"		
	7'	6'-2½"	13'-4"	7'-1½"	26'-2"	19'-11½"	39'-0"	32'-9½"	51'-10"	45'-7½"		
	8'	7'-4"	13'-4"	6'-0"	26'-2"	18'-10"	39'-0"	31'-8"	51'-10"	44'-6"		

QUANTITIES

CLEAR SPAN	CLEAR HEIGHT	THICKNESS OF WING AT HEADWALL	THICKNESS OF WING FOOTING	REINFORCING STEEL ⊗ - FOR 4 WINGS	CLASS S CONCRETE - 4 WINGS (HEADWALLS, WINGWALLS, FOOTINGS, TOEWALLS 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"	164.4	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"	357.8	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"	164.4	6.47	7.63	8.79	9.96	11.12
	4'	6"	7"	254.6	8.54	9.70	10.87	10.03	13.20
	5'	6"	7"	357.8	10.94	12.10	13.26	14.43	15.59
	6'	7"	8"	583.1	14.77	15.96	17.15	18.34	19.54
	7'	7½"	8½"	1134.6	18.94	20.15	21.37	22.59	23.80
6'	3'	6"	7"	164.4	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"	1134.6	19.15	20.58	22.00	23.43	24.86
	8'	8"	9"	1425.6	24.09	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	14.54	16.15	17.75
	6'	7"	8"	583.1	15.20	16.82	18.42	20.04	21.66
	7'	7½"	8½"	1134.6	19.38	21.02	22.64	24.28	25.92
	8'	8"	9"	1425.6	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	19.36
	6'	7"	8"	583.1	15.42	17.27	19.09	20.93	22.75
	7'	7½"	8½"	1134.6	19.59	21.46	23.30	25.16	26.99
	8'	8"	9"	1425.6	24.54	26.41	28.24	30.11	31.96
9'	5'	7"	7"	357.8	12.26	14.34	16.37	18.45	20.47
	6'	7½"	8"	583.1	15.94	18.04	20.09	22.19	24.23
	7'	7½"	8½"	1134.6	19.81	21.91	23.96	26.06	28.10
	8'	8"	9"	1425.6	24.76	26.86	28.91	31.00	33.05
10'	5'	7"	7"	357.8	12.49	14.80	17.05	19.26	21.52
	6'	7½"	8"	583.1	16.17	18.50	20.77	22.99	25.28
	7'	7½"	8½"	1134.6	20.04	22.37	24.64	26.87	29.15
	8'	8"	9"	1425.6	24.98	27.31	29.58	31.81	34.10
11'	6'	8"	8"	583.1	16.69	19.27	21.76	24.23	
	7'	8"	8½"	1134.6	20.64	23.22	25.71	28.18	
	8'	8"	9"	1425.6	25.19	27.77	30.27	32.74	
12'	6'	8"	8"	583.1	16.92	19.75	22.45	25.18	
	7'	8"	8½"	1134.6	20.87	23.69	26.40	29.13	
	8'	8"	9"	1425.6	25.42	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

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 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

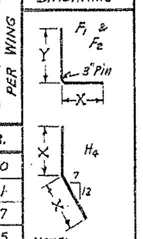
MEMBRANE:- A membrane waterproofing 12" wide, consisting of three moppings of waterproofing asphalt and two alternate layers of treated cotton fabric shall be applied to the back face of wing to cover the construction joints in wings.

BAR LIST FOR ONE WING - 4 REQUIRED

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.
F5: STRAIGHT — Longitudinal in top of wing footing heel.
F6: 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.

CLEAR HEIGHT H	F1 SIZE	F1 SPACING	F1 NO. REQ'D	F1 LENGTHS VARY MIN.	F1 LENGTHS VARY MAX.	F1 X MIN.	F1 X MAX.	F1 Y MIN.	F1 Y MAX.	F2 SIZE	F2 SPACING	F2 NO. REQ'D	F2 LENGTH	F2 X	F2 Y	F5 SIZE	F5 NO. REQ'D	F5 LENGTH	F6 SIZE	F6 NO. REQ'D	F6 LENGTH	H1 SIZE	H1 SPACING	H1 NO. REQ'D	H1 LENGTH	H2 SIZE	H2 SPACING	H2 NO. REQ'D	H2 LENGTHS VARY MAX.	H2 LENGTHS VARY MIN.	H3 SIZE	H3 NO. REQ'D	H3 LENGTH	H4 SIZE	H4 SPACING	H4 NO. REQ'D	H4 LENGTH	H4 X	QUANTITY REINFORCING STEEL PER WING LB.
2'	#3	12"	8	1'-6"	3'-10"	0'-8"	1'-0"	0'-11"	2'-11"	—	—	—	—	—	—	#3	1	9'-8"	#3	2	8'-6"	#3	12"	1	7'-2"	#3	12"	1	—	4'-0"	#3	1	7'-4"	#3	12"	2	2'-8"	1'-4"	27.0
3'	#3	12"	10	2'-2"	5'-2"	0'-10"	1'-3"	1'-5"	4'-0"	—	—	—	—	—	—	#3	1	12'-0"	#3	2	11'-0"	#3	12"	1	9'-6"	#3	12"	2	7'-6"	4'-0"	#3	1	9'-9"	#3	12"	3	2'-8"	1'-4"	41.1
4'	#3	12"	13	2'-4"	6'-6"	0'-11"	1'-7"	1'-6"	5'-0"	—	—	—	—	—	—	#3	1	14'-4"	#3	3	13'-6"	#3	12"	1	11'-10"	#3	12"	3	10'-11"	4'-0"	#3	1	12'-2"	#3	12"	4	2'-8"	1'-4"	63.7
5'	#3	12"	15	2'-11"	7'-10"	1'-1"	1'-11"	1'-11"	6'-0"	#3	12"	4	3'-6"	1'-1"	2'-6"	#3	1	16'-8"	#3	3	16'-0"	#3	12"	2	14'-2"	#3	12"	3	10'-11"	4'-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"	4	4'-6"	1'-4"	3'-3"	#3	1	19'-0"	#3	3	18'-6"	#3	12"	2	16'-6"	#3	12"	4	14'-4"	4'-0"	#3	1	17'-0"	#3	12"	6	2'-8"	1'-4"	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'-4"	#4	4	21'-0"	#4	12"	2	18'-9"	#4	12"	5	17'-9"	4'-0"	#4	1	19'-5"	#4	12"	7	3'-6"	1'-9"	283.7
8'	#4	12"	22	4'-4"	12'-3"	1'-5"	3'-2"	3'-0"	9'-2"	#4	12"	10	6'-6"	1'-10"	4'-9"	#4	1	23'-8"	#4	4	23'-9"	#4	12"	3	21'-1"	#4	12"	5	17'-9"	4'-0"	#4	1	21'-10"	#4	12"	8	3'-6"	1'-9"	356.4

BAR BENDING DIAGRAMS



NOTE:- Dimensions are to bar centers.

REVISIONS:- Membrane added 5-10-66 W.C.H.

Designed By: W.C.H. 6-20-62 Checked By: RHS 1-9-63
Drawn By: W.C.H. 12-4-62 Checked By: RHS 1-31-63
Quantities By: W.C.H. 12-14-62 Checked By: RHS
Rechecked By: RHS 3-29-63

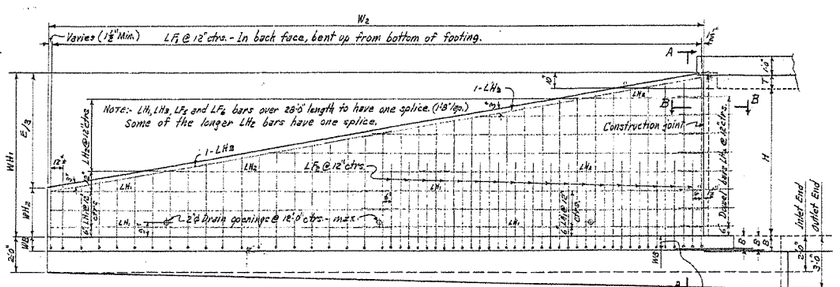
ARKANSAS STATE HIGHWAY COMMISSION

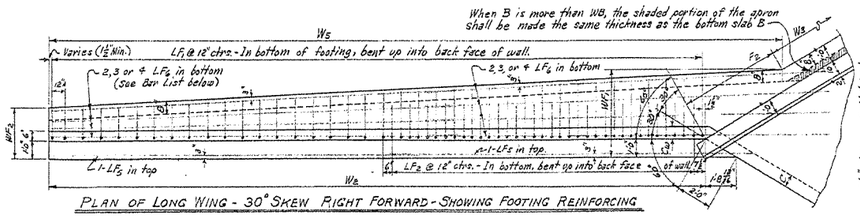
DETAILS OF STANDARD WINGS FOR REINFORCED CONCRETE BOX CULVERTS

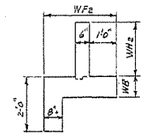
4', 5', 6', 7', 8', 9', 10', 11' & 12' SPANS — 3:1 SLOPES

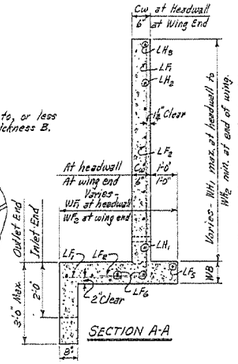
SINGLES, DOUBLES, TRIPLES, QUADRUPLES & QUINTUPLES. — ALL DEPTHS OF COVER FOR H = 8'-0" OR LESS

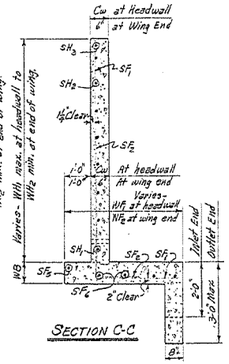
STANDARD DRAWING NO. W-X003-1

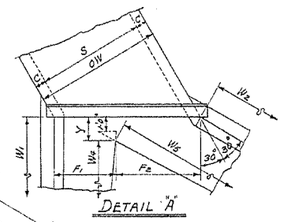


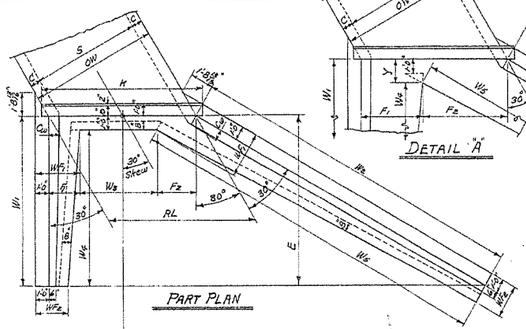


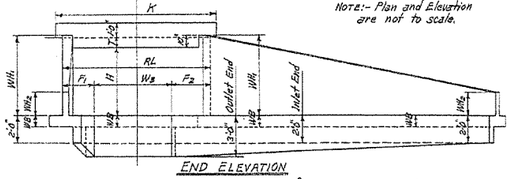


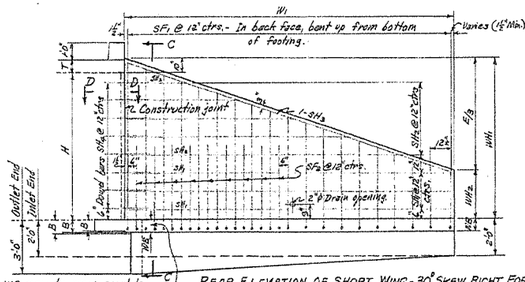


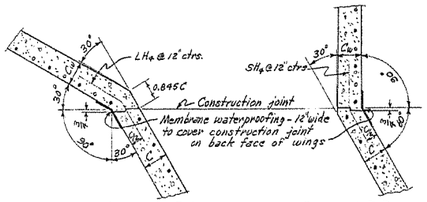


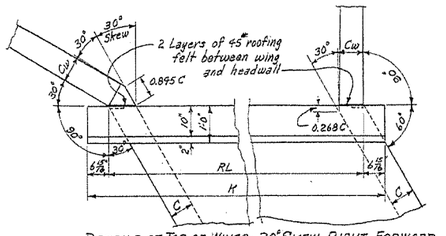












Reshot 3-8-93

FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			141	
JOB No.					

Varies (1½" Min.) LF1 @ 12" ctrs.- In back face, bent up from bottom of footing.

NOTE:- LH1, LH2, LF2 and LF4 bars over 28'6" length to have one splice. (1'8" lap.) Some of the longer LH2 bars have one splice.

REAR ELEVATION OF LONG WING - 30° SKEW RIGHT FORWARD - SHOWING BACK FACE REINFORCING

WB may be more, equal to, or less than the bottom slab thickness B.

When B is more than WB, the shaded portion of the apron shall be made the same thickness as the bottom slab B.

PLAN OF LONG WING - 30° SKEW RIGHT FORWARD - SHOWING FOOTING REINFORCING

TYPICAL END VIEW OF WING

SECTION A-A

SECTION C-C

REAR ELEVATION OF SHORT WING - 30° SKEW RIGHT FORWARD

SHOWING BACK FACE REINFORCING

WB may be more, equal to, or less than the bottom slab B.

When B is more than WB, the shaded portion of the apron shall be made the same thickness as the bottom slab B.

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 HDWL = 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 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'-11¼"	6'-6"	6'-6"	13'-0"	5'-6"	13'-3¾"	0.752	1.599	0.836	1.717
3'	7"	6"	3'-10"	1'-0"	2'-8"	2'-1½"	1'-8"	1'-7¼"	8'-6"	8'-6"	17'-0"	7'-6"	17'-10¾"	1.130	2.340	1.239	2.565
4'	7"	6"	4'-10"	1'-4"	3'-0"	2'-3"	2'-0"	2'-3¼"	10'-6"	10'-6"	21'-0"	9'-6"	22'-5½"	1.577	3.270	1.711	3.552
5'	7"	6"	5'-10"	1'-8"	3'-4"	2'-4½"	2'-4"	2'-11¼"	12'-6"	12'-6"	25'-0"	11'-6"	27'-0½"	2.093	4.341	2.252	4.680
		7"	5'-10"	1'-8"	3'-4"	2'-4½"	2'-4"	2'-11¼"	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'-7¼"	14'-6"	14'-6"	29'-0"	13'-6"	31'-7½"	2.908	6.024	3.092	6.419
		7½"	6'-10"	2'-0"	3'-8"	2'-6"	2'-8"	3'-7¼"	14'-6"	14'-6"	29'-0"	13'-6"	31'-7½"	2.966	6.147	3.150	6.543
		8"	6'-10"	2'-0"	3'-8"	2'-6"	2'-8"	3'-7¼"	14'-6"	14'-6"	29'-0"	13'-6"	31'-7½"	3.025	6.272	3.208	6.667
° 7'	8½"	7½"	7'-10"	2'-4"	4'-2"	2'-7½"	3'-2"	4'-7¼"	16'-6"	16'-6"	33'-0"	15'-6"	36'-5¾"	3.811	7.895	4.019	8.350
		8"	7'-10"	2'-4"	4'-2"	2'-7½"	3'-2"	4'-7¼"	16'-6"	16'-6"	33'-0"	15'-6"	36'-5¾"	3.857	8.057	4.095	8.512
° 8'	9"	8"	8'-10"	2'-8"	4'-8"	2'-9"	3'-8"	5'-7¼"	18'-6"	18'-6"	37'-0"	17'-6"	41'-4¼"	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 4'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'-7⅞"	3'-3¾"	0"	1'-1⅞"	13'-4½"	31'-3½"
5'	7'	3'-1⅝"	4'-1"	0"	1'-3¼"	15'-2¾"	35'-10¾"
6'	8'	3'-7½"	4'-10⅝"	0"	1'-4¾"	17'-1¼"	40'-6"

PART PLAN

DETAIL "A"

NOTE:- Plan and Elevation are not to scale.

END ELEVATION

SINGLE BARREL CULVERT - 30° SKEW RIGHT FORWARD

Details of Culvert with 30° Skew Left Forward is reversed, see Drawing No. W-X30.

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-X30.
For values of RL, K and W3 for each box, see above Std. also.

MEMBRANE:- A membrane waterproofing 12" 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 of wings.

REVISIONS:- Membrane Added. 5-10-66 W.C.H.

QUANTITIES

CLEAR SPAN	CLEAR HEIGHT	THICKNESS OF WING AT HEADWALL	THICKNESS OF WING FOOTING	REINFORCING ⊕ STEEL - FOR 4 WINGS	CLASS S CONCRETE - 4 WINGS (HEADWALLS, WINGWALLS, FOOTINGS, TOEWALLS 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"	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	18.85	19.99	21.13	22.27	23.41
5'	3'	6"	7"	213	8.33	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	15.48	16.83	18.17	19.52
	6'	7"	8"	762	19.11	20.48	21.86	23.24	24.62
	7'	7½"	8½"	1474	24.51	25.94	27.35	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	14.43	16.03	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	26.44	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	21.48	23.32	25.20	27.04
	7'	7½"	8½"	1474	25.05	26.94	28.82	30.71	32.59
	8'	8"	9"	1870	31.47	33.37	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	15.46	17.60	19.70	21.83	23.89
	6'	7"	8"	762	19.86	21.98	24.05	26.17	28.20
	7'	7½"	8½"	1474	25.30	27.46	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	20.76	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	32.47	35.45	38.33	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#/□"
Reinforcing Steel 20,000#/□"

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		

BAR LIST FOR ONE SHORT AND ONE LONG WING - 2 EACH REQUIRED

CLEAR HEIGHT	WING LOCATION	SF1 & LF1									SF2 & LF2						SF5 & LF5			SF6 & LF6			SH1 & LH1				SH2 & LH2					SH3 & LH3			SH4 & LH4					BAR BENDING DIAGRAM	QUANTITY	
		BENT									BENT						STRAIGHT						STRAIGHT												BENT						REINFORCING STEEL PER WING - LBS.	
		In bottom of footing, bent up into back face of wing. One bar (or two bars) of each length									In bottom of footing, bent up into back face of wing. Alt. with F1 bars.						Longitudinal in top of wing footing heel.			Longitudinal in bottom of wing footing toe.			Horizontal in back face of wing.				Horizontal in back face of wing. One bar of each length.*					In back face of wing at top - on slope.			Dowels thru construction joint at headwall.							
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'-7"	3'-11"	0'-8"	1'-0"	1'-0"	3'-0"	—	—	—	—	—	—	#3	1	9'-0"	#3	2	8'-0"	#3	12"	1	6'-3"	#3	12"	1	—	3'-3"	#3	1	6'-7"	#3	12"	2	2'-8"	1'-4"	 Y SF1 & SF2 LF1 & LF2 3" Pin X X SH4 & LH4 7 12 X NOTE:- Dimensions are to bar centers.	29.7	45.6
	Long	#3	12"	19	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'-4"	1'-4"	4'-0"	—	—	—	—	—	—	#3	1	11'-0"	#3	2	10'-0"	#3	12"	1	8'-3"	#3	12"	2	6'-3"	3'-3"	#3	1	8'-8"	#3	12"	3	"	"		37.0	69.5
	Long	#3	12"	18	1'-11"	5'-3"	0'-10"	1'-4"	1'-2"	4'-0"	—	—	—	—	—	—	#3	1	19'-6"	#3	2	20'-2"	#3	12"	1	16'-8"	#3	12"	2	12'-6"	6'-6"	#3	1	16'-11"	#3	12"	3	"	"			
4'	Short	#3	12"	11	2'-6"	6'-7"	0'-11"	1'-8"	1'-8"	5'-0"	—	—	—	—	—	—	#3	1	13'-0"	#3	3	12'-0"	#3	12"	1	10'-3"	#3	12"	3	9'-3"	3'-3"	#3	1	10'-9"	#3	12"	4	"	"		56.2	107.2
	Long	#3	12"	22	2'-4"	6'-6"	0'-11"	1'-7"	1'-6"	5'-0"	—	—	—	—	—	—	#3	1	23'-6"	#3	3	24'-0"	#3	12"	1	20'-8"	#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"	5	"	"		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'-9"	#3	12"	3	18'-6"	6'-6"	#3	1	25'-1"	#3	12"	5	"	"			
6'	Short	#4	12"	15	3'-6"	9'-4"	1'-2"	2'-4"	2'-5"	7'-1"	#3	12"	3	4'-6"	1'-4"	3'-3"	#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'-4"	9'-3"	1'-2"	2'-3"	2'-3"	7'-1"	#3	12"	6	4'-6"	1'-4"	3'-3"	#3	2	16'-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'-10"	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"		267.0	489.8
	Long	#4	12"	34	3'-9"	10'-8"	1'-3"	2'-8"	2'-7"	8'-1"	#4	12"	12	5'-6"	1'-7"	4'-0"	#4	2	18'-8"	#4	8	20'-4"	#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"	3'-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'-3"	#4	12"	8	"	"		312.9	622.3
	Long	#4	12"	38	4'-4"	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:-
Drawn By:- W.C.H. 7-26-63 Checked By:- ZHS 8-19-63
Quantities By:- W.C.H. 1-7-64 Checked By:- DMT 7-15-64

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 — 3:1 SLOPES.
SINGLES, DOUBLES, TRIPLES, — ALL DEPTHS OF COVER
QUADRUPLES & QUINTUPLES. — FOR H = 8'-0" OR LESS

STANDARD DRAWING No. W-X303-1

RESHOT 3-4-93

FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			192	
JOB No.					

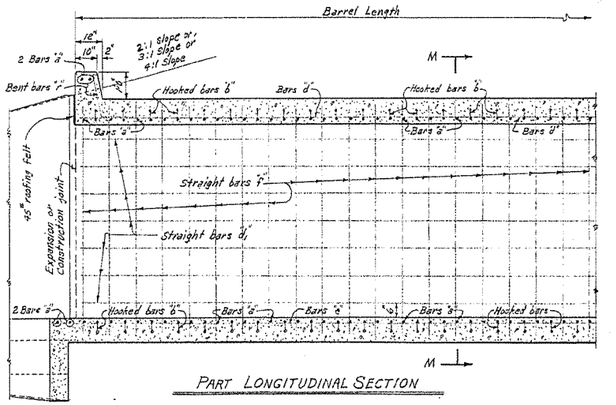
BAR LIST FOR BARREL SECTION 60'-0" IN LENGTH

DIMENSIONS / QUANTITIES

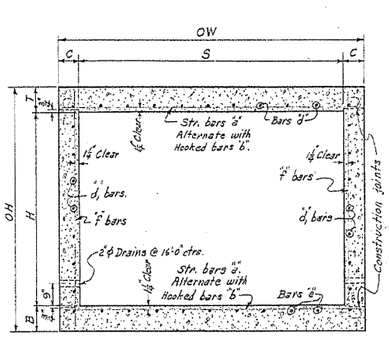
DEPTH OF COVER D	CLEAR SPAN S	CLEAR HEIGHT H	"a" bars STRAIGHT In Top and Bottom Slabs of Barrel. 2 Add'l in Apron and Headwall - Each. SIZE	SPACING	NUMBER REQ'D 3:1	NUMBER REQ'D 4:1	LENGTH	"b" bars BENT - See Diagram below. In Top and Bottom Slabs of Barrel. Alternate with "a" bars. SIZE	SPACING	NUMBER REQ'D 3:1	NUMBER REQ'D 4:1	LENGTH	X	"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 3:1	NUMBER REQ'D 4:1	LENGTH
0'-0" TO 5'-0" MAXIMUM	4'	2'			120	120	4'-9"			110	110	5'-10"	4'-10"													#4	12"	120	120	2'-11"
		3'			120	120	4'-9"			110	110	5'-10"	4'-10"													#4	12"	120	120	3'-11"
		4'	#5	13"	120	120	4'-9"	#6	13"	110	110	5'-10"	4'-10"	#5	10½"	6	#4	12"	6										
		5'			120	120	4'-9"			110	110	5'-10"	4'-10"																
		6'			120	120	4'-11"			110	110	6'-0"	4'-10"																
	4'	3'			120	120	5'-9"			110	110	6'-10"	5'-8"													#4	12"	120	120	4'-0"
		4'			120	120	5'-9"			110	110	6'-10"	5'-8"													#4	12"	120	120	5'-0"
		5'	#6	13"	120	120	5'-9"	#6	13"	110	110	6'-10"	5'-8"	#5	10½"	7	#4	12"	7										
		6'			120	120	5'-11"			110	110	7'-0"	5'-10"																
		7'			120	120	6'-0"			110	110	7'-1"	5'-11"																
	5'	3'			128	128	6'-9"			118	118	7'-10"	6'-8"													#4	12"	120	120	4'-1"
		4'			128	128	6'-9"			118	118	7'-10"	6'-8"													#4	12"	120	120	5'-1"
		5'	#6	12"	128	128	6'-9"	#6	12"	118	118	7'-10"	6'-8"	#5	10½"	8	#4	12"	8										
		6'			128	128	6'-11"			118	118	8'-0"	6'-10"													#4	12"	120	120	6'-1"
		7'			128	128	7'-0"			118	118	8'-1"	6'-11"																
		8'			128	128	7'-1"			118	118	8'-2"	7'-0"																
	6'	4'			140	140	7'-9"			130	130	8'-10"	7'-8"													#4	12"	120	120	5'-2"
		5'			140	140	7'-9"			130	130	8'-10"	7'-8"													#4	12"	120	120	6'-2"
		6'	#6	11"	140	140	7'-11"	#6	11"	130	130	9'-0"	7'-10"	#5	10½"	9	#4	12"	9							#4	12"	120	120	7'-2"
		7'			140	140	8'-0"			130	130	9'-1"	7'-11"																
		8'			140	140	8'-1"			130	130	9'-2"	8'-0"													10"	166	166	9'-2"
		9'			140	140	8'-3"			130	130	9'-4"	8'-2"													#5	12"	120	120	10'-2"
		4'			128	128	8'-9"			118	118	9'-10"	8'-8"																
		5'			128	128	8'-11"			118	118	10'-0"	8'-10"													#4	12"	120	120	6'-9"
		6'			128	128	8'-11"			118	118	10'-0"	8'-10"																
	8'	7'	#7	12"	128	128	9'-0"	#6	12"	118	118	10'-1"	8'-11"	#5	10"	11	#4	12"	11	#4	12"	9	#4	12"	9					
		8'			128	128	9'-1"			118	118	10'-2"	9'-0"													10"	166	166	9'-10"
		9'			128	128	9'-3"			118	118	10'-4"	9'-2"													#5	12"	120	120	10'-4"
		10'			128	128	9'-5"			118	118	10'-6"	9'-4"													11"	132	132	11'-9"
		5'			140	140	9'-11"			130	130	11'-0"	9'-10"																
		6'			140	140	10'-0"			130	130	11'-1"	9'-11"													12"	120	120	6'-5"
		7'			140	140	10'-0"			130	130	11'-1"	9'-11"													#4	12"	120	120	7'-5"
	9'	8'	#7	11"	140	140	10'-1"	#6	11"	130	130	11'-2"	10'-0"	#5	10"	12	#4	12"	12	#4	12"	10	#4	12"	10					
		9'			140	140	10'-3"			130	130	11'-3"	10'-2"													12"	120	120	10'-5"
		10'			140	140	10'-5"			130	130	11'-6"	10'-4"													#5	11"	132	132	10'-5"
		11'			140	140	10'-7"			130	130	11'-8"	10'-6"													10"	166	166	12'-5"
		5'			128	128	10'-11"			118	118	12'-2"	10'-10"																
		6'			128	128	11'-0"			118	118	12'-3"	10'-11"													#4	12"	120	120	7'-6"
	1	7'			128	128	11'-0"			118	118	12'-3"	10'-11"																
	@	8'	#7	12"	128	128	11'-1"	#7	12"	118	118	12'-4"	11'-0"	#5	10"	13	#4	12"	13	#4	12"	11	#4	12"	11	10"	166	166	9'-6"
	10'	9'			128	128	11'-3"			118	118	12'-6"	11'-2"													12"	120	120	10'-6"
		10'			128	128	11'-5"			118	118	12'-8"	11'-4"													#5	11"	132	132	11'-3"
		11'			128	128	11'-7"			118	118	12'-10"	11'-6"													10"	166	166	12'-4"
		12'			128	128	11'-9"			118	118	13'-0"	11'-8"													#6	12"	120	120	13'-6"
		6'			140	140	12'-1"			130	130	13'-4"	12'-0"													#4	12"	120	120	7'-7"
		7'			140	140	12'-1"			130	130	13'-4"	12'-0"															120	120	8'-7"
	1	8'			140	140	12'-1"			130	130	13'-4"	12'-0"													10"	166	166	9'-7"
	@	9'	#7	11"	140	140	12'-3"	#7	11"	130	130	13'-6"	12'-2"	#5	9½"	15	#4	12"	15	#4	12"	12	#4	12"	12	12"	120	120	10'-7"
	11'	10'			140	140	12'-5"			130	130	13'-8"	12'-4"													#5	11"	132	132	11'-7"
		11'			140	140	12'-7"			130	130	13'-10"	12'-6"													10"	166	166	12'-7"
		12'			140	140	12'-9"			130	130	14'-0"	12'-8"													#6	12"	120	120	13'-7"
		6'			128	128	13'-1"			118	118	14'-4"	13'-0"													#4	12"	120	120	7'-9"
		7'			128	128	13'-1"			118	118	14'-4"	13'-0"															120	120	8'-9"
	1	8'			128	128	13'-1"			118	118	14'-4"	13'-0"													10"	166	166	9'-9"
	@	9'	#7	12"	128	128	13'-3"	#7	12"	118	118	14'-6"	13'-2"	#5	9½"	16	#4	12"	16	#4	12"	13	#4	12"	13	12"	120	120	10'-9"
	12'	10'			128	128	13'-5"			118	118	14'-8"	13'-4"													#5	11"	132	132	11'-9"
		11'			128	128	13'-7"			118	118	14'-10"	13'-6"													10"	166	166	12'-9"
		12'			128	128	13'-9"			118	118	15'-0"	13'-8"													#6	12"	120	120	13'-9"

MARK DESIGN DEPTH OF COVER D	CLEAR SPAN S	CLEAR HEIGHT H	BARREL DIMENSIONS: CLEAR OPENING SQ. FT. A	OVERALL WIDTH OW	THICKNESS OF TOP SLAB T	THICKNESS OF SIDEWALLS C	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.
5'-0"	4'	2'	8	5'-0"	6"			3'-1½"	0.282	41.93	17.95	66.35
		3'	12	5'-0"				3'-7½"	0.319	44.16	19.62	66.35
		4'	16	5'-0"	7'	6"	6½"	4'-1½"	0.356	46.83	21.29	66.35
		5'	20	5'-0"		6"		4'-7½"	0.394	49.50	22.96	66.35
		6'	24	5'-2"		7"		5'-1½"	0.474	52.96	24.63	67.75
	5'	3'	15	6'-0"		6"		4'-2½"	0.380	55.55	22.19	101.27
		4'	20	6'-0"	7½"	6"	7"	5'-2½"	0.417	58.23	23.86	101.27
		5'	25	6'-0"		6"		6'-2½"	0.454	60.90	25.53	101.27
		6'	30	6'-2"		7"		7'-2½"	0.535	64.93	27.20	103.27
		7'	35	6'-3"		7½"		8'-2½"	0.609	67.63	28.87	109.27
	6'	3'	18	7'-0"		6"		4'-3½"	0.446	66.29	29.76	118.96
		4'	24	7'-0"		6"		5'-3½"	0.483	68.96	26.93	118.96
		5'	30	7'-0"	8"	6"	7½"	6'-3½"	0.520	71.64	28.10	118.96
		6'	36	7'-2"		7"		7'-3½"	0.602	75.31	29.77	120.96
		7'	42	7'-3"		7½"		8'-3½"	0.671	78.98	31.44	121.97
		8'	48	7'-5"		8"		9'-3½"	0.746	88.47	33.11	122.97
	7'	4'	28	8'-0"		6"		5'-5"	0.568	81.32	29.01	136.89
		5'	35	8'-0"		6"		6'-5"	0.605	84.00	30.68	136.88
		6'	42	8'-2"	8½"	7"	8½"	7'-5"	0.688	87.76	32.35	138.88
		7'	49	8'-3"		7½"		8'-5"	0.757	90.98	34.02	139.88
		8'	56	8'-4"		8"		9'-5"	0.832	96.65	35.69	140.88
		9'	63	8'-6"		9"		10'-5"	0.996	105.59	37.36	142.89
	8'	4'	32	9'-0"		6"		5'-7"	0.676	95.26	33.32	194.67
		5'	40	9'-2"		7"		6'-7"	0.756	99.12	34.99	196.80
		6'	48	9'-2"		7"		7'-7"	0.787	101.79	36.66	196.80
		7'	56	9'-3"	9½"	7½"	9½"	8'-7"	0.867	105.05	38.33	198.16
		8'	64	9'-6"		8"		9'-7"	0.942	110.81	40.00	199.52
		9'	72	9'-6"		9"		10'-7"	1.057	119.92	41.67	202.25
		10'	80	9'-8"		10"		11'-7"	1.184	126.67	43.34	204.97
	9'	5'	45	10'-2"		7"		6'-8"	0.844	114.72	37.56	219.61
		6'	54	10'-3"		7½"		7'-8"	0.910	118.06	39.23	220.97
		7'	63	10'-3"		7½"		8'-8"	0.957	120.71	40.90	220.97
		8'	72	10'-4"	10'	8"	10'	9'-8"	1.033	126.54	42.57	222.33
		9'	81	10'-6"		9"		10'-8"	1.148	135.80	44.24	223.06
		10'	90	10'-8"		10"		11'-8"	1.276	142.68	45.91	223.78
		11'	99	10'-10"		11"		12'-8"	1.916	150.90	47.58	230.51
	10'	5'	50	11'-2"		7"		6'-9½"	0.957	130.64	40.13	242.64
		6'	60	11'-3"		7½"		7'-9½"	1.024	133.99	41.80	244.00
		7'	70	11'-3"		7½"		8'-9½"	1.071	136.66	43.47	244.00
		8'	80	11'-4"	10½"	8"	11"	9'-9½"	1.147	142.55	45.14	245.36
		9'	90	11'-6"		9"		10'-9½"	1.263	151.92	46.81	248.09
		10'	100	11'-8"		10"		11'-9½"	1.391	158.89	48.98	250.81
		11'	110	11'-10"		11"		12'-9½"	1.532	164.71	50.15	253.54
		12'	120	12'-0"		12"		13'-9½"	1.685	178.67	51.82	256.26
	11'	6'	66	12'-4"		8"		7'-10½"	1.153	156.16	46.12	268.62
		7'	77	12'-4"		8"		8'-10½"	1.202	157.83	47.79	268.62
		8'	88	12'-5"		9"		9'-10½"	1.252	162.06	49.46	268.62
		9'	99	12'-6"	11"	9"	11½"	10'-10½"	1.368	172.60	51.13	271.34
		10'	110	12'-8"		10"		11'-10½"	1.497	179.70	52.80	274.07
		11'	121	12'-10"		11"		12'-10½"	1.638	187.67	54.47	276.79
		12'	132	13'-0"		12"		13'-10½"	1.792	198.79	56.14	278.52
	12'	6'	72	13'-4"		8"		8'-0"	1.284	172.20	48.69	357.62
		7'	84	13'-5"		8"		9'-0"	1.333	174.87	50.36	357.62
		8'	96	13'-5"		9"		10'-0"	1.383	180.15	52.03	357.62
		9'	108	13'-6"	11½"	9"	12½"	11'-0"	1.500	189.85	53.70	361.18
		10'	120	13'-8"		10"		12'-0"	1.630	197.07	55.37	364.74
		11'	132	13'-10"		11"		13'-0"	1.772	205.16	57.04	368.30
		12'	144	14'-0"		12"		14'-0"	1.926	217.95	58.71	371.86

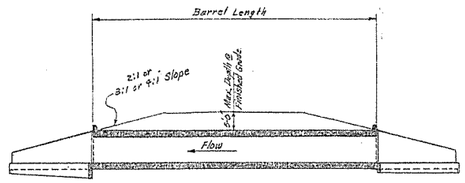
W-X002-1 or W-X002-2, W-X003-1 or W-X003-2, and W-X004-1 or W-X004-2.



PART LONGITUDINAL SECTION



TYPICAL SECTION M-M



LONGITUDINAL SECTION

NOTE:- For details of wings and bar bars, see Drawing Nos. W-X002-1 or W-X002-2 and W-X004-1 or W-X004-2.

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.

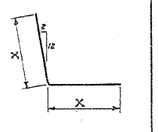
BAR SIZE	PIN DIAM.	K	ADD FOR 2 HOOKS	BENDING DIAGRAM Bars "b".
#6	3"	5"	1'-2"	K, Pin Diam., X
#7	3½"	5⅝"	1'-4"	

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'-3⅝"
6'	#4	11"±	16	2'-8"	1'-4"
7'	#4	11"±	18	2'-9"	1'-4⅝"
8'	#4	11⅝"±	20	2'-11"	1'-5½"
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 "f" 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 #/□"

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 SINGLES — 3:1 OR 4:1 SLOPES UNDER 5'-0" COVER

STANDARD DRAWING NO. R-100X-0

Designed By:- W.C.H. 1-28-63. Checked By:- RBMS -5-8-63
Drawn By:- W.C.H. 2-8-63. Checked By:- RBMS -5-24-63
Quantities By:- W.C.H. 2-12-63. Checked By:- RBMS -5-24-63

RESHOT 3-5-93 355 ~~156~~

FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			143	
JOB No.					

BAR LIST FOR VARIOUS SECTIONS OF BARREL

NOTE:- Bars for each Section to be marked with the Section Letter, thus for Section B, the bars should be marked Ba, Bb, Bd, Bd_1, Be and Bf.

Designed By:- W.C.H. 12-9-64 Checked By:-
Drawn By:- W.C.H. 12-11-64 Checked By:-
Quantities By:- W.C.H. 12-17-64 Checked By:-

DIMENSIONS / QUANTITIES

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	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"	1@											
	4'	2'	8	5'-0"	6½"	6"	6½"	3'-1"	0.275	26.94	11.69	51.93
	6'	3'	18	7'-0"	7½"	6"	7½"	4'-3"	0.435	56.32	16.70	93.29
	7'	4'	28	8'-0"	8"	6"	8½"	5'-9½"	0.556	65.53	20.04	107.42
	8'	4'	32	9'-0"	8½"	6"	9½"	5'-6"	0.648	80.21	21.71	154.94
		5'	40	9'-2"		7"		6'-6"	0.725	83.88	23.38	156.95
	9'	5'	45	10'-2"	9½"	7"	10½"	6'-8"	0.844	110.91	25.05	176.61
		6'	54	10'-3"		7½"		7'-8"	0.911	114.23	26.72	177.61
	10'	5'	50	11'-2"	10½"	7"	11½"	6'-10"	0.974	124.54	26.72	243.97
		6'	60	11'-3"		7½"		7'-10"	1.042	128.22	28.39	245.54
		7'	70	11'-3"		7½"		8'-10"	1.088	130.56	30.06	245.54
SECTION "B" – 15'-0"	4'	2'	8	5'-0"	6½"	6"	6½"	3'-1"	0.275	31.30	11.69	51.93
	6'	3'	18	7'-0"	8"	6"	8¼"	4'-4¼"	0.462	62.62	16.70	118.07
	7'	4'	28	8'-0"	8¾"	6"	9¼"	5'-6"	0.593	77.39	20.04	135.88
	8'	4'	32	9'-0"	9¾"	6"	10¾"	5'-8½"	0.718	89.91	21.71	192.88
		5'	40	9'-2"		7"		6'-8½"	0.796	93.77	23.38	195.61
	9'	5'	45	10'-2"	10¾"	7"	11¾"	6'-10½"	0.922	115.02	25.05	219.61
		6'	54	10'-3"		7½"		7'-10½"	0.990	118.38	26.72	220.97
	10'	5'	50	11'-2"	11¾"	7"	12¾"	7'-0½"	1.060	139.76	28.39	298.64
		6'	60	11'-3"		7½"		8'-0½"	1.128	143.22	30.06	300.42
		7'	70	11'-3"		7½"		9'-0½"	1.175	152.45	31.73	300.42
SECTION "C" – 20'-0"	4'	2'	8	5'-0"	6½"	6"	6¾"	3'-1¼"	0.279	34.87	11.69	
	6'	3'	18	7'-0"	8½"	6"	9"	4'-5½"	0.489	66.72	16.70	
	7'	4'	28	8'-0"	9¾"	6"	10½"	5'-8"	0.642	86.48	20.04	
	8'	4'	32	9'-0"	11"	6"	11½"	5'-10½"	0.773	102.81	23.38	
		5'	40	9'-2"		7"		6'-10½"	0.859	106.85	25.05	
	9'	5'	45	10'-2"	12"	7"	13"	7'-1"	1.001	129.11	26.72	
		6'	54	10'-3"		7½"		8'-1"	1.069	134.66	28.39	
	10'	5'	50	11'-2"	13¼"	7"	14½"	7'-3½"	1.164	157.56	30.06	
		6'	60	11'-3"		7½"		8'-3½"	1.233	163.26	31.73	
		7'	70	11'-3½"		7¾"		9'-3½"	1.298	170.54	33.40	
SECTION "D" – 25'-0"	4'	2'	8	5'-0"	6¾"	6"	7½"	3'-2"	0.290	36.95	11.69	
	6'	3'	18	7'-0"	9¼"	6"	9¾"	4'-7"	0.522	70.27	16.70	
	7'	4'	28	8'-0"	10¾"	6"	11¼"	5'-10"	0.691	93.30	21.71	
	8'	4'	32	9'-0"	12"	6"	12½"	6'-0½"	0.829	115.33	25.05	
		5'	40	9'-2"		7"		7'-0½"	0.909	119.57	26.72	
	9'	5'	45	10'-2"	13¼"	7"	14¼"	7'-3¼"	1.079	145.54	28.39	
		6'	54	10'-3"		7½"		8'-3¼"	1.149	155.10	30.06	
	10'	5'	50	11'-2"	14½"	7"	15½"	7'-6"	1.250	175.16	31.73	
		6'	60	11'-3½"		7¾"		8'-6"	1.333	181.05	33.40	
		7'	70	11'-5½"		8¾"		9'-6"	1.489	190.98	35.07	
SECTION "E" – 30'-0"	4'	2'	8	5'-0"	7¼"	6"	7¾"	3'-3"	0.306	39.95	11.69	
	6'	3'	18	7'-0"	10"	6"	10½"	4'-9½"	0.554	76.37	18.37	
	7'	4'	28	8'-0"	11½"	6"	12"	5'-11½"	0.728	99.64	21.71	
	8'	4'	32	9'-1"	13"	6½"	13½"	6'-2½"	0.903	124.37	25.05	
		5'	40	9'-2½"		7½"		7'-2½"	0.977	128.74	26.72	
	9'	5'	45	10'-3"	14¼"	7½"	15¼"	7'-5¼"	1.165	160.30	30.06	
		6'	54	10'-4½"		8¼"		8'-5¼"	1.250	168.15	31.73	
	10'	5'	50	11'-3"	15¾"	7½"	16¾"	7'-8½"	1.360	195.95	55.63	
		6'	60	11'-5"		8½"		8'-8½"	1.460	202.10	59.10	
		7'	70	11'-7"		9½"		9'-8½"	1.572	210.29	62.58	
		8'	80	11'-9"		10½"		10'-8½"	1.697	220.26	66.06	
		9'	90	11'-11"		11½"		11'-8½"	1.834	232.03	69.52	
		10'	100	12'-0½"		12½"		12'-8½"	1.964	250.93	73.01	
SECTION "F" – 35'-0"	4'	2'	8	5'-0"	7¾"	6"	8¼"	3'-4"	0.321	42.82	11.69	
	6'	3'	18	7'-0"	10¾"	6"	11¼"	4'-10"	0.586	82.45	20.04	
	7'	4'	28	8'-2"	12¼"	7"	12¾"	6'-1"	0.803	110.30	23.38	
		5'	35	8'-3"		7½"		7'-1"	0.868	113.79	25.05	
		6'	42	8'-5"		8½"		8'-1"	0.964	123.56	26.72	
		7'	49	8'-7"		9½"		9'-1"	1.073	131.46	28.39	
		8'	56	8'-9"		10½"		10'-1"	1.194	145.80	30.06	
		9'	63	8'-11"		11½"		11'-1"	1.327	160.83	31.73	
	8'	4'	32	9'-1½"	13¾"	6¾"	14½"	6'-4½"	0.962	136.57	26.72	
		5'	40	9'-3½"		7¾"		7'-4½"	1.049	142.02	28.39	
		6'	48	9'-5½"		8¾"		8'-4½"	1.149	150.75	30.06	
		7'	56	9'-7½"		9¾"		9'-4½"	1.261	157.78	31.73	
		8'	64	9'-9½"		10¾"		10'-4½"	1.385	170.62	33.40	
		9'	72	9'-11½"		11¾"		11'-4½"	1.521	183.51	35.07	
		10'	80	10'-1½"		12¾"		12'-4½"	1.670	200.66	36.74	
	9'	5'	45	10'-4"	15¼"	8"	16"	7'-7½"	1.244	177.60	52.15	
		6'	54	10'-6"		9"		8'-7½"	1.346	186.70	55.63	
		7'	63	10'-8"		10"		9'-7½"	1.461	194.03	59.10	
		8'	72	10'-10"		11"		10'-7½"	1.588	202.30	62.58	
		9'	81	11'-0"		12"		11'-7½"	1.728	220.59	66.06	
SECTION "G" – 40'-0"	4'	2'	8	5'-0"	8¼"	6"	8¾"	3'-5"	0.336	45.38	11.69	
	6'	3'	18	7'-0"	11½"	6"	12"	4'-11½"	0.619	88.05	20.04	
		4'	24	7'-2"		7"		5'-11½"	0.693	92.21	21.71	
		5'	30	7'-4"		8"		6'-11½"	0.779	98.15	23.38	
		6'	36	7'-6"		9"		7'-11½"	0.877	106.27	25.05	
		7'	42	7'-8"		10"		8'-11½"	0.988	119.14	26.72	
		8'	48	7'-10"		11"		9'-11½"	1.111	130.77	28.39	
	7'	4'	28	8'-3"	12"	7½"	13½"	6'-2½"	0.860	115.80	25.05	
		5'	35	8'-4½"		8¼"		7'-2½"	0.940	121.18	26.72	
		6'	42	8'-6½"		9¼"		8'-2½"	1.041	129.65	28.39	
		7'	49	8'-8½"		10¼"		9'-2½"	1.155	138.51	30.06	
		8'	56	8'-10½"		11¼"		10'-2½"	1.281	151.74	31.73	
		9'	63	9'-0½"		12¼"		11'-2½"	1.420	166.92	33.40	
	8'	4'	32	9'-3"	14¾"	7½"	15½"	6'-6¼"	1.079	144.17	28.39	
		5'	40	9'-5"		8½"		7'-6¼"	1.142	152.91	30.06	
		6'	48	9'-7"		9½"		8'-6¼"	1.247	159.59	31.73	
		7'	56	9'-9"		10½"		9'-6¼"	1.364	168.81	33.40	
		8'	64	9'-11"		11½"		10'-6¼"	1.494	179.73	35.07	
		9'	72	10'-1"		12½"		11'-6½"	1.636	192.77	36.74	
		10'	80	10'-3½"		13½"		12'-6¼"	1.810	210.12	38.41	

NOTE:- For details of wings and bar lists, see Drawing Nos. W-X002-1 or W-X002-2, W-X003-1 or W-X003-2, & W-X004-1 or W-X004-2.

BAR SIZE	PIN DIAM.	K	ADD FOR 2 HOOKS	Bars "b"
#4	2"	4"	0'-10½"	
#5	2½"	4½"	0'-11½"	
#6	3"	5"	1'-2"	
#7	3½"	5¾"	1'-4"	
#8	4"	6½"	1'-6"	

NOTE:- Dimensions are to centers of bars.

DOWEL BARS FOR TWO HEADWALLS

SPAN	SIZE	SPACING	No. REQ'D	LENGTH	X	Bars "r" Dowel bars in Headwalls
4'	#4	11½	12	2'-5"	1'-2½"	
6'	#4	12½	16	2'-7"	1'-3½"	
7'	#4	12½	18	2'-8"	1'-4"	
8'	#4	12½	20	2'-10"	1'-5"	
9'	#4	12½	22	3'-0"	1'-6"	
10'	#4	12½	24	3'-2"	1'-7"	

PART LONGITUDINAL SECTION

TYPICAL SECTION M-M

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.

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 @ 4'-0" ctrs.

UNIT STRESSES:-

Class S Concrete (n=10) 1200#/□"
Reinforcing Steel 20,000#/□"

SECTIONS AND BAR GROUPS TO BE USED FOR VARIOUS DEPTHS OF COVER

DEPTHS OF COVER	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	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

LENGTH OF SECTIONS FOR SKEWED CULVERTS

SKEW ANGLE	SEC. OF SKEW ANGLE	2:1 SLOPES SECTIONS A	2:1 SLOPES SECTIONS B,C,D,E or F	3:1 SLOPES SECTIONS A	3:1 SLOPES SECTIONS B,C,D,E or F	4:1 SLOPES SECTIONS A	4:1 SLOPES SECTIONS B,C,D,E or F
0°	1.0	12.0'	6.0'	22.0'	11.0'	32.0'	16.0'
15°	1.0353	12.424'	6.212'	22.776'	11.388'	33.129'	16.564'
30°	1.1547	13.856'	6.928'	25.403'	12.702'	36.950'	18.475'
45°	1.4142	16.970'	8.485'	31.113'	15.556'	45.255'	22.627'

NOTE:- This drawing to be used in conjunction with Standard Wing Drawing Nos W-X002-1 or W-X002-2, W-X003-1 or W-X003-2, & W-X004-1 or W-X004-2.

CLASS S CONCRETE

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF STANDARD BARREL SECTIONS
FOR
REINFORCED CONCRETE BOX CULVERTS

ADD'L 4', 6', 7', 8', 9' & 10' SPANS 2:1, 3:1 OR 4:1 SLOPES
SINGLES OVER 5'-0" COVER

STANDARD DRAWING NO. R-100X-X3

(13)

RESHOT 3-8-93

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FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			144	
JOB No.					

NOTE:- For Details of Standard Wings and bar lists, see Drawing No. W-X302-1 or W-X302-2; W-X303-1 or W-X303-2, and W-X304-1 or W-X304-2. Also W-X30.

BAR LIST FOR BARREL SECTION 60'-0" IN LENGTH - TWO 30° SKEWED ENDS.

DEPTH OF COVER	CLEAR SPAN	CLEAR HEIGHT	"a" bars				▼ "a_1" bars					"b" bars					▼ "b_1" bars							"d" bars				"d_1" bars				"e" bars				"f" bars				▼ "k_1" bars			▼ k_2 bars		
			STRAIGHT									BENT - See Diagrams below												STRAIGHT												STRAIGHT				STRAIGHT					
			In Top and Bottom Slabs of Barrel.				In Top and Bottom Slab of Barrel- (Four of each Length)					In Top and Bottom Slabs of Barrel- hooked. Alternate with "a" bars					In Top and Bottom Slabs of Barrel - one end hooked. (Four of each Length) Alternate with "a_1" bars.							Longitudinal in Top Slab of Barrel.				Longitudinal in Sidewalls.				Longitudinal in Bottom Slab of Barrel.				Verticals in Sidewalls.				In Bottom of Headwall.			In Top of Headwall and Apron (2 Each)		
D	S	H	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH		SIZE	SPACING	NO. REQ'D	LENGTH	X	SIZE	SPACING	NO. REQ'D	LENGTH		X		SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	NO. REQ'D	LENGTH	SIZE	NO. REQ'D	LENGTH
										MAX.	MIN.									MAX.	MIN.	MAX.	MIN.																						
0'-0" TO 5'-0" MAXIMUM	1 @ 4'	2'	#5	13"	108	4'-9"	#5	13"	4	2'-11"	—	#6	13"	108	5'-10"	4'-8"	#6	13"	4	4'-5"	—	3'-10"	—	#5	10½"	6	2 @ 30'-8" for 60'-0" Length Barrel. (1'-8" Lap)	#4	12"	4	2 @ 30'-6" for 60'-0" Length Barrel. (1'-3" Lap)	#4	12"	5	2 @ 31'-8" for 60'-0" Length Barrel. (1'-3" Lap)	#4	12"	120	2'-11"	#5	6	5'-6"	#5	8	6'-8"
		3'			108	4'-9"			4	"	—			108	5'-10"	"			4	"	—	"	—			6				6				5				120	3'-11"		6	"		8	"
		4'			108	4'-9"			4	"	—			108	5'-10"	"			4	"	—	"	—			6				8				5				120	4'-11"		6	"		8	"
		5'			108	4'-9"			4	"	—			108	5'-10"	"			4	"	—	"	—			6				10				5				120	5'-11"		6	"		8	"
		6'			108	4'-11"			4	3'-1"	—			108	6'-0"	4'-10"			8	4'-8"	2'-8"	4'-0"	2'-1"			6				12				5				120	6'-11"		6	5'-8"		8	6'-10"
	1 @ 5'	3'	#6	13"	108	5'-9"	#6	13"	4	3'-11"	—	#6	13"	106	6'-10"	5'-8"	#6	13"	8	5'-5"	3'-6"	4'-10"	2'-11"	#5	10½"	7		#4	12"	6		#4	12"	6		#4	12"	120	4'-0"	#6	6	6'-8"	#6	8	7'-10"
		4'			108	5'-9"			4	"	—			106	6'-10"	"			8	"	"	"	"			7				8				6				120	5'-0"		6	"		8	"
		5'			108	5'-9"			4	"	—			106	6'-10"	"			8	"	"	"	"			7				10				6				120	6'-0"		6	"		8	"
		6'			108	5'-11"			4	4'-1"	—			106	7'-0"	5'-10"			8	5'-7"	3'-8"	5'-0"	3'-1"			7				12				6				120	7'-0"		6	6'-10"		8	8'-0"
		7'			108	6'-0"			4	4'-2"	—			106	7'-1"	5'-11"			8	5'-8"	3'-9"	5'-1"	3'-2"			7				14				6				120	8'-0"		6	6'-11"		8	8'-1"
	1 @ 6'	3'	#6	12"	114	6'-9"	#6	12"	8	5'-0"	3'-3"	#6	12"	114	7'-10"	6'-8"	#6	12"	12	6'-5"	2'-11"	5'-10"	2'-9"	#5	10½"	8		#4	12"	6		#4	12"	7		#4	12"	120	4'-1"	#6	6	7'-10"	#6	8	9'-0"
		4'			114	6'-9"			8	"	"			114	7'-10"	"			12	"	"	"	"			8				8				7				120	5'-1"		6	"		8	"
		5'			114	6'-9"			8	"	"			114	7'-10"	"			12	"		"	"			8				10				7				120	6'-1"		6	"		8	"
		6'			114	6'-11"			8	5'-2"	3'-5"			114	8'-0"	6'-10"			12	6'-7"	3'-1"	6'-0"	2'-6"			8				12				7				120	7'-1"		6	8'-0"		8	9'-2"
		7'			114	7'-0"			8	5'-3"	3'-6"			114	8'-1"	6'-11"			12	6'-8"	3'-2"	6'-1"	2'-7"			8				14				7				120	8'-1"		6	8'-1"		8	9'-3"
		8'			114	7'-1"			8	5'-4"	3'-7"			114	8'-2"	7'-0"			12	6'-9"	3'-3"	6'-2"	2'-8"			8				16				7		#5	12"	120	9'-1"		6	8'-2"		8	9'-4"
	1 @ 7'	4'	#6	11"	124	7'-9"	#6	11"	12	6'-2"	3'-0"	#6	11"	122	8'-10"	7'-8"	#6	11"	12	7'-6"	4'-4"	6'-11"	3'-9"	#5	10½"	9		#4	12"	8		#4	12"	8		#4	12"	120	5'-2"	#6	6	9'-0"	#6	8	10'-2"
		5'			124	7'-9"			12	"	"			122	8'-10"	"			12	"	"	"	"			9				10				8				120	6'-2"		6	"		8	"
		6'			124	7'-11"			12	6'-4"	3'-2"			122	9'-0"	7'-10"			16	7'-8"	2'-11"	7'-1"	2'-4"			9				12				8				120	7'-2"		6	9'-2"		8	10'-4"
		7'			124	8'-0"			12	6'-5"	3'-3"			122	9'-1"	7'-11"			16	7'-9"	3'-0"	7'-2"	2'-5"			9				14				8				120	8'-2"		6	9'-3"		8	10'-5"
		8'			124	8'-1"			12	6'-6"	3'-4"			122	9'-2"	8'-0"			16	7'-10"	3'-1"	7'-3"	2'-6"			9				16				8			10"	144	9'-2"		6	9'-4"		8	10'-6"
		9'			124	8'-3"			12	6'-8"	3'-6"			122	9'-4"	8'-2"			16	8'-0"	3'-3"	7'-5"	2'-8"			9				18				8		#5	12"	120	10'-2"		6	9'-6"		8	10'-8"
	1 @ 8'	4'	#7	12"	112	8'-9"	#7	12"	12	7'-0"	3'-6"	#6	12"	112	9'-10"	8'-8"	#6	12"	16	8'-5"	3'-2"	7'-10"	2'-7"	#5	10"	11		#4	12"	8		#4	12"	9		#4	12"	120	5'-4"	#7	6	10'-1"	#7	8	11'-3"
		5'			112	8'-11"			12	7'-2"	3'-8"			112	10'-0"	8'-10"			16	8'-7"	3'-4"	8'-0"	2'-9"			11				10				9				120	6'-4"		6	10'-4"		8	11'-6"
		6'			112	8'-11"			12	"	"			112	10'-0"	"			16	"	"	"	"			11				12				9				120	7'-4"		6	"		8	"
		7'			112	9'-0"			12	7'-3"	3'-9"			112	10'-1"	8'-11"			16	8'-8"	3'-5"	8'-1"	2'-10"			11				14				9				120	8'-4"		6	10'-5"		8	11'-7"
		8'			112	9'-1"			12	7'-4"	3'-10"			112	10'-2"	9'-0"			16	8'-9"	3'-6"	8'-2"	2'-11"			11				16				9			10"	144	9'-4"		6	10'-6"		8	11'-8"
		9'			112	9'-3"			12	7'-6"	4'-0"			112	10'-4"	9'-2"			16	8'-11"	3'-8"	8'-4"	3'-1"			11				18				9		#5	12"	120	10'-4"		6	10'-8"		8	11'-10"
		10'			112	9'-5"			16	7'-8"	2'-5"			110	10'-6"	9'-4"			16	9'-1"	3'-10"	8'-6"	3'-3"			11				20				9			11"	132	11'-4"		6	10'-11"		8	12'-0"
	1 @ 9'	5'	#7	11"	122	9'-11"	#7	11"	16	8'-4"	3'-7"	#6	11"	120	11'-0"	9'-10"	#6	11"	20	9'-8"	3'-4"	9'-1"	2'-9"	#5	10"	12		#4	12"	10		#4	12"	10		#4	12"	120	6'-5"	#7	6	11'-5"	#7	8	12'-7"
		6'			122	10'-0"			16	8'-5"	3'-8"			120	11'-1"	9'-11"			20	9'-9"	3'-5"	9'-2"	2'-10"			12				12				10				120	7'-5"		6	11'-7"		8	12'-9"
		7'			122	10'-0"			16	"	"			120	11'-1"	9'-11"			20	"	"	"	"			12				14				10				120	8'-5"		6	"		8	"
		8'			122	10'-1"			16	8'-6"	3'-9"			120	11'-2"	10'-0"			20	9'-10"	3'-6"	9'-3"	2'-11"			12				16				10			10"	144	9'-5"		6	11'-8"		8	12'-10"
		9'			120	10'-3"			20	8'-8"	2'-4"			120	11'-4"	10'-2"			20	10'-0"	3'-8"	9'-5"	3'-1"			12				18				10		#5	12"	120	10'-5"		6	11'-10"		8	13'-0"
		10'			120	10'-5"			20	8'-10"	2'-6"			120	11'-6"	10'-4"			20	10'-2"	3'-10"	9'-7"	3'-3"			12				20				10			11"	132	11'-5"		6	12'-1"		8	13'-2"
		11'			120	10'-7"			20	9'-0"	2'-8"			120	11'-8"	10'-6"			20	10'-4"	4'-0"	9'-9"	3'-5"			12				22				10			10"	144	12'-5"		6	12'-3"		8	13'-5"
	1 @ 10'	5'	#7	12"	110	10'-11"	#7	12"	16	9'-2"	3'-11"	#7	12"	110	12'-2"	10'-10"	#7	12"	20	10'-8"	3'-8"	10'-0"	3'-0"	#5	10"	13		#4	12"	10		#4	12"	11		#4	12"	120	6'-6"	#7	6	12'-7"	#7	8	13'-9"
		6'			110	11'-0"			16	9'-3"	4'-0"			110	12'-3"	10'-11"			20	10'-9"	3'-9"	10'-1"	3'-1"			13				12				11				120	7'-6"		6	12'-8"		8	13'-10"
		7'			110	11'-0"			16	"	"			110	12'-3"	"			20	"	"	"	"			13				14				11				120	8'-6"		6	"		8	"
		8'			110	11'-1"			20	9'-4"	2'-4"			110	12'-4"	11'-0"			20	10'-10"	3'-10"	10'-2"	3'-2"			13				16				11			10"	144	9'-6"		6	12'-10"		8	14'-0"
		9'			110	11'-3"			20	9'-6"	2'-6"			108	12'-6"	11'-2"			20	11'-0"	4'-0"	10'-4"	3'-4"			13				18				11		#5	12"	120	10'-6"		6	13'-0"		8	14'-2"
		10'			110	11'-5"			20	9'-8"	2'-8"			108	12'-8"	11'-4"			20	11'-2"	4'-2"	10'-6"	3'-6"			13				20				11			11"	132	11'-6"		6	13'-2"		8	14'-4"
		11'			110	11'-7"			20	9'-10"	2'-10"			108	12'-10"	11'-6"			20	11'-4"	4'-4"	10'-8"	3'-8"			13				22				11			10"	144	12'-6"		6	13'-5"		8	14'-6"
		12'			110	11'-9"			20	10'-0"	3'-0"			108	13'-0"	11'-8"			20	11'-6"	4'-6"	10'-10"	3'-10"			13				24				11		#6	12"	120	13'-6"		6	13'-7"		8	14'-9"
	1 @ 11'	6'	#7	11"	118	12'-1"	#7	11"	24	10'-6"	2'-7"	#7	11"	118	13'-4"	12'-0"	#7	11"	24	11'-11"	4'-0"	11'-3"	3'-4"	#5	9½"	15		#4	12"	12		#4	12"	12		#4	12"	120	7'-7"	#7	6	14'-0"	#7	8	15'-1"
		7'			118	12'-1"			24	"	"			118	13'-4"	"			24	"	"	"	"			15				14				12				120	8'-7"		6	"		8	"
		8'			118	12'-1"			24	"	"			118	13'-4"	"			24	"	"	"	"			15				16				12			10"	144	9'-7"		6	"		8	"
		9'			118	12'-3"			24	10'-8"	2'-9"			118	13'-6"	12'-2"			24	12'-1"	4'-2"	11'-5"	3'-6"			15				18				12	#5	12"	120	10'-7"		6	14'-2"		8	15'-4"
		10'			118	12'-5"			24	10'-10"	2'-11"			116	13'-8"	12'-4"			24	12'-3"	4'-4"	11'-7"	3'-8"			15				20				12		11"	132	11'-7"		6	14'-4"		8	15'-6"
		11'			118	12'-7"			24	11'-0"	3'-1"			116	13'-10"	12'-6"			24	12'-5"	4'-6"	11'-9"	3'-10"			15				22				12		10"	144	12'-7"		6	14'-7"		8	15'-8"
		12'			118	12'-9"			24	11'-2"	3'-3"			116	14'-0"	12'-8"			24	12'-7"	4'-8"	11'-11"	4'-0"			15				24				12	#6	12"	120	13'-7"		6	14'-9"		8	15'-11"
	1 @ 12'	6'	#8	12"	108	13'-1"	#8	12"	24	11'-4"	2'-7"	#7	12"	106	14'-4"	13'-0"	#7	12"	24	12'-10"	4'-1"	12'-2"	3'-5"	#5	9½"	16		#4	12"	12		#4	12"	13		#4	12"	120	7'-9"	#8	6	15'-1"	#8	8	16'-3"
		7'			108	13'-1"			24	"	"			106	14'-4"	"			24	"	"	"	"			16				14				13				120	8'-9"		6	"		8	"
		8'			108	13'-1"			24	"	"			106	14'-4"	"			24	"	"	"	"			16				16				13			10"	144	9'-9"		6	"		8	"
		9'			108	13'-3"			24	11'-6"	2'-9"			106	14'-6"	13'-2"			24	13'-0"	4'-3"	12'-4"	3'-7"			16				18				13	#5	12"	120	10'-9"		6	15'-4"		8	16'-6"
		10'			108	13'-5"			24	11'-8"	2'-11"			106	14'-8"	13'-4"			24	13'-2"	4'-5"	12'-6"	3'-9"			16				20				13		11"	132	11'-9"		6	15'-6"		8	16'-8"
		11'			108	13'-7"			24	11'-10"	3'-1"			106	14'-10"	13'-6"			24	13'-4"	4'-7"	12'-8"	3'-11"			16				22				13		10"	144	12'-9"		6	15'-8"		8	16'-10"
		12'			106	13'-9"			24	12'-0"	3'-3"			106	15'-0"	13'-8"			24	13'-6"	4'-9"	12'-10"	4'-1"			16				24				13	#6	12"	120	13'-9"		6	15'-11"		8	17'-0"

▼ These bars are in the skewed portion of barrel only. The length of "a_1" bars and overall length X of "b_1" bars vary by 1'-11" for 13" spacing, 1'-9" for 12" spacing and 1'-7" for 11" spacing.

BAR SIZE	PIN DIAM.	K	ADD FOR HOOKS	BENDING DIAGRAMS FOR BARS "b" & "b_1"	
#6	3"	5"	1'-2"	2 Hooks	
#7	3½"	5¾"	1'-4"		
#6	3"	5"	0'-7"	1 Hook	
#7	3½"	5¾"	0'-8"		

NOTE:- Dimensions are to centers of bars. ("b" and "b_1")

DOWEL BARS FOR TWO HEADWALLS

SPAN	SIZE	SPACING	No. REQ'D	LENGTH	X	Dowel bars "r" in Two Headwalls.
4'	#4	12"±	12	2'-6"	1'-3"	
5'	#4	12"±	16	2'-7"	1'-3½"	
6'	#4	12"±	18	2'-8"	1'-4"	
7'	#4	12"±	20	2'-9"	1'-4½"	
8'	#4	12"±	22	2'-11"	1'-5½"	
9'	#4	12"±	26	3'-0"	1'-6"	
10'	#4	12"±	28	3'-1"	1'-6½"	
11'	#4	12"±	30	3'-2"	1'-7"	
12'	#4	12"±	32	3'-3"	1'-7½"	

Designed by:- W.C.H. 1-23-63.
Drawn by:- W.C.H. 2-24-64.
Quantities by:- W.C.H. 4-2-64.
Checked by:- R.H.S. 5-8-63
Checked by:-
Checked by:-

TOP SLAB REINFORCING
PART PLAN AT END OF CULVERT

BOTTOM SLAB REINFORCING
PART PLAN AT END OF CULVERT

SECTION N-N

LONGITUDINAL SECTION N-N'

TYPICAL SECTION M-M

LAYOUT OF SINGLE BARREL CULVERT
30° SKEW LEFT FORWARD
30° Skew Right Forward is reversed.

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-X302-1 or W-X302-2, W-X303-1 or W-X303-2, and W-X304-1 or W-X304-2. Also W-X30.

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 min.

CONSTRUCTION JOINTS:- Construction joints between wingwalls, sidewalls and slabs shall be only where shown on plans.

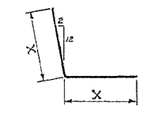
SPECIFICATIONS:- Arkansas State Highway Commission Standard Specifications for Highway Construction and applicable Special Provisions.

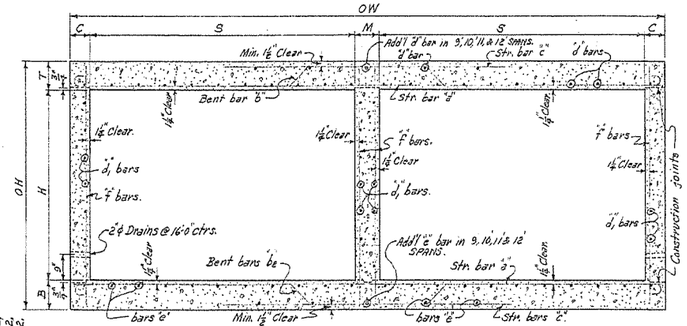
MAX. DESIGN DEPTH OF COVER	BARREL DIMENSIONS										* QUANTITIES			
												REINFORCING STEEL		
	CLEAR SPANS	CLEAR HEIGHT	SQ. FT. OPENING	OVERALL WIDTH	THICKNESS OF TOP SLAB	THICKNESS OF SIDEWALLS	THICKNESS OF BOTTOM SLAB	OVERALL HEIGHT	ROADWAY LENGTH	LENGTH OF HEADWALLS	CLASS S CONC. PER LIN. FT. OF BARREL	TOTAL FOR 60'-0" LENGTH OF BARREL	PER LIN. FT. OF BARREL	ADDITIONAL PER LAP
D	S	H	A	OW	T	C	B	OH	RL	K	CU. YD.	LB.	LB.	LB.
5'-0"	1 @ 4'	2'	8	5'-0"	7"	6"	6½"	3'-1½"	5'-9¼"	6'-11⅛"	0.282	2 622	41.99	17.95
		3'	12	5'-0"		6"		4'-1½"	"	"	0.319	2784	44.16	19.62
		4'	16	5'-0"		6"		5'-1½"	"	"	0.356	2946	46.83	21.29
		5'	20	5'-0"		6"		6'-1½"	"	"	0.394	3107	49.50	22.96
		6'	24	5'-2"		7"		7'-1½"	5'-11⅝"	7'-1½"	0.474	3335	52.96	24.63
	1 @ 5'	3'	15	6'-0"	7½"	6"	7"	4'-2½"	6'-11⅛"	8'-1"	0.380	3541	55.55	22.19
		4'	20	6'-0"		6"		5'-2½"	"	"	0.417	3703	58.23	23.86
		5'	25	6'-0"		6"		6'-2½"	"	"	0.454	3865	60.90	25.53
		6'	30	6'-2"		7"		7'-2½"	7'-1½"	8'-3¼"	0.535	4091	64.49	27.20
		7'	35	6'-3"		7½"		8'-2½"	7'-2⅝"	8'-4½"	0.604	4283	67.63	28.87
	1 @ 6'	3'	18	7'-0"	8"	6"	7½"	4'-3½"	8'-1"	9'-2⅞"	0.446	4221	66.29	24.76
		4'	24	7'-0"		6"		5'-3½"	"	"	0.483	4383	68.96	26.43
		5'	30	7'-0"		6"		6'-3½"	"	"	0.520	4595	71.64	28.10
		6'	36	7'-2"		7"		7'-3½"	8'-3½"	9'-5⅛"	0.602	4772	75.31	29.77
		7'	42	7'-3"		7½"		8'-3½"	8'-4½"	9'-6⅜"	0.671	4966	78.48	31.44
		8'	48	7'-4"		8"		9'-3½"	8'-5⅝"	9'-7⅝"	0.746	5570	88.47	33.11
	1 @ 7'	4'	28	8'-0"	8½"	6"	8½"	5'-5"	9'-2⅞"	10'-4⅜"	0.568	5146	81.32	29.01
		5'	35	8'-0"		6"		6'-5"	"	"	0.605	5307	84.00	30.68
		6'	42	8'-2"		7"		7'-5"	9'-5¼"	10'-7"	0.688	5558	87.76	32.35
		7'	49	8'-3"		7½"		8'-5"	9'-6½"	10'-8⅛"	0.767	5755	90.98	34.02
		8'	56	8'-4"		8"		9'-5"	9'-7¾"	10'-9⅜"	0.832	6100	96.65	35.69
		9'	63	8'-6"		9"		10'-5"	9'-9⅜"	10'-11¾"	0.946	6649	105.59	37.36
	1 @ 8'	4'	32	9'-0"	9½"	6"	9½"	5'-7"	10'-4⅞"	11'-6½"	0.676	6114	95.26	33.32
		5'	40	9'-2"		7"		6'-7"	10'-7"	11'-8⅝"	0.754	6357	99.12	34.99
		6'	48	9'-2"		7"		7'-7"	"	"	0.797	6518	101.79	36.66
		7'	56	9'-3"		7½"		8'-7"	10'-8¼"	11'-10"	0.867	6720	105.05	38.33
		8'	64	9'-4"		8"		9'-7"	10'-9⅜"	11'-11¼"	0.942	7070	110.81	40.00
		9'	72	9'-6"		9"		10'-7"	10'-11⅝"	12'-1½"	1.057	7627	119.92	41.67
		10'	80	9'-8"		10"		11'-7"	11'-2"	12'-3⅜"	1.184	8043	126.67	43.34
	1 @ 9'	5'	45	10'-2"	10"	7"	10"	6'-8"	11'-8⅞"	12'-10¾"	0.844	7356	114.72	37.56
		6'	54	10'-3"		7½"		7'-8"	11'-10"	13'-0"	0.910	7567	118.04	39.23
		7'	63	10'-3"		7½"		8'-8"	"	"	0.957	7725	120.71	40.90
		8'	72	10'-4"		8"		9'-8"	11'-11¼"	13'-1"	1.033	8081	126.59	42.57
		9'	81	10'-6"		9"		10'-8"	12'-1½"	13'-3½"	1.198	8625	135.80	44.24
		10'	90	10'-8"		10"		11'-8"	12'-3⅞"	13'-5¾"	1.276	9063	142.68	45.91
		11'	99	10'-10"		11"		12'-8"	12'-6¼"	13'-8"	1.416	9526	150.40	47.58
	1 @ 10'	5'	50	11'-2"	10½"	7"	11"	6'-9½"	12'-10¾"	14'-0½"	0.957	8359	130.64	40.13
		6'	60	11'-3"		7½"		7'-9½"	12'-11⅞"	14'-1¾"	1.024	8567	133.99	41.80
		7'	70	11'-3"		7½"		8'-9½"	"	"	1.071	8729	136.66	43.47
		8'	80	11'-4"		8"		9'-9½"	13'-1"	14'-3"	1.147	9110	142.55	45.14
		9'	90	11'-6"		9"		10'-9½"	13'-3⅜"	14'-5⅛"	1.263	9634	151.32	46.81
		10'	100	11'-8"		10"		11'-9½"	13'-5¾"	14'-7½"	1.391	10,019	158.89	48.48
		11'	110	11'-10"		11"		12'-9½"	13'-8"	14'-9¾"	1.532	10,597	166.71	50.15
		12'	120	12'-0"		12"		13'-9½"	13'-10⅜"	15'-0⅛"	1.685	11,278	178.67	51.82
	1 @ 11	6'	66	12'-4"	11"	8"	11½"	7'-10½"	14'-2⅞"	15'-4⅝"	1.153	9888	155.16	46.12
		7'	77	12'-4"		8"		8'-10½"	"	"	1.202	10,049	157.83	47.79
		8'	88	12'-4"		8"		9'-10½"	"	"	1.252	10,364	163.06	49.46
		9'	99	12'-6"		9"		10'-10½"	14'-5¼"	15'-7"	1.368	10,952	172.60	51.13
		10'	110	12'-8"		10"		11'-10½"	14'-7½"	15'-9¼"	1.497	11,349	179.70	52.80
		11'	121	12'-10"		11"		12'-10½"	14'-9⅞"	15'-11⅝"	1.638	11,927	187.67	54.47
		12'	132	13'-0"		12"		13'-10½"	15'-0¼"	16'-2"	1.792	12,569	199.79	56.14
	1 @ 12	6'	72	13'-4"	11¾"	8"	12¼"	8'-0"	15'-4⅜"	16'-6½"	1.284	11,081	172.20	48.69
		7'	84	13'-4"		8"		9'-0"	"	"	1.333	11,243	174.87	50.36
		8'	96	13'-4"		8"		10'-0"	"	"	1.383	11,561	180.15	52.03
		9'	108	13'-6"		9"		11'-0"	15'-7⅛"	16'-9"	1.500	12,162	189.85	53.70
		10'	120	13'-8"		10"		12'-0"	15'-9⅝"	16'-11¼"	1.630	12,625	197.07	55.37
		11'	132	13'-10"		11"		13'-0"	15'-11⅞"	17'-1½"	1.772	13,115	205.16	57.04
		12'	144	14'-0"		12"		14'-0"	16'-2"	17'-3⅞"	1.926	13,795	217.45	58.71

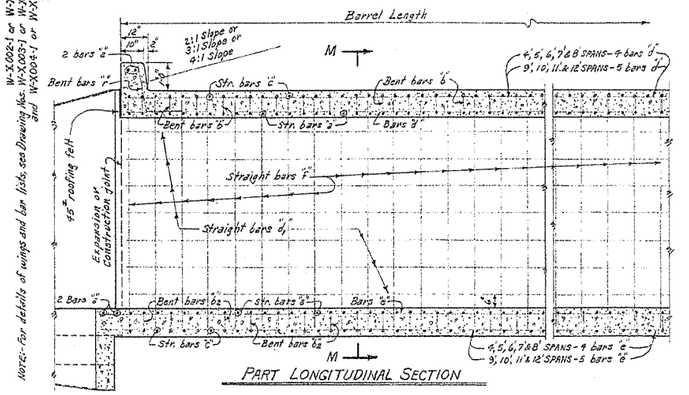
* For remainder of quantities see Std. Wing Drawings listed at left.
Total steel quantities listed above include one lap of longitudinal bars.

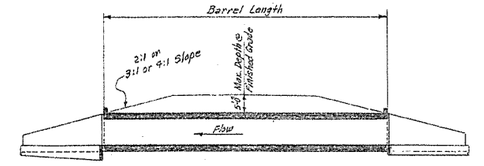
CLASS S CONCRETE

ARKANSAS STATE HIGHWAY COMMISSION
DETAILS OF STANDARD BARREL SECTIONS
FOR
REINFORCED CONCRETE BOX CULVERTS
30° SKEW
4,5,6,7,8,9,10,11 & 12 SPANS
2:1, 3:1 OR 4:1 SLOPES
SINGLES
UNDER 5'-0" COVER
STANDARD DRAWING NO. R-130X-0









FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			145	
JOB No.					

BAR LIST FOR BARREL SECTION 60'-0" IN LENGTH

DEPTH OF COVER	CLEAR SPAN	CLEAR HEIGHT	"a" bars					"b" bars								"b_2" bars								"c" bars					"d" bars				"d_1" bars				"e" bars				"f" bars				
			STRAIGHT					BENT - See Diagram below.								BENT - See Diagram below.								STRAIGHT					STRAIGHT												STRAIGHT				
			In Top and Bottom Slab of Barrel. 2 Add'l in Apron and Headwall.- Each.					In Bottom of Top Slab bent up over Division Wall - hooked. Alternate with "a" and "c" bars.								In Top of Bottom Slab bent down under Division Wall - hooked. Alternate with "a" and "c" bars.								In Top and Bottom Slab of Barrel. Alternate with "b" and "b_2" bars.					Longitudinal in Top Slab of Barrel.				Longitudinal in Sidewalls and Division Walls.				Longitudinal in Bottom Slab of Barrel.				Vertical in Sidewalls and Division Walls.				
D	S	H	SIZE	SPACING	NUMBER REQ'D 3:1	NUMBER REQ'D 4:1	LENGTH	SIZE	SPACING	NUMBER REQ'D 3:1	NUMBER REQ'D 4:1	LENGTH	X	Y	Z	SIZE	SPACING	NUMBER REQ'D 3:1	NUMBER REQ'D 4:1	LENGTH	X	Y	Z	SIZE	SPACING	NUMBER REQ'D 3:1	NUMBER REQ'D 4:1	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NUMBER REQ'D 3:1	NUMBER REQ'D 4:1	LENGTH
0'-0" TO 5'-0" MAXIMUM.	2 @ 4'	2'	#5	12"	128	128	9'-5"	#5	12"	59	59	10'-6"	0'-3"	2'-2½"	3'-4"	#5	12"	59	59	10'-6"	0'-2½"	2'-3½"	3'-4"	#5	12"	120	120	4'-8"	#5	12"	14	2 @ 30'-8" for 60'-0" Length Barrel (1'-8" Lap)	#4	12"	8	2 @ 30'-6" for 60'-0" Length Barrel (1'-3" Lap)	#4	12"	14	2 @ 31'-6" for 60'-0" Length Barrel (1'-3" Lap)	#4	12"	240	240	2'-10"
		3'			128	128	9'-5"			59	59	10'-6"	0'-3"	2'-2½"	3'-4"			59	59	10'-6"	0'-2½"	2'-3½"	3'-4"			120	120	4'-8"			14				12				14				240	240	3'-10"
		4'			128	128	9'-5"			59	59	10'-6"	0'-3"	2'-2½"	3'-4"			59	59	10'-6"	0'-2½"	2'-3½"	3'-4"			120	120	4'-8"			14				16				14				240	240	4'-10"
		5'			128	128	9'-5"			59	59	10'-6"	0'-3"	2'-2½"	3'-4"			59	59	10'-6"	0'-2½"	2'-3½"	3'-4"			120	120	4'-8"			14				20				14				240	240	5'-10"
		6'			128	128	9'-8"			59	59	10'-9"	0'-3"	2'-3½"	3'-5"			59	59	10'-9"	0'-2½"	2'-4½"	3'-5"			120	120	4'-9"			14				24				14				240	240	6'-10"
	2 @ 5'	3'	#6	12"	128	128	11'-5"	#5	12"	59	59	12'-7"	0'-3½"	2'-7½"	4'-1"	#5	12"	59	59	12'-6"	0'-3"	2'-8½"	4'-1"	#6	12"	120	120	5'-8"	#5	11½"	16		#4	12"	12		#4	12"	16		#4	12"	240	240	3'-11"
		4'			128	128	11'-5"			59	59	12'-7"	0'-3½"	2'-7½"	4'-1"			59	59	12'-6"	0'-3"	2'-8½"	4'-1"			120	120	5'-8"			16				16				16				240	240	4'-11"
		5'			128	128	11'-5"			59	59	12'-7"	0'-3½"	2'-7½"	4'-1"			59	59	12'-6"	0'-3"	2'-8½"	4'-1"			120	120	5'-8"			16				20				16				240	240	5'-11"
		6'			128	128	11'-8"			59	59	12'-10"	0'-3½"	2'-8½"	4'-2"			59	59	12'-9"	0'-3"	2'-9½"	4'-2"			120	120	5'-9"			16				24				16				240	240	6'-11"
		7'			128	128	11'-10"			59	59	13'-0"	0'-3½"	2'-9½"	4'-2½"			59	59	12'-11"	0'-3"	2'-10½"	4'-2½"			120	120	5'-10"			16				28				16				240	240	7'-11"
	2 @ 6'	3'	#6	11"	140	140	13'-5"	#5	11"	65	65	14'-7"	0'-4"	3'-0½"	4'-10"	#5	11"	65	65	14'-7"	0'-4"	3'-0½"	4'-10"	#6	11"	132	132	6'-8"	#5	11½"	18		#4	12"	12		#4	12"	18		#4	12"	240	240	4'-0"
		4'			140	140	13'-5"			65	65	14'-7"	0'-4"	3'-0½"	4'-10"			65	65	14'-7"	0'-4"	3'-0½"	4'-10"			132	132	6'-8"			18				16				18				240	240	5'-0"
		5'			140	140	13'-5"			65	65	14'-7"	0'-4"	3'-0½"	4'-10"			65	65	14'-7"	0'-4"	3'-0½"	4'-10"			132	132	6'-8"			18				20				18				240	240	6'-0"
		6'			140	140	13'-8"			65	65	14'-10"	0'-4"	3'-1½"	4'-11"			65	65	14'-10"	0'-4"	3'-1½"	4'-11"			132	132	6'-9"			18				24				18				240	240	7'-0"
		7'			140	140	13'-10"			65	65	15'-0"	0'-4"	3'-2½"	4'-11½"			65	65	15'-0"	0'-4"	3'-2½"	4'-11½"			132	132	6'-10"			18				28				18				240	240	8'-0"
		8'			140	140	13'-11"			65	65	15'-1"	0'-4"	3'-2½"	5'-0"			65	65	15'-1"	0'-4"	3'-2½"	5'-0"			132	132	6'-10"			18				32				18			10"	288	288	9'-0"
	2 @ 7'	4'	#6	12"	128	128	15'-5"	#6	12"	59	59	16'-9"	0'-4½"	3'-5"	5'-7"	#6	12"	59	59	16'-9"	0'-4½"	3'-5"	5'-7"	#6	12"	120	120	7'-8"	#5	11½"	20		#4	12"	16		#4	12"	20		#4	12"	240	240	5'-1"
		5'			128	128	15'-5"			59	59	16'-9"	0'-4½"	3'-5"	5'-7"			59	59	16'-9"	0'-4½"	3'-5"	5'-7"			120	120	7'-8"			20				20				20				240	240	6'-1"
		6'			128	128	15'-8"			59	59	17'-0"	0'-4½"	3'-6"	5'-8"			59	59	17'-0"	0'-4½"	3'-6"	5'-8"			120	120	7'-9"			20				24				20				240	240	7'-1"
		7'			128	128	15'-10"			59	59	17'-2"	0'-4½"	3'-7"	5'-8½"			59	59	17'-2"	0'-4½"	3'-7"	5'-8½"			120	120	7'-10"			20				28				20				240	240	8'-1"
		8'			128	128	15'-11"			59	59	17'-3"	0'-4½"	3'-7"	5'-9"			59	59	17'-3"	0'-4½"	3'-7"	5'-9"			120	120	7'-10"			20				32				20			10"	288	288	9'-1"
		9'			128	128	16'-2"			59	59	17'-6"	0'-4½"	3'-8"	5'-10"			59	59	17'-6"	0'-4½"	3'-8"	5'-10"			120	120	7'-11"			20				36				20		#5	12"	240	240	10'-1"
	2 @ 8'	4'	#6	11"	140	140	17'-5"	#6	11"	65	65	18'-10"	0'-5"	3'-10"	6'-4"	#6	11"	65	65	18'-10"	0'-5"	3'-10"	6'-4"	#6	11"	132	132	8'-8"	#5	11½"	23		#4	12"	16		#4	12"	22		#4	12"	240	240	5'-2"
		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				20				22				240	240	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				24				22				240	240	7'-2"
		7'			140	140	17'-10"			65	65	19'-3"	0'-5"	4'-0"	6'-5½"			65	65	19'-3"	0'-5"	4'-0"	6'-5½"			132	132	8'-10"			23				28				22				240	240	8'-2"
		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				32				22			10"	288	288	9'-2"
		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				36				22		#5	12"	240	240	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				40				22			11"	264	264	11'-2"
	2 @ 9'	5'	#6	11"	140	140	19'-8"	#6	11"	65	65	21'-1"	0'-5½"	4'-4"	7'-2"	#6	11"	65	65	21'-1"	0'-5¾"	4'-3½"	7'-2"	#6	11"	132	132	9'-9"	#5	11½"	26		#4	12"	20		#4	12"	25		#4	12"	240	240	6'-3"
		6'			140	140	19'-10"			65	65	21'-3"	0'-5½"	4'-5"	7'-2½"			65	65	21'-3"	0'-5¾"	4'-4½"	7'-2½"			132	132	9'-10"			26				24				25				240	240	7'-3"
		7'			140	140	19'-10"			65	65	21'-3"	0'-5½"	4'-5"	7'-2½"			65	65	21'-3"	0'-5¾"	4'-4½"	7'-2½"			132	132	9'-10"			26				28				25				240	240	8'-3"
		8'			140	140	19'-11"			65	65	21'-4"	0'-5½"	4'-5"	7'-3"			65	65	21'-4"	0'-5¾"	4'-4½"	7'-3"			132	132	9'-10"			26				32				25			10"	288	288	9'-3"
		9'			140	140	20'-2"			65	65	21'-7"	0'-5½"	4'-6"	7'-4"			65	65	21'-7"	0'-5¾"	4'-5½"	7'-4"			132	132	9'-11"			26				36				25		#5	12"	240	240	10'-3"
		10'			140	140	20'-5"			65	65	21'-10"	0'-5½"	4'-7"	7'-5"			65	65	21'-10"	0'-5¾"	4'-6½"	7'-5"			132	132	10'-0"			26				40				25			11"	264	264	11'-3"
		11'			140	140	20'-7"			65	65	22'-0"	0'-5½"	4'-7"	7'-6"			65	65	22'-0"	0'-5¾"	4'-6½"	7'-6"			132	132	10'-0"			26				44				25			10"	288	288	12'-3"
	2 @ 10'	5'	#7	12"	128	128	21'-8"	#6	12"	59	59	23'-2"	0'-6"	4'-9"	7'-11"	#6	12"	59	59	23'-2"	0'-6½"	4'-8"	7'-11"	#7	12"	120	120	10'-9"	#5	11½"	28		#4	12"	20		#4	12"	27		#4	12"	240	240	6'-4"
		6'			128	128	21'-10"			59	59	23'-4"	0'-6"	4'-10"	7'-11½"			59	59	23'-4"	0'-6½"	4'-9"	7'-11½"			120	120	10'-10"			28				24				27				240	240	7'-4"
		7'			128	128	21'-10"			59	59	23'-4"	0'-6"	4'-10"	7'-11½"			59	59	23'-4"	0'-6½"	4'-9"	7'-11½"			120	120	10'-10"			28				28				27				240	240	8'-4"
		8'			128	128	21'-11"			59	59	23'-5"	0'-6"	4'-10"	8'-0"			59	59	23'-5"	0'-6½"	4'-9"	8'-0"			120	120	10'-10"			28				32				27			10"	288	288	9'-4"
		9'			128	128	22'-2"			59	59	23'-8"	0'-6"	4'-11"	8'-1"			59	59	23'-8"	0'-6½"	4'-10"	8'-1"			120	120	10'-11"			28				36				27		#5	12"	240	240	10'-4"
		10'			128	128	22'-5"			59	59	23'-11"	0'-6"	5'-0"	8'-2"			59	59	23'-11"	0'-6½"	4'-11"	8'-2"			120	120	11'-0"			28				40				27			11"	264	264	11'-4"
		11'			128	128	22'-7"			59	59	24'-1"	0'-6"	5'-0"	8'-3"			59	59	24'-1"	0'-6½"	4'-11"	8'-3"			120	120	11'-0"			28				44				27			10"	288	288	12'-4"
		12'			128	128	22'-9"			59	59	24'-3"	0'-6"	5'-0"	8'-4"			59	59	24'-3"	0'-6½"	4'-11"	8'-4"			120	120	11'-0"			28				48				27		#6	12"	240	240	13'-4"
	2 @ 11'	6'	#7	12"	128	128	23'-11"	#6	12"	59	59	25'-5"	0'-6½"	5'-3"	8'-9"	#6	12"	59	59	25'-6"	0'-7½"	5'-1"	8'-9"	#7	12"	120	120	11'-10"	#5	11½"	30		#4	12"	24		#4	12"	29		#4	12"	240	240	7'-6"
		7'			128	128	23'-11"			59	59	25'-5"	0'-6½"	5'-3"	8'-9"			59	59	25'-6"	0'-7½"	5'-1"	8'-9"			120	120	11'-10"			30				28				29				240	240	8'-6"
		8'			128	128	23'-11"			59	59	25'-5"	0'-6½"	5'-3"	8'-9"			59	59	25'-6"	0'-7½"	5'-1"	8'-9"			120	120	11'-10"			30				32				29			10"	288	288	9'-6"
		9'			128	128	24'-2"			59	59	25'-8"	0'-6½"	5'-4"	8'-10"			59	59	25'-9"	0'-7½"	5'-2"	8'-10"			120	120	11'-11"			30				36				29		#5	12"	240	240	10'-6"
		10'			128	128	24'-5"			59	59	25'-11"	0'-6½"	5'-5"	8'-11"			59	59	26'-0"	0'-7½"	5'-3"	8'-11"			120	120	12'-0"			30				40				29			11"	264	264	11'-6"
		11'			128	128	24'-7"			59	59	26'-1"	0'-6½"	5'-5"	9'-0"			59	59	26'-2"	0'-7½"	5'-3"	9'-0"			120	120	12'-0"			30				44				29			10"	288	288	12'-6"
		12'			128	128	24'-9"			59	59	26'-3"	0'-6½"	5'-5"	9'-1"			59	59	26'-4"	0'-7½"	5'-3"	9'-1"			120	120	12'-0"			30				48				29		#6	12"	240	240	13'-6"
	2 @ 12'	6'	#7	11"	140	140	25'-11"	#6	11"	65	65	27'-5"	0'-7"	5'-8"	9'-6"	#6	11"	65	65	27'-7"	0'-8½"	5'-5"	9'-6"	#7	11"	132	132	12'-10"	#5	11½"	32		#4	12"	24		#4	12"	31		#4	12"	240	240	7'-7"
		7'			140	140	25'-11"			65	65	27'-5"	0'-7"	5'-8"	9'-6"			65	65	27'-7"	0'-8½"	5'-5"	9'-6"			132	132	12'-10"			32				28				31				240	240	8'-7"
		8'			140	140	25'-11"			65	65	27'-5"	0'-7"	5'-8"	9'-6"			65	65	27'-7"	0'-8½"	5'-5"	9'-6"			132	132	12'-10"			32				32				31			10"	288	288	9'-7"
		9'			140	140	26'-2"			65	65	27'-8"	0'-7"	5'-9"	9'-7"			65	65	27'-10"	0'-8½"	5'-6"	9'-7"			132	132	12'-11"			32				36				31		#5	12"	240	240	10'-7"
		10'			140	140	26'-5"			65	65	27'-11"	0'-7"	5'-10"	9'-8"			65	65	28'-1"	0'-8½"	5'-7"	9'-8"			132	132	13'-0"			32				40				31			11"	264	264	11'-7"
		11'			140	140	26'-7"			65	65	28'-1"	0'-7"	5'-10"	9'-9"			65	65	28'-3"	0'-8½"	5'-7"	9'-9"			132	132	13'-0"			32				44				31			10"	288	288	12'-7"
		12			140	140	26'-9"			65	65	28'-3"	0'-7"	5'-10"	9'-10"			65	65	28'-5"	0'-8½"	5'-7"	9'-10"			132	132	13'-0"			32				48				31		#6	12"	240	240	13'-7"

BAR SIZE	PIN DIAM.	K	ADD FOR 2 HOOKS	BENDING DIAGRAM FOR Bars "b" and "b_2".
#5	2½"	4¼"	0'-11½"	
#6	3"	5"	1'-2"	

NOTE:- Dimensions are to centers of bars. (Bars "b" and "b_2")

DOWEL BARS FOR TWO HEADWALLS

2 SPANS @	SIZE	SPACING	NO. REQ'D	LENGTH	X	Bars "r" Dowel bars in Headwalls.
4'	#4	12"±	20	2'-5"	1'-2½"	
5'	#4	12"±	24	2'-6"	1'-3"	
6'	#4	12"±	28	2'-7"	1'-3½"	
7'	#4	12"±	32	2'-8"	1'-4"	
8'	#4	12"±	36	2'-9"	1'-4½"	
9'	#4	12"±	40	2'-10"	1'-5"	
10'	#4	12"±	46	2'-11"	1'-5½"	
11'	#4	12"±	50	3'-0"	1'-6"	
12'	#4	12"±	54	3'-1"	1'-6½"	

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:- RHS. 5-14-63
Checked by:- RHS. 5-24-63
Checked by:- RHS. 5-24-63

DIMENSIONS QUANTITIES

MAX. DESIGN DEPTH OF COVER	BARREL DIMENSIONS									UNIT QUANTITIES			
	CLEAR SPANS	CLEAR HEIGHT	SQ. FT. OPENING	OVERALL WIDTH	THICKNESS OF TOP SLAB	THICKNESS OF SIDEWALLS	THICKNESS OF DIVISION WALL	THICKNESS OF BOTTOM SLAB	OVERALL HEIGHT	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
D	S	H	A	OW	T	C	M	B	OH	CU.YD.	LB.	LB.	LB.
5'-0"	2 @ 4'	2'	16	9'-8"	6½"	6"	8"	6"	3'-0½"	0.496	88.15	42.71	129.56
		3'	24	9'-8"		6"	8"		4'-0½"	0.558	93.49	46.05	129.56
		4'	32	9'-8"		6"	8"		5'-0½"	0.620	98.84	49.39	129.56
		5'	40	9'-8"		6"	8"		6'-0½"	0.682	104.18	52.73	129.56
		6'	48	9'-11"		7"	9"		7'-0½"	0.809	110.74	56.07	131.65
	2 @ 5'	3'	30	11'-8"	7"	6"	8"	6½"	4'-1½"	0.671	123.34	51.19	198.64
		4'	40	11'-8"		6"	8"		5'-1½"	0.733	128.68	54.53	198.64
		5'	50	11'-8"		6"	8"		6'-1½"	0.795	134.03	57.87	198.64
		6'	60	11'-11"		7"	9"		7'-1½"	0.922	140.89	61.21	201.64
		7'	70	12'-1"		7½"	10"		8'-1½"	1.049	147.34	64.55	203.65
	2 @ 6'	3'	36	13'-8"	7½"	6"	8"	7½"	4'-3"	0.818	148.50	56.34	233.58
		4'	48	13'-8"		6"	8"		5'-3"	0.880	153.85	59.68	233.58
		5'	60	13'-8"		6"	8"		6'-3"	0.941	159.19	63.02	233.58
		6'	72	13'-11"		7"	9"		7'-3"	1.070	166.20	66.36	236.59
		7'	84	14'-1"		7½"	10"		8'-3"	1.192	172.74	69.70	238.59
		8'	96	14'-2"		8"	10"		9'-3"	1.298	183.36	73.04	239.59
	2 @ 7'	4'	56	15'-8"	8"	6"	8"	8"	5'-4"	1.021	178.15	64.83	268.97
		5'	70	15'-8"		6"	8"		6'-4"	1.082	183.49	68.17	268.97
		6'	84	15'-11"		7"	9"		7'-4"	1.212	190.59	71.51	271.97
		7'	98	16'-1"		7½"	10"		8'-4"	1.339	197.19	74.85	273.98
		8'	112	16'-2"		8"	10"		9'-4"	1.440	207.89	78.19	274.98
		9'	126	16'-5"		9"	11"		10'-4"	1.616	225.25	81.53	277.98
	2 @ 8'	4'	64	17'-8"	8½"	6"	8"	8½"	5'-5"	1.174	210.37	71.71	304.80
		5'	80	17'-11"		7"	9"		6'-5"	1.295	217.63	75.05	307.81
		6'	96	17'-11"		7"	9"		7'-5"	1.366	222.97	78.39	307.81
		7'	112	18'-1"		7½"	10"		8'-5"	1.489	229.68	81.73	309.81
		8'	128	18'-2"		8"	10"		9'-5"	1.595	240.97	85.07	310.81
		9'	144	18'-5"		9"	11"		10'-5"	1.772	258.08	88.41	313.82
		10'	160	18'-8"		10"	12"		11'-5"	1.967	271.07	91.75	316.82
	2 @ 9'	5'	90	19'-11"	9"	7"	9"	9¼"	6'-6¼"	1.477	239.37	82.77	345.92
		6'	108	20'-1"		7½"	10"		7'-6¼"	1.594	246.08	86.11	347.43
		7'	126	20'-1"		7½"	10"		8'-6¼"	1.671	251.93	89.45	347.43
		8'	144	20'-2"		8"	10"		9'-6¼"	1.778	262.26	92.79	348.43
		9'	162	20'-5"		9"	11"		10'-6¼"	1.956	279.95	96.13	351.43
		10'	180	20'-8"		10"	12"		11'-6¼"	2.152	292.97	99.47	354.43
		11'	198	20'-10"		11"	12"		12'-6¼"	2.328	306.86	102.81	356.94
	2 @ 10'	5'	100	21'-11"	9½"	7"	9"	10"	6'-7½"	1.674	279.64	87.92	479.99
		6'	120	22'-1"		7½"	10"		7'-7½"	1.792	286.50	91.26	482.71
		7'	140	22'-1"		7½"	10"		8'-7½"	1.869	291.85	94.60	482.71
		8'	160	22'-2"		8"	10"		9'-7½"	1.976	302.77	97.94	484.08
		9'	180	22'-5"		9"	11"		10'-7½"	2.155	320.74	101.28	488.16
		10'	200	22'-8"		10"	12"		11'-7½"	2.352	333.99	104.62	492.25
		11'	220	22'-10"		11"	12"		12'-7½"	2.529	346.01	107.96	494.98
		12'	240	23'-0"		12"	12"		13'-7½"	2.718	370.23	111.30	497.70
	2 @ 11'	6'	132	24'-2"	10"	8"	10"	11"	7'-9"	2.048	309.36	96.41	530.03
		7'	154	24'-2"		8"	10"		8'-9"	2.128	314.70	99.75	530.03
		8'	176	24'-2"		8"	10"		9'-9"	2.208	325.12	103.09	530.03
		9'	198	24'-5"		9"	11"		10'-9"	2.388	343.25	106.43	534.12
		10'	220	24'-8"		10"	12"		11'-9"	2.586	356.57	109.77	538.21
		11'	242	24'-10"		11"	12"		12'-9"	2.764	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"	10½"	8"	10"	12"	7'-10½"	2.299	353.31	101.55	576.93
		7'	168	26'-2"		8"	10"		8'-10½"	2.379	368.65	104.89	576.93
		8'	192	26'-2"		8"	10"		9'-10½"	2.459	369.12	108.23	576.93
		9'	216	26'-5"		9"	11"		10'-10½"	2.640	387.52	111.57	580.52
		10'	240	26'-8"		10"	12"		11'-10½"	2.840	401.07	114.91	584.60
		11'	264	26'-10"		11"	12"		12'-10½"	3.018	415.31	118.25	587.33
		12'	288	27'-0"		12"	12"		13'-10½"	3.208	437.88	121.59	590.05

NOTE:- For details of wings and bar lists, see Drawing Nos. W-X002-1 or W-X002-2, W-X003-1 or W-X003-2, and W-X004-1 or W-X004-2.

TYPICAL SECTION M-M

PART LONGITUDINAL SECTION

LONGITUDINAL SECTION

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'-8". Lap longitudinal bars 30 diameters.

CONSTRUCTION JOINTS:- Construction joints between wingwalls, sidewalls, division walls and slabs shall be only where shown on plans.

SPECIFICATIONS:- Arkansas State Highway Commission Standard Specifications for Highway Construction and applicable Special Provisions.

NOTE:- This drawing to be used in conjunction with Standard Wing 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.

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#/□"

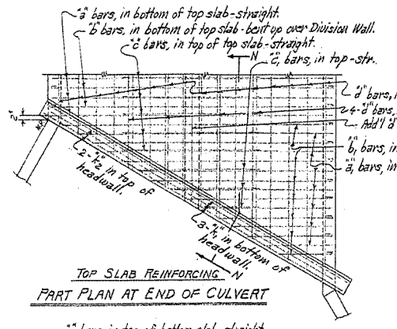
CLASS S CONCRETE

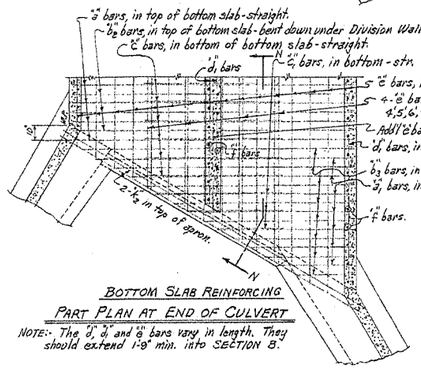
ARKANSAS STATE HIGHWAY COMMISSION

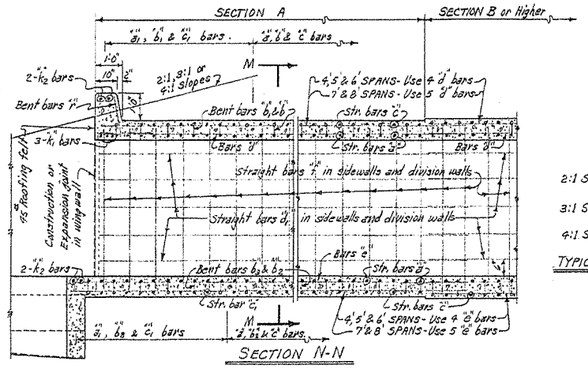
DETAILS OF STANDARD BARREL SECTIONS
FOR
REINFORCED CONCRETE BOX CULVERTS

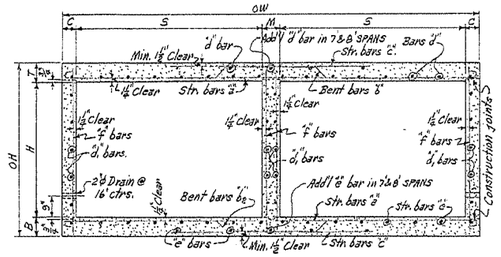
4',5',6',7',8',9',10',11' & 12' SPANS — 3:1 OR 4:1 SLOPES
DOUBLES — UNDER 5'-0" COVER

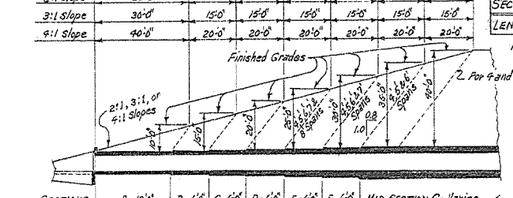
STANDARD DRAWING NO. R-200X-0.

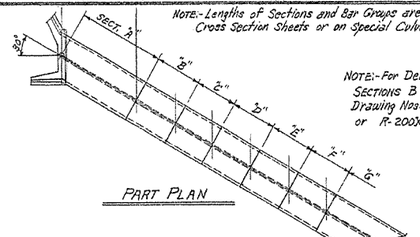












Reshot 3-8-93

292

FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			146	
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 "e" bars vary in length. They should extend 1'-9" min. into SECTION B.

NOTE:- For Details of Standard Wings and bar lists, see Drawing No. W-X302-1 or W-X302-2; W-X303-1 or W-X303-2, and W-X304-1 or W-X304-2. Also W-X30.

SECTION N-N

TYPICAL SECTION M-M

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 above.

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-200X-X1, R-200X-X2, or R-200X-X3.

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'-10¼"	6'-11⅛"	25'-4¾"	12'-8⅜"	36'-11¼"	18'-5¾"

NOTE:- Minimum ℄ Length of SECTION "A" on 30° Skew = (0.288675 OW + 2").

MAX. DESIGN DEPTH OF COVER	CLEAR SPANS	CLEAR HEIGHT	SQ. FT. OPENING	OVERALL WIDTH	THICKNESS OF TOP SLAB	THICKNESS OF SIDEWALLS	THICKNESS OF DIVISION WALL	THICKNESS OF BOTTOM SLAB	OVERALL HEIGHT	ROADWAY LENGTH	LENGTH OF HEADWALL	* QUANTITIES - ONE SECTION "A": CLASS S CONCRETE, BARREL ONLY 2:1	3:1	4:1	REINFORCING STEEL, BARREL, APRON AND HEADWALL. 2:1	3:1	4:1
D	S	H	A	OW	T	C	M	B	OH	RL	K	CU.YD.	CU.YD.	CU.YD.	LB.	LB.	LB.
SECTION "A" = 10'-0"	2 @ 4'	2'	16	9'-8"	6"	6"	8"	6"	3'-0"	11'-2"	12'-3¾"	6.66	12.22	17.77	1063	1803	2560
		3'	24	9'-8"		6"	8"		4'-0"	"	"	7.52	13.79	20.06	1142	1943	2786
		4'	32	9'-8"		6"	8"		5'-0"	"	"	8.38	15.36	22.35	1221	2084	2991
		5'	40	9'-8"		6"	8"		6'-0"	"	"	9.24	16.94	24.64	1300	2224	3197
		6'	48	9'-11"		7"	9"		7'-0"	11'-5⅛"	12'-7¼"	10.99	20.14	29.29	1393	2391	3438
	2 @ 5'	3'	30	11'-8"	6½"	6"	8"	6½"	4'-1"	13'-5⅝"	14'-7½"	9.05	16.58	24.12	1539	2685	3821
		4'	40	11'-8"		6"	8"		5'-1"	"	"	9.91	18.16	26.41	1618	2776	4027
		5'	50	11'-8"		6"	8"		6'-1"	"	"	10.76	19.73	28.70	1697	2916	4232
		6'	60	11'-11"		7"	9"		7'-1"	13'-9⅛"	14'-11"	12.52	22.96	33.39	1796	3090	4484
		7'	70	12'-1"		7½"	10"		8'-1"	13'-11½"	15'-1¼"	14.20	26.03	37.86	2053	3552	5157
	2 @ 6'	3'	36	13'-8"	7¼"	6"	8"	7¾"	4'-3"	15'-9⅜"	16'-11¼"	11.33	20.77	30.21	1755	3039	4356
		4'	48	13'-8"		6"	8"		5'-3"	"	"	12.19	22.35	32.50	1834	3180	4562
		5'	60	13'-8"		6"	8"		6'-3"	"	"	13.04	23.90	34.76	1913	3320	4767
		6'	72	13'-11"		7"	9"		7'-3"	16'-0⅞"	17'-2¾"	14.82	27.17	39.52	2012	3494	5018
		7'	84	14'-1"		7½"	10"		8'-3"	16'-3¼"	17'-5"	16.51	30.27	44.03	2273	3965	5702
		8'	96	14'-2"		8"	10"		9'-3"	16'-4¼"	17'-6¼"	17.98	32.96	47.94	2445	4256	6116
	2 @ 7'	4'	56	15'-8"	8¼"	6"	8"	8¾"	5'-5"	18'-1⅛"	19'-3"	14.81	27.15	39.49	2352	4096	5782
		5'	70	15'-8"		6"	8"		6'-5"	"	"	15.67	28.72	41.78	2430	4186	5987
		6'	84	15'-11"		7"	9"		7'-5"	18'-4⅛"	19'-6½"	17.47	32.02	46.58	2544	4378	6259
		7'	98	16'-1"		7½"	10"		8'-5"	18'-6⅝"	19'-8¾"	19.17	35.15	51.12	2813	4860	6958
		8'	112	16'-2"		8"	10"		9'-5"	18'-8"	19'-9¾"	20.64	37.84	55.04	2979	5147	7370
		9'	126	16'-5"		9"	11"		10'-5"	18'-11⅛"	20'-1¼"	23.10	42.33	61.57	3175	5505	7872
	2 @ 8'	4'	64	17'-8"	9¼"	6"	8"	9¾"	5'-7"	20'-4¼"	21'-6¾"	17.77	32.58	47.39	2765	4822	6874
		5'	80	17'-11"		7"	9"		6'-7"	20'-8½"	21'-10"	19.48	35.71	51.93	2874	5010	7144
		6'	96	17'-11"		7"	9"		7'-7"	"	"	20.46	37.51	54.56	2953	5151	7350
		7'	112	18'-1"		7½"	10"		8'-7"	20'-10⅝"	22'-0½"	22.18	40.66	59.14	3148	5424	7807
		8'	128	18'-2"		8"	10"		9'-7"	20'-11⅜"	22'-1¼"	23.65	43.35	63.05	3341	5783	8348
		9	144	18'-5"		9"	11"		10'-7"	21'-3¼"	22'-5"	26.13	47.90	69.66	3595	6116	8824
		10'	160	18'-8"		10"	12"		11'-7"	21'-6¾"	22'-8½"	28.94	52.87	76.90	3893	6766	9770

* For remainder of quantities see Std. Wing and Barrel Drawings listed below. Total steel quantities listed above include one lap of longitudinal bars, plus an additional lap for 4:1 slopes.

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 LIST FOR SECTION "A" ON 30° SKEW - ONE END ONLY.

SECTION & BAR GROUP: SECTION "A" & BAR GROUP "A"

LENGTH OF SECTION: 2:1 = 13'-10¼"; 3:1 = 25'-4¾"; 4:1 = 36'-11¼"

DEPTH OF COVER (D): 0'-0" TO 10'-0" MAXIMUM.

"a" bars – STRAIGHT – In Top and Bottom Slab of Barrel. ▼"a1" bars – STRAIGHT – In Top and Bottom Slab of Barrel - (Two of each Length)

CLEAR SPAN S	CLEAR HEIGHT H	"a" SIZE	SPACING	NUMBER REQ'D 2:1	3:1	4:1	LENGTH	"a1" SIZE	SPACING	No. REQ'D	LENGTH MAX.	MIN.
2 @ 4'	2'	#4	13"	23	43	65	9'-5"	#4	13"	6	7'-6"	3'-8"
	3'			23	43	65	"			6	"	"
	4'			23	43	65	"			6	"	"
	5'			23	43	65	"			6	"	"
	6'			23	43	65	9'-8"			6	7'-9"	3'-11"
2 @ 5'	3'	#4	11"	25	49	75	11'-5"	#4	11"	10	9'-10"	3'-6"
	4'			25	49	75	"			10	"	"
	5'			25	49	75	"			10	"	"
	6'			25	49	75	11'-8"			10	10'-1"	3'-9"
	7'			25	49	75	11'-10"			10	10'-3"	3'-11"
2 @ 6'	3'	#4	12"	21	45	67	13'-5"	#4	12"	12	11'-8"	2'-11"
	4'			21	45	67	"			12	"	"
	5'			21	45	67	"			12	"	"
	6'			21	45	67	13'-8"			12	11'-11"	3'-2"
	7'			21	45	67	13'-10"			12	12'-1"	3'-4"
	8'			21	45	67	13'-11"			12	12'-2"	3'-5"
2 @ 7'	4'	#4	12"	21	43	67	15'-5"	#4	12"	14	13'-8"	3'-2"
	5'			21	43	67	"			14	"	"
	6'			21	43	67	15'-8"			14	13'-11"	3'-5"
	7'			21	43	67	15'-10"			14	14'-1"	3'-7"
	8'			21	43	67	15'-11"			14	14'-2"	3'-8"
	9'			21	43	67	16'-2"			14	14'-5"	3'-11"
2 @ 8'	4'	#5	13"	17	39	61	17'-5"	#5	13"	14	15'-6"	4'-0"
	5'			17	39	61	17'-8"			14	15'-9"	4'-3"
	6'			17	39	61	"			14	"	"
	7'			17	39	61	17'-10"			16	15'-11"	2'-6"
	8'			17	39	61	17'-11"			16	16'-0"	2'-7"
	9'			17	39	61	18'-2"			16	16'-2"	2'-9"
	10'			17	39	61	18'-5"			16	16'-6"	3'-1"

"b" bars – BENT - See Diagrams below. – In Bottom of Top Slab bent up over Division Wall - hooked. Alternate with "a" and "c" bars. ▼"b1" bars – In Bottom of Top Slab - some are bent up over Division Walls - one end hooked. Alternate with "a1" and "c" or "c1" bars.

S	H	"b" SIZE	SPACING	NUMBER REQ'D 2:1	3:1	4:1	LENGTH	X	Y	Z	"b1" SIZE	SPACING	No. REQ'D	LENGTH MAX.	MIN.	L MAX.	MIN.
2 @ 4'	2'	#4	13"	10	21	31	10'-5"	0'-2¾"	2'-1"	3'-5"	#4	13"	4	9'-0"	3'-1"	8'-5"	2'-8"
	3'			10	21	31	"	"	"	"			4	"	"	"	"
	4'			10	21	31	"	"	"	"			4	"	"	"	"
	5'			10	21	31	"	"	"	"			4	"	"	"	"
	6'			10	21	31	10'-8"	0'-2¾"	2'-2"	3'-6"			4	9'-3"	3'-4"	8'-8"	2'-11"
2 @ 5'	3'	#5	11"	11	23	36	12'-6"	0'-3"	2'-6½"	4'-2"	#5	11"	6	11'-3"	3'-2"	10'-7"	2'-8"
	4'			11	23	36	"	"	"	"			6	"	"	"	"
	5'			11	23	36	"	"	"	"			6	"	"	"	"
	6'			11	23	36	12'-9"	"	2'-7½"	4'-3"			6	11'-6"	3'-5"	10'-10"	2'-11"
	7'			11	23	36	12'-11"	0'-3"	2'-8½"	4'-3½"			6	11'-8"	3'-7"	11'-0"	3'-1"
2 @ 6'	3'	#5	12"	10	21	33	14'-7"	0'-3¾"	2'-11"	4'-11"	#5	12"	6	13'-3"	4'-3"	12'-6"	3'-9"
	4'			10	21	33	"	"	"	"			6	"	"	"	"
	5'			10	21	33	"	"	"	"			6	"	"	"	"
	6'			10	21	33	14'-10"	"	3'-0"	5'-0"			6	13'-6"	4'-6"	12'-9"	4'-0"
	7'			10	21	33	15'-0"	"	3'-1"	5'-0½"			6	13'-8"	4'-8"	12'-11"	4'-2"
	8'			10	21	33	15'-1"	0'-3¾"	3'-1"	5'-1"			6	13'-9"	4'-9"	12'-0"	4'-3"
2 @ 7'	4'	#6	12"	9	21	32	16'-10"	0'-4¾"	3'-4½"	5'-7"	#6	12"	7	15'-5"	4'-7"	14'-6"	4'-0"
	5'			9	21	32	"	"	"	"			7	"	"	"	"
	6'			9	21	32	17'-1"	"	3'-5½"	5'-8"			8	15'-8"	3'-1"	14'-9"	2'-6"
	7'			9	21	32	17'-3"	"	3'-6½"	5'-8½"			8	15'-10"	3'-3"	14'-11"	2'-8"
	8'			9	21	32	17'-4"	"	3'-6½"	5'-9"			8	15'-11"	3'-4"	15'-0"	2'-9"
	9'			9	21	32	17'-7"	0'-4¾"	3'-7½"	5'-10"			8	16'-2"	3'-7"	15'-3"	3'-0"
2 @ 8'	4'	#6	13"	8	19	29	18'-10"	0'-5¾"	3'-7"	6'-5"	#6	13"	8	17'-4"	3'-7"	16'-5"	3'-0"
	5'			8	19	29	19'-1"	"	3'-8"	6'-6"			8	17'-7"	3'-10"	16'-8"	3'-3"
	6'			8	19	29	"	"	"	"			8	"	"	"	"
	7'			8	18	29	19'-3"	"	3'-9"	6'-6½"			8	17'-9"	4'-0"	16'-10"	3'-5"
	8'			8	18	29	19'-4"	"	3'-9"	6'-7"			8	17'-10"	4'-1"	16'-11"	3'-6"
	9'			8	18	29	19'-7"	"	3'-10"	6'-8"			8	18'-1"	4'-4"	17'-2"	3'-9"
	10'			8	18	29	19'-10"	0'-5¾"	3'-11"	6'-9"			8	18'-4"	4'-7"	17'-5"	4'-0"

"b2" bars – BENT - See Diagrams below. – In Top of Bottom Slab bent down under Division Wall - hooked. Alternate with "a" and "c" bars. ▼"b3" bars – In Top of Bottom Slab - some are bent down under Division Walls - one end hooked. Alternate with "a1" and "c" or "c1" bars.

S	H	"b2" SIZE	SPACING	NUMBER REQ'D 2:1	3:1	4:1	LENGTH	X	Y	Z	"b3" SIZE	SPACING	No. REQ'D	LENGTH MAX.	MIN.	L MAX.	MIN.
2 @ 4'	2'	#4	13"	11	22	32	10'-5"	0'-2¾"	2'-1"	3'-5"	#4	13"	4	9'-0"	3'-1"	8'-5"	2'-8"
	3'			11	22	32	"	"	"	"			4	"	"	"	"
	4'			11	22	32	"	"	"	"			4	"	"	"	"
	5'			11	22	32	"	"	"	"			4	"	"	"	"
	6'			11	22	32	10'-8"	0'-2¾"	2'-2"	3'-6"			4	9'-3"	3'-4"	8'-8"	2'-11"
2 @ 5'	3'	#5	11"	12	24	37	12'-6"	0'-3"	2'-6½"	4'-2"	#5	11"	6	11'-3"	3'-2"	10'-7"	2'-8"
	4'			12	24	37	"	"	"	"			6	"	"	"	"
	5'			12	24	37	"	"	"	"			6	"	"	"	"
	6'			12	24	37	12'-9"	"	2'-7½"	4'-3"			6	11'-6"	3'-5"	10'-10"	2'-11"
	7'			12	24	37	12'-11"	0'-3"	2'-8½"	4'-3½"			6	11'-8"	3'-7"	11'-0"	3'-1"
2 @ 6'	3'	#5	12"	11	22	34	14'-7"	0'-4⅝"	2'-10"	4'-11"	#5	12"	6	13'-3"	4'-3"	12'-6"	3'-9"
	4'			11	22	34	"	"	"	"			6	"	"	"	"
	5'			11	22	34	"	"	"	"			6	"	"	"	"
	6'			11	22	34	14'-10"	"	2'-11"	5'-0"			6	13'-6"	4'-6"	12'-9"	4'-0"
	7'			11	22	34	15'-0"	"	3'-0"	5'-0½"			6	13'-8"	4'-8"	12'-11"	4'-2"
	8'			11	22	34	15'-1"	0'-4½"	3'-0"	5'-1"			6	13'-9"	4'-9"	13'-0"	4'-3"
2 @ 7'	4'	#6	12"	10	22	33	16'-10"	0'-5½"	3'-3½"	5'-7"	#6	12"	7	15'-5"	4'-7"	14'-6"	4'-0"
	5'			10	22	33	"	"	"	"			7	"	"	"	"
	6'			10	22	33	17'-1"	"	3'-4½"	5'-8"			8	15'-8"	3'-1"	14'-9"	2'-6"
	7'			10	22	33	17'-3"	"	3'-5½"	5'-8½"			8	15'-10"	3'-3"	14'-11"	2'-8"
	8'			10	22	33	17'-4"	"	3'-5½"	5'-9"			8	15'-10"	3'-4"	15'-0"	2'-9"
	9'			10	22	33	17'-7"	0'-5½"	3'-6½"	5'-10"			8	16'-2"	3'-7"	15'-3"	3'-0"
2 @ 8'	4'	#6	13"	9	20	30	18'-11"	0'-6½"	3'-6"	6'-5"	#6	13"	8	17'-5"	3'-7"	16'-5"	3'-0"
	5'			9	20	30	19'-2"	"	3'-7"	6'-6"			8	17'-8"	3'-10"	16'-8"	3'-3"
	6'			9	20	30	"	"	"	"			8	"	"	"	"
	7'			9	19	30	19'-4"	"	3'-9"	6'-6½"			8	17'-10"	4'-0"	16'-10"	3'-5"
	8'			9	19	30	19'-5"	"	3'-8"	6'-7"			8	17'-11"	4'-1"	16'-11"	3'-6"
	9'			9	19	30	19'-8"	"	3'-9"	6'-8"			8	18'-2"	4'-4"	17'-2"	3'-9"
	10'			9	19	30	19'-11"	0'-6½"	3'-10"	6'-9"			8	18'-5"	4'-7"	17'-5"	4'-0"

"c" bars – STRAIGHT – In Top and Bottom Slab of Barrel. Alternate with "b" and "b2" bars. ▼"c1" bars – In Top and Bottom Slab of Barrel. Alt. with "b1" & "b3" bars. (Two of each Length). "d" bars – STRAIGHT – Longitudinal in Top Slab of Barrel. "d1" bars – Longitudinal in Sidewalls and Division Wall. "e" bars – Longitudinal in Bottom Slab of Barrel.

S	H	"c" SIZE	SPACING	NUMBER REQ'D 2:1	3:1	4:1	LENGTH	"c1" SIZE	SPACING	No. REQ'D	LENGTH MAX.	MIN.	"d" SIZE	SPACING	No. REQ'D	LENGTH	"d1" SIZE	SPACING	No. REQ'D	LENGTH	"e" SIZE	SPACING	No. REQ'D	LENGTH
2 @ 4'	2'	#5	13"	25	45	67	4'-6"	#5	13"	2	3'-3"	—	#4	12"	14	Lengths Vary - Ave. Lengths; 2:1 = 15'-6", 3:1 = 27'-1", ⊙4:1 = 38'-8".	#4	12"	8	Lengths Vary - Ave. Lengths; 2:1 = 15'-6", 3:1 = 27'-1", ⊙4:1 = 38'-8".	#4	12"	14	Lengths Vary - Ave. Lengths; 2:1 = 16'-8", 3:1 = 28'-3", ⊙4:1 = 39'-10".
	3'			25	45	67	"			2	"	—			14				12				14	
	4'			25	45	67	"			2	"	—			14				16				14	
	5'			25	45	67	"			2	"	—			14				20				14	
	6'			25	45	67	4'-9"			2	3'-6"	—			14				24				14	
2 @ 5'	3'	#5	11"	27	51	77	5'-8"	#5	11"	4	5'-5"	3'-10"	#4	12"	16		#4	12"	12		#4	12"	16	
	4'			27	51	77	"			4	"	"			16				16				16	
	5'			27	51	77	"			4	"	"			16				20				16	
	6'			27	51	77	5'-9"			4	5'-7"	4'-0"			16				24				16	
	7'			27	51	77	5'-10"			4	5'-8"	4'-1"			16				28				16	
2 @ 6'	3'	#6	12"	23	47	69	6'-8"	#6	12"	6	6'-7"	3'-1"	#4	12"	18		#4	12"	12		#4	12"	18	
	4'			23	47	69	"			6	"	"			18				16				18	
	5'			23	47	69	"			6	"	"			18				20				18	
	6'			23	47	69	6'-9"			6	6'-9"	3'-3"			18				24				18	
	7'			23	47	69	6'-10"			6	6'-10"	3'-4"			18				28				18	
	8'			23	47	69	6'-10"			6	6'-11"	3'-5"			18				32				18	
2 @ 7'	4'	#6	12"	25	47	71	7'-8"	#6	12"	6	6'-4"	2'-10"	#4	12"	21		#4	12"	16		#4	12"	21	
	5'			25	47	71	"			6	"	"			21				20				21	
	6'			25	47	71	7'-9"			6	6'-6"	3'-0"			21				24				21	
	7'			25	47	71	7'-10"			6	6'-7"	3'-1"			21				28				21	
	8'			25	47	71	7'-10"			6	6'-8"	3'-2"			21				32				21	
	9'			25	47	71	7'-11"			6	6'-10"	3'-4"			21				36				21	
2 @ 8'	4'	#7	13"	21	43	65	8'-8"	#7	13"	8	8'-0"	3'-3"	#4	12"	23		#4	12"	16		#4	12"	23	
	5'			21	43	65	8'-9"			8	8'-2"	3'-5"			23				20				23	
	6'			21	43	65	"			8	"	"			23				24				23	
	7'			21	43	65	8'-10"			8	8'-3"	3'-6"			23				28				23	
	8'			21	43	65	8'-10"			8	8'-4"	3'-7"			23				32				23	
	9'			21	43	65	8'-11"			8	8'-6"	3'-9"			23				36				23	
	10'			21	43	65	9'-0"			8	8'-8"	3'-11"			23				40				23	

"f" bars – STRAIGHT – Verticals in Sidewalls and Division Wall. ▼"k1" bars – STRAIGHT – In Bottom of Headwall. ▼"k2" bars – In Top of Headwall and Apron. (2 Each)

S	H	"f" SIZE	SPACING	NUMBER REQ'D 2:1	3:1	4:1	LENGTH	"k1" SIZE	No. REQ'D	LENGTH	"k2" SIZE	No. REQ'D	LENGTH
2 @ 4'	2'	#4	12"	56	102	148	2'-9"	#5	3	10'-11"	#5	4	12'-0"
	3'			56	102	148	3'-9"		3	"		4	"
	4'			56	102	148	4'-9"		3	"		4	"
	5'			56	102	148	5'-9"		3	"		4	"
	6'			56	102	148	6'-9"		3	11'-2"		4	12'-4"
2 @ 5'	3'	#4	12"	56	102	148	3'-10"	#5	3	13'-2"	#5	4	14'-5"
	4'			56	102	148	4'-10"		3	"		4	"
	5'			56	102	148	5'-10"		3	"		4	"
	6'			56	102	148	6'-10"		3	13'-6"		4	14'-9"
	7'	#5	12"	56	102	148	7'-10"		3	13'-8"		4	14'-10"
2 @ 6'	3'	#4	12"	56	102	148	4'-0"	#5	3	15'-6"	#5	4	16'-8"
	4'			56	102	148	5'-0"		3	"		4	"
	5'			56	102	148	6'-0"		3	"		4	"
	6'			56	102	148	7'-0"		3	15'-9"		4	16'-11"
	7'	#5	12"	56	102	148	8'-0"		3	16'-0"		4	17'-2"
	8'		11"	62	112	162	9'-0"		3	16'-1"		4	17'-5"
2 @ 7'	4'	#4	12"	56	102	148	5'-2"	#6	3	17'-10"	#6	4	19'-0"
	5'			56	102	148	6'-2"		3	"		4	"
	6'			56	102	148	7'-2"		3	18'-1"		4	19'-3"
	7'	#5	12"	56	102	148	8'-2"		3	18'-3"		4	19'-5"
	8'		11"	62	112	162	9'-2"		3	18'-5"		4	19'-6"
	9'		10"	68	124	178	10'-2"		3	18'-8"		4	19'-10"
2 @ 8'	4'	#4	12"	56	102	148	5'-4"	#6	3	20'-1"	#6	4	21'-3"
	5'			56	102	148	6'-4"		3	20'-5"		4	21'-7"
	6'			56	102	148	7'-4"		3	"		4	"
	7'		10"	68	124	178	8'-4"		3	20'-7"		4	21'-9"
	8'	#5	12"	56	102	148	9'-4"		3	20'-8"		4	21'-10"
	9'		11"	62	112	162	10'-4"		3	21'-0"		4	22'-2"
	10'	#6	12"	56	102	148	11'-4"		3	21'-3"		4	22'-5"

BAR SIZE	PIN DIAM.	K	ADD FOR 2 HOOKS	BENDING DIAGRAM FOR BARS "b" AND "b2"
#4	2"	4"	0'-10½"	
#5	2½"	4½"	0'-11½"	
#6	3"	5"	1'-2"	

BAR SIZE	PIN DIAM.	K	ADD FOR 1 HOOK	BENDING DIAGRAM FOR BARS "b1" AND "b3"
#4	2"	4"	0'-5¼"	
#5	2½"	4½"	0'-5¾"	
#6	3"	5"	0'-7"	

SPAN	SIZE	SPACING	No. REQ'D	LENGTH	X	Dowel bars "r" in One Headwall.
4'	#4	12"±	12	2'-4"	1'-2"	
5'	#4	12"±	14	2'-5"	1'-2½"	
6'	#4	12"±	16	2'-6"	1'-3"	
7'	#4	12"±	18	2'-8"	1'-4"	
8'	#4	12"±	21	2'-10"	1'-5"	

NOTE:- Dimensions are to centers of bars (b, b1, b2, & b3). The X, Y & Z values for "b1" bars are same as for "b" bars and for "b3" bars same as for "b2" bars.

▼ These bars are in the skewed portion of barrel only. The length of "a1" and "c1" bars and overall length L of "b1" and "b3" bars vary by 1'-11" for 13" spacing, 1'-9" for 12" spacing, and 1'-7" for 11" spacing.

⊙ To Longitudinal bars of 4:1 slopes add one splice for each "d", "d1" and "e" bar. (1'-3" lap).

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, division wall 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 @ 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-X302-1 or W-X302-2, W-X303-1 or W-X303-2, and W-X304-1 or W-X304-2. Also W-X30.

For Barrels of 4', 5' & 6' Spans, see Drawing No. R-200X-X1, of 7' Spans Drawing No. R-200X-X3, and of 8' Spans Drawing No. R-200X-X2.

CLASS S CONCRETE

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF STANDARD BARREL SECTIONS

FOR

REINFORCED CONCRETE BOX CULVERTS

30° SKEW ~ SECTIONS "A" ONLY

4', 5', 6', 7' AND 8' SPANS   2:1, 3:1 OR 4:1 SLOPES

DOUBLES   OVER 5'-0" COVER

STANDARD DRAWING NO. R-230X-1

Designed by:- W.C.H. 9-17-62. Checked by:- R.H.S. 11-12-62
Drawn by:- W.C.H. 1-28-64. Checked by:-
Quantities by:- W.C.H 4-23-64 Checked by:-

(61)

RESHOT 3-5-93 164

FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			147	
JOB No.					

BAR LIST FOR VARIOUS SECTIONS OF BARREL

SECTION & BAR GROUP	LENGTHS OF SECTION	DEPTH OF COVER	CLEAR SPAN	CLEAR HEIGHT	"a" bars					"b" bars								"b2" bars								"c" bars					"d" bars				"d1" bars				"e" bars				"f" bars				
					STRAIGHT					BENT- See Diagram below.								BENT- See Diagram below.								STRAIGHT					STRAIGHT												STRAIGHT				
					In Top and Bottom Slab of Barrel. 2 Add'l in Apron and Headwall- Each.					In Bottom of Top Slab bent up over Division Walls- hooked. Alternate with "a" and "c" bars.								In Top of Bottom Slab bent down under Division Walls- hooked. Alternate with "a" and "c" bars								In Top and Bottom Slab of Barrel. Alternate with "b" and "b2" bars.					Longitudinal in Top Slab of Barrel				Longitudinal in Sidewalls and Division Walls				Longitudinal in Bottom Slab of Barrel.				Vertical in Sidewalls and Division Walls				
		D	S	H	SIZE	SPACING	NUMBER REQ'D 3:1	NUMBER REQ'D 4:1	LENGTH	SIZE	SPACING	NUMBER REQ'D 3:1	NUMBER REQ'D 4:1	LENGTH	X	Y	Z	SIZE	SPACING	NUMBER REQ'D 3:1	NUMBER REQ'D 4:1	LENGTH	X	Y	Z	SIZE	SPACING	NUMBER REQ'D 3:1	NUMBER REQ'D 4:1	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NUMBER REQ'D 3:1	NUMBER REQ'D 4:1	LENGTH
SECTION "A" & BAR GROUP "A"	3:1 = 22'-0" 4:1 = 32'-0"	0' TO 10'-0"	3 @ 8'	5'	#5	12"	48	68	26'-5"	#6	12"	22	32	28'-1"	0'-5"	3'-11"	6'-5"	#6	12"	22	32	28'-2"	0'-5½"	3'-10"	6'-5"	#6	12"	44	64	17'-6"	#4	12"	37	33'-5" for 32'-0" Section	#4	12"	30	33'-3" for 32'-0" Section	#4	12"	37	34'-3" for 32'-0" Section	#4	12"	132	192	6'-2"
				6'			48	68	26'-5"			22	32	28'-1"	0'-5"	3'-11"	6'-5"			22	32	28'-2"	0'-5½"	3'-10"	6'-5"			44	64	17'-6"			37				36				37				132	192	7'-2"
				7'			48	68	26'-8"			22	32	28'-4"	0'-5"	4'-0"	6'-5½"			22	32	28'-5"	0'-5½"	3'-11"	6'-5½"			44	64	17'-8"			37				42				37			10"	162	234	8'-2"
				8'			48	68	26'-9"			22	32	28'-5"	0'-5"	4'-0"	6'-6"			22	32	28'-6"	0'-5½"	3'-11"	6'-6"			44	64	17'-8"			37				48				37		#5	11"	144	210	9'-2"
				9'			48	68	27'-1"			22	32	28'-9"	0'-5"	4'-1"	6'-7"			22	32	28'-10"	0'-5½"	4'-0"	6'-7"			44	64	17'-10"			37				54				37			10"	162	234	10'-2"
				10'			48	68	27'-5"			22	32	29'-1"	0'-5"	4'-2"	6'-8"			22	32	29'-2"	0'-5½"	4'-1"	6'-8"			44	64	18'-0"			37				60				37		#6	12"	132	192	11'-2"
			3 @ 10'	6'	#6	11"	52	74	32'-8"	#6	11"	24	35	34'-6"	0'-6½"	4'-9"	7'-11½"	#6	11"	24	35	34'-7"	0'-7"	4'-8"	7'-11½"	#7	11"	48	70	21'-8"	#4	12"	43		#4	12"	36		#4	12"	43		#4	12"	132	192	7'-5"
				7'			52	74	32'-8"			24	35	34'-6"	0'-6½"	4'-9"	7'-11½"			24	35	34'-7"	0'-7"	4'-8"	7'-11½"			48	70	21'-8"			43				42				43			10"	162	234	8'-5"
				8'			52	74	32'-9"			24	35	34'-7"	0'-6½"	4'-9"	8'-0"			24	35	34'-8"	0'-7"	4'-6"	8'-0"			48	70	21'-8"			43				48				43		#5	12"	132	192	9'-5"
				9'			52	74	33'-1"			24	35	34'-11"	0'-6½"	4'-10"	8'-1"			24	35	35'-0"	0'-7"	4'-9"	8'-1"			48	70	21'-10"			43				54				43			10"	162	234	10'-5"
				10'			52	74	33'-5"			24	35	35'-3"	0'-6½"	4'-11"	8'-2"			24	35	35'-4"	0'-7"	4'-10"	8'-2"			48	70	22'-0"			43				60				43		#6	12"	132	192	11'-5"
				11'			52	74	33'-7"			24	35	35'-5"	0'-6½"	4'-11"	8'-3"			24	35	35'-6"	0'-7"	4'-10"	8'-3"			48	70	22'-0"			43				66				43			11"	144	210	12'-5"
				12'			52	74	33'-9"			24	35	35'-7"	0'-6½"	4'-11"	8'-4"			24	35	35'-8"	0'-7"	4'-10"	8'-4"			48	70	22'-0"			43				72				43			10"	162	234	13'-5"
			3 @ 12'	6'	#6	11"	52	74	38'-9"	#7	11"	24	35	40'-11"	0'-7¾"	5'-6½"	9'-6"	#7	11"	24	35	41'-0"	0'-8¼"	5'-5½"	9'-6"	#7	11"	48	70	25'-8"	#4	12"	49		#4	12"	36		#4	12"	49		#4	12"	132	192	7'-8"
				7'			52	74	38'-9"			24	35	40'-11"	0'-7¾"	5'-6½"	9'-6"			24	35	41'-0"	0'-8¼"	5'-5½"	9'-6"			48	70	25'-8"			49				42				49				132	192	8'-8"
				8'			52	74	38'-9"			24	35	40'-11"	0'-7¾"	5'-6½"	9'-6"			24	35	41'-0"	0'-8¼"	5'-5½"	9'-6"			48	70	25'-8"			49				48				49		#5	12"	132	192	9'-8"
				9'			52	74	39'-1"			24	35	41'-3"	0'-7¾"	5'-7½"	9'-7"			24	35	41'-4"	0'-8¼"	5'-6½"	9'-7"			48	70	25'-10"			49				54				49			10"	162	234	10'-8"
				10'			52	74	39'-5"			24	35	41'-7"	0'-7¾"	5'-8½"	9'-8"			24	35	41'-8"	0'-8¼"	5'-7½"	9'-8"			48	70	26'-0"			49				60				49		#6	12"	132	192	11'-8"
				11'			52	74	39'-7"			24	35	41'-9"	0'-7¾"	5'-8½"	9'-9"			24	35	41'-10"	0'-8¼"	5'-7½"	9'-9"			48	70	26'-0"			49				66				49			11"	144	210	12'-8"
				12'			52	74	39'-9"			24	35	41'-11"	0'-7¾"	5'-8½"	9'-10"			24	35	42'-0"	0'-8¼"	5'-7½"	9'-10"			48	70	26'-0"			49				72				49			9"	180	258	13'-8"
SECTION "B" & BAR GROUP "B"	3:1 = 11'-0" 4:1 = 16'-0"	10'-0" TO 15'-0"	3 @ 8'	5'	#5	11"	24	36	26'-5"	#6	11"	12	17	28'-3"	0'-6"	3'-9"	6'-5"	#6	11"	12	17	28'-4"	0'-6½"	3'-8"	6'-5"	#6	11"	24	36	17'-6"	#4	12"	37	34'-3" for 33'-0" Length Section	#4	12"	30	34'-3" for 33'-0" Length Section	#4	12"	37	34'-3" for 33'-0" Length Section.	#4	12"	66	96	6'-4"
				6'			24	36	26'-5"			12	17	28'-3"	0'-6"	3'-9"	6'-5"			12	17	28'-4"	0'-6½"	3'-8"	6'-5"			24	36	17'-6"			37				36				37				66	96	7'-4"
				7'			24	36	26'-8"			12	17	28'-6"	0'-6"	3'-10"	6'-5½"			12	17	28'-7"	0'-6½"	3'-9"	6'-5½"			24	36	17'-8"			37				42				37		#5	12"	66	96	8'-4"
				8'			24	36	26'-9"			12	17	28'-7"	0'-6"	3'-10"	6'-6"			12	17	28'-8"	0'-6½"	3'-9"	6'-6"			24	36	17'-8"			37				48				37			9"	90	126	9'-4"
				9'			24	36	27'-1"			12	17	28'-11"	0'-6"	3'-11"	6'-7"			12	17	29'-0"	0'-6½"	3'-10"	6'-7"			24	36	17'-10"			37				54				37		#6	11"	72	102	10'-4"
				10'			24	36	27'-5"			12	17	29'-3"	0'-6"	4'-0"	6'-8"			12	17	29'-4"	0'-6½"	3'-11"	6'-8"			24	36	18'-0"			37				60				37			10"	84	120	11'-4"
			3 @ 10'	6'	#6	13"	20	30	32'-8"	#7	13"	10	14	34'-10"	0'-7½"	4'-7"	7'-11½"	#7	13"	10	14	34'-11"	0'-8"	4'-6"	7'-11½"	#8	13"	20	30	21'-8"	#4	12"	43		#4	12"	36		#4	12"	43		#4	12"	66	96	7'-8"
				7'			20	30	32'-8"			10	14	34'-10"	0'-7½"	4'-7"	7'-11½"			10	14	34'-11"	0'-8"	4'-6"	7'-11½"			20	30	21'-8"			43				42				43		#5	12"	66	96	8'-8"
				8'			20	30	32'-9"			10	14	34'-11"	0'-7½"	4'-7"	8'-0"			10	14	35'-0"	0'-8"	4'-6"	8'-0"			20	30	21'-8"			43				48				43			9"	90	132	9'-8"
				9'			20	30	33'-1"			10	14	35'-3"	0'-7½"	4'-8"	8'-1"			10	14	35'-4"	0'-8"	4'-7"	8'-1"			20	30	21'-10"			43				54				43		#6	12"	66	96	10'-8"
				10'			20	30	33'-5"			10	14	35'-7"	0'-7½"	4'-9"	8'-2"			10	14	35'-8"	0'-8"	4'-8"	8'-2"			20	30	22'-0"			43				60				43			10"	84	120	11'-8"
				11'			20	30	33'-7"			10	14	35'-9"	0'-7½"	4'-9"	8'-3"			10	14	35'-10"	0'-8"	4'-8"	8'-3"			20	30	22'-0"			43				66				43			9"	90	132	12'-8"
				12'			20	30	33'-9"			10	14	35'-11"	0'-7½"	4'-9"	8'-4"			10	14	36'-0"	0'-8"	4'-8"	8'-4"			20	30	22'-0"			43				72				43			8"	96	144	13'-8"
			3 @ 12'	6'	#7	12"	22	32	38'-9"	#7	12"	11	16	41'-2"	0'-9¼"	5'-3½"	9'-6"	#7	12"	11	16	41'-3"	0'-9¾"	5'-2½"	9'-6"	#9	12"	22	32	25'-8"	#4	12"	49		#4	12"	36		#4	12"	49		#4	12"	66	96	7'-11"
				7'			22	32	38'-9"			11	16	41'-2"	0'-9¼"	5'-3½"	9'-6"			11	16	41'-3"	0'-9¾"	5'-2½"	9'-6"			22	32	25'-8"			49				42				49			9"	90	132	8'-11"
				8'			22	32	38'-9"			11	16	41'-2"	0'-9¼"	5'-3½"	9'-6"			11	16	41'-3"	0'-9¾"	5'-2½"	9'-6"			22	32	25'-8"			49				48				49		#6	12"	66	96	9'-11"
				9'			22	32	39'-1"			11	16	41'-6"	0'-9¼"	5'-4½"	9'-7"			11	16	41'-7"	0'-9¾"	5'-3½"	9'-7"			22	32	25'-10"			49				54				49			11"	72	102	10'-11"
				10'			22	32	39'-5"			11	16	41'-10"	0'-9¼"	5'-5½"	9'-8"			11	16	41'-11"	0'-9¾"	5'-4½"	9'-8"			22	32	26'-0"			49				60				49			9"	90	132	11'-11"
				11'			22	32	39'-7"			11	16	42'-0"	0'-9¼"	5'-5½"	9'-9"			11	16	42'-1"	0'-9¾"	5'-4½"	9'-9"			22	32	26'-0"			49				66				49		#7	11"	72	108	12'-11"
				12'			22	32	39'-9"			11	16	42'-2"	0'-9¼"	5'-5½"	9'-10"			11	16	42'-3"	0'-9¾"	5'-4½"	9'-10"			22	32	26'-0"			49				72				49			10"	78	114	13'-11"
SECTION "C" & BAR GROUP "C"	3:1 = 11'-0" 4:1 = 16'-0"	15'-0" TO 20'-0"	3 @ 8'	5'	#6	11"	24	34	26'-5"	#6	11"	12	18	28'-4"	0'-7"	3'-7"	6'-5"	#6	11"	12	18	28'-5"	0'-7½"	3'-6"	6'-5"	#7	11"	24	34	17'-6"	#4	12"	37		#4	12"	30		#4	12"	37		#4	12"	66	96	6'-6"
				6'			24	34	26'-5"			12	18	28'-4"	0'-7"	3'-7"	6'-5"			12	18	28'-5"	0'-7½"	3'-6"	6'-5"			24	34	17'-6"			37				36				37				66	96	7'-6"
				7'			24	34	26'-8"			12	18	28'-7"	0'-7"	3'-8"	6'-5½"			12	18	28'-8"	0'-7½"	3'-7"	6'-5½"			24	34	17'-8"			37				42				37		#5	11"	72	102	8'-6"
				8'			24	34	26'-9"			12	18	28'-8"	0'-7"	3'-8"	6'-6"			12	18	28'-9"	0'-7½"	3'-7"	6'-6"			24	34	17'-8"			37				48				37		#6	11"	72	102	9'-6"
				9'			24	34	27'-1"			12	18	29'-0"	0'-7"	3'-9"	6'-7"			12	18	29'-1"	0'-7½"	3'-8"	6'-7"			24	34	17'-10"			37				54				37			10"	78	114	10'-6"
				10'			24	34	27'-5"			12	18	29'-4"	0'-7"	3'-10"	6'-8"			12	18	29'-5"	0'-7½"	3'-9"	6'-8"			24	34	18'-0"			37				60				37		#7	10"	78	114	11'-6"
			3 @ 10'	6'	#7	12"	22	32	32'-9"	#7	12"	11	16	35'-1"	0'-8¾"	4'-4½"	8'-0"	#7	12"	11	16	35'-2"	0'-9¼"	4'-3½"	8'-0"	#8	12"	22	32	21'-8"	#4	12"	43		#4	12"	36		#4	12"	43		#4	12"	66	96	7'-10"
				7'			22	32	32'-9"			11	16	35'-1"	0'-8¾"	4'-4½"	8'-0"			11	16	35'-2"	0'-9¼"	4'-3½"	8'-0"			22	32	21'-8"			43				42				43		#5	12"	66	96	8'-10"
				8'			22	32	32'-10"			11	16	35'-2"	0'-8¾"	4'-4½"	8'-0½"			11	16	35'-3"	0'-9¼"	4'-3½"	8'-0½"			22	32	21'-8"			43				48				43		#6	12"	66	96	9'-10"
				9'			22	32	33'-2"			11	16	35'-6"	0'-8¾"	4'-5½"	8'-1½"			11	16	35'-7"	0'-9¼"	4'-4½"	8'-1½"			22	32	21'-10"			43				54				43			10"	78	114	10'-10"
				10'			22	32	33'-5"			11	16	35'-10"	0'-8¾"	4'-6½"	8'-2¼"			11	16	35'-11"	0'-9¼"	4'-5½"	8'-2¼"			22	32	22'-0"			43				60				43		#7	12"	66	96	11'-10"
				11'			22	32	33'-7"			11	16	35'-11"	0'-8¾"	4'-6½"	8'-3"			11	16	36'-0"	0'-9¼"	4'-5½"	8'-3"			22	32	22'-0"			43				66				43			10"	78	114	12'-10"
				12'			22	32	33'-9"			11	16	36'-1"	0'-8¾"	4'-6½"	8'-4"			11	16	36'-2"	0'-9¼"	4'-5½"	8'-4"			22	32	22'-0"			43				72				43			9"	90	126	13'-10"
			3 @ 12'	6'	#7	12"	22	32	38'-9"	#8	12"	11	16	41'-6"	0'-10¾"	5'-0½"	9'-6"	#8	12"	11	16	41'-7"	0'-11¼"	4'-11½"	9'-6"	#9	12"	22	32	25'-8"	#4	12"	49		#4	12"	36		#4	12"	49		#4	12"	66	96	8'-2"
				7'			22	32	38'-9"			11	16	41'-6"	0'-10¾"	5'-0½"	9'-6"			11	16	41'-7"	0'-11¼"	4'-11½"	9'-6"			22	32	25'-8"			49				42				49		#5	11"	72	102	9'-2"
				8'			22	32	38'-10"			11	16	41'-8"	0'-10¾"	5'-0½"	9'-6¾"			11	16	41'-9"	0'-11¼"	4'-11½"	9'-6¾"			22	32	25'-8"			49				48				49		#6	12"	66	96	10'-2"
				9'			22	32	39'-2"			11	16	41'-11"	0'-10¾"	5'-1½"	9'-7½"			11	16	42'-0"	0'-11¼"	5'-0½"	9'-7½"			22	32	25'-10"			49				54				49			10"	78	114	11'-2"
				10'			22	32	39'-5"			11	16	42'-3"	0'-10¾"	5'-2½"	9'-8¼"			11	16	42'-4"	0'-11¼"	5'-1½"	9'-8¼"			22	32	26'-0"			49				60				49		#7	11"	72	102	12'-2"
				11'			22	32	39'-7"			11	16	42'-5"	0'-10¾"	5'-2½"	9'-9¼"			11	16	42'-6"	0'-11¼"	5'-1½"	9'-9¼"			22	32	26'-0"			49				66				49			10"	84	114	13'-2"
				12'			22	32	39'-9"			11	16	42'-7"	0'-10¾"	5'-2½"	9'-10¼"			11	16	42'-8"	0'-11¼"	5'-1½"	9'-10¼"			22	32	26'-0"			49				72				49			8"	96	144	14'-2"
SECTION "D" & BAR GROUP "D"	Varies with Length of Barrel	20'-0" TO 25'-0"	3 @ 8'	5'	#6	12"	Varies with length of Barrel.	Varies with length of Barrel.	26'-5"	#7	12"	Varies with length of Barrel.	Varies with length of Barrel.	28'-7"	0'-7¼"	3'-5½"	6'-5"	#7	12"	Varies with length of Barrel.	Varies with length of Barrel.	28'-8"	0'-8¼"	3'-4½"	6'-5"	#7	12"	Varies with length of Barrel.	Varies with length of Barrel.	17'-6"	#4	12"	37	Varies with length of Barrel.	#4	12"	30	Varies with length of Barrel.	#4	12"	37	Varies with length of Barrel.	#4	12"	Varies with length of Barrel.	Varies with length of Barrel.	6'-8"
				6'					26'-6"					28'-9"	0'-7½"	3'-5½"	6'-5¾"					28'-10"	0'-8¼"	3'-4½"	6'-5¾"					17'-6"			37				36				37			10"			7'-8"
				7'					26'-10"					29'-0"	0'-7¾"	3'-6½"	6'-6½"					29'-1"	0'-8¼"	3'-5½"	6'-6½"					17'-8"			37				42				37		#5	10"			8'-8"
				8'					26'-11"					29'-2"	0'-7¾"	3'-6½"	6'-7½"					29'-3"	0'-8¼"	3'-5½"	6'-7½"					17'-8"			37				48				37		#6	11"			9'-8"
				9'					27'-3"					29'-5"	0'-7¾"	3'-7½"	6'-8"					29'-6"	0'-8¼"	3'-6½"	6'-8"					17'-10"			37				54				37			9"			10'-8"
				10'					27'-7"					29'-9"	0'-7¾"	3'-8½"	6'-9"					29'-10"	0'-8¼"	3'-7½"	6'-9"					18'-0"			37				60				37			8"			11'-8"
			3 @ 10'	6'	#7	11"			32'-9"	#7	11"			35'-3"	0'-10"	4'-2"	8'-0"	#7	11"			35'-4"	0'-10½"	4'-1"	8'-0"	#8	11"			21'-8"	#4	12"	43		#4	12"	36		#4	12"	43		#4	12"			8'-1"
				7'					32'-10"					35'-4"	0'-10"	4'-2"	8'-0½"					35'-5"	0'-10½"	4'-1"	8'-0½"					21'-8"			43				42				43		#5	11"			9'-1"
				8'					32'-11"					35'-6"	0'-10"	4'-2"	8'-1¼"					35'-7"	0'-10½"	4'-1"	8'-1¼"					21'-8"			43				48				43		#6	12"			10'-1"
				9'					33'-3"					35'-10"	0'-10"	4'-3"	8'-2¼"					35'-11"	0'-10½"	4'-2"	8'-2¼"					21'-10"			43				54				43			10"			11'-1"
				10'					33'-7"					36'-2"	0'-10"	4'-4"	8'-3½"					36'-3"	0'-10½"	4'-3"	8'-3½"					22'-0"			43				60				43		#7	11"			12'-1"
				11'					33'-9"					36'-3"	0'-10"	4'-4"	8'-4"					36'-4"	0'-10½"	4'-3"	8'-4"					22'-0"			43				66				43			9"			13'-1"
				12'					33'-10"					36'-5"	0'-10"	4'-4"	8'-4¾"					36'-6"	0'-10½"	4'-3"	8'-4¾"					22'-0"			43				72				43			8"			14'-1"
			3 @ 12'	6'	#7	11"			38'-9"	#8	11"			41'-9"	1'-0¼"	4'-9½"	9'-6"	#8	11"			41'-10"	1'-0¾"	4'-8½"	9'-6"	#9	11"			25'-8"	#4	11"	52		#4	12"	36		#4	11"	52		#4	12"			8'-5"
				7'					38'-10"					41'-10"	1'-0¼"	4'-9½"	9'-6¾"					41'-11"	1'-0¾"	4'-8½"	9'-6¾"					25'-8"			52				42				52		#5	11"			9'-5"
				8'					39'-0"					42'-0"	1'-0¼"	4'-9½"	9'-7½"					42'-1"	1'-0¾"	4'-8½"	9'-7½"					25'-8"			52				48				52		#6	12"			10'-5"
				9'					39'-4"					42'-4"	1'-0¼"	4'-10½"	9'-8½"					42'-5"	1'-0¾"	4'-9½"	9'-8½"					25'-10"			52				54				52			10"			11'-5"
				10'					39'-7"					42'-7"	1'-0¼"	4'-11½"	9'-9½"					42'-8"	1'-0¾"	4'-10½"	9'-9½"					26'-0"			52				60				52		#7	11"			12'-5"
				11'					39'-9"					42'-9"	1'-0¼"	4'-11½"	9'-10½"					42'-10"	1'-0¾"	4'-10½"	9'-10½"					26'-0"			52				66				52			9"			13'-5"
				12'					39'-11"					42'-11"	1'-0¼"	4'-11½"	9'-11½"					43'-0"	1'-0¾"	4'-10½"	9'-11½"					26'-0"			52				72				52			8"			14'-5"

NOTE:- Bars for each Section to be marked with the Section letter, thus for Section B, the bars should be marked Ba, Bb, Bb2, Bc, Bd, Bd1, Be and Bf.

DIMENSIONS QUANTITIES

MAX. DESIGN DEPTH OF COVER	BARREL DIMENSIONS									UNIT QUANTITIES			
											REINFORCING STEEL		
												ADDITIONAL	
	CLEAR SPANS	CLEAR HEIGHT	SQ.FT. OPENING	OVERALL WIDTH	THICKNESS OF TOP SLAB	THICKNESS OF SIDEWALLS	THICKNESS OF DIVISION WALLS	THICKNESS OF BOTTOM SLAB	OVERALL HEIGHT	CLASS S CONC. PER LIN. FT. OF BARREL	PER LIN. FT. OF BARREL	PER LAP	TWO HEADWALLS & APRONS
D	S	H	A	OW	T	C	M	B	OH	CU.YD.	LB.	LB.	LB.
SECTION "A" - 10'-0"	3 @ 8'	5'	120	26'-8"	8½"	7"	9"	9"	6'-5½"	1.934	286.35	86.84	372.06
		6'	144	26'-8"		7"	9"		7'-5½"	2.033	299.37	91.85	372.06
		7'	168	26'-11"		7½"	10"		8'-5½"	2.210	310.70	96.86	374.14
		8'	192	27'-0"		8"	10"		9'-5½"	2.347	338.44	101.87	379.84
		9'	216	27'-4"		9"	11"		10'-5½"	2.587	358.41	106.88	377.62
		10'	240	27'-8"		10"	12"		11'-5½"	2.852	388.90	111.89	380.40
	3 @ 10'	6'	180	32'-11"	10"	7½"	10"	10½"	7'-8½"	2.731	428.10	101.87	582.24
		7'	210	32'-11"		7½"	10"		8'-8½"	2.839	442.86	106.88	582.24
		8'	240	33'-0"		8"	10"		9'-8½"	2.977	465.86	111.89	583.24
		9'	270	33'-4"		9"	11"		10'-8½"	3.220	492.09	116.90	587.24
		10'	300	33'-8"		10"	12"		11'-8½"	3.488	522.69	121.91	591.25
		11'	330	33'-10"		11"	12"		12'-8½"	3.702	547.98	126.92	593.25
		12'	360	34'-0"		12"	12"		13'-8½"	3.929	576.10	131.93	595.25
	3 @ 12'	6'	216	39'-0"	11½"	8"	10"	12"	7'-11½"	3.495	544.35	111.89	704.76
		7'	252	39'-0"		8"	10"		8'-11½"	3.606	552.37	116.90	704.76
		8'	288	39'-0"		8"	10"		9'-11½"	3.718	582.13	121.91	704.76
		9'	324	39'-4"		9"	11"		10'-11½"	3.964	609.07	126.92	708.77
		10'	360	39'-8"		10"	12"		11'-11½"	4.235	641.44	131.93	712.77
		11'	396	39'-10"		11"	12"		12'-11½"	4.451	666.13	136.94	714.78
		12'	432	40'-0"		12"	12"		13'-11½"	4.679	711.11	141.95	716.78
SECTION "B" - 15'-0"	3 @ 8'	5'	120	26'-8"	9½"	7"	9"	10"	6'-7½"	2.099	305.03	86.84	
		6'	144	26'-8"		7"	9"		7'-7½"	2.198	313.05	91.85	
		7'	168	26'-11"		7½"	10"		8'-7½"	2.376	341.75	96.86	
		8'	192	27'-0"		8"	10"		9'-7½"	2.514	371.95	101.87	
		9'	216	27'-4"		9"	11"		10'-7½"	2.756	402.07	106.88	
		10'	240	27'-8"		10"	12"		11'-7½"	3.023	429.44	111.89	
	3 @ 10'	6'	180	32'-11"	11¼"	7½"	10"	11¾"	7'-11"	2.985	441.21	101.87	
		7'	210	32'-11"		7½"	10"		8'-11"	3.093	468.72	106.88	
		8'	240	33'-0"		8"	10"		9'-11"	3.231	499.70	111.89	
		9'	270	33'-4"		9"	11"		10'-11"	3.477	522.18	116.90	
		10'	300	33'-8"		10"	12"		11'-11"	3.748	559.23	121.91	
		11'	330	33'-10"		11"	12"		12'-11"	3.963	590.37	126.92	
		12'	360	34'-0"		12"	12"		13'-11"	4.191	628.01	131.93	
	3 @ 12'	6'	216	39'-0"	13"	8"	10"	13½"	8'-2½"	3.856	622.65	111.89	
		7'	252	39'-0"		8"	10"		9'-2½"	3.968	642.57	116.90	
		8'	288	39'-0"		8"	10"		10'-2½"	4.079	688.30	121.91	
		9'	324	39'-4"		9"	11"		11'-2½"	4.328	714.12	126.92	
		10'	360	39'-8"		10"	12"		12'-2½"	4.602	757.69	131.93	
		11'	396	39'-10"		11"	12"		13'-2½"	4.820	792.68	136.94	
		12'	432	40'-0"		12"	12"		14'-2½"	5.049	830.04	141.95	
SECTION "C" - 20'-0"	3 @ 8'	5'	120	26'-8"	10½"	7"	9"	11"	6'-9½"	2.263	353.13	86.84	
		6'	144	26'-8½"		7½"	9"		7'-9½"	2.374	361.14	91.85	
		7'	168	26'-11½"		7¾"	10"		8'-9½"	2.556	395.50	96.86	
		8'	192	27'-0½"		8¼"	10"		9'-9½"	2.696	435.42	101.87	
		9'	216	27'-4½"		9¼"	11"		10'-9½"	2.942	462.51	106.88	
		10'	240	27'-8½"		10¼"	12"		11'-9½"	3.212	525.14	111.89	
	3 @ 10'	6'	180	33'-0"	12½"	8"	10"	13"	8'-1½"	3.264	506.07	101.87	
		7'	210	33'-0"		8"	10"		9'-1½"	3.375	533.96	106.88	
		8'	240	33'-1"		8½"	10"		10'-1½"	3.517	571.98	111.89	
		9'	270	33'-5"		9½"	11"		11'-1½"	3.769	608.15	116.90	
		10'	300	33'-8½"		10¼"	12"		12'-1½"	4.026	643.40	121.91	
		11'	330	33'-10"		11"	12"		13'-1½"	4.225	692.17	126.92	
		12'	360	34'-0"		12"	12"		14'-1½"	4.454	734.88	131.93	
	3 @ 12'	6'	216	39'-0"	14½"	8"	10"	15"	8'-5½"	4.218	677.02	111.89	
		7'	252	39'-0"		8"	10"		9'-5½"	4.329	710.88	116.90	
		8'	288	39'-1½"		8¾"	10"		10'-5½"	4.488	745.16	121.91	
		9'	324	39'-5"		9½"	11"		11'-5½"	4.728	782.14	126.92	
		10'	360	39'-8½"		10¼"	12"		12'-5½"	4.989	832.09	131.93	
		11'	396	39'-10½"		11¼"	12"		13'-5½"	5.209	868.67	136.94	
		12'	432	40'-0½"		12¼"	12"		14'-5½"	5.442	941.08	141.95	
SECTION "D" - 25'-0"	3 @ 8'	5'	120	26'-8"	11½"	7"	9"	12"	6'-11½"	2.428	369.11	86.84	
		6'	144	26'-9½"		7¾"	9"		7'-11½"	2.564	379.20	91.85	
		7'	168	27'-1"		8½"	10"		8'-11½"	2.764	414.12	96.86	
		8'	192	27'-2½"		9¼"	10"		9'-11½"	2.924	449.02	101.87	
		9'	216	27'-6"		10"	11"		10'-11½"	3.161	488.86	106.88	
		10'	240	27'-10"		11"	12"		11'-11½"	3.439	525.45	111.89	
	3 @ 10'	6'	180	33'-0"	13¾"	8"	10"	14¼"	8'-4"	3.519	543.55	101.87	
		7'	210	33'-1"		8½"	10"		9'-4"	3.658	577.92	106.88	
		8'	240	33'-2½"		9¼"	10"		10'-4"	3.820	611.90	111.89	
		9'	270	33'-6½"		10½"	11"		11'-4"	4.079	647.87	116.90	
		10'	300	33'-10½"		11¼"	12"		12'-4"	4.363	698.60	121.91	
		11'	330	34'-0"		12"	12"		13'-4"	4.568	756.00	126.92	
		12'	360	34'-1½"		12¾"	12"		14'-4"	4.782	806.26	131.93	
	3 @ 12'	6'	216	39'-0"	16"	8"	10"	16½"	8'-8½"	4.579	733.92	116.90	
		7'	252	39'-1½"		8¾"	10"		9'-8½"	4.735	769.34	121.91	
		8'	288	39'-3"		9½"	10"		10'-8½"	4.900	809.65	126.92	
		9'	324	39'-7"		10½"	11"		11'-8½"	5.165	842.91	131.93	
		10'	360	39'-10½"		11½"	12"		12'-8½"	5.435	893.38	136.94	
		11'	396	40'-0½"		12½"	12"		13'-8½"	5.663	952.37	141.95	
		12'	432	40'-2½"		13½"	12"		14'-8½"	5.904	1003.92	146.96	

TYPICAL SECTION M-M

NOTE:- For details of wings and bar lists, see Drawing Nos. W-X002-1 or W-X002-2, W-X003-1 or W-X003-2, and W-X004-1 or W-X004-2.

PART LONGITUDINAL SECTION

NOTE:- See Table at lower left for SECTIONS and Bar Groups to be used for Various Depths of Cover.

TYPICAL LONGITUDINAL SECTION-SHOWING SECTIONS AND BAR GROUPS FOR VARIOUS DEPTHS OF COVER

NOTE:- Lengths of Sections, with Bar Groups to be shown on Cross Section Sheets.

SECTIONS & 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		
5.0' to 9.5'	✓				A
10.0' to 19.5'	✓				B
15.0' to 19.5'	✓	✓			C
20.0' to 25.0'	✓	✓	✓		D

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

BAR SIZE	PIN DIAM.	K	ADD FOR 2 HOOKS
#6	3"	5"	1'-1½"
#7	3½"	5¾"	1'-3¾"
#8	4"	6½"	1'-6"

BENDING DIAGRAM FOR BARS "b" and "b2"

NOTE:- Dimension are to centers of bars ("b" and "b2")

DOWEL BARS FOR TWO HEADWALLS	S	SIZE	SPACING	No. REQ'D	LENGTH	X	Bars "r" Dowel bars in Headwalls.
	8'	#4	12"±	54	2'-10"	1'-5"	
	10'	#4	12"±	66	3'-0"	1'-6"	
	12'	#4	12"±	78	3'-4"	1'-8"	

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, division walls 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 @ 4'-0" ctrs.

UNIT STRESSES:-
Class S Concrete (n=10) 1200#/□"
Reinforcing Steel 20000#/□"

LENGTH OF SECTIONS FOR SKEWED CULVERTS

SKEW ANGLE	SEC. OF SKEW ANGLE	3:1 SLOPES SECTIONS A	3:1 SLOPES SECTIONS B, or C	4:1 SLOPES SECTIONS A	4:1 SLOPES SECTIONS B, or C
0°	1.0	22.0'	11.0'	32.0'	16.0'
15°	1.0353	22.776'	11.388'	33.129'	16.564'
30°	1.1547	*	12.702'	*	18.475'
45°	1.4142	*	15.556'	*	22.627'

* Variable, see Drawings for Skewed Culverts.

REVISIONS:-
Wing Drwg. Nos.- W.C.H. 1-14-63.
Bar size, spacing, no., & quant. for 10' Spans, Sect. C & D, W.C.H. 1-13-65.

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF STANDARD BARREL SECTIONS
FOR
REINFORCED CONCRETE BOX CULVERTS
8', 10' & 12' SPANS
TRIPLES
3:1 OR 4:1 SLOPES
OVER 5'-0" COVER
STANDARD DRAWING NO. R-300X-X2

Designed by:- W.C.H. 8-7-62 Checked by:- RHS 8-10-62
Drawn by:- W.C.H. 8-15-62 Checked by:- RHS 8-20-62
Quantities by:- W.C.H. 8-17-62 Checked by:- RHS 8-20-62

(23)

Reshot 3-8-93

417

FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			148	
JOB No.					

BAR LIST FOR BARREL SECTION 60'-0" IN LENGTH - TWO 30° SKEWED ENDS

"a" bars — STRAIGHT — In Top and Bottom Slab of Barrel. ▼"a_1" bars — STRAIGHT — In Top and Bottom Slab of Barrel- (Four of Each Length)

DEPTH OF COVER D	CLEAR SPAN S	CLEAR HEIGHT H	"a" SIZE	"a" SPACING	"a" No. REQ'D	"a" LENGTH	"a_1" SIZE	"a_1" SPACING	"a_1" No. REQ'D	"a_1" LENGTH MAX.	"a_1" LENGTH MIN.
0'-0" TO 5'-0" MAXIMUM	3 @ 4'	2'	#5	12"	108	14'-1"	#5	12"	24	12'-4"	3'-7"
		3'			108	14'-1"			24	"	"
		4'			108	14'-1"			24	"	"
		5'			108	14'-1"			24	"	"
		6'			108	14'-5"			24	12'-8"	3'-11"
	3 @ 5'	3'	#6	12"	104	17'-1"	#6	12"	32	15'-4"	3'-1"
		4'			104	17'-1"			32	"	"
		5'			104	17'-1"			32	"	"
		6'			104	17'-5"			32	15'-8"	3'-5"
		7'			104	17'-8"			32	15'-11"	3'-8"
	3 @ 6'	3'	#6	11"	110	20'-1"	#6	11"	44	18'-6"	2'-8"
		4'			110	20'-1"			44	"	"
		5'			110	20'-1"			44	"	"
		6'			110	20'-5"			44	18'-10"	3'-0"
		7'			108	20'-8"			44	19'-1"	3'-3"
		8'			108	20'-9"			44	19'-2"	3'-4"
	3 @ 7'	4'	#6	12"	98	23'-1"	#6	12"	44	21'-4"	3'-10"
		5'			96	23'-1"			44	"	"
		6'			96	23'-5"			44	21'-8"	4'-2"
		7'			96	23'-8"			48	21'-11"	2'-8"
		8'			96	23'-9"			48	22'-0"	2'-9"
		9'			96	24'-1"			48	22'-4"	3'-1"
	3 @ 8'	4'	#6	11"	102	26'-1"	#6	11"	56	24'-6"	3'-11"
		5'			102	26'-5"			60	24'-10"	2'-8"
		6'			102	26'-5"			60	"	"
		7'			102	26'-9"			60	25'-1"	2'-11"
		8'			100	26'-9"			60	25'-2"	3'-0"
		9'			100	27'-1"			60	25'-6"	3'-4"
		10'			100	27'-5"			60	25'-10"	3'-8"

"b" bars — BENT - See Diagrams below — In Bottom of Top Slab bent up over Division Walls - hooked. Alternate with "a" and "c" bars. ▼"b_1" bars — In Bottom of Top Slab-some bent up over Division Walls-one end hooked (2 of Each Length) Alternate with "a_1" and "c" or "c_1" bars.

D	S	H	"b" SIZE	"b" SPACING	"b" No. REQ'D	"b" LENGTH	X	Y	Z	"b_1" SIZE	"b_1" SPACING	"b_1" No. REQ'D	"b_1" LENGTH MAX.	"b_1" LENGTH MIN.	L MAX.	L MIN.
0'-0" TO 5'-0" MAXIMUM	3 @ 4'	2'	#5	12"	51	15'-4"	0'-3"	2'-2"	3'-4¼"	#5	12"	14	14'-0"	3'-2"	13'-2"	2'-8"
		3'			51	15'-4"	"	"	"			14	"	"	"	"
		4'			51	15'-4"	"	"	"			14	"	"	"	"
		5'			51	15'-4"	"	"	"			14	"	"	"	"
		6'			51	15'-8"	0'-3"	2'-3"	3'-5¼"			14	14'-4"	3'-6"	13'-6"	3'-0"
	3 @ 5'	3'	#5	12"	50	18'-5"	0'-3½"	2'-7"	4'-1½"	#5	12"	16	17'-0"	4'-5"	16'-2"	3'-11"
		4'			50	18'-5"	"	"	"			16	"	"	"	"
		5'			50	18'-5"	"	"	"			16	"	"	"	"
		6'			50	18'-9"	"	2'-8"	4'-2¼"			18	17'-4"	4'-9"	16'-6"	2'-6"
		7'			49	19'-0"	0'-3½"	2'-9"	4'-2¾"			18	17'-7"	5'-0"	16'-9"	2'-9"
	3 @ 6'	3'	#5	11"	52	21'-6"	0'-4"	3'-0"	4'-10¼"	#5	11"	22	20'-3"	3'-11"	19'-3"	3'-5"
		4'			52	21'-6"	"	"	"			22	"	"	"	"
		5'			52	21'-6"	"	"	"			22	"	"	"	"
		6'			52	21'-10"	"	3'-1"	4'-11¼"			22	20'-7"	4'-3"	19'-7"	3'-9"
		7'			52	22'-1"	"	3'-2"	4'-11¾"			22	20'-10"	4'-6"	19'-10"	4'-0"
		8'			52	22'-2"	0'-4"	3'-2"	5'-0¼"			24	20'-11"	3'-0"	19'-11"	2'-6"
	3 @ 7'	4'	#6	12"	46	24'-8"	0'-4½"	3'-5"	5'-7"	#6	12"	24	23'-4"	3'-6"	22'-2"	2'-11"
		5'			46	24'-8"	"	"	"			24	"	"	"	"
		6'			46	25'-0"	"	3'-6"	5'-8"			24	23'-8"	3'-10"	22'-6"	3'-3"
		7'			46	25'-3"	"	3'-7"	5'-8½"			24	23'-11"	4'-1"	22'-9"	3'-6"
		8'			46	25'-4"	"	"	5'-9"			24	24'-0"	4'-2"	22'-10"	3'-7"
		9'			46	25'-8"	0'-4½"	3'-8"	5'-10"			24	24'-4"	4'-6"	23'-2"	3'-11"
	3 @ 8'	4'	#6	11"	48	27'-9"	0'-5"	3'-10"	6'-4"	#6	11"	30	26'-5"	3'-8"	25'-3"	3'-1"
		5'			48	28'-1"	"	3'-11"	6'-5"			30	26'-9"	4'-0"	25'-7"	3'-5"
		6'			48	28'-1"	"	"	"			30	"	"	"	"
		7'			48	28'-4"	"	4'-0"	6'-5½"			30	27'-0"	4'-3"	25'-10"	3'-8"
		8'			48	28'-5"	"	"	6'-6"			30	27'-1"	4'-4"	25'-11"	3'-9"
		9'			48	28'-9"	"	4'-1"	6'-7"			30	27'-5"	4'-8"	26'-3"	4'-1"
		10'			48	29'-1"	0'-5"	4'-2"	6'-8"			32	27'-9"	3'-5"	26'-7"	2'-10"

"b_2" bars — BENT - See Diagrams below. — In Top of Bottom Slab bent down under Division Walls - hooked. Alternate with "a" and "c" bars. ▼"b_3" bars — In Top of Bottom Slab-some bent down under Division Walls-one end hooked. (2 of Each Length) Alternate with "a_1" and "c" or "c_1" bars.

D	S	H	"b_2" SIZE	"b_2" SPACING	"b_2" No. REQ'D	"b_2" LENGTH	X	Y	Z	"b_3" SIZE	"b_3" SPACING	"b_3" No. REQ'D	"b_3" LENGTH MAX.	"b_3" LENGTH MIN.	L MAX.	L MIN.
0'-0" TO 5'-0" MAXIMUM	3 @ 4'	2'	#5	12"	53	15'-3"	0'-2½"	2'-3"	3'-4¼"	#5	12"	14	13'-11"	3'-2"	13'-2"	2'-8"
		3'			53	15'-3"	"	"	"			14	"	"	"	"
		4'			53	15'-3"	"	"	"			14	"	"	"	"
		5'			53	15'-3"	"	"	"			14	"	"	"	"
		6'			53	15'-7"	0'-2½"	2'-4"	3'-5¼"			14	14'-3"	3'-6"	13'-6"	3'-0"
	3 @ 5'	3'	#5	12"	52	18'-4"	0'-3"	2'-8"	4'-1½"	#5	12"	16	17'-0"	4'-5"	16'-2"	3'-11"
		4'			52	18'-4"	"	"	"			16	"	"	"	"
		5'			52	18'-4"	"	"	"			16	"	"	"	"
		6'			52	18'-8"	"	2'-9"	4'-2¼"			18	17'-4"	4'-9"	16'-6"	2'-6"
		7'			51	18'-11"	0'-3"	2'-10"	4'-2¾"			18	17'-7"	5'-0"	16'-9"	2'-9"
	3 @ 6'	3'	#5	11"	54	21'-5"	0'-3½"	3'-1"	4'-10¼"	#5	11"	22	20'-2"	3'-11"	19'-3"	3'-5"
		4'			54	21'-5"	"	"	"			22	"	"	"	"
		5'			54	21'-5"	"	"	"			22	"	"	"	"
		6'			54	21'-9"	"	3'-2"	4'-11¼"			22	20'-6"	4'-3"	19'-7"	3'-9"
		7'			54	22'-0"	"	3'-3"	4'-11¾"			22	20'-9"	4'-6"	19'-10"	4'-0"
		8'			54	22'-1"	0'-3½"	3'-3"	5'-0¼"			24	20'-10"	3'-0"	19'-11"	2'-6"
	3 @ 7'	4'	#6	12"	48	24'-8"	0'-4½"	3'-5½"	5'-7"	#6	12"	24	23'-3"	3'-6"	22'-2"	2'-11"
		5'			48	24'-8"	"	"	"			24	"	"	"	"
		6'			48	25'-0"	"	3'-6½"	5'-8"			24	23'-7"	3'-10"	22'-6"	3'-3"
		7'			48	25'-3"	"	3'-7½"	5'-9½"			24	23'-10"	4'-1"	22'-9"	3'-6"
		8'			48	25'-4"	"	"	5'-9"			24	23'-11"	4'-2"	22'-10"	3'-7"
		9'			48	25'-8"	0'-4½"	3'-8½"	5'-10"			24	24'-3"	4'-6"	23'-2"	3'-11"
	3 @ 8'	4'	#6	11"	50	27'-9"	0'-5"	3'-10"	6'-4"	#6	11"	30	26'-5"	3'-8"	25'-3"	3'-1"
		5'			50	28'-1"	"	3'-11"	6'-5"			30	26'-9"	4'-0"	25'-7"	3'-5"
		6'			50	28'-1"	"	"	"			30	"	"	"	"
		7'			50	28'-4"	"	4'-0"	6'-5½"			30	27'-0"	4'-3"	25'-10"	3'-8"
		8'			50	28'-5"	"	"	6'-6"			30	27'-1"	4'-4"	25'-11"	3'-9"
		9'			50	28'-9"	"	4'-1"	6'-7"			30	27'-5"	4'-8"	26'-3"	4'-1"
		10'			50	29'-1"	0'-5"	4'-2"	6'-8"			32	27'-9"	3'-5"	26'-7"	2'-10"

"c" bars — STRAIGHT — In Top and Bottom Slab of Barrel. Alternate with "b" and "b_2" bars. ▼"c_1" bars — In Top and Bottom Slab of Barrel. Alt. with "b_1" & "b_3" bars. (Four of each Length) "d" bars — Longitudinal in Top Slab of Barrel.

D	S	H	"c" SIZE	"c" SPACING	"c" No. REQ'D	"c" LENGTH	"c_1" SIZE	"c_1" SPACING	"c_1" No. REQ'D	"c_1" LENGTH MAX.	"c_1" LENGTH MIN.	"d" SIZE	"d" SPACING	"d" No. REQ'D	"d" LENGTH
0'-0" TO 5'-0" MAXIMUM	3 @ 4'	2'	#5	12"	112	9'-4"	#5	12"	16	8'-3"	3'-0"	#5	12"	22	2@ 30'-8" for 60'-0" Length Barrel (1'-8" Lap).
		3'			112	9'-4"			16	"	"			22	
		4'			112	9'-4"			16	"	"			22	
		5'			112	9'-4"			16	"	"			22	
		6'			112	9'-6"			16	8'-6"	3'-3"			22	
	3 @ 5'	3'	#6	12"	108	11'-4"	#6	12"	20	10'-9"	3'-9"	#5	11½"	26	
		4'			108	11'-4"			20	"	"			26	
		5'			108	11'-4"			20	"	"			26	
		6'			108	11'-6"			20	11'-0"	4'-0"			26	
		7'			108	11'-8"			20	11'-2"	4'-2"			26	
	3 @ 6'	3'	#6	11"	118	13'-4"	#6	11"	28	12'-0"	2'-6"	#5	11½"	30	
		4'			118	13'-4"			28	"	"			30	
		5'			118	13'-4"			28	"	"			30	
		6'			118	13'-6"			28	12'-3"	2'-9"			30	
		7'			116	13'-8"			28	12'-5"	2'-11"			30	
		8'			116	13'-8"			28	12'-6"	3'-0"			30	
	3 @ 7'	4'	#6	12"	106	15'-4"	#6	12"	28	14'-0"	3'-6"	#5	11½"	32	
		5'			104	15'-4"			28	"	"			32	
		6'			104	15'-6"			28	14'-3"	3'-9"			32	
		7'			104	15'-8"			28	14'-5"	3'-11"			32	
		8'			104	15'-8"			28	14'-6"	4'-0"			32	
		9'			104	15'-10"			32	14'-9"	2'-6"			32	
	3 @ 8'	4'	#6	11"	110	17'-4"	#6	11"	40	17'-0"	2'-9"	#5	11½"	36	
		5'			110	17'-6"			40	17'-3"	3'-0"			36	
		6'			110	17'-6"			40	"	"			36	
		7'			110	17'-8"			40	17'-5"	3'-2"			36	
		8'			108	17'-8"			40	17'-6"	3'-3"			36	
		9'			108	17'-10"			40	17'-9"	3'-6"			36	
		10'			110	18'-0"			36	16'-5"	3'-9"			36	

"d_1" bars — STRAIGHT — Longitudinal in Sidewalls and Division Walls. "e" bars — Longitudinal in Bottom Slab of Barrel. "f" bars — STRAIGHT — Verticals in Sidewalls and Division Walls. ▼"k_1" bars — STRAIGHT — In Bottom of Headwalls. ▼"k_2" bars — In Top of Headwalls and Aprons (2 Each)

D	S	H	"d_1" SIZE	"d_1" SPACING	"d_1" No. REQ'D	"d_1" LENGTH	"e" SIZE	"e" SPACING	"e" No. REQ'D	"e" LENGTH	"f" SIZE	"f" SPACING	"f" No. REQ'D	"f" LENGTH	"k_1" SIZE	"k_1" No. REQ'D	"k_1" LENGTH	"k_2" SIZE	"k_2" No. REQ'D	"k_2" LENGTH
0'-0" TO 5'-0" MAXIMUM	3 @ 4'	2'	#4	12"	12	2@ 30'-6" for 60'-0" Length Barrel (1'-3" Lap).	#4	12"	22	2@ 31'-8" for 60'-0" Length Barrel (1'-3" Lap).	#4	12"	360	2'-10"	#5	6	16'-3"	#5	8	17'-5"
		3'			18				22				360	3'-10"		6	"		8	"
		4'			24				22				360	4'-10"		6	"		8	"
		5'			30				22				360	5'-10"		6	"		8	"
		6'			36				22				360	6'-10"		6	16'-8"		8	17'-10"
	3 @ 5'	3'	#4	12"	18		#4	12"	25		#4	12"	360	3'-11"	#6	6	19'-9"	#6	8	20'-11"
		4'			24				25				360	4'-11"		6	"		8	"
		5'			30				25				360	5'-11"		6	"		8	"
		6'			36				25				360	6'-11"		6	20'-1"		8	21'-3"
		7'			42				25				360	7'-11"		6	20'-5"		8	21'-7"
	3 @ 6'	3'	#4	12"	18		#4	12"	28		#4	12"	360	4'-0"	#6	6	23'-2"	#6	8	24'-4"
		4'			24				28				360	5'-0"		6	"		8	"
		5'			30				28				360	6'-0"		6	"		8	"
		6'			36				28				360	7'-0"		6	23'-7"		8	24'-9"
		7'			42				28				360	8'-0"		6	23'-10"		8	25'-0"
		8'			48				28			10"	432	9'-0"		6	24'-0"		8	25'-1"
	3 @ 7'	4'	#4	12"	24		#4	12"	31		#4	12"	360	5'-1"	#6	6	26'-8"	#6	8	27'-10"
		5'			30				31				360	6'-1"		6	"		8	"
		6'			36				31				360	7'-1"		6	27'-1"		8	28'-2"
		7'			42				31				360	8'-1"		6	27'-4"		8	28'-6"
		8'			48				31			10"	432	9'-1"		6	27'-5"		8	28'-7"
		9'			54				31		#5	12"	360	10'-1"		6	27'-10"		8	29'-0"
	3 @ 8'	4'	#4	12"	24		#4	12"	35		#4	12"	360	5'-2"	#6	6	30'-1"	#6	8	31'-3"
		5'			30				35				360	6'-2"		6	30'-6"		8	31'-8"
		6'			36				35				360	7'-2"		6	"		8	"
		7'			42				35				360	8'-2"		6	30'-10"		8	31'-11"
		8'			48				35			10"	432	9'-2"		6	30'-11"		8	32'-1"
		9'			54				35		#5	12"	360	10'-2"		6	31'-3"		8	32'-5"
		10'			60				35			11"	396	11'-2"		6	31'-8"		8	32'-10"

BAR SIZE	PIN DIAM.	K	ADD FOR 2 HOOKS	BENDING DIAGRAM FOR BARS "b" AND "b_2"
#5	2½"	4¼"	0'-11½"	
#6	3"	5"	1'-2"	

BAR SIZE	PIN DIAM.	K	ADD FOR 1 HOOK	BENDING DIAGRAM FOR BARS "b_1" AND "b_3"
#5	2½"	4¼"	0'-5¾"	
#6	3"	5"	0'-7"	

DOWEL BARS FOR TWO HEADWALLS

SPAN	SIZE	SPACING	No. REQ'D	LENGTH	X	Dowel bars "r" in Two Headwalls.
4'	#4	12½"	34	2'-5"	1'-2½"	
5'	#4	12½"	42	2'-6"	1'-3"	
6'	#4	12½"	48	2'-7"	1'-3½"	
7'	#4	12½"	56	2'-8"	1'-4"	
8'	#4	12½"	62	2'-9"	1'-4½"	

▼ These bars are in the skewed portion of barrel only. The length of "a_1" and "c_1" bars and overall length L of "b_1" and "b_3" bars vary by 1'-9" for 12" spacing and 1'-7" for 11" spacing.

NOTE:- Dimensions are to centers of bars. (b, b_1, b_2 & b_3). The X, Y & Z values for "b_1" bars are same as "b" bars, and for "b_3" bars same as for "b_2" bars.
①①--⑤⑤ Min. & Max. Lengths of L for bars "b_1" & "b_3" for each type bend.

MAX. DESIGN DEPTH OF COVER D	CLEAR SPANS S	CLEAR HEIGHT H	SQ. FT. OPENING A	OVERALL WIDTH OW	THICKNESS OF TOP SLAB T	THICKNESS OF SIDEWALLS C	THICKNESS OF DIVISION WALLS M	THICKNESS OF BOTTOM SLAB B	OVERALL HEIGHT OH	ROADWAY LENGTH RL	LENGTH OF HEADWALLS K	* CLASS S CONC. PER LIN. FT. OF BARREL CU. YD.	REINFORCING STEEL TOTAL FOR 60'-0" LENGTH OF BARREL LB.	PER LIN. FT. OF BARREL LB.	ADDITIONAL PER LAP LB.
5'-0"	3 @ 4'	2'	24	14'-4"	6½"	6"	8"	6"	3'-0½"	16'-6⅝"	17'-8½"	0.726	8689	137.76	66.63
		3'	36	14'-4"		6"	8"		4'-0½"	"	"	0.812	9175	145.78	71.64
		4'	48	14'-4"		6"	8"		5'-0½"	"	"	0.899	9662	153.79	76.15
		5'	60	14'-4"		6"	8"		6'-0½"	"	"	0.985	10,148	161.81	81.66
		6'	72	14'-8"		7"	9"		7'-0½"	16'-11¼"	18'-1"	1.158	10,746	171.56	86.67
	3 @ 5'	3'	45	17'-4"	7"	6"	8"	6½"	4'-1½"	20'-0¼"	21'-2"	0.981	12,375	195.23	81.10
		4'	60	17'-4"		6"	8"		5'-1½"	"	"	1.068	12,870	203.25	86.11
		5'	75	17'-4"		6"	8"		6'-1½"	"	"	1.154	13,365	211.27	91.12
		6'	90	17'-8"		7"	9"		7'-1½"	20'-4⅜"	21'-6¾"	1.329	14,033	221.48	96.13
		7'	105	17'-11"		7½"	10"		8'-1½"	20'-8¼"	21'-10"	1.503	14,604	231.27	101.14
	3 @ 6'	3'	54	20'-4"	7½"	6"	8"	7"	4'-2½"	23'-5¾"	24'-7½"	1.169	14,995	236.39	90.56
		4'	72	20'-4"		6"	8"		5'-2½"	"	"	1.256	15,480	244.41	95.57
		5'	90	20'-4"		6"	8"		6'-2½"	"	"	1.342	15,965	252.42	100.58
		6'	108	20'-8"		7"	9"		7'-2½"	23'-10⅜"	25'-0¼"	1.517	16,628	262.84	105.59
		7'	126	20'-11"		7½"	10"		8'-2½"	24'-1⅞"	25'-3¾"	1.692	17,148	272.79	110.60
		8'	144	21'-0"		8"	10"		9'-2½"	24'-3"	25'-4¾"	1.829	18,118	288.98	115.61
	3 @ 7'	4'	84	23'-4"	8"	6"	8"	7¾"	5'-3¾"	26'-11⅜"	28'-1¼"	1.480	17,720	279.99	101.55
		5'	105	23'-4"		6"	8"		6'-3¾"	"	"	1.566	18,090	288.01	106.56
		6'	126	23'-8"		7"	9"		7'-3¾"	27'-4"	28'-5¾"	1.743	18,761	298.53	111.57
		7'	147	23'-11"		7½"	10"		8'-3¾"	27'-7⅜"	28'-9¼"	1.919	19,407	308.55	116.58
		8'	168	24'-0"		8"	10"		9'-3¾"	27'-8½"	28'-10½"	2.056	20,370	324.34	121.59
		9'	189	24'-4"		9"	11"		10'-3¾"	28'-1½"	29'-3"	2.294	21,982	350.27	126.60
	3 @ 8'	4'	96	26'-4"	8½"	6"	8"	8½"	5'-5"	30'-4⅞"	31'-6¾"	1.727	20,858	330.89	111.85
		5'	120	26'-8"		7"	9"		6'-5"	30'-9½"	31'-11¼"	1.893	21,563	341.64	116.86
		6'	144	26'-8"		7"	9"		7'-5"	"	"	1.992	22,049	349.65	121.87
		7'	168	26'-11"		7½"	10"		8'-5"	31'-1"	32'-2¾"	2.168	22,697	359.85	126.88
		8'	192	27'-0"		8"	10"		9'-5"	31'-2½"	32'-4"	2.306	23,538	375.76	131.89
		9'	216	27'-4"		9"	11"		10'-5"	31'-6¾"	32'-8½"	2.545	25,162	402.04	136.90
		10'	240	27'-8"		10"	12"		11'-5"	31'-11⅜"	33'-1¼"	2.810	26,380	421.39	141.91

* For quantities in wings see Standard Wing Drawings listed below.
Total steel quantities listed above include one lap of longitudinal bars.

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 LAPS:- 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 min.

CONSTRUCTION JOINTS:- Construction joints between wingwalls, sidewalls, division walls 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 @ 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-X302-1 or W-X302-2, W-X303-1 or W-X303-2, and W-X304-1 or W-X304-2. Also W-X30.

TOP SLAB REINFORCING
PART PLAN AT END OF CULVERT

BOTTOM SLAB REINFORCING
PART PLAN AT END OF CULVERT

NOTE:- In the regular portion of the barrel begin and end with a set of "a" & "c" bars. If the spacing is such that the last set of bars would be "b" & "b_2" bars, use a set of "a" & "c" bars instead.

NOTE:- For Details of Standard Wings and bar lists, see Drawing No. W-X302-1 or W-X302-2; W-X303-1 or W-X303-2, and W-X304-1 or W-X304-2. Also W-X30.

SECTION N-N

TYPICAL SECTION M-M

LONGITUDINAL SECTION N'-N'

LAYOUT OF
TRIPLE BARREL CULVERT
30° SKEW LEFT FORWARD
30° Skew Right Forward is reversed.

CLASS S CONCRETE

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF STANDARD BARREL SECTIONS
FOR
REINFORCED CONCRETE BOX CULVERTS
30° SKEW

4', 5', 6', 7' AND 8' SPANS 2:1, 3:1 OR 4:1 SLOPES
TRIPLES UNDER 5'-0" COVER

STANDARD DRAWING No. R-330X-01

Designed by:- W.C.H. 1-22-63. Checked by:- R.H.S. 5-17-63
Drawn by:- W.C.H. 2-27-64. Checked by:-
Quantities by:- W.C.H. 4-8-64. Checked by:-