DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	1	226

(2) HWY. 43 KCS RAILROAD OVERPASS (SILOAM SPRINGS)(S)

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

CONSTRUCTION PLANS FOR STATE HIGHWAY

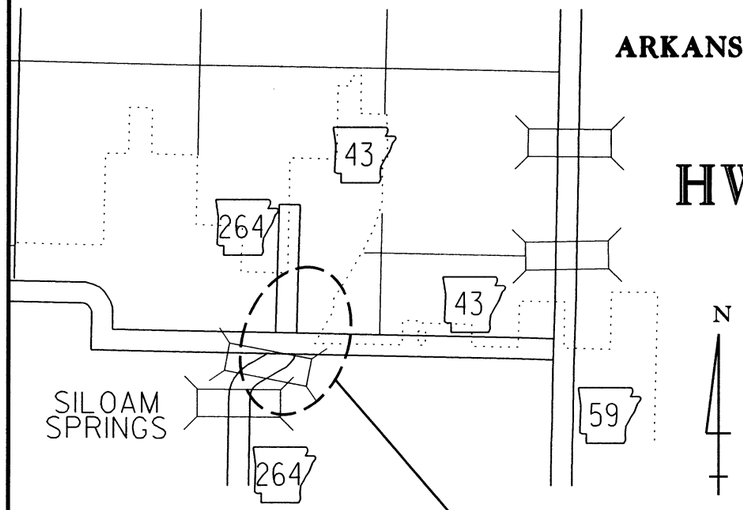
HWY. 43 KCS RAILROAD OVERPASS (SILOAM SPRINGS) (S)

BENTON COUNTY

ROUTE 43 SECTION 0

F.A.P. NO. HSIP-9394(13)

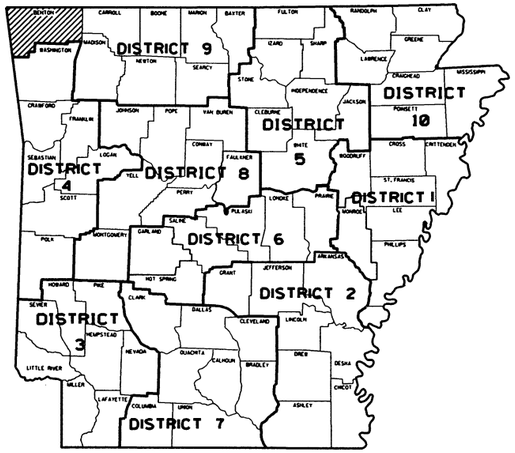
JOB 090406



VICINITY MAP

PROJECT LOCATION

NOT TO SCALE



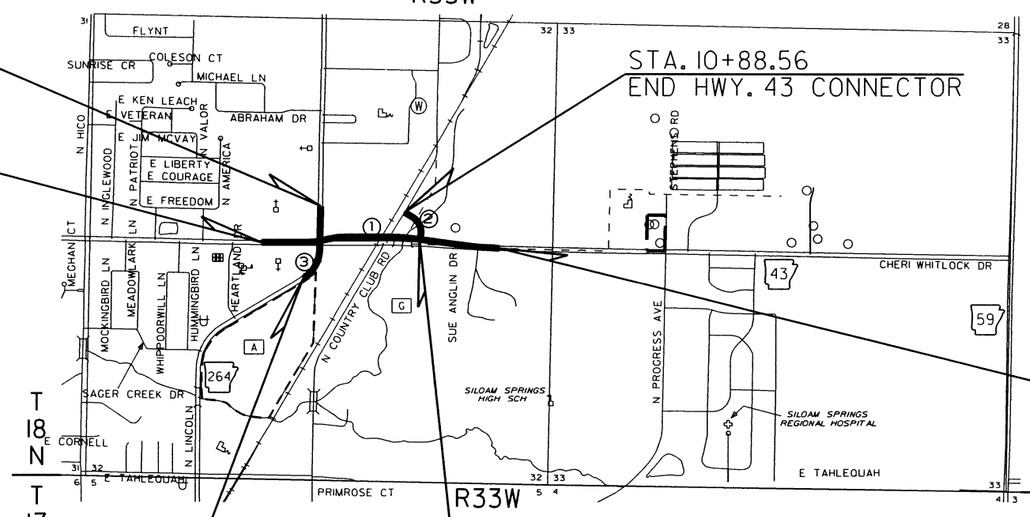
ARKANSAS HWY. DIST. 9

• DESIGN TRAFFIC DATA •

DESIGN YEAR	2036
2016 ADT	11,000
2036 ADT	15,500
2036 DHV	1705
DIRECTIONAL DISTRIBUTION	60%
TRUCKS	3%
DESIGN SPEED	40 MPH

STA. 111+80.00
END N. LINCOLN ST.

STA. 21+86.00
BEGIN JOB 090406
LOG MILE 20.03



STA. 10+88.56
END HWY. 43 CONNECTOR

STA. 46+60.00
END JOB 090406

STA. 102+80.00
BEGIN N. LINCOLN ST.

STA. 5+28.00
BEGIN HWY. 43 CONNECTOR

BRIDGE DATA

(1) STA. 32+01.72 - BRIDGE END
BRIDGE NO. 07393
380'-0" CONT. COMPOSITE PLATE GIRDER UNIT (85',105',105',85')
170'-0" CONT. COMPOSITE PLATE GIRDER UNIT (85',85')
30° LT. FWD. SKEW
58'-0" CLEAR ROADWAY
552'-6 1/16 BRIDGE LENGTH
STA. 37+54.23 - BRIDGE END

STRUCTURES OVER 20'-0" SPAN

(2) STA. 8+11.70 ℄ HWY. 43 CONNECTOR - CONSTRUCT
SEXTUPLE 11' x 9' x 95' R.C. BOX CULVERT
WITH 3:1 WINGS
Q25 = 4700 CFS D.A. = 2880 ACRES
CHANNEL CHANGE = 1618 CU. YDS.
SPAN = 72.10'

(3) STA. 104+10 ℄ N. LINCOLN ST. - IN PLACE
TRP. 6' x 3' x 78' R.C. BOX CULVERT
WITH 3:1 WINGS LT. & RT. ON 45° LT. FWD SKEW
RETAIN & EXTEND 20' LT.
WITH 2:1 WINGS ON 45° LT. FWD. SKEW
Q50 = 524 CFS D.A. = 320 ACRES
SPAN = 28.76'

PROJECT COORDINATES:

	BEGIN	MID-POINT	END
LAT.	N36° 11' 45"	N36° 11' 45"	N36° 11' 44"
LON.	W94° 31' 28"	W94° 31' 13"	W94° 30' 58"

LENGTH OF PROJECT CALCULATED ALONG C.L.
GROSS LENGTH OF PROJECT 2474.00 FEET OR 0.469 MILES
NET LENGTH OF ROADWAY 1921.49 FEET OR 0.364 MILES
NET LENGTH OF BRIDGES 552.51 FEET OR 0.105 MILES
NET LENGTH OF PROJECT 2474.00 FEET OR 0.469 MILES

P.E. JOB 090406

APPROVED

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

6-13-16

DEPUTY DIRECTOR
AND CHIEF ENGINEER

090406

5/20/2014

R090406.DGN

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

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
6-9-16

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188 - 226	CROSS SECTIONS		

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

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				JOB NO.		090406	3	226

(2) GOVERNING SPECS, AND GENERAL NOTES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-17-16

GENERAL NOTES

1. GRADE LINE DENOTES FINISHED GRADE WHERE SHOWN ON PLANS.
2. ALL PIPE LINES, POWER, TELEPHONE, AND TELEGRAPH LINES TO BE MOVED OR LOWERED BY THE RESPECTIVE OWNERS AS PER AGREEMENT WITH SUCH OWNERS.
3. ANY EQUIPMENT OR APPURTENANCE THAT INTERFERES WITH THE PROPOSED CONSTRUCTION AND WHICH MAY BE THE PROPERTY OF UTILITY SERVICE ORGANIZATIONS SHALL BE MOVED BY THE OWNERS UNLESS OTHERWISE PROVIDED.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING U. S. MAILBOXES WITHIN THE PROJECT LIMITS IN SUCH A MANNER THAT THE PUBLIC MAY RECEIVE CONTINUED MAIL SERVICE. PAYMENT WILL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE VARIOUS BID ITEMS.
5. ALL LAND MONUMENTS LOCATED WITHIN THE CONSTRUCTION AREA SHALL BE PROTECTED IN ACCORDANCE WITH SECTION 107.12 OF THE STANDARD SPECIFICATIONS.
6. ALL TREES THAT DO NOT DIRECTLY INTERFERE WITH THE PROPOSED CONSTRUCTION SHALL BE SPARED AS DIRECTED BY THE ENGINEER. CARE AND DISCRETION SHALL BE USED TO INSURE THAT ALL TREES NOT TO BE REMOVED SHALL BE HARMED AS LITTLE AS POSSIBLE DURING THE CONSTRUCTION OPERATIONS.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A FENCE TO CONTROL LIVESTOCK IN AREAS WHERE PASTURES ARE SEVERED. WIRE FENCE MAY BE CONSTRUCTED INITIALLY, OR IN LIEU THEREOF, THE CONTRACTOR AT HIS OWN EXPENSE, MAY ELECT TO PROVIDE TEMPORARY FENCING SUITABLE TO CONTAIN LIVESTOCK.
8. 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.

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 090406
FHWA-1273__	SUPPLEMENT - POSTERS AND NOTICES REQUIRED FOR FEDERAL-AID PROJECTS
FHWA-1273__	SUPPLEMENT - WAGE RATE DETERMINATION
100-3_____	CONTRACTOR'S LICENSE
102-2_____	ISSUANCE OF PROPOSALS
108-1_____	LIQUIDATED DAMAGES
108-2_____	WORK ALLOWED PRIOR TO ISSUANCE OF WORK ORDER
303-1_____	AGGREGATE BASE COURSE
400-1_____	TACK COATS
410-1_____	CONSTRUCTION REQUIREMENTS AND ACCEPTANCE OF ASPHALT CONCRETE PLANT MIX COURSES
604-1_____	RETROREFLECTIVE SHEETING FOR TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES
606-1_____	PIPE CULVERTS FOR SIDE DRAINS
620-1_____	MULCH COVER
JOB 090406__	AIRPORT CLEARANCE REQUIREMENTS
JOB 090406__	ASSESSMENT OF WORKING DAYS - MAINTENANCE OF TRAFFIC
JOB 090406__	BIDDING REQUIREMENTS AND CONDITIONS
JOB 090406__	BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB 090406__	BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB 090406__	CABINET DRAWER ASSEMBLY
JOB 090406__	CARGO PREFERENCE ACT REQUIREMENTS
JOB 090406__	CONSTRUCTION IN SPECIAL FLOOD HAZARD AREAS
JOB 090406__	DELAY IN RIGHT OF WAY OCCUPANCY
JOB 090406__	DISADVANTAGED BUSINESS ENTERPRISE BIDDER'S RESPONSIBILITIES
JOB 090406__	DIRECT TENSION INDICATORS FOR HIGH STRENGTH BOLT ASSEMBLIES
JOB 090406__	DRILLED SHAFT FOUNDATIONS
JOB 090406__	EDGE CARD VIDEO PROCESSOR
JOB 090406__	ELECTRICAL CONDUCTORS FOR LUMINAIRES
JOB 090406__	ELECTRICAL CONDUCTORS-IN-CONDUIT
JOB 090406__	FIBERGLASS CONDUIT
JOB 090406__	GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
JOB 090406__	HIGH PERFORMANCE PAVEMENT MARKING
JOB 090406__	INSURANCE, CONSTRUCTION, AND FLAGGING REQUIREMENTS ON RAILROAD PROPERTY (KCS)
JOB 090406__	LED COUNTDOWN PEDESTRIAN SIGNAL HEAD
JOB 090406__	LED LUMINAIRE ASSEMBLY (BUG U0 TYPE)
JOB 090406__	LED TRAFFIC SIGNAL HEAD
JOB 090406__	LOCAL RADIO WITH ANTENNA RELOCATION
JOB 090406__	LOOP WIRING REVISION 1.4
JOB 090406__	LOUVERS FOR SIGNAL HEADS
JOB 090406__	MAINTENANCE OF TRAFFIC
JOB 090406__	MANDATORY ELECTRONIC CONTRACT
JOB 090406__	MANDATORY ELECTRONIC DOCUMENT SUBMITTAL
JOB 090406__	NESTING SITES OF MIGRATORY BIRDS
JOB 090406__	NONDESTRUCTIVE TESTING OF DRILLED SHAFTS
JOB 090406__	OFF-SITE RESTRAINING CONDITIONS FOR BATS
JOB 090406__	PARTNERING REQUIREMENTS
JOB 090406__	PEDESTRIAN SIGNAL HEAD RELOCATION
JOB 090406__	PLASTIC PIPE
JOB 090406__	PROSECUTION AND PROGRESS - CALENDAR DAY CONTRACT WITH CPM
JOB 090406__	RELOCATION OF TRAFFIC SIGNAL HEAD
JOB 090406__	REMOVAL OF TRAFFIC SIGNAL EQUIPMENT
JOB 090406__	RETAINING WALLS
JOB 090406__	SERVICE POINT ASSEMBLY (TRAFFIC CONTROL DEVICES)
JOB 090406__	SHORING FOR CULVERTS
JOB 090406__	SITE USE (A+C METHOD) - CALENDAR DAY CONTRACT
JOB 090406__	SOIL STABILIZATION
JOB 090406__	SPECIAL SAFETY REQUIREMENTS FOR BRIDGES
JOB 090406__	STORM WATER POLLUTION PREVENTION PLAN
JOB 090406__	STREET NAME SIGN (MAST ARM MOUNTED)
JOB 090406__	SYSTEM LOCAL CONTROLLER
JOB 090406__	SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB 090406__	TEMPORARY RETAINING WALLS
JOB 090406__	TEXTURED COATING FINISH
JOB 090406__	TRAFFIC SIGNAL CONTROLLER (MODIFICATION)
JOB 090406__	UTILITY ADJUSTMENTS
JOB 090406__	VALUE ENGINEERING
JOB 090406__	VIDEO DETECTOR (COLOR)
JOB 090406__	VIDEO DETECTOR ROTATION
JOB 090406__	WARM MIX ASPHALT
JOB 090406__	WATER GATES

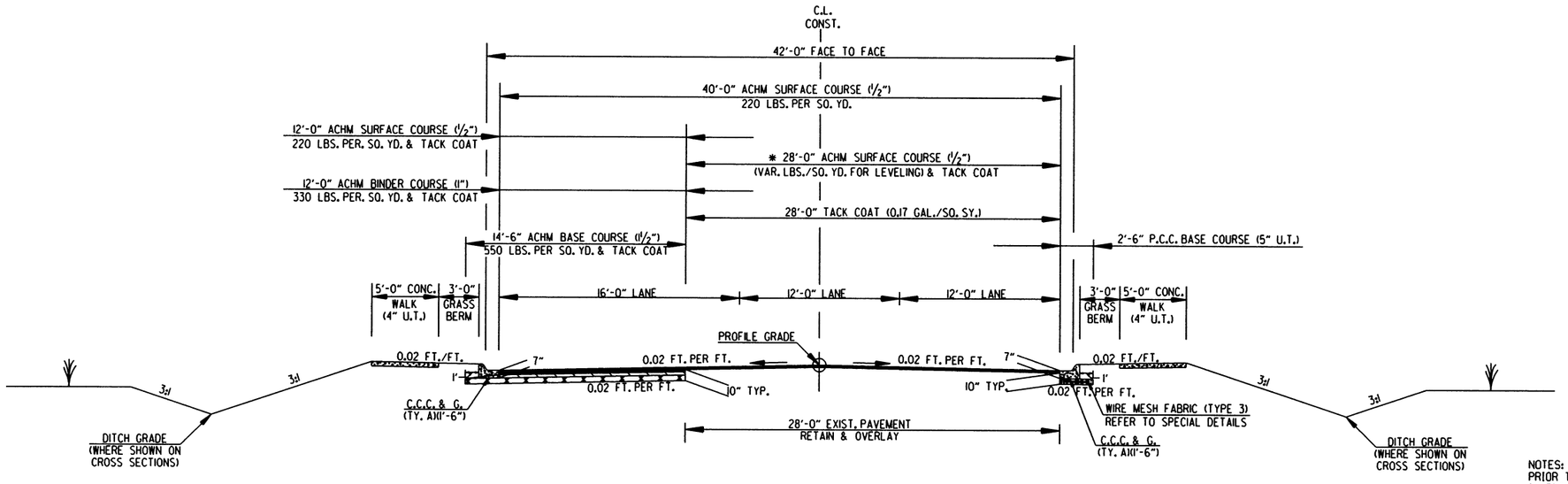
12/14/2015

R090406.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.		090406	4	226

(2) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
6-9-16



TYPICAL SECTION OF IMPROVEMENT
STA. 22+86.00 - STA. 25+75.00

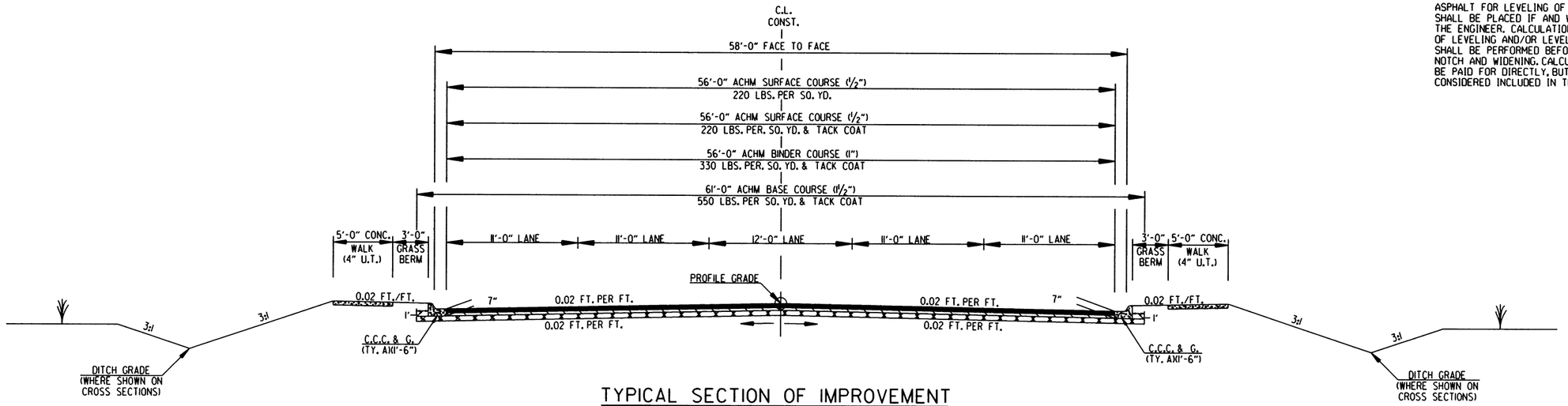
* TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER

NOTES:
PRIOR TO AND DURING PLACEMENT OF PAVEMENT IN FRONT OF THE CURB AND GUTTER, THE CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE AT ALL TIMES. THE METHOD(S) USED SHALL BE APPROVED BY THE ENGINEER. PAYMENT FOR THIS WORK SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE VARIOUS CONTRACT ITEMS.

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

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

ASPHALT FOR LEVELING OF EXISTING PAVEMENT SHALL BE PLACED 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.



TYPICAL SECTION OF IMPROVEMENT
STA. 27+00.00 - STA. 32+01.72
STA. 37+54.23 - STA. 41+00.00

6/2/2015

R090406.DGN

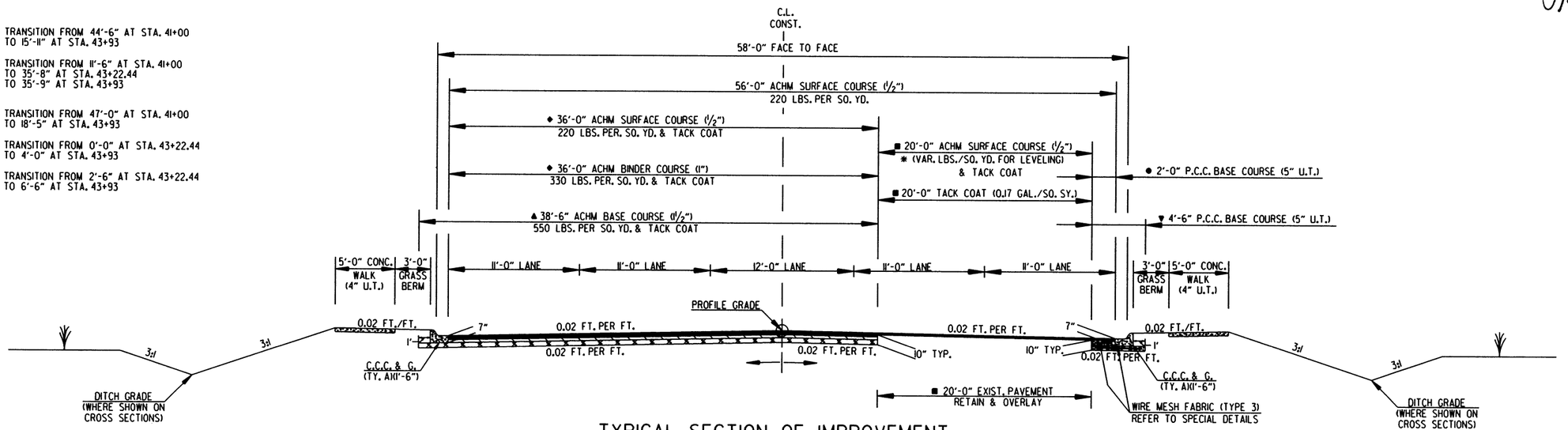
TYPICAL SECTIONS OF IMPROVEMENT

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	5	226

(2) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
6-3-16

- ◆ TRANSITION FROM 44'-6" AT STA. 41+00 TO 15'-11" AT STA. 43+93
- ■ TRANSITION FROM 11'-6" AT STA. 41+00 TO 35'-8" AT STA. 43+22.44 TO 35'-9" AT STA. 43+93
- ▲ TRANSITION FROM 47'-0" AT STA. 41+00 TO 18'-5" AT STA. 43+93
- ● TRANSITION FROM 0'-0" AT STA. 43+22.44 TO 4'-0" AT STA. 43+93
- ▼ TRANSITION FROM 2'-6" AT STA. 43+22.44 TO 6'-6" AT STA. 43+93



TYPICAL SECTION OF IMPROVEMENT
STA. 41+00.00 - STA. 43+93.00

* TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER

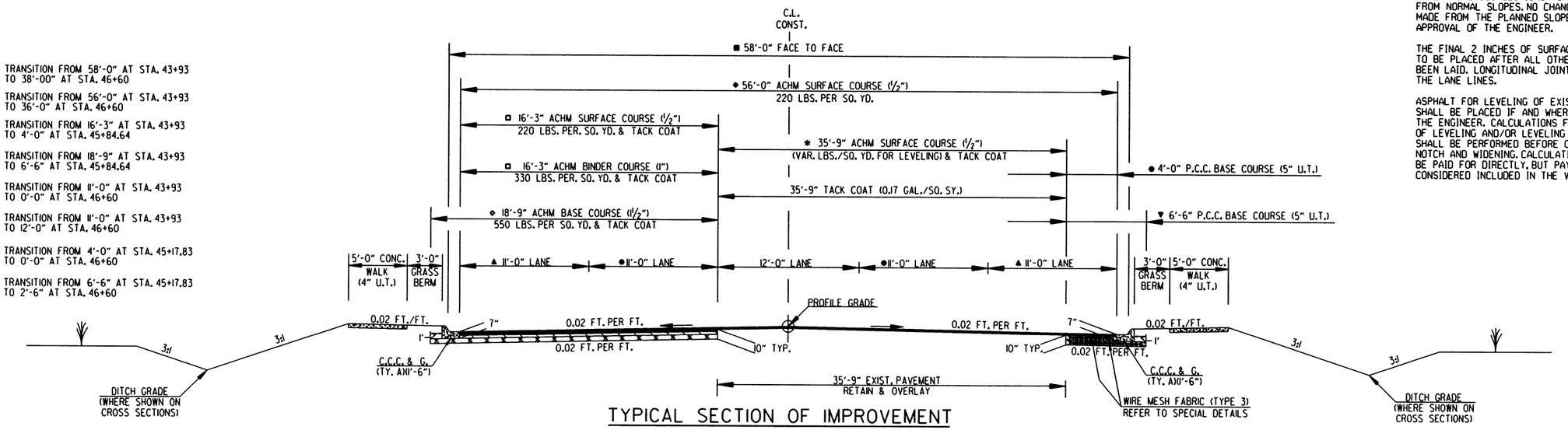
NOTES:
PRIOR TO AND DURING PLACEMENT OF PAVEMENT IN FRONT OF THE CURB AND GUTTER, THE CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE AT ALL TIMES. THE METHOD(S) USED SHALL BE APPROVED BY THE ENGINEER. PAYMENT FOR THIS WORK SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE VARIOUS CONTRACT ITEMS.

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

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

ASPHALT FOR LEVELING OF EXISTING PAVEMENT SHALL BE PLACED 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.

- ■ TRANSITION FROM 58'-0" AT STA. 43+93 TO 38'-00" AT STA. 46+60
- ◆ TRANSITION FROM 56'-0" AT STA. 43+93 TO 36'-0" AT STA. 46+60
- ◘ TRANSITION FROM 16'-3" AT STA. 43+93 TO 4'-0" AT STA. 45+84.64
- ◇ TRANSITION FROM 18'-9" AT STA. 43+93 TO 6'-6" AT STA. 45+84.64
- ▲ TRANSITION FROM 11'-0" AT STA. 43+93 TO 0'-0" AT STA. 46+60
- ● TRANSITION FROM 11'-0" AT STA. 43+93 TO 12'-0" AT STA. 46+60
- ● TRANSITION FROM 4'-0" AT STA. 45+17.83 TO 0'-0" AT STA. 46+60
- ▼ TRANSITION FROM 6'-6" AT STA. 45+17.83 TO 2'-6" AT STA. 46+60



TYPICAL SECTION OF IMPROVEMENT
STA. 43+93.00 - STA. 46+60.00

* TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER

6/2/2015

R090406.DGN

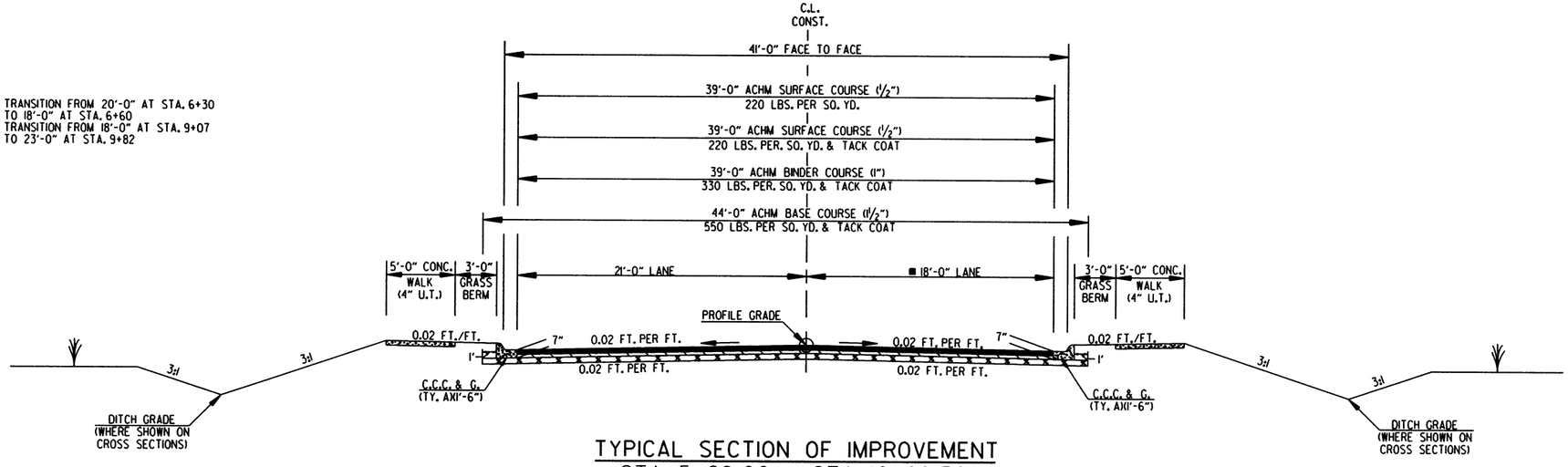
TYPICAL SECTIONS OF IMPROVEMENT

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	6	226

(2) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
6-9-16

■ TRANSITION FROM 20'-0" AT STA. 6+30 TO 18'-0" AT STA. 6+60
TRANSITION FROM 18'-0" AT STA. 9+07 TO 23'-0" AT STA. 9+82



TYPICAL SECTION OF IMPROVEMENT
STA. 5+28.00 - STA. 10+88.56
(HWY. 43 CONNECTOR)

NOTES:
PRIOR TO AND DURING PLACEMENT OF PAVEMENT IN FRONT OF THE CURB AND GUTTER, THE CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE AT ALL TIMES. THE METHOD(S) USED SHALL BE APPROVED BY THE ENGINEER. PAYMENT FOR THIS WORK SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE VARIOUS CONTRACT ITEMS.

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

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

ASPHALT FOR LEVELING OF EXISTING PAVEMENT SHALL BE PLACED 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.

■ TRANSITION FROM 42'-6" AT STA. 105+00 TO 44'-0" AT STA. 106+06.05 TO 52'-8" AT STA. 106+51.14

◆ TRANSITION FROM 40'-6" AT STA. 105+00 TO 42'-0" AT STA. 106+06.05 TO 50'-8" AT STA. 106+51.14

▲ TRANSITION FROM 31'-0" AT STA. 105+00 TO 39'-1" AT STA. 106+06.05 TO 47'-10" AT STA. 106+51.14

● TRANSITION FROM 14'-7" AT STA. 105+00 TO 18'-0" AT STA. 106+06.05 TO 26'-7" AT STA. 106+51.14

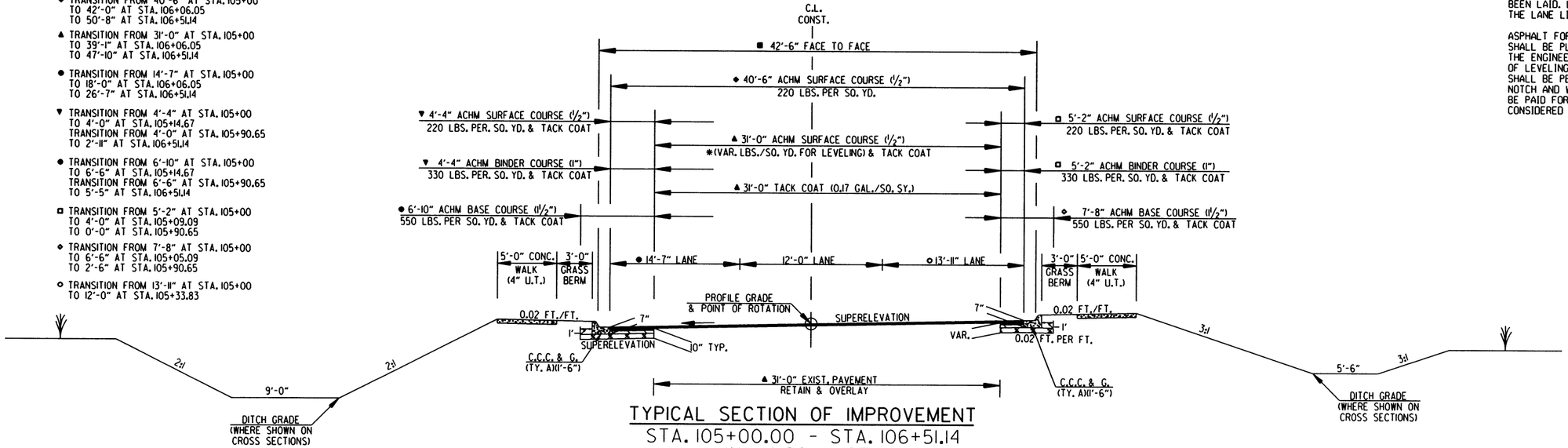
▼ TRANSITION FROM 4'-4" AT STA. 105+00 TO 4'-0" AT STA. 105+14.67
TRANSITION FROM 4'-0" AT STA. 105+90.65 TO 2'-11" AT STA. 106+51.14

● TRANSITION FROM 6'-10" AT STA. 105+00 TO 6'-6" AT STA. 105+14.67
TRANSITION FROM 6'-6" AT STA. 105+90.65 TO 5'-5" AT STA. 106+51.14

□ TRANSITION FROM 5'-2" AT STA. 105+00 TO 4'-0" AT STA. 105+09.09 TO 0'-0" AT STA. 105+90.65

◆ TRANSITION FROM 7'-8" AT STA. 105+00 TO 6'-6" AT STA. 105+05.09 TO 2'-6" AT STA. 105+90.65

○ TRANSITION FROM 13'-11" AT STA. 105+00 TO 12'-0" AT STA. 105+33.83



TYPICAL SECTION OF IMPROVEMENT
STA. 105+00.00 - STA. 106+51.14
(N. LINCOLN ST.)

* TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER

6/2/2015

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TYPICAL SECTIONS OF IMPROVEMENT

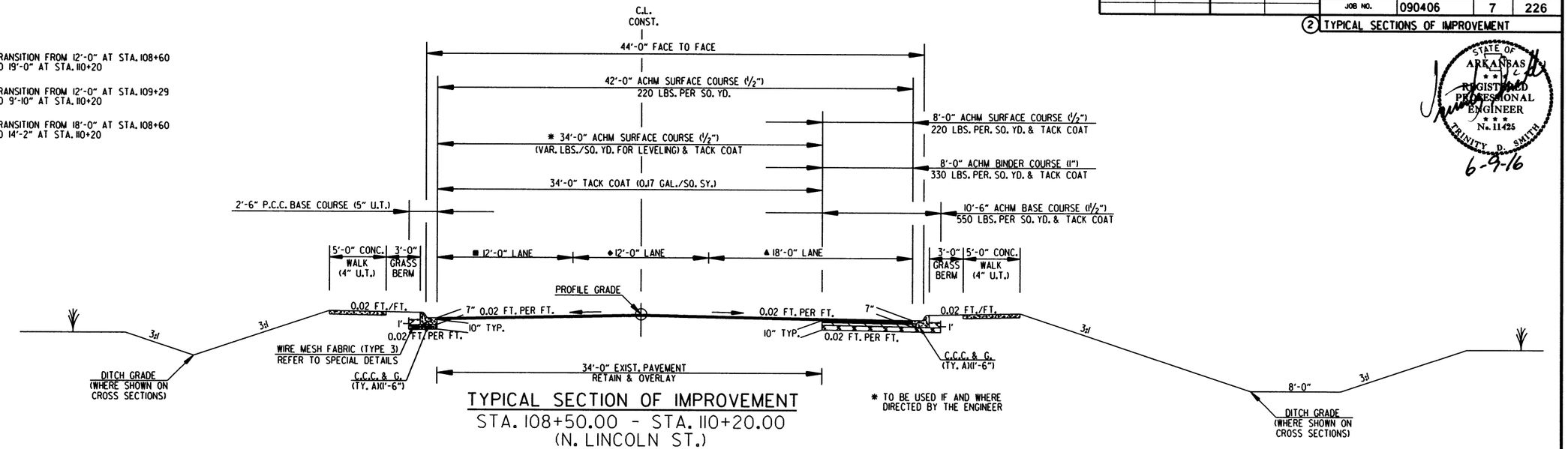
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	7	226

(2) TYPICAL SECTIONS OF IMPROVEMENT

■ TRANSITION FROM 12'-0" AT STA. 108+60 TO 19'-0" AT STA. 110+20

◆ TRANSITION FROM 12'-0" AT STA. 109+29 TO 9'-10" AT STA. 110+20

▲ TRANSITION FROM 18'-0" AT STA. 108+60 TO 14'-2" AT STA. 110+20



TYPICAL SECTION OF IMPROVEMENT
STA. 108+50.00 - STA. 110+20.00
(N. LINCOLN ST.)

* TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
6-9-16

NOTES:
PRIOR TO AND DURING PLACEMENT OF PAVEMENT IN FRONT OF THE CURB AND GUTTER, THE CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE AT ALL TIMES. THE METHOD(S) USED SHALL BE APPROVED BY THE ENGINEER. PAYMENT FOR THIS WORK SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE VARIOUS CONTRACT ITEMS.

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

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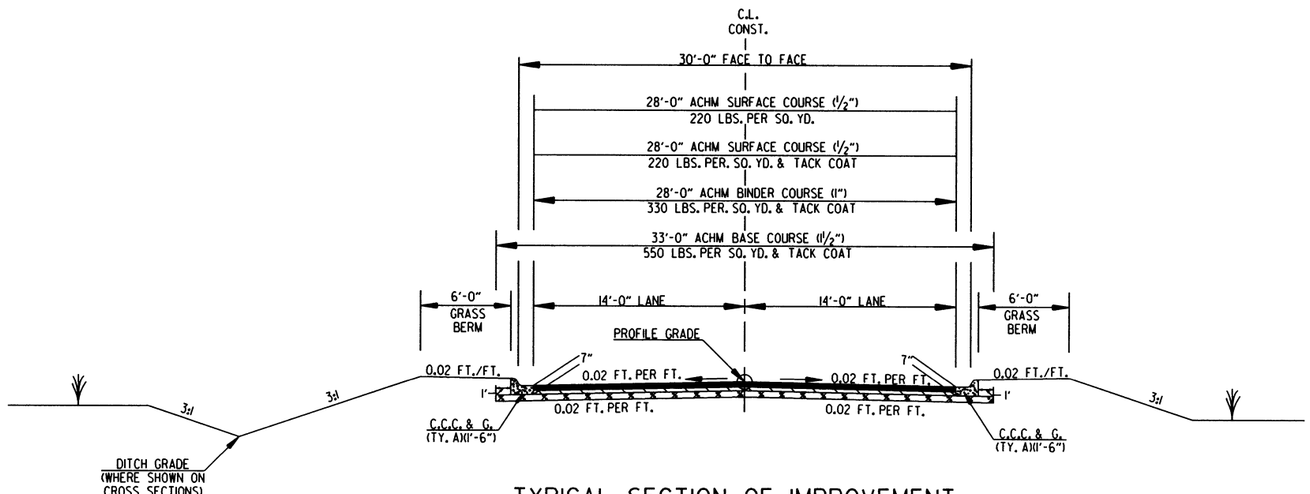
ASPHALT FOR LEVELING OF EXISTING PAVEMENT SHALL BE PLACED IF AND WHERE DIRECTED BY THE ENGINEER. CALCULATIONS FOR THE AMOUNT OF LEVELING AND/OR LEVELING OPERATIONS SHALL BE PERFORMED BEFORE CONSTRUCTING NOTCH AND WIDENING. CALCULATIONS WILL NOT BE PAID FOR DIRECTLY, BUT PAYMENT WILL BE CONSIDERED INCLUDED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



TYPICAL SECTION OF IMPROVEMENT
STA. 60+35.00 - STA. 63+83.48
(N. COUNTRY CLUB RD.)

6/2/2015

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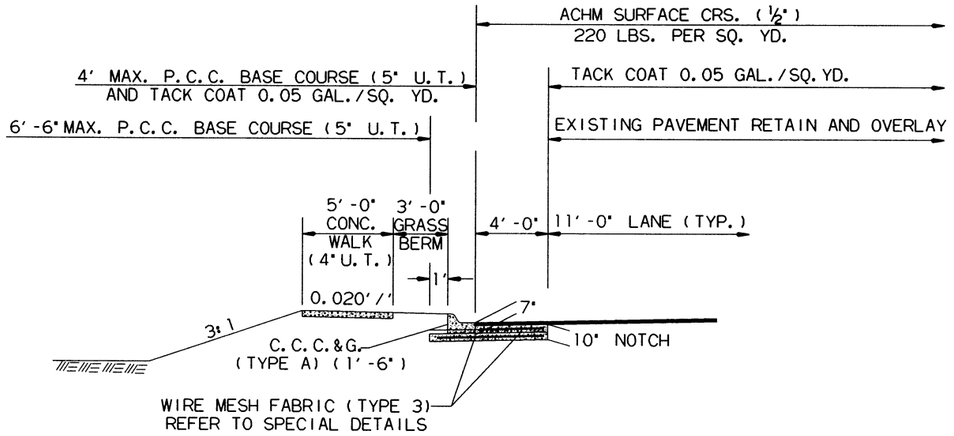
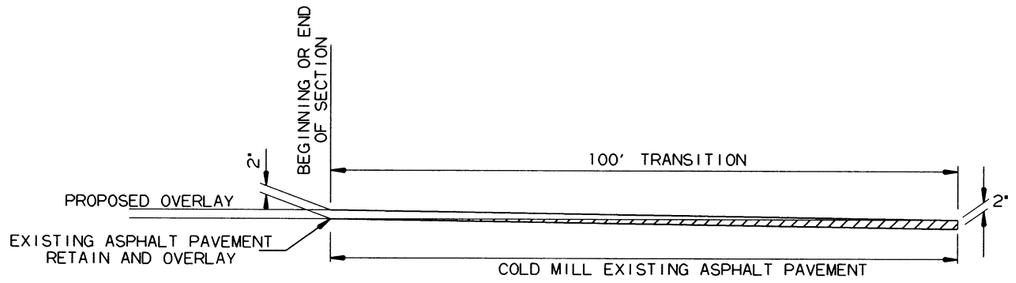
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	8	226

(2) SPECIAL DETAILS

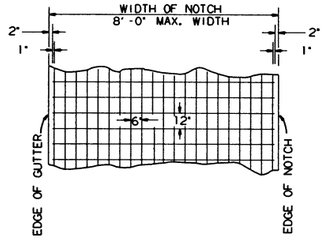


P.C.C. BASE WIDENING DETAIL



COLD MILLING DETAIL AT EXISTING PAVEMENT TIE-INS

NOTE: 50' PER 1" OF OVERLAY FOR MAIN LANES

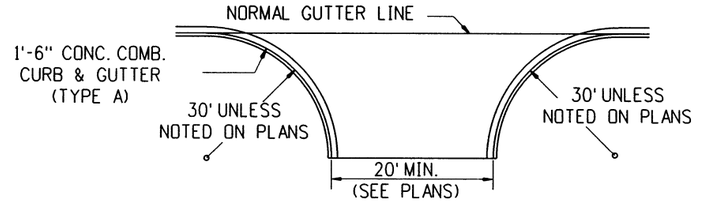


DETAIL OF REINFORCING STEEL FOR P.C.C. BASE PAVEMENT (WIRE MESH TYPE 3)

6" X 12" MESH FABRIC (TYPE 3) (W5.5 x W2.9) AT T/2 = 4.26 LBS./SQ. YD.

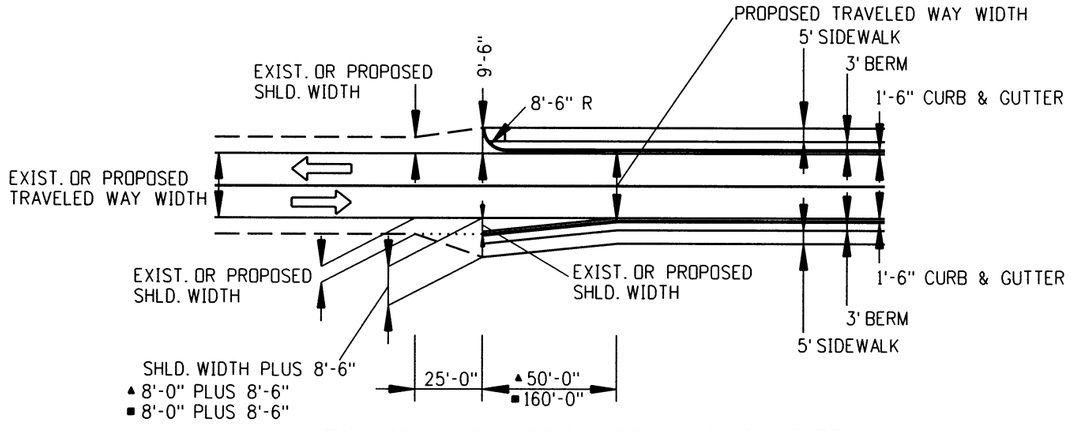
NOTES:

1. LAP MESH FABRIC MIN. 12" LONGITUDINALLY AND MIN. 6' TRANSVERSELY.
2. MESH FABRIC IS NOT REQUIRED WHEN THE WIDTH OF PORTLAND CEMENT CONCRETE BASE IS LESS THAN 12".
3. MESH FABRIC (TYPE 3) WILL NOT BE PAID FOR DIRECTLY, BUT FULL COMPENSATION THEREFORE WILL BE CONSIDERED INCLUDED IN THE CONTRACT PRICE BID PER SQ. YD. FOR PORTLAND CEMENT CONCRETE BASE (5" U.T.).



DETAIL OF TURNOUTS ASPHALT STREETS

NOTE: THE TYPICAL SECTION FOR THE CITY STREET CONNECTIONS IN THE CURB & GUTTER SECTION SHALL MATCH THE PROPOSED WIDENING SECTION SHOWN FOR THE MAIN LANES. UNLESS OTHERWISE NOTED ON THE PLANS, ALL CITY STREET RADII WILL BE 30'.



TRANSITION FROM OPEN SHOULDER TO CURB & GUTTER SECTION

▲ STA. 104+58.86 - STA. 105+33.86
■ STA. 108+60.00 - STA. 110+45.00

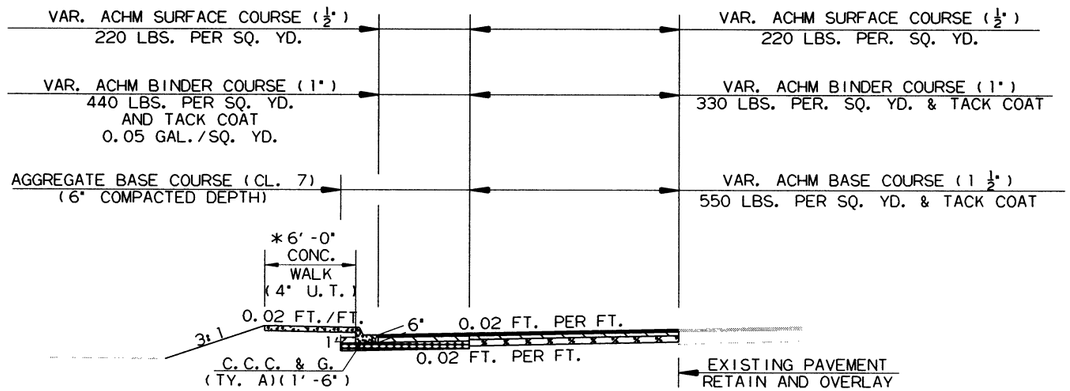
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
6-9-16

11/5/2015

R090406.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.		090406	9	226

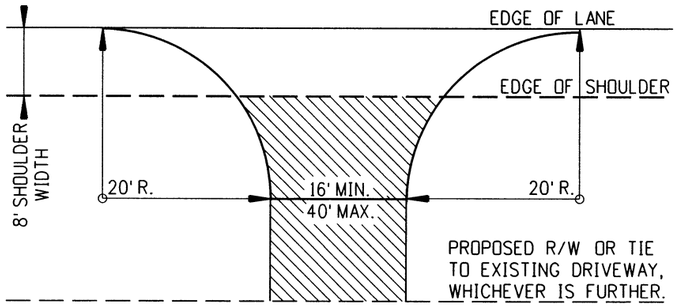
(2) SPECIAL DETAILS



*TEMPORARY SIDEWALK AND CURB AND GUTTER WILL BE REMOVED IN STAGE 5 MAINTENANCE OF TRAFFIC

HWY. 49
STATION 21+86.00 - STATION 25+77.00

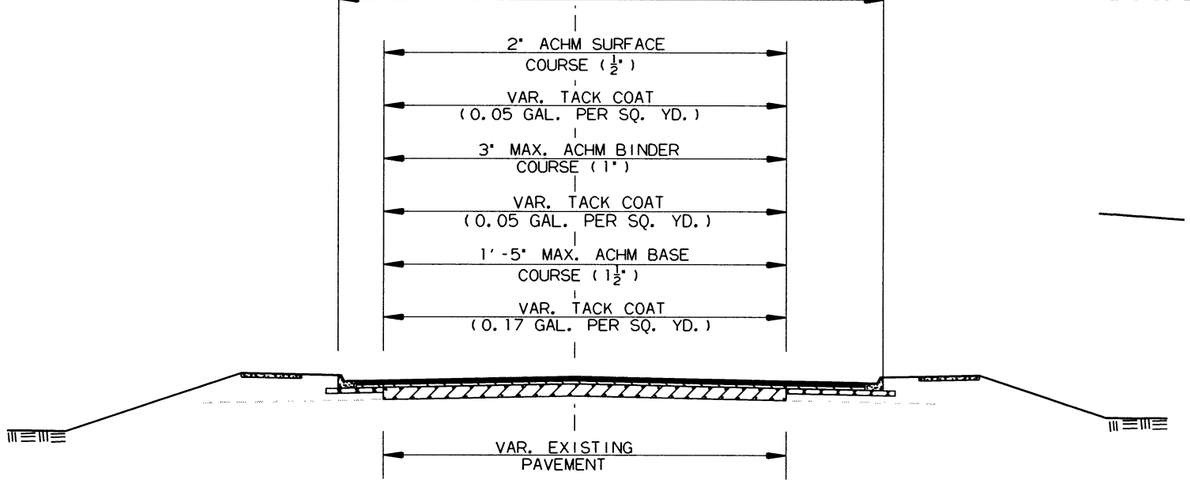
TEMPORARY WIDEN DETAILS



DETAIL FOR DRIVEWAY TURNOUTS OPEN SHOULDER SECTION (ARTERIALS)

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

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



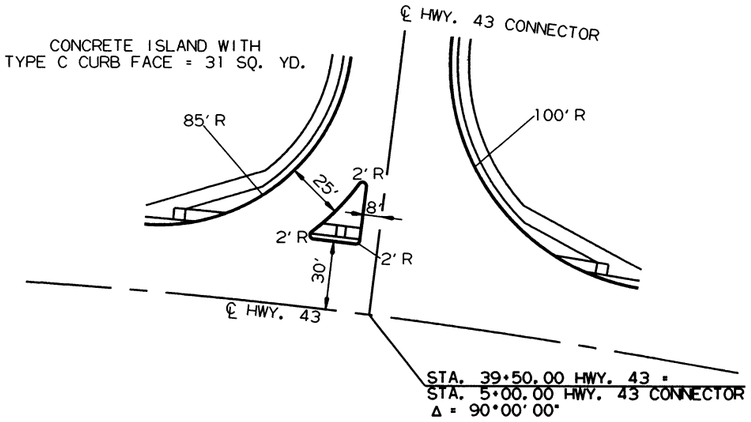
METHOD OF RAISING GRADE

NOTES:

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

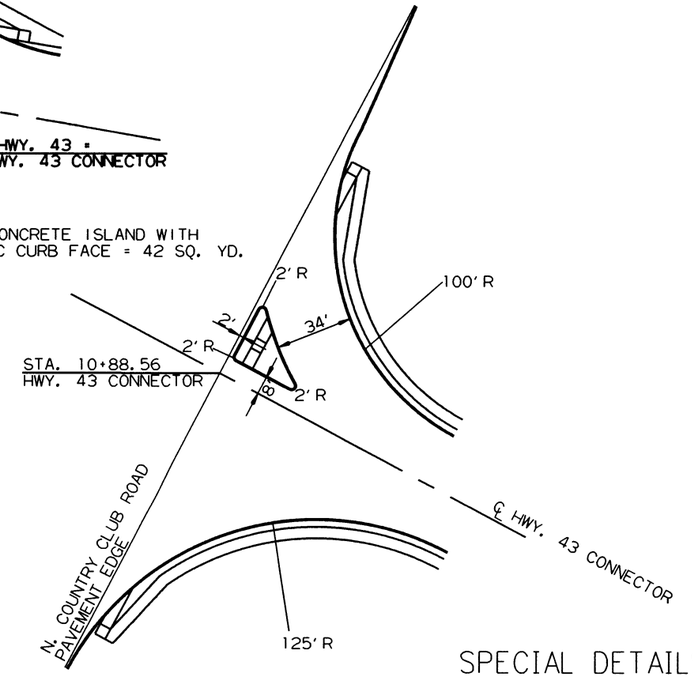
(2) QUANTITIES FOR METHOD OF GRADE RAISE USING ASPHALT WERE CALCULATED ON THIS PROJECT AT LOCATIONS WHERE THE DISTANCE BETWEEN THE EXISTING ASPHALT ROADWAY AND THE PROPOSED SUBGRADE WAS ONE FOOT OR LESS.

(3) IN LOCATIONS WHERE THE DISTANCE BETWEEN THE PROPOSED SUBGRADE AND THE EXISTING ASPHALT ROADWAY IS MORE THAN ONE FOOT, SCARIFICATION OF THE EXISTING ASPHALT ROADWAY WILL BE REQUIRED AS STATED IN SECTION 210, SUBSECTION 210.09, OF THE STANDARD SPECIFICATIONS, EDITION OF 2014.



ISLAND DETAILS

TYPE C CURB FACE



STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
6-9-16

11/5/2015

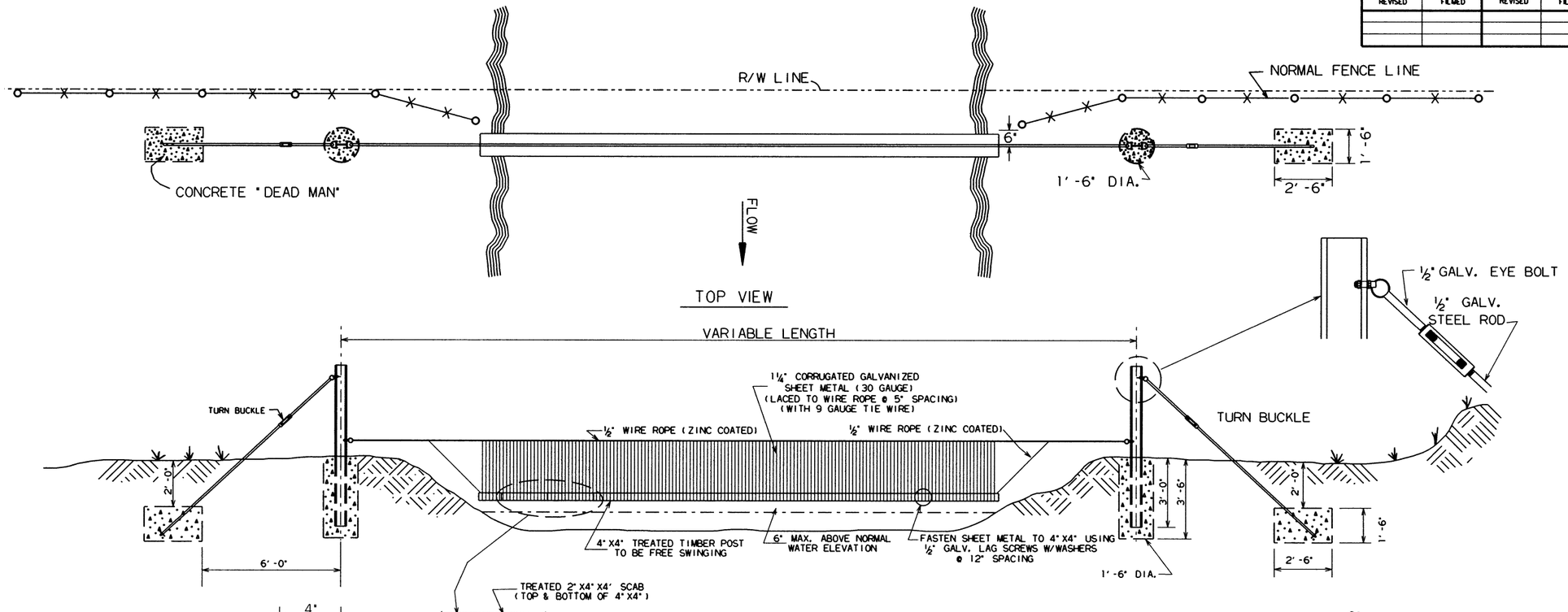
R090406.DGN

SPECIAL DETAILS

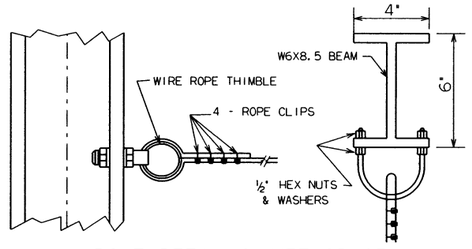
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	10	226

(2) SPECIAL DETAILS

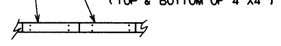
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
6-9-16



TOP VIEW

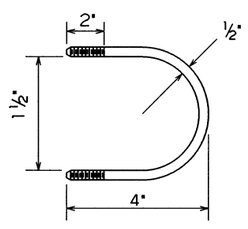


U-BOLT DETAIL & METHOD OF ATTACHING ½" WIRE ROPE TO POST



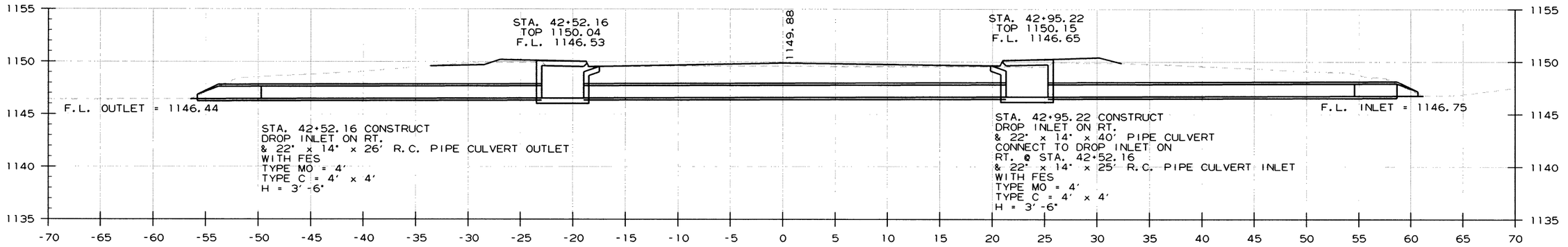
4"x4" SPLICE

PLAN VIEW



U-BOLT

WATER GATE DETAIL



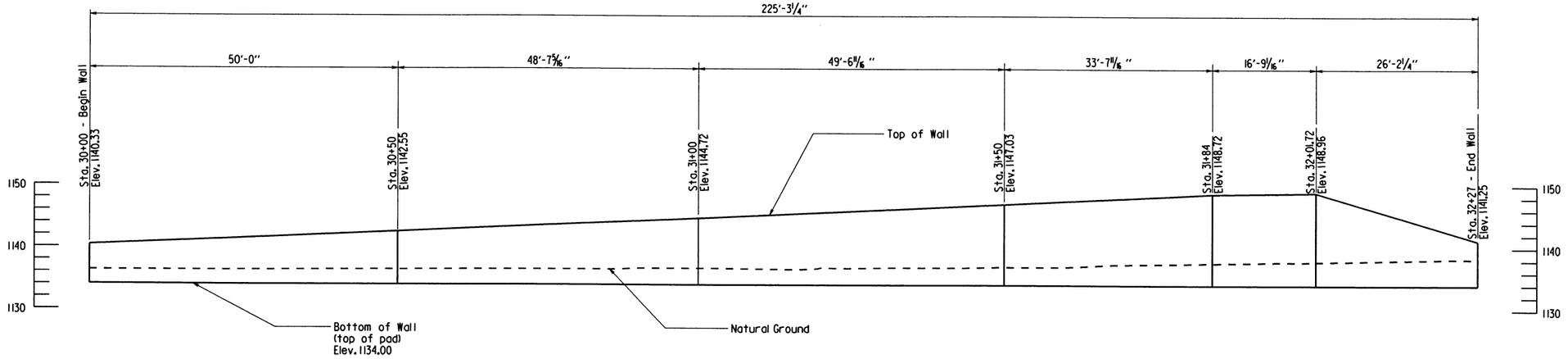
DRAINAGE DETAIL FOR DROP INLETS ON SUE ANGLIN DR.

11/5/2015

R090406.DGN

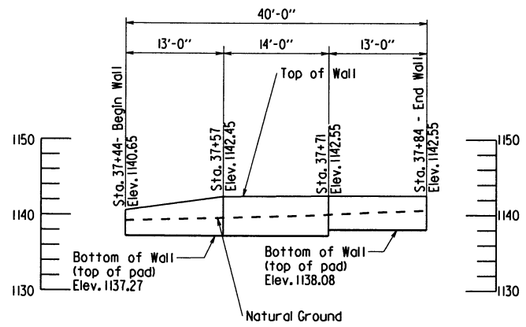
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	11	226

① SPECIAL DETAILS



ELEVATION OF TEMPORARY MSE RETAINING WALL

Sta. 30+00 - Sta. 32+27



ELEVATION OF TEMPORARY MSE RETAINING WALL

Sta. 37+44 - Sta. 37+84

TABLE OF QUANTITIES

(FOR INFORMATION ONLY)

LOCATION / ITEM / UNIT	ITEM NO. 210 UNCLASSIFIED EXCAVATION CU. YD.	SP Job 090406 SELECT GRANULAR BACKFILL CU. YD.	SP Job 090406 TEMPORARY RETAINING WALL SQ. FT.
STA. 30+00 TO STA. 32+27	245	918	2,442
STA. 37+44 TO STA. 37+84	18	30	187
TOTALS	263	948	2,629

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-2-16
CHARLES R. ELLIS
BRIDGE ENGINEER

DETAILS OF TEMPORARY MSE RETAINING WALL SPECIAL DETAILS

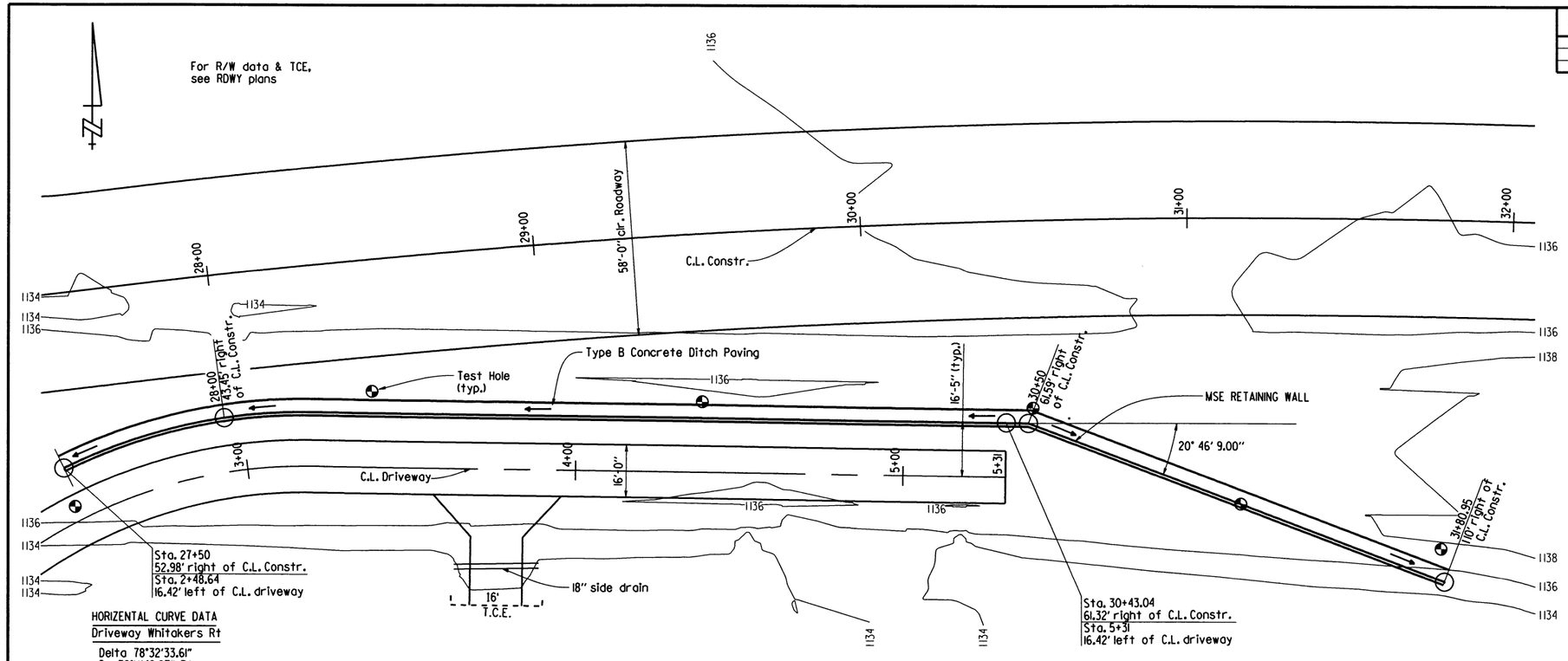
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: HS DATE: 04/11/2016 FILENAME: b090406_rw.dgn
CHECKED BY: C.R.E. DATE: 5/2/16 SCALE: 1"= 10'-0"
DESIGNED BY: HS DATE: 5/2/16

PRINT DATE: 5/2/2016

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	12	226

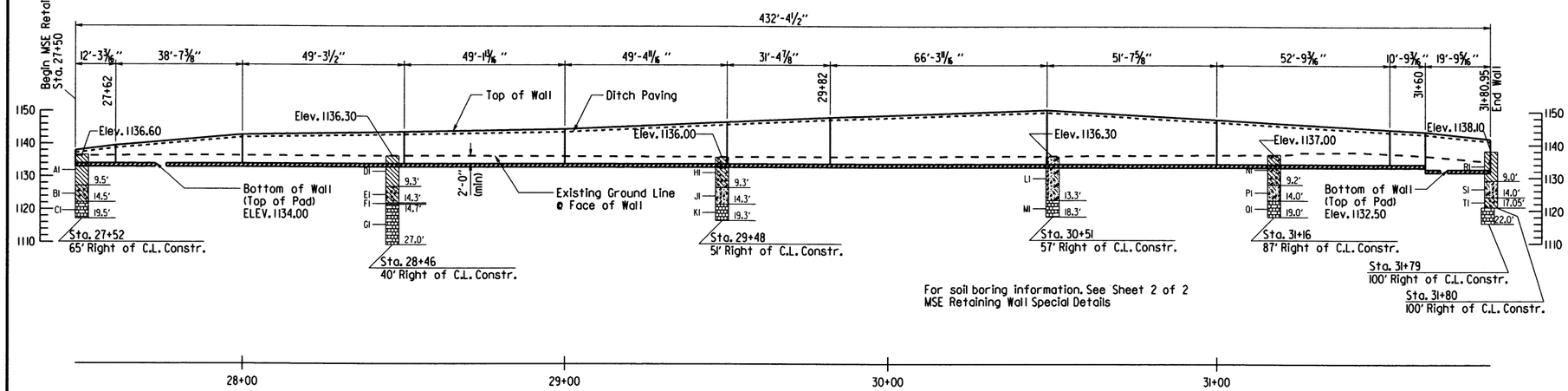
(1) SPECIAL DETAILS



HORIZENTAL CURVE DATA
Driveway Whitakers Rt

Delta 78°32'33.61"
Dc 38°11'49.87" Rt.
T 122.65'
L 205.62'
R 150.00'

PLAN



For soil boring information. See Sheet 2 of 2 MSE Retaining Wall Special Details

ELEVATION

TABLE OF MSE RETAINING WALL ELEVATIONS		
STATION	TOP OF WALL ELEVATION (FT.)	EXISTING GROUND ELEVATION (FT.)
27+50	1137.90	1136.31
27+62	1139.46	1136.44
28+00	1142.78	1136.50
28+50	1143.64	1136.43
29+00	1144.50	1136.30
29+50	1146.71	1136.17
29+82	1148.11	1136.18
30+00	1148.73	1136.20
30+50	1150.45	1136.49
31+00	1147.42	1136.83
31+50	1144.50	1137.25
31+60	1143.89	1136.60
31+80.95	1141.79	1134.90

GENERAL NOTES:

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications Sixth Edition (2012) with 2013 Interim Revisions.

The retaining wall is defined by stations and offsets to the outside vertical face of wall. Stations shown are along the alignment indicated. Offset distances are radial to the alignment indicated at that station.

Retaining Wall lengths are measured along the outside vertical face of wall. Elevations shown are profile grade for top of wall. Wall and ground elevations are approximate. Wall dimensions may vary depending on wall design selected, and field conditions.

The excavated material may be utilized at other locations within the project area if approved by the Engineer. Excavated material that cannot be utilized shall be disposed of by the Contractor in accordance with Subsection 210.08.

Boring logs may be obtained from the Construction Contract Procurement Section of the Programs Management Division upon request.

Reinforcement placement and details for retaining walls may be affected by proposed roadway drainage structures. See Roadway Plans for locations and details of drainage structures.

For ditch paving, See Standard Dwg. No. CDP-1. Weep holes shall be eliminated.

Pipe Underdrains shall be used in the area of backfill as determined by the Engineer.

Preformed joint filler, joint sealer, polystyrene board, and pipe underdrains will not be paid for directly, but will be considered subsidiary to the item "Retaining Wall".

See Job 090406 Special Provision "Retaining Wall" for additional information.

An Ashlar Stone finish or approved equivalent will be required for the concrete wall face.

A factored bearing resistance of 4,500 psf is recommended for the existing foundation material based on an estimated width of the reinforced zone.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-2-16
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 1 OF 2
MSE RETAINING WALL SPECIAL DETAILS

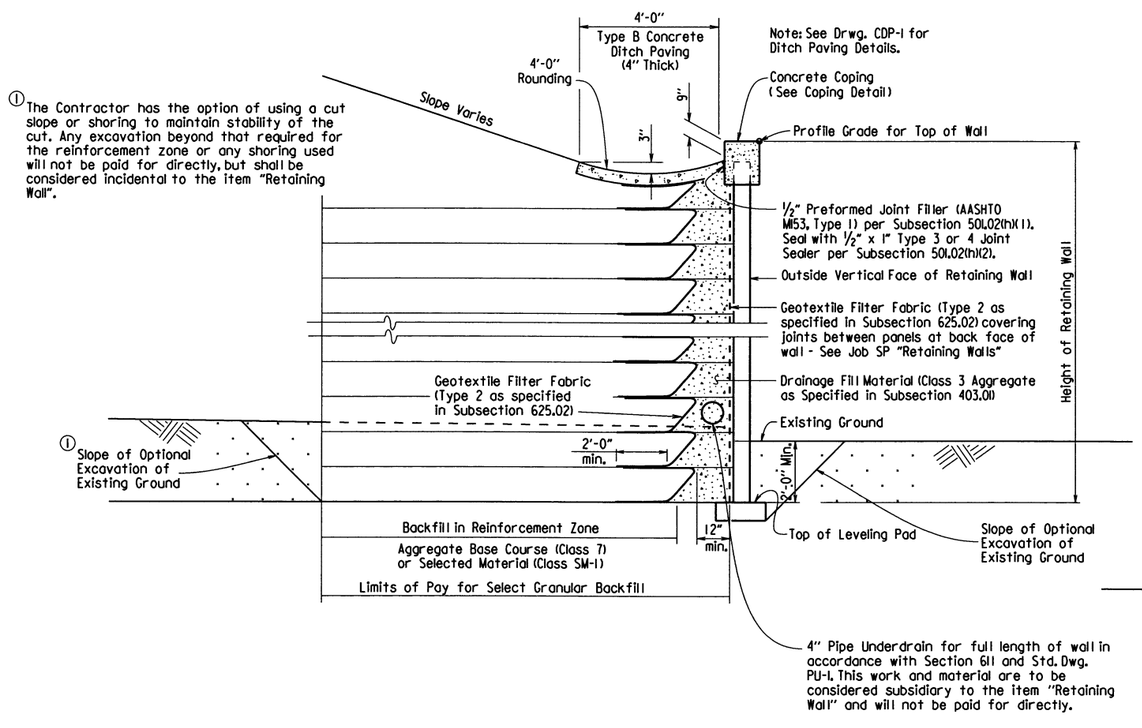
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: HS DATE: 04/11/2016 FILENAME: b090406_rw.dgn
CHECKED BY: CRE DATE: 5/2/16 SCALE: 1" = 20'-0"
DESIGNED BY: HS DATE: 5/2/16

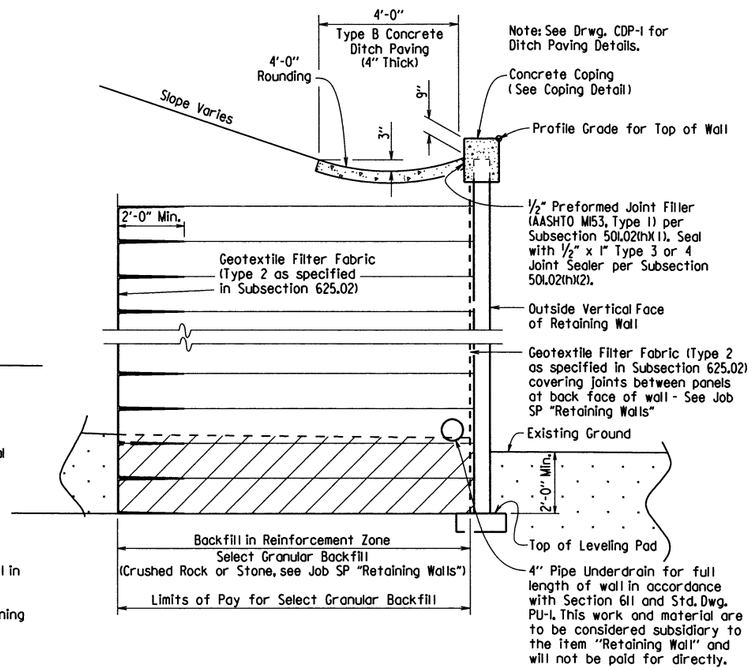
PRINT DATE: 5/2/2016

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	13	226

① SPECIAL DETAILS



① The Contractor has the option of using a cut slope or shoring to maintain stability of the cut. Any excavation beyond that required for the reinforcement zone or any shoring used will not be paid for directly, but shall be considered incidental to the item "Retaining Wall".



SECTION A-A (BACKFILL METHOD A)

No Scale

SECTION A-A (BACKFILL METHOD B)

No Scale

"N" VALUES

Sta. 27+52 - 65' Right of Construction Centerline
- 5.0- 6.0, N=5
- 10.0- 11.0, N=35
- 14.5- 14.5, N=100 (0")

Sta. 28+46 - 40' Right of Construction Centerline
- 4.8- 5.8, N=8
- 9.8- 10.8, N=76
- 14.3- 14.7, N=60 (5")

Sta. 29+48 - 51' Right of Construction Centerline
- 4.8- 5.8, N=49
- 9.8- 10.8, N=61

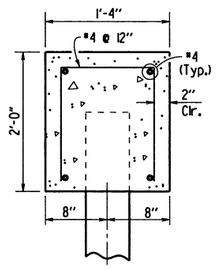
Sta. 30+51 - 57' Right of Construction Centerline
- 5.0- 6.0, N=40
- 10.0- 11.0, N=21

Sta. 31+16 - 87' Right of Construction Centerline
- 4.7- 5.7, N=20
- 9.7- 10.4, N=78 (9")

Sta. 31+80 - 100' Right of Construction Centerline
- 4.5- 5.5, N=20
- 9.5- 10.5, N=20
- 14.5- 15.5, N=40

BORING LEGEND

AI-Moist, Medium Stiff, Brown Clay with Some Sand, Gravel, and Organic Matter
BI-Moist, Hard, Brown Gravelly Clay with Sand
CI-LIMESTONE AND CHERT INTERBEDDED - Weathered, Hard, Frequent Fractures, Gray
DI-Moist, Medium Stiff, Brown Clay with Some Gravel
EI-Moist, Very Hard, Brown Sandy Clay with Gravel (Chert Fragments)
FI-Moist, Very Dense, Gray Sand with Gravel (Chert Fragments)
GI-LIMESTONE AND CHERT INTERBEDDED - Weathered, Hard, Light Gray
HI-Moist, Hard, Brown Sandy Clay with Gravel (Chert Fragments)
JI-Moist, Very Dense, Clayey Sand with Gravel (Chert Fragments)
KI-LIMESTONE AND CHERT INTERBEDDED - Slightly Weathered, Hard, Light Gray
LI-Wet, Dense, Red Brown Clayey Sand with Gravel (Chert Fragments)
MI-LIMESTONE AND CHERT INTERBEDDED - Slightly Weathered, Hard, Light Gray
NI-Moist, Very Stiff, Brown Clay With Sand and Gravel
PI-Moist, Very Dense, Brown Clayey Sand With Gravel (Chert Fragments)
QI-LIMESTONE AND CHERT INTERBEDDED - Slightly Weathered, Hard, Gray
RI-Moist, Very Stiff, Brown Clay with Some Gravel
SI-Moist, Medium Dense, Brown Clayey Sand with Gravel
TI-Wet, Dense, Brown Gravel with Clay (Chert Fragments)
UI-Moist, Medium Dense, Clayey Sand with Gravel (Rock Fragments)
VI-LIMESTONE AND CHERT INTERBEDDED - Slightley Weathered, Hard, Occasional Fractures, Gray



COPING DETAIL

No Scale

Notes:
Reinforcing steel and Class S(AE) Concrete for coping shall not be paid for directly, but will be considered subsidiary to the item "Retaining Wall."

Precast coping may be substituted for cast-in-place coping shown.

TABLE OF QUANTITIES

(FOR INFORMATION ONLY)

LOCATION / ITEM / UNIT	ITEM NO.	210	SP Job 090406	SP Job 090406	SP Job 090406
	ITEM	UNCLASSIFIED EXCAVATION	RETAINING WALL	SELECT GRANULAR BACKFILL	TEXTURED COATING FINISH
	UNIT	CU. YD.	SQ. FT.	CU. YD.	SQ. YD.
STA. 27+50 TO STA. 31+80.92		408	5,022	1,761	436

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-2-16
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 2 OF 2
MSE RETAINING WALL SPECIAL DETAILS

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: HS DATE: 04/11/2016
CHECKED BY: CRE DATE: 5/2/16
DESIGNED BY: HS DATE: 5/2/16

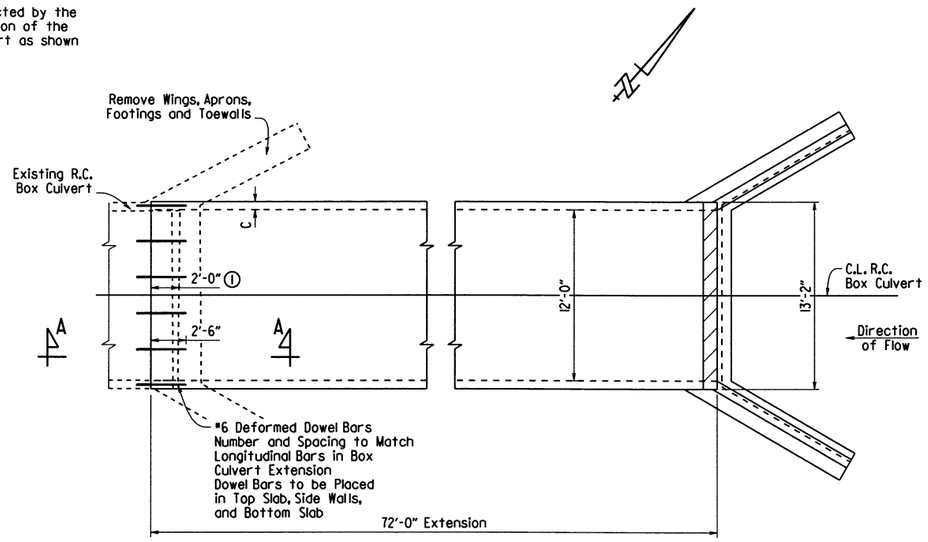
FILENAME: b090406_rw.dgn
SCALE: 1" = 20'-0"

PRINT DATE: 5/2/2016

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	14	226

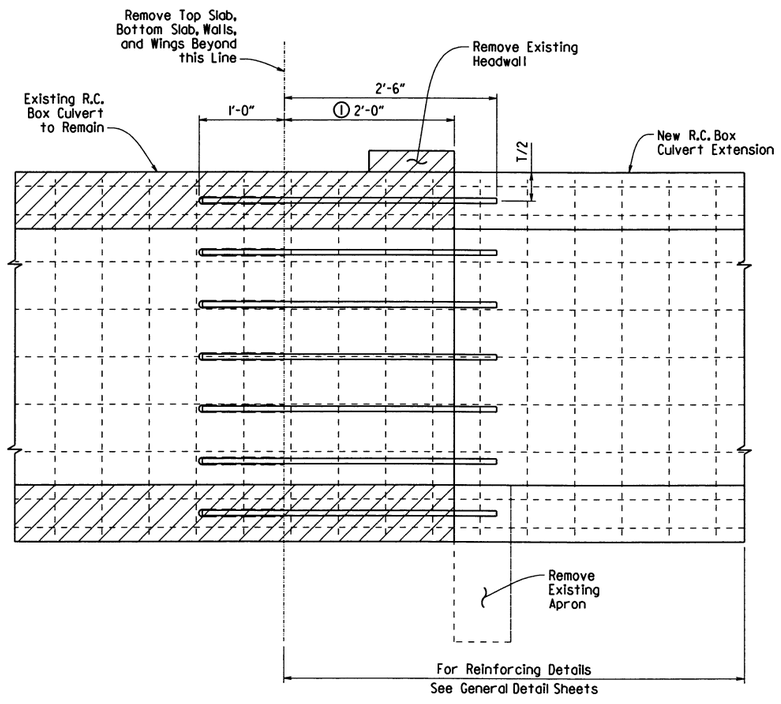
① SPECIAL DETAILS

Unless otherwise directed by the Engineer, remove portion of the existing R.C. Box Culvert as shown



① Location of Cut Line Shall Provide the Minimum Clearance to Facilitate Construction of the New R.C. Box Culvert

LAYOUT OF R.C. BOX CULVERT EXTENSION



SECTION A-A

STATE OF ARKANSAS
Charles A. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-2-16
CHARLES R. ELLIS

DRAWN BY: KAP DATE: 04/13/2016
CHECKED BY: CSK DATE: 4/14/16

GENERAL NOTES:

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

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications, Fifth Edition (2010) with 2010 interim revisions.

LIVE LOADING: HL-93

All concrete shall be Class S with a minimum 28-day compressive strength of 3,500 psi and shall be poured in the dry. All exposed corners to have ¾" chamfers.

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

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 1/2 inch.

Excavation and backfilling shall be in accordance with the requirements of Section 801.

Membrane Waterproofing shall conform to the requirements of Section 815. Membrane Waterproofing shall be Type C and as directed by the Engineer applied to all construction joints in the top slab and the sidewalls of R.C. Box culverts and to the construction joint between wingwalls and R.C. Box culvert walls.

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 barrel components of the culvert may be constructed using continuous pours. For longer culvert construction, the Contractor may use multiple pours with transverse construction joints spaced a minimum of 50 feet apart unless superseded by stage construction or site constraints as approved by the Engineer. Construction joints between footings and walls shall be made only where shown in the Plans. Joints shall be normal to the centerline of barrel and shall be keyed. Longitudinal reinforcing shall be continuous through joints unless shown otherwise. All longitudinal construction joints shall be submitted to the Engineer for approval.

Membrane Waterproofing, Weep Holes, Geotextile Filter Fabric, and Drainage Fill Material will not be paid for directly but shall be considered subsidiary to Class S Concrete.

When precast reinforced concrete box culverts are substituted for cast in place box culverts, they shall be manufactured according to ASTM C 1577 and meet the requirements of Section 607.

Reinforcing steel removed from the existing structure shall not be reused in constructing extension.

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.

Materials for securing dowel bars shall meet the requirements of Subsection 507.02 of the Standard Specifications.

Dowel bars shall be installed using a drilling procedure and filling system approved by the Engineer. The filling system shall be an injection-type system that will ensure that the material completely surrounds the bars and fills the holes.

SHEET 1 OF 2

DETAILS OF R.C. BOX CULVERT

R.C. BOX EXTENSION
STA 26+65
SPECIAL DETAILS

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	15	226

(1) SPECIAL DETAILS

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-2-16
CHARLES R. ELLIS

TABULAR DATA BY: KAP DATE: 04/13/2016
CHECKED BY: CSR DATE: 4/29/16

This drawing to be used in conjunction with
SHEET 1 OF 4, "GENERAL DETAILS OF R.C. BOX CULVERT", 'GENERAL NOTES & LONGITUDINAL SECTION LENGTH SCHEDULE',
SHEET 2 OF 4, "GENERAL DETAILS OF R.C. BOX CULVERT", 'DETAILS OF SINGLE-BARREL R.C. BOX CULVERT',
SHEET 4 OF 4, "GENERAL DETAILS OF R.C. BOX CULVERT", 'DETAILS OF WINGWALLS', and
STANDARD DRAWING RCB-2.

INLET WINGWALL TABLE

OVER ALL WIDTH	CLEAR HEIGHT	FOOTING THK.	WING WALL THK.	BOX SKEW (DEG.)	SLOPE	HDWL LENGTH	HEEL	WALL HEIGHT AT HDWL	WALL HEIGHT AT WING END	WINGWALL ANGLE (DEGREE) WING A	WINGWALL ANGLE (DEGREE) WING B	FOOTING WIDTH AT WALL END	WIDTH OF WING FOOTINGS AT HDWL WING A	WIDTH OF WING FOOTINGS AT HDWL WING B	FOOTING DIMENSION PARALLEL WITH HDWL WING A	FOOTING DIMENSION PARALLEL WITH HDWL WING B	LENGTH OF WINGWALLS WING A	LENGTH OF WINGWALLS WING B	LENGTH OF FOOTING HEEL WING A	LENGTH OF FOOTING HEEL WING B
OW	H	WB	CW	SK	SL	K	HL	WH1	WH2	AF1	AF2	WE	WF1	WF2	G1	G2	W1	W2	W3	W4
13'-2"	3'-0"	0'-9"	0'-8"	0	3:1	12'-0"	1'-0"	3'-10"	1'-0"	30	30	2'-2"	2'-2"	2'-2"	0'-0"	0'-0"	9'-6"	9'-6"	11'-2 5/8"	11'-2 5/8"

CLASS "S" CONCRETE (Includes apron)	REINFORCING STEEL (Includes apron and laps if required)
INLET	INLET
CU.YD	LBS.
3.54	332

WING	F1 BAR SIZE	F1 MAX. SPACING	F1 NO. REQ'D	F1 LENGTHS VARY			F2 BAR SIZE	F2 SPACING	F2 NO. REQ'D	F2 LENGTHS			F3 BAR SIZE	F3 SPACING	F3 NO. REQ'D	F3 LENGTHS			F4 BAR SIZE	F4 SPACING	F4 NO. REQ'D	F4 LENGTHS VARY	F5 BAR SIZE	F5 SPACING	F5 NO. REQ'D	F5 LENGTHS	F6 BAR SIZE	F6 SPACING	F6 NO. REQ'D	F6 LENGTHS VARY			F7 BAR SIZE	F7 NO. REQ'D	F7 LENGTHS	F8 BAR SIZE	F8 SPACING	F8 NO. REQ'D	F8 LENGTHS VARY	F9 BAR SIZE	F9 SPACING	F9 NO. REQ'D	F9 LENGTHS	F10 BAR SIZE	F10 NO. REQ'D	F10 LENGTHS	F11 BAR SIZE	F11 NO. REQ'D	F11 LENGTHS	F12 BAR SIZE	F12 SPACING	F12 NO. REQ'D	F12 LENGTHS		REINF. STEEL QTY. PER WING (LBS)
WING A	4	12	10	L	Min	2'-0"	-	-	-	L	-	-	-	-	L	-	4	18	2	Min	4	18	2	9'-2"	4	18	7	L	Min	2'-7"	4	6	12'-1"	4	18	6	Min	-	-	-	Min	4	2	9'-5"	4	2	10'-7"	6	12	3	L	3'-4"	166
					Max	4'-8"														5'-5"								Max	5'-3"								1'-8"													
				X	Min	0'-9"				X	-				X	-				Min							X	Min	1'-4"								-			Max							X	1'-8"	
					Max	0'-9"														5'-5"								Max	1'-4"								1'-8"													
				Y	Min	1'-4"				Y	-				Y	-				Max							Y	Min	1'-4"								-													
					Max	4'-0"																						Max	4'-0"																					
WING B	4	12	10	L	Min	2'-0"	-	-	-	L	-	-	-	-	L	-	4	18	2	Min	4	18	2	9'-2"	4	18	7	L	Min	2'-7"	4	6	12'-1"	4	18	6	Min	-	-	-	Min	4	2	9'-5"	4	2	10'-7"	6	12	3	L	3'-4"	166
					Max	4'-8"														5'-5"								Max	5'-3"								1'-8"													
				X	Min	0'-9"				X	-				X	-				Min							X	Min	1'-4"								-			Max							X	1'-8"	
					Max	0'-9"														5'-5"								Max	1'-4"								1'-8"													
				Y	Min	1'-4"				Y	-				Y	-				Max							Y	Min	1'-4"								-													
					Max	4'-0"																						Max	4'-0"																					

INLET SLOPE SECTION(S)

R.C. BOX SECTION	DESIGN FILL DEPTH (FT.) D	CLEAR SPAN (FT.) S	CLEAR HEIGHT (FT.) H	TOP SLAB THICKNESS T	BOTTOM SLAB THK. B	SIDE WALL THICKNESS C	OVER ALL WIDTH OW	OVER ALL HEIGHT OH	SECTION LENGTH (FT.) SL	TOP SLAB REINFORCING STEEL "a" LENGTH = OW - 4" SIZE	SPACING	NO. REQ'D	LENGTH	BOTTOM SLAB REINFORCING STEEL "b" LENGTH = OW - 4" SIZE	SPACING	NO. REQ'D	LENGTH	SIDE WALL REINFORCING STEEL "f" LENGTH = OH - 4" SIZE	SPACING	NO. REQ'D	LENGTH	TOP SLAB DISTRIBUTION REINF. STEEL "d" LENGTH = SL SIZE	SPACING	NO. REQ'D	BOTTOM SLAB DISTRIBUTION REINF. STEEL "e" LENGTH = SL SIZE	SPACING	NO. REQ'D	SIDE WALL DISTRIBUTION REINF. STEEL "d1" LENGTH = SL SIZE	SPACING	NO. REQ'D

HDWL DEPTH HD	ADDITIONAL REINF. FOR HDWL LBS	"h" HDWL BARS SIZE	Y	LENGTH	NO. REQ'D
3"	38	4	0'-7"	1'-7"	14

CLASS "S" CONCRETE CU. YDS.	REINFORCING STEEL (GR. 50) LBS.
TOTAL	
0.12	53

MID-SECTION

R.C. BOX SECTION	DESIGN FILL DEPTH (FT.) D	CLEAR SPAN (FT.) S	CLEAR HEIGHT (FT.) H	TOP SLAB THK. T	BOTTOM SLAB THK. B	SIDE WALL THK C	OVER ALL WIDTH OW	OVER ALL HEIGHT OH	SECTION LENGTH (FT.) SL	TOP SLAB REINFORCING STEEL "a" LENGTH = OW - 4" SIZE	SPACING	NO. REQ'D	LENGTH	BOTTOM SLAB REINFORCING STEEL "b" LENGTH = OW - 4" SIZE	SPACING	NO. REQ'D	LENGTH	SIDE WALL REINFORCING STEEL "f" LENGTH = OH - 4" SIZE	SPACING	NO. REQ'D	LENGTH	TOP SLAB DISTRIBUTION REINF. STEEL "d" LENGTH = SL SIZE	SPACING	NO. REQ'D	BOTTOM SLAB DISTRIBUTION REINF. STEEL "e" LENGTH = SL SIZE	SPACING	NO. REQ'D	SIDE WALL DISTRIBUTION REINF. STEEL "d1" LENGTH = SL SIZE	SPACING	NO. REQ'D
A	5	12	3	11	11	7	13'-2"	4'-10"	72.00	8	7.5	115	12'-10"	6	5	172	12'-10"	5	6	288	4'-6"	4	10	16	4	10	16	4	12	6

CLASS "S" CONCRETE CU. YDS.	REINFORCING STEEL (Gr. 60) LBS.
73.70	10480

DOWELS

DOWELLING	TOP SLAB DOWELS NUMBER & SPACINGS TO MATCH "d" BARS LENGTH = 3'-6" SIZE	SPACING	NO. REQ'D	BOTTOM SLAB DOWELS NUMBER & SPACINGS TO MATCH "e" BARS LENGTH = 3'-6" SIZE	SPACING	NO. REQ'D	SIDE WALL DOWELS NUMBER & SPACINGS TO MATCH "d1" BARS LENGTH = 3'-6" SIZE	SPACING	NO. REQ'D	REINFORCING STEEL (Gr. 60) LBS.
	6	10	16	6	10	16	6	12	6	200

Min. Bar Lap Length	
#4	1'-9"
#5	2'-2"
#6	2'-7"
#7	3'-6"
#8	4'-7"

Bar Pin Dia. Table	
#4	3"
#5	3 3/4"
#6	4 1/2"
#7	5 1/4"
#8	6"

MID-SECTION BAR LAP TABLE

# of Long. Laps Req'd.	SL = Section Length
0	< 40.0 ft
1	>40.0 ft - 78.0 ft
2	>78.0 ft - 116.0 ft
3	>116.0 ft - 154.0 ft
4	>154.0 ft - 192.0 ft
5	>192.0 ft - 230.0 ft
6	>230.0 ft - 268.0 ft
7	>268.0 ft - 306.0 ft
8	>306.0 ft -344.0 ft

Design Fill Depth	Range of Actual Fill Depth
2	0.0 ft - 2.0 ft
5	>2.0 ft - 5.0 ft
10	>5.0 ft - 10.0 ft
15	>10.0 ft - 15.0 ft
20	>15.0 ft - 20.0 ft
25	>20.0 ft - 25.0 ft
30	>25.0 ft - 30.0 ft
35	>30.0 ft - 35.0 ft
40	>35.0 ft - 40.0 ft

Data shown for Mid-Section, Slope Section(s), and Skewed End Section is based on the design fill depth shown in the table, see PLAN AND PROFILE SHEETS for actual fill depth.

SHEET 2 OF 2
DETAILS OF R.C. BOX CULVERT

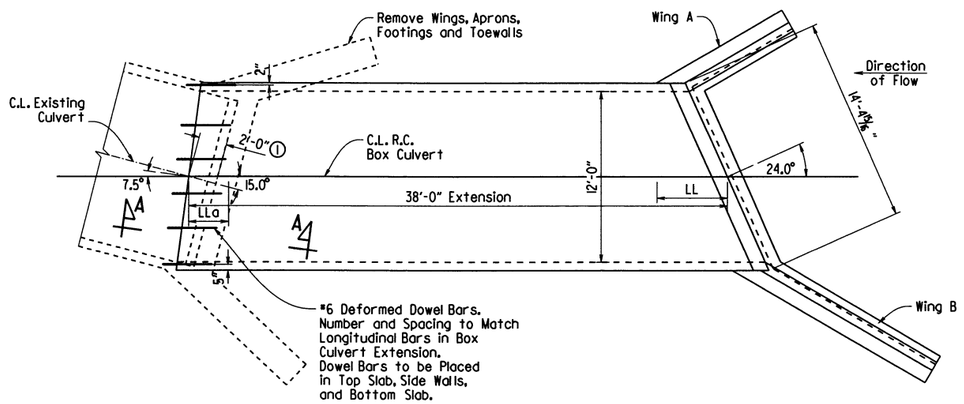
R.C. BOX EXTENSION
STA 26+65

SPECIAL DETAILS

Ver. LI4 b090406_cl.dgn

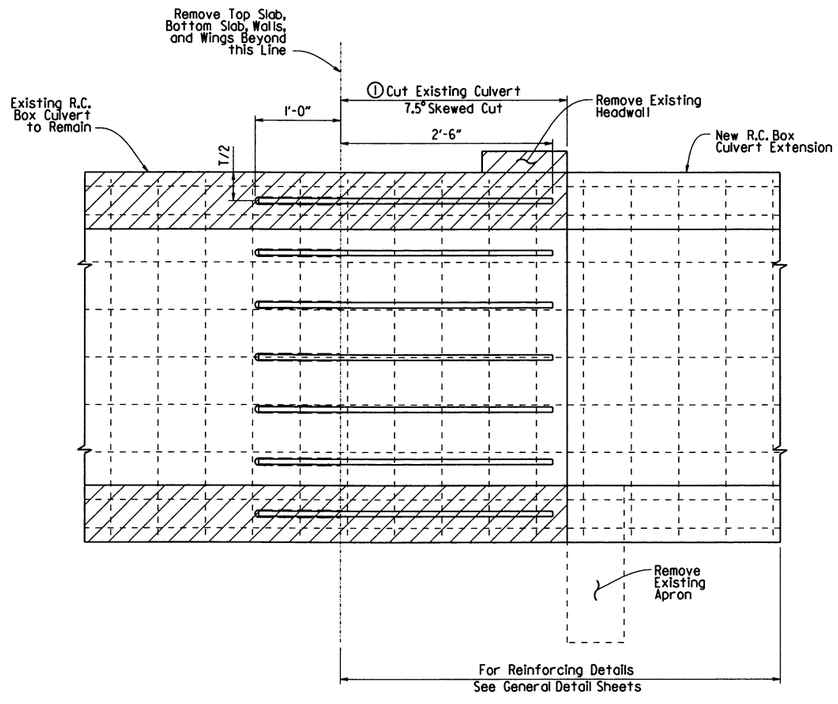
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	16	226
				①		SPECIAL DETAILS		

Unless otherwise directed by the Engineer, remove portion of the existing R.C. Box Culvert as shown



① Location of Cut Line Shall Provide the Minimum Clearance to Facilitate Construction of the New R.C. Box Culvert

LAYOUT OF R.C. BOX CULVERT EXTENSION



SECTION A-A

DRAWN BY: KAP DATE: 04/13/2016
CHECKED BY: CSE DATE: 4/14/16

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-2-16
CHARLES R. ELLIS

GENERAL NOTES:

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

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications, Fifth Edition (2010) with 2010 interim revisions.

LIVE LOADING: HL-93

All concrete shall be Class S with a minimum 28-day compressive strength of 3,500 psi and shall be poured in the dry. All exposed corners to have ¾" chamfers.

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

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 1/2 inch.

Excavation and backfilling shall be in accordance with the requirements of Section 801.

Membrane Waterproofing shall conform to the requirements of Section 815. Membrane Waterproofing shall be Type C and as directed by the Engineer applied to all construction joints in the top slab and the sidewalls of R.C. Box culverts and to the construction joint between wingwalls and R.C. Box culvert walls.

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 barrel components of the culvert may be constructed using continuous pours. For longer culvert construction, the Contractor may use multiple pours with transverse construction joints spaced a minimum of 50 feet apart unless superseded by stage construction or site constraints as approved by the Engineer. Construction joints between footings and walls shall be made only where shown in the Plans. Joints shall be normal to the centerline of barrel and shall be keyed. Longitudinal reinforcing shall be continuous through joints unless shown otherwise. All longitudinal construction joints shall be submitted to the Engineer for approval.

Membrane Waterproofing, Weep Holes, Geotextile Filter Fabric, and Drainage Fill Material will not be paid for directly but shall be considered subsidiary to Class S Concrete.

When precast reinforced concrete box culverts are substituted for cast in place box culverts, they shall be manufactured according to ASTM C 1577 and meet the requirements of Section 607.

Reinforcing steel removed from the existing structure shall not be reused in constructing extension.

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.

Materials for securing dowel bars shall meet the requirements of Subsection 507.02.

Dowel bars shall be installed using a drilling procedure and filling system approved by the Engineer. The filling system shall be an injection-type system that will ensure that the material completely surrounds the bars and fills the holes.

Dowels placed along sidewalls shall be positioned 2" or 5 " from the outside edge of the extension to ensure that the dowels do not protrude through existing sidewalls.

SHEET 1 OF 2
DETAILS OF R.C. BOX CULVERT
R.C. BOX EXTENSION
STA 25+77
SPECIAL DETAILS

V 1.14 b090406_c2.dgn

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	17	226

① SPECIAL DETAILS

INLET WINGWALL TABLE

OVER ALL WIDTH	CLEAR HEIGHT	FOOTING THK.	WING WALL THK.	BOX SKEW (DEG.)	SLOPE	HDWL LENGTH	HEEL	WALL HEIGHT		WINGWALL ANGLE (DEGREE)		FOOTING WIDTH AT WALL END	WIDTH OF WING FOOTINGS AT HDWL		FOOTING DIMENSION PARALLEL WITH HDWL		LENGTH OF WINGWALLS		LENGTH OF FOOTING HEEL	
								AT HDWL	AT WING END	WING A	WING B		WING A	WING B	WING A	WING B	WING A	WING B	WING A	WING B
OW	H	WB	CW	SK	SL	K	HL	WH1	WH2	AP1	AP2	WE	WF1	WF2	G1	G2	W1	W2	W3	W4
13'-2"	3'-0"	0'-9"	0'-8"	24	3:1	13'-1 5/8"	1'-0"	3'-10"	1'-0"	6	54	2'-2"	2'-2"	2'-2 7/8"	0'-4 3/4"	0'--4 -3/4"	8'-6"	14'-0"	10'-2 5/8"	15'-8 5/8"

CLASS "S" CONCRETE (Includes apron)	REINFORCING STEEL (Includes apron and laps if required)
INLET	INLET
CU.YD	LBS.
4.15	381

WING	F1 BAR SIZE	F1 MAX. SPACING	F1 NO. REQ'D	F1 LENGTHS VARY	F1	F2 BAR SIZE	F2 SPACING	F2 NO. REQ'D	F2 LENGTHS	F3 BAR SIZE	F3 SPACING	F3 NO. REQ'D	F3 LENGTHS	F4 BAR SIZE	F4 SPACING	F4 NO. REQ'D	F4 LENGTHS VARY	F5 BAR SIZE	F5 SPACING	F5 NO. REQ'D	F5 LENGTHS	F6 BAR SIZE	F6 SPACING	F6 NO. REQ'D	F6 LENGTHS VARY	F6	F7 BAR SIZE	F7 NO. REQ'D	F7 LENGTHS	F8 BAR SIZE	F8 SPACING	F8 NO. REQ'D	F8 LENGTHS VARY	F9 BAR SIZE	F9 SPACING	F9 NO. REQ'D	F9 LENGTHS VARY	F10 BAR SIZE	F10 NO. REQ'D	F10 LENGTHS	F11 BAR SIZE	F11 NO. REQ'D	F11 LENGTHS	F12 BAR SIZE	F12 SPACING	F12 NO. REQ'D	F12 LENGTHS		REINF. STEEL QTY. PER WING (LBS)
WING A	4	12	9	L Min	2'-0"	-	-	-	L -	-	-	-	L -	4	18	2	Min	4	18	2	8'-2"	4	18	6	L Min	2'-9"	4	6	11'-1"	4	18	6	Min	-	-	-	Min	4	2	8'-6"	4	2	9'-5"	6	12	3	L	3'-4"	153
				L Max	4'-8"												4'-10"								L Max	5'-3"							1'-8"				-									
				X Min	0'-9"				X -				X -				Min					4	18	6	X Min	1'-4"							Max				Max							X	1'-8"	
				X Max	0'-9"												4'-10"								X Max	1'-4"							1'-8"				-									
				Y Min	1'-4"				Y -				Y -												Y Min	1'-6"																					
				Y Max	4'-0"																				Y Max	4'-0"																					
WING B	4	12	14	L Min	2'-1"	-	-	-	L -	-	-	-	L -	4	18	2	Min	4	18	2	13'-8"	4	18	10	L Min	2'-7"	4	6	16'-7"	4	18	9	Min	-	-	-	Min	4	2	13'-10"	4	2	15'-8"	6	12	3	L	3'-4"	228
				L Max	4'-9"												8'-1"								L Max	5'-3"							1'-8"				-									
				X Min	0'-9"				X -				X -				Min					4	18	10	X Min	1'-4"							Max				Max							X	1'-8"	
				X Max	0'-10"												8'-1"								X Max	1'-4"							1'-9"				-									
				Y Min	1'-5"				Y -				Y -												Y Min	1'-4"																					
				Y Max	4'-0"																				Y Max	4'-0"																					

MID-SECTION BAR LAP TABLE

# of Long. Laps Req'd.	SL = Section Length
0	< 40.0 ft
1	>40.0 ft - 78.0 ft
2	>78.0 ft - 116.0 ft
3	>116.0 ft - 154.0 ft
4	>154.0 ft - 192.0 ft
5	>192.0 ft - 230.0 ft
6	>230.0 ft - 268.0 ft
7	>268.0 ft - 306.0 ft
8	>306.0 ft -344.0 ft

TABULAR DATA BY: KAP DATE: 04/13/2016
CHECKED BY: CSK DATE: 4/29/16

This drawing to be used in conjunction with
SHEET 1 OF 4, "GENERAL DETAILS OF R.C. BOX CULVERT", 'GENERAL NOTES & LONGITUDINAL SECTION LENGTH SCHEDULE',
SHEET 2 OF 4, "GENERAL DETAILS OF R.C. BOX CULVERT", 'DETAILS OF SINGLE-BARREL R.C. BOX CULVERT',
SHEET 4 OF 4, "GENERAL DETAILS OF R.C. BOX CULVERT", 'DETAILS OF WINGWALLS', and
STANDARD DRAWING RCB-2.
For additional information and outlet sections, see Sheet 2 of 2.

INLET SKEWED END SECTION

SKEW (DEGREE)	SLOPE	DESIGN FILL DEPTH (FT.)	CLEAR SPAN (FT.)	CLEAR HEIGHT (FT.)	SECTION LENGTH	TOP SLAB THICKNESS	BOTTOM SLAB THK.	SIDE WALL THICKNESS	HEADWALL DEPTH	OVER ALL WIDTH	OVER ALL HEIGHT	TOP SLAB REINFORCING STEEL "a" SIZE	"a" SPACING	"a" LENGTHS VARY	"a" NO. REQ'D	BOTTOM SLAB REINFORCING STEEL "b" SIZE	"b" SPACING	"b" LENGTHS VARY	"b" NO. REQ'D	SIDE WALL REINFORCING STEEL "f" SIZE	"f" SPACING	"f" NO. REQ'D	"f" LENGTH	TOP SLAB DISTRIBUTION REINFORCING STEEL "d" SIZE	"d" SPACING	"d" NO. REQ'D	"d" LENGTHS VARY	BOTTOM SLAB DISTRIBUTION REINFORCING STEEL "e" SIZE	"e" SPACING	"e" NO. REQ'D	"e" LENGTHS VARY	SIDE WALL DISTRIBUTION REINFORCING STEEL "d1" SIZE	"d1" SPACING	"d1" NO. REQ'D	"d1" LENGTH	HEADWALL REINFORCING STEEL "k1", "k2" & "h"				CLASS "S" CONCRETE (Includes HDWL)	① REINFORCING STEEL (GR. 60) (Includes HDWL)
SK	SL	D	S	H	LL	T	B	C	HD	OW	OH	SIZE	SPACING	LENGTHS VARY	NO. REQ'D	SIZE	SPACEING	LENGTHS VARY	NO. REQ'D	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTHS VARY	SIZE	SPACING	NO. REQ'D	LENGTHS VARY	SIZE	SPACING	NO. REQ'D	LENGTH	BAR	SIZE	NO. REQ'D	LENGTH	CU. YDS.	LBS.
24	3:1	5	12	3	4'-11"	11	11	7	3	13'-2"	4'-10"	8	7.5	Max 12'-10" / Min 3'-8" / 12'-10"	7 / 4	6	5	Max 12'-10" / Min 3'-8" / 12'-10"	10 / 5	5	6	20	4'-6"	4	10	16	Max 7'-8" / Min 1'-10"	4	10	16	Max 7'-8" / Min 1'-10"	4	12	3	LONG 7'-8" / SHORT 1'-10"	"k1" / "k2" / "h"	5 / 5 / 4	6 / 6 / 16	14'-1" / 14'-1" / 1'-10" / Y 0'-10"	5.30	922

OUTLET SKEWED END SECTION

SKEW (DEGREE)	DESIGN FILL DEPTH (FT.)	CLEAR SPAN (FT.)	CLEAR HEIGHT (FT.)	SECTION LENGTH	TOP SLAB THICKNESS	BOTTOM SLAB THK.	SIDE WALL THICKNESS	HEADWALL DEPTH	OVER ALL WIDTH	OVER ALL HEIGHT	TOP SLAB REINFORCING STEEL "a" SIZE	"a" SPACING	"a" LENGTHS VARY	"a" NO. REQ'D	BOTTOM SLAB REINFORCING STEEL "b" SIZE	"b" SPACEING	"b" LENGTHS VARY	"b" NO. REQ'D	SIDE WALL REINFORCING STEEL "f" SIZE	"f" SPACING	"f" NO. REQ'D	"f" LENGTH	TOP SLAB DISTRIBUTION REINFORCING STEEL "d" SIZE	"d" SPACING	"d" NO. REQ'D	"d" LENGTHS VARY	BOTTOM SLAB DISTRIBUTION REINFORCING STEEL "e" SIZE	"e" SPACING	"e" NO. REQ'D	"e" LENGTHS VARY	SIDE WALL DISTRIBUTION REINFORCING STEEL "d1" SIZE	"d1" SPACING	"d1" NO. REQ'D	"d1" LENGTH	OUTLET SKEW "k1", "k2" & "h"				CLASS "S" CONCRETE	① REINFORCING STEEL (GR. 60)
SK	D	S	H	LLa	T	B	C	HD	OW	OH	SIZE	SPACING	LENGTHS VARY	NO. REQ'D	SIZE	SPACEING	LENGTHS VARY	NO. REQ'D	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTHS VARY	SIZE	SPACING	NO. REQ'D	LENGTHS VARY	SIZE	SPACING	NO. REQ'D	LENGTH	BAR	SIZE	NO. REQ'D	LENGTH	CU. YDS.	LBS.
7.5	5	12	3	2'-10"	11	11	7	0	13'-2"	4'-10"	8	7.5	Max 12'-10" / Min 3'-9" / 12'-10"	2 / 4	6	5	Max 12'-10" / Min 3'-9" / 12'-10"	3 / 5	5	6	12	4'-6"	4	10	16	Max 3'-7" / Min 1'-10"	4	10	16	Max 3'-7" / Min 1'-10"	4	12	3	LONG 3'-7" / SHORT 1'-10"	"k1" / "k2" / "h"	4 / 4 / -	6 / 6 / 0	12'-11" / 12'-11" / - / -	2.90	544

MID-SECTION

R.C. BOX SECTION	DESIGN FILL DEPTH (FT.)	CLEAR SPAN (FT.)	CLEAR HEIGHT (FT.)	TOP SLAB THK.	BOTTOM SLAB THK.	SIDE WALL THK	OVER ALL WIDTH	OVER ALL HEIGHT	SECTION LENGTH (FT.)	TOP SLAB REINFORCING STEEL "a" LENGTH = OW - 4" SIZE	SPACING	NO. REQ'D	LENGTH	BOTTOM SLAB REINFORCING STEEL "b" LENGTH = OW - 4" SIZE	SPACING	NO. REQ'D	LENGTH	SIDE WALL REINFORCING STEEL "f" LENGTH = OH - 4" SIZE	SPACING	NO. REQ'D	LENGTH	TOP SLAB DISTRIBUTION REINF. STEEL "d" LENGTH = SL SIZE	SPACING	NO. REQ'D	BOTTOM SLAB DISTRIBUTION REINF. STEEL "e" LENGTH = SL SIZE	SPACING	NO. REQ'D	SIDE WALL DISTRIBUTION REINF. STEEL "d1" LENGTH = SL SIZE	SPACING	NO. REQ'D	CLASS "S" CONCRETE CU. YDS.	REINFORCING STEEL (Gr. 60) LBS.
	D	S	H	T	B	C	OW	OH	SL																								
A	5	12	3	11	11	7	13'-2"	4'-10"	30.25	8	7.5	48	12'-10"	6	5	72	12'-10"	5	6	120	4'-6"	4	10	16	4	10	16	4	12	6	30.97	4364

DOWELS

DOWELS	TOP SLAB DOWELS NUMBER & SPACINGS TO MATCH "d" BARS LENGTH = 3'-6" SIZE	SPACING	NO. REQ'D	BOTTOM SLAB DOWELS NUMBER & SPACINGS TO MATCH "e" BARS LENGTH = 3'-6" SIZE	SPACING	NO. REQ'D	SIDE WALL DOWELS NUMBER & SPACINGS TO MATCH "d1" BARS LENGTH = 3'-6" SIZE	SPACING	NO. REQ'D	REINFORCING STEEL (Gr. 60) LBS.
	6	10	16	6	10	16	6	12	6	200

Min. Bar Lap Length	
#4	1'-9"
#5	2'-2"
#6	2'-7"
#7	3'-6"
#8	4'-7"

Bar Pin Dia. Table	
#4	3"
#5	3 3/4"
#6	4 1/2"
#7	5 1/4"
#8	6"

Design Fill Depth	Range of Actual Fill Depth
2	0.0 ft - 2.0 ft
5	>2.0 ft - 5.0 ft
10	>5.0 ft - 10.0 ft
15	>10.0 ft - 15.0 ft
20	>15.0 ft - 20.0 ft
25	>20.0 ft - 25.0 ft
30	>25.0 ft - 30.0 ft
35	>30.0 ft - 35.0 ft
40	>35.0 ft - 40.0 ft

① Any Bar Lap Required for the Skewed End Section shall be considered subsidiary to the item "Reinforcing Steel - Roadway (Gr. 60)."

Data shown for Mid-Section, Slope Section(s), and Skewed End Section is based on the design fill depth shown in the table, see PLAN AND PROFILE SHEETS for actual fill depth.

SHEET 2 OF 2
DETAILS OF R.C. BOX CULVERT
SINGLE BARREL BOX CULVERT
STA 25+77

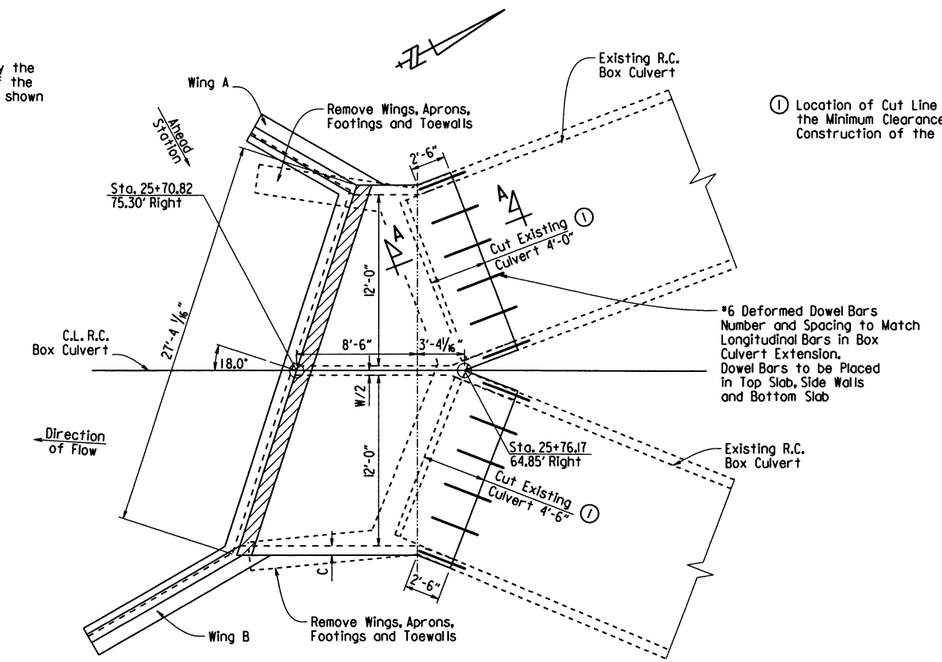
SPECIAL DETAILS

Ver. LJ14 b090406_c2.dgn

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	18	226

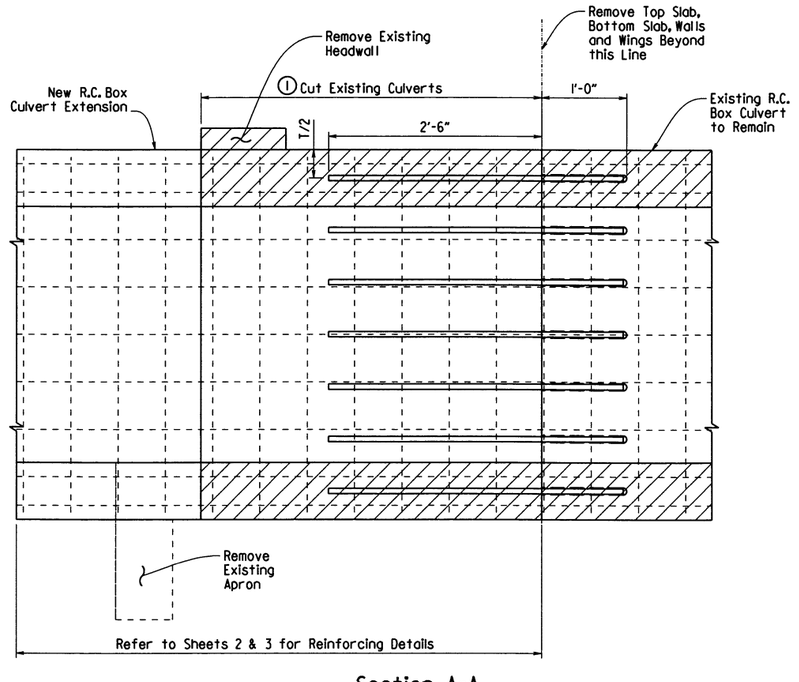
① SPECIAL DETAILS

Unless otherwise directed by the Engineer, remove portions of the existing R.C. Box Culverts as shown



① Location of Cut Line Shall Provide the Minimum Clearance to Facilitate Construction of the New R.C. Box Culvert

LAYOUT OF DOUBLE BARREL R.C. JUNCTION BOX CULVERT



Section A-A

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-2-16
CHARLES R. ELLIS

DRAWN BY: KAP DATE: 04/13/2016
CHECKED BY: CRE DATE: 4/29/16

GENERAL NOTES:

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

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications, Fifth Edition (2010) with 2010 interim revisions.

LIVE LOADING: HL-93

All concrete shall be Class S with a minimum 28-day compressive strength of 3,500 psi and shall be poured in the dry. All exposed corners to have ¾" chamfers.

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

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 1/2 inch.

Excavation and backfilling shall be in accordance with the requirements of Section 801.

Membrane Waterproofing shall conform to the requirements of Section 815. Membrane Waterproofing shall be Type C and as directed by the Engineer applied to all construction joints in the top slab and the sidewalls of R.C. Box culverts and to the construction joint between wingwalls and R.C. Box culvert walls.

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 barrel components of the culvert may be constructed using continuous pours. For longer culvert construction, the Contractor may use multiple pours with transverse construction joints spaced a minimum of 50 feet apart unless superseded by stage construction or site constraints as approved by the Engineer. Construction joints between footings and walls shall be made only where shown in the Plans. Joints shall be normal to the centerline of barrel and shall be keyed. Longitudinal reinforcing shall be continuous through joints unless shown otherwise. All longitudinal construction joints shall be submitted to the Engineer for approval.

Membrane Waterproofing, Weep Holes, Geotextile Filter Fabric, and Drainage Fill Material will not be paid for directly but shall be considered subsidiary to Class S Concrete.

When precast reinforced concrete box culverts are substituted for cast in place box culverts, they shall be manufactured according to ASTM C 1577 and meet the requirements of Section 607.

Reinforcing steel removed from the existing structures shall not be reused in constructing extension.

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.

Materials for securing dowel bars shall meet the requirements of Subsection 507.02.

Dowel bars shall be installed using a drilling procedure and filling system approved by the Engineer. The filling system shall be an injection-type system that will ensure that the material completely surrounds the bars and fills the holes.

Culvert layout was developed using surveyor information. The Contractor shall verify the cut and removal dimensions of the existing box culverts on site to ensure that the extension joins with the existing culverts

SHEET 1 OF 3
DETAILS OF R.C. BOX CULVERT
DOUBLE BARREL JUNCTION BOX
Sta. 25+70
SPECIAL DETAILS

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	19	226

SPECIAL DETAILS

OUTLET WINGWALL TABLE

OVER ALL WIDTH	CLEAR HEIGHT	FOOTING THK.	WING WALL THK.	BOX SKEW (DEG.)	SLOPE	HDWL LENGTH	HEEL	WALL HEIGHT AT HDWL	WALL HEIGHT AT WING END	WINGWALL ANGLE (DEGREE) WING A	WINGWALL ANGLE (DEGREE) WING B	FOOTING WIDTH AT WALL END	WIDTH OF WING FOOTINGS AT HDWL WING A	WIDTH OF WING FOOTINGS AT HDWL WING B	FOOTING DIMENSION PARALLEL WITH HDWL WING A	FOOTING DIMENSION PARALLEL WITH HDWL WING B	LENGTH OF WINGWALLS WING A	LENGTH OF WINGWALLS WING B	LENGTH OF FOOTING HEEL WING A	LENGTH OF FOOTING HEEL WING B	CLASS "S" CONCRETE (Includes apron)	REINFORCING STEEL (Includes apron and laps if required)
OW	H	WB	CW	SK	SL	K	HL	WH1	WH2	AP1	AF2	WE	WF1	WF2	G1	G2	W1	W2	W3	W4	OUTLET	OUTLET
26'-0"	3'-0"	0'-9"	0'-8"	18	3:1	25'-11 1/4"	1'-0"	3'-10"	1'-0"	12	48	2'-2"	2'-2"	2'-2 7/8"	0'-3 5/8"	0'--2 -1/1"	8'-6"	12'-6"	10'-0 5/8"	14'-0 5/8"	5.54	377

WING	F1 BAR SIZE	F1 MAX. SPACING	F1 NO. REQ'D	F1 LENGTHS VARY	F1 LENGTHS	F2 BAR SIZE	F2 SPACING	F2 NO. REQ'D	F2 LENGTHS	F3 BAR SIZE	F3 SPACING	F3 NO. REQ'D	F3 LENGTHS	F4 BAR SIZE	F4 SPACING	F4 NO. REQ'D	F4 LENGTHS VARY	F5 BAR SIZE	F5 SPACING	F5 NO. REQ'D	F5 LENGTHS	F6 BAR SIZE	F6 SPACING	F6 NO. REQ'D	F6 LENGTHS VARY	F6 LENGTHS	F7 BAR SIZE	F7 NO. REQ'D	F7 LENGTHS	F8 BAR SIZE	F8 SPACING	F8 NO. REQ'D	F8 LENGTHS VARY	F9 BAR SIZE	F9 SPACING	F9 NO. REQ'D	F9 LENGTHS	F10 BAR SIZE	F10 NO. REQ'D	F10 LENGTHS	F11 BAR SIZE	F11 NO. REQ'D	F11 LENGTHS	F12 BAR SIZE	F12 SPACING	F12 NO. REQ'D	F12 LENGTHS	REINF. STEEL QTY. PER WING (LBS)
WING A	4	12	9	L Min	2'-0"	-	-	-	-	-	-	-	L -	4	18	2	Min	4	18	2	8'-2"	4	18	6	L Min	2'-9"	4	6	10'-11"	4	18	6	Min	-	-	-	Min	4	2	8'-6"	4	2	9'-5"	6	12	3	L 3'-4"	161
					Max	4'-8"											4'-10"								Max 5'-3"								1'-8"			-											
				X Min	0'-9"								X -				Max								Min 1'-4"								Max			-									X 1'-8"	
				Max	0'-9"												4'-10"								Max 1'-4"								1'-8"												
				Y Min	1'-4"								Y -				Min								Min 1'-6"								Min			-											
				Max	4'-0"												4'-10"								Max 4'-0"								1'-8"												
WING B	4	12	13	L Min	2'-0"	-	-	-	-	-	-	-	L -	4	18	2	Min	4	18	2	12'-2"	4	18	9	L Min	2'-7"	4	6	14'-11"	4	18	8	Min	-	-	-	Min	4	2	12'-4"	4	2	14'-0"	6	12	3	L 3'-4"	216
					Max	4'-9"											7'-2"								Max 5'-3"								1'-8"			-											
				X Min	0'-9"								X -				Max								Min 1'-4"								Max			-									X 1'-8"	
				Max	0'-10"												7'-2"								Max 1'-4"								1'-9"												
				Y Min	1'-4"								Y -				Min								Min 1'-4"								Min			-											
				Max	4'-0"												7'-2"								Max 4'-0"								1'-8"												

MID-SECTION BAR LAP TABLE

# of Long. Laps Req'd.	SL = Section Length
0	< 40.0 ft
1	>40.0 ft - 78.0 ft
2	>78.0 ft - 116.0 ft
3	>116.0 ft - 154.0 ft
4	>154.0 ft - 192.0 ft
5	>192.0 ft - 230.0 ft
6	>230.0 ft - 268.0 ft
7	>268.0 ft - 306.0 ft
8	>306.0 ft -344.0 ft

Min. Bar Lap Length	
#4	1'-9"
#5	2'-2"
#6	2'-7"
#7	3'-6"
#8	4'-7"

Bar Pin Dia. Table	
#4	3"
#5	3 3/4"
#6	4 1/2"
#7	5 1/4"
#8	6"

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-2-16
CHARLES R. ELLIS

TABULAR DATA BY: KAP DATE: 04/13/2016
CHECKED BY: CSR DATE: 4/29/16

This drawing to be used in conjunction with
SHEET 1 OF 4, "GENERAL DETAILS OF R.C. BOX CULVERT", 'GENERAL NOTES & LONGITUDINAL SECTION LENGTH SCHEDULE',
SHEET 4 OF 4, "GENERAL DETAILS OF R.C. BOX CULVERT", 'DETAILS OF WINGWALLS', and
STANDARD DRAWING RCB-2.

OUTLET SLOPE SECTION(S)

R.C. BOX SECTION	DESIGN FILL DEPTH	CLEAR SPAN (FT.)	CLEAR HEIGHT (FT.)	TOP SLAB THK.	BOTTOM SLAB THK.	SIDE WALL THK.	INTERIOR WALL THK.	OVER ALL WIDTH	OVER ALL HEIGHT	SECTION LENGTH (FT.)	TOP SLAB REINFORCING STEEL LENGTH = OW - 4" + BENDS "a" SIZE	"a" L	Bent "b" SIZE	Bent "b" L	"c" SIZE	"c" L	SPACING	NO. REQ'D	BOTTOM SLAB REINFORCING STEEL LENGTH = OW - 4" + BENDS "d" SIZE	"d" L	Bent "b1" SIZE	Bent "b1" L	"f" SIZE	"f" L	SPACING	NO. REQ'D	SIDE WALL REINFORCING STEEL "f0" LENGTH = OH - 4" SIZE	SPACING	NO. REQ'D	LENGTH	INTERIOR WALL REINFORCING STEEL "f1" LENGTH = OH - 4" SIZE	SPACING	NO. REQ'D	LENGTH	TOP SLAB DISTRIBUTION REINF. STEEL "g" LENGTH = SL SIZE	SPACING	NO. REQ'D	BOTTOM SLAB DISTRIBUTION REINF. STEEL "e" LENGTH = SL SIZE	SPACING	NO. REQ'D	SIDE WALL DISTRIBUTION REINF. STEEL "d1" LENGTH = SL SIZE	SPACING	NO. REQ'D	INTERIOR WALL DISTRIBUTION REINF. STEEL "d2" LENGTH = SL SIZE	SPACING	NO. REQ'D
D	S	H	T	B	C	W	OW	OH	SL																																							
5	12	3																																													

HDWL DEPTH	ADDITIONAL REINF. FOR HDWL	"h" HDWL BARS				"k1" HDWL BARS			"k2" HDWL BARS		
HD	LBS.	SIZE	Y	LENGTH	NO. REQ'D	SIZE	LENGTH	NO. REQ'D	SIZE	LENGTH	NO. REQ'D
3"	36	4	0'-7"	1'-7"	28	4	27'-0"	6	4	28'-7"	6

CLASS "S" CONCRETE	REINFORCING STEEL (GR. 60)
CU. YDS.	LBS.
TOTAL	
0.51	252

MID-SECTION

R.C. BOX SECTION	DESIGN FILL DEPTH	CLEAR SPAN (FT.)	CLEAR HEIGHT (FT.)	TOP SLAB THK.	BOTTOM SLAB THK.	SIDE WALL THK.	INTERIOR WALL THK.	OVER ALL WIDTH	OVER ALL HEIGHT	TOP SLAB REINFORCING STEEL "a" SIZE	"a" SPACING	"a" LENGTHS VARY	"a" NO. REQ'D	"c" SIZE	"c" SPACING	"c" LENGTHS VARY	"c" NO. REQ'D	BOTTOM SLAB REINFORCING STEEL "d" SIZE	"d" SPACING	"d" LENGTHS VARY	"d" NO. REQ'D	"f" SIZE	"f" SPACING	"f" LENGTHS VARY	"f" NO. REQ'D	SIDE WALL REINFORCING STEEL LENGTH = OH - 4" "f0" SIZE	SPACING	NO. REQ'D	LENGTH	INTERIOR WALL REINFORCING STEEL LENGTH = OH - 4" "f1" SIZE	SPACING	NO. REQ'D	LENGTH	TOP SLAB DISTRIBUTION REINF. STEEL LENGTH = VARIES "g" SIZE	SPACING	NO. REQ'D	BOTTOM SLAB DISTRIBUTION REINF. STEEL LENGTH = VARIES "e" SIZE	SPACING	NO. REQ'D	SIDE WALL DISTRIBUTION STEEL (INCLUDES 2' LAP) "d1" or "d3" SIZE	SPACING	NO. REQ'D	LENGTH	INTERIOR WALL DISTRIBUTION STEEL (INCLUDES 2' LAP) "d2" or "d4" SIZE	SPACING	NO. REQ'D	LENGTH
D	S	H	T	B	C	W	OW	OH																																								
A	5	12	3	12.0	12.0	8.0	8	26'-0"	5	6	6	13'-0" / 25'-8" / Max 24'-2" / Min 4'-2"	20 / 14 / 14	6	6	13'-0" / 25'-8" / Max 24'-2" / Min 4'-2"	20 / 14 / 14	6	6	13'-0" / 25'-8" / Max 24'-2" / Min 4'-2"	20 / 14 / 14	6	6	13'-0" / 25'-8" / Max 24'-2" / Min 4'-2"	20 / 14 / 14	6	12	22	4'-8"	4	12	32	4'-8"	6	12	52	6	12	52	4	12	3	LONG 8'-9" / SHORT 16'-11"	4	12	6	17'-4"

CLASS "S" CONCRETE	REINFORCING STEEL (GR. 60)
CU. YDS.	LBS.
29.23	7323

DOWELS

DOWELS	TOP SLAB DOWELS NUMBER & SPACINGS TO MATCH "g" BARS LENGTH = 3'-6" SIZE	SPACING	NO. REQ'D	BOTTOM SLAB DOWELS NUMBER & SPACINGS TO MATCH "e" BARS LENGTH = 3'-6" SIZE	SPACING	NO. REQ'D	SIDE WALL DOWELS NUMBER & SPACINGS TO MATCH "d3" or "d4" BARS LENGTH = 3'-6" SIZE	SPACING	NO. REQ'D	REINFORCING STEEL (GR. 60)
	6	12	52	6	12	52	6	12	12	610

The required number of bars and lengths shown are for estimating purpose only. The actual number and length required shall be determined in field.

Unless otherwise noted, all dimensions are in inches.

Design Fill Depth	Range of Actual Fill Depth
2	0.0 ft - 2.0 ft
5	>2.0 ft - 5.0 ft
10	>5.0 ft - 10.0 ft
15	>10.0 ft - 15.0 ft
20	>15.0 ft - 20.0 ft
25	>20.0 ft - 25.0 ft
30	>25.0 ft - 30.0 ft
35	>30.0 ft - 35.0 ft
40	>35.0 ft - 40.0 ft

Data shown for Mid-Section, Slope Section(s), and Skewed End Section is based on the design fill depth shown in the table, see PLAN AND PROFILE SHEETS for actual fill depth.

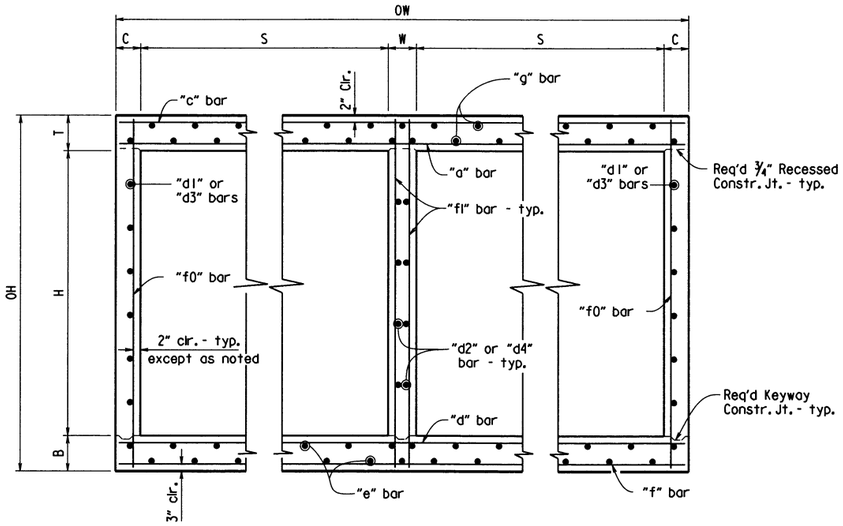
SHEET 2 OF 3
DETAILS OF R.C. BOX CULVERT
DOUBLE BARREL JUNCTION BOX
Sta. 25+70

SPECIAL DETAILS

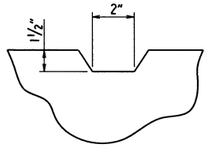
Ver. Ll14 b090406_c3.dgn

DATE REVISED	DATE FILMED	REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	20	226

① SPECIAL DETAILS



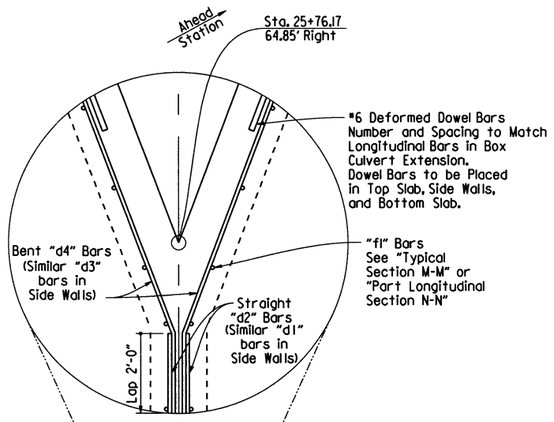
TYPICAL SECTION M-M

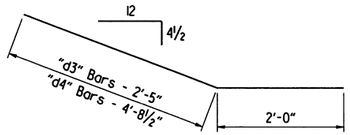


TYPICAL KEYWAY DETAIL
(All Construction Joints)

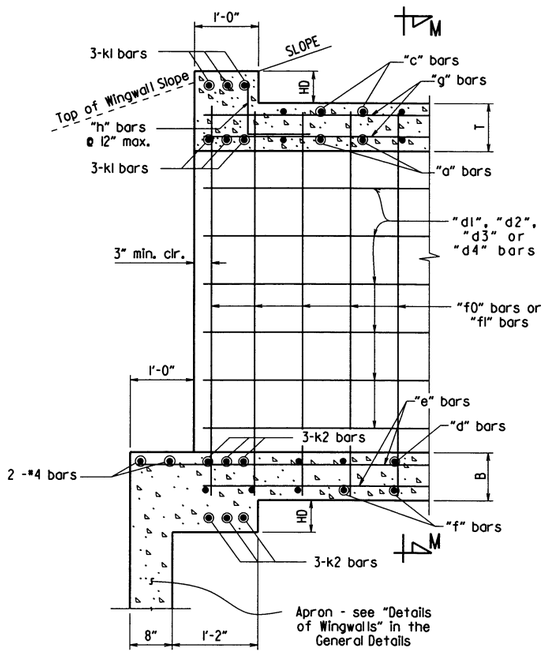
DRAWN BY: KAP DATE: 04/13/2016
CHECKED BY: CSE DATE: 4/29/16

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-2-16
CHARLES R. ELLIS

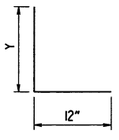




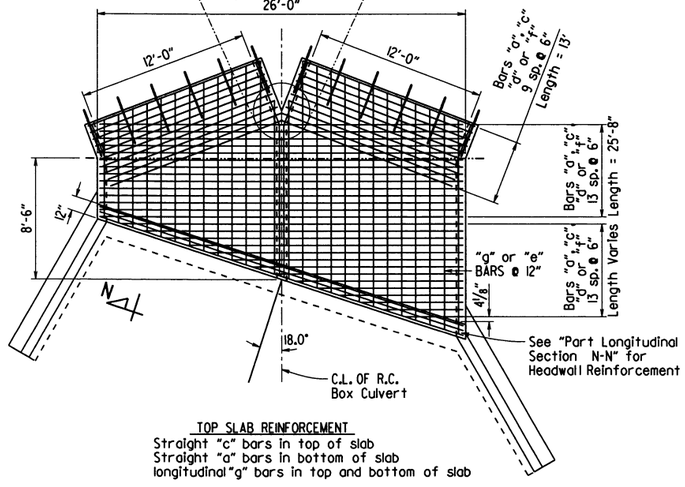
"d3" & "d4" bars sketch



PART LONGITUDINAL SECTION N-N



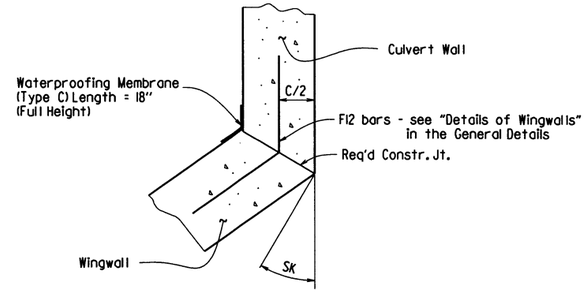
"h" bars sketch



TOP SLAB REINFORCEMENT
Straight "c" bars in top of slab
Straight "a" bars in bottom of slab
longitudinal "g" bars in top and bottom of slab

BOTTOM SLAB REINFORCEMENT
Straight "d" bars in top of slab
Straight "f" bars in bottom of slab
longitudinal "e" bars in top and bottom of slab

SKEWED END SECTION DETAILS



WINGWALL ATTACHMENT
See "Details of Wingwalls" for additional information and wingwall details. in the General Details

SHEET 3 OF 3
DETAILS OF R.C. BOX CULVERT
DOUBLE BARREL JUNCTION BOX
Sta. 25+70
SPECIAL DETAILS

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	21	226

① SPECIAL DETAILS

INLET WINGWALL TABLE

OVER ALL WIDTH	CLEAR HEIGHT	FOOTING THK.	WING WALL THK.	BOX SKEW (DEG.)	SLOPE	HDWL LENGTH	HEEL	WALL HEIGHT AT HDWL	WALL HEIGHT AT WING END	WINGWALL ANGLE (DEGREE) WING A	WINGWALL ANGLE (DEGREE) WING B	FOOTING WIDTH AT WALL END	WIDTH OF WING FOOTINGS AT HDWL WING A	WIDTH OF WING FOOTINGS AT HDWL WING B	FOOTING DIMENSION PARALLEL WITH HDWL WING A	FOOTING DIMENSION PARALLEL WITH HDWL WING B	LENGTH OF WINGWALLS WING A	LENGTH OF WINGWALLS WING B	LENGTH OF FOOTING HEEL WING A	LENGTH OF FOOTING HEEL WING B
OW	**H**	**WB**	**CW**	**SK**	**SL**	**K**	**HL**	**WH1**	**WH2**	**AF1**	**AF2**	**WE**	**WF1**	**WF2**	**G1**	**G2**	**W1**	**W2**	**W3**	**W4**
70'-9"	9'-0"	0'-10"	0'-9"	0	3:1	69'-4"	2'-0"	9'-10"	3'-0"	30	30	3'-3"	4'-10"	4'-10"	1'-10"	1'-10"	23'-6"	23'-6"	26'-10 1/8"	26'-10 1/8"

CLASS "S" CONCRETE (Includes apron)	REINFORCING STEEL (Includes apron and laps if required)
INLET	INLET
CU.YD	**LBS.**
19.77	1576

WING	F1 BAR SIZE	F1 MAX. SPACING	F1 NO. REQ'D	F1 LENGTHS VARY	F2 BAR SIZE	F2 SPACING	F2 NO. REQ'D	F2 LENGTHS	F3 BAR SIZE	F3 SPACING	F3 NO. REQ'D	F3 LENGTHS	F4 BAR SIZE	F4 SPACING	F4 NO. REQ'D	F4 LENGTHS VARY	F5 BAR SIZE	F5 SPACING	F5 NO. REQ'D	F5 LENGTHS	F6 BAR SIZE	F6 SPACING	F6 NO. REQ'D	F6 LENGTHS VARY
WING A	4	12	24	L Min 4'-2" Max 12'-5" X Min 0'-10" Max 2'-5" Y Min 3'-5" Max 10'-1"	4	12	11	L 6'-3" X 1'-9" Y 4'-7"	-	-	-	L - X - Y -	4	18	8	Min 5'-7" Max 21'-0"	4	18	4	23'-2"	4	18	16	L Min 5'-11" Max 12'-5" X Min 2'-5" Max 2'-5" Y Min 3'-7" Max 10'-1"
WING B	4	12	24	L Min 4'-2" Max 12'-5" X Min 0'-10" Max 2'-5" Y Min 3'-5" Max 10'-1"	4	12	11	L 6'-3" X 1'-9" Y 4'-7"	-	-	-	L - X - Y -	4	18	8	Min 5'-7" Max 21'-0"	4	18	4	23'-2"	4	18	16	L Min 5'-11" Max 12'-5" X Min 2'-5" Max 2'-5" Y Min 3'-7" Max 10'-1"

WING	F7 BAR SIZE	F7 NO. REQ'D	F7 LENGTHS	F8 BAR SIZE	F8 SPACING	F8 NO. REQ'D	F8 LENGTHS VARY	F9 BAR SIZE	F9 SPACING	F9 NO. REQ'D	F9 LENGTHS	F10 BAR SIZE	F10 NO. REQ'D	F10 LENGTHS	F11 BAR SIZE	F11 NO. REQ'D	F11 LENGTHS	F12 BAR SIZE	F12 SPACING	F12 NO. REQ'D	F12 LENGTHS	REINF. STEEL QTY. PER WING (LBS)
WING A	4	8	27'-8"	4	18	16	Min 2'-9" Max 4'-3"	4	18	2	Min 24'-3" Max 24'-3"	4	2	24'-0"	4	2	25'-8"	6	12	9	L 3'-4" X 1'-8"	788
WING B	4	8	27'-8"	4	18	16	Min 2'-9" Max 4'-3"	4	18	2	Min 24'-3" Max 24'-3"	4	2	24'-0"	4	2	25'-8"	6	12	9	L 3'-4" X 1'-8"	788

MID-SECTION
BAR LAP TABLE

# of Long. Laps Req'd.	SL = Section Length
0	< 40.0 ft
1	>40.0 ft - 78.0 ft
2	>78.0 ft - 116.0 ft
3	>116.0 ft - 154.0 ft
4	>154.0 ft - 192.0 ft
5	>192.0 ft - 230.0 ft
6	>230.0 ft - 268.0 ft
7	>268.0 ft - 306.0 ft
8	>306.0 ft -344.0 ft

Min. Bar Lap Length	
#4	1'-9"
#5	2'-2"
#6	2'-7"
#7	3'-6"
#8	4'-7"

Bar Pin Dia. Table	
#4	3"
#5	3 3/4"
#6	4 1/2"
#7	5 1/4"
#8	6"

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-2-16

TABULAR DATA BY: KAP DATE: 4/08/2016
CHECKED BY: CRE DATE: 4/28/16

This drawing to be used in conjunction with
SHEET 1 OF 4, "GENERAL DETAILS OF R.C. BOX CULVERT", 'GENERAL NOTES & LONGITUDINAL SECTION LENGTH SCHEDULE',
SHEET 3 OF 4, "GENERAL DETAILS OF R.C. BOX CULVERT", 'DETAILS OF MULTI-BARREL R.C. BOX CULVERT',
SHEET 4 OF 4, "GENERAL DETAILS OF R.C. BOX CULVERT", 'DETAILS OF WINGWALLS', and
STANDARD DRAWING RCB-2.

For additional information and outlet sections, see Sheet 2 of 2.

INLET SKEWED END SECTION

SKEW (DEGREE)	SLOPE	DESIGN FILL DEPTH (FT.)	CLEAR SPAN (FT.)	CLEAR HEIGHT (FT.)	SECTION LENGTH	TOP SLAB THK.	HDWL DEPTH	BOTTOM SLAB THK.	SIDE WALL THK.	INTERIOR WALL THK.	OVER ALL WIDTH	OVER ALL HEIGHT	TOP SLAB REINFORCING STEEL "a" SIZE	"a" SPACING	"a" LENGTHS VARY	"a" NO. REQ'D	"c" SIZE	"c" SPACING	"c" LENGTHS VARY	"c" NO. REQ'D	BOTTOM SLAB REINFORCING STEEL "d" SIZE	"d" SPACING	"d" LENGTHS VARY	"d" NO. REQ'D	"f" SIZE	"f" SPACING	"f" LENGTHS VARY	"f" NO. REQ'D
SK	SL	D	S	H	LL	T	HD	B	C	W	OW	OH																
															Max Min				Max Min				Max Min				Max Min	

SIDE WALL REINFORCING STEEL "f0" SIZE	"f0" SPACING	"f0" NO. REQ'D	"f0" LENGTH	INTERIOR WALL REINFORCING STEEL "f1" SIZE	"f1" SPACING	"f1" NO. REQ'D	"f1" LENGTH	TOP SLAB DISTRIBUTION REINFORCING STEEL "g" SIZE	"g" SPACING	"g" NO. REQ'D	"g" LENGTHS VARY	BOTTOM SLAB DISTRIBUTION REINFORCING STEEL "e" SIZE	"e" SPACING	"e" NO. REQ'D	"e" LENGTHS VARY	SIDE WALL DISTRIBUTION REINFORCING STEEL "d1" SIZE	"d1" SPACING	"d1" NO. REQ'D	"d1" LENGTH	INTERIOR WALL DISTRIBUTION REINFORCING STEEL "d2" SIZE	"d2" SPACING	"d2" NO. REQ'D	"d2" LENGTHS VARY
											Max Min				Max Min				LONG SHORT				LONG MID SHORT

CLASS "S" CONCRETE (Includes HDWL)	① REINFORCING STEEL (GR 60) (Includes HDWL)
CU. YDS.	LBS.

① Any Bar Lap Required for the Skewed End Section shall be considered subsidiary to the item "Reinforcing Steel - Roadway (Gr. 60)."

"k1" HDWL BARS SIZE	"k1" LENGTH	"k1" NO. REQ'D	"k2" HDWL BARS SIZE	"k2" LENGTH	"k2" NO. REQ'D	"h" HDWL BARS SIZE	"h" LENGTH	"h" Y	"h" NO. REQ'D

INLET SLOPE SECTION(S)

R.C. BOX SECTION	DESIGN FILL DEPTH (FT.)	CLEAR SPAN (FT.)	CLEAR HEIGHT (FT.)	TOP SLAB THK.	BOTTOM SLAB THK	SIDE WALL THK	INTERIOR WALL THK.	OVER ALL WIDTH	OVER ALL HEIGHT	SECTION LENGTH (FT.)	TOP SLAB REINFORCING STEEL LENGTH = OW - 4" + BENDS "a" SIZE	"a" L	Bent "b" SIZE	Bent "b" L	"c" SIZE	"c" L	SPACING	NO. REQ'D	BOTTOM SLAB REINFORCING STEEL LENGTH = OW - 4" + BENDS "d" SIZE	"d" L	Bent "b1" SIZE	Bent "b1" L	"f" SIZE	"f" L	SPACING	NO. REQ'D	SIDE WALL REINFORCING STEEL "f0" LENGTH = OH - 4" SIZE	SPACING	NO. REQ'D	LENGTH	INTERIOR WALL REINFORCING STEEL "f1" LENGTH = OH - 4" SIZE	SPACING	NO. REQ'D	LENGTH	TOP SLAB DISTRIBUTION REINF. STEEL "g" LENGTH = SL SIZE	SPACING	NO. REQ'D	BOTTOM SLAB DISTRIBUTION REINF. STEEL "e" LENGTH = SL SIZE	SPACING	NO. REQ'D	SIDE WALL DISTRIBUTION REINF. STEEL "d1" LENGTH = SL SIZE	SPACING	NO. REQ'D	INTERIOR WALL DISTRIBUTION REINF. STEEL "d2" LENGTH = SL SIZE	SPACING	NO. REQ'D
	D	S	H	T	B	C	W	OW	OH	SL																																						

CLASS "S" CONCRETE	REINFORCING STEEL (GR. 60)
CU. YDS.	LBS.
TOTAL	
0.65	190

HDWL DEPTH	ADDITIONAL REINF. FOR HDWL	"h" HDWL BARS SIZE	"h" Y	"h" LENGTH	"h" NO. REQ'D
HD	LBS.				
3"	94	4	1'-0"	2'-0"	72

Design Fill Depth	Range of Actual Fill Depth
2	0.0 ft - 2.0 ft
5	>2.0 ft - 5.0 ft
10	>5.0 ft - 10.0 ft
15	>10.0 ft - 15.0 ft
20	>15.0 ft - 20.0 ft
25	>20.0 ft - 25.0 ft
30	>25.0 ft - 30.0 ft
35	>30.0 ft - 35.0 ft
40	>35.0 ft - 40.0 ft

Data shown for Mid-Section, Slope Section(s), and Skewed End Section is based on the design fill depth shown in the table, see PLAN AND PROFILE SHEETS for actual fill depth.

MID-SECTION

R.C. BOX SECTION	DESIGN FILL DEPTH (FT.)	CLEAR SPAN (FT.)	CLEAR HEIGHT (FT.)	TOP SLAB THK.	BOTTOM SLAB THK	SIDE WALL THK.	INTERIOR WALL THK.	OVER ALL WIDTH	OVER ALL HEIGHT	SECTION LENGTH (FT.)	TOP SLAB REINFORCING STEEL LENGTH = OW - 4" + BENDS "a" SIZE	"a" L	Bent "b" SIZE	Bent "b" L	"c" SIZE	"c" L	SPACING	NO. REQ'D	BOTTOM SLAB REINFORCING STEEL LENGTH = OW - 4" + BENDS "d" SIZE	"d" L	Bent "b1" SIZE	Bent "b1" L	"f" SIZE	"f" L	SPACING	NO. REQ'D	SIDE WALL REINFORCING STEEL "f0" LENGTH = OH - 4" SIZE	SPACING	NO. REQ'D	LENGTH	INTERIOR WALL REINFORCING STEEL "f1" LENGTH = OH - 4" SIZE	SPACING	NO. REQ'D	LENGTH	TOP SLAB DISTRIBUTION REINF. STEEL "g" LENGTH = SL SIZE	SPACING	NO. REQ'D	BOTTOM SLAB DISTRIBUTION REINF. STEEL "e" LENGTH = SL SIZE	SPACING	NO. REQ'D	SIDE WALL DISTRIBUTION REINF. STEEL "d1" LENGTH = SL SIZE	SPACING	NO. REQ'D	INTERIOR WALL DISTRIBUTION REINF. STEEL "d2" LENGTH = SL SIZE	SPACING	NO. REQ'D
	D	S	H	T	B	C	W	OW	OH	SL																																						
A	5	11	9	13	13	8.5	8	70'-9"	11'-2"	95	5	70'-5"	8	72'-5"	4	70'-5"	20	57	4	70'-5"	4	72'-4"	4	70'-5"	11	103	6	6	380	10'-10"	4	12	950	10'-10"	4	8.5	203	4	8.5	203	4	12	18	4	12	90

CLASS "S" CONCRETE	REINFORCING STEEL (GR. 60)
CU. YDS.	LBS.
689.78	80781

SHEET 1 OF 2
DETAILS OF R.C. BOX CULVERT
SEXTUPLE BARREL BOX CULVERT
Sta. 8+11.70

SPECIAL DETAILS

LRFD

Ver. 1.14 b090406_c4.dgn

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		090406	22	226

① SPECIAL DETAILS

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

Charles R. Ellis

5-2-16

TABULAR DATA BY: KAP DATE: 4/08/2016
CHECKED BY: CRE DATE: 4/28/16

OUTLET WINGWALL TABLE

OVER ALL WIDTH	CLEAR HEIGHT	FOOTING THK.	WING WALL THK.	BOX SKEW (DEG.)	SLOPE	HDWL LENGTH	HEEL	WALL HEIGHT		WINGWALL ANGLE (DEGREE)		FOOTING WIDTH AT WALL END	WIDTH OF WING FOOTINGS AT HDWL		FOOTING DIMENSION PARALLEL WITH HDWL		LENGTH OF WINGWALLS		LENGTH OF FOOTING HEEL	
								AT HDWL	AT WING END	WING A	WING B		WING A	WING B	WING A	WING B	WING A	WING B	WING A	WING B
OW	H	WB	CW	SK	SL	K	HL	WH1	WH2	AF1	AF2	WE	WF1	WF2	G1	G2	W1	W2	W3	W4
70'-9"	9'-0"	0'-10"	0'-9"	0	3:1	69'-4"	2'-0"	9'-10"	3'-0"	30	30	3'-3"	4'-10"	4'-10"	1'-10"	1'-10"	23'-6"	23'-6"	26'-10 1/8"	26'-10 1/8"

CLASS "S" CONCRETE (Includes apron)	REINFORCING STEEL (Includes apron and laps if required)
OUTLET	OUTLET
CU.YD	LBS.
21.97	1576

WING	F1						F2					F3					F4				F5				F6					
	BAR SIZE	MAX. SPACING	NO. REQ'D	LENGTHS VARY			BAR SIZE	SPACING	NO. REQ'D	LENGTHS		BAR SIZE	SPACING	NO. REQ'D	LENGTHS		BAR SIZE	SPACING	NO. REQ'D	LENGTHS VARY	BAR SIZE	SPACING	NO. REQ'D	LENGTHS	BAR SIZE	SPACING	NO. REQ'D	LENGTHS VARY		
WING A	4	12	24	L	Min	4'-2"	4	12	11	L	6'-3"	-	-	-	L	-	4	18	8	Min	4	18	4	23'-2"	4	18	16	L	Min	5'-11"
					Max	12'-5"														5'-7"									Max	12'-5"
				X	Min	0'-10"				X	1'-9"				X	-												X	Min	2'-5"
					Max	2'-5"														Max									Max	2'-5"
				Y	Min	3'-5"				Y	4'-7"				Y	-				21'-0"								Y	Min	3'-7"
					Max	10'-1"																							Max	10'-1"
WING B	4	12	24	L	Min	4'-2"	4	12	11	L	6'-3"	-	-	-	L	-	4	18	8	Min	4	18	4	23'-2"	4	18	16	L	Min	5'-11"
					Max	12'-5"														5'-7"									Max	12'-5"
				X	Min	0'-10"				X	1'-9"				X	-												X	Min	2'-5"
					Max	2'-5"														Max									Max	2'-5"
				Y	Min	3'-5"				Y	4'-7"				Y	-				21'-0"								Y	Min	3'-7"
					Max	10'-1"																							Max	10'-1"

WING	F7			F8				F9				F10			F11			F12					REINF. STEEL QTY. PER WING (LBS)
	BAR SIZE	NO. REQ'D	LENGTHS	BAR SIZE	SPACING	NO. REQ'D	LENGTHS VARY	BAR SIZE	SPACING	NO. REQ'D	LENGTHS	BAR SIZE	NO. REQ'D	LENGTHS	BAR SIZE	NO. REQ'D	LENGTHS	BAR SIZE	SPACING	NO. REQ'D	LENGTHS		
WING A	4	8	27'-8"	4	18	16	Min	4	18	2	Min	4	2	24'-0"	4	2	25'-8"	6	12	9	L	3'-4"	788
							2'-9"				24'-3"												
							Max				Max										X	1'-8"	
							4'-3"				24'-3"												
WING B	4	8	27'-8"	4	18	16	Min	4	18	2	Min	4	2	24'-0"	4	2	25'-8"	6	12	9	L	3'-4"	788
							2'-9"				24'-3"												
							Max				Max										X	1'-8"	
							4'-3"				24'-3"												

Min. Bar Lap Length	
#4	1'-9"
#5	2'-2"
#6	2'-7"
#7	3'-6"
#8	4'-7"

Bar Pin Dia. Table	
#4	3"
#5	3 3/4"
#6	4 1/2"
#7	5 1/4"
#8	6"

① Any Bar Lap Required for the Skewed End Section shall be considered subsidiary to the item "Reinforcing Steel - Roadway (Gr. 60)."

OUTLET SKEWED END SECTION

SKEW (DEGREE)	SLOPE	DESIGN FILL DEPTH (FT.)	CLEAR SPAN (FT.)	CLEAR HEIGHT (FT.)	SECTION LENGTH	TOP SLAB THK.	HDWL DEPTH	BOTTOM SLAB THK.	SIDE WALL THK.	INTERIOR WALL THK.	OVER ALL WIDTH	OVER ALL HEIGHT	TOP SLAB REINFORCING STEEL								BOTTOM SLAB REINFORCING STEEL							
													"a"				"c"				"d"				"f"			
SK	SL	D	S	H	LL	T	HD	B	C	W	OW	OH	SIZE	SPACING	LENGTHS VARY	NO. REQ'D	SIZE	SPACING	LENGTHS VARY	NO. REQ'D	SIZE	SPACING	LENGTHS VARY	NO. REQ'D	SIZE	SPACING	LENGTHS VARY	NO. REQ'D
															Max				Max				Max				Max	
															Min				Min				Min				Min	

SIDE WALL REINFORCING STEEL				INTERIOR WALL REINFORCING STEEL				TOP SLAB DISTRIBUTION REINFORCING STEEL				BOTTOM SLAB DISTRIBUTION REINFORCING STEEL				SIDE WALL DISTRIBUTION REINFORCING STEEL				INTERIOR WALL DISTRIBUTION REINFORCING STEEL			
"f0"				"f1"				"g"				"e"				"d1"				"d2"			
SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTHS VARY	SIZE	SPACING	NO. REQ'D	LENGTHS VARY	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTHS VARY
											Max				Max				LONG				LONG
											Min				Min				SHORT				MID
																							SHORT

CLASS "S" CONCRETE (Includes HDWL)	① REINFORCING STEEL (GR 60) (Includes HDWL)
CU. YDS.	LBS.

"k1" HDWL BARS			"k2" HDWL BARS			"h" HDWL BARS			
SIZE	LENGTH	NO. REQ'D	SIZE	LENGTH	NO. REQ'D	SIZE	LENGTH	Y	NO. REQ'D

OUTLET SLOPE SECTION(S)

R.C. BOX SECTION	DESIGN FILL DEPTH (FT.)	CLEAR SPAN (FT.)	CLEAR HEIGHT (FT.)	TOP SLAB THK.	BOTTOM SLAB THK	SIDE WALL THK	INTERIOR WALL THK.	OVER ALL WIDTH	OVER ALL HEIGHT	SECTION LENGTH (FT.)	TOP SLAB REINFORCING STEEL LENGTH = OW - 4" + BENDS								BOTTOM SLAB REINFORCING STEEL LENGTH = OW - 4" + BENDS							
											"a"		Bent "b"		"c"		SPACING	NO. REQ'D	"d"		Bent "b1"		"f"		SPACING	NO. REQ'D
	D	S	H	T	B	C	W	OW	OH	SL	SIZE	L	SIZE	L	SIZE	L			SIZE	L	SIZE	L	SIZE	L		

SIDE WALL REINFORCING STEEL "f0" LENGTH = OH - 4"				INTERIOR WALL REINFORCING STEEL "f1" LENGTH = OH - 4"				TOP SLAB DISTRIBUTION REINF. STEEL "g" LENGTH = SL			BOTTOM SLAB DISTRIBUTION REINF. STEEL "e" LENGTH = SL			SIDE WALL DISTRIBUTION REINF. STEEL "d1" LENGTH = SL			INTERIOR WALL DISTRIBUTION REINF. STEEL "d2" LENGTH = SL		
SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	SIZE	SPACING	NO. REQ'D	SIZE	SPACING	NO. REQ'D	SIZE	SPACING	NO. REQ'D

CLASS "S" CONCRETE	REINFORCING STEEL (GR. 60)
CU. YDS.	LBS.
TOTAL	
0.65	190

HDWL DEPTH	ADDITIONAL REINF. FOR HDWL	"h" HDWL BARS			
HD	LBS.	SIZE	Y	LENGTH	NO. REQ'D
3"	94	4	1'-0"	2'-0"	72

The required number of bars and lengths shown are for estimating purpose only.
The actual number and length required shall be determined in field.

Unless otherwise noted, all dimensions are in inches.

SHEET 2 OF 2
DETAILS OF R.C. BOX CULVERT

SEXTUPLE BARREL BOX CULVERT
STA. 8+11.70

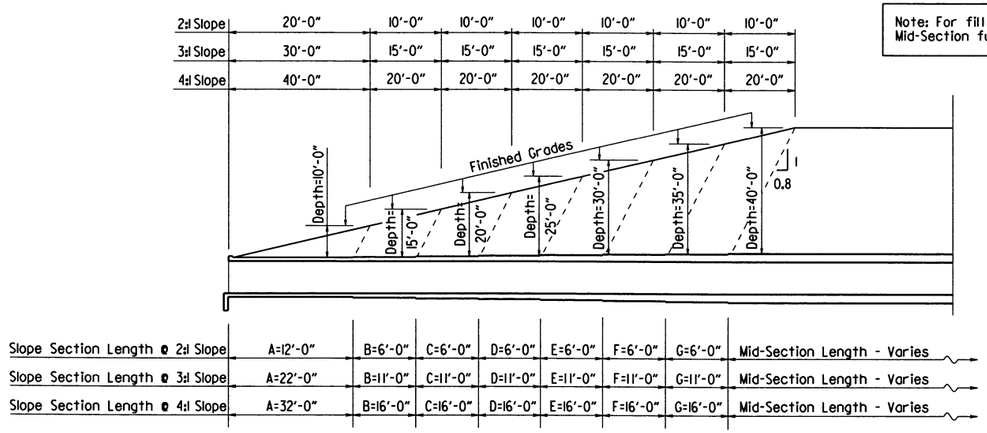
SPECIAL DETAILS

LRFD

Ver. 1.14 b090406_c4.dgn

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	23	226

① SPECIAL DETAILS

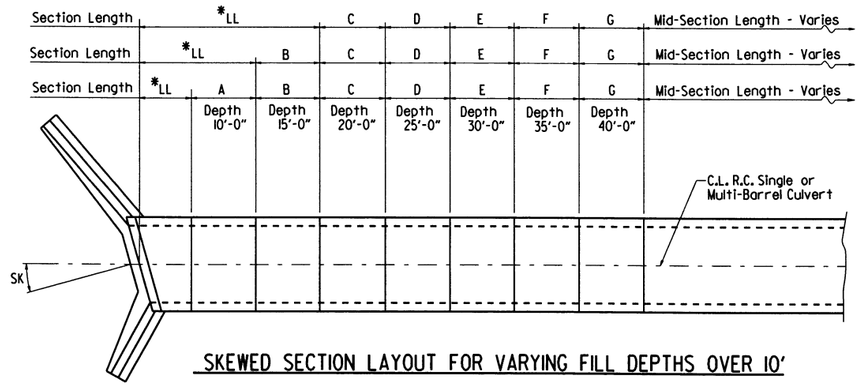


Note: For fill depths 10' and under, use Mid-Section full length of box culvert.

LONGITUDINAL SECTION LENGTH SCHEDULE FOR VARYING FILL DEPTHS OVER 10'

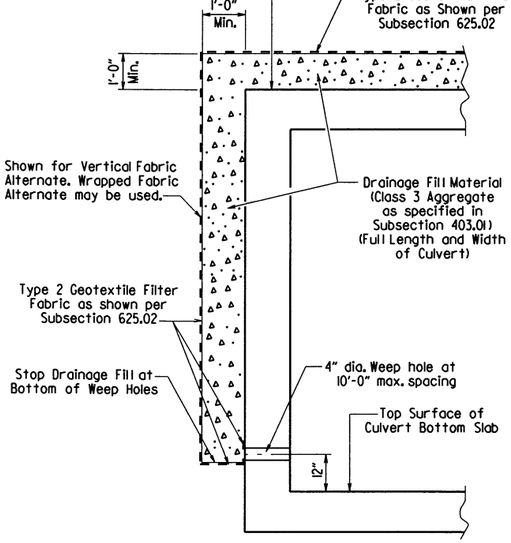
Lengths for Non-Skewed Boxes

*LL = Skewed End Section Length - See "Skewed End Section Details" Length LL varies with skew angle, overall box width and fill depth and may eliminate the need for some slope section lengths as shown.



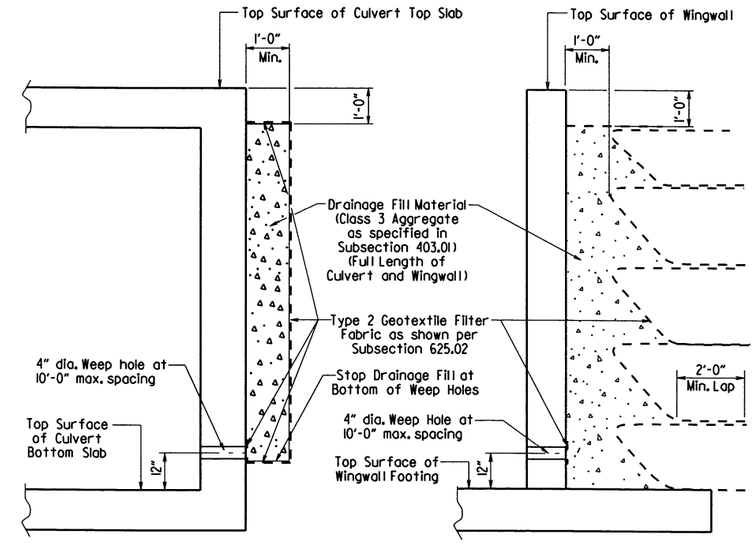
SKEWED SECTION LAYOUT FOR VARYING FILL DEPTHS OVER 10'

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-24-16
CHARLES R. ELLIS



CULVERT DRAINAGE DETAIL FOR ROCK FILL

This detail shall be used when rock fill is specified for embankment construction.



VERTICAL FABRIC ALTERNATE
(Shown for Culvert, Similar for Wingwall)

WRAPPED FABRIC ALTERNATE
(Shown for Wingwall, Similar for Culvert)

For Details of Excavation and Pay Limits, see Standard Drawing RCB-2.

WINGWALL & CULVERT DRAINAGE DETAIL

GENERAL NOTES:

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

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications, Fifth Edition (2010) with 2010 interim revisions.

LIVE LOADING: HL-93

All concrete shall be Class S with a minimum 28-day compressive strength of 3,500 psi and shall be poured in the dry. All exposed corners to have ¾" chamfers.

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

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 1/2 inch.

Excavation and backfilling shall be in accordance with the requirements of Section 801.

Membrane Waterproofing shall conform to the requirements of Section 815. Membrane Waterproofing shall be Type C and as directed by the Engineer applied to all construction joints in the top slab and the sidewalls of R.C. Box culverts and to the construction joint between wingwalls and R.C. Box culvert walls.

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 barrel components of the culvert may be constructed using continuous pours. For longer culvert construction, the Contractor may use multiple pours with transverse construction joints spaced a minimum of 50 feet apart unless superseded by stage construction or site constraints as approved by the Engineer. Construction joints between footings and walls shall be made only where shown in the Plans. Joints shall be normal to the centerline of barrel and shall be keyed. Longitudinal reinforcing shall be continuous through joints unless shown otherwise. All longitudinal construction joints shall be submitted to the Engineer for approval.

Membrane Waterproofing, Weep Holes, Geotextile Filter Fabric, and Drainage Fill Material will not be paid for directly but shall be considered subsidiary to Class S Concrete.

When the top slab of the box culvert serves as finished roadway surface, curing and finishing shall be in accordance with subsections 802.17 and 802.20 for bridge roadway surface and a tine finish shall be applied in accordance with subsection 802.19 for Class 5 Tined Bridge Roadway Surface Finish. Curing and finishing shall not be paid for directly, but shall be considered incidental to the item "Class S Concrete-Roadway". Class 1 Protective Surface Treatment shall be applied to the roadway surface and this work shall be paid for under the unit price bid for "Class 1 Protective Surface Treatment".

When precast reinforced concrete box culverts are substituted for cast in place box culverts, they shall be manufactured according to ASTM C 1577 and meet the requirements of Section 607. When the top slab of the box culvert serves as the finished roadway surface, a precast reinforced concrete box culvert substitution is not allowed.

SHEET 1 OF 4

GENERAL DETAILS OF R.C. BOX CULVERT

GENERAL NOTES &
LONGITUDINAL SECTION LENGTH SCHEDULE

SPECIAL DETAILS

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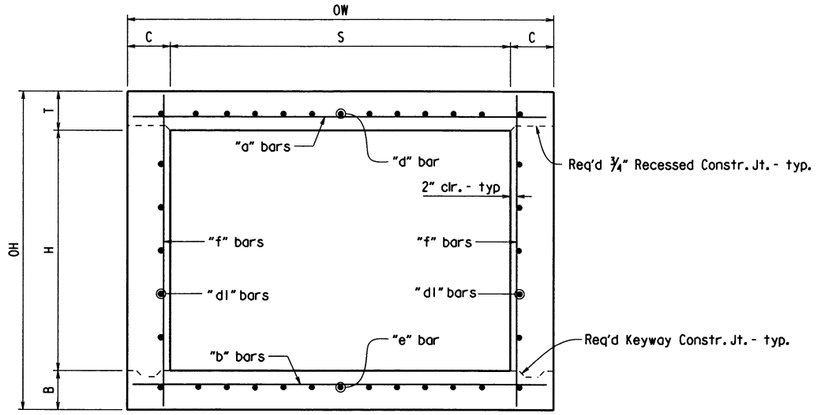
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	24	226

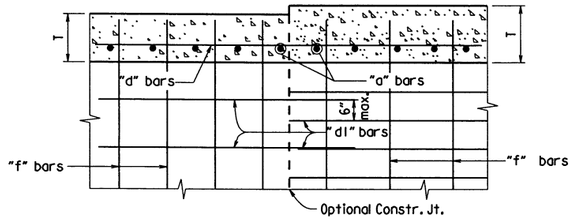
(1) SPECIAL DETAILS

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-2-16
CHARLES R. ELLIS

Note: When top slab of culvert serves as finished roadway surface, see General Notes on Sheet 1 of 4.



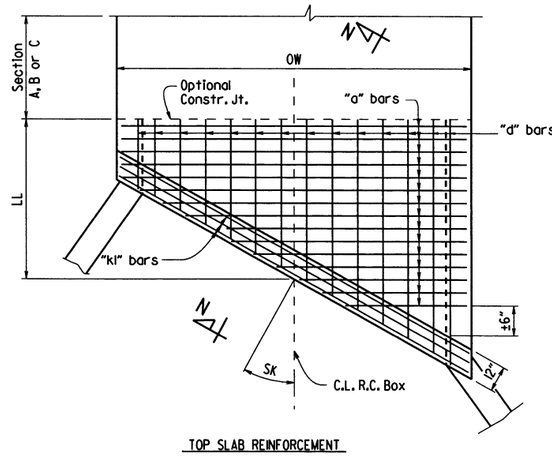
TYPICAL SECTION M-M



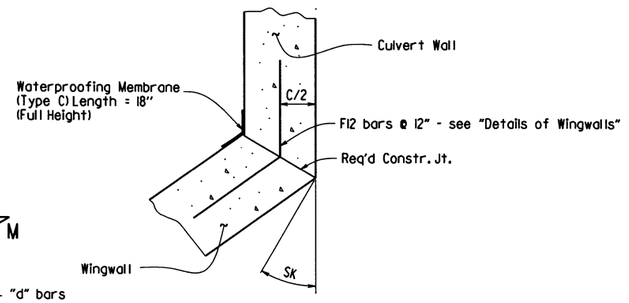
Longitudinal Bar Spacing at individual sections shall be maintained, which may result in noncontact bar laps.

LONGITUDINAL LAP DETAIL AT CHANGE IN SECTIONS

TOP SLAB SHOWN, BOTTOM SLAB SIMILAR

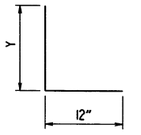


TOP SLAB REINFORCEMENT

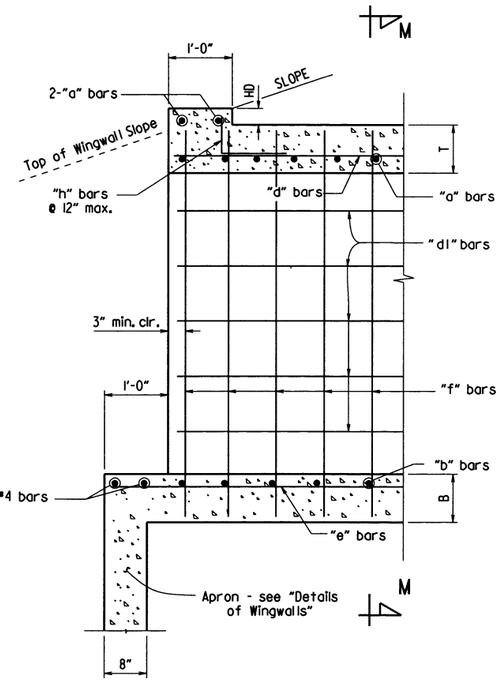


WINGWALL ATTACHMENT

See "Details of Wingwalls" for additional information and wingwall details.

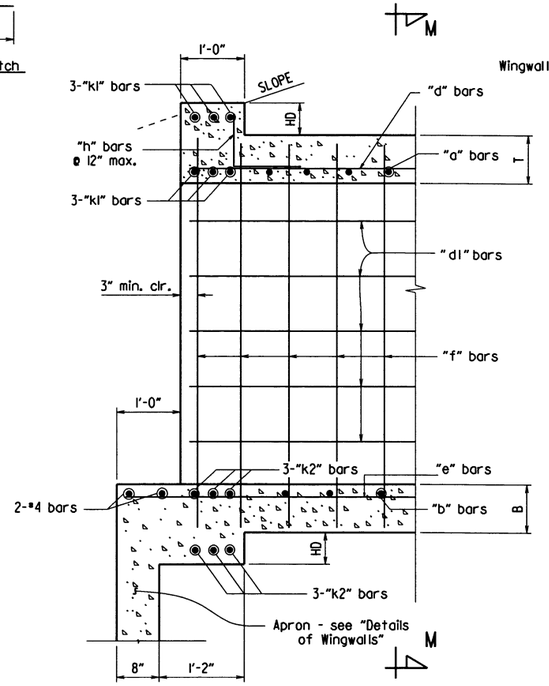


"h" bars sketch



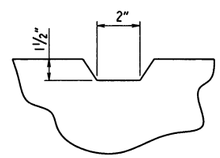
PART LONGITUDINAL SECTION

(Non-Skewed Ends)



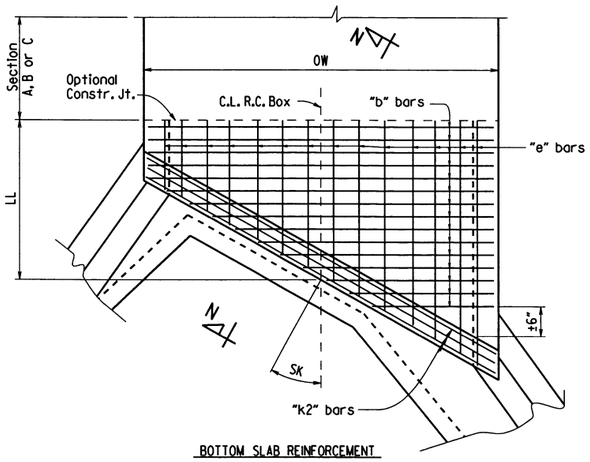
PART LONGITUDINAL SECTION N-N

(Skewed Ends)



TYPICAL KEYWAY DETAIL

(All Construction Joints)



BOTTOM SLAB REINFORCEMENT

SKEWED END SECTION DETAILS

SHEET 2 OF 4
GENERAL DETAILS OF R.C. BOX CULVERT

DETAILS OF SINGLE BARREL
R.C. BOX CULVERT

SPECIAL DETAILS

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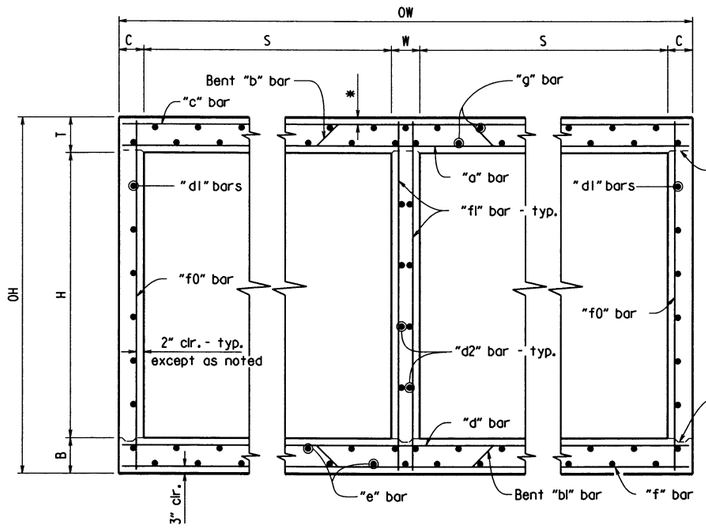
DATE REVISED	DATE FILMED	REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	25	226

SPECIAL DETAILS

*2" clr. for fill depth (D) greater than 2 ft.
2½" clr. for fill depth (D) equal to or less than 2 ft.

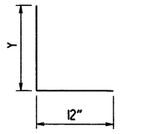
Note: When top slab of culvert serves as finished roadway surface, see General Notes on Sheet 1 of 4.



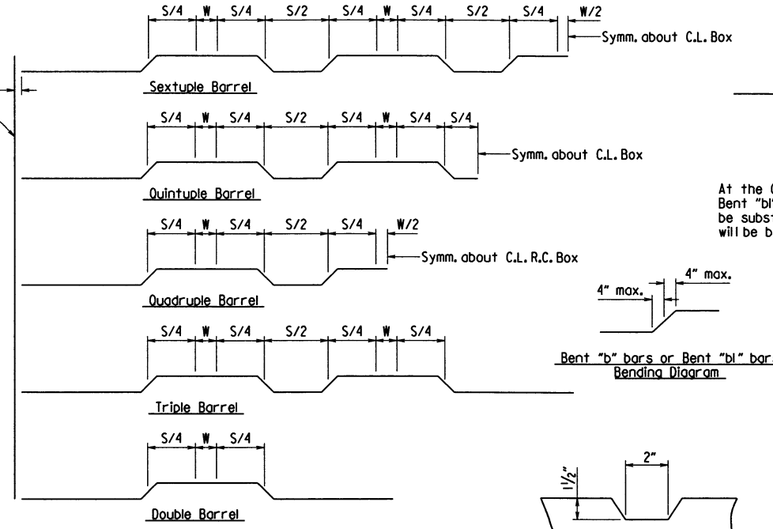
TYPICAL SECTION M-M

Top Slab
Straight "c" bars shall alternate with Bent "b" bars in top.
Straight "a" bars shall alternate with Bent "b" bars in bottom.

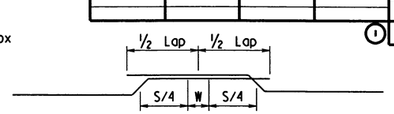
Bottom Slab
Straight "d" bars shall alternate with Bent "bl" bars in top.
Straight "f" bars shall alternate with Bent "bl" bars in bottom.



"h" bars sketch



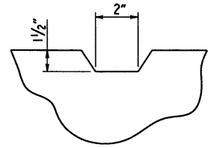
Bent "b" bars or Bent "bl" bars sketch



Lap Detail
For Bent "b" bars and Bent "bl" bars

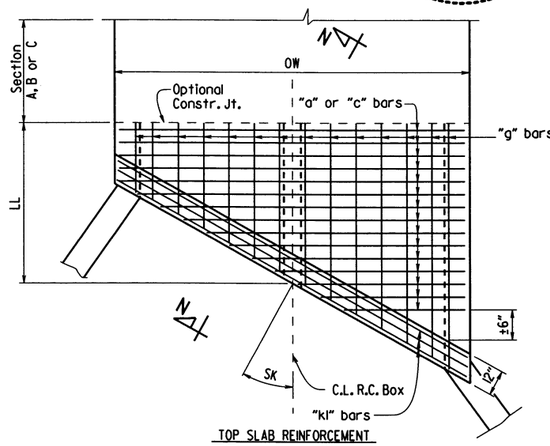
At the Contractor's option in lieu of providing Bent "b" or Bent "bl" bars, one bar top and bottom of equivalent size may be substituted for each bent bar. Payment for the reinforcing will be based on the weight of the "b" or "bl" bar.

Bent "b" bars or Bent "bl" bars Bending Diagram

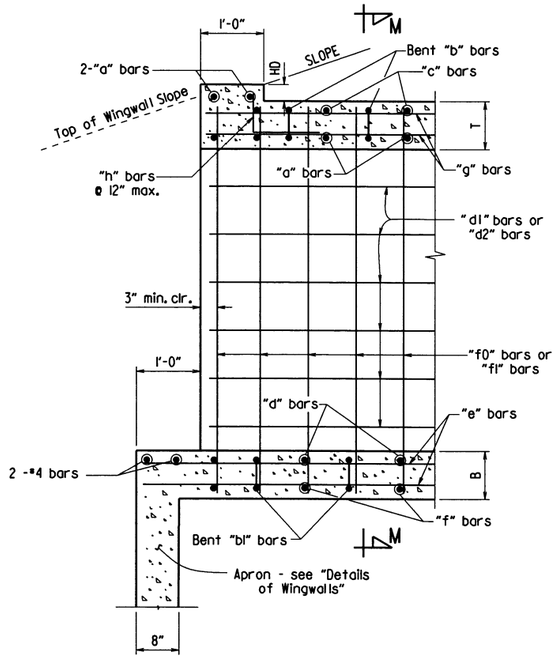


TYPICAL KEYWAY DETAIL

(All Construction Joints)

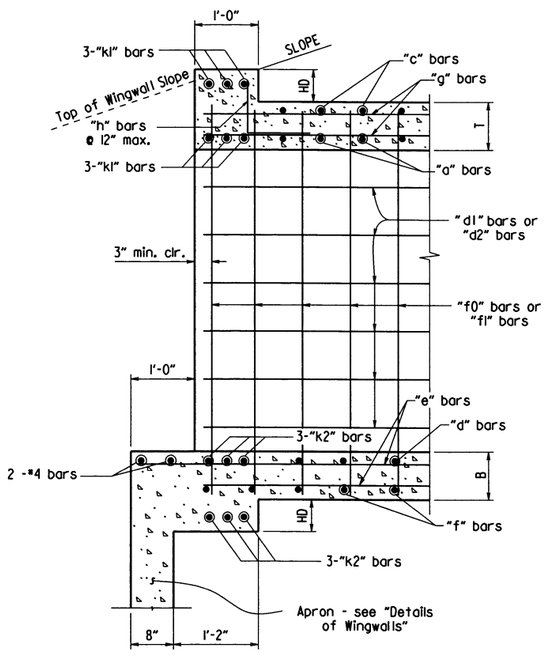


TOP SLAB REINFORCEMENT
Straight "c" bars in top.
Straight "a" bars in bottom.



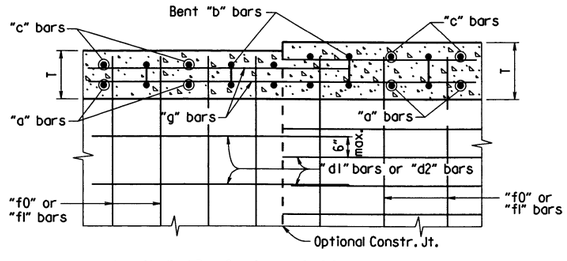
PART LONGITUDINAL SECTION

(Non-Skewed Ends)



PART LONGITUDINAL SECTION N-N

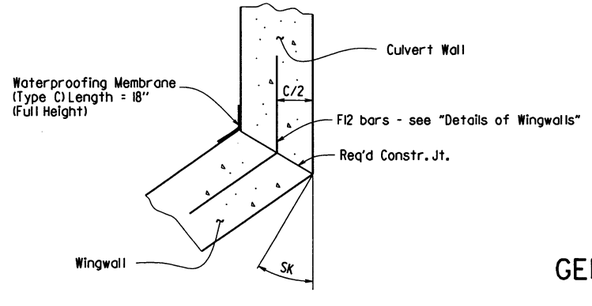
(Skewed Ends)



Longitudinal Bar Spacing at individual sections shall be maintained, which may result in noncontact bar laps.

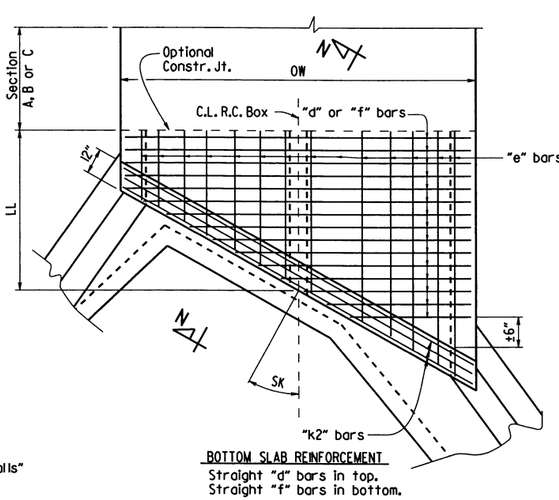
LONGITUDINAL LAP DETAIL AT CHANGE IN SECTIONS

TOP SLAB SHOWN, BOTTOM SLAB SIMILAR



WINGWALL ATTACHMENT

See "Details of Wingwalls" for additional information and wingwall details.



BOTTOM SLAB REINFORCEMENT
Straight "d" bars in top.
Straight "f" bars in bottom.

SKEWED END SECTION DETAILS

SHEET 3 OF 4
GENERAL DETAILS OF R.C. BOX CULVERT

DETAILS OF MULTI-BARREL R.C. BOX CULVERT

SPECIAL DETAILS

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-2-16
CHARLES R. ELLIS

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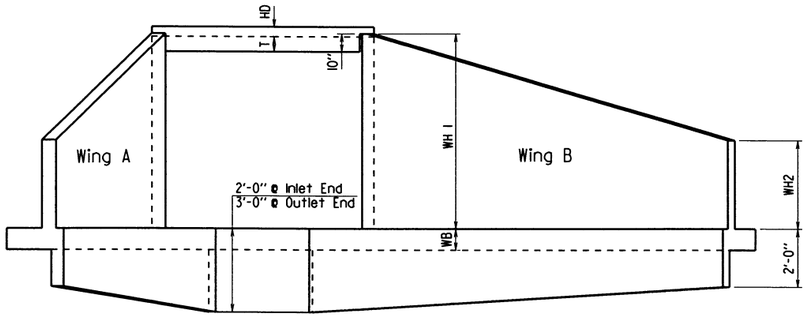
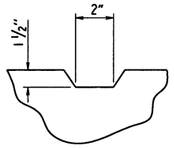
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	26	226

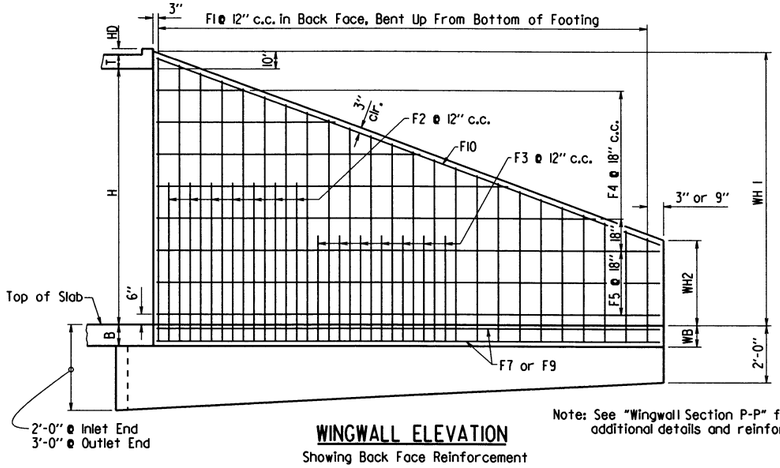
SPECIAL DETAILS



END ELEVATION
Flared Wingwalls Shown

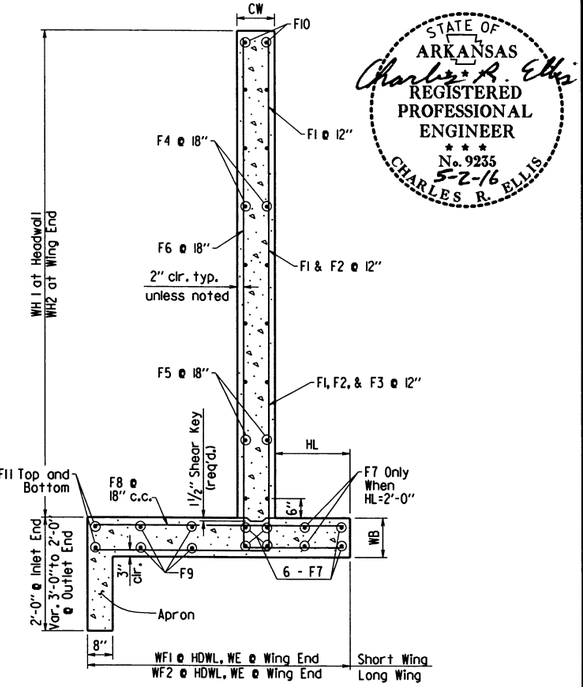


TYPICAL KEYWAY DETAIL
All Construction Joints

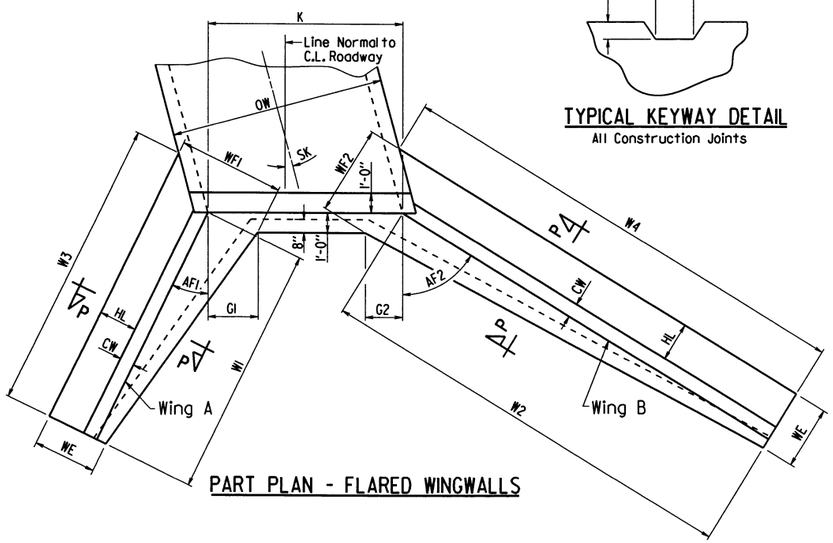


WINGWALL ELEVATION
Showing Back Face Reinforcement

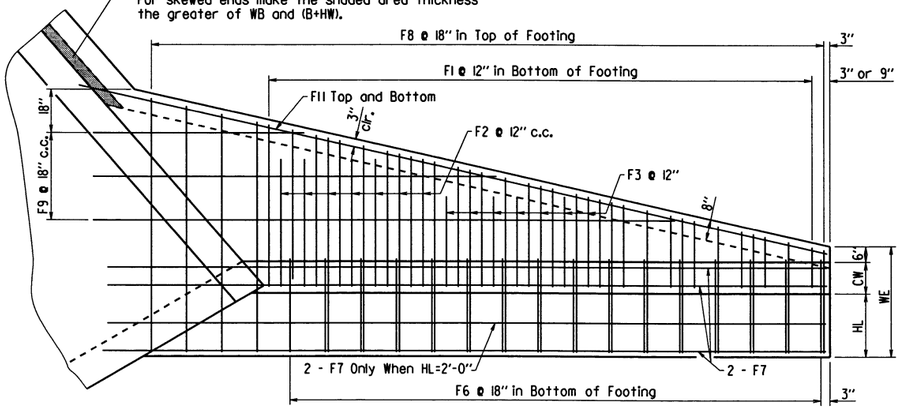
Note: See "Wingwall Section P-P" for additional details and reinforcing.



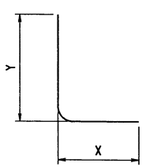
WINGWALL SECTION P-P



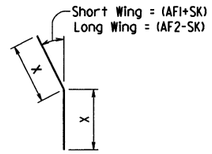
PART PLAN - FLARED WINGWALLS



PLAN - FLARED WINGWALLS
Showing Footing Reinforcement

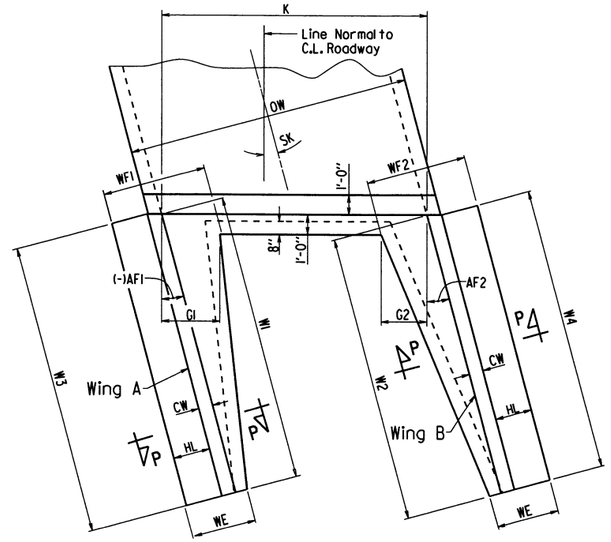


F1, F2, F3, & F6 BARS

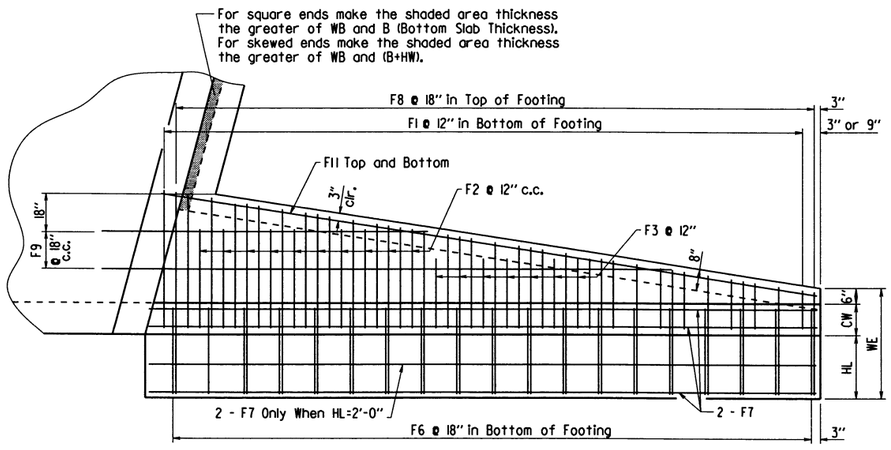


*F12 BAR

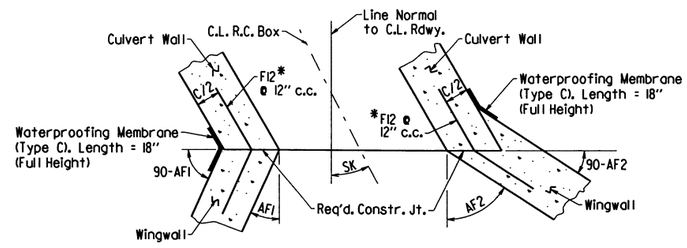
*F12 is a straight bar for parallel wingwalls



PART PLAN - PARALLEL WINGWALLS



PLAN - PARALLEL WINGWALLS
Showing Footing Reinforcement



CONSTRUCTION JOINTS
Flared Wingwalls Shown

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-2-16
CHARLES R. ELLIS

SHEET 4 OF 4
GENERAL DETAILS OF R.C. BOX CULVERT
DETAILS OF WINGWALLS
SPECIAL DETAILS

b090406_culvert.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.		090406	27	226

(2) TEMPORARY EROSION CONTROL DETAILS

REVISIONS

DATE	REVISION

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

9-7-16

LEGEND

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

(E-11) SILT FENCE ON LT.

HWY. 43:
STA. 28+86 - STA. 32+64.96 = 540 LIN. FT.

(E-7) DROP INLET SILT FENCE ON LT.

HWY. 43:
STA. 21+89 = 25 LIN. FT.
STA. 23+10 = 25 LIN. FT.
STA. 24+88 = 25 LIN. FT.
STA. 27+62 = 25 LIN. FT.
STA. 29+82 = 25 LIN. FT.
STA. 32+01 = 25 LIN. FT.

(E-7) DROP INLET SILT FENCE ON RT.

N. LINCOLN ST.:
STA. 108+55.12 = 25 LIN. FT.

(E-6) ROCK CHECKS ON RT.

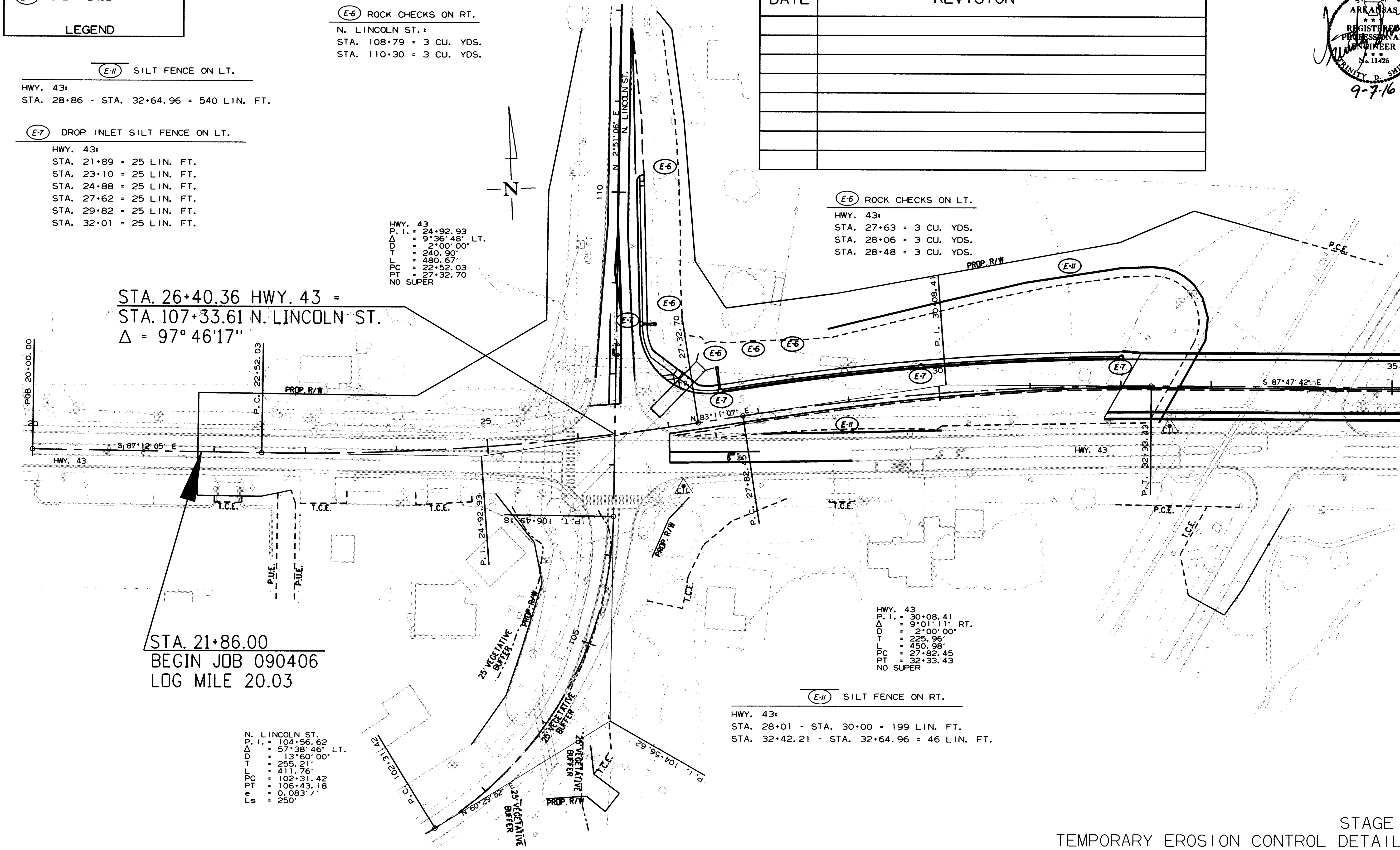
N. LINCOLN ST.:
STA. 108+79 = 3 CU. YDS.
STA. 110+30 = 3 CU. YDS.

(E-6) ROCK CHECKS ON LT.

HWY. 43:
STA. 27+63 = 3 CU. YDS.
STA. 28+06 = 3 CU. YDS.
STA. 28+48 = 3 CU. YDS.

(E-11) SILT FENCE ON RT.

HWY. 43:
STA. 28+01 - STA. 30+00 = 199 LIN. FT.
STA. 32+42.21 - STA. 32+64.96 = 46 LIN. FT.



STAGE 1
TEMPORARY EROSION CONTROL DETAILS

9/7/2016

R090406.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.		090406	28	226

(2) TEMPORARY EROSION CONTROL DETAILS

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

LEGEND

REVISIONS

DATE	REVISION

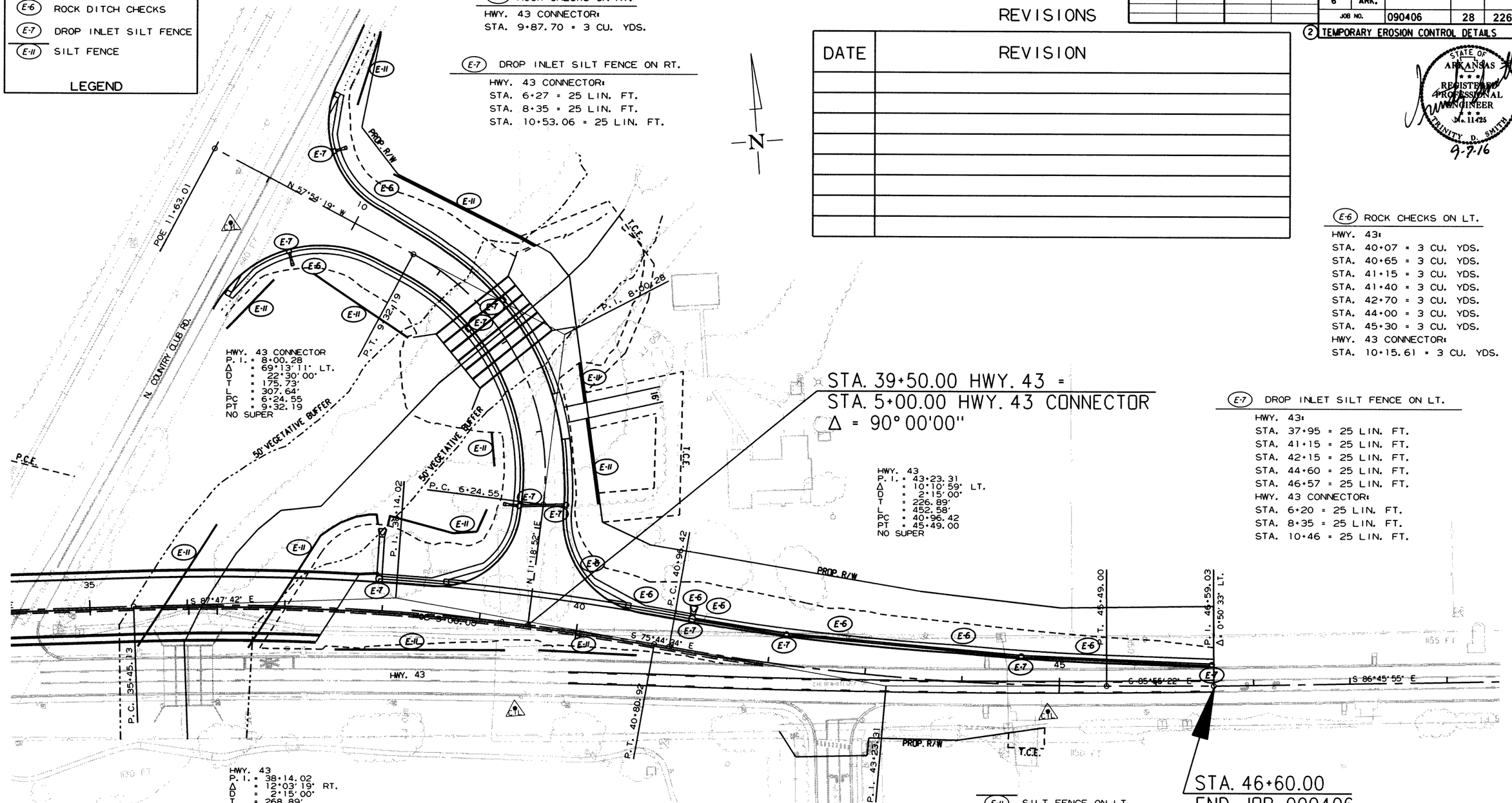
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-7-16

(E-6) ROCK CHECKS ON RT.
HWY. 43 CONNECTOR:
STA. 9+87.70 = 3 CU. YDS.

(E-7) DROP INLET SILT FENCE ON RT.
HWY. 43 CONNECTOR:
STA. 6+27 = 25 LIN. FT.
STA. 8+35 = 25 LIN. FT.
STA. 10+53.06 = 25 LIN. FT.

(E-6) ROCK CHECKS ON LT.
HWY. 43:
STA. 40+07 = 3 CU. YDS.
STA. 40+65 = 3 CU. YDS.
STA. 41+15 = 3 CU. YDS.
STA. 41+40 = 3 CU. YDS.
STA. 42+70 = 3 CU. YDS.
STA. 44+00 = 3 CU. YDS.
STA. 45+30 = 3 CU. YDS.
HWY. 43 CONNECTOR:
STA. 10+15.61 = 3 CU. YDS.

(E-7) DROP INLET SILT FENCE ON LT.
HWY. 43:
STA. 37+95 = 25 LIN. FT.
STA. 41+15 = 25 LIN. FT.
STA. 42+15 = 25 LIN. FT.
STA. 44+60 = 25 LIN. FT.
STA. 46+57 = 25 LIN. FT.
HWY. 43 CONNECTOR:
STA. 6+20 = 25 LIN. FT.
STA. 8+35 = 25 LIN. FT.
STA. 10+46 = 25 LIN. FT.



(E-11) SILT FENCE ON RT.
HWY. 43:
STA. 35+47.87 - STA. 35+76.39 = 50 LIN. FT.
STA. 36+62.88 - STA. 36+90.27 = 52 LIN. FT
STA. 37+73.44 - STA. 39+29.86 = 175 LIN. FT.
STA. 39+63.93 - STA. 40+65.21 = 101 LIN. FT.
HWY. 43 CONNECTOR:
STA. 6+30.61 - STA. 7+04.26 = 89 LIN. FT.
STA. 7+17.71 - STA. 7+51.56 = 42 LIN. FT.
STA. 8+51 - STA. 9+88.95 = 162 LIN. FT.
STA. 10+75.73 - STA. 10+69.27 = 80 LIN. FT.

(E-11) SILT FENCE ON LT.
HWY. 43:
STA. 35+76.39 - STA. 36+30.42 = 100 LIN. FT.
STA. 36+90.27 - STA. 37+90.13 = 159 LIN. FT.
STA. 37+99.74 - STA. 38+88.08 = 102 LIN. FT.
HWY. 43 CONNECTOR:
STA. 5+88.48 - STA. 6+12.54 = 25 LIN. FT.
STA. 6+65.54 - STA. 7+09.48 = 35 LIN. FT.
STA. 8+81 - STA. 10+13.36 = 118 LIN. FT.
STA. 10+46.18 - STA. 10+56.35 = 70 LIN. FT.

9/7/2016

R090406.DGN

STAGE 1
TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	29	226

(2) TEMPORARY EROSION CONTROL DETAILS

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

LEGEND

REVISIONS

DATE	REVISION

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-7-16

(E-11) SILT FENCE ON LT.

HWY. 43:
STA. 21+86 - STA. 25+71.49 = 378 LIN. FT.

(E-7) DROP INLET SILT FENCE ON LT.

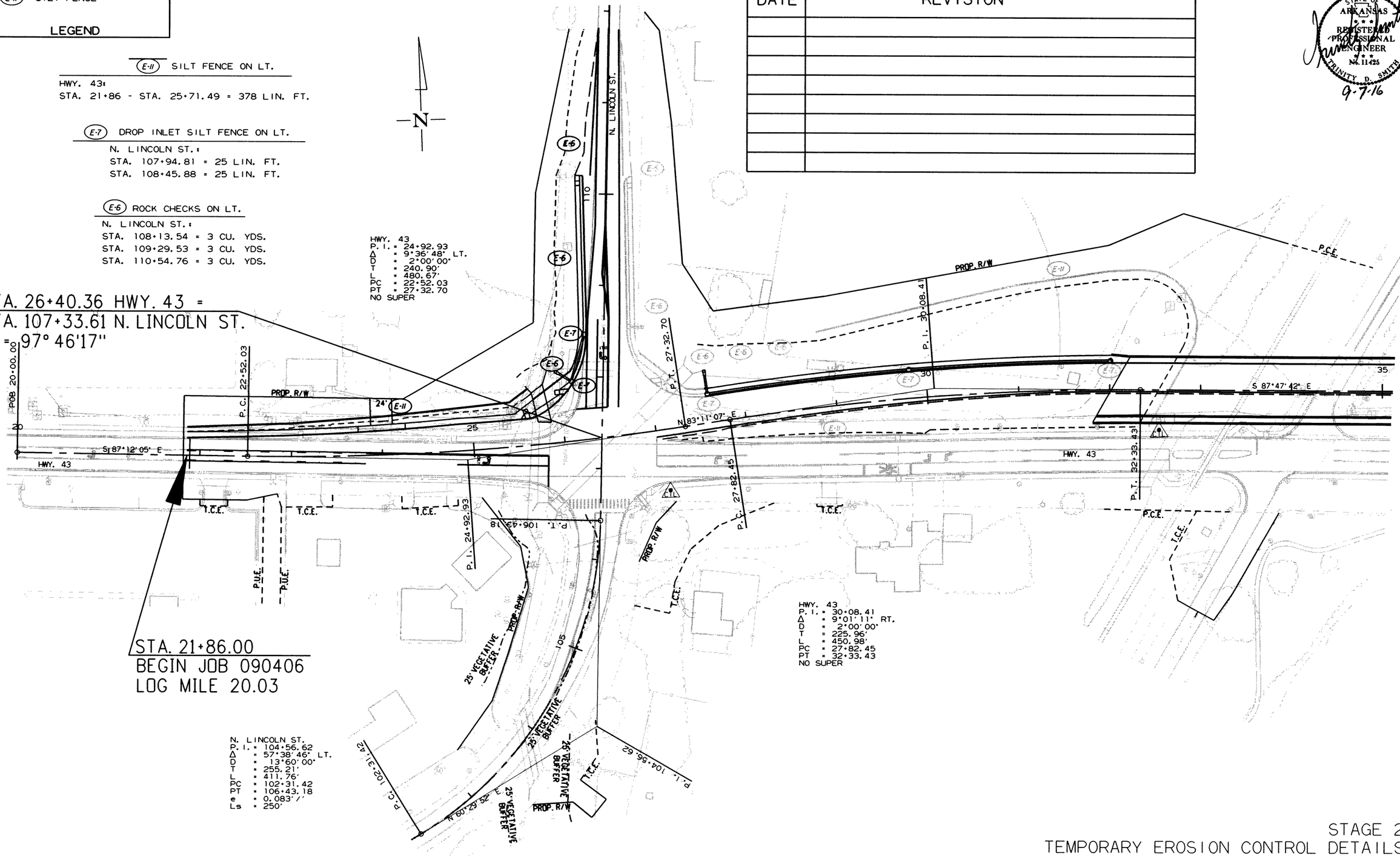
N. LINCOLN ST.:
STA. 107+94.81 = 25 LIN. FT.
STA. 108+45.88 = 25 LIN. FT.

(E-6) ROCK CHECKS ON LT.

N. LINCOLN ST.:
STA. 108+13.54 = 3 CU. YDS.
STA. 109+29.53 = 3 CU. YDS.
STA. 110+54.76 = 3 CU. YDS.

HWY. 43
P. I. = 24+92.93
Δ = 9°36'48" LT.
D = 2°00'00"
T = 240.90'
L = 480.67'
PC = 22+52.03
PT = 27+32.70
NO SUPER

STA. 26+40.36 HWY. 43 =
STA. 107+33.61 N. LINCOLN ST.
Δ = 97° 46'17"



STA. 21+86.00
BEGIN JOB 090406
LOG MILE 20.03

N. LINCOLN ST.
P. I. = 104+56.62
Δ = 57°38'46" LT.
D = 13°60'00"
T = 255.21'
L = 411.76'
PC = 102+31.42
PT = 106+43.18
e = 0.083'/'
Ls = 250'

HWY. 43
P. I. = 30+08.41
Δ = 9°01'11" RT.
D = 2°00'00"
T = 225.96'
L = 450.98'
PC = 27+82.45
PT = 32+33.43
NO SUPER

9/7/2016

R090406.DGN

STAGE 2
TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
10/14/16				6	ARK.			
				JOB NO.		090406	30	226

(2) TEMPORARY EROSION CONTROL DETAILS

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

LEGEND

(E-11) SILT FENCE ON RT.

N. LINCOLN ST.:
STA. 102+80 - STA. 103+78.91 = 108 LIN. FT.
STA. 104+12.85 - STA. 105+72.08 = 186 LIN. FT.
HWY. 43:
STA. 30+40.38 - STA. 32+42.21 = 247 LIN. FT.
N. COUNTRY CLUB RD.:
STA. 60+00 - STA. 61+53.01 = 153 LIN. FT.
STA. 62+62.47 - STA. 63+00 = 138 LIN. FT.

REVISIONS

DATE	REVISION

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-17-16

HWY. 43
P. I. = 24+92.93
Δ = 9°36'48" LT.
D = 2°00'00"
T = 240.90'
L = 480.67'
PC = 22+52.03
PT = 27+32.70
NO SUPER

STA. 26+40.36 HWY. 43 =
STA. 107+33.61 N. LINCOLN ST.
Δ = 97° 46'17"

STA. 21+86.00
BEGIN JOB 090406
LOG MILE 20.03

HWY. 43
P. I. = 30+08.41
Δ = 9°01'11" RT.
D = 2°00'00"
T = 225.96'
L = 450.98'
PC = 27+82.45
PT = 32+33.43
NO SUPER

(E-7) DROP INLET SILT FENCE ON RT.

N. LINCOLN ST.:
STA. 106+28.92 = 25 LIN. FT.
HWY. 43:
STA. 27+34 = 25 LIN. FT.
STA. 29+82 = 25 LIN. FT.
STA. 31+60 = 25 LIN. FT.
STA. 31+80.18 = 25 LIN. FT.

N. LINCOLN ST.
P. I. = 104+56.62
Δ = 57°38'46" LT.
D = 13°40'00"
T = 255.21'
L = 411.76'
PC = 102+31.42
PT = 106+43.18
e = 0.083'/'
Ls = 250'

(E-6) ROCK CHECKS ON RT.

N. LINCOLN ST.:
STA. 103+68 = 3 CU. YDS.
STA. 106+16.90 = 3 CU. YDS.
STA. 106+50.11 = 3 CU. YDS.
HWY. 43:
STA. 27+21.98 = 3 CU. YDS.
STA. 27+46.30 = 3 CU. YDS.
STA. 27+71.21 = 3 CU. YDS.
STA. 32+40 = 3 CU. YDS.

(E-11) SILT FENCE ON LT.

N. COUNTRY CLUB RD.:
STA. 62+31.93 - STA. 63+00 = 168 LIN. FT.

(E-6) ROCK CHECKS ON LT.

N. COUNTRY CLUB RD:
STA. 60+46 = 3 CU. YDS.
STA. 61+40 = 3 CU. YDS.

STAGE 3
TEMPORARY EROSION CONTROL DETAILS

10/14/2016

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	31	226

(2) TEMPORARY EROSION CONTROL DETAILS

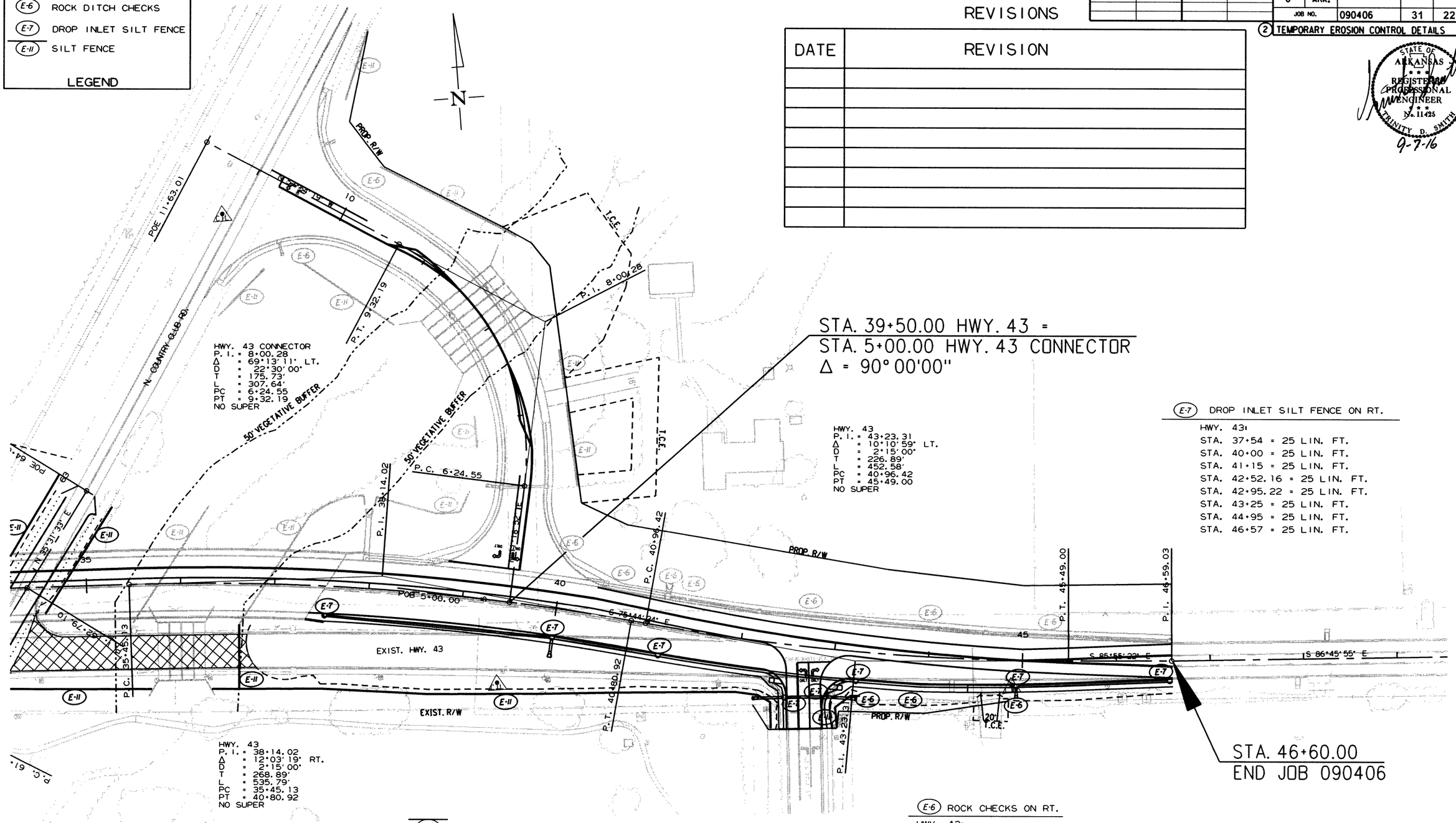
REVISIONS

DATE	REVISION

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-7-16

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

LEGEND



(E-7) DROP INLET SILT FENCE ON RT.

HWY. 43:
STA. 37+54 = 25 LIN. FT.
STA. 40+00 = 25 LIN. FT.
STA. 41+15 = 25 LIN. FT.
STA. 42+52.16 = 25 LIN. FT.
STA. 42+95.22 = 25 LIN. FT.
STA. 43+25 = 25 LIN. FT.
STA. 44+95 = 25 LIN. FT.
STA. 46+57 = 25 LIN. FT.

(E-11) SILT FENCE ON RT.

HWY. 43:
STA. 34+07.15 - STA. 35+66.81 = 159 LIN. FT.
STA. 36+33.93 - STA. 42+42.53 = 692 LIN. FT.
STA. 43+09.86 - STA. 43+30.92 = 53 LIN. FT.

(E-6) ROCK CHECKS ON RT.

HWY. 43:
STA. 43+30 = 3 CU. YDS.
STA. 43+83 = 3 CU. YDS.
STA. 44+94 = 3 CU. YDS.

9/7/2016

R090406.DGN

STAGE 3
TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
10/14/16				6	ARK.			
				JOB NO.		090406	32	226

(2) TEMPORARY EROSION CONTROL DETAILS

REVISIONS

DATE	REVISION

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-17-16

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

LEGEND

(E-11) SILT FENCE ON RT.

HWY. 43:
STA. 21+90 - STA. 22+06 = 16 LIN. FT.
STA. 22+26 - STA. 22+45 = 19 LIN. FT.
STA. 22+80 - STA. 22+96 = 16 LIN. FT.
STA. 23+30 - STA. 24+11 = 81 LIN. FT.
STA. 24+23 - STA. 24+32 = 9 LIN. FT.
STA. 24+65 - STA. 24+80 = 15 LIN. FT.

(E-7) DROP INLET SILT FENCE ON RT.

HWY. 43:
STA. 21+89 = 25 LIN. FT.
STA. 22+60 = 25 LIN. FT.
STA. 24+15 = 25 LIN. FT.
STA. 24+88 = 25 LIN. FT.

(E-6) ROCK CHECKS ON RT.

HWY. 43:
STA. 21+89 = 3 CU. YDS.
STA. 22+60 = 3 CU. YDS.
STA. 24+15 = 3 CU. YDS.
STA. 25+07 = 3 CU. YDS.
STA. 25+38 = 3 CU. YDS.

STA. 26+40.36 HWY. 43 =
STA. 107+33.61 N. LINCOLN ST.
Δ = 97° 46'17"

STA. 21+86.00
BEGIN JOB 090406
LOG MILE 20.03

(E-6) ROCK CHECKS ON LT.

N. LINCOLN ST.:
STA. 102+95 = 3 CU. YDS.
STA. 104+70 = 3 CU. YDS.
STA. 104+85 = 3 CU. YDS.
STA. 105+02 = 3 CU. YDS.

(E-7) DROP INLET SILT FENCE ON LT.

N. LINCOLN ST.:
STA. 104+66 = 25 LIN. FT.
STA. 105+25 = 25 LIN. FT.
STA. 106+10.33 = 25 LIN. FT.

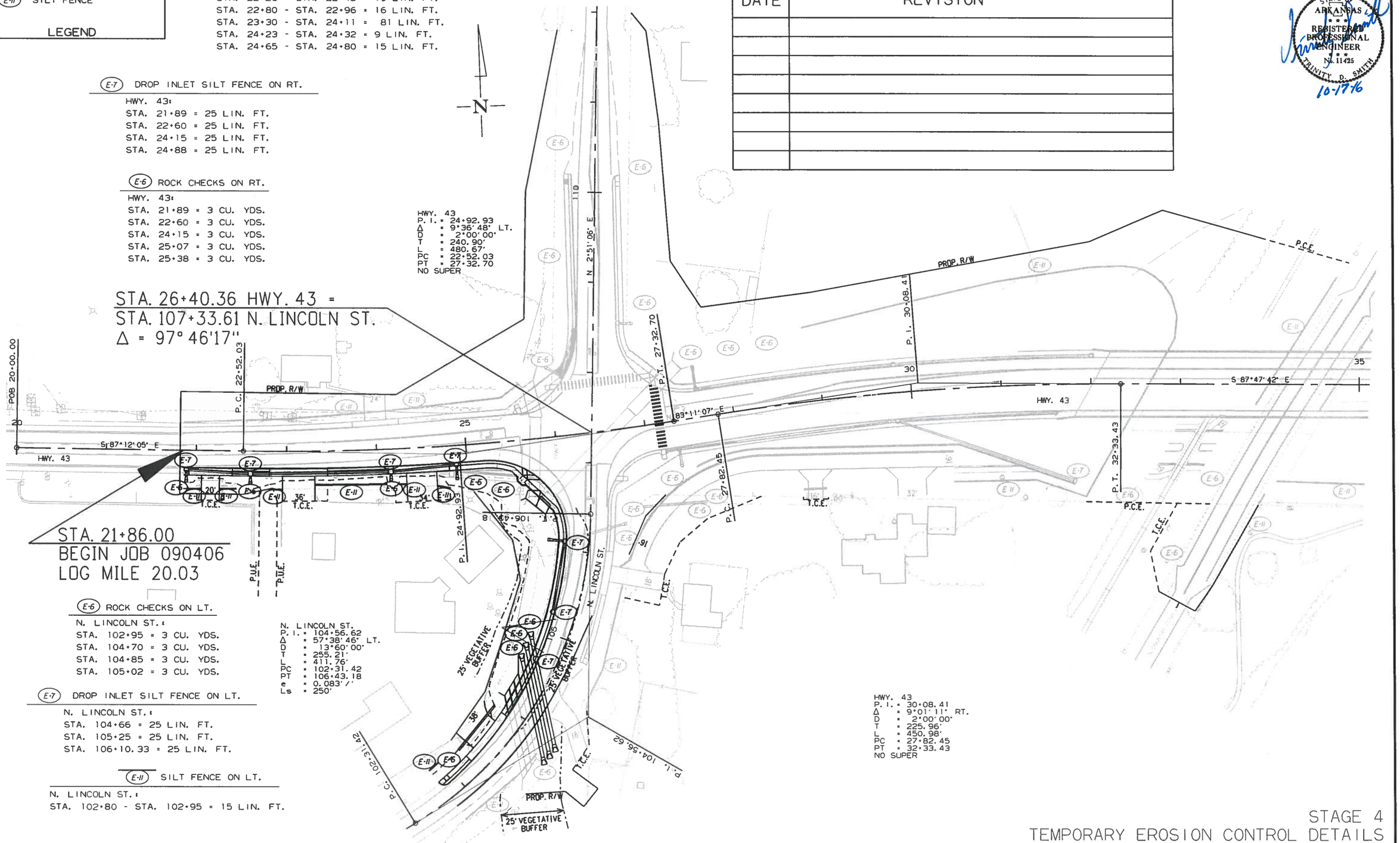
(E-11) SILT FENCE ON LT.

N. LINCOLN ST.:
STA. 102+80 - STA. 102+95 = 15 LIN. FT.

HWY. 43
P. I. = 24+92.93
Δ = 9°36'48" LT.
D = 2°00'00"
T = 240.90'
L = 480.67'
PC = 22+52.03
PT = 27+32.70
NO SUPER

N. LINCOLN ST.
P. I. = 104+56.62
Δ = 57°38'46" LT.
D = 13°60'00"
T = 255.21'
L = 411.76'
PC = 102+31.42
PT = 106+43.18
e = 0.083'/'
Ls = 250'

HWY. 43
P. I. = 30+08.41
Δ = 9°01'11" RT.
D = 2°00'00"
T = 225.96'
L = 450.98'
PC = 27+82.45
PT = 32+33.43
NO SUPER



STAGE 4
TEMPORARY EROSION CONTROL DETAILS

10/14/2016

RD090406.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
10/14/16				6	ARK.			
				JOB NO.		090406	33	226

(2) TEMPORARY EROSION CONTROL DETAILS

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

LEGEND

(E-11) SILT FENCE ON LT.

HWY. 43:
STA. 21+86 - STA. 23+00 = 114 LIN. FT.
STA. 23+26 - STA. 23+88 = 62 LIN. FT.
STA. 24+12 - STA. 24+26 = 14 LIN. FT.

(E-7) DROP INLET SILT FENCE ON LT.

HWY. 43:
STA. 21+89 = 25 LIN. FT.
STA. 23+10 = 25 LIN. FT.
STA. 24+88 = 25 LIN. FT.

(E-6) ROCK CHECKS ON LT.

HWY. 43:
STA. 23+10 = 3 CU. YDS.
STA. 24+60 = 3 CU. YDS.
STA. 24+94 = 3 CU. YDS.
STA. 25+60 = 3 CU. YDS.

REVISIONS

DATE	REVISION

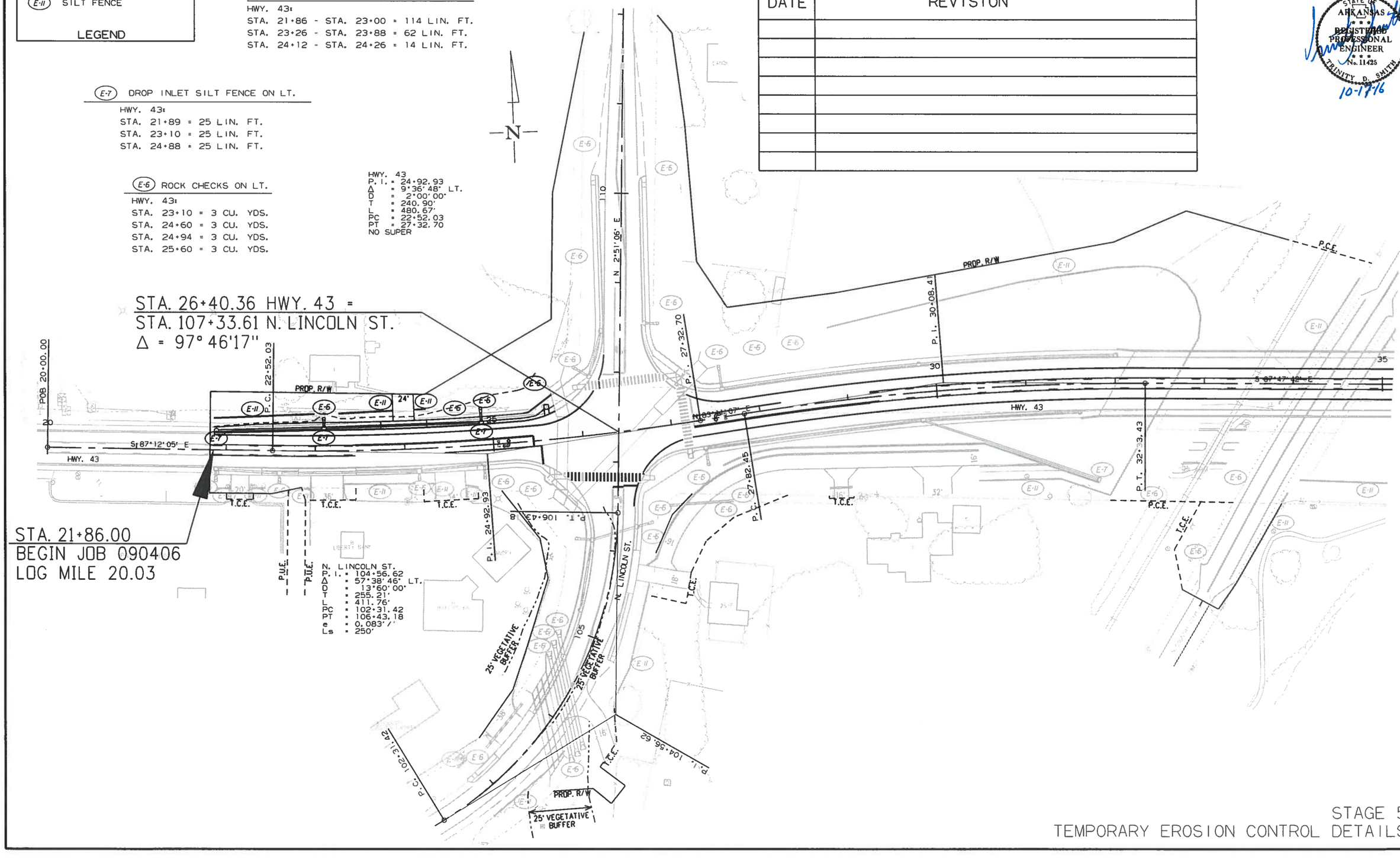
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-17-16

HWY. 43
P. I. = 24+92.93
Δ = 9°36'48" LT.
D = 2°00'00"
T = 240.90'
L = 480.67'
PC = 22+52.03
PT = 27+32.70
NO SUPER

STA. 26+40.36 HWY. 43 =
STA. 107+33.61 N. LINCOLN ST.
Δ = 97° 46'17"

STA. 21+86.00
BEGIN JOB 090406
LOG MILE 20.03

N. LINCOLN ST.
P. I. = 104+56.62
Δ = 57°38'46" LT.
D = 13°60'00"
T = 255.21'
L = 411.76'
PC = 102+31.42
PT = 106+43.18
e = 0.083'/'
Ls = 250'



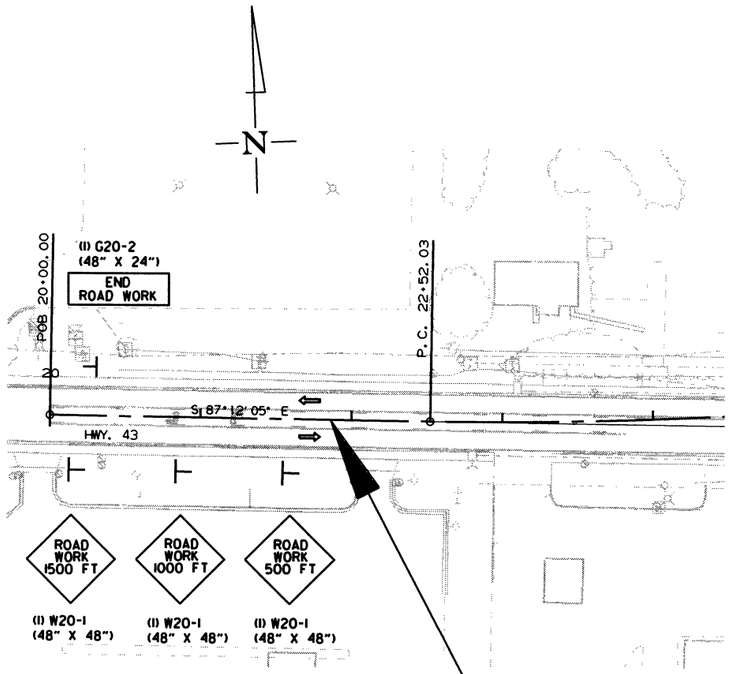
STAGE 5
TEMPORARY EROSION CONTROL DETAILS

10/14/2016
R090406.DGN

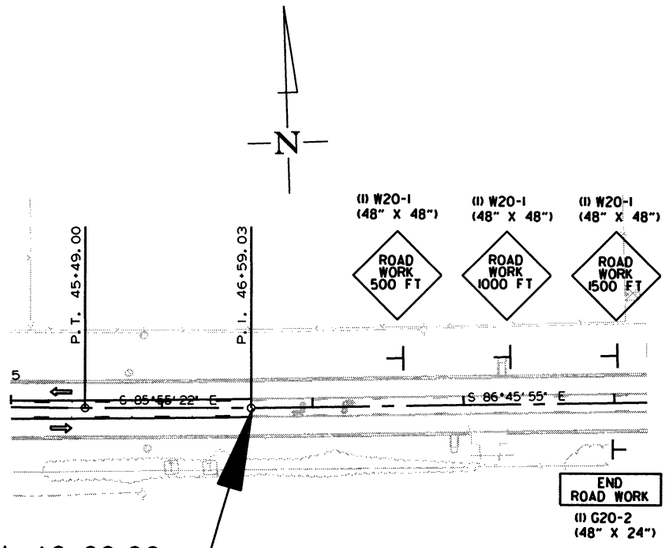
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	34	226

(2) MAINTENANCE OF TRAFFIC DETAILS

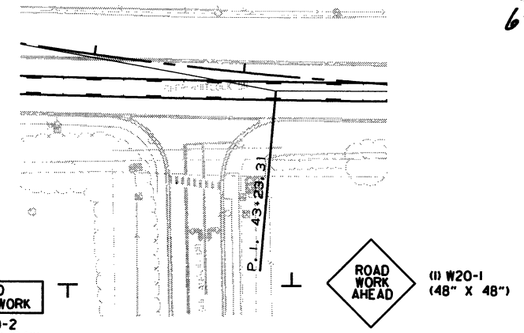
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
6-9-16



STA. 21+86.00
BEGIN JOB 090406
LOG MILE 20.03



STA. 46+60.00
END JOB 090406



TO BE USED AT CITY STREET TURNOUTS
(3 LOCATIONS)

- SEQUENCE OF CONSTRUCTION

STAGE 1:
CONSTRUCT BRIDGE
CONSTRUCT LEFT SIDE OF HWY. 43
STA. 26+40.36 - STA. 46+60.00
CONSTRUCT HWY. 43 CONNECTOR
CONSTRUCT TEMPORARY RETAINING WALL ON HWY. 43
STA. 30+00.00 - STA. 32+27.00
STA. 37+44.00 - STA. 37+84.00
CONSTRUCT R.C. BOX CULVERT ON HWY. 43 CONNECTOR
STA. 8+35.00
CONSTRUCT RIGHT SIDE OF N. LINCOLN ST.
STA. 107+61.87 - STA. 111+80.00
INSTALL PRECAST BARRIER WALL
STA. 26+77.00 - 28+43.00
EXTEND R.C. BOX CULVERT ON LEFT SIDE OF HWY. 43
STA. 26+65.00

STAGE 2:
LEVELING
COMPLETE CONSTRUCTION OF BRIDGE
COMPLETE CONSTRUCTION OF LEFT SIDE OF HWY. 43
COMPLETE CONSTRUCTION OF HWY. 43 CONNECTOR
CONSTRUCT LEFT SIDE OF N. LINCOLN ST.
STA. 107+61.87 - STA. 111+80.00
CONSTRUCT TEMPORARY WIDENING ON LEFT SIDE OF HWY. 43
STA. 21+86.00 - STA. 25+77.00
RELOCATE PRECAST BARRIER WALL
STA. 25+33.00 - STA. 26+22.00
EXTEND R.C. BOX CULVERT ON LEFT SIDE OF HWY. 43
STA. 25+77.00

STAGE 3:
SHIFT TRAFFIC TO LEFT SIDE
CLOSE N. COUNTRY CLUB RD.
CONSTRUCT ALL OF N. COUNTRY CLUB RD.
STA. 60+10.00 - STA. 64+00.00
CONSTRUCT RIGHT SIDE OF HWY. 43
STA. 26+50.00 - STA. 46+60.00
CONSTRUCT RETAINING WALL ON RIGHT SIDE OF HWY. 43
CONSTRUCT RIGHT SIDE OF N. LINCOLN ST.
STA. 102+80.00 - 107+00.00
RELOCATE & INSTALL PRECAST BARRIER WALL
STA. 22+37.00 - STA. 41+50.00

STAGE 4:
OPEN N. COUNTRY CLUB RD.
CONSTRUCT RIGHT SIDE OF HWY. 43
STA. 21+86.00 - STA. 26+25.00
CONSTRUCT LEFT SIDE OF N. LINCOLN ST.
STA. 102+80.00 - STA. 107+00.00
RELOCATE PRECAST BARRIER WALL
STA. 25+12.00 - STA. 26+03.00 (HWY. 43)
STA. 106+96.00 - STA. 104+76.00 (N. LINCOLN ST.)
EXTEND R.C. BOX CULVERT ON RIGHT SIDE OF HWY. 43
STA. 25+77.00
EXTEND R.C. BOX CULVERT ON LEFT SIDE OF N. LINCOLN ST.
STA. 104+10.00

STAGE 5:
SHIFT TRAFFIC
REMOVE TEMPORARY WIDENING ON LEFT SIDE OF HWY. 43
CONSTRUCT LEFT SIDE OF HWY. 43
STA. 21+86.00 - STA. 25+77.00

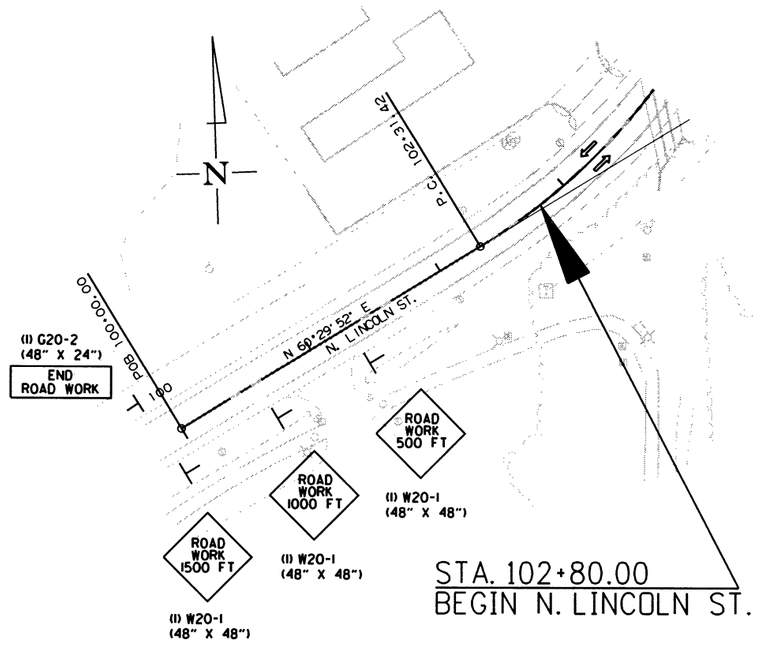
STAGE 6:
PLACE FINAL 2" OF SURFACE COURSE
INSTALL PERMANENT PAVEMENT MARKINGS

- REFER TO TRAFFIC SIGNAL PLANS FOR STAGING OF SIGNALS DURING MAINTENANCE OF TRAFFIC

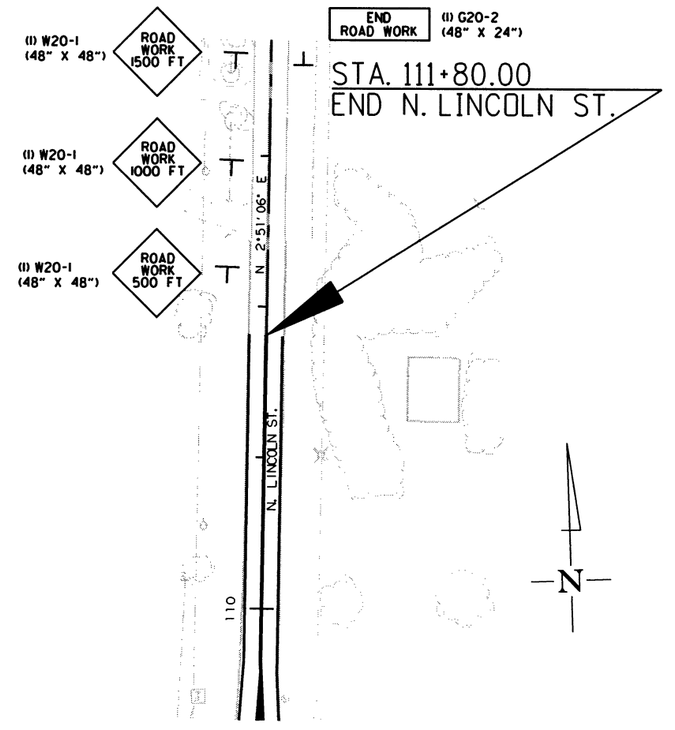
(4) R4-1
(24" X 30")
DO NOT PASS

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

TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER



STA. 102+80.00
BEGIN N. LINCOLN ST.



ALL STAGES
MAINTENANCE OF TRAFFIC DETAILS

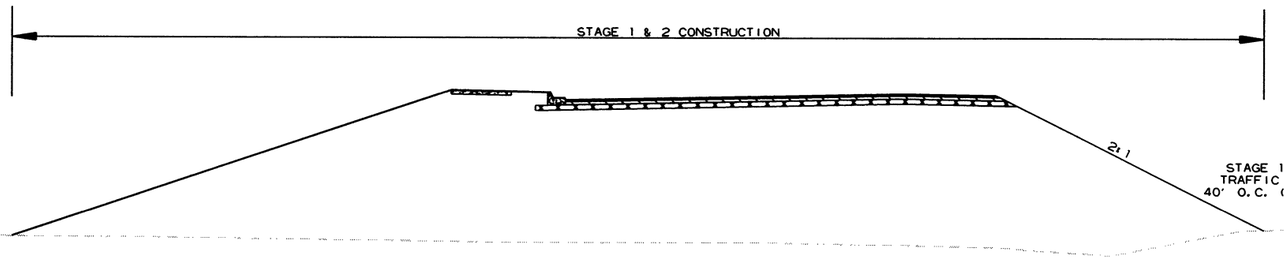
6/8/2016

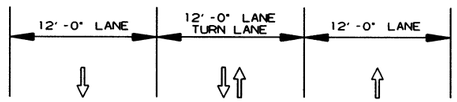
R090406.DGN

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.		090406	35	226

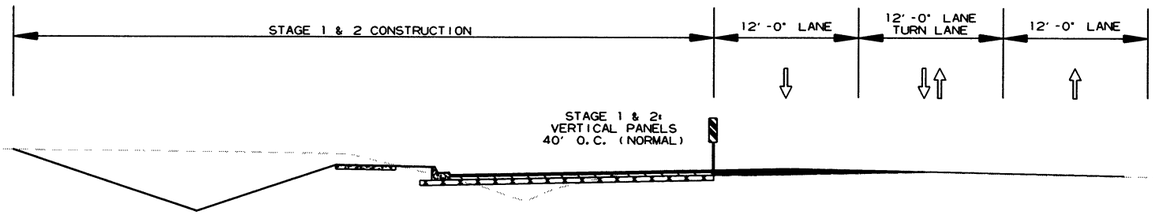
(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
6-9-16

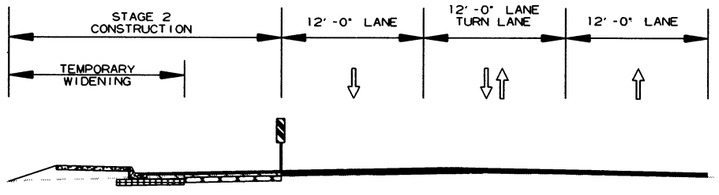




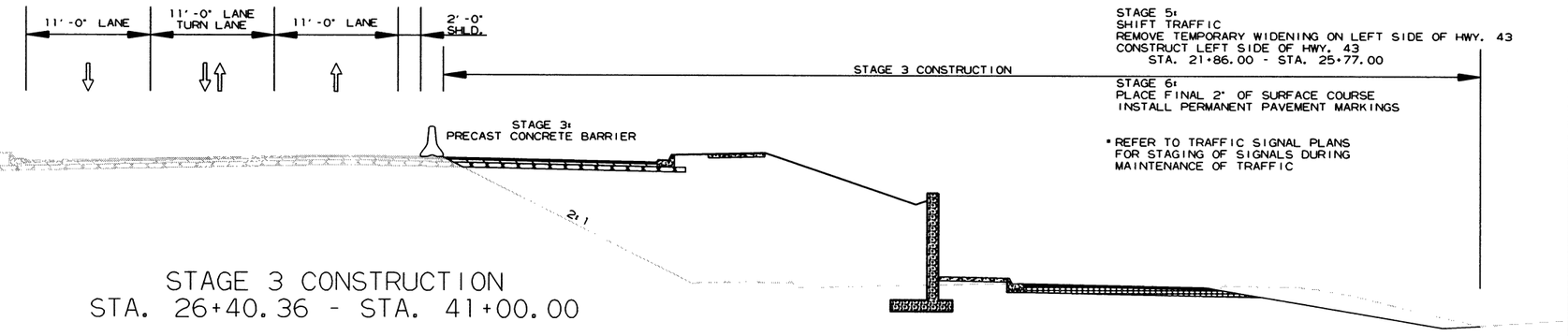
STAGE 1 & 2 CONSTRUCTION
STA. 26+40.36 - STA. 41+00.00



STAGE 1 & 2 CONSTRUCTION
STA. 41+00.00 - STA. 46+60.00



STAGE 2 CONSTRUCTION
STA. 21+86.00 - 26+40.36



STAGE 3 CONSTRUCTION
STA. 26+40.36 - STA. 41+00.00

* SEQUENCE OF CONSTRUCTION

STAGE 1:
CONSTRUCT BRIDGE
CONSTRUCT LEFT SIDE OF HWY. 43
STA. 25+40.36 - STA. 46+60.00
CONSTRUCT HWY. 43 CONNECTOR
CONSTRUCT TEMPORARY RETAINING WALL ON HWY. 43
STA. 30+00.00 - STA. 32+27.00
STA. 37+44.00 - STA. 37+84.00
CONSTRUCT R.C. BOX CULVERT ON HWY. 43 CONNECTOR
STA. 8+35.00
CONSTRUCT RIGHT SIDE OF N. LINCOLN ST.
STA. 107+61.87 - STA. 111+80.00
INSTALL PRECAST BARRIER WALL
STA. 26+77.00 - 28+43.00
EXTEND R.C. BOX CULVERT ON LEFT SIDE OF HWY. 43
STA. 26+65.00

STAGE 2:
LEVELING
COMPLETE CONSTRUCTION OF BRIDGE
COMPLETE CONSTRUCTION OF LEFT SIDE OF HWY. 43
COMPLETE CONSTRUCTION OF HWY. 43 CONNECTOR
CONSTRUCT LEFT SIDE OF N. LINCOLN ST.
STA. 107+61.87 - STA. 111+80.00
CONSTRUCT TEMPORARY WIDENING ON LEFT SIDE OF HWY. 43
STA. 21+86.00 - STA. 25+77.00
RELOCATE PRECAST BARRIER WALL
STA. 25+33.00 - STA. 26+22.00
EXTEND R.C. BOX CULVERT ON LEFT SIDE OF HWY. 43
STA. 25+77.00

STAGE 3:
SHIFT TRAFFIC TO LEFT SIDE
CLOSE N. COUNTRY CLUB RD.
CONSTRUCT ALL OF N. COUNTRY CLUB RD.
STA. 60+10.00 - STA. 64+00.00
CONSTRUCT RIGHT SIDE OF HWY. 43
STA. 26+50.00 - STA. 46+60.00
CONSTRUCT RETAINING WALL ON RIGHT SIDE OF HWY. 43
CONSTRUCT RIGHT SIDE OF N. LINCOLN ST.
STA. 102+80.00 - 107+00.00
RELOCATE & INSTALL PRECAST BARRIER WALL
STA. 22+37.00 - STA. 41+50.00

STAGE 4:
OPEN N. COUNTRY CLUB RD.
CONSTRUCT RIGHT SIDE OF HWY. 43
STA. 21+86.00 - STA. 26+25.00
CONSTRUCT LEFT SIDE OF N. LINCOLN ST.
STA. 102+80.00 - STA. 107+00.00
RELOCATE PRECAST BARRIER WALL
STA. 25+12.00 - STA. 26+03.00 (HWY. 43)
STA. 106+96.00 - STA. 104+76.00 (N. LINCOLN ST.)
EXTEND R.C. BOX CULVERT ON RIGHT SIDE OF HWY. 43
STA. 25+77.00
EXTEND R.C. BOX CULVERT ON LEFT SIDE OF N. LINCOLN ST.
STA. 104+10.00

STAGE 5:
SHIFT TRAFFIC
REMOVE TEMPORARY WIDENING ON LEFT SIDE OF HWY. 43
CONSTRUCT LEFT SIDE OF HWY. 43
STA. 21+86.00 - STA. 25+77.00

STAGE 6:
PLACE FINAL 2" OF SURFACE COURSE
INSTALL PERMANENT PAVEMENT MARKINGS

* REFER TO TRAFFIC SIGNAL PLANS FOR STAGING OF SIGNALS DURING MAINTENANCE OF TRAFFIC

6/8/2016

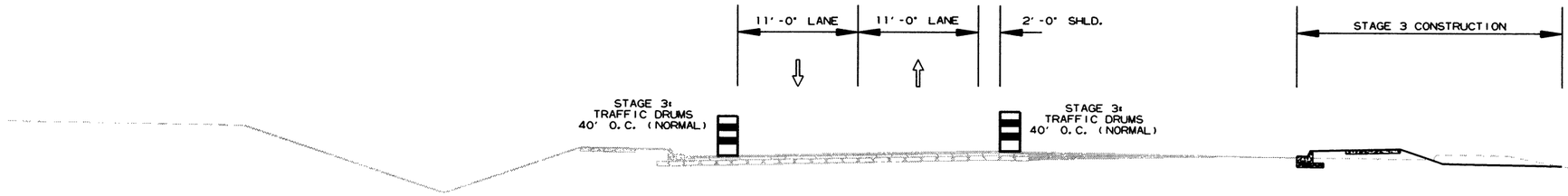
R090406.DGN

ALL STAGES
MAINTENANCE OF TRAFFIC DETAILS

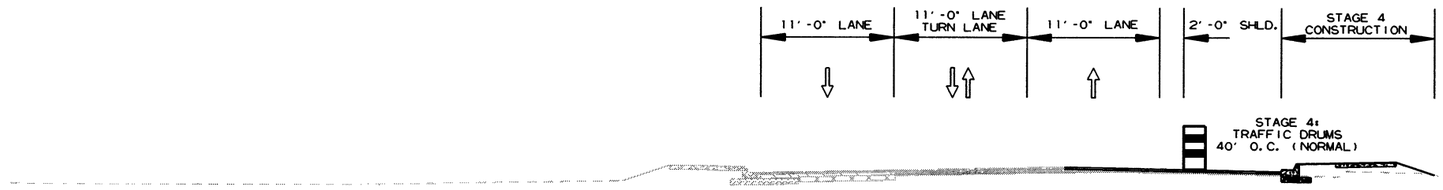
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	36	226

(2) MAINTENANCE OF TRAFFIC DETAILS

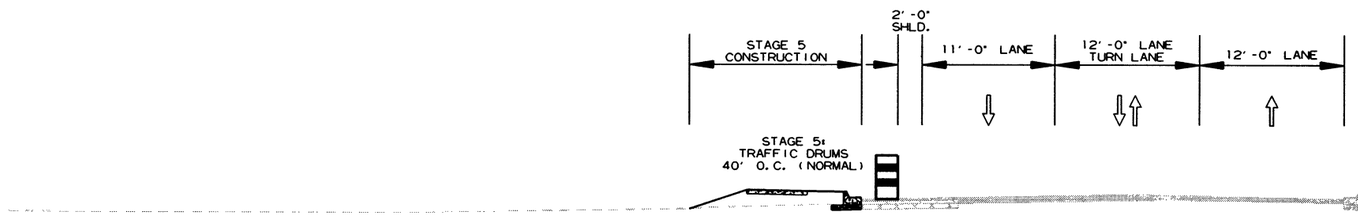
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
6-4-16



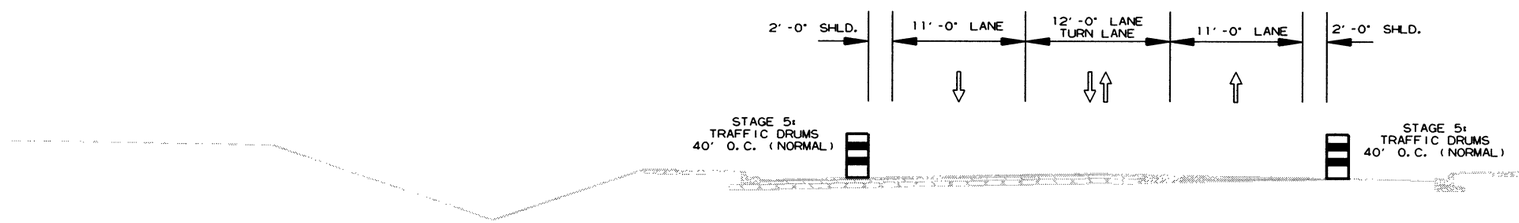
STAGE 3 CONSTRUCTION
STA. 41+00.00 - STA. 46+60.00



STAGE 4 CONSTRUCTION
STA. 21+86.00 - 26+40.36



STAGE 5 CONSTRUCTION
STA. 21+86.00 - 26+40.36



STAGE 5 CONSTRUCTION
STA. 26+40.36 - STA. 46+60.00

- SEQUENCE OF CONSTRUCTION

STAGE 1:
CONSTRUCT BRIDGE
CONSTRUCT LEFT SIDE OF HWY. 43
STA. 26+40.36 - STA. 46+60.00
CONSTRUCT HWY. 43 CONNECTOR
CONSTRUCT TEMPORARY RETAINING WALL ON HWY. 43
STA. 30+00.00 - STA. 32+27.00
STA. 37+44.00 - STA. 37+84.00
CONSTRUCT R.C. BOX CULVERT ON HWY. 43 CONNECTOR
STA. 8+35.00
CONSTRUCT RIGHT SIDE OF N. LINCOLN ST.
STA. 107+61.87 - STA. 111+80.00
INSTALL PRECAST BARRIER WALL
STA. 26+77.00 - 28+43.00
EXTEND R.C. BOX CULVERT ON LEFT SIDE OF HWY. 43
STA. 26+65.00

STAGE 2:
LEVELING
COMPLETE CONSTRUCTION OF BRIDGE
COMPLETE CONSTRUCTION OF LEFT SIDE OF HWY. 43
COMPLETE CONSTRUCTION OF HWY. 43 CONNECTOR
CONSTRUCT LEFT SIDE OF N. LINCOLN ST.
STA. 107+61.87 - STA. 111+80.00
CONSTRUCT TEMPORARY WIDENING ON LEFT SIDE OF HWY. 43
STA. 21+86.00 - STA. 25+77.00
RELOCATE PRECAST BARRIER WALL
STA. 25+33.00 - STA. 26+22.00
EXTEND R.C. BOX CULVERT ON LEFT SIDE OF HWY. 43
STA. 25+77.00

STAGE 3:
SHIFT TRAFFIC TO LEFT SIDE
CLOSE N. COUNTRY CLUB RD.
CONSTRUCT ALL OF N. COUNTRY CLUB RD.
STA. 60+10.00 - STA. 64+00.00
CONSTRUCT RIGHT SIDE OF HWY. 43
STA. 26+50.00 - STA. 46+60.00
CONSTRUCT RETAINING WALL ON RIGHT SIDE OF HWY. 43
CONSTRUCT RIGHT SIDE OF N. LINCOLN ST.
STA. 102+80.00 - 107+00.00
RELOCATE & INSTALL PRECAST BARRIER WALL
STA. 22+37.00 - STA. 41+50.00

STAGE 4:
OPEN N. COUNTRY CLUB RD.
CONSTRUCT RIGHT SIDE OF HWY. 43
STA. 21+86.00 - STA. 26+25.00
CONSTRUCT LEFT SIDE OF N. LINCOLN ST.
STA. 102+80.00 - STA. 107+00.00
RELOCATE PRECAST BARRIER WALL
STA. 25+12.00 - STA. 26+03.00 (HWY. 43)
STA. 106+96.00 - STA. 104+76.00 (N. LINCOLN ST.)
EXTEND R.C. BOX CULVERT ON RIGHT SIDE OF HWY. 43
STA. 25+77.00
EXTEND R.C. BOX CULVERT ON LEFT SIDE OF N. LINCOLN ST.
STA. 104+10.00

STAGE 5:
SHIFT TRAFFIC
REMOVE TEMPORARY WIDENING ON LEFT SIDE OF HWY. 43
CONSTRUCT LEFT SIDE OF HWY. 43
STA. 21+86.00 - STA. 25+77.00

STAGE 6:
PLACE FINAL 2" OF SURFACE COURSE
INSTALL PERMANENT PAVEMENT MARKINGS

* REFER TO TRAFFIC SIGNAL PLANS FOR STAGING OF SIGNALS DURING MAINTENANCE OF TRAFFIC

6/8/2016

R090406.DGN

ALL STAGES
MAINTENANCE OF TRAFFIC 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.		090406	37	226

(2) MAINTENANCE OF TRAFFIC DETAILS

- SEQUENCE OF CONSTRUCTION

STAGE 1:
CONSTRUCT BRIDGE
CONSTRUCT LEFT SIDE OF HWY. 43
STA. 26+40.36 - STA. 46+60.00
CONSTRUCT HWY. 43 CONNECTOR
CONSTRUCT TEMPORARY RETAINING WALL ON HWY. 43
STA. 30+00.00 - STA. 32+27.00
STA. 37+44.00 - STA. 37+84.00
CONSTRUCT R.C. BOX CULVERT ON HWY. 43 CONNECTOR
STA. 8+35.00
CONSTRUCT RIGHT SIDE OF N. LINCOLN ST.
STA. 107+61.87 - STA. 111+80.00
INSTALL PRECAST BARRIER WALL
STA. 26+77.00 - 28+43.00
EXTEND R.C. BOX CULVERT ON LEFT SIDE OF HWY. 43
STA. 26+65.00

STAGE 2:
LEVELING
COMPLETE CONSTRUCTION OF BRIDGE
COMPLETE CONSTRUCTION OF LEFT SIDE OF HWY. 43
COMPLETE CONSTRUCTION OF HWY. 43 CONNECTOR
CONSTRUCT LEFT SIDE OF N. LINCOLN ST.
STA. 107+61.87 - STA. 111+80.00
CONSTRUCT TEMPORARY WIDENING ON LEFT SIDE OF HWY. 43
STA. 21+86.00 - STA. 25+77.00
RELOCATE PRECAST BARRIER WALL
STA. 25+33.00 - STA. 26+22.00
EXTEND R.C. BOX CULVERT ON LEFT SIDE OF HWY. 43
STA. 25+77.00

STAGE 3:
SHIFT TRAFFIC TO LEFT SIDE
CLOSE N. COUNTRY CLUB RD.
CONSTRUCT ALL OF N. COUNTRY CLUB RD.
STA. 60+10.00 - STA. 64+00.00
CONSTRUCT RIGHT SIDE OF HWY. 43
STA. 26+50.00 - STA. 46+60.00
CONSTRUCT RETAINING WALL ON RIGHT SIDE OF HWY. 43
CONSTRUCT RIGHT SIDE OF N. LINCOLN ST.
STA. 102+80.00 - 107+00.00
RELOCATE & INSTALL PRECAST BARRIER WALL
STA. 22+37.00 - STA. 41+50.00

SEQUENCE OF CONSTRUCTION (CONT.)

STAGE 4:
OPEN N. COUNTRY CLUB RD.
CONSTRUCT RIGHT SIDE OF HWY. 43
STA. 21+86.00 - STA. 26+25.00
CONSTRUCT LEFT SIDE OF N. LINCOLN ST.
STA. 102+80.00 - STA. 107+00.00
RELOCATE PRECAST BARRIER WALL
STA. 25+12.00 - STA. 26+03.00 (HWY. 43)
STA. 106+96.00 - STA. 104+76.00 (N. LINCOLN ST.)
EXTEND R.C. BOX CULVERT ON RIGHT SIDE OF HWY. 43
STA. 25+77.00
EXTEND R.C. BOX CULVERT ON LEFT SIDE OF N. LINCOLN ST.
STA. 104+10.00

STAGE 5:
SHIFT TRAFFIC
REMOVE TEMPORARY WIDENING ON LEFT SIDE OF HWY. 43
CONSTRUCT LEFT SIDE OF HWY. 43
STA. 21+86.00 - STA. 25+77.00

STAGE 6:
PLACE FINAL 2" OF SURFACE COURSE
INSTALL PERMANENT PAVEMENT MARKINGS

- REFER TO TRAFFIC SIGNAL PLANS FOR STAGING OF SIGNALS DURING MAINTENANCE OF TRAFFIC

HWY. 43
P.I. = 24+92.93
Δ = 9°36'48" LT.
D = 2°00'00"
T = 240.90'
L = 480.67'
PC = 22+52.03
PT = 27+32.70
NO SUPER

VERTICAL PANELS @ 40 O.C. = 9 EACH
N. LINCOLN ST.
STA. 108+80-111+80 ON RT.

CONSTRUCTION PAVEMENT MARKINGS:

4" DOUBLE YELLOW CENTERLINE:
HWY. 43
STA. 26+96-28+96 = 400 LIN. FT.
N. LINCOLN STREET
STA. 107+67-108+67 = 200 LIN. FT.
STA. 108+67-109+58 = 366 LIN. FT. (2 DBL. YELLOWS)
STA. 109+58-111+80 = 444 LIN. FT.

4" YELLOW CENTER TURN LANE:
HWY. 43
STA. 40+00-46+60 = 1650 LIN. FT.

4" WHITE SOLID EDGE LINE ON LT.:
N. LINCOLN STREET
STA. 107+96-111+80 = 385 LIN. FT.

4" WHITE SOLID EDGE LINE ON RT.:
N. LINCOLN STREET
STA. 107+94-111+80 = 386 LIN. FT.

4" WHITE SOLID FOR TURN LANE LINES:
HWY. 43
STA. 26+96-27+96 = 100 LIN. FT.
N. LINCOLN ST.
STA. 107+67-108+67 = 100 LIN. FT.

CONSTRUCTION PAVEMENT MARKINGS (CONT.):

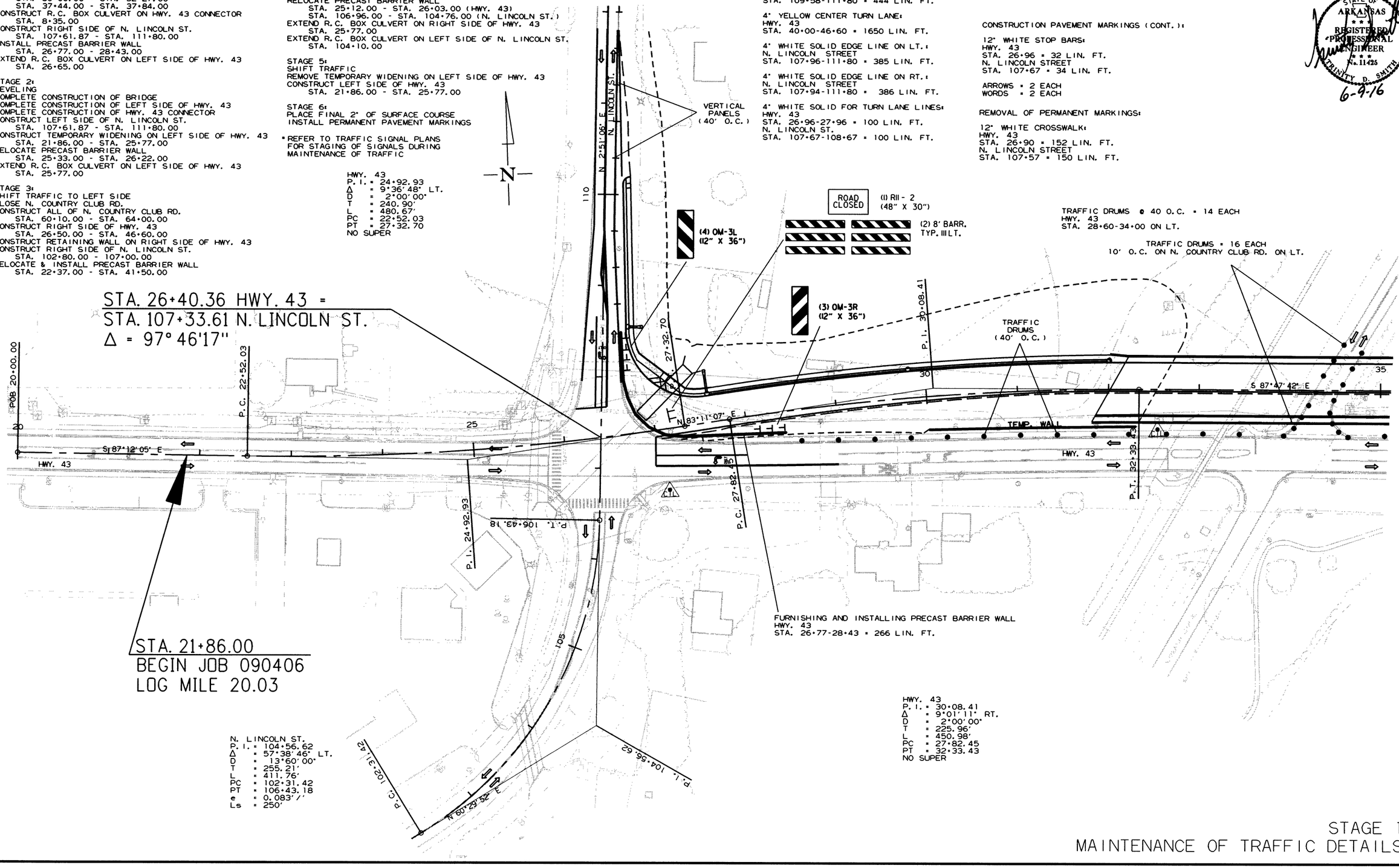
12" WHITE STOP BARS:
HWY. 43
STA. 26+96 = 32 LIN. FT.
N. LINCOLN STREET
STA. 107+67 = 34 LIN. FT.

ARROWS = 2 EACH
WORDS = 2 EACH

REMOVAL OF PERMANENT MARKINGS:

12" WHITE CROSSWALK:
HWY. 43
STA. 26+90 = 152 LIN. FT.
N. LINCOLN STREET
STA. 107+57 = 150 LIN. FT.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
6-9-16



N. LINCOLN ST.
P.I. = 104+56.62
Δ = 57°38'46" LT.
D = 13°60'00"
T = 255.21'
L = 411.76'
PC = 102+31.42
PT = 106+43.18
e = 0.083'/'
Ls = 250'

HWY. 43
P.I. = 30+08.41
Δ = 9°01'11" RT.
D = 2°00'00"
T = 225.96'
L = 450.98'
PC = 27+82.45
PT = 32+33.43
NO SUPER

STAGE 1
MAINTENANCE OF TRAFFIC DETAILS

6/8/2016

R090406.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.		090406	38	226

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
6-9-16

SEQUENCE OF CONSTRUCTION

STAGE 1:
CONSTRUCT BRIDGE
CONSTRUCT LEFT SIDE OF HWY. 43
STA. 26+40.36 - STA. 46+60.00
CONSTRUCT HWY. 43 CONNECTOR
CONSTRUCT TEMPORARY RETAINING WALL ON HWY. 43
STA. 30+00.00 - STA. 32+27.00
STA. 37+44.00 - STA. 37+84.00
CONSTRUCT R.C. BOX CULVERT ON HWY. 43 CONNECTOR
STA. 8+35.00
CONSTRUCT RIGHT SIDE OF N. LINCOLN ST.
STA. 107+61.87 - STA. 111+80.00
INSTALL PRECAST BARRIER WALL
STA. 26+77.00 - 28+43.00
EXTEND R.C. BOX CULVERT ON LEFT SIDE OF HWY. 43
STA. 26+65.00

STAGE 2:
LEVELING
COMPLETE CONSTRUCTION OF BRIDGE
COMPLETE CONSTRUCTION OF LEFT SIDE OF HWY. 43
COMPLETE CONSTRUCTION OF HWY. 43 CONNECTOR
CONSTRUCT LEFT SIDE OF N. LINCOLN ST.
STA. 107+61.87 - STA. 111+80.00
CONSTRUCT TEMPORARY WIDENING ON LEFT SIDE OF HWY. 43
STA. 21+86.00 - STA. 25+77.00
RELOCATE PRECAST BARRIER WALL
STA. 25+33.00 - STA. 26+22.00
EXTEND R.C. BOX CULVERT ON LEFT SIDE OF HWY. 43
STA. 25+77.00

STAGE 3:
SHIFT TRAFFIC TO LEFT SIDE
CLOSE N. COUNTRY CLUB RD.
CONSTRUCT ALL OF N. COUNTRY CLUB RD.
STA. 60+10.00 - STA. 64+00.00
CONSTRUCT RIGHT SIDE OF HWY. 43
STA. 26+50.00 - STA. 46+60.00
CONSTRUCT RETAINING WALL ON RIGHT SIDE OF HWY. 43
CONSTRUCT RIGHT SIDE OF N. LINCOLN ST.
STA. 102+80.00 - 107+00.00
RELOCATE & INSTALL PRECAST BARRIER WALL
STA. 22+37.00 - STA. 41+50.00

SEQUENCE OF CONSTRUCTION (CONT.)

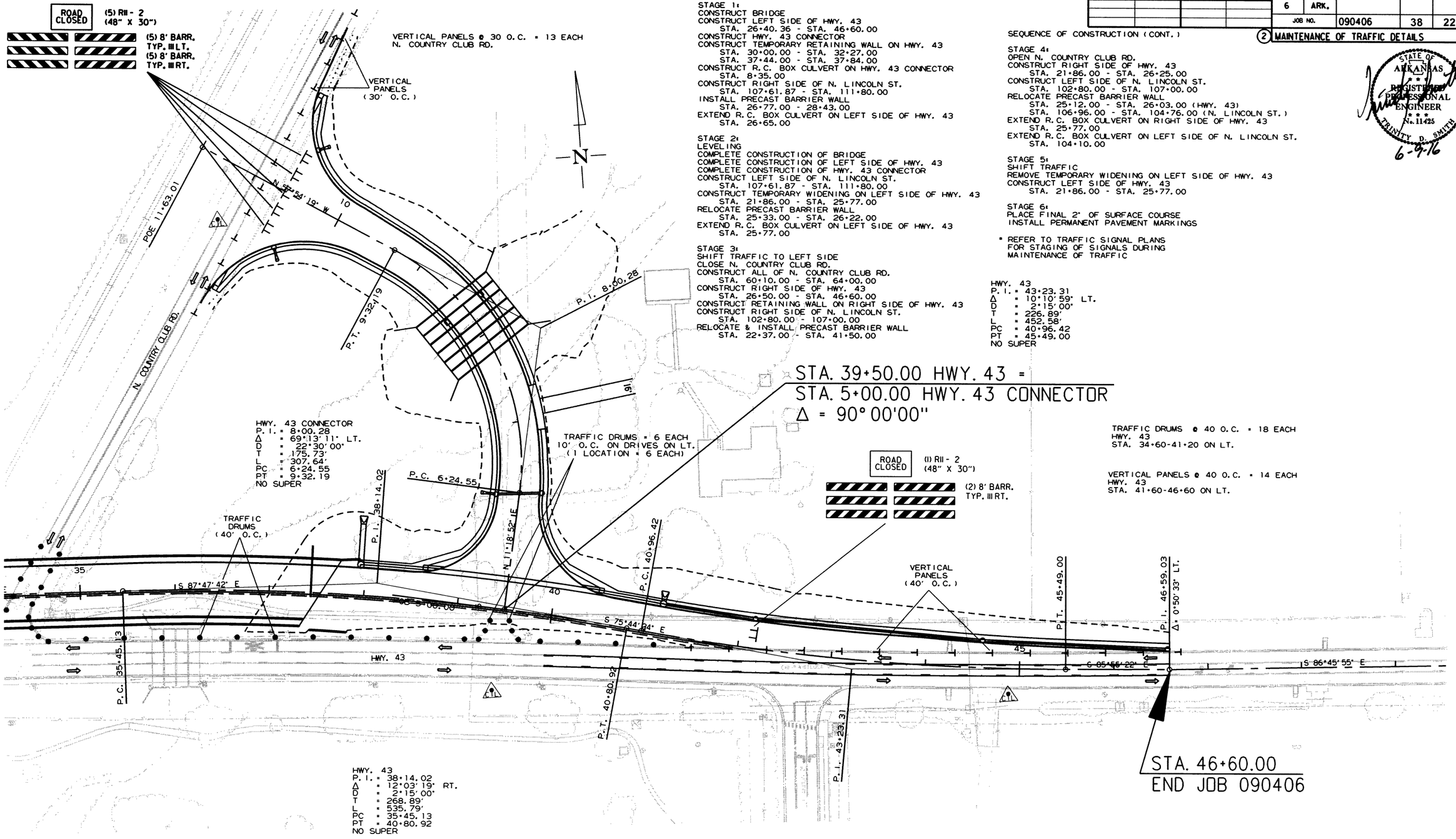
STAGE 4:
OPEN N. COUNTRY CLUB RD.
CONSTRUCT RIGHT SIDE OF HWY. 43
STA. 21+86.00 - STA. 26+25.00
CONSTRUCT LEFT SIDE OF N. LINCOLN ST.
STA. 102+80.00 - STA. 107+00.00
RELOCATE PRECAST BARRIER WALL
STA. 25+12.00 - STA. 26+03.00 (HWY. 43)
STA. 106+96.00 - STA. 104+76.00 (N. LINCOLN ST.)
EXTEND R.C. BOX CULVERT ON RIGHT SIDE OF HWY. 43
STA. 25+77.00
EXTEND R.C. BOX CULVERT ON LEFT SIDE OF N. LINCOLN ST.
STA. 104+10.00

STAGE 5:
SHIFT TRAFFIC
REMOVE TEMPORARY WIDENING ON LEFT SIDE OF HWY. 43
CONSTRUCT LEFT SIDE OF HWY. 43
STA. 21+86.00 - STA. 25+77.00

STAGE 6:
PLACE FINAL 2" OF SURFACE COURSE
INSTALL PERMANENT PAVEMENT MARKINGS

* REFER TO TRAFFIC SIGNAL PLANS FOR STAGING OF SIGNALS DURING MAINTENANCE OF TRAFFIC

HWY. 43
P.I. = 43+23.31
Δ = 10°10'59" LT.
D = 2°15'00"
T = 226.89'
L = 452.58'
PC = 40+96.42
PT = 45+49.00
NO SUPER



HWY. 43
P.I. = 38+14.02
Δ = 12°03'19" RT.
D = 2°15'00"
T = 268.89'
L = 535.79'
PC = 35+45.13
PT = 40+80.92
NO SUPER

TRAFFIC DRUMS @ 40 O.C. = 18 EACH
HWY. 43
STA. 34+60-41+20 ON LT.

VERTICAL PANELS @ 40 O.C. = 14 EACH
HWY. 43
STA. 41+60-46+60 ON LT.

6/8/2016

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STAGE 1
MAINTENANCE OF TRAFFIC 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.		090406	39	226

(2) MAINTENANCE OF TRAFFIC DETAILS

• SEQUENCE OF CONSTRUCTION

STAGE 1:
CONSTRUCT BRIDGE
CONSTRUCT LEFT SIDE OF HWY. 43
STA. 26+40.36 - STA. 46+60.00
CONSTRUCT HWY. 43 CONNECTOR
CONSTRUCT TEMPORARY RETAINING WALL ON HWY. 43
STA. 30+00.00 - STA. 32+27.00
STA. 37+44.00 - STA. 37+84.00
CONSTRUCT R.C. BOX CULVERT ON HWY. 43 CONNECTOR
STA. 8+35.00
CONSTRUCT RIGHT SIDE OF N. LINCOLN ST.
STA. 107+61.87 - STA. 111+80.00
INSTALL PRECAST BARRIER WALL
STA. 26+77.00 - 28+43.00
EXTEND R.C. BOX CULVERT ON LEFT SIDE OF HWY. 43
STA. 26+65.00

STAGE 2:
LEVELING
COMPLETE CONSTRUCTION OF BRIDGE
COMPLETE CONSTRUCTION OF LEFT SIDE OF HWY. 43
COMPLETE CONSTRUCTION OF HWY. 43 CONNECTOR
CONSTRUCT LEFT SIDE OF N. LINCOLN ST.
STA. 107+61.87 - STA. 111+80.00
CONSTRUCT TEMPORARY WIDENING ON LEFT SIDE OF HWY. 43
STA. 21+86.00 - STA. 25+77.00
RELOCATE PRECAST BARRIER WALL
STA. 25+33.00 - STA. 26+22.00
EXTEND R.C. BOX CULVERT ON LEFT SIDE OF HWY. 43
STA. 25+77.00

STAGE 3:
SHIFT TRAFFIC TO LEFT SIDE
CLOSE N. COUNTRY CLUB RD.
CONSTRUCT ALL OF N. COUNTRY CLUB RD.
STA. 60+10.00 - STA. 64+00.00
CONSTRUCT RIGHT SIDE OF HWY. 43
STA. 26+50.00 - STA. 46+60.00
CONSTRUCT RETAINING WALL ON RIGHT SIDE OF HWY. 43
CONSTRUCT RIGHT SIDE OF N. LINCOLN ST.
STA. 102+80.00 - 107+00.00
RELOCATE & INSTALL PRECAST BARRIER WALL
STA. 22+37.00 - STA. 41+50.00

SEQUENCE OF CONSTRUCTION (CONT.)

STAGE 4:
OPEN N. COUNTRY CLUB RD.
CONSTRUCT RIGHT SIDE OF HWY. 43
STA. 21+86.00 - STA. 26+25.00
CONSTRUCT LEFT SIDE OF N. LINCOLN ST.
STA. 102+80.00 - STA. 107+00.00
RELOCATE PRECAST BARRIER WALL
STA. 25+12.00 - STA. 26+03.00 (HWY. 43)
STA. 106+96.00 - STA. 104+76.00 (N. LINCOLN ST.)
EXTEND R.C. BOX CULVERT ON RIGHT SIDE OF HWY. 43
STA. 25+77.00
EXTEND R.C. BOX CULVERT ON LEFT SIDE OF N. LINCOLN ST.
STA. 104+10.00

STAGE 5:
SHIFT TRAFFIC
REMOVE TEMPORARY WIDENING ON LEFT SIDE OF HWY. 43
CONSTRUCT LEFT SIDE OF HWY. 43
STA. 21+86.00 - STA. 25+77.00

STAGE 6:
PLACE FINAL 2" OF SURFACE COURSE
INSTALL PERMANENT PAVEMENT MARKINGS

• REFER TO TRAFFIC SIGNAL PLANS FOR STAGING OF SIGNALS DURING MAINTENANCE OF TRAFFIC

REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS:

4" WHITE SOLID EDGE LINE ON LT.:
N. LINCOLN STREET
STA. 107+96-108+63 = 67 LIN. FT.

4" WHITE SOLID EDGE LINE ON RT.:
N. LINCOLN STREET
STA. 107+94-111+80 = 386 LIN. FT.

CONSTRUCTION PAVEMENT MARKINGS:

4" DOUBLE YELLOW CENTERLINE:
HWY. 43
STA. 23+82-25+82 = 400 LIN. FT.

4" YELLOW CENTER TURN LANE:
HWY. 43
STA. 21+86-23+82 = 490 LIN. FT.

4" WHITE SOLID EDGE LINE ON LT.:
N. LINCOLN STREET
STA. 107+67-108+63 = 96 LIN. FT.

4" WHITE SOLID EDGE LINE ON RT.:
N. LINCOLN STREET
STA. 107+67-111+80 = 413 LIN. FT.

4" WHITE SOLID FOR TURN LANE LINES:
HWY. 43
STA. 24+82-25+82 = 100 LIN. FT.

12" WHITE STOP BARS:
HWY. 43
STA. 25+82 = 34 LIN. FT.

ARROWS = 2 EACH
WORDS = 2 EACH

REMOVAL OF PERMANENT MARKINGS:

12" WHITE CROSSWALK:
HWY. 43
STA. 25+92 = 165 LIN. FT.

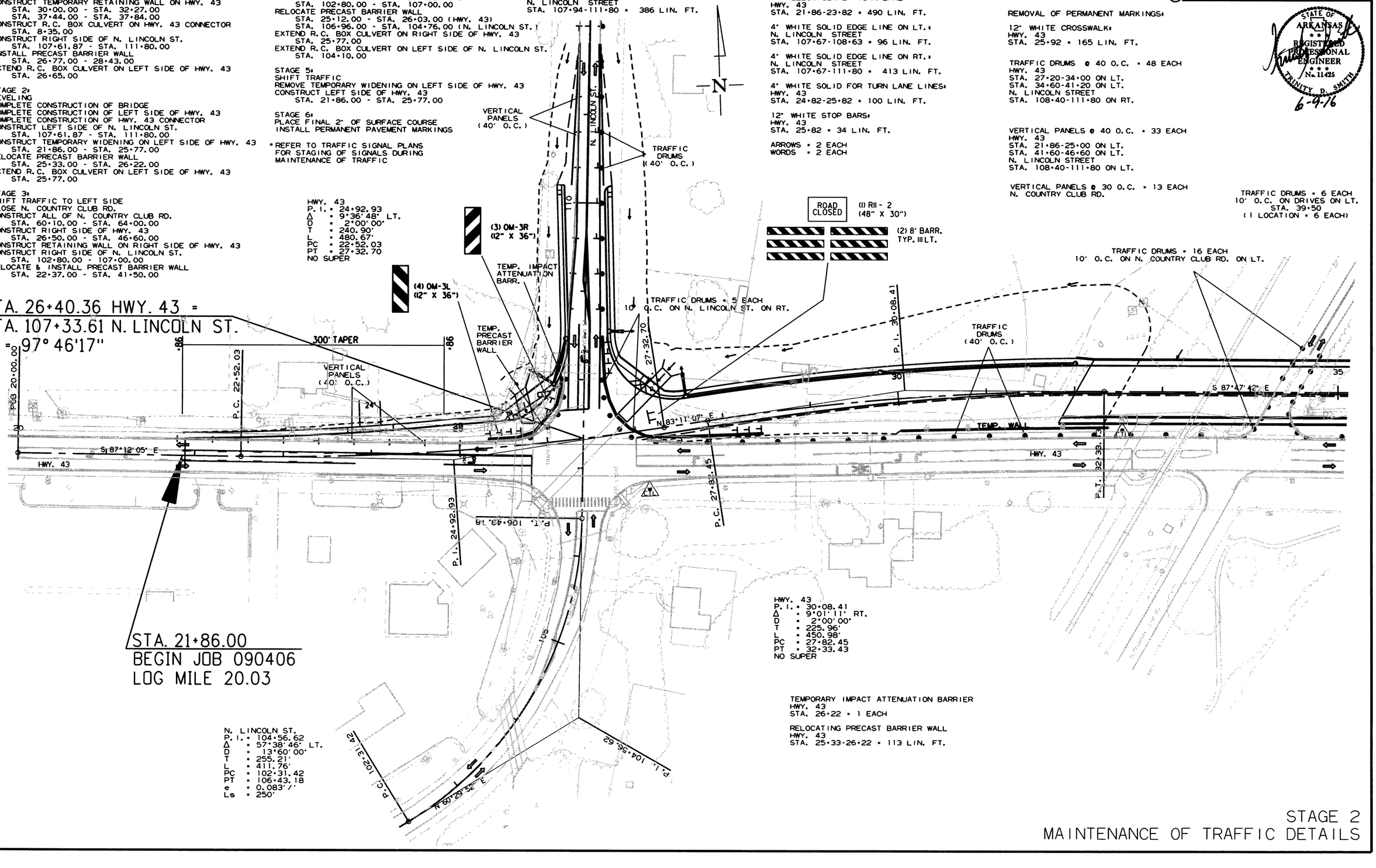
TRAFFIC DRUMS @ 40 O.C. = 48 EACH
HWY. 43
STA. 27+20-34+00 ON LT.
STA. 34+60-41+20 ON LT.
N. LINCOLN STREET
STA. 108+40-111+80 ON RT.

VERTICAL PANELS @ 40 O.C. = 33 EACH
HWY. 43
STA. 21+86-25+00 ON LT.
STA. 41+60-46+60 ON LT.
N. LINCOLN STREET
STA. 108+40-111+80 ON LT.

VERTICAL PANELS @ 30 O.C. = 13 EACH
N. COUNTRY CLUB RD.

TRAFFIC DRUMS = 6 EACH
10' O.C. ON DRIVES ON LT.
STA. 39+50
(1 LOCATION = 6 EACH)

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
6-9-16



TEMPORARY IMPACT ATTENUATION BARRIER
HWY. 43
STA. 26+22 = 1 EACH

RELOCATING PRECAST BARRIER WALL
HWY. 43
STA. 25+33-26+22 = 113 LIN. FT.

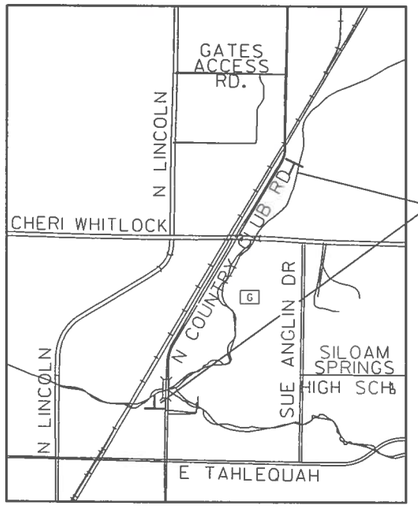
STAGE 2
MAINTENANCE OF TRAFFIC DETAILS

6/9/2016

R090406.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
10/14/16				6	ARK.			
				JOB NO.		090406	40	226

(2) MAINTENANCE OF TRAFFIC DETAILS



* SEQUENCE OF CONSTRUCTION

STAGE 1:
CONSTRUCT BRIDGE
CONSTRUCT LEFT SIDE OF HWY. 43
STA. 26+40.36 - STA. 46+60.00
CONSTRUCT HWY. 43 CONNECTOR
CONSTRUCT TEMPORARY RETAINING WALL ON HWY. 43
STA. 30+00.00 - STA. 32+27.00
STA. 37+44.00 - STA. 37+84.00
CONSTRUCT R.C. BOX CULVERT ON HWY. 43 CONNECTOR
STA. 8+35.00
CONSTRUCT RIGHT SIDE OF N. LINCOLN ST.
STA. 107+61.87 - STA. 111+80.00
INSTALL PRECAST BARRIER WALL
STA. 26+77.00 - 28+43.00
EXTEND R.C. BOX CULVERT ON LEFT SIDE OF HWY. 43
STA. 26+65.00

STAGE 2:
LEVELING
COMPLETE CONSTRUCTION OF BRIDGE
COMPLETE CONSTRUCTION OF LEFT SIDE OF HWY. 43
COMPLETE CONSTRUCTION OF HWY. 43 CONNECTOR
CONSTRUCT LEFT SIDE OF N. LINCOLN ST.
STA. 107+61.87 - STA. 111+80.00
CONSTRUCT TEMPORARY WIDENING ON LEFT SIDE OF HWY. 43
STA. 21+86.00 - STA. 25+77.00
RELOCATE PRECAST BARRIER WALL
STA. 25+33.00 - STA. 26+22.00
EXTEND R.C. BOX CULVERT ON LEFT SIDE OF HWY. 43
STA. 25+77.00

STAGE 3:
SHIFT TRAFFIC TO LEFT SIDE
CLOSE N. COUNTRY CLUB RD.
CONSTRUCT ALL OF N. COUNTRY CLUB RD.
STA. 60+10.00 - STA. 64+00.00
CONSTRUCT RIGHT SIDE OF HWY. 43
STA. 26+50.00 - STA. 46+60.00
CONSTRUCT RETAINING WALL ON RIGHT SIDE OF HWY. 43
CONSTRUCT RIGHT SIDE OF N. LINCOLN ST.
STA. 102+80.00 - 107+00.00
RELOCATE & INSTALL PRECAST BARRIER WALL
STA. 22+37.00 - STA. 41+50.00

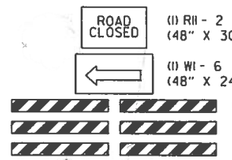
SEQUENCE OF CONSTRUCTION (CONT.)

STAGE 4:
OPEN N. COUNTRY CLUB RD.
CONSTRUCT RIGHT SIDE OF HWY. 43
STA. 21+86.00 - STA. 26+25.00
CONSTRUCT LEFT SIDE OF N. LINCOLN ST.
STA. 102+80.00 - STA. 107+00.00
RELOCATE PRECAST BARRIER WALL
STA. 25+12.00 - STA. 26+03.00 (HWY. 43)
STA. 106+96.00 - STA. 104+76.00 (N. LINCOLN ST.)
EXTEND R.C. BOX CULVERT ON RIGHT SIDE OF HWY. 43
STA. 25+77.00
EXTEND R.C. BOX CULVERT ON LEFT SIDE OF N. LINCOLN ST.
STA. 104+10.00

STAGE 5:
SHIFT TRAFFIC
REMOVE TEMPORARY WIDENING ON LEFT SIDE OF HWY. 43
CONSTRUCT LEFT SIDE OF HWY. 43
STA. 21+86.00 - STA. 25+77.00

STAGE 6:
PLACE FINAL 2" OF SURFACE COURSE
INSTALL PERMANENT PAVEMENT MARKINGS

* REFER TO TRAFFIC SIGNAL PLANS FOR STAGING OF SIGNALS DURING MAINTENANCE OF TRAFFIC



REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS:

4" DOUBLE YELLOW CENTERLINE:
HWY. 43
STA. 23+82-25+82 = 400 LIN. FT.
N. LINCOLN STREET
STA. 107+67-111+80 = 1010 LIN. FT.

4" YELLOW CENTER TURN LANE:
HWY. 43
STA. 21+86-23+82 = 490 LIN. FT.
STA. 41+00-46+60 = 1400 LIN. FT.

4" WHITE SOLID EDGE LINE ON LT.:
N. LINCOLN STREET
STA. 107+67-111+80 = 413 LIN. FT.

4" WHITE SOLID EDGE LINE ON RT.:
N. LINCOLN STREET
STA. 107+67-111+80 = 413 LIN. FT.

4" WHITE SOLID FOR TURN LANE LINES:
HWY. 43
STA. 24+82-25+82 = 100 LIN. FT.
N. LINCOLN ST.
STA. 107+67-108+67 = 100 LIN. FT.

12" WHITE STOP BARS:
HWY. 43
STA. 25+82 = 34 LIN. FT.
N. LINCOLN STREET
STA. 107+67 = 34 LIN. FT.

ARROWS = 4 EACH
WORDS = 2 EACH

REMOVAL OF PERMANENT MARKINGS:

12" WHITE STOP BARS:
N. LINCOLN STREET
STA. 106+51 = 32 LIN. FT.

12" WHITE CROSSWALK:
N. LINCOLN STREET
STA. 106+60 = 165 LIN. FT.

REMOVABLE CONSTRUCTION PAVEMENT MARKINGS:

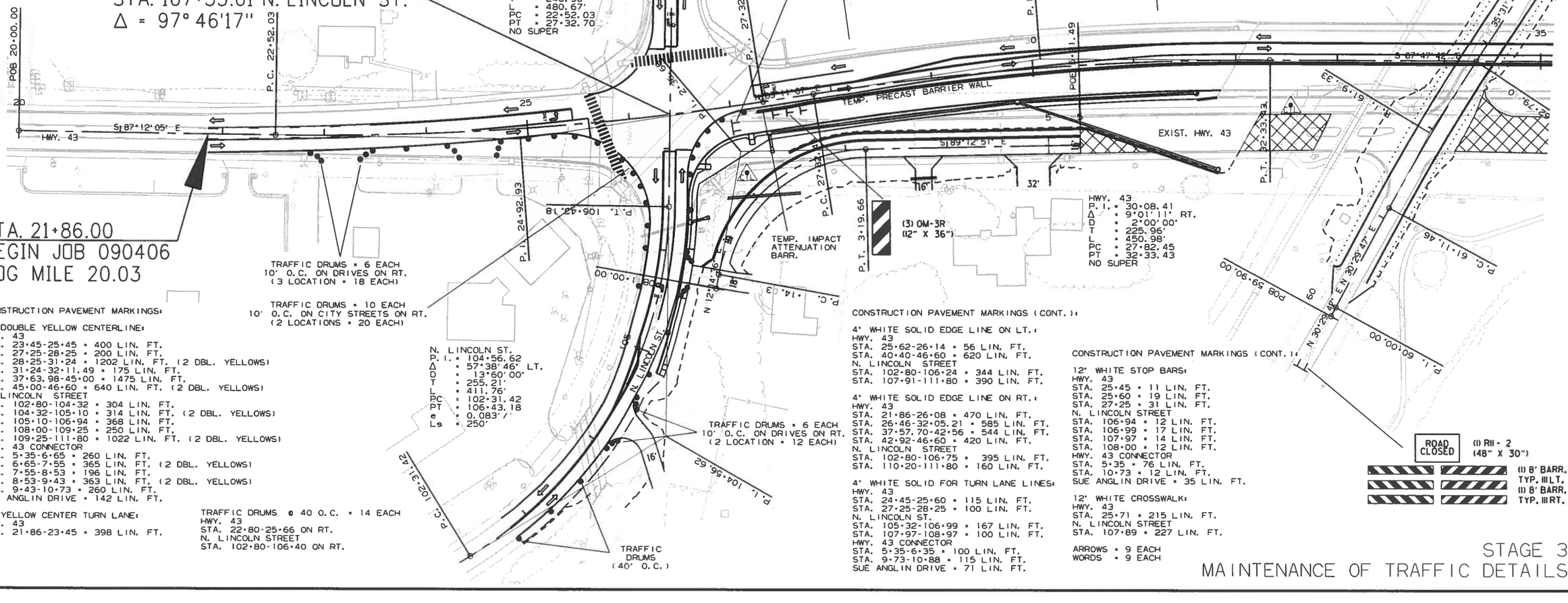
4" DOUBLE YELLOW CENTERLINE:
HWY. 43
STA. 32+11.49-37+63.98 = 1108 LIN. FT.

4" WHITE SOLID EDGE LINE ON RT.:
HWY. 43
STA. 32+05.21-37+57.70 = 554 LIN. FT.

TEMPORARY IMPACT ATTENUATION BARRIER
HWY. 43
STA. 27+25 = 1 EACH

FURNISHING AND INSTALLING PRECAST BARRIER WALL
HWY. 43
STA. 27+37-38+97 = 1160 LIN. FT.

RELOCATE PRECAST BARRIER WALL
HWY. 43
STA. 38+97-41+50 = 253 LIN. FT.



CONSTRUCTION PAVEMENT MARKINGS:

4" DOUBLE YELLOW CENTERLINE:
HWY. 43
STA. 23+45-25+45 = 400 LIN. FT.
STA. 27+25-28+25 = 200 LIN. FT.
STA. 28+25-31+24 = 1202 LIN. FT. (2 DBL. YELLOWS)
STA. 31+24-32+11.49 = 175 LIN. FT.
STA. 37+63.98-45+00 = 1475 LIN. FT.
STA. 45+00-46+60 = 640 LIN. FT. (2 DBL. YELLOWS)
N. LINCOLN STREET
STA. 102+80-104+32 = 304 LIN. FT.
STA. 104+32-105+10 = 314 LIN. FT. (2 DBL. YELLOWS)
STA. 105+10-106+94 = 368 LIN. FT.
STA. 108+00-109+25 = 250 LIN. FT.
STA. 109+25-111+80 = 1022 LIN. FT. (2 DBL. YELLOWS)
HWY. 43 CONNECTOR
STA. 5+35-6+65 = 260 LIN. FT.
STA. 6+65-7+55 = 365 LIN. FT. (2 DBL. YELLOWS)
STA. 7+55-8+53 = 196 LIN. FT.
STA. 8+53-9+43 = 363 LIN. FT. (2 DBL. YELLOWS)
STA. 9+43-10+73 = 260 LIN. FT.
SUE ANGLIN DRIVE = 142 LIN. FT.

4" YELLOW CENTER TURN LANE:
HWY. 43
STA. 21+86-23+45 = 398 LIN. FT.

TRAFFIC DRUMS @ 40 O.C. = 14 EACH
HWY. 43
STA. 22+80-25+66 ON RT.
N. LINCOLN STREET
STA. 102+80-106+40 ON RT.

CONSTRUCTION PAVEMENT MARKINGS (CONT.):

4" WHITE SOLID EDGE LINE ON LT.:
HWY. 43
STA. 25+62-26+14 = 56 LIN. FT.
STA. 40+40-46+60 = 620 LIN. FT.
N. LINCOLN STREET
STA. 102+80-106+24 = 344 LIN. FT.
STA. 107+91-111+80 = 390 LIN. FT.

4" WHITE SOLID EDGE LINE ON RT.:
HWY. 43
STA. 21+86-26+08 = 470 LIN. FT.
STA. 26+46-32+05.21 = 585 LIN. FT.
STA. 37+57.70-42+56 = 544 LIN. FT.
STA. 42+92-46+60 = 420 LIN. FT.
N. LINCOLN STREET
STA. 102+80-106+75 = 395 LIN. FT.
STA. 110+20-111+80 = 160 LIN. FT.

4" WHITE SOLID FOR TURN LANE LINES:
HWY. 43
STA. 24+45-25+60 = 115 LIN. FT.
STA. 27+25-28+25 = 100 LIN. FT.
N. LINCOLN ST.
STA. 105+32-106+99 = 167 LIN. FT.
STA. 107+97-108+97 = 100 LIN. FT.
HWY. 43 CONNECTOR
STA. 5+35-6+35 = 100 LIN. FT.
STA. 9+73-10+88 = 115 LIN. FT.
SUE ANGLIN DRIVE = 71 LIN. FT.

CONSTRUCTION PAVEMENT MARKINGS (CONT.):

12" WHITE STOP BARS:
HWY. 43
STA. 25+45 = 11 LIN. FT.
STA. 25+60 = 19 LIN. FT.
STA. 27+25 = 31 LIN. FT.
N. LINCOLN STREET
STA. 106+94 = 12 LIN. FT.
STA. 106+99 = 17 LIN. FT.
STA. 107+97 = 14 LIN. FT.
STA. 108+00 = 12 LIN. FT.
HWY. 43 CONNECTOR
STA. 5+35 = 76 LIN. FT.
STA. 10+73 = 12 LIN. FT.
SUE ANGLIN DRIVE = 35 LIN. FT.

12" WHITE CROSSWALK:
HWY. 43
STA. 25+71 = 215 LIN. FT.
N. LINCOLN STREET
STA. 107+89 = 227 LIN. FT.

ARROWS = 9 EACH
WORDS = 9 EACH

STAGE 3
MAINTENANCE OF TRAFFIC DETAILS

10/14/2016

R090406.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.		090406	41	226

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
6-9-16

• SEQUENCE OF CONSTRUCTION

STAGE 1:
CONSTRUCT BRIDGE
CONSTRUCT LEFT SIDE OF HWY. 43
STA. 26+40.36 - STA. 46+60.00
CONSTRUCT HWY. 43 CONNECTOR
CONSTRUCT TEMPORARY RETAINING WALL ON HWY. 43
STA. 30+00.00 - STA. 32+27.00
STA. 37+44.00 - STA. 37+84.00
CONSTRUCT R.C. BOX CULVERT ON HWY. 43 CONNECTOR
STA. 8+35.00
CONSTRUCT RIGHT SIDE OF N. LINCOLN ST.
STA. 107+61.87 - STA. 111+80.00
INSTALL PRECAST BARRIER WALL
STA. 26+77.00 - 28+43.00
EXTEND R.C. BOX CULVERT ON LEFT SIDE OF HWY. 43
STA. 26+65.00

STAGE 2:
LEVELING
COMPLETE CONSTRUCTION OF BRIDGE
COMPLETE CONSTRUCTION OF LEFT SIDE OF HWY. 43
COMPLETE CONSTRUCTION OF HWY. 43 CONNECTOR
CONSTRUCT LEFT SIDE OF N. LINCOLN ST.
STA. 107+61.87 - STA. 111+80.00
CONSTRUCT TEMPORARY WIDENING ON LEFT SIDE OF HWY. 43
STA. 21+86.00 - STA. 25+77.00
RELOCATE PRECAST BARRIER WALL
STA. 25+33.00 - STA. 26+22.00
EXTEND R.C. BOX CULVERT ON LEFT SIDE OF HWY. 43
STA. 25+77.00

SEQUENCE OF CONSTRUCTION (CONT.)

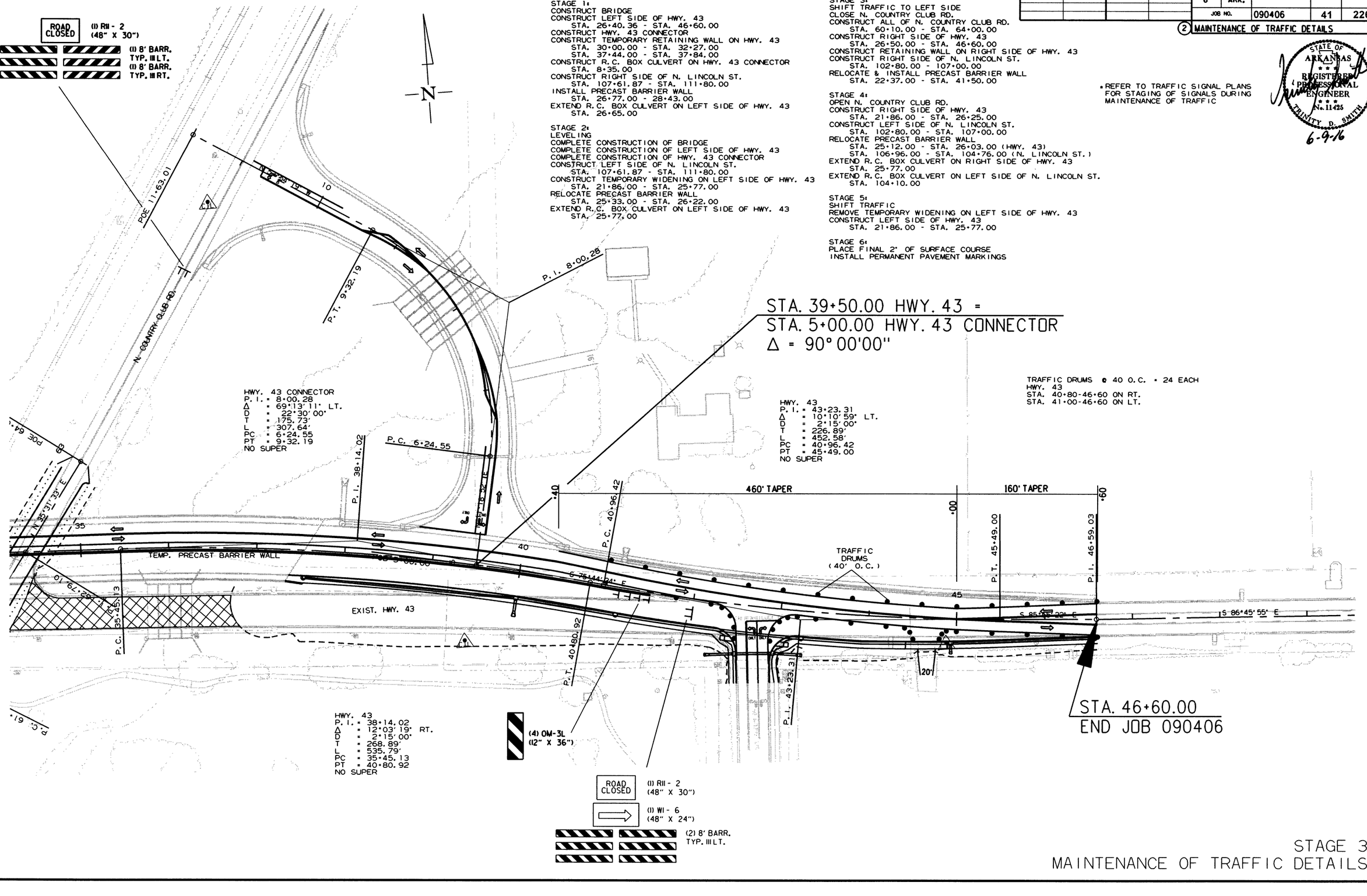
STAGE 3:
SHIFT TRAFFIC TO LEFT SIDE
CLOSE N. COUNTRY CLUB RD.
CONSTRUCT ALL OF N. COUNTRY CLUB RD.
STA. 60+10.00 - STA. 64+00.00
CONSTRUCT RIGHT SIDE OF HWY. 43
STA. 26+50.00 - STA. 46+60.00
CONSTRUCT RETAINING WALL ON RIGHT SIDE OF HWY. 43
CONSTRUCT RIGHT SIDE OF N. LINCOLN ST.
STA. 102+80.00 - 107+00.00
RELOCATE & INSTALL PRECAST BARRIER WALL
STA. 22+37.00 - STA. 41+50.00

STAGE 4:
OPEN N. COUNTRY CLUB RD.
CONSTRUCT RIGHT SIDE OF HWY. 43
STA. 21+86.00 - STA. 26+25.00
CONSTRUCT LEFT SIDE OF N. LINCOLN ST.
STA. 102+80.00 - STA. 107+00.00
RELOCATE PRECAST BARRIER WALL
STA. 25+12.00 - STA. 26+03.00 (HWY. 43)
STA. 106+96.00 - STA. 104+76.00 (N. LINCOLN ST.)
EXTEND R.C. BOX CULVERT ON RIGHT SIDE OF HWY. 43
STA. 25+77.00
EXTEND R.C. BOX CULVERT ON LEFT SIDE OF N. LINCOLN ST.
STA. 104+10.00

STAGE 5:
SHIFT TRAFFIC
REMOVE TEMPORARY WIDENING ON LEFT SIDE OF HWY. 43
CONSTRUCT LEFT SIDE OF HWY. 43
STA. 21+86.00 - STA. 25+77.00

STAGE 6:
PLACE FINAL 2" OF SURFACE COURSE
INSTALL PERMANENT PAVEMENT MARKINGS

• REFER TO TRAFFIC SIGNAL PLANS FOR STAGING OF SIGNALS DURING MAINTENANCE OF TRAFFIC



STAGE 3
MAINTENANCE OF TRAFFIC DETAILS

6/8/2016

R090406.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
10/14/16				6	ARK.			
				JOB NO.		090406	42	226

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-17-16

• SEQUENCE OF CONSTRUCTION

STAGE 1:
CONSTRUCT BRIDGE
CONSTRUCT LEFT SIDE OF HWY. 43
STA. 26+40.36 - STA. 46+60.00
CONSTRUCT HWY. 43 CONNECTOR
CONSTRUCT TEMPORARY RETAINING WALL ON HWY. 43
STA. 30+00.00 - STA. 32+27.00
STA. 37+44.00 - STA. 37+84.00
CONSTRUCT R.C. BOX CULVERT ON HWY. 43 CONNECTOR
STA. 8+35.00
CONSTRUCT RIGHT SIDE OF N. LINCOLN ST.
STA. 107+61.87 - STA. 111+80.00
INSTALL PRECAST BARRIER WALL
STA. 26+77.00 - 28+43.00
EXTEND R.C. BOX CULVERT ON LEFT SIDE OF HWY. 43
STA. 26+65.00

STAGE 2:
LEVELING
COMPLETE CONSTRUCTION OF BRIDGE
COMPLETE CONSTRUCTION OF LEFT SIDE OF HWY. 43
COMPLETE CONSTRUCTION OF HWY. 43 CONNECTOR
CONSTRUCT LEFT SIDE OF N. LINCOLN ST.
STA. 107+61.87 - STA. 111+80.00
CONSTRUCT TEMPORARY WIDENING ON LEFT SIDE OF HWY. 43
STA. 21+86.00 - STA. 25+77.00
RELOCATE PRECAST BARRIER WALL
STA. 25+33.00 - STA. 26+22.00
EXTEND R.C. BOX CULVERT ON LEFT SIDE OF HWY. 43
STA. 25+77.00

STAGE 3:
SHIFT TRAFFIC TO LEFT SIDE
CLOSE N. COUNTRY CLUB RD.
CONSTRUCT ALL OF N. COUNTRY CLUB RD.
STA. 60+10.00 - STA. 64+00.00
CONSTRUCT RIGHT SIDE OF HWY. 43
STA. 26+50.00 - STA. 46+60.00
CONSTRUCT RETAINING WALL ON RIGHT SIDE OF HWY. 43
CONSTRUCT RIGHT SIDE OF N. LINCOLN ST.
STA. 102+80.00 - 107+00.00
RELOCATE & INSTALL PRECAST BARRIER WALL
STA. 22+37.00 - STA. 41+50.00

SEQUENCE OF CONSTRUCTION (CONT.)

STAGE 4:
OPEN N. COUNTRY CLUB RD.
CONSTRUCT RIGHT SIDE OF HWY. 43
STA. 21+86.00 - STA. 26+25.00
CONSTRUCT LEFT SIDE OF N. LINCOLN ST.
STA. 102+80.00 - STA. 107+00.00
RELOCATE PRECAST BARRIER WALL
STA. 25+12.00 - STA. 26+03.00 (HWY. 43)
STA. 106+96.00 - STA. 104+76.00 (N. LINCOLN ST.)
EXTEND R.C. BOX CULVERT ON RIGHT SIDE OF HWY. 43
STA. 25+77.00
EXTEND R.C. BOX CULVERT ON LEFT SIDE OF N. LINCOLN ST.
STA. 104+10.00

STAGE 5:
SHIFT TRAFFIC
REMOVE TEMPORARY WIDENING ON LEFT SIDE OF HWY. 43
CONSTRUCT LEFT SIDE OF HWY. 43
STA. 21+86.00 - STA. 25+77.00

STAGE 6:
PLACE FINAL 2" OF SURFACE COURSE
INSTALL PERMANENT PAVEMENT MARKINGS

• REFER TO TRAFFIC SIGNAL PLANS FOR STAGING OF SIGNALS DURING MAINTENANCE OF TRAFFIC

REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS:

4" WHITE SOLID EDGE LINE ON RT.:
N. LINCOLN STREET
STA. 102+80-106+51 = 371 LIN. FT.

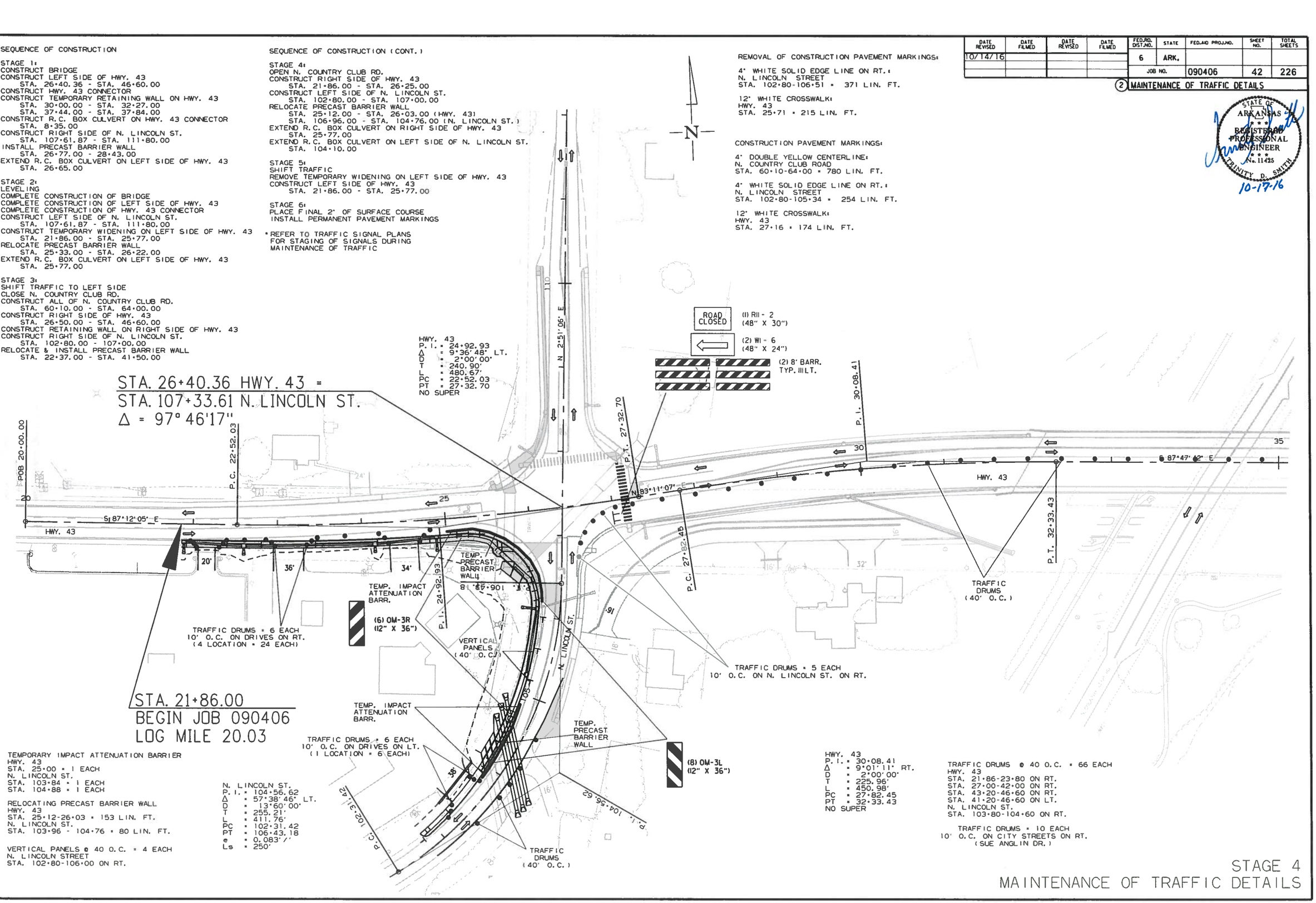
12" WHITE CROSSWALK:
HWY. 43
STA. 25+71 = 215 LIN. FT.

CONSTRUCTION PAVEMENT MARKINGS:

4" DOUBLE YELLOW CENTERLINE:
N. COUNTRY CLUB ROAD
STA. 60+10-64+00 = 780 LIN. FT.

4" WHITE SOLID EDGE LINE ON RT.:
N. LINCOLN STREET
STA. 102+80-105+34 = 254 LIN. FT.

12" WHITE CROSSWALK:
HWY. 43
STA. 27+16 = 174 LIN. FT.



TEMPORARY IMPACT ATTENUATION BARRIER
HWY. 43
STA. 25+00 = 1 EACH
N. LINCOLN ST.
STA. 103+84 = 1 EACH
STA. 104+88 = 1 EACH

RELOCATING PRECAST BARRIER WALL
HWY. 43
STA. 25+12-26+03 = 153 LIN. FT.
N. LINCOLN ST.
STA. 103+96 - 104+76 = 80 LIN. FT.

VERTICAL PANELS @ 40 O.C. = 4 EACH
N. LINCOLN STREET
STA. 102+80-106+00 ON RT.

N. LINCOLN ST.
P.I. = 104+56.62
Δ = 57°38'46" LT.
D = 13°60'00"
T = 255.21'
L = 411.76'
PC = 102+31.42
PT = 106+43.18
e = 0.083'/'
Ls = 250'

HWY. 43
P.I. = 30+08.41
Δ = 9°01'11" RT.
D = 2°00'00"
T = 225.96'
L = 450.98'
PC = 27+82.45
PT = 32+33.43
NO SUPER

TRAFFIC DRUMS @ 40 O.C. = 66 EACH
HWY. 43
STA. 21+86-23+80 ON RT.
STA. 27+00-42+00 ON RT.
STA. 43+20-46+60 ON RT.
STA. 41+20-46+60 ON LT.
N. LINCOLN ST.
STA. 103+80-104+60 ON RT.

TRAFFIC DRUMS = 10 EACH
10' O.C. ON CITY STREETS ON RT.
(SUE ANGLIN DR.)

10/14/2016
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STAGE 4
MAINTENANCE OF TRAFFIC DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
10/14/16				6	ARK.			
				JOB NO.		090406	43	226

(2) MAINTENANCE OF TRAFFIC DETAILS

• SEQUENCE OF CONSTRUCTION

STAGE 1:
CONSTRUCT BRIDGE
CONSTRUCT LEFT SIDE OF HWY. 43
STA. 26+40.36 - STA. 46+60.00
CONSTRUCT HWY. 43 CONNECTOR
CONSTRUCT TEMPORARY RETAINING WALL ON HWY. 43
STA. 30+00.00 - STA. 32+27.00
STA. 37+44.00 - STA. 37+84.00
CONSTRUCT R.C. BOX CULVERT ON HWY. 43 CONNECTOR
STA. 8+35.00
CONSTRUCT RIGHT SIDE OF N. LINCOLN ST.
STA. 107+61.87 - STA. 111+80.00
INSTALL PRECAST BARRIER WALL
STA. 26+77.00 - 28+43.00
EXTEND R.C. BOX CULVERT ON LEFT SIDE OF HWY. 43
STA. 26+65.00

STAGE 2:
LEVELING
COMPLETE CONSTRUCTION OF BRIDGE
COMPLETE CONSTRUCTION OF LEFT SIDE OF HWY. 43
COMPLETE CONSTRUCTION OF HWY. 43 CONNECTOR
CONSTRUCT LEFT SIDE OF N. LINCOLN ST.
STA. 107+61.87 - STA. 111+80.00
CONSTRUCT TEMPORARY WIDENING ON LEFT SIDE OF HWY. 43
STA. 21+86.00 - STA. 25+77.00
RELOCATE PRECAST BARRIER WALL
STA. 25+33.00 - STA. 26+22.00
EXTEND R.C. BOX CULVERT ON LEFT SIDE OF HWY. 43
STA. 25+77.00

STAGE 3:
SHIFT TRAFFIC TO LEFT SIDE
CLOSE N. COUNTRY CLUB RD.
CONSTRUCT ALL OF N. COUNTRY CLUB RD.
STA. 60+10.00 - STA. 64+00.00
CONSTRUCT RIGHT SIDE OF HWY. 43
STA. 26+50.00 - STA. 46+60.00
CONSTRUCT RETAINING WALL ON RIGHT SIDE OF HWY. 43
CONSTRUCT RIGHT SIDE OF N. LINCOLN ST.
STA. 102+80.00 - 107+00.00
RELOCATE & INSTALL PRECAST BARRIER WALL
STA. 22+37.00 - STA. 41+50.00

SEQUENCE OF CONSTRUCTION (CONT.)

STAGE 4:
OPEN N. COUNTRY CLUB RD.
CONSTRUCT RIGHT SIDE OF HWY. 43
STA. 21+86.00 - STA. 26+25.00
CONSTRUCT LEFT SIDE OF N. LINCOLN ST.
STA. 102+80.00 - STA. 107+00.00
RELOCATE PRECAST BARRIER WALL
STA. 25+12.00 - STA. 26+03.00 (HWY. 43)
STA. 106+96.00 - STA. 104+76.00 (N. LINCOLN ST.)
EXTEND R.C. BOX CULVERT ON RIGHT SIDE OF HWY. 43
STA. 25+77.00
EXTEND R.C. BOX CULVERT ON LEFT SIDE OF N. LINCOLN ST.
STA. 104+10.00

STAGE 5:
SHIFT TRAFFIC
REMOVE TEMPORARY WIDENING ON LEFT SIDE OF HWY. 43
CONSTRUCT LEFT SIDE OF HWY. 43
STA. 21+86.00 - STA. 25+77.00

STAGE 6:
PLACE FINAL 2" OF SURFACE COURSE
INSTALL PERMANENT PAVEMENT MARKINGS

• REFER TO TRAFFIC SIGNAL PLANS FOR STAGING OF SIGNALS DURING MAINTENANCE OF TRAFFIC

HWY. 43
P.I. = 24+92.93
Δ = 9°36'48" LT.
D = 2°00'00"
T = 240.90'
L = 480.67'
PC = 22+52.03
PT = 27+32.70
NO SUPER

TRAFFIC DRUMS = 10 EACH
10' O.C. ON CITY STREETS ON LT.
(2 LOCATIONS = 20 EACH)

REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS:

4" DOUBLE YELLOW CENTERLINE:
HWY. 43
STA. 23+45-25+45 = 400 LIN. FT.
STA. 27+25-32+11.49 = 1577 LIN. FT.
STA. 37+63.98-46+60 = 2115 LIN. FT.
N. LINCOLN STREET
STA. 106+72-106+94 = 44 LIN. FT.
SUE ANGLIN DRIVE = 66 LIN. FT.

4" YELLOW CENTER TURN LANE:
HWY. 43
STA. 21+86-23+45 = 398 LIN. FT.

4" WHITE SOLID EDGE LINE ON LT.:
HWY. 43
STA. 25+62-26+14 = 56 LIN. FT.
STA. 42+80-46+60 = 380 LIN. FT.
N. LINCOLN STREET
STA. 102+80-106+24 = 344 LIN. FT.
STA. 107+91-108+19 = 32 LIN. FT.

4" WHITE SOLID EDGE LINE ON RT.:
HWY. 43
STA. 21+86-26+08 = 488 LIN. FT.
STA. 26+46-32+05.21 = 585 LIN. FT.
STA. 37+57.70-42+56 = 544 LIN. FT.
STA. 42+92-46+60 = 420 LIN. FT.
N. LINCOLN STREET
STA. 106+51-106+75 = 24 LIN. FT.

4" WHITE SOLID FOR TURN LANE LINES:
HWY. 43
STA. 24+53-25+53 = 100 LIN. FT.
STA. 27+25-28+25 = 100 LIN. FT.
N. LINCOLN ST.
STA. 106+72-106+99 = 27 LIN. FT.
SUE ANGLIN DRIVE = 33 LIN. FT.

REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS (CONT.):

12" WHITE STOP BARS:
HWY. 43
STA. 25+45 = 11 LIN. FT.
STA. 25+53 = 16 LIN. FT.
STA. 27+25 = 8 LIN. FT.
N. LINCOLN STREET
STA. 106+94 = 12 LIN. FT.
STA. 106+99 = 17 LIN. FT.
HWY. 43 CONNECTOR
STA. 5+35 = 19 LIN. FT.
SUE ANGLIN DRIVE = 35 LIN. FT.

ARROWS = 4 EACH
WORDS = 4 EACH

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-17-16

REMOVABLE CONSTRUCTION PAVEMENT MARKINGS:

4" DOUBLE YELLOW CENTERLINE:
HWY. 43
STA. 32+01.75-37+54.25 = 1381 LIN. FT.

4" WHITE SOLID EDGE LINE ON LT.:
HWY. 43
STA. 32+11.50-37+63.99 = 553 LIN. FT.

4" WHITE SOLID EDGE LINE ON RT.:
HWY. 43
STA. 31+91.87-37+44.36 = 553 LIN. FT.

STA. 26+40.36 HWY. 43 =
STA. 107+33.61 N. LINCOLN ST.
Δ = 97° 46'17"

STA. 21+86.00
BEGIN JOB 090406
LOG MILE 20.03

N. LINCOLN ST.
P.I. = 104+56.62
Δ = 57°38'46" LT.
D = 13°60'00"
T = 255.21'
L = 411.76'
PC = 102+31.42
PT = 106+43.18
e = 0.083'/'
Ls = 250'

CONSTRUCTION PAVEMENT MARKINGS:

4" DOUBLE YELLOW CENTERLINE:
HWY. 43
STA. 23+45-25+45 = 400 LIN. FT.
STA. 27+25-29+25 = 400 LIN. FT.

4" YELLOW CENTER TURN LANE:
HWY. 43
STA. 21+86-23+45 = 398 LIN. FT.
STA. 29+25-32+01.75 = 692 LIN. FT.
STA. 37+54.25-46+60 = 2264 LIN. FT.

4" WHITE SOLID EDGE LINE ON LT.:
HWY. 43
STA. 21+86-26+34 = 505 LIN. FT.
STA. 26+82-32+11.50 = 568 LIN. FT.
STA. 37+63.99-39+30 = 227 LIN. FT.
STA. 39+69-46+60 = 754 LIN. FT.

4" WHITE SOLID EDGE LINE ON RT.:
HWY. 43
STA. 26+46-31+91.87 = 556 LIN. FT.
STA. 37+44.36-42+54 = 572 LIN. FT.
STA. 42+90-46+60 = 400 LIN. FT.

4" WHITE SOLID FOR TURN LANE LINES:
HWY. 43
STA. 24+54-25+54 = 100 LIN. FT.
STA. 27+25-28+25 = 100 LIN. FT.

CONSTRUCTION PAVEMENT MARKINGS (CONT.):

12" WHITE STOP BARS:
HWY. 43
STA. 25+45 = 12 LIN. FT.
STA. 25+54 = 21 LIN. FT.
N. LINCOLN STREET
STA. 106+72 = 12 LIN. FT.
STA. 106+74 = 16 LIN. FT.
SUE ANGLIN DRIVE = 26 LIN. FT.

12" WHITE CROSSWALK:
N. LINCOLN STREET
STA. 106+83 = 210 LIN. FT.

ARROWS = 2 EACH
WORDS = 2 EACH

TRAFFIC DRUMS = 10 EACH
10' O.C. ON CITY STREETS ON RT.
(2 LOCATIONS = 15 EACH)

TRAFFIC DRUMS @ 40 O.C. = 74 EACH
HWY. 43
STA. 21+86-25+60 ON LT.
STA. 27+20-42+00 ON RT.
STA. 27+60-38+60 ON LT.

STAGE 5
MAINTENANCE OF TRAFFIC DETAILS

10/14/2016

R090406.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.		090406	44	226

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
6-9-16

- SEQUENCE OF CONSTRUCTION

STAGE 1:
CONSTRUCT BRIDGE
CONSTRUCT LEFT SIDE OF HWY. 43
STA. 26+40.36 - STA. 46+60.00
CONSTRUCT HWY. 43 CONNECTOR
CONSTRUCT TEMPORARY RETAINING WALL ON HWY. 43
STA. 30+00.00 - STA. 32+27.00
STA. 37+44.00 - STA. 37+84.00
CONSTRUCT R.C. BOX CULVERT ON HWY. 43 CONNECTOR
STA. 8+35.00
CONSTRUCT RIGHT SIDE OF N. LINCOLN ST.
STA. 107+61.87 - STA. 111+80.00
INSTALL PRECAST BARRIER WALL
STA. 26+77.00 - 28+43.00
EXTEND R.C. BOX CULVERT ON LEFT SIDE OF HWY. 43
STA. 26+65.00

STAGE 2:
LEVELING
COMPLETE CONSTRUCTION OF BRIDGE
COMPLETE CONSTRUCTION OF LEFT SIDE OF HWY. 43
COMPLETE CONSTRUCTION OF HWY. 43 CONNECTOR
CONSTRUCT LEFT SIDE OF N. LINCOLN ST.
STA. 107+61.87 - STA. 111+80.00
CONSTRUCT TEMPORARY WIDENING ON LEFT SIDE OF HWY. 43
STA. 21+86.00 - STA. 25+77.00
RELOCATE PRECAST BARRIER WALL
STA. 25+33.00 - STA. 26+22.00
EXTEND R.C. BOX CULVERT ON LEFT SIDE OF HWY. 43
STA. 25+77.00

SEQUENCE OF CONSTRUCTION (CONT.)

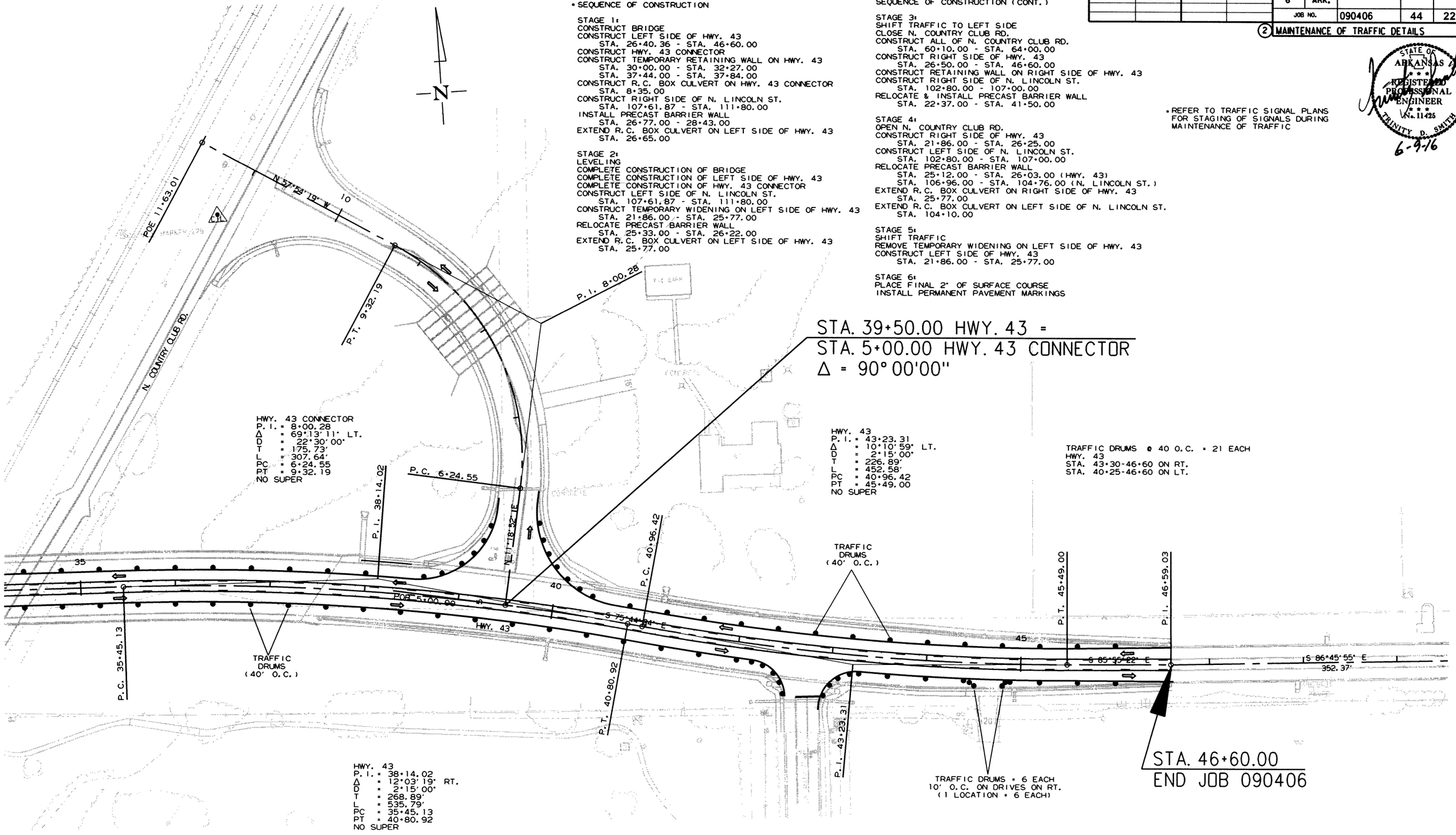
STAGE 3:
SHIFT TRAFFIC TO LEFT SIDE
CLOSE N. COUNTRY CLUB RD.
CONSTRUCT ALL OF N. COUNTRY CLUB RD.
STA. 60+10.00 - STA. 64+00.00
CONSTRUCT RIGHT SIDE OF HWY. 43
STA. 26+50.00 - STA. 46+60.00
CONSTRUCT RETAINING WALL ON RIGHT SIDE OF HWY. 43
CONSTRUCT RIGHT SIDE OF N. LINCOLN ST.
STA. 102+80.00 - 107+00.00
RELOCATE & INSTALL PRECAST BARRIER WALL
STA. 22+37.00 - STA. 41+50.00

STAGE 4:
OPEN N. COUNTRY CLUB RD.
CONSTRUCT RIGHT SIDE OF HWY. 43
STA. 21+86.00 - STA. 26+25.00
CONSTRUCT LEFT SIDE OF N. LINCOLN ST.
STA. 102+80.00 - STA. 107+00.00
RELOCATE PRECAST BARRIER WALL
STA. 25+12.00 - STA. 26+03.00 (HWY. 43)
STA. 106+96.00 - STA. 104+76.00 (N. LINCOLN ST.)
EXTEND R.C. BOX CULVERT ON RIGHT SIDE OF HWY. 43
STA. 25+77.00
EXTEND R.C. BOX CULVERT ON LEFT SIDE OF N. LINCOLN ST.
STA. 104+10.00

STAGE 5:
SHIFT TRAFFIC
REMOVE TEMPORARY WIDENING ON LEFT SIDE OF HWY. 43
CONSTRUCT LEFT SIDE OF HWY. 43
STA. 21+86.00 - STA. 25+77.00

STAGE 6:
PLACE FINAL 2" OF SURFACE COURSE
INSTALL PERMANENT PAVEMENT MARKINGS

- REFER TO TRAFFIC SIGNAL PLANS FOR STAGING OF SIGNALS DURING MAINTENANCE OF TRAFFIC



STAGE 5
MAINTENANCE OF TRAFFIC DETAILS

6/8/2016

R090406.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
10/14/16				6	ARK.			
				JOB NO.		090406	45	226

(2) PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-7-16

▪ SEQUENCE OF CONSTRUCTION

STAGE 1:
CONSTRUCT BRIDGE
CONSTRUCT LEFT SIDE OF HWY. 43
STA. 26+40.36 - STA. 46+60.00
CONSTRUCT HWY. 43 CONNECTOR
CONSTRUCT TEMPORARY RETAINING WALL ON HWY. 43
STA. 30+00.00 - STA. 32+27.00
STA. 37+44.00 - STA. 37+84.00
CONSTRUCT R.C. BOX CULVERT ON HWY. 43 CONNECTOR
STA. 8+35.00
CONSTRUCT RIGHT SIDE OF N. LINCOLN ST.
STA. 107+61.87 - STA. 111+80.00
INSTALL PRECAST BARRIER WALL
STA. 26+77.00 - 28+43.00
EXTEND R.C. BOX CULVERT ON LEFT SIDE OF HWY. 43
STA. 26+65.00

STAGE 2:
LEVELING
COMPLETE CONSTRUCTION OF BRIDGE
COMPLETE CONSTRUCTION OF LEFT SIDE OF HWY. 43
COMPLETE CONSTRUCTION OF HWY. 43 CONNECTOR
CONSTRUCT LEFT SIDE OF N. LINCOLN ST.
STA. 107+61.87 - STA. 111+80.00
CONSTRUCT TEMPORARY WIDENING ON LEFT SIDE OF HWY. 43
STA. 21+86.00 - STA. 25+77.00
RELOCATE PRECAST BARRIER WALL
STA. 25+33.00 - STA. 26+22.00
EXTEND R.C. BOX CULVERT ON LEFT SIDE OF HWY. 43
STA. 25+77.00

STAGE 3:
SHIFT TRAFFIC TO LEFT SIDE
CLOSE N. COUNTRY CLUB RD.
CONSTRUCT ALL OF N. COUNTRY CLUB RD.
STA. 60+10.00 - STA. 64+00.00
CONSTRUCT RIGHT SIDE OF HWY. 43
STA. 26+50.00 - STA. 46+60.00
CONSTRUCT RETAINING WALL ON RIGHT SIDE OF HWY. 43
CONSTRUCT RIGHT SIDE OF N. LINCOLN ST.
STA. 102+80.00 - 107+00.00
RELOCATE & INSTALL PRECAST BARRIER WALL
STA. 22+37.00 - STA. 41+50.00

SEQUENCE OF CONSTRUCTION (CONT.)

STAGE 4:
OPEN N. COUNTRY CLUB RD.
CONSTRUCT RIGHT SIDE OF HWY. 43
STA. 21+86.00 - STA. 26+25.00
CONSTRUCT LEFT SIDE OF N. LINCOLN ST.
STA. 102+80.00 - STA. 107+00.00
RELOCATE PRECAST BARRIER WALL
STA. 25+12.00 - STA. 26+03.00 (HWY. 43)
STA. 106+96.00 - STA. 104+76.00 (N. LINCOLN ST.)
EXTEND R.C. BOX CULVERT ON RIGHT SIDE OF HWY. 43
STA. 25+77.00
EXTEND R.C. BOX CULVERT ON LEFT SIDE OF N. LINCOLN ST.
STA. 104+10.00

STAGE 5:
SHIFT TRAFFIC
REMOVE TEMPORARY WIDENING ON LEFT SIDE OF HWY. 43
CONSTRUCT LEFT SIDE OF HWY. 43
STA. 21+86.00 - STA. 25+77.00

STAGE 6:
PLACE FINAL 2" OF SURFACE COURSE
INSTALL PERMANENT PAVEMENT MARKINGS

▪ REFER TO TRAFFIC SIGNAL PLANS FOR STAGING OF SIGNALS DURING MAINTENANCE OF TRAFFIC

RAISED PAVEMENT MARKERS (TYPE II)(YELLOW/YELLOW) ARE TO BE PLACED ON THE DOUBLE YELLOW AT 80' INTERVALS.

RAISED PAVEMENT MARKERS (TYPE II)(YELLOW/YELLOW) ARE TO BE PLACED ON EACH SIDE OF THE CENTER TURN LANE AT 80' INTERVALS.

RAISED PAVEMENT MARKERS (TYPE III)(WHITE/RED) ARE TO BE PLACED ON THE LANE LINES AT 80' INTERVALS.

REFER TO THE PERMANENT PAVEMENT MARKING DETAILS, STD. DRWG. PM-1, AND THE LATEST EDITION OF THE MUTCD FOR ADDITIONAL PAVEMENT MARKING DETAILS.

THERMOPLASTIC PAVEMENT MARKINGS:

4" WHITE SOLID FOR EDGE LINES
HWY. 43:
STA. 26+46.77-40+00 ON RT. = 1364 LIN. FT.
STA. 42+91-46+60 ON RT. = 401 LIN. FT.
N. LINCOLN STREET:
STA. 102+80-105+05 ON RT. = 225 LIN. FT.
STA. 110+11-111+80 ON RT. = 169 LIN. FT.
STA. 108+60-111+80 ON LT. = 320 LIN. FT.

4" WHITE SOLID FOR TURN LANE LINES
HWY. 43:
STA. 24+45-25+53 = 108 LIN. FT.
STA. 27+25-28+25 = 100 LIN. FT.
N. LINCOLN STREET:
STA. 105+32-106+74 = 142 LIN. FT.
STA. 107+97-108+99 = 102 LIN. FT.
HWY. 43 CONNECTOR:
STA. 5+73.61-6+35+.50 = 62 LIN. FT.
STA. 9+73.56-10+44.57 = 71 LIN. FT.
SUE ANGLIN DRIVE = 38 LIN. FT.

4" WHITE SOLID FOR LANE LINE
HWY. 43:
STA. 40+30-42+30 ON RT. = 200 LIN. FT.

4" WHITE SKIP ON LT.
HWY. 43:
STA. 37+64-44+60 = 174 LIN. FT.

8" WHITE SOLID FOR LANE LINE
HWY. 43:
STA. 27+30-28+80 ON LT. = 150 LIN. FT.

THERMOPLASTIC PAVEMENT MARKINGS (CONT.):

8" DOTTED WHITE LANE LINE
HWY. 43:
STA. 26+46.77-40+00 = 1369 LIN. FT.
STA. 42+91-46+60 = 223 LIN. FT.

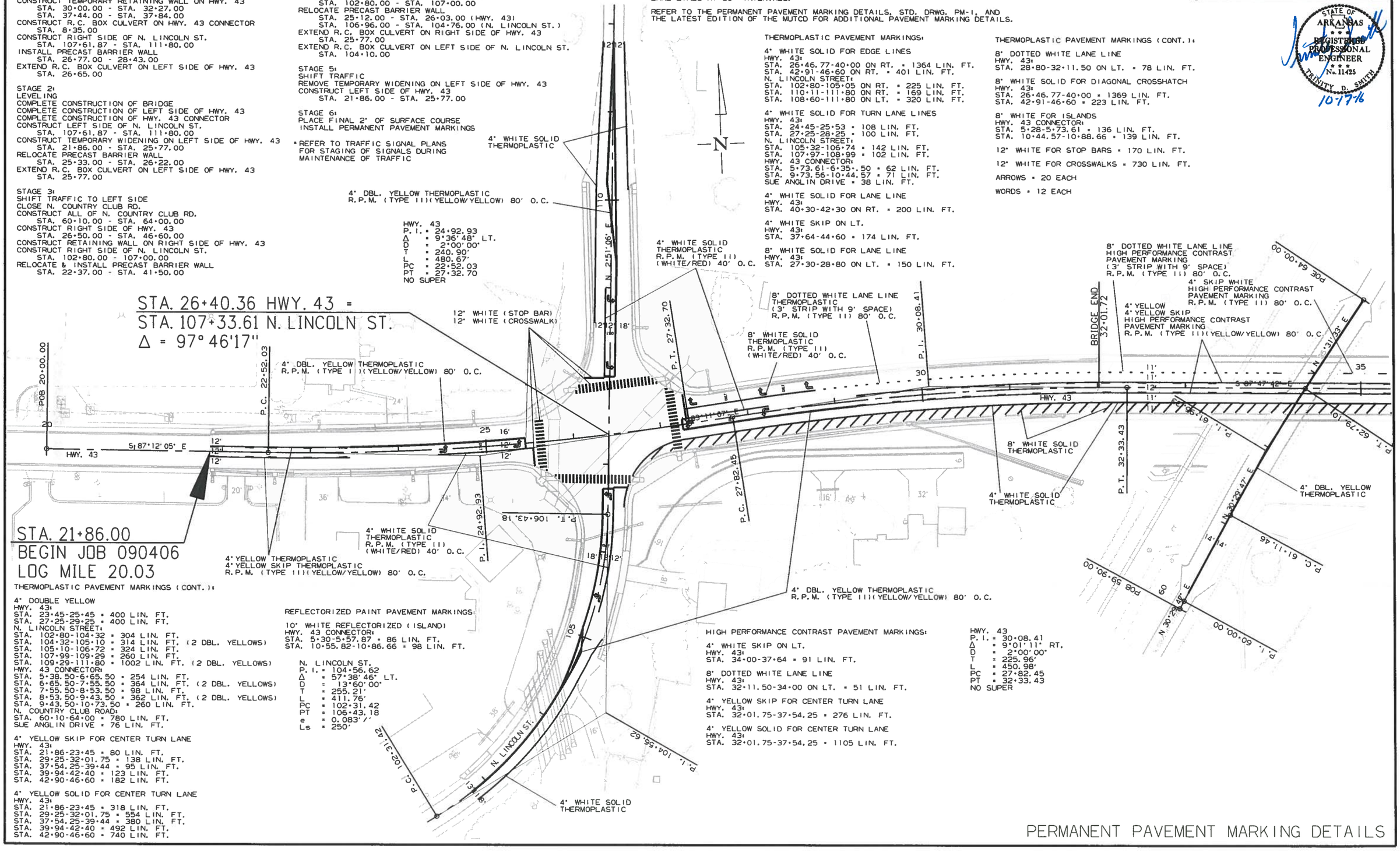
8" WHITE FOR ISLANDS
HWY. 43 CONNECTOR:
STA. 5+28-5+73.61 = 136 LIN. FT.
STA. 10+44.57-10+88.66 = 139 LIN. FT.

12" WHITE FOR STOP BARS = 170 LIN. FT.

12" WHITE FOR CROSSWALKS = 730 LIN. FT.

ARROWS = 20 EACH

WORDS = 12 EACH



THERMOPLASTIC PAVEMENT MARKINGS (CONT.):

4" DOUBLE YELLOW
HWY. 43:
STA. 23+45-25+45 = 400 LIN. FT.
STA. 27+25-29+25 = 400 LIN. FT.
N. LINCOLN STREET:
STA. 102+80-104+32 = 304 LIN. FT.
STA. 104+32-105+10 = 314 LIN. FT. (2 DBL. YELLOWS)
STA. 105+10-106+72 = 324 LIN. FT.
STA. 107+99-109+29 = 260 LIN. FT.
STA. 109+29-111+80 = 1002 LIN. FT. (2 DBL. YELLOWS)
HWY. 43 CONNECTOR:
STA. 5+38.50-6+65.50 = 254 LIN. FT.
STA. 6+65.50-7+55.50 = 364 LIN. FT. (2 DBL. YELLOWS)
STA. 7+55.50-8+53.50 = 98 LIN. FT.
STA. 8+53.50-9+43.50 = 362 LIN. FT. (2 DBL. YELLOWS)
STA. 9+43.50-10+73.50 = 260 LIN. FT.
N. COUNTRY CLUB ROAD:
STA. 60+10-64+00 = 780 LIN. FT.
SUE ANGLIN DRIVE = 76 LIN. FT.

4" YELLOW SKIP FOR CENTER TURN LANE
HWY. 43:
STA. 21+86-23+45 = 80 LIN. FT.
STA. 29+25-32+01.75 = 138 LIN. FT.
STA. 37+54.25-39+44 = 95 LIN. FT.
STA. 39+94-42+40 = 123 LIN. FT.
STA. 42+90-46+60 = 182 LIN. FT.

4" YELLOW SOLID FOR CENTER TURN LANE
HWY. 43:
STA. 21+86-23+45 = 318 LIN. FT.
STA. 29+25-32+01.75 = 554 LIN. FT.
STA. 37+54.25-39+44 = 380 LIN. FT.
STA. 39+94-42+40 = 492 LIN. FT.
STA. 42+90-46+60 = 740 LIN. FT.

REFLECTORIZED PAINT PAVEMENT MARKINGS:

10" WHITE REFLECTORIZED (ISLAND)
HWY. 43 CONNECTOR:
STA. 5+30-5+57.87 = 86 LIN. FT.
STA. 10+55.82-10+86.66 = 98 LIN. FT.

HIGH PERFORMANCE CONTRAST PAVEMENT MARKINGS:

4" WHITE SKIP ON LT.
HWY. 43:
STA. 34+00-37+64 = 91 LIN. FT.

8" DOTTED WHITE LANE LINE
HWY. 43:
STA. 32+11.50-34+00 ON LT. = 51 LIN. FT.

4" YELLOW SKIP FOR CENTER TURN LANE
HWY. 43:
STA. 32+01.75-37+54.25 = 276 LIN. FT.

4" YELLOW SOLID FOR CENTER TURN LANE
HWY. 43:
STA. 32+01.75-37+54.25 = 1105 LIN. FT.

10/14/2016

R090406.DGN

PERMANENT PAVEMENT MARKING DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	46	226

(2) PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
6-9-16

- SEQUENCE OF CONSTRUCTION

STAGE 1:
CONSTRUCT BRIDGE
CONSTRUCT LEFT SIDE OF HWY. 43
STA. 26+40.36 - STA. 46+60.00
CONSTRUCT HWY. 43 CONNECTOR
CONSTRUCT TEMPORARY RETAINING WALL ON HWY. 43
STA. 30+00.00 - STA. 32+27.00
STA. 37+44.00 - STA. 37+84.00
CONSTRUCT R.C. BOX CULVERT ON HWY. 43 CONNECTOR
STA. 8+35.00
CONSTRUCT RIGHT SIDE OF N. LINCOLN ST.
STA. 107+61.87 - STA. 111+80.00
INSTALL PRECAST BARRIER WALL
STA. 26+77.00 - 28+43.00
EXTEND R.C. BOX CULVERT ON LEFT SIDE OF HWY. 43
STA. 26+65.00

STAGE 2:
LEVELING
COMPLETE CONSTRUCTION OF BRIDGE
COMPLETE CONSTRUCTION OF LEFT SIDE OF HWY. 43
COMPLETE CONSTRUCTION OF HWY. 43 CONNECTOR
CONSTRUCT LEFT SIDE OF N. LINCOLN ST.
STA. 107+61.87 - STA. 111+80.00
CONSTRUCT TEMPORARY WIDENING ON LEFT SIDE OF HWY. 43
STA. 21+86.00 - STA. 25+77.00
RELOCATE PRECAST BARRIER WALL
STA. 25+33.00 - STA. 26+22.00
EXTEND R.C. BOX CULVERT ON LEFT SIDE OF HWY. 43
STA. 25+77.00

SEQUENCE OF CONSTRUCTION (CONT.)

STAGE 3:
SHIFT TRAFFIC TO LEFT SIDE
CLOSE N. COUNTRY CLUB RD.
CONSTRUCT ALL OF N. COUNTRY CLUB RD.
STA. 60+10.00 - STA. 64+00.00
CONSTRUCT RIGHT SIDE OF HWY. 43
STA. 26+50.00 - STA. 46+60.00
CONSTRUCT RETAINING WALL ON RIGHT SIDE OF HWY. 43
CONSTRUCT RIGHT SIDE OF N. LINCOLN ST.
STA. 102+80.00 - 107+00.00
RELOCATE & INSTALL PRECAST BARRIER WALL
STA. 22+37.00 - STA. 41+50.00

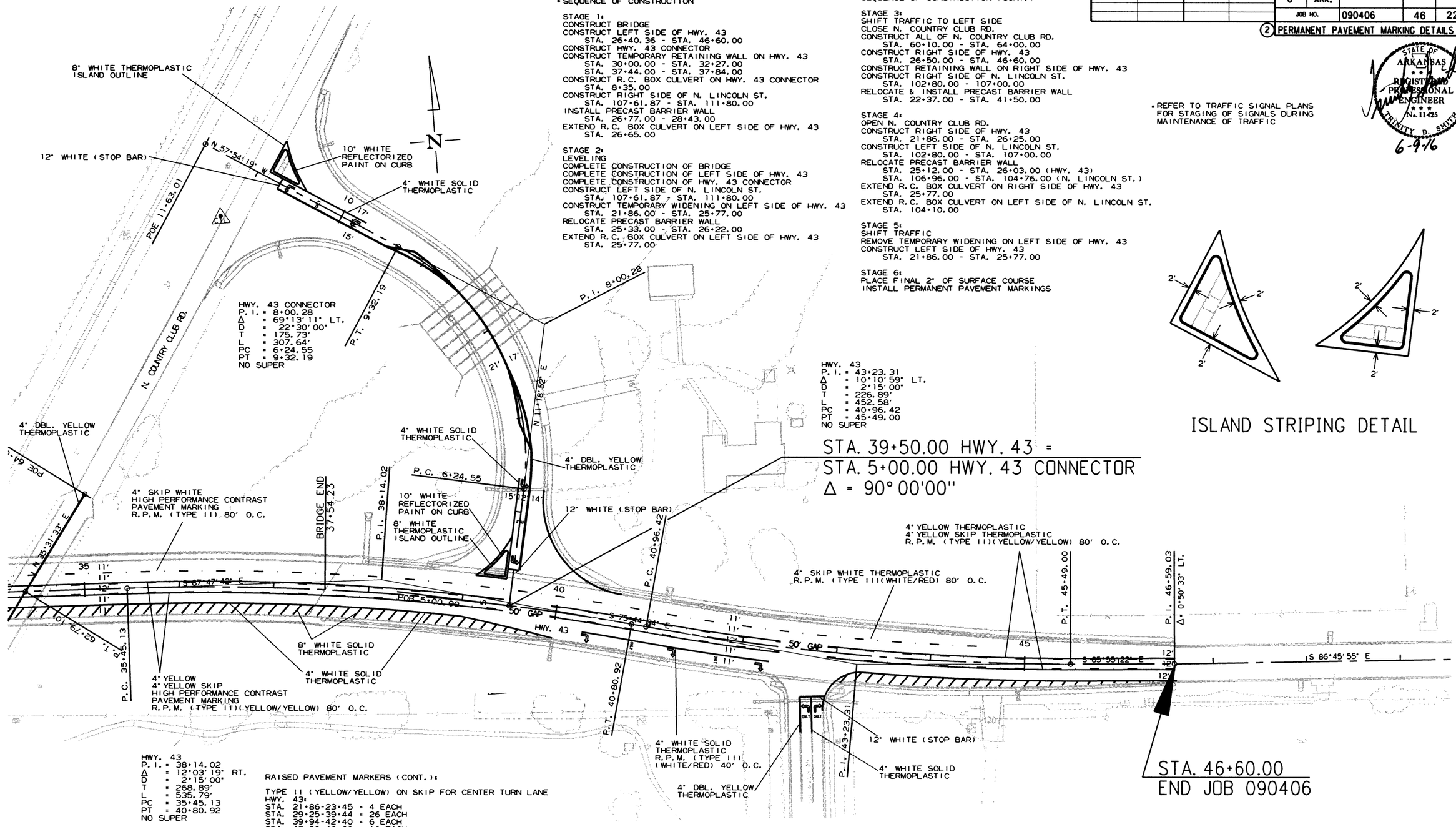
STAGE 4:
OPEN N. COUNTRY CLUB RD.
CONSTRUCT RIGHT SIDE OF HWY. 43
STA. 21+86.00 - STA. 26+25.00
CONSTRUCT LEFT SIDE OF N. LINCOLN ST.
STA. 102+80.00 - STA. 107+00.00
RELOCATE PRECAST BARRIER WALL
STA. 25+12.00 - STA. 26+03.00 (HWY. 43)
STA. 106+96.00 - STA. 104+76.00 (N. LINCOLN ST.)
EXTEND R.C. BOX CULVERT ON RIGHT SIDE OF HWY. 43
STA. 25+77.00
EXTEND R.C. BOX CULVERT ON LEFT SIDE OF N. LINCOLN ST.
STA. 104+10.00

STAGE 5:
SHIFT TRAFFIC
REMOVE TEMPORARY WIDENING ON LEFT SIDE OF HWY. 43
CONSTRUCT LEFT SIDE OF HWY. 43
STA. 21+86.00 - STA. 25+77.00

STAGE 6:
PLACE FINAL 2" OF SURFACE COURSE
INSTALL PERMANENT PAVEMENT MARKINGS

- REFER TO TRAFFIC SIGNAL PLANS FOR STAGING OF SIGNALS DURING MAINTENANCE OF TRAFFIC

ISLAND STRIPING DETAIL



HWY. 43
P.I. = 38+14.02
Δ = 12°03'19" RT.
D = 2°15'00"
T = 268.89'
L = 535.79'
PC = 35+45.13
PT = 40+80.92
NO SUPER

RAISED PAVEMENT MARKERS:

TYPE II (YELLOW/YELLOW) ON DOUBLE YELLOW
HWY. 43:
STA. 23+45-25+45 = 3 EACH
STA. 27+25-29+25 = 3 EACH
N. LINCOLN STREET:
STA. 102+80-104+32 = 2 EACH
STA. 104+32-105+10 = 2 EACH (2 DBL. YELLOWS)
STA. 105+10-106+72 = 2 EACH
STA. 107+99-109+29 = 2 EACH
STA. 109+29-111+80 = 6 EACH (2 DBL. YELLOWS)

RAISED PAVEMENT MARKERS (CONT.):

TYPE II (YELLOW/YELLOW) ON SKIP FOR CENTER TURN LANE
HWY. 43:
STA. 21+86-23+45 = 4 EACH
STA. 29+25-39+44 = 26 EACH
STA. 39+94-42+40 = 6 EACH
STA. 42+90-46+60 = 10 EACH

TYPE II (WHITE/RED) ON WHITE TURN LANE LINES
HWY. 43:
STA. 24+45-25+53 = 3 EACH
STA. 27+25-28+25 = 3 EACH
N. LINCOLN STREET:
STA. 105+32-106+74 = 4 EACH
STA. 107+97-108+99 = 3 EACH

TYPE II (WHITE/RED) ON WHITE SOLID FOR LANE LINE
HWY. 43:
STA. 27+30-28+80 ON LT. = 4 EACH
STA. 40+30-42+30 ON RT. = 5 EACH

RAISED PAVEMENT MARKERS (CONT.):

TYPE II (WHITE/RED) ON DOTTED WHITE LANE LINES ON LT.
HWY. 43:
STA. 28+80-34+00 ON LT. = 7 EACH

TYPE II (WHITE/RED) ON SKIP LINES ON LT.
HWY. 43:
STA. 34+00-44+60 ON LT. = 13 EACH

6/8/2016

R090406.DGN

PERMANENT PAVEMENT MARKING DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	47	226

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
6-9-16

ADVANCE WARNING SIGNS AND DEVICES

SIGN NUMBER	DESCRIPTION	SIGN SIZE	STAGE 1	STAGE 2	STAGE 3	STAGE 4	STAGE 5	MAXIMUM NUMBER REQUIRED	TOTAL SIGNS REQUIRED		VERTICAL PANELS	TRAFFIC DRUMS	BARRICADES (TYPE III)		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		RIGHT	LEFT	LIN. FT.		EACH	
W20-1	ROAD WORK 1500 FT.	48"x48"	4	4	4	4	4	4	4	64.0								
W20-1	ROAD WORK 1000 FT.	48"x48"	4	4	4	4	4	4	4	64.0								
W20-1	ROAD WORK 500 FT.	48"x48"	4	4	4	4	4	4	4	64.0								
W20-1	ROAD WORK AHEAD	48"x48"	3	3	3	3	3	3	3	48.0								
G20-2	END ROAD WORK	48"x24"	7	7	7	7	7	7	7	56.0								
R11-2	ROAD CLOSED	48"x30"	7	7	4	2		7	7	70.0								
OM-3L	OBJECT MARKER	12"x36"	3	3	3	6		6	6	18.0								
OM-3R	OBJECT MARKER	12"x36"	4	4	4	8		8	8	24.0								
W1-6	LARGE ARROW	48"x24"			2	2		2	2	16.0								
R4-1	DO NOT PASS	24"x30"	4	4	4	4	4	4	4	20.0								
RSP-1	SHOULDER CLOSED	48"x30"	4	4	4	4	4	4	4	40.0								
	VERTICAL PANELS		36	46		4		46			46							
	TRAFFIC DRUMS		54	75	88	111	136	136				136						
	TYPE III BARRICADE-RT. (8')		7	5	2			7					56					
	TYPE III BARRICADE-LT. (8')		7	9	6	4		9						72				
	FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER		266		1160			1426							1426			
	RELOCATING PRECAST CONCRETE BARRIER			113	253	233		599								599		
	TEMPORARY IMPACT ATTENUATION BARRIER			1	1	3		5									5	
	TEMPORARY IMPACT ATTENUATION BARRIER (REPAIR)			1	1	3		5										5
TOTALS:										**484.0**	**46**	**136**	**56**	**72**	**1426**	**599**	**5**	**5**

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

CONSTRUCTION PAVEMENT MARKINGS AND PERMANENT PAVEMENT MARKINGS

DESCRIPTION	STAGE 1	STAGE 2	STAGE 3	STAGE 4	STAGE 5	END OF JOB	REMOVAL OF PERMANENT PAVEMENT MARKINGS	CONSTRUCTION PAVEMENT MARKINGS	CONSTRUCTION PAVEMENT MARKINGS		REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS	REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS		REMOVABLE CONSTRUCTION PAVEMENT MARKINGS	RAISED PAVEMENT MARKERS		THERMOPLASTIC PAVEMENT MARKING						REFLECTORIZED PAINT PAVEMENT MARKING	HIGH PERFORMANCE CONTRAST PAVEMENT MARKING		
									WORDS	ARROWS		WORDS	ARROWS		TYPE II (WHITE/RED)	TYPE II (YEL/YEL)	4" WHITE	4" YELLOW	8" WHITE	12" WHITE	WORDS	ARROWS	10" WHITE	4" WHITE	4" YELLOW	8" WHITE
	LIN. FT. - EACH						LIN. FT.		EACH		LIN. FT.	EACH		LIN. FT.	EACH		LIN. FT.				EACH		LIN. FT.	LIN. FT.		
REMOVAL OF PERMANENT PAVEMENT MARKINGS	302	165	197				664																			
CONSTRUCTION PAVEMENT MARKINGS	4097	1533	13767	1208	8233			28838																		
CONSTRUCTION PAVEMENT MARKINGS (WORDS)	2	2	9		2				15																	
CONSTRUCTION PAVEMENT MARKINGS (ARROWS)	2	2	9		2					15																
REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS		453	4394	586	7851						13284															
REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS (WORDS)			4		4							8														
REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS (ARROWS)			2		4								6													
REMOVABLE CONSTRUCTION PAVEMENT MARKINGS			1662		2487									4149												
RAISED PAVEMENT MARKERS TYPE II (WHITE/RED)						42									42											
RAISED PAVEMENT MARKERS TYPE II (YEL/YEL)						66										66										
THERMOPLASTIC PAVEMENT MARKING WHITE (4")						3476											3476									
THERMOPLASTIC PAVEMENT MARKING YELLOW (4")						8300												8300								
THERMOPLASTIC PAVEMENT MARKING WHITE (8")						2095													2095							
THERMOPLASTIC PAVEMENT MARKING WHITE (12")						900														900						
THERMOPLASTIC PAVEMENT MARKING (WORDS)						12															12					
THERMOPLASTIC PAVEMENT MARKING (ARROWS)						12																12				
REFLECTORIZED PAINT PAVEMENT MARKING WHITE (10")						184																	184			
HIGH PERFORMANCE CONTRAST PAVEMENT MARKING WHITE (4")						91																		91		
HIGH PERFORMANCE CONTRAST PAVEMENT MARKING YELLOW (4")						1381																			1381	
HIGH PERFORMANCE CONTRAST PAVEMENT MARKING WHITE (8")						51																				51
TOTALS:							**664**	**28838**	**15**	**15**	**13284**	**8**	**6**	**4149**	**42**	**66**	**3476**	**8300**	**2095**	**900**	**12**	**12**	**184**	**91**	**1381**	**51**

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

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

CLEARING AND GRUBBING

STATION	STATION	LOCATION	CLEARING	GRUBBING
			STATION	
23+00	26+00	HWY. 43	3	3
34+50	35+50	HWY. 43	1	1
36+00	37+00	HWY. 43	1	1
38+00	40+00	HWY. 43	2	2
41+00	42+00	HWY. 43	1	1
43+60	46+60	HWY. 43	3	3
105+60	106+80	N. LINCOLN ST.	2	2
109+80	111+80	N. LINCOLN ST.	2	2
6+00	9+00	HWY. 43 CONNECTOR	3	3
TOTALS:			**18**	**18**

12/14/2015

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QUANTITIES

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
10/14/16				6	ARK.			
				JOB NO.		090406	48	226

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-17-16

EROSION CONTROL

STATION	STATION	LOCATION	PERMANENT EROSION CONTROL					TEMPORARY EROSION CONTROL									
			SEEDING	MULCH COVER	WATER	SECOND SEEDING APPLICATION	SOLID SODDING	TEMPORARY SEEDING	MULCH COVER	WATER	TRIANGULAR SILT DIKE	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	ACRE	M.GAL.	ACRE	SQ.YD.	ACRE	ACRE	M.GAL.	LIN. FT.	CU.YD.	LIN. FT.	LIN. FT.	CU.YD.	CU.YD.	CU. YD.
ENTIRE	PROJECT	STAGE 1	2.80	2.80	296.9	2.80	895	7.09	7.09	144.6		42	450	2145			110
ENTIRE	PROJECT	STAGE 2	0.20	0.20	21.8	0.20	110	1.19	1.19	24.3		9	50	378			19
ENTIRE	PROJECT	STAGE 3	1.51	1.51	163.0	1.51	715	3.91	3.91	79.8		36	325	1904			95
ENTIRE	PROJECT	STAGE 4	0.17	0.17	19.9	0.17	204	0.77	0.77	15.7		27	175	171			22
ENTIRE	PROJECT	STAGE 5	0.10	0.10	11.7	0.10	122	0.47	0.47	9.6		12	75	190			14
*ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER					2.5		200	3.00	3.00	61.2	335	126	200	500	96	96	331
TOTALS:			4.78	4.78	515.8	4.78	2246	16.43	16.43	335.2	335	252	1275	5288	96	96	591

BASIS OF ESTIMATE:
LIME .....2 TONS / ACRE OF SEEDING
WATER.....102.0 M.G. / ACRE OF SEEDING
WATER.....20.4 M.G. / ACRE OF TEMPORARY SEEDING
WATER.....12.6 GAL. / SQ. YD. OF SOLID SODDING
ROCK DITCH CHECKS.....3 CU.YD./LOCATION

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

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

BENCH MARKS

STATION	LOCATION	BENCH MARKS
		EACH
25+77	BOX CULVERT ON RT.	1
33+00	BRIDGE	1
8+11	BOX CULVERT ON HWY. 43 CONNECTOR	1
104+10	BOX CULVERT ON LT.	1
TOTAL:		4

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

REMOVAL AND DISPOSAL OF CULVERTS AND DROP INLETS

STATION	DESCRIPTION	PIPE CULVERTS	BOX CULVERTS	YARD DRAIN	DROP INLETS
		EACH	EACH	EACH	EACH
22+16	18" x 37' PIPE CULVERT ON RT.	1			
22+80	DROP INLET WITH 18" x 4' R.C. PIPE CULVERT & 18" x 200' R.C. PIPE CULVERT ON RT.	2			1
23+10	DROP INLET WITH 18" x 164' R.C. PIPE CULVERT ON LT.	1			1
23+84	YARD DRAIN WITH 12" x 90' C.M. PIPE CULVERT ON LT.	1		1	
24+49	18" x 50' C.M. PIPE CULVERT ON RT.	1			
24+79	DROP INLET WITH 18" PIPE CULVERT ON LT.	1			1
24+82	DROP INLET WITH 18" x 84' R.C. PIPE CULVERT ON RT.				
26+75	DROP INLET ON RT.				1
26+85	DROP INLET ON LT.				1
27+91	18" x 35' C.M. PIPE CULVERT ON RT.	1			
28+80	18" x 30' C.M. PIPE CULVERT ON RT.	1			
29+61	DROP INLET WITH 18" x 4' R.C. PIPE CULVERT & 18" x 40' R.C. PIPE CULVERT ON RT.	2			1
29+63	DROP INLET WITH 18" x 294' R.C. PIPE CULVERT ON RT.	1			1
30+27	DROP INLET WITH 18" x 3' R.C. PIPE CULVERT & 18" x 61' R.C. PIPE CULVERT ON RT.	2			1
32+58	12' x 3' x 82' R.C. BOX CULVERT ON RT.		1		
33+72	DROP INLET WITH 18" x 19' R.C. PIPE CULVERT & 18" x 171' R.C. PIPE CULVERT ON RT.	2			1
35+48	DROP INLET WITH 18" x 23' R.C. PIPE CULVERT ON RT.	1			1
35+49	DROP INLET WITH 18" x 24' R.C. PIPE CULVERT ON RT.	1			1
36+00	QUAD. 12' x 7' x 62' R.C. BOX CULVERT ON RT.		1		
37+21	DROP INLET WITH 18" x 91' R.C. PIPE CULVERT ON RT.	1			1
37+23	DROP INLET WITH 18" x 90' R.C. PIPE CULVERT ON RT.	1			1
39+49	24" x 40' C.M. PIPE CULVERT ON RT.	1			
39+79	DROP INLET WITH 18" x 250' R.C. PIPE CULVERT ON RT.	1			1
42+75	18" x 113' R.C. PIPE CULVERT ON RT.	1			
44+25	DROP INLET ON LT.				1
44+26	DROP INLET ON RT.				1
44+66.85	18" x 30' PIPE CULVERT ON RT.	1			
103+58	16" x 40' C.M. PIPE CULVERT ON LT.	1			
60+59	18" x 20' PIPE CULVERT ON LT.	1			
TOTALS:		26	2	1	16

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

EARTHWORK

STATION	STATION	LOCATION / DESCRIPTION	UNCLASSIFIED EXCAVATION	COMPACTED EMBANKMENT	SELECT GRANULAR BACKFILL	* SOIL STABILIZATION
			CU. YD.			TON
ENTIRE	PROJECT	STAGE 1-MAIN LANES	1909	34962	948	
ENTIRE	PROJECT	STAGE 1-N. LINCOLN ST.	635	1388		
ENTIRE	PROJECT	STAGE 1-HWY. 43 CONNECTOR	612	9348		
ENTIRE	PROJECT	STAGE 2-TEMPORARY WIDENING	87	409		
ENTIRE	PROJECT	STAGE 2-N. LINCOLN ST.	172	768		
ENTIRE	PROJECT	STAGE 3-MAIN LANES	995	13281	1761	
ENTIRE	PROJECT	STAGE 3-N. LINCOLN ST.	99	356		
ENTIRE	PROJECT	STAGE 4-MAIN LANES	275	372		
ENTIRE	PROJECT	STAGE 4-N. LINCOLN ST.	880	761		
ENTIRE	PROJECT	STAGE 5-MAIN LANES	203	116		
ENTIRE	PROJECT	APPROACHES		275		
		BRIDGE				
		N. COUNTRY CLUB RD.	1265	293		
		SUE ANGLIN DR.	73	20		
27+31.67	27+88.00	PAVEMENT OBLITERATION - HWY. 43 ON LEFT	96			
30+43.00	31+16.00	PAVEMENT OBLITERATION - HWY. 43 ON RIGHT	34			
32+02.53	32+93.68	PAVEMENT OBLITERATION - HWY. 43 ON RIGHT	94			
34+15.73	36+72.02	PAVEMENT OBLITERATION - HWY. 43 ON RIGHT	331			
27+31.67	27+88.00	PAVEMENT OBLITERATION - HWY. 43 CONNECTOR ON RIGHT	53			
8+11.70		CHANNEL CHANGE - INLET	1243			
8+11.70		CHANNEL CHANGE - OUTLET	375			
* ENTIRE	PROJECT	TO BE USED IF AND WHERE				100
		DIRECTED BY THE ENGINEER				
TOTALS:			9431	62349	2709	100

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

REMOVAL AND DISPOSAL OF FENCE

STATION	STATION	LOCATION	FENCE
			LIN. FT.
28+40		HWY. 43 ON LEFT	60
29+08	31+44	HWY. 43 ON LEFT	378
34+70	37+67	HWY. 43 ON LEFT (N. COUNTRY CLUB RD.)	694
34+70	39+24	HWY. 43 ON LEFT	523
43+00	46+60	HWY. 43 ON LEFT	379
43+08	44+52	HWY. 43 ON RIGHT	140
44+52		HWY. 43 ON RIGHT	20
44+80		HWY. 43 ON RIGHT	20
103+67	103+87	N. LINCOLN ST. ON RIGHT	24
109+25	109+30	N. LINCOLN ST. ON RIGHT	45
6+92	7+43	HWY.43 CONNECTOR	87
TOTAL:			2370

SOIL LOG

STATION	LOCATION	DEPTH	LIQUID LIMIT	PLASTICITY INDEX	AASHTO CLASSIFICATION	COLOR
		FEET				
24+00	12RT	0-5	34	15	A-6(9)	RED
24+00	27RT	0-5	35	15	A-6(6)	RED
48+00	12LT	0-5	35	18	A-6(12)	RED
48+00	24LT	0-5	40	22	A-6(11)	RED

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.

EROSION CONTROL MATTING

STATION	STATION	LOCATION	LENGTH	CLASS 3
			LIN. FT.	SQ. YD.
* ENTIRE	PROJECT	TO BE USED IF AND WHERE	800.00	711.11
		DIRECTED BY THE ENGINEER		
TOTAL:				711.11

NOTE: AVERAGE WIDTH = 8'-0"

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

DUMPED RIPRAP AND FILTER BLANKET

STATION	LOCATION	DUMPED RIPRAP	FILTER BLANKET
		CU. YD.	SQ. YD.
104+10	OUTLET OF PIPE CULVERT - N. LINCOLN ST.	58	115
8+11.70	OUTLET OF PIPE CULVERT - HWY. 43 CONNECTOR	237	474
TOTALS:		295	589

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

SELECTED PIPE BEDDING

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

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

12/14/2015

R090406.DGN

QUANTITIES

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	49	226

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
6-9-16

REMOVAL AND DISPOSAL OF ITEMS

STATION	STATION	LOCATION	POSTS	CURB AND GUTTER	BRICK WALLS	CONCRETE ISLANDS	CONCRETE DRIVEWAYS	WALKS	CONCRETE DITCH PAVING	SIGN POLE AND FOUNDATION	LUMINAIRE POLE AND FOUNDATION	BUILDINGS	CANOPY	HANDRAIL
			EACH	LIN. FT.	LIN. FT.	SQ. YD.	SQ. YD.	SQ. YD.	SQ. YD.	EACH	EACH	EACH	EACH	LIN. FT.
21+86	25+74	HWY. 43 ON LEFT (TEMPORARY WIDENING)		355										
21+86	25+71	HWY. 43 ON LEFT (TEMPORARY WIDENING)						266						
21+86	26+26	HWY. 43 ON LEFT		469										
21+86	26+23	HWY. 43 ON LEFT						303						
21+86	26+04	HWY. 43 ON RIGHT		455										
21+86	26+02	HWY. 43 ON RIGHT						292						
22+00		HWY. 43 ON RIGHT	1											
22+02		HWY. 43 ON RIGHT								1				
22+04	22+27	HWY. 43 ON RIGHT (DRIVEWAY)		34										
22+30		HWY. 43 ON RIGHT								1				
22+32		HWY. 43 ON RIGHT	1											
22+94	23+32	HWY. 43 ON RIGHT (DRIVEWAY)		25										
23+13		HWY. 43 ON RIGHT					121							
24+32	24+67	HWY. 43 ON RIGHT (DRIVEWAY)		29										
24+49		HWY. 43 ON RIGHT					106							
25+44		HWY. 43 ON RIGHT								1				
25+70	26+24	HWY. 43 ON LEFT							66					
25+91	26+07	HWY. 43 ON LEFT												19
26+44	32+95	HWY. 43 ON RIGHT		674										
26+46	32+90	HWY. 43 ON RIGHT						450						
26+70	33+16	HWY. 43 ON RIGHT		687										
26+71	33+20	HWY. 43 ON RIGHT						440						
26+82	27+03	HWY. 43 ON LEFT							55					
26+83	26+97	HWY. 43 ON LEFT												28
27+16		HWY. 43 ON RIGHT									1			
28+74		HWY. 43 ON LEFT											1	
28+80		HWY. 43 ON RIGHT					46							
28+98		HWY. 43 ON LEFT										1		
31+60		HWY. 43 ON LEFT										1		
32+69	33+03	HWY. 43 ON RIGHT				30								
33+02	33+48	HWY. 43 ON RIGHT						43						
33+07	33+48	HWY. 43 ON RIGHT		77										
33+20	33+56	HWY. 43 ON RIGHT				27								
33+28	34+28	HWY. 43 ON RIGHT		125										
33+29	34+25	HWY. 43 ON RIGHT						78						
33+83	42+60	HWY. 43 ON RIGHT		909										
33+94	42+58	HWY. 43 ON RIGHT						567						
34+48	46+60	HWY. 43 ON RIGHT		1235										
34+48		HWY. 43 ON RIGHT									1			
36+32		HWY. 43 ON RIGHT									1			
38+18		HWY. 43 ON RIGHT									1			
39+23	39+31	HWY. 43 ON LEFT			241									
39+25	40+66	HWY. 43 ON LEFT					727							
39+54	42+92	HWY. 43 ON LEFT			338									
40+02		HWY. 43 ON RIGHT									1			
41+82		HWY. 43 ON RIGHT									1			
42+93	44+60	HWY. 43 ON RIGHT		410										
42+95	43+05	HWY. 43 ON RIGHT						18						
44+66.85		HWY. 43 ON RIGHT					19							
103+33	103+81	N. LINCOLN ST. ON LEFT (DRIVEWAY)		35										
103+58		N. LINCOLN ST. ON LEFT					123							
104+00		N. LINCOLN ST. ON LEFT									1			
105+81		N. LINCOLN ST. ON RIGHT					80							
108+82		N. LINCOLN ST. ON RIGHT											1	
TOTALS:			2	5519	579	57	1222	2457	121	3	7	2	2	47

4" PIPE UNDERDRAIN

STATION	STATION	LOCATIONS	4" PIPE UNDERDRAINS
			LIN. FT.
* ENTIRE PROJECT TO BE USED IF AND			480
WHERE DIRECTED BY THE ENGINEER			
TOTAL:			480

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

NOTE: UNDERDRAINS SHALL BE STUBBED INTO THE PROPOSED DROP INLET IF AND WHERE DIRECTED BY THE ENGINEER. PAYMENT FOR THIS TO BE INCLUDED IN THE UNIT PRICE BID FOR 4" PIPE UNDERDRAIN.

COLD MILLING ASPHALT PAVEMENT

STATION	STATION	LOCATION	AVG. WIDTH	COLD MILLING ASPHALT PAVEMENT
			FEET	SQ. YD.
21+86.00	22+86.00	HWY. 43	38.00	422.22
45+60.00	46+60.00	HWY. 43	38.00	422.22
102+80.00	103+80.00	N. LINCOLN ST.	32.00	355.56
110+80.00	111+80.00	N. LINCOLN ST.	24.00	266.67
TOTAL:				1466.67

NOTE: AVERAGE MILLING DEPTH 1".

CONCRETE ISLAND

STATION	LOCATION	CURB FACE TYPE	CONCRETE ISLAND
			SQ.YD.
5+40	HWY. 43 CONNECTOR ON LEFT	C	31
10+74	HWY. 43 CONNECTOR ON RIGHT	C	42
TOTAL:			73

ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC

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

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

ACHM PATCHING OF EXISTING ROADWAY

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

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

PAVEMENT REPAIR OVER CULVERTS (CONCRETE)

STATION	LOCATION	WIDTH	LENGTH	CU.YD.
		FEET		
104+25	N. LINCOLN ST.	37.00	36.5	50.0
TOTAL:				50.0

AVG. DEPTH = 12"

CONCRETE DITCH PAVING

STATION	STATION	LOCATION	LENGTH	"W"	"B"	CONC. DITCH PAVING (TYPE A)	CONC. DITCH PAVING (TYPE B)	SOLID SODDING	WATER
			LIN. FT.	FEET	FEET	SQ. YD.	SQ. YD.	SQ. YD.	M. GAL.
27+50.00	31+80.95	HWY. 43 ON RIGHT BEHIND RETAINING WALL	430.95	4.00			191.53		
103+93.00	106+60.00	N. LINCOLN ST. ON LEFT	267.00	38.00	9.00	1127.33		118.67	1.50
107+89.00	108+43.00	N. LINCOLN ST. ON LEFT	54.00	26.00	4.00	156.00		24.00	0.30
108+04.00	108+66.00	N. LINCOLN ST. ON RIGHT	62.00	28.00	8.00	192.89		27.56	0.35
*ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.			200.00	6.00			133.33	88.89	1.12
TOTALS:						1476.22	324.86	259.12	3.27

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

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

12/14/2015

R090406.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
10/14/16				6	ARK.			
				JOB NO.	090406		50	226

(2) QUANTITIES

FENCING

STATION	STATION	LOCATION	WIRE FENCE (TYPE D) LIN. FT.
42+81.81	46+60.00	HWY. 43 ON LEFT	398
43+22.63	44+54.95	HWY. 43 ON RIGHT	137
7+43.26	10+67.86	HWY. 43 CONNECTOR ON RIGHT	465
TOTAL:			1000

RETAINING WALLS

STATION	STATION	LOCATION	UNCL.EXC. FOR STR.-ROADWAY CU.YDS.	RETAINING WALL SQ.FT.	TEMPORARY RETAINING WALL SQ.FT.	TEXTURED COATING FINISH SQ.YD.
30+00	32+27	HWY. 43 ON RIGHT	245		2442	
37+44	37+84	HWY. 43 ON RIGHT	18		187	
27+50	31+80.92	HWY. 43 ON RIGHT	408	5022		436
TOTALS:			671	5022	2629	436

MAILBOXES

LOCATION	MAILBOXES	MAILBOX SUPPORTS (SINGLE) EACH	MAILBOX SUPPORTS (DOUBLE) EACH
ENTIRE PROJECT	5	3	1
TOTALS:	5	3	1

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-17-16

STRUCTURES

STATION	DESCRIPTION	REINFORCED CONCRETE PIPE CULVERT (CLASS III) 18"	24"	36"	48"	54"	22"X14"	SIDE DRAIN 12"	PIPE CULVERT STORM DRAIN ALTERNATES 1 & 2 18"	24"	54"	22"X14"	FLARED END SECTIONS FOR R.C. PIPE CULVERTS 18"	24"	36"	48"	54"	22"X14"	DROP INLETS TYPE C	TYPE MO	EXT. 4'	EXT. 8'	JUNCT. BOXES (TYPE E)	YARD DRAINS	SPAN	HEIGHT	LENGTH	CLASS S CONCRETE-ROADWAY	REINF. STEEL-ROADWAY (GRADE 60)	UNCL.EXC. FOR STR.-ROADWAY	SOLID SODDING	WATER	STD. DWG. NOS.
		LIN. FT.							LIN. FT.				EACH						EACH						LIN. FT.			CU.YD.	POUND	CU.YD.	SQ.YD.	M.GAL.	
21+89	CONSTRUCT DROP INLET ON RT.	6							67				1							1											5	0.06	FPC-9E, FPC-9M, PCC-1, PCM-1, FES-1, FES-2
21+89	CONSTRUCT DROP INLET ON LT.								117											1													FPC-9E, FPC-9M, PCC-1, PCM-1
22+60	CONSTRUCT 4' x 4' TYPE E JUNCTION BOX ON RT.	3							152				1										1							5	0.06	FPC-9, PCC-1, PCM-1, FES-1, FES-2
23+10	CONSTRUCT DROP INLET ON LT.	4							172				1							1	1									5	0.06	FPC-9E, FPC-9M, PCC-1, PCM-1, FES-1, FES-2
24+15	CONSTRUCT 4' x 4' TYPE E JUNCTION BOX ON RT.	2							70				1										1							5	0.06	FPC-9, PCC-1, PCM-1, FES-1, FES-2
24+88	CONSTRUCT DROP INLET ON RT.	9											1							1	1									5	0.06	FPC-9M, PCC-1,FES-1, FES-2
24+88	CONSTRUCT DROP INLET ON LT.	9											1							1	1									5	0.06	FPC-9E, FPC-9M, PCC-1,FES-1, FES-2
25+70	EXTEND DBL. 12' x 3' R.C. BOX CULVERT JUNCTION BOX ON RT.																								12	3	12	35.28	8562	23			RCB-1, RCB-2, RCB-3, SPECIAL DETAILS
25+77	EXTEND 12' x 3' R.C. BOX CULVERT ON LT.																								12	3	38	43.32	6411	26	9	0.11	RCB-1, RCB-2, RCB-3, SPECIAL DETAILS
26+65	EXTEND 12' x 3' R.C. BOX CULVERT ON LT.																								12	3	72	77.36	11065	45	7	0.09	RCB-1, RCB-2, RCB-3, SPECIAL DETAILS
27+34	CONSTRUCT DROP INLET ON RT.	12											1							1		1								5	0.06	FPC-9E, FPC-9M, PCC-1,FES-1, FES-2
27+62	CONSTRUCT DROP INLET ON LT.	18											1							1		1								5	0.06	FPC-9E, FPC-9M, PCC-1,FES-1, FES-2
29+82	CONSTRUCT DROP INLET ON LT.								218											1		1										FPC-9E, FPC-9M, PCC-1, PCM-1
29+82	CONSTRUCT DROP INLET ON RT.								242											1		1										FPC-9D, FPC-9E, FPC-9M, PCC-1, PCM-1
31+60	CONSTRUCT DROP INLET ON RT.								172											1												FPC-9E, FPC-9M, PCC-1, PCM-1
31+80.18	CONSTRUCT 4' x 2' TYPE E JUNCTION BOX ON RT.								205														1									FPC-9, PCC-1, PCM-1
32+01	CONSTRUCT DROP INLET ON LT.								217											1												FPC-9E, FPC-9M, PCC-1, PCM-1
37+54	CONSTRUCT DROP INLET ON RT.								239											1												FPC-9E, FPC-9M, PCC-1, PCM-1
37+95	CONSTRUCT DROP INLET ON LT.					42											1			1										35	0.44	FPC-9M, PCC-1,FES-1, FES-2
40+00	CONSTRUCT DROP INLET ON RT.		13											1						1		1								8	0.10	FPC-9E, FPC-9M, PCC-1,FES-1, FES-2
41+15	CONSTRUCT DROP INLET ON RT.									110										1	1											FPC-9E, FPC-9M, PCC-1, PCM-1
41+15	CONSTRUCT DROP INLET ON LT.				3						317					1				1										29	0.37	FPC-9E, FPC-9M, PCC-1, PCM-1, FES-1, FES-2
42+15	CONSTRUCT DROP INLET ON LT.									94										1	1											FPC-9E, FPC-9M, PCC-1, PCM-1
42+52.16	CONSTRUCT DROP INLET ON RT.						26										1			1										5	0.06	FPC-9E, FPC-9M, PCC-1,FES-1, FES-2
42+95.22	CONSTRUCT DROP INLET ON RT.						25					40					1			1										5	0.06	FPC-9E, FPC-9M, PCC-1, PCM-1, FES-1, FES-2
43+25	CONSTRUCT DROP INLET ON RT.									209										1	1											FPC-9E, FPC-9M, PCC-1, PCM-1
44+60	CONSTRUCT DROP INLET ON LT.								238											1												FPC-9E, FPC-9M, PCC-1, PCM-1
44+94	CONSTRUCT DROP INLET ON RT.	4								167			1							1										5	0.06	FPC-9E, FPC-9M, PCC-1, PCM-1, FES-1, FES-2
46+57	CONSTRUCT DROP INLET ON RT.								160											1												FPC-9E, FPC-9M, PCC-1, PCM-1
46+57	CONSTRUCT DROP INLET ON LT.								192											1												FPC-9E, FPC-9M, PCC-1, PCM-1
6+20	CONSTRUCT DROP INLET ON LT.						8										1			1		1								5	0.06	FPC-9E, FPC-9M, PCC-1,FES-1, FES-2
6+27	CONSTRUCT DROP INLET ON RT.											45								1	1											FPC-9E, FPC-9M, PCC-1, PCM-1
8+35	CONSTRUCT 4' x 4' TYPE C DROP INLET ON RT.																		1		1											FPC-9E
8+35	CONSTRUCT 4' x 4' TYPE C DROP INLET ON LT.																		1		1											FPC-9E
10+46	CONSTRUCT DROP INLET ON LT.	7											1							1	1									5	0.06	FPC-9E, FPC-9M, PCC-1,FES-1, FES-2
10+53.06	CONSTRUCT DROP INLET ON RT.	5											1							1		1								5	0.06	FPC-9E, FPC-9M, PCC-1,FES-1, FES-2
104+10	CONSTRUCT DBL. 36" R.C. PIPE CULVERTS			225											4															18	0.23	PCC-1,FES-1, FES-2
104+66	CONSTRUCT DROP INLET ON LT.			116											2					1		1								17	0.21	FPC-9E, FPC-9M, PCC-1,FES-1, FES-2
105+25	CONSTRUCT DROP INLET ON LT.								76											1	1											FPC-9E, FPC-9M, PCC-1, PCM-1
106+10.33	CONSTRUCT DROP INLET ON LT.	11											1							1	1									5	0.06	FPC-9E, FPC-9M, PCC-1,FES-1, FES-2
106+28.92	CONSTRUCT 4' x 4' TYPE E JUNCTION BOX ON RT.	12											1										1							5	0.06	FPC-9, PCC-1, FES-1, FES-2
107+94.81	CONSTRUCT DROP INLET ON LT.	13											1							1	1									5	0.06	FPC-9E, FPC-9M, PCC-1,FES-1, FES-2
108+45.88	CONSTRUCT DROP INLET ON LT.								49											1	1											FPC-9E, FPC-9M, PCC-1, PCM-1
108+55.12	CONSTRUCT DROP INLET ON RT.	8											1							1	1									5	0.06	FPC-9E, FPC-9M, PCC-1,FES-1, FES-2
*	TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER							600																6								FPC-9, PCC-1, PCM-1
SUBTOTALS:		123	13	341	3	42	59	600	2586	580	317	85	15	1	6	1	1	3	2	34	15	8	4	6				155.96	26038	94	213	2.63	
STRUCTURES OVER 20' - 0" SPAN																																	
104+10	EXTEND TRP. 6' x 3' R.C. BOX CULVERT ON 45° LT. FWD. SKEW ON LT.																								6	3	20	30.94	5852	16			RCB-1, RCB-2, RCB-3, R-345X-01, W-X45, W-X452-1
8+11.70	SEXTUPLE 11' x 9' x 95' R.C. BOX CULVERT																								11	9	95	732.82	84313	318	53	0.67	RCB-1, RCB-2, PBC-1, SPECIAL DETAILS
SUBTOTALS:																												763.76	90165	334	53	0.67	
TOTALS:		123	13	341	3	42	59	600	2586	580	317	85	15	1	6	1	1	3	2	34	15	8	4	6				919.72	116203	428	266	3.30	

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.

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

12/14/2015

R090406.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AND PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	51	226

(2) QUANTITIES

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH
6-9-16

DRIVEWAYS & TURNOUTS

STATION	SIDE	LOCATION	WIDTH	**MODIFIED CURB		PORTLAND CEMENT CONCRETE DRIVEWAY	ACHM SURFACE COURSE (1/2") 220 LBS. PER SQ. YD. (PG 64-22)		AGGREGATE BASE COURSE (CLASS 7)	SIDE DRAINS 18"	STANDARD DRAWINGS
			FEET	STATION	STATION	SQ. YD.	SQ. YD.	TON	TON	LIN. FT.	
22+16	RT.	HWY. 43	20	21+92	22+40	42.67	61.11	6.72	24.95		
23+13	RT.	HWY. 43	36	22+81	23+45	162.89					
24+00	LT.	HWY. 43	24	23+74	24+26	46.22	69.12	7.60	28.22		
24+49	RT.	HWY. 43	34	24+18	24+80	176.00					
44+67	RT.	HWY. 43	20	44+43	44+91	42.67	68.27	7.51	27.88		
103+58	LT.	N. LINCOLN ST.	38	103+25	103+91	164.39				64	PCC-1, PCM-1, PCP-1, PCP-2
104+36	RT.	N. LINCOLN ST.	16				131.47	14.46	53.68		
105+81	RT.	N. LINCOLN ST.	18	105+58	106+04	40.89	119.28	13.12	48.71		
7+11	RT.	HWY. 43 CONNECTOR	16	6+89	7+33	217.58					
3+76	RT.	DRIVEWAY	16			75.77				28	PCC-1, PCM-1, PCP-1, PCP-2
4+84	RT.	DRIVEWAY	32				142.22	15.64	58.07		
DRIVEWAY STA. 1+18.62 TO STA. 5+31.49			16				743.07	81.74	303.42	74	PCC-1, PCM-1, PCP-1, PCP-2
* ENTIRE PROJECT TEMPORARY DRIVES									120.00		
TOTALS:						**969.08**	**1334.54**	**146.79**	**664.93**	**166**	

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

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

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

** FOR INFORMATION ONLY

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.

CONCRETE WALKS & HAND RAILING

STATION	STATION	LOCATION	LENGTH	CONCRETE WALKS	HAND RAILING
			LIN. FT.	SQ.YD.	LIN. FT.
21+86	25+71	HWY. 43 ON LEFT (TEMPORARY WIDENING)	385	263	
21+86.00	25+42.21	HWY. 43 ON LEFT	356	263	
21+86.00	25+51.72	HWY. 43 ON RIGHT	366	107	
25+42.21	26+18.42	HWY. 43 ON LEFT	76	92	
26+55.41	27+32.61	HWY. 43 ON RIGHT	77	127	
26+89.15	27+35.10	HWY. 43 ON LEFT	46	49	
27+32.61	31+60.95	HWY. 43 ON RIGHT	428	235	
27+35.10	32+01.95	HWY. 43 ON LEFT	467	261	
31+60.95	31+84.51	HWY. 43 ON RIGHT	24	17	
32+01.95	32+18.58	HWY. 43 ON LEFT	17	15	
37+36.98	37+53.41	HWY. 43 ON RIGHT	16	14	
37+53.41	42+55.58	HWY. 43 ON RIGHT	502	304	
37+71.06	37+94.42	HWY. 43 ON LEFT	23	17	
37+94.42	39+01.24	HWY. 43 ON LEFT	107	74	
40+07.60	46+60.00	HWY. 43 ON LEFT	652	373	
42+99.85	46+60.00	HWY. 43 ON RIGHT	360	203	
102+88.07	106+50.27	N. LINCOLN ST. ON LEFT	362	154	
104+04.75	106+83.31	N. LINCOLN ST. ON LEFT			282
104+89.51	106+67.33	N. LINCOLN ST. ON RIGHT	178	77	
106+50.27	106+92.70	N. LINCOLN ST. ON LEFT	42	39	
107+53.68	108+05.47	N. LINCOLN ST. ON LEFT			84
107+89.07	108+26.12	N. LINCOLN ST. ON RIGHT			84
108+03.41	110+14.00	N. LINCOLN ST. ON LEFT	211	117	
108+23.99	110+12.33	N. LINCOLN ST. ON RIGHT	188	105	
5+52.49	10+80.41	HWY. 43 CONNECTOR ON RIGHT	528	310	
5+53.80	10+83.33	HWY. 43 CONNECTOR ON LEFT	530	305	
2+48.69	5+31.49	DRIVEWAY ON LEFT	283	210	
TOTALS:				**3731**	**450**

CONCRETE BASE

STATION	STATION	LOCATION	LENGTH	PORTLAND CEMENT CONCRETE BASE	
				AVG. WID.	5" U.T.
			FEET	FEET	SQ. YD.
21+86.00	22+86.00	HWY. 43 - LEFT NOTCH IN FRONT OF CURB	100.00	2.00	22.22
21+86.00	22+86.00	HWY. 43 - LEFT NOTCH UNDER CURB	100.00	4.50	50.00
22+86.00	25+32.74	HWY. 43 - LEFT NOTCH UNDER CURB	246.74	2.50	68.54
21+86.00	25+18.54	HWY. 43 - RIGHT NOTCH UNDER CURB	332.54	2.50	92.37
41+00.00	42+36.49	HWY. 43 - RIGHT NOTCH UNDER CURB	136.49	2.50	37.91
42+36.49	43+93.00	HWY. 43 - RIGHT NOTCH IN FRONT OF CURB	156.51	2.18	37.91
42+36.49	43+93.00	HWY. 43 - RIGHT NOTCH UNDER CURB	156.51	4.68	81.39
45+17.83	46+60.00	HWY. 43 - RIGHT NOTCH IN FRONT OF CURB	142.17	2.00	31.59
45+17.83	46+60.00	HWY. 43 - RIGHT NOTCH UNDER CURB	142.17	4.50	71.09
45+84.64	46+60.00	HWY. 43 - LEFT NOTCH IN FRONT OF CURB	75.36	2.00	16.75
45+84.64	46+00.00	HWY. 43 - LEFT NOTCH UNDER CURB	15.36	4.50	7.68
102+80.00	103+58.00	N. LINCOLN ST. - LEFT NOTCH IN FRONT OF CURB	78.00	2.15	18.63
102+80.00	103+58.00	N. LINCOLN ST. - LEFT NOTCH UNDER CURB	78.00	4.65	40.30
105+09.09	105+90.65	N. LINCOLN ST. - RIGHT NOTCH IN FRONT OF CURB	81.56	1.14	10.33
105+09.09	105+90.65	N. LINCOLN ST. - RIGHT NOTCH UNDER CURB	81.56	3.64	32.99
105+14.67	105+97.52	N. LINCOLN ST. - LEFT NOTCH IN FRONT OF CURB	82.85	4.00	36.82
105+14.67	105+97.52	N. LINCOLN ST. - LEFT NOTCH UNDER CURB	82.85	6.50	59.84
105+90.65	106+51.14	N. LINCOLN ST. - RIGHT NOTCH UNDER CURB	60.49	2.50	16.80
105+97.52	106+69.92	N. LINCOLN ST. - LEFT NOTCH IN FRONT OF CURB	72.40	2.34	18.82
105+97.52	106+69.92	N. LINCOLN ST. - LEFT NOTCH UNDER CURB	72.40	4.84	38.94
106+69.90	107+01.77	N. LINCOLN ST. - LEFT NOTCH UNDER CURB	31.87	2.50	8.85
108+01.64	108+16.32	N. LINCOLN ST. - LEFT NOTCH IN FRONT OF CURB	14.68	2.00	3.26
108+01.64	108+16.32	N. LINCOLN ST. - LEFT NOTCH UNDER CURB	14.68	4.50	7.34
108+16.32	108+75.83	N. LINCOLN ST. - LEFT NOTCH UNDER CURB	59.51	2.50	16.53
108+75.83	109+16.50	N. LINCOLN ST. - LEFT NOTCH IN FRONT OF CURB	40.67	1.95	8.81
108+75.83	109+16.50	N. LINCOLN ST. - LEFT NOTCH UNDER CURB	40.67	4.45	20.11
TOTAL:					855.82

WHEELCHAIR RAMPS

STATION	LOCATION	TYPE 2	TYPE 3
		SQ.YD.	
25+59.60	HWY. 43 ON RIGHT	12.5	
25+60.50	HWY. 43 ON LEFT (TEMPORARY - STAGE 2)		3.7
25+62.42	HWY. 43 ON LEFT		3.8
27+16.12	HWY. 43 ON RIGHT		3.3
27+18.03	HWY. 43 ON LEFT	12.4	
38+69.00	HWY. 43 ON LEFT		7.2
39+27.00	HWY. 43 ON LEFT		5.2
39+38.00	HWY. 43 ON LEFT		3.9
40+40.00	HWY. 43 ON LEFT		7.5
42+43.00	HWY. 43 ON RIGHT		4.6
43+03.00	HWY. 43 ON RIGHT		4.6
102+88.07	N. LINCOLN ST. ON LEFT		4.0
104+89.51	N. LINCOLN ST. ON RIGHT		3.4
106+82.87	N. LINCOLN ST. ON RIGHT		4.6
107+82.00	N. LINCOLN ST. ON LEFT		4.7
110+12.33	N. LINCOLN ST. ON RIGHT		3.9
110+14.00	N. LINCOLN ST. ON LEFT		3.4
10+78.16	HWY. 43 CONNECTOR ON RIGHT		7.6
10+79.11	HWY. 43 CONNECTOR ON RIGHT		4.7
10+79.14	HWY. 43 CONNECTOR ON RIGHT		4.6
10+80.85	HWY. 43 CONNECTOR ON LEFT		8.1
TOTALS:		**24.9**	**92.8**

WATER GATE

STATION	LOCATION	WATER GATE
		EACH
8+11.70	HWY. 43 CONNECTOR ON RIGHT	1
TOTAL:		1

CONCRETE COMBINATION CURB AND GUTTER

STATION	STATION	LOCATION	TYPE A (1' 6")
			LIN. FT.
21+86	25+74	HWY. 43 ON LEFT (TEMPORARY WIDENING)	355
21+86	25+32.74	HWY. 43 ON LEFT	325
21+86	25+51.40	HWY. 43 ON RIGHT	356
27+10.07	31+84.81	HWY. 43 ON RIGHT	438
27+59.26	32+18.30	HWY. 43 ON LEFT	435
31+84.81	42+59.02	HWY. 43 ON RIGHT	529
32+18.30	37+70.77	HWY. 43 ON LEFT	72
40+65.21	46+60	HWY. 43 ON LEFT	568
42+94.53	46+60	HWY. 43 ON RIGHT	388
102+80	106+97.10	N. LINCOLN ST. ON LEFT	383
104+83.86	107+15.31	N. LINCOLN ST. ON RIGHT	257
107+43.86	110+20	N. LINCOLN ST. ON LEFT	296
107+80.69	110+20	N. LINCOLN ST. ON RIGHT	275
5+26.36	10+87.74	HWY. 43 CONNECTOR ON RIGHT	693
5+26.92	10+87.14	HWY. 43 CONNECTOR ON LEFT	591
60+35	63+83.48	N. COUNTRY CLUB RD. ON RIGHT	351
60+35	63+83.48	N. COUNTRY CLUB RD. ON LEFT	354
1+18	5+31.49	DRIVEWAY ON LEFT	429
TOTAL:			7095

12/14/2015

R090406.DGN

QUANTITIES

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	52	226

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
6-9-16

BASE AND SURFACING

STATION	STATION	LOCATION	LENGTH	AGGREGATE BASE COURSE (CLASS 7)		TACK COAT				ACHM BASE COURSE (1 1/2")				ACHM BINDER COURSE (1")				ACHM SURFACE COURSE (1/2")								
				TON / STATION	TON	AVG. WID.	SQ.YD.	GALLONS / SQ.YD.	GALLON	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 64-22	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 64-22	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 70-22	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 70-22	TOTAL PG 70-22
			FEET			FEET				FEET			TON	FEET			TON	FEET			TON	FEET			TON	TON
MAIN LANES																										
21+86.00	22+86.00	FINAL 2" - HWY. 43 - TRANSITION	100.00			37.82	420.22	0.17	71.44													37.82	420.22	220.00	46.22	46.22
22+86.00	25+32.74	HWY. 43 - LEFT NOTCH	246.74			58.40	1601.07	0.05	80.05	9.20	252.22	550.00	69.36	9.20	252.22	330.00	41.62	9.20	252.22	220.00	27.74	40.00	1096.62	220.00	120.63	148.37
25+32.74	26+14.00	HWY. 43 - LEFT NOTCH	81.26			73.70	665.43	0.05	33.27	16.85	152.14	550.00	41.84	14.35	129.56	330.00	21.38	14.35	129.56	220.00	14.25	45.00	406.30	220.00	44.69	58.94
26+14.00	32+01.72	HWY. 43 - FULL DEPTH	587.72			168.00	10970.77	0.05	548.54	61.00	3983.44	550.00	1095.45	56.00	3656.92	330.00	603.39	56.00	3656.92	220.00	402.26	56.00	3656.92	220.00	402.26	804.52
37+54.23	38+47.56	HWY. 43 - FULL DEPTH	93.33			168.00	1742.16	0.05	87.11	61.00	632.57	550.00	173.96	56.00	580.72	330.00	95.82	56.00	580.72	220.00	63.88	56.00	580.72	220.00	63.88	127.76
38+47.56	40+65.21	HWY. 43 - FULL DEPTH	217.65			168.00	4062.80	0.05	203.14	58.50	1414.73	550.00	389.05	56.00	1354.27	330.00	223.45	56.00	1354.27	220.00	148.97	56.00	1354.27	220.00	148.97	297.94
40+65.21	41+00.00	HWY. 43 - FULL DEPTH	34.79			168.00	649.41	0.05	32.47	61.00	235.80	550.00	64.85	56.00	216.47	330.00	35.72	56.00	216.47	220.00	23.81	56.00	216.47	220.00	23.81	47.62
41+00.00	43+93.00	HWY. 43 - LEFT NOTCH	293.00			111.32	3624.08	0.05	181.20	30.16	981.88	550.00	270.02	27.66	900.49	330.00	148.58	27.66	900.49	220.00	99.05	56.00	1823.11	220.00	200.54	299.59
43+93.00	45+17.83	HWY. 43 - LEFT AND RIGHT NOTCH	124.83			82.35	1142.19	0.05	57.11	20.50	284.34	550.00	78.19	15.50	214.99	330.00	35.47	15.50	214.99	220.00	23.65	51.35	712.22	220.00	78.34	101.99
45+17.83	45+84.64	HWY. 43 - LEFT NOTCH	66.81			57.16	424.32	0.05	21.22	8.52	63.25	550.00	17.39	6.02	44.69	330.00	7.37	6.02	44.69	220.00	4.92	45.12	334.94	220.00	36.84	41.76
45+60.00	45+84.64	HWY. 43 - LEFT NOTCH	24.64			9.08	24.86	0.05	1.24	7.04	19.27	550.00	5.30	4.54	12.43	330.00	2.05	4.54	12.43	220.00	1.37					1.37
45+60.00	46+60.00	FINAL 2" - HWY. 43 - TRANSITION	100.00			39.78	442.00	0.17	75.14													39.78	442.00	220.00	48.62	48.62
102+80.00	103+58.00	FINAL 2" - N. LINCOLN ST. - TRANSITION	78.00			34.03	294.93	0.17	50.14													34.03	294.93	220.00	32.44	32.44
103+58.00	104+58.86	N. LINCOLN ST. - LEFT NOTCH	100.86			48.37	542.07	0.05	27.10	7.73	86.63	550.00	23.82	5.23	58.61	330.00	9.67	5.23	58.61	220.00	6.45	37.91	424.84	220.00	46.73	53.18
104+58.86	104+83.86	N. LINCOLN ST. - LEFT NOTCH	25.00			55.55	154.31	0.05	7.72	7.72	21.44	550.00	5.90	5.22	14.50	330.00	2.39	5.22	14.50	220.00	1.60	45.11	125.31	220.00	13.78	15.38
104+83.86	105+09.09	N. LINCOLN ST. - RIGHT NOTCH	25.23			10.68	29.94	0.05	1.50	7.84	21.98	550.00	6.04	5.34	14.97	330.00	2.47	5.34	14.97	220.00	1.65					1.65
104+83.86	105+14.67	N. LINCOLN ST. - LEFT NOTCH	30.81			8.30	28.41	0.05	1.42	6.65	22.77	550.00	6.26	4.15	14.21	330.00	2.34	4.15	14.21	220.00	1.56					1.56
104+83.86	106+51.14	FINAL 2" - N. LINCOLN ST.	167.28			41.55	772.28	0.05	38.61													41.55	772.28	220.00	84.95	84.95
106+51.14	107+05.35	N. LINCOLN ST. - RIGHT NOTCH	54.21			VAR.	364.66	0.05	18.23	VAR.	204.86	550.00	56.34	VAR.	182.33	330.00	30.08	VAR.	182.33	220.00	20.06	VAR.	542.53	220.00	59.68	79.74
107+61.87	108+54.63	N. LINCOLN ST. - RIGHT NOTCH	92.76			VAR.	869.42	0.05	43.47	VAR.	452.53	550.00	124.45	VAR.	434.71	330.00	71.73	VAR.	434.71	220.00	47.82					47.82
107+61.87	108+01.64	N. LINCOLN ST. - LEFT NOTCH	39.77			VAR.	100.34	0.05	5.02	VAR.	58.93	550.00	16.21	VAR.	50.17	330.00	8.28	VAR.	50.17	220.00	5.52					5.52
107+61.87	108+54.63	FINAL 2" - N. LINCOLN ST.	92.76			VAR.	809.85	0.05	40.49													VAR.	809.85	220.00	89.08	89.08
108+54.63	109+16.50	N. LINCOLN ST. - RIGHT NOTCH	61.87			57.16	392.94	0.05	19.65	10.00	68.74	550.00	18.90	7.50	51.56	330.00	8.51	7.50	51.56	220.00	5.67	42.16	289.83	220.00	31.88	37.55
109+16.50	110+20.00	N. LINCOLN ST. - LEFT AND RIGHT NOTCH	103.50			75.60	869.40	0.05	43.47	21.46	246.79	550.00	67.87	16.46	189.29	330.00	31.23	16.46	189.29	220.00	20.82	42.68	490.82	220.00	53.99	74.81
110+20.00	110+45.00	N. LINCOLN ST. - LEFT AND RIGHT NOTCH	25.00	138.50	34.63	79.42	220.61	0.05	11.03	12.71	35.31	550.00	9.71	11.91	33.08	330.00	5.46	11.45	31.81	220.00	3.50	56.06	155.72	220.00	17.13	20.63
110+45.00	110+80.00	N. LINCOLN ST. - LEFT AND RIGHT NOTCH	35.00	118.00	41.30	68.29	265.57	0.05	13.28	10.18	39.59	550.00	10.89	9.84	38.27	330.00	6.31	9.64	37.49	220.00	4.12	48.81	189.82	220.00	20.88	25.00
110+80.00	111+80.00	N. LINCOLN ST. - LEFT AND RIGHT NOTCH	100.00	75.50	75.50	8.82	98.00	0.05	4.90	4.85	53.89	550.00	14.82	4.51	50.11	330.00	8.27	4.31	47.89	220.00	5.27					5.27
110+80.00	111+80.00	FINAL 2" - N. LINCOLN ST. - TRANSITION	100.00			35.75	397.22	0.17	67.53													35.75	397.22	220.00	43.69	43.69
5+28.00	6+30.00	HWY. 43 CONNECTOR	102.00			VAR.	2563.44	0.05	128.17	VAR.	938.86	550.00	258.19	VAR.	854.48	330.00	140.99	VAR.	854.48	220.00	93.99	VAR.	854.48	220.00	93.99	187.98
6+30.00	6+60.00	HWY. 43 CONNECTOR	30.00			120.00	400.00	0.05	20.00	45.00	150.00	550.00	41.25	40.00	133.33	330.00	22.00	40.00	133.33	220.00	14.67	40.00	133.33	220.00	14.67	29.34
6+60.00	9+07.00	HWY. 43 CONNECTOR	247.00			117.00	3211.00	0.05	160.55	44.00	1207.56	550.00	332.08	39.00	1070.33	330.00	176.60	39.00	1070.33	220.00	117.74	39.00	1070.33	220.00	117.74	235.48
9+07.00	9+62.13	HWY. 43 CONNECTOR	55.13			122.52	750.50	0.05	37.53	45.84	280.80	550.00	77.22	40.84	250.17	330.00	41.28	40.84	250.17	220.00	27.52	40.84	250.17	220.00	27.52	55.04
9+62.13	10+88.56	HWY. 43 CONNECTOR	126.43			VAR.	3877.41	0.05	193.87	VAR.	1413.12	550.00	388.61	VAR.	1292.47	330.00	213.26	VAR.	1292.47	220.00	142.17	VAR.	1292.47	220.00	142.17	284.34
60+35.00	63+83.48	N. COUNTRY CLUB RD	348.48			84.00	3252.48	0.05	162.62	33.00	1277.76	550.00	351.38	28.00	1084.16	330.00	178.89	28.00	1084.16	220.00	119.26	28.00	1084.16	220.00	119.26	238.52
TEMPORARY WIDENING																										
22+86.00	25+32.74	HWY. 43 - TEMPORARY WIDENING ON LEFT	246.74	21.50	53.05	6.00	164.49	0.05	8.22					3.00	82.25	440.00	18.10	3.00	82.25	220.00	9.05					9.05
ADDITIONAL FOR LEVELING & GRADE RAISE																										
22+16.00	26+14.00	HWY. 43 - LEVELING	398.00			31.85	1408.48	0.17	239.44									31.85	1408.48	220.00	154.93					154.93
23+70.00	26+14.00	HWY. 43 - GRADE RAISE	244.00			29.74	806.28	0.05	40.31					29.74	806.28	VAR.	151.00									
24+88.00	26+69.00	HWY. 43 - GRADE RAISE	181.00			35.33	863.74	0.05	43.19	35.33	863.74	VAR.	448.00													
40+60.00	42+56.16	HWY. 43 - GRADE RAISE	196.16			9.93	216.43	0.05	10.82	9.93	216.43	VAR.	46.00													
41+15.00	43+25.00	HWY. 43 - GRADE RAISE	210.00			14.20	331.33	0.05	16.57					14.20	331.33	VAR.	46.00									
41+15.00	45+00.00	HWY. 43 - LEVELING	385.00			28.97	1239.27	0.17	210.68									28.97	1239.27	220.00	136.32					136.32
103+58.00	107+05.35	N. LINCOLN ST. - LEVELING	347.35			37.11	1432.24	0.17	243.48									37.11	1432.24	220.00	157.55					157.55
104+00.00	104+66.00	N. LINCOLN ST. - GRADE RAISE	66.00			21.46	157.37	0.05	7.87					21.46	157.37	VAR.	17.00									
105+81.00	107+05.35	N. LINCOLN ST. - GRADE RAISE	124.35			49.29	681.02	0.05	34.05					49.29	681.02	VAR.	108.00									
105+81.00	107+05.35	N. LINCOLN ST. - GRADE RAISE	124.35			48.49	669.97	0.05	33.50	48.49	669.97	VAR.	198.00													
107+61.87	109+00.00	N. LINCOLN ST. - GRADE RAISE	138.13			40.80	626.19	0.05	31.31	40.80	626.19	VAR.	148.00													
107+78.63	111+00.00	N. LINCOLN ST. - GRADE RAISE	321.37			25.78	920.55	0.05	46.03					25.78	920.55	VAR.	110.00									
107+78.63	111+00.00	N. LINCOLN ST. - LEVELING	321.37			24.95	890.91	0.17	151.45									24.95	890.91	220.00	98.00					98.00
SIDE STREETS																										
42+69.21		SUE ANGLIN DR. ON RIGHT				VAR.	834.12	0.05	41.71	VAR.	319.68	550.00	87.91	VAR.	278.04	330.00	45.88	VAR.	278.04	440.00	61.17					61.17
TOTALS:					**204.48**		**57276.48**		**3646.86**		**17297.21**		**4943.26**		**16436.35**		**2670.59**		**18506.43**		**2066.31**		**20221.88**		**2224.38**	**4290.69**

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....94.7% MIN. AGGR.....5.3% ASPHALT BINDER
ACHM BINDER COURSE (1").....95.7% MIN. AGGR.....4.3% ASPHALT BINDER
ACHM BASE COURSE (1 1/2").....96.0% MIN. AGGR.....4.0% ASPHALT BINDER
MAXIMUM NUMBER OF GYRATIONS = 115 FOR PG 64-22
MAXIMUM NUMBER OF GYRATIONS = 160 FOR PG 70-22
TACK COAT QUANTITIES WERE CALCULATED USING THE EMULISIFED ASPHALT RATES. REFER TO SS-400-1 FOR THE RESIDUAL ASPHALT APPLICATION RATES.

DON'T FORGET TO DELETE THE TOTALS OUT OF THE COLUMNS YOU ARE NOT USING OR YOU WILL END UP WITH 3 TIMES MORE ASPHALT THAN NEEDED
FOR TACK COAT QUANTITIES, USE 0.05 INSTEAD OF 0.03 AND USE 0.17 INSTEAD OF 0.10. SEE TACK COAT BASIS OF ESTIMATE ABOVE FOR REASON.

12/14/2015

R090406.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	53	226
				① 07393 -		QUANTITIES	- 58798	

SCHEDULE OF BRIDGE QUANTITIES - JOB NO. 090406

BRIDGE NO.	NAME PLATE TITLE	UNIT OF STRUCTURE	ITEM NO.	619	802	802	803	804	804	805	806	806	SP & 807
			ITEM	7' STEEL CHAIN LINK FENCE	CLASS S CONCRETE-BRIDGE	CLASS S(AE) CONCRETE-BRIDGE	CLASS 2 PROTECTIVE SURFACE TREATMENT	REINFORCING STEEL-BRIDGE (GRADE 60)	EPOXY COATED REINFORCING STEEL (GRADE 60)	STEEL PILING (HP 12X53)	METAL BRIDGE RAILING (TYPE H)	TRANSITIONAL APPROACH RAILING	STRUCTURAL STEEL IN BEAM SPANS (M 270, GRADE 50W)
			UNIT	LIN. FT.	CU. YD.	CU. YD.	SQ. YD.	LB.	LB.	LIN. FT.	LIN. FT.	EACH	LB.
07393	KCS RAILROAD N. COUNTRY CLUB RD. OVERPASS	BENT NO. 1			69.85		19.2	7,674		315		2	1,538
		BENT NO. 2			151.92			22,402					
		BENT NO. 3			142.55			22,178					
		BENT NO. 4			144.03			21,421					
		BENT NO. 5			150.11			20,369					
		BENT NO. 6			139.07			19,436					
		BENT NO. 7			72.87		19.2	7,460		270		2	1,576
		380'-0'' CONT. COMP. W-BEAM UNIT		274		925.86	3,326.3		195,165		480		902,490
		170'-0'' CONT. COMP. W-BEAM UNIT				416.64	1,487.3		87,395		334		394,776
TOTALS FOR JOB NO. 090406				274	870.40	1,342.50	4,852.0	120,940	282,560	① 585	814	4	1,300,380

① These steel piles are required to have driving points which will not be paid for directly, but will be considered subsidiary to the item ''Steel Piling HP 12x53''.

BRIDGE NO.	NAME PLATE TITLE	UNIT OF STRUCTURE	ITEM NO.	808	809	809	812	816	SP JOB 090406	SP JOB 090406	SP JOB 090406	SP JOB 090406
			ITEM	ELASTOMERIC BEARINGS	ARMORED JOINT WITH NEOPRENE STRIP SEAL	SILICONE JOINT SEALANT	BRIDGE NAME PLATE (TYPE D)	CONCRETE RIPRAP	DRILLED SHAFT (72'' DIA.)	PERMANENT STEEL CASING (84'' DIA.)	CROSSHOLE SONIC LOGGING (72'' DIA.)	CORING DRILLED SHAFT
			UNIT	CU. IN.	LIN. FT.	LIN. FT.	EACH	CU. YD.	LIN. FT.	LIN. FT.	EACH	LIN. FT.
07393	KCS RAILROAD N. COUNTRY CLUB RD. OVERPASS	BENT NO. 1		4,698.0				145				
		BENT NO. 2		7,308.0					104	32	4	26
		BENT NO. 3		7,308.0					104	32	4	26
		BENT NO. 4		7,308.0					120	48	4	30
		BENT NO. 5		7,047.0					120	48	4	30
		BENT NO. 6		7,308.0					120	48	4	30
		BENT NO. 7		2,349.0				117				
		380'-0'' CONT. COMP. W-BEAM UNIT			170		1					
		170'-0'' CONT. COMP. W-BEAM UNIT				85						
TOTALS FOR JOB NO. 090406				43,326.0	170	85	1	262	568	208	20	② 142

② Quantity shown is for estimating and bidding purposes. Actual quantity, if any, shall be determined by the Engineer.

STEVEN PEYTON
DESIGN SECTION SUPERVISOR

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
6-7-16
CHARLES R. ELLIS

BRIDGE ENGINEER

SCHEDULE OF BRIDGE QUANTITES
KCS RAILROAD & N. COUNTRY CLUB RD.
HWY. 43 KCS RAILROAD OVERPASS
(SILOAM SPRINGS) (S)
BENTON COUNTY

ROUTE 43 SEC. 0

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 3-31-16 FILENAME: b090406.ql.dgn
CHECKED BY: DBS DATE: 6/7/16 SCALE: NONE
DESIGNED BY: DATE:

BRIDGE NO. 07393 DRAWING NO. 58798

PRINT DATE: 6/7/2016

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
10/14/16				6	ARK.			
10/25/16				JOB NO.		090406	54	226

(2) SUMMARY OF QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-26-16

SUMMARY OF QUANTITIES (1 OF 3)

ITEM NUMBER	ITEM		QUANTITY	UNIT
201	CLEARING		18	STATION
201	GRUBBING		18	STATION
202	REMOVAL AND DISPOSAL OF CURB AND GUTTER		5519	LIN FT
202	REMOVAL AND DISPOSAL OF FENCE		2370	LIN FT
202	REMOVAL AND DISPOSAL OF POSTS		2	EACH
202	REMOVAL AND DISPOSAL OF BRICK WALLS		579	LIN FT
202	REMOVAL AND DISPOSAL OF CONCRETE ISLANDS		57	SQ YD
202	REMOVAL AND DISPOSAL OF CONCRETE DRIVEWAYS		1222	SQ YD
202	REMOVAL AND DISPOSAL OF WALKS		2457	SQ YD
202	REMOVAL AND DISPOSAL OF DROP INLETS		16	EACH
202	REMOVAL AND DISPOSAL OF PIPE CULVERTS		26	EACH
202	REMOVAL AND DISPOSAL OF BOX CULVERTS		2	EACH
202	REMOVAL AND DISPOSAL OF YARD DRAIN		1	EACH
202	REMOVAL AND DISPOSAL OF CONCRETE DITCH PAVING		121	SQ YD
202	REMOVAL AND DISPOSAL OF SIGN POLE AND FOUNDATION		3	EACH
202	REMOVAL AND DISPOSAL OF LUMINAIRE POLE AND FOUNDATION		7	EACH
202	REMOVAL AND DISPOSAL OF BUILDINGS		2	EACH
202	REMOVAL AND DISPOSAL OF CANOPY		2	EACH
202	REMOVAL AND DISPOSAL OF HANDRAIL		47	LIN FT
210	UNCLASSIFIED EXCAVATION		9431	CU YD
SP	SELECT GRANULAR BACKFILL		2709	CU YD
210	COMPACTED EMBANKMENT		62349	CU YD
SP & 210	SOIL STABILIZATION		100	TON
SS & 303	AGGREGATE BASE COURSE (CLASS 7)		869	TON
309	PORTLAND CEMENT CONCRETE BASE (5" UNIFORM THICKNESS)		856	SQ YD
SS & 401	TACK COAT		3667	GAL
SP & 405	MINERAL AGGREGATE IN ACHM BASE COURSE (1 1/2")		4745	TON
SP & 405	ASPHALT BINDER (PG 64-22) IN ACHM BASE COURSE (1 1/2")		198	TON
SP, SS, & 406	MINERAL AGGREGATE IN ACHM BINDER COURSE (1")		2556	TON
SP, SS, & 406	ASPHALT BINDER (PG 64-22) IN ACHM BINDER COURSE (1")		115	TON
SP, SS, & 407	MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2")		4202	TON
SP, SS, & 407	ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2")		8	TON
SP, SS, & 407	ASPHALT BINDER (PG 70-22) IN ACHM SURFACE COURSE (1/2")		227	TON
412	COLD MILLING ASPHALT PAVEMENT		1467	SQ YD
SP & 414	ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC		10	TON
SP & 415	ACHM PATCHING OF EXISTING ROADWAY		25	TON
505	PORTLAND CEMENT CONCRETE DRIVEWAY		969.08	SQ YD
601	MOBILIZATION		1.00	LUMP SUM
SP & 602	FURNISHING FIELD OFFICE		1	EACH
602	FURNISHING FIELD LABORATORY		1	EACH
SP & 603	MAINTENANCE OF TRAFFIC		1.00	LUMP SUM
SS & 604	SIGNS		484	SQ FT
SS & 604	BARRICADES		128	LIN FT
SS & 604	TRAFFIC DRUMS		136	EACH
604	FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER		1426	LIN FT
604	RELOCATING PRECAST CONCRETE BARRIER		599	LIN FT
604	CONSTRUCTION PAVEMENT MARKINGS		28838	LIN FT
604	CONSTRUCTION PAVEMENT MARKINGS (WORDS)		15	EACH
604	CONSTRUCTION PAVEMENT MARKINGS (ARROWS)		15	EACH
604	REMOVABLE CONSTRUCTION PAVEMENT MARKINGS		4149	LIN FT
604	REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS		13284	LIN FT
604	REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS (WORDS)		8	EACH
604	REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS (ARROWS)		6	EACH
604	REMOVAL OF PERMANENT PAVEMENT MARKINGS		664	LIN FT
SS & 604	VERTICAL PANELS		46	EACH
605	CONCRETE DITCH PAVING (TYPE A)		1476	SQ YD
605	CONCRETE DITCH PAVING (TYPE B)		325	SQ YD
606	18" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)		123	LIN FT
* 606	18" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	(ALTERNATE NO. 1)	2586	LIN FT
* 606	18" SMOOTH LINED POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL PIPE	(ALTERNATE NO. 2)	2586	LIN FT
606	24" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)		13	LIN FT
* 606	24" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	(ALTERNATE NO. 1)	580	LIN FT
* 606	24" SMOOTH LINED POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL PIPE	(ALTERNATE NO. 2)	580	LIN FT
606	36" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)		341	LIN FT
606	48" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)		3	LIN FT
606	54" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)		42	LIN FT
* 606	54" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	(ALTERNATE NO. 1)	317	LIN FT
* 606	54" SMOOTH LINED POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL PIPE	(ALTERNATE NO. 2)	317	LIN FT
606	22" X 14" REINFORCED CONCRETE ARCH PIPE CULVERTS (CLASS III)		59	LIN FT
* 606	22" X 14" REINFORCED CONCRETE ARCH PIPE CULVERTS (CLASS III)	(ALTERNATE NO. 1)	85	LIN FT
* 606	21" X 15" SMOOTH LINED POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL ARCH PIPE	(ALTERNATE NO. 2)	85	LIN FT
SS & 606	12" SIDE DRAIN		600	LIN FT
SP, SS, & 606	18" SIDE DRAIN		166	LIN FT
606	18" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS		15	EACH
606	24" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS		1	EACH
606	36" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS		6	EACH
606	48" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS		1	EACH
606	54" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS		1	EACH
606	22" X 14" FLARED END SECTIONS FOR REINFORCED CONCRETE ARCH PIPE CULVERTS		3	EACH
606	SELECTED PIPE BEDDING		300	CU YD
609	DROP INLETS (TYPE C)		2	EACH
609	DROP INLETS (TYPE MO)		34	EACH
609	JUNCTION BOXES (TYPE E)		4	EACH
609	DROP INLET EXTENSIONS (4')		15	EACH
609	DROP INLET EXTENSIONS (8')		8	EACH
609	YARD DRAINS		6	EACH
611	4" PIPE UNDERDRAINS		480	LIN FT
615	PAVEMENT REPAIR OVER CULVERTS (CONCRETE)		50.0	CU YD
619	WIRE FENCE (TYPE D)		1000	LIN FT
SP	WATER GATE		1	EACH

* DENOTES ALTERNATE BID ITEMS

SUMMARY OF QUANTITIES (BOX 2 OF 3)

ITEM NUMBER	ITEM	QUANTITY	UNIT
620	SEEDING	4.78	ACRE
SS & 620	MULCH COVER	21.21	ACRE
620	WATER	857.6	M GAL
621	TEMPORARY SEEDING	16.43	ACRE
621	SILT FENCE	5288	LIN FT
621	DROP INLET SILT FENCE	1275	LIN FT
621	SEDIMENT BASIN	96	CU YD
621	OBLITERATION OF SEDIMENT BASIN	96	CU YD
621	SEDIMENT REMOVAL AND DISPOSAL	591	CU YD
621	ROCK DITCH CHECKS	252	CU YD
621	TRIANGULAR SILT DIKE	335	LIN FT
623	SECOND SEEDING APPLICATION	4.78	ACRE
624	SOLID SODDING	2771	SQ YD
626	EROSION CONTROL MATTING (CLASS 3)	711	SQ YD
632	CONCRETE ISLAND	73	SQ YD
633	CONCRETE WALKS	3731	SQ YD
633	HAND RAILING	450	LIN FT
634	CONCRETE COMBINATION CURB AND GUTTER (TYPE A) (1'6")	7095	LIN FT
635	ROADWAY CONSTRUCTION CONTROL	1.00	LUMP SUM
637	MAILBOXES	5	EACH
637	MAILBOX SUPPORTS (SINGLE)	3	EACH
637	MAILBOX SUPPORTS (DOUBLE)	1	EACH
641	WHEELCHAIR RAMPS (TYPE 2)	25	SQ YD
641	WHEELCHAIR RAMPS (TYPE 3)	93	SQ YD
SP & 701	SYSTEM LOCAL CONTROLLER TS2-TYPE 2, E-NET (8 PHASES)	2	EACH
SP	ETHERNET SWITCH, T100 HARDENED (8-PORT)	2	EACH
SP	LOCAL RADIO (E-NET 5.8) WITH ANTENNA	1	EACH
SP	E-NET CABLE (EXTERIOR CAT 5E)	140	LIN FT
SP	LOCAL RADIO WITH ANTENNA RELOCATION	1	EACH
704	VEHICLE DETECTOR-RACK MOUNT	4	EACH
SP	LOOP WIRING CLASS III (1C/16 A.W.G.)	480	LIN FT
704	FEEDER WIRE	1807	LIN FT
SP & 706	TRAFFIC SIGNAL HEAD, LED, (3 SECTION, 1 WAY)	22	EACH
SP & 706	TRAFFIC SIGNAL HEAD, LED, (4 SECTION, 1 WAY)	4	EACH
SP	RELOCATION OF TRAFFIC SIGNAL HEAD	12	EACH
SP	LOUVERS	3	EACH
SP	PEDESTRIAN SIGNAL HEAD RELOCATION	8	EACH
SP & 707	COUNTDOWN PEDESTRIAN SIGNAL HEAD, LED	8	EACH
708	TRAFFIC SIGNAL CABLE (5C/14 A.W.G.)	6805	LIN FT
708	TRAFFIC SIGNAL CABLE (7C/14 A.W.G.)	1005	LIN FT
708	TRAFFIC SIGNAL CABLE (20C/14 A.W.G.)	474	LIN FT
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (1C/8 A.W.G., E.G.C.)	646	LIN FT
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (1C/12 A.W.G., E.G.C.)	185	LIN FT
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (2C/6 A.W.G.)	40	LIN FT
SP	ELECTRICAL CONDUCTORS FOR LUMINAIRES	659	LIN FT
709	GALVANIZED STEEL CONDUIT (1.25")	40	LIN FT
709	GALVANIZED STEEL CONDUIT (2")	70	LIN FT
SP	FIBERGLASS CONDUIT (2")	430	LIN FT
710	NON-METALLIC CONDUIT (1")	738	LIN FT
710	NON-METALLIC CONDUIT (1.25")	80	LIN FT
710	NON-METALLIC CONDUIT (2")	60	LIN FT
710	NON-METALLIC CONDUIT (3")	532	LIN FT
711	CONCRETE PULL BOX (TYPE 1)	1	EACH
711	CONCRETE PULL BOX (TYPE 2)	5	EACH
711	CONCRETE PULL BOX (TYPE 1 HD)	7	EACH
713	SPAN WIRE ASSEMBLY	4	EACH
714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (34')	1	EACH
714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (36')	1	EACH
714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (54')	1	EACH
714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (64')	1	EACH
SP	LED LUMINAIRE ASSEMBLY	4	EACH
SP	TRAFFIC SIGNAL CONTROLLER (MODIFICATION)	4	EACH
715	TRAFFIC SIGNAL PEDESTAL POLE WITH FOUNDATION	2	EACH
SP	SERVICE POINT ASSEMBLY (2 CIRCUITS)	2	EACH
SP	REMOVAL OF TRAFFIC SIGNAL EQUIPMENT	1.00	LUMP SUM
716	TREATED WOOD POLE (CLASS 2, 45')	10	EACH
718	REFLECTORIZED PAINT PAVEMENT MARKING WHITE (10")	184	LIN FT
719	THERMOPLASTIC PAVEMENT MARKING WHITE (4")	3476	LIN FT
719	THERMOPLASTIC PAVEMENT MARKING WHITE (8")	2095	LIN FT
719	THERMOPLASTIC PAVEMENT MARKING WHITE (12")	900	LIN FT
719	THERMOPLASTIC PAVEMENT MARKING YELLOW (4")	8300	LIN FT
719	THERMOPLASTIC PAVEMENT MARKING (WORDS)	12	EACH
719	THERMOPLASTIC PAVEMENT MARKING (ARROWS)	12	EACH

12/14/2015

R090406.DGN

SUMMARY OF QUANTITIES

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
10/14/16				6	ARK.			
10/25/16				JOB NO.		090406	55	226
				(2) SUMMARY OF QUANTITIES AND REVISIONS				

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-26-16

SUMMARY OF QUANTITIES (BOX 3OF 3)

ITEM NUMBER	ITEM		QUANTITY	UNIT
SP & 719	INVERTED PROFILE THERMOPLASTIC CONTRAST PAVEMENT MARKING WHITE (4")	(ALTERNATE NO. 1)	91	LIN. FT.
SP	HIGH PERFORMANCE CONTRAST MARKING TAPE WHITE (4")	(ALTERNATE NO. 2)	91	LIN. FT.
SP & 719	INVERTED PROFILE THERMOPLASTIC CONTRAST PAVEMENT MARKING WHITE (8")	(ALTERNATE NO. 1)	51	LIN. FT.
SP	HIGH PERFORMANCE CONTRAST MARKING TAPE WHITE (8")	(ALTERNATE NO. 2)	51	LIN. FT.
SP & 719	INVERTED PROFILE THERMOPLASTIC CONTRAST PAVEMENT MARKING YELLOW (4")	(ALTERNATE NO. 1)	1381	LIN. FT.
SP	HIGH PERFORMANCE CONTRAST MARKING TAPE YELLOW (4")	(ALTERNATE NO. 2)	1381	LIN. FT.
721	RAISED PAVEMENT MARKERS (TYPE II)		108	EACH
SP	18" STREET NAME SIGN		4	EACH
731	TEMPORARY IMPACT ATTENUATION BARRIER		5	EACH
731	TEMPORARY IMPACT ATTENUATION BARRIER (REPAIR)		5	EACH
733	VIDEO DETECTOR RELOCATION		2	EACH
SP	VIDEO DETECTOR ROTATION		6	EACH
SP & 733	VIDEO DETECTOR (CLR)		13	EACH
733	VIDEO CABLE		2608	LIN. FT.
733	VIDEO MONITOR (CLR)		1	EACH
SP & 733	VIDEO PROCESSOR, EDGE CARD (2 CAMERA)		9	EACH
SP & 733	VIDEO EDGE CARD EXTENDER		2	EACH
SP & 733	VEHICLE DETECTOR RACK (24 CHANNEL)		2	EACH
801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-ROADWAY		765	CU. YD.
802	CLASS S CONCRETE-ROADWAY		155.96	CU. YD.
804	REINFORCING STEEL-ROADWAY (GRADE 60)		26038	POUND
816	FILTER BLANKET		589	SQ. YD.
816	DUMPED RIPRAP		295	CU. YD.
SP	RETAINING WALL		5022	SQ. FT.
SP	TEMPORARY RETAINING WALL		2629	SQ. FT.
SP	TEXTURED COATING FINISH		436	SQ. YD.
	STRUCTURES OVER 20' SPAN			
619	7' STEEL CHAIN LINK FENCE		274	LIN. FT.
636	BRIDGE CONSTRUCTION CONTROL		1.00	LUMP SUM
801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-ROADWAY		334	CU. YD.
802	CLASS S CONCRETE-ROADWAY		763.76	CU. YD.
802	CLASS S CONCRETE-BRIDGE		870.40	CU. YD.
802	CLASS S(AE) CONCRETE-BRIDGE		1342.50	CU. YD.
803	CLASS 2 PROTECTIVE SURFACE TREATMENT		4852.0	SQ. YD.
804	REINFORCING STEEL-ROADWAY (GRADE 60)		90165	POUND
804	REINFORCING STEEL-BRIDGE (GRADE 60)		120940	POUND
804	EPOXY COATED REINFORCING STEEL (GRADE 60)		282560	POUND
805	STEEL PILING (HP 12X53)		585	LIN. FT.
SP	CORING DRILLED SHAFT		142	LIN. FT.
SP	DRILLED SHAFT (72" DIAMETER)		568	LIN. FT.
SP	PERMANENT STEEL CASING (84" DIAMETER)		208	LIN. FT.
SP	CROSSHOLE SONIC LOGGING (72" DIAMETER)		20	EACH
806	METAL BRIDGE RAILING (TYPE H)		814	LIN. FT.
806	TRANSITIONAL APPROACH RAILING		4	EACH
SP & 807	STRUCTURAL STEEL IN BEAM SPANS (M270-GR50W)		1300380	POUND
808	ELASTOMERIC BEARINGS		43326	CU. IN.
809	ARMORED JOINT WITH NEOPRENE STRIP SEAL		170	LIN. FT.
809	SILICONE JOINT SEALANT		85	LIN. FT.
812	BRIDGE NAME PLATE (TYPE D)		1	EACH
816	CONCRETE RIPRAP		262	CU. YD.

* DENOTES ALTERNATE BID ITEMS.

REVISIONS

DATE	REVISION	SHEET NUMBER
10/14/2016	ADDED SPECIAL PROVISION "ASSESSMENT OF WORKING DAYS - MAINTENANCE OF TRAFFIC", REVISED SPECIAL PROVISION "INSURANCE, CONSTRUCTION, AND FLAGGING REQUIREMENTS ON RAILROAD PROPERTY (KCS)", TYPE -E JUNCTION BOX AT STATION 31+80.18 WITH AN 18" X 205' PIPE CULVERT, DROP INLET SILT FENCE AT STATION 31+80.18 ON RIGHT, ROCK DITCH CHECK AT STATION 32+40 ON RIGHT. REVISED DROP INLET HEIGHT FROM 3'-11' TO 15'-2" AT STATION 29+82 ON RIGHT. REVISED EROSION CONTROL QUANTITY BOX, STRUCTURES QUANTITY BOX, AND SUMMARY OF QUANTITIES.	3, 30, 32-33, 40, 42-43, 45, 48, 50, 54-55, 59-60, 66, & 194-197
10/25/2016	REMOVED TREATED WOOD POLE (CLASS 2, 46') AND ADDED TREATED WOOD POLE (CLASS 2, 45'). REVISED NOTE FROM TREATED WOOD POLE (CLASS 2, 40') (TYPICAL) TO TREATED WOOD POLE (CLASS 2, 45') (TYPICAL). REVISED SUMMARY OF QUANTITIES.	54-55, 67, & 69-70

12/14/2015

R090406.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.		090406	56	226

(2) SURVEY CONTROL DETAILS

SURVEY CONTROL COORDINATES
Project Name: 090406
Date: 4/11/2014
Coordinate System: Arkansas State Plane Coordinates
Based on AHTD GPS PTS : *040034, 040001A, SILOAM*
Projected to Ground Coordinates
Units: U.S. Survey Foot

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

Point No.	Northing	SY	Easting	SX	Elevation	SZ	Feature Code	Point Description
1	687539.8108	0.0144	567161.0727	0.0125	1145.78	0.004	CTL	PD:AHTD STD. MONUMENT STAMPED PN:1
2	687438.6769	0.0174	568045.5854	0.0143	1136.03	0.003	CTL	PD:AHTD STD. MONUMENT STAMPED PN:2
3	687487.3121	0.0152	568582.4753	0.0131	1139.02	0.003	CTL	PD:AHTD STD. MONUMENT STAMPED PN:3
4	687387.5983	0.0188	569257.2629	0.0165	1144.31	0.003	CTL	PD:AHTD STD. MONUMENT STAMPED PN:4
5	687345.6198	0.0143	569803.0308	0.0125	1151.31	0.004	CTL	PD:AHTD STD. MONUMENT STAMPED PN:5
6	687363.1695	0.0169	570372.1082	0.0153	1156.17	0.004	CTL	PD:AHTD STD. MONUMENT STAMPED PN:6
7	687905.6199	0.0172	569002.0055	0.0148	1141.25	0.003	CTL	PD:AHTD STD. MONUMENT STAMPED PN:7
8	687004.2168	0.0173	568424.7554	0.0147	1130.29	0.003	CTL	PD:AHTD STD. MONUMENT STAMPED PN:8
100	685489.9268	0.0001	566464.5978	0.0001	1147.17	0.001	GPS	PD:AHTD GPS #040034
101	686834.9799	0.0001	567181.0178	0.0001	1129.29	0.012	GPS	PD:NGS B ORDER HORIZONTAL MARK
102	681968.3254	0.0001	573643.7955	0.0001	1150.52	0.025	GPS	PD:AHTD GPS #040001A
990	684820.4769	0.0187	567012.9294	0.0156	1140.51	0.000	BM	PD:NGS 2ND ORDER BM K 31

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

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

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

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

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

Positional Accuracy:
- Horizontal - GPS (1.0 cm± 1PPM) *PN: 100-102*
- Horizontal - Primary (2.0cm± 20PPM): *PN:1-8*
- Horizontal - Secondary (3 cm ± 50PPM): *PN:N/A*
- Vertical - NGS 1st Order (±4mm x √dist in km) *PN:N/A*
- Vertical - NGS 2nd Order (±6mm x √dist in km) *PN:990*
- Vertical - NGS 3rd Order (±8mm x √dist in km) *PN:N/A*

Horizontal Datum: NAD 1983 (1997) State Plane Zone: 0301 - North Zone
The adjustment year is based on metadata in the SDMS Control file
A project CAF of: 0.999943856 has been used to compute the above coordinates.
The project CAF shall have a minimum precision of 9 digits right of the decimal.
This CAF is intended for use within the project limits only.
Grid Distance = Ground Distance X CAF
If Coordinates are listed as Ground:
To compute Grid Coordinates, multiply the Ground Coordinates by CAF about the origin of X=0 & Y=0
If Coordinates are listed as Grid:
To compute Ground Coordinates, divide the Grid Coordinates by CAF about the origin of X=0 & Y=0

Vertical Datum: NAVD 1988 based NGS BM:
A project Elevation Factor of: 0.9999453471 has been computed and incorporated in the above CAF.
This is based on the average elevation of the project: 1142.64 Feet
3-Wire Leveling techniques have been used to establish elevations on
Points: 1-8, 100-102 From NGS BM: K 31

Basis of Bearing: Grid Bearings based on AHTD GPS points: *(List AHTD GPS points used)*
Convergence Angle is: 01-28-00.91 LEFT at PN: 3
LT: 36-11-44.92 N LG: 094-31-15.30 W
Grid Azimuth = Astronomical Azimuth - Convergence Angle

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
6-9-16

HWY. 43

POINT NO.	TYPE	STATION	NORTHING	EASTING
8000	POB	20+00.00	687503.1843	567332.4636
8001	PC	22+52.03	687490.8788	567584.1941
8003	PT	27+32.70	687507.7018	568064.0025
8004	PC	27+82.45	687513.6057	568113.4025
8006	PT	32+33.43	687531.7244	568563.5556
8007	PC	35+45.13	687519.7326	568875.0224
8009	PT	40+80.92	687443.1545	569404.3118
8010	PC	40+96.42	687439.3357	569419.3357
8012	PT	45+49.00	687367.3169	569865.5427
8013	PI	46+59.03	687359.4939	569975.2927
8014	POE	50+11.40	687339.6099	570327.1061

N. LINCOLN ST.

POINT NO.	TYPE	STATION	NORTHING	EASTING
8015	POB	100+00.00	686958.1121	567559.0251
8016	PC	102+31.42	687072.0747	567760.4353
8018	PT	106+43.18	687407.9074	567967.6455
8019	POE	118+65.71	688628.9221	568028.4682

HWY. 43 CONNECTOR

POINT NO.	TYPE	STATION	NORTHING	EASTING
8020	POB	5+00.00	687472.1277	569276.6545
8021	PC	6+24.55	687594.2524	569301.0894
8023	PT	9+32.19	687859.9428	569186.6904
8024	POE	11+63.01	687982.5836	568991.1446

N. COUNTRY CLUB RD.

POINT NO.	TYPE	STATION	NORTHING	EASTING
8025	POB	59+90.00	687278.4425	568613.9289
8026	PI	60+00.00	687287.0591	568619.0038
8027	PC	61+11.46	687383.0963	568675.5660
8029	PT	62+79.10	687523.6350	568766.8721
8030	POE	64+00.00	687622.0257	568837.1207

DRIVEWAY

POINT NO.	TYPE	STATION	NORTHING	EASTING
8031	POB	1+00.00	687325.9488	568011.2749
8032	PC	1+14.03	687339.6641	568014.2511
8034	PT	3+19.66	687457.8406	568162.8970
8035	POE	5+31.49	687454.9352	568374.7045

6/8/2016

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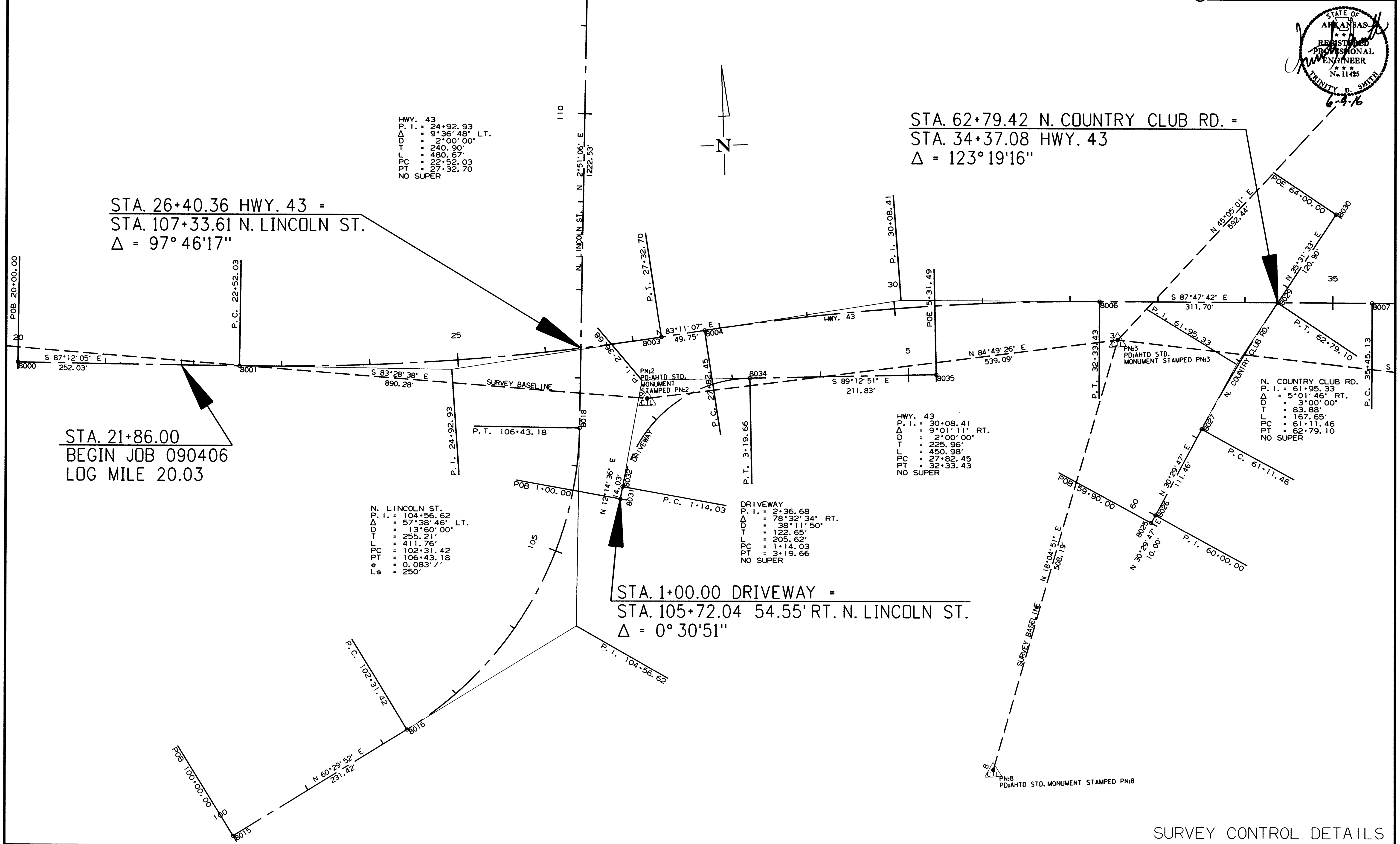
SURVEY CONTROL DETAILS

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.		090406	57	226

(2) SURVEY CONTROL DETAILS



STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH
6-9-16
N
STA. 62+79.42 N. COUNTRY CLUB RD. =
STA. 34+37.08 HWY. 43
Δ = 123° 19'16"
STA. 26+40.36 HWY. 43 =
STA. 107+33.61 N. LINCOLN ST.
Δ = 97° 46'17"
STA. 21+86.00
BEGIN JOB 090406
LOG MILE 20.03
STA. 1+00.00 DRIVEWAY =
STA. 105+72.04 54.55' RT. N. LINCOLN ST.
Δ = 0° 30'51"
HWY. 43
P. I. = 24+92.93
Δ = 9°36' 48" LT.
D = 2°00' 00"
T = 240.90'
L = 480.67'
PC = 22+52.03
PT = 27+32.70
NO SUPER
HWY. 43
P. I. = 30+08.41
Δ = 9°01' 11" RT.
D = 2°00' 00"
T = 225.96'
L = 450.98'
PC = 27+82.45
PT = 32+33.43
NO SUPER
N. LINCOLN ST.
P. I. = 104+56.62
Δ = 57°38' 46" LT.
D = 13°60' 00"
T = 255.21'
L = 411.76'
PC = 102+31.42
PT = 106+43.18
e = 0.083'/'
Ls = 250'
DRIVEWAY
P. I. = 2+36.68
Δ = 78°32' 34" RT.
D = 38°11' 50"
T = 122.65'
L = 205.62'
PC = 1+14.03
PT = 3+19.66
NO SUPER
N. COUNTRY CLUB RD.
P. I. = 61+95.33
Δ = 5°01' 46" RT.
D = 3°00' 00"
T = 83.88'
L = 167.65'
PC = 61+11.46
PT = 62+79.10
NO SUPER
POB 20+00.00
8000
S 87°12' 05" E
252.03'
8001
P. C. 22+52.03
S 83°28' 38" E
890.28'
SURVEY BASELINE
P. I. 24+92.93
25
P. T. 106+43.18
8018
N. LINCOLN ST.
N 2°51' 06" E
1222.53'
110
105
8003
N 83°11' 07" E
49.75'
8004
P. T. 27+32.70
P. I. 2+36.68
PN:2
PD:AHTD STD. MONUMENT STAMPED PN:2
DRIVEWAY
POB 1+00.00
N 12°14' 36" E
14.03'
8032
8031
P. C. 1+14.03
P. C. 27+82.45
8034
P. T. 3+19.66
HWY. 43
P. I. 30+08.41
30
POE 5+31.49
5
8035
S 89°12' 51" E
211.83'
N 84°49' 26" E
539.09'
P. T. 32+33.43
8006
S 87°47' 42" E
311.70'
P. I. 61+95.33
PN:3
PD:AHTD STD. MONUMENT STAMPED PN:3
N 45°05' 01" E
592.44'
POE 64+00.00
8030
N 35°31' 33" E
120.90
35
8029
8007
P. T. 62+79.10
P. C. 35+45.13
N. COUNTRY CLUB RD.
8027
N 30°29' 47" E
111.46'
P. C. 61+11.46
POB 59+90.00
60
8025
8026
N 30°29' 47" E
10.00'
P. I. 60+00.00
N 18°04' 51" E
508.19'
SURVEY BASELINE
PN:8
PD:AHTD STD. MONUMENT STAMPED PN:8
P. C. 102+31.42
8016
P. I. 104+56.62
N 60°29' 52" E
231.42'
POB 100+00.00
100
8015

SURVEY CONTROL DETAILS

6/8/2016

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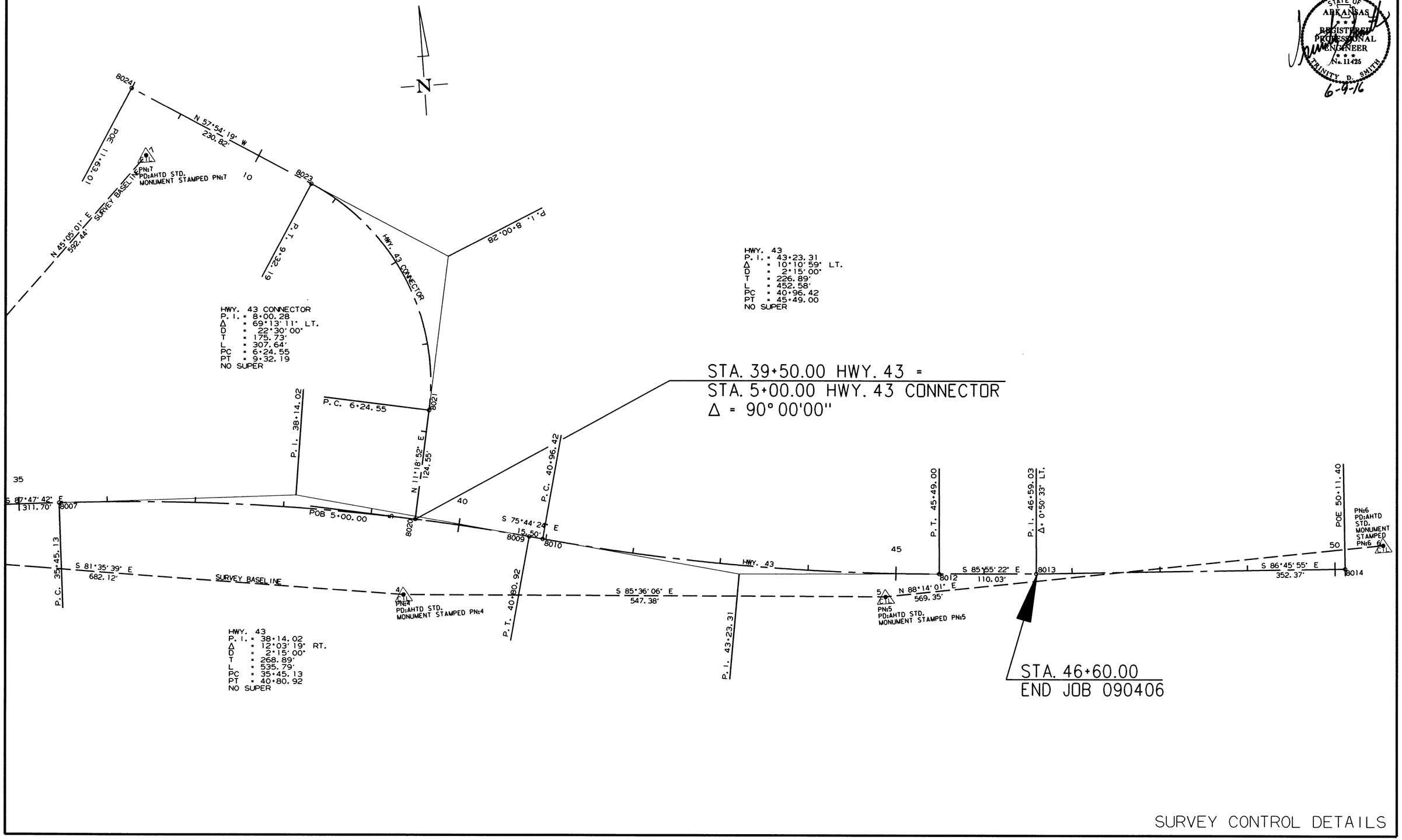
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	58	226

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
6-9-16



6/8/2016

R090406.DGN

SURVEY CONTROL DETAILS

DATE REVISED	DATE FILED	DATE REVISED	DATE FILED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
10/14/16				6	ARK.			
				JOB NO.		090406	59	226

(2) PLAN SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-17-16

STA. 23+10 IN PLACE
DROP INLET WITH
18" x 164' R.C. PIPE CULVERT OUTLET
ON LT. REMOVE

STA. 23+84 IN PLACE
YARD DRAIN WITH
12" x 90' C.M. PIPE CULVERT OUTLET
ON LT. REMOVE

STA. 24+79 IN PLACE
DROP INLET WITH
18" PIPE CULVERT OUTLET
ON LT. REMOVE

STA. 25+62.42 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP = 3.8 SQ. YDS.
ON LT.

STA. 24+00 CONSTRUCT
APPROACH ON LT. = 20 CU. YDS.

STA. 24+88 - CONSTRUCT
D. I. ON LT.
WITH 4' EXTENSION
& 18" x 9' R.C. PIPE CULVERT OUTLET
WITH FES
TY MO = 4'
TY C = 4' x 4'
H = 4'-0"

STA. 26+85 IN PLACE
DROP INLET
ON LT. REMOVE

STA. 32+01.72 - BRIDGE END
BRIDGE NO. 07393
380'-0" CONT. COMPOSITE PLATE GIRDER UNITS (85', 105', 105', 85')
170'-0" CONT. COMPOSITE PLATE GIRDER UNITS (85', 85')
30° LT. FWD. SKEW
58'-0" CLEAR ROADWAY
552'-6 1/16" BRIDGE LENGTH
STA. 37+54.23 - BRIDGE END

STA. 26+65 IN PLACE
12' x 3' x 142' R.C. BOX CULVERT
WITH 3:1 WINGS LT. & RT.
RETAIN & EXTEND 72' LT.
WITH 3:1 WINGS & 13' RT. WITH 3:1 WINGS
ON 45°LT. FWD. SKEW (STA. 25+70)
Q50 = 272 CFS D.A. = 172.8 ACRES

NOTE: FOR BRIDGE INFORMATION REFER TO BRIDGE PLANS FOR BRIDGE STRUCTURE DEPTH, VERTICAL CLEARANCE WITH TOP RAIL, BRIDGE FOOTING/PIERS WITH VERTICAL CLEARANCE.

STA. 21+89 CONSTRUCT
DROP INLET ON LT.
& 18" x 117' PIPE CULVERT
CONNECT TO DROP INLET ON
LT. @ STA. 23+10
TYPE MO = 4'
TYPE C = 4' x 4'
H = 3'-8"

STA. 23+10 CONSTRUCT
DROP INLET ON LT.
WITH 4' EXTENSION
& 18" x 172' PIPE CULVERT
CONNECT TO DROP INLET ON
LT. @ STA. 24+88
& 18" x 4' R.C. PIPE CULVERT INLET
WITH FES
TYPE MO = 4'
TYPE C = 4' x 4'
H = 3'-10"

STA. 25+77 IN PLACE
12' x 3' x 90' R.C. BOX CULVERT
WITH 3:1 WINGS LT. & RT.
RETAIN & EXTEND 38' LT.
WITH 3:1 WINGS ON 15°RT. FWD. SKEW
& 14' RT. WITH 3:1 WINGS
ON 15° LT. FWD. SKEW (STA. 25+70)
Q50 = 252 CFS D.A. = 147.2 ACRES

STA. 27+62 - CONSTRUCT
D. I. ON LT. WITH 8' EXTENSION
& 18" x 18' R.C. PIPE CULVERT OUTLET
WITH FES
TY MO = 4'
TY C = 4' x 4'
H = 6'-0"

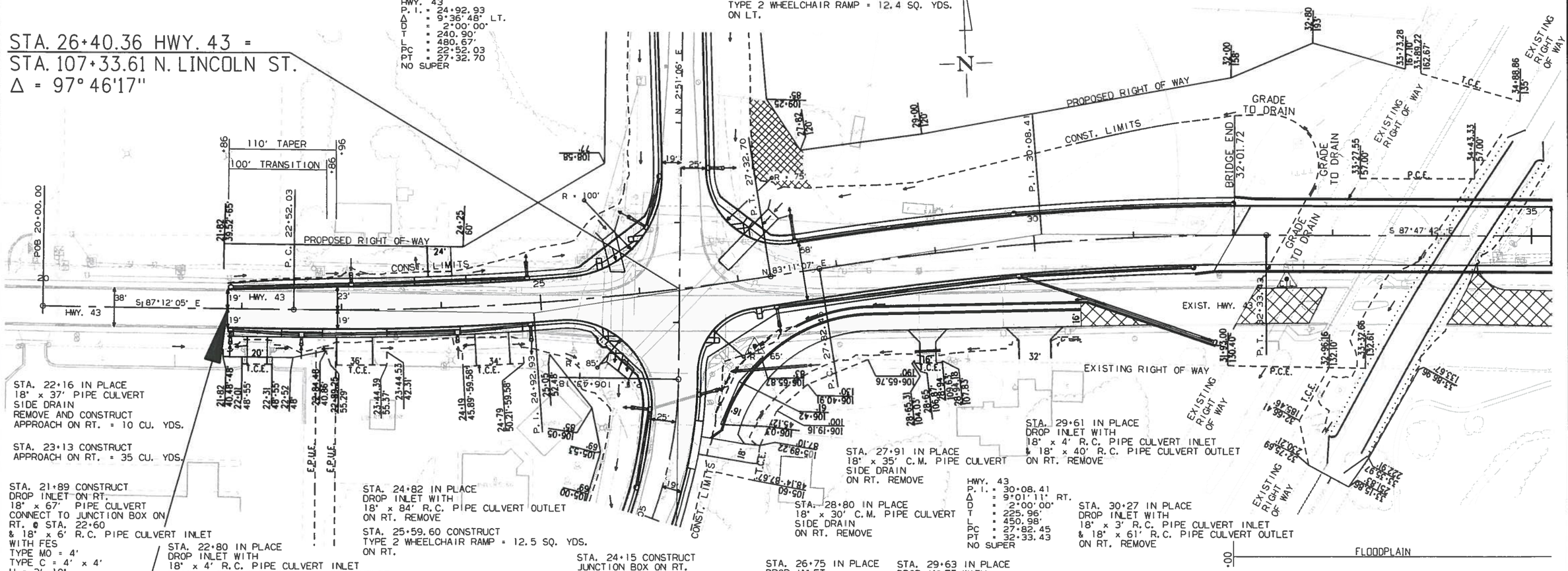
STA. 29+82 CONSTRUCT
DROP INLET ON LT.
WITH 8' EXTENSION
& 18" x 218' PIPE CULVERT
CONNECT TO DROP INLET ON
LT. @ STA. 27+62
TYPE MO = 4'
TYPE C = 4' x 4'
H = 3'-11"

STA. 32+01 CONSTRUCT
DROP INLET ON LT.
& 18" x 217' PIPE CULVERT
CONNECT TO DROP INLET ON
LT. @ STA. 29+82
TYPE MO = 4'
TYPE C = 4' x 4'
H = 3'-8"

HWY. 43
P. I. = 24+92.93
Δ = 9°36'48" LT.
D = 2°00'00"
T = 240.90'
L = 480.67'
PC = 22+52.03
PT = 27+32.70
NO SUPER

STA. 27+18.03 CONSTRUCT
TYPE 2 WHEELCHAIR RAMP = 12.4 SQ. YDS.
ON LT.

STA. 26+40.36 HWY. 43 =
STA. 107+33.61 N. LINCOLN ST.
Δ = 97° 46'17"



STA. 21+86.00
BEGIN JOB 090406
LOG MILE 20.03

STA. 22+16 IN PLACE
18" x 37' PIPE CULVERT
SIDE DRAIN
REMOVE AND CONSTRUCT
APPROACH ON RT. = 10 CU. YDS.

STA. 23+13 CONSTRUCT
APPROACH ON RT. = 35 CU. YDS.

STA. 21+89 CONSTRUCT
DROP INLET ON RT.
18" x 67' PIPE CULVERT
CONNECT TO JUNCTION BOX ON
RT. @ STA. 22+60
& 18" x 6' R.C. PIPE CULVERT INLET
WITH FES
TYPE MO = 4'
TYPE C = 4' x 4'
H = 3'-10"

STA. 22+80 IN PLACE
DROP INLET WITH
18" x 4' R.C. PIPE CULVERT INLET
& 18" x 200' R.C. PIPE CULVERT OUTLET
ON RT. REMOVE

STA. 24+82 IN PLACE
DROP INLET WITH
18" x 84' R.C. PIPE CULVERT OUTLET
ON RT. REMOVE

STA. 25+59.60 CONSTRUCT
TYPE 2 WHEELCHAIR RAMP = 12.5 SQ. YDS.
ON RT.

STA. 22+60 CONSTRUCT
JUNCTION BOX ON RT.
& 18" x 152' PIPE CULVERT
CONNECT TO JUNCTION BOX ON
RT. @ STA. 24+15
& 18" x 3' R.C. PIPE CULVERT INLET
WITH FES
TYPE E = 4' x 4'
H = 4'-0"

STA. 24+49 IN PLACE
18" x 50' C.M. PIPE CULVERT
SIDE DRAIN
REMOVE AND CONSTRUCT
APPROACH ON RT. = 25 CU. YDS.

STA. 24+15 CONSTRUCT
JUNCTION BOX ON RT.
& 18" x 70' PIPE CULVERT
CONNECT TO DROP INLET ON
RT. @ STA. 24+88
& 18" x 2' R.C. PIPE CULVERT INLET
WITH FES
TYPE E = 4' x 4'
H = 3'-10"

STA. 24+88 - CONSTRUCT
D. I. ON RT.
WITH 4' EXTENSION
& 18" x 9' R.C. PIPE CULVERT OUTLET
WITH FES
TY MO = 4'
TY C = 4' x 4'
H = 4'-0"

STA. 26+75 IN PLACE
DROP INLET
ON RT. REMOVE

STA. 27+91 IN PLACE
18" x 35' C.M. PIPE CULVERT
SIDE DRAIN
ON RT. REMOVE

STA. 28+80 IN PLACE
18" x 30' C.M. PIPE CULVERT
SIDE DRAIN
ON RT. REMOVE

HWY. 43
P. I. = 30+08.41
Δ = 9°01'11" RT.
D = 2°00'00"
T = 225.96'
L = 450.98'
PC = 27+82.45
PT = 32+33.43
NO SUPER

STA. 29+61 IN PLACE
DROP INLET WITH
18" x 4' R.C. PIPE CULVERT INLET
& 18" x 40' R.C. PIPE CULVERT OUTLET
ON RT. REMOVE

STA. 30+27 IN PLACE
DROP INLET WITH
18" x 3' R.C. PIPE CULVERT INLET
& 18" x 61' R.C. PIPE CULVERT OUTLET
ON RT. REMOVE

STA. 29+63 IN PLACE
DROP INLET WITH
18" x 294' R.C. PIPE CULVERT OUTLET
ON RT. REMOVE

STA. 27+34 - CONSTRUCT
D. I. ON RT.
WITH 8' EXTENSION
& 18" x 12' R.C. PIPE CULVERT OUTLET
WITH FES
TY MO = 4'
TY C = 4' x 4'
H = 5'-0"

STA. 27+16.12 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP = 3.33 SQ. YDS.
ON RT.

STA. 29+82 CONSTRUCT
DROP INLET ON RT.
WITH 8' EXTENSION
& 18" x 242' PIPE CULVERT
CONNECT TO DROP INLET ON
RT. @ STA. 27+34
TYPE MO = 4'
TYPE C = 4' x 4'
H = 15'-2"

STA. 33+72 IN PLACE
DROP INLET WITH
18" x 19' R.C. PIPE CULVERT INLET
& 18" x 171' R.C. PIPE CULVERT OUTLET
ON RT. REMOVE

STA. 31+60 CONSTRUCT
DROP INLET ON RT.
& 18" x 172' PIPE CULVERT
CONNECT TO DROP INLET ON
RT. @ STA. 29+82
TYPE MO = 4'
TYPE C = 4' x 4'
H = 3'-8"

STA. 32+58 IN PLACE
12' x 3' x 82' R.C. BOX CULVERT
ON RT. REMOVE

STA. 31+80.18 CONSTRUCT
JUNCTION BOX ON RT.
& 18" x 205' PIPE CULVERT
CONNECT TO DROP INLET ON
RT. @ STA. 29+82
TYPE E = 4' x 2'
H = 2'-3"

OBLITERATE EXISTING PAVEMENT

ALL R.C. PIPE CULVERTS SHALL BE CLASS III UNLESS OTHERWISE SPECIFIED. FOR ALL R.C. PIPE CULVERT INSTALLATIONS USE TYPE 3 BEDDING UNLESS OTHERWISE SPECIFIED. FOR ALL C.M. PIPE CULVERT INSTALLATIONS USE TYPE 2 BEDDING UNLESS OTHERWISE SPECIFIED.

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

10/14/2016

R090406.DGN

HWY. 43

ALL R.C. PIPE CULVERTS SHALL BE CLASS III UNLESS OTHERWISE SPECIFIED. FOR ALL R.C. PIPE CULVERT INSTALLATIONS USE TYPE 3 BEDDING UNLESS OTHERWISE SPECIFIED. FOR ALL C.M. PIPE CULVERT INSTALLATIONS USE TYPE 2 BEDDING UNLESS OTHERWISE SPECIFIED.

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

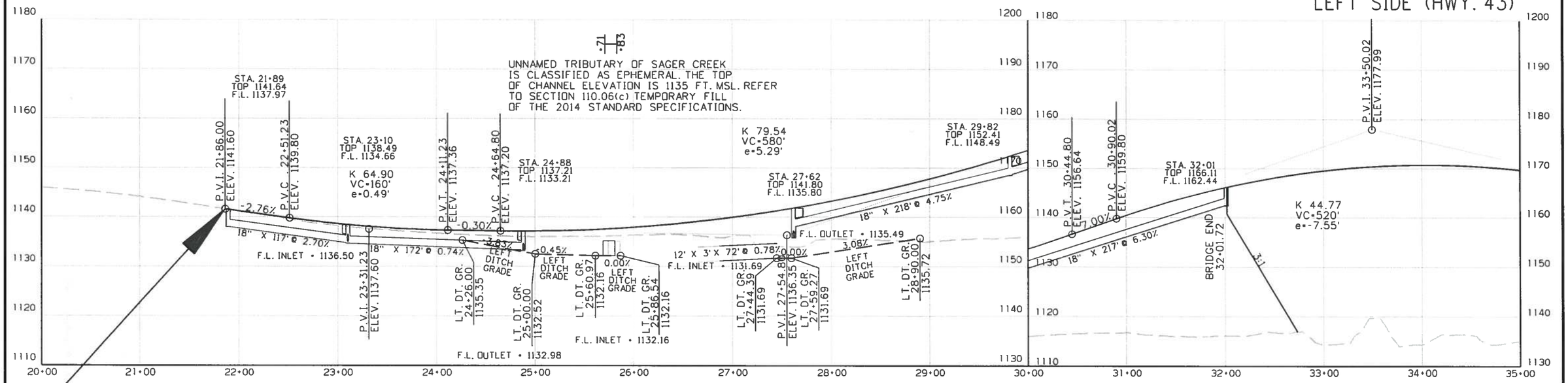
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED
10/14/16			

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		090406	60	226

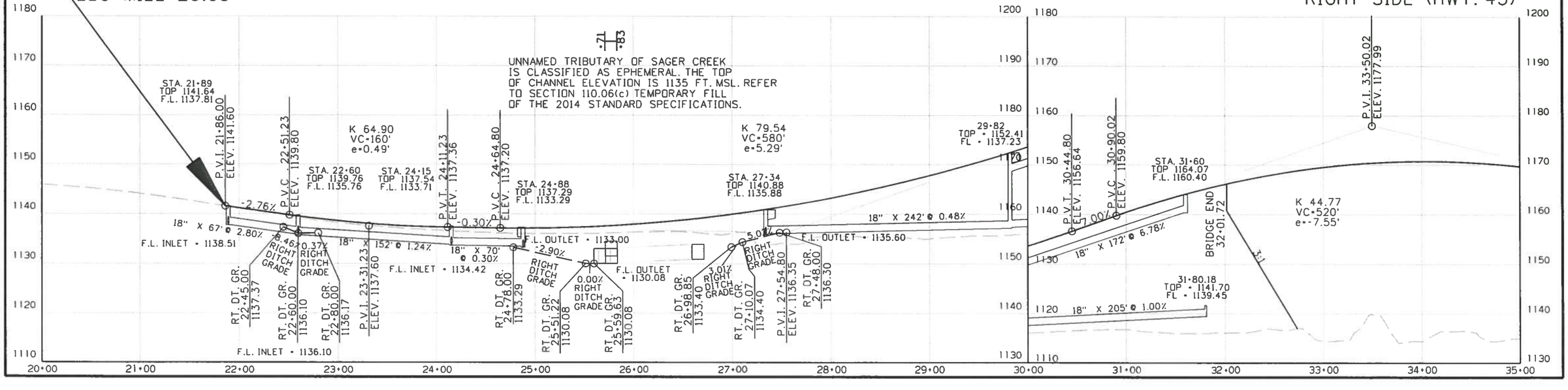
(2) PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-19-16

LEFT SIDE (HWY. 43)



RIGHT SIDE (HWY. 43)



10/14/2016

R090406.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.		090406	61	226

(2) PLAN SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
6-9-16

STA. 32+01.72 - BRIDGE END
BRIDGE NO. 07393
380'-0" CONT. COMPOSITE PLATE GIRDER UNITS (85',105',105',85')
170'-0" CONT. COMPOSITE PLATE GIRDER UNITS (85',85')
30° LT. FWD. SKEW
58'-0" CLEAR ROADWAY
552'-6 1/16" BRIDGE LENGTH
STA. 37+54.23 - BRIDGE END

STA. 10+46 - CONSTRUCT
D. I. ON LT.
WITH 4' EXTENSION
& 18" x 7' R.C. PIPE CULVERT OUTLET
WITH FES
TYPE MO = 4'
TYPE C = 4' x 4'
H = 3'-9"

STA. 35+49 IN PLACE
DROP INLET WITH
18" x 24" R.C. PIPE CULVERT OUTLET
ON RT. REMOVE

STA. 35+48 IN PLACE
DROP INLET WITH
18" x 23' R.C. PIPE CULVERT OUTLET
ON RT. REMOVE

STA. 10+80.85 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP = 8.1 SQ. YDS.
ON LT.

STA. 37+21 IN PLACE
DROP INLET WITH
18" x 91' R.C. PIPE CULVERT OUTLET
ON RT. REMOVE

STA. 10+78.16 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP = 7.6 SQ. YDS.
ON RT.

STA. 10+53.06 - CONSTRUCT
D. I. ON RT.
WITH 8' EXTENSION
& 18" x 5' R.C. PIPE CULVERT OUTLET
WITH FES
TYPE MO = 4'
TYPE C = 4' x 4'
H = 3'-0"

STA. 10+79.14 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP = 4.7 SQ. YDS.
ON RT.

STA. 10+79.11 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP = 4.6 SQ. YDS.
ON RT.

STA. 39+49 IN PLACE
24" x 40' C.M. PIPE CULVERT
SIDE DRAIN
ON RT. REMOVE

STA. 39+79 IN PLACE
DROP INLET WITH
36" x 250' R.C. PIPE CULVERT OUTLET
ON RT. REMOVE

STA. 8+11.70 - CONSTRUCT
SEXTUPLE 11' x 9' x 95' R.C. BOX CULVERT
WITH 3:1 WINGS
Q25 = 4700 CFS D.A. = 2880 ACRES
CHANNEL CHANGE = 1618 CU. YDS.
SPAN = 72.10'

STA. 8+35 CONSTRUCT
DROP INLET ON RT.
WITH 4' EXTENSION
ON TOP OF R.C. BOX CULVERT
TYPE C = 4' x 4'
H = 5'-2"

STA. 38+69 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP = 7.2 SQ. YDS.
ON LT.

STA. 39+27 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP = 5.2 SQ. YDS.
ON LT.

STA. 39+38 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP = 3.9 SQ. YDS.
ON LT.

STA. 40+40 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP = 7.5 SQ. YDS.
ON LT.

STA. 37+95 - CONSTRUCT
D. I. ON LT.
& 54" x 42' R.C. PIPE CULVERT OUTLET
WITH FES
TYPE MO = 6'
H = 16'-4"

STA. 41+15 CONSTRUCT
DROP INLET ON LT.
& 54" x 317' PIPE CULVERT
CONNECT TO DROP INLET ON
LT. @ STA. 37+95
& 48" x 3' R.C. PIPE CULVERT INLET
WITH FES
TYPE MO = 6'
TYPE C = 6' x 6'
H = 6'-0"

NOTE: FOR BRIDGE INFORMATION REFER TO BRIDGE PLANS FOR BRIDGE STRUCTURE DEPTH, VERTICAL CLEARANCE WITH TOP RAIL, BRIDGE FOOTING/PIERS WITH VERTICAL CLEARANCE.

STA. 39+50.00 HWY. 43 =
STA. 5+00.00 HWY. 43 CONNECTOR
Δ = 90° 00'00"

STA. 7+11 CONSTRUCT
APPROACH ON RT. = 15 CU. YDS.

STA. 6+20 - CONSTRUCT
DROP INLET ON LT.
WITH 8' EXTENSION
& 22" x 14" x 8' R.C. PIPE CULVERT OUTLET
WITH FES
TYPE MO = 4'
TYPE C = 4' x 4'
H = 4'-0"

HWY. 43
P.I. = 43+23.31
Δ = 10°10'59" LT.
D = 2°15'00"
T = 226.89'
L = 452.58'
PC = 40+96.42
PT = 45+49.00
NO SUPER

STA. 44+25 IN PLACE
DROP INLET
ON LT. REMOVE

STA. 6+27 CONSTRUCT
DROP INLET ON RT.
WITH 4' EXTENSION
& 22" x 14" x 45' PIPE CULVERT
CONNECT TO DROP INLET ON
LT. @ STA. 6+20
TYPE MO = 4'
TYPE C = 4' x 4'
H = 3'-8"

STA. 42+15 CONSTRUCT
DROP INLET ON LT.
WITH 4' EXTENSION
& 24" x 94' PIPE CULVERT
CONNECT TO DROP INLET ON
LT. @ STA. 41+15
TYPE MO = 4'
TYPE C = 4' x 4'
H = 4'-0"

STA. 44+60 CONSTRUCT
DROP INLET ON LT.
& 18" x 238' PIPE CULVERT
CONNECT TO DROP INLET ON
LT. @ STA. 42+15
TYPE MO = 4'
TYPE C = 4' x 4'
H = 3'-11"

STA. 46+57 CONSTRUCT
DROP INLET ON LT.
& 18" x 192' PIPE CULVERT
CONNECT TO DROP INLET ON
LT. @ STA. 44+60
TYPE MO = 4'
TYPE C = 4' x 4'
H = 3'-8"

EXISTING RIGHT OF WAY
N. COUNTRY CLUB RD.
N 57°54'19" W
POE 11+63.01
R = 125'
P.T. 9+32.19
P.C. 6+24.55
R = 85'
P.I. 38+14.02
BRIDGE END 37+54.23
EXISTING RIGHT OF WAY
P.C. 35+45.13
S 87°47'42" E
POB 5+00.00
EXIST. HWY. 43
S 75°44'24" E
HWY. 43
CONST. LIMITS
EXISTING RIGHT OF WAY
P.T. 40+80.92
R = 100'
P.C. 40+96.42
PROPOSED RIGHT OF WAY
CONST. LIMITS
267' TAPER
P.T. 45+49.00
P.I. 46+59.03
Δ 0°50'33" LT.
EXISTING RIGHT OF WAY
S 85°55'22" E
S 86°45'55" E
100' TRANSITION
267' TAPER
R = 30'
P.I. 43+23.31
P.C.C.
P.T.
T.C.E.
75' TAPER
P.I. 8+60.28
HWY. 43 CONNECTOR
P.I. = 8+00.28
Δ = 69°13'11" LT.
D = 22°30'00"
T = 175.73'
L = 307.64'
PC = 6+24.55
PT = 9+32.19
NO SUPER

STA. 36+00 IN PLACE
QUAD. 12' x 7' x 62' R.C. BOX CULVERT
ON RT. REMOVE

FLOODPLAIN

STA. 37+23 IN PLACE
DROP INLET WITH
18" x 90' R.C. PIPE CULVERT OUTLET
ON RT. REMOVE

STA. 37+54 CONSTRUCT
DROP INLET ON RT.
& 18" x 239' PIPE CULVERT
CONNECT TO DROP INLET ON
RT. @ STA. 40+00
TYPE MO = 4'
TYPE C = 4' x 4'
H = 3'-8"

STA. 40+00 CONSTRUCT
DROP INLET ON RT.
WITH 8' EXTENSION
& 24" x 13' R.C. PIPE CULVERT OUTLET
WITH FES
TYPE MO = 4'
TYPE C = 4' x 4'
H = 5'-7"

HWY. 43
P.I. = 38+14.02
Δ = 12°03'19" RT.
D = 2°15'00"
T = 268.89'
L = 535.79'
PC = 35+45.13
PT = 40+80.92
NO SUPER

STA. 42+52.16 CONSTRUCT
DROP INLET ON RT.
& 22" x 14" x 26' R.C. PIPE CULVERT OUTLET
WITH FES
TYPE MO = 4'
TYPE C = 4' x 4'
H = 3'-6"

STA. 42+43 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP = 4.6 SQ. YDS.
ON RT.

STA. 42+95.22 CONSTRUCT
DROP INLET ON RT.
& 22" x 14" x 40' PIPE CULVERT
CONNECT TO DROP INLET ON
RT. @ STA. 42+52.16
& 22" x 14" x 25' R.C. PIPE CULVERT INLET
WITH FES
TYPE MO = 4'
TYPE C = 4' x 4'
H = 3'-6"

STA. 43+03 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP = 4.6 SQ. YDS.
ON RT.

STA. 42+75 IN PLACE
18" x 113' R.C. PIPE CULVERT
SIDE DRAIN
ON RT. REMOVE

STA. 44+26 IN PLACE
DROP INLET
ON RT. REMOVE

STA. 44+66.85 IN PLACE
18" x 30' PIPE CULVERT
SIDE DRAIN
REMOVE AND CONSTRUCT
APPROACH ON RT. = 15 CU. YDS.

STA. 44+94 CONSTRUCT
DROP INLET ON RT.
& 24" x 167' PIPE CULVERT
CONNECT TO DROP INLET ON
RT. @ STA. 43+25
& 18" x 4' R.C. PIPE CULVERT INLET
WITH FES
TYPE MO = 4'
TYPE C = 4' x 4'
H = 3'-11"

STA. 43+25 CONSTRUCT
DROP INLET ON RT.
WITH 4' EXTENSION
& 24" x 209' PIPE CULVERT
CONNECT TO DROP INLET ON
RT. @ STA. 41+15
TYPE MO = 4'
TYPE C = 4' x 4'
H = 4'-5"

STA. 46+57 CONSTRUCT
DROP INLET ON RT.
& 18" x 160' PIPE CULVERT
CONNECT TO DROP INLET ON
RT. @ STA. 44+94
TYPE MO = 4'
TYPE C = 4' x 4'
H = 3'-8"

OBLITERATE EXISTING PAVEMENT

STA. 41+15 CONSTRUCT
DROP INLET ON RT.
WITH 4' EXTENSION
& 24" x 110' PIPE CULVERT
CONNECT TO DROP INLET ON
RT. @ STA. 40+00
TYPE MO = 4'
TYPE C = 4' x 4'
H = 4'-3"

ALL R.C. PIPE CULVERTS SHALL BE CLASS III UNLESS OTHERWISE SPECIFIED. FOR ALL R.C. PIPE CULVERT INSTALLATIONS USE TYPE 3 BEDDING UNLESS OTHERWISE SPECIFIED. FOR ALL C.M. PIPE CULVERT INSTALLATIONS USE TYPE 2 BEDDING UNLESS OTHERWISE SPECIFIED.

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

STA. 46+60.00
END JOB 090406

HWY. 43

6/8/2016

R090406.DGN

ALL R.C. PIPE CULVERTS SHALL BE CLASS III UNLESS OTHERWISE SPECIFIED. FOR ALL R.C. PIPE CULVERT INSTALLATIONS USE TYPE 3 BEDDING UNLESS OTHERWISE SPECIFIED. FOR ALL C.M. PIPE CULVERT INSTALLATIONS USE TYPE 2 BEDDING UNLESS OTHERWISE SPECIFIED.

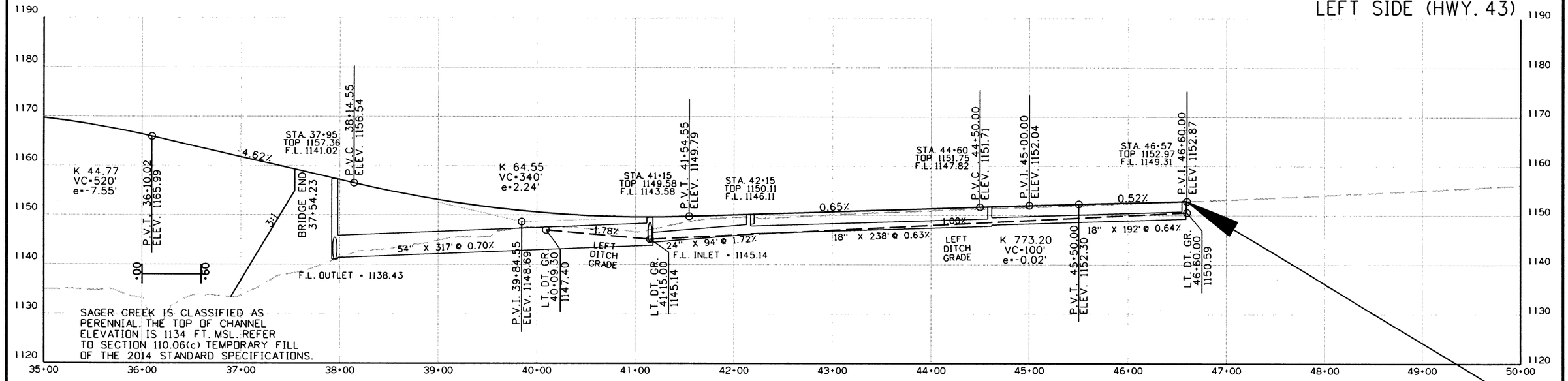
REFER TO SURVEY CONTROL DETAIL SHEETS FOR HORIZONTAL AND VERTICAL CONTROL DATA.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	62	226

(2) PROFILE SHEETS

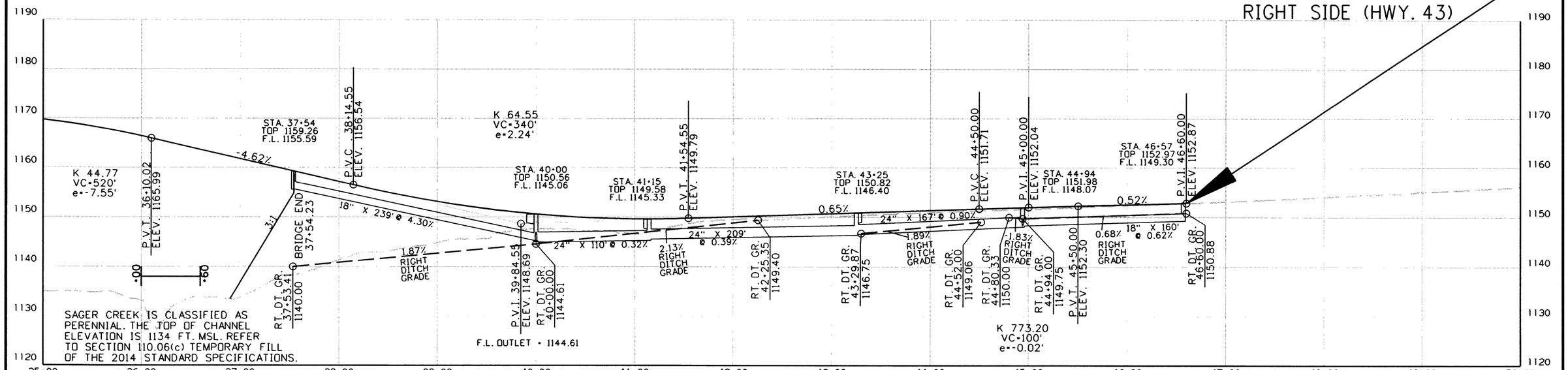
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
6-9-16

LEFT SIDE (HWY. 43)



STA. 46+60.00
END JOB 090406

RIGHT SIDE (HWY. 43)



6/8/2016

R090406.DGN

ALL R.C. PIPE CULVERTS SHALL BE CLASS III UNLESS OTHERWISE SPECIFIED. FOR ALL R.C. PIPE CULVERT INSTALLATIONS USE TYPE 3 BEDDING UNLESS OTHERWISE SPECIFIED. FOR ALL C.M. PIPE CULVERT INSTALLATIONS USE TYPE 2 BEDDING UNLESS OTHERWISE SPECIFIED.

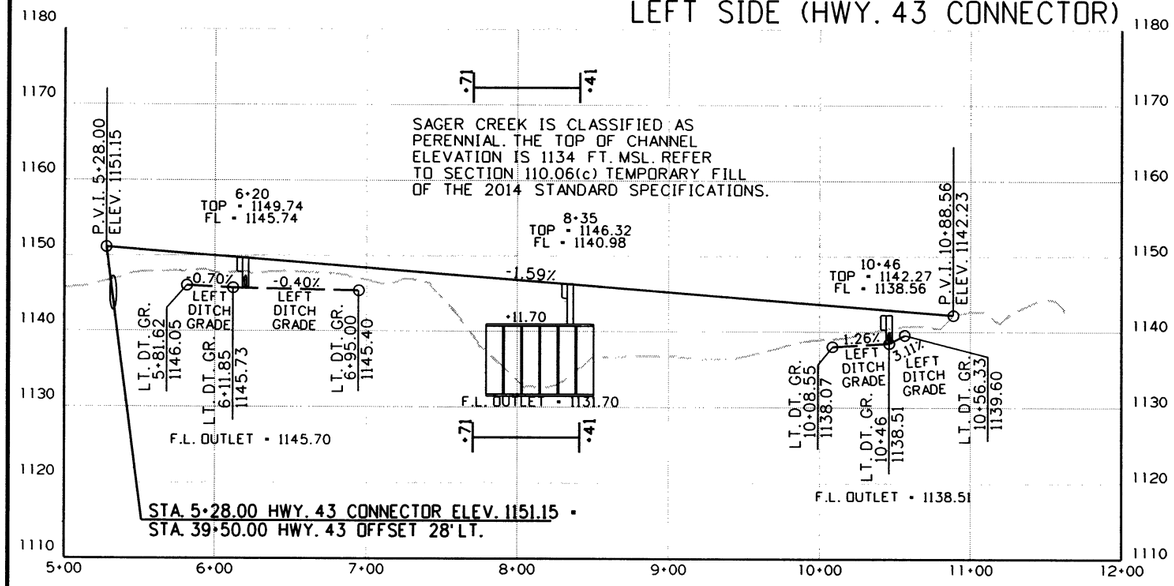
REFER TO SURVEY CONTROL DETAIL SHEETS FOR HORIZONTAL AND VERTICAL CONTROL DATA.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	63	226

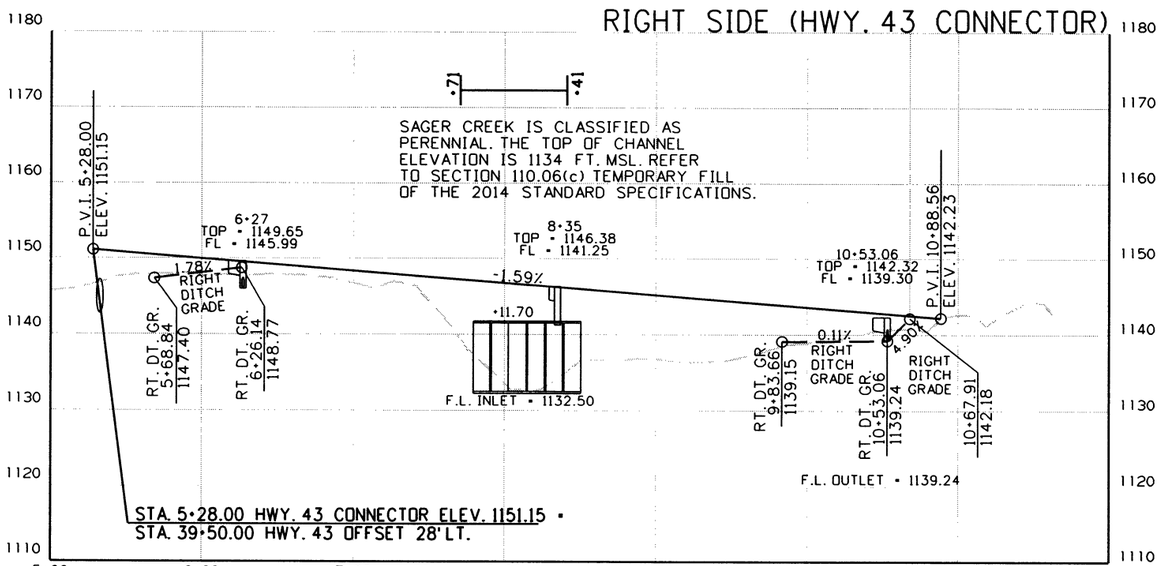
(2) PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
6-9-16

LEFT SIDE (HWY. 43 CONNECTOR)



RIGHT SIDE (HWY. 43 CONNECTOR)



6/8/2016

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				6	ARK.			
				JOB NO.		090406	64	226

(2) PLAN SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
6-9-16

STA. 104+10 IN PLACE
TRP. 6' x 3' x 78' R.C. BOX CULVERT
WITH 3:1 WINGS LT. & RT. ON 45° LT. FWD. SKEW
RETAIN & EXTEND 20' LT.
WITH 2:1 WINGS ON 45° LT. FWD. SKEW
CONSTRUCT DBL. 36' x 225' R.C. PIPE CULVERTS
TO THE NORTH SIDE OF THE EXISTING R.C. BOX. CULVERT
WITH FES LT. & RT.
Q50 = 524 CFS D.A. = 320 ACRES
SPAN = 28.76'

STA. 104+66 CONSTRUCT
DROP INLET ON LT.
WITH 8' EXTENSION
& 36" x 21' R.C. PIPE CULVERT INLET
WITH FES
& 36" x 95 R.C. PIPE CULVERT OUTLET
WITH FES
TYPE MO = 5'
TYPE C = 5' x 5'
H = 7'-0"

STA. 102+88.07 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP = 4.0 SQ. YDS.
ON LT.

STA. 105+25 CONSTRUCT
DROP INLET ON LT.
WITH 4' EXTENSION
& 18" x 76' PIPE CULVERT
CONNECT TO DROP INLET ON
LT. @ STA. 106+10.33
TYPE MO = 4'
TYPE C = 4' x 4'
H = 4'-3"

STA. 106+10.33 CONSTRUCT
DROP INLET ON LT.
WITH 4' EXTENSTION
& 18" x 11' R.C. PIPE CULVERT OUTLET WITH FES
CONNECT TO EXISTING 18" R.C. PIPE CULVERT
TYPE MO = 4'
TYPE C = 4' x 4'
H = 5'-6"

STA. 107+94.81 CONSTRUCT
DROP INLET ON LT.
WITH 4' EXTENSION
& 18" x 13' R.C. PIPE CULVERT OUTLET
WITH FES
TYPE MO = 4'
TYPE C = 4' x 4'
H = 3'-8"

STA. 108+45.88 CONSTRUCT
DROP INLET ON LT.
WITH 4' EXTENSION
& 18" x 49' PIPE CULVERT
CONNECT TO DROP INLET ON
LT. @ STA. 107+94.81
TYPE MO = 4'
TYPE C = 4' x 4'
H = 3'-8"

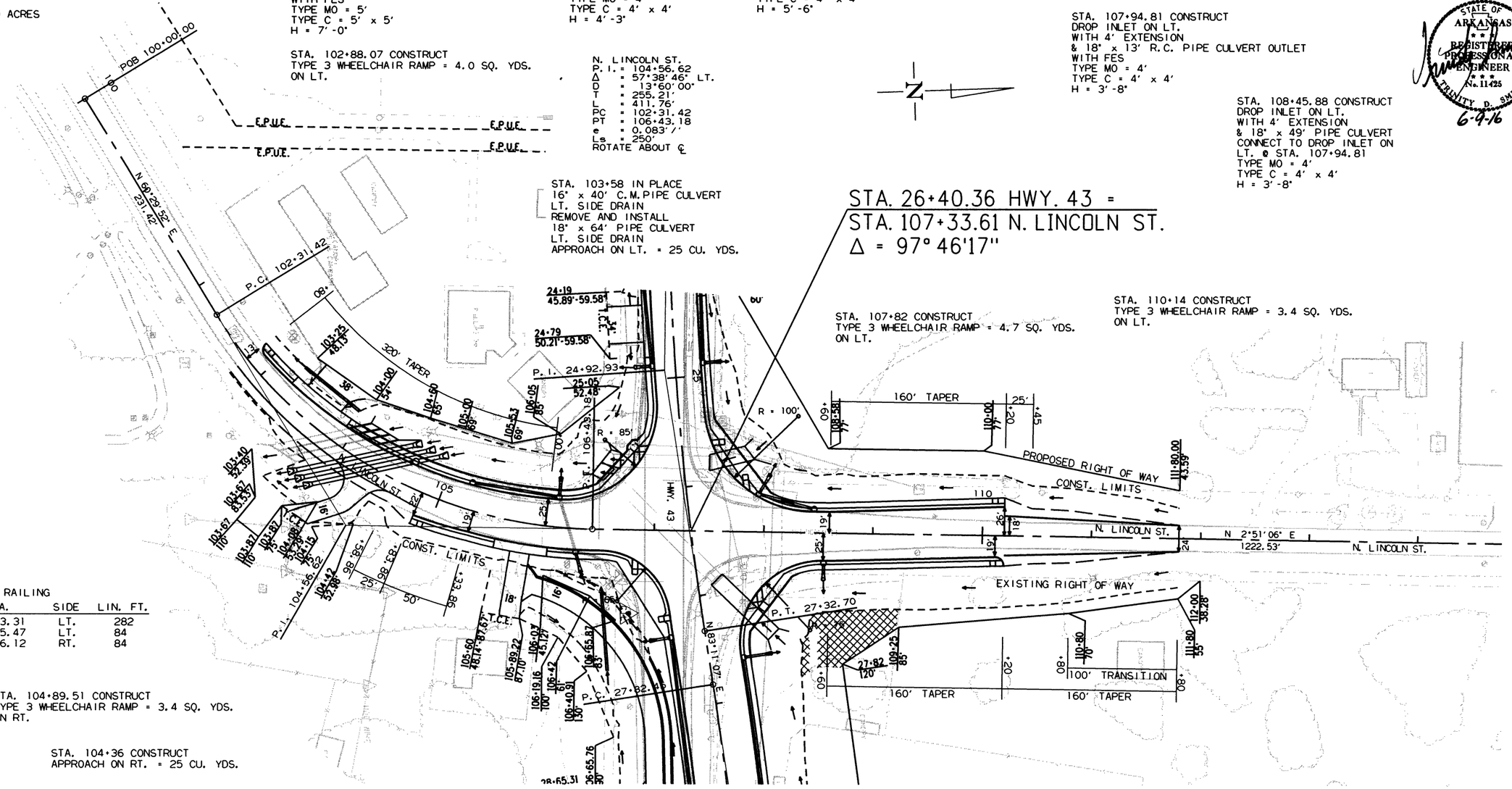
N. LINCOLN ST.
P.I. = 104+56.62
Δ = 57°38'46" LT.
D = 13°60'00"
T = 255.21'
L = 411.76'
PC = 102+31.42
PT = 106+43.18
e = 0.083'/'
Ls = 250'
ROTATE ABOUT ℄

STA. 103+58 IN PLACE
16" x 40' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" x 64' PIPE CULVERT
LT. SIDE DRAIN
APPROACH ON LT. = 25 CU. YDS.

STA. 26+40.36 HWY. 43 =
STA. 107+33.61 N. LINCOLN ST.
Δ = 97° 46'17"

STA. 107+82 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP = 4.7 SQ. YDS.
ON LT.

STA. 110+14 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP = 3.4 SQ. YDS.
ON LT.



HAND RAILING

STA.	STA.	SIDE	LIN. FT.
104+05.00	106+83.31	LT.	282
107+53.68	108+05.47	LT.	84
107+89.07	108+26.12	RT.	84

STA. 104+89.51 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP = 3.4 SQ. YDS.
ON RT.

STA. 104+36 CONSTRUCT
APPROACH ON RT. = 25 CU. YDS.

CONCRETE DITCH PAVING (TYPE A)

STA.	STA.	SIDE	"B"	"W"	SQ. YDS.
103+93	106+60	LT.	9'-0"	38'-0"	1127.33
107+89	108+43	LT.	4'-0"	26'-0"	156.00
108+04	108+66	RT.	8'-0"	28'-0"	192.89

STA. 105+81 CONSTRUCT
APPROACH ON RT. = 60 CU. YDS.

STA. 106+28.92 CONSTRUCT
JUNCTION BOX ON RT.
CONNECT TO EXISTING 18" R.C. PIPE CULVERT
& 18" x 12' R.C. PIPE CULVERT INLET
WITH FES
TYPE E = 4' x 4'
H = 5'-4"

STA. 106+82.87 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP = 4.6 SQ. YDS.
ON RT.

STA. 108+55.12 CONSTRUCT
DROP INLET ON RT.
WITH 4' EXTENSTION
& 18" x 8' R.C. PIPE CULVERT OUTLET
WITH FES
TYPE MO = 4'
TYPE C = 4' x 4'
H = 3'-8"

STA. 110+12.33 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP = 3.9 SQ. YDS.
ON RT.

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

N. LINCOLN ST.

6/8/2016

R090406.DGN

ALL R.C. PIPE CULVERTS SHALL BE CLASS III UNLESS OTHERWISE SPECIFIED. FOR ALL R.C. PIPE CULVERT INSTALLATIONS USE TYPE 3 BEDDING UNLESS OTHERWISE SPECIFIED. FOR ALL C.M. PIPE CULVERT INSTALLATIONS USE TYPE 2 BEDDING UNLESS OTHERWISE SPECIFIED.

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

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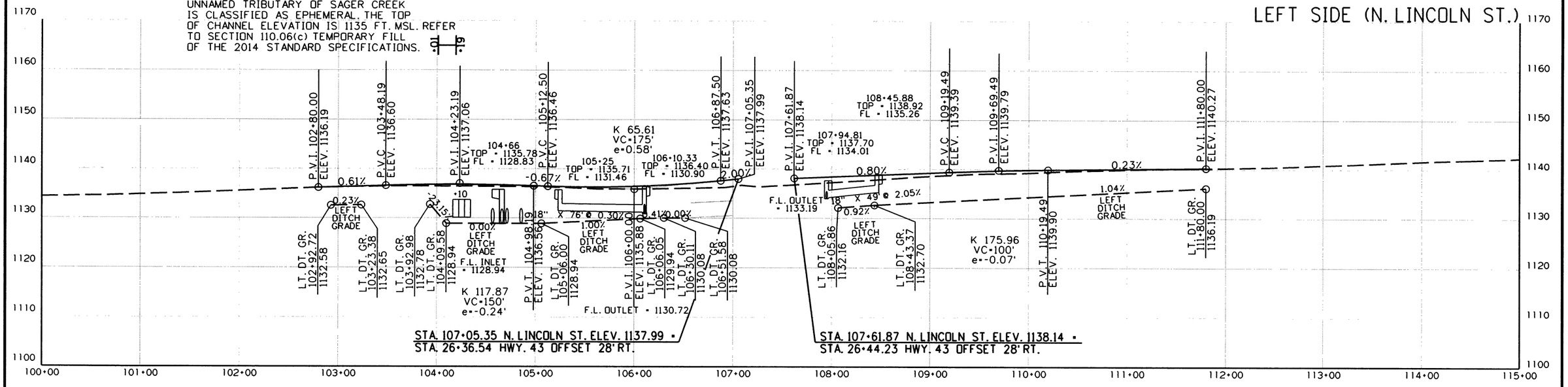
				6	ARK.			
				JOB NO.		090406	65	226

(2) PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
6-9-16

UNNAMED TRIBUTARY OF SAGER CREEK IS CLASSIFIED AS EPHEMERAL. THE TOP OF CHANNEL ELEVATION IS 1135 FT. MSL. REFER TO SECTION 110.06(c) TEMPORARY FILL OF THE 2014 STANDARD SPECIFICATIONS.

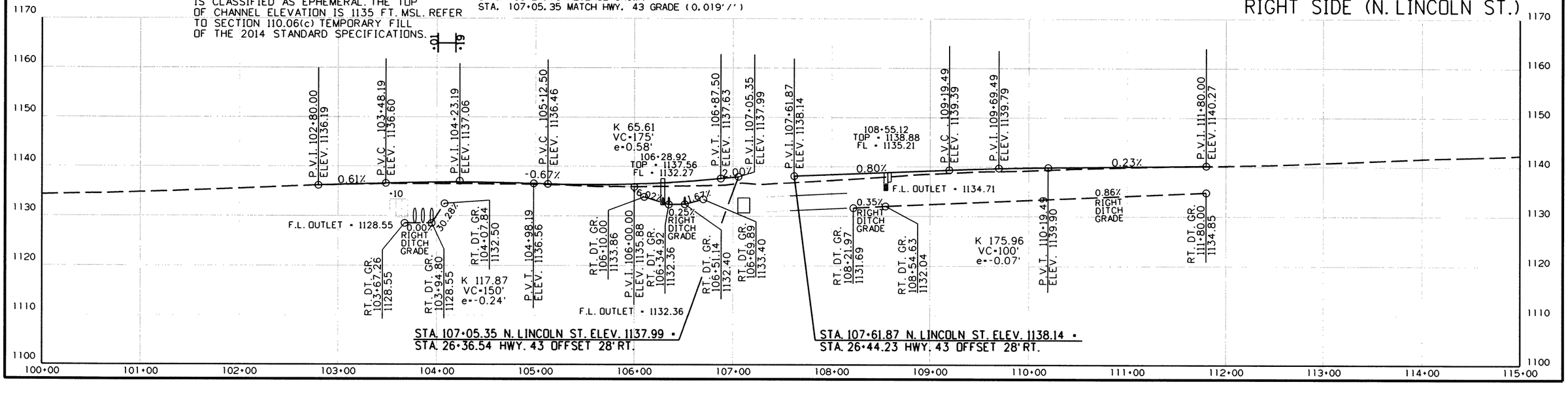
LEFT SIDE (N. LINCOLN ST.)



ROTATE ABOUT CENTERLINE
STA. 102+80.00 MATCH EXIST. SUPERELEVATION (0.053'/')
STA. 103+43.36 MAX. SUPERELEVATION (0.074'/')
STA. 104+65.10 MAX. SUPERELEVATION (0.074'/')
STA. 106+27.76 REVERSE CROWN
STA. 107+05.35 MATCH HWY. 43 GRADE (0.019'/')

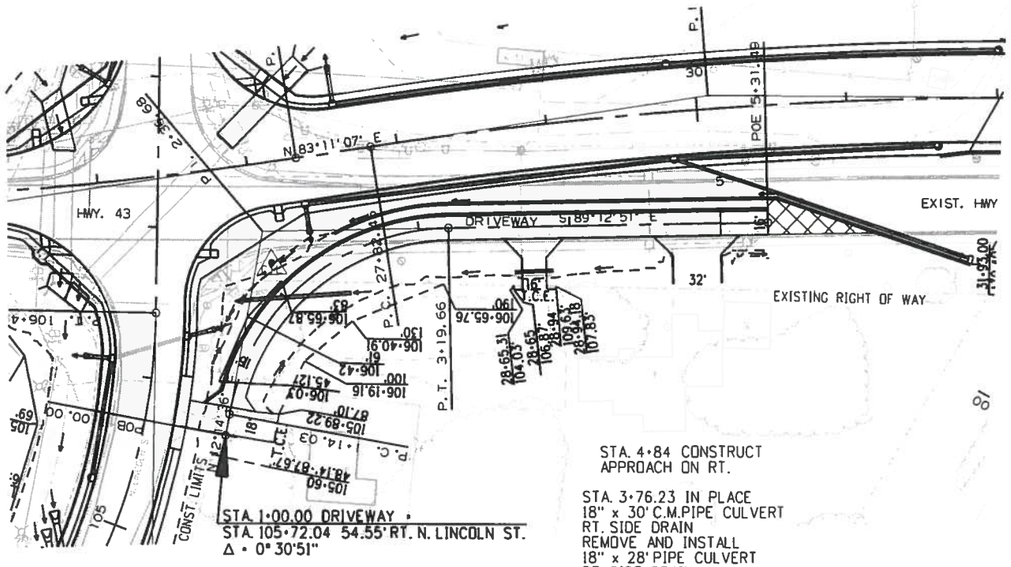
UNNAMED TRIBUTARY OF SAGER CREEK IS CLASSIFIED AS EPHEMERAL. THE TOP OF CHANNEL ELEVATION IS 1135 FT. MSL. REFER TO SECTION 110.06(c) TEMPORARY FILL OF THE 2014 STANDARD SPECIFICATIONS.

RIGHT SIDE (N. LINCOLN ST.)



6/8/2016

R090406.DGN



DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
10/14/16				6	ARK.			
					JOB NO.	090406	66	226

② PLAN AND PROFILE SHEETS

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH
Trinity D. Smith
10-17-16

ALL R.C. PIPE CULVERTS SHALL BE CLASS III UNLESS OTHERWISE SPECIFIED. FOR ALL R.C. PIPE CULVERT INSTALLATIONS USE TYPE 3 BEDDING UNLESS OTHERWISE SPECIFIED. FOR ALL C.M. PIPE CULVERT INSTALLATIONS USE TYPE 2 BEDDING UNLESS OTHERWISE SPECIFIED.

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

DRIVEWAY
P.I. = 2+36.68
Δ = 78°32′34″ RT.
D = 38°11′50″
T = 122.65′
L = 205.62′
PC = 1+14.03
PT = 3+19.66
NO SUPER

STA. 2+02 INSTALL
18″ x 74′ PIPE CULVERT
SIDE DRAIN

STA. 1+00.00 DRIVEWAY =
STA. 105+72.04 54.55′ RT. N. LINCOLN ST.
Δ = 0°30′51″

STA. 4+84 CONSTRUCT APPROACH ON RT.

STA. 3+76.23 IN PLACE
18″ x 30′ C.M.PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
18″ x 28′ PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH ON RT. = 30 CU. YDS.

DRIVEWAY

STA. 1+18.62 DRIVEWAY ELEV. 1135.16=
STA. 105+81.00 54.94′ RT. N. LINCOLN ST.

N. COUNTRY CLUB RD.
P.I. = 61+95.33
Δ = 5°01′46″ RT.
D = 3°00′00″
T = 83.88′
L = 167.65′
PC = 61+11.46
PT = 62+79.10
NO SUPER

STA. 60+59 IN PLACE
18″ x 20′ PIPE CULVERT
LT. SIDE DRAIN
REMOVE

STA. 62+79.42 N. COUNTRY CLUB RD. =
STA. 34+37.08 HWY. 43
Δ = 123°19′16″

N. COUNTRY CLUB RD.

10/14/2016
R090406.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
10-25-16				6	ARK.			
				JOB NO.		090406	67	226

(2) SUMMARY OF TRAFFIC SIGNAL QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-26-16

SUMMARY OF TRAFFIC SIGNAL QUANTITIES

ITEM NO.	ITEM	QUANTITY	UNIT
SP&701	SYSTEM LOCAL CONTROLLER TS 2-TYPE 2, E-NET (8 PHASES)	2	EACH
704	VEHICLE DETECTOR-RACK MOUNT	4	EACH
704	FEEDER WIRE	1807	LIN. FT.
SP&706	TRAFFIC SIGNAL HEAD, LED, (3 SECTION, 1 WAY)	22	EACH
SP&706	TRAFFIC SIGNAL HEAD, LED, (4 SECTION, 1 WAY)	4	EACH
SP&707	COUNTDOWN PEDESTRIAN SIGNAL HEAD, LED	8	EACH
708	TRAFFIC SIGNAL CABLE (5C/14 A.W.G.)	6805	LIN. FT.
708	TRAFFIC SIGNAL CABLE (7C/14 A.W.G.)	1005	LIN. FT.
708	TRAFFIC SIGNAL CABLE (20C/14 A.W.G.)	474	LIN. FT.
709	GALVANIZED STEEL CONDUIT (1.25")	40	LIN. FT.
709	GALVANIZED STEEL CONDUIT (2")	70	LIN. FT.
710	NON-METALLIC CONDUIT (1")	738	LIN. FT.
710	NON-METALLIC CONDUIT (1.25")	80	LIN. FT.
710	NON-METALLIC CONDUIT (2")	60	LIN. FT.
710	NON-METALLIC CONDUIT (3")	532	LIN. FT.
711	CONCRETE PULL BOX (TYPE 1)	1	EACH
711	CONCRETE PULL BOX (TYPE 1HD)	7	EACH
711	CONCRETE PULL BOX (TYPE 2)	5	EACH
713	SPAN WIRE ASSEMBLY	4	EACH
714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (34')	1	EACH
714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (36')	1	EACH
714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (54')	1	EACH
714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (64')	1	EACH
715	TRAFFIC SIGNAL PEDESTAL POLE WITH FOUNDATION	2	EACH
716	TREATED WOOD POLE (CLASS 2, 45')	10	EACH
733	VIDEO DETECTOR RELOCATION	2	EACH
• SP&733	VIDEO DETECTOR (CLR)	13	EACH
SP&733	VIDEO EDGE CARD EXTENDER	2	EACH
733	VIDEO CABLE	2608	LIN. FT.
733	VIDEO MONITOR (CLR)	1	EACH
• SP&733	VIDEO PROCESSOR, EDGE CARD (2 CAMERA)	9	EACH
SP&733	VEHICLE DETECTOR RACK (24 CHANNEL)	2	EACH
SP	E-NET CABLE (EXTERIOR CAT 5E)	140	LIN. FT.
SP	ELECTRICAL CONDUCTORS FOR LUMINAIRES	659	LIN. FT.
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (1C/8 A.W.G., E.G.C.)	646	LIN. FT.
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (1C/12 A.W.G., E.G.C.)	185	LIN. FT.
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (2C/6 A.W.G.)	40	LIN. FT.
SP	ETHERNET SWITCH, TIOO HARDENED (8 PORT)	2	EACH
SP	LOCAL RADIO (E-NET 5.8) WITH ANTENNA	1	EACH
SP	LOCAL RADIO WITH ANTENNA RELOCATION	1	EACH
SP	LOOP WIRING CLASS III (IC/16 A.W.G.)	480	LIN. FT.
SP	LOUVERS	3	EACH
SP	LED LUMINAIRE ASSEMBLY	4	EACH
SP	PEDESTRIAN SIGNAL HEAD RELOCATION	8	EACH
SP	RELOCATION OF TRAFFIC SIGNAL HEAD	12	EACH
SP	REMOVAL OF TRAFFIC SIGNAL EQUIPMENT	1.00	LUMP SUM
SP	SERVICE POINT ASSEMBLY (2 CIRCUITS)	2	EACH
SP	TRAFFIC SIGNAL CONTROLLER (MODIFICATION)	4	EACH
SP	VIDEO DETECTOR ROTATION	6	EACH
SP	18" STREET NAME SIGN	4	EACH

• ONE SPARE VIDEO DETECTOR AND ONE SPARE VIDEO PROCESSOR SHALL BE SUPPLIED.

DATE: 10-25-16 FILE NAME: t090406.dgn

LOCATION: HWY. 43/HWY. 264
CITY: SILOAM SPRINGS
COUNTY: BENTON
DISTRICT: 9 SCALE: N/A DRAWN BY: GWE

TRAFFIC SIGNAL NOTES:

1. PERFORM ELECTRICAL WORK IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE NFPA 70 (2014) NATIONAL ELECTRICAL CODE, NFPA 101(2012) LIFE SAFETY CODE, STATE ELECTRICAL CODE AND LOCAL ELECTRICAL CODE.

2. EXTEND GREEN EQUIPMENT GROUNDING CONDUCTOR (EGC) FROM GROUND BAR AT MAIN BREAKER TO CONTROL PANEL AND TO FIRST POLE. SOLIDLY BOND EGC TO GROUND LUG OF CONTROL CABINET AND TO POLE GROUND. ENSURE THAT ONLY ONE NEUTRAL-TO-GROUND BOND EXISTS IN THE SYSTEM AND THAT IT IS AT THE MAIN BREAKER.

3. ELECTRICAL SERVICE SHALL BE PROVIDED BY THE CITY TO A SERVICE POLE WITH EXTERNAL RAINTIGHT BREAKER (MAIN BREAKER), GALVANIZED STEEL SERVICE RISER, METER LOOP (IF REQUIRED), AND WEATHERHEAD AT A MUTUALLY ACCEPTABLE POINT WITHIN THE RIGHT-OF-WAY. IF THE SERVICE POINT IS OVER 10 FEET FROM THE CONTROLLER, THE CONTRACTOR SHALL PROVIDE AND INSTALL A SEPARATE TWO CIRCUIT EXTERNAL BREAKER (SECONDARY BREAKER) ON OR NEAR THE TRAFFIC SIGNAL CONTROLLER CABINET AND SHALL INSTALL CONDUIT, ELECTRICAL SERVICE WIRE (2c/#6 USE RATED, WITH GROUND TYPICAL), AND PERFORM WIRING TO TAP INTO THE CITY'S MAIN BREAKER AS PART OF THIS CONTRACT. CONDUIT IS PAID FOR AS A SEPARATE ITEM OF THIS CONTRACT. TWO CIRCUIT BREAKERS, CONSIDERED SUBSIDIARY TO THE CONTROL EQUIPMENT, ARE NEEDED WHERE STREET LIGHTING IS INCLUDED. AS PART OF THE SIGNAL INSTALLATION, STREET LIGHTING CIRCUIT (2c/#12 AWG UF RATED, TYPICAL) SHALL BE KEPT FROM THE CIRCUIT SERVING THE TRAFFIC SIGNAL CONTROL EQUIPMENT FROM THE POINT OF TIE-IN AT THE SECONDARY BREAKER PROVIDED BY THE CONTRACTOR.

4. CONTRACTOR SHALL CONNECT A SEPARATE NEUTRAL FOR EACH LOAD SWITCH REPRESENTED ON EACH SIGNAL POLE.

5. TRAFFIC CONTROLLER CABINET AND LAYOUT SHALL BE SUCH THAT IT IS NOT NECESSARY TO SHUT DOWN POWER OR REMOVE LOAD SWITCHES IN ORDER TO EASILY TEST OR MODIFY DETECTOR INPUTS TO THE CONTROLLER.

6. CONTROLLER CABINET SHALL BE WIRED SUCH THAT DURING FLASH OPERATIONS POWER TO THE LOAD SWITCHES CANNOT BACKFEED TO LOAD SWITCH POWER BUSS.

7. ALL PARTS OF THIS INSTALLATION SHALL BE IN ACCORDANCE WITH THE ARKANSAS HIGHWAY AND TRANSPORTATION DEPARTMENT STANDARDS AND DETAILS AND WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, CURRENT EDITIONS.

8. CONDUIT INSTALLED UNDER ROADWAY SURFACES SHALL BE INSTALLED BY PUSHING OR BORING METHODS. IF THE ENGINEER DETERMINES THIS IS NOT FEASIBLE, THEN A TRENCHING METHOD AS SHOWN IN THE DETAILS MAY BE USED.

9. TRAFFIC SIGNAL POLES SHALL BE GALVANIZED. BACKPLATES SHALL BE SUPPLIED FOR ALL SIGNAL HEADS.

10. PAVEMENT MARKING SHOWN FOR REFERENCE ONLY. SEE PAVEMENT MARKING PLAN SHEETS.

11. FOUNDATION FOR ALL POLES SHALL BE EXTENDED IF NECESSARY TO ACCOMMODATE THE REQUIREMENTS FOR SIGNAL HEAD CLEARANCE ABOVE ROADWAY ONLY AT LOCATIONS WHERE THE GROUND ELEVATION AT THE POLE IS BELOW THE ELEVATION OF THE ROADWAY (SEE NOTES ON SPECIAL DETAILS). PAYMENT WILL BE INCLUDED IN SECTION 714, AHTD STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.

12. ALL BOXES SHALL BE (TYPE 2 HD) UNLESS OTHERWISE INDICATED. ALL CONDUIT SHALL BE 3" DIAMETER UNLESS SPECIFIED ON PLANS.

13. CONTRACTOR SHALL NOTIFY ALL EXISTING UTILITY OWNERS BEFORE BEGINNING WORK ON THIS PROJECT.

14. LUMINAIRE ASSEMBLIES SHALL BE OF THE FULL CUTOFF TYPE.

15. HARDWARE INPUTS MAY BE DETERMINED BY SUPPLIER. EACH DETECTOR OUTPUT SHALL INPUT THE CONTROLLER THROUGH A SEPARATE INPUT UNLESS OTHERWISE NOTED AND BE PROGRAMMED TO ACTUATE THE ASSOCIATED PHASE. COMBINATION (COMB.) DETECTORS SHALL ALSO BE PROGRAMMED TO PROVIDE VEHICLE COUNT/OCCUPANCY DATA.

16. THE LOCAL RADIO WITH ANTENNA SHALL BE COMPATIBLE WITH THE EXISTING CLOSED LOOP COORDINATION SYSTEM IN THE CITY.

17. TO DETERMINE UTILITY CLEARANCES ABOVE THE TRAFFIC SIGNAL POLE, REFER TO THE POLE SCHEDULE FOR VERTICAL SHAFT HEIGHT. WHERE THE POLE SCHEDULE INDICATES THAT A LUMINAIRE ARM WILL BE USED, 38 FEET SHOULD BE USED TO DETERMINE UTILITY CLEARANCE ABOVE THE LUMINAIRE ARM. WHERE THE POLE SCHEDULE INDICATES A TRAFFIC SIGNAL POLE WITHOUT A LUMINAIRE ARM, A HEIGHT OF 21' SHOULD BE USED TO DETERMINE UTILITY CLEARANCE ABOVE THE TRAFFIC SIGNAL MAST ARM. AN ADDITIONAL 6 FEET SHOULD BE USED DIRECTLY ABOVE "VIDEO DETECTOR" AT LOCATIONS SHOWN ON THE SIGNAL PLANS.

18. THE DESIRABLE MINIMUM DISTANCE FROM THE FACE OF ROADWAY CURB OR SHOULDER EDGE TO THE FACE OF NON-BREAKAWAY POLE OR OBSTRUCTION IS 6 FEET. REFER TO TRAFFIC SIGNAL PLANS FOR SPECIFIC LOCATION OF POLES, CONTROLLER AND ANY OTHER NON-BREAKAWAY OBSTRUCTIONS. REFER TO "DESIGN PARAMETERS, MINIMUM CLEAR ZONE DISTANCE" FOR MINIMUM DISTANCE FROM THE EDGE OF TRAVELED WAY TO THE FACE OF A NON-BREAKAWAY POLE OR OBSTRUCTION. TRAFFIC SIGNAL POLES OR ANY OTHER NON-BREAKAWAY OBSTRUCTION SHALL NOT BE INSTALLED WITHIN THE CLEAR ZONE.

19. AS DETERMINED BY THE ENGINEER, FOUNDATION EMBEDMENT MAY BE DECREASED BY A MAXIMUM OF TWO FEET IF COMPETENT ROCK IS ENCOUNTERED PRIOR TO ACHIEVING PLAN EMBEDMENT AND AT LEAST HALF OF THE REMAINING PLAN EMBEDMENT LENGTH IS KEYED INTO COMPETENT ROCK.

20. CONNECTION OF TRAFFIC SIGNAL DISPLAY TO FIELD WIRING SHALL UTILIZE AN APPROVED TERMINAL STRIP BEHIND HAND-HOLE COVER AT BASE OF POLE. TERMINAL STRIP SHALL PROVIDE PROTECTION TO PREVENT EXPOSURE TO THE PUBLIC IN THE EVENT THAT POLE COVER IS MISSING. PAYMENT FOR TERMINAL STRIPS SHALL BE INCLUDED IN ITEM 714-TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION.

21. CONTROLLER CABINET LAYOUT AND ORIENTATION SHALL CONFORM TO ISMA STANDARDS.

22. ONE VIDEO PROGRAMMING MODULE SHALL BE PROVIDED FOR AIMING AND SETUP OF DETECTORS IF THE VIDEO SYSTEM CANNOT BE ADJUSTED THROUGH HARDWARE AND SOFTWARE PROVIDED BY ITEMS WITHIN THE JOB.

23. TRAFFIC SIGNAL CONTRACTOR MUST NOTIFY RESIDENT ENGINEER OR ASSIGNED DEPARTMENT PROJECT INSPECTOR EACH DAY PRIOR TO SIGNAL RELATED WORK. NO WORK ON TRAFFIC SIGNALS WILL BE ALLOWED OR APPROVED WITHOUT THIS PRIOR NOTIFICATION.

24. ALL STEEL POLES SHALL BE DESIGNED TO MEET THE AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, 4TH EDITION (2001) WITH 2003 AND 2006 INTERIMS.

25. DOOR PANEL TEST PUSH BUTTONS SHALL ACTUATE INDICATED PHASES. DETECTOR ASSIGNMENTS AND/OR SIDE PANEL JUMPERS MAY REQUIRE MODIFICATION.

26. ALL SYSTEM DETECTOR RACKS AND ASSOCIATED EQUIPMENT SHALL BE PROTECTED BY THE MAIN CONTROLLER CABINET POWER SURGE PROTECTION.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	68	226

(2) TRAFFIC SIGNAL NOTES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRUNITY D. SMITH
6-9-16

DATE: 06-08-16 FILE NAME: t090406.dgn

LOCATION: HWY. 43/HWY. 264
CITY: SILOAM SPRINGS
COUNTY: BENTON
DISTRICT: 9 SCALE: N/A DRAWN BY: GWE

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
10-25-16				6	ARK.			
				JOB NO.		090406	69	226

(2) TRAFFIC SIGNAL QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-26-16

STAGE 1 TRAFFIC SIGNAL QUANTITIES

ITEM NO.	ITEM	QUANTITY	UNIT
SP&701	SYSTEM LOCAL CONTROLLER TS 2-TYPE 2, E-NET (8 PHASES)	1	EACH
SP&706	TRAFFIC SIGNAL HEAD, LED, (3 SECTION, 1WAY)	10	EACH
SP&706	TRAFFIC SIGNAL HEAD, LED, (4 SECTION, 1WAY)	2	EACH
708	TRAFFIC SIGNAL CABLE (5C/14 A.W.G.)	1907	LIN. FT.
708	TRAFFIC SIGNAL CABLE (7C/14 A.W.G.)	733	LIN. FT.
709	GALVANIZED STEEL CONDUIT (1.25")	20	LIN. FT.
709	GALVANIZED STEEL CONDUIT (2")	70	LIN. FT.
710	NON-METALLIC CONDUIT (1.25")	20	LIN. FT.
711	CONCRETE PULL BOX (TYPE 1HD)	1	EACH
713	SPAN WIRE ASSEMBLY	1	EACH
716	TREATED WOOD POLE (CLASS 2, 45')	4	EACH
733	VIDEO CABLE	1862	LIN. FT.
SP&733	VIDEO DETECTOR (CLR)	8	EACH
SP&733	VIDEO EDGE CARD EXTENDER	2	EACH
SP&733	VIDEO PROCESSOR, EDGE CARD (2 CAMERA)	4	EACH
SP&733	VEHICLE DETECTOR RACK (24 CHANNEL)	1	EACH
SP	E-NET CABLE (EXTERIOR CAT 5e)	70	LIN. FT.
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (1c/8 A.W.G., E.G.C.)	20	LIN. FT.
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (2c/6 A.W.G.)	20	LIN. FT.
SP	ETHERNET SWITCH, TIOO HARDENED (8 PORT)	1	EACH
SP	LOCAL RADIO WITH ANTENNA RELOCATION	1	EACH
SP	LOUVERS	3	EACH
SP	REMOVAL OF TRAFFIC SIGNAL EQUIPMENT	0.16	LUMP SUM
SP	SERVICE POINT ASSEMBLY (2 CIRCUITS)	1	EACH

STAGE 1
THE EXISTING RADIO, RADIO ANTENNA, AND PEDESTRIAN SIGNAL HEADS SHALL BE RELOCATED AND UTILIZED ON THE TEMPORARY TRAFFIC SIGNAL INSTALLATION FOR ALL STAGES OF CONSTRUCTION AS SHOWN ON THE PLANS.
INSTALL ALL TEMPORARY TRAFFIC SIGNAL EQUIPMENT AND UTILIZE THE EXISTING STEEL POLES LABELED E-F AND ALL EXISTING PEDESTRIAN TRAFFIC SIGNAL EQUIPMENT NECESSARY TO ESTABLISH TEMPORARY PEDESTRIAN CROSSINGS FOR BOTH HWY. 43 WEST LEG AND HWY. 264 SOUTH LEG. REMOVE ALL EXISTING MAST ARMS AND UNNECESSARY TRAFFIC SIGNAL EQUIPMENT. ACCESS THE EXISTING TRAFFIC SIGNAL POLES FROM THE TOP AS SHOWN ON THE STANDARD DRAWING SD-3 (SPAN WIRE ASSEMBLY STEEL POLE). MAKE CONNECTIONS AT THE POLE BASE.
SPOOL EXCESS VIDEO CABLE AND TRAFFIC SIGNAL CABLE FOR VIDEO CAMERAS V2 AND V5 AND TRAFFIC SIGNAL HEADS 1, 2, 3, 7, 8, AND 9 ON WOOD POLES A AND D UNTIL UTILIZED IN STAGE 3.
MAINTAIN THIS TRAFFIC SIGNAL CONFIGURATION AS SHOWN ON THE STAGE 1 TRAFFIC SIGNAL PLANS.
(REFER TO MAINTENANCE OF TRAFFIC DETAILS.)

STAGE 2 TRAFFIC SIGNAL QUANTITIES

ITEM NO.	ITEM	QUANTITY	UNIT
SP	REMOVAL OF TRAFFIC SIGNAL EQUIPMENT	0.16	LUMP SUM
SP	TRAFFIC SIGNAL CONTROLLER (MODIFICATION)	1	EACH

STAGE 2
REMOVE ALL COMPONENTS OF THE HWY. 43 WEST LEG PEDESTRIAN CROSSING INCLUDING THE EXISTING STEEL POLE LABELED F IN THE STAGE 1 TRAFFIC SIGNAL PLAN. RETAIN THE COMPONENTS IN POLE E NECESSARY TO RE-ESTABLISH THE HWY. 43 WEST LEG PEDESTRIAN CROSSING LATER DURING STAGE 3.
MAINTAIN THIS TRAFFIC SIGNAL CONFIGURATION AS SHOWN ON THE STAGE 2 TRAFFIC SIGNAL PLAN.
(REFER TO MAINTENANCE OF TRAFFIC DETAILS.)

STAGE 3 TRAFFIC SIGNAL QUANTITIES

ITEM NO.	ITEM	QUANTITY	UNIT
708	TRAFFIC SIGNAL CABLE (5C/14 A.W.G.)	1788	LIN. FT.
713	SPAN WIRE ASSEMBLY	1	EACH
716	TREATED WOOD POLE (CLASS 2, 45')	3	EACH
733	VIDEO DETECTOR RELOCATION	2	EACH
SP	PEDESTRIAN SIGNAL HEAD RELOCATION	4	EACH
SP	RELOCATION OF TRAFFIC SIGNAL HEAD	6	EACH
SP	REMOVAL OF TRAFFIC SIGNAL EQUIPMENT	0.16	LUMP SUM
SP	TRAFFIC SIGNAL CONTROLLER (MODIFICATION)	1	EACH
SP	VIDEO DETECTOR ROTATION	2	EACH

STAGE 3
REMOVE ALL COMPONENTS OF THE HWY. 264 SOUTH LEG PEDESTRIAN CROSSING INCLUDING THE EXISTING STEEL POLE LABELED G IN THE STAGE 1 AND 2 TRAFFIC SIGNAL PLAN.
INSTALL THE WOOD POLES LABELED H-J AND RELOCATE ALL PEDESTRIAN TRAFFIC SIGNAL EQUIPMENT NECESSARY TO ESTABLISH BOTH THE PEDESTRIAN CROSSING FOR THE HWY. 43 WEST LEG AND THE HWY. 264 NORTH LEG AS SHOWN ON THE STANDARD DRAWING SD-7 (SPAN WIRE ASSEMBLY WOOD POLE).
ROTATE VIDEO DETECTORS V1 AND V6. RELOCATE VIDEO CAMERAS V2 AND V5 TO POLES C AND B RESPECTIVELY.
RELOCATE TRAFFIC SIGNAL HEADS 1, 2, 3 AND 7, 8, 9 TO ACCOMMODATE THE LANE SHIFT FOR HWY. 43.
MAINTAIN THIS TRAFFIC SIGNAL CONFIGURATION AS SHOWN ON THE STAGE 3 TRAFFIC SIGNAL PLAN.
(REFER TO MAINTENANCE OF TRAFFIC DETAILS.)

STAGE 4 TRAFFIC SIGNAL QUANTITIES

ITEM NO.	ITEM	QUANTITY	UNIT
708	TRAFFIC SIGNAL CABLE (5C/14 A.W.G.)	542	LIN. FT.
713	SPAN WIRE ASSEMBLY	1	EACH
716	TREATED WOOD POLE (CLASS 2, 45')	1	EACH
SP	PEDESTRIAN SIGNAL HEAD RELOCATION	2	EACH
SP	REMOVAL OF TRAFFIC SIGNAL EQUIPMENT	0.16	LUMP SUM
SP	TRAFFIC SIGNAL CONTROLLER (MODIFICATION)	1	EACH

STAGE 4
REMOVE ALL COMPONENTS OF THE HWY. 43 WEST LEG PEDESTRIAN CROSSING INCLUDING THE EXISTING STEEL POLE LABELED E AND THE WOOD POLE LABELED H IN THE STAGE 3 TRAFFIC SIGNAL PLAN.
INSTALL THE WOOD POLE LABELED K AND RELOCATE ALL PEDESTRIAN TRAFFIC SIGNAL EQUIPMENT FROM THE WEST LEG OF THE INTERSECTION NECESSARY TO ESTABLISH THE PEDESTRIAN CROSSING FOR THE HWY. 43 EAST LEG AS SHOWN ON THE STANDARD DRAWING SD-7 (SPAN WIRE ASSEMBLY WOOD POLE) FOR ALL WOOD POLES.
MAINTAIN THIS TRAFFIC SIGNAL CONFIGURATION AS SHOWN ON THE STAGE 4 TRAFFIC SIGNAL PLAN.
(REFER TO MAINTENANCE OF TRAFFIC DETAILS.)

STAGE 5 TRAFFIC SIGNAL QUANTITIES

ITEM NO.	ITEM	QUANTITY	UNIT
708	TRAFFIC SIGNAL CABLE (5C/14 A.W.G.)	658	LIN. FT.
713	SPAN WIRE ASSEMBLY	1	EACH
716	TREATED WOOD POLE (CLASS 2, 45')	2	EACH
SP	VIDEO DETECTOR ROTATION	4	EACH
SP	PEDESTRIAN SIGNAL HEAD RELOCATION	2	EACH
SP	RELOCATION OF TRAFFIC SIGNAL HEAD	6	EACH
SP	REMOVAL OF TRAFFIC SIGNAL EQUIPMENT	0.16	LUMP SUM
SP	TRAFFIC SIGNAL CONTROLLER (MODIFICATION)	1	EACH

STAGE 5
INSTALL THE WOOD POLES LABELED L AND M AND RELOCATE ALL PEDESTRIAN TRAFFIC SIGNAL EQUIPMENT NECESSARY TO RE-ESTABLISH THE PEDESTRIAN CROSSING FOR THE HWY. 264 SOUTH LEG AS SHOWN ON THE STANDARD DRAWING SD-7 (SPAN WIRE ASSEMBLY WOOD POLE) FOR ALL WOOD POLES.
ROTATE VIDEO DETECTORS V1, V2, V5, AND V6 AND RELOCATE TRAFFIC SIGNAL HEADS 1, 2, 3, 7, 8, AND 9 TO ACCOMMODATE THE LANE SHIFT FOR HWY. 43.
MAINTAIN THIS TRAFFIC SIGNAL CONFIGURATION AS SHOWN ON THE STAGE 5 TRAFFIC SIGNAL PLAN.
(REFER TO MAINTENANCE OF TRAFFIC DETAILS.)

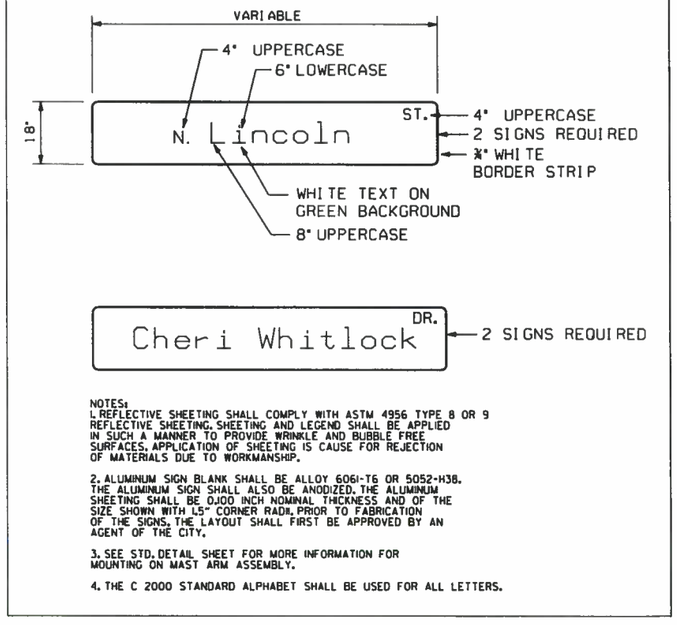
PERMANENT TRAFFIC SIGNAL QUANTITIES

ITEM NO.	ITEM	QUANTITY	UNIT
SP&701	SYSTEM LOCAL CONTROLLER TS 2-TYPE 2, E-NET (8 PHASES)	1	EACH
704	VEHICLE DETECTOR-RACK MOUNT	4	EACH
704	FEEDER WIRE	1807	LIN. FT.
SP&706	TRAFFIC SIGNAL HEAD, LED, (3 SECTION, 1WAY)	12	EACH
SP&706	TRAFFIC SIGNAL HEAD, LED, (4 SECTION, 1WAY)	2	EACH
SP&707	COUNTDOWN PEDESTRIAN SIGNAL HEAD, LED	8	EACH
708	TRAFFIC SIGNAL CABLE (5C/14 A.W.G.)	1910	LIN. FT.
708	TRAFFIC SIGNAL CABLE (7C/14 A.W.G.)	272	LIN. FT.
708	TRAFFIC SIGNAL CABLE (20C/14 A.W.G.)	474	LIN. FT.
709	GALVANIZED STEEL CONDUIT (1.25")	20	LIN. FT.
710	NON-METALLIC CONDUIT (1")	738	LIN. FT.
710	NON-METALLIC CONDUIT (1.25")	60	LIN. FT.
710	NON-METALLIC CONDUIT (2")	60	LIN. FT.
710	NON-METALLIC CONDUIT (3")	532	LIN. FT.
711	CONCRETE PULL BOX (TYPE 1HD)	6	EACH
711	CONCRETE PULL BOX (TYPE 1)	1	EACH
711	CONCRETE PULL BOX (TYPE 2)	5	EACH
714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (34')	1	EACH
714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (36')	1	EACH
714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (54')	1	EACH
714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (64')	1	EACH
715	TRAFFIC SIGNAL PEDESTAL POLE WITH FOUNDATION	2	EACH
733	VIDEO CABLE	746	LIN. FT.
• SP&733	VIDEO DETECTOR (CLR)	5	EACH
SP&733	VEHICLE DETECTOR RACK (24 CHANNEL)	1	EACH
733	VIDEO MONITOR (CLR)	1	EACH
• SP&733	VIDEO PROCESSOR, EDGE CARD (2 CAMERA)	5	EACH
SP	E-NET CABLE (EXTERIOR CAT 5E)	70	LIN. FT.
SP	ELECTRICAL CONDUCTORS FOR LUMINAIRES	659	LIN. FT.
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (1C/8 A.W.G., E.G.C.)	626	LIN. FT.
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (1C/12 A.W.G., E.G.C.)	185	LIN. FT.
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (2C/6 A.W.G., E.G.C.)	20	LIN. FT.
SP	ETHERNET SWITCH, TIOO HARDENED (8 PORT)	1	EACH
SP	LOCAL RADIO (E-NET 5.8) WITH ANTENNA	1	EACH
SP	LOOP WIRING CLASS III (1C/16 A.W.G.)	480	LIN. FT.
SP	LED LUMINAIRE ASSEMBLY	4	EACH
SP	REMOVAL OF TRAFFIC SIGNAL EQUIPMENT	0.20	LUMP SUM
SP	SERVICE POINT ASSEMBLY (2 CIRCUITS)	1	EACH
SP	18" STREET NAME SIGN	4	EACH

• ONE SPARE VIDEO DETECTOR AND ONE SPARE VIDEO PROCESSOR SHALL BE SUPPLIED.

PERMANENT TRAFFIC SIGNAL:
THE STAGE 5 TEMPORARY TRAFFIC SIGNAL INSTALLATION SHALL REMAIN IN OPERATION UNTIL THE PERMANENT TRAFFIC SIGNAL IS COMPLETED AND OPERATIONAL.
INSTALL PERMANENT TRAFFIC SIGNAL AND REMOVE ALL STAGE 1-5 TEMPORARY TRAFFIC SIGNAL COMPONENTS.
(REFER TO PERMANENT TRAFFIC SIGNAL PLANS.)

OVERHEAD STREET NAME MARKER STANDARD MAST ARM MOUNTED



NOTES:
1. REFLECTIVE SHEETING SHALL COMPLY WITH ASTM 4956 TYPE 8 OR 9 REFLECTIVE SHEETING. SHEETING AND LEGEND SHALL BE APPLIED IN SUCH A MANNER TO PROVIDE WRINKLE AND BUBBLE FREE SURFACES. APPLICATION OF SHEETING IS CAUSE FOR REJECTION OF MATERIALS DUE TO WORKMANSHIP.

2. ALUMINUM SIGN BLANK SHALL BE ALLOY 6061-T6 OR 5052-H38. THE ALUMINUM SIGN SHALL ALSO BE ANODIZED. THE ALUMINUM SHEETING SHALL BE 0.100 INCH NOMINAL THICKNESS AND OF THE SIZE SHOWN WITH 1.5" CORNER RADII. PRIOR TO FABRICATION OF THE SIGNS, THE LAYOUT SHALL FIRST BE APPROVED BY AN AGENT OF THE CITY.

3. SEE STD. DETAIL SHEET FOR MORE INFORMATION FOR MOUNTING ON MAST ARM ASSEMBLY.

4. THE C 2000 STANDARD ALPHABET SHALL BE USED FOR ALL LETTERS.

LOCATION: HWY. 43/HWY. 264
CITY: SILOAM SPRINGS
COUNTY: BENTON
DISTRICT: 9 SCALE: N/A DRAWN BY: GWE

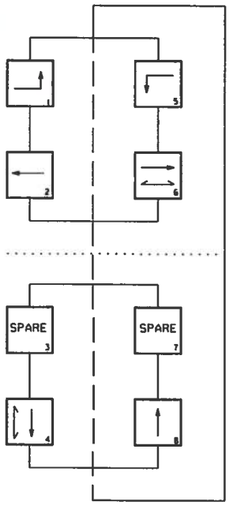
DATE: 10-25-16 FILE NAME: t090406.dgn

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED
10-25-16			

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		090406	70	226

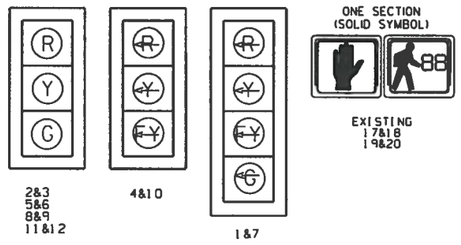
(2) SIGNALIZATION PLAN SHEET

PHASING DIAGRAM



SIGNAL FACES

12" LENSES



ONE SECTION (SOLID SYMBOL)

EXISTING
17&18
19&20

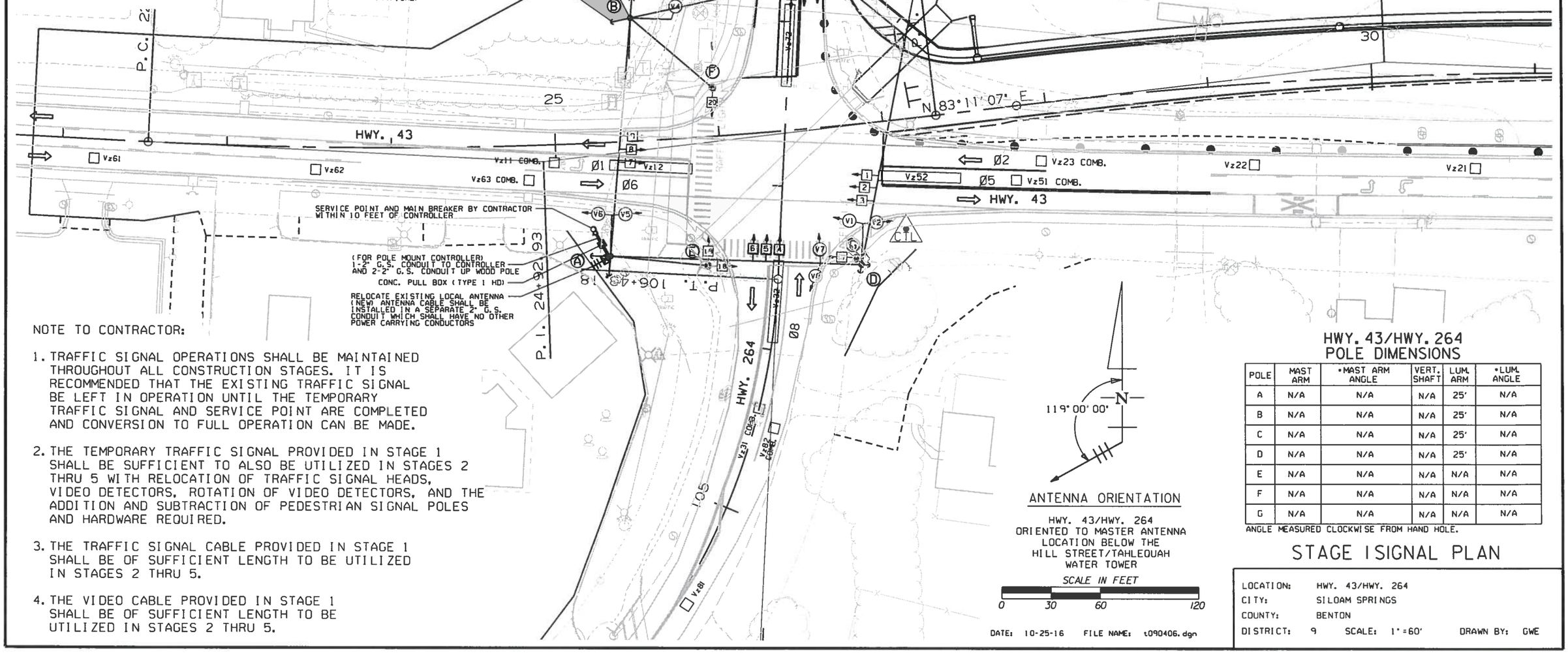
NOTES:

1. ALL SIGNAL HEADS SHALL HAVE BACKPLATES.
2. REFER TO SPECIAL PROVISIONS FOR DETAILS ON NEW REQUIREMENTS FOR PEDESTRIAN SIGNAL HEADS.
3. ALL PEDESTRIAN SIGNAL HEADS CAN BE PLACED INTO OPERATION IF THERE ARE BOTH WHEELCHAIR RAMPS AND A CROSSWALK THAT MEET A.D.A.S. STANDARDS.
4. ALL INDICATIONS OF SIGNAL HEAD NUMBERS 10,11 AND 12 ARE TO BE LOUVERED TO PREVENT VISIBILITY NORTH OF THE INTERSECTION, IN ALL STAGES OF CONSTRUCTION.

DETECTOR SPACING CHART

AHTD HWY. 43 MAIN LANE VIRTUAL LOOPS		
POSTED SPEED	DISTANCE FROM STOP BAR	
	LEAD LOOP	LAG LOOP
50 MPH	365'/230'	100'
HWY. 264 MAIN LANE VIRTUAL LOOPS		
POSTED SPEED	DISTANCE FROM STOP BAR	
	LEAD LOOP	LAG LOOP
40 MPH	290'	100'

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-26-16



NOTE TO CONTRACTOR:

1. TRAFFIC SIGNAL OPERATIONS SHALL BE MAINTAINED THROUGHOUT ALL CONSTRUCTION STAGES. IT IS RECOMMENDED THAT THE EXISTING TRAFFIC SIGNAL BE LEFT IN OPERATION UNTIL THE TEMPORARY TRAFFIC SIGNAL AND SERVICE POINT ARE COMPLETED AND CONVERSION TO FULL OPERATION CAN BE MADE.
2. THE TEMPORARY TRAFFIC SIGNAL PROVIDED IN STAGE 1 SHALL BE SUFFICIENT TO ALSO BE UTILIZED IN STAGES 2 THRU 5 WITH RELOCATION OF TRAFFIC SIGNAL HEADS, VIDEO DETECTORS, ROTATION OF VIDEO DETECTORS, AND THE ADDITION AND SUBTRACTION OF PEDESTRIAN SIGNAL POLES AND HARDWARE REQUIRED.
3. THE TRAFFIC SIGNAL CABLE PROVIDED IN STAGE 1 SHALL BE OF SUFFICIENT LENGTH TO BE UTILIZED IN STAGES 2 THRU 5.
4. THE VIDEO CABLE PROVIDED IN STAGE 1 SHALL BE OF SUFFICIENT LENGTH TO BE UTILIZED IN STAGES 2 THRU 5.

ANTENNA ORIENTATION

HWY. 43/HWY. 264
ORIENTED TO MASTER ANTENNA LOCATION BELOW THE HILL STREET/TAHLEQUAH WATER TOWER

SCALE IN FEET

0 30 60 120

DATE: 10-25-16 FILE NAME: t090406.dgn

HWY. 43/HWY. 264 POLE DIMENSIONS

POLE	MAST ARM	*MAST ARM ANGLE	VERT. SHAFT	LUM. ARM	*LUM. ANGLE
A	N/A	N/A	N/A	25'	N/A
B	N/A	N/A	N/A	25'	N/A
C	N/A	N/A	N/A	25'	N/A
D	N/A	N/A	N/A	25'	N/A
E	N/A	N/A	N/A	N/A	N/A
F	N/A	N/A	N/A	N/A	N/A
G	N/A	N/A	N/A	N/A	N/A

ANGLE MEASURED CLOCKWISE FROM HAND HOLE.

STAGE I SIGNAL PLAN

LOCATION: HWY. 43/HWY. 264
CITY: SILOAM SPRINGS
COUNTY: BENTON
DISTRICT: 9 SCALE: 1"=60' DRAWN BY: GWE

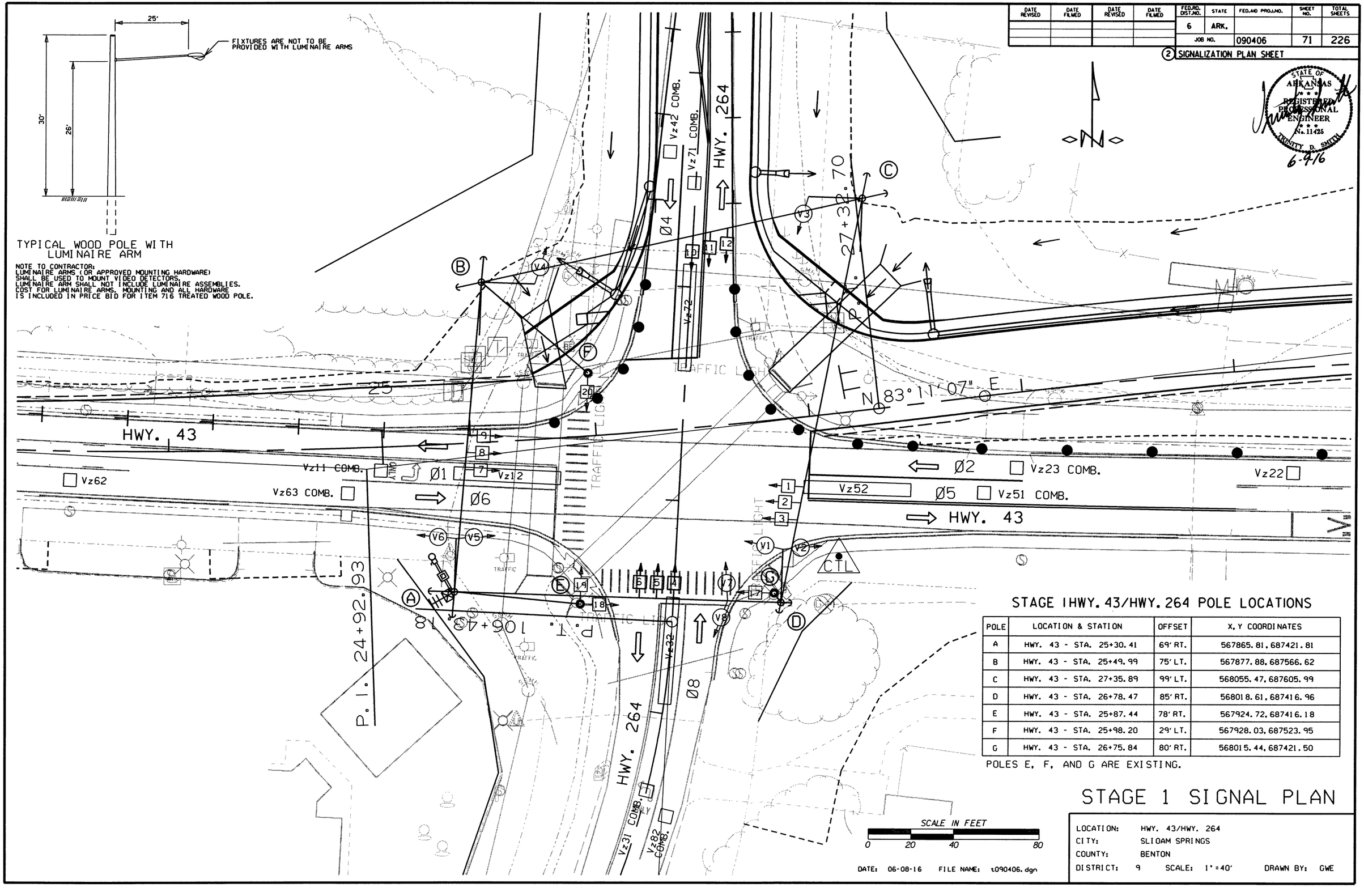
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	71	226

(2) SIGNALIZATION PLAN SHEET

TYPICAL WOOD POLE WITH LUMINAIRE ARM

NOTE TO CONTRACTOR:
LUMINAIRE ARMS (OR APPROVED MOUNTING HARDWARE) SHALL BE USED TO MOUNT VIDEO DETECTORS. LUMINAIRE ARM SHALL NOT INCLUDE LUMINAIRE ASSEMBLIES. COST FOR LUMINAIRE ARMS, MOUNTING AND ALL HARDWARE IS INCLUDED IN PRICE BID FOR ITEM 716 TREATED WOOD POLE.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRENTY D. SMITH
6-9-16



STAGE 1 HWY. 43/HWY. 264 POLE LOCATIONS

POLE	LOCATION & STATION	OFFSET	X, Y COORDINATES
A	HWY. 43 - STA. 25+30.41	69' RT.	567865.81, 687421.81
B	HWY. 43 - STA. 25+49.99	75' LT.	567877.88, 687566.62
C	HWY. 43 - STA. 27+35.89	99' LT.	568055.47, 687605.99
D	HWY. 43 - STA. 26+78.47	85' RT.	568018.61, 687416.96
E	HWY. 43 - STA. 25+87.44	78' RT.	567924.72, 687416.18
F	HWY. 43 - STA. 25+98.20	29' LT.	567928.03, 687523.95
G	HWY. 43 - STA. 26+75.84	80' RT.	568015.44, 687421.50

POLES E, F, AND G ARE EXISTING.

SCALE IN FEET
0 20 40 80

DATE: 06-08-16 FILE NAME: t090406.dgn

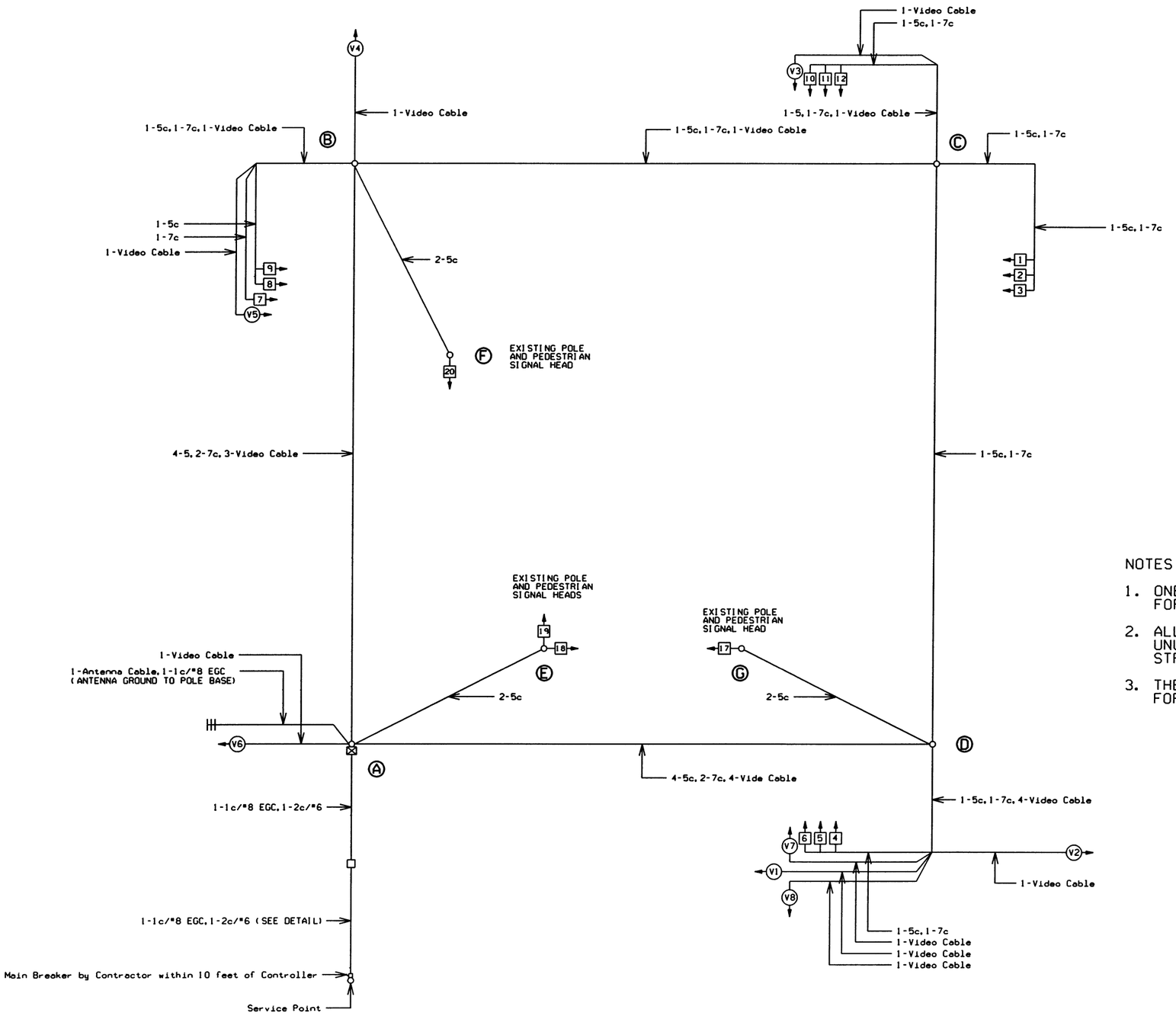
STAGE 1 SIGNAL PLAN

LOCATION: HWY. 43/HWY. 264
CITY: SLIOAM SPRINGS
COUNTY: BENTON
DISTRICT: 9 SCALE: 1"=40' DRAWN BY: GWE

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	72	226

(2) SIGNALIZATION PLAN SHEET

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
6-9-16



WIRING DIAGRAM

NOTES TO CONTRACTOR:

1. ONE SEPARATE 1-5c IS RUN TO EACH POLE FOR THE PEDESTRIAN PUSH BUTTON.
2. ALL DETECTOR RACK CHANNELS, INCLUDING UNUSED, SHALL BE BROUGHT TO TERMINAL STRIP IN DETECTOR AREA OF CABINET.
3. THE LOCAL GOVERNMENT SHALL BE RESPONSIBLE FOR PROVIDING POWER TO THE SERVICE POINT.

STAGE I SIGNAL PLAN

LOCATION: HWY. 43/HWY. 264
CITY: SILOAM SPRINGS
COUNTY: BENTON
DISTRICT: 9 SCALE: N/A DRAWN BY: GWE

DATE: 06-08-16 FILE NAME: t090406.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.		090406	73	226

(2) SIGNALIZATION PLAN SHEET

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
6-9-16

DETECTOR SYSTEM DESCRIPTION: JOB 090406

HWY. 43/HWY. 264 DETECTOR ASSIGNMENTS				HARDWARE INPUTS BY SUPPLIER			PROGRAM ASSIGNMENTS			COMMENTS	TUBE LENGTHS
							LOCAL		MASTER SYSTEM DETECTOR NUMBERS		
DET. ID*	LOCATION DIRECTION	TYPE	DET. *	CAB. TRM *	AMP CHN. *	CON. INP.*	PHS	SYSTEM DET. *			
Vz11	EB LEFT TURN FAR	COMB.			1	V9	1	1		CAMERA V1	23'
Vz12	EB LEFT TURN	LOCAL			2	V1	1			CAMERA V1	23'
Vz21	WB ADVANCE	LOCAL			9	V2	2			CAMERA V2	74'
Vz22	WB INTERMEDIATE	LOCAL			10	P5	2			CAMERA V2	74'
Vz23	WB NEAR	COMB.			13	V10	2	2		CAMERA V5	23'
Vz31	NB LEFT TURN FAR	COMB.			17	V11	3	3		CAMERA V3	23'
Vz32	NB LEFT TURN	LOCAL			18	V3	3			CAMERA V3	23'
Vz41	SB ADVANCE	LOCAL			21	V4	4			CAMERA V4	23'
Vz42	SB NEAR	COMB.			22	V12	4	4		CAMERA V7	23'
Vz51	WB LEFT TURN FAR	COMB.			14	V13	5	5		CAMERA V5	23'
Vz52	WB LEFT TURN	LOCAL			15	V5	5			CAMERA V5	23'
Vz61	EB ADVANCE	LOCAL			5	V6	6			CAMERA V6	74'
Vz62	EB INTERMEDIATE	LOCAL			6	P7	6			CAMERA V6	74'
Vz63	EB NEAR	COMB.			3	V14	6	6		CAMERA V1	23'
Vz71	SB LEFT TURN FAR	COMB.			23	V15	7	7		CAMERA V7	23'
Vz72	SB LEFT TURN	LOCAL			24	V7	7			CAMERA V7	23'
Vz81	NB ADVANCE	LOCAL			19	V8	8			CAMERA V8	23'
Vz82	NB NEAR	COMB.			20	V16	8	8		CAMERA V8	23'
PB4A&B	HWY. 43 W. LEG	PED.				P4	4				
PB6A&B	HWY. 264 S. LEG	PED.				P6	6				
					SPARE 4, 7, 8, 11, 12, 16						

CONTROLLER INPUT ABBREVIATIONS:
V = VEHICLE INPUT
D = SYSTEM OR AUXILIARY INPUT
P = PEDESTRIAN INPUT

NOTE: "AMP CHN=" REFERS TO THE DETECTOR RACK OUTPUT POSITION.
THIS IS WIRED TO CONTROLLER INPUT DETECTOR NUMBER WHICH IS PROGRAMMED TO ACTUATE THE DESIGNATED PHASE.
EXAMPLE: V9=SYSTEM DETECTOR 1, V10=SYSTEM DETECTOR 2

INTERVAL CHART

SIGNAL FACES	HWY. 43/HWY. 264											FLASH SEQ.
	1+5	CLR.	1+6	CLR.	2+5	CLR.	2+6	CLR.	4+8	CLR.		
1	~~G~~	•	~~G~~	•	~~FY~~	•••	~~FY~~	•••	~~R~~	~~R~~		~~R~~
2&3	R	R	G	••	R	R	G	••	R	R		R
4	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~FY~~	•••		~~R~~
5&6	R	R	R	R	R	R	R	R	G	••		R
7	~~G~~	•	~~FY~~	•••	~~G~~	•	~~FY~~	•••	~~R~~	~~R~~		~~R~~
8&9	R	R	R	R	G	••	G	••	R	R		R
10	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~FY~~	•••		~~R~~
11&12	R	R	R	R	R	R	R	R	G	••		R
17&18	DW	DW	W	FDW	DW	DW	W	FDW	DW	DW		BLK
19&20	DW	DW	DW	DW	DW	DW	DW	DW	W	FDW		BLK

• DENOTES GREEN OR YELLOW ARROW DEPENDING ON NEXT PHASE
•• DENOTES GREEN OR YELLOW BALL DEPENDING ON NEXT PHASE
••• DENOTES FLASHING YELLOW ARROW OR YELLOW ARROW DEPENDING ON NEXT PHASE

STAGE ISIGNAL PLAN

LOCATION: HWY. 43/HWY. 264
CITY: SILOAM SPRINGS
COUNTY: BENTON
DISTRICT: 9 SCALE: N/A DRAWN BY: GWE

DATE: 06-08-16 FILE NAME: t090406.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.		090406	74	226

(2) SIGNALIZATION PLAN SHEET

PHASING DIAGRAM

SIGNAL FACES

12" LENSES

ONE SECTION (SOLID SYMBOL)

EXISTING 17&18

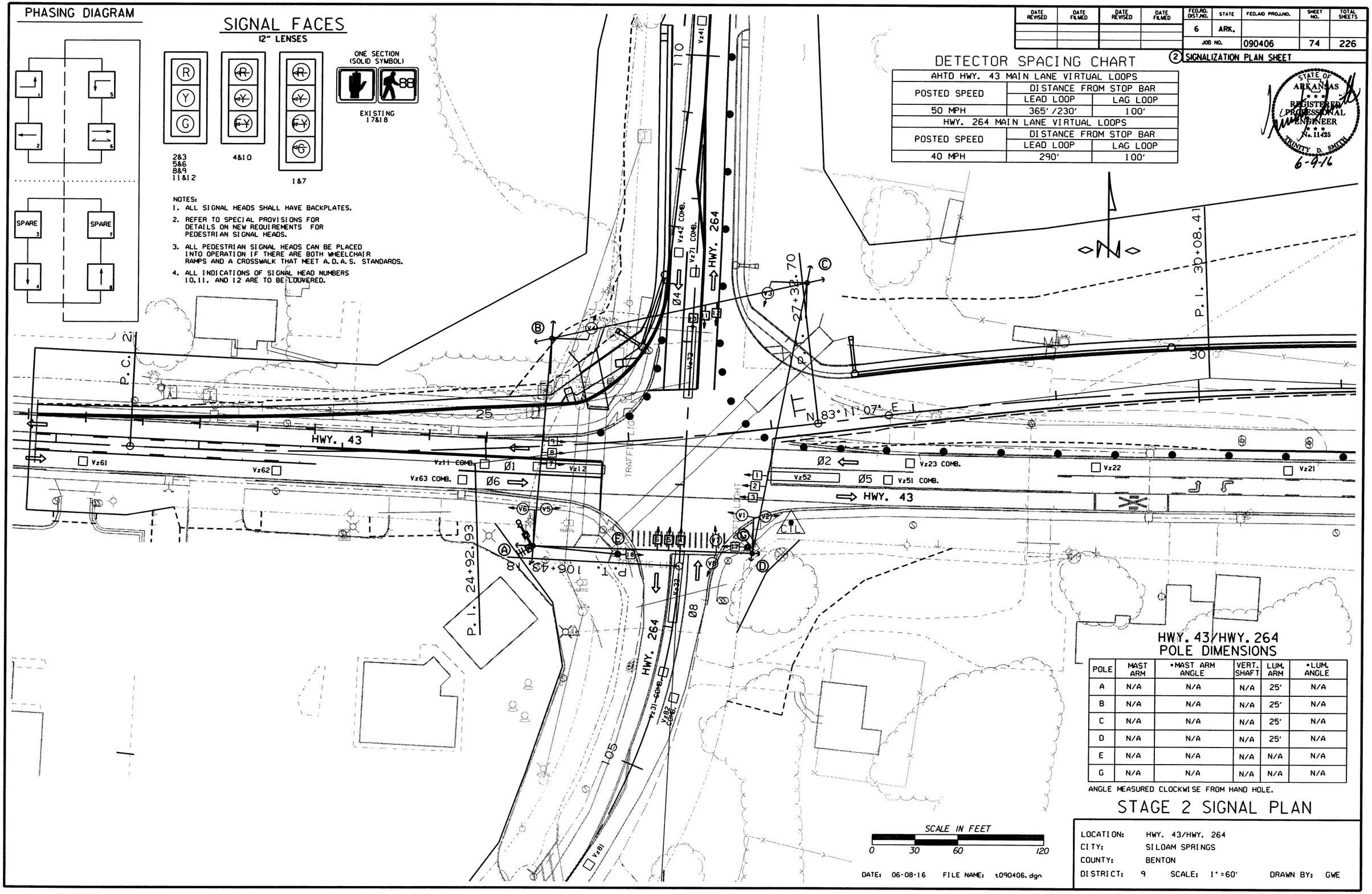
NOTES:

1. ALL SIGNAL HEADS SHALL HAVE BACKPLATES.
2. REFER TO SPECIAL PROVISIONS FOR DETAILS ON NEW REQUIREMENTS FOR PEDESTRIAN SIGNAL HEADS.
3. ALL PEDESTRIAN SIGNAL HEADS CAN BE PLACED INTO OPERATION IF THERE ARE BOTH WHEELCHAIR RAMPS AND A CROSSWALK THAT MEET A.D.A.S. STANDARDS.
4. ALL INDICATIONS OF SIGNAL HEAD NUMBERS 10,11, AND 12 ARE TO BE LOUVERED.

DETECTOR SPACING CHART

AHTD HWY. 43 MAIN LANE VIRTUAL LOOPS		
POSTED SPEED	DISTANCE FROM STOP BAR	
	LEAD LOOP	LAG LOOP
50 MPH	365'/230'	100'
HWY. 264 MAIN LANE VIRTUAL LOOPS		
POSTED SPEED	DISTANCE FROM STOP BAR	
	LEAD LOOP	LAG LOOP
40 MPH	290'	100'

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
6-9-16



HWY. 43/HWY. 264 POLE DIMENSIONS

POLE	MAST ARM	*MAST ARM ANGLE	VERT. SHAFT	LUM. ARM	*LUM. ANGLE
A	N/A	N/A	N/A	25'	N/A
B	N/A	N/A	N/A	25'	N/A
C	N/A	N/A	N/A	25'	N/A
D	N/A	N/A	N/A	25'	N/A
E	N/A	N/A	N/A	N/A	N/A
G	N/A	N/A	N/A	N/A	N/A

ANGLE MEASURED CLOCKWISE FROM HAND HOLE.

SCALE IN FEET
0 30 60 120

DATE: 06-08-16 FILE NAME: t090406.dgn

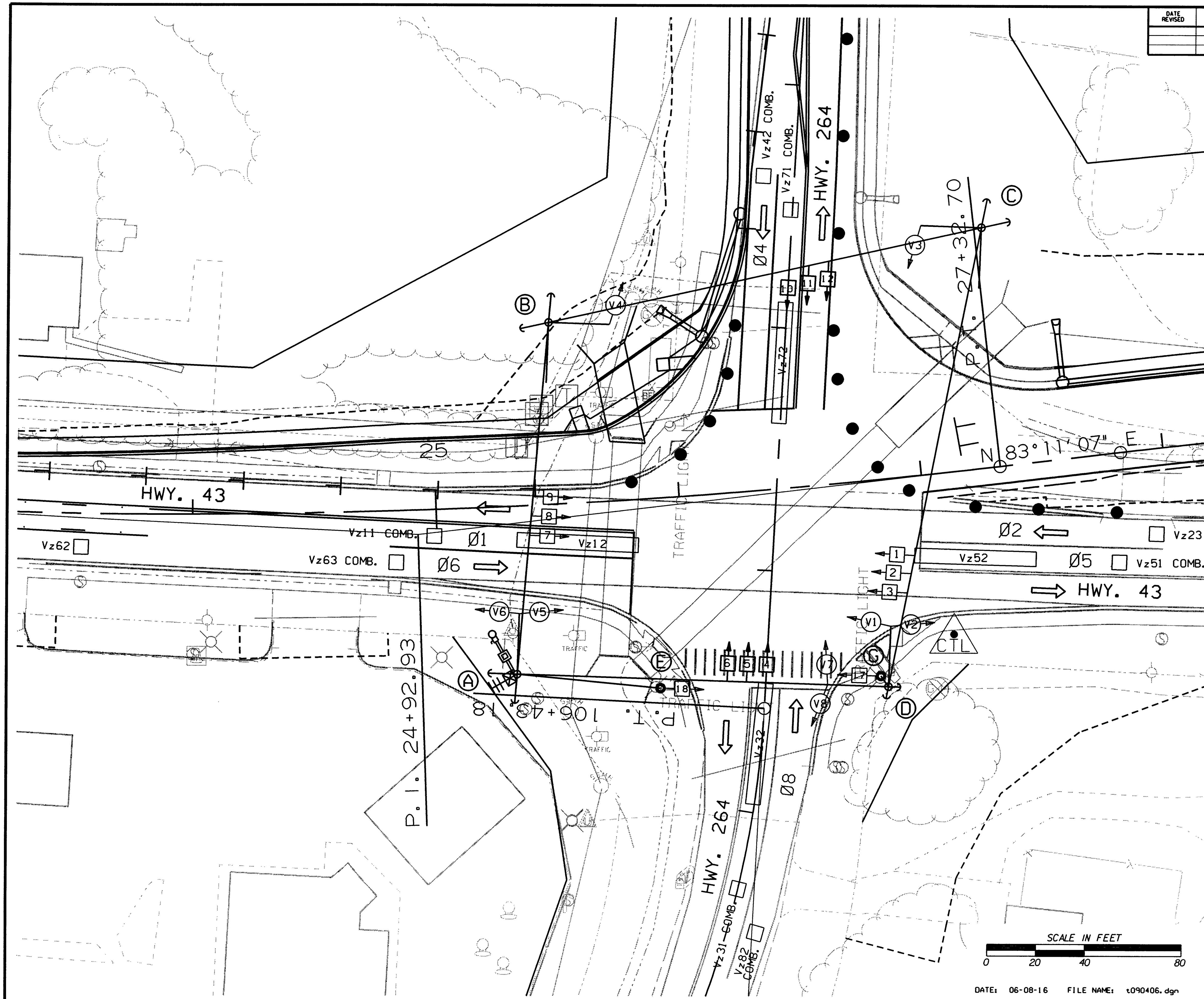
STAGE 2 SIGNAL PLAN

LOCATION: HWY. 43/HWY. 264
CITY: SILOAM SPRINGS
COUNTY: BENTON
DISTRICT: 9 SCALE: 1"=60' DRAWN BY: GWE

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	75	226

(2) SIGNALIZATION PLAN SHEET

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
6-9-16



STAGE 2 SIGNAL PLAN

SCALE IN FEET
0 20 40 80

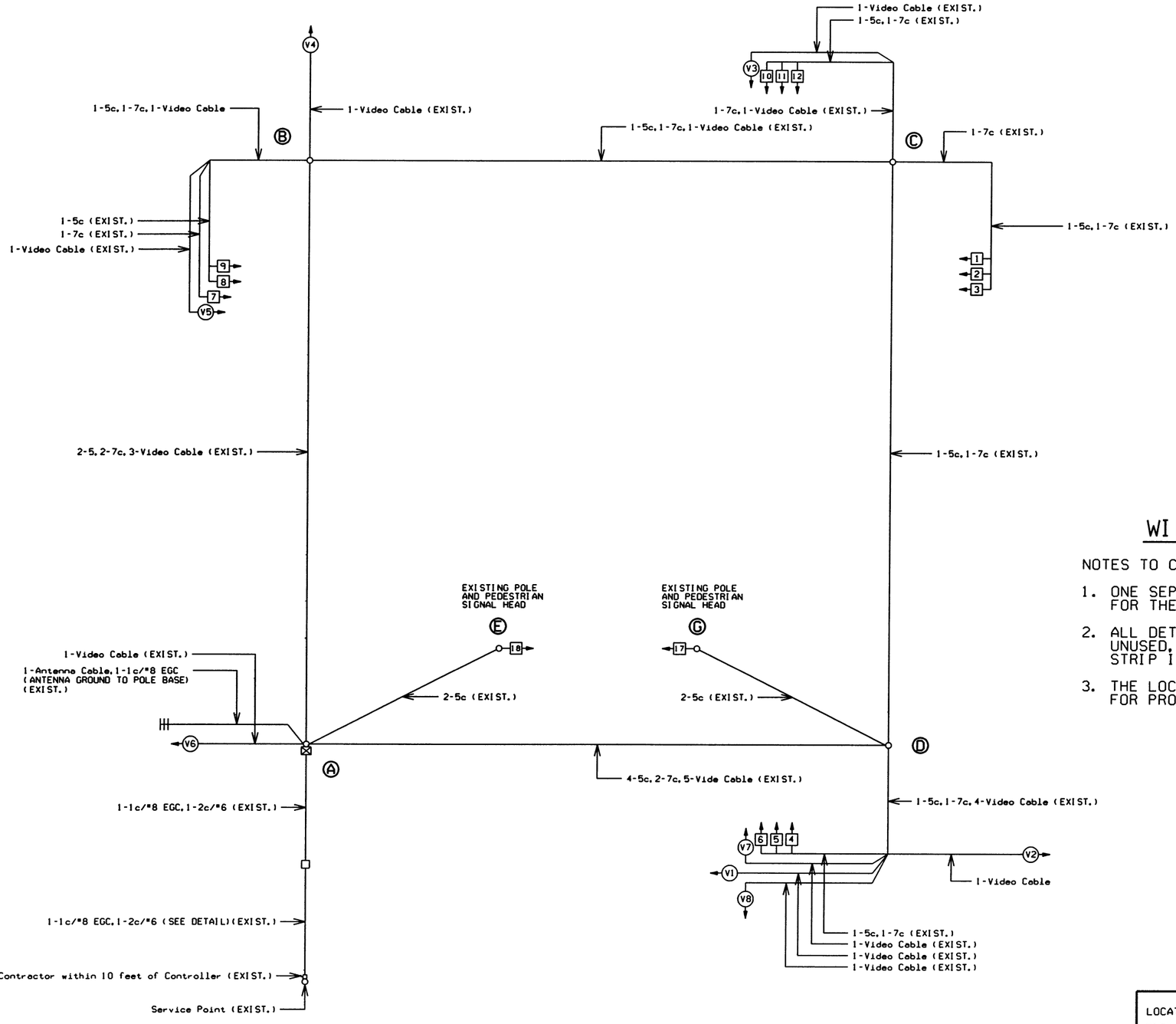
DATE: 06-08-16 FILE NAME: t090406.dgn

LOCATION:	HWY. 43/HWY. 264
CITY:	SLIOAM SPRINGS
COUNTY:	BENTON
DISTRICT:	9 SCALE: 1"=40' DRAWN BY: GWE

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	76	226

(2) SIGNALIZATION PLAN SHEET

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
6-9-16



WIRING DIAGRAM

NOTES TO CONTRACTOR:

1. ONE SEPARATE 1-5c IS RUN TO EACH POLE FOR THE PEDESTRIAN PUSH BUTTON.
2. ALL DETECTOR RACK CHANNELS, INCLUDING UNUSED, SHALL BE BROUGHT TO TERMINAL STRIP IN DETECTOR AREA OF CABINET.
3. THE LOCAL GOVERNMENT SHALL BE RESPONSIBLE FOR PROVIDING POWER TO THE SERVICE POINT.

DATE: 06-08-16 FILE NAME: t090406.dgn

STAGE 2 SIGNAL PLAN

LOCATION: HWY. 43/HWY. 264
CITY: SILOAM SPRINGS
COUNTY: BENTON
DISTRICT: 9 SCALE: N/A DRAWN BY: GWE

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	77	226

(2) SIGNALIZATION PLAN SHEET

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
6-9-16

DETECTOR SYSTEM DESCRIPTION: JOB 090406

HWY. 43/HWY. 264 DETECTOR ASSIGNMENTS				HARDWARE INPUTS BY SUPPLIER			PROGRAM ASSIGNMENTS			COMMENTS	TUBE LENGTHS
							LOCAL		MASTER SYSTEM DETECTOR NUMBERS		
DET. ID*	LOCATION DIRECTION	TYPE	DET. *	CAB. TRM *	AMP CHN. *	CON. INP.*	PHS	SYSTEM DET. *			
Vz11	EB LEFT TURN FAR	COMB.			1	V9	1	1		CAMERA V1	23'
Vz12	EB LEFT TURN	LOCAL			2	V1	1			CAMERA V1	23'
Vz21	WB ADVANCE	LOCAL			9	V2	2			CAMERA V2	74'
Vz22	WB INTERMEDIATE	LOCAL			10	P5	2			CAMERA V2	74'
Vz23	WB NEAR	COMB.			13	V10	2	2		CAMERA V5	23'
Vz31	NB LEFT TURN FAR	COMB.			17	V11	3	3		CAMERA V3	23'
Vz32	NB LEFT TURN	LOCAL			18	V3	3			CAMERA V3	23'
Vz41	SB ADVANCE	LOCAL			21	V4	4			CAMERA V4	23'
Vz42	SB NEAR	COMB.			22	V12	4	4		CAMERA V7	23'
Vz51	WB LEFT TURN FAR	COMB.			14	V13	5	5		CAMERA V5	23'
Vz52	WB LEFT TURN	LOCAL			15	V5	5			CAMERA V5	23'
Vz61	EB ADVANCE	LOCAL			5	V6	6			CAMERA V6	74'
Vz62	EB INTERMEDIATE	LOCAL			6	P7	6			CAMERA V6	74'
Vz63	EB NEAR	COMB.			3	V14	6	6		CAMERA V1	23'
Vz71	SB LEFT TURN FAR	COMB.			23	V15	7	7		CAMERA V7	23'
Vz72	SB LEFT TURN	LOCAL			24	V7	7			CAMERA V7	23'
Vz81	NB ADVANCE	LOCAL			19	V8	8			CAMERA V8	23'
Vz82	NB NEAR	COMB.			20	V16	8	8		CAMERA V8	23'
PB6A&B	HWY. 264 S.LEG	PED.				P6	6				
					SPARE 4, 7, 8, 11, 12, 16						

CONTROLLER INPUT ABBREVIATIONS:
V = VEHICLE INPUT
D = SYSTEM OR AUXILIARY INPUT
P = PEDESTRIAN INPUT

NOTE: 'AMP CHN=' REFERS TO THE DETECTOR RACK OUTPUT POSITION.
THIS IS WIRED TO CONTROLLER INPUT DETECTOR NUMBER WHICH IS PROGRAMMED TO ACTUATE THE DESIGNATED PHASE.
EXAMPLE: V9=SYSTEM DETECTOR 1, V10=SYSTEM DETECTOR 2

INTERVAL CHART

SIGNAL FACES	HWY. 43/HWY. 264											FLASH SEQ.
	1+5	CLR.	1+6	CLR.	2+5	CLR.	2+6	CLR.	4+8	CLR.		
1	~~G~~	•	~~G~~	•	~~FY~~	•••	~~FY~~	•••	~~R~~	~~R~~		~~R~~
2&3	R	R	G	••	R	R	G	••	R	R		R
4	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~FY~~	•••		~~R~~
5&6	R	R	R	R	R	R	R	R	G	••		R
7	~~G~~	•	~~FY~~	•••	~~G~~	•	~~FY~~	•••	~~R~~	~~R~~		~~R~~
8&9	R	R	R	R	G	••	G	••	R	R		R
10	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~FY~~	•••		~~R~~
11&12	R	R	R	R	R	R	R	R	G	••		R
17&18	DW	DW	W	FDW	DW	DW	W	FDW	DW	DW		BLK

• DENOTES GREEN OR YELLOW ARROW DEPENDING ON NEXT PHASE
•• DENOTES GREEN OR YELLOW BALL DEPENDING ON NEXT PHASE
••• DENOTES FLASHING YELLOW ARROW OR YELLOW ARROW DEPENDING ON NEXT PHASE

STAGE 2 SIGNAL PLAN

LOCATION: HWY. 43/HWY. 264
CITY: SILOAM SPRINGS
COUNTY: BENTON
DISTRICT: 9 SCALE: N/A DRAWN BY: GWE

DATE: 06-08-16 FILE NAME: t090406.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.		090406	78	226

(2) SIGNALIZATION PLAN SHEET

PHASING DIAGRAM

SIGNAL FACES

12" LENSES

ONE SECTION (SOLID SYMBOL)

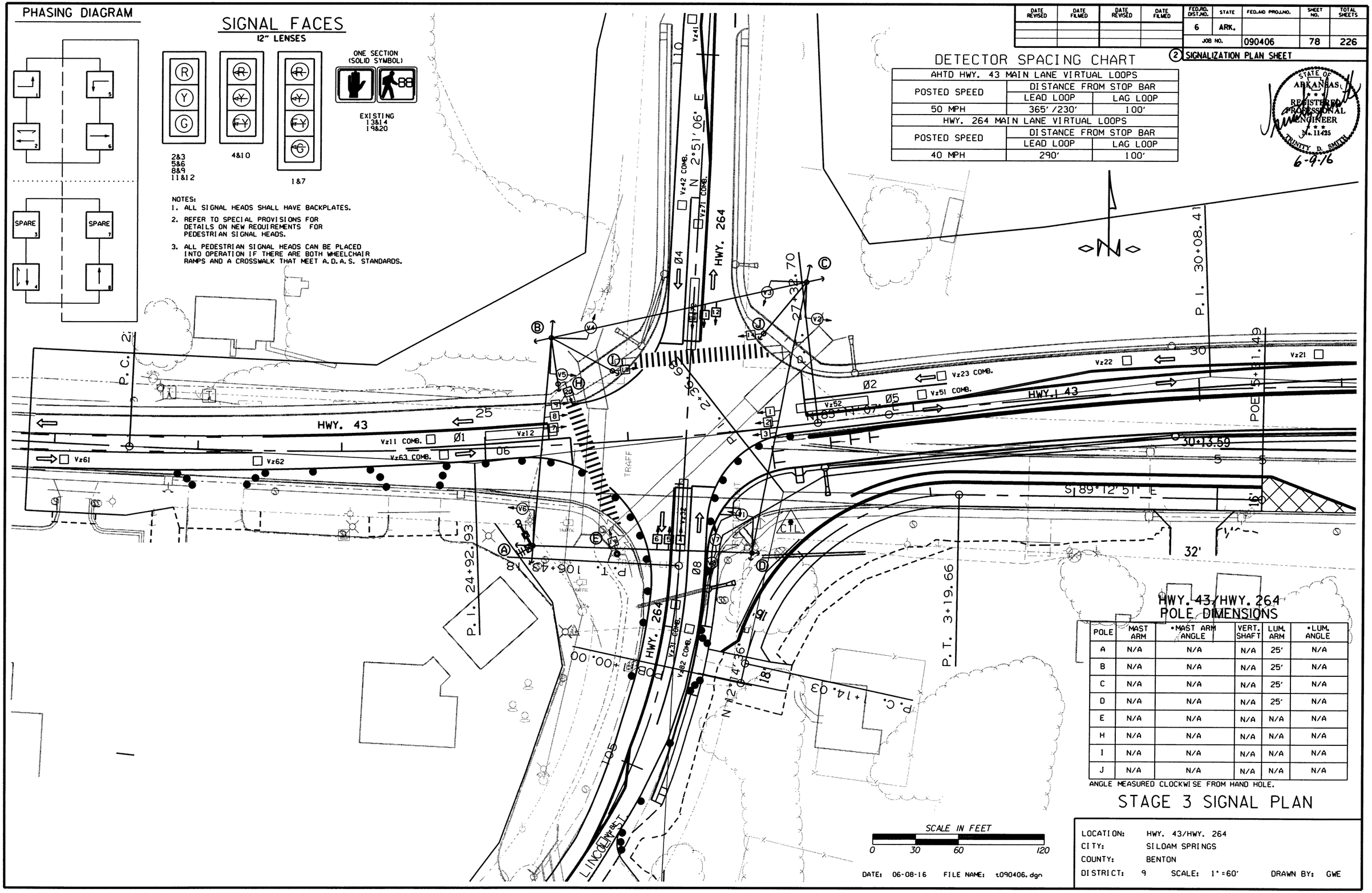
EXISTING
13&14
19&20

NOTES:
1. ALL SIGNAL HEADS SHALL HAVE BACKPLATES.
2. REFER TO SPECIAL PROVISIONS FOR DETAILS ON NEW REQUIREMENTS FOR PEDESTRIAN SIGNAL HEADS.
3. ALL PEDESTRIAN SIGNAL HEADS CAN BE PLACED INTO OPERATION IF THERE ARE BOTH WHEELCHAIR RAMPS AND A CROSSWALK THAT MEET A.D.A.S. STANDARDS.

DETECTOR SPACING CHART

AHTD HWY. 43 MAIN LANE VIRTUAL LOOPS		
POSTED SPEED	DISTANCE FROM STOP BAR	
	LEAD LOOP	LAG LOOP
50 MPH	365'/230'	100'
HWY. 264 MAIN LANE VIRTUAL LOOPS		
POSTED SPEED	DISTANCE FROM STOP BAR	
	LEAD LOOP	LAG LOOP
40 MPH	290'	100'

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
6-9-16



HWY. 43/HWY. 264 POLE DIMENSIONS

POLE	MAST ARM	*MAST ARM ANGLE	VERT. SHAFT	LUM. ARM	*LUM. ANGLE
A	N/A	N/A	N/A	25'	N/A
B	N/A	N/A	N/A	25'	N/A
C	N/A	N/A	N/A	25'	N/A
D	N/A	N/A	N/A	25'	N/A
E	N/A	N/A	N/A	N/A	N/A
H	N/A	N/A	N/A	N/A	N/A
I	N/A	N/A	N/A	N/A	N/A
J	N/A	N/A	N/A	N/A	N/A

ANGLE MEASURED CLOCKWISE FROM HAND HOLE.

STAGE 3 SIGNAL PLAN

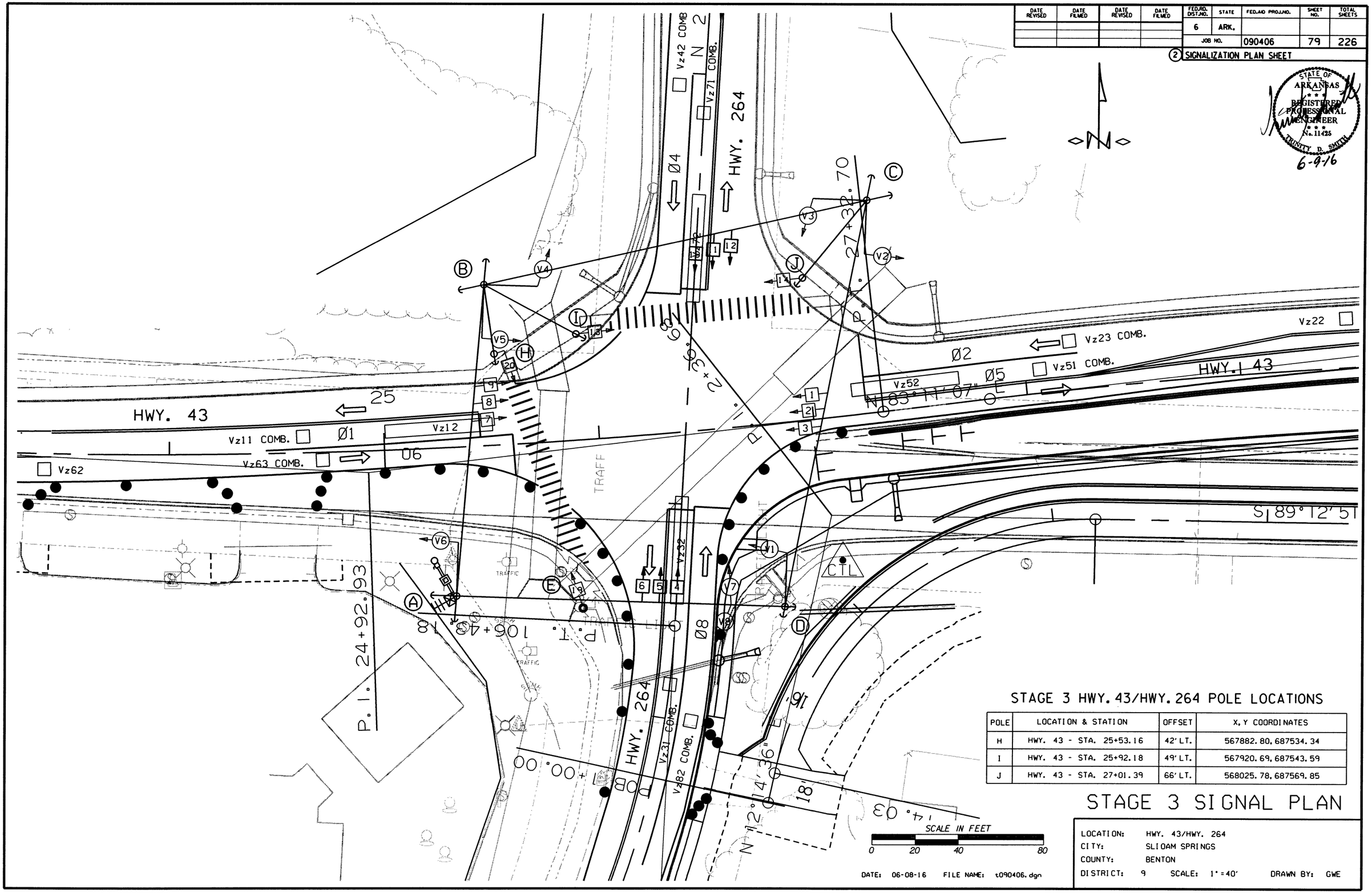
LOCATION: HWY. 43/HWY. 264
CITY: SILOAM SPRINGS
COUNTY: BENTON
DISTRICT: 9 SCALE: 1"=60' DRAWN BY: GWE

DATE: 06-08-16 FILE NAME: t090406.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.		090406	79	226

(2) SIGNALIZATION PLAN SHEET

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
6-9-16



STAGE 3 HWY. 43/HWY. 264 POLE LOCATIONS

POLE	LOCATION & STATION	OFFSET	X, Y COORDINATES
H	HWY. 43 - STA. 25+53.16	42' LT.	567882.80, 687534.34
I	HWY. 43 - STA. 25+92.18	49' LT.	567920.69, 687543.59
J	HWY. 43 - STA. 27+01.39	66' LT.	568025.78, 687569.85

STAGE 3 SIGNAL PLAN

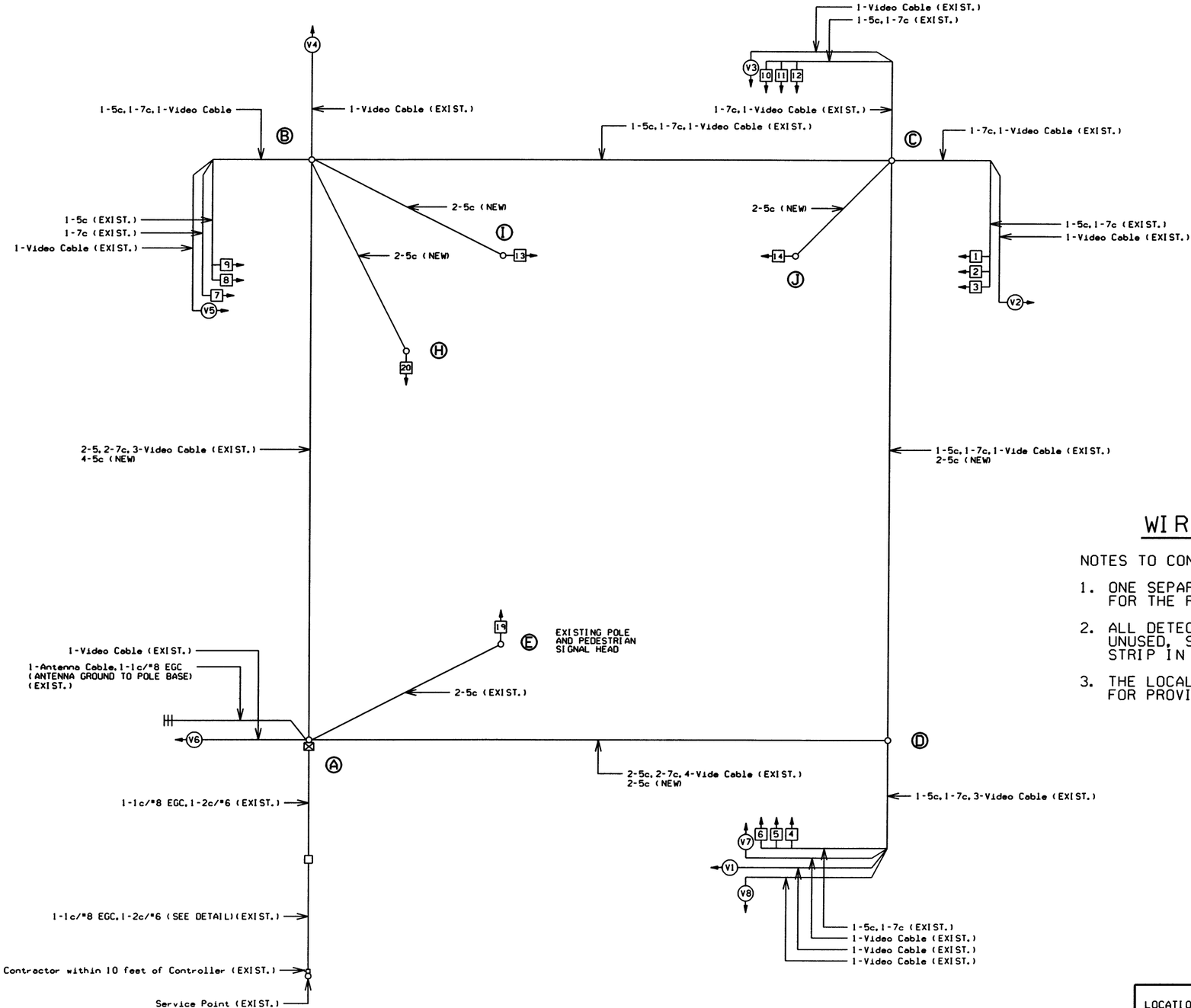
DATE: 06-08-16 FILE NAME: t090406.dgn

LOCATION: HWY. 43/HWY. 264
CITY: SLOAM SPRINGS
COUNTY: BENTON
DISTRICT: 9 SCALE: 1"=40' DRAWN BY: GWE

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	80	226

(2) SIGNALIZATION PLAN SHEET

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
6-9-16



WIRING DIAGRAM

NOTES TO CONTRACTOR:

1. ONE SEPARATE 1-5c IS RUN TO EACH POLE FOR THE PEDESTRIAN PUSH BUTTON.
2. ALL DETECTOR RACK CHANNELS, INCLUDING UNUSED, SHALL BE BROUGHT TO TERMINAL STRIP IN DETECTOR AREA OF CABINET.
3. THE LOCAL GOVERNMENT SHALL BE RESPONSIBLE FOR PROVIDING POWER TO THE SERVICE POINT.

DATE: 06-08-16 FILE NAME: t090406.dgn

STAGE 3 SIGNAL PLAN

LOCATION: HWY. 43/HWY. 264
CITY: SILOAM SPRINGS
COUNTY: BENTON
DISTRICT: 9 SCALE: N/A DRAWN BY: GWE

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	81	226

(2) SIGNALIZATION PLAN SHEET

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TIMOTHY D. SMITH
6-9-16

DETECTOR SYSTEM DESCRIPTION: JOB 090406

HWY. 43/HWY. 264 DETECTOR ASSIGNMENTS				HARDWARE INPUTS BY SUPPLIER			PROGRAM ASSIGNMENTS LOCAL		MASTER SYSTEM DETECTOR NUMBERS	COMMENTS	TUBE LENGTHS
DET. ID*	LOCATION DIRECTION	TYPE	DET. *	CAB. TRM *	AMP CHN. *	CON. INP.*	PHS	SYSTEM DET. *			
Vz11	EB LEFT TURN FAR	COMB.			1	V9	1	1		CAMERA V1	23'
Vz12	EB LEFT TURN	LOCAL			2	V1	1			CAMERA V1	23'
Vz21	WB ADVANCE	LOCAL			9	V2	2			CAMERA V2	74'
Vz22	WB INTERMEDIATE	LOCAL			10	P5	2			CAMERA V2	74'
Vz23	WB NEAR	COMB.			13	V10	2	2		CAMERA V5	23'
Vz31	NB LEFT TURN FAR	COMB.			17	V11	3	3		CAMERA V3	23'
Vz32	NB LEFT TURN	LOCAL			18	V3	3			CAMERA V3	23'
Vz41	SB ADVANCE	LOCAL			21	V4	4			CAMERA V4	23'
Vz42	SB NEAR	COMB.			22	V12	4	4		CAMERA V7	23'
Vz51	WB LEFT TURN FAR	COMB.			14	V13	5	5		CAMERA V5	23'
Vz52	WB LEFT TURN	LOCAL			15	V5	5			CAMERA V5	23'
Vz61	EB ADVANCE	LOCAL			5	V6	6			CAMERA V6	74'
Vz62	EB INTERMEDIATE	LOCAL			6	P7	6			CAMERA V6	74'
Vz63	EB NEAR	COMB.			3	V14	6	6		CAMERA V1	23'
Vz71	SB LEFT TURN FAR	COMB.			23	V15	7	7		CAMERA V7	23'
Vz72	SB LEFT TURN	LOCAL			24	V7	7			CAMERA V7	23'
Vz81	NB ADVANCE	LOCAL			19	V8	8			CAMERA V8	23'
Vz82	NB NEAR	COMB.			20	V16	8	8		CAMERA V8	23'
PB2A&B	HWY. 264 N. LEG	PED.				P2	2				
PB4A&B	HWY. 43 W. LEG	PED.				P4	4				
					SPARE 4, 7, 8, 11, 12, 16						

CONTROLLER INPUT ABBREVIATIONS:
V = VEHICLE INPUT
D = SYSTEM OR AUXILIARY INPUT
P = PEDESTRIAN INPUT

NOTE: "AMP CHN=" REFERS TO THE DETECTOR RACK OUTPUT POSITION.
THIS IS WIRED TO CONTROLLER INPUT DETECTOR NUMBER WHICH IS PROGRAMMED TO ACTUATE THE DESIGNATED PHASE.
EXAMPLE: V9=SYSTEM DETECTOR 1, V10=SYSTEM DETECTOR 2

INTERVAL CHART

SIGNAL FACES	HWY. 43/HWY. 264											FLASH SEQ.
	1+5	CLR.	1+6	CLR.	2+5	CLR.	2+6	CLR.	4+8	CLR.		
1	~~G~~	•	~~G~~	•	~~FY~~	•••	~~FY~~	•••	~~R~~	~~R~~		~~R~~
2&3	R	R	G	••	R	R	G	••	R	R		R
4	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~FY~~	•••		~~R~~
5&6	R	R	R	R	R	R	R	R	G	••		R
7	~~G~~	•	~~FY~~	•••	~~G~~	•	~~FY~~	•••	~~R~~	~~R~~		~~R~~
8&9	R	R	R	R	G	••	G	••	R	R		R
10	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~FY~~	•••		~~R~~
11&12	R	R	R	R	R	R	R	R	G	••		R
13&14	DW	DW	DW	DW	W	FDW	W	FDW	DW	DW		BLK
19&20	DW	DW	DW	DW	DW	DW	DW	DW	W	FDW		BLK

• DENOTES GREEN OR YELLOW ARROW DEPENDING ON NEXT PHASE
•• DENOTES GREEN OR YELLOW BALL DEPENDING ON NEXT PHASE
••• DENOTES FLASHING YELLOW ARROW OR YELLOW ARROW DEPENDING ON NEXT PHASE

STAGE 3 SIGNAL PLAN

LOCATION: HWY. 43/HWY. 264
CITY: SILOAM SPRINGS
COUNTY: BENTON
DISTRICT: 9 SCALE: N/A DRAWN BY: GWE

DATE: 06-08-16 FILE NAME: t090406.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.		090406	82	226

(2) SIGNALIZATION PLAN SHEET

PHASING DIAGRAM

SIGNAL FACES

12" LENSES

ONE SECTION (SOLID SYMBOL)

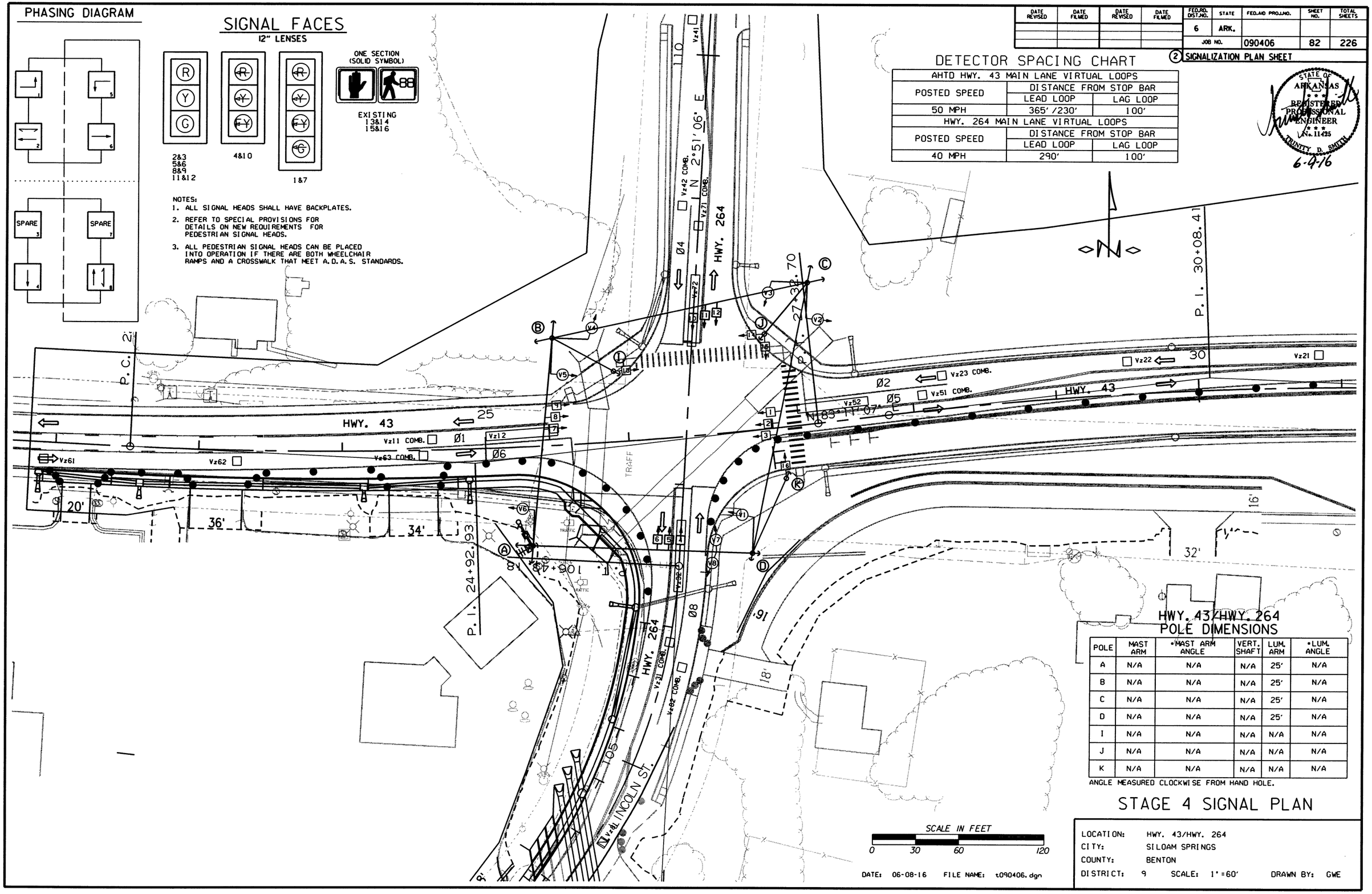
EXISTING
13&14
15&16

NOTES:
1. ALL SIGNAL HEADS SHALL HAVE BACKPLATES.
2. REFER TO SPECIAL PROVISIONS FOR DETAILS ON NEW REQUIREMENTS FOR PEDESTRIAN SIGNAL HEADS.
3. ALL PEDESTRIAN SIGNAL HEADS CAN BE PLACED INTO OPERATION IF THERE ARE BOTH WHEELCHAIR RAMPS AND A CROSSWALK THAT MEET A.D.A.S. STANDARDS.

DETECTOR SPACING CHART

AHTD HWY. 43 MAIN LANE VIRTUAL LOOPS		
POSTED SPEED	DISTANCE FROM STOP BAR	
	LEAD LOOP	LAG LOOP
50 MPH	365'/230'	100'
HWY. 264 MAIN LANE VIRTUAL LOOPS		
POSTED SPEED	DISTANCE FROM STOP BAR	
	LEAD LOOP	LAG LOOP
40 MPH	290'	100'

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
6-4-16



HWY. 43/HWY. 264 POLE DIMENSIONS

POLE	MAST ARM	•MAST ARM ANGLE	VERT. SHAFT	LUM. ARM	•LUM. ANGLE
A	N/A	N/A	N/A	25'	N/A
B	N/A	N/A	N/A	25'	N/A
C	N/A	N/A	N/A	25'	N/A
D	N/A	N/A	N/A	25'	N/A
I	N/A	N/A	N/A	N/A	N/A
J	N/A	N/A	N/A	N/A	N/A
K	N/A	N/A	N/A	N/A	N/A

ANGLE MEASURED CLOCKWISE FROM HAND HOLE.

STAGE 4 SIGNAL PLAN

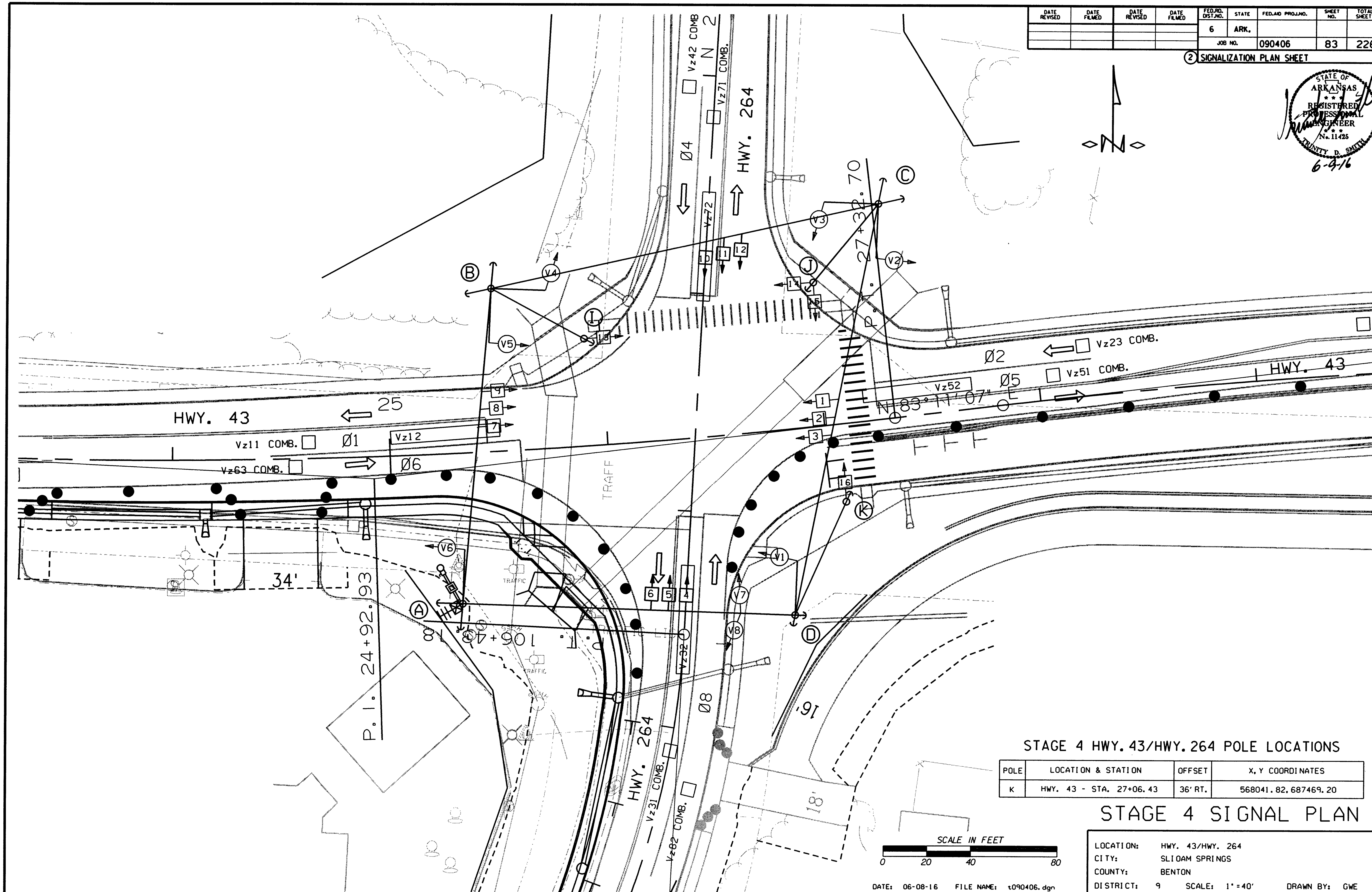
SCALE IN FEET
0 30 60 120

DATE: 06-08-16 FILE NAME: t090406.dgn

LOCATION: HWY. 43/HWY. 264
CITY: SILOAM SPRINGS
COUNTY: BENTON
DISTRICT: 9 SCALE: 1"=60' DRAWN BY: GWE

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	83	226

(2) SIGNALIZATION PLAN SHEET



STAGE 4 HWY. 43/HWY. 264 POLE LOCATIONS

POLE	LOCATION & STATION	OFFSET	X, Y COORDINATES
K	HWY. 43 - STA. 27+06.43	36' RT.	568041.82, 687469.20

STAGE 4 SIGNAL PLAN

SCALE IN FEET
0 20 40 80

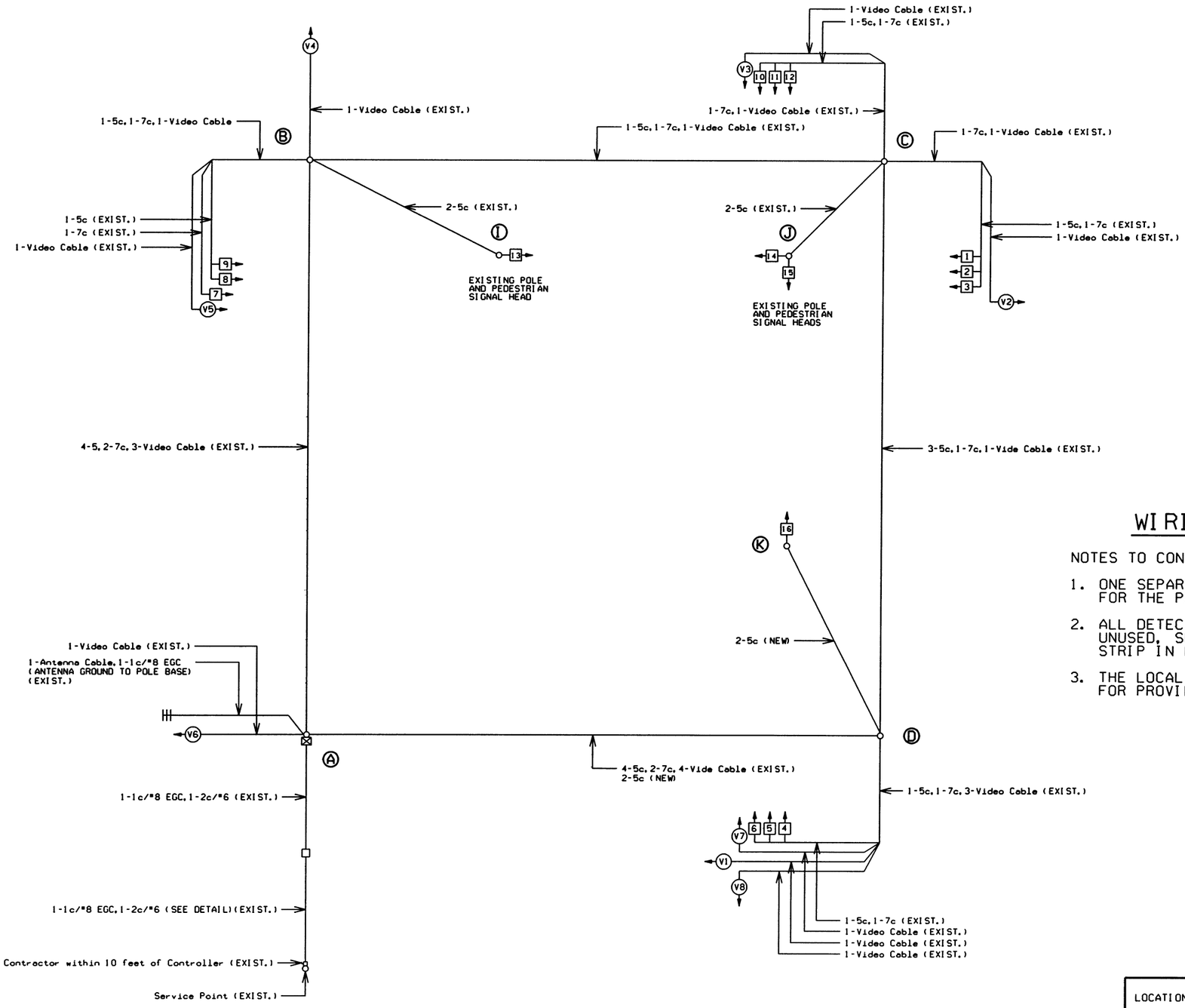
DATE: 06-08-16 FILE NAME: t090406.dgn

LOCATION:	HWY. 43/HWY. 264
CITY:	SLIOAM SPRINGS
COUNTY:	BENTON
DISTRICT: 9	SCALE: 1"=40' DRAWN BY: GWE

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	84	226

(2) SIGNALIZATION PLAN SHEET

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 6-9-16



WIRING DIAGRAM

NOTES TO CONTRACTOR:

1. ONE SEPARATE 1-5c IS RUN TO EACH POLE FOR THE PEDESTRIAN PUSH BUTTON.
2. ALL DETECTOR RACK CHANNELS, INCLUDING UNUSED, SHALL BE BROUGHT TO TERMINAL STRIP IN DETECTOR AREA OF CABINET.
3. THE LOCAL GOVERNMENT SHALL BE RESPONSIBLE FOR PROVIDING POWER TO THE SERVICE POINT.

DATE: 06-08-16 FILE NAME: t090406.dgn

STAGE 4 SIGNAL PLAN

LOCATION: HWY. 43/HWY. 264
CITY: SILOAM SPRINGS
COUNTY: BENTON
DISTRICT: 9 SCALE: N/A DRAWN BY: GWE

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	85	226

(2) SIGNALIZATION PLAN SHEET

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
6-9-16

DETECTOR SYSTEM DESCRIPTION: JOB 090406

HWY. 43/HWY. 264 DETECTOR ASSIGNMENTS				HARDWARE INPUTS BY SUPPLIER			PROGRAM ASSIGNMENTS LOCAL		MASTER SYSTEM DETECTOR NUMBERS	COMMENTS	TUBE LENGTHS
DET. ID*	LOCATION DIRECTION	TYPE	DET. *	CAB. TRM *	AMP CHN. *	CON. INP.*	PHS	SYSTEM DET. *			
Vz11	EB LEFT TURN FAR	COMB.			1	V9	1	1		CAMERA V1	23'
Vz12	EB LEFT TURN	LOCAL			2	V1	1			CAMERA V1	23'
Vz21	WB ADVANCE	LOCAL			9	V2	2			CAMERA V2	74'
Vz22	WB INTERMEDIATE	LOCAL			10	P5	2			CAMERA V2	74'
Vz23	WB NEAR	COMB.			13	V10	2	2		CAMERA V5	23'
Vz31	NB LEFT TURN FAR	COMB.			17	V11	3	3		CAMERA V3	23'
Vz32	NB LEFT TURN	LOCAL			18	V3	3			CAMERA V3	23'
Vz41	SB ADVANCE	LOCAL			21	V4	4			CAMERA V4	23'
Vz42	SB NEAR	COMB.			22	V12	4	4		CAMERA V7	23'
Vz51	WB LEFT TURN FAR	COMB.			14	V13	5	5		CAMERA V5	23'
Vz52	WB LEFT TURN	LOCAL			15	V5	5			CAMERA V5	23'
Vz61	EB ADVANCE	LOCAL			5	V6	6			CAMERA V6	74'
Vz62	EB INTERMEDIATE	LOCAL			6	P7	6			CAMERA V6	74'
Vz63	EB NEAR	COMB.			3	V14	6	6		CAMERA V1	23'
Vz71	SB LEFT TURN FAR	COMB.			24	V15	7	7		CAMERA V7	23'
Vz72	SB LEFT TURN	LOCAL			25	V7	7			CAMERA V7	23'
Vz81	NB ADVANCE	LOCAL			19	V8	8			CAMERA V8	23'
Vz82	NB NEAR	COMB.			20	V16	8	8		CAMERA V8	23'
P82A&B	HWY. 264 N. LEG	PED.				P2	2				
P88A&B	HWY. 43 E. LEG	PED.				P8	8				
					SPARE 4, 7, 8, 11, 12, 16						

CONTROLLER INPUT ABBREVIATIONS:
V = VEHICLE INPUT
O = SYSTEM OR AUXILLIARY INPUT
P = PEDESTRIAN INPUT

NOTE: "AMP CHN=" REFERS TO THE DETECTOR RACK OUTPUT POSITION.
THIS IS WIRED TO CONTROLLER INPUT DETECTOR NUMBER WHICH IS PROGRAMMED TO ACTUATE THE DESIGNATED PHASE.
EXAMPLE: V9=SYSTEM DETECTOR 1, V10=SYSTEM DETECTOR 2

INTERVAL CHART

SIGNAL FACES	HWY. 43/HWY. 264											FLASH SEQ.
	1+5	CLR.	1+6	CLR.	2+5	CLR.	2+6	CLR.	4+8	CLR.		
1	~~G~~	•	~~G~~	•	~~FY~~	•••	~~FY~~	•••	~~R~~	~~R~~		~~R~~
2&3	R	R	G	••	R	R	G	••	R	R		R
4	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~FY~~	•••		~~R~~
5&6	R	R	R	R	R	R	R	R	G	••		R
7	~~G~~	•	~~FY~~	•••	~~G~~	•	~~FY~~	•••	~~R~~	~~R~~		~~R~~
8&9	R	R	R	R	G	••	G	••	R	R		R
10	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~FY~~	•••		~~R~~
11&12	R	R	R	R	R	R	R	R	G	••		R
13&14	DW	DW	DW	DW	W	FDW	W	FDW	DW	DW		BLK
15&16	DW	DW	DW	DW	DW	DW	DW	DW	W	FDW		BLK

• DENOTES GREEN OR YELLOW ARROW DEPENDING ON NEXT PHASE
•• DENOTES GREEN OR YELLOW BALL DEPENDING ON NEXT PHASE
••• DENOTES FLASHING YELLOW ARROW OR YELLOW ARROW DEPENDING ON NEXT PHASE

STAGE 4 SIGNAL PLAN

LOCATION: HWY. 43/HWY. 264
CITY: SILOAM SPRINGS
COUNTY: BENTON
DISTRICT: 9 SCALE: N/A DRAWN BY: GWE

DATE: 06-08-16 FILE NAME: t090406.dgn

PHASING DIAGRAM

SIGNAL FACES

12" LENSES

ONE SECTION
(SOLID SYMBOL)

EXISTING
13&14
15&16
17&18

NOTES:

1. ALL SIGNAL HEADS SHALL HAVE BACKPLATES.
2. REFER TO SPECIAL PROVISIONS FOR DETAILS ON NEW REQUIREMENTS FOR PEDESTRIAN SIGNAL HEADS.
3. ALL PEDESTRIAN SIGNAL HEADS CAN BE PLACED INTO OPERATION IF THERE ARE BOTH WHEELCHAIR RAMPS AND A CROSSWALK THAT MEET A.D.A.S. STANDARDS.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

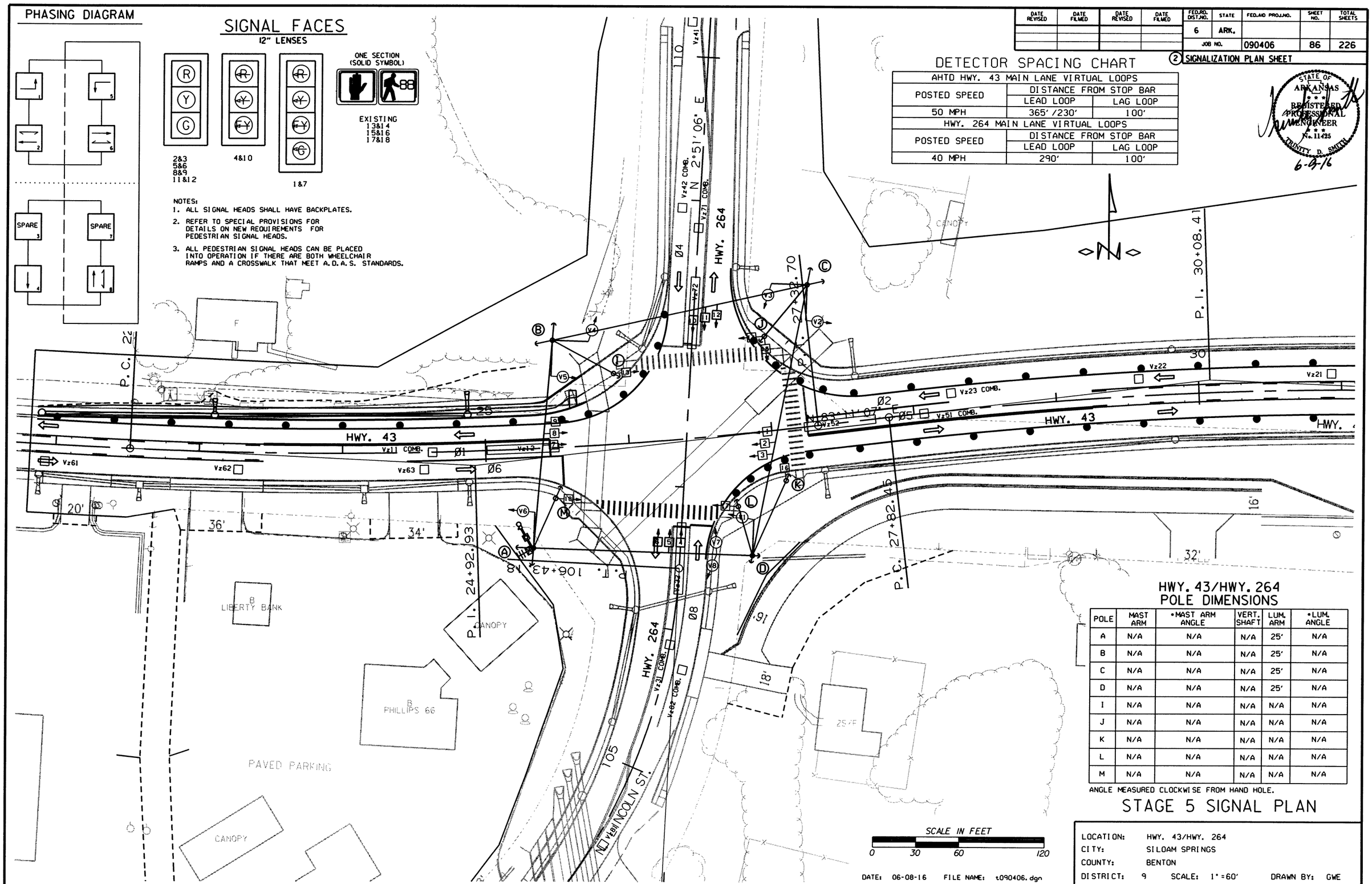
FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		090406	86	226

(2) SIGNALIZATION PLAN SHEET

DETECTOR SPACING CHART

AHTD HWY. 43 MAIN LANE VIRTUAL LOOPS		
POSTED SPEED	DISTANCE FROM STOP BAR	
	LEAD LOOP	LAG LOOP
50 MPH	365'/230'	100'
HWY. 264 MAIN LANE VIRTUAL LOOPS		
POSTED SPEED	DISTANCE FROM STOP BAR	
	LEAD LOOP	LAG LOOP
40 MPH	290'	100'

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
6-8-16



HWY. 43/HWY. 264 POLE DIMENSIONS

POLE	MAST ARM	•MAST ARM ANGLE	VERT. SHAFT	LUM. ARM	•LUM. ANGLE
A	N/A	N/A	N/A	25'	N/A
B	N/A	N/A	N/A	25'	N/A
C	N/A	N/A	N/A	25'	N/A
D	N/A	N/A	N/A	25'	N/A
I	N/A	N/A	N/A	N/A	N/A
J	N/A	N/A	N/A	N/A	N/A
K	N/A	N/A	N/A	N/A	N/A
L	N/A	N/A	N/A	N/A	N/A
M	N/A	N/A	N/A	N/A	N/A

ANGLE MEASURED CLOCKWISE FROM HAND HOLE.

SCALE IN FEET
0 30 60 120

STAGE 5 SIGNAL PLAN

LOCATION: HWY. 43/HWY. 264
CITY: SILOAM SPRINGS
COUNTY: BENTON
DISTRICT: 9 SCALE: 1"=60' DRAWN BY: GWE

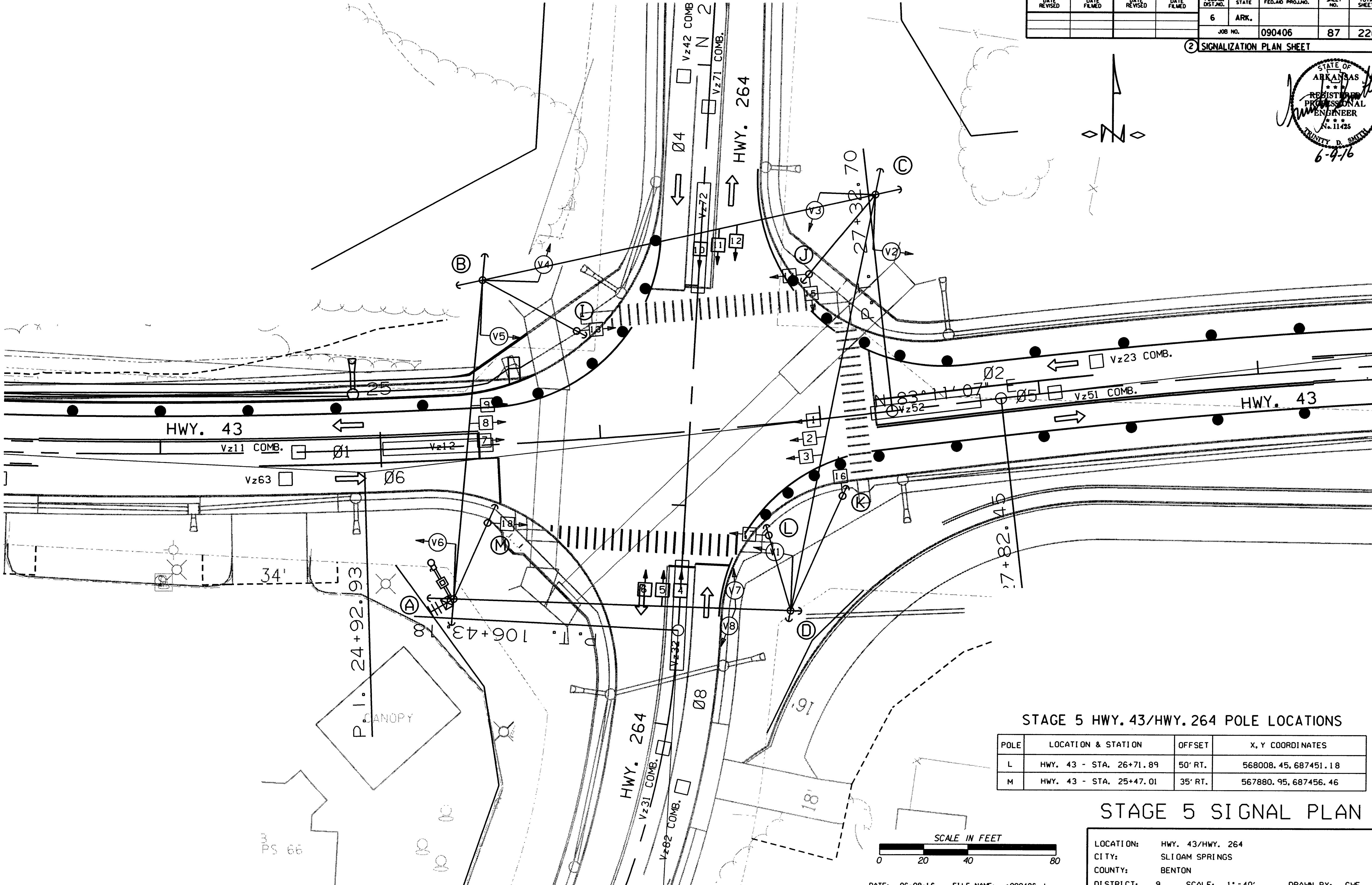
DATE: 06-08-16 FILE NAME: t090406.dgn

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.		090406	87	226

(2) SIGNALIZATION PLAN SHEET

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

6-9-16



STAGE 5 HWY. 43/HWY. 264 POLE LOCATIONS

POLE	LOCATION & STATION	OFFSET	X,Y COORDINATES
L	HWY. 43 - STA. 26+71.89	50' RT.	568008.45, 687451.18
M	HWY. 43 - STA. 25+47.01	35' RT.	567880.95, 687456.46

STAGE 5 SIGNAL PLAN

SCALE IN FEET: 0 20 40 80

DATE: 06-08-16 FILE NAME: t090406.dgn

LOCATION: HWY. 43/HWY. 264

CITY: SILOAM SPRINGS

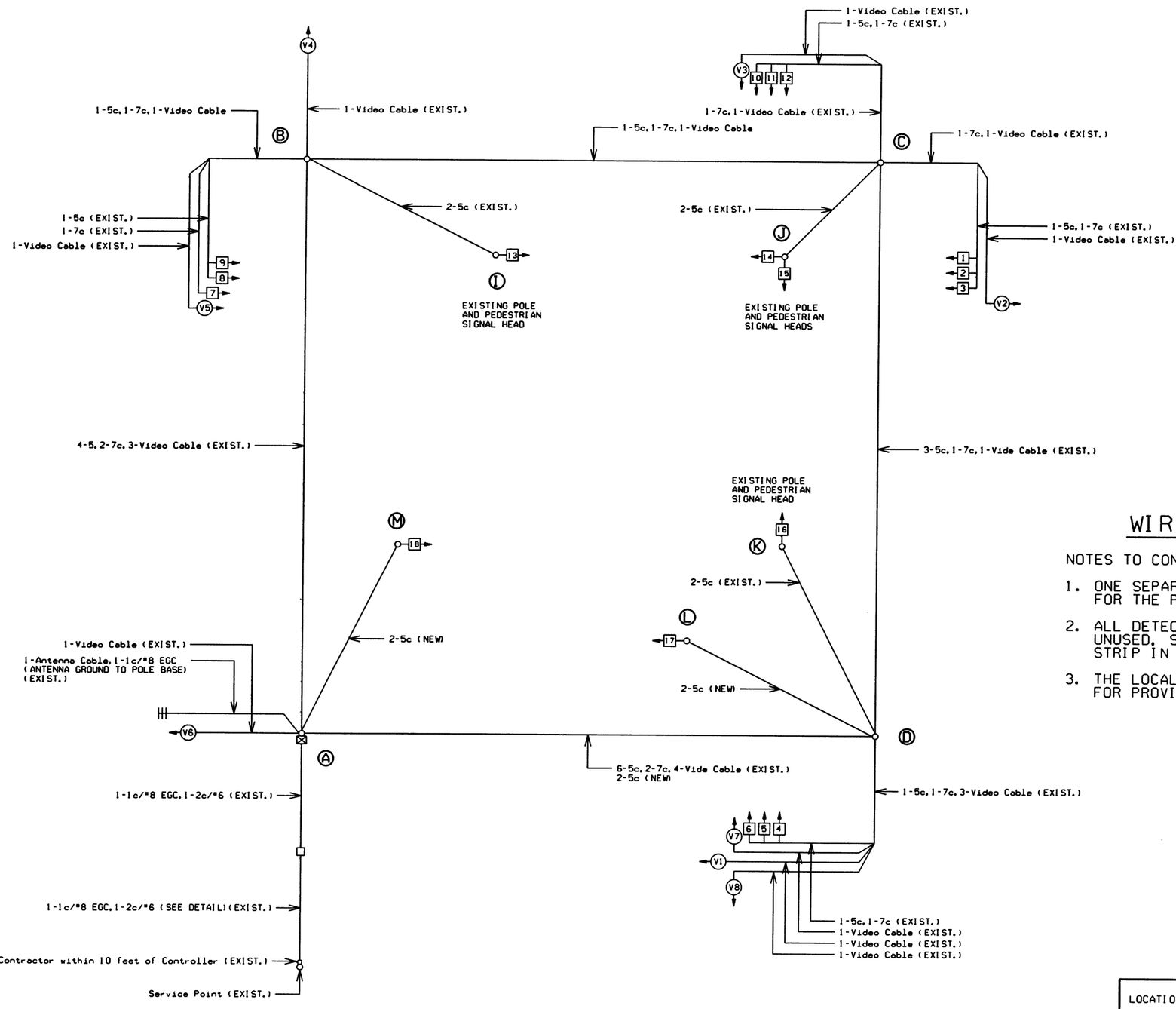
COUNTY: BENTON

DISTRICT: 9 SCALE: 1" = 40' DRAWN BY: GWE

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	88	226

(2) SIGNALIZATION PLAN SHEET

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
6-9-16



WIRING DIAGRAM

NOTES TO CONTRACTOR:

1. ONE SEPARATE 1-5c IS RUN TO EACH POLE FOR THE PEDESTRIAN PUSH BUTTON.
2. ALL DETECTOR RACK CHANNELS, INCLUDING UNUSED, SHALL BE BROUGHT TO TERMINAL STRIP IN DETECTOR AREA OF CABINET.
3. THE LOCAL GOVERNMENT SHALL BE RESPONSIBLE FOR PROVIDING POWER TO THE SERVICE POINT.

STAGE 5 SIGNAL PLAN

DATE: 06-08-16 FILE NAME: t090406.dgn

LOCATION:	HWY. 43/HWY. 264			
CITY:	SILOAM SPRINGS			
COUNTY:	BENTON			
DISTRICT:	9	SCALE: N/A	DRAWN BY:	GWE

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	89	226

(2) SIGNALIZATION PLAN SHEET

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
6-9-16

DETECTOR SYSTEM DESCRIPTION: JOB 090406

HWY. 43/HWY. 264 DETECTOR ASSIGNMENTS				HARDWARE INPUTS BY SUPPLIER			PROGRAM ASSIGNMENTS LOCAL		MASTER SYSTEM DETECTOR NUMBERS	COMMENTS	TUBE LENGTHS
DET. ID*	LOCATION DIRECTION	TYPE	DET. *	CAB. TRM *	AMP CHN. *	CON. INP.*	PHS	SYSTEM DET. *			
Vz11	EB LEFT TURN FAR	COMB.			1	V9	1	1		CAMERA V1	23'
Vz12	EB LEFT TURN	LOCAL			2	V1	1			CAMERA V1	23'
Vz21	WB ADVANCE	LOCAL			9	V2	2			CAMERA V2	74'
Vz22	WB INTERMEDIATE	LOCAL			10	P5	2			CAMERA V2	74'
Vz23	WB NEAR	COMB.			13	V10	2	2		CAMERA V5	23'
Vz31	NB LEFT TURN FAR	COMB.			17	V11	3	3		CAMERA V3	23'
Vz32	NB LEFT TURN	LOCAL			18	V3	3			CAMERA V3	23'
Vz41	SB ADVANCE	LOCAL			21	V4	4			CAMERA V4	23'
Vz42	SB NEAR	COMB.			22	V12	4	4		CAMERA V7	23'
Vz51	WB LEFT TURN FAR	COMB.			14	V13	5	5		CAMERA V5	23'
Vz52	WB LEFT TURN	LOCAL			15	V5	5			CAMERA V5	23'
Vz61	EB ADVANCE	LOCAL			5	V6	6			CAMERA V6	74'
Vz62	EB INTERMEDIATE	LOCAL			6	P7	6			CAMERA V6	74'
Vz63	EB NEAR	COMB.			3	V14	6	6		CAMERA V1	23'
Vz71	SB LEFT TURN FAR	COMB.			24	V15	7	7		CAMERA V7	23'
Vz72	SB LEFT TURN	LOCAL			25	V7	7			CAMERA V7	23'
Vz81	NB ADVANCE	LOCAL			19	V8	8			CAMERA V8	23'
Vz82	NB NEAR	COMB.			20	V16	8	8		CAMERA V8	23'
PB2A&B	HWY. 264 N. LEG	PED.				P2	2				
PB6A&B	HWY. 264 S. LEG	PED.				P6	6				
PB8A&B	HWY. 43 E. LEG	PED.				P8	8				
					SPARE 4, 7, 8, 11, 12, 16						

CONTROLLER INPUT ABBREVIATIONS:
V = VEHICLE INPUT
D = SYSTEM OR AUXILIARY INPUT
P = PEDESTRIAN INPUT

NOTE: *AMP CHN=* REFERS TO THE DETECTOR RACK OUTPUT POSITION.
THIS IS WIRED TO CONTROLLER INPUT DETECTOR NUMBER WHICH IS PROGRAMMED TO ACTUATE THE DESIGNATED PHASE.
EXAMPLE: V9=SYSTEM DETECTOR 1, V10=SYSTEM DETECTOR 2

INTERVAL CHART

SIGNAL FACES	HWY. 43/HWY. 264										FLASH SEQ.
	1+5	CLR.	1+6	CLR.	2+5	CLR.	2+6	CLR.	4+8	CLR.	
1	~~G~~	•	~~G~~	•	~~FY~~	•••	~~FY~~	•••	~~R~~	~~R~~	~~R~~
2&3	R	R	G	••	R	R	G	••	R	R	R
4	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~FY~~	•••	~~R~~
5&6	R	R	R	R	R	R	R	R	G	••	R
7	~~G~~	•	~~FY~~	•••	~~G~~	•	~~FY~~	•••	~~R~~	~~R~~	~~R~~
8&9	R	R	R	R	G	••	G	••	R	R	R
10	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~FY~~	•••	~~R~~
11&12	R	R	R	R	R	R	R	R	G	••	R
13&14	DW	DW	W	FDW	DW	DW	W	FDW	DW	DW	BLK
15&16	DW	DW	DW	DW	DW	DW	DW	DW	W	FDW	BLK
17&18	DW	DW	W	FDW	DW	DW	W	FDW	DW	DW	BLK

• DENOTES GREEN OR YELLOW ARROW DEPENDING ON NEXT PHASE
•• DENOTES GREEN OR YELLOW BALL DEPENDING ON NEXT PHASE
••• DENOTES FLASHING YELLOW ARROW OR YELLOW ARROW DEPENDING ON NEXT PHASE

STAGE 5 SIGNAL PLAN

LOCATION: HWY. 43/HWY. 264
CITY: SILOAM SPRINGS
COUNTY: BENTON
DISTRICT: 9 SCALE: N/A DRAWN BY: GWE

DATE: 06-08-16 FILE NAME: t090406.dgn

PHASING DIAGRAM

SIGNAL FACES

12" LENSES

ONE SECTION (SOLID SYMBOL)

13&14
15&16
17&18
19&20

NOTES:

1. ALL SIGNAL HEADS SHALL HAVE BACKPLATES.
2. REFER TO SPECIAL PROVISIONS FOR DETAILS ON NEW REQUIREMENTS FOR PEDESTRIAN SIGNAL HEADS.
3. ALL PEDESTRIAN SIGNAL HEADS CAN BE PLACED INTO OPERATION IF THERE ARE BOTH WHEELCHAIR RAMPS AND A CROSSWALK THAT MEET A.D.A.S. STANDARDS.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

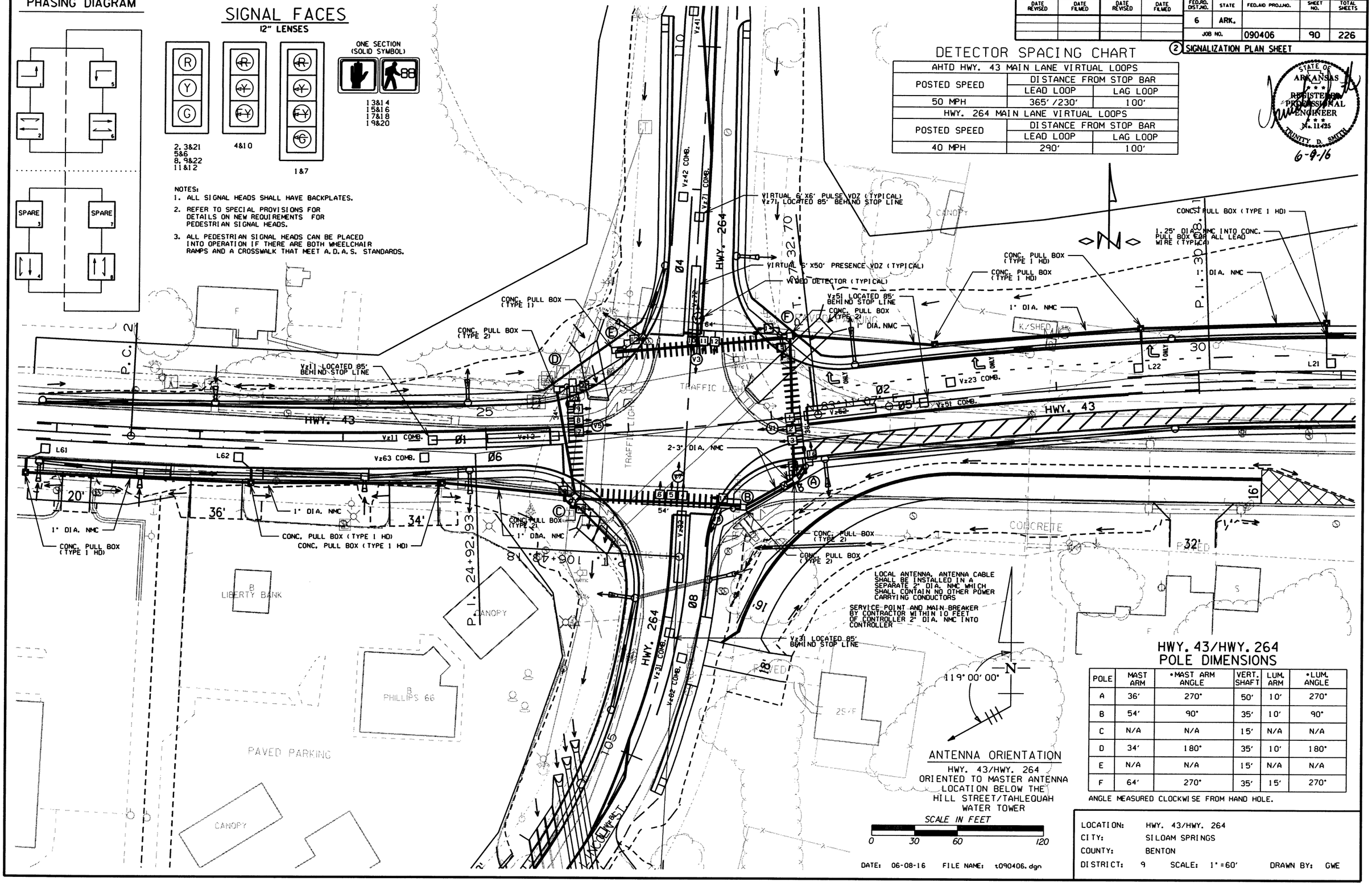
FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		090406	90	226

(2) SIGNALIZATION PLAN SHEET

DETECTOR SPACING CHART

AHTD HWY. 43 MAIN LANE VIRTUAL LOOPS		
POSTED SPEED	DISTANCE FROM STOP BAR	
	LEAD LOOP	LAG LOOP
50 MPH	365'/230'	100'
HWY. 264 MAIN LANE VIRTUAL LOOPS		
POSTED SPEED	DISTANCE FROM STOP BAR	
	LEAD LOOP	LAG LOOP
40 MPH	290'	100'

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
6-9-16



HWY. 43/HWY. 264 POLE DIMENSIONS

POLE	MAST ARM	*MAST ARM ANGLE	VERT. SHAFT	LUM. ARM	*LUM. ANGLE
A	36'	270°	50'	10'	270°
B	54'	90°	35'	10'	90°
C	N/A	N/A	15'	N/A	N/A
D	34'	180°	35'	10'	180°
E	N/A	N/A	15'	N/A	N/A
F	64'	270°	35'	15'	270°

ANGLE MEASURED CLOCKWISE FROM HAND HOLE.

ANTENNA ORIENTATION

HWY. 43/HWY. 264
ORIENTED TO MASTER ANTENNA LOCATION BELOW THE HILL STREET/TAHLEQUAH WATER TOWER

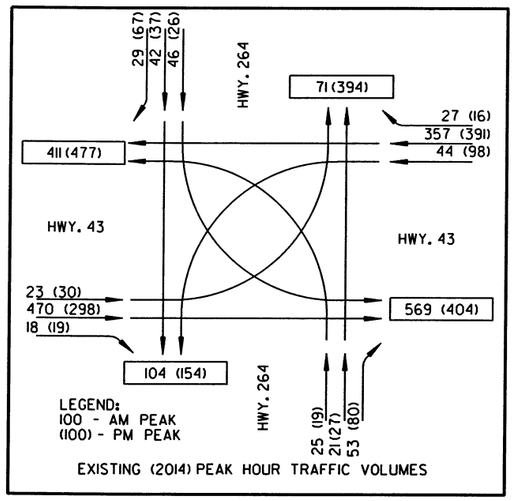
LOCATION:	HWY. 43/HWY. 264		
CITY:	SILOAM SPRINGS		
COUNTY:	BENTON		
DISTRICT:	9	SCALE: 1"=60'	DRAWN BY: GWE

DATE: 06-08-16 FILE NAME: t090406.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.		090406	91	226

(2) SIGNALIZATION PLAN SHEET

TRAFFIC FLOW DIAGRAM



EXISTING (2014) PEAK HOUR TRAFFIC VOLUMES

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 6-9-16

VIRTUAL 6' X6' PULSE VDZ (TYPICAL) Vz71 LOCATED 85' BEHIND STOP LINE

VIRTUAL 6' X50' PRESENCE VDZ (TYPICAL)

VIDEO DETECTOR (TYPICAL)

CONC. PULL BOX (TYPE 1)

CONC. PULL BOX (TYPE 2)

Vz11 LOCATED 85' BEHIND STOP LINE

Vz51 LOCATED 85' BEHIND STOP LINE

CONC. PULL BOX (TYPE 1 HD)

1" DIA. NMC

2-3" DIA. NMC

Vz31 LOCATED 85' BEHIND STOP LINE

CONC. PULL BOX (TYPE 1 HD)

CONC. PULL BOX (TYPE 2)

1" DIA. NMC

CONC. PULL BOX (TYPE 2)

CONC. PULL BOX (TYPE 2)

CONC. PULL BOX (TYPE 1 HD)

CONC. PULL BOX (TYPE 1 HD)

NOTE TO CONTRACTOR:
TRAFFIC SIGNAL OPERATIONS SHALL BE MAINTAINED THROUGHOUT ALL CONSTRUCTION PHASES.

DESIGN PARAMETERS

POSTED SPEED LIMIT:
50 MPH EAST AND WEST APPROACH
40 MPH NORTH AND SOUTH APPROACH
NO BUS STOPS
NO RAILROAD TRACKS
NO EXISTING INTERCONNECTIONS
NO FIRE STATION
NO PARKING
NO SIGHT DISTANCE RESTRICTIONS

LOCATION OF STOP BARS SHOWN ON PAVEMENT MARKING PLAN. SEE SEPARATE SHEET.

MINIMUM CLEAR ZONE DISTANCE
3 FEET BEHIND CURB

HWY. 43/HWY. 264 POLE LOCATIONS

POLE	LOCATION & STATION	OFFSET	X, Y COORDINATES
A	HWY. 43 - STA. 27+20.30	35' RT.	568055.69, 687471.49
B	HWY. 43 - STA. 26+67.60	60' RT.	568005.00, 687441.53
C	HWY. 43 - STA. 25+57.09	46' RT.	567891.74, 687446.48
D	HWY. 43 - STA. 25+58.09	34' LT.	567888.13, 687526.27
E	HWY. 43 - STA. 26+00.87	59' LT.	567928.49, 687553.94
F	HWY. 43 - STA. 27+11.62	58' LT.	568036.55, 687563.35

SCALE IN FEET
0 20 40 80

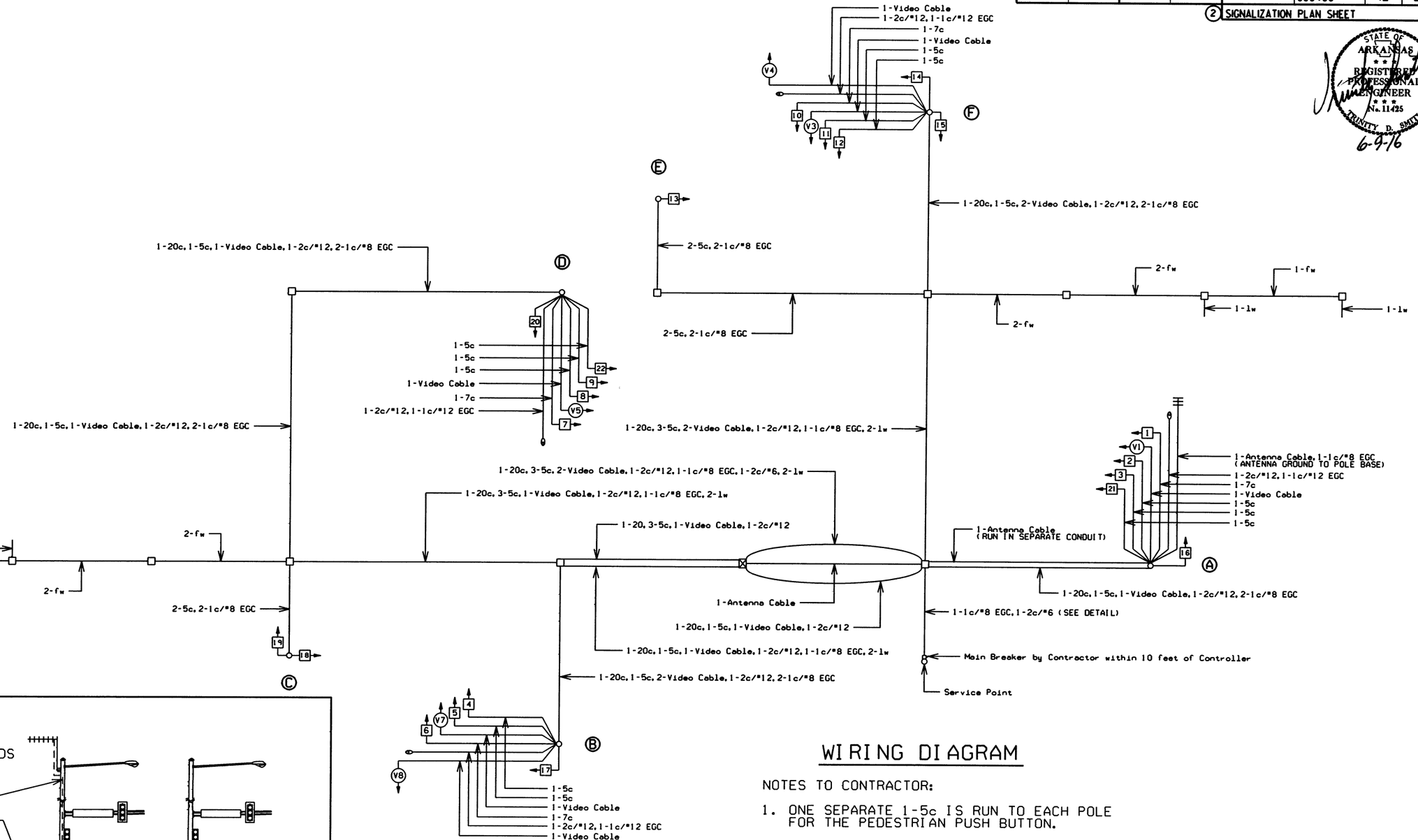
DATE: 06-08-16 FILE NAME: t090406.dgn

LOCATION: HWY. 43/HWY. 264
CITY: SLOAM SPRINGS
COUNTY: BENTON
DISTRICT: 9 SCALE: 1"=40' DRAWN BY: GWE

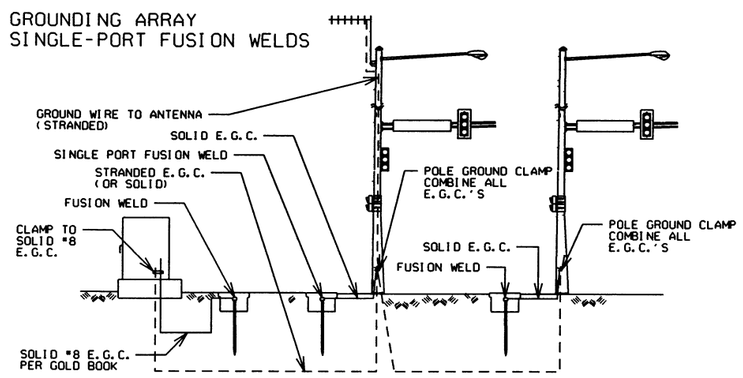
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	92	226

(2) SIGNALIZATION PLAN SHEET

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
6-9-16



GROUNDING ARRAY
SINGLE-PORT FUSION WELDS



WIRING DIAGRAM

NOTES TO CONTRACTOR:

1. ONE SEPARATE 1-5c IS RUN TO EACH POLE FOR THE PEDESTRIAN PUSH BUTTON.
2. ALL DETECTOR RACK CHANNELS, INCLUDING UNUSED, SHALL BE BROUGHT TO TERMINAL STRIP IN DETECTOR AREA OF CABINET.
3. THE LOCAL GOVERNMENT SHALL BE RESPONSIBLE FOR PROVIDING POWER TO THE SERVICE POINT.

LOCATION: HWY. 43/HWY. 264
CITY: SILOAM SPRINGS
COUNTY: BENTON
DISTRICT: 9 SCALE: N/A DRAWN BY: GWE

DATE: 06-08-16 FILE NAME: t090406.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.		090406	93	226

(2) SIGNALIZATION PLAN SHEET

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
6-9-16

DETECTOR SYSTEM DESCRIPTION: JOB 090406

HWY. 43/HWY. 264 DETECTOR ASSIGNMENTS				HARDWARE INPUTS BY SUPPLIER			PROGRAM ASSIGNMENTS LOCAL		MASTER SYSTEM DETECTOR NUMBERS	COMMENTS	TUBE LENGTHS
DET. ID*	LOCATION DIRECTION	TYPE	DET. *	CAB. TRM *	AMP CHN. *	CON. INP.*	PHS	SYSTEM DET. *			
Vz11	EB LEFT TURN FAR	COMB.			1	V9	1	1		CAMERA V1	23'
Vz12	EB LEFT TURN	LOCAL			2	V1	1			CAMERA V1	23'
L21	WB ADVANCE	LOCAL	2			V2	2				
L22	WB INTERMEDIATE	LOCAL	2			P5	2				
Vz23	WB NEAR	COMB.	10		5	V10	2	2		CAMERA V5	23'
Vz31	NB LEFT TURN FAR	COMB.			9	V11	3	3		CAMERA V3	23'
Vz32	NB LEFT TURN	LOCAL			10	V3	3			CAMERA V3	23'
Vz41	SB ADVANCE	LOCAL			13	V4	4			CAMERA V4	23'
Vz42	SB NEAR	COMB.			14	V12	4	4		CAMERA V7	23'
Vz51	WB LEFT TURN FAR	COMB.			7	V13	5	5		CAMERA V5	23'
Vz52	WB LEFT TURN	LOCAL			8	V5	5			CAMERA V5	23'
L61	EB ADVANCE	LOCAL	6			V6	6				
L62	EB INTERMEDIATE	LOCAL	6			P7	6				
Vz63	EB NEAR	COMB.	14		3	V14	6	6		CAMERA V1	23'
Vz71	SB LEFT TURN FAR	COMB.			15	V15	7	7		CAMERA V7	23'
Vz72	SB LEFT TURN	LOCAL			16	V7	7			CAMERA V7	23'
Vz81	NB ADVANCE	LOCAL			11	V8	8			CAMERA V8	23'
Vz82	NB NEAR	COMB.			12	V16	8	8		CAMERA V3	23'
PB2A&B	HWY. 264 N. LEG	PED.				P2	2				
PB4A&B	HWY. 43 W. LEG	PED.				P4	4				
PB6A&B	HWY. 264 S. LEG	PED.				P6	6				
PB8A&B	HWY. 43 E. LEG	PED.				P8	8				
					SPARE 4 & 6						

CONTROLLER INPUT ABBREVIATIONS:
V = VEHICLE INPUT
D = SYSTEM OR AUXILIARY INPUT
P = PEDESTRIAN INPUT

NOTE: 'AMP CHN=' REFERS TO THE DETECTOR RACK OUTPUT POSITION.
THIS IS WIRED TO CONTROLLER INPUT DETECTOR NUMBER WHICH IS PROGRAMMED TO ACTUATE THE DESIGNATED PHASE.
EXAMPLE: V9=SYSTEM DETECTOR 1, V10=SYSTEM DETECTOR 2

INTERVAL CHART

SIGNAL FACES	HWY. 43/HWY. 264										FLASH SEQ.
	1+5	CLR.	1+6	CLR.	2+5	CLR.	2+6	CLR.	4+8	CLR.	
1	~~G~~	•	~~G~~	•	~~FY~~	•••	~~FY~~	•••	~~R~~	~~R~~	~~R~~
2&3	R	R	G	••	R	R	G	••	R	R	R
4	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~FY~~	•••	~~R~~
5&6	R	R	R	R	R	R	R	R	G	••	R
7	~~G~~	•	~~FY~~	•••	~~G~~	•	~~FY~~	•••	~~R~~	~~R~~	~~R~~
8&9	R	R	R	R	G	••	G	••	R	R	R
10	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~FY~~	•••	~~R~~
11&12	R	R	R	R	R	R	R	R	G	••	R
13&14	DW	DW	DW	DW	W	FDW	W	FDW	DW	DW	BLK
15&16	DW	DW	DW	DW	DW	DW	DW	DW	W	FDW	BLK
17&18	DW	DW	W	FDW	DW	DW	W	FDW	DW	DW	BLK
19&20	DW	DW	DW	DW	DW	DW	DW	DW	W	FDW	BLK

• DENOTES GREEN OR YELLOW ARROW DEPENDING ON NEXT PHASE
•• DENOTES GREEN OR YELLOW BALL DEPENDING ON NEXT PHASE
••• DENOTES FLASHING YELLOW ARROW OR YELLOW ARROW DEPENDING ON NEXT PHASE

DATE: 06-08-16 FILE NAME: t090406.dgn

LOCATION: HWY. 43/HWY. 264
CITY: SILOAM SPRINGS
COUNTY: BENTON
DISTRICT: 9 SCALE: N/A DRAWN BY: GWE

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		090406	94	226
① 07393 -		LAYOUT	- 58799	

For R/W & T.C.E. Data, see Rdwy. Plans

Note: ℄ Bridge is on a 2°00' curve right, a tangent section, and a 2°15' curve right. Longitudinal lines shall be constructed on curves and lines concentric with the ℄ Bridge. Stations, elevations, and span lengths are shown along ℄ Bridge. Bents are skewed 30° from radial lines to ℄ Bridge. Skew is measured at ℄ Bent for intermediate bents and at ℄ Joint for end bents.

① Temporary Retaining Wall will be required. See rdwy. plans and SP Job 090406 "Temporary Retaining Wall" for details.

HORIZONTAL CURVE DATA

HWY. 43

PI = Sta. 30+08.41	PI = Sta. 38+14.02
Delta = 9°01'11"	Delta = 12° 03' 19"
D = 2° 00' 00"	D = 2° 15' 00"
T = 225.96'	T = 268.89'
L = 450.98'	L = 535.79'

N. COUNTRY CLUB RD.

PI = 61+95.33
Delta = 5° 01' 46"
D = 3° 00' 00"
T = 83.88'
L = 167.65'

PVI = Sta.33+50.02
Elev. 1177.99
7.00% -4.62%
L=520'

VERTICAL CURVE DATA

Stations and elevations shown are along ℄ Bridge. Elevations are at Working Point See "ROUNDING DETAIL", Std. Dwg. No. 55007.

Bent No.	℄ Deck at ℄ Bridge to Low Side Top of Cap	⑤	⑥
2	5'-8"	1132.10	1106.10
3	5'-2 7/16"	1132.04	1106.04
4	5'-6 5/16"	1136.18	1106.08
5	5'-10 7/16"	1135.79	1105.79
6	6'-0 1/8"	1135.79	1105.79

PLAN

ELEVATION

Total Length of Bridge = 552'-6 1/16"

1'-3 5/16" | 380'-0" Continuous Composite Plate Girder Unit (85', 105', 105', 85') | 170'-0" Continuous Composite Plate Girder Unit (85', 85') | 1'-2 3/4"

② Low Steel to top of KCS RR rail at point of minimum vertical clearance =
25'-3" at Mainline Track - Constr. Sta. 33+29.62, KCS RR Sta. 12043+65.66
24'-6" at 38' left of Mainline Track - Constr. Sta. 32+88.36, KCS RR Sta. 12043+86.78

③ Low Steel to top of N. Country Club Rd. at point of minimum vertical clearance = 29'-3"

④ Low Steel to Design High Water = 16'-11"
See "Hydraulic Data" Dwg. No. 58800.
Low steel elevation 1153.91 occurs at 34'-0" Left of C.L. Construction Sta. 37+71.19

For "GENERAL NOTES" and soil boring information, See Dwg. No. 58800.

7

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
9-15-16
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 1 OF 2
LAYOUT OF BRIDGE OVER KCS RAILROAD & N. COUNTRY CLUB RD. HWY. 43 KCS RAILROAD OVERPASS (SILOAM SPRINGS) (S) BENTON COUNTY

ROUTE 43 SEC. 0

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 9-23-15 FILENAME: b090406_ll.dgn
CHECKED BY: SWP DATE: 9-15-16 SCALE: 1" = 30'
DESIGNED BY: DDS DATE: 7-15

BRIDGE NO. 07393 DRAWING NO. 58799

PRINT DATE: 9/13/2016

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	95	226
				① 07393 -		LAYOUT		- 58800

GENERAL NOTES

BENCH MARK: Vertical Control Data are shown in the Survey Control Data Sheets.

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

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

LIVE LOADING: HL-93 SEISMIC ZONE: 1

MATERIALS AND STRENGTHS:

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

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

STEEL PILING: Piling in Bents 1 & 7 shall be HP12x53 and shall be driven with an approved air, steam, or diesel hammer to a minimum safe bearing capacity of 70 tons per pile and into the material designated as Limestone on the boring legend. Lengths of piling shown are for estimating quantities and for use in determining payment for cut-off and build-up in accordance with Section 805. Actual lengths to be determined in the field. Piles in end bents shall be driven after embankment to bottom of cap is in place. On all piles the Contractor shall use approved steel H-Pile driving points.

DRILLED SHAFTS: Foundations for Intermediate Bents shall consist of Drilled Shafts. All drilled shafts shall be founded into Limestone and to the minimum rock penetrations and tip elevations shown in the plans. No adjustments in Plan Tip Elevation shall be made without prior approval from the Engineer. Methods of construction of the drilled shafts shall be in accordance with SP Job No. 090406 "Drilled Shaft Foundations". Any casing used as a means for construction of the drilled shafts, such as to prevent caving, to exclude groundwater, or to provide shoring shall not extend below top of rock. The Contractor must obtain approval from the Engineer for any deviation from this requirement.

CROSSHOLE SONIC LOGGING: Nondestructive testing shall be performed on each drilled shaft in accordance with SP Job No. 090406 "Nondestructive Testing of Drilled Shafts".

BRIDGE DECK: The concrete bridge deck, except sidewalks, shall be given a tine finish as specified for final finishing in Subsection 802.19 for Class 5 Tined Bridge Roadway Surface Finish. Sidewalks shall be given a Class 6, Broomed Finish.

DETAIL DRAWINGS:	DRAWING NOS.
End Bents	58805-58807 & 58818-58820
Intermediate Bents	58808-58817
380' Continuous Composite W-Beam Unit	58821-58827
170' Continuous Composite W-Beam Unit	58828-58832
Details of Neoprene Strip Steel Joints	58833-58834
Elastomeric Bearings	58835-58836
Standard General Notes for Steel Structures	55006
Standard Details for Steel Structures	55007
Poured Silicone Joints	55008
Type H Metal Bridge Railing	55014
Chain Link Fence	55018
Steel Piling	55020

MAINTENANCE OF TRAFFIC: See Roadway Plans.

BORING LEGEND

A1-Moist, Very Dense, Brown Clayey Sand with Gravel (Chert Fragments)
B1-LIMESTONE AND CHERT INTERBEDDED - Slightly Weathered, Hard, Frequent Fractures, Gray
C1-Moist, Very Stiff, Brown Sandy Clay with Gravel (Chert Fragments)
D1-LIMESTONE AND CHERT INTERBEDDED - Weathered, Hard, Occasional Fractures, Gray
E1-LIMESTONE AND CHERT INTERBEDDED - Slightly Weathered, Hard, Gray
F1-Moist, Medium Stiff, Brown Clay with Some Organic Matter
G1-Moist, Very Stiff, Sandy Clay with Gravel (Chert Fragments)
H1-Wet, Medium Dense, Clayey Gravel with Sand
J1-LIMESTONE AND CHERT INTERBEDDED - Weathered, Hard, Frequent Fractures, Gray
K1-Moist, Medium Stiff, Brown Clay with Gravel (Chert Fragments)
L1-Moist, Medium Dense, Brown Clayey Sand with Gravel (Chert Fragments)
M1-LIMESTONE AND CHERT INTERBEDDED - Slightly Weathered, Hard, Light Gray
N1-Dry, Dense, Brown Clayey Sand With Gravel (Chert Fragments)
P1-LIMESTONE AND CHERT INTERBEDDED - Slightly Weathered, Hard, Light Gray *
Q1-Moist, Very Stiff, Brown Sandy Clay with Some Gravel (Chert Fragments)
R1-Moist, Dense, Brown Sand with Gravel (Chert Fragments)
S1-Moist, Very Stiff, Brown Gravelly Clay with Sand
T1-Moist, Very Dense, Brown Gravel with Clay and Sand
U1-LIMESTONE AND CHERT INTERBEDDED - Slightly Weathered, Hard, Occasional Fractures, Light Gray
V1-Moist, Very Dense, Brown Clayey Sand with Gravel
W1-LIMESTONE AND CHERT INTERBEDDED - Weathered, Hard, Occasional Shale Parting, Light Gray
X1-Moist, Medium Stiff, Brown Clay with Some Gravel and Organic Matter
Y1-Moist, Dense, Brown Clayey Sand with Gravel (Chert Fragments)
Z1-LIMESTONE AND CHERT INTERBEDDED - Slightly Weathered, Hard, Occasional Clay Partings, Gray
A2-Boulder (Limestone/Chert Rock Fragment) (5.1' to 6.8')
B2-Moist, Loose, Brown Clayey Sand with Gravel
C2-LIMESTONE AND CHERT INTERBEDDED - Slightly Weathered, Hard, Occasional Fractures, Light Gray
D2-LIMESTONE - Slightly Weathered, Hard, Occasional Calcite Seam, Light Gray

* Complete loss of drilling fluid at 10.1'

HYDRAULIC DATA

FLOOD DESCRIPTION	FREQUENCY	DISCHARGE	*NATURAL WATER SURFACE ELEVATION	WATER SURFACE ELEV. WITH BACKWATER
	YEARS	CFS	FEET	FEET
Design	50	5100	1137.0	1137.0
Base	100	5700	1137.2	1137.2
Extreme	500	7500	1137.8	1137.8
Overtopping	>500	-	-	-

* Unconstricted water surface without structure or roadway approaches.

0100 backwater elevation for existing structure = Elev. 1139.3
Proposed low bridge chord = Elev. 1153.91

Drainage area = 4.5 square miles.
Historical H.W. = N/A

"N" VALUES

Sta. 30+93 - 44' Right of Construction Centerline
5.0 - 6.0, N=84
10.0 - 11.0, N=24

Sta. 31+85 - 3' Left of Construction Centerline
4.9 - 5.9, N=30
9.9 - 10.9, N=8

Sta. 32+25 - 45' Right of Construction Centerline
4.9 - 5.9, N=7
9.9 - 10.9, N=20
14.9 - 15.9, N=12

Sta. 32+88 - Construction Centerline
4.0 - 5.0, N=7
9.0 - 10.0, N=25

Sta. 33+93 - Construction Centerline
5.0 - 6.0, N=41
9.5 - 9.8, N=47 (3")

Sta. 34+98 - Construction Centerline
5.2 - 6.2, N=19
10.2 - 10.9, N=29 (9")

Sta. 35+85 - Construction Centerline
3.8 - 4.8, N=24
8.8 - 9.6, N=39 (9")

Sta. 36+68 - Construction Centerline
4.8 - 5.8, N=100

Sta. 36+74 - 45' Right of Construction Centerline
5.0 - 6.0, N=5
10.0 - 11.0, N=49

Sta. 37+50 - Construction Centerline
4.8 - 5.1, N=60 (4")
10.3 - 11.3, N=7
12.6 - 12.6, N=10 (0")

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-2-16
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 2 OF 2
LAYOUT OF BRIDGE OVER
KCS RAILROAD & N. COUNTRY CLUB RD.
HWY. 43 KCS RAILROAD OVERPASS
(SILOAM SPRINGS) (S)
BENTON COUNTY

ROUTE 43 SEC. 0

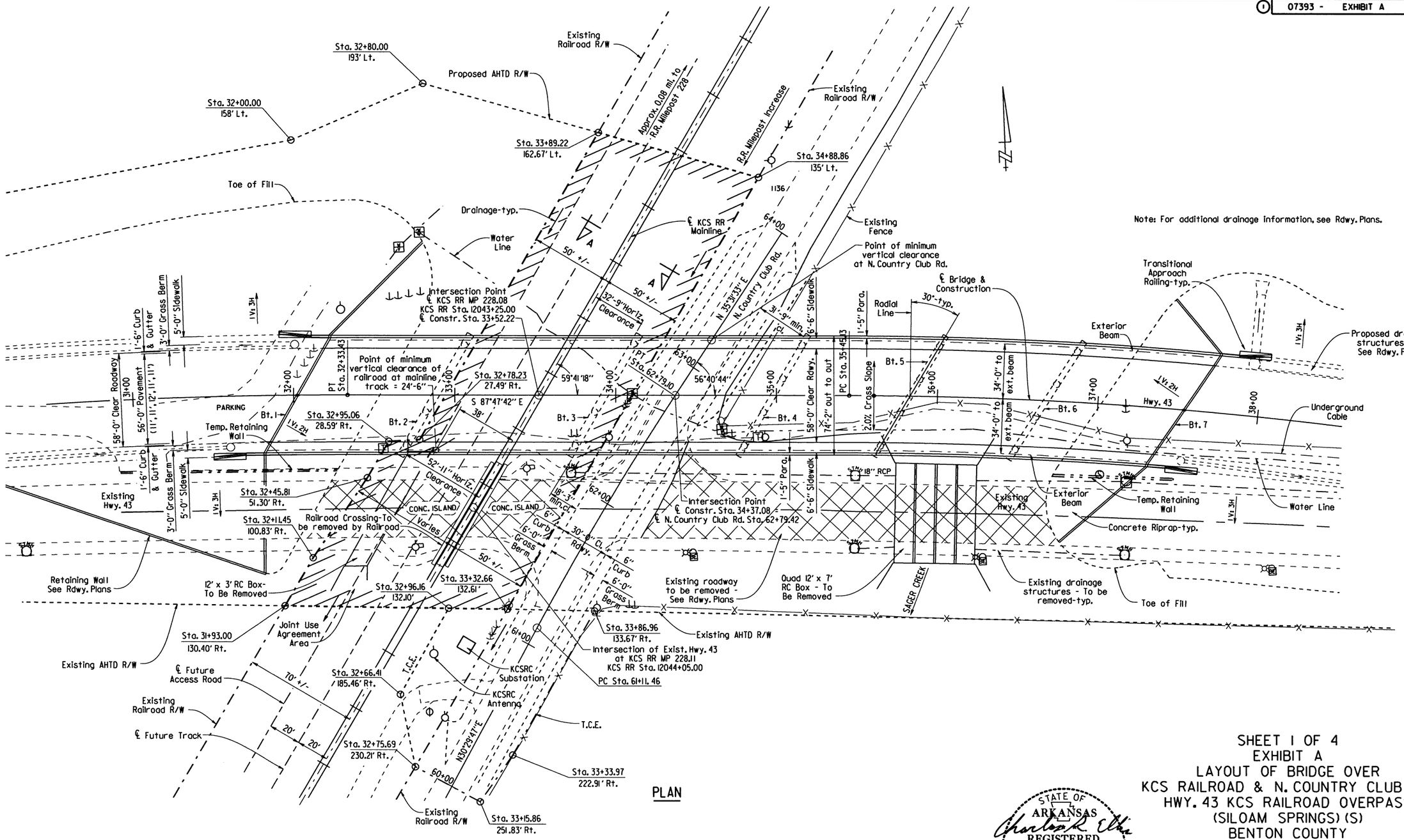
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 9-23-15 FILENAME: b090406_ll.dgn
CHECKED BY: SLLP DATE: 11/19/15 SCALE: NO SCALE
DESIGNED BY: DBS DATE: 7/15

BRIDGE NO. 07393 DRAWING NO. 58800

PRINT DATE: 4/29/2016

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	96	226
				07393 -		EXHIBIT A		- 58801



PLAN

Note: For additional drainage information, see Rdwy. Plans.

Note: ℄ Bridge is on a 2°00' curve right, a tangent section, and a 2°15' curve right. Longitudinal lines shall be constructed on curves and lines concentric with the ℄ Bridge. Stations, elevations, and span lengths are shown along ℄ Bridge. Bents are skewed 30° from radial lines to ℄ Bridge. Skew is measured at ℄ Bent for intermediate bents and at ℄ Joint for end bents.

HORIZONTAL CURVE DATA

HWY. 43		N. COUNTRY CLUB RD.
PI = Sta. 30+08.41	PI = Sta. 38+14.02	PI = 61+95.33
Delta = 9°01'11"	Delta = 12° 03' 19"	Delta = 5° 01' 46"
D = 2° 00' 00"	D = 2° 15' 00"	D = 3° 00' 00"
T = 225.96'	T = 268.89'	T = 83.88'
L = 450.98'	L = 535.79'	L = 167.65'

Note: All permanent clearances shall be verified before project closing.

There are no known utilities in the railroad right of way except the underground cable, water line and power poles shown in the plan view.

For "Section A-A", see Dwg. No. 58803.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9235
9-15-16
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 1 OF 4
EXHIBIT A
LAYOUT OF BRIDGE OVER
KCS RAILROAD & N. COUNTRY CLUB RD.
HWY. 43 KCS RAILROAD OVERPASS
(SILOAM SPRINGS) (S)
BENTON COUNTY

ROUTE 43 SEC. 0

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

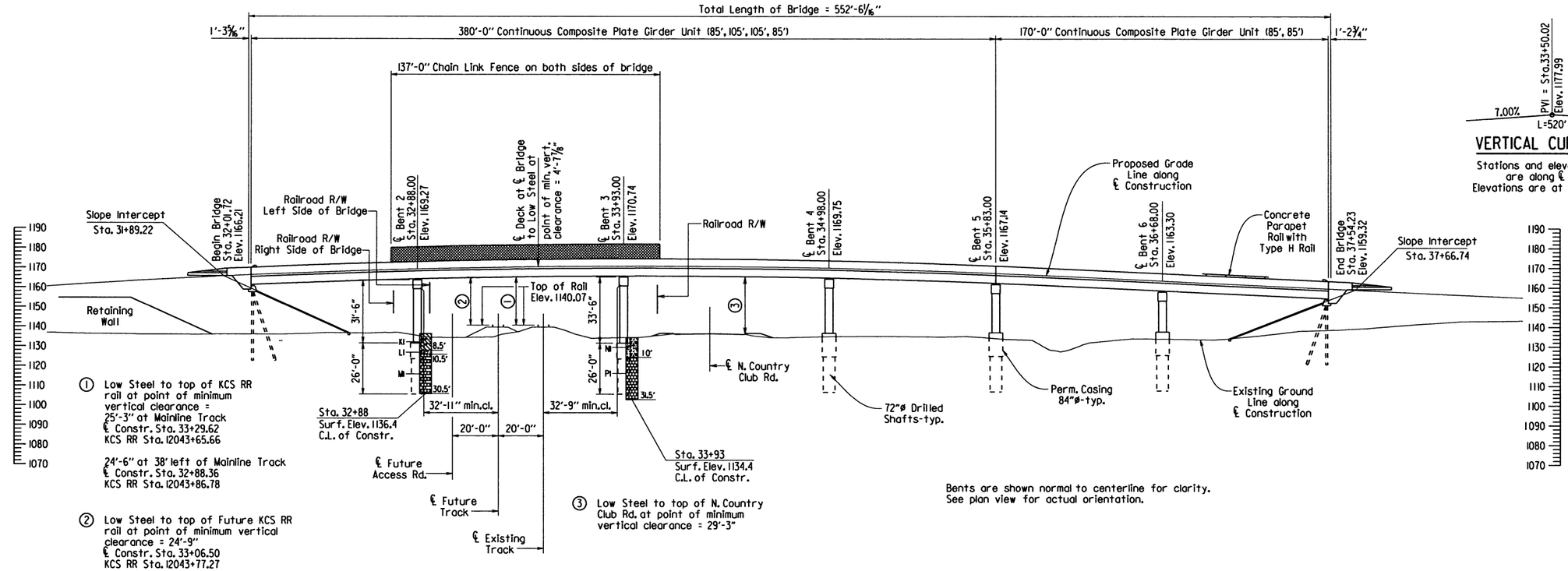
DRAWN BY: KDH DATE: 3-30-16 FILENAME: b090406_exa.dgn
CHECKED BY: SWP DATE: 9/14/16 SCALE: 1" = 30'
DESIGNED BY: DDS DATE: 7-15

BRIDGE NO. 07393 DRAWING NO. 58801

PRINT DATE: 9/14/2016

For R/W & T.C.E. Data, see Rdwy. Plans

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	97	226
				① 07393 -		EXHIBIT A		- 58802



VERTICAL CURVE DATA

7.00% PVI = Sta.33+50.02 Elev. 1177.99 -4.62%
L=520'

Stations and elevations shown are along ℄ Bridge.
Elevations are at Working Point

Bents are shown normal to centerline for clarity. See plan view for actual orientation.

ELEVATION

Note: Looking in the the direction of the milepost decrease.

BORING LEGEND

KI-Moist, Medium Stiff, Brown Clay with Gravel (Chert Fragments)
LI-Moist, Medium Dense, Brown Clayey Sand with Gravel (Chert Fragments)
MI-LIMESTONE AND CHERT INTERBEDDED - Slightly Weathered, Hard, Light Gray
NI-Dry, Dense, Brown Clayey Sand With Gravel (Chert Fragments)
PI-LIMESTONE AND CHERT INTERBEDDED - Slightly Weathered, Hard, Light Gray

"N" VALUES

Sta. 32+88 - Construction Centerline
4.0- 5.0, N=7
9.0- 10.0, N=25

Sta. 33+93 - Construction Centerline
5.0- 6.0, N=41
9.5- 9.8, N=47(3")

For additional geotechnical information, see Bridge Layout, Dwg. No. 58800.

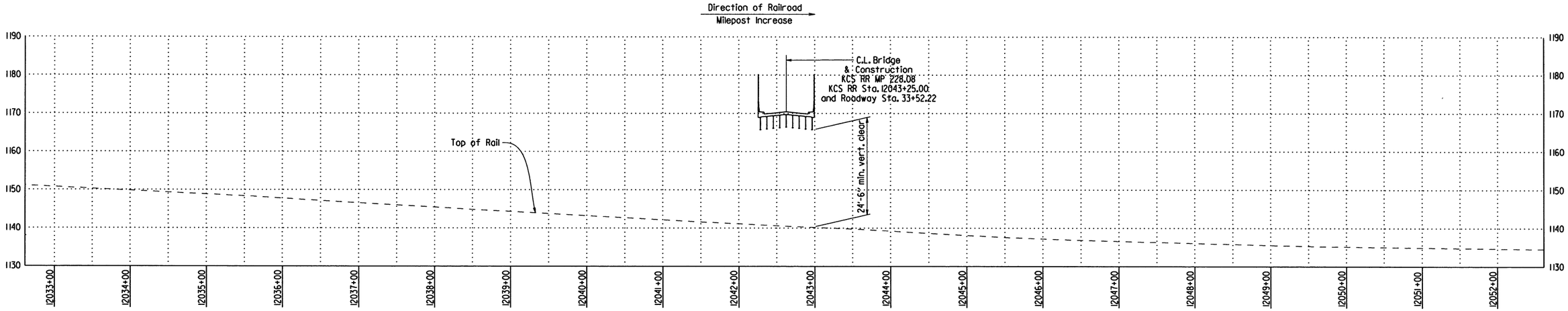
STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
9-15-16
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 2 OF 4
EXHIBIT A
LAYOUT OF BRIDGE OVER
KCS RAILROAD & N. COUNTRY CLUB RD.
HWY. 43 KCS RAILROAD OVERPASS
(SILOAM SPRINGS) (S)
BENTON COUNTY
ROUTE 43 SEC. 0
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

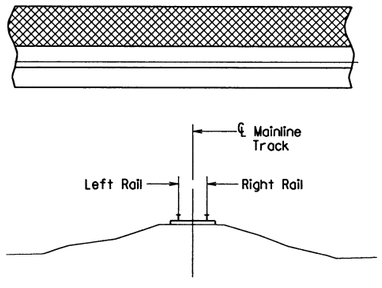
DRAWN BY: KDH DATE: 3-30-16 FILENAME: b090406_exa.dgn
CHECKED BY: SWP DATE: 9-13-16 SCALE: 1" = 30'
DESIGNED BY: DBS DATE: 7-15
BRIDGE NO. 07393 DRAWING NO. 58802

PRINT DATE: 9/13/2016

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	3	226
				① 07393 -		EXHIBIT A		- 58803



TOP OF RAIL PROFILE



SECTION A-A

Looking in the the direction of the milepost increase

No Scale

TOP OF RAIL ELEVATIONS

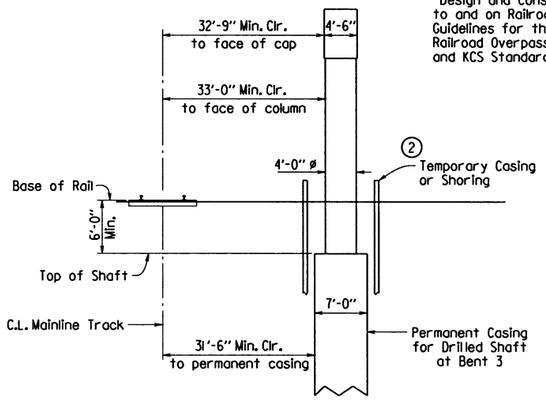
Looking in direction of Milepost increase.
Stations increase with Milepost increase

Direction of Railroad Milepost Increase

MAINLINE TRACK			
① LEFT RAIL		① RIGHT RAIL	
STATION	ELEVATION	STATION	ELEVATION
12033+62.60	1150.85	12033+62.60	1150.83
12034+62.60	1149.92	12034+62.60	1149.89
12035+62.60	1148.93	12035+62.60	1148.90
12036+62.60	1147.87	12036+62.60	1147.82
12037+62.60	1146.69	12037+62.60	1146.64
12038+62.60	1145.55	12038+62.60	1145.51
12039+62.60	1144.42	12039+62.60	1144.37
12040+62.60	1143.29	12040+62.60	1143.28
12041+62.60	1142.21	12041+62.60	1142.21
12042+62.60	1141.18	12042+62.60	1141.17
12043+62.60	1140.27	12043+62.60	1140.25
12043+65.66	1140.25	12043+65.66	1140.23
12043+86.78	1140.06	12043+86.78	1140.07
12044+62.60	1139.29	12044+62.60	1139.27
12045+62.60	1138.14	12045+62.60	1138.13
12046+62.60	1137.21	12046+62.60	1137.22
12047+62.60	1136.58	12047+62.60	1136.58
12048+62.60	1136.07	12048+62.60	1136.07
12049+62.60	1135.59	12049+62.60	1135.59
12050+62.60	1135.21	12050+62.60	1135.19
12051+62.60	1134.95	12051+62.60	1134.95
12052+62.60	1134.71	12052+62.60	1134.71

① ℄ KCS RR Sta. 12043+25.00 = ℄ Constr. Sta. 33+52.22 at ℄ Bridge

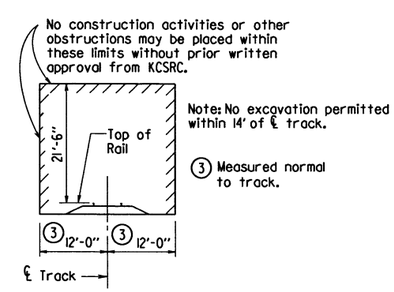
The elevations of the existing top-of-rail profile shall be verified by the Contractor prior to beginning construction. Any discrepancies that will decrease the vertical clearance shown in the Elevation Section shall be brought to the attention of the Railroad prior to construction.



② PIER PROTECTION DETAILS

At Bent 3
No Scale

② Shoring design shall be in accordance with "Design and Construction of Shoring Adjacent to and on Railroad Right-of-Way". See KCS RR Guidelines for the Design and Construction of Railroad Overpasses and Underpasses, Section IV, and KCS Standard Dwg. No. BR-122.



MINIMUM CONSTRUCTION CLEARANCES

No Scale

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
9-15-16
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 3 OF 4
EXHIBIT A
LAYOUT OF BRIDGE OVER
KCS RAILROAD & N. COUNTRY CLUB RD.
HWY. 43 KCS RAILROAD OVERPASS
(SILOAM SPRINGS) (S)
BENTON COUNTY

ROUTE 43 SEC. 0

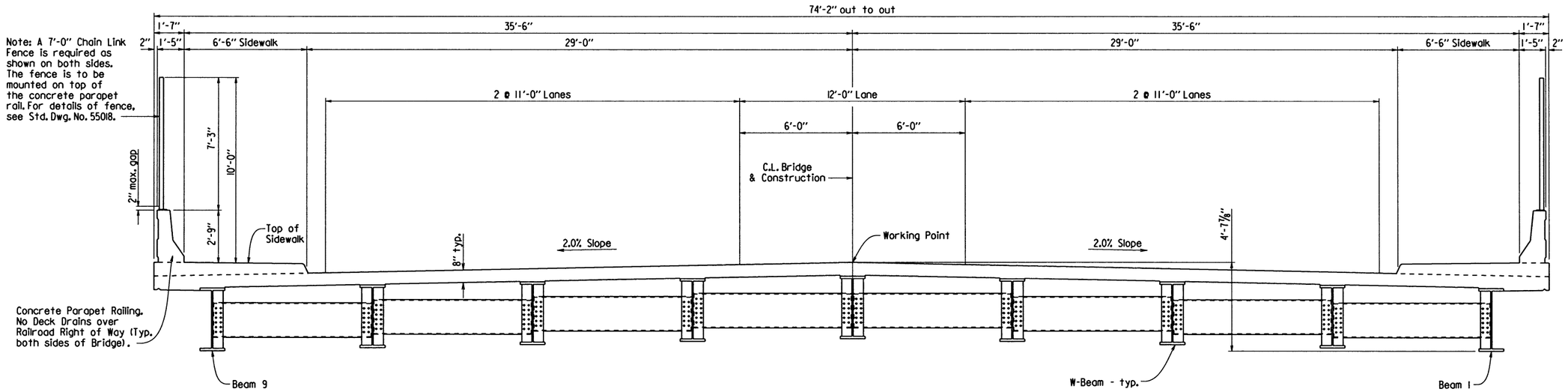
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 3-30-16
CHECKED BY: SWP DATE: 9/14/16
DESIGNED BY: DBS DATE: 7-15
FILENAME: b090406_exa.dgn
SCALE: AS SHOWN

BRIDGE NO. 07393
DRAWING NO. 58803

PRINT DATE: 9/14/2016

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	99	224
				(1) 07393 -		EXHIBIT A		- 58804



TYPICAL SECTION

Looking Ahead

GENERAL NOTES

All demolitions within the Railroad's right-of-way and/or demolition that may impact the Railroad's tracks or operations shall comply with the Railroad's demolition requirements.

Erection over the Railroad's right-of-way shall be designed to cause no interruption to the Railroad's operation. Erection over the Railroad's track(s) shall be developed such that it enables the track(s) to remain open to traffic per the Railroad's requirements.

The Contractor must submit a proposed method of erosion and sediment control and have the method approved by the Railroad prior to beginning any grading on the project site.

Railroad requirements do not allow work within 50 feet of track centerline when a train passes the work site and all personnel must clear the area within 25 feet of the track centerline and secure all equipment when trains are present.

The State shall not plow ice, snow, or sleet over the sides of the structure. In consideration of this practice, the Carrier waives its request for the State to attach splash boards to sides of the structure. This statement is in the State Railroad Agreement.

The proposed bridge structure will not change the quantity and/or characteristic of the flow in the Railway's ditches and/or drainage structure.

Closed Parapet Railing (No Deck Drains) over Railroad Right of Way on both sides of Bridge.

Construction shall comply with the Kansas City Southern Railway Company requirements noted in SP Job No. 090406 "Insurance, Construction, and Flagging Requirements on Railroad Property (Kansas City Southern Railway Company)". Any shoring shall comply with KCSRC requirements.

Railroad review and approval of Shoring, Erection and Falsework is required. Allow a minimum of four weeks for the review and approval of each submittal.

For Railroad coordination, refer to the Railroad Minimum Requirments of SP Job No. 090406 "Insurance, Construction and Flagging Requirments on Railroad Property (Kansas City Southern Railway Company)".

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9235
9-15-16
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 4 OF 4
EXHIBIT A
LAYOUT OF BRIDGE OVER
KCS RAILROAD & N. COUNTRY CLUB RD.
HWY. 43 KCS RAILROAD OVERPASS
(SILOAM SPRINGS) (S)
BENTON COUNTY

ROUTE 43 SEC. 0

ARKANSAS STATE HIGHWAY COMMISSION

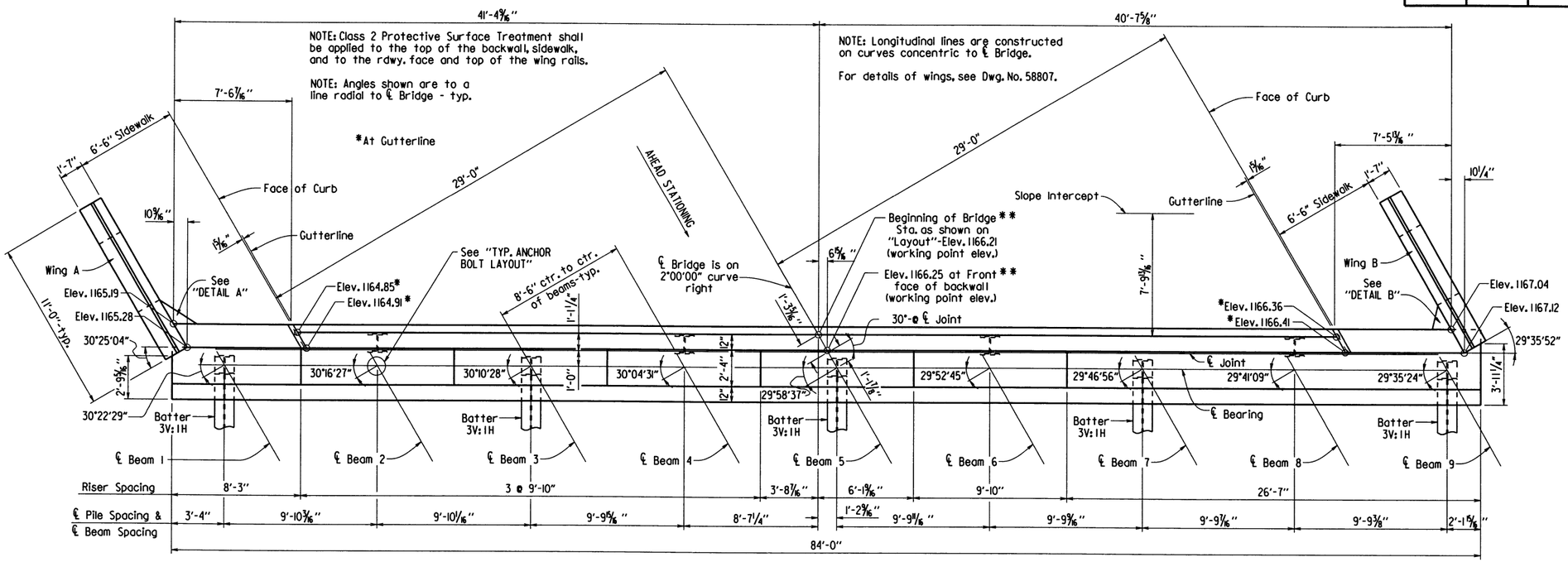
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 3-30-16 FILENAME: b090406_exa.dgn
CHECKED BY: SWP DATE: 9-13-16 SCALE: AS SHOWN
DESIGNED BY: DBS DATE: 7-15

BRIDGE NO. 07393 DRAWING NO. 58804

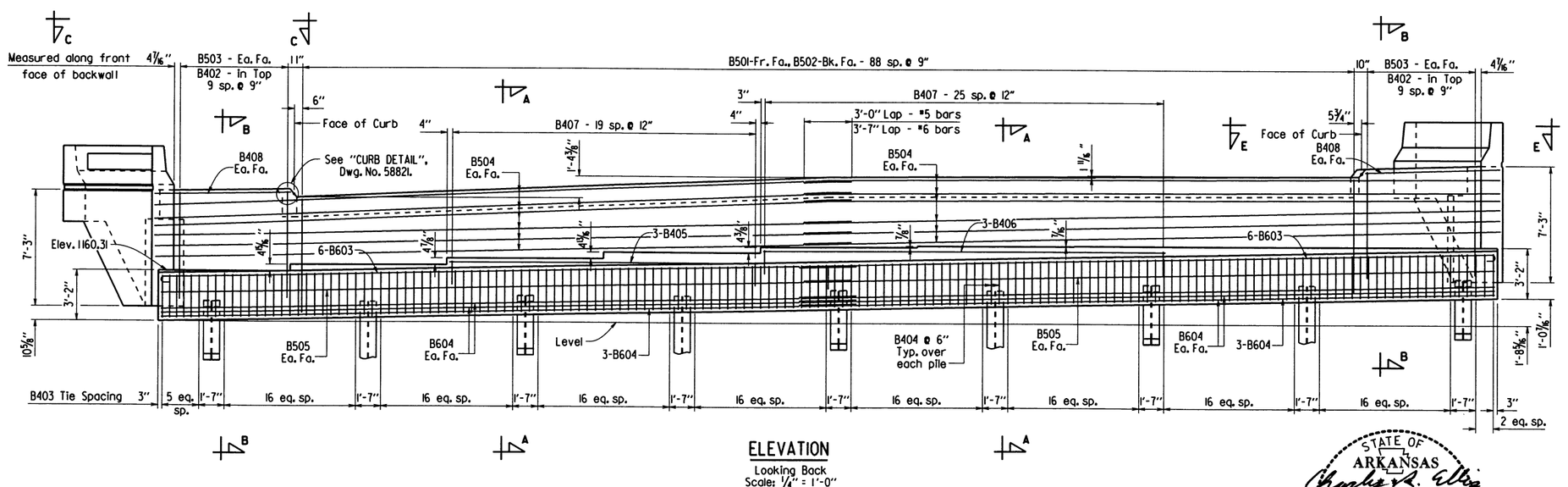
PRINT DATE: 9/13/2016

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	100	226
				①		07393 - BENT 1 - 58805		

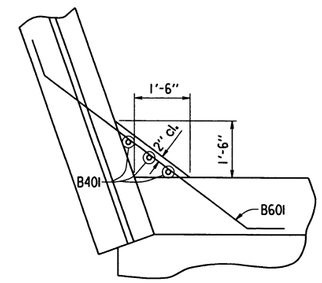


PLAN
Scale: 1/4" = 1'-0"

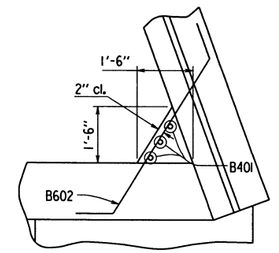
** See "ROUNDING DETAIL", Std. Dwg. No. 55007.



ELEVATION
Looking Back
Scale: 1/4" = 1'-0"



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



DETAIL B
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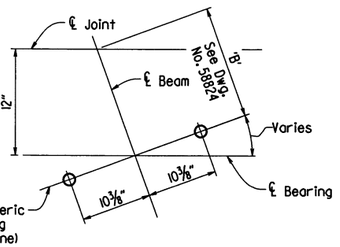


TYP. ANCHOR BOLT LAYOUT
No Scale
For details of elastomeric bearings, See Dwg. No. 58835 & 58836.

Note: The profile of the backwall angle shall be established based on the vertical curve in conjuction with the skew.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-2-16
CHARLES R. ELLIS
BRIDGE ENGINEER

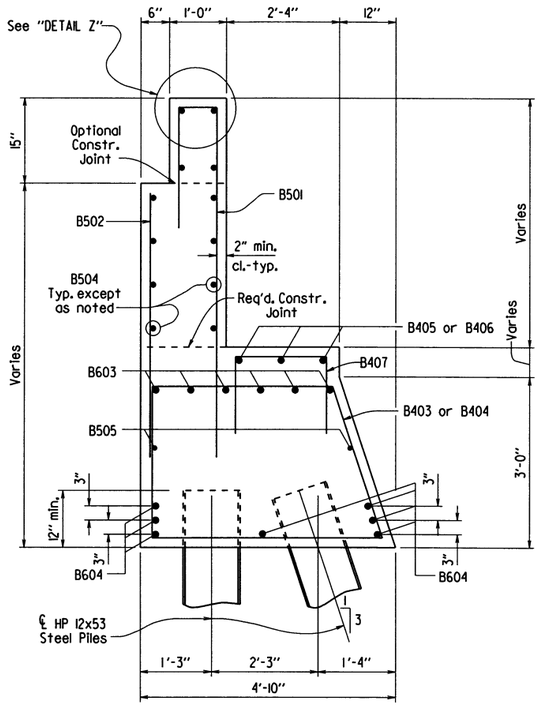
SHEET 1 OF 3
DETAILS OF BENT 1

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

DRAWN BY: DBS DATE: 03-08-16 FILENAME: b090406.bl.dgn
CHECKED BY: CSR DATE: 4/29/16 SCALE: AS NOTED
DESIGNED BY: DBS DATE: 4/11
BRIDGE NO. 07393 DRAWING NO. 58805

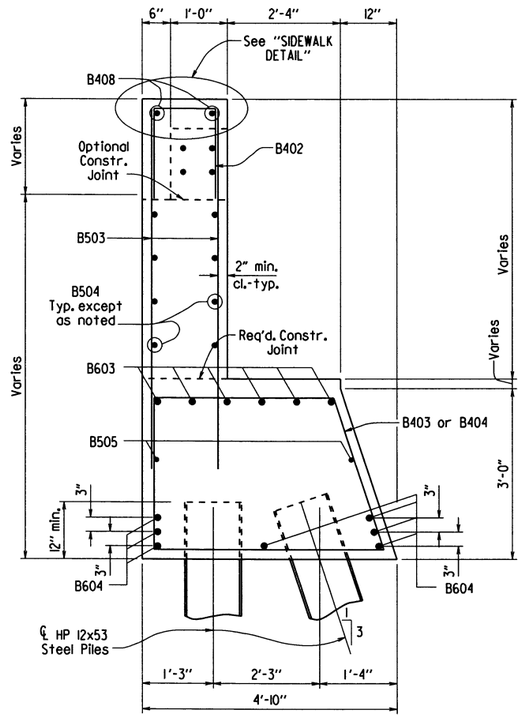
PRINT DATE: 4/29/2016

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		909406	101	226
				①	07393 - BENT 1 - 58806			



SECTION A-A

Scale: ¾" = 1'-0"



SECTION B-B

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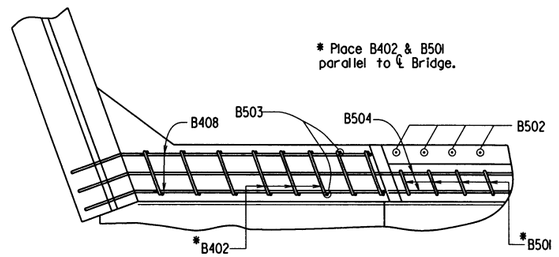
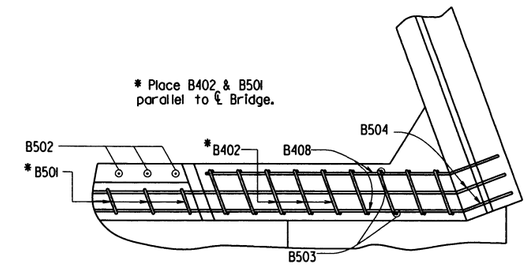


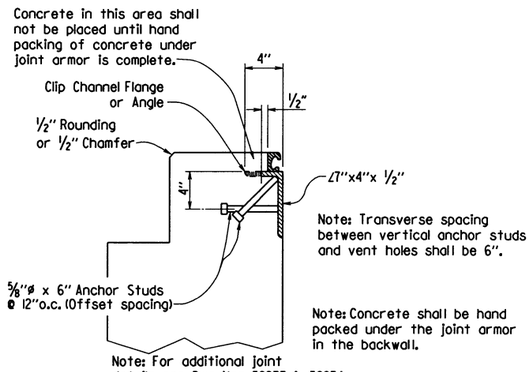
VIEW C-C

Scale: ½" = 1'-0"



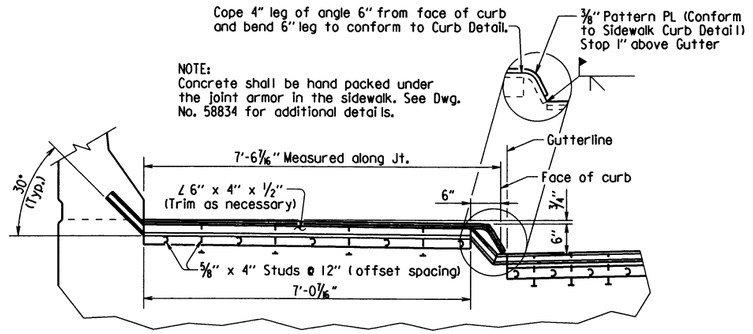
VIEW E-E

Scale: ½" = 1'-0"



DETAIL Z

No Scale



SIDEWALK DETAIL

No Scale

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-2-16
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 3
DETAILS OF BENT 1

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

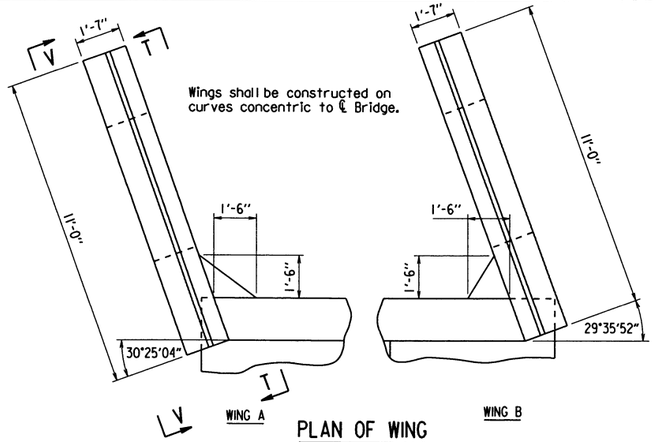
LITTLE ROCK, ARK.

DRAWN BY: DBS DATE: 03/08/16 FILENAME: b090406.bl.dgn
CHECKED BY: CRE DATE: 4/29/16 SCALE: AS NOTED
DESIGNED BY: DBS DATE: 4/16

BRIDGE NO. 07393 DRAWING NO. 58806

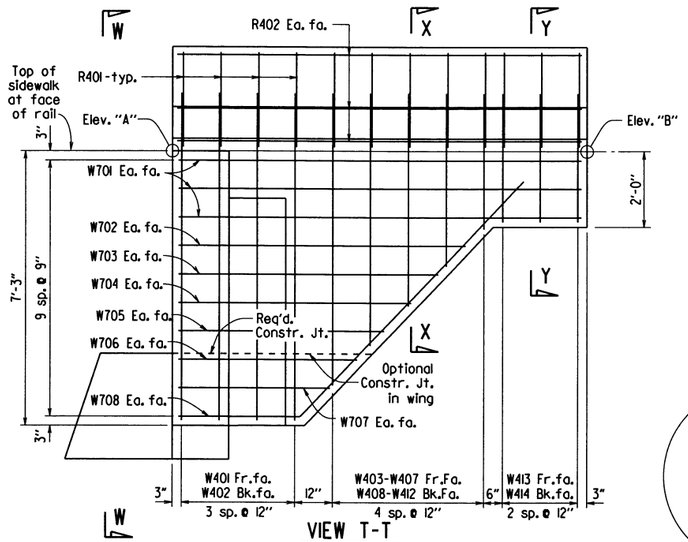
PRINT DATE: 4/29/2016

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	102	226
				07393 - BENT 1 - 58807				



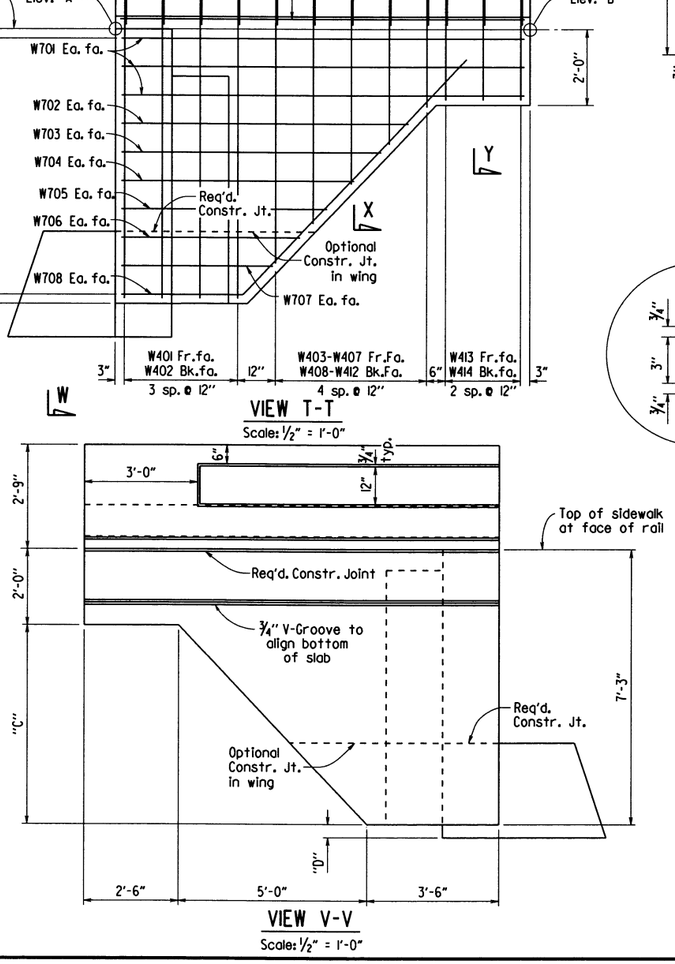
PLAN OF WING

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



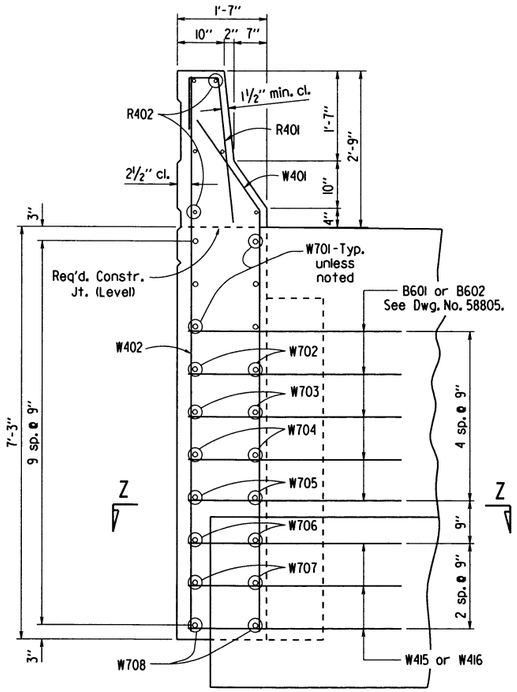
VIEW T-T

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



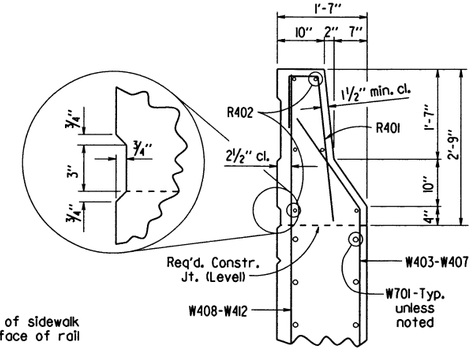
VIEW V-V

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



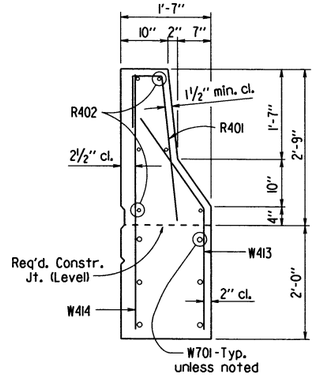
VIEW W-W

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



SECTION X-X

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



SECTION Y-Y

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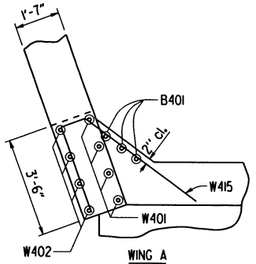
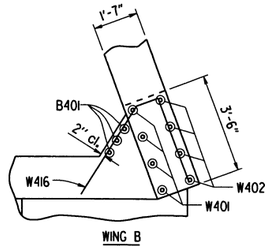




SECTION Z-Z

No Scale

TABLE OF VARIABLES

	Wing A	Wing B
Elev. "A"	1165.28	1167.12
Elev. "B"	1164.71	1166.66
"C"	4'-8 3/16"	4'-9 1/2"
"D"	10 5/16"	1'-0 1/16"

GENERAL NOTES

Structural steel in end bents shall be AASHTO M 270, Gr. 50W and shall be paid for as "Structural Steel in Beam Spans (M 270, Gr. 50W)".

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

No portion of the backwall shall be poured until the beams are in place. Refer to "Expansion Device Installation at End Bents" note, Dwg. No. 58833.

For additional information, See layout.

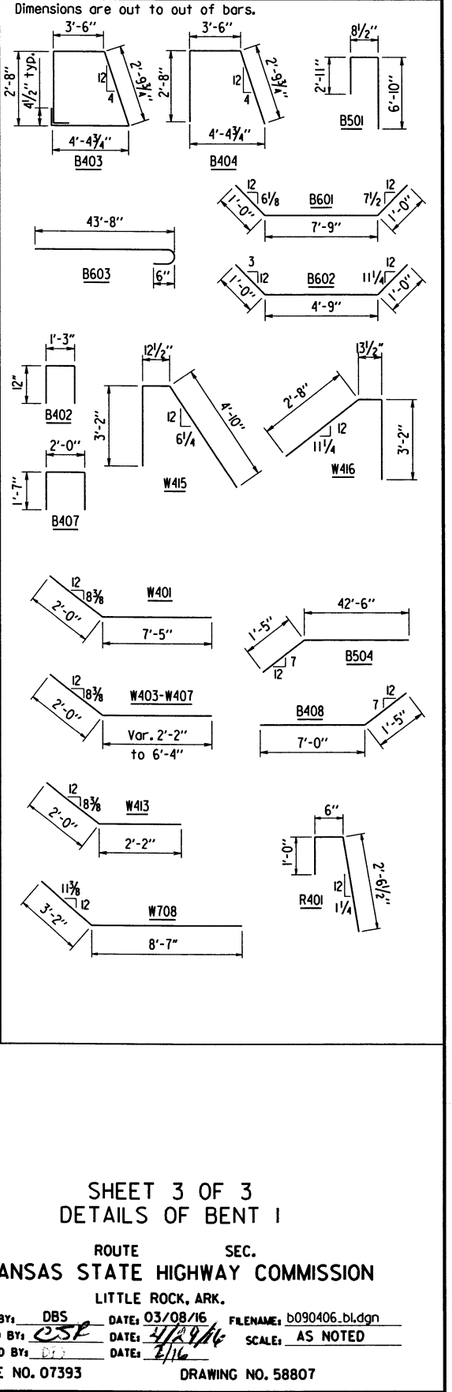
For additional notes, see Std. Dwg. No. 55006.

BAR LIST

MARK	NO. REQ'D.	LENGTH	P.D.
B401	6	5'-1"	Str.
B402	20	3'-1"	2"
B403	145	13'-9"	2"
B404	18	8'-10"	2"
B405	3	19'-5"	Str.
B406	3	25'-4"	Str.
B407	46	5'-0"	2"
B408	4	8'-4"	3"
R401	24	3'-11"	2"
R402	12	10'-8"	Str.
W401	8	9'-4"	2"
W402	8	9'-8"	Str.
W403-W407	2 each	Var. 4'-2" to 8'-4"	2"
W408-W412	2 each	Var. 4'-8" to 8'-8"	Str.
W413	6	4'-1"	2"
W414	6	4'-5"	Str.
W415	3	8'-11"	2"
W416	3	6'-10"	2"
B501	89	10'-3"	2½"
B502	89	5'-7"	Str.
B503	40	6'-9"	Str.
B504	24	43'-11"	3¾"
B505	4	43'-4"	Str.
B601	5	9'-6"	4½"
B602	5	6'-6"	4½"
B603	12	44'-4"	4½"
B604	14	43'-8"	Str.
W701	12	10'-8"	Str.
W702	4	7'-7"	Str.
W703	4	6'-10"	Str.
W704	4	6'-1"	Str.
W705	4	5'-5"	Str.
W706	4	4'-8"	Str.
W707	4	4'-0"	Str.
W708	4	11'-6"	5¼"

BENDING DIAGRAMS

Dimensions are out to out of bars.



GENERAL NOTES

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-2-16
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 3 OF 3
DETAILS OF BENT 1

ROUTE SEC.

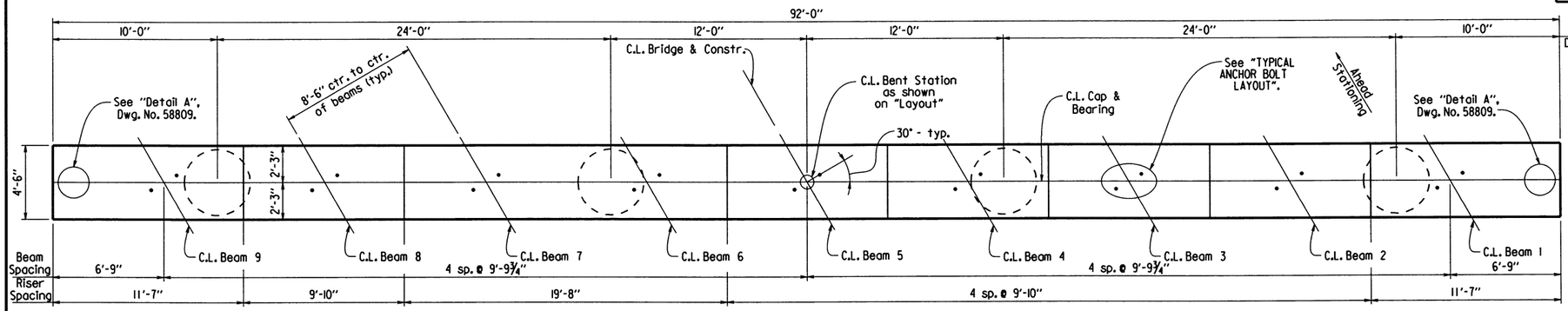
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

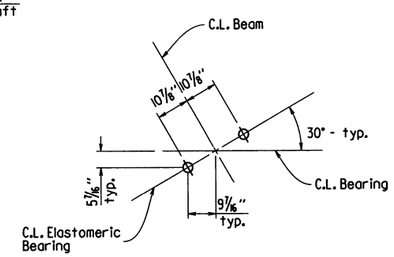
DRAWN BY: DBS DATE: 03/08/16 FILENAME: b090406_bl.dgn
CHECKED BY: CSR DATE: 4/29/16 SCALE: AS NOTED
DESIGNED BY: DBS DATE: 2/16

BRIDGE NO. 07393 DRAWING NO. 58807

PRINT DATE: 4/29/2016

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	103	226
				①		07393 - INT. BENTS - 58808		





TYPICAL ANCHOR BOLT LAYOUT

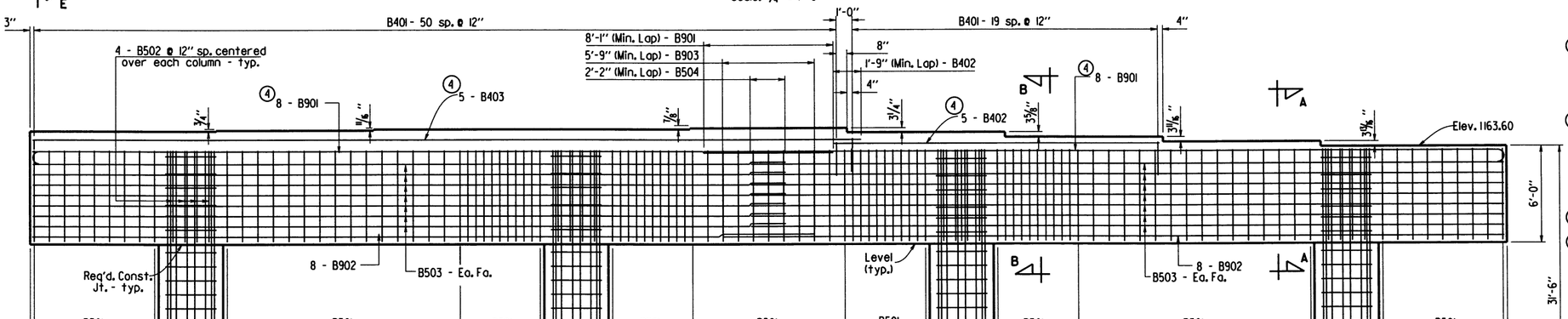
Not to Scale

For Details of Elastomeric Bearings, See Dwg. Nos. 58835 & 58836.

For Details of Sections A-A and B-B and View E-E, See Dwg. No. 58809.

PLAN

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



Note: For additional details of reinforcing in columns and drilled shafts, see Dwg. No. 58809.

ELEVATION

Looking Ahead

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

① Length of Permanent Casing shown is for estimating quantities only. Actual lengths are to be determined in the field. See Special Provision Job No. 090406 "Drilled Shaft Foundations". Permanent casing shall not extend below top of competent rock without approval from the Engineer.

② The column reinforcing cage, consisting of bars C501 and C901, may be placed before or after concrete placement in the shaft is complete. Vibration of concrete in the top 10 feet of the shaft will be needed to ensure the consolidation of the concrete around the reinforcing steel and to insert the column reinforcing cage. The Contractor will be responsible for obtaining satisfactory results.

③ Minimum penetration into competent rock below permanent casing.

④ Reinforcing bars in top of cap shall be properly placed to avoid interference with anchor bolts or sheet metal sleeves.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
6-7-16
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 1 OF 2
DETAILS OF BENT 2

ROUTE SEC.

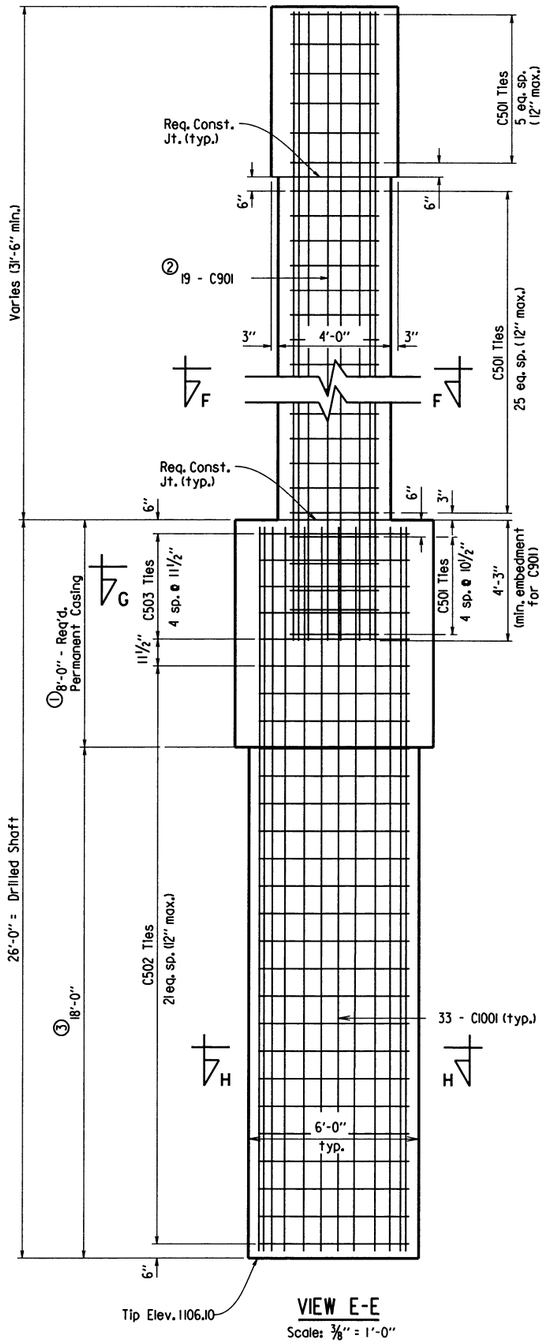
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: HS DATE: 3/30/2016 FILENAME: b090406_b2.dgn
CHECKED BY: DBB DATE: 6/7/16 SCALE: AS NOTED
DESIGNED BY: DBB DATE: 3/16

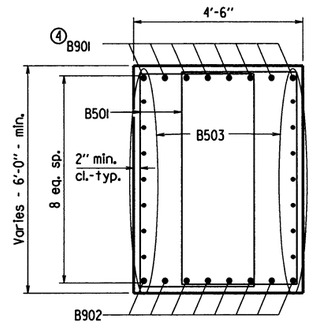
BRIDGE NO. 07393 DRAWING NO. 58808

PRINT DATE: 6/7/2016

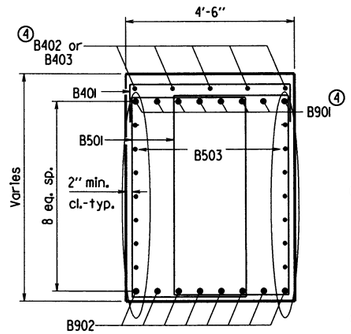
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	104	226
				07393		- INT. BENTS - 58809		



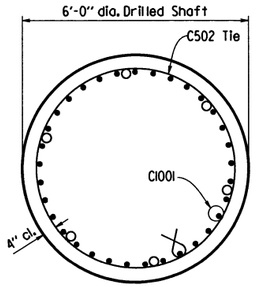
VIEW E-E
Scale: 3/8" = 1'-0"



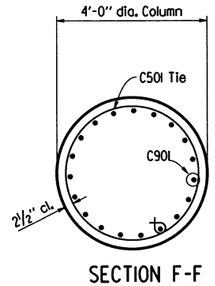
SECTION A-A
Scale: 1/2" = 1'-0"



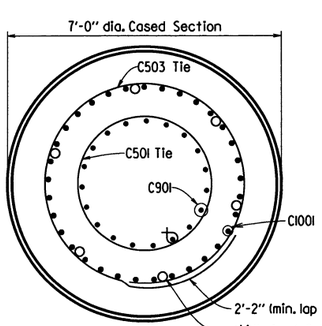
SECTION B-B
Scale: 1/2" = 1'-0"



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



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



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

① Length of Permanent Casing shown is for estimating quantities only. Actual lengths are to be determined in the field. See Special Provision Job No. 090406 "Drilled Shaft Foundations". Permanent casing shall not extend below top of competent rock without approval from the Engineer.

② The column reinforcing cage, consisting of bars C501 and C901, may be placed before or after concrete placement in the shaft is complete. Vibration of concrete in the top 10 feet of the shaft will be needed to ensure the consolidation of the concrete around the reinforcing steel and to insert the column reinforcing cage. The Contractor will be responsible for obtaining satisfactory results.

③ Minimum penetration into competent rock below permanent casing.

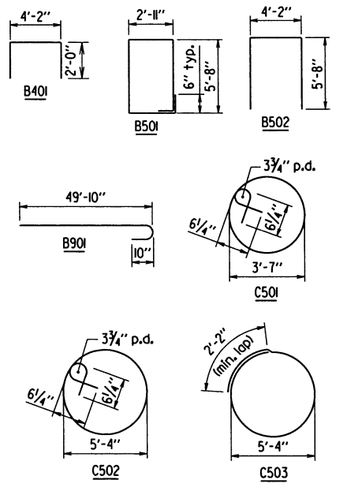
④ Reinforcing bars in top of cap shall be properly placed to avoid interference with anchor bolts or sheet metal sleeves.

⑤ Non-pay item - Subsidiary to SP Job No. 090406 "Drilled Shaft Foundations".

BAR LIST

MARK	NO. REQ'D.	LENGTH	P.D.
B401	71	8'-0"	2"
B402	5	20'-4"	Str.
B403	5	51'-10"	Str.
B501	202	17'-8"	2½"
B502	16	15'-4"	2½"
B503	28	47'-0"	Str.
B901	16	51'-1"	9"
B902	16	48'-9"	Str.
C501	148	12'-8"	3¾"
⑤ C502	88	18'-2"	3¾"
⑤ C503	20	18'-10"	3¾"
C901	76	35'-0"	Str.
⑤ C1001	132	25'-8"	Str.

BENDING DIAGRAMS
Dimensions are out to out of bars.

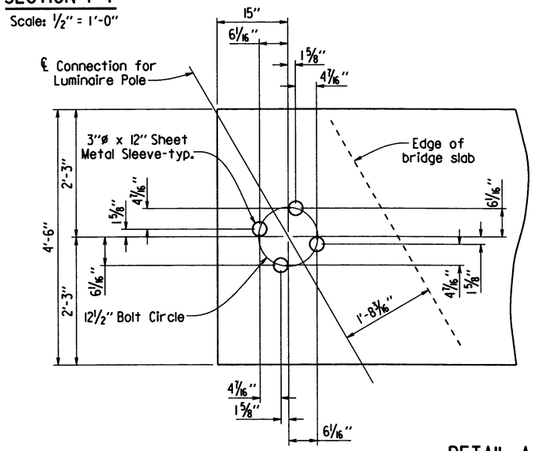


GENERAL NOTES

For additional information see Layout.

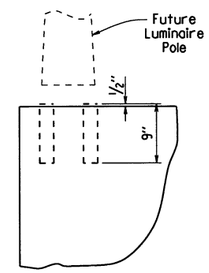
For additional notes, see Std. Dwg. No. 55006.

Drilled shafts shall conform to SP Job No. 090406 "Drilled Shaft Foundations".



PLAN

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



ELEVATION

3"ø x 9" Galvanized Sheet Metal Sleeves shall be cast in place as shown for future anchor bolts for luminaire pole. Sleeves shall be dry packed with styrofoam, urethane foam or approved equal prior to pouring of concrete. Cap reinforcing shall be properly placed to avoid interference with the sheet metal sleeves. After pouring of the cap, the dry pack shall be removed and the sleeves shall be filled with a OPL approved, non-shrink grout. Galvanized Sheet Metal Sleeves will not be paid for directly, but will be considered subsidiary to the item "Class S Concrete-Bridge".

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9235
6-7-16
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 2 OF 2
DETAILS OF BENT 2

ROUTE SEC.

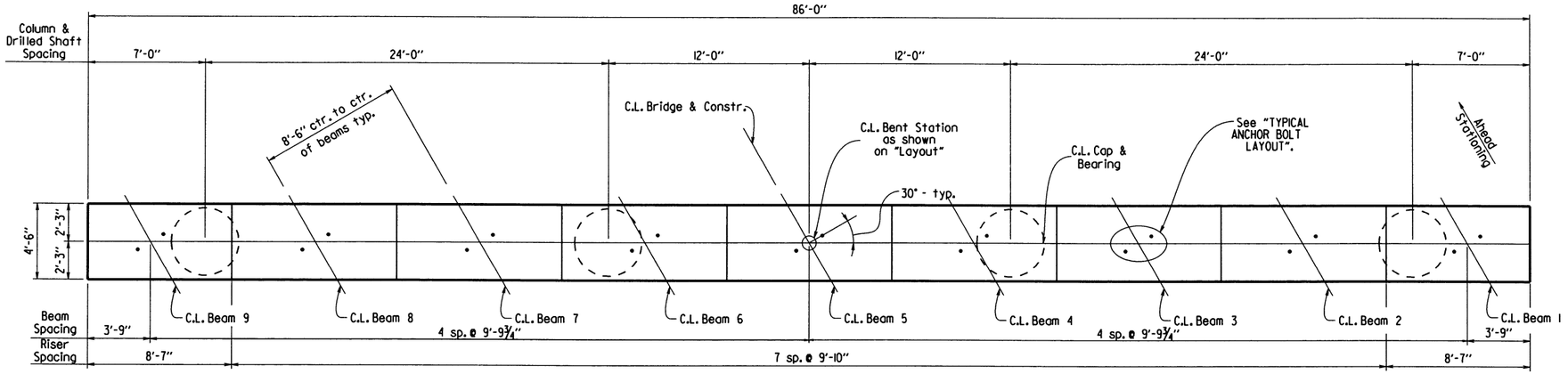
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

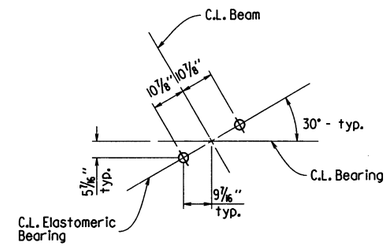
DRAWN BY: HS DATE: 3/30/2016
CHECKED BY: DBJ DATE: 6/7/16
DESIGNED BY: DBJ DATE: 2/16
FILENAME: b090406_b2.dgn
SCALE: AS NOTED

BRIDGE NO. 07393 DRAWING NO. 58809

PRINT DATE: 6/7/2016

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	105	226
				①	07393 - INT. BENTS - 58810			





TYPICAL ANCHOR BOLT LAYOUT

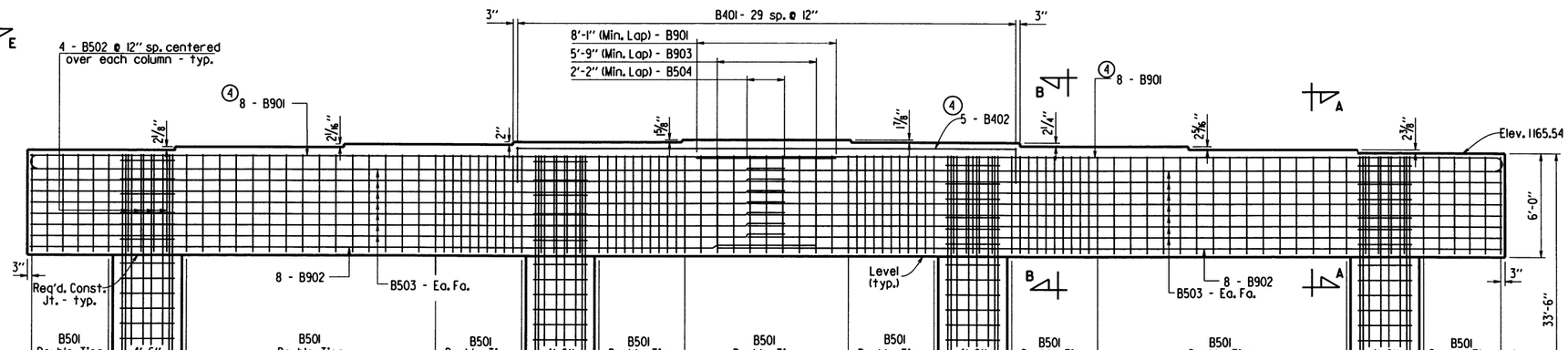
Not to Scale

For Details of Elastomeric Bearings, See Dwg. Nos. 58835 & 58836.

For Details of Section A-A and B-B and View E-E, See Dwg. No. 58811.

PLAN

Scale: ¼" = 1'-0"



Note: For additional details of reinforcing in columns and drilled shafts, see Dwg. No. 58811.

ELEVATION

Looking Ahead

Scale: ¼" = 1'-0"

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STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-2-16
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 1 OF 2
DETAILS OF BENT 3

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

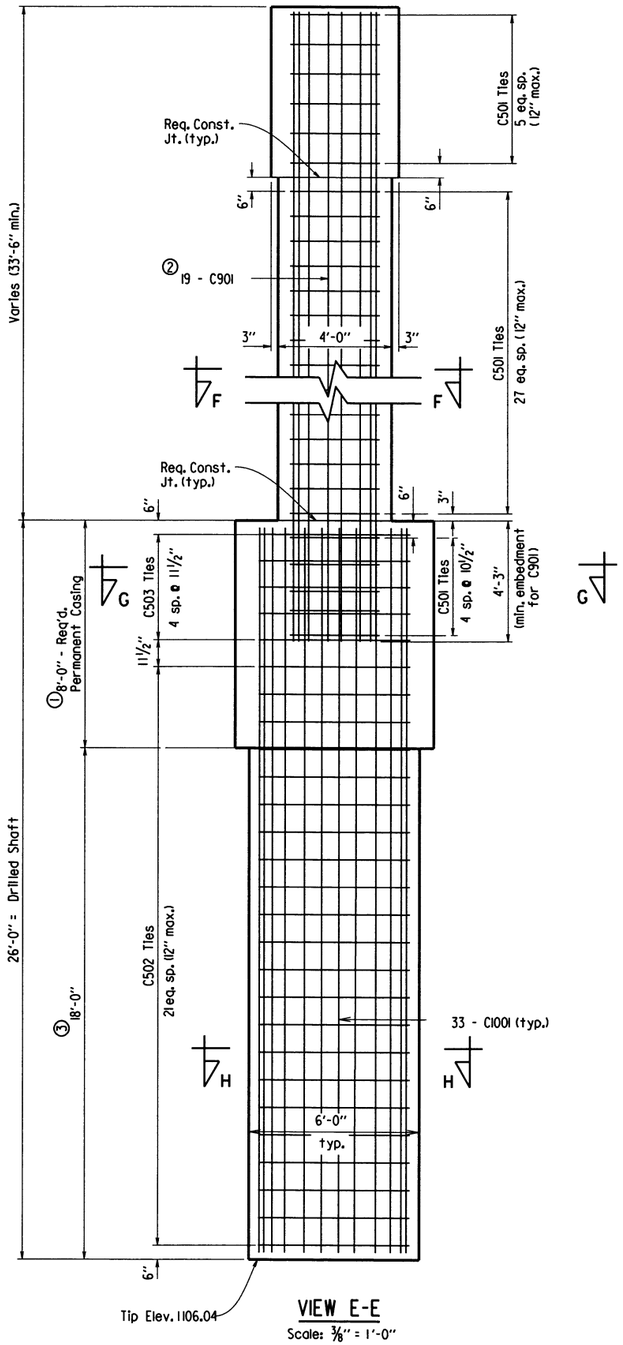
LITTLE ROCK, ARK.

DRAWN BY: HS DATE: 3/30/2016 FILENAME: b090406_b2.dgn
CHECKED BY: DBS DATE: 5/2/16 SCALE: AS NOTED
DESIGNED BY: DBS DATE: 3/16

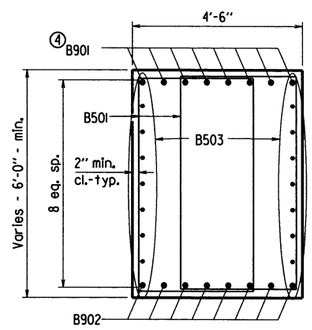
BRIDGE NO. 07393 DRAWING NO. 58810

PRINT DATE: 5/2/2016

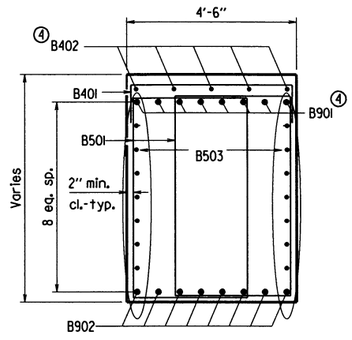
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	106	226
				07393		- INT. BENTS - 58811		



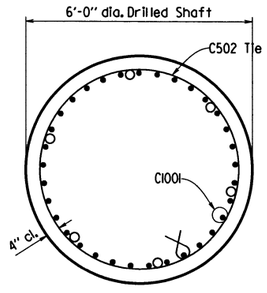
VIEW E-E
Scale: 3/8" = 1'-0"



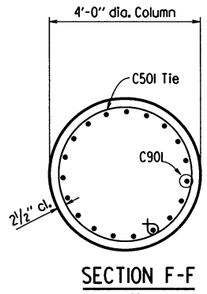
SECTION A-A
Scale: ½" = 1'-0"



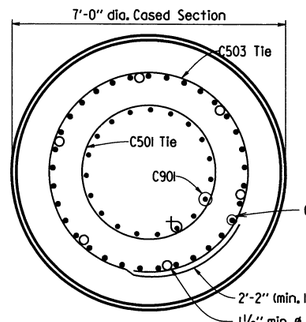
SECTION B-B
Scale: ½" = 1'-0"



SECTION H-H
Scale: ½" = 1'-0"



SECTION F-F
Scale: ½" = 1'-0"



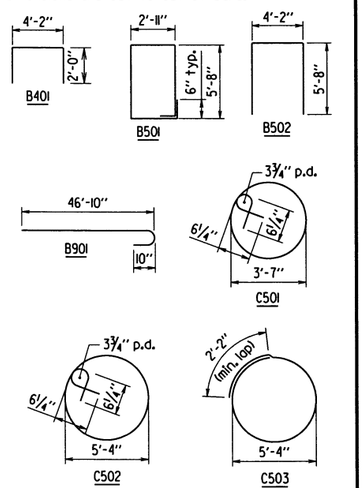
SECTION G-G
Scale: ½" = 1'-0"

BAR LIST

MARK	NO. REQ'D.	LENGTH	P.D.
B401	30	8'-0"	2"
B402	5	29'-3"	Str.
B501	190	17'-8"	2½"
B502	16	15'-4"	2½"
B503	28	44'-0"	Str.
B901	16	48'-1"	9"
B902	16	45'-9"	Str.
C501	156	12'-8"	3¾"
⑤ C502	88	18'-2"	3¾"
⑤ C503	20	18'-10"	3¾"
C901	76	37'-0"	Str.
⑤ C1001	132	25'-8"	Str.

BENDING DIAGRAMS

Dimensions are out to out of bars.



GENERAL NOTES

For additional information see Layout.

For additional notes, see Std. Dwg. No. 55006.

Drilled shafts shall conform to SP Job No. 090406 "Drilled Shaft Foundations".

① Length of Permanent Casing shown is for estimating quantities only. Actual lengths are to be determined in the field. See Special Provision Job No. 090406 "Drilled Shaft Foundations". Permanent casing shall not extend below top of competent rock without approval from the Engineer.

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⑤ Non-pay item - Subsidiary to SP Job No. 090406 "Drilled Shaft Foundations".

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-2-16
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 2 OF 2
DETAILS OF BENT 3

ROUTE SEC.

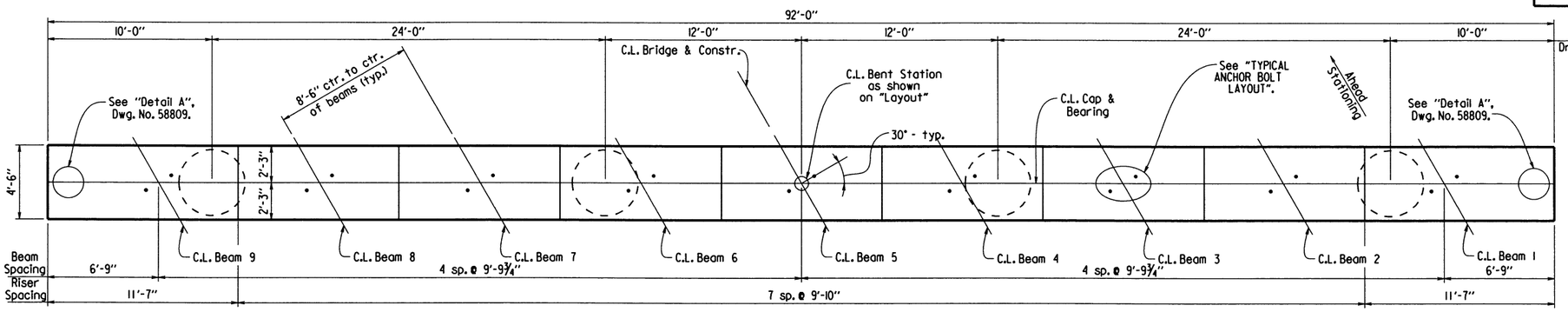
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: HS DATE: 3/30/2016
CHECKED BY: DBS DATE: 5/2/16
DESIGNED BY: DBS DATE: 3/16
FILENAME: b090406_b2.dgn
SCALE: AS NOTED

BRIDGE NO. 07393 DRAWING NO. 58811

PRINT DATE: 5/2/2016

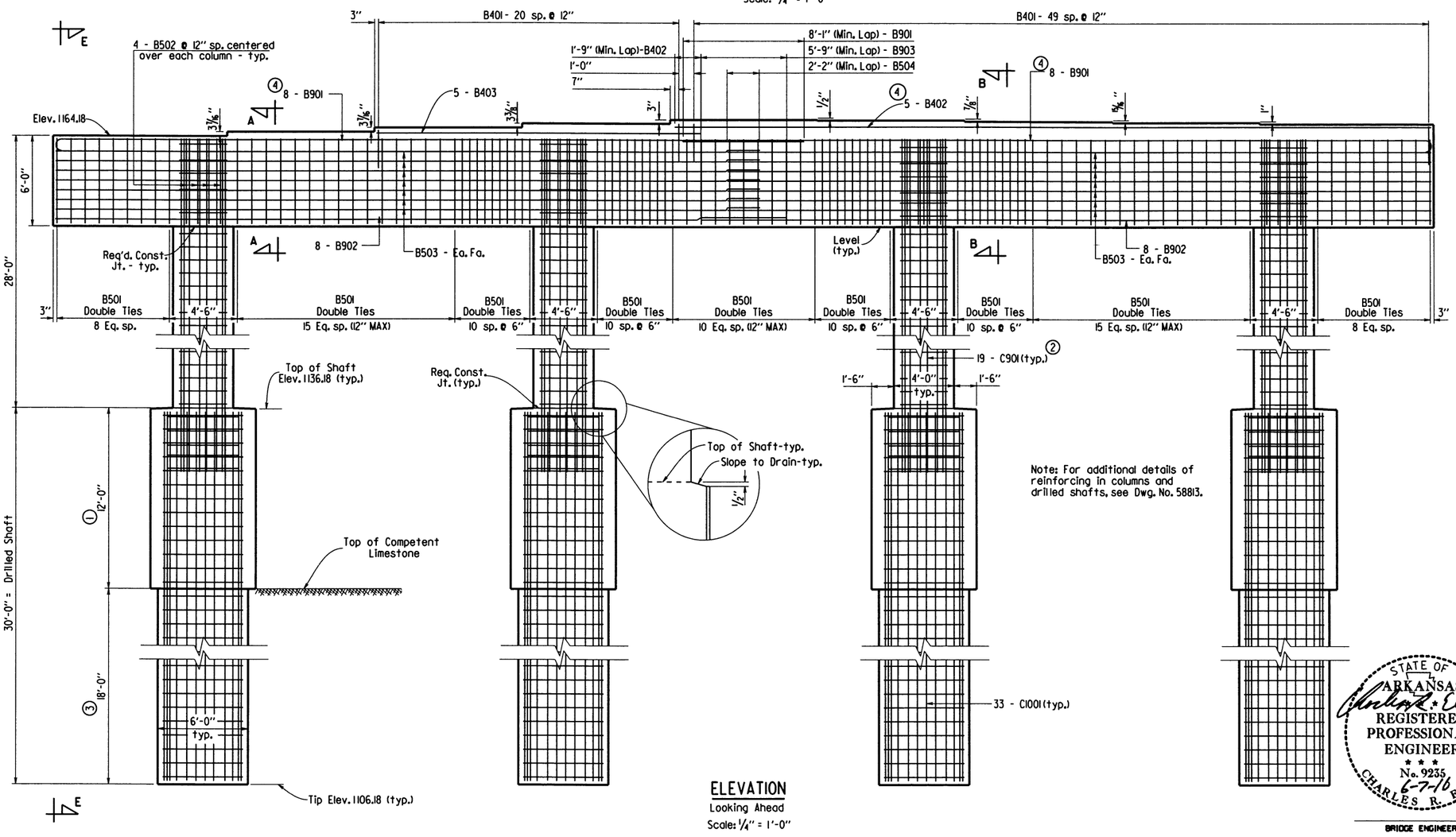
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	107	226
				①		07393 - INT. BENTS - 58812		



PLAN

Scale: ¼" = 1'-0"

For Details of Section A-A and B-B and View E-E, See Dwg. No. 58813.

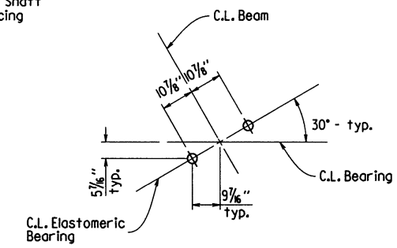


ELEVATION

Looking Ahead

Scale: ¼" = 1'-0"

Note: For additional details of reinforcing in columns and drilled shafts, see Dwg. No. 58813.



TYPICAL ANCHOR BOLT LAYOUT

Not to Scale

For Details of Elastomeric Bearings, See Dwg. Nos. 58835 & 58836.

① Length of Permanent Casing shown is for estimating quantities only. Actual lengths are to be determined in the field. See Special Provision Job No. 090406 "Drilled Shaft Foundations". Permanent casing shall not extend below top of competent rock without approval from the Engineer.

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STATE OF ARKANSAS
CHARLES R. ELLIS
REGISTERED PROFESSIONAL ENGINEER
No. 9235
6-7-16
BRIDGE ENGINEER

SHEET 1 OF 2
DETAILS OF BENT 4

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

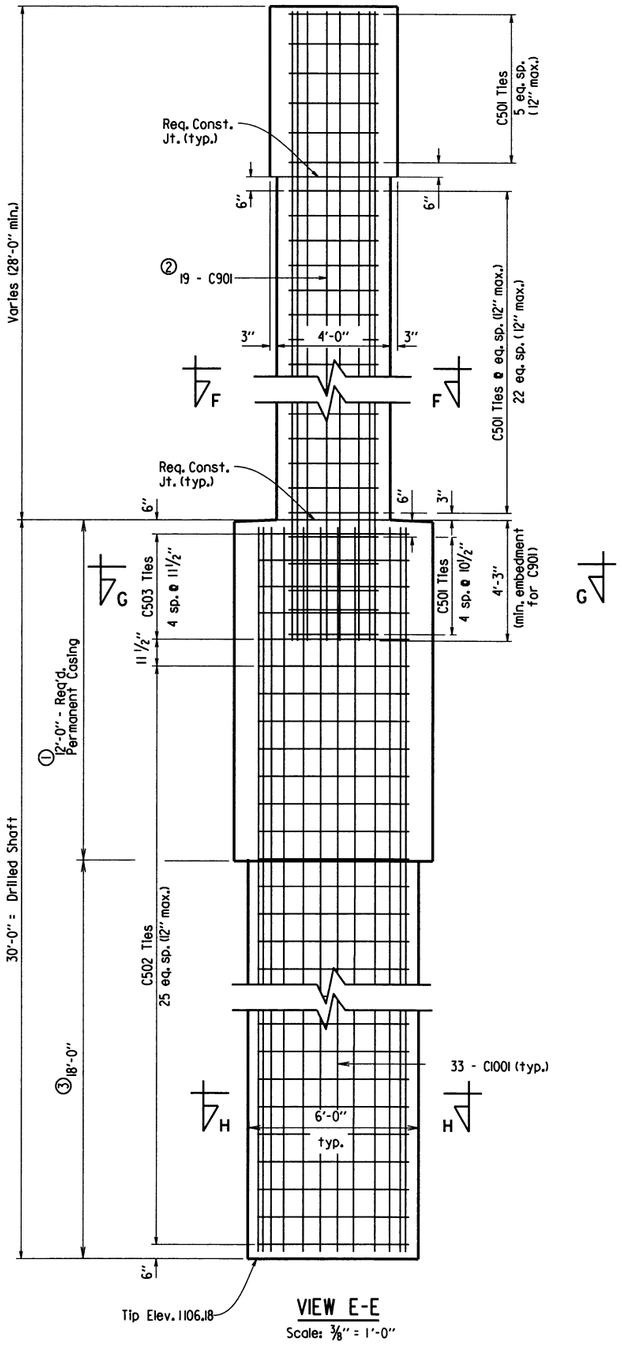
LITTLE ROCK, ARK.

DRAWN BY: HS DATE: 3/30/2016 FILENAME: b090406_b2.dgn
CHECKED BY: DBS DATE: 6/7/16 SCALE: AS NOTED
DESIGNED BY: DBS DATE: 3/16

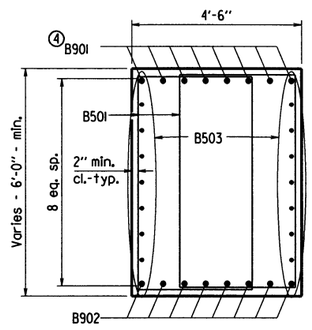
BRIDGE NO. 07393 DRAWING NO. 58812

PRINT DATE: 6/7/2016

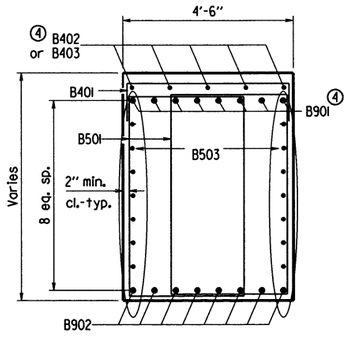
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	108	226
				07393 - INT. BENTS - 58813				



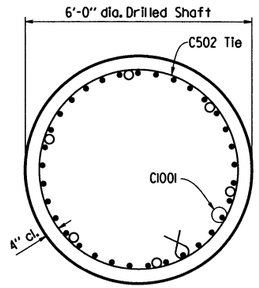
VIEW E-E
Scale: 3/8" = 1'-0"



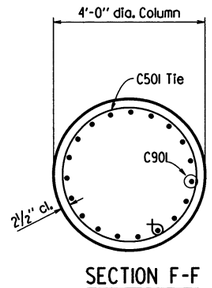
SECTION A-A
Scale: ½" = 1'-0"



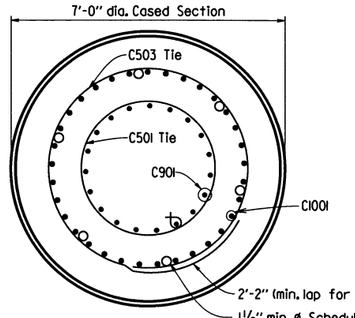
SECTION B-B
Scale: ½" = 1'-0"



SECTION H-H
Scale: ½" = 1'-0"



SECTION F-F
Scale: ½" = 1'-0"



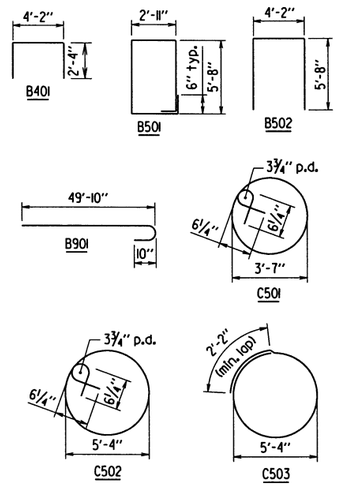
SECTION G-G
Scale: ½" = 1'-0"

BAR LIST

MARK	NO. REQ'D.	LENGTH	P.D.
B401	71	8'-8"	2"
B402	5	50'-7"	Str.
B403	5	21'-6"	Str.
B501	202	17'-8"	2½"
B502	16	15'-4"	2½"
B503	28	47'-0"	Str.
B901	16	51'-1"	9"
B902	16	48'-9"	Str.
C501	136	12'-8"	3¾"
⑤ C502	104	18'-2"	3¾"
⑤ C503	20	18'-10"	3¾"
C901	76	31'-6"	Str.
⑤ C1001	132	29'-8"	Str.

BENDING DIAGRAMS

Dimensions are out to out of bars.



GENERAL NOTES

For additional information see Layout.

For additional notes, see Std. Dwg. No. 55006.

Drilled shafts shall conform to SP Job No. 090406 "Drilled Shaft Foundations".

① Length of Permanent Casing shown is for estimating quantities only. Actual lengths are to be determined in the field. See Special Provision Job No. 090406 "Drilled Shaft Foundations". Permanent casing shall not extend below top of competent rock without approval from the Engineer.

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⑤ Non-pay item - Subsidiary to SP Job No. 090406 "Drilled Shaft Foundations".

STATE OF ARKANSAS
CHARLES R. ELLIS
REGISTERED PROFESSIONAL ENGINEER
No. 9235
6-7-16
BRIDGE ENGINEER

SHEET 2 OF 2
DETAILS OF BENT 4

ROUTE SEC.

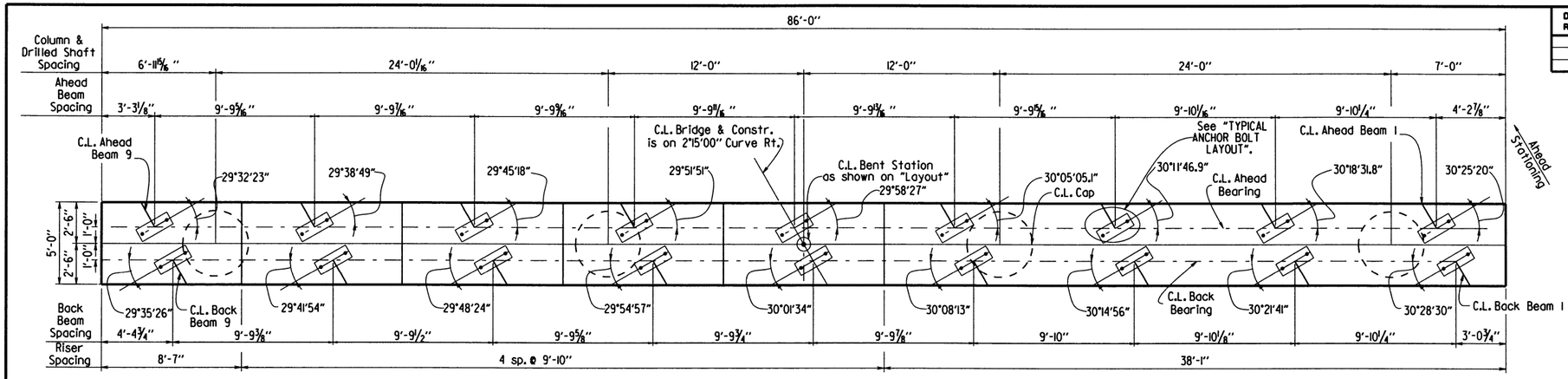
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

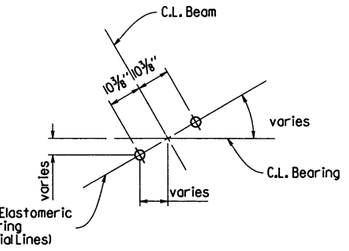
DRAWN BY: HS DATE: 3/30/2016 FILENAME: b090406_b2.dgn
CHECKED BY: DBS DATE: 6/7/16 SCALE: AS NOTED
DESIGNED BY: DBS DATE: 3/16

BRIDGE NO. 07393 DRAWING NO. 58813

PRINT DATE: 6/7/2016

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	109	226
				①	07393 - INT. BENTS - 58814			





TYPICAL ANCHOR BOLT LAYOUT

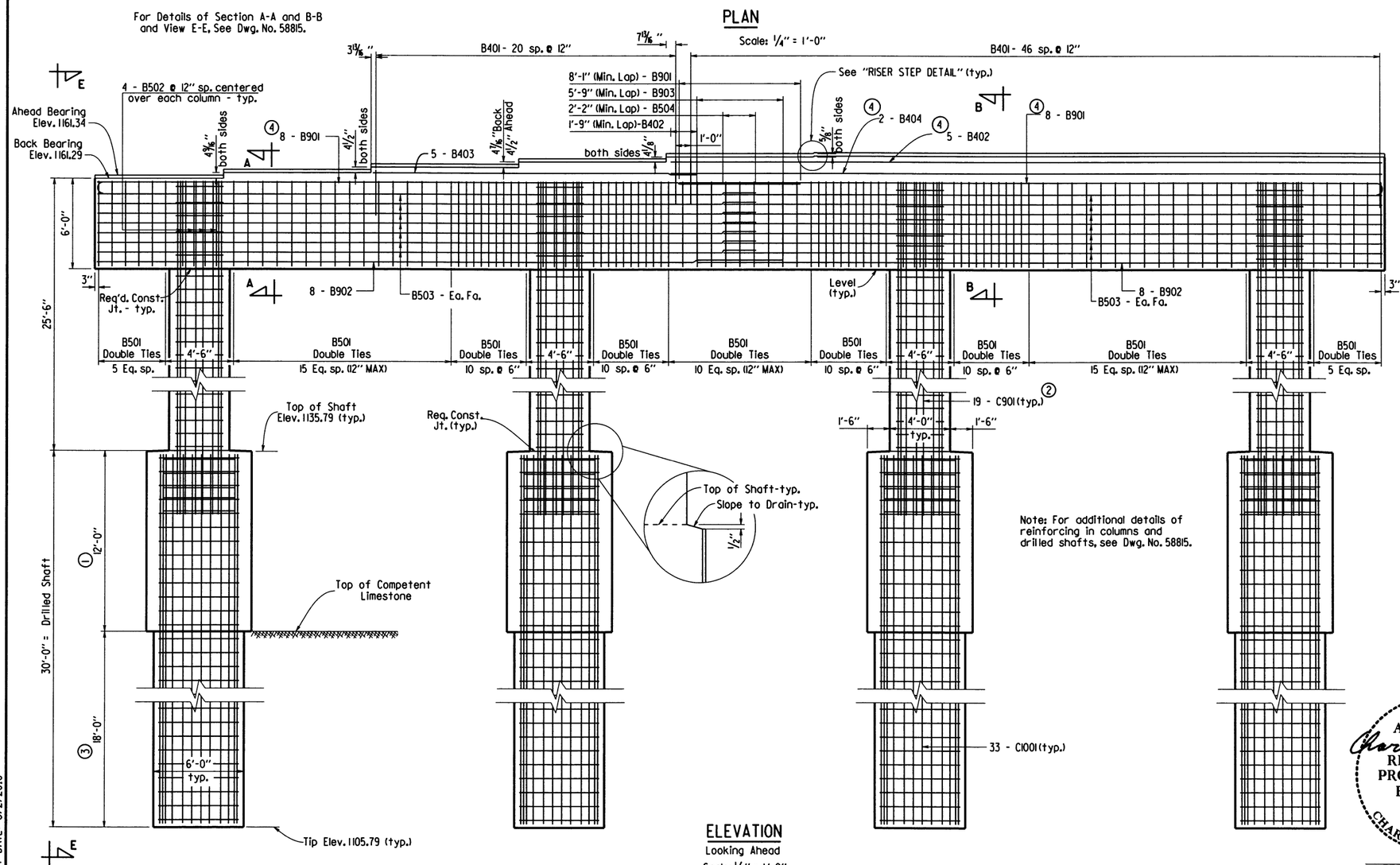
Not to Scale

For Details of Elastomeric Bearings, See Dwg. Nos. 58835 & 58836.

PLAN

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

For Details of Section A-A and B-B and View E-E, See Dwg. No. 58815.

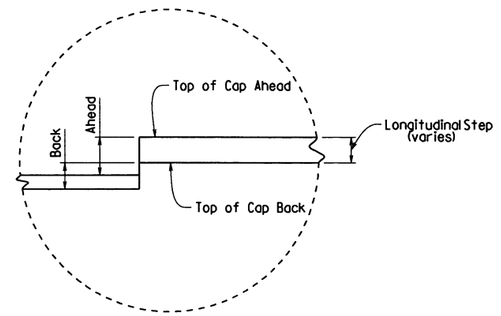


Note: For additional details of reinforcing in columns and drilled shafts, see Dwg. No. 58815.

ELEVATION

Looking Ahead

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



RISER STEP DETAIL

Looking Ahead
Not to Scale

① Length of Permanent Casing shown is for estimating quantities only. Actual lengths are to be determined in the field. See Special Provision Job No. 090406 "Drilled Shaft Foundations". Permanent casing shall not extend below top of competent rock without approval from the Engineer.

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STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-2-16
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 1 OF 2
DETAILS OF BENT 5

ROUTE SEC.

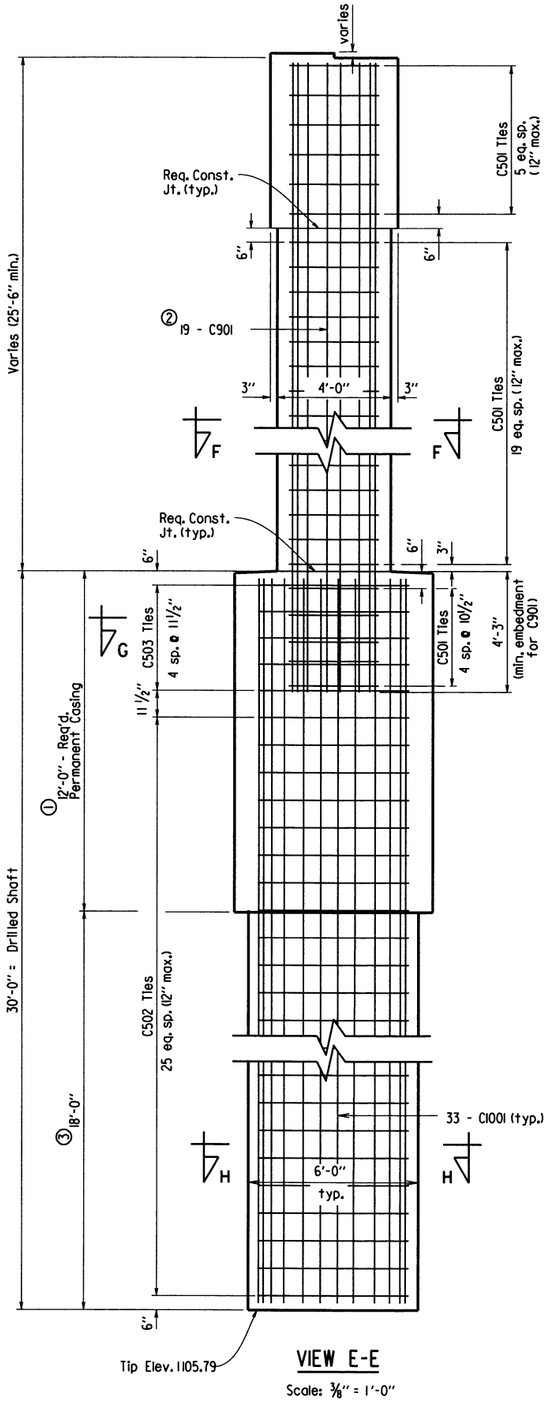
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: HS DATE: 3/30/2016 FILENAME: b090406_b2.dgn
CHECKED BY: DB2 DATE: 5/2/16 SCALE: AS NOTED
DESIGNED BY: DB2 DATE: 3/16

BRIDGE NO. 07393 DRAWING NO. 58814

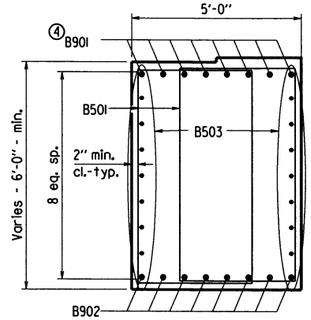
PRINT DATE: 5/2/2016

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	110	226
				07393		- INT. BENTS - 58815		



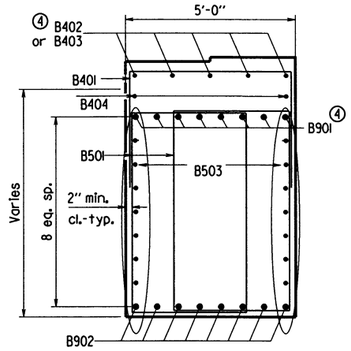
VIEW E-E

Scale: ⅜" = 1'-0"



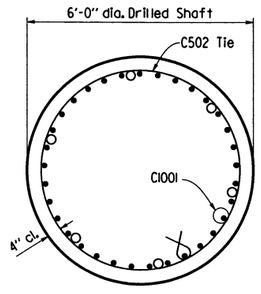
SECTION A-A

Scale: ½" = 1'-0"



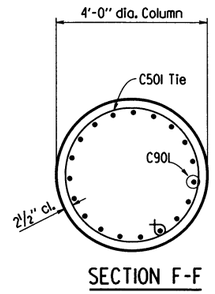
SECTION B-B

Scale: ½" = 1'-0"



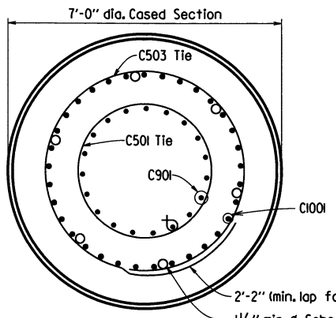
SECTION H-H

Scale: ½" = 1'-0"



SECTION F-F

Scale: ½" = 1'-0"



SECTION G-G

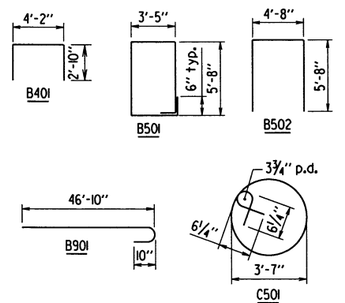
Scale: ½" = 1'-0"

BAR LIST

	MARK	NO. REQ'D.	LENGTH	P.D.
	B401	68	9'-8"	2"
	B402	5	47'-7"	Str.
	B403	5	21'-6"	Str.
	B404	2	47'-7"	Str.
	B501	190	18'-8"	2½"
	B502	16	15'-10"	2½"
	B503	28	44'-0"	Str.
	B901	16	48'-1"	9"
	B902	16	45'-9"	str.
	C501	124	12'-8"	3¾"
⑤	C502	104	18'-2"	3¾"
⑤	C503	20	18'-10"	3¾"
	C901	76	29'-0"	Str.
⑤	C1001	132	29'-8"	Str.

BENDING DIAGRAMS

Dimensions are out to out of bars.



GENERAL NOTES

For additional information see Layout.

For additional notes, see Std. Dwg. No. 55006.

Drilled shafts shall conform to SP Job No. 090406 "Drilled Shaft Foundations".

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STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-2-16
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 2
DETAILS OF BENT 5

ROUTE SEC.

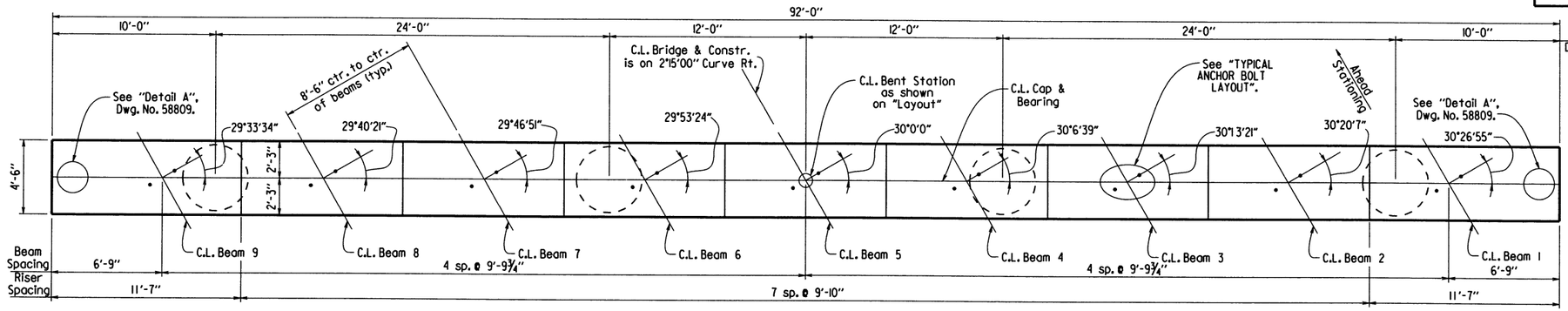
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

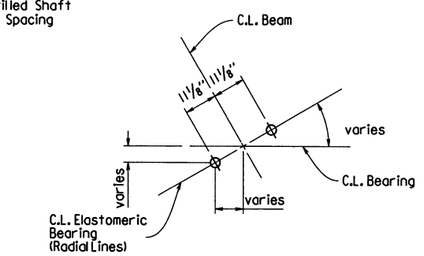
DRAWN BY: HS DATE: 3/30/2016
CHECKED BY: DBJ DATE: 5/2/16
DESIGNED BY: DBJ DATE: 3/16
FILENAME: b090406_b2.dgn
SCALE: AS NOTED

BRIDGE NO. 07393 DRAWING NO. 58815

PRINT DATE: 5/2/2016

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	///	226
				①		07393 - INT. BENTS - 58816		





TYPICAL ANCHOR BOLT LAYOUT

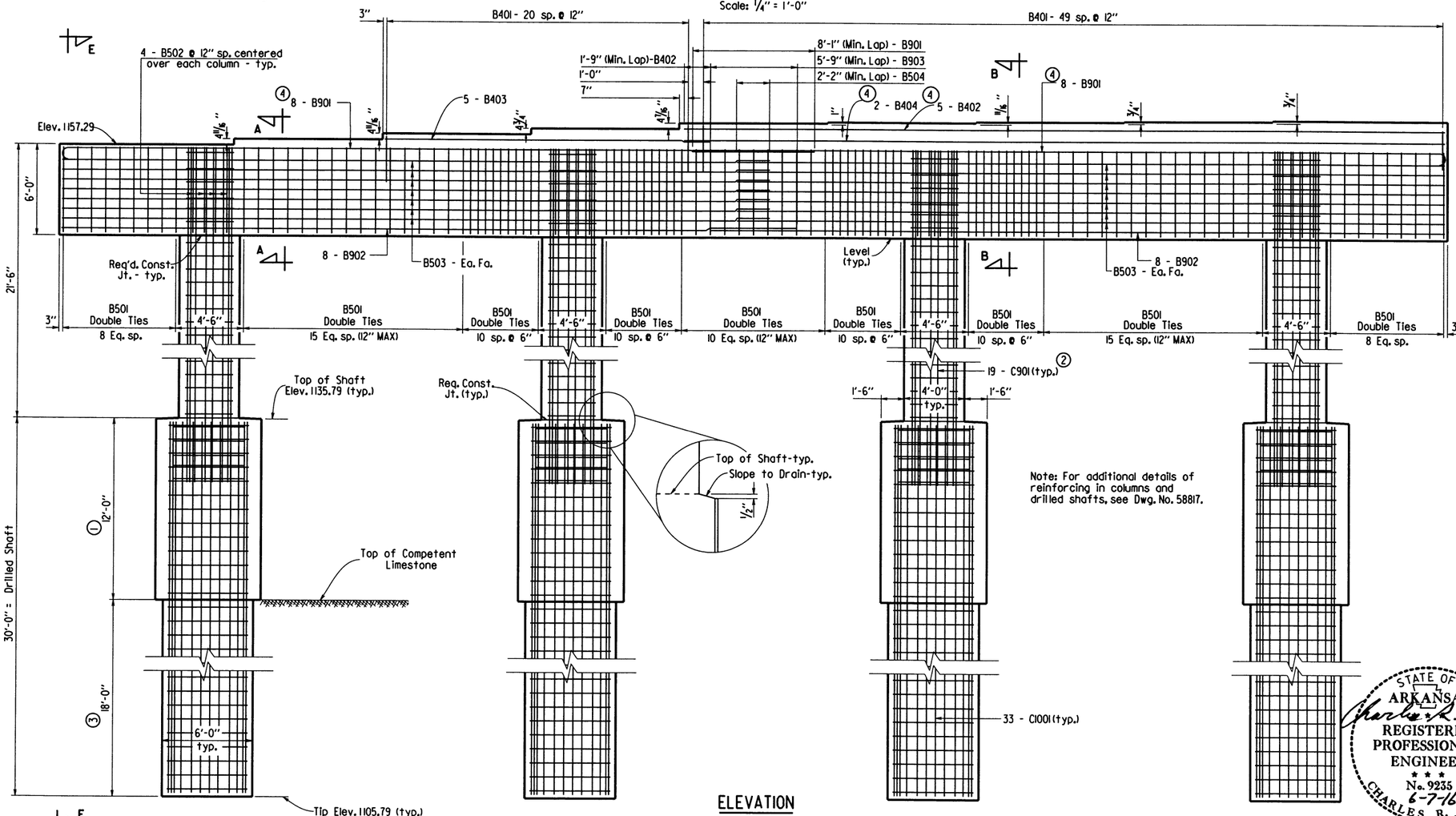
Not to Scale

For Details of Elastomeric Bearings, See Dwg. Nos. 58835 & 58836.

For Details of Section A-A and B-B and View E-E, See Dwg. No. 58817.

PLAN

Scale: ¼" = 1'-0"



Note: For additional details of reinforcing in columns and drilled shafts, see Dwg. No. 58817.

ELEVATION

Looking Ahead

Scale: ¼" = 1'-0"

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STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
6-7-16
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 1 OF 2
DETAILS OF BENT 6

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

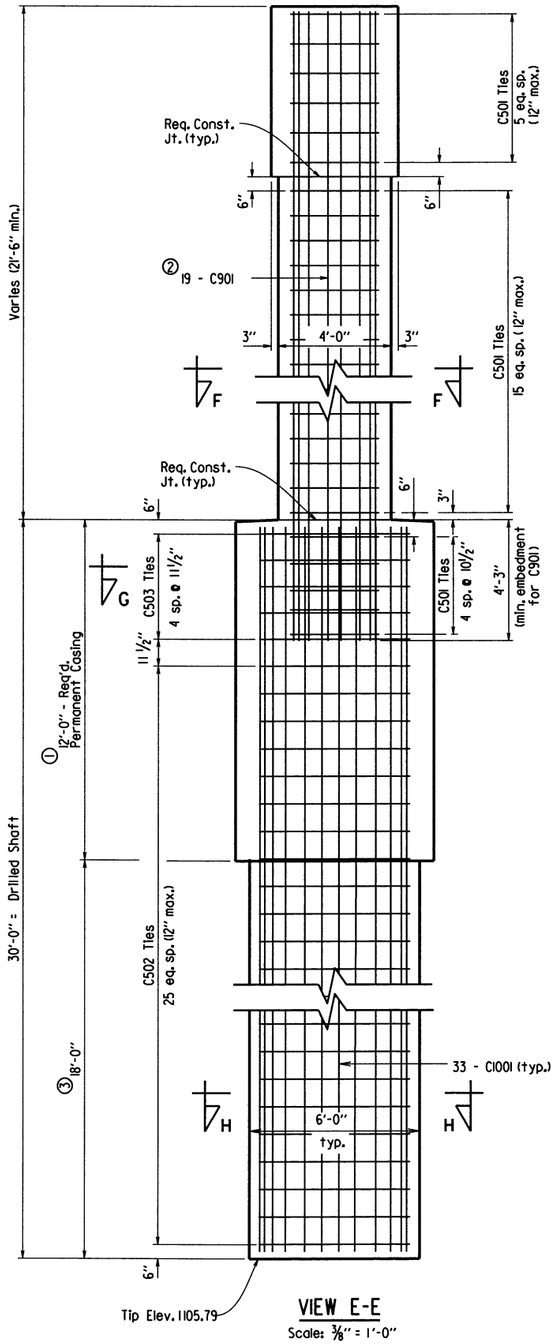
DRAWN BY: HS DATE: 3/30/2016 FILENAME: b090406.b2.dgn
CHECKED BY: DBS DATE: 6/7/16 SCALE: AS NOTED
DESIGNED BY: DBS DATE: 5/7/16

BRIDGE NO. 07393 DRAWING NO. 58816

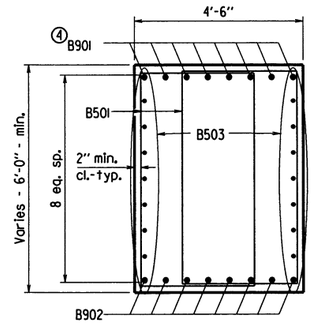
PRINT DATE: 6/7/2016

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

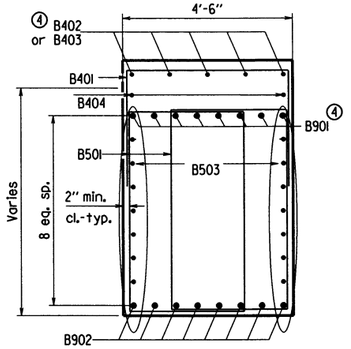
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		090406	112	226
07393		- INT. BENTS - 58817		



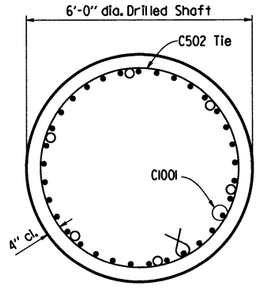
VIEW E-E
Scale: ⅜" = 1'-0"



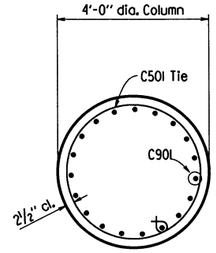
SECTION A-A
Scale: ½" = 1'-0"



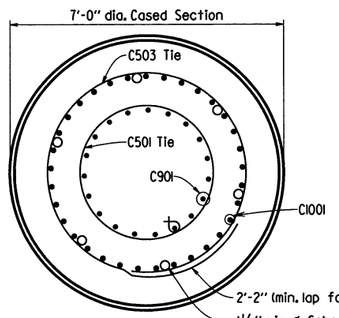
SECTION B-B
Scale: ½" = 1'-0"



SECTION H-H
Scale: ½" = 1'-0"



SECTION F-F
Scale: ½" = 1'-0"



SECTION G-G
Scale: ½" = 1'-0"

BAR LIST

MARK	NO. REQ'D.	LENGTH	P.D.
B401	71	9'-8"	2"
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B404	2	50'-7"	Str.
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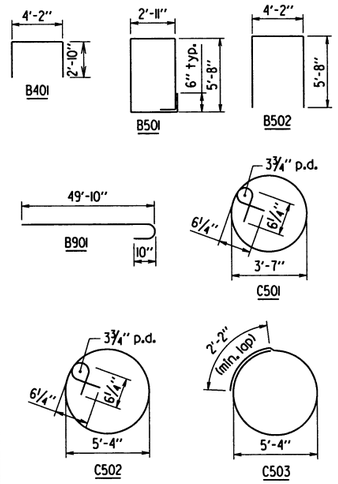
⑤ C1001	132	29'-8"	Str.

BENDING DIAGRAMS
Dimensions are out to out of bars.



GENERAL NOTES

For additional information see Layout.

For additional notes, see Std. Dwg. No. 55006.

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STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
6-7-16
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 2 OF 2
DETAILS OF BENT 6

ROUTE SEC.

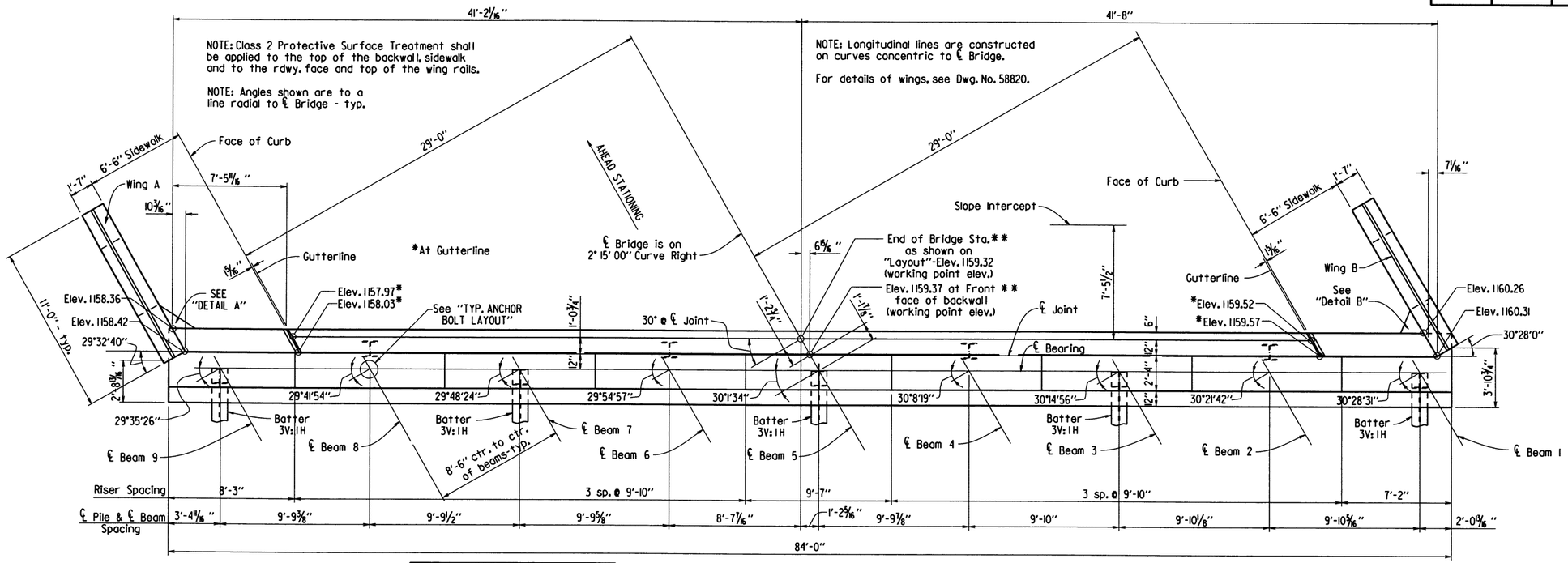
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: HS DATE: 3/30/2016 FILENAME: b090406_b2.dgn
CHECKED BY: DBS DATE: 6/7/16 SCALE: AS NOTED
DESIGNED BY: DBS DATE: 6/7/16

BRIDGE NO. 07393 DRAWING NO. 58817

PRINT DATE: 6/7/2016

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	113	226
				07393 - BENT 7 - 58818				

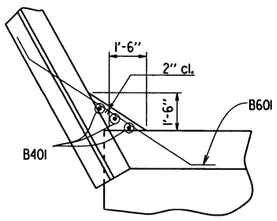


PLAN

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

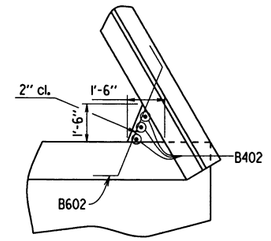
Note: The profile of the backwall angle shall be established based on the vertical curve in conjuction with the skew.

** See "ROUNDING DETAIL", Std. Dwg. No. 55007.



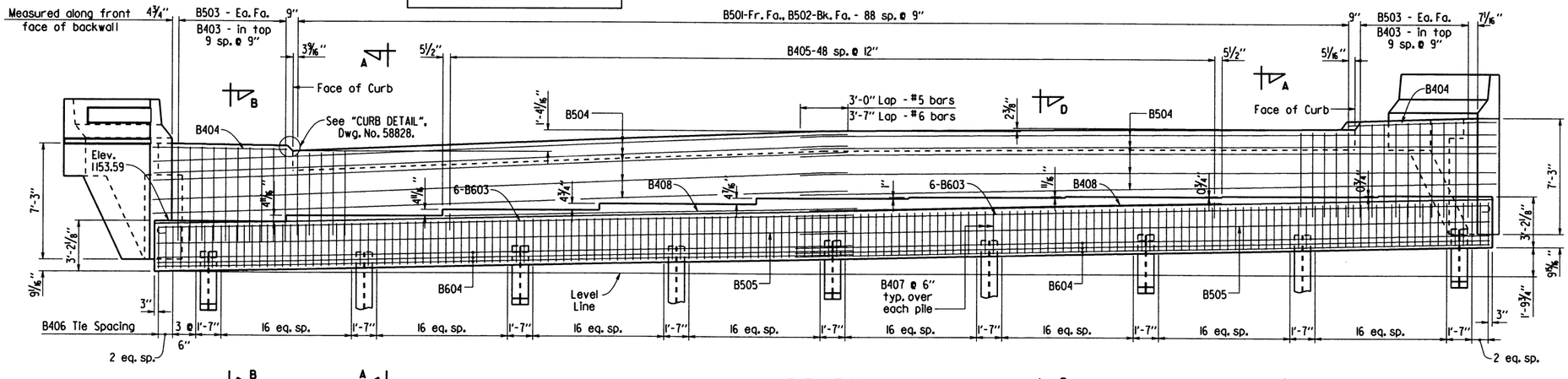
DETAIL A

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



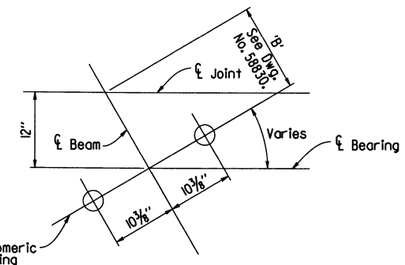
DETAIL B

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



ELEVATION

Looking Ahead
Scale: 1/4" = 1'-0"



TYP. ANCHOR BOLT LAYOUT

No Scale
For details of elastomeric bearings, See Dwg. Nos. 58835 & 58836.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-2-16
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 1 OF 3
DETAILS OF BENT 7

ROUTE SEC.

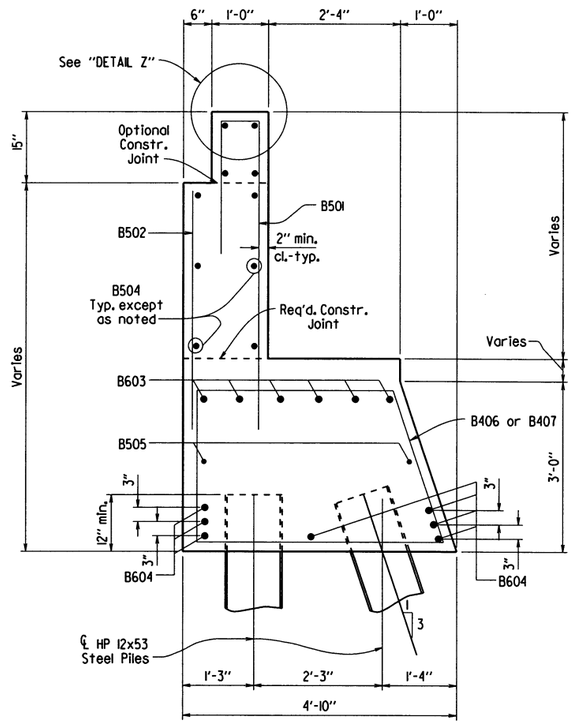
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CJR DATE: 3/8/16 FILENAME: b090406_b7.dgn
CHECKED BY: DBS DATE: 5/2/16 SCALE: AS NOTED
DESIGNED BY: DBS DATE: 3/16

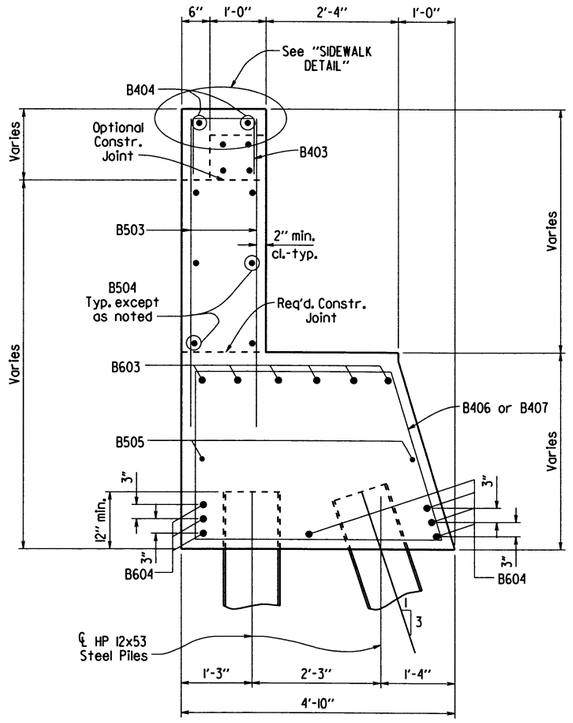
BRIDGE NO. 07393 DRAWING NO. 58818

PRINT DATE: 5/2/2016

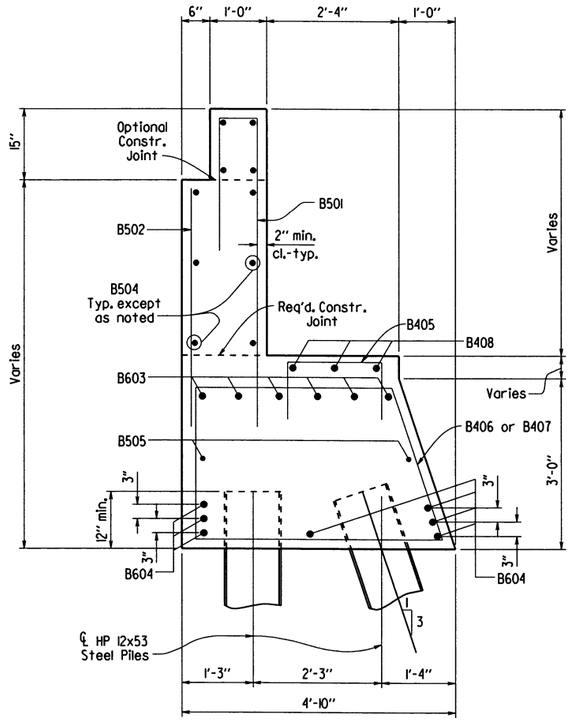
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	119	226
				(1) 07393 - BENT 7 - 58819				



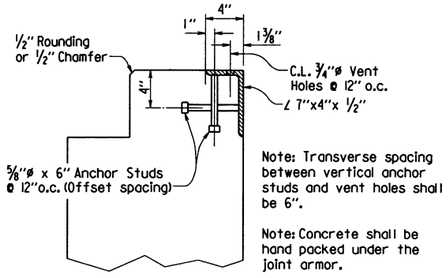
SECTION A-A
Scale: 3/4" = 1'-0"



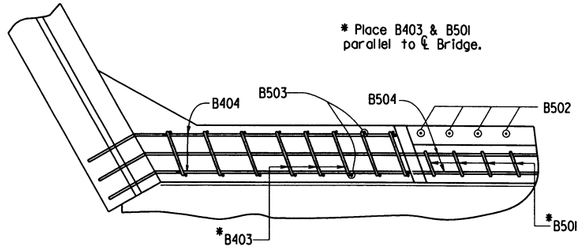
SECTION B-B
Scale: 3/4" = 1'-0"



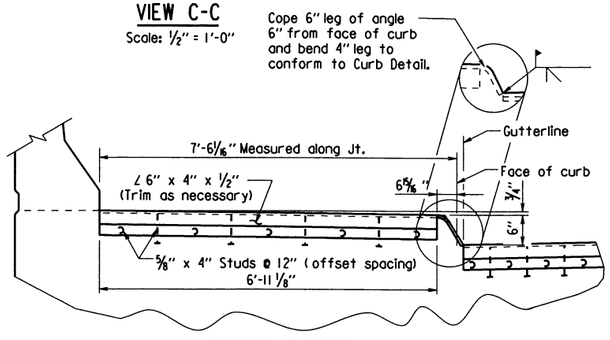
SECTION D-D
Scale: 3/4" = 1'-0"



DETAIL Z
No Scale



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



SIDEWALK DETAIL
No Scale

Concrete shall be hand packed under the joint armor in the sidewalk. See Std. Dwg. No. 55008 for additional details.

GENERAL NOTES

Structural steel in end bents shall be AASHTO M 270, Gr. 50W and shall be paid for as "Structural Steel in Beam Spans (M 270, Gr. 50W)".

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

No portion of the backwall shall be poured until the beams are in place. Refer to "Expansion Device Installation at End Bents" note, Std. Dwg. No. 55008.

For additional information, See layout.

For additional notes; See Std. Dwg. No. 55006.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-2-16
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 3
DETAILS OF BENT 7

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

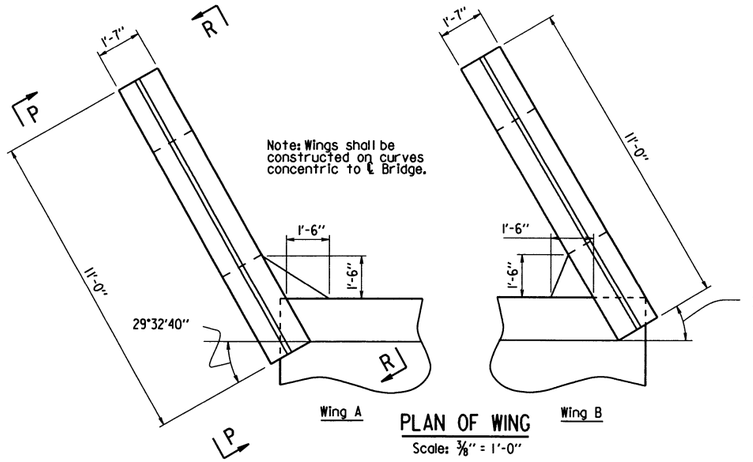
DRAWN BY: CJR DATE: 3/6/16
CHECKED BY: DBS DATE: 4/29/16
DESIGNED BY: DBS DATE: 2/16

FILENAME: b090406_b7.dgn
SCALE: AS NOTED

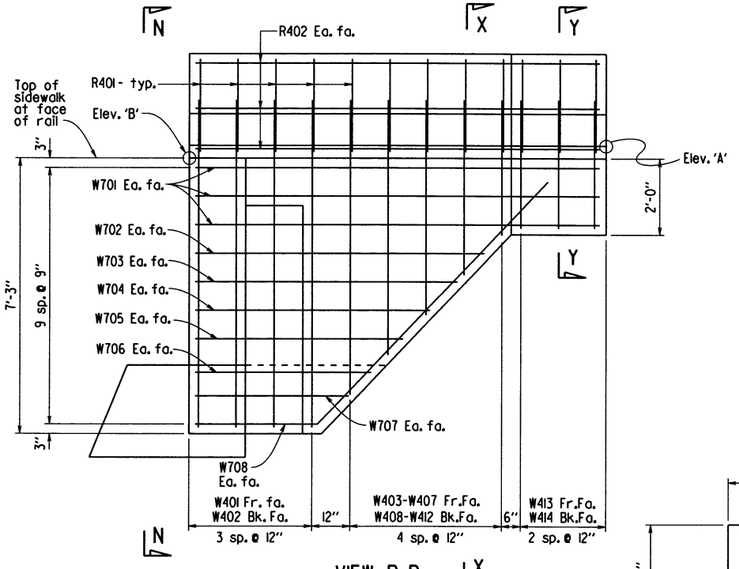
BRIDGE NO. 07393
DRAWING NO. 58819

PRINT DATE: 4/28/2016

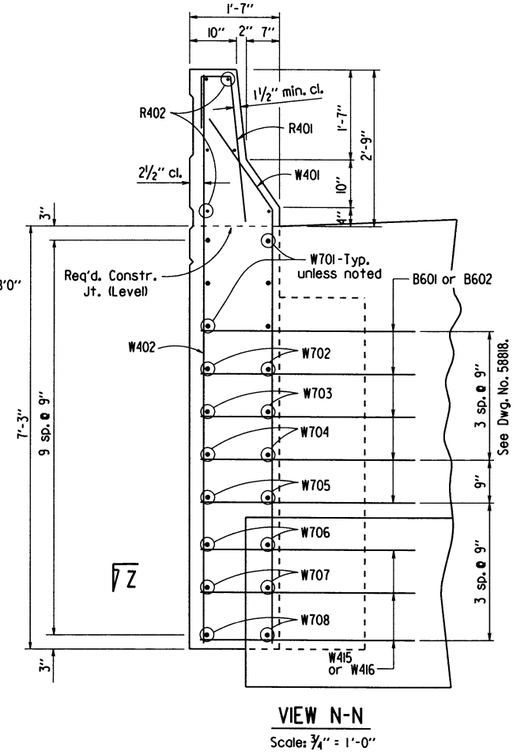
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	115	226
				07393 - BENT 7 - 58820				



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



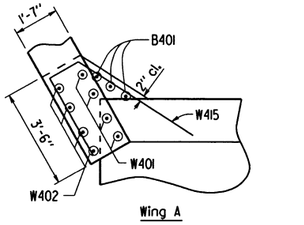
VIEW R-R
Scale: 1/2" = 1'-0"

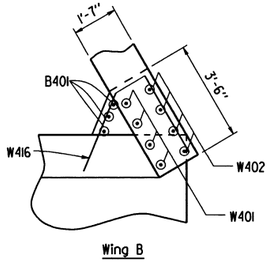


VIEW N-N
Scale: 3/4" = 1'-0"

TABLE OF VARIABLES

Bent	Wing	Elev. 'A'	Elev. 'B'	'C'	'D'
7	A	1157.92	1158.42	4'-9"	9 1/16"
	B	1159.80	1160.31	4'-8 7/8"	9 15/16"



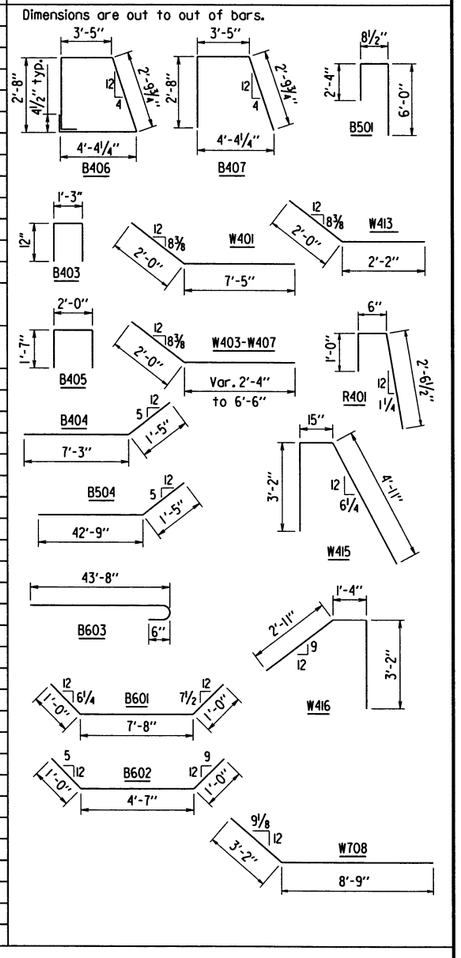


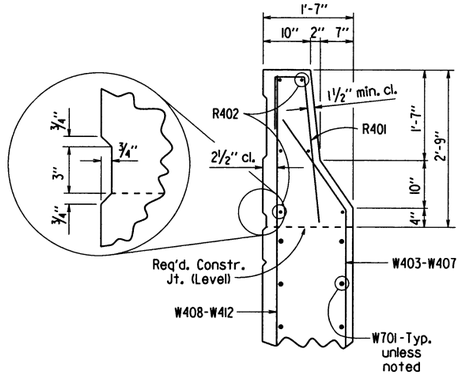
SECTION Z-Z
No Scale

BAR LIST

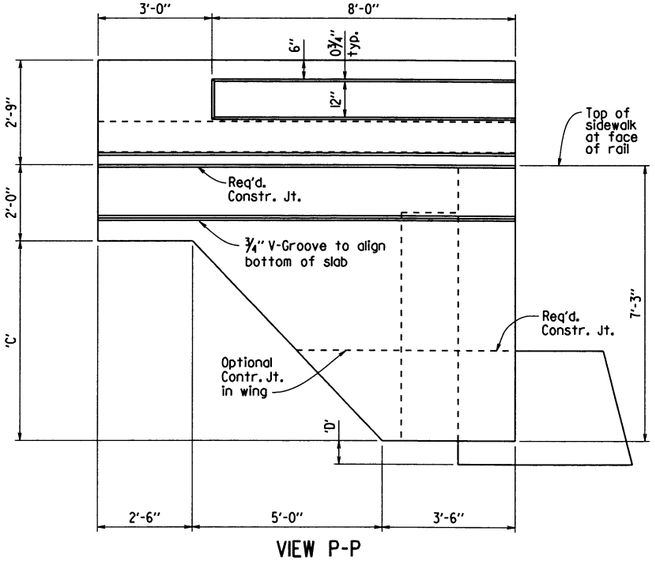
MARK	NO. REQ'D.	LENGTH	P.D.
B401	3	5'-0"	Str.
B402	3	5'-8"	Str.
B403	20	3'-1"	2"
B404	4	8'-6"	3"
B405	49	5'-0"	2"
B406	145	13'-7"	2"
B407	18	8'-10"	2"
B408	6	27'-11"	Str.
R401	24	3'-11"	2"
R402	12	10'-8"	Str.
W401	8	9'-5"	2"
W402	8	9'-8"	Str.
W403-W407	2 each	Var. 4'-4" to 8'-6"	2"
W408-W412	2 each	Var. 4'-7" to 8'-9"	Str.
W413	6	4'-1"	2"
W414	6	4'-5"	Str.
W415	3	9'-4"	2"
W416	3	7'-5"	2"
B501	89	8'-10"	2½"
B502	89	6'-3"	Str.
B503	40	6'-10"	Str.
B504	20	44'-2"	3¾"
B505	4	43'-5"	Str.
B601	5	9'-8"	4½"
B602	5	6'-7"	4½"
B603	12	44'-4"	4½"
B604	14	43'-8"	Str.
W701	12	10'-8"	Str.
W702	4	7'-7"	Str.
W703	4	6'-11"	Str.
W704	4	6'-2"	Str.
W705	4	5'-5"	Str.
W706	4	4'-7"	Str.
W707	4	4'-0"	Str.
W708	4	12'-0"	5¼"

BENDING DIAGRAMS
Dimensions are out to out of bars.

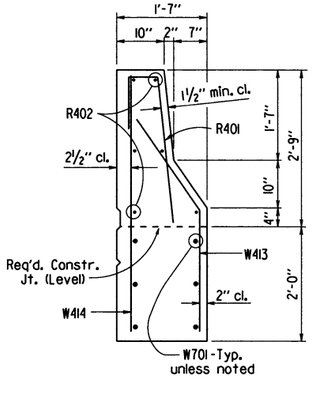




SECTION X-X
Scale: 3/4" = 1'-0"



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



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

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-2-16
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 3 OF 3
DETAILS OF BENT 7

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CJR DATE: 3/7/16 FILENAME: b090406_b7.dgn
CHECKED BY: DBS DATE: 5/2/16 SCALE: AS NOTED
DESIGNED BY: DBS DATE: 5/2/16

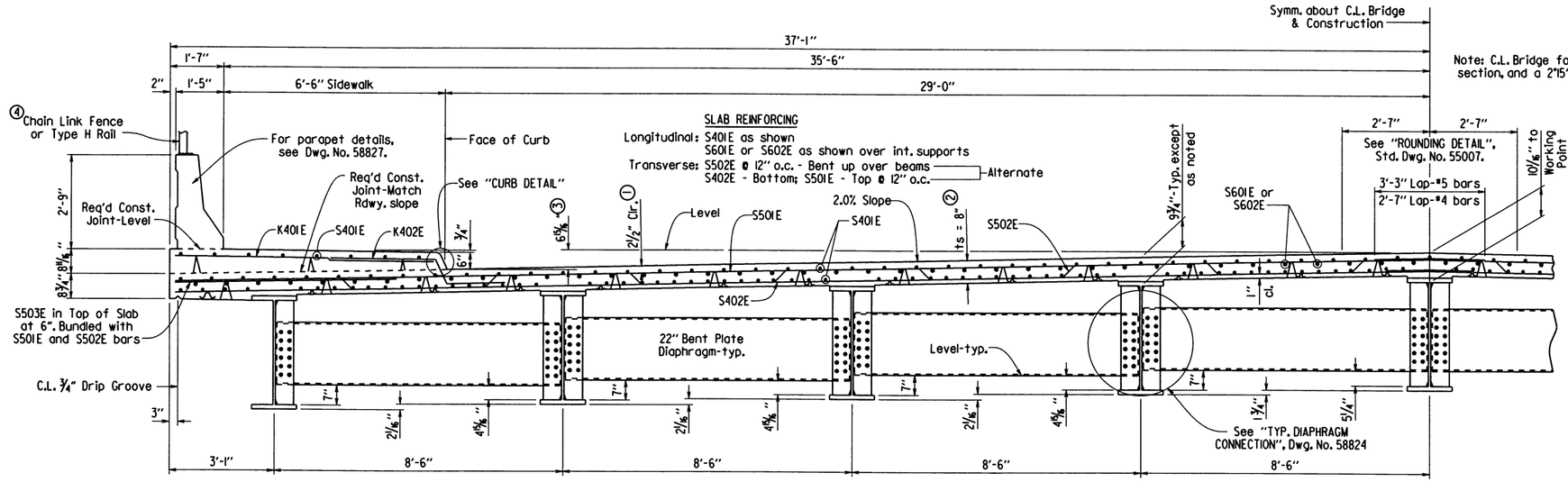
BRIDGE NO. 07393 DRAWING NO. 58820

PRINT DATE: 5/2/2016

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	116	226
				①	07393 -	380 FT. UNIT	- 58821	

Class 2 Protective Surface Treatment shall be applied to the Roadway Surface, Sidewalk Surface and to the Roadway Face and Top of the Concrete Parapet Rail.

At the Contractors option, one epoxy coated No. 5 straight bar top and bottom may be substituted for bars S502E. Payment for reinforcing will be based on the weight of bars S502E.



TYPICAL ROADWAY SECTION

Scale: ½" = 1'-0"

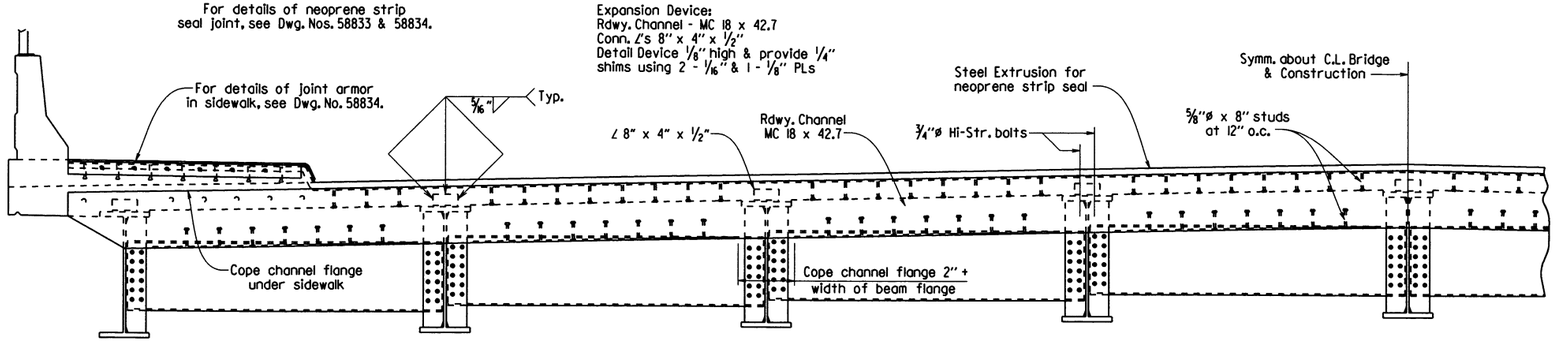
Note: C.L. Bridge for this unit is on a 2°00' curve right, a tangent section, and a 2°15' curve right. For add'l. information, see Layout.

①Tolerance: Minus = ¼", Plus: Equal to amount of slab thickening used to meet slab thickness tolerance - See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE", Std. Dwg. No. 55007.

②See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE", Std. Dwg. No. 55007.

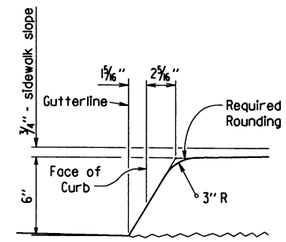
③C.L. Bridge to Gutterline.

④For Chain link fence details, see Dwg. Nos. 58825 & 58826 and Std. Dwg. No. 55018.
For Type H Rail details, see Dwg. No. 58825 & 58826 and Std. Dwg. No. 55014.



TYPICAL SECTION THRU JOINT

Scale: ½" = 1'-0"



CURB DETAIL

No Scale

For additional notes, see Std. Dwg. No. 55006.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-2-16
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 1 OF 7
DETAILS OF 380'-0" CONTINUOUS COMPOSITE W-BEAM UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

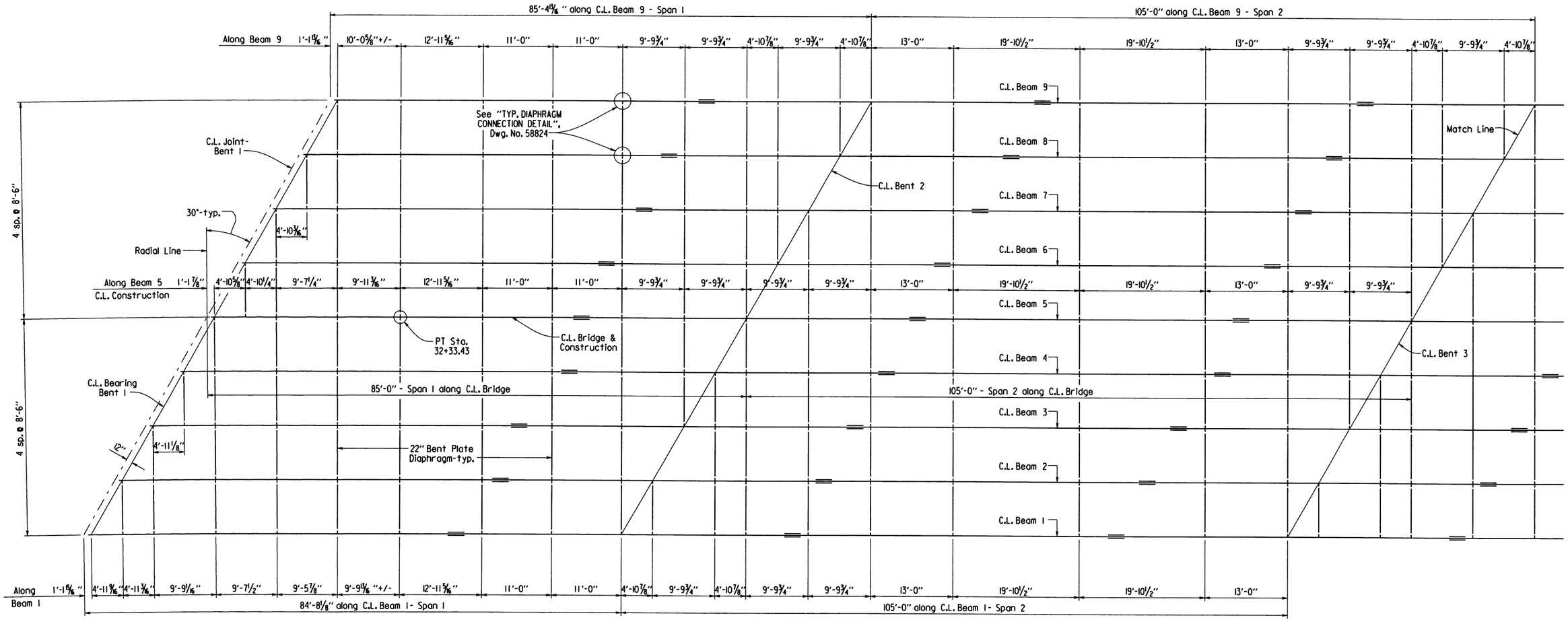
DRAWN BY: KDH DATE: 2-25-16 FILENAME: b090406_sl.dgn
CHECKED BY: CSE DATE: 3/2/2016 SCALE: AS NOTED
DESIGNED BY: DBS DATE: 2/16

BRIDGE NO. 07393 DRAWING NO. 58821

PRINT DATE: 29-APR-2016

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	117	226
				(1) 07393 -		380 FT. UNIT	- 58822	

Note: C.L. Bridge for this unit is on a 2°00' curve right, a tangent section, and a 2°15' curve right. Longitudinal lines shall be constructed on curves and lines concentric with the C.L. Bridge. Diaphragms are on radial lines in curved sections. Skew is measured at C.L. Bent for intermediate bents and at C.L. Joint for end bent.



PARTIAL FRAMING PLAN

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

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-2-16
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 2 OF 7
DETAILS OF 380'-0" CONTINUOUS COMPOSITE W-BEAM UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

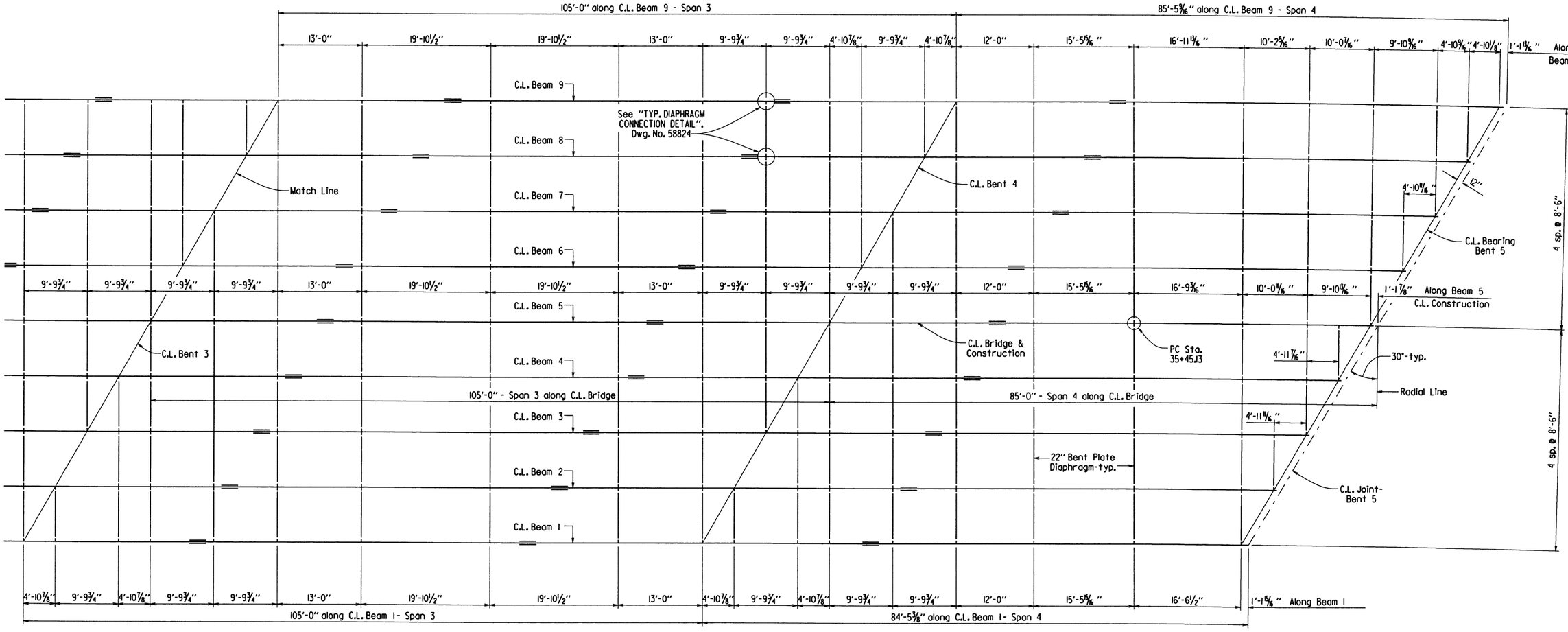
DRAWN BY: KDH DATE: 3-1-16
CHECKED BY: CSR DATE: 5/2/16
DESIGNED BY: DOJ DATE: 2/16
FILENAME: b090406_sl.dgn
SCALE: AS NOTED

BRIDGE NO. 07393
DRAWING NO. 58822

PRINT DATE: 5/2/2016

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	18	26
				(1) 07393 -		380 FT. UNIT	- 58823	

Note: C.L. Bridge for this unit is on a 2°00' curve right, a tangent section, and a 2°15' curve right. Longitudinal lines shall be constructed on curves and lines concentric with the C.L. Bridge. Diaphragms are on radial lines in curved sections. Skew is measured at C.L. Bent for intermediate bents and at C.L. Joint for end bent.



PARTIAL FRAMING PLAN

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

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-2-16
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 3 OF 7
DETAILS OF 380'-0" CONTINUOUS COMPOSITE W-BEAM UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 3-1-16
CHECKED BY: CSE DATE: 5/2/16
DESIGNED BY: DB2 DATE: 2/16

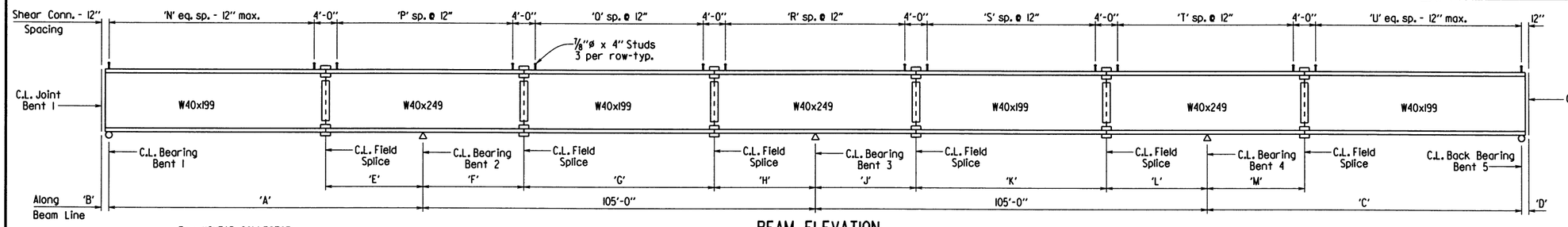
FILENAME: b090406_sl.dgn
SCALE: AS NOTED

BRIDGE NO. 07393
DRAWING NO. 58823

PRINT DATE: 5/2/2016

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

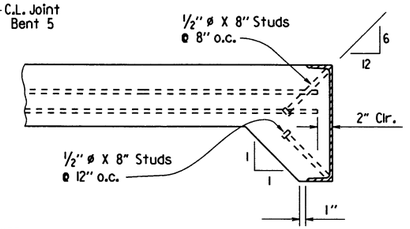
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	119	226
				① 07393 -		380 FT. UNIT	- 58824	



For "SHEAR CONNECTOR DETAIL", see Std. Dwg. No. 55007.

BEAM ELEVATION
No Scale

Structural steel shall be AASHTO M 270, Gr. 50W, and shall be measured and paid for as "Structural Steel in Beam Spans (M 270, Grade 50W)".



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

DETAILS OF ALTERNATE ANCHORS AND PLACEMENT OF LONGITUDINAL REINFORCEMENT
No Scale

TABLE OF BEAM VARIABLES

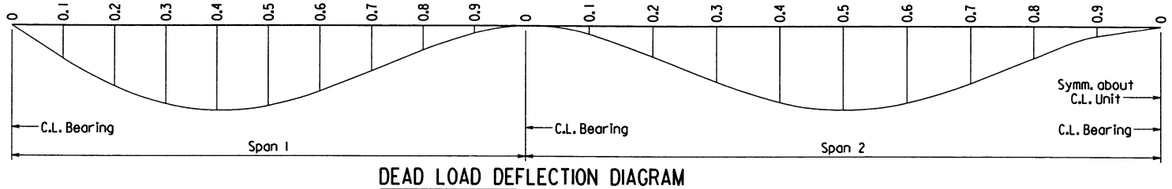
Beam No.	'A'	'B'	'C'	'D'	'E'	'F'	'G'	'H'	'J'	'K'	'L'	'M'	'N'	'P'	'O'	'R'	'S'	'T'	'U'
1	83'-6 1/4"	1'-1 5/16"	83'-3 1/2"	1'-1 5/16"	26'-0"	27'-0"	51'-0"	27'-0"	27'-0"	51'-0"	27'-0"	26'-0"	56	49	47	50	47	49	56
2	83'-7 1/8"	1'-1 7/8"	83'-5 1/4"	1'-1 7/8"	24'-0"	27'-0"	51'-0"	27'-0"	27'-0"	51'-0"	27'-0"	27'-0"	58	47	47	50	47	50	55
3	83'-8 1/16"	1'-1 7/8"	83'-6 5/16"	1'-1 7/8"	26'-0"	27'-0"	51'-0"	27'-0"	27'-0"	51'-0"	27'-0"	26'-0"	56	49	47	50	47	49	56
4	83'-9 1/16"	1'-1 7/8"	83'-8 5/16"	1'-1 7/8"	23'-0"	27'-0"	53'-0"	25'-0"	27'-0"	53'-0"	25'-0"	27'-0"	59	46	49	48	48	48	55
5	83'-10 1/8"	1'-1 7/8"	83'-10 1/8"	1'-1 7/8"	26'-0"	27'-0"	51'-0"	27'-0"	27'-0"	51'-0"	27'-0"	26'-0"	57	49	47	50	47	49	56
6	83'-11 1/4"	1'-1 5/16"	83'-11 5/16"	1'-1 5/16"	27'-0"	25'-0"	53'-0"	27'-0"	25'-0"	53'-0"	27'-0"	24'-0"	56	49	48	48	48	47	59
7	84'-0 5/16"	1'-1 5/16"	84'-1 1/16"	1'-1 5/16"	26'-0"	27'-0"	51'-0"	27'-0"	27'-0"	51'-0"	27'-0"	26'-0"	57	49	47	50	47	48	57
8	84'-1 11/16"	1'-1 5/16"	84'-2 7/16"	1'-1 5/16"	27'-0"	27'-0"	51'-0"	27'-0"	27'-0"	51'-0"	27'-0"	26'-0"	56	50	47	50	47	49	57
9	84'-3"	1'-1 5/16"	84'-3 3/4"	1'-1 5/16"	26'-0"	27'-0"	51'-0"	27'-0"	27'-0"	51'-0"	27'-0"	25'-0"	57	49	47	50	47	48	58

TABLE OF DEAD LOAD DEFLECTIONS (INCHES)

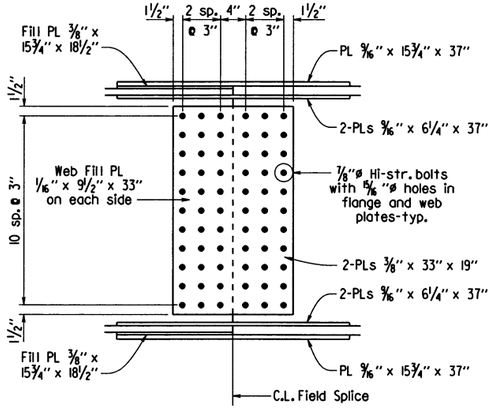
Span	Point of Deflection	Structural Steel		Structural Steel + Slab		Struct. Steel + Slab + Parapet + Sidewalk	
		Interior	Exterior	Interior	Exterior	Interior	Exterior
1	0	0	0	0	0	0	0
	0.1	0.089	0.095	0.433	0.445	0.496	0.547
	0.2	0.163	0.174	0.795	0.815	0.910	1.001
	0.3	0.213	0.227	1.034	1.055	1.181	1.294
	0.4	0.231	0.248	1.122	1.145	1.279	1.403
	0.5	0.219	0.237	1.061	1.083	1.207	1.325
	0.6	0.180	0.197	0.870	0.887	0.986	1.084
	0.7	0.126	0.139	0.604	0.614	0.681	0.749
	0.8	0.068	0.078	0.324	0.335	0.362	0.407
	0.9	0.023	0.026	0.109	0.106	0.119	0.127
2	0	0	0	0	0	0	0
	0.1	0.026	0.019	0.122	0.102	0.148	0.140
	0.2	0.088	0.078	0.416	0.387	0.491	0.511
	0.3	0.156	0.145	0.753	0.708	0.881	0.920
	0.4	0.210	0.201	1.024	0.978	1.190	1.256
	0.5	0.229	0.223	1.126	1.081	1.303	1.380
	0.6	0.210	0.207	1.035	0.996	1.193	1.265
	0.7	0.156	0.157	0.768	0.743	0.880	0.943
	0.8	0.089	0.089	0.438	0.416	0.497	0.529
	0.9	0.027	0.028	0.133	0.129	0.148	0.165
	0	0	0	0	0	0	0

← Symm. about C.L. Unit

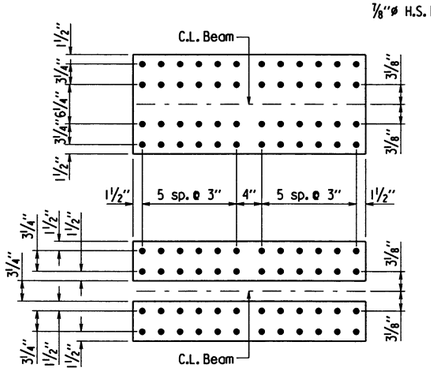
Note:
Camber for Dead Load Deflection plus Vertical curve +/- 1/4" tolerance. Deflections shown are along the C.L. Beam from the plane perpendicular to the web extending from C.L. Bearing to C.L. Bearing. Vertical curve corrections not included. Negative Sign (-) indicates point above chord.



DEAD LOAD DEFLECTION DIAGRAM
No Scale



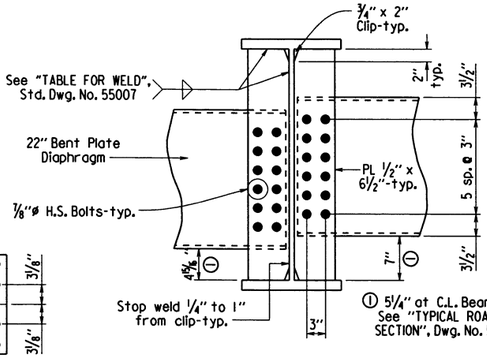
WEB SPLICE



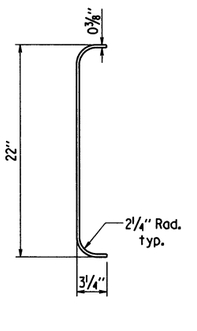
FLANGE SPLICE

All field splice plates shall be AASHTO M 270, Gr. 50W

FIELD SPLICE DETAILS
No Scale



TYP. DIAPHRAGM CONNECTION
Scale: 1" = 1'-0"



TYP. SECTION THRU BENT PLATE DIAPHRAGM
No Scale

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-2-16
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 4 OF 7
DETAILS OF 380'-0" CONTINUOUS COMPOSITE W-BEAM UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 3-3-16
CHECKED BY: CSE DATE: 4/29/16
DESIGNED BY: DBS DATE: 2/16
FILENAME: b090406_sl.dgn
SCALE: AS NOTED

BRIDGE NO. 07393 DRAWING NO. 58824

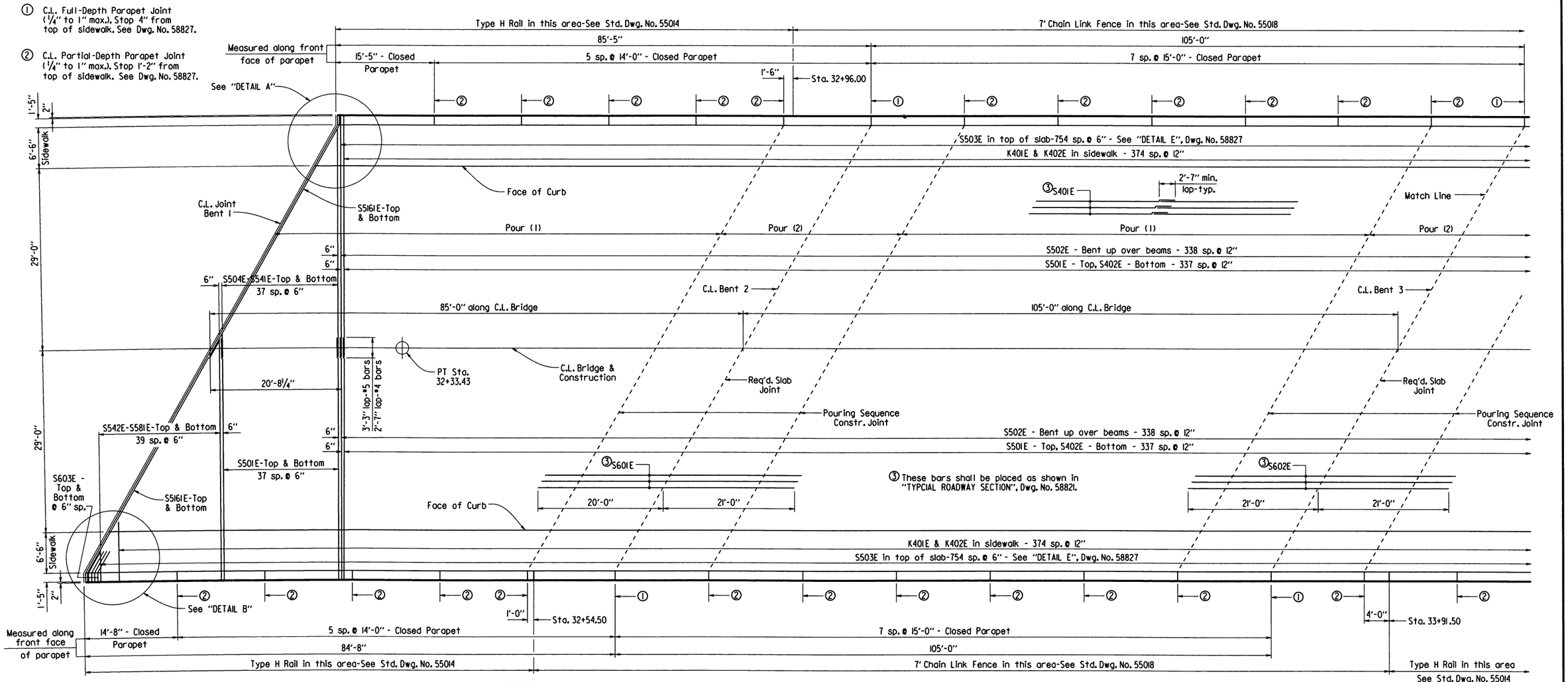
PRINT DATE: 4/29/2016

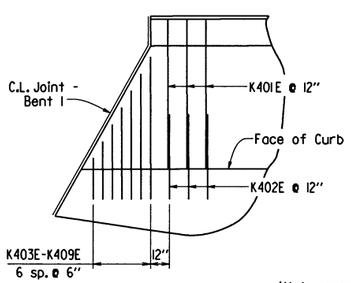
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	120	226
				① 07393 -		380 FT. UNIT	- 58825	

Note: C.L. Bridge for this unit is on a 2°00' curve right, a tangent section, and a 2°15' curve right. Longitudinal lines shall be constructed on curves and lines concentric with the C.L. Bridge. All slab and sidewalk reinforcing steel shall be placed on radial lines, and is measured along C.L. Bridge. Skew is measured at C.L. Bent for intermediate bents and at C.L. Joint for end bents.

① C.L. Full-Depth Parapet Joint (1/4" to 1" max.). Stop 4" from top of sidewalk. See Dwg. No. 58827.

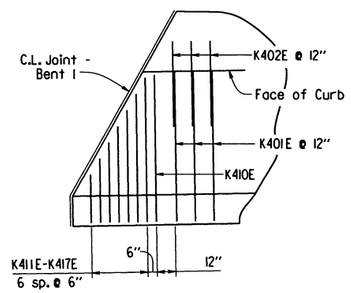
② C.L. Partial-Depth Parapet Joint (1/4" to 1" max.). Stop 1'-2" from top of sidewalk. See Dwg. No. 58827.





DETAIL A
Scale: 1/4" = 1'-0"

All transverse sidewalk reinforcing steel shall be placed on radial lines. Spacing is measured along C.L. Bridge.



DETAIL B
Scale: 1/4" = 1'-0"

REINFORCING PLAN & POURING SEQUENCE

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

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

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

72 hours shall elapse between the end of deck pour and the start of a sidewalk pour. 72 hours shall elapse between the end of a sidewalk pour and the start of a railing pour. Any sidewalk pours or railing pours made before the entire slab unit has been placed must be approved by the Engineer. The Contractor must obtain approval from the Engineer for any deviations from the pouring sequence shown.

For additional notes, see Std. Dwg. No. 55006.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-2-16
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 5 OF 7
DETAILS OF 380'-0" CONTINUOUS COMPOSITE W-BEAM UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

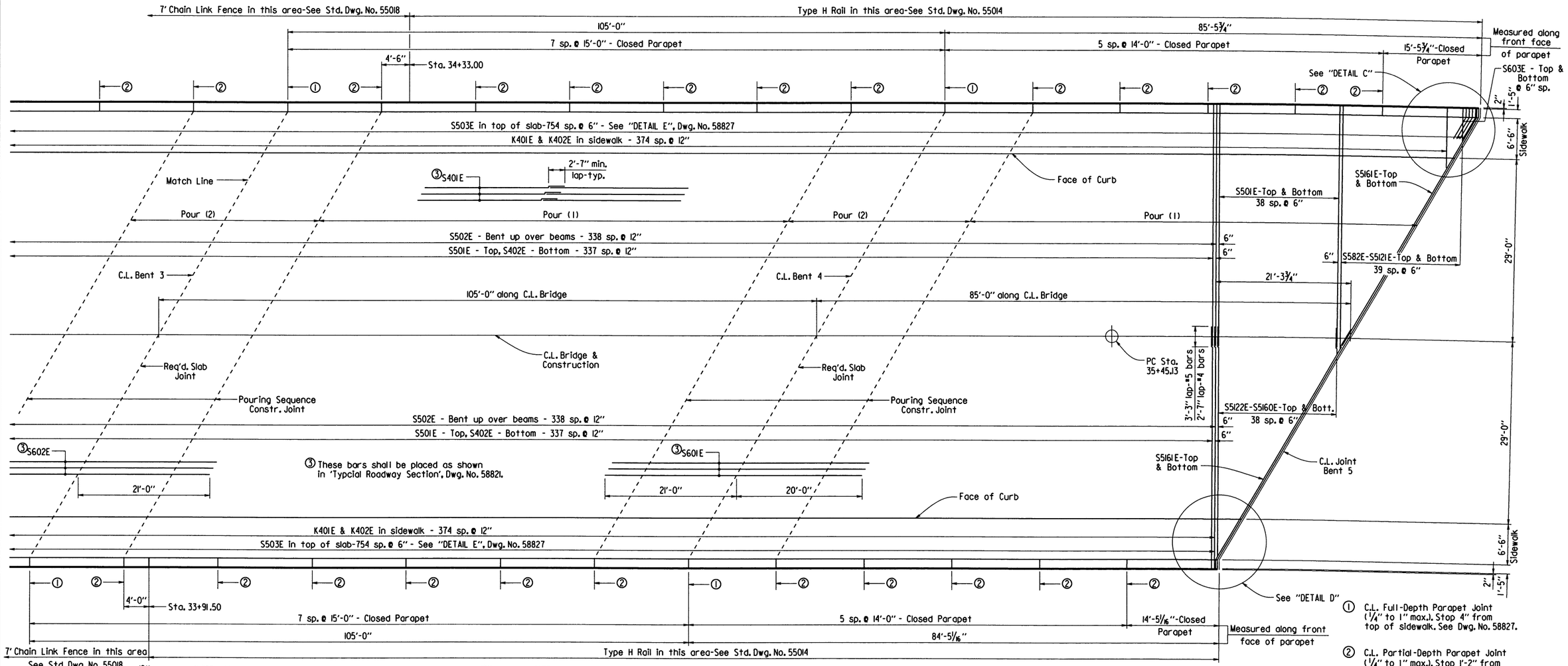
DRAWN BY: KDH DATE: 3-4-16
CHECKED BY: CSE DATE: 4/29/16
DESIGNED BY: DBS DATE: 2/16
FILENAME: b090406_sl.dgn
SCALE: AS NOTED

BRIDGE NO. 07393 DRAWING NO. 58825

PRINT DATE: 4/29/2016

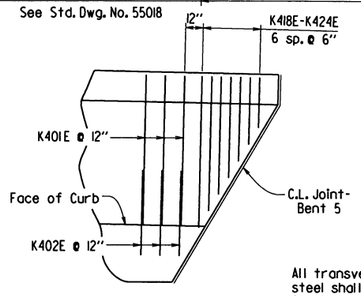
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	12	226
				①	07393 -	380 FT. UNIT	- 58826	

Note: C.L. Bridge for this unit is on a 2°00' curve right, a tangent section, and a 2°15' curve right. Longitudinal lines shall be constructed on curves and lines concentric with the C.L. Bridge. All slab and sidewalk reinforcing steel shall be placed on radial lines, and is measured along C.L. Bridge. Skew is measured at C.L. Bent for intermediate bents and at C.L. Joint for end bents.



① C.L. Full-Depth Parapet Joint (¼" to 1" max.). Stop 4" from top of sidewalk. See Dwg. No. 58827.

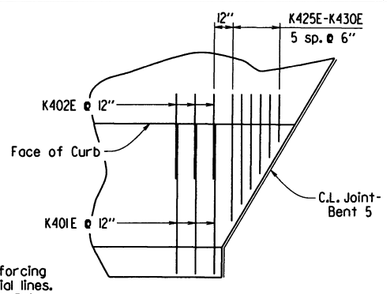
② C.L. Partial-Depth Parapet Joint (¼" to 1" max.). Stop 1'-2" from top of sidewalk. See Dwg. No. 58827.



DETAIL C

Scale: ¼" = 1'-0"

All transverse sidewalk reinforcing steel shall be placed on radial lines. Spacing is measured along C.L. Bridge.



DETAIL D

Scale: ¼" = 1'-0"

REINFORCING PLAN & POURING SEQUENCE

Scale: ⅛" = 1'-0"

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

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

72 hours shall elapse between the end of deck pour and the start of a sidewalk pour. 72 hours shall elapse between the end of a sidewalk pour and the start of a railing pour. Any sidewalk pours or railing pours made before the entire slab unit has been placed must be approved by the Engineer. The Contractor must obtain approval from the Engineer for any deviations from the pouring sequence shown.

For additional notes, see Std. Dwg. No. 55006.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-2-16
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 6 OF 7
DETAILS OF 380'-0" CONTINUOUS COMPOSITE W-BEAM UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 3-4-16
CHECKED BY: CSE DATE: 4/29/16
DESIGNED BY: DHS DATE: 2/16

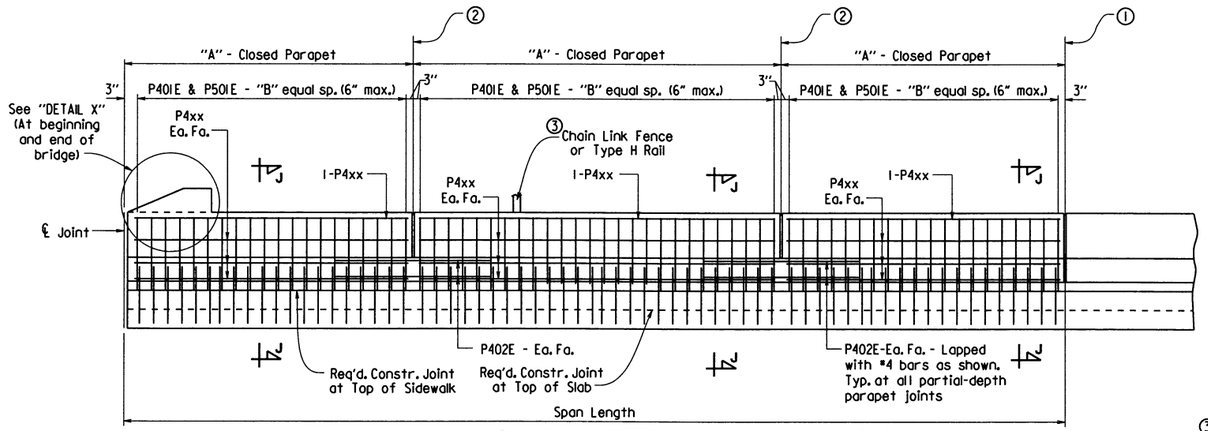
FILENAME: b090406_sl.dgn
SCALE: AS NOTED

BRIDGE NO. 07393

DRAWING NO. 58826

PRINT DATE: 4/29/2016

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	122	226
				① 07393 -		380 FT. UNIT	- 58827	



DETAILS OF PARAPET RAIL

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

① ℄ Full-Depth Parapet Joint (1/4" to 1" max.) as shown in "REINFORCING PLAN & POURING SEQUENCE", Dwg. Nos. 58825 & 58826. Stop 4" from top of sidewalk.

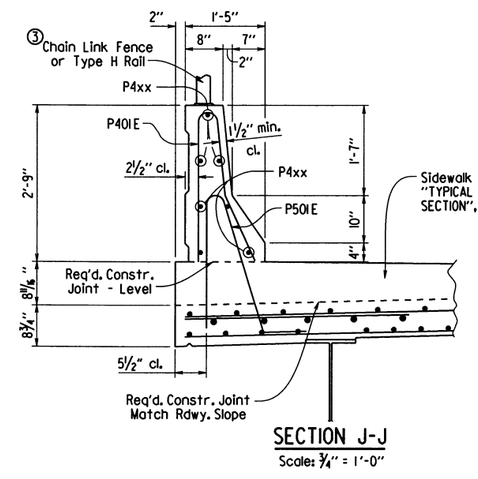
② ℄ Partial-Depth Parapet Joint (1/4" to 1" max.) as shown in "REINFORCING PLAN & POURING SEQUENCE", Dwg. Nos. 58825 & 58826. Stop 1'-2" from top of sidewalk.

TABLE OF PARAPET RAIL VARIABLES

"A" Closed Parapet	"B"	P4xx Bar
15'-5"	30	P403E
14'-0"	27	P404E
15'-0"	29	P405E
14'-8"	29	P406E
15'-5 3/4"	30	P407E
14'-5 1/16"	28	P408E

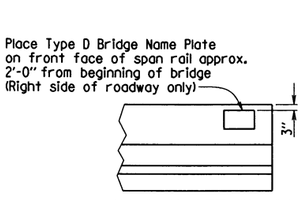
For location of Closed Parapet panels, see "Reinforcing Plan & Pouring Sequence" Dwg. Nos. 58825 & 58826.

③ For Chain link fence details, see Dwg. Nos. 58825, 58826 & Std. Dwg. No. 550I8. For Type H Rail details, see Dwg. No. 58825, 58826 & Std. Dwg. No. 550I4.



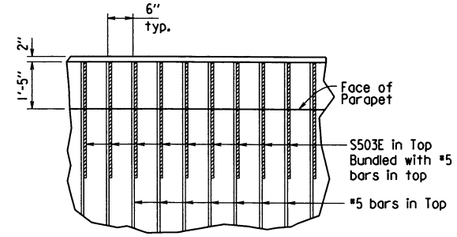
SECTION J-J

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



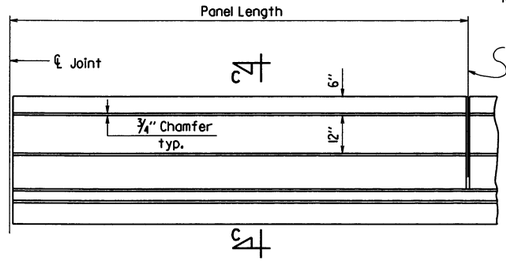
NAME PLATE DETAIL

No Scale



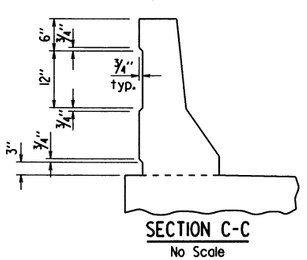
DETAIL E

No Scale



DETAILS OF PARAPET ENHANCEMENT

No Scale



SECTION C-C

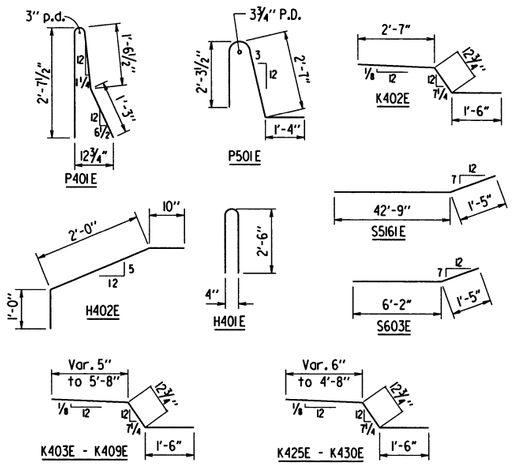
No Scale

BAR LIST

MARK	NO. REQ'D.	LENGTH	P.D.
S401E	2453	37'-0"	Str.
S402E	676	38'-3"	Str.
K401E	750	7'-8"	Str.
K402E	750	5'-2"	3"
K403E-K409E	1 each	Var. 3'-0" to 8'-4"	3"
K410E	1	7'-9"	Str.
K411E-K417E	1 each	Var. 2'-7" to 7'-7"	Str.
K418E-K424E	1 each	Var. 2'-7" to 7'-11"	Str.
K425E-K430E	1 each	Var. 2'-11" to 7'-1"	3"
P401E	1521	5'-6"	3"
P402E	176	5'-6"	Str.
P403E	7	15'-1"	Str.
P404E	140	13'-8"	Str.
P405E	196	14'-8"	Str.
P406E	7	14'-4"	Str.
P407E	7	15'-0"	Str.
P408E	7	14'-1"	Str.
H401E	6	5'-2"	3"
H402E	2	3'-10"	2"
S501E	830	38'-7"	3"
S502E	678	39'-9"	3"
S503E	1510	4'-9"	Str.
S504E-S541E	2 each	Var. 4'-1" to 36'-7"	Str.
S542E-S581E	2 each	Var. 5'-1" to 38'-5"	Str.
S582E-S5121E	2 each	Var. 5'-4" to 38'-8"	Str.
S5122E-S5160E	2 each	Var. 4'-3" to 36'-7"	Str.
S5161E	8	44'-2"	3 3/4"
P501E	1521	6'-4"	2 1/2"
S601E	156	41'-0"	Str.
S602E	78	42'-0"	Str.
S603E	16	7'-7"	4 1/2"

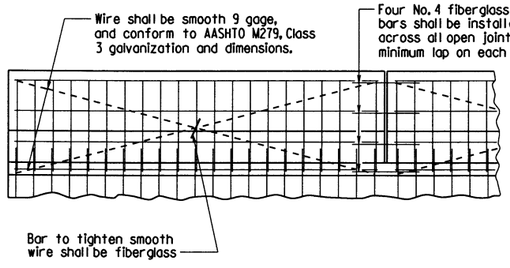
BENDING DIAGRAMS

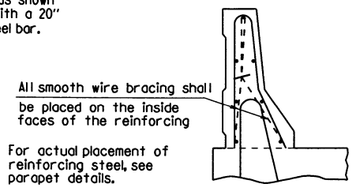
Dimensions are out to out of bars.

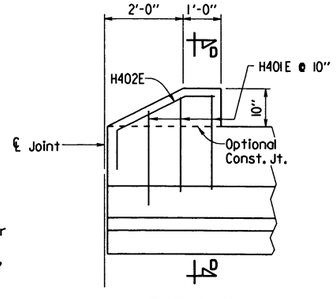


④ 1/2" Overtolerance
No Undertolerance

Note: Bars marked with an "E" suffix shall be epoxy coated.

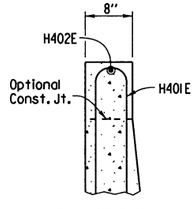






DETAIL X

No Scale



SECTION D-D

No Scale

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

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

DETAILS OF OPTIONAL SLIPFORMING OF CONCRETE PARAPET RAIL

No Scale

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-2-16
CHARLES R. ELLIS
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SHEET 7 OF 7
DETAILS OF 380'-0" CONTINUOUS COMPOSITE W-BEAM UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 3-7-16 FILENAME: b090406_sl.dgn
CHECKED BY: CRE DATE: 4/29/16 SCALE: AS NOTED
DESIGNED BY: DBS DATE: 2/16

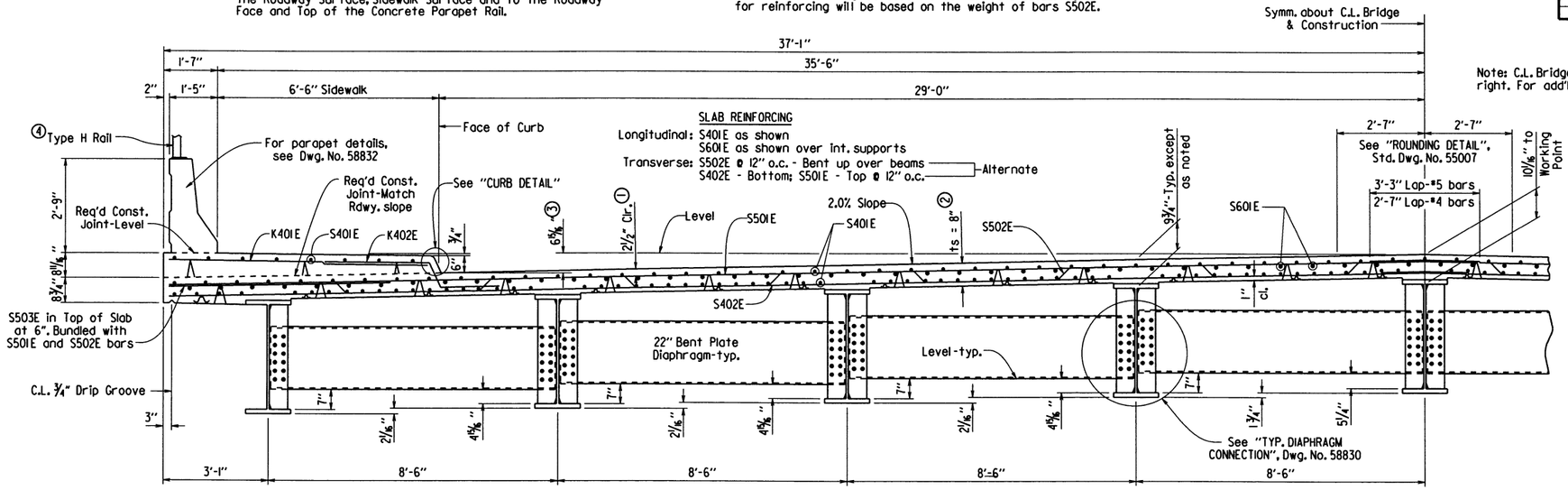
BRIDGE NO. 07393 DRAWING NO. 58827

PRINT DATE: 29-APR-2016

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	123	226
				① 07393 -		170 FT. UNIT	- 58828	

Class 2 Protective Surface Treatment shall be applied to the Roadway Surface, Sidewalk Surface and to the Roadway Face and Top of the Concrete Parapet Rail.

At the Contractors option, one epoxy coated No. 5 straight bar top and bottom may be substituted for bars S502E. Payment for reinforcing will be based on the weight of bars S502E.



Note: C.L. Bridge for this unit is on a 2°15' curve right. For add'l. information, see Layout.

SLAB REINFORCING
Longitudinal: S401E as shown
S601E as shown over int. supports
Transverse: S502E @ 12" o.c. - Bent up over beams — Alternate
S402E - Bottom; S501E - Top @ 12" o.c.

①Tolerance: Minus = ¼", Plus: Equal to amount of slab thickening used to meet slab thickness tolerance - See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE", Std. Dwg. No. 55007.

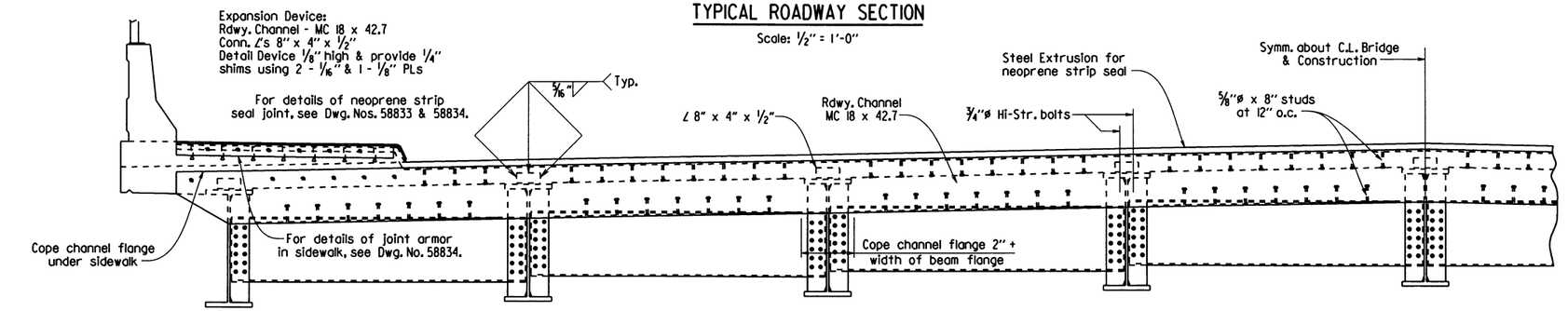
②See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE", Std. Dwg. No. 55007.

③C.L. Bridge to Gutterline.

④For Type H Rail details, see Dwg. No. 58831 and Std. Dwg. No. 55014.

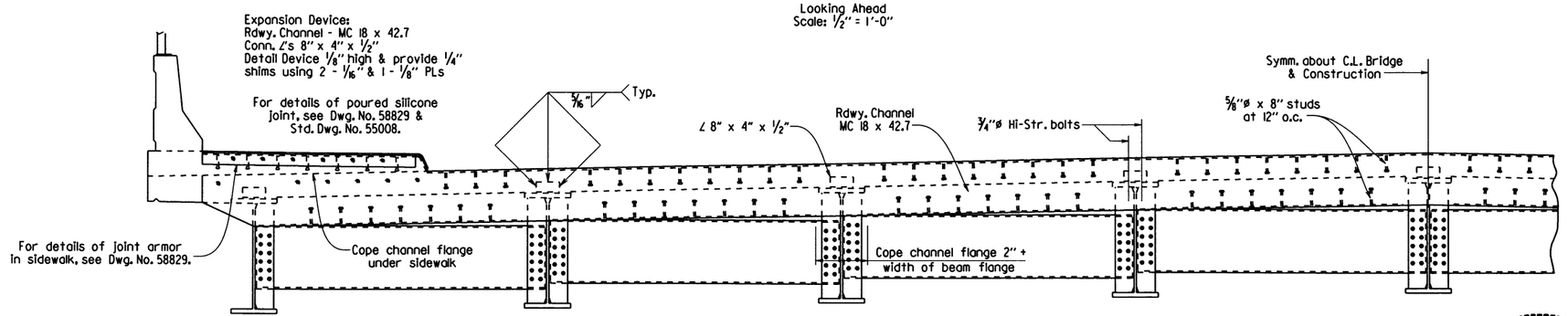
TYPICAL ROADWAY SECTION

Scale: ½" = 1'-0"



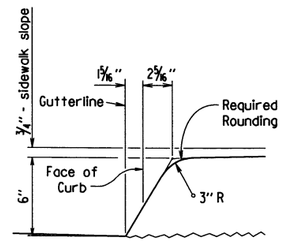
TYPICAL SECTION THRU JOINT AT BENT 5

Looking Ahead
Scale: ½" = 1'-0"



TYPICAL SECTION THRU JOINT AT BENT 7

Looking Back
Scale: ½" = 1'-0"



CURB DETAIL

No Scale

For additional notes, see Std. Dwg. No. 55006.

STATE OF ARKANSAS
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5-2-16
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SHEET 1 OF 5
DETAILS OF 170'-0" CONTINUOUS COMPOSITE W-BEAM UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 3-8-16 FILENAME: b090406_s2.dgn
CHECKED BY: CJC DATE: 4/29/16 SCALE: AS NOTED
DESIGNED BY: DBS DATE: 2/16

BRIDGE NO. 07393 DRAWING NO. 58828

PRINT DATE: 29-APR-2016

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	124	226
				① 07393 -		170 FT. UNIT	- 58829	

Note:
C.L. Bridge for this unit is on a 2°15' curve right. Longitudinal lines shall be constructed on curves and lines concentric with the C.L. Bridge. Diaphragms are on radial lines. Skew is measured at C.L. Bent for intermediate bents and at C.L. Joint for end bent.

4 sp. @ 8'-6"

4 sp. @ 8'-6"

86'-1⅝" along C.L. Beam 9 - Span 1

86'-1⅝" along C.L. Beam 9 - Span 2

Along Beam 9 - 1'-1¹³⁄₁₆"

13'-2¹⁄₁₆" | 18'-10³⁄₁₆" | 13'-2¹⁄₁₆" | 10'-2³⁄₁₆" | 10'-0⁵⁄₁₆" | 4'-11⁷⁄₁₆" | 9'-9¹⁄₂" | 4'-10¹⁄₁₆" | 13'-2¹⁄₁₆" | 18'-9¹¹⁄₁₆" | 13'-2¹⁄₁₆" | 10'-2⁵⁄₁₆" | 10'-0⁷⁄₁₆" | 9'-10³⁄₁₆" | 4'-10³⁄₁₆" | 4'-10¹⁄₈" | 1'-1¹³⁄₁₆"

See "TYP. DIAPHRAGM CONNECTION DETAIL", Dwg. No. 58830

C.L. Joint-Bent 5

C.L. Beam 9

C.L. Beam 8

C.L. Beam 7

C.L. Beam 6

C.L. Beam 5

C.L. Beam 4

C.L. Beam 3

C.L. Beam 2

C.L. Beam 1

C.L. Bent 6

C.L. Bearing Bent 7

30°-typ.

Radial Line

4'-10¹⁄₁₆"

4'-11¹⁄₈"

12"

1'-1⅞" | 4'-10⁵⁄₁₆" | 4'-10¹⁄₈" | 9'-6⁵⁄₁₆" | 13'-0" | 18'-7³⁄₁₆" | 13'-0" | 10'-0⁹⁄₁₆" | 9'-10¹¹⁄₁₆" | 9'-8⁵⁄₈" | 9'-7¹⁄₁₆" | 13'-0" | 18'-6¹¹⁄₁₆" | 13'-0" | 10'-0¹¹⁄₁₆" | 9'-10¹³⁄₁₆" | 1'-1⅞"

C.L. Bridge & Construction

4'-11⅝"

85'-0" - Span 1 along C.L. Bridge

85'-0" - Span 2 along C.L. Bridge

C.L. Bearing Bent 5

22" Bent Plate Diaphragm-typ.

4'-7⅝"

C.L. Joint-Bent 7

1'-1⁵⁄₁₆" | 4'-11⅜" | 4'-11³⁄₁₆" | 9'-9" | 9'-7³⁄₁₆" | 9'-5⅞" | 12'-9⅞" | 18'-4³⁄₁₆" | 12'-9⅞" | 4'-11¾" | 9'-10¹⁄₁₆" | 4'-10⅝" | 9'-7⅝" | 9'-5⅝" | 12'-9⅞" | 18'-3¹¹⁄₁₆" | 12'-9⅞" | 1'-1⁵⁄₁₆" - Along Beam 1

83'-10³⁄₈" along C.L. Beam 1 - Span 1

83'-10³⁄₈" along C.L. Beam 1 - Span 2

FRAMING PLAN

Scale: ⅛" = 1'-0"

Cope 6" leg of angle 6" from face of curb and bend 4" leg to conform to Curb Detail.

⅜" Patterned Plate (Conform to Sidewalk Curb Detail) Stop 1" above Gutter

DETAIL C

No Scale

Note: Install seal in slab joint and parapet joint with damming procedure as recommended by the manufacturer. The sealant shall be recessed to prevent damage and be allowed to cure prior to removal of the outer damming material.

⅜" x 8¾" Patterned PL

⅝"ø x 4" studs @ 12" o.c. (offset)

∠6" x 4" x ½"

See "Detail C"

3" min.

Poured Silicone Joint

Cope channel flange under sidewalk

TYPICAL SECTION THRU SIDEWALK AT BENT 7

No Scale

4" | "A" | 1" | 1⅜" | 1⅜"

① C.L. ¾"ø Vent Holes in angle, ¾" x 1⅝" ctsk. slots in patterned plate at 12" ctrs.

⅜" x 8¾" Patterned PL

∠6" x 4" x ½"

∠6" x 4" x ½"

① ¾" x 1⅝" Ctsk. Slots in ⅜" Patterned Plates. Tap 4" leg of angle for ⅝"ø flat head cap screws @ 12" o.c. Install screws in the shop and ship as a unit. Remove screws on one side after erection is complete.

⅝"ø x 4" studs @ 12" o.c. (Offset Spacing)-typ.

Backwall

Sidewalk Slab

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

MC18 coped under sidewalk

The surfaces of the ⅜" Patterned plate and ∠6" x 4" x ½" not in contact with concrete shall be painted in accordance with Section 638 or as approved by the Engineer. Only one coat is required and shall be applied in the Fabricator's shop. Painting will not be paid for directly, but shall be considered subsidiary to "Structural Steel in Beam Spans (M 270, Gr. 50W)". Patterned plate and angle shall be M 270, Gr. 36 or as approved by the Engineer and shall be paid for as "Structural Steel in Beam Spans (M 270, Gr. 50W)".

SECTION A-A

No Scale

SILICONE JOINT DATA

Bent Number	"A" Width Perpendicular to Joint at 24 Hour Average Temperature ① Of:			"B" Perpendicular to Joint at 60°F	Bumper Bar Size	"D"
	40°F	60°F	80°F			
7	1⅝"	1½"	1⅜"	±2"	1" x ¾"	5"

See additional details on Std. Dwg. No. 55008.

STATE OF ARKANSAS
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No. 9235
5-2-16
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SHEET 2 OF 5
DETAILS OF 170'-0" CONTINUOUS COMPOSITE W-BEAM UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 3-9-16 FILENAME: b090406_s2.dgn

CHECKED BY: CSK DATE: 5/2/16 SCALE: AS NOTED

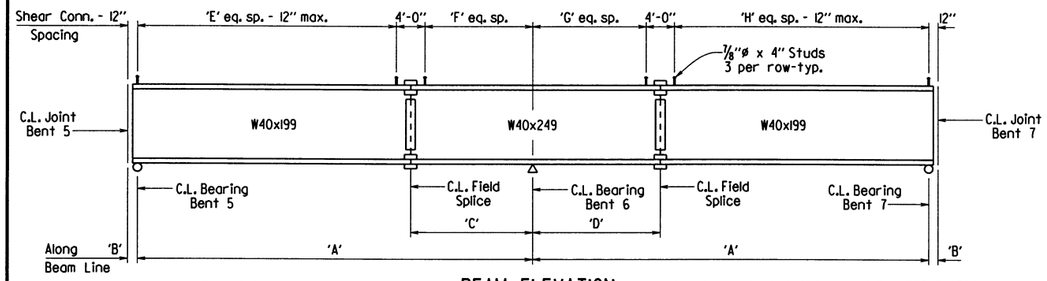
DESIGNED BY: DJJ DATE: 4/16

BRIDGE NO. 07393 DRAWING NO. 58829

PRINT DATE: 5/2/2016

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	125	226
				① 07393 -		170 FT. UNIT	- 58830	

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



For "SHEAR CONNECTOR DETAIL", see Std. Dwg. No. 55007.

BEAM ELEVATION
No Scale

Structural steel shall be AASHTO M 270, Gr. 50W, and shall be measured and paid for as "Structural Steel in Beam Spans (M 270, Grade 50W)".

TABLE OF BEAM VARIABLES

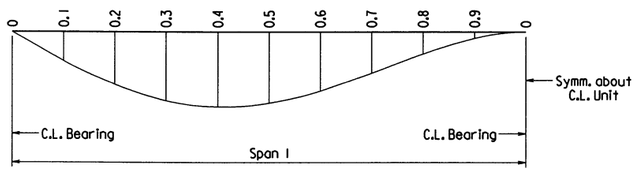
Beam No.	'A'	'B'	'C'	'D'	'E'	'F'	'G'	'H'
1	82'-8 3/16"	1'-1 5/16"	24'-0"	24'-0"	57	22	22	57
2	82'-11 5/16"	1'-1 7/16"	24'-0"	22'-3"	58	22	21	59
3	83'-3 1/4"	1'-1 7/8"	25'-0"	24'-0"	57	23	22	58
4	83'-6 5/16"	1'-1 7/8"	24'-0"	22'-0"	58	22	20	60
5	83'-10 1/8"	1'-1 7/8"	24'-0"	24'-0"	58	22	22	58
6	84'-1 1/2"	1'-1 5/16"	22'-9"	24'-0"	60	21	22	59
7	84'-4 5/8"	1'-1 5/16"	24'-0"	25'-0"	59	22	23	58
8	84'-8 3/8"	1'-1 5/16"	22'-6"	24'-0"	61	21	22	59
9	84'-11 3/4"	1'-1 5/16"	24'-0"	24'-0"	60	22	22	60

TABLE OF DEAD LOAD DEFLECTIONS (INCHES)

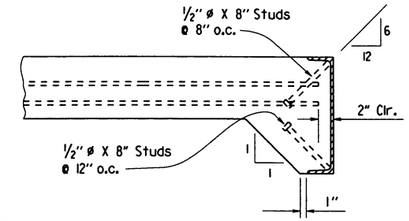
Span	Point of Deflection	Structural Steel		Structural Steel + Slab		Struct. Steel + Slab + Parapet + Sidewalk	
		Interior	Exterior	Interior	Exterior	Interior	Exterior
1	0	0	0	0	0	0	0
	0.1	0.086	0.090	0.402	0.408	0.457	0.511
	0.2	0.160	0.163	0.745	0.739	0.850	0.924
	0.3	0.209	0.214	0.975	0.971	1.116	1.214
	0.4	0.229	0.234	1.064	1.058	1.221	1.322
	0.5	0.219	0.223	1.013	1.007	1.166	1.256
	0.6	0.183	0.186	0.841	0.834	0.971	1.040
	0.7	0.129	0.130	0.588	0.580	0.681	0.724
	0.8	0.070	0.070	0.316	0310	0.368	0.387
	0.9	0.021	0.021	0.093	0.091	0.109	0.114
	0	0	0	0	0	0	0

← Symm. about C.L. Unit

Note:
Camber for Dead Load Deflection plus Vertical curve +/- 1/4" tolerance. Deflections shown are along the C.L. Beam from the plane perpendicular to the web extending from C.L. Bearing to C.L. Bearing. Vertical curve corrections not included. Negative Sign (-) indicates point above chord.

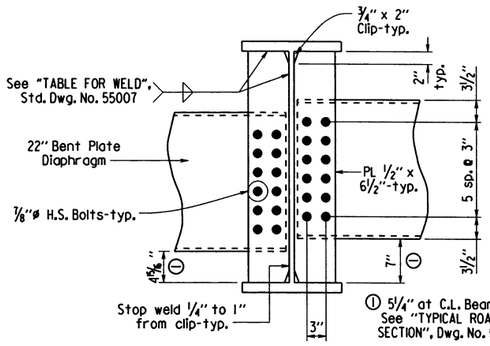


DEAD LOAD DEFLECTION DIAGRAM
No Scale

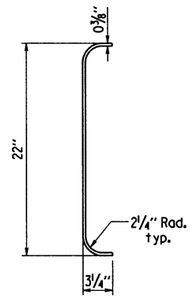


NOTE:
As an alternate to 5/8" ø studs, 1/2"ø x 8" studs spaced as shown may be used. Use weight of 5/8"ø stud as basis of measurement of structural steel in anchors.

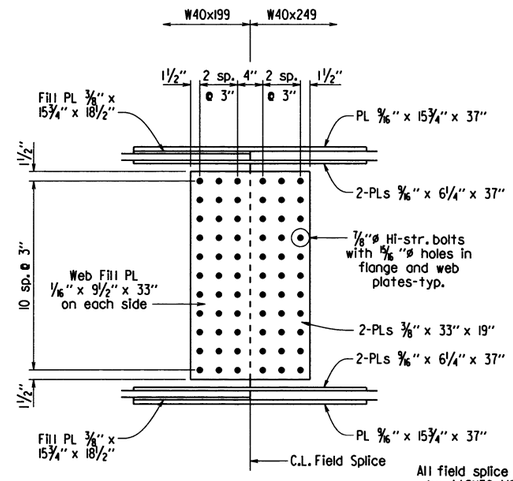
DETAILS OF ALTERNATE ANCHORS AND PLACEMENT OF LONGITUDINAL REINFORCEMENT
No Scale



TYP. DIAPHRAGM CONNECTION
Scale: 1" = 1'-0"



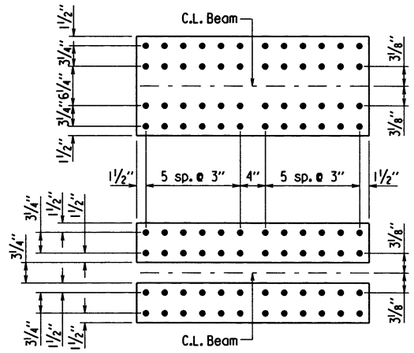
TYP. SECTION THRU BENT PLATE DIAPHRAGM
No Scale



WEB SPILCE

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

FIELD SPLICE DETAILS
No Scale



FLANGE SPLICE

STATE OF ARKANSAS
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SHEET 3 OF 5
DETAILS OF 170'-0" CONTINUOUS COMPOSITE W-BEAM UNIT

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

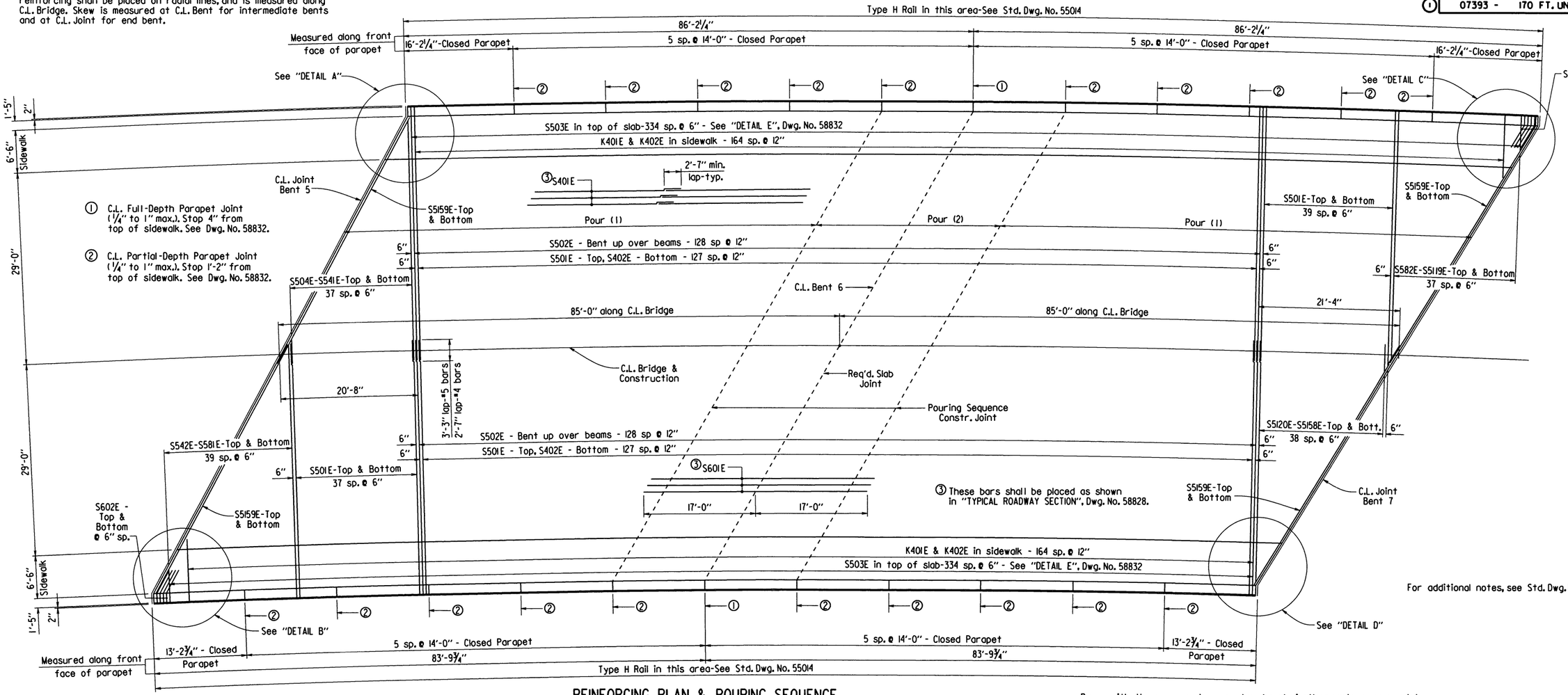
DRAWN BY: KDH DATE: 3-10-16
CHECKED BY: CSR DATE: 4/29/16
DESIGNED BY: DBS DATE: 2/16
FILENAME: b090406_s2.dgn
SCALE: AS NOTED

BRIDGE NO. 07393 DRAWING NO. 58830

PRINT DATE: 4/29/2016

Note: C.L. Bridge for this unit is on a 2°15' curve right. Longitudinal lines shall be constructed on curves and lines concentric with the C.L. Bridge. Diaphragms are on radial lines. All slab and sidewalk reinforcing shall be placed on radial lines, and is measured along C.L. Bridge. Skew is measured at C.L. Bent for intermediate bents and at C.L. Joint for end bent.

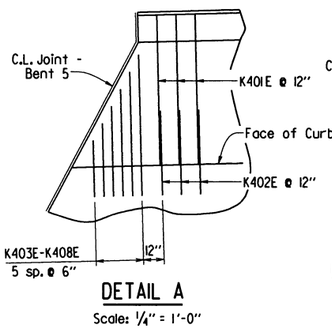
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	126	226
				07393 -		170 FT. UNIT	- 58831	



For additional notes, see Std. Dwg. No. 55006.

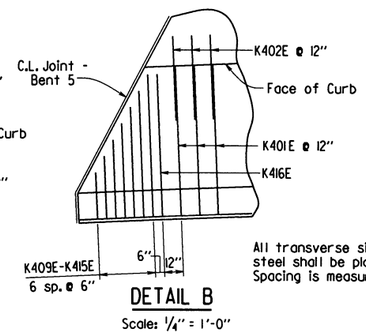
REINFORCING PLAN & POURING SEQUENCE

Scale: ⅛" = 1'-0"



DETAIL A

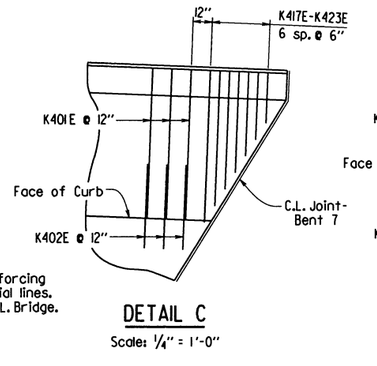
Scale: ¼" = 1'-0"



DETAIL B

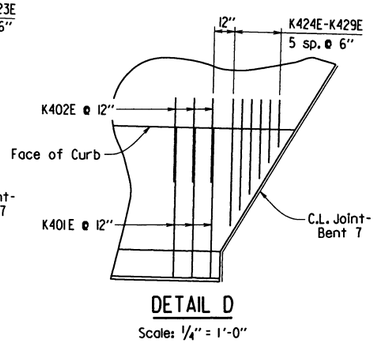
Scale: ¼" = 1'-0"

All transverse sidewalk reinforcing steel shall be placed on radial lines. Spacing is measured along C.L. Bridge.



DETAIL C

Scale: ¼" = 1'-0"



DETAIL D

Scale: ¼" = 1'-0"

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

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

72 hours shall elapse between the end of deck pour and the start of a sidewalk pour. 72 hours shall elapse between the end of a sidewalk pour and the start of a railing pour. Any sidewalk pours or railing pours made before the entire slab unit has been placed must be approved by the Engineer. The Contractor must obtain approval from the Engineer for any deviations from the pouring sequence shown.

STATE OF ARKANSAS
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SHEET 4 OF 5
DETAILS OF 170'-0" CONTINUOUS COMPOSITE W-BEAM UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

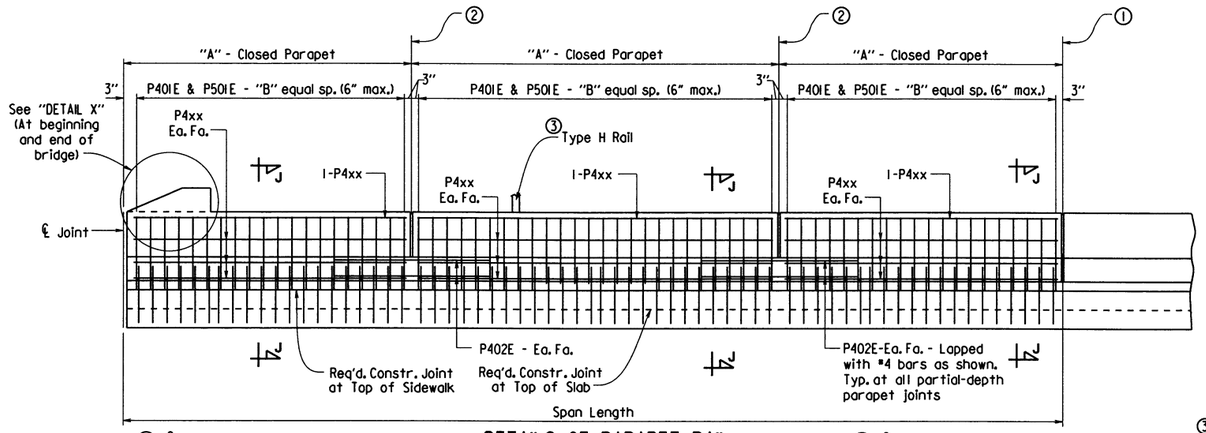
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 3-11-16 FILENAME: b090406_s2.dgn
CHECKED BY: CRE DATE: 4/29/16 SCALE: AS NOTED
DESIGNED BY: DBS DATE: 2/16

BRIDGE NO. 07393 DRAWING NO. 58831

PRINT DATE: 4/29/2016

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	127	226
				① 07393 -		170 FT. UNIT	- 58832	



DETAILS OF PARAPET RAIL

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

① ℄ Full-Depth Parapet Joint (1/4" to 1" max.) as shown in "REINFORCING PLAN & POURING SEQUENCE", Dwg. No. 58831. Stop 4" from top of sidewalk.

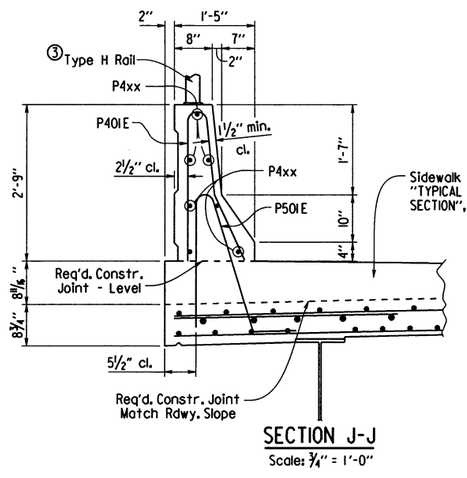
② ℄ Partial-Depth Parapet Joint (1/4" to 1" max.) as shown in "REINFORCING PLAN & POURING SEQUENCE", Dwg. No. 58831. Stop 1'-2" from top of sidewalk.

TABLE OF PARAPET RAIL VARIABLES

"A" Closed Parapet	"B"	P4xx Bar
14'-0"	27	P403E
16'-2 1/4"	32	P404E
13'-2 3/4"	26	P405E

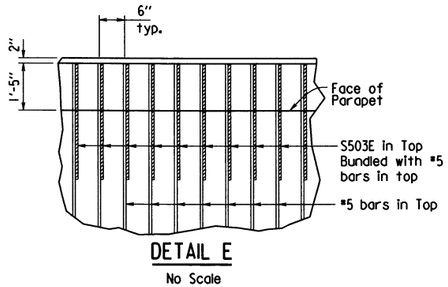
For location of Closed Parapet panels, see "Reinforcing Plan & Pouring Sequence" Dwg. No. 58831.

③ For Type H Rail details, see Dwg. No. 58831 & Std. Dwg. No. 55014.



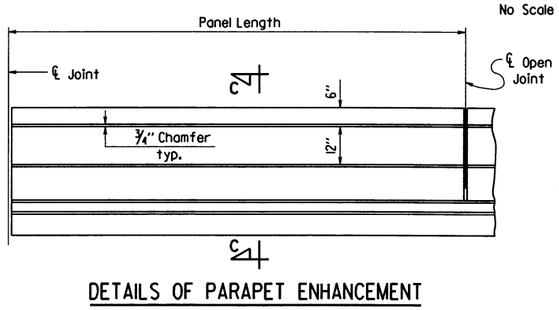
SECTION J-J

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



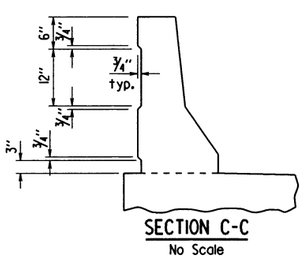
DETAIL E

No Scale



DETAILS OF PARAPET ENHANCEMENT

No Scale



SECTION C-C

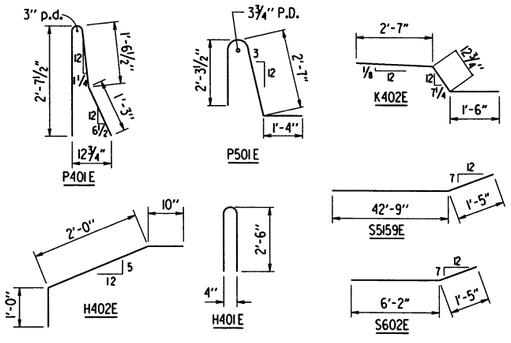
No Scale

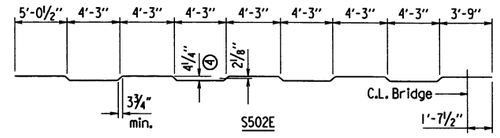
BAR LIST

MARK	NO. REQ'D.	LENGTH	P.D.
S401E	1115	36'-6"	Str.
S402E	256	38'-3"	Str.
K401E	330	7'-8"	Str.
K402E	330	5'-2"	3"
K403E-K408E	1 each	Var. 3'-4" to 7'-9"	3"
K409E-K415E	1 each	Var. 2'-5" to 7'-6"	Str.
K416E	1	7'-6"	Str.
K417E-K423E	1 each	Var. 2'-8" to 8'-0"	Str.
K424E-K429E	1 each	Var. 3'-5" to 7'-7"	3"
P401E	680	5'-6"	3"
P402E	80	5'-6"	Str.
P403E	140	13'-8"	Str.
P404E	14	15'-10"	Str.
P405E	14	12'-10"	Str.
H401E	6	5'-2"	3"
H402E	2	3'-10"	2"
S501E	412	38'-7"	Str.
S502E	258	39'-9"	3"
S503E	670	4'-9"	Str.
S504E-S541E	2 each	Var. 3'-8" to 36'-3"	Str.
S542E-S581E	2 each	Var. 5'-0" to 38'-3"	Str.
S582E-S5119E	2 each	Var. 5'-4" to 37'-9"	Str.
S5120E-S5158E	2 each	Var. 4'-3" to 36'-7"	Str.
S5159E	8	44'-2"	3 3/4"
P501E	680	6'-4"	2 1/2"
S601E	78	34'-0"	Str.
S602E	16	7'-7"	Str.

BENDING DIAGRAMS

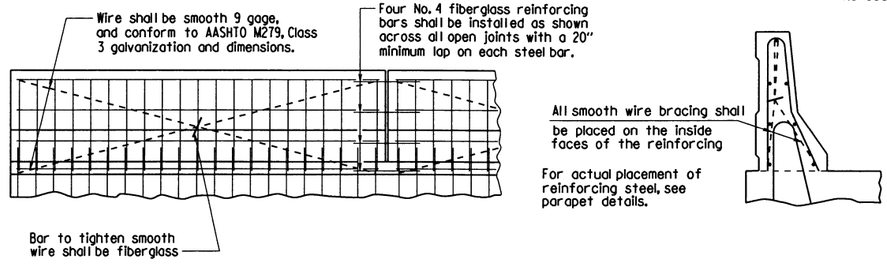
Dimensions are out to out of bars.





④ 1/2" Overtolerance
No Undertolerance

Note: Bars marked with an "E" suffix shall be epoxy coated.

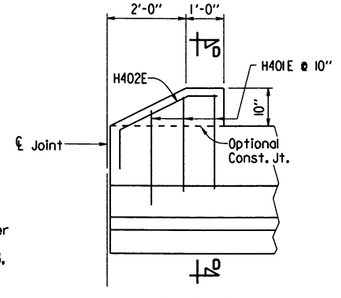


All panels shall be braced as required to prevent racking. All parapet joints shall be sawed as soon as practical to a minimum width of 1/4". To control cracking before sawing, all joints must be grooved before the concrete is set. Sawing of the joints must be controlled so it will follow the grooved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

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

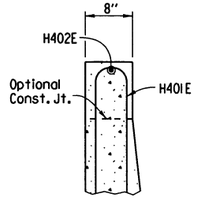
DETAILS OF OPTIONAL SLIPFORMING OF CONCRETE PARAPET RAIL

No Scale



DETAIL X

No Scale



SECTION D-D

No Scale

STATE OF ARKANSAS
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BRIDGE ENGINEER

SHEET 5 OF 5
DETAILS OF 170'-0" CONTINUOUS COMPOSITE W-BEAM UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

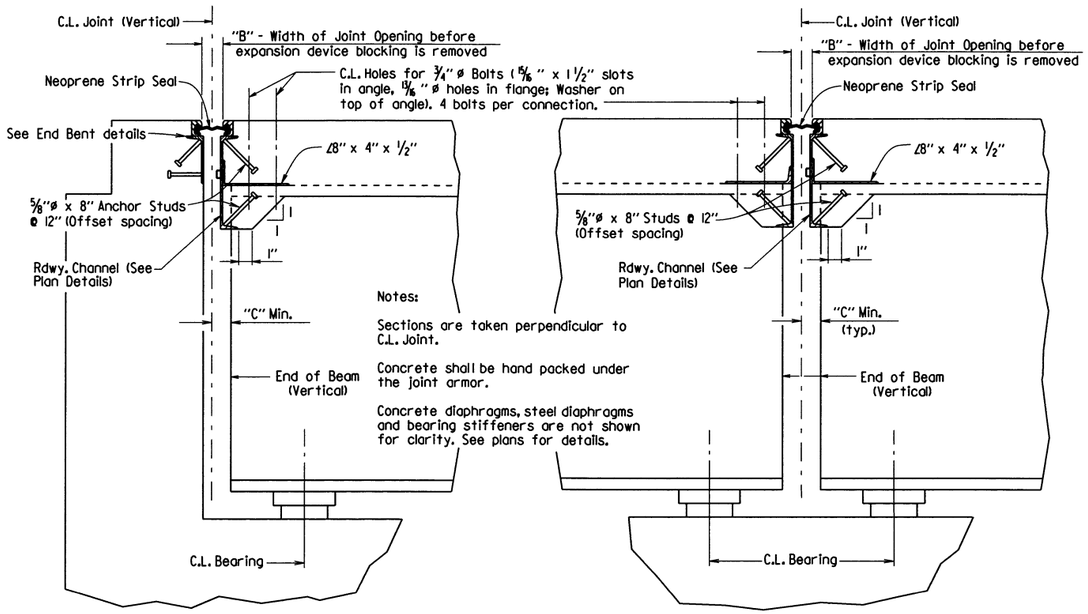
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 3-11-16
CHECKED BY: CJSR DATE: 4/29/16
DESIGNED BY: DBS DATE: 2/16
FILENAME: b090406_s2.dgn
SCALE: AS NOTED

BRIDGE NO. 07393 DRAWING NO. 58832

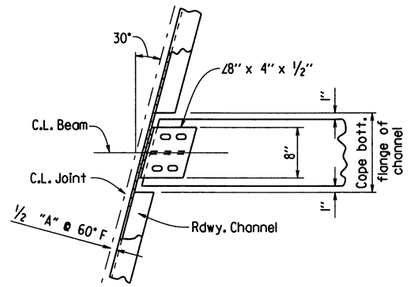
PRINT DATE: 29-APR-2016

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	128	226
				①	07393 - STRIP SEAL JOINT - 58833			

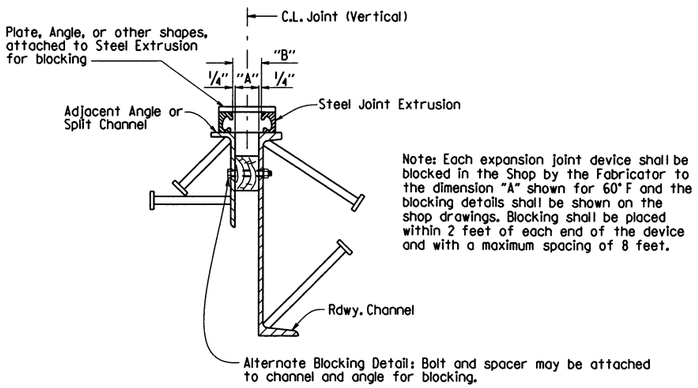


SECTION THRU JOINT AT BENT 1

SECTION THRU JOINT AT BENT 5



CHANNEL CONNECTION DETAIL



DETAILS FOR BLOCKING EXPANSION JOINT DEVICE

EXPANSION DEVICE INSTALLATION AT END BENTS:

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

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

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

EXPANSION DEVICE INSTALLATION AT INTERMEDIATE BENTS:

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

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

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-2-16
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 1 OF 2
DETAILS OF NEOPRENE STRIP SEAL JOINTS

ROUTE SEC.

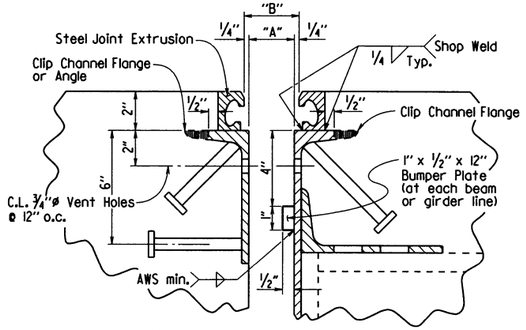
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 3-14-16 FILENAME: b090406_ssj.dgn
CHECKED BY: SWP DATE: 4-29-16 SCALE: NONE
DESIGNED BY: DBJ DATE: 2/16

BRIDGE NO. 07393 DRAWING NO. 58833

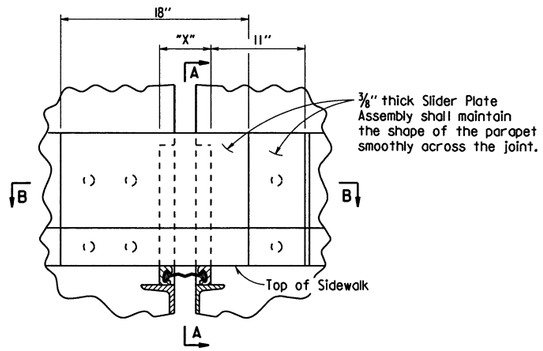
PRINT DATE: 4/28/2016

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	129	226
				①		07393 - STRIP SEAL JOINT - 58834		



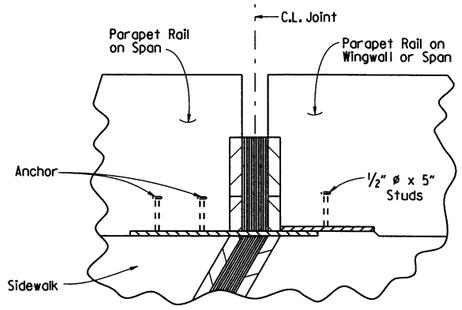
DETAIL OF STRIP SEAL JOINT

Detail shown at End Bent,
Details similar at Intermediate Bent



Dimension "X" equals the width of opening in parapet to allow for removal or repair of joint.

DETAIL OF PARAPET SLIDER PLATES

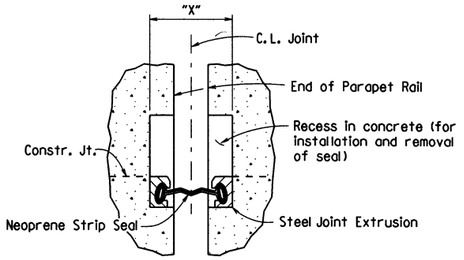


The method of attachment of the slider plate assembly shall allow for removal to provide for future replacement of the neoprene seal. Anchors shall not be paid for directly, but shall be considered subsidiary to the item "Armored Joint with Neoprene Strip Seal".

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

SECTION B-B

BENTS WITHOUT SKEW SHOWN



SECTION C-C

GENERAL NOTES FOR NEOPRENE STRIP SEAL JOINTS:

The steel extrusion and neoprene strip seal material and installation shall be in accordance with Section 809.

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

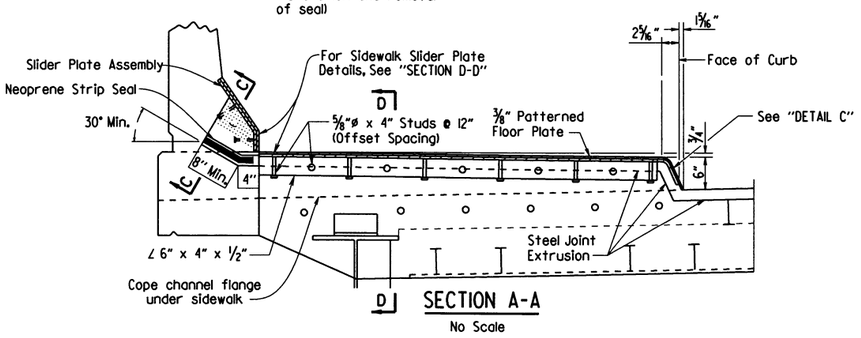
Details of proposed slider plate assembly shall be submitted to the Engineer for approval prior to the fabrication of any structural steel at the expansion device.

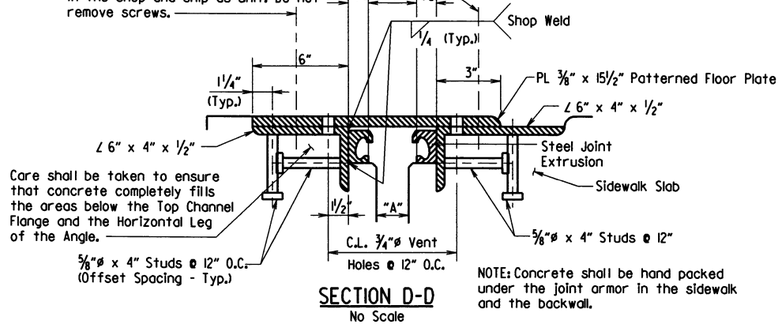
All structural steel shall conform to AASHTO M 270, Grade 50W and all exposed surfaces shall be cleaned in accordance with Subsection 807.84(e). The parapet slider plates and structural steel completely embedded in concrete shall conform to AASHTO M 270, Grade 36, 50 or 50W steel. Unless otherwise noted in the plans, all exposed surfaces of the parapet slider plates shall be cleaned and painted in accordance with Section 638. Painting shall not be paid for directly and structural steel completely embedded in concrete need not be painted. Painting shall be considered subsidiary to "Structural Steel in Beam Spans (M 270, Gr. 50W)".

TABLE OF STRIP SEAL JOINT DATA

Bent Number	④ "A" width perpendicular to joint at 24 hour average temperature of:			"B" Joint width perpendicular to joint at 60° F	Movement Rating	"C" perpendicular to joint
	40°	60°	80°			
1	2¾"	2½"	2¼"	3"	5"	2½"
5	2⅞"	2½"	2⅛"	3"	5"	2½"

④ NOTE: The temperature used to set the joint opening shall be the approximate average air temperature during the 24 hour period immediately before the bolts are tightened. The Engineer shall establish the temperature. Interpolation of the table may be necessary.

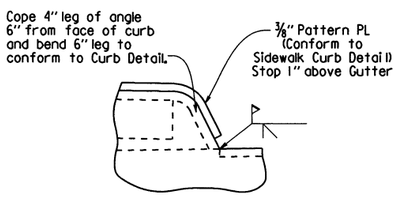




SECTION D-D

No Scale

The surfaces of the 3/8" Patterned plate and ∠6" x 4" x 1/2" not in contact with concrete shall be painted in accordance with Section 638 or as approved by the Engineer. Only one coat is required and shall be applied in the Fabricator's shop. Painting will not be paid for directly, but shall be considered subsidiary to "Structural Steel in Beam Spans (M 270, Gr. 50W)". Patterned plate and angle shall be M 270, Gr. 36 or as approved by the Engineer and shall be paid for as "Structural Steel in Beam Spans (M 270, Gr. 50W)".



DETAIL C

No Scale

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SHEET 2 OF 2
DETAILS OF NEOPRENE STRIP SEAL JOINTS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 3-14-16 FILENAME: b090406_ssj.dgn
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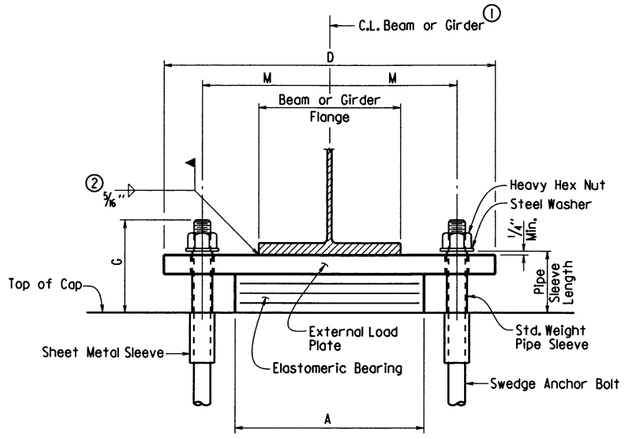
DESIGNED BY: DBS DATE: 4/16

BRIDGE NO. 07393 DRAWING NO. 58834

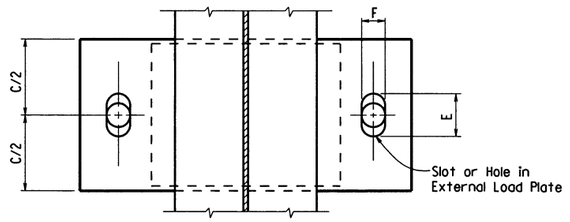
PRINT DATE: 4/28/2016

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	130	226
				①	07393 - ELASTO. BEARINGS - 58835			



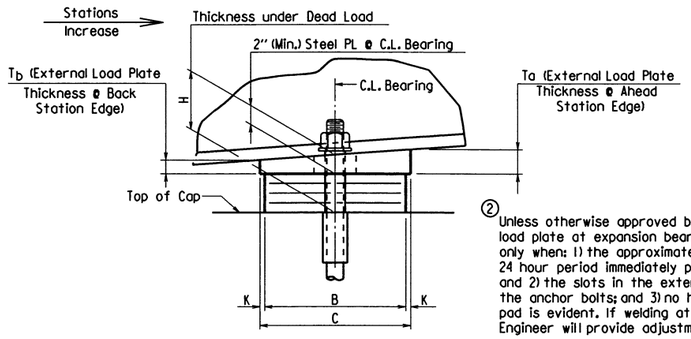
FRONT VIEW

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



PLAN VIEW

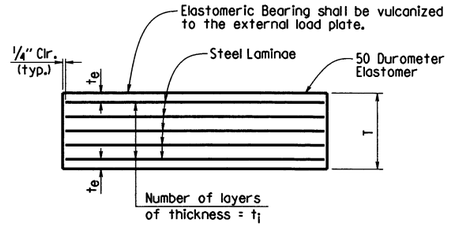
The direction of bevel of the external load plate may not be accurately depicted with respect to Ta and Tb values shown in the "Table of Fabricator Variables".



SIDE VIEW

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

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



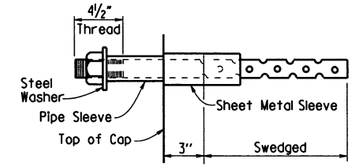
t_e = Thickness of elastomer cover on top and bottom of pad

t_i = Thickness of elastomer between steel laminae

N = Number of elastomer layers of thickness t_i

ELASTOMERIC BEARING

For "TABLE OF FABRICATOR VARIABLES", see Dwg. No. 58836.



ANCHOR BOLT DETAIL

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

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

GENERAL NOTES

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

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

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

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

Pipe Sleeves, Anchor Bolts, Washers and Nuts shall be paid for at the unit price bid for "Structural Steel in Beam Spans (M 270, Gr. 50W)". External load plates will not be measured and paid for separately, but will be considered incidental to the unit price bid for "Elastomeric Bearings".

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

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SHEET 1 OF 2
DETAILS OF
ELASTOMERIC BEARINGS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 3-14-16 FILENAME: b090406_el.dgn
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BRIDGE NO. 07393 DRAWING NO. 58835

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	131	226
				(1) 07393 - ELASTO. BEARINGS - 58836				

TABLE OF FABRICATOR VARIABLES

(3) Maximum Design Load = Service I Limit State

BRIDGE NO.	LOCATION BENT NO.	LOCATION BEAM NO.	BEARING TYPE	NO. of BEARINGS EACH BENT	(3) MAXIMUM DESIGN LOAD (KIPS)	G	H	ELASTOMERIC PAD A	B	N	t_i	t_e	NO. & THICKNESS OF STEEL LAMINAE	T	EXTERNAL LOAD PLATE C	D	E	F	K	M	(4) T_a	(4) T_b	ANCHOR BOLT ANCHOR BOLT (ø x L)	GRADE	PIPE SLEEVE SIZE (ø x L)	SHEET METAL SLEEVE SIZE (ø x L)	STEEL WASHER SIZE (O.D.)
07393	1	1 & 2	Exp.	2	117	9"	5 9/16"	16"	9"	5	1/2"	1/4"	6 @ 12 Gauge	3 5/8"	10"	26 1/4"	5 1/4"	2 1/4"	1/2"	10 3/8"	2.24"	1.76"	1 1/2" x 27"	55	1 1/2" x 6 1/2"	3" x 12"	3"
		3 & 4	Exp.	2	117	9"	5 9/16"	16"	9"	5	1/2"	1/4"	6 @ 12 Gauge	3 5/8"	10"	26 1/4"	5 1/4"	2 1/4"	1/2"	10 3/8"	2.23"	1.77"	1 1/2" x 27"	55	1 1/2" x 6 1/2"	3" x 12"	3"
		5 & 6	Exp.	2	117	9"	5 9/16"	16"	9"	5	1/2"	1/4"	6 @ 12 Gauge	3 5/8"	10"	26 1/4"	5 1/4"	2 1/4"	1/2"	10 3/8"	2.22"	1.78"	1 1/2" x 27"	55	1 1/2" x 6 1/2"	3" x 12"	3"
		7	Exp.	1	117	9"	5 9/16"	16"	9"	5	1/2"	1/4"	6 @ 12 Gauge	3 5/8"	10"	26 1/4"	5 1/4"	2 1/4"	1/2"	10 3/8"	2.21"	1.79"	1 1/2" x 27"	55	1 1/2" x 6 1/2"	3" x 12"	3"
		8	Exp.	1	117	9"	5 9/16"	16"	9"	5	1/2"	1/4"	6 @ 12 Gauge	3 5/8"	10"	26 1/4"	5 1/4"	2 1/4"	1/2"	10 3/8"	2.58"	2.17"	1 1/2" x 27"	55	1 1/2" x 6 1/2"	3" x 12"	3"
		9	Exp.	1	117	9"	6 1/4"	16"	9"	5	1/2"	1/4"	6 @ 12 Gauge	3 5/8"	10"	26 1/4"	5 1/4"	2 1/4"	1/2"	10 3/8"	2.89"	2.49"	1 1/2" x 27"	55	1 1/2" x 6 1/2"	3" x 12"	3"
	2	1	Fix	1	295	9 3/4"	5 9/16"	16"	14"	5	1/2"	1/4"	6 @ 12 Gauge	3 5/8"	15"	28 1/4"	3 1/8"	3 1/8"	1/2"	10 7/8"	2.23"	1.77"	2 1/4" x 36"	55	2 1/2" x 6 1/2"	4" x 12"	4"
		2	Fix	1	295	9 3/4"	5 9/16"	16"	14"	5	1/2"	1/4"	6 @ 12 Gauge	3 5/8"	15"	28 1/4"	3 1/8"	3 1/8"	1/2"	10 7/8"	2.22"	1.78"	2 1/4" x 36"	55	2 1/2" x 6 1/2"	4" x 12"	4"
		3	Fix	1	295	9 3/4"	5 9/16"	16"	14"	5	1/2"	1/4"	6 @ 12 Gauge	3 5/8"	15"	28 1/4"	3 1/8"	3 1/8"	1/2"	10 7/8"	2.21"	1.79"	2 1/4" x 36"	55	2 1/2" x 6 1/2"	4" x 12"	4"
		4	Fix	1	295	9 3/4"	5 9/16"	16"	14"	5	1/2"	1/4"	6 @ 12 Gauge	3 5/8"	15"	28 1/4"	3 1/8"	3 1/8"	1/2"	10 7/8"	2.20"	1.80"	2 1/4" x 36"	55	2 1/2" x 6 1/2"	4" x 12"	4"
		5	Fix	1	295	9 3/4"	5 9/16"	16"	14"	5	1/2"	1/4"	6 @ 12 Gauge	3 5/8"	15"	28 1/4"	3 1/8"	3 1/8"	1/2"	10 7/8"	2.19"	1.81"	2 1/4" x 36"	55	2 1/2" x 6 1/2"	4" x 12"	4"
		6	Fix	1	295	9 3/4"	6 3/16"	16"	14"	5	1/2"	1/4"	6 @ 12 Gauge	3 5/8"	15"	28 1/4"	3 1/8"	3 1/8"	1/2"	10 7/8"	2.81"	2.44"	2 1/4" x 36"	55	2 1/2" x 6 1/2"	4" x 12"	4"
		7	Fix	1	295	9 3/4"	5 9/16"	16"	14"	5	1/2"	1/4"	6 @ 12 Gauge	3 5/8"	15"	28 1/4"	3 1/8"	3 1/8"	1/2"	10 7/8"	2.18"	1.82"	2 1/4" x 36"	55	2 1/2" x 6 1/2"	4" x 12"	4"
		8	Fix	1	295	9 3/4"	5 9/16"	16"	14"	5	1/2"	1/4"	6 @ 12 Gauge	3 5/8"	15"	28 1/4"	3 1/8"	3 1/8"	1/2"	10 7/8"	2.17"	1.83"	2 1/4" x 36"	55	2 1/2" x 6 1/2"	4" x 12"	4"
		9	Fix	1	295	9 3/4"	5 9/16"	16"	14"	5	1/2"	1/4"	6 @ 12 Gauge	3 5/8"	15"	28 1/4"	3 1/8"	3 1/8"	1/2"	10 7/8"	2.16"	1.84"	2 1/4" x 36"	55	2 1/2" x 6 1/2"	4" x 12"	4"
	3	1	Fix	1	295	9 1/8"	5 9/16"	16"	14"	5	1/2"	1/4"	6 @ 12 Gauge	3 5/8"	15"	28 1/4"	3 1/8"	3 1/8"	1/2"	10 7/8"	2.05"	1.95"	2 1/4" x 36"	55	2 1/2" x 5 7/8"	4" x 12"	4"
		2	Fix	1	295	9 1/8"	5 9/16"	16"	14"	5	1/2"	1/4"	6 @ 12 Gauge	3 5/8"	15"	28 1/4"	3 1/8"	3 1/8"	1/2"	10 7/8"	2.04"	1.96"	2 1/4" x 36"	55	2 1/2" x 5 7/8"	4" x 12"	4"
		3 & 4	Fix	2	295	9 1/8"	5 9/16"	16"	14"	5	1/2"	1/4"	6 @ 12 Gauge	3 5/8"	15"	28 1/4"	3 1/8"	3 1/8"	1/2"	10 7/8"	2.03"	1.97"	2 1/4" x 36"	55	2 1/2" x 5 7/8"	4" x 12"	4"
		5	Fix	1	295	9 1/8"	5 9/16"	16"	14"	5	1/2"	1/4"	6 @ 12 Gauge	3 5/8"	15"	28 1/4"	3 1/8"	3 1/8"	1/2"	10 7/8"	2.02"	1.98"	2 1/4" x 36"	55	2 1/2" x 5 7/8"	4" x 12"	4"
		6	Fix	1	295	9 1/8"	5 9/16"	16"	14"	5	1/2"	1/4"	6 @ 12 Gauge	3 5/8"	15"	28 1/4"	3 1/8"	3 1/8"	1/2"	10 7/8"	2.01"	1.99"	2 1/4" x 36"	55	2 1/2" x 5 7/8"	4" x 12"	4"
		7	Fix	1	295	9 1/8"	5 9/16"	16"	14"	5	1/2"	1/4"	6 @ 12 Gauge	3 5/8"	15"	28 1/4"	3 1/8"	3 1/8"	1/2"	10 7/8"	2.00"	2.00"	2 1/4" x 36"	55	2 1/2" x 5 7/8"	4" x 12"	4"
		8	Fix	1	295	9 1/8"	5 9/16"	16"	14"	5	1/2"	1/4"	6 @ 12 Gauge	3 5/8"	15"	28 1/4"	3 1/8"	3 1/8"	1/2"	10 7/8"	1.99"	2.01"	2 1/4" x 36"	55	2 1/2" x 5 7/8"	4" x 12"	4"
		9	Fix	1	295	9 1/8"	5 9/16"	16"	14"	5	1/2"	1/4"	6 @ 12 Gauge	3 5/8"	15"	28 1/4"	3 1/8"	3 1/8"	1/2"	10 7/8"	1.98"	2.02"	2 1/4" x 36"	55	2 1/2" x 5 7/8"	4" x 12"	4"
	4	1 & 2	Fix	2	295	9 1/8"	5 9/16"	16"	14"	5	1/2"	1/4"	6 @ 12 Gauge	3 5/8"	15"	28 1/4"	3 1/8"	3 1/8"	1/2"	10 7/8"	1.87"	2.13"	2 1/4" x 36"	55	2 1/2" x 5 7/8"	4" x 12"	4"
		3	Fix	1	295	9 1/8"	5 9/16"	16"	14"	5	1/2"	1/4"	6 @ 12 Gauge	3 5/8"	15"	28 1/4"	3 1/8"	3 1/8"	1/2"	10 7/8"	1.86"	2.14"	2 1/4" x 36"	55	2 1/2" x 5 7/8"	4" x 12"	4"
		4	Fix	1	295	9 1/8"	5 9/16"	16"	14"	5	1/2"	1/4"	6 @ 12 Gauge	3 5/8"	15"	28 1/4"	3 1/8"	3 1/8"	1/2"	10 7/8"	1.85"	2.15"	2 1/4" x 36"	55	2 1/2" x 5 7/8"	4" x 12"	4"
		5	Fix	1	295	9 1/8"	5 9/16"	16"	14"	5	1/2"	1/4"	6 @ 12 Gauge	3 5/8"	15"	28 1/4"	3 1/8"	3 1/8"	1/2"	10 7/8"	1.84"	2.16"	2 1/4" x 36"	55	2 1/2" x 5 7/8"	4" x 12"	4"
		6	Fix	1	295	9 1/8"	5 9/16"	16"	14"	5	1/2"	1/4"	6 @ 12 Gauge	3 5/8"	15"	28 1/4"	3 1/8"	3 1/8"	1/2"	10 7/8"	1.83"	2.17"	2 1/4" x 36"	55	2 1/2" x 5 7/8"	4" x 12"	4"
		7 & 8	Fix	2	295	9 1/8"	5 9/16"	16"	14"	5	1/2"	1/4"	6 @ 12 Gauge	3 5/8"	15"	28 1/4"	3 1/8"	3 1/8"	1/2"	10 7/8"	1.82"	2.18"	2 1/4" x 36"	55	2 1/2" x 5 7/8"	4" x 12"	4"
		9	Fix	1	295	9 1/8"	5 9/16"	16"	14"	5	1/2"	1/4"	6 @ 12 Gauge	3 5/8"	15"	28 1/4"	3 1/8"	3 1/8"	1/2"	10 7/8"	1.81"	2.19"	2 1/4" x 36"	55	2 1/2" x 5 7/8"	4" x 12"	4"
	5 Back	1	Exp.	1	117	8 7/8"	6 1/8"	16"	9"	5	1/2"	1/4"	6 @ 12 Gauge	3 5/8"	10"	26 1/4"	5 1/4"	2 1/4"	1/2"	10 3/8"	2.39"	2.74"	1 1/2" x 27"	55	1 1/2" x 6 3/8"	3" x 12"	3"
		2	Exp.	1	117	8 7/8"	6"	16"	9"	5	1/2"	1/4"	6 @ 12 Gauge	3 5/8"	10"	26 1/4"	5 1/4"	2 1/4"	1/2"	10 3/8"	2.25"	2.62"	1 1/2" x 27"	55	1 1/2" x 6 3/8"	3" x 12"	3"
		3	Exp.	1	117	8 7/8"	5 11/16"	16"	9"	5	1/2"	1/4"	6 @ 12 Gauge	3 5/8"	10"	26 1/4"	5 1/4"	2 1/4"	1/2"	10 3/8"	2.06"	2.44"	1 1/2" x 27"	55	1 1/2" x 6 3/8"	3" x 12"	3"
		4	Exp.	1	117	8 7/8"	5 9/16"	16"	9"	5	1/2"	1/4"	6 @ 12 Gauge	3 5/8"	10"	26 1/4"	5 1/4"	2 1/4"	1/2"	10 3/8"	1.81"	2.19"	1 1/2" x 27"	55	1 1/2" x 6 3/8"	3" x 12"	3"
		5 & 6	Exp.	2	117	8 7/8"	5 9/16"	16"	9"	5	1/2"	1/4"	6 @ 12 Gauge	3 5/8"	10"	26 1/4"	5 1/4"	2 1/4"	1/2"	10 3/8"	1.80"	2.20"	1 1/2" x 27"	55	1 1/2" x 6 3/8"	3" x 12"	3"
		7	Exp.	1	117	8 7/8"	5 9/16"	16"	9"	5	1/2"	1/4"	6 @ 12 Gauge	3 5/8"	10"	26 1/4"	5 1/4"	2 1/4"	1/2"	10 3/8"	1.79"	2.21"	1 1/2" x 27"	55	1 1/2" x 6 3/8"	3" x 12"	3"
		8 & 9	Exp.	2	117	8 7/8"	5 9/16"	16"	9"	5	1/2"	1/4"	6 @ 12 Gauge	3 5/8"	10"	26 1/4"	5 1/4"	2 1/4"	1/2"	10 3/8"	1.78"	2.22"	1 1/2" x 27"	55	1 1/2" x 6 3/8"	3" x 12"	3"
	5 Ahead	1	Exp.	1	117	7 1/4"	4 1/2"	16"	9"	2	1/2"	1/4"	3 @ 12 Gauge	1 3/16"	10"	26 1/4"	5 1/4"	2 1/4"	1/2"	10 3/8"	2.51"	2.87"	1 1/2" x 26"	55	1 1/2" x 4 3/4"	3" x 12"	3"
		2	Exp.	1	117	7 1/4"	4 5/16"	16"	9"	2	1/2"	1/4"	3 @ 12 Gauge	1 3/16"	10"	26 1/4"	5 1/4"	2 1/4"	1/2"	10 3/8"	2.31"	2.69"	1 1/2" x 26"	55	1 1/2" x 4 3/4"	3" x 12"	3"
		3	Exp.	1	117	7 1/4"	4 1/16"	16"	9"	2	1/2"	1/4"	3 @ 12 Gauge	1 3/16"	10"	26 1/4"	5 1/4"	2 1/4"	1/2"	10 3/8"	2.06"	2.44"	1 1/2" x 26"	55	1 1/2" x 4 3/4"	3" x 12"	3"
		4 & 5	Exp.	2	117	7 1/4"	3 15/16"	16"	9"	2	1/2"	1/4"	3 @ 12 Gauge	1 3/16"	10"	26 1/4"	5 1/4"	2 1/4"	1/2"	10 3/8"	1.80"	2.20"	1 1/2" x 26"	55	1 1/2" x 4 3/4"	3" x 12"	3"
		6 & 7	Exp.	2	117	7 1/4"	3 15/16"	16"	9"	2	1/2"	1/4"	3 @ 12 Gauge	1 3/16"	10"	26 1/4"	5 1/4"	2 1/4"	1/2"	10 3/8"	1.79"	2.21"	1 1/2" x 26"	55	1 1/2" x 4 3/4"	3" x 12"	3"
		8 & 9	Exp.	2	117	7 1/4"	3 15/16"	16"	9"	2	1/2"	1/4"	3 @ 12 Gauge	1 3/16"	10"	26 1/4"	5 1/4"	2 1/4"	1/2"	10 3/8"	1.78"	2.22"	1 1/2" x 26"	55	1 1/2" x 4 3/4"	3" x 12"	3"
	6	1 - 9	Fix	9	291	9 3/8"	5 9/16"	16"	14"	5	1/2"	1/4"	6 @ 12 Gauge	3 5/8"	15"	29 1/4"	3 3/4"	3 3/4"	1/2"	11 1/8"	1.65"	2.35"	2 1/2" x 37 1/2"	55	3" x 5 7/8"	4" x 12"	4 1/2"
	7	1 - 9	Exp.	9	117	6 3/4"	3 15/16"	16"	9"	2	1/2"	1/4"	3 @ 12 Gauge	1 3/16"	10"	26 1/4"	5 1/4"	2 1/4"	1/2"	10 3/8"	1.77"	2.23"	1 1/2" x 25"	55	1 1/2" x 4 1/4"	3" x 12"	3"

(4) Includes load plate thickening for bearings along:
Beams 8 & 9 - Bent 1
Beam 6 - Bent 2
Beams 1, 2 & 3 - Bent 5 Back
Beams 1, 2 & 3 - Bent 5 Ahead

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-2-16
CHARLES R. ELLIS
BRIDGE ENGINEER

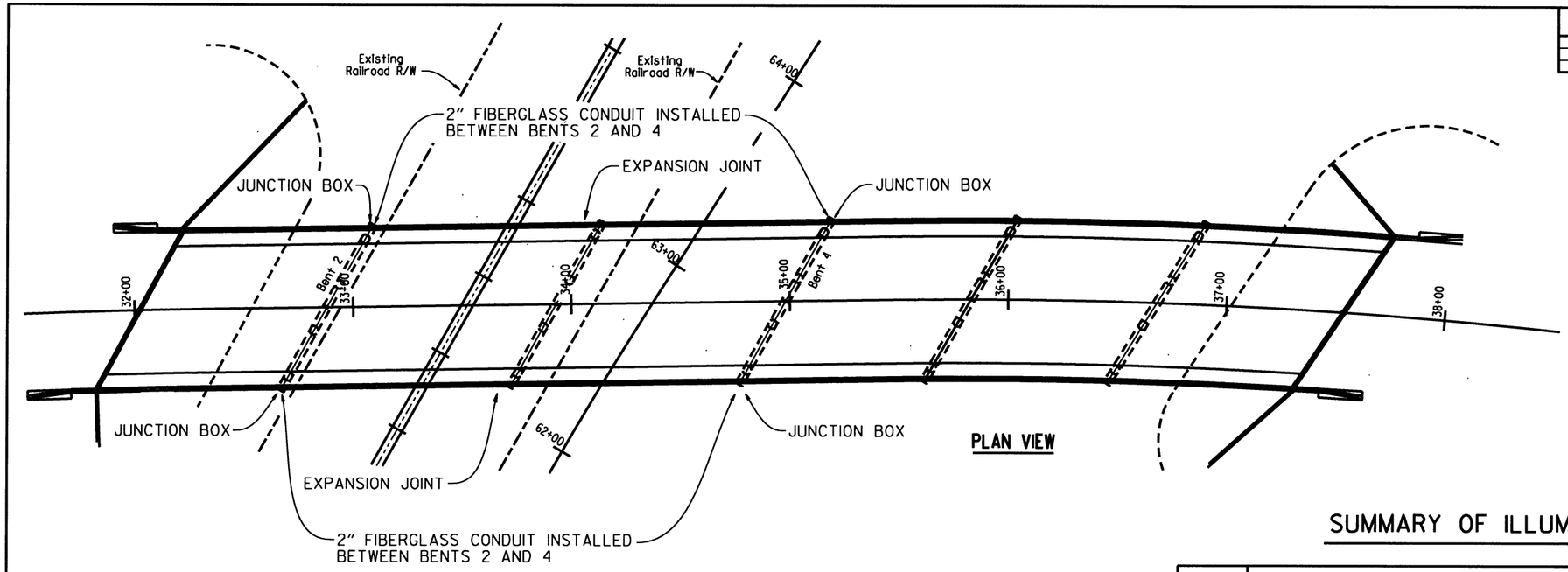
SHEET 2 OF 2
DETAILS OF
ELASTOMERIC BEARINGS

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

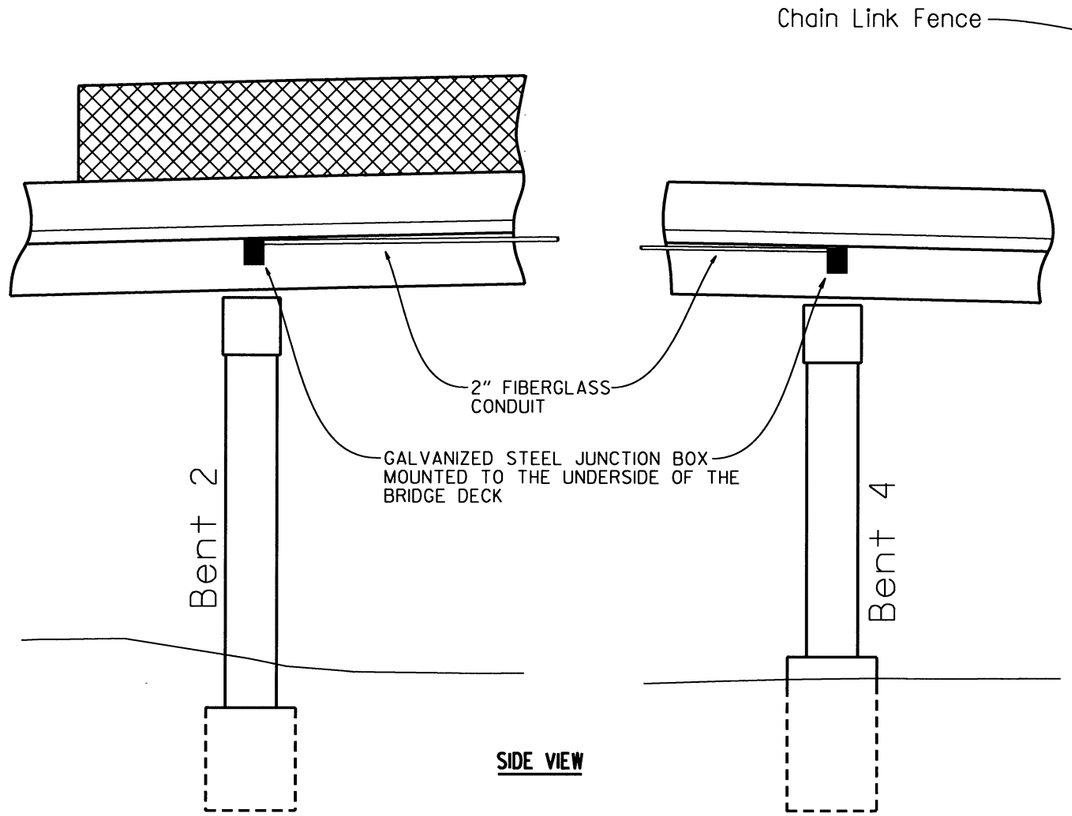
DRAWN BY: KDH DATE: 3-14-16 FILENAME: b090406_el.dgn
CHECKED BY: CSE DATE: 4/29/16 SCALE: NONE
DESIGNED BY: DBS DATE: 2/16
BRIDGE NO. 07393 DRAWING NO. 58836

PRINT DATE: 4/28/2016

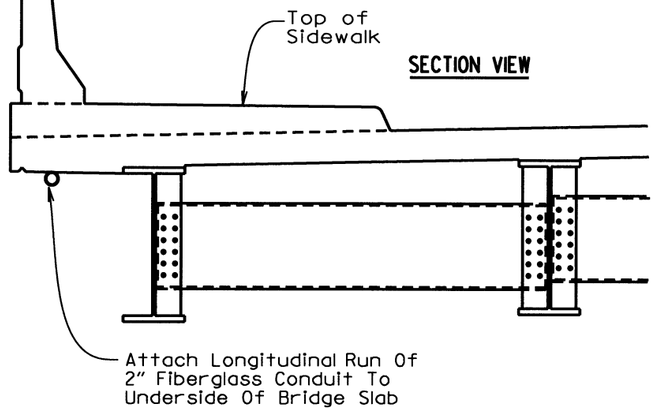
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	132	226
				①	BRIDGE LIGHTING DETAILS			



PLAN VIEW



SIDE VIEW



SECTION VIEW

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7526
6-7-16
JOSEPH A. SARTINI

SUMMARY OF ILLUMINATION QUANTITIES

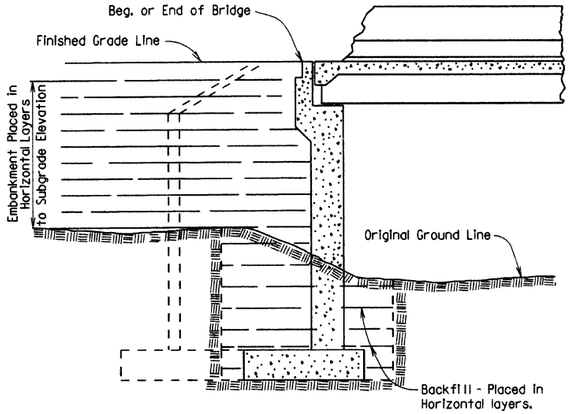
ITEM NO.	ITEM	QUANTITIES TOTAL	UNIT
SP	FIBERGLASS CONDUIT (2")	430	LIN. FT.

NOTES:

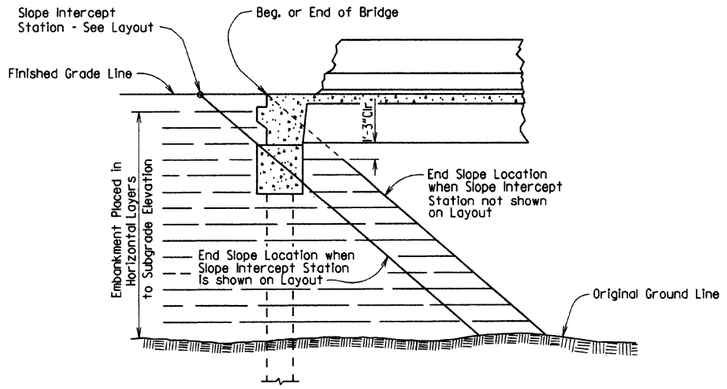
1. CONDUIT SHALL BE ATTACHED TO THE UNDERSIDE OF THE BRIDGE DECK USING STRAPS EVERY 5 FEET.
2. GALVANIZED STEEL JUNCTION BOXES SHALL BE INSTALLED FOR CONDUIT CONNECTION ON BENTS 2 AND 4 ON BOTH SIDES OF THE BRIDGE.
3. JUNCTION BOXES, STRAPS, CLAMPS, HANGERS, BOLTS, ANCHORS, AND EXPANSION DEVICES ARE SUBSIDIARY TO FIBERGLASS CONDUIT

PRINT DATE: dateprinted

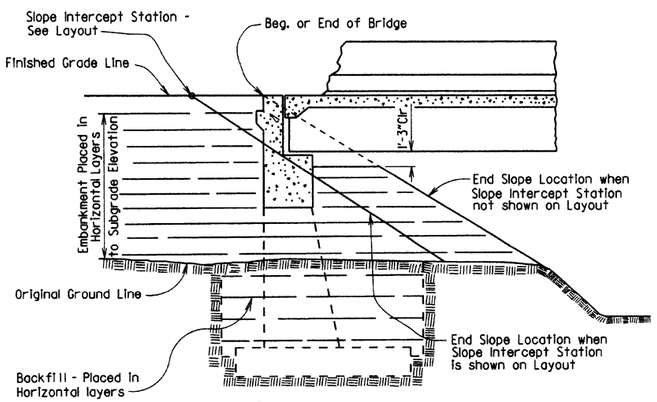
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		133	
				JOB NO.				
				①	EMBANKMENT & BACKFILL		55000	



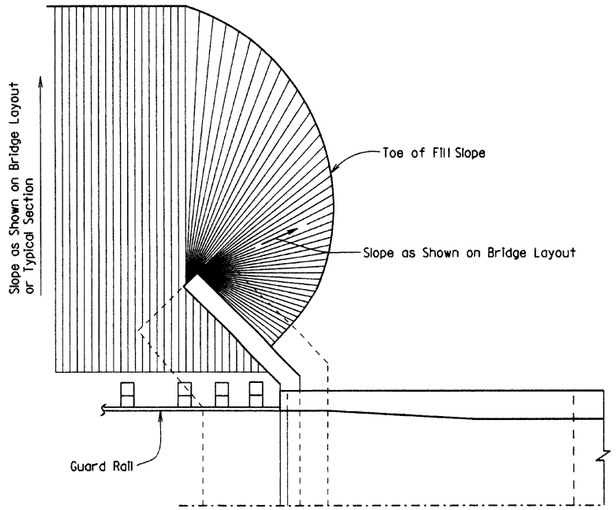
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT VERTICAL WALL ABUTMENTS



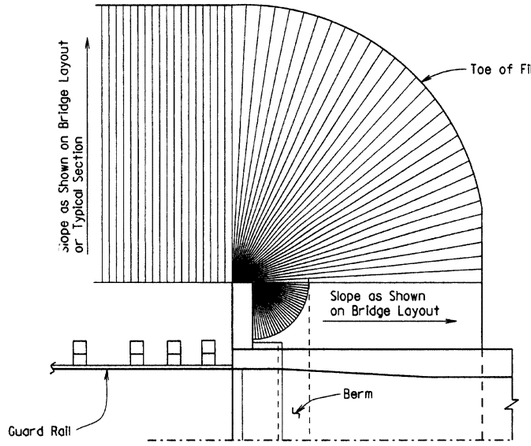
EMBANKMENT CONSTRUCTION AT SPILL-THROUGH PILE END BENTS



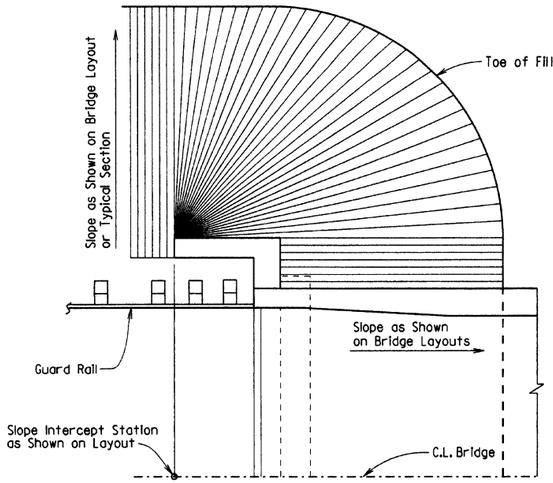
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT SPILL-THROUGH END BENTS



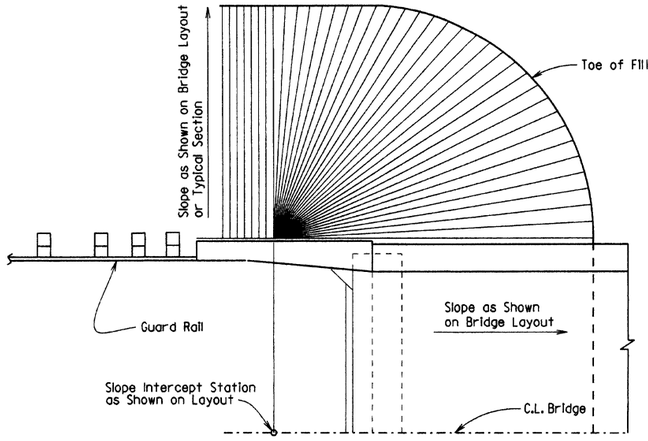
VERTICAL WALL ABUTMENTS



SPILL-THROUGH END BENTS WITH STUB WING



SPILL-THROUGH END BENTS WITH TURNBACK WING



SPILL-THROUGH END BENTS WITH TRANSITION WING

METHOD OF DETERMINING FILL SLOPE LOCATION AT BRIDGE ENDS

GENERAL NOTES

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

STANDARD DETAILS FOR EMBANKMENT CONSTRUCTION AND BACKFILL AT BRIDGE ENDS

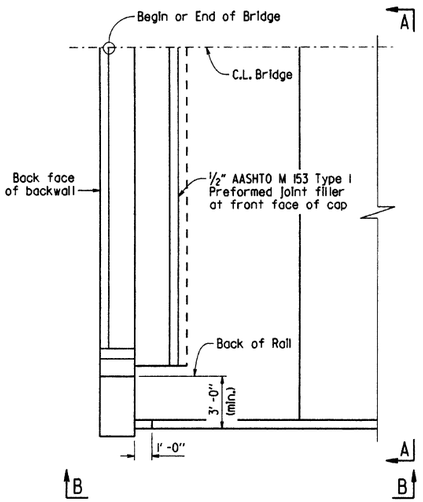
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

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

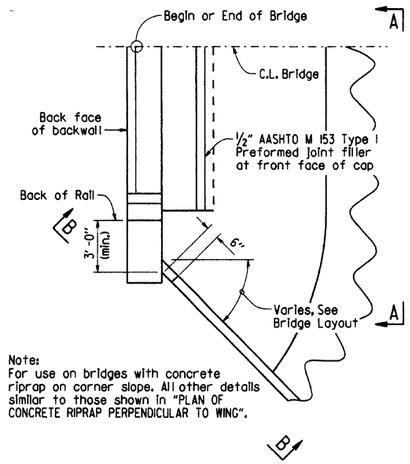
DRAWING NO. 55000

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		134	
				JOB NO.				
				①	CONCRETE RIPRAP 55002			

Note:
Sloped surfaces of concrete riprap to be marked off into blocks (construction joints optional) with an approved grooving tool, spacing the grooved lines about 5' apart.



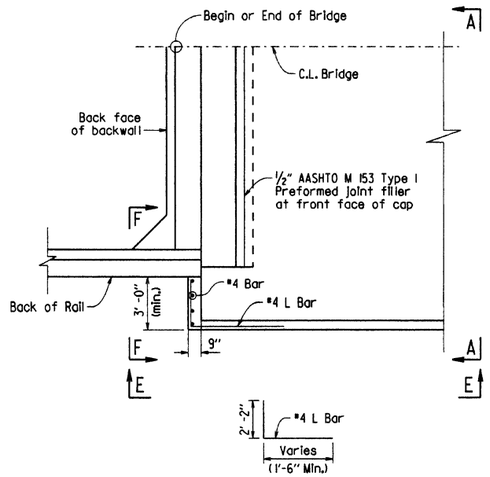
PLAN OF CONCRETE RIPRAP
PERPENDICULAR TO WING
¼" = 1'-0"



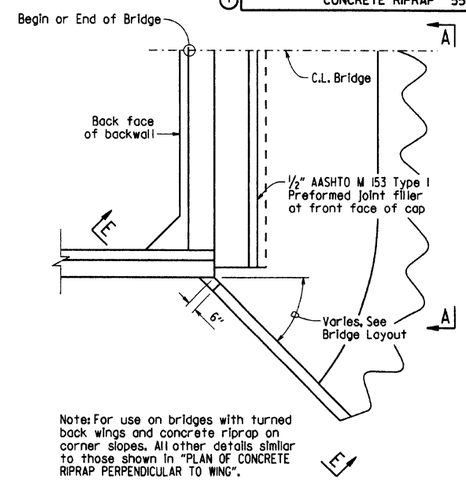
Note:
For use on bridges with concrete riprap on corner slope. All other details similar to those shown in "PLAN OF CONCRETE RIPRAP PERPENDICULAR TO WING".

PLAN OF CONCRETE RIPRAP
AT ANGLE TO WING
¼" = 1'-0"

Note:
For use on bridges with turned back wings, All other details similar to those shown in "PLAN OF CONCRETE RIPRAP PERPENDICULAR TO WING".

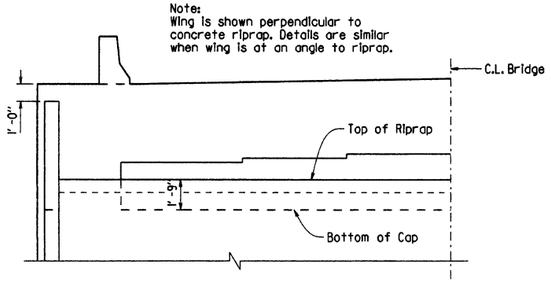


PLAN OF CONCRETE RIPRAP
PERPENDICULAR TO TURNED BACK WING
¼" = 1'-0"

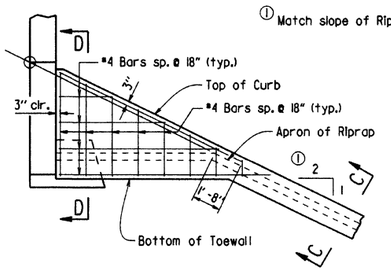


Note: For use on bridges with turned back wings and concrete riprap on corner slopes. All other details similar to those shown in "PLAN OF CONCRETE RIPRAP PERPENDICULAR TO WING".

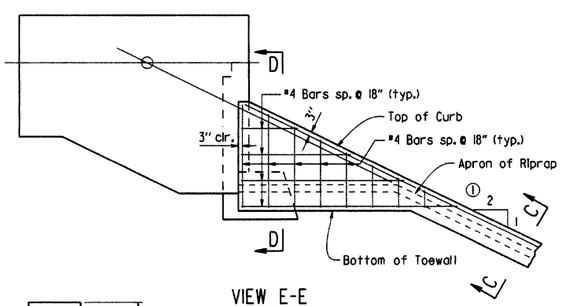
PLAN OF CONCRETE RIPRAP
AT ANGLE FROM TURNED BACK WING
¼" = 1'-0"



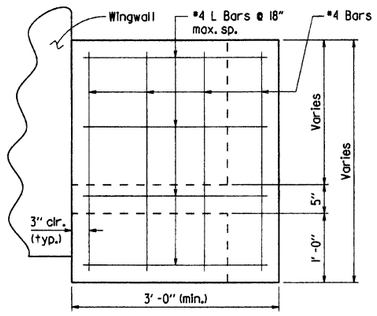
VIEW A-A
¼" = 1'-0"



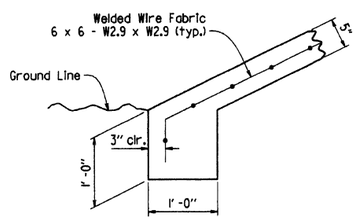
VIEW B-B
¼" = 1'-0"



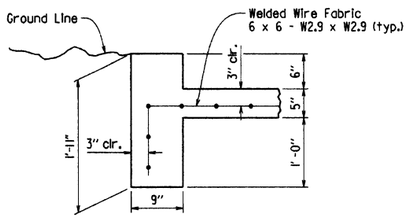
VIEW E-E
¼" = 1'-0"



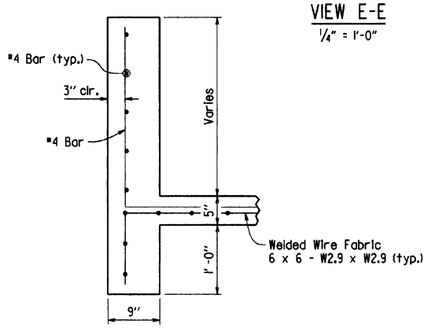
VIEW F-F
1" = 1'-0"



TOE OF CONCRETE RIPRAP
1" = 1'-0"



SECTION C-C
1" = 1'-0"



SECTION D-D
1" = 1'-0"

GENERAL NOTES

All concrete shall be Class A with a minimum compressive strength, f'c = 2,100 psi.

Welded wire fabric shall conform to AASHTO M55 or M221.

STANDARD DETAILS FOR CONCRETE RIPRAP

ARKANSAS STATE HIGHWAY COMMISSION

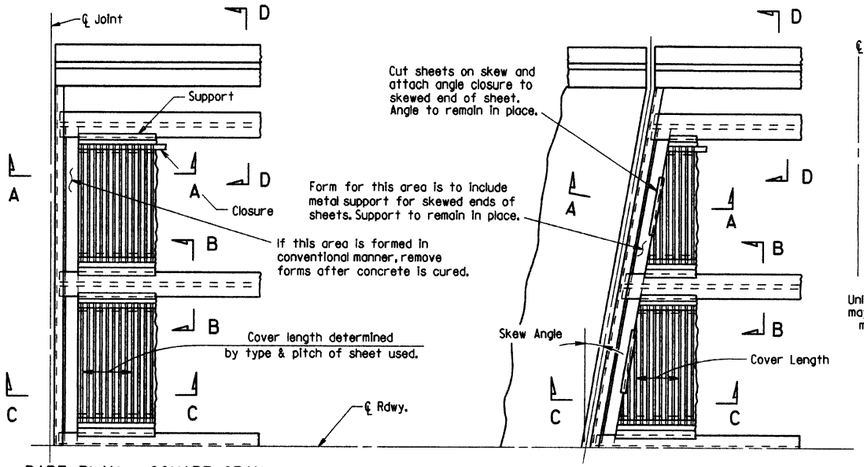
LITTLE ROCK, ARK.

DRAWN BY: ACP DATE: 2/27/2014 FILENAME: b55002.dgn
CHECKED BY: BEF DATE: 2/27/2014 SCALE: AS SHOWN
DESIGNED BY: Std. DATE: ---

DRAWING NO. 55002

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
3/24/16				6	ARK.		135	
				JOB NO.				

① BRIDGE DECK FORMS 55005

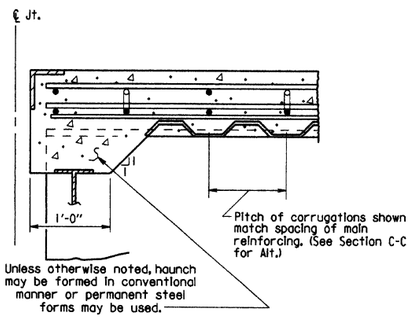


PART PLAN - SQUARE SPAN

⅜" = 1'-0"

PART PLAN - SKEWED SPAN

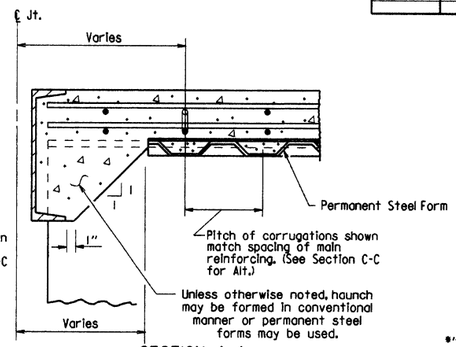
⅜" = 1'-0"



SECTION A-A

N.T.S.

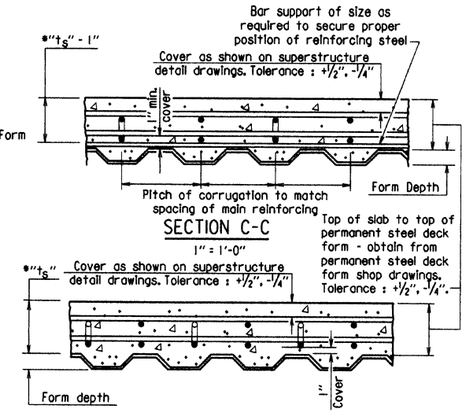
(Angle at end of span)



SECTION A-A

N.T.S.

(Channel at end of span)



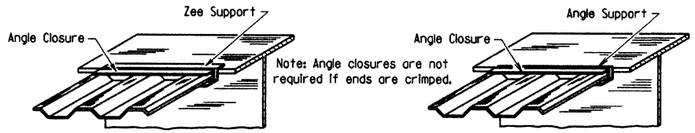
SECTION C-C

1" = 1'-0"

SECTION C-C - ALTERNATE

1" = 1'-0"

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



SKETCH OF PERMISSIBLE SUPPORTS

N.T.S.

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

GENERAL NOTES

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

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

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

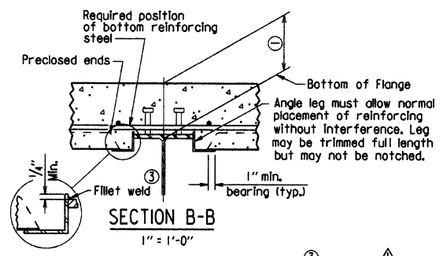
Form sheets shall be fastened to supporting members and to each other with galvanized metal screws sufficient in size and number to provide a secure attachment. Alternate methods of attachment must be approved by the Engineer.

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

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

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

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

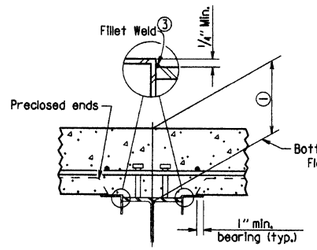


SECTION B-B

1" = 1'-0"

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

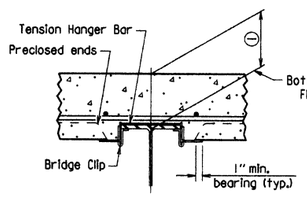
③ ⚠ Minimum weld: ⅛" x 1" @ 18". More weld may be required; maximum length per weld = 1½" (typ.)



SECTION B-B

1" = 1'-0"

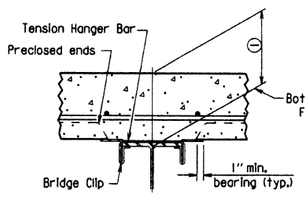
(Showing permissible support for tension flange where shear connectors are used and for all compression flanges)



SECTION B-B

1" = 1'-0"

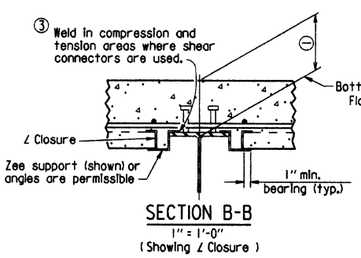
(Showing permissible support for tension flange where shear connectors are not used)



SECTION B-B

1" = 1'-0"

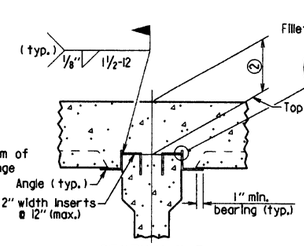
(Showing permissible support for tension flange where shear connectors are not used)



SECTION B-B

1" = 1'-0"

(Showing ∠ Closure)

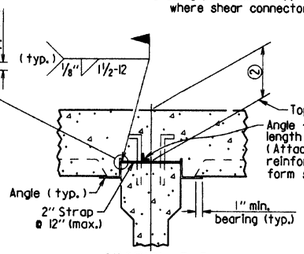


SECTION B-B

(FOR CONCRETE GIRDERS)

1" = 1'-0"

(Showing support by insert cast in girder)

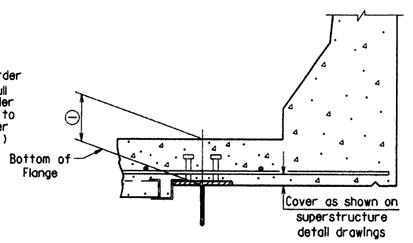


SECTION B-B

(FOR CONCRETE GIRDERS)

1" = 1'-0"

(Showing support by Strap)



SECTION D-D

1" = 1'-0"

Note: Only Bottom Reinforcing is shown.

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

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

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

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

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

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

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

DESIGNED BY: STD. DATE: —

DRAWING NO. 55005

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		136	
				JOB NO.				
				①	GENERAL NOTES		55006	

GENERAL NOTES

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

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2014 Edition) with applicable Supplemental Specifications and Special Provisions. Section and Subsection refer to the Standard Specifications.

DESIGN SPECIFICATIONS: See Bridge Layout(s).

SUPERSTRUCTURE NOTES:

MATERIALS AND STRENGTHS:

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

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

CONCRETE:

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

The superstructure details shown are for use when removable deck forming is used and are the basis for measurement of Class S(AE) Concrete. See Standard Drawing No. 55005 for allowable modifications and for tolerances when Permanent Steel Bridge Deck Forms are used.

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

The concrete deck (roadway surface) shall be given a tine finish in accordance with Subsection 802.19 for Class 5 Tined Bridge Roadway Surface Finish. Sidewalks shall receive a broomed finish as specified for final finishing in Subsection 802.19 for Class 6 Broomed Finish. Movement of the finishing machine across new concrete shall be on planks placed on the surface and shall be prohibited for 72 hours after finishing the pour. Sufficient concrete must be placed ahead of the strike-off to fully load the beam or girder. When permitted, the use of a longitudinal strike-off will require that a vertical camber adjustment be made in the strike-off to account for the future dead load deflection due to any railings, median barrier, and sidewalks.

REINFORCING STEEL:

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

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

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

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

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

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

Unless otherwise noted, field connections shall be bolted with ¾" ø high-strength bolts using 13/16 " ø open holes. Holes for ¾" ø high-strength bolts may be 15/16 " ø if a washer is supplied for use under both the nut and head of the bolt. The use of oversized holes will not be allowed on main members unless otherwise noted. Bolts shall be placed with heads on the outside face of the exterior beam or girder webs and on the bottom of the beam or girder flanges.

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

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

STRUCTURAL STEEL (W-BEAMS):

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

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

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

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

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

Bent plate diaphragms for horizontally curved beams shall be cut and fabricated so that the primary direction of rolling is parallel to the direction of the main tensile and/or compressive stresses. Bent plate diaphragms for straight beams may be cut and fabricated in accordance with Subsection 807.35 or as required for horizontally curved beams.

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

STRUCTURAL STEEL (PLATE GIRDERS):

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

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

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

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

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

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

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

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

Bent plate diaphragms for horizontally curved girders shall be cut and fabricated so that the primary direction of rolling is parallel to the direction of the main tensile and/or compressive stresses. Bent plate diaphragms for straight girders may be cut and fabricated in accordance with Subsection 807.35 or as required for horizontally curved girders.

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

SUBSTRUCTURE NOTES:

CONCRETE:

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

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

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

REINFORCING STEEL:

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

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

STRUCTURAL STEEL:

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

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

STANDARD GENERAL NOTES
FOR STEEL BRIDGE STRUCTURES

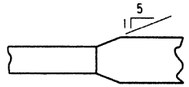
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

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

DRAWING NO. 55006

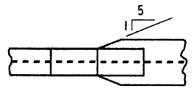
PRINT DATE: 9/10/2015

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		137	
				JOB NO.				
				①	STEEL BRIDGE STRUCTURES		55007	

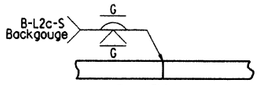


Plan-Unequal Width (Fig.)

FLANGE SPLICE

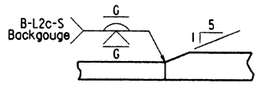


FLANGE SPLICE AT UNEQUAL BOTTOM FLANGE WIDTHS



Equal Thickness

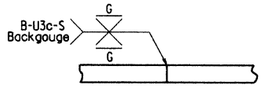
WEB & FLANGE SPLICE



Unequal Thickness

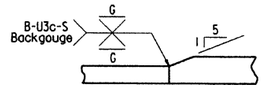
FLANGE SPLICE

(Use when Base Metal Thickness is Equal to or Less than 2")



Equal Thickness

WEB & FLANGE SPLICE

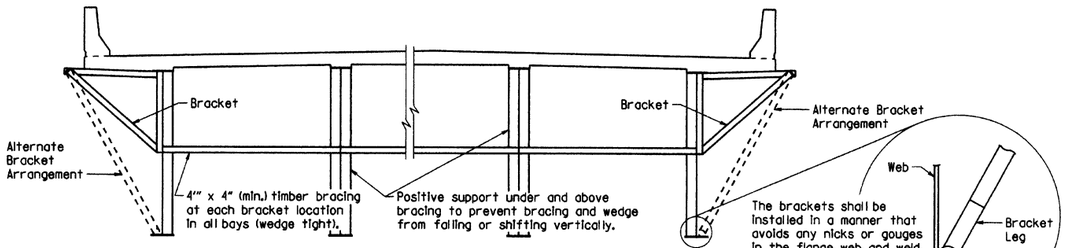


Unequal Thickness

FLANGE SPLICE

(Use when Base Metal Thickness is Greater than 2")

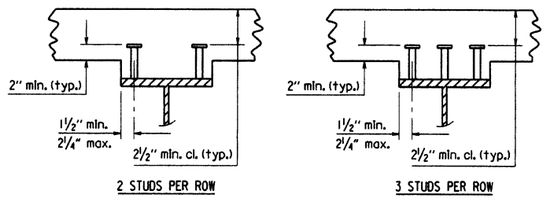
DETAILS OF WELDED SPLICES FOR PLATE GIRDERS



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

SCREED RAIL SUPPORT FOR PLATE GIRDERS

(USE WHEN WEB DEPTHS ARE 48" OR GREATER)

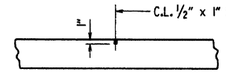


2 STUDS PER ROW

3 STUDS PER ROW

Stud Shear Connectors shall be automatically end welded to the beam or girder flange in accordance with the recommendations of the Manufacturer. See plan details for number and size.

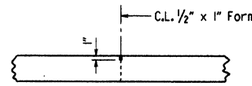
SHEAR CONNECTOR DETAIL



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

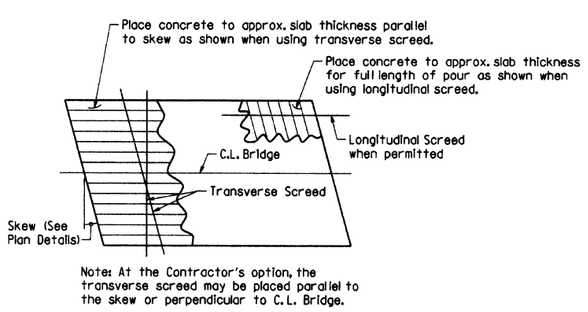
ADDITIONAL NOTES IF SIDEWALKS OR RAISED MEDIANS ARE REQUIRED:
Slab Joints shall be installed before the sidewalk or raised median is poured. After installation of the joint in the sidewalk or raised median and prior to pouring the parapet rail, the joint sealer shall be placed extending across the deck slab from gutterline to gutterline and acrosss the top of the sidwalk or raised median to the edge of the slab. No joint sealer shall be placed on the deck slab under the sidewalk or raised median.

TRANSVERSE SLAB JOINT DETAIL



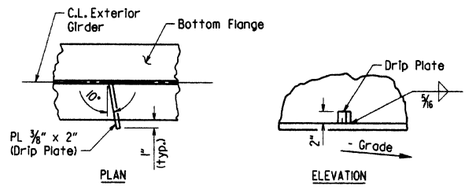
Use ½" x 1" Type 3 or 4 Joint Sealer. See Subsections 501.02(h) and 501.05(j). Backer Rod filler will not be required. Joint sealer shall be measured and paid for as Class S(AE) Concrete-Bridge. This joint shall be formed. Seal color shall be gray or other color similar to concrete.

LONGITUDINAL CONSTRUCTION JOINT



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

CONCRETE PLACEMENT PROCEDURE FOR BRIDGES WITH SKEW



PLAN

ELEVATION

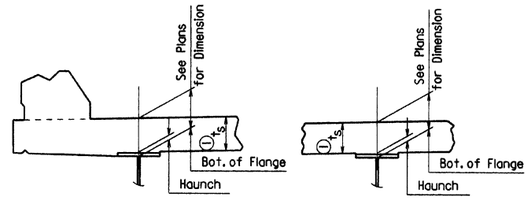
Drip Plate to be welded to the outer side of the bottom flange of the exterior girders.

Locate drip plate 5'-0" from C.L. Bearing on high side of each Bent, unless otherwise noted in the plans.

BOTTOM FLANGE DRIP PLATE

(USE WHEN WEB DEPTHS ARE 54" OR GREATER AND UNIT OR SPAN IS NOT IN LEVEL GRADE)

t_s = slab thickness. See "Typical Roadway Section" in the plans.



EXTERIOR BEAM OR GIRDER

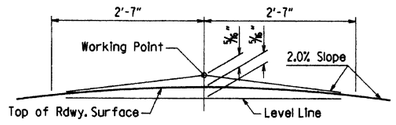
INTERIOR BEAM OR GIRDER

① Tolerance when removable deck forming is used is + ½", - ¼". Haunch forming is required and shall be adjusted to maintain slab thickness tolerance.

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

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

ADJUSTMENT FOR SLAB THICKNESS TOLERANCE



NOTE: Working Point matches Theoretical Roadway Grade.

ROUNDING DETAIL

BRIDGES IN NORMAL CROWN

WELD TABLE

Material Thickness of Thicker Part Joined (Inches)	Minimum Size of Fillet Weld (Inches)	Single Pass Weld Must Be Used
To ¾" Inclusive	¼"	
Over ¾"	⅜"	

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

SECTION AND SUBSECTION REFER TO THE ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (2014 EDITION).

THESE DETAILS ARE APPLICABLE UNLESS OTHERWISE SHOWN IN THE PLAN DETAILS, SPECIAL PROVISIONS, OR SUPPLEMENTAL SPECIFICATIONS.

STANDARD DETAILS FOR STEEL BRIDGE STRUCTURES

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

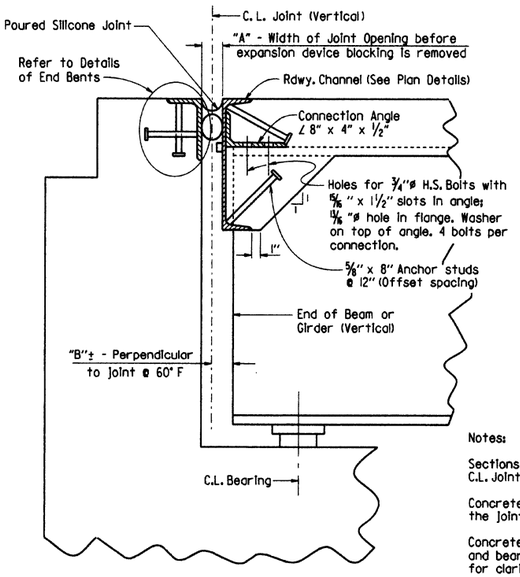
DRAWN BY: JYP DATE: 2/11/2016 FILENAME: b55007.dgn

CHECKED BY: AMS DATE: 2/11/2016 SCALE: No Scale

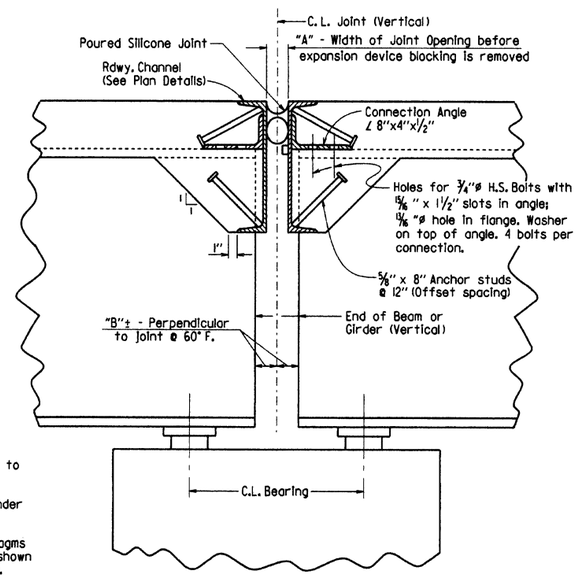
DESIGNED BY: STD. DATE: —

DRAWING NO. 55007

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		138	
				JOB NO.				
				①	POURED SILICONE JOINT			55008



SECTION THRU JOINT AT END BENT



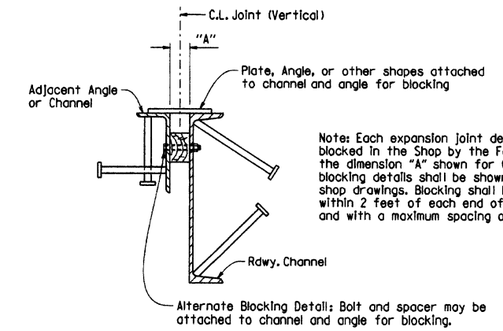
SECTION THRU JOINT AT INTERMEDIATE BENT

Notes:

Sections are taken perpendicular to C.L. Joint.

Concrete shall be hand packed under the joint armor.

Concrete diaphragms, steel diaphragms and bearing stiffeners are not shown for clarity. See plans for details.



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

DETAILS FOR BLOCKING EXPANSION JOINT DEVICE

EXPANSION DEVICE INSTALLATION AT END BENTS:

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

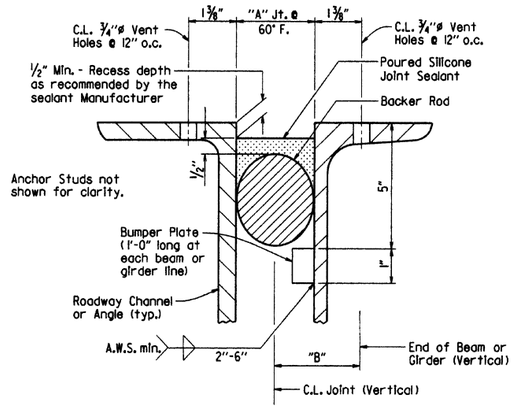
1) The concrete span pour adjacent to joint shall be placed before the end bent backwall is placed. After the end bent backwall forms are in place and the beams or girders erected, the blocked expansion device shall be installed and adjusted for grade. All connection bolts shall be fully tightened prior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

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

EXPANSION DEVICE INSTALLATION AT INTERMEDIATE BENTS:

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

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



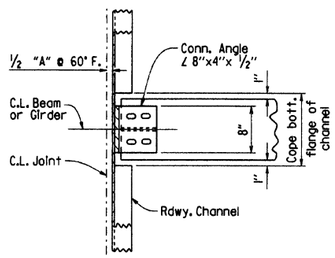
DETAIL OF POURED SILICONE JOINT

Silicone joint material and installation shall conform to Section 809. The temperature limitations recommended by the sealant Manufacturer shall be observed. The sealant shall be installed only when the average 24 hour air temperature is between 40° and 80° F.

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

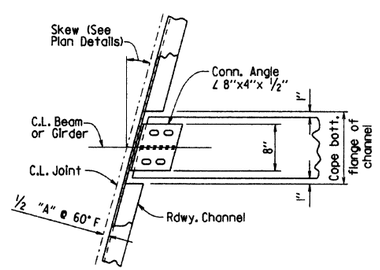
The Contractor shall verify separation of the backer rod from the joint material after the joint material has set.

When bridge deck is constructed in stages, backer rods shall be extended beyond length of poured joint in initial construction stage so that the two pieces can be properly spliced together prior to installing sealant in subsequent stages. Manufacturer's recommendations shall be followed to prevent sealant from "running out of joint" during stage construction.



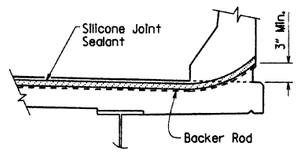
CHANNEL CONNECTION DETAIL

BENTS WITHOUT SKEW

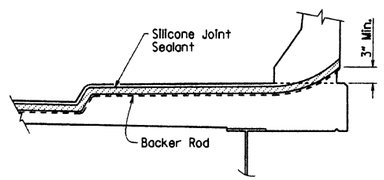


CHANNEL CONNECTION DETAIL

BENTS WITH SKEW



JOINT SEAL PLACEMENT AT RAIL



JOINT SEAL PLACEMENT AT SIDEWALK

SECTION AND SUBSECTION REFER TO THE ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (2014 EDITION).

THESE DETAILS ARE APPLICABLE UNLESS OTHERWISE SHOWN IN THE PLAN DETAILS, SPECIAL PROVISIONS, OR SUPPLEMENTAL SPECIFICATIONS. SEE "TABLE OF SILICONE JOINT DATA" IN PLAN DETAILS FOR VARIABLES "A" AND "B", AND BUMPER PLATE SIZE.

STANDARD DETAILS FOR POURED SILICONE JOINTS

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

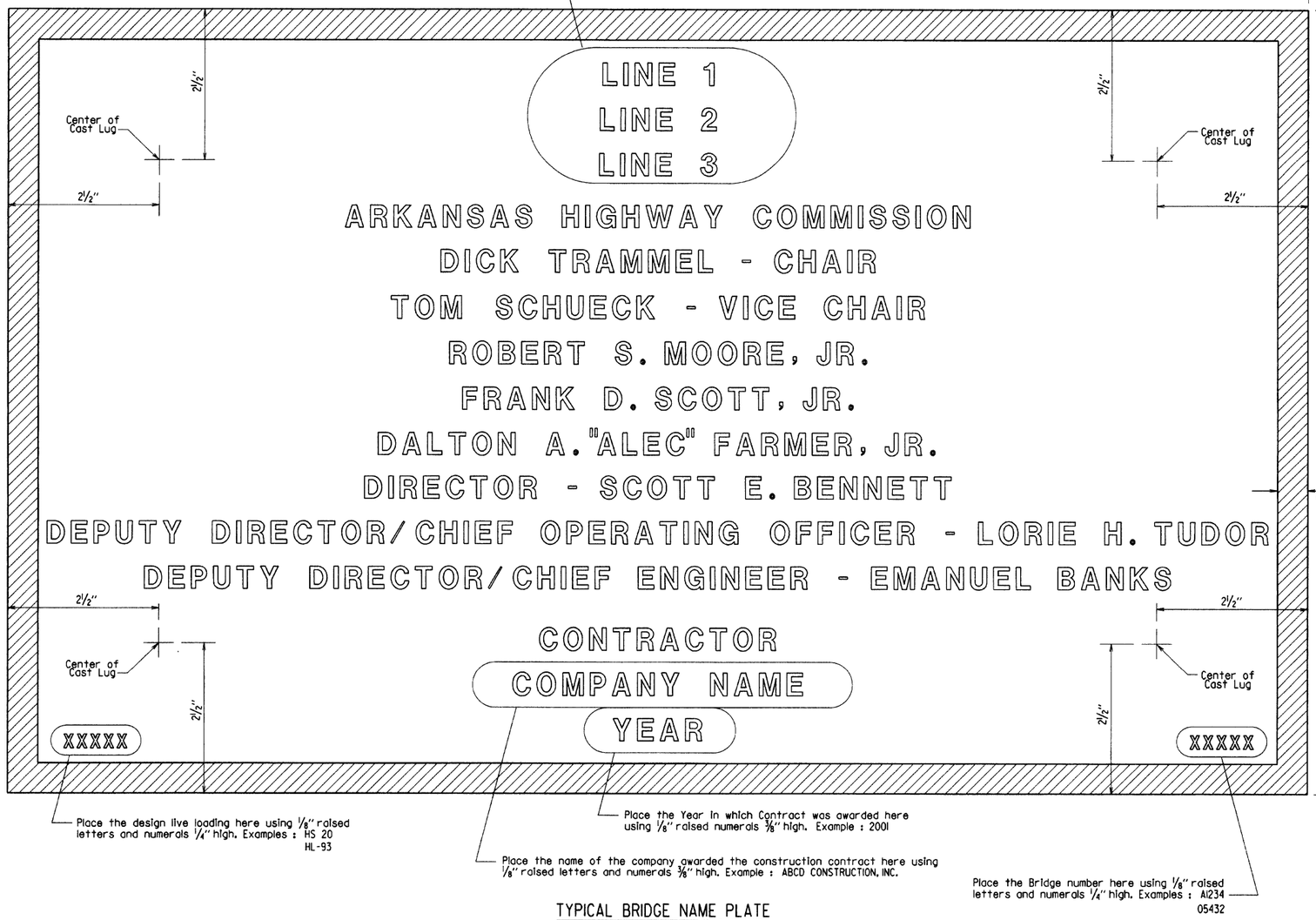
DRAWN BY: A.C.P. DATE: 2/11/2016 FILENAME: b55008.dgn
CHECKED BY: A.M.S. DATE: 2/11/2016 SCALE: No Scale
DESIGNED BY: STD. DATE: —

DRAWING NO. 55008

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
12-1-14				6	ARK.		139	
1-14-15				JOB NO.				
				① TYPE D NAME PLATE			55010	

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

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



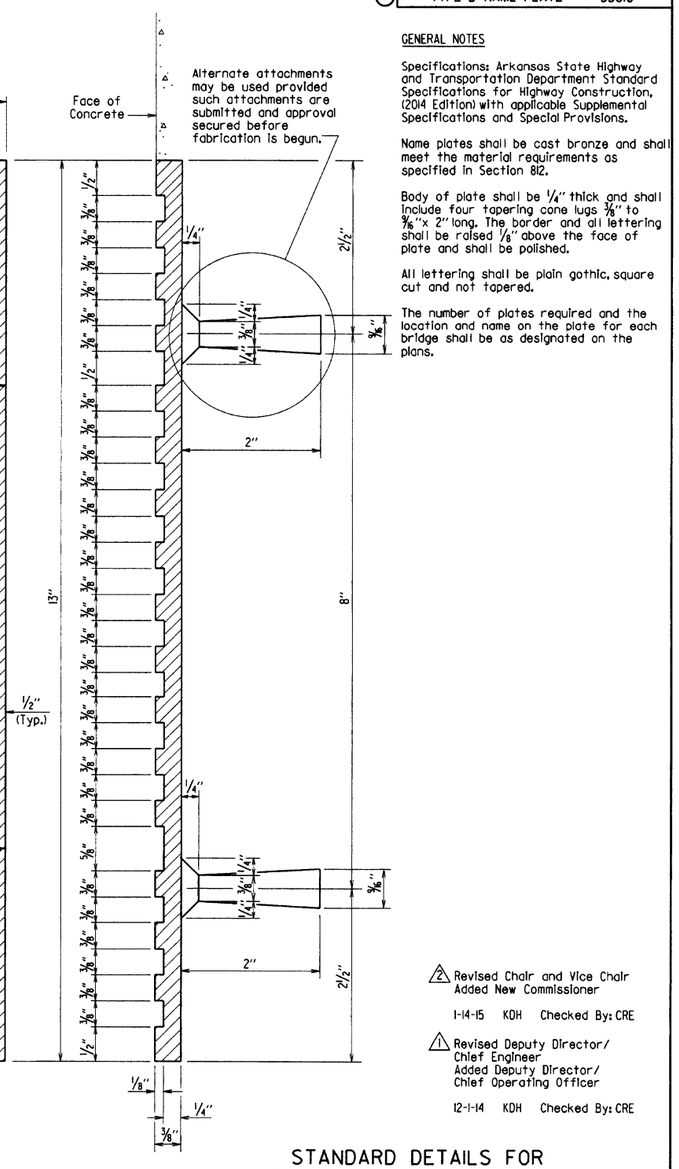
Place the design live loading here using 1/8" raised letters and numerals 1/4" high. Examples : HS 20 HL-93

Place the Year in which Contract was awarded here using 1/8" raised numerals 3/8" high. Example : 2001

Place the name of the company awarded the construction contract here using 1/8" raised letters and numerals 3/8" high. Example : ABCD CONSTRUCTION, INC.

Place the Bridge number here using 1/8" raised letters and numerals 1/4" high. Examples : A1234 05432

TYPICAL BRIDGE NAME PLATE



GENERAL NOTES

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

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

Body of plate shall be 1/4" thick and shall include four tapering cone lugs 3/8" to 5/8"x 2" long. The border and all lettering shall be raised 1/8" above the face of plate and shall be polished.

All lettering shall be plain gothic, square cut and not tapered.

The number of plates required and the location and name on the plate for each bridge shall be as designated on the plans.

⚠2 Revised Chair and Vice Chair
Added New Commissioner
1-14-15 KDH Checked By: CRE

⚠1 Revised Deputy Director/
Chief Engineer
Added Deputy Director/
Chief Operating Officer
12-1-14 KDH Checked By: CRE

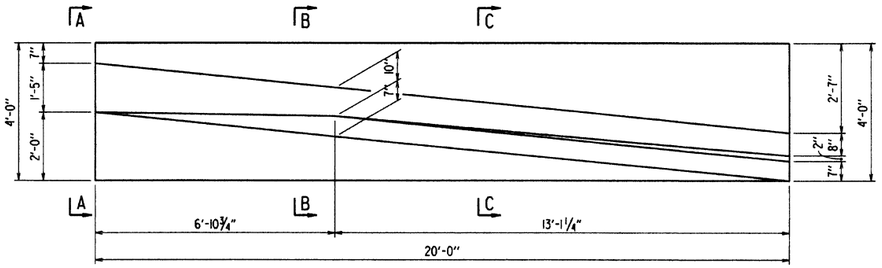
STANDARD DETAILS FOR
TYPE D BRIDGE NAME PLATE

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 2-27-2014 FILENAME: b55010.dgn
CHECKED BY: BEF DATE: 2-27-2014 SCALE: NO SCALE
DESIGNED BY: STD. DATE: —

DRAWING NO. 55010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		140	
				JOB NO.				
				①	TRANSITIONAL RAIL		55013	



PLAN OF TRANSITIONAL APPROACH RAILING

(RAILINGS ON EACH SIDE OF ROADWAY ARE OPPOSITE HAND TO EACH OTHER)
½" = 1'-0"

GENERAL NOTES

Transitional Approach Railing shall be placed at locations shown in the plans.

All concrete shall be Class "S" with a minimum 28 day compressive strength f'c = 3,500 psi and shall be poured in the dry. All exposed corners to be chamfered ¾" unless otherwise noted.

All reinforcing steel shall be Grade 60 conforming to AASHTO M 31 or M 322, Type A, with mill test reports.

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

Unless otherwise required in the plans, curing and finishing shall be in accordance with Subsection 806.05(c) and the surface finish type and areas of application shall match that used on the adjacent bridge railing or concrete barrier wall. See Subsection 802.19(3) for Class 3 Textured Coating Finish or Subsections 803.03(a) or 803.03(b) for Class 1 or 2 Protective Surface Treatment, respectively. Payment for surface finishes shall not be paid for directly, but shall be considered incidental to the unit price bid for "Transitional Approach Railing".

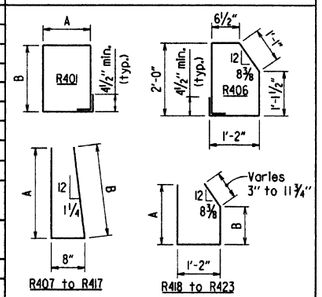
When alternate surface and/or architectural finishes are specified in the plans, no direct payment will be made, and the alternate finish shall be considered incidental to the unit price bid for "Transitional Approach Railing". See plan details for additional information when architectural finishes are specified.

Transitional Approach Railing shall be paid for at the contract unit price bid for "Transitional Approach Railing". See Section 806 for additional information.

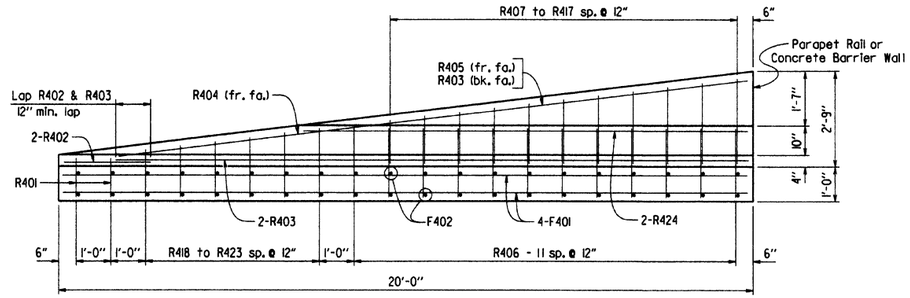
BAR LIST - ONE TRANSITIONAL RAIL

Mark	No. Req'd	Length	A	B	Pin Dia.
F401	8	19'-8"			Str.
F402	40	3'-8"			Str.
R401	2	4'-10"	1'-2"	1'-1"	2"
R402	2	3'-0"			Str.
R403	3	17'-9"			Str.
R404	1	5'-0"			Str.
R405	1	12'-9"			Str.
R406	12	6'-3"			2"
R407 to R417	1 ea.	3'-0" to 5'-5"	1'-3" to 2'-5½"	1'-3" to 2'-5½"	2"
R418 to R423	1 ea.	3'-9" to 5'-1"	1'-4" to 1'-11¼"	1'-1½"	2"
R424	2	12'-0"			Str.

Bending Diagrams



Dimensions are out to out of bars.



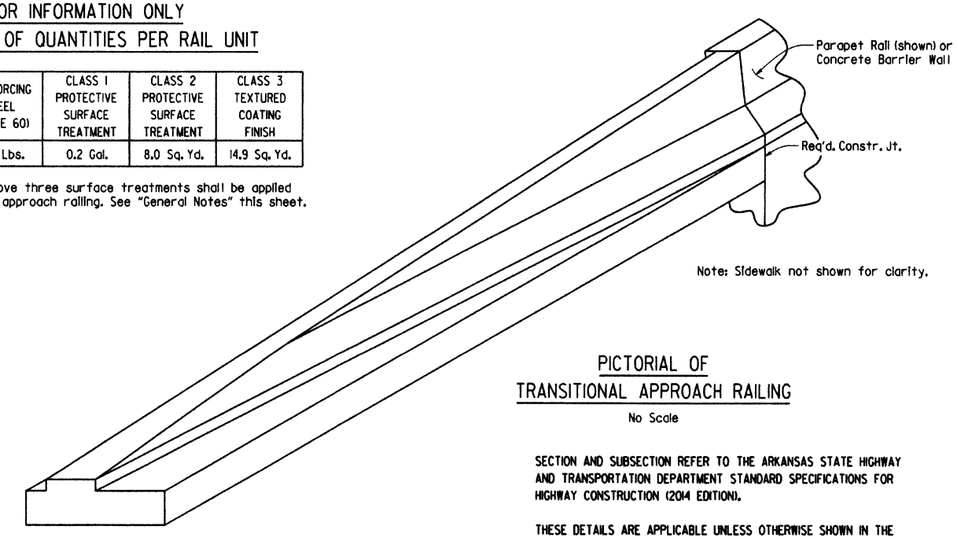
ELEVATION OF TRANSITIONAL APPROACH RAILING

½" = 1'-0"

FOR INFORMATION ONLY
SCHEDULE OF QUANTITIES PER RAIL UNIT

CLASS "S" CONCRETE	REINFORCING STEEL (GRADE 60)	CLASS 1 PROTECTIVE SURFACE TREATMENT	CLASS 2 PROTECTIVE SURFACE TREATMENT	CLASS 3 TEXTURED COATING FINISH
4.20 Cu. Yds.	376 Lbs.	0.2 Gal.	8.0 Sq. Yd.	14.9 Sq. Yd.

Only one of the above three surface treatments shall be applied to the transitional approach railing. See "General Notes" this sheet.

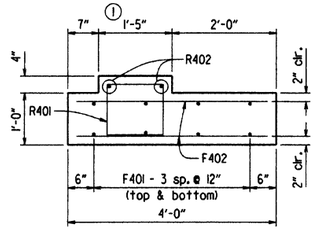


Note: Sidewalk not shown for clarity.

PICTORIAL OF TRANSITIONAL APPROACH RAILING

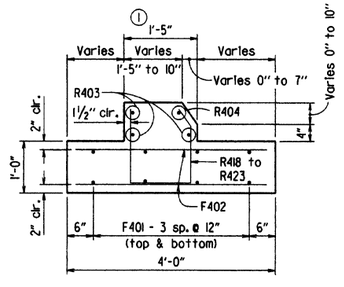
No Scale

① Dimension shall be increased to maintain 1½" clearance if architectural finish is specified.



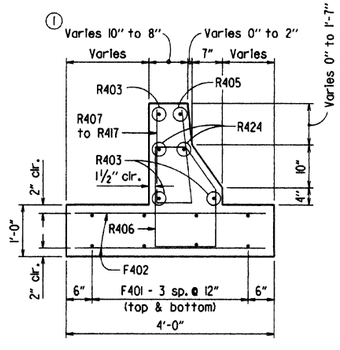
VIEW A-A

¾" = 1'-0"



SECTION B-B

¾" = 1'-0"



SECTION C-C

¾" = 1'-0"

SECTION AND SUBSECTION REFER TO THE ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (2014 EDITION).

THESE DETAILS ARE APPLICABLE UNLESS OTHERWISE SHOWN IN THE PLAN DETAILS, SPECIAL PROVISIONS, OR SUPPLEMENTAL SPECIFICATIONS.

STANDARD DETAILS FOR TRANSITIONAL APPROACH RAILING

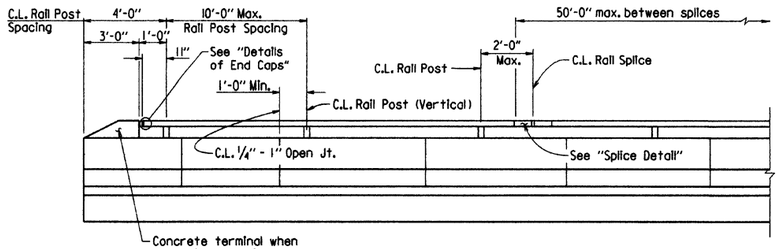
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: JYP DATE: 2/11/2016 FILENAME: b55013.dgn
CHECKED BY: AMS DATE: 2/11/2016 SCALE: As Noted
DESIGNED BY: STD. DATE: —

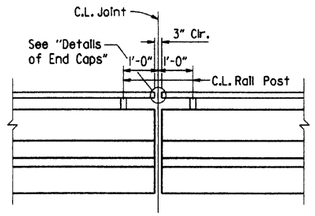
DRAWING NO. 55013

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		141	
				JOB NO.				
				①	TYPE H RAILING		55014	

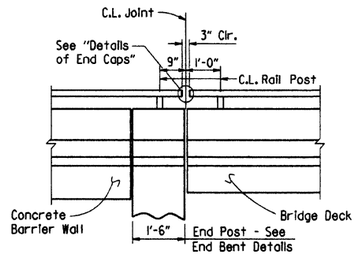


RAIL POST SPACING DETAIL

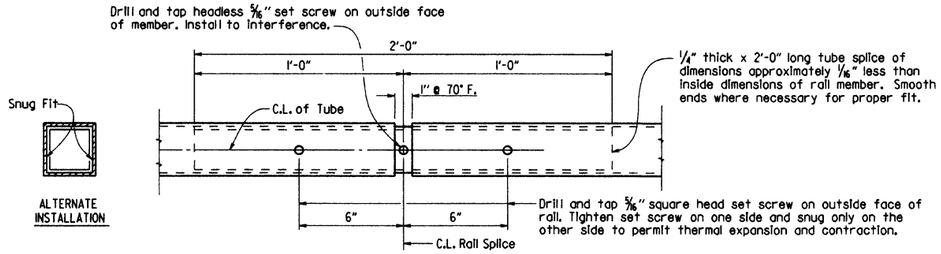
(Horizontal dimensions are along face of rail)



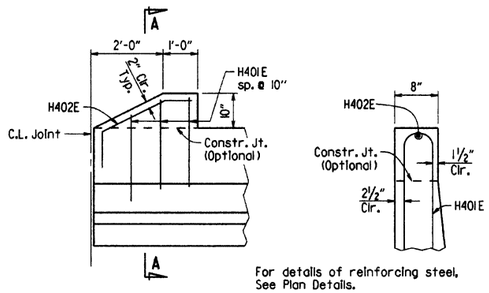
RAIL POST SPACING AT EXPANSION JOINTS



RAIL POST SPACING AT BRIDGE ENDS WITH CONCRETE BARRIER WALL

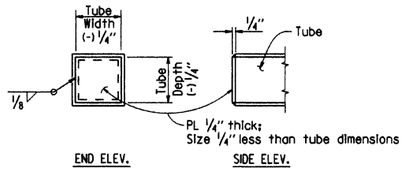


SPLICE DETAIL

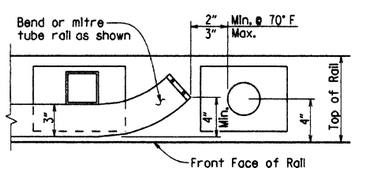


DETAIL X

SECTION A-A

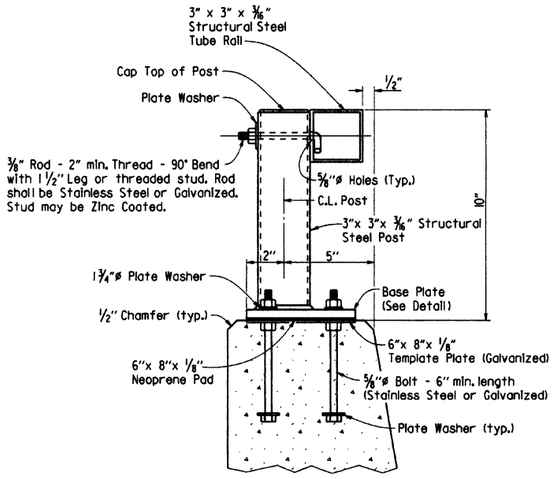


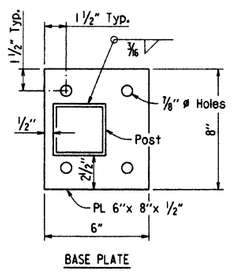
DETAILS OF END CAPS



DETAILS OF RAIL TERMINUS AT FENCE POST

(When Chain Link Fence is required)

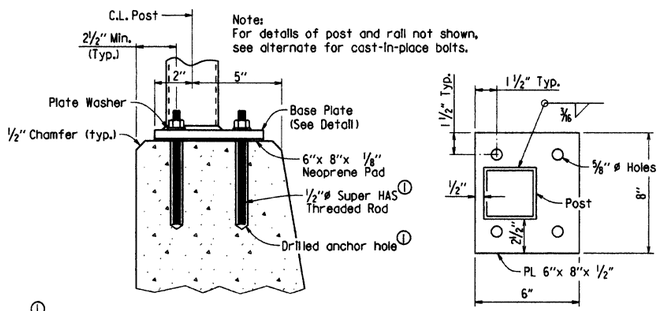


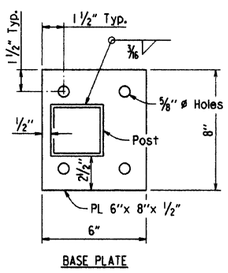


BASE PLATE

DETAILS OF POST ANCHOR SYSTEM

(CAST-IN-PLACE BOLTS)





BASE PLATE

① HILTI HIT RE 500 Epoxy Adhesive Anchor System with 4 1/2" embedment or an approved equal.

The HILTI Epoxy Adhesive Anchor System (or approved equal) shall be installed in accordance with Manufacturer's recommendations.

DETAILS OF ALTERNATE POST ANCHOR SYSTEM

(EPOXY ADHESIVE ANCHORS)

MATERIALS:

Rail tubing, posts, end caps, and base plates shall conform to AASHTO M 270, Gr. 36 or ASTM A 500-Grade B, and shall be galvanized after fabrication in accordance with Subsection 806.02(c). When required elsewhere in the plans, steel rail members shall receive a powder coating process after galvanizing. Galvanized surfaces shall be prepared in accordance with Subsection 807.87 and the manufacturer's recommendations prior to application of the powder coating process.

The powder coating process shall be a two coat system applied using electrostatic spray. The base coat shall be a thermosetting epoxy powder with a minimum thickness of 2 to 4 mils. The top coat shall be tough polyester powder with a minimum thickness of 2 to 4 mils. The color shall be as shown in the plans. Coated galvanized framework shall have a salt spray resistance of 3000 hours using ASTM B 117 without loss of adhesion. The powder coating process shall be in accordance with manufacturer's recommendations. Any damage to the powder coated finish shal l be repaired with a compatible touch-up system in accordance with manufacturer's recommendations and to the satisfaction of the Engineer at the Contractor's expense.

Cast-in-place anchor bolts, nuts, washers, and set screws shall be galvanized high-strength steel or stainless steel. Mixing of galvanized fasteners and stainless steel will not be permitted.

High-Strength Steel:
Cast-in-place anchor bolts shall conform to ASTM A325, Type 1.
Nuts shall conform to ASTM A563, Grade DH or AASHTO M 292, Grade 2H.
Washers shall conform to ASTM F436.
Plate Washers shall conform to AASHTO M 270, Gr. 36.
Splice Set Screws shall conform to AASHTO M 270, Grade 36.
Anchor bolts, nuts, washers, plate washers, and set screws shall be galvanized in accordance with AASHTO M 232, Class C or ASTM B695, Class 50.

Stainless Steel:
Cast-in-place anchor bolts shall conform to ASTM A193 or A320-Grade B8 with a minimum yield strength of 80,000 psi.
Nuts shall conform to AASHTO M 292, Grade 8 or ASTM A563.
Washers shall conform to ASTM A240, Type 302.
Plate Washers shall conform to ASTM A240, Type 302.
Splice Set Screws shall conform to ASTM A193 or A320-Grade B8.

Threads on bolts, screws, and nuts shall conform to American Standard Coarse Series, Class 2 FIT, ASA Specification B1.1. Plate washers shall have dimensions meeting the requirements of ANSI/ASME B18.22.1, Type A plain washer (Wide Series). Neoprene pads shall conform to the requirements of Subsection 807.15(b).

GENERAL NOTES FOR BRIDGE RAILING:

Rail layout shall conform to vertical and horizontal alignment of bridge. All posts shall be vertical.

Maximum post spacing = 10'-0". Minimum distance from centerline post to centerline open or contraction joints in parapet rail = 1'-0".

Splices in rail tubing shall be at 50' maximum spacing. The centerline of splices shall be located a maximum of 2 feet from centerline of post. Rail sections shall be fabricated to attach to at least three posts.

Base plates shall not be placed upon areas that are improperly finished, deformed or irregular.

Bridge railing, including posts, template and base plates, fasteners, and neoprene pads shall be paid for at the contract unit price bid per linear foot for "Metal Bridge Railing (Type H)". When required elsewhere in the plans, powdered coating finish and repair of powdered coating finish shall be considered subsidiary to the item "Metal Bridge Railing (Type H)".

Shop drawings showing details of railing shall be submitted and approval secured prior to fabrication.

SECTION AND SUBSECTION REFER TO THE ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (2014 EDITION).

THESE DETAILS ARE APPLICABLE UNLESS OTHERWISE SHOWN IN THE PLAN DETAILS, SPECIAL PROVISIONS OR SUPPLEMENTAL SPECIFICATIONS.

STANDARD DETAILS FOR TYPE H RAILING

ARKANSAS STATE HIGHWAY COMMISSION

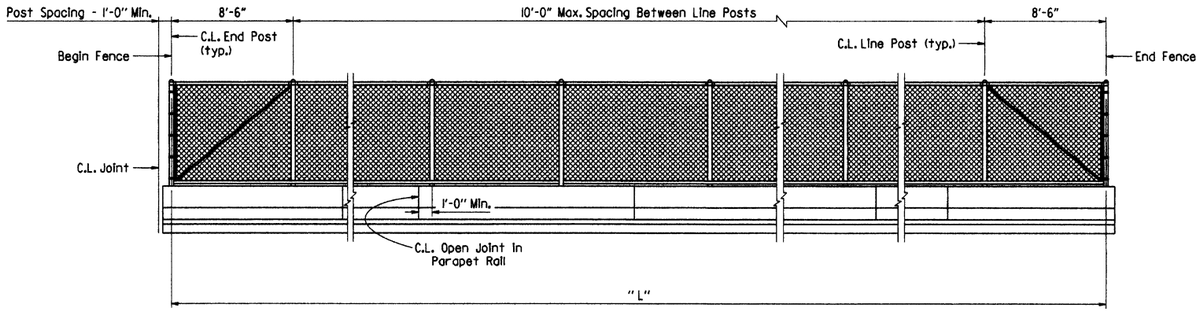
LITTLE ROCK, ARK.

DRAWN BY: A.C.P. DATE: 2/11/2016 FILENAME: b55014.dgn
CHECKED BY: A.M.S. DATE: 2/11/2016 SCALE: No Scale
DESIGNED BY: STD. DATE: ——

BRIDGE NO. DRAWING NO. 55014

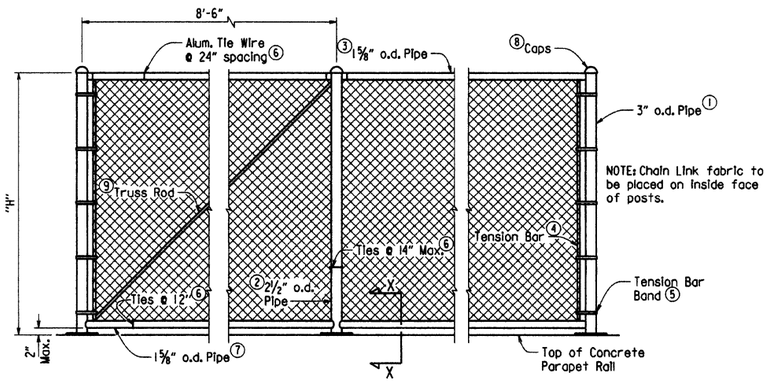
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		142	
				JOB NO.				

① CHAIN LINK FENCE 55018

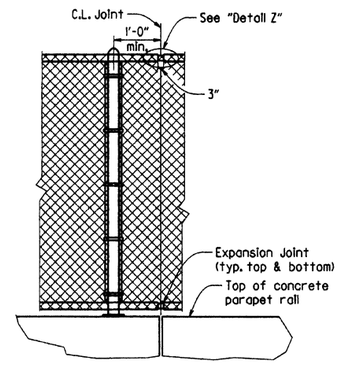


NOTE: The fence location, height "H", total length "L" and parapet panel spacing shall be as specified in plans.

LONGITUDINAL VIEW OF CHAIN LINK FENCE



DETAILS OF CHAIN LINK FENCE



DETAIL AT EXPANSION JOINTS

① END POST: 3" O.D.
② LINE POST: 2½" O.D.
③ TOP RAIL: 1⅝" O.D.
④ TENSION BAR: ⅜" x ¾" Bar
⑤ TENSION BAR BAND: ¾"x .074 w/⅝"ø x 1¼" Bolt (1 Band Top and Bottom w/15" Max. spaces)
⑥ TIE WIRE: 9 Ga. Aluminum
⑦ BOTTOM RAIL: 1⅝" O.D.
⑧ CAPS: All Posts shall be Capped and Shall Conform to ASTM F626-84
⑨ TRUSS ROD: Min. of ⅝" Round with Tighteners and Fittings

FABRIC: 9 Ga. 2" Mesh w/Knocklug or Twisting Selvage

GENERAL NOTES FOR CHAIN LINK FENCE:

Fence layout shall conform to the vertical and horizontal bridge alignments. Fence posts shall be set plumb (true vertical position). Parapet rail concrete shall be at least 7 days old before stretching and securing fabric to posts.

Base plates shall not be placed upon areas that are improperly finished, deformed, or irregular.

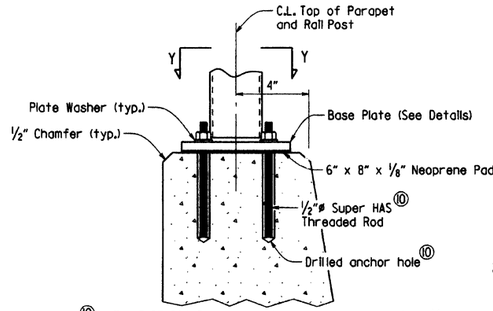
Chain Link Fence attached to Bridge, including neoprene pad and template plates, shall be paid for as "___' Steel Chain Link Fence". For additional details of Chain Link Fence, See Standard Drawing WF-3.

Cast-in-place anchor bolts, nuts, washers, and set screws shall be galvanized high-strength steel or stainless steel. Mixing of galvanized fasteners and stainless steel will not be permitted.

High-Strength Steel:
Cast-in-place anchor bolts shall conform to ASTM A325, Type 1.
Nuts shall conform to ASTM A563, Grade DH or AASHTO M 292, Grade 2H.
Washers shall conform to ASTM F436.
Plate Washers shall conform to AASHTO M 270, Grade 36.
Splice Set Screws shall conform to AASHTO M 270, Grade 36.
Anchor bolts, nuts, washers, plate washers, and set screws shall be galvanized in accordance with AASHTO M 232, Class C or ASTM B695, Class 50.

Stainless Steel:
Cast-in-place anchor bolts shall conform to ASTM A193 or A320-Grade B8 with a minimum yield strength of 80,000 psi.
Nuts shall conform to AASHTO M 292, Grade 8 or ASTM A563.
Washers shall conform to ASTM A240, Type 302.
Plate Washers shall conform to ASTM A240, Type 302.
Splice Set Screws shall conform to ASTM A193 or A320-Grade B8.

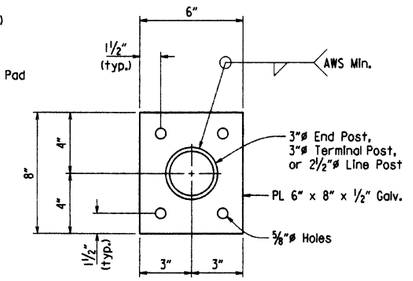
Threads on bolts, screws, and nuts shall conform to American Standard Course Series, Class 2 Fit, ASA Specification B1J. Plate washers shall have dimensions meeting the requirements of ANSI/ASME B18.22.1, Type A plain washer (Wide Series). Neoprene pads shall conform to the requirements of Subsection 807.15(b).



⑩ HILTI HIT RE 500 Epoxy Adhesive Anchor System with 4½" embedment or approved equal.

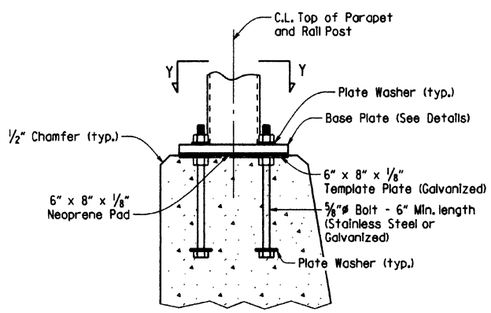
The HILTI Adhesive Anchor System shall be installed in accordance with Manufacturer's recommendations.

VIEW X-X

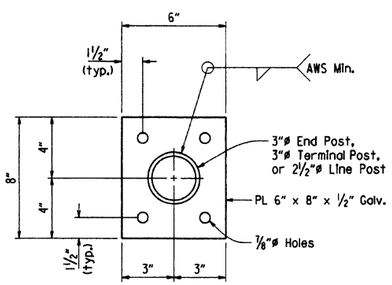


VIEW Y-Y

DETAILS OF ALTERNATE POST ANCHOR SYSTEM
(EPOXY ADHESIVE ANCHORS)

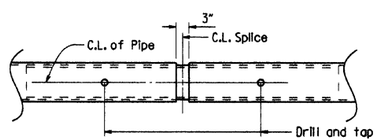


VIEW X-X



VIEW Y-Y

DETAILS OF POST ANCHOR SYSTEM
(CAST-IN-PLACE BOLTS)



DETAIL Z

Drill and tap ⅝" square head set screw on outside face of rails. Tighten set screw on one side and snug only on the other side to permit thermal expansion and contraction.

SECTION AND SUBSECTION REFER TO THE ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (2014 EDITION).

THESE DETAILS ARE APPLICABLE UNLESS OTHERWISE SHOWN IN THE PLAN DETAILS, SPECIAL PROVISIONS, OR SUPPLEMENTAL SPECIFICATIONS.

STANDARD DETAILS FOR CHAIN LINK FENCE

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: E.O.R. DATE: 2-11-2016 FILENAME: b55018.dgn
CHECKED BY: A.M.S. DATE: 2-11-2016 SCALE: No Scale
DESIGNED BY: STD. DATE: ——

DRAWING NO. 55018

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
3/24/16				6	ARK.		143	
				JOB NO.				
				①	STEEL H-PILES		55020	

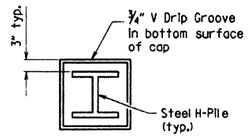
GENERAL NOTES FOR STEEL H-PILES:

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

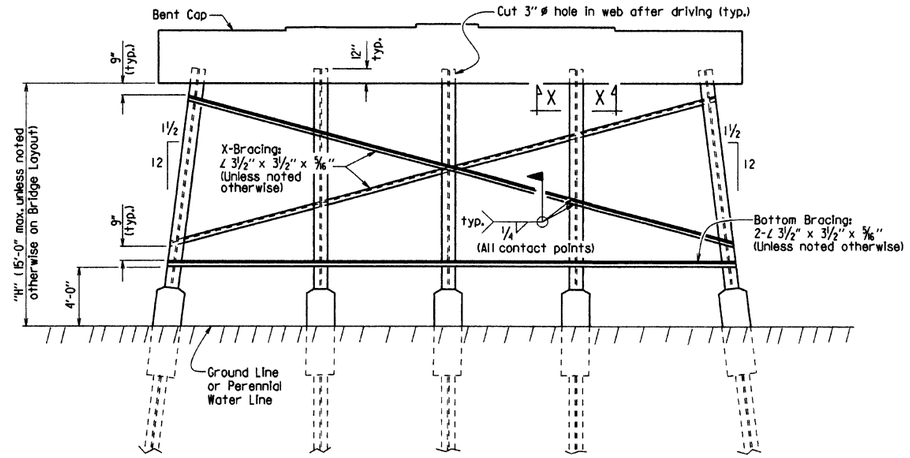
See Bridge Layout and Bent Details for pile size, estimated length, spacing, pile anchorage (if required) and for driving information.

Steel H-Piles that extend above the ground and are not protected by pile encasement shall be painted in accordance with Subsection 805.02.

Brackets, lugs, cap plates, pile tips, driving points, pile painting, splicing and welding shall not be paid for directly, but shall be considered subsidiary to the item "Steel Piling".



VIEW X-X



Notes:
All bracing shall be cut and welded in the field. Each brace shall be furnished in one piece. Payment shall be made under Item 807.

Unless noted otherwise, omit X-Bracing when "H" is less than 8 feet.

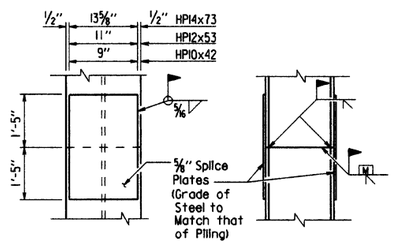
Omit X-Bracing and Bottom Bracing when "H" is 5 feet or less.

When required on the Bridge Layout sheet, pile encasements shall be constructed. See Notes and Details for H-Pile Encasements.

Omit all bracing (and V-groove in cap) when pile encasement is extended to bottom of bent cap.

TYPICAL DETAILS OF H-PILE TRESTLE INTERMEDIATE BENT

(Shown with Partial Height Encasement)



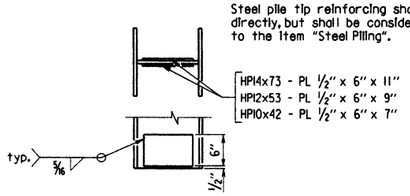
The Contractor may for his own convenience and at his own expense provide as many as three splices per pile. Minimum spacing between splices shall be 5 feet.

TYPICAL SPLICE DETAILS

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

Notes:
Steel pile tip reinforcing not required when approved H-Pile driving points are used.

Steel pile tip reinforcing shall not be paid for directly, but shall be considered subsidiary to the item "Steel Piling".



REINFORCING DETAIL FOR STEEL H-PILE TIP

GENERAL NOTES FOR H-PILE ENCASEMENTS:

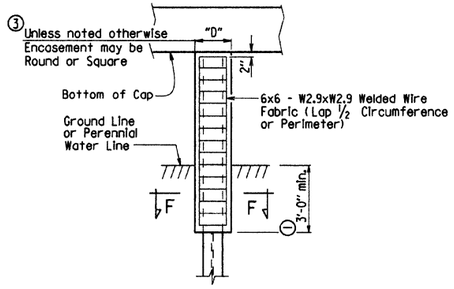
⚠ See Bridge Layout for additional notes, any pile encasement restrictions and required location of pile encasements.

All concrete shall be Class S with a minimum 28-day compressive strength, f'c = 3,500 psi. If concrete cannot be placed in the dry, Seal Concrete may be used from top to bottom of encasement.

Reinforcing steel shall be Grade 60 conforming to AASHTO M 31 or M 322, Type A.

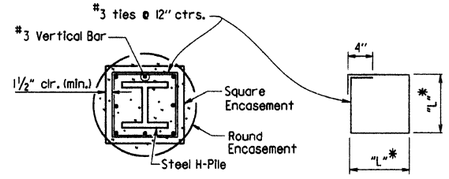
Welded Wire Fabric shall conform to AASHTO M 55 or M 221. Galvanized Corrugated Steel Pipe shall conform to AASHTO M 36 and M 218.

Concrete, welded wire fabric or reinforcing steel and galvanized pipe shall not be paid for directly, but shall be considered subsidiary to the item "Pile Encasement".



PILE ENCASEMENT DETAIL FOR STEEL H-PILES

④ (Shown with Encasement to Bottom of Cap)

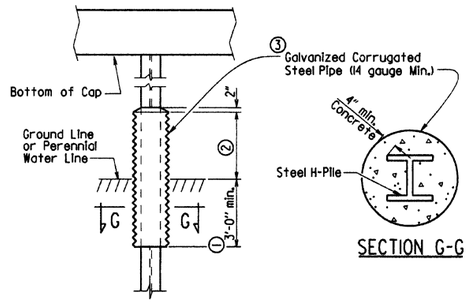


SECTION F-F

*Measured out-to-out of bar.

TABLE OF VARIABLES FOR PILE ENCASEMENT

Pile Size	"D" Square Encsmt.	"D" Round Encsmt.	"L"*
HP10x42	1'-7"	2'-0"	1'-4"
HP12x53	1'-8"	2'-2"	1'-5"
HP14x73	1'-11"	2'-6"	1'-8"



SECTION G-G

ALTERNATE PILE ENCASEMENT DETAIL FOR STEEL H-PILES

(Shown with Partial Height Encasement)

① Unless otherwise noted on Bridge Layout.

② 3'-0" minimum or as shown on Bridge Layout.

③ Encasement dimensions shall be sized to maintain a minimum concrete cover of 4" from the H-Pile. Reinforcement shall be sized to provide a minimum concrete cover of 1½" and a minimum clearance of 1¼" from the pile.

④ Alternate pile encasement, when not extended to bottom of cap, shall have 2" concrete taper for water runoff as shown in the Partial Height Encasement detail.

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

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

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

BRIDGE ENGINEER

STANDARD DETAILS FOR STEEL H-PILES AND PILE ENCASEMENTS

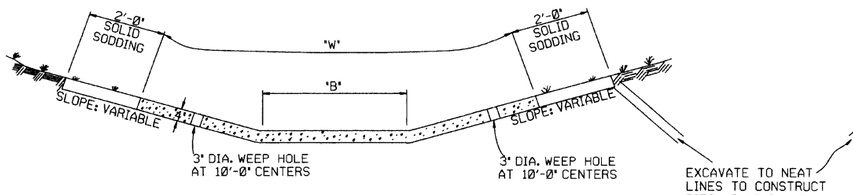
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: A.M.S. DATE: 2/27/2014 FILENAME: b55020.dgn
CHECKED BY: B.E.F. DATE: 2/27/2014 SCALE: NO SCALE
DESIGNED BY: STD. DATE: —

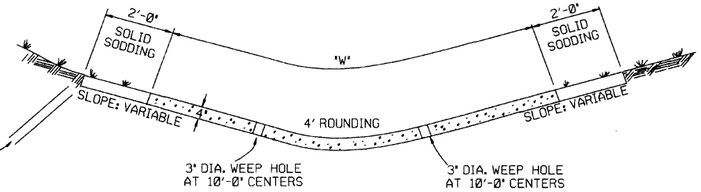
DRAWING NO. 55020

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



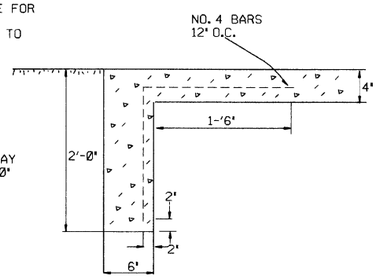
TYPE A

REFER TO TABULATION OF QUANTITIES FOR 'W' DIMENSIONS



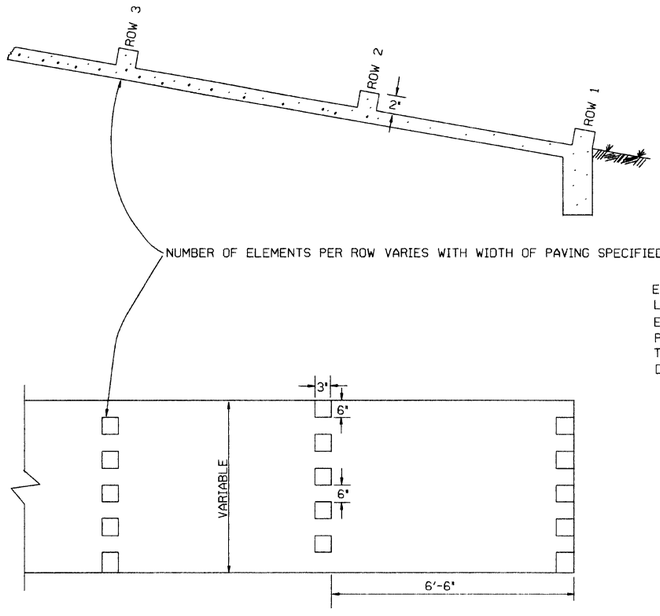
TYPE B

THE STEEL AND ADDITIONAL CONCRETE FOR THE WALLS SHALL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID FOR 'CONCRETE DITCH PAVING.'



TOE WALL DEPTH MAY BE ALTERED TO 1'-0" WHEN DIRECTED BY THE ENGINEER IN ROCK EXCAVATION

TOE WALL DETAIL FOR CONCRETE DITCH PAVING



ENERGY DISSIPATORS
(NO SCALE)

ENERGY DISSIPATORS TO BE USED FOR THE ENTIRE LENGTH OF DITCH WHEN SLOPE OF DITCH PAVING EXCEEDS 7%. THE DISSIPATORS WILL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED TO BE UNCLUDED IN THE PRICE BID FOR CONCRETE DITCH PAVING.

GENERAL NOTES:

THE FULL WIDTH OF EACH SECTION SHALL BE POURED MONOLITHICALLY.

TOE WALLS TO BE CONSTRUCTED FULL WIDTH AT EACH END OF DITCH PAVING, AND POURED MONOLITHICALLY.

SOLID SOD ALONG DITCH PAVING TO BE PLACED WITHIN 14 DAYS OF DITCH PAVING CONSTRUCTION.

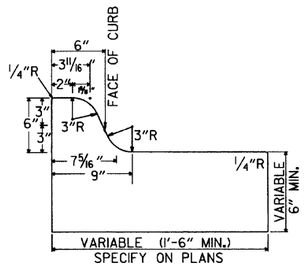
1" WIDE TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE DITCH PAVING AT 45' INTERVALS. THE SPACE SHALL BE FILLED WITH APPROVED JOINT FILLER COMPLYING WITH AASHTO M213.

DATE	REVISION	DATE FILM'D
11-17-10	ADDED GENERAL NOTE	
6-2-94	ADDED GENERAL NOTE ABOUT SOLID SODDING	
11-30-8	ELIMINATED MIN. ROWS OF ELEMENTS	111-30-89
7-15-88	REVISED DISSIPATOR NOTE	653-7-15-88
4-3-87	REVISED ENERGY DISSIPATOR	671-4-3-87
1-9-87	MODIFIED NOTE ON ENERGY DISS.	532-1-9-87
11-3-86	ADDED NOTE TO ENERGY DISS.	599-12-1-86
11-1-84	ENERGY DISSIPATOR DETAILS ADDED	508-11-1-84
11-1-84	EXCAVATION DETAILS ADDED TYPED A & B	
10-2-72	REVISED AND REDRAWN	508-10-2-72

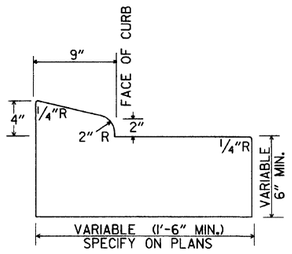
ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE DITCH PAVING

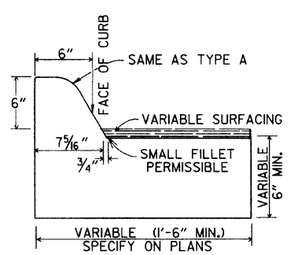
STANDARD DRAWING CDP-1



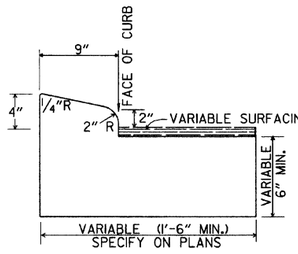
TYPE A



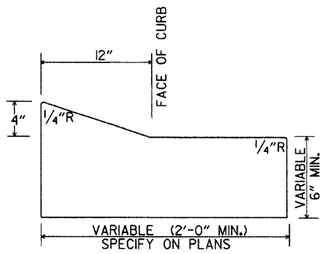
TYPE B-1



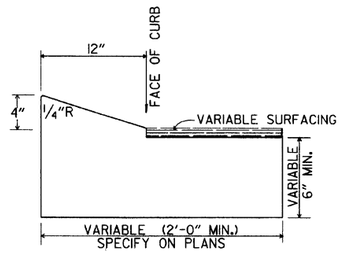
TYPE C



TYPE B-2

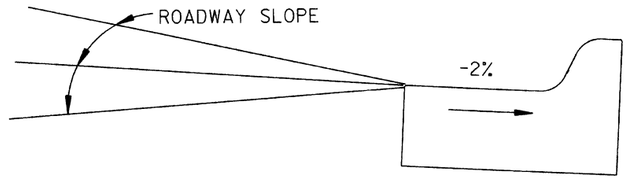


TYPE E-1



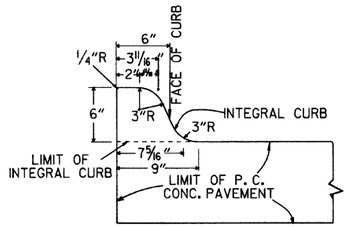
TYPE E-2

CONCRETE COMBINATION CURB AND GUTTER

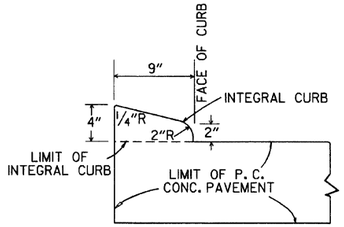


DETAIL OF GUTTER SLOPE

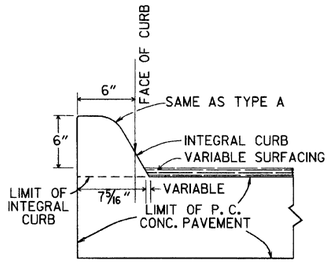
GUTTER SHALL BE CONSTRUCTED ON 2% SLOPE AWAY FROM ROADWAY, REGARDLESS OF ROADWAY SLOPE.



TYPE A

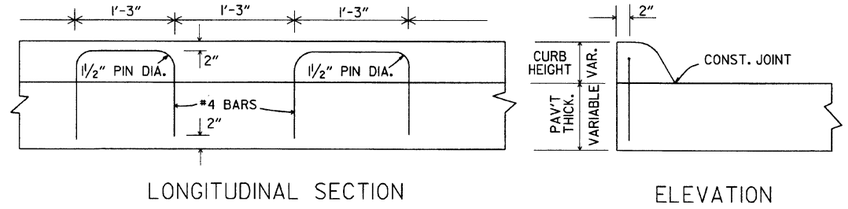


TYPE B



TYPE C

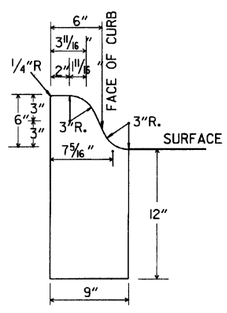
INTEGRAL CURB



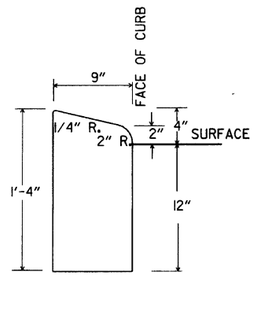
LONGITUDINAL SECTION

ELEVATION

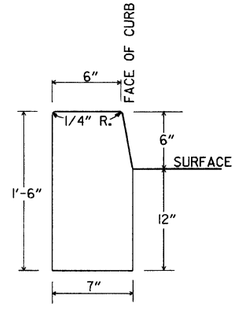
ALTERNATE CONSTRUCTION METHOD FOR INTEGRAL CURB



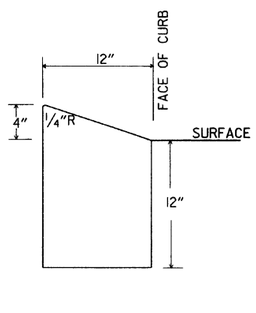
TYPE A



TYPE B

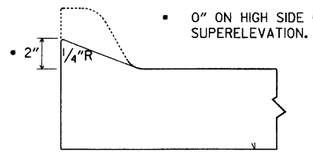


TYPE D



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.

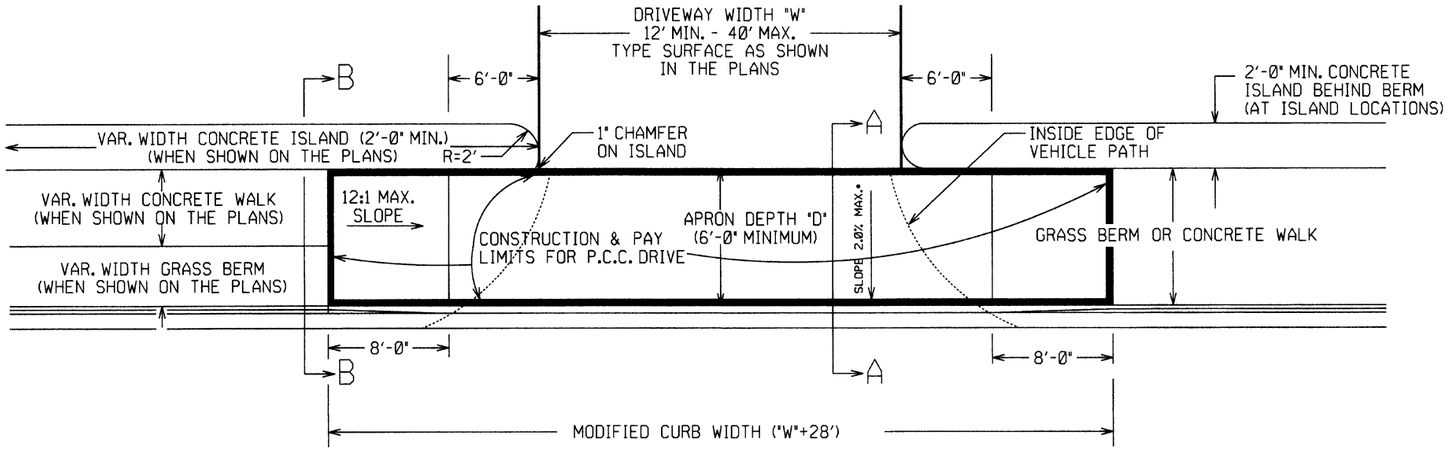
DETAILS OF MODIFIED CURB

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

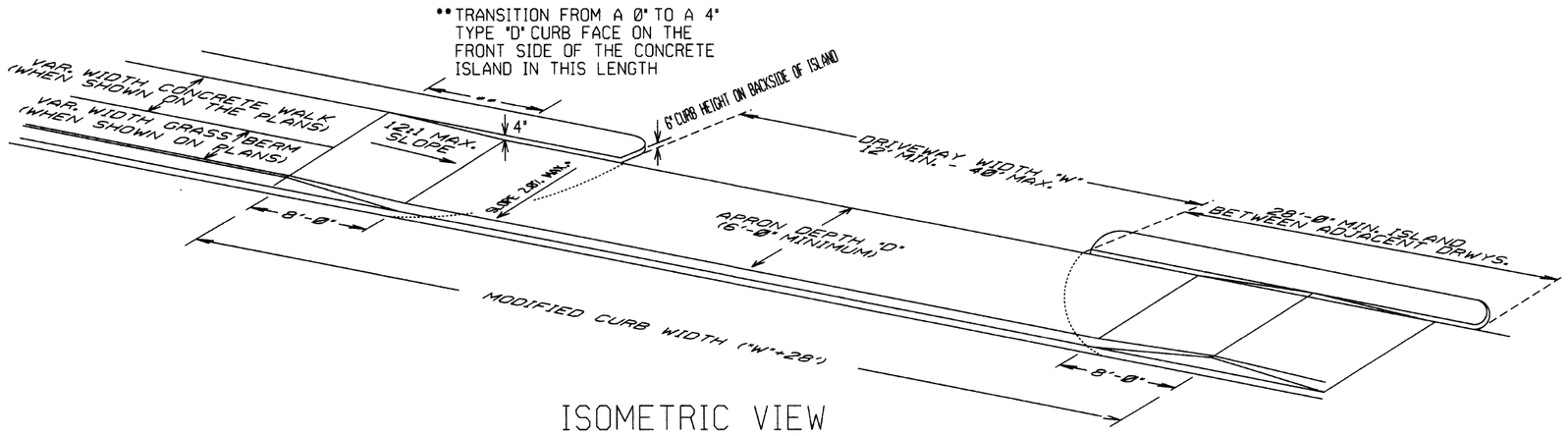
ARKANSAS STATE HIGHWAY COMMISSION

CURBING DETAILS

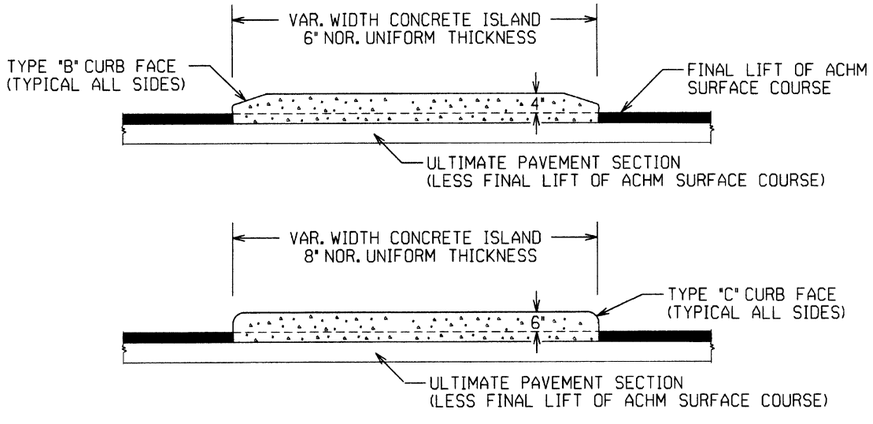
STANDARD DRAWING CG-1



PLAN VIEW

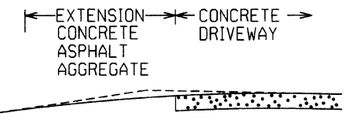


ISOMETRIC VIEW



CURBED ISLANDS FOR CHANNELIZATION

REFER TO PLANS FOR TYPE OF CURB FACE TO BE USED. NO DIRECT PAYMENT WILL BE MADE FOR THE CURB FACES SHOWN ON THE ISLAND DETAILS. PAYMENT FOR THE CURB FACE WILL BE INCLUDED IN THE UNIT PRICE BID FOR THE ITEM "CONCRETE ISLAND".



EXTENSION TYPICAL SECTIONS

1: CONCRETE - 6" P.C. CONCRETE DRIVEWAY

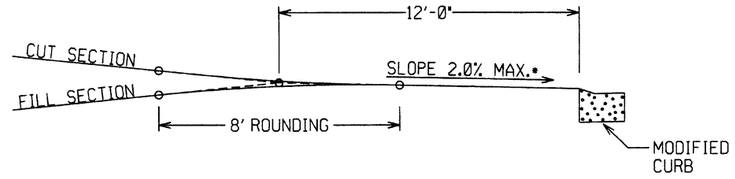
2: ASPHALT - 2" ACHM SURFACE COURSE (1/2")
4" ACHM BINDER COURSE.(1") OR
4" ACHM BASE COURSE (1-1/2")

3: ASPHALT - 2" ACHM SURFACE COURSE (1/2")
7" AGGREGATE BASE COURSE

4: AGGREGATE - 6" AGGREGATE BASE COURSE

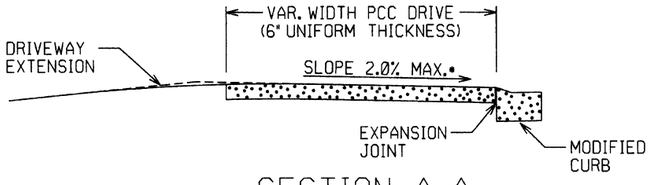
THE TYPE OF EXTENSION SHALL BE AS SHOWN IN THE PLANS. THE CONTRACTOR MAY, WITH THE APPROVAL OF THE ENGINEER, SUBSTITUTE A LOWER NUMBERED TYPE OF EXTENSION IN LIEU OF THE TYPE SPECIFIED IN THE PLANS, BUT AT NO ADDITIONAL COST TO THE DEPARTMENT.

DRIVEWAY EXTENSION DETAILS

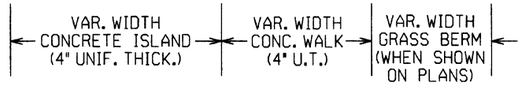


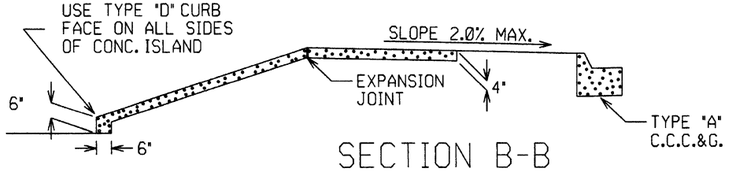
DRIVEWAY VERTICAL ALIGNMENT DETAILS

* NOTE: DRIVEWAYS MAY NOT BE SLOPED AWAY FROM THE ROADWAY UNLESS APPROVED BY THE ENGINEER.



SECTION A-A

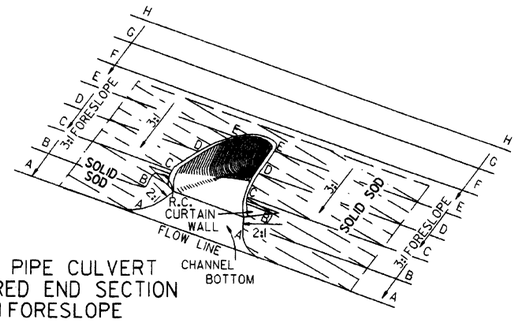




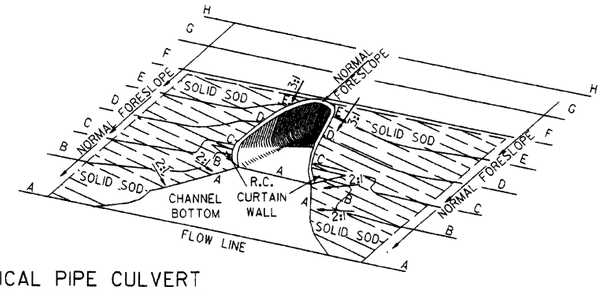
SECTION B-B
CURBED ISLAND BEHIND WALK

DATE REV	DATE FILMED	DESCRIPTION
2-27-14		REVISED PLAN & ISOMETRIC VIEW
11-29-07		ADDED CHANNELIZATION ISLAND WITH TYPE C CURB FACE & REVISED DRIVEWAY SLOPE NOTE & VERTICAL ALIGNMENT DETAIL
11-10-05		REV. APRON SLOPE & DEPTH OF AGG. BASE.
8-22-02		ADDED ISLAND DETAILS & NOTES
3-30-00		REV. MOD. CURB WIDTH & TRANS. NOTE
11-19-98		REVISED NOTES
11-18-98		REDRAWN AND REISSUED

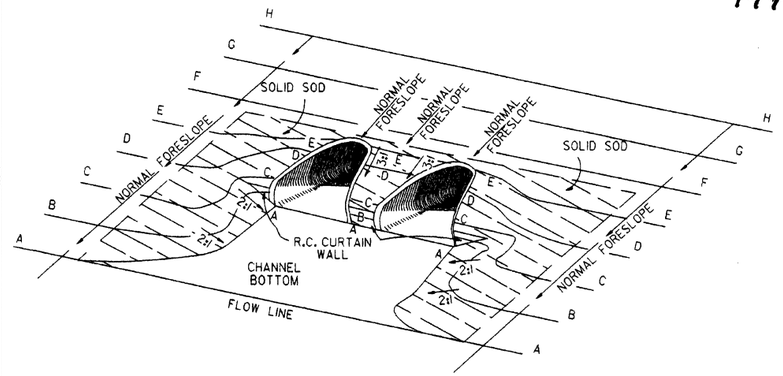
ARKANSAS STATE HIGHWAY COMMISSION
DETAILS OF DRIVEWAYS & ISLANDS
STANDARD DRAWING DR-1



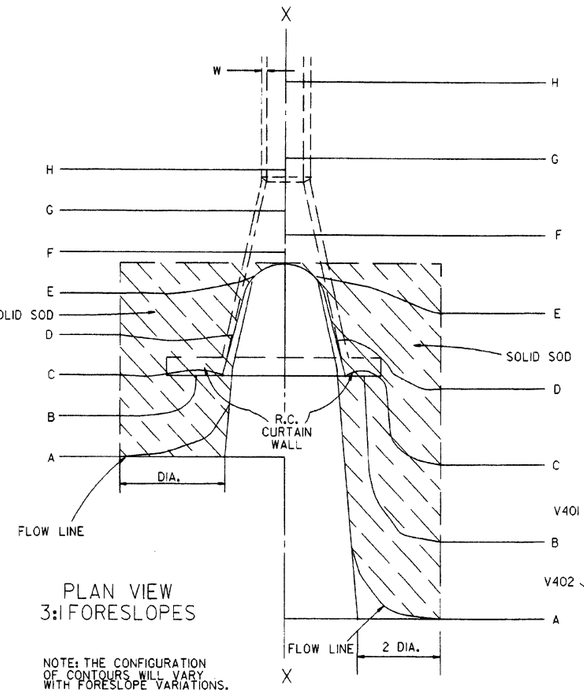
TYPICAL PIPE CULVERT
WITH FLARED END SECTION
& 3:1 FORESLOPE



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

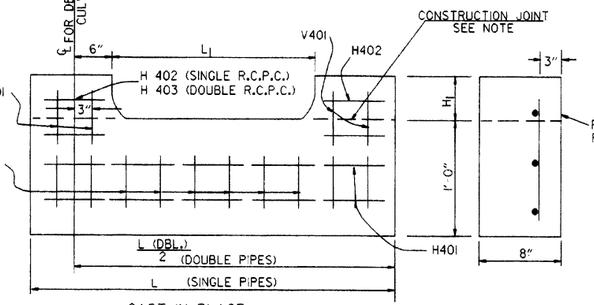
NOTE: THE CONFIGURATION OF CONTOURS WILL VARY WITH FORESLOPE VARIATIONS.

PLAN VIEW
FLATTENED FORESLOPES

R.C. CURTAIN WALL
DIMENSIONS & QUANTITIES

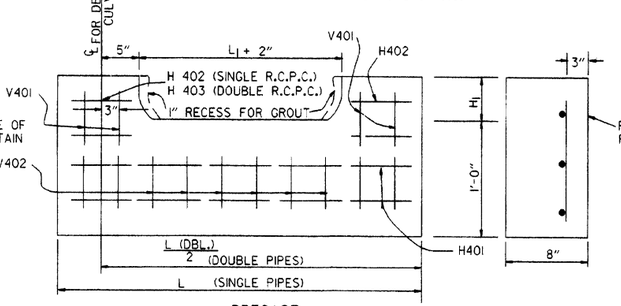
PIPE DIA.	H_1	L_1	L	L (DBL.)/2	SINGLE R.C.P.C. CONC.	SINGLE R.C.P.C. REINF. STEEL	DOUBLE R.C.P.C. CONC.	DOUBLE R.C.P.C. REINF. STEEL
					CU. YDS.	LBS.	CU. YDS.	LBS.
18"	1'-11½"	3'-5"	8'-0"	6'-3"	0.31	27.7	0.45	39.5
24"	1'-0½"	4'-6"	9'-6"	7'-6"	0.37	33.4	0.53	48.0
30"	1'-3½"	5'-7"	11'-0"	9'-0"	0.45	39.0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

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



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

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

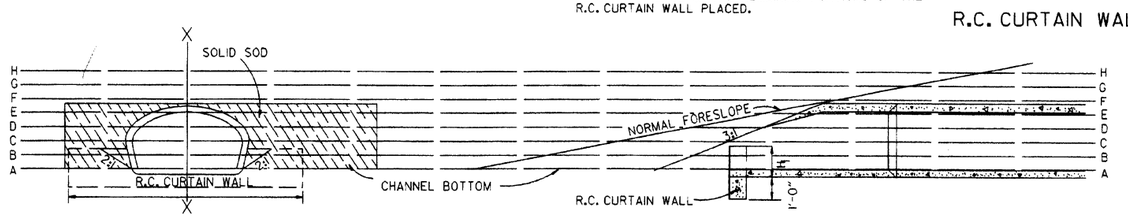
SOLID SODDING

PIPE DIA.	SINGLE R.C.P.C. 3:1	4:1	6:1	DOUBLE R.C.P.C. 3:1	4:1	6:1
	SQ. YDS.			SQ. YDS.		
18"	5	7	12	6	8	13
24"	8	12	19	9	13	20
30"	13	18	29	14	19	30
36"	17	26	41	18	28	43
42"	23	35	55	25	37	57
48"	29	46	68	31	48	70
54"	35	57	85	37	59	87
60"	45	62	104	48	65	107
72"	64	92	156	67	95	159

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

GENERAL NOTES

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



END VIEW

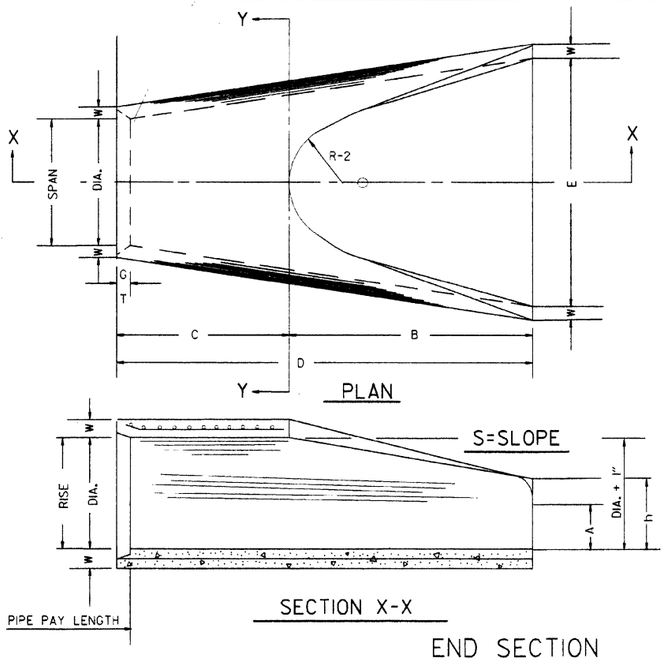
SECTIONAL VIEW "X-X"

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

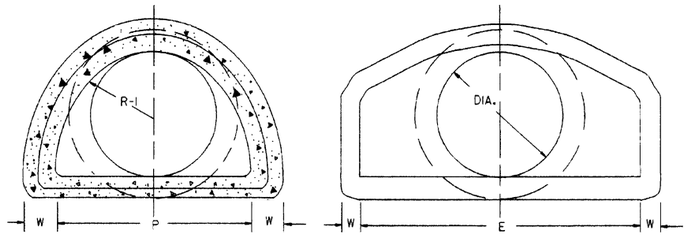
STANDARD DRAWING FES-1



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"	33⅜"	16⅛"	14"	2½"	1600	1'-1½"
30"	3½"	1'-0"	4'-6"	1'-7¾"	6'-1¾"	5'-0"	3:1	31"	37"	18½"	15"	3¼"	1940	1'-4⅝"
36"	4"	1'-3"	5'-3"	2'-10¾"	8'-1¾"	6'-0"	3:1	37"	47⅛"	24⅝"	20"	3½"	4100	1'-8"
42"	4½"	1'-9"	5'-3"	2'-11"	8'-2"	6'-6"	3:1	43"	53⅛"	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"	33⅞"	24"	4"	8750	2'-10½"
60"	6"	2'-0"	6'-6"	1'-10"	8'-4"	8'-0"	3:1	61"	72½"	36⅛"	24"	4"	9270	3'-5"
72"	7"	3'-10"	6'-6"	1'-10"	8'-4"	9'-0"	3:1	73"	77⅛"	38⅝"	24"	5"	13250	4'-6"

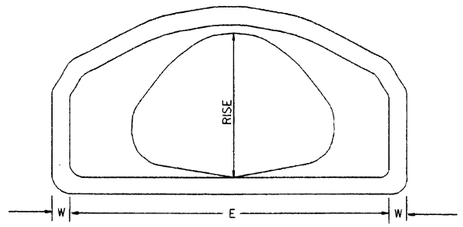


NOTE: TONGUE END ON UPSTREAM SECTION
GROOVE END ON DOWNSTREAM SECTION

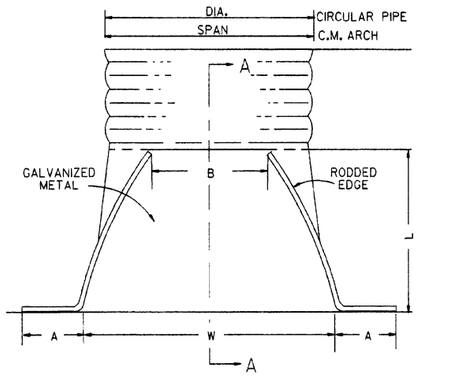
ARCH PIPE

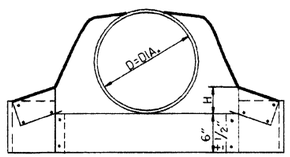
EQUIV. DIA.	• SPAN AASHTO M 206	• SPAN AHD NOMINAL	• RISE AASHTO M 206	• RISE AHD NOMINAL	W	A	B	C	D	E	P	R2	G-T	S
	INCHES													
15	18	18	11	11	2"	4"	2'-0"	4'-0"	6'-0"	3'-0"	29"	12"	1½"	2½:1
18	22	22	13½	14	2½"	5"	2'-0"	4'-1"	6'-1"	3'-6"	32⅛"	13"	2½"	2½:1
21	26	26	15½	16	2¾"	7"	2'-3"	3'-10"	6'-1"	4'-0"	34⅛"	14"	2½"	2½:1
24	28½	29	18	18	3"	9"	2'-3"	3'-10"	6'-1"	5'-0"	36⅛"	15"	2½"	2½:1
30	36¼	36	22½	23	3½"	10"	3'-1"	3'-0½"	6'-1½"	6'-0"	47⅛"	20"	3"	2½:1
36	43¾	44	26⅝	27	4"	10½"	4'-0"	2'-1½"	6'-1½"	6'-6"	54⅞"	22"	3½"	2½:1
42	51⅛	51	31⅝	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"	72⅛"	24"	4¾"	2¼:1
60	73	73	45	45	6"	1'-10"	5'-6"	2'-8"	8'-2"	9'-0"	77⅛"	24"	5"	2¼:1

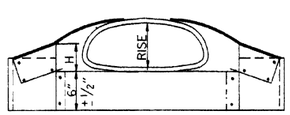
• THE MEASURED SPAN AND RISE SHALL NOT VARY MORE THAN ± 2 PER CENT FROM THE VALUES SPECIFIED BY AASHTO M 206.



END VIEW
CONCRETE ARCH PIPE







CIRCULAR PIPE

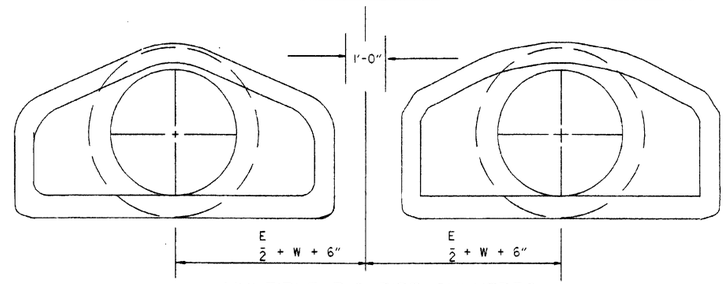
D. DIA.	GAUGE	A 1" ±	B. MAX.	H 1" ±	L 1½" ±	W 2" ±	S
		INCHES					
12	16	6	6	6	21	24	2½:1
15	16	7	8	6	26	30	2½:1
18	16	8	10	6	31	36	2½:1
21	16	9	12	6	36	42	2½:1
24	16	10	13	6	41	48	2½:1
30	14	12	16	8	51	60	2½:1
36	14	14	19	9	60	72	2½:1
42	12	16	22	11	69	84	2½:1
48	12	18	27	12	78	90	2½:1
54	12	18	30	12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

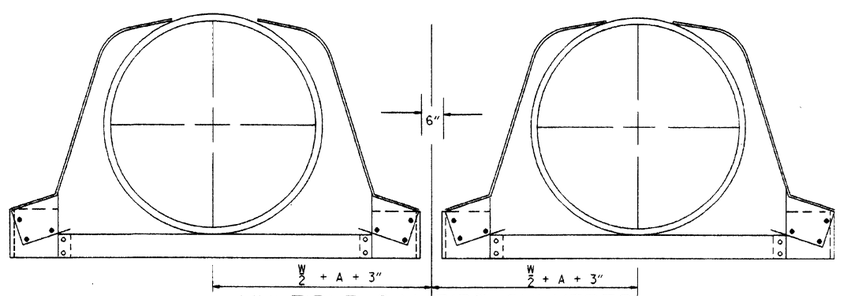
EQUIV. DIA.	SPAN	RISE	A 1" ±	B MAX.	H 1" ±	L 1½" ±	W 2" ±	S	GAUGE
	INCHES								
15"	17	13	7	9	6	19	30	2½:1	16
18"	21	15	7	10	6	23	36	2½:1	16
21"	24	18	8	12	6	28	42	2½:1	16
24"	28	20	9	14	6	32	48	2½:1	16
30"	35	24	10	16	6	39	60	2½:1	14
36"	42	29	12	18	8	46	75	2½:1	14
42"	49	33	13	21	9	53	85	2½:1	12
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

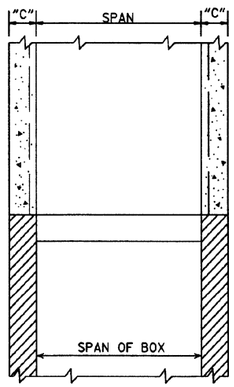
DATE	REVISION	BY
10-18-96	REVISED ASTM REF. TO AASHTO	10-18-96
5-15-80	REVISED DISTANCE BETWEEN MULTIPLE R.C.P. F.E.S.	664-5-15-80
7-14-78	C.M. ARCH SIZES TO CONFORM WITH AASHTO SIZES	752-7-14-78
8-22-75	ADDED MULTIPLE PIPE CULVERTS	517-8-22-75
12-5-74	REMOVED NOTE RE REINF. FOR R.C. F.E.S.	500-12-5-74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

ARKANSAS STATE HIGHWAY COMMISION

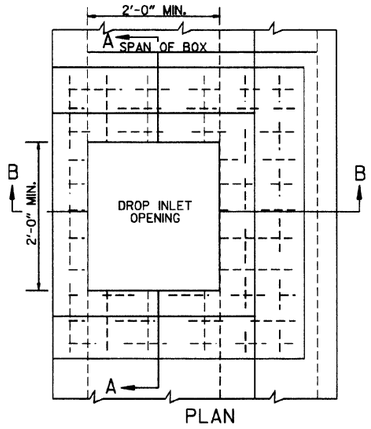
FLARED END SECTION

STANDARD DRAWING FES-2

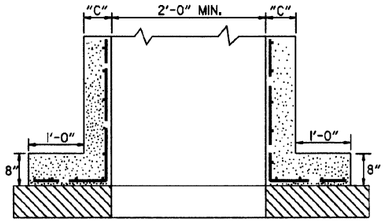
stdfes2.dgn



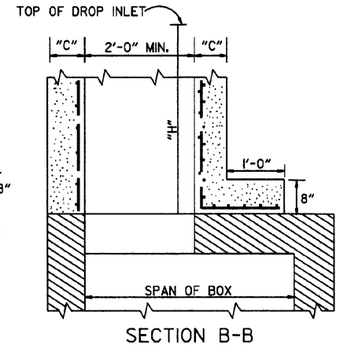
SECTION B-B



PLAN

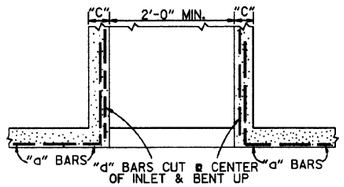


SECTION A-A

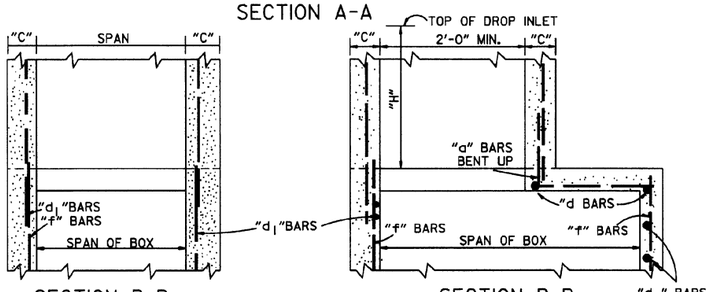


SECTION B-B

METHOD OF CONSTRUCTING DROP INLET ON EXISTING R.C. BOX CULVERT



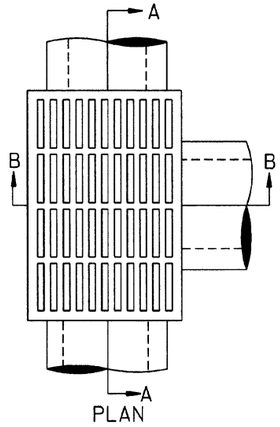
SECTION A-A



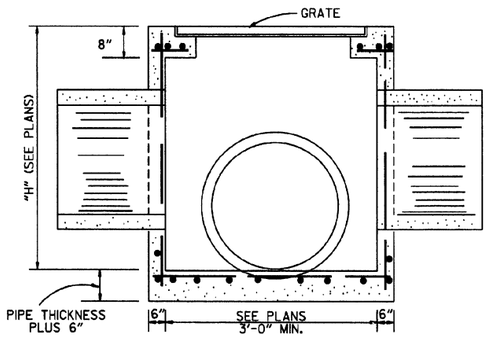
SECTION B-B SECTION B-B

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.

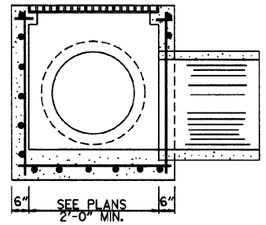


PLAN



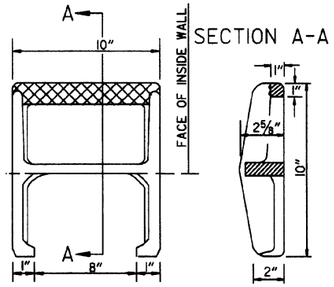
SECTION A-A

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)

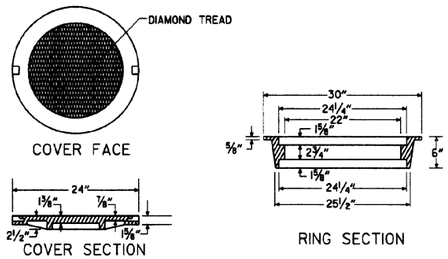


APPROX. WEIGHT = 11 LBS. (CAST IRON)

PLAN

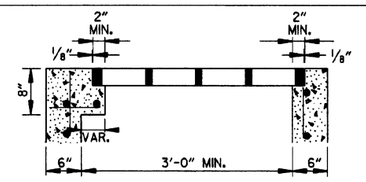
NOTE: THIS DETAIL IS TYPICAL. OTHERS MAY BE USED WITH PRIOR APPROVAL OF THE ENGINEER.

DETAIL OF STEP FOR DROP INLET

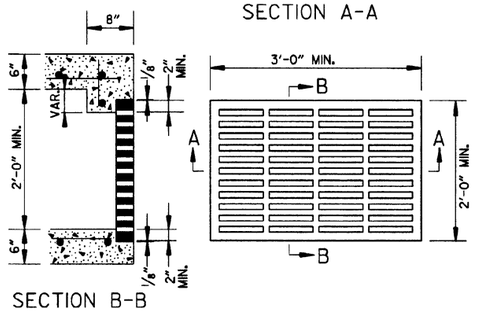


APPROXIMATE TOTAL WEIGHT = 333 LBS.

HEAVY DUTY RING & COVER



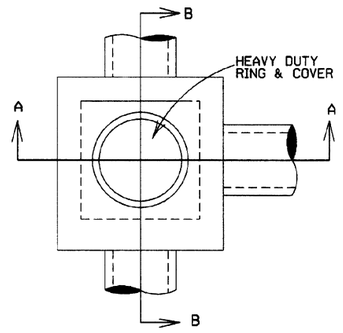
SECTION A-A



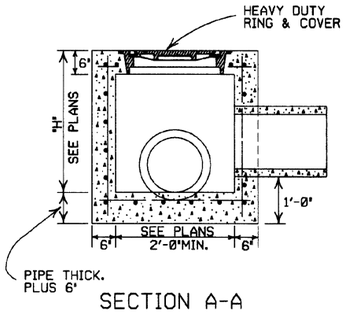
SECTION B-B

APPROXIMATE MINIMUM WATERWAY OPENING = 260 SQ. IN.

GRATE FOR TYPE E DROP INLET

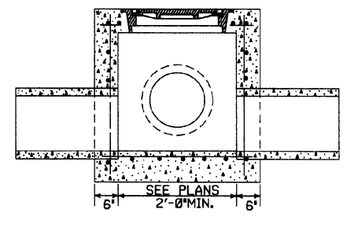


PLAN



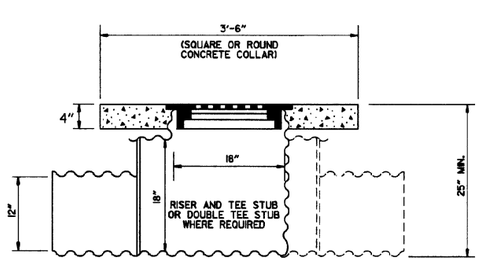
SECTION A-A

NOTE: REINF. BARS TO BE #4 BARS ON 6" CTRS. WITH 1½" MIN. COVER. THIS TYPE JUNCTION BOX TO BE USED WHERE NOT SUBJECTED TO TRAFFIC.

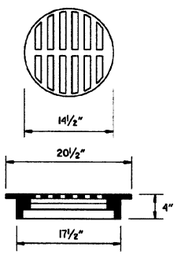


SECTION B-B

JUNCTION BOX (TYPE E)



NOTE: CONCRETE COLLAR TO BE CAST IN PLACE. 12" PIPE CULVERTS TO BE MEASURED AND PAID FOR AS " 12" SIDE DRAIN ".



USE NEENAH R-5901-C OR EQUIVALENT BICYCLE SAFE FRAME AND GRATE

DETAIL OF YARD DRAIN

GENERAL NOTES:

1. ALL EXPOSED CORNERS SHALL BE ¾" CHAMFERED.
2. STEPS SHALL BE INSTALLED ON 16" CENTERS ON ALL INLETS 4'-0" HIGH OR OVER, OR AS APPROVED BY THE ENGINEER.
3. EXPANSION JOINT MATERIAL SHALL BE ¾" PREFORMED FIBER.
4. GRATE OR GRATE AND FRAME SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS AASHTO M 105 CLASS 35B. GRATE MAY BE USED WITHOUT FRAME.
5. GRATE AND FRAME SHALL NOT BE PAINTED.
6. GRATE SHALL BE BICYCLE SAFE.
7. HEAVY DUTY RING SHALL ALWAYS BE INSTALLED WITH FLANGE ON TOP.
8. HEAVY DUTY RING AND COVER SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS AASHTO M105 CLASS 35B & AASHTO M306.
9. HEAVY DUTY RING AND COVER SHALL NOT BE PAINTED.
10. DIMENSIONS SHOWN FOR RING AND COVER ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR CASTINGS WITH THE APPROVAL OF THE ENGINEER. REQUESTING APPROVAL FOR CASTING DESIGNS MAY BE MADE BY REFERRING TO PREVIOUSLY APPROVED DRAWINGS.

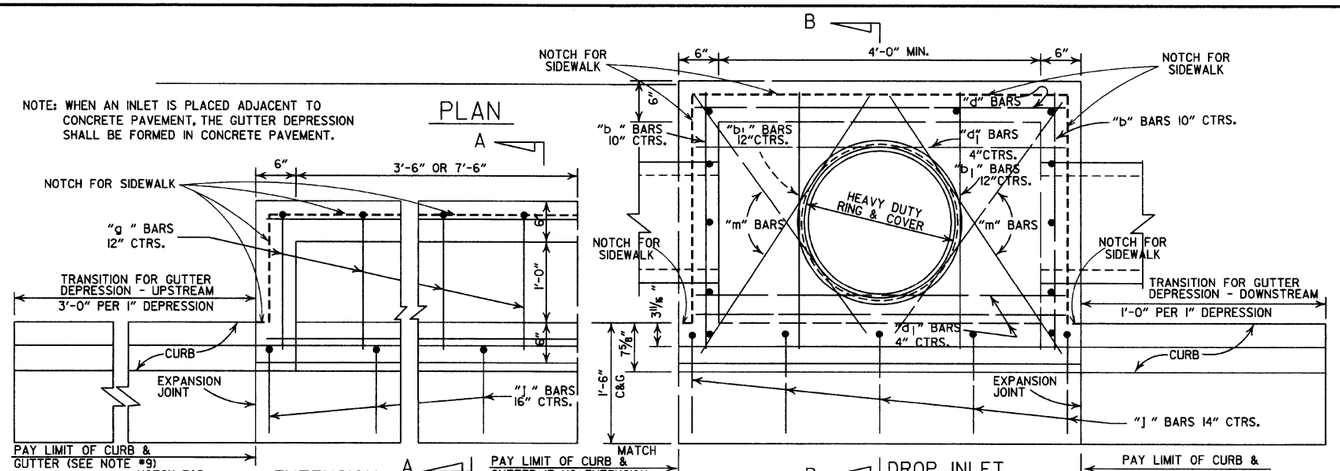
DATE REV.	REVISION	DATE FILMED
11-16-01	ADDED NOTE 10	
1-12-00	REVISED HEAVY DUTY RING & COVER	
7-02-98	CHANGED GRATE DETAIL, DELETED DI(TYPE D), REPLACED RING & COVER W/HEAVY DUTY RING & COVER, ADDED JUNCTION BOX (TYPE E)	
6-26-97	ADDED DIMENSION TO TYPE IV-A	
10-18-96	ADDED DETAIL OF YARD DRAIN	
8-15-91	DELETE TYPE IV GRATE	
7-15-88	REVISED STEP DETAIL	
5-20-83	REVISED DETAILS OF GRATES (TYPE IV & IV-A)	
2-4-83	ADDED GENERAL NOTE NO. 4	
3-2-81	ADDED TYPE IV-A GRATE	
5-22-74	DELETED INLET (TYPE F) & GRATE (TYPE III)	
10-2-72	REVISED AND REDRAWN	

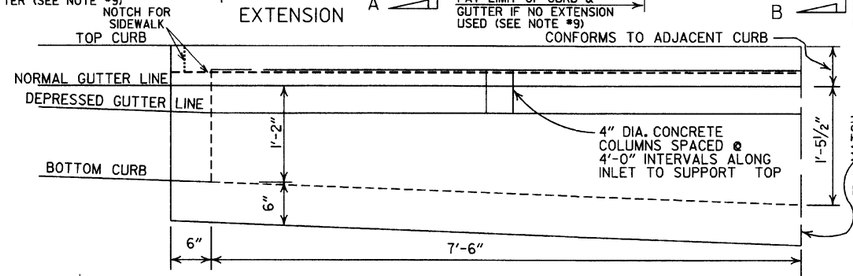
ARKANSAS STATE HIGHWAY COMMISSION

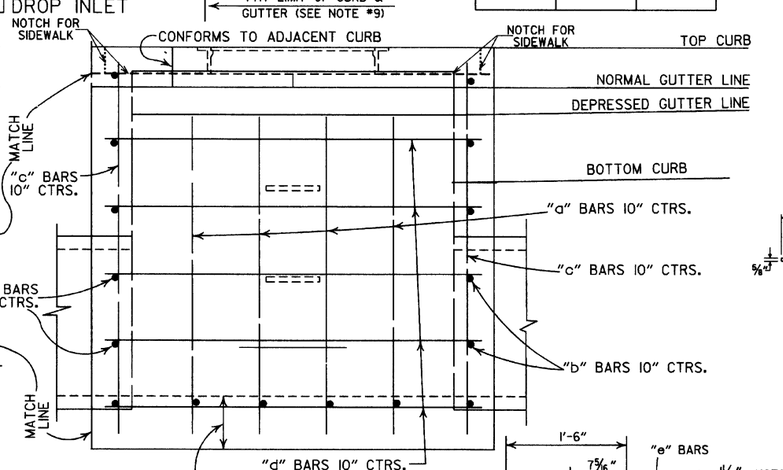
DETAILS OF DROP INLETS & JUNCTION BOXES

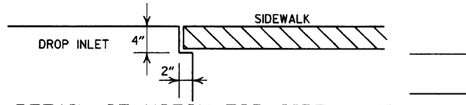
STANDARD DRAWING FPC-9

NOTE: WHEN AN INLET IS PLACED ADJACENT TO CONCRETE PAVEMENT, THE GUTTER DEPRESSION SHALL BE FORMED IN CONCRETE PAVEMENT.

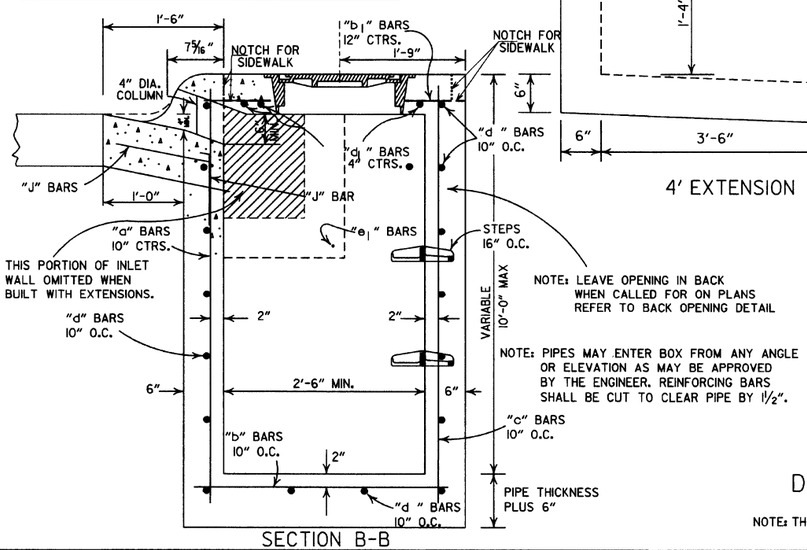


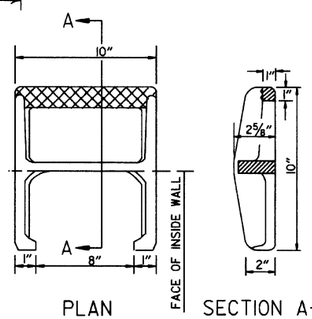






DETAIL OF NOTCH FOR SIDEWALKS





PLAN SECTION A-A

DETAIL OF STEP FOR DROP INLET

APPROX. WEIGHT = 11 LBS. (CAST IRON)

NOTE: THIS DETAIL IS TYPICAL. OTHERS MAY BE USED WITH PRIOR APPROVAL OF THE ENGINEER.

4'-0" LENGTH DROP INLET

PIPE SIZE	MIN. WIDTH	HEIGHT 5'-0" CLASS A CONC. CU. YDS.	HEIGHT 5'-0" REINF. STEEL POUNDS	PLUS OR MINUS PER LIN. FT. OF HEIGHT CLASS A CONC. CU. YDS.	PLUS OR MINUS PER LIN. FT. OF HEIGHT REINF. STEEL POUNDS
18"	2'-6"	1.77	156	0.28	22
24"	2'-6"	1.79	156	0.28	22
30"	3'-2"	2.39	205	0.30	26
36"	3'-8"	2.63	236	0.32	28
42"	4'-4"	2.95	250	0.34	30
48"	4'-10"	3.21	265	0.36	32

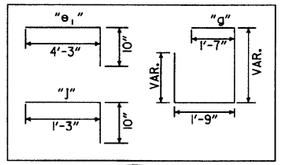
NOTE: QUANTITIES ARE APPROXIMATE AND ARE SHOWN FOR BIDDER INFORMATION ONLY.

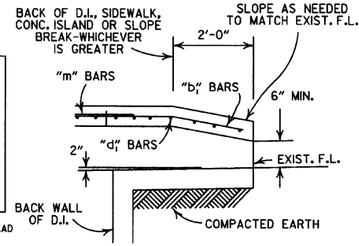
DROP INLET EXTENSION

4'-0" CLASS A CONC. CU. YDS.	4'-0" REINF. STEEL POUNDS	8'-0" CLASS A CONC. CU. YDS.	8'-0" REINF. STEEL POUNDS
0.58	38	0.87	72
DEDUCT FROM QUANTITY COMPUTED FOR EACH EXTENSION ADDED.			
0.04	3		

DEDUCT FROM QUANTITY COMPUTED FOR EACH PIPE ENTERING INLET		
INSIDE DIA. PIPE	CLASS A CONC.	REINF. STEEL
INCHES	CU. YDS.	POUNDS
18	0.05	2
24	0.09	3
30	0.13	4
42	0.24	8

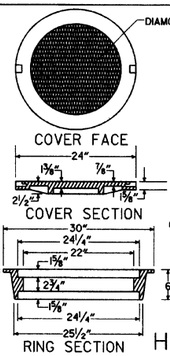
BAR DIAMETER





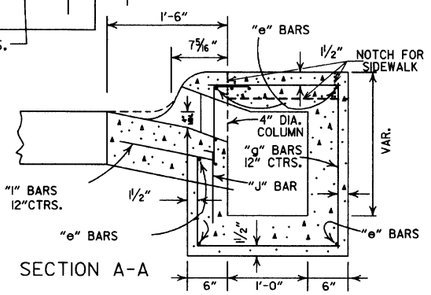
BACK OPENING

WHEN OPENING IN BACK IS CALLED FOR ON PLANS EXTEND OPENING AS SHOWN IN DETAIL. PAYMENT TO BE INCLUDED IN PRICE BID FOR DROP INLET (TYPE C).



APPROXIMATE TOTAL WEIGHT = 333 LBS.

HEAVY DUTY RING & COVER



SECTION A-A

GENERAL NOTES:
1. ALL EXPOSED CORNERS TO HAVE ¾" CHAMFER.
2. STEPS SHALL BE INSTALLED IN ALL INLETS 4'-0" HIGH AND OVER OF AS APPROVED BY THE ENGINEER.
3. ALL REINF. BARS SHALL BE #4 AND HAVE 1½" COVER.
4. DROP INLETS AND EXTENSION ON CURVED SECTIONS SHALL CONFORM TO THE CURVATURE OF THE CURB.
5. THIS DROP INLET MAY BE CONSTRUCTED ON NEW OR EXISTING R.C. BOX CULVERT AS SHOWN ON F.P.C.-9.
6. WHEN PLANS CALL FOR DROP INLET OVER 10'-0" HIGH, FLOOR AND WALLS SHALL BE CONSTRUCTED AS SHOWN FOR TYPE "RM" DROP INLET (F.P.C.-9D).
7. HEAVY DUTY RING SHALL ALWAYS BE INSTALLED WITH FLANGE ON TOP.
8. DURING CONSTRUCTION OF THE ROADWAY THE CONTRACTOR SHALL MAINTAIN DRAINAGE INTO OR AROUND THE DROP INLET AS APPROVED BY THE ENGINEER.
9. PAYMENT FOR CURB AND/OR CURB AND GUTTER WITHIN THE LIMITS OF DROP INLETS AND DROP INLET EXTENSIONS SHALL BE CONSIDERED INCLUDED IN PAYMENT MADE FOR DROP INLETS AND/OR DROP INLET EXTENSIONS.
10. 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.
11. HEAVY DUTY RING AND COVER SHALL NOT BE PAINTED.
12. 4"x2" NOTCH SHALL BE FORMED IN ALL DROP INLETS TO SUPPORT SIDEWALK CONSTRUCTION. REFER TO DETAIL OF NOTCH FOR SIDEWALKS.
13. 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.

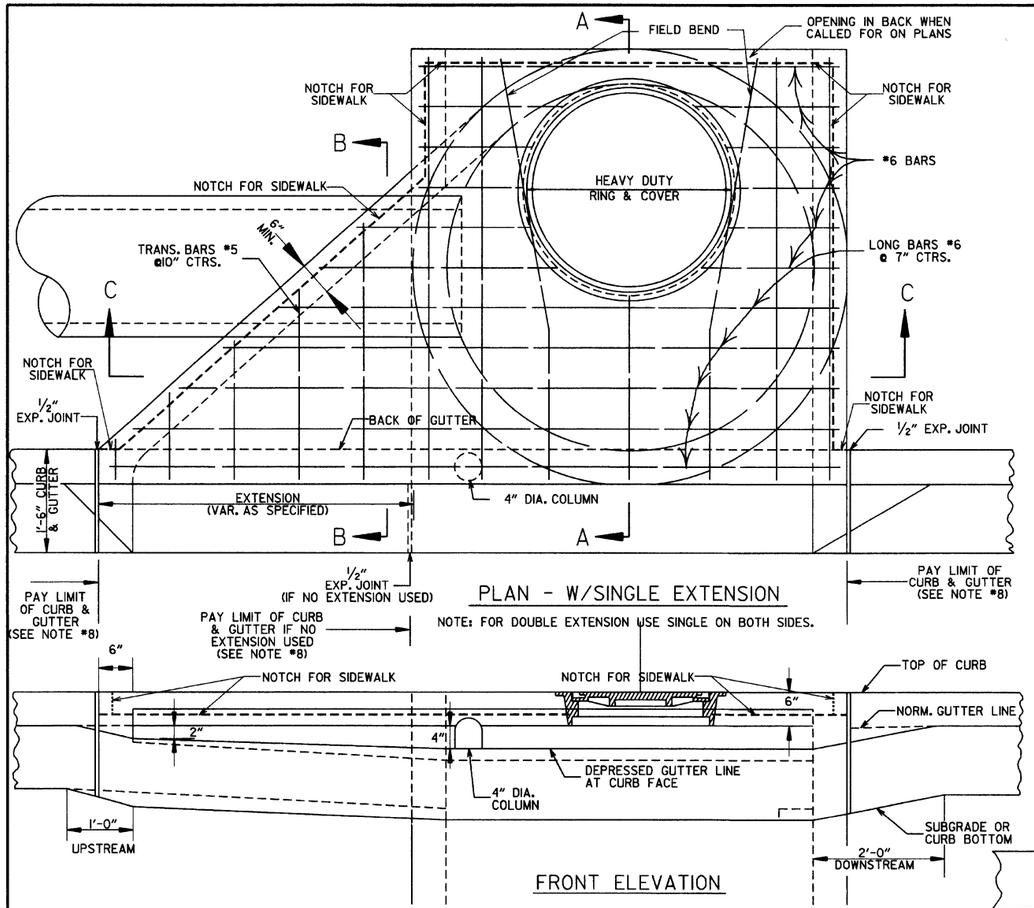
DATE REV.	REVISION	DATE FILMED
8-22-02	ADDED PAY LIMIT CURB NOTES TO SECTIONS A-A & B-B	
11-16-01	ADDED NOTE 13; REVISED SECTION B-B	
1-12-00	CORRECTED DIMENSION ON SECTION B-B & REVISED RING & COVER	
5-13-99	ADDED DETAIL OF NOTCH FOR SIDEWALKS	
7-02-98	REPLACED RING & COVER W/HEAVY DUTY RING & COVER ADDED NOTES 9,10,&11	
10-18-96	CORRECTED SPELLING	
4-26-96	ADDED NOTE 8 & REVISED (4')(8') EXTENSION TITLES	10-18-96
4-1-93	REVISED BACK OPENING & NOTE	
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	

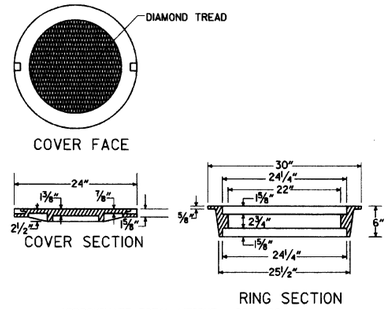
ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF DROP INLETS

(TYPE C)

STANDARD DRAWING FPC-9E

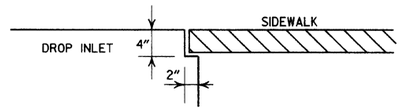




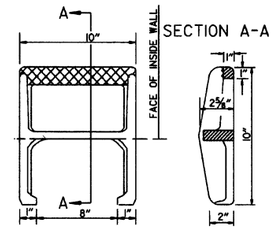
APPROXIMATE TOTAL WEIGHT = 333 LBS.

HEAVY DUTY RING & COVER

1. 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.
2. HEAVY DUTY RING AND COVER SHALL NOT BE PAINTED.
3. HEAVY DUTY RING SHALL ALWAYS BE INSTALLED WITH FLANGE ON TOP.



DETAIL OF NOTCH FOR SIDEWALKS

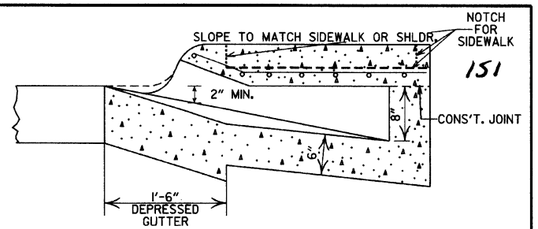


APPROX. WEIGHT = 11 LBS. (CAST IRON)

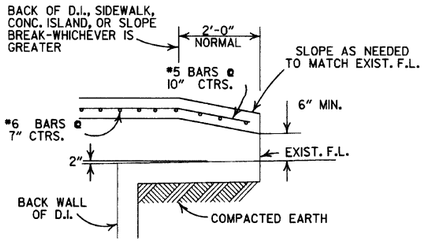
PLAN

NOTE: THIS DETAIL IS TYPICAL. OTHERS MAY BE USED WITH PRIOR APPROVAL OF THE ENGINEER.

DETAIL OF STEP FOR DROP INLET



SECTION B-B

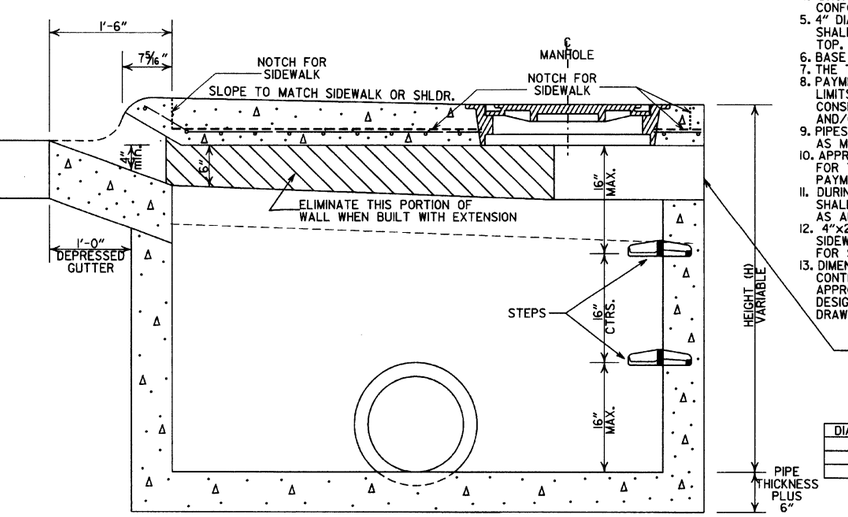


BACK OPENING

WHEN OPENING IN BACK IS CALLED FOR ON PLANS EXTEND OPENING AS SHOWN IN DETAIL. PAYMENT TO BE INCLUDED IN PRICE BID FOR DROP INLET (TYPE MO).

GENERAL NOTES:

1. ALL EXPOSED CORNERS TO HAVE 3/4" CHAMFER.
2. STEPS SHALL BE INSTALLED IN ALL INLETS 4'-0" HIGH AND OVER OR AS DIRECTED BY THE ENGINEER.
3. ALL REINFORCING BARS SHALL BE GRADE 60 AND HAVE MIN. 1 1/2" COVER.
4. DROP INLETS AND EXTENSION ON CURVED SECTIONS SHALL CONFORM TO THE CURVATURE OF THE CURB.
5. 4" DIA. COLUMNS SPACED AT MAX. 4'-0" INTERVALS SHALL BE INSTALLED ALONG INLET AND EXTENSION TO SUPPORT TOP.
6. BASE AND INLET WALLS SHALL BE CAST MONOLITHICALLY.
7. THE THROAT SHALL BE CAST INTEGRALLY WITH THE GUTTER.
8. PAYMENT FOR CURB AND/OR CURB AND GUTTER WITHIN THE LIMITS OF DROP INLETS AND DROP INLET EXTENSIONS SHALL BE CONSIDERED INCLUDED IN PAYMENT MADE FOR DROP INLETS AND/OR DROP INLET EXTENSIONS.
9. PIPES MAY ENTER DROP INLET FROM ANY ANGLE OR ELEVATION AS MAY BE APPROVED BY THE ENGINEER.
10. APPROPRIATE SIZE TYPE C DROP INLETS MAY BE SUBSTITUTED FOR TYPE MO DROP INLETS AS APPROVED BY THE ENGINEER. PAYMENT TO BE AS DROP INLET (TYPE MO).
11. DURING CONSTRUCTION OF THE ROADWAY THE CONTRACTOR SHALL MAINTAIN DRAINAGE INTO OR AROUND THE DROP INLET AS APPROVED BY THE ENGINEER.
12. 4"x2" NOTCH SHALL BE FORMED IN ALL DROP INLETS TO SUPPORT SIDEWALK CONSTRUCTION. REFER TO DETAIL OF NOTCH FOR SIDEWALKS.
13. 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.



SECTION A-A

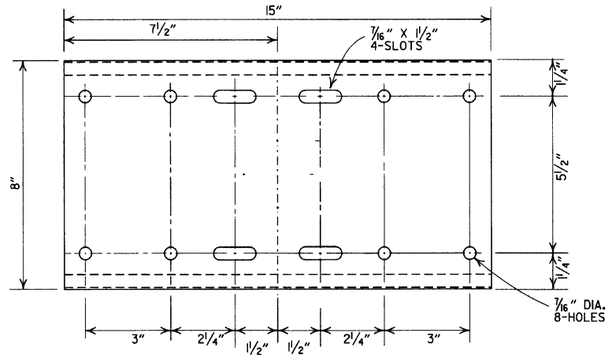
DIA. OF D.I.	DIA. OF OUTLET PIPE	MINIMUM WALL THICKNESS	
		CAST IN PLACE	PRECAST
4' I.D.	12" THRU 27"	6"	5"
5' I.D.	30" THRU 42"	8"	6"
6' I.D.	48" THRU 54"	8"	7"

DATE	REVISIONS	DATE FILMED
8-22-02	ADDED PAY LIMIT CURB NOTES TO SECTIONS A-A & B-B	
11-16-01	ADDED NOTE 13	
1-12-00	REVISED HEAVY DUTY RING & COVER	
5-13-99	ADDED NOTCH DETAIL FOR SIDEWALKS	
7-02-98	REP. NOTE 8, REM. PLAN DET., REV. PICTURE FOR NEW RING & COVER, ADDED HEAVY DUTY RING & COVER AND DETAIL OF STEP FOR DROP INLET	
4-26-96	ADDED NOTE IN ADJ. OPENING DIMENSION	
10-12-95	CORRECTED *5 BAR SPACING	
7-20-95	CORRECTED DIAMETER OF D.I. IN BOX	
4-7-95	TYPE C TO MO (OPEN BACK DETAIL)	
11-1-94	REVISED GENERAL NOTES	11-3-94
4-1-93	REV. BACK OPEN. DETAIL & NOTE	4-1-93
8-15-91	REVISED NOTES 11,12 & ADDED BK.OPEN DETAIL	8-15-91
10-30-89	ADDED NOTE NO. 12	11-30-89
1-23-89	ADDED NOTE & MINIMUM WALL THICKNESS	505-1-23-89
1-15-88	ADDED EXTEND NOTE TO SECTION A-A	639-1-15-88
1-14-87	MODIFIED WALL THICKNESS	783-1-14-87
6-12-87	ISSUED	4-6-12-87

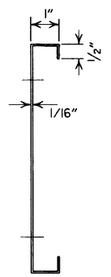
ARKANSAS STATE HIGHWAY COMMISSION

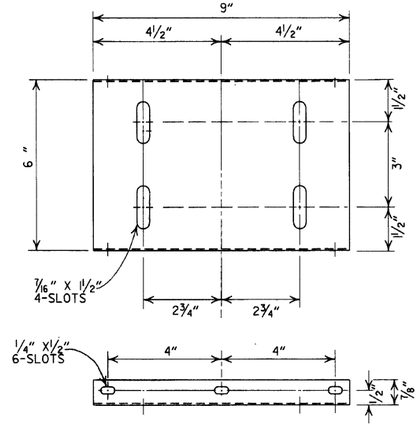
DETAILS OF DROP INLET (TYPE MO)

STANDARD DRAWING FPC-9M

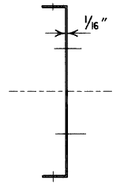


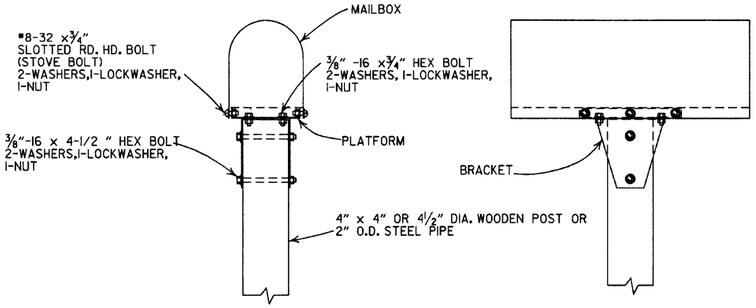
SHELF



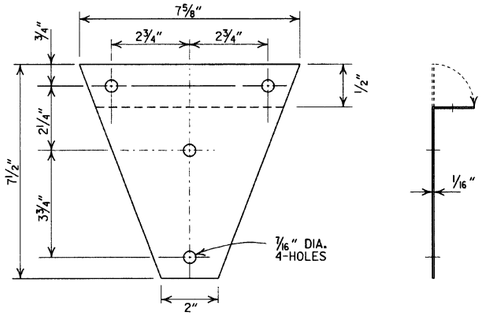


PLATFORM





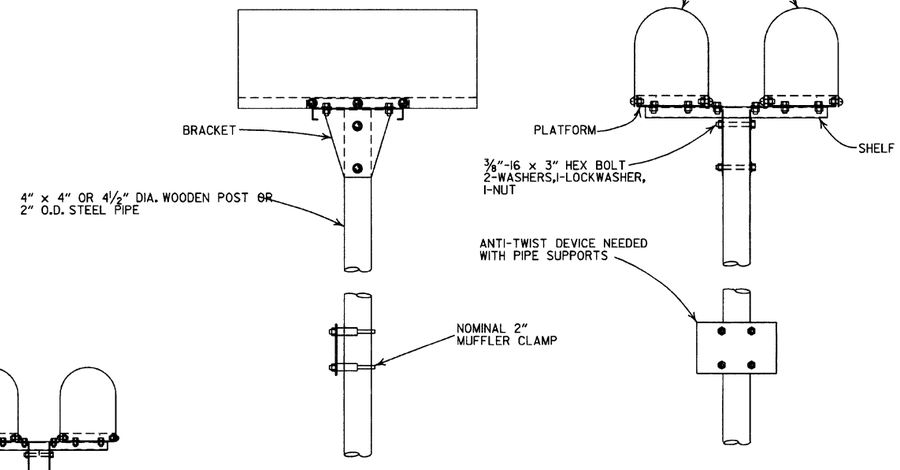
SINGLE INSTALLATION



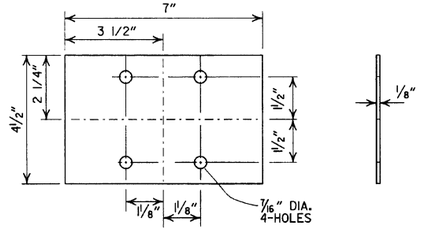
BRACKET

GENERAL NOTES

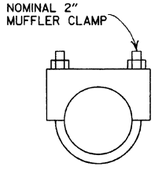
1. MAILBOX POSTS MAY BE WOOD OR METAL. WOOD POSTS SHALL BE PRESSURE TREATED FOR GROUND CONTACT IN ACCORDANCE WITH SECTION 637.02 OF THE STANDARD SPECIFICATIONS.
2. ANTI-TWIST PLATES SHALL BE USED ONLY ON METAL POSTS.
3. MAILBOX SHELF, BRACKET & PLATFORM SHALL BE GALVANIZED OR PAINTED STEEL, HOWEVER TREATED 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 9 X2½" 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.



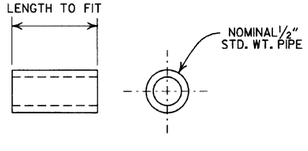
DOUBLE INSTALLATION



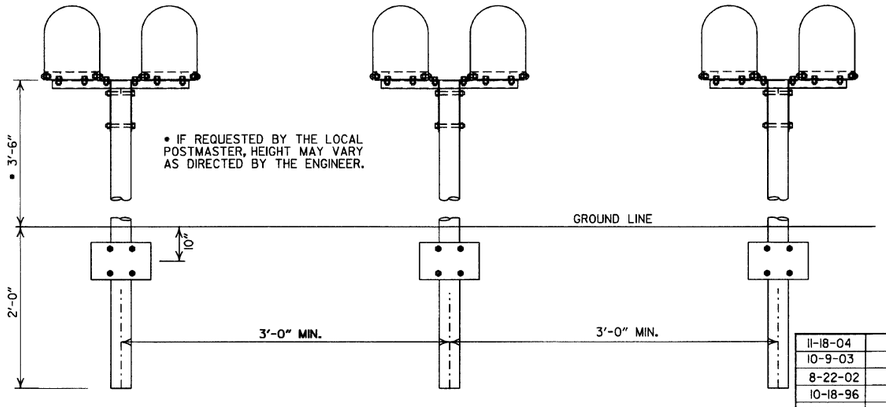
ANTI-TWIST PLATE



CLAMP



SPACER



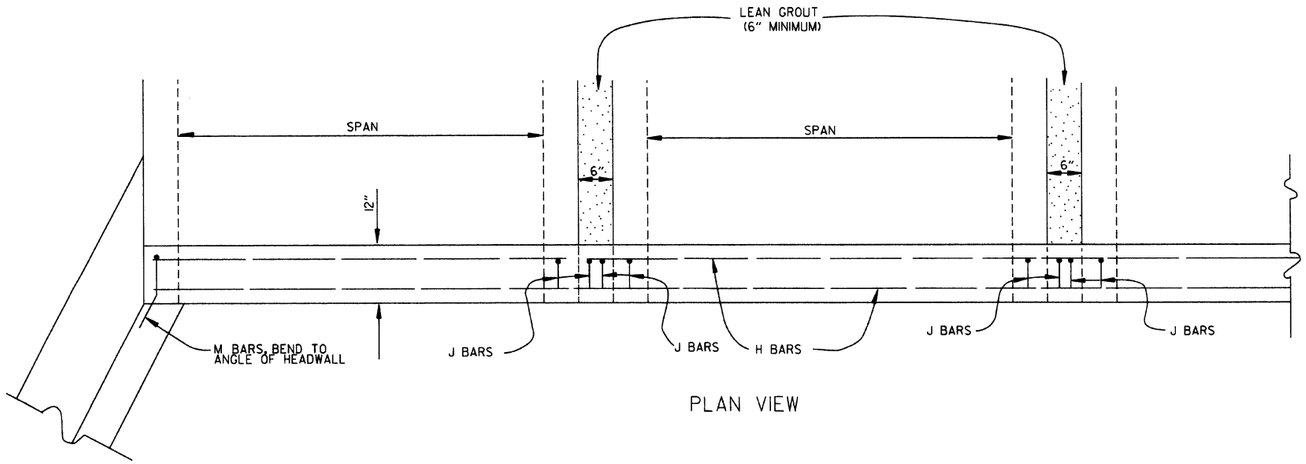
SPACING FOR MULTIPLE POST INSTALLATION

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

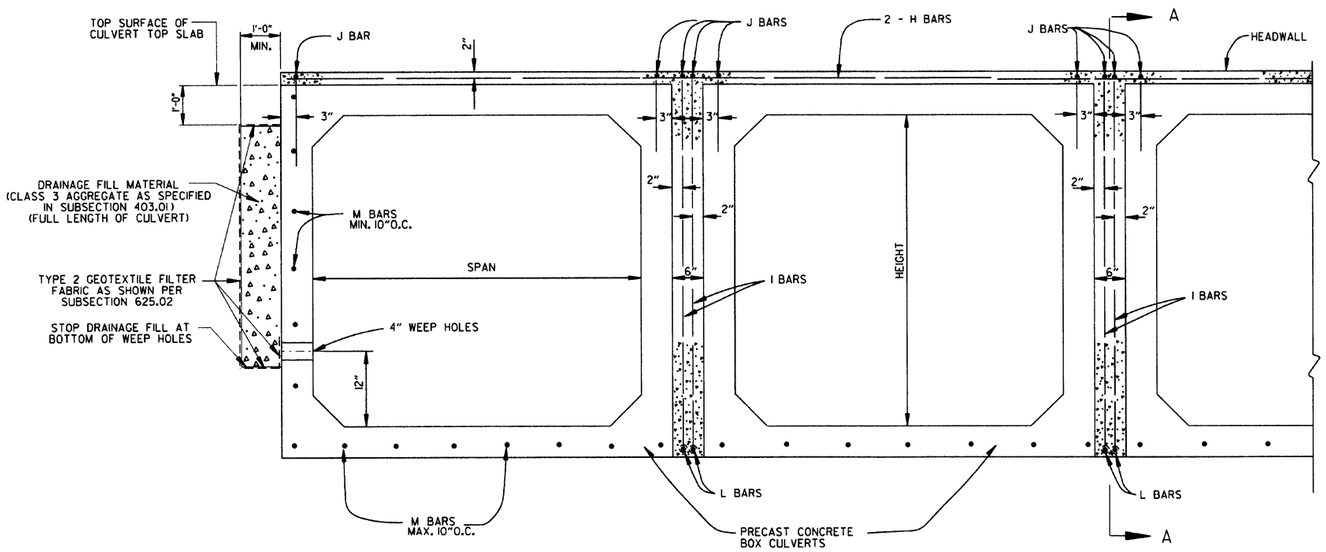
ARKANSAS STATE HIGHWAY COMMISSION

MAILBOX DETAILS

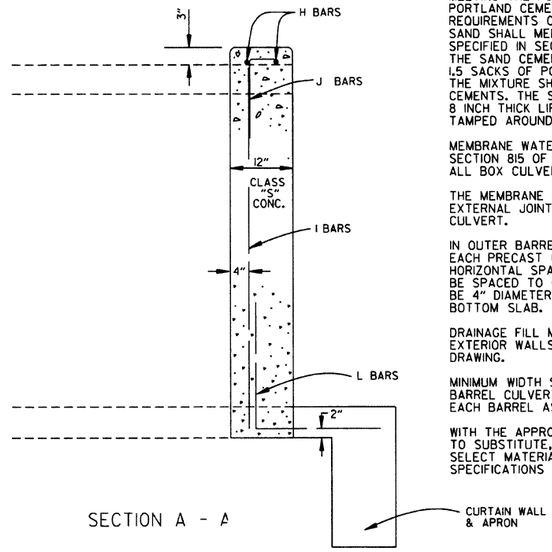
STANDARD DRAWING MB-1



PLAN VIEW



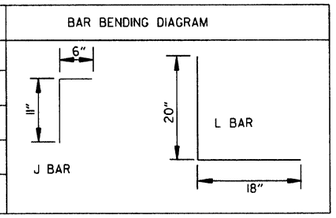
END VIEW



SECTION A - A

BAR LIST

BAR	NO.	SIZE	LENGTH	BAR BENDING DIAGRAM
H	2	#4	•	
I	•	#4	•	
J	•	#4	1'-5"	
L	•	#4	3'-2"	
M	•	#4	1'-8"	



• NOTE: LENGTH AND NUMBER OF BARS VARIES WITH SIZE OF CULVERT

GENERAL NOTES

WINGS, CURTAIN WALLS AND APRONS SHALL BE TIED TO THE PRECAST CULVERT SECTION BY CASTING BARS IN CULVERT END SECTIONS AS SHOWN OR BY DOWELING AND GROUTING. J BARS AND M BARS SHALL BE EMBEDDED A MINIMUM OF 10" IN PRECAST BOX.

WINGS, FOOTINGS, APRONS AND CURTAIN WALLS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE APPLICABLE WING DRAWING, STEEL AND CONCRETE QUANTITIES WILL BE ADJUSTED TO FIT THE IN-PLACE WIDTH & HEIGHT OF THE PRECAST CONCRETE BOX CULVERTS.

ALL EXPOSED CORNERS TO HAVE 3/4" CHAMFERS.

WINGWALLS AND FOOTINGS MAY BE ADJUSTED IN THE FIELD AS DIRECTED BY THE ENGINEER.

ALL CONCRETE, REINFORCING STEEL, LEAN GROUT, MEMBRANE WATERPROOFING, DRAINAGE FILL MATERIAL, GEOTEXTILE FILTER FABRIC, LABOR, MATERIALS AND EQUIPMENT REQUIRED FOR INSTALLING PRECAST BOX CULVERTS WILL NOT BE PAID FOR DIRECTLY BUT WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID FOR THE ITEMS AS SPECIFIED IN SECTION 607 OF THE STANDARD SPECIFICATIONS.

LEAN GROUT SHALL CONSIST OF A SAND CEMENT MIXTURE MEETING THE FOLLOWING REQUIREMENTS:
PORTLAND CEMENT SHALL BE TYPE I AND SHALL MEET THE REQUIREMENTS OF AASHTO M 85.
SAND SHALL MEET THE REQUIREMENTS OF FINE AGGREGATE AS SPECIFIED IN SECTION 802.02 OF THE STANDARD SPECIFICATIONS.
THE SAND CEMENT MIXTURE SHALL CONSIST OF NOT LESS THAN 1.5 SACKS OF PORTLAND CEMENT PER TON OF MATERIAL MIXTURE.
THE MIXTURE SHALL CONTAIN SUFFICIENT WATER TO HYDRATE THE CEMENTS. THE SAND CEMENT MIXTURE SHALL BE PLACED IN MAXIMUM 8 INCH THICK LIFTS, LOOSE MEASURE, AND THOROUGHLY RODDED AND TAMPED AROUND BOX TO THOROUGHLY FILL ALL VOIDS.

MEMBRANE WATERPROOFING CONFORMING TO THE REQUIREMENTS OF SECTION 815 OF THE STANDARD SPECIFICATIONS SHALL BE APPLIED TO ALL BOX CULVERT JOINTS.

THE MEMBRANE WATERPROOFING WILL BE REQUIRED ON THE TOP EXTERNAL JOINT AND SHALL EXTEND 1 FOOT DOWN THE SIDES OF THE CULVERT.

IN OUTER BARRELS, ONE WEEP HOLE IS REQUIRED IN EXTERIOR WALLS OF EACH PRECAST CULVERT SECTION. WEEP HOLES SHALL HAVE A MAXIMUM HORIZONTAL SPACING OF 10'-0" IN THE ASSEMBLED CULVERT AND SHALL BE SPACED TO CLEAR ALL REINFORCING STEEL. THE DRAIN OPENING SHALL BE 4" DIAMETER AND SHALL BE PLACED 12" ABOVE THE TOP OF THE BOTTOM SLAB.

DRAINAGE FILL MATERIAL WITH GEOTEXTILE FABRIC IS REQUIRED AT THE EXTERIOR WALLS OF THE ASSEMBLED CULVERT, SEE DETAILS ON THIS DRAWING.

MINIMUM WIDTH SHALL BE 12" (6" ON EACH SIDE OF JOINT). ON MULTIPLE BARREL CULVERTS, MEMBRANE WATERPROOFING SHALL BE APPLIED TO EACH BARREL AS DESCRIBED ABOVE.

WITH THE APPROVAL OF THE ENGINEER, THE CONTRACTOR WILL BE ALLOWED TO SUBSTITUTE, AT NO ADDITIONAL COST TO THE DEPARTMENT, FLOWABLE SELECT MATERIAL CONFORMING TO SECTION 206 OF THE STANDARD SPECIFICATIONS IN LIEU OF LEAN GROUT.

DATE	REVISION	DATE FILMED
1-28-15	REVISED GEOTEXTILE FABRIC PLACEMENT	
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	31⅞	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.

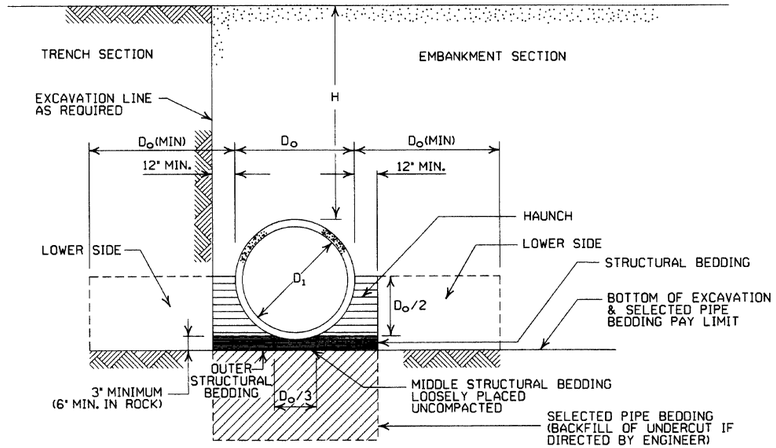
- LEGEND -

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)	①MINUMUM COVER TOP OF PIPE TO TOP OF GROUND "H" (FEET)	MAX. FILL HEIGHT "H" ABOVE TOP OF PIPE (FEET)				
		METAL THICKNESS IN INCHES				
		0.060	0.075	0.105	0.135	0.164
		2⅔ INCH BY ½ INCH CORRUGATION RIVETED OR HELICAL LOCK-SEAM				
12	1	45	45			
18	2	30	30	52		
24	2	22	22	39	41	
30	2		18	31	32	34
36	2.5		15	26	27	28
42	2			43	43	44
48	2			40	41	43
54	2			35	37	38
60	2				33	34
66	2					31
72	2					29

CORRUGATED METAL PIPE ARCHES

EQUIV. DIA. (INCHES)	PIPE DIMENSION SPAN X RISE (INCHES)	MINUMUM CORNER RADIUS (INCHES)	STEEL				ALUMINUM			
			MIN. THICKNESS REQUIRED INCHES	① MIN. HEIGHT OF FILL, "H" (FT.)		MAX. HEIGHT OF FILL, "H" (FT.)	MIN. THICKNESS REQUIRED INCHES	① MIN. HEIGHT OF FILL, "H" (FT.)		MAX. HEIGHT OF FILL, "H" (FT.)
				INSTALLATION		INSTALLATION		INSTALLATION		INSTALLATION
				TYPE 1		TYPE 1		TYPE 1		TYPE 1
			2 ⅔ INCH BY ½ INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM				2 ⅔ INCH BY ½ INCH CORRUGATION RIVETED OR HELICAL LOCK-SEAM			
15	17x13	3	0.064	2		15	0.060	2		15
18	21x15	3	0.064	2		15	0.060	2		15
21	24x18	3	0.064	2.25		15	0.060	2.25		15
24	28x20	3	0.064	2.5		15	0.075	2.5		15
30	35x24	3	0.079	3		12	0.075	3		12
36	42x29	3½	0.079	3		12	0.105	3		12
42	49x33	4	0.079	3		12	0.105	3		12
48	57x38	5	0.109	3		13	0.135	3		13
54	64x43	6	0.109	3		14	0.135	3		14
60	71x47	7	0.138	3		15	0.164	3		15
66	77x52	8	0.168	3		15				
72	83x57	9	0.168	3		15				
			② 3 INCH BY 1 INCH OR 5 INCH BY 1 INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM							
				INSTALLATION		INSTALLATION				
				TYPE 2	TYPE 1	TYPE 2	TYPE 1			
36	40x31	5	0.079	3	2	12	15			
42	46x36	6	0.079	3	2	13	15			
48	53x41	7	0.079	3	2	13	15			
54	60x46	8	0.079	3	2	13	15			
60	66x51	9	0.079	3	2	13	15			
66	73x55	12	0.079	3	2	15	15			
72	81x59	14	0.079	3	2	15	15			
78	87x63	14	0.079	3	2	15	15			
84	95x67	16	0.109	3	2	15	15			
90	103x71	16	0.109	3	2	15	15			
96	112x75	18	0.109	3	2	15	15			
102	117x79	18	0.109	3	2	15	15			
108	128x83	18	0.138	3	2	15	15			

CONSTRUCTION SEQUENCE

1. PLACE STRUCTURAL BEDDING MATERIAL TO GRADE. DO NOT COMPACT.
2. INSTALL PIPE TO GRADE.
3. COMPACT STRUCTURAL BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE.
4. COMPLETE STRUCTURAL BACKFILL OPERATION BY WORKING FROM SIDE TO SIDE OF THE PIPE. THE SIDE TO SIDE STRUCTURAL BACKFILL DIFFERENTIAL SHALL NOT EXCEED 24 INCHES OR 1/3 THE SIZE OF THE PIPE, WHICHEVER IS LESS.

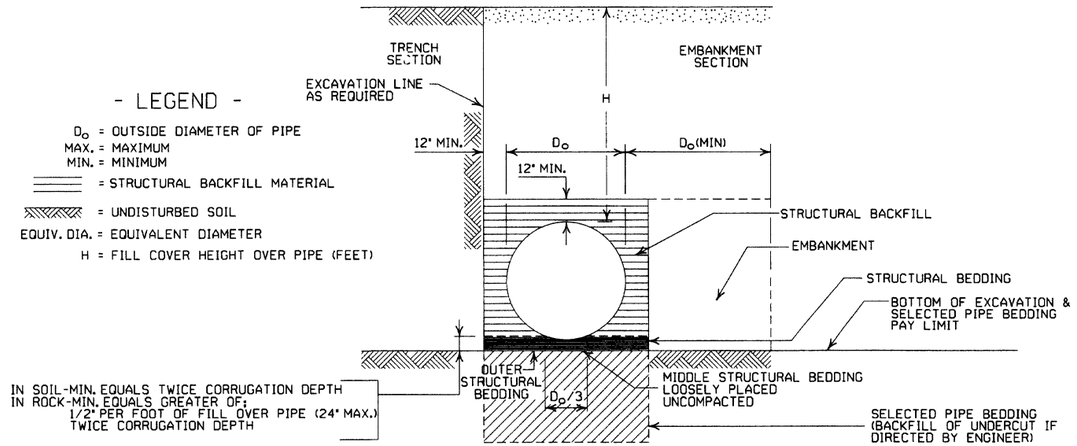
NOTE: STRUCTURAL BACKFILL AND STRUCTURAL BEDDING MATERIAL WILL NOT BE PAID FOR SEPARATELY, BUT COMPENSATION WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID PER LINEAR FOOT OF METAL PIPE.

INSTALLATION TYPE	MATERIAL REQUIREMENTS FOR STRUCTURAL BACKFILL AND STRUCTURAL BEDDING
TYPE 1	AGGREGATE BASE COURSE (CLASS 4, 5, 6, OR 7)
TYPE 2	SELECTED MATERIALS (CLASS SM-1, SM-2, OR SM-4) OR TYPE 1 INSTALLATION MATERIAL ③

③ SM-3 WILL NOT BE ALLOWED.

EQUIVALENT METAL THICKNESSES AND GAUGES

METAL THICKNESS IN INCHES			GAUGE NUMBER
STEEL			
ZINC COATED	UNCOATED	ALUMINUM	
0.064	0.0598	0.060	16
0.079	0.0747	0.075	14
0.109	0.1046	0.105	12
0.138	0.1345	0.135	10
0.168	0.1644	0.164	8



EMBANKMENT AND TRENCH INSTALLATIONS

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

GENERAL NOTES

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

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

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

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

ARKANSAS STATE HIGHWAY COMMISSION

METAL PIPE CULVERT FILL HEIGHTS & BEDDING

STANDARD DRAWING PCM-1

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

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

SM3 WILL NOT BE ALLOWED.

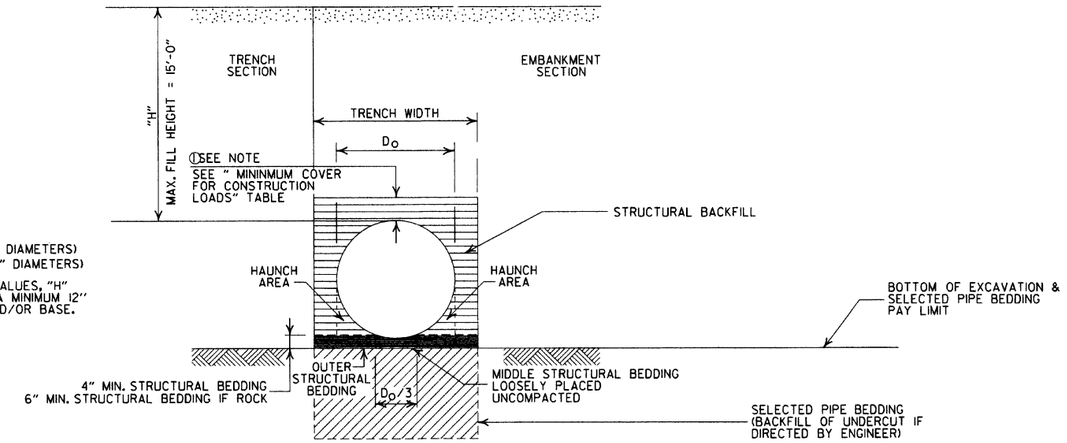
•• STRUCTURAL BEDDING MATERIAL SHALL HAVE A MAXIMUM PARTICLE SIZE OF 1INCH. STRUCTURAL BACKFILL MATERIAL SHALL BE FREE OF ORGANIC MATERIAL, STONES LARGER THAN 1.50 INCH IN GREATEST DIMENSION, OR FROZEN LUMPS.

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

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

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

①NOTE:
18" MIN. (18" - 30" DIAMETERS)
24" MIN. (36" - 48" DIAMETERS)
MINIMUM COVER VALUES, "H" SHALL INCLUDE A MINIMUM 12" OF PAVEMENT AND/OR BASE.



TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

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

MULTIPLE INSTALLATION OF HIGH DENSITY POLYETHYLENE PIPES

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

MINIMUM COVER FOR CONSTRUCTION LOADS

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

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

CONSTRUCTION SEQUENCE

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

GENERAL NOTES

1. PIPE SHALL CONFORM TO AASHTO M294, TYPE S. INSTALLATION SHALL CONFROM TO JOB SPECIAL PROVISION "PLASTIC PIPE" AND SECTION 606 OF THE STANDARD SPECIFICIATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION).
2. PLASTIC PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) WITH 2010 INTERIMS.
3. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PLUS A SUFFICIENT WIDTH TO ENSURE WORKING ROOM TO PROPERLY AND SAFELY PLACE AND COMPACT HAUNCHING AND OTHER BACKFILL MATERIAL.
4. IMPERVIOUS MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
5. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH (BELOW THE AREA IDENTIFIED AS "STRUCTURAL BEDDING" ABOVE) WILL BE EXCAVATED AND REPLACED WITH SELECTED PIPE BEDDING. THE QUANTITY OF MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE SELECTED PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS "SELECTED PIPE BEDDING."
6. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED ABOVE AS STRUCTURAL BACKFILL), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."
7. FOR PIPE TYPES THAT ARE NOT SMOOTH ON THE OUTSIDE (CORRUGATED OR PROFILE WALLS), BACKFILL GRADATIONS SHOULD BE SELECTED THAT WILL PERMIT THE FILLING OF THE CORRUGATION OR PROFILE VALLEY.
8. HIGH DENSITY POLYETHYLENE PIPES OF DIAMETERS OTHER THAN SHOWN WILL NOT BE ALLOWED.
9. JOINTS FOR HDPE PIPE SHALL MEET THE REQUIREMENTS FOR SOIL TIGHTNESS AS SPECIFIED IN AASHTO SECTION 26.4.2.4 AND 30.4.2 "AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS." JOINTS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

- LEGEND -

H = FILL HEIGHT (FT.)
D = 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 1INCH. STRUCTURAL BACKFILL MATERIAL SHALL BE FREE OF ORGANIC MATERIAL, STONES LARGER THAN 1.50 INCH IN GREATEST DIMENSION, OR FROZEN LUMPS.

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

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

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

MULTIPLE INSTALLATION OF PVC PIPES

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

MAXIMUM FILL HEIGHT BASED ON STRUCTURAL BACKFILL

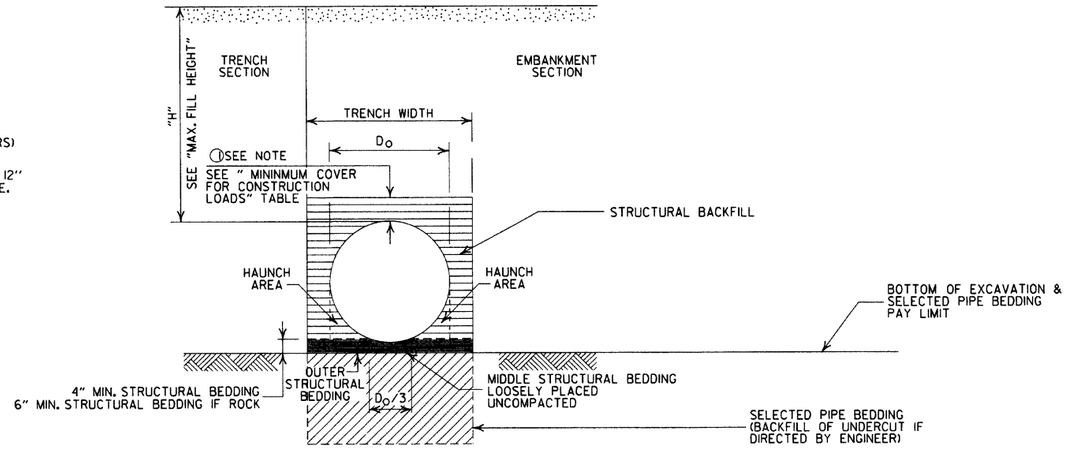
PIPE DIAMETER	"H"
18"	45'-0"
24"	45'-0"
30"	40'-0"
36"	40'-0"

① NOTE:
12" MIN. (18" - 36" DIAMETERS)
MINIMUM COVER VALUE, "H" SHALL INCLUDE A MINIMUM 12" OF PAVEMENT AND/OR BASE.

MINIMUM COVER FOR CONSTRUCTION LOADS

PIPE DIAMETER	② MIN. COVER (FEET) FOR INDICATED CONSTRUCTION LOADS			
	18.0-50.0 (KIPS)	50.0-75.0 (KIPS)	75.0-110.0 (KIPS)	110.0-175.0 (KIPS)
18" THRU 36"	2'-0"	2'-6"	3'-0"	3'-0"

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



TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

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

CONSTRUCTION SEQUENCE

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

GENERAL NOTES

1. PIPE SHALL CONFORM TO ASTM F949, CELL CLASS 12454. INSTALLATION SHALL CONFROM TO JOB SPECIAL PROVISION "PLASTIC PIPE" AND SECTION 606 OF THE STANDARD SPECIFICIATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION).
2. PLASTIC PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) WITH 2010 INTERIMS.
3. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PLUS A SUFFICIENT WIDTH TO ENSURE WORKING ROOM TO PROPERLY AND SAFELY PLACE AND COMPACT HAUNCHING AND OTHER BACKFILL MATERIAL.
4. IMPERVIOUS MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
5. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH (BELOW THE AREA IDENTIFIED AS "STRUCTURAL BEDDING" ABOVE) WILL BE EXCAVATED AND REPLACED WITH SELECTED PIPE BEDDING. THE QUANTITY OF MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE SELECTED PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS "SELECTED PIPE BEDDING."
6. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED ABOVE AS STRUCTURAL BACKFILL), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."
7. FOR PIPE TYPES THAT ARE NOT SMOOTH ON THE OUTSIDE (CORRUGATED OR PROFILE WALLS), BACKFILL GRADATIONS SHOULD BE SELECTED THAT WILL PERMIT THE FILLING OF THE CORRUGATION OR PROFILE VALLEY.
8. PVC PIPES OF DIAMETERS OTHER THAN SHOWN WILL NOT BE ALLOWED.
9. JOINTS FOR PVC PIPE SHALL MEET THE REQUIREMENTS FOR SOIL TIGHTNESS AS SPECIFIED IN AASHTO SECTION 26.4.2.4 AND 30.4.2 "AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS." JOINTS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

- LEGEND -

H = FILL HEIGHT (FT.)
D_O = OUTSIDE DIAMETER OF PIPE
MAX. = MAXIMUM
MIN. = MINIMUM

= STRUCTURAL BACKFILL MATERIAL

= UNDISTURBED SOIL

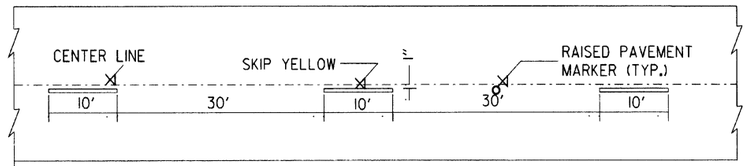
DATE	REVISION	DATE FILMED
2-27-14	REVISED GENERAL NOTE 1.	
12-15-11	REV GENERAL NOTES & MINIMUM COVER NOTE; DELETED SM3 MATERIAL	
11-17-10	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

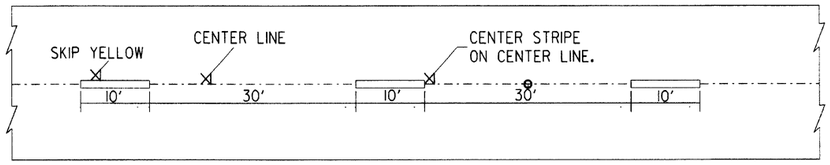
PLASTIC PIPE CULVERT (PVC F949)

STANDARD DRAWING PCP-2

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

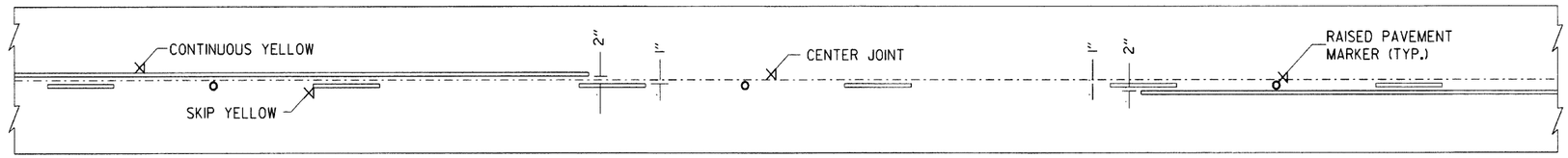


CONCRETE PAVEMENT

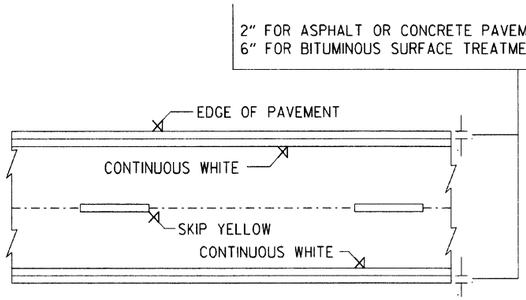


ASPHALT PAVEMENT

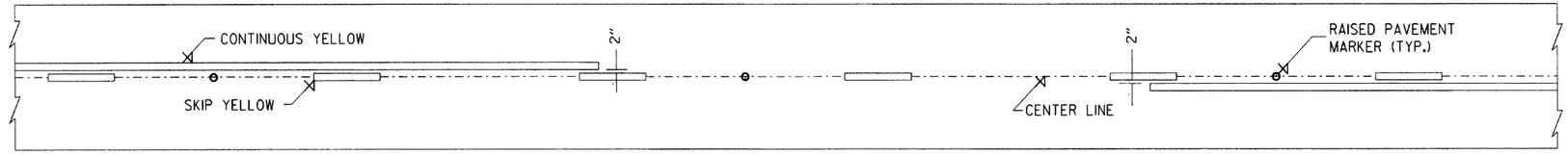
BROKEN LINE STRIPING



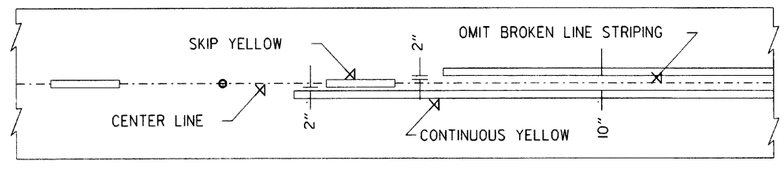
SOLID LINE STRIPING ON CONCRETE PAVEMENT



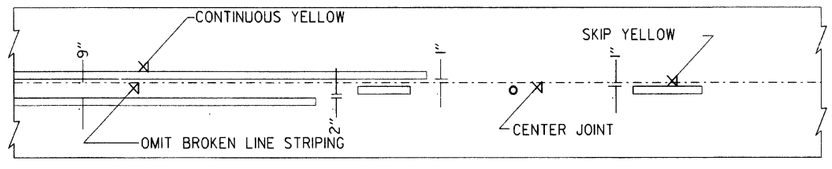
PAVEMENT EDGE LINE MARKING



SOLID LINE STRIPING ON ASPHALT PAVEMENT

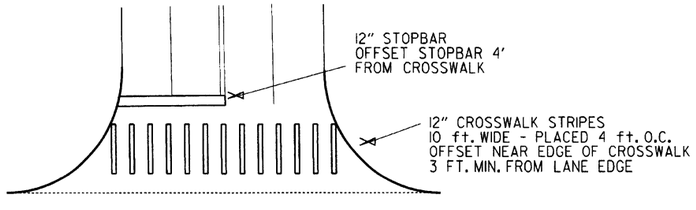


ASPHALT PAVEMENT

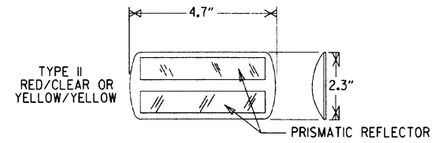


CONCRETE PAVEMENT

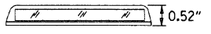
STRIPING AT ADJACENT NO PASSING LANES



CROSSWALK AND STOPBAR DETAILS



NOTE:
THE RED LENS OF THE TYPE II R.P.M. SHALL FACE THE INCORRECT TRAFFIC MOVEMENT.



DETAIL OF STANDARD RAISED PAVEMENT MARKERS

NOTE:
DIMENSIONS SHOWN FOR RAISED PAVEMENT MARKERS ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR MARKERS WITH THE APPROVAL OF THE ENGINEER. REQUESTING APPROVAL FOR SIMILAR MARKERS MAY BE MADE BY REFERRING TO THE AHTD QUALIFIED PRODUCTS LIST.

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

ARKANSAS STATE HIGHWAY COMMISSION

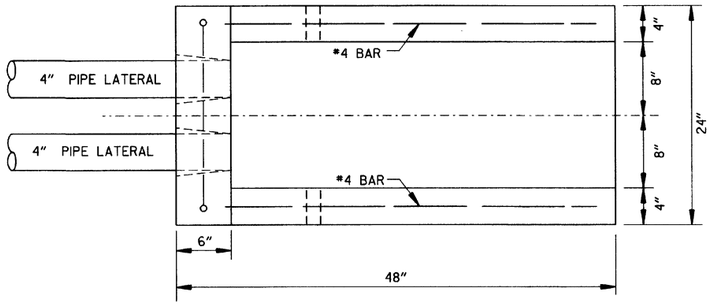
PAVEMENT MARKING DETAILS

STANDARD DRAWING PM-1

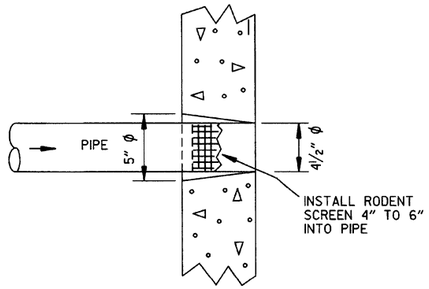
NOTE:
1. GRANULAR BACKFILL TO BE SUBSIDIARY TO PIPE UNDERDRAIN.

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

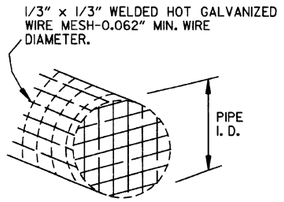
3. GRANULAR MATERIAL SHALL BE WRAPPED WITH GEOTEXTILE FABRIC. LAP FABRIC 12" OR THE WIDTH OF THE TRENCH AT THE TOP.



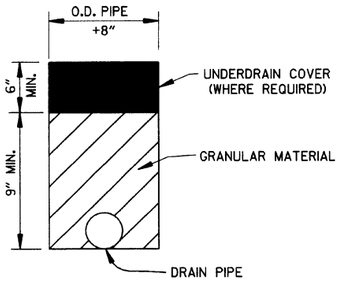
PLAN VIEW

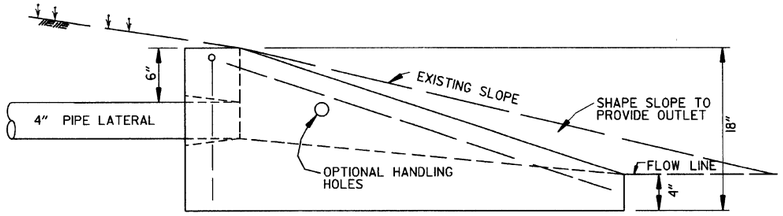


DETAIL OF HOLE FOR 4" PIPE

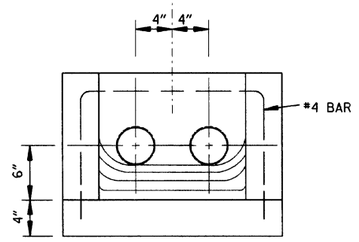


DETAIL OF RODENT SCREEN

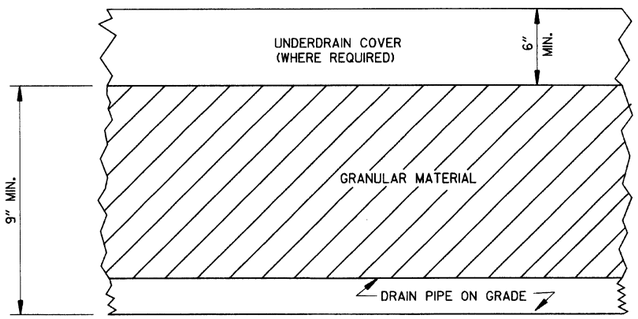




SIDE VIEW

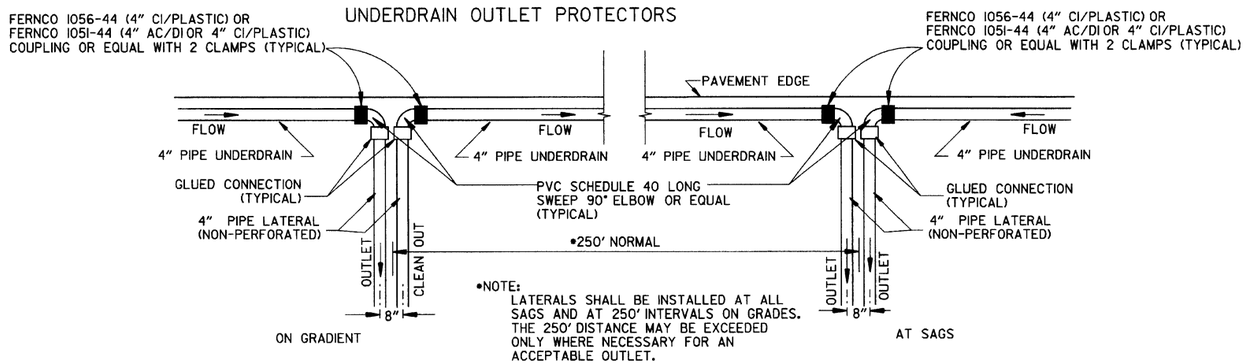


FRONT VIEW



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

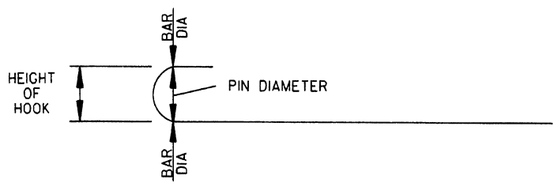
STANDARD DRAWING PU-1

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	2 1/4"	4"
4	3 "	4 1/2"
5	3 3/4"	5"
6	4 1/2"	6"
7	5 1/4"	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 2 3/4 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

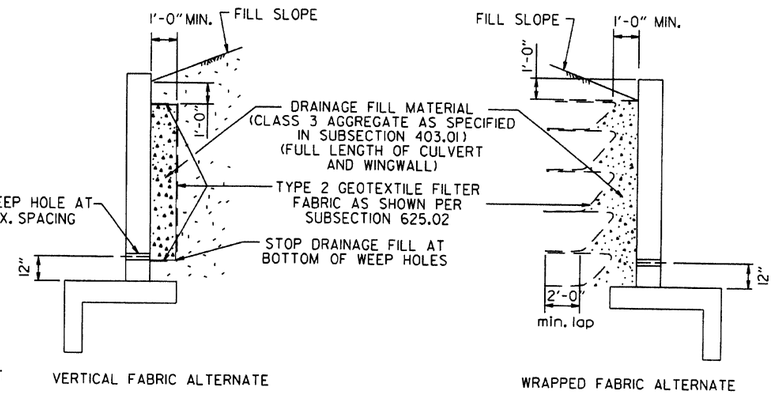
THE HOOKED BARS SHALL BE PLACED IN THE BOTTOM OF THE TOP SLAB AND THE TOP OF THE BOTTOM SLAB. THE STRAIGHT BARS SHALL BE PLACED IN THE TOP OF THE TOP SLAB AND THE BOTTOM OF THE BOTTOM SLAB. SEE TABLE BELOW FOR LENGTHS OF REPLACEMENT HOOKED AND STRAIGHT BARS.

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.

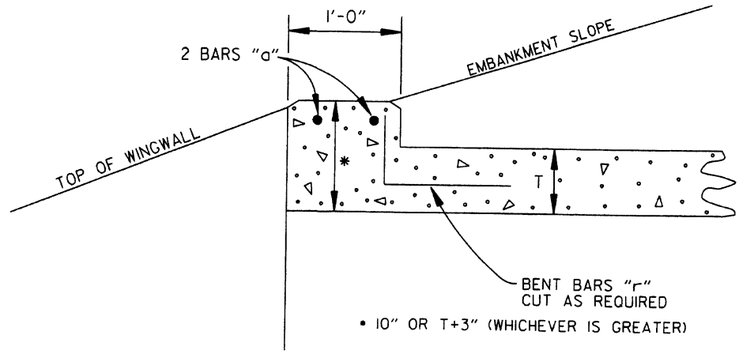
MEMBRANE WATERPROOFING SHALL BE APPLIED TO ALL CONSTRUCTION JOINTS IN THE TOP SLAB AND THE SIDEWALLS OF R.C. BOX CULVERTS AS DIRECTED BY THE ENGINEER. NO PAYMENT SHALL BE MADE FOR THIS ITEM, BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS BID FOR THE R.C. BOX CULVERT.

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 1/2 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.

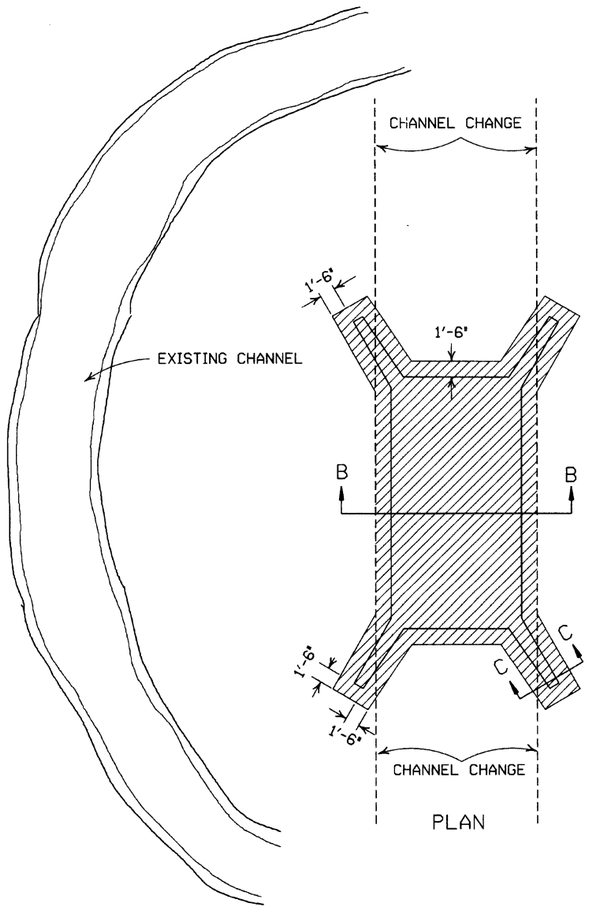
R.C. BOX CULVERT HEADWALL MODIFICATIONS

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

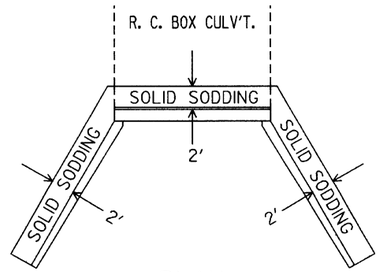
REINFORCED CONCRETE BOX CULVERT DETAILS

STANDARD DRAWING RCB-1



PLAN

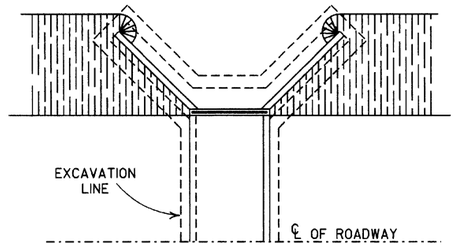
SOLID SODDING



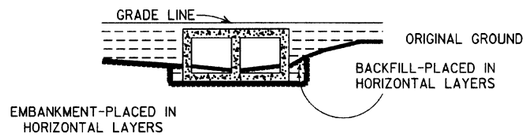
PLAN

PARTIAL SECTION SHOWING SOLID SODDING AT HEADWALLS AND WING WALLS

NOTE: LENGTH MEASURED ALONG THE CENTER OF 2' STRIP OF SOLID SODDING.

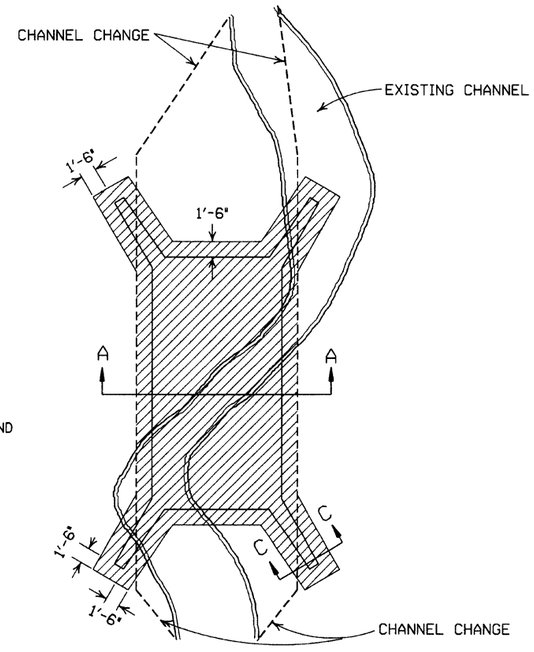


PLAN

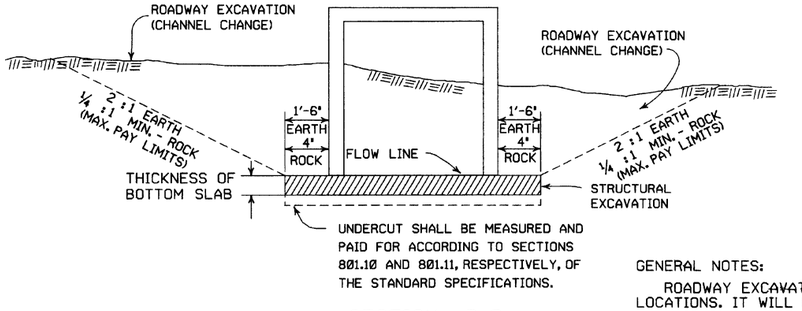


LONGITUDINAL SECTION

BACKFILL DETAILS FOR BOX CULVERT

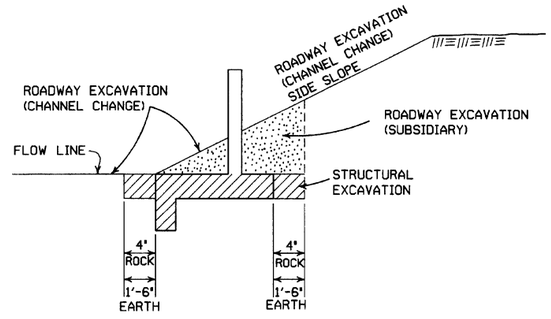


PLAN

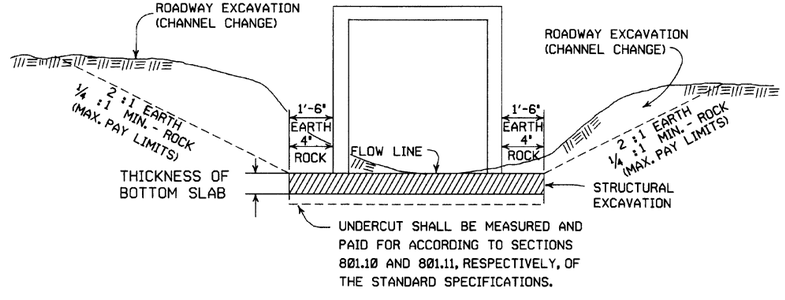


SECTION B-B

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.

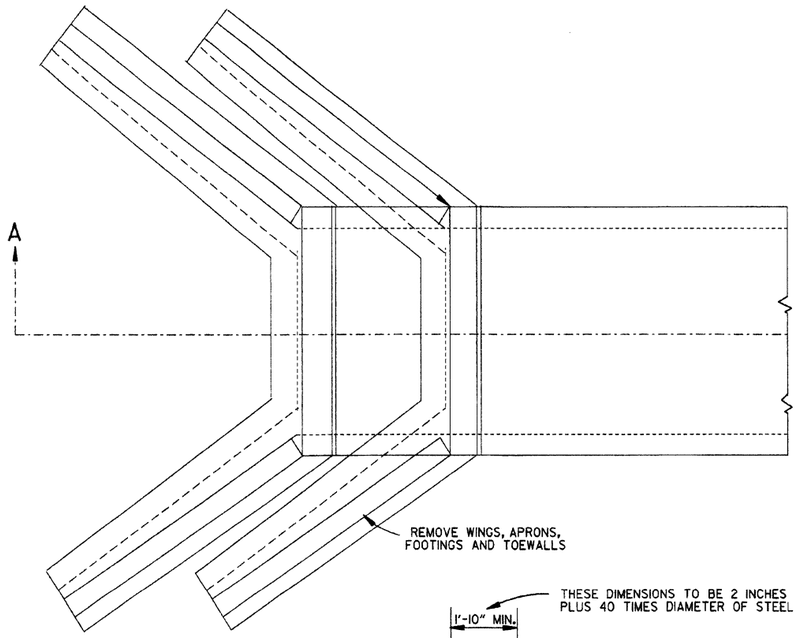
ROADWAY EXCAVATION SHOWN IN SECTION C-C ABOVE AS SUBSIDIARY WILL NOT BE MEASURED OR PAID FOR DIRECTLY, BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS OF EXCAVATION.

DATE	REVISION	FILMED
11-20-03	REVISED SECTION A-A NOTE	
8-22-02	REVISED SECTION B-B NOTE	
10-12-95	COMBINED 1891B AND 1888A	
1-4-83	REVISED GENERAL NOTES	674-1-4-83
	AND ADDED MAXIMUM PAY	
	LIMIT NOTES.	
2-2-76	EXCAV. PAY LIMITS	917-2-2-76
10-2-72	REVISED AND REDRAWN	564-10-16-72

ARKANSAS STATE HIGHWAY COMMISSION

EXCAVATION PAY LIMITS, BACKFILL, & SOLID SODDING FOR BOX CULVERTS

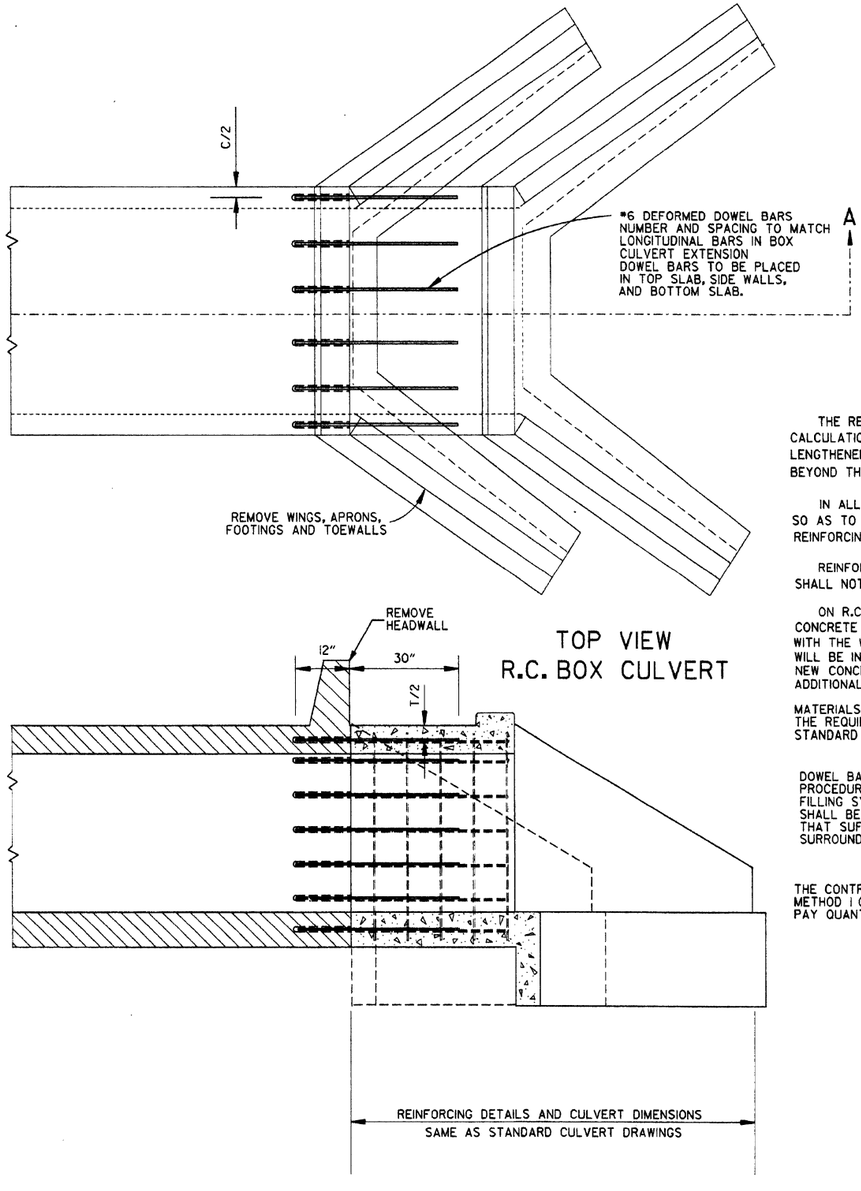
STANDARD DRAWING RCB-2



TOP VIEW
R.C. BOX CULVERT

SECTION A-A

METHOD 1



TOP VIEW
R.C. BOX CULVERT

SECTION A-A

METHOD 2

GENERAL NOTES

	USE FOR METHOD
THE RESIDENT ENGINEER WILL MAKE INDIVIDUAL CALCULATIONS OF QUANTITIES FOR EACH STRUCTURE LENGTHENED, MAKING NO ALLOWANCE FOR OVERBREAKAGE BEYOND THE LINES INDICATED.	1
IN ALL INSTANCES CONCRETE SHALL BE REMOVED SO AS TO PERMIT FULL 40 DIAMETER SPLICE OF REINFORCING STEEL.	1
REINFORCING STEEL REMOVED FROM EXISTING STRUCTURE SHALL NOT BE REUSED IN CONSTRUCTING EXTENSION.	1&2
ON R.C. BOX CULVERTS THAT HAVE AN EXISTING CONCRETE APRON; THE CONCRETE APRON SHALL BE REMOVED WITH THE WINGS. THE COST OF REMOVING ALL OLD CONCRETE WILL BE INCLUDED IN THE PRICE BID PER CUBIC YARD FOR NEW CONCRETE OF THE CLASS SPECIFIED AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.	1&2
MATERIALS FOR SECURING DOWEL BARS SHALL MEET THE REQUIREMENTS OF SECTION 507.02 OF THE STANDARD SPECIFICATIONS.	2
DOWEL BARS SHALL BE INSTALLED AS FOLLOWS: THE DRILLING PROCEDURE SHALL BE APPROVED BY THE ENGINEER, THE FILLING SYSTEM SHALL BE APPROVED BY THE ENGINEER. AND SHALL BE AN INJECTION-TYPE SYSTEM WHICH WILL INSURE THAT SUFFICIENT MATERIAL IS INJECTED SO IT COMPLETELY SURROUNDS THE BARS AND FILLS THE HOLES.	2
THE CONTRACTOR SHALL HAVE THE OPTION OF USING EITHER METHOD 1 OR METHOD 2. REGARDLESS OF WHICH METHOD IS USED, PAY QUANTITIES WILL BE CALCULATED BASED ON METHOD 1.	1&2

NOTE:
NO PART OF THIS STANDARD IS TO BE USED FOR ANY DETAILS RELATIVE TO NEW CONSTRUCTION.

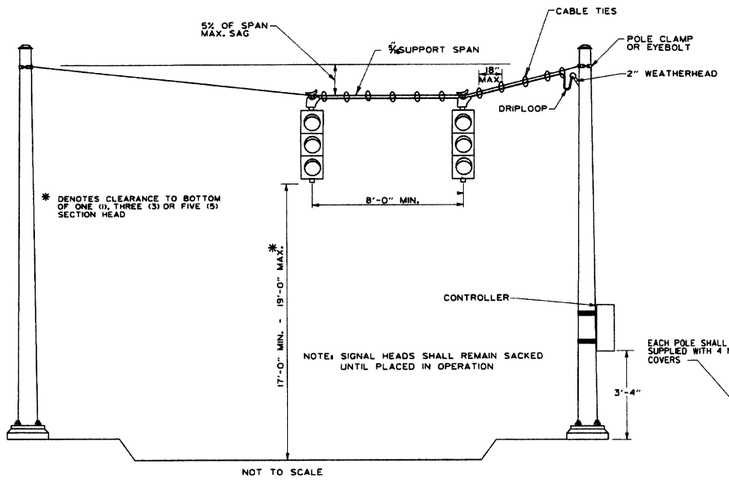
SEE STANDARD DRAWING LISTED IN TABULATION OF STRUCTURES FOR ALL NEW CONSTRUCTION DETAILS.

DATE	REVISION	DATE FILM
10-12-95	CHANGED DRAWING * FROM 144-A	
4-1-93	ADDED GENERAL NOTE	
10-1-92	ADDED ALT. METHOD OF EXTENSION	
11-30-89	REDRAWN	
1-4-83	ELIMINATED CONCRETE CLASS	
12-20-56	RETRACED	

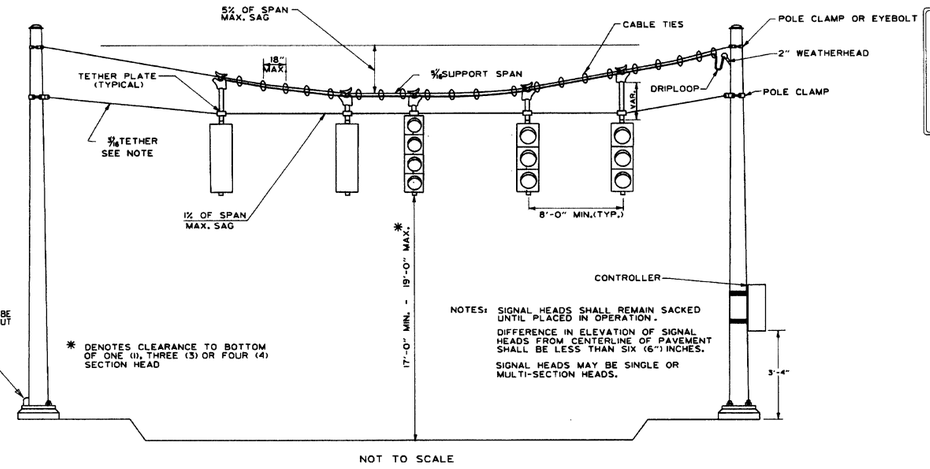
ARKANSAS STATE HIGHWAY COMMISSION

METHOD OF EXTENDING EXISTING R.C. BOX CULVERTS

STANDARD DRAWING RCB-3



TYPICAL SPAN WIRE ASSEMBLY



TYPICAL SPAN WIRE ASSEMBLY WITH TETHER

NOTES: SPAN WIRE POLES SHALL BE MOUNTED A MINIMUM OF 4' BEHIND CURB OR SHOULDER.

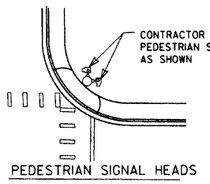
OCTAGONAL POLES AND ARMS MEETING THE REQUIREMENTS OF THE PLANS AND SPECIFICATIONS CAN BE INSTALLED IN LIEU OF ROUND POLES AND ARMS. ALL POLES AND ARMS IN A JOB MUST BE OF THE SAME SHAPE.

SPAN WIRE ASSEMBLIES WILL REQUIRE TETHER UNLESS OTHERWISE NOTED ON PLAN SHEETS.

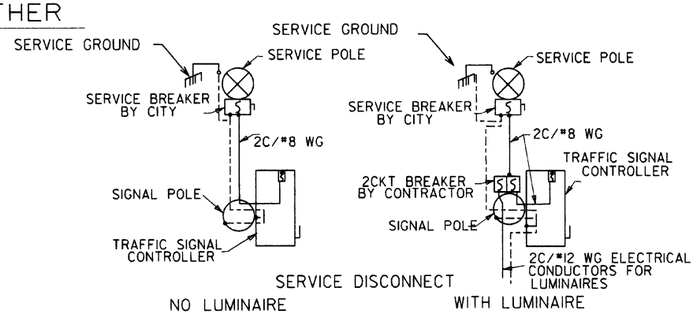
CABLE TIES SHALL BE SUITABLE FOR OUTSIDE USE (BLACK).

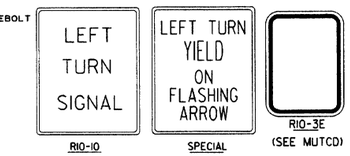
THE ANCHOR BOLTS AND SWEEPING "L" CONDUIT SHALL BE PLACED IN THE FOUNDATION IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS. THE FOUND ROD SHALL EXTEND A MINIMUM OF 8' BELOW CABINET FOUNDATION.

THE CONTROLLER POWER SUPPLY GROUND BUSS SHALL BE BONDED TO THE FOUNDATION GROUND ROD WITH A #8 AWG SOLID COPPER WIRE. ON EXISTING FOUNDATIONS WITH NO GROUND ROD, CONTRACTOR SHALL INSTALL A 10' X ⅝" COPPERWELD GROUND ROD.



PEDESTRIAN SIGNAL HEADS





NOTES:
EACH ITEM "TRAFFIC SIGNAL HEAD (4 SEC., 1-WAY)" SHALL INCLUDE A SPECIAL SIGN AS SHOWN, ATTACHED TO THE MAST ARM OR SPAN ASSEMBLY 12" TO THE RIGHT OF THE SIGNAL HEAD UNLESS REMOVED WITHIN SIGNAL PLAN NOTES.

SIGN BLANK SHALL BE CONSTRUCTED OF ALUMINUM ALLOY (ASTM DESIGNATION B-209, ALLOY 5052-H38) WITH A THICKNESS OF 0.100 INCH.

SIGN FACE SHALL BE CONSTRUCTED OF HIGH INTENSITY SHEETING (TYPE III) WITH SILKSCREEN LEGEND AND BORDER.

EACH ITEM "TRAFFIC SIGNAL HEAD (3 SEC., 1-WAY)", TO BE USED AS A LEFT TURN INDICATION ONLY, SHALL INCLUDE A SIGN (RIO-10) AS SHOWN, ATTACHED TO THE MAST ARM OR SPAN ASSEMBLY 12" TO THE RIGHT OF THE SIGNAL HEAD.

TETHER STRAND SHALL BE EITHER 5#32" OR 3#16" HIGH FATIGUE STAINLESS STEEL AIRCRAFT CABLE IN 7/19 CONFIGURATION, MIL-W-83420 CERTIFIED, WITH A MINIMUM STRENGTH OF 2400 LB.

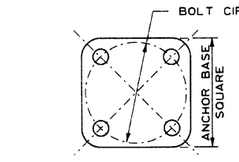
SIGNAL OPERATION NOTES:

FLASHING OPERATION - PRIOR TO NORMAL OPERATION, SIGNAL SHALL BE FLASHED FOR A PERIOD OF 3 TO 5 WORK DAYS. SIGNAL SHALL BE PLACED IN OPERATION ONLY ON A REGULAR WORK DAY, EXCEPT FRIDAY.

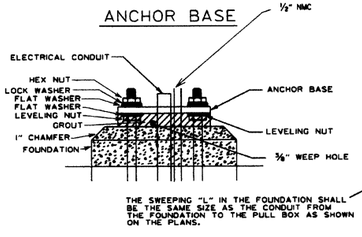
THE CONTRACTOR MAY BE REQUIRED TO ALTER THE FLASHING DISPLAY DURING THE TEMPORARY FLASH PERIOD. AT THE TIME THE INTERSECTION IS PLACED IN PERMANENT OPERATION, THE FLASH SEQUENCE SHALL THEN BE RETURNED TO THAT INDICATED ON THE PLAN SHEETS. NO ADDITIONAL COMPENSATION SHALL BE ALLOWED FOR THESE ALTERATIONS IN FLASH SEQUENCE.

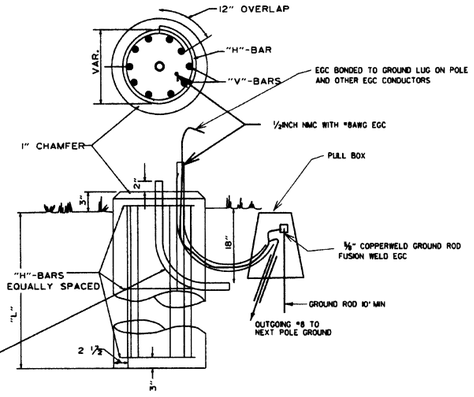
FOUNDATION NOTES

1. ALL REINFORCING STEEL SHALL BE GRADE 40 MINIMUM.
2. SPAN WIRE POLES WITH A 9" OR 10" POLE BASE SHALL USE FOUNDATIONS THAT ARE 30" IN DIA. AND 9'-0" IN DEPTH. VERTICAL REINFORCING SHALL BE 12-#7 @ 102". HORIZONTAL REINFORCING STEEL SHALL BE 13-#4 @ 8.333" O.C.
3. SPAN WIRE POLES WITH AN 11", 12" OR 13" POLE BASE SHALL USE FOUNDATIONS THAT ARE 30" IN DIA. AND 12'-0" IN DEPTH. VERTICAL REINFORCING STEEL SHALL BE 12-#7 @ 138". HORIZONTAL REINFORCING STEEL SHALL BE 17-#4 @ 8.5" O.C.
4. ALL PED POLES SHALL USE FOUNDATIONS THAT ARE 30" IN DIAMETER AND 7'-0" IN DEPTH. VERTICAL REINFORCING STEEL SHALL BE 12-#7 @ 78". HORIZONTAL REINFORCING STEEL SHALL BE 10-#4 @ 8.44" O.C.

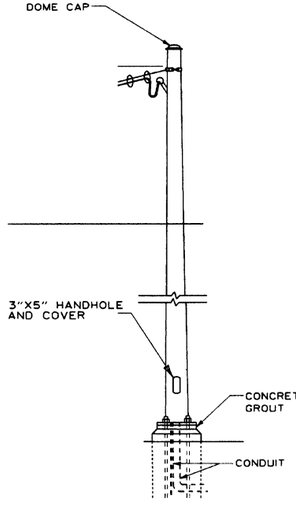


ANCHOR BASE

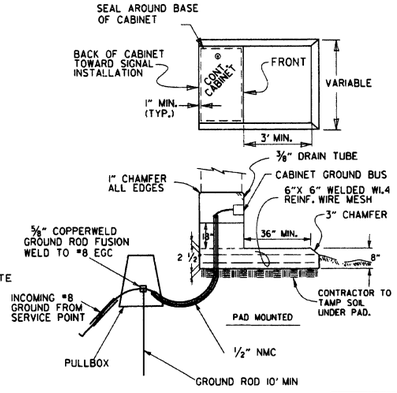




TYPICAL FOUNDATION DETAILS



SPAN WIRE ASSEMBLY WITH SPAN WIRE SUPPORT POLE



CONCRETE BASE MOUNTED CABINET DETAILS

MINIMUM STRUCTURAL REQUIREMENTS:
DESIGN SPECIFICATIONS: AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, 4TH EDITION (2001) WITH 2003 AND 2006 INTERIMS.

USE FATIGUE CATEGORY II.
CONSTRUCTION SPECIFICATIONS: ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION) WITH APPLICABLE SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS.

BASE WIND SPEED: 90 MPH

STEEL MEMBERS CONSIDERED MAIN LOAD CARRYING MEMBERS WITH THICKNESS GREATER THAN ½" SHALL MEET THE LONGITUDINAL CHARPY V-NOTCH TEST SPECIFIED IN SUBSECTION 807.05 OF THE STANDARD SPECIFICATIONS.

GROUND ROD - A 10' X ⅝" GROUND ROD SHALL BE INSTALLED IN THE PULL BOX FOR EACH POLE AND THE CONTROLLER. PAYMENT FOR THE GROUND ROD AND ½" NMC SHALL BE INCLUDED IN ITEM 713 FOR SIGNAL POLES AND ITEM 701 FOR THE CONTROLLER. THE PULL BOX AND EGC CONDUCTOR SHALL BE PAID FOR SEPARATELY.

ALL CONCRETE SHALL BE CLASS "S" WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH F'C=3500 PSI. CONCRETE SHALL BE POURED IN THE DRY AND ALL EXPOSED CORNERS CHAMFERED ¾" UNLESS NOTED OTHERWISE.

ALL REINFORCING STEEL SHALL CONFORM TO AASHTO M31 OR M53, GRADE 40 (YIELD STRENGTH=40,000 PSI).

UNLESS OTHERWISE DIRECTED BY THE ENGINEER, CABINET ORIENTATION SHALL BE SUCH THAT THE BACK OF THE CABINET IS PARALLEL TO THE STREET AND POSITIONED TO ALLOW VISIBILITY OF THE SIGNAL DISPLAY WHILE OBSERVING THE CONTROLLER FRONT PANEL.

DATE	REVISION	DATE FILM
2-27-14	REVISED NOTES.	
9-12-13	ISSUED AS STANDARD DRAWING	
7-21-11	REVISED PEDESTRIAN SIGN & GROUNDING	
5-21-09	REVISED GROUNDING	
9-10-08	REV. STEEL AIRCRAFT CABLE CONFIGURATION NOTE	
7-31-08	REVISED GROUNDING	
4-18-08	REVISED AASHTO NOTES	
4-17-08	REVISED TO 2001 AASHTO STANDARDS	
10-12-04	REV. CABINET ORIENTATION & SIGNAL OPERATION	
5-22-02	REVISED	
12-27-99	REVISED	
11-18-98	REVISION TO NOTES	
11-21-95	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

SPAN WIRE ASSEMBLY
STEEL POLE

STANDARD DRAWING SD-3

LOOP DETECTOR INSTALLATION AND TESTING

NOTES:

1. LOOPS WITH A PERIMETER GREATER THAN 40' SHALL HAVE TWO TURNS. LOOPS WITH A PERIMETER LESS THAN OR EQUAL TO 40' SHALL HAVE THREE TURNS, UNLESS OTHERWISE NOTED ON THE PLANS. QUADRUPOLE LOOPS SHALL BE TWO TURNS (2-4-2 CONFIGURATION) UNLESS OTHERWISE NOTED.
2. LOOP AND FEEDER WIRE SHALL BE CONTINUOUS WITHOUT SPLICES EXCEPT AT THE LOOP/FEEDER WIRE SPLICE AS SHOWN. SPLICE SHALL BE ROSIN SOLDERED AND WATERPROOFED WITH AN ACCEPTED SPLICE KIT. DRAIN WIRE SHALL BE GROUNDED IN CABINET AND INSULATED AT LOOP TO FEEDER SPLICE.
3. THE LOOP TO FEEDER SPLICE, FEEDER JACKET AND JACKET OF LOOP WIRE IN DUCT SHALL BE COMPLETELY SEALED AND WATERPROOFED.
4. CONTRACTOR MAY MAKE CONNECTIONS TO SIGNAL CABLE AND LOOP TO FEEDER CONNECTION AT TERMINAL STRIPS MOUNTED TO POLE INSIDE HAND HOLD COVER AS SHOWN IN DETAIL. TERMINALS MUST BE EASILY ACCESSIBLE, BUT PROTECTED AGAINST ACCIDENTAL CONTACT. CONNECTION OF POWER CARRYING CIRCUITS MUST BE SEPARATED FROM LOOP OR LOGIC CIRCUITS. ALL CONNECTIONS TO TERMINAL STRIPS SHALL UTILIZE SPADE LUGS OR AS APPROVED BY THE ENGINEER.
5. EACH LOOP SHALL HAVE A SEPARATE "FEEDER WIRE" UNLESS OTHERWISE NOTED. ALL FEEDER WIRES SHALL BE LABELED AS TO LOOP NUMBER AS DESIGNATED ON THE PLANS.
6. ALL LOOP WIRE ENTERING PULL BOXES SHALL BE ENCLOSED IN CONDUIT. EACH LOOP WIRE SHALL ENTER PULL BOX OR POLE BASE THROUGH A SEPARATE PIECE OF ONE INCH (1"O) CONDUIT.
7. LOOP WIRE FROM LOOP TO CONDUIT IS NOT TWISTED. LOOP WIRE IN THE CONDUIT MUST BE TWISTED TWO TO FIVE TURNS PER FOOT.
8. WARRANTY PERIOD FOR LOOPS SHALL NOT COMMENCE UNTIL TESTED BY THE CONTRACTOR AND ACCEPTED BY THE ENGINEER. CONTRACTOR SHALL PERFORM TEST AND PROVIDE A RECORD TO THE ENGINEER AS LISTED IN THE DETECTOR LOOP TESTING PROCEDURE.
9. UNLESS OTHERWISE APPROVED BY THE ENGINEER, BACKER ROD SHALL BE INSTALLED IN SHORT SECTIONS SPACED NOT MORE THAN 18" APART AND WEDGED INTO SLOT TO HOLD CABLE IN PLACE. CABLE SHALL BE TOTALLY ENCAPSULATED IN SEALER.
10. "HOT POUR" SEALER SHALL NOT BE ALLOWED WITH 705-LOOP WIRING IN DUCT.
11. WHERE UNDERGROUND SPLICES OF SIGNAL CABLE ARE REQUIRED, CONNECTIONS SHALL BE SOLDERED AND COMPLETELY WATERPROOFED TO THE SATISFACTION OF THE ENGINEER. WATERPROOFING SHALL EXTEND A MINIMUM OF TWO INCHES PAST THE SIGNAL CABLE JACKET AND SHALL COMPLETELY COVER ALL INDIVIDUAL CONDUCTORS OF THE SIGNAL CABLE. WATERPROOFING DOES NOT APPLY TO CONNECTIONS MADE IN POLE BASES.
12. CONTRACTOR SHALL CONNECT A SEPARATE NEUTRAL FOR EACH LOAD SWITCH REPRESENTED ON EACH SIGNAL POLE. ONLY ONE NEUTRAL IS REQUIRED FOR PEDESTRIAN SIGNALS. A SEPARATE 5C (TYPICAL) IS PROVIDED FOR PEDESTRIAN PUSH BUTTONS.
13. TRAFFIC CONTROLLER CABINET AND LAYOUT SHALL BE SUCH THAT IT IS NOT NECESSARY TO SHUT DOWN POWER OR REMOVE LOAD SWITCHES IN ORDER TO EASILY TEST OR MODIFY DETECTOR INPUTS TO CONTROLLER. CONTROLLER CABINET SHALL BE WIRED SUCH POWER TO LOAD SWITCHES CANNOT BACKFEED TO LOAD SWITCH POWER BUSS DURING FLASH OPERATION.

TYPICAL PROCEDURE FOR DETECTOR LOOP TESTING

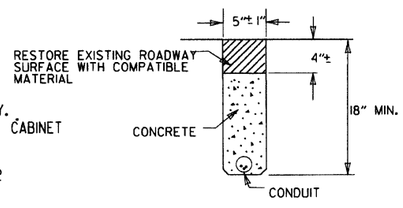
1. DISCONNECT AND TEST CONTINUITY (< 10 OHMS) IF CONTINUITY IS BAD, GO TO TEST 3
2. TEST INSULATION (@ 500 VOLT TEST > 10 MEG-OHM)

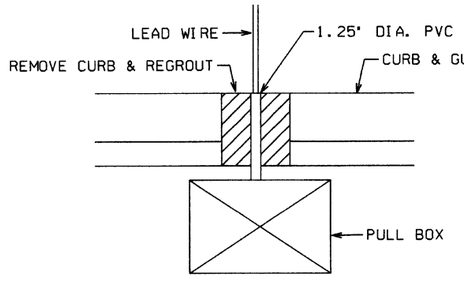
   IF TESTS 1& 2 ARE GOOD, NO FURTHER TESTING IS NECESSARY. RECORDED RESULTS CONSIST OF TESTS 1& 2 FROM CONTROL CABINET WITH FEEDER WIRE CONNECTED TO LOOP.
3. OPEN SPLICE (DO NOT BREAK CONNECTION) REPEAT TEST 1& 2 IF TEST 3 IS BAD, GO TO TEST 4
4. BREAK SPLICE, INSTALL JUMPER IN CABINET, REPEAT TESTS 1& 2 SEPARATELY FOR FEEDER AND FOR LOOP

FAILURES TYPICALLY RESULT FROM BROKEN WIRE IN PAVEMENT, FAULTY INSULATION OF LOOP OR FEEDER WIRE, OR POORLY INSULATED SPLICE CONNECTION.

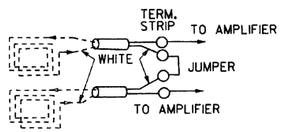
TRENCHING DETAIL

(FOR SAW CUT TRENCH IN ROADWAY)



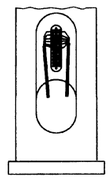


SERIES CONNECTED LOOPS

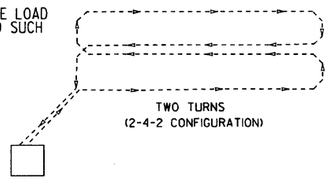


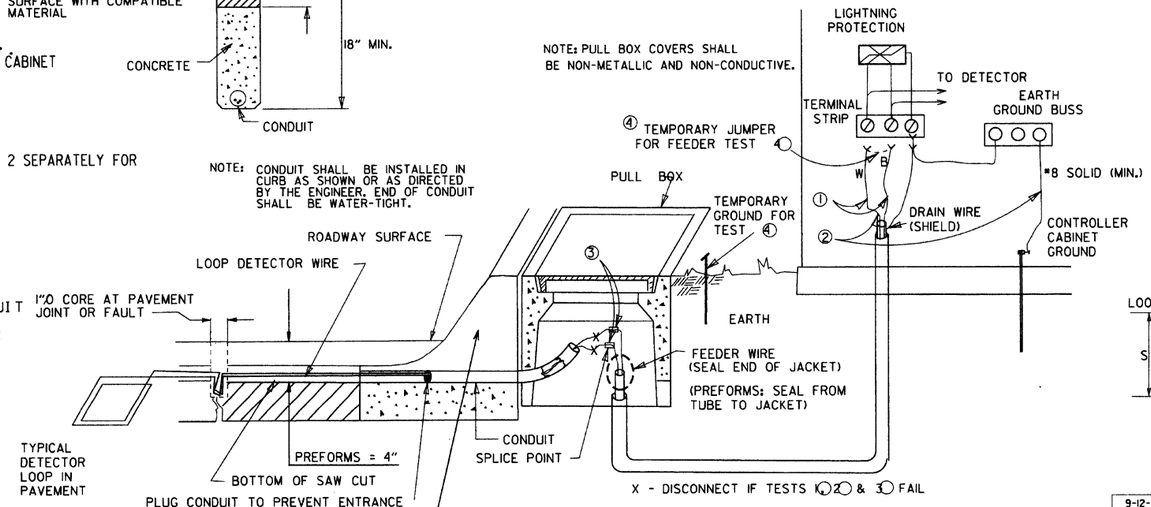
WIND LOOPS COUNTERCLOCKWISE; TAG WIRE EXITING SLOT AND TIE TO WHITE LEAD OF FEEDER WIRE; WHEN LOOPS ARE TIED TO SAME VEHICLE DETECTOR, SERIES CONNECT IN CABINET AS SHOWN.

HANDHOLE TERMINAL



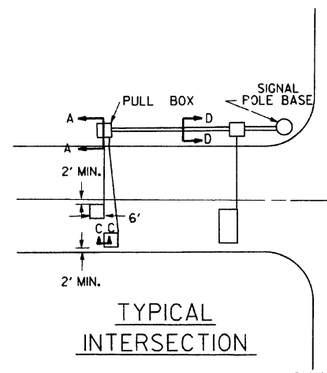
QUADRUPOLE LOOP



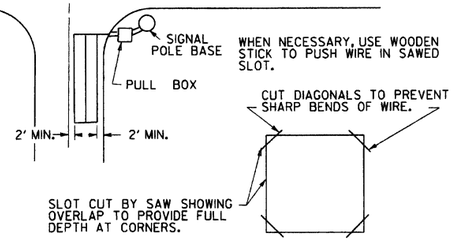


SECTION A-A

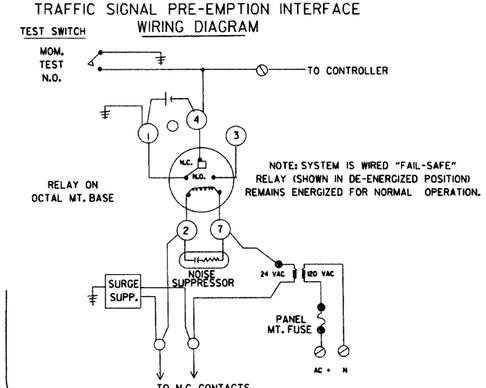
1'-6" CONCRETE COMBINATION CURB AND GUTTER



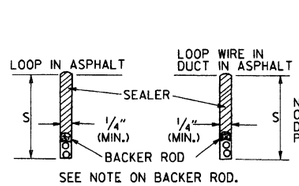
TYPICAL INTERSECTION



TRAFFIC SIGNAL PRE-EMPTION INTERFACE WIRING DIAGRAM

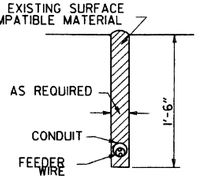


TYPICAL SECTIONS FOR PULSE AND PRESENCE LOOP DETECTORS



SECTION C-C

S=2 ½" IN ASPHALT
S=1½" IN CONCRETE



SECTION D-D

SPECIAL NOTE

IF FEEDER WIRE JACKET IS LEFT UNSEALED AND WATER IS ALLOWED TO ENTER JACKET, CONTRACTOR WILL BE REQUIRED TO REPLACE FEEDER AT NO COST TO THE DEPARTMENT.

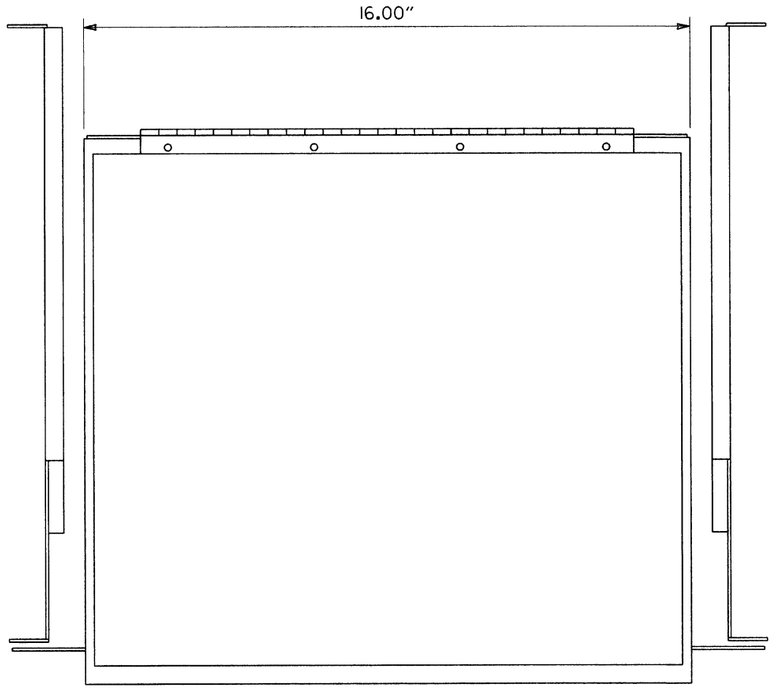
DATE	REVISION	DATE FILM
9-12-13	ISSUED AS STANDARD DRAWING	
5-17-01	REVISED	
4-11-01	REVISED	
2-4-00	REVISED PRE-EMPTION TEST SWITCH	
11-18-98	REVISED NOTES	
11-21-95	ISSUED	

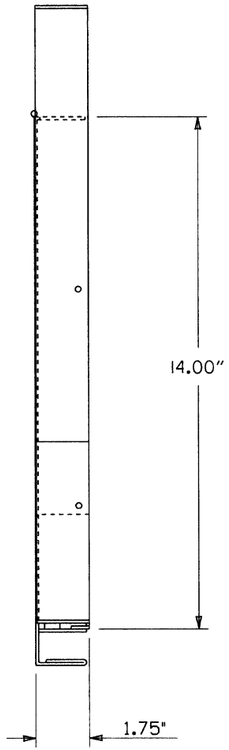
ARKANSAS STATE HIGHWAY COMMISSION

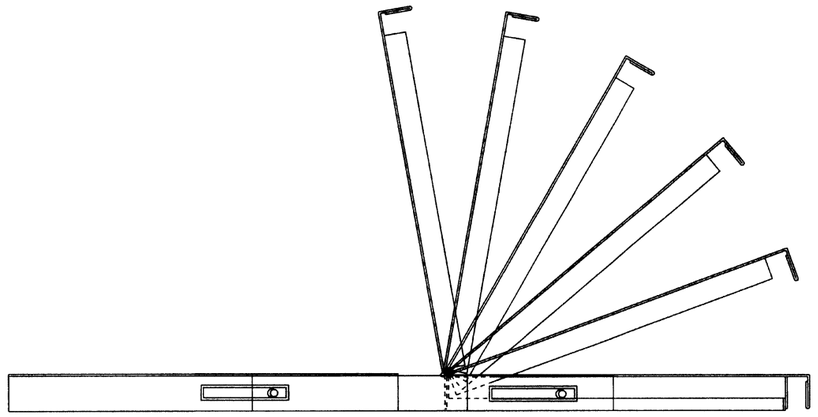
LOOP DETECTOR INSTALLATION

STANDARD DRAWING SD-4

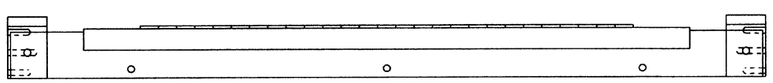
DRAWER PLAN VIEW



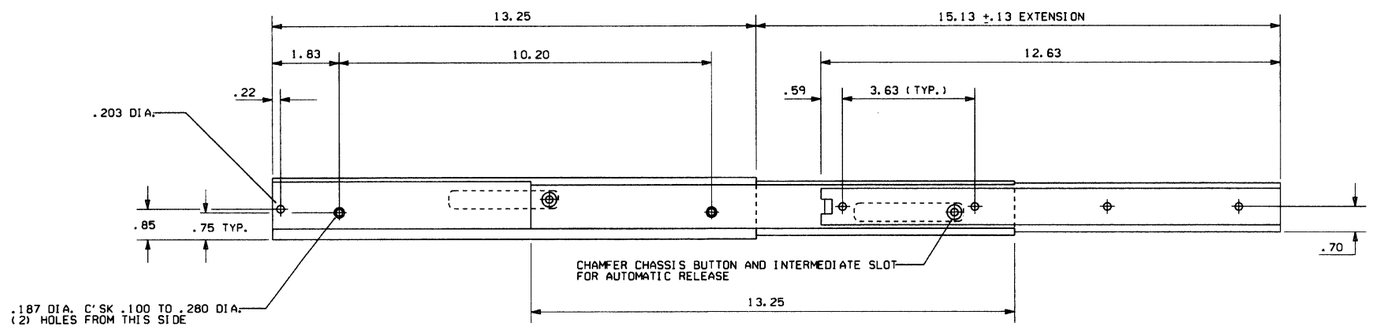




NOTES:
1. RIGHT HAND SLIDE SHOWN, LEFT SLIDE OPPOSITE.
2. GENERAL DEVICES (CC3002-99-0102) OR EQUAL AND CONTAINS (1) RIGHT HAND SLIDE ASSEMBLY, (1) LEFT HAND SLIDE ASSEMBLY.
3. ALL HARDWARE NECESSARY TO FASTEN SLIDE ASSEMBLY TO UNDERSIDE OF CONTROLLER SHELF SHALL BE INCLUDED.



FRONT VIEW



RIGHT SIDE ASSEMBLY

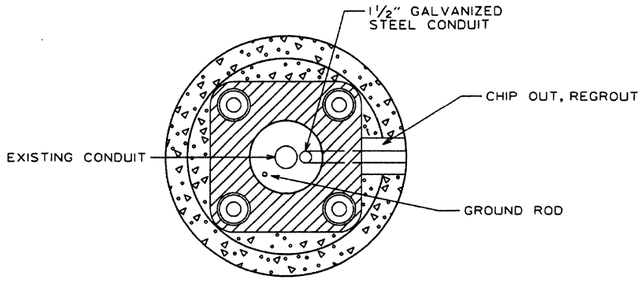
DATE	REVISION	DATE FILM
9-12-13	ISSUED AS STANDARD DRAWING	
6-15-05	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

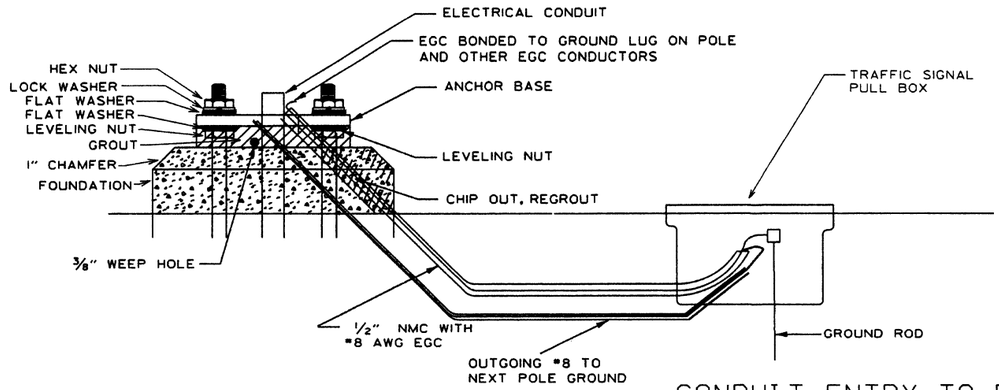
CONTROLLER CABINET
UTILITY DRAWER

STANDARD DRAWING SD-5

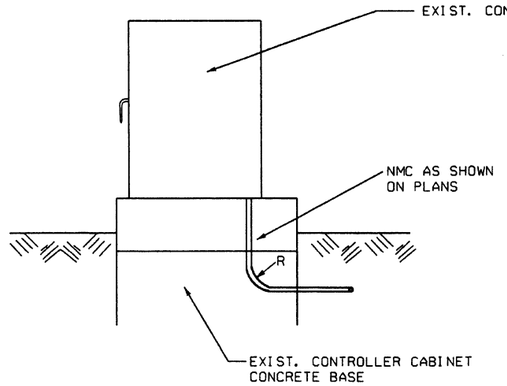
CONDUIT ENTRY TO EXISTING POLE BASE



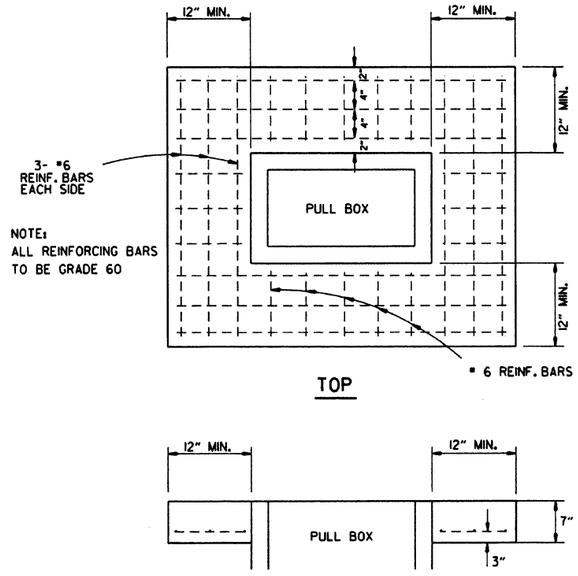
ANCHOR BASE



CONDUIT ENTRY TO EXISTING CONTROLLER CABINET



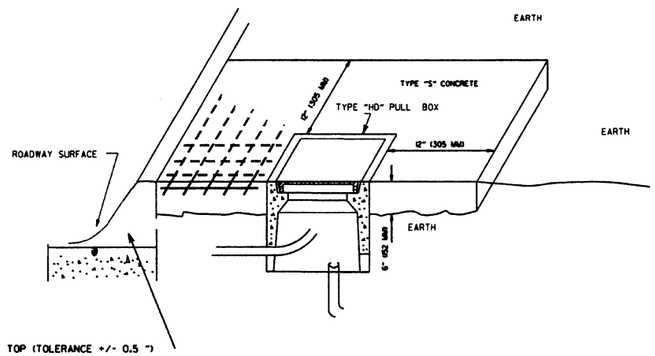
NOTE: ENTRY TO CABINET SHALL BE THROUGH A CUT IN THE BASE SUFFICIENT TO PROVIDE ADEQUATE CONDUIT RADIUS FOR ITEM.



TOP

ELEVATION

TYPE "HD" CONCRETE PULL BOX DETAIL



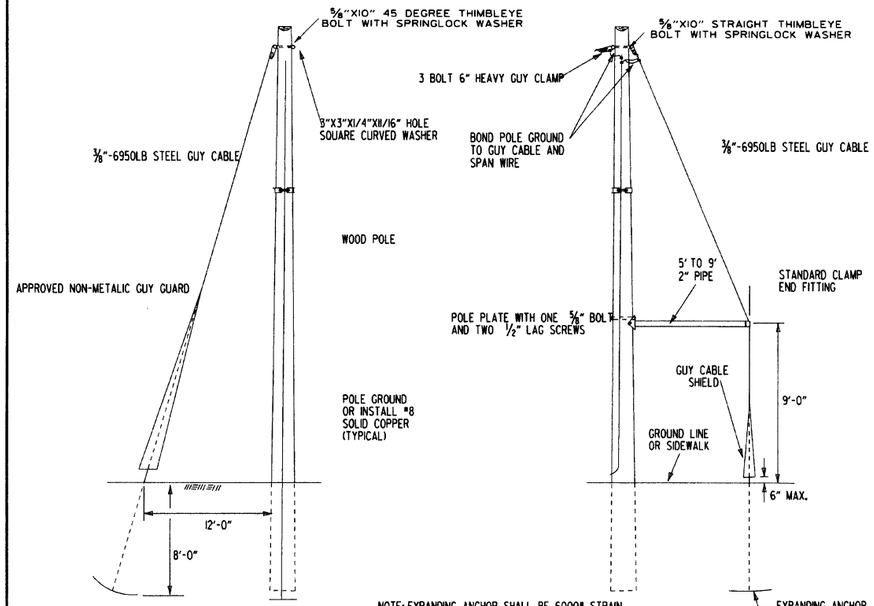
NOTE: ALL TYPE 1 AND TYPE 2 HD PULL BOXES ARE INSTALLED WITH AN APRON OF CONCRETE 12" (305 MM) WIDE AND 7" (178 MM) IN DEPTH. ALL PAYMENT SHALL BE INCLUDED IN THE PRICE OF THE TYPE HD PULL BOX. PULL BOX SHALL BE INSTALLED FLUSH TO SURROUNDING GRADE UNLESS OTHERWISE INSTRUCTED BY THE ENGINEER. THE CONCRETE SHALL BE CLASS "S." THREE #6 REINFORCING BARS IN THE APRON ON ALL SIDES OF THE PULL BOX IS REQUIRED IN CONCRETE.

DATE	REVISION	DATE FILM
9-2-15	REVISED PULL BOX DEPTH	
9-12-13	ISSUED AS STANDARD DRAWING	
5-21-09	REVISED GROUNDING	
7-31-08	ADDED & REVISED CONDUIT ENTRY	
6-23-04	REVISED CLEARANCE AT CURB ENTRY	
1-4-02	ADDED REINFORCING TO BOX APRON	
7-2-01	REVISED	
12-27-99	REVISED NOTES	
11-18-98	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

HEAVY DUTY PULL BOX

STANDARD DRAWING SD-6

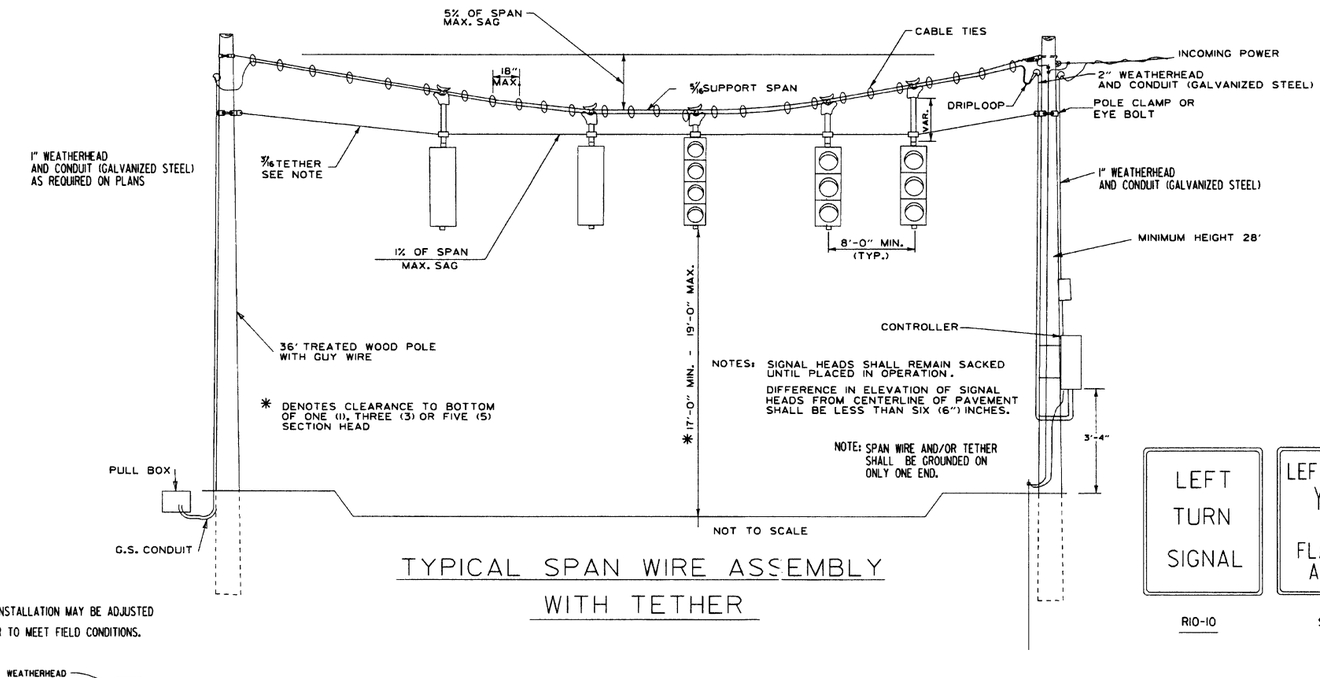


STANDARD GUY INSTALLATION

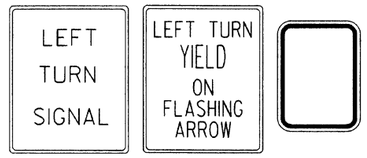
NOTE: EXPANDING ANCHOR SHALL BE 6000# STRAIN OR GREATER. IT SHALL BE A "NEW CHANCE 8-WAY EXPANDING ANCHOR", WITH A ⅝" MINIMUM GUY ROD.

SIDEWALK GUY INSTALLATION

NOTE: CONDUIT INSTALLATION MAY BE ADJUSTED BY THE ENGINEER TO MEET FIELD CONDITIONS.



TYPICAL SPAN WIRE ASSEMBLY WITH TETHER



R10-10

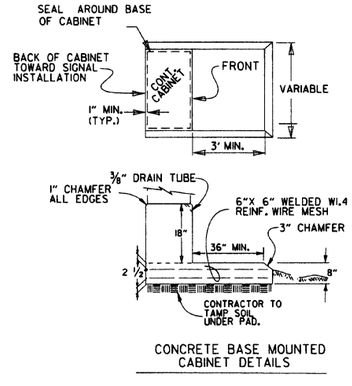
SPECIAL

R10-3E (SEE MUTCD)

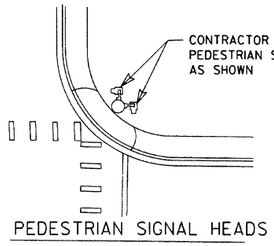
NOTES: SPAN WIRE POLES SHALL BE MOUNTED A MINIMUM OF 4' BEHIND CURB OR SHOULDER.

SPAN WIRE ASSEMBLIES WILL REQUIRE TETHER UNLESS OTHERWISE NOTED ON PLAN SHEETS. CABLE TIES SHALL BE SUITABLE FOR OUTSIDE USE (BLACK).

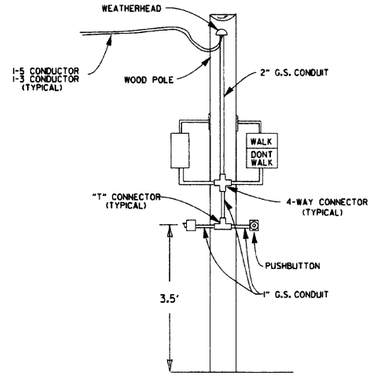
THE CONTROLLER POWER SUPPLY GROUND BUSS SHALL BE BONDED TO THE GROUND ROD WITH A #8 AWG SOLID COPPER WIRE. ON EXISTING INSTALLATIONS WITH NO GROUND ROD, CONTRACTOR SHALL INSTALL A 10' X ⅝" COPPERWELD GROUND ROD.



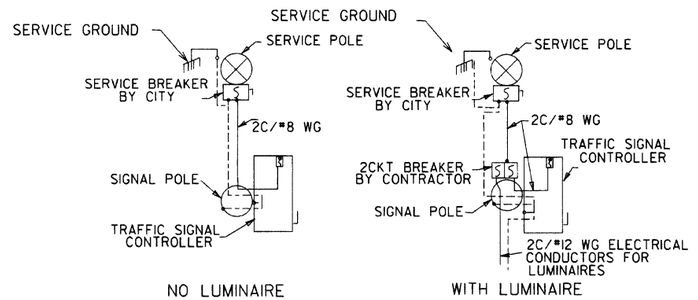
CONCRETE BASE MOUNTED CABINET DETAILS



PEDESTRIAN SIGNAL HEADS



WOODEN POLE INSTALLATION OF PED HEADS



SERVICE DISCONNECT

NOTE: ELECTRICAL GROUND CONDUCTOR IS BONDED TO ALL METAL ENCLOSURES

NOTES:

EACH ITEM "TRAFFIC SIGNAL HEAD (4 SEC., 1-WAY)" SHALL INCLUDE A SPECIAL SIGN AS SHOWN, ATTACHED TO THE MAST ARM OR SPAN ASSEMBLY 12" TO THE RIGHT OF THE SIGNAL HEAD UNLESS REMOVED WITHIN SIGNAL PLAN NOTES.

SIGN BLANK SHALL BE CONSTRUCTED OF ALLUMINUM ALLOY (ASTM DESIGNATION B-209, ALLOY 5052-H38) WITH A THICKNESS OF 0.100 INCH.

SIGN FACE SHALL BE CONSTRUCTED OF HIGH INTENSITY SHEETING (TYPE III) WITH SILKSCREEN LEGEND AND BORDER.

EACH ITEM "TRAFFIC SIGNAL HEAD (3 SEC., 1-WAY)" TO BE USED AS A LEFT TURN INDICATION ONLY SHALL INCLUDE A SIGN (R10-10) AS SHOWN, ATTACHED TO THE MAST ARM OR SPAN ASSEMBLY 12" TO THE RIGHT OF THE SIGNAL HEAD.

SIGNAL OPERATION NOTES:

FLASHING OPERATION - PRIOR TO NORMAL OPERATION, SIGNAL SHALL BE FLASHED FOR A PERIOD OF 3 TO 5 WORKING DAYS. SIGNAL SHALL BE PLACED IN OPERATION ONLY ON A REGULAR WORK DAY, EXCEPT FRIDAY.

THE CONTRACTOR MAY BE REQUIRED TO ALTER THE FLASHING DISPLAY DURING THE TEMPORARY FLASH PERIOD. AT THE TIME THE INTERSECTION IS PLACED IN PERMANENT OPERATION, THE FLASH SEQUENCE SHALL THEN BE RETURNED TO THAT INDICATED ON THE PLAN SHEETS. NO ADDITIONAL COMPENSATION SHALL BE ALLOWED FOR THESE ALTERATIONS IN FLASH SEQUENCE.

UNLESS OTHERWISE DIRECTED BY THE ENGINEER, CABINET ORIENTATION SHALL BE SUCH THAT THE BACK OF THE CABINET IS PARALLEL TO THE STREET AND POSITIONED TO ALLOW VISIBILITY OF THE SIGNAL DISPLAY WHILE OBSERVING THE CONTROLLER FRONT PANEL.

DESIGN SPECIFICATIONS: AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, 4TH EDITION (2001) WITH 2003 AND 2006 INTERIMS.

CONSTRUCTION SPECIFICATIONS: ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION) WITH APPLICABLE SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS.

BASE WIND SPEED: 90 MPH

STEEL MEMBERS CONSIDERED MAIN LOAD CARRYING MEMBERS WITH THICKNESS GREATER THAN ½" SHALL MEET THE LONGITUDINAL CHARPY V-NOTCH TEST SPECIFIED IN SUBSECTION 807.05 OF THE STANDARD SPECIFICATIONS.

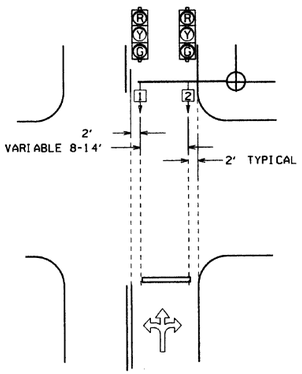
DATE	REVISION	DATE FILM
2-27-14	REVISED NOTES.	
9-12-13	ISSUED AS STANDARD DRAWING	
7-21-11	REVISED PED SIGN, CABINET GROUNDING	
4-17-08	REVISED TO 2001 AASHTO STANDARDS	
10-12-04	REV. CABINET ORIENT. & SIGNAL OPER.	
5-22-02	REV. TYP. SPAN WIRE ASSEMBLY	
12-27-99	REVISED	
11-18-98	REVISED NOTES	
11-21-95	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

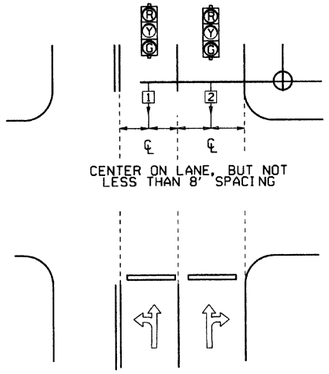
SPAN WIRE ASSEMBLY WOOD POLE

STANDARD DRAWING SD-7

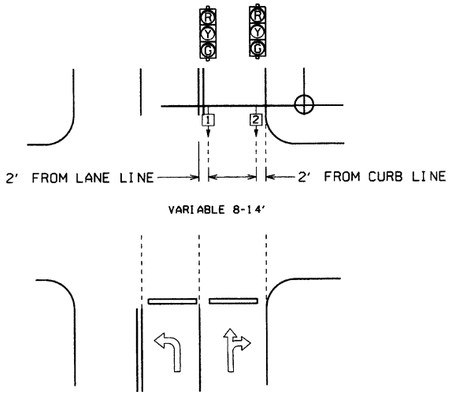
(A)



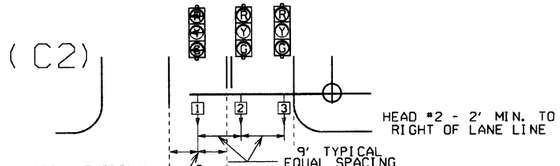
(B)



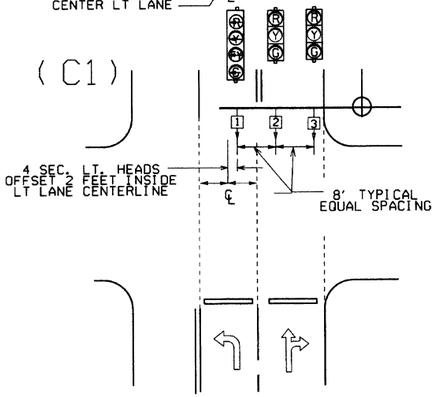
(C)



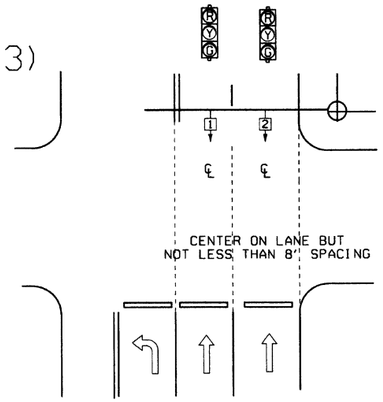
(C2)



(C1)



(C3)



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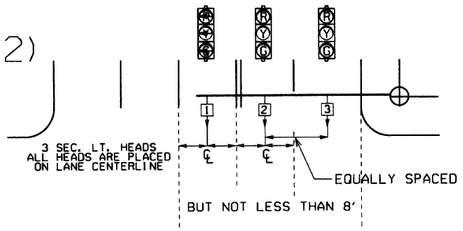
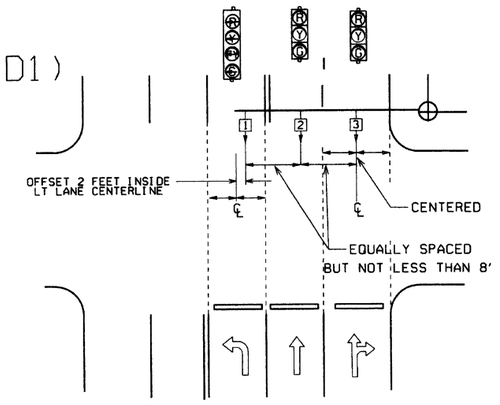
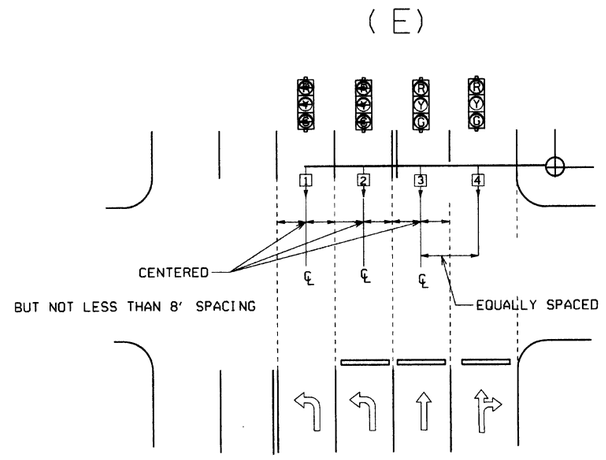


(D1)



NOTE: WHERE LEFT TURN HEAD (HEAD 1 ON D1 AND D2) IS NOT CALLED FOR ON PLANS, MAST ARM LENGTH MAY STILL BE ALLOWED FOR FUTURE INSTALLATION. HEADS FOR THROUGH MOVEMENTS SHALL STILL BE ALIGNED WITH THROUGH LANES AS SHOWN ON DETAILS.

(E)



℄ = CENTER OF LANE FROM APPROACH SIDE

GENERAL NOTES:

1. FOUR SECTION "PROTECTED/PERMISSIVE" LEFT TURN HEADS SHOULD BE PLACED A MINIMUM OF TWO (2') FEET TO THE RIGHT OF THE CENTERLINE OF THE APPROACHING LEFT TURN LANE.

2. THREE SECTION "PROTECTED" LEFT TURN HEADS SHOULD BE PLACED ON THE CENTERLINE OF THE APPROACHING LEFT TURN LANE.

3. WHEN IT IS NECESSARY TO PLACE POLES OTHER THAN AS SHOWN ON PLAN SHEET(S) RESULTING IN MAST ARM EXTENDING MORE THAN TWO FEET PAST (TO THE LEFT OF) THE CENTERLINE OF THE APPROACHING LEFT TURN LANE, MAST ARM SHALL BE CUT TO APPROPRIATE LENGTH AS DETERMINED BY THE ENGINEER, AND A NEW END CAP PROVIDED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THIS PRIOR TO INSTALLING THE MAST ARM IF ADDITIONAL COMPENSATION IS REQUIRED.

4. SIGNAL HEAD SPACING SHALL, IN NO CASE, BE LESS THAN EIGHT (8') FEET BETWEEN HEADS ON CENTER, MEASURED HORIZONTALLY PERPENDICULAR TO THE APPROACH.

5. ALL SIGNAL HEADS SHOWN ON THIS DETAIL SHEET SHALL BE LOCATED ACCORDING TO THE DIMENSIONS SHOWN IN RELATION TO THE APPROACH SIDE OF THE INTERSECTION.

6. MAXIMUM MOUNTING HEIGHT OF SIGNAL FACES LOCATED BETWEEN 40 FEET AND 53 FEET FROM STOP BAR SHALL BE IN ACCORDANCE WITH FIGURE 4D-1 OF 2009 MUTCD.

9-12-13	ISSUED AS STANDARD DRAWING	
3-11-10	2009 MUTCD	
12-9-99	ISSUED	
DATE	REVISION	DATE FILM

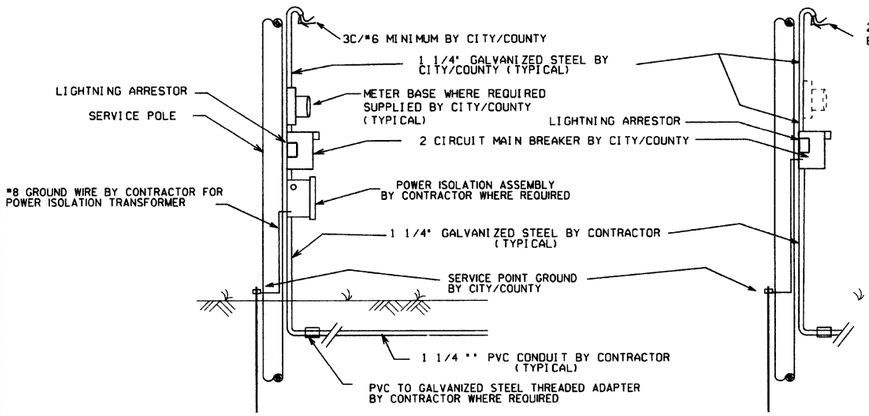
ARKANSAS STATE HIGHWAY COMMISSION

SIGNAL HEAD PLACEMENT

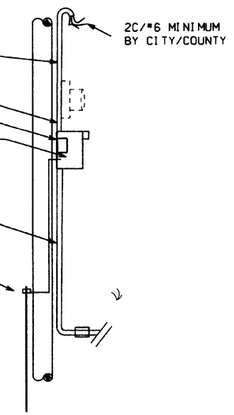
STANDARD DRAWING SD-8

MAIN BREAKER NOT NEAR CONTROLLER CABINET SECONDARY REQUIRED

WITH POWER ISOLATION ASSEMBLY

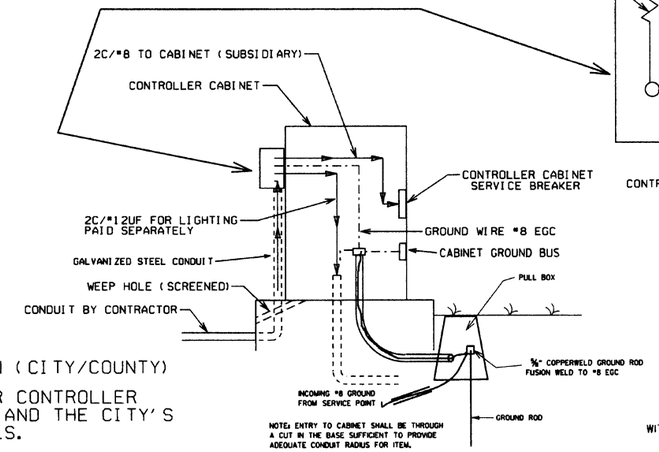


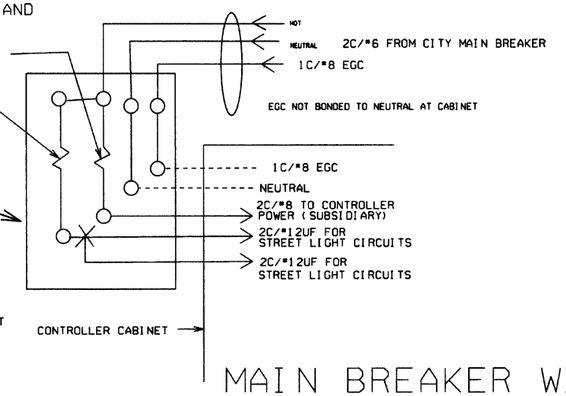
WITHOUT POWER ISOLATION ASSEMBLY



GROUND ROD-A 10' X ⅝" GROUND ROD SHALL BE INSTALLED IN THE PULL BOX FOR EACH POLE AND THE CONTROLLER. PAYMENT FOR THE GROUND ROD AND ½" NMC SHALL BE INCLUDED IN ITEM 701. THE PULL BOX AND CONDUCTOR BOX SHALL BE PAID FOR SEPARATELY.

SECONDARY BREAKER BY CONTRACTOR (SUBSIDIARY)





MAIN BREAKER WIRING (TYPICAL)

NOTES TO CONTRACTOR AND AGENCY RESPONSIBLE FOR MAINTENANCE OF THE INTERSECTION (CITY/COUNTY)

ELECTRICAL SERVICE TYPICALLY FALLS INTO TWO CATEGORIES: MAIN BREAKER NEAR CONTROLLER CABINET; AND MAIN BREAKER NOT NEAR CONTROLLER CABINET. THE CONTRACTOR'S AND THE CITY'S OR COUNTY'S RESPONSIBILITY VARIES ACCORDINGLY AS INDICATED ON THESE DETAILS.

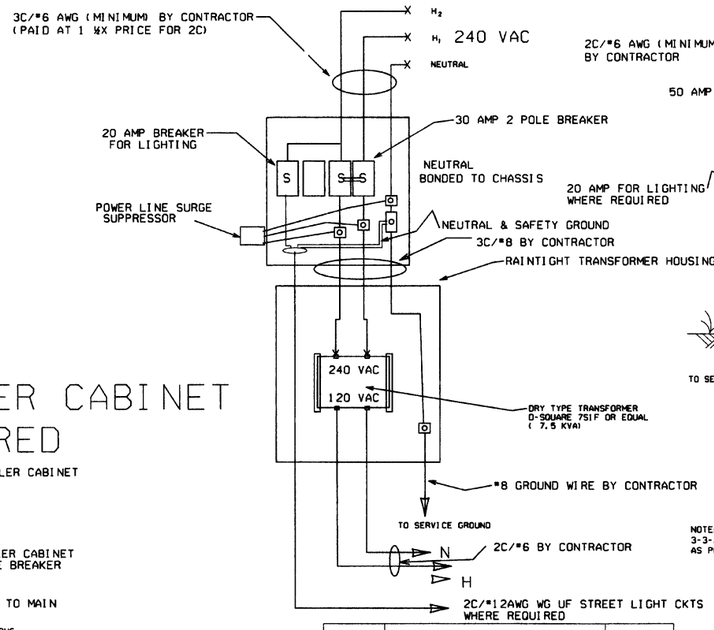
1. ALL SITUATIONS: ELECTRICAL SERVICE SHALL BE PROVIDED BY THE CITY/COUNTY TO A SERVICE POLE WITH EXTERNAL RAINTIGHT BREAKER (MAIN BREAKER) AT A MUTUALLY ACCEPTABLE POINT WITHIN THE RIGHT-OF-WAY. SERVICE POINT INCLUDES GALVANIZED STEEL CONDUIT TO A POINT 18" BELOW GROUND LINE, TWO CIRCUIT MAIN BREAKER, LIGHTNING ARRESTOR, POWER ISOLATION ASSEMBLY WHERE REQUIRED, METER LOOP IF REQUIRED BY LOCAL UTILITY, ELECTRICAL CONDUCTORS AND WEATHERHEAD. WHERE STREET LIGHTING IS INCLUDED AS PART OF SIGNAL INSTALLATION, STREET LIGHTING CIRCUIT (2C/#12 AWG UF RATED, TYPICAL) SHALL BE KEPT SEPARATE FROM THE CIRCUIT SERVING TRAFFIC SIGNAL. SERVICE WIRE AND WIRING FROM THE CONTROLLER TO MAIN BREAKER IS PROVIDED BY THE CONTRACTOR AS A PART OF THIS CONTRACT. WIRE AND WIRING FROM MAIN BREAKER, AND CONNECTION TO THE UTILITY IS THE RESPONSIBILITY OF THE CITY/COUNTY.

2. MAIN BREAKER NOT NEAR CONTROLLER CABINET: THE MAIN BREAKER ASSEMBLY, GALVANIZED STEEL CONDUIT, WEATHERHEAD AND WIRE ABOVE MAIN BREAKER AND CONNECTION TO THE UTILITY SHALL BE PROVIDED BY CITY/COUNTY. CONTRACTOR SHALL PROVIDE AS PART OF CONTRACT SECONDARY BREAKER, CONDUIT, WIRE AND WIRING TO THE MAIN BREAKER.

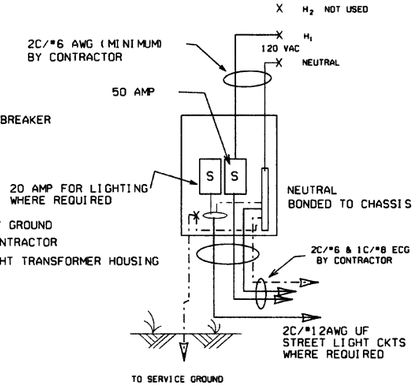
3. MAIN BREAKER NEAR CONTROLLER CABINET: ALL COMPONENTS OF THE SERVICE POINT WITH THE EXCEPTION OF THE WIRE AND WIRING ABOVE THE MAIN BREAKER IS FURNISHED AND INSTALLED BY THE CONTRACTOR. WIRING FROM MAIN BREAKER INCLUDING CONNECTION TO THE UTILITY, IS THE RESPONSIBILITY OF THE CITY/COUNTY. IF METER LOOP IS REQUIRED, METER BASE AND HARDWARE IS PROVIDED BY THE CITY/COUNTY AND INSTALLED BY THE CONTRACTOR.

SERVICE GROUND IS TYPICALLY TIED TO NEUTRAL AT THE MAIN BREAKER. AS SUCH, CONTROLLER GROUND IS NOT TIED TO NEUTRAL AT SECONDARY BREAKER OR IN CONTROLLER CABINET.

WITH POWER ISOLATION ASSEMBLY
4 CIRCUIT MAIN BREAKER

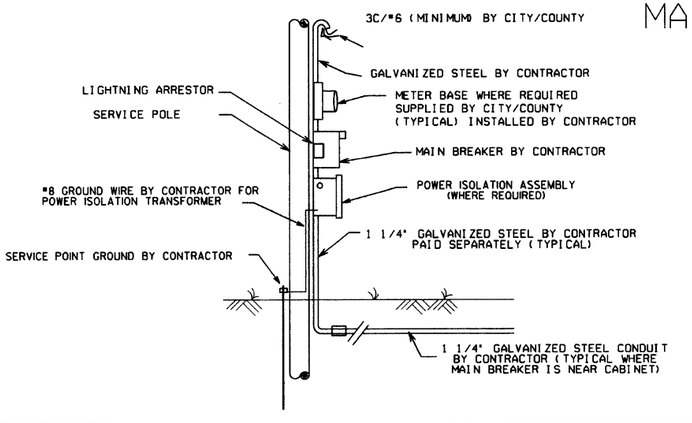


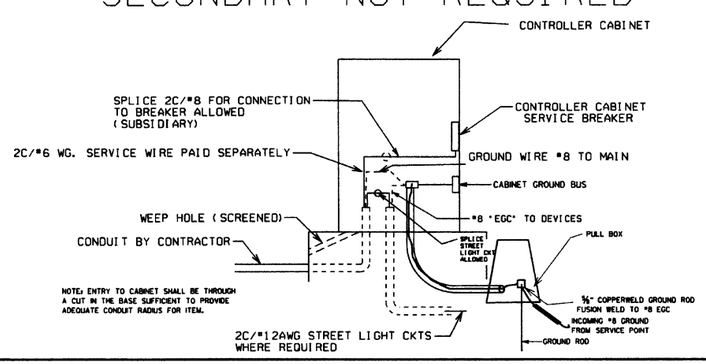
WITHOUT POWER ISOLATION ASSEMBLY
2 CIRCUIT MAIN BREAKER



NOTE: ELECTRICAL GROUND CONDUCTOR (ECG) ADDED 3-3-2003. CONSISTING OF A 1C/#8AWG CU GREEN WIRE AS PER NATIONAL ELECT. CODES.

MAIN BREAKER NEAR CONTROLLER CABINET SECONDARY NOT REQUIRED





DATE	REVISION	DATE FILM
9-12-13	ISSUED AS STANDARD DRAWING	
4-18-13	ADDED LIGHTNING ARRESTOR	
5-21-09	REVISED GROUNDING	
7-31-08	REVISED GROUNDING	
3-3-03	ADDED EGC NOTE	
9-26-01	REVISED	
12-27-99	REVISED	
7-28-99	REVISED	
2-5-99	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

SERVICE POINT

STANDARD DRAWING SD-9

NOTES, PED AND TRAFFIC SIGNAL HEAD SIGNS:
EACH ITEM "TRAFFIC SIGNAL HEAD (4 SEC., 1-WAY)" SHALL INCLUDE A SPECIAL SIGN AS SHOWN, ATTACHED TO THE MAST ARM OR SPAN ASSEMBLY 12" TO THE RIGHT OF THE SIGNAL HEAD UNLESS REMOVED WITHIN THE SIGNAL PLAN NOTES.

EACH ITEM "TRAFFIC SIGNAL HEAD (3 SEC., 1-WAY)" TO BE USED AS A LEFT TURN INDICATION ONLY SHALL INCLUDE A SIGN (R10-10) AS SHOWN, ATTACHED TO THE MAST ARM OR SPAN ASSEMBLY 12" TO THE RIGHT OF THE SIGNAL HEAD.

EACH PEDESTRIAN PUSHBUTTON SHALL HAVE ONE R10-3E SIGN ATTACHED TO THE POLE ABOVE THE BUTTON. ALL SIGN FACES SHALL BE CONSTRUCTED OF HIGH INTENSITY SHEETING (TYPE III) WITH SILKSCREEN LEGEND AND BORDER.

ALL SIGN BLANKS SHALL BE CONSTRUCTED OF ALUMINUM ALLOY (ASTM DESIGNATION B-209. ALLOY 5052-H38) WITH THICKNESS OF 0.100 INCH.

GENERAL NOTES:
1. MAST ARM POLES SHALL BE MOUNTED A MINIMUM OF 4 FT. BEHIND CURB OR SHOULDER.

2. OCTAGONAL POLES AND ARMS MEETING THE REQUIREMENTS OF THE PLANS AND SPECIFICATIONS CAN BE INSTALLED IN LIEU OF ROUND. ALL POLES AND ARMS IN A JOB MUST BE THE SAME SHAPE.

3. MINIMUM STRUCTURAL REQUIREMENTS:
DESIGN SPECIFICATIONS: AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, 4TH EDITION (2001) WITH 2003 AND 2006 INTERIMS.

USE FATIGUE CATEGORY I FOR ALL STRUCTURES ON ROUTES WHERE THE SPEED LIMIT IS 65 MPH AND GREATER AT THE STRUCTURE LOCATION AND ON ROUTES WHERE SPEED LIMIT IS GREATER THAN 45 MPH WITH AN ARM 60' OR LONGER.

USE FATIGUE CATEGORY II FOR STRUCTURES ON ROUTES WITH A SPEED LIMIT LESS THAN 65 MPH AND GREATER THAN 45 MPH WITH ARMS LESS THAN 60' AND ROUTES WITH SPEED LIMITS OF 45 MPH AND LESS WITH AN ARM 60' OR LONGER.

USE FATIGUE CATEGORY III FOR ALL STRUCTURES WHERE SPEED LIMIT IS 45 MPH AND LESS AND ARMS LESS THAN 60'.

CONSTRUCTION SPECIFICATIONS: ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION) WITH APPLICABLE SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS.

BASE WIND SPEED: 90 MPH.

STEEL MEMBERS CONSIDERED MAIN LOAD CARRYING MEMBERS WITH A THICKNESS GREATER THAN 1/2" SHALL MEET THE LONGITUDINAL CHARPY V-NOTCH TEST SPECIFIED IN SUBSECTION 807.05 OF THE STANDARD SPECIFICATIONS.

DEAD LOAD: AS A MINIMUM, DESIGN SHALL BE BASED ON THE FIXED ATTACHMENTS SHOWN BELOW OR AS MODIFIED IN THE PLANS.

ALL SIGNAL HEADS TO BE ONE WAY, 12 INCH, AND HAVE 5 IN. BACK PLATES:

HEADS AT END OF ARM - ONE 4 SEC., 85 LB., 16.0 SQ. FT. ONE SIGN MOUNTED 3 FT. FROM SIGNAL @ 2' X 0' X 2' @ 6"; 20 LB. REMAINING HEADS SPACED A 8 FT. @ 3 SEC., 56 LB., TWO 5 SEC):
14.4 SQ. FT. DESIGN TO ACCOMMODATE (INCLUDING
2 HEADS FOR ARMS 10 TO 16 FT.
2 HEADS FOR ARMS 10 TO 16 FT.; INCLUDING LB.
3 HEADS FOR 18 TO 24 FT. ARMS;
4 HEADS FOR OVER 26 FT. ARMS.

STREET NAME SIGN -- 72" X 18", 36 LB., MOUNTED SUCH THAT OUTSIDE EDGE IS NOT GREATER THAN 12 FT. FROM POLE. DEPENDING UPON POSITION OF SIGNAL HEAD ADJACENT TO POLE, SIGN MAY OVERLAP POLE SHAFT
ROADWAY LUMINAIRES (WHERE REQUIRED ON PLAN SHEET) @ VARIABLE ARM LENGTH (MAX.), 3.3 SQ. FT., 75 LB. PED SIGNALS -- TWO 2 SEC. 12 INCH MOUNTED 8 FT. FROM BASE OF POLE.
POST MOUNTED 3 SEC. SIGNAL HEAD AT 10 FT. ON SIDE OF POLE.

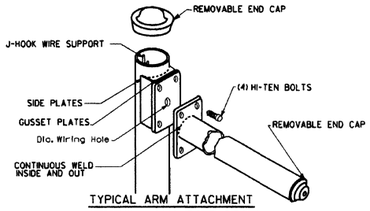
4. POLE/MAST ARM CAP -- POLE AND MAST ARMS CAPS SHALL BE PROVIDED, FABRICATED OF EITHER STEEL OR CAST ALUMINUM.

5. HAND HOLE -- HAND HOLES SHALL BE 4 X 6 INCHES FOR STANDARD, AND 3 X 5 INCHES FOR PED POLES, MINIMUM PLACED APPROXIMATELY 12 INCHES FROM BASE, AND SHALL BE FIXED WITH A BOLT DOWN COVER. A VACUUM FORMED ABS COVER IS AN ACCEPTABLE ALTERNATE TO STEEL. POLES GREATER THAN 21 FT. IN HEIGHT (FOR ROADWAY LUMINAIRE ATTACHMENT) SHALL INCLUDE A HAND HOLD WITHIN 12 INCHES OF MAST ARM(S) ATTACHMENT(S).

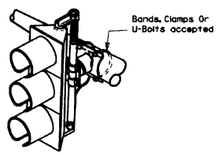
6. POLE/MAST ARM TAPER AND SLOPE - AVERAGE TAPER OF SIGNAL ARMS AND POLE SHALL BE 0.125 TO 0.15 INCHES PER FT.

MAST ARM CENTERLINE ANGLE AT ATTACHMENT POINT WITH POLE SHALL MAINTAIN NOT LESS THAN 0.5 DEGREES OR MORE THAN 4 DEGREES POSITIVE SLOPE WITH A LINE PERPENDICULAR TO THE POLE CENTERLINE. THE ARM SHALL MAINTAIN A POSITIVE AFTER IT IS PLACED UNDER LOAD.

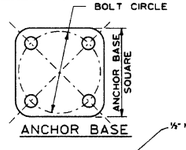
7. NUT COVERS - EACH POLE SHALL INCLUDE A BOLT DOWN NUT COVER FOR EACH ANCHOR BOLT.



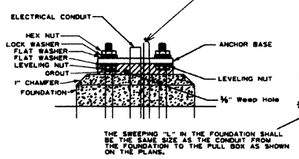
TYPICAL ARM ATTACHMENT

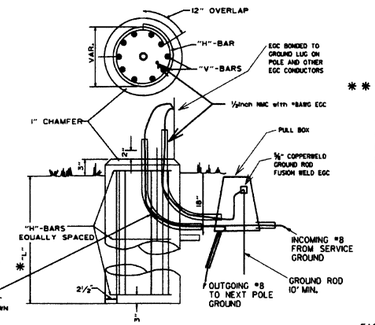


NOTE: THE SIGNAL SHALL BE CONNECTED TO THE MAST ARM BY BRACKETING AS DIRECTED BY THE ENGINEER.



ANCHOR BASE



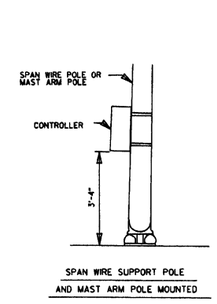


THE GROUND ROD SHALL BE FUSION WELDED TO A 10'/#8 A.W.G. SOLID COPPER GROUND WIRE. ATTACHMENT TO THE PRIMARY GROUND MAY BE BY AN APPROVED CLAMP. THE ROD IS TO BE LOCATED IN THE CONCRETE PULL BOX.

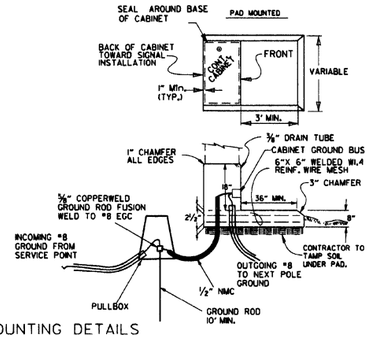
TYPICAL FOUNDATION DETAILS

POLE FOUNDATION MINIMUM DIMENSIONS AND STEEL REINFORCING. ALL REINFORCING STEEL SHALL BE GRADE 40 MIN.

ARM LENGTH	FDN. DIAMETER	DEPTH "L" *	STEEL		
			VERT.	HORZ.	O/C.
PED	30"	7'-0"	12-#7 (6'-6")	10-#4	8.44"
2' to 12'	30"	10'-6"	12-#7 (10'-0")	15-#4	8.42"
over 12' to 20'	30"	11'-6"	12-#7 (11'-0")	16-#4	8.66"
over 20' to 35'	36"	12'-6"	13-#8 (12'-0")	17-#4	8.88"
over 35' to 50'	36"	13'-6"	13-#8 (13'-0")	19-#4	8.56"
over 50' to 72'	42"	14'-6"	18-#8 (14'-0")	20-#4	8.74"
Twins to 20'	30"	16'-0"	12-#6 (15'-6")	22-#4	8.76"
Twins over 20' to 44'	36"	16'-0"	13-#8 (15'-6")	22-#4	8.76"
Twins over 44' to 50'	42"	16'-0"	18-#8 (15'-6")	22-#4	8.76"
Twins over 50' to 72'	42"	16'-6"	18-#8 (16'-0")	23-#4	8.64"



SPAN WIRE SUPPORT POLE AND MAST ARM POLE MOUNTED



CONTROLLER CABINET MOUNTING DETAILS

UNLESS OTHERWISE DIRECTED BY THE ENGINEER, CABINET ORIENTATION SHALL BE SUCH THAT THE BACK OF THE CABINET IS PARALLEL TO THE STREET AND POSITIONED TO ALLOW VISIBILITY OF THE SIGNAL DISPLAY WHILE OBSERVING THE CONTROLLER FRONT PANEL.

8. GROUND ROD - A 10' X 5/8" GROUND ROD SHALL BE INSTALLED IN THE PULL BOX FOR EACH POLE AND THE CONTROLLER. PAYMENT FOR THE GROUND ROD AND 1/2" NMC SHALL BE INCLUDED IN ITEM 714 FOR SIGNAL POLES AND ITEM 701 FOR THE CONTROLLER. THE PULL BOX AND CONDUCTOR BOX SHALL BE PAID FOR SEPARATELY.

9. POLE BASE/FOUNDATION - ANCHOR BOLTS SHALL INCLUDE AS A MINIMUM, ONE LEVELING NUT, TWO FLAT WASHERS, ONE LOCK WASHER, AND ONE HEX. NUT. PERIMETER OF ANCHOR BASE SHALL BE GROUTED WITH A 1/4" WEEP HOLE. ALL CONCRETE SHALL BE CLASS "S" OR GREATER.

10. CONCRETE - ALL CONCRETE FOR CONTROLLER CABINET AND POLE FOUNDATIONS SHALL BE CLASS "S" OR GREATER.

11. PEDESTRIAN PHASES - PEDESTRIAN MOVEMENTS SHALL BE PUSH BUTTON ACTUATED AND CONCURRENTLY TIMED, UNLESS OTHERWISE INDICATED ON THE PLAN SHEET(S). FURNISHING AND INSTALLING PED PUSH SWITCH SHALL BE CONSIDERED SUBSIDIARY TO THE ITEM PEDESTRIAN SIGNAL HEAD.

SIGNAL OPERATION NOTES:

FLASHING OPERATION - PRIOR TO NORMAL OPERATION, SIGNAL SHALL BE FLASHED FOR A PERIOD OF 3 TO 5 WORK DAYS OR AS DIRECTED BY THE ENGINEER. SIGNAL SHALL BE PLACED IN OPERATION ONLY ON A REGULAR WORK DAY, EXCEPT FRIDAY.

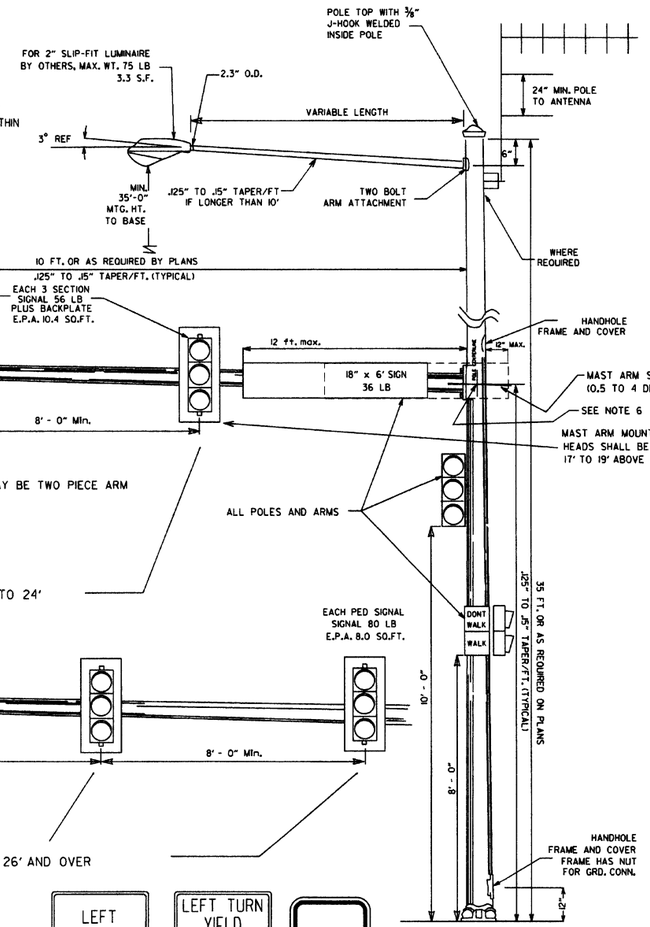
THE CONTRACTOR MAY BE REQUIRED TO ALTER THE FLASHING DISPLAY DURING THE TEMPORARY FLASH PERIOD, AT THE TIME INTERSECTION IS PLACED IN PERMANENT OPERATION, THE FLASH SEQUENCE SHALL THEN BE RETURNED TO THAT INDICATED ON THE PLAN SHEETS. NO ADDITIONAL COMPENSATION SHALL BE ALLOWED FOR THESE ALTERATIONS IN FLASH SEQUENCE.

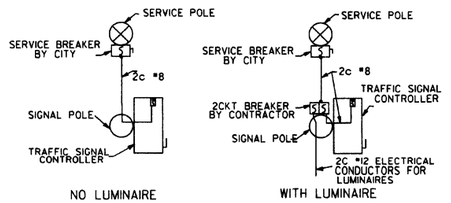
SPECIAL NOTE: 90 MPH WIND ZONE DESIGN, SEE NOTE 3. MINIMUM STRUCTURAL REQUIREMENTS.

* WHEN THE GROUND ELEVATION AT THE POLE IS LOWER THAN THE ROADWAY ELEVATION, THE LENGTH OF FOUNDATION ABOVE THE GROUND MAY BE INCREASED TO PROVIDE THE REQUIRED SIGNAL HEAD CLEARANCE ABOVE THE ROADWAY. WHEN THE REQUIRED LENGTH OF FOUNDATION ABOVE THE GROUND IS 18" OR LESS, NO INCREASE IN DEPTH "L" WILL BE REQUIRED. WHEN THE REQUIRED LENGTH OF FOUNDATION ABOVE THE GROUND IS 5'-6" OR LESS, INCREASE DEPTH "L" BY 1'-0". FOR LENGTHS GREATER THAN 5'-6", DEPTH "L" SHALL BE ADJUSTED AS DIRECTED BY THE ENGINEER. LONGITUDINAL REINFORCING, AS SHOWN IN THE TABLE, SHALL BE PROVIDED FOR THE LENGTH OF THE EXTENDED SHAFT AND #4 TIES SHALL BE PROVIDED AT A SPACING NOT TO EXCEED 9" ON CENTERS. PAYMENT WILL BE IN ACCORDANCE WITH SECTION 714 OF THE STANDARD SPECIFICATIONS.

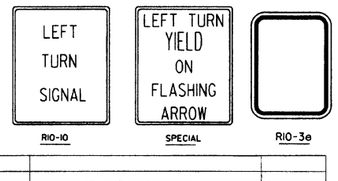
** IN LIEU OF DESIGNING THE STRUCTURE TO RESIST PERIODIC GALLOPING, A VIBRATORY MITIGATION DEVICE MAY BE PROVIDED BY THE POLE MANUFACTURER. THE VIBRATORY MITIGATION DEVICE SHALL BE AN ANTI-GALLOPING PANEL CONSISTING OF A 60"X16"X0.125" SIGN BLANK MOUNTED NEAR THE END OF THE MAST ARM NOT TO EXCEED ONE QUARTER OF THE LENGTH OF THE MAST ARM FROM THE END OF THE MAST ARM WITH THE LONG AXIS OF THE PANEL COLLINEAR WITH THE LONG AXIS OF THE MAST ARM. THE PANEL SHOULD BE MOUNTED AT SUCH A HEIGHT AS TO PROVIDE AT LEAST 6" CLEAR FROM THE TOP OF ANY SIGNAL ASSEMBLY OR SIGN PANEL LOCATED ON THE MAST ARM WITHIN THE LENGTH OF THE ANTI-GALLOPING PANEL.

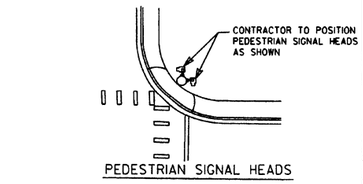
TRUCK-INDUCED GUST LOADS SHALL BE EXCLUDED FOR FATIGUE DESIGN FOR ALL STRUCTURES EXCEPT MAST ARMS MOUNTED OVER FACILITIES WITH POSTED SPEEDS OF 65 MPH OR GREATER AT THE LOCATION OF THE STRUCTURE.





SERVICE DISCONNECT





PEDESTRIAN SIGNAL HEADS

DATE	REVISION	DATE FILM
2-27-14	REVISED NOTES.	
9-12-13	ISSUED AS STANDARD DRAWING	
7-21-11	REVISED VMD, SIGNAL HEADS	
5-21-09	REVISED GROUNDING	
7-31-08	REVISED GROUNDING	
4-25-08	ADDED VIBRATORY MITIGATION DEVICE & NOTES	
4-18-08	REVISED AASHTO NOTES	
4-17-08	REVISED TO 2006 AASHTO STANDARDS	
10-12-04	REVISED CABINET ORIENTATION	
6-23-04	REVISED	
5-11-04	REV. NOTE 3/AASHTO REQUIREMENTS	
6-11-01	REV. NOTES & POLE MAST ARM SLOPE	
4-11-01	REVISED POLE TAPERS	
4-25-00	REV. NOTES & SIGNAL HEAD PLACEMENT	
8-22-99	REVISED FOUNDATION DETAILS	
8-17-98	REVISED DETAILS AND NOTES	
8-21-95	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

STEEL POLE WITH MAST ARM

STANDARD DRAWING SD-11

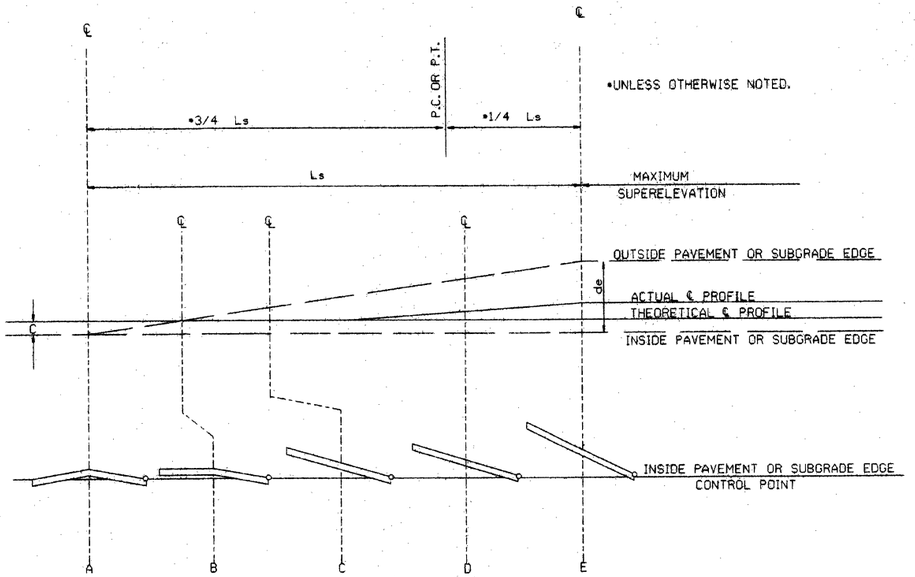
SUPERELEVATION TABLE FOR TWO - WAY TRAFFIC

DEGREE OF CURVE	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.			R.C.			0.022			0.023			N.C.		
0° 45′	N.C.			N.C.			0.021			0.026			0.030			0.028		
1° 00′	N.C.			N.C.			0.026			0.032			0.037			0.037	275	300
1° 15′	N.C.			R.C.			0.031			0.037			0.043			0.046		
1° 30′	N.C.			0.021			0.036	200		0.043	225		0.049	250		0.054		
1° 45′	N.C.			0.025			0.040			0.048			0.055			0.062		
2° 00′	R.C.			0.028	175		0.045		250	0.053		300	0.061		300	0.070		
2° 15′	R.C.			0.031			0.049			0.058			0.067			0.078	300	350
2° 30′	0.021			0.034			0.053			0.063			0.072			0.085	315	
2° 45′	0.023			0.037		200	0.057			0.067	230		0.077	260		0.091	335	
3° 00′	0.025			0.040			0.061			0.072	245		0.082	275		0.096	350	400
3° 15′	0.027	150		0.043			0.065	205		0.076	255		0.086	285		0.098	360	
3° 30′	0.029			0.046			0.069	215		0.080	265		0.090	295		0.100	360	
3° 45′	0.031		200	0.049			0.072	225		0.083	270		0.093	305	350			
4° 00′	0.033			0.051			0.078	240		0.087	280		0.096	315				
4° 30′	0.037			0.056			0.083	250		0.091	295		0.098	320				
5° 00′	0.040			0.061			0.088	260		0.094	300	350						
5° 30′	0.043			0.066	185		0.092	270		0.096	305							
6° 00′	0.046			0.070	190		0.095	280	300	0.100	315							
6° 30′	0.050			0.074	200		0.098	285										
7° 00′	0.053			0.078	210		0.099	290										
7° 30′	0.056			0.081	215		0.100	290										
8° 00′	0.058			0.084	220	250												
8° 30′	0.061			0.087	225													
9° 00′	0.063			0.089	230													
10° 00′	0.068	160		0.094	235													
11° 00′	0.072	170		0.097	250													
12° 00′	0.076	175		0.099	250													
13° 00′	0.080	180		0.100	250													
14° 00′	0.083	190																
15° 00′	0.086	195																
16° 00′	0.089	200																
17° 00′	0.091	200																
18° 00′	0.093	205																
19° 00′	0.095	210																
20° 00′	0.097	215	250															
21° 00′	0.098	215																
22° 00′	0.099	215																
23° 00′	0.099	215																
24° 00′	0.100	220																

D MAX = 24° 45′ | D MAX = 13° 15′ | D MAX = 8° 15′ | D MAX = 6° 30′ | D MAX = 5° 15′ | D MAX = 3° 30′

ABBREVIATIONS

NC - NORMAL CROWN
RC - REVERSE CROWN, SUPERELEVATION AT NORMAL CROWN SLOPE
e - RATE OF SUPERELEVATION (FT. PER FT.)
Ls - LENGTH OF SUPERELEVATION TRANSITION (FT.)
L - DISTANCE FROM BEGINNING OF SUPERELEVATION TRANSITION TO ANY POINT (FT.)
d - WIDTH OF PAVEMENT (FT.) OR WIDTH OF SUBGRADE (FT.)
C - NORMAL CROWN (FT.)



*UNLESS OTHERWISE NOTED.

STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND INNER SUBGRADE POINT OR INNER PAVEMENT EDGE

NOTE: MAINTAIN NORMAL CROWN ON INSIDE UNTIL SUPERELEVATION EXCEEDS 2C.

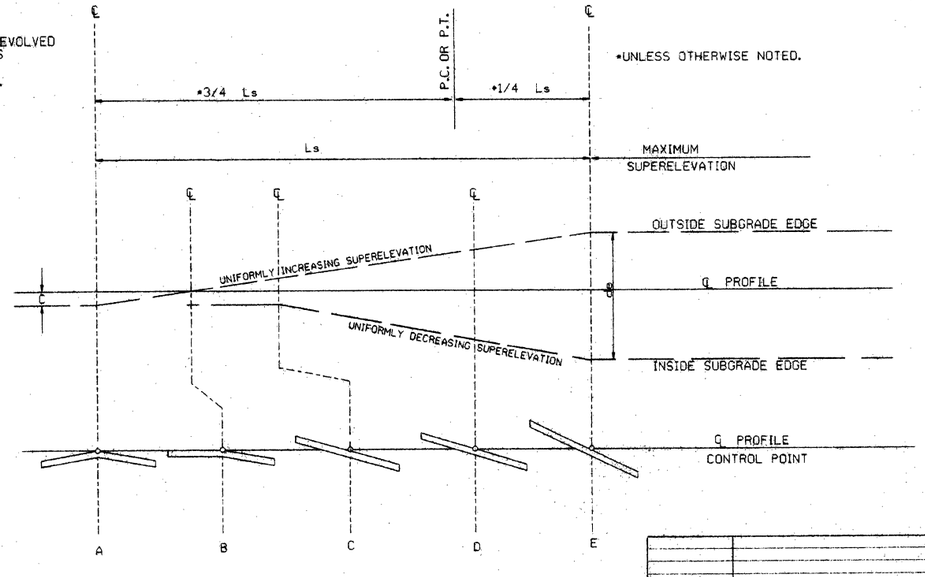
GENERAL NOTES

1. ON PAVEMENT WITH TWO-WAY TRAFFIC, THE SUPERELEVATION SHALL BE REVOLVED ON THE INSIDE PAVEMENT EDGE UNLESS OTHERWISE NOTED ON THE PLANS
2. SUPERELEVATION VALUES SHOWN ON THE CROSS SECTIONS ARE VALUES (+) OR (-) TO BE ADDED TO OR SUBTRACTED FROM THE POINT OF CONTROL.
3. LENGTHS FOR L MAY BE ROUNDED IN MULTIPLES OF 25 FT. OR 50 FT. TO PERMIT SIMPLER CALCULATIONS.
4. PAVEMENTS WIDER THAN 2 LANES SHALL HAVE ADDITIONAL TRANSITION LENGTHS AS FOLLOWS:

3 LANE UNDIVIDED - - - - - +20%
4 LANE UNDIVIDED - - - - - +50%
5 LANE UNDIVIDED - - - - - +80%
6 LANE UNDIVIDED - - - - - +100%

NOTE: MAINTAIN NORMAL CROWN ON INSIDE UNTIL SUPERELEVATION EXCEEDS 2C.

RATE OF SUPERELEVATION SHALL BE COMPUTED ON STRAIGHT LINE METHOD USING APPLICABLE Ls.



*UNLESS OTHERWISE NOTED.

STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND CENTER LINE

SUPERELEVATION FORMULA = $\frac{Lde}{Ls}$

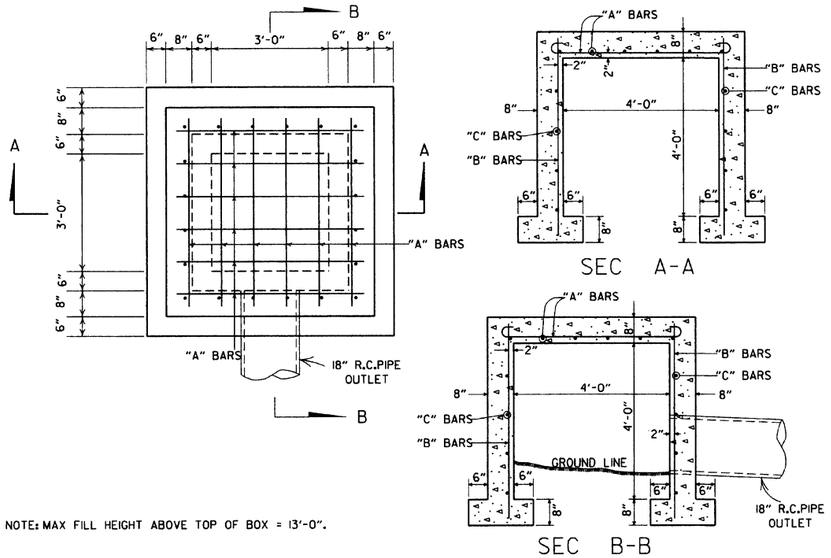
DATE	REVISION	DATE FILMED
10-18-96	ADDED FORMULA	10-18-96
01-09-87	ISSUED	534-1-9-87

ARKANSAS STATE HIGHWAY COMMISSION

TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC

STANDARD DRAWING SE-2

FILE STDSE2.DGN

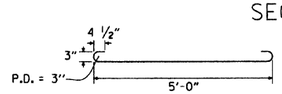


NOTE: MAX FILL HEIGHT ABOVE TOP OF BOX = 13'-0".

STEEL SCHEDULE

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

ALL STEEL TO BE #4 BARS



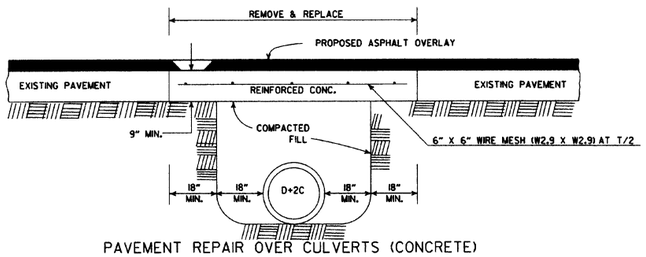
"A" BARS

QUANTITIES

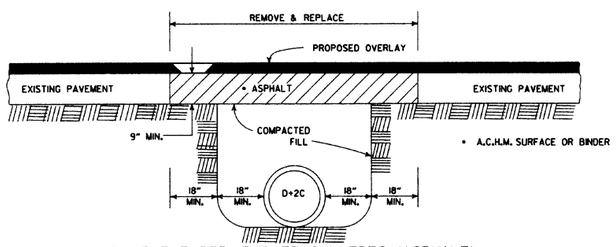
CONCRETE 3.31 CU. YDS.
REINFORCING STEEL 168 LB.

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

REINFORCED CONCRETE SPRING BOX



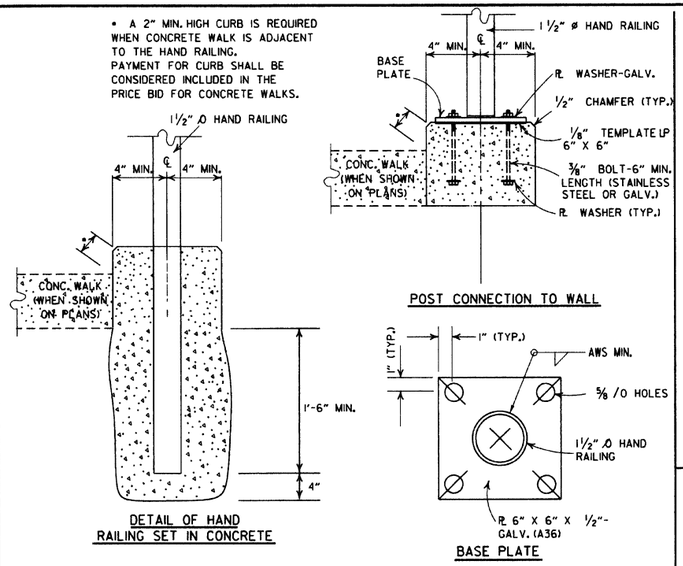
PAVEMENT REPAIR OVER CULVERTS (CONCRETE)



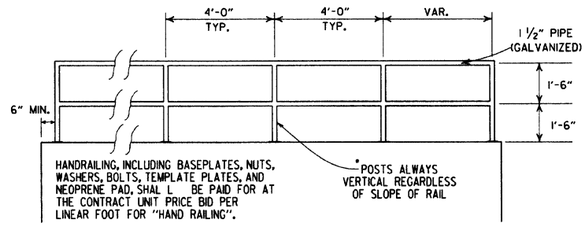
PAVEMENT REPAIR OVER CULVERTS (ASPHALT)

DETAIL SHOWING REPAIR OF EXISTING PAVEMENT AT CULVERT INSTALLATIONS

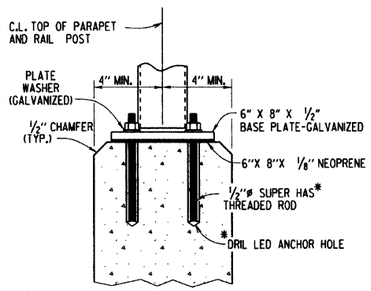
• A 2" MIN. HIGH CURB IS REQUIRED WHEN CONCRETE WALK IS ADJACENT TO THE HAND RAILING. PAYMENT FOR CURB SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR CONCRETE WALKS.



POST CONNECTION DETAILS



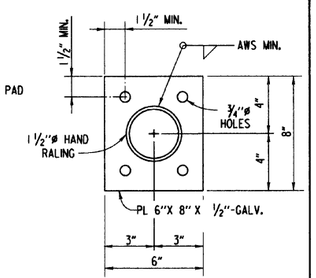
HAND RAILING SHALL CONFORM TO SECTION 633.



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

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

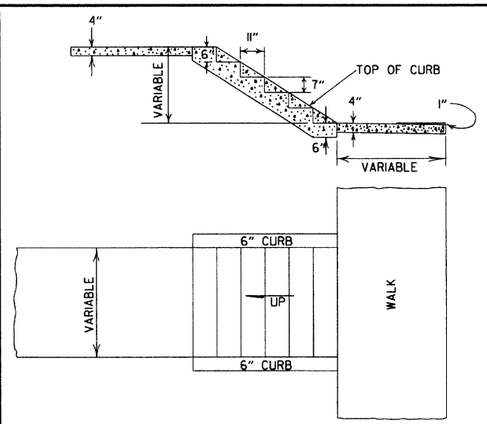
POST CONNECTION TO WALL



BASE PLATE

DETAILS OF ALTERNATE POST ANCHOR SYSTEM (EPOXY ADHESIVE ANCHORS)

HAND RAILING DETAILS



GENERAL NOTES

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

DETAILS OF CONCRETE STEPS & WALKS

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

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF SPECIAL ITEMS

STANDARD DRAWING SI - 1

R1-1

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

R1-2

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

R2-1

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

W3-5

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

W3-5a

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

R4-1

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

R4-2

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

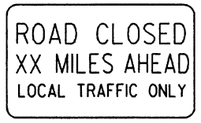
R5-1

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

R11-2

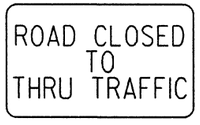
48"X30"

R11-3A



60"X30"

R11-4



60"X30"

RSP-1

48"X30"

W1-1

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

W1-2

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

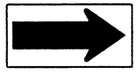
W1-3

STD. 48"X48"

W1-4

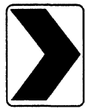
STD. 48"X48"

W1-6



STD. 48"X24"
SPECIAL 60"X30"

W1-8



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

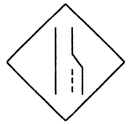
W3-1

STD. 36"X36"
SPECIAL 48"X48"

W3-2

STD. 36"X36"
SPECIAL 48"X48"

W4-2



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

W5-1

STD. 36"X36"
SPECIAL 48"X48"

W6-3

EXPWY. 36"X36"
SPECIAL 48"X48"

W8-7

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

W9-2

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

W13-1

STD. 24"X24"

W20-1

STD. 48"X48"

W20-2

STD. 48"X48"

W20-3

STD. 48"X48"

W20-4

STD. 48"X48"

W20-5

STD. 48"X48"

W20-7a

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

W21-2

STD. 30"X30"
SPECIAL 36"X36"

W21-5

STD. 30"X30"
SPECIAL 36"X36"

W24-1

STD. 36"X36"

W1-4b

STD. 48"X48"

R56-1

STD. 18"X18"

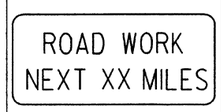
W8-11

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

W8-9

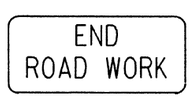
STD. 36"X36"
FWY. 48"X48"

G20-1



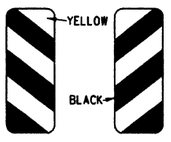
60"X24"

G20-2



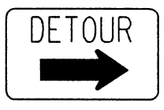
48"X24"

OM-3L OM-3R



12"X36"

M4-9

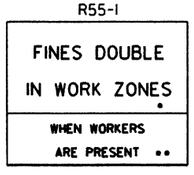


STD. 30"X24"
SPECIAL 48"X36"
SPECIAL 60"X48"

M4-10

48"X18"

R55-1



36"X60"

• USE 6" C LETTERS
•• USE 4" D LETTERS

ADVANCE DISTANCES
(XXXX)

500 FT	½ MILE
1000 FT	¾ MILE
1500 FT	1 MILE
	AHEAD

GENERAL NOTES:

1. ALL TRAFFIC CONTROL DEVICES USED ON ROAD CONSTRUCTION SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION, AND TO THE STANDARD HIGHWAY SIGNS, LATEST EDITION, OR AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION.
2. TRAFFIC CONTROL DEVICES SHALL BE SET UP JUST BEFORE THE START OF CONSTRUCTION OPERATIONS AND SHALL BE PROPERLY MAINTAINED DURING THE TIME SUCH CONDITIONS EXIST. THEY SHALL REMAIN IN PLACE ONLY AS LONG AS NEEDED AND REMOVED THEREAFTER.
3. EXISTING SIGNS AND CONSTRUCTION SIGNS SHALL BE KEPT IN PROPER POSITION, AND BE CLEAN AND LEGIBLE AT ALL TIMES. SIGNS THAT DO NOT APPLY TO EXISTING CONDITIONS SHALL BE REMOVED. SIGNS THAT ARE DAMAGED, DEFACED, OR THAT ACCUMULATE DIRT DURING CONSTRUCTION SHALL BE CLEANED, REPAIRED, OR REPLACED.
- 4. SIGNS ARE USUALLY MOUNTED ON A SINGLE POST, ALTHOUGH THOSE WIDER THAN 36" OR LARGER THAN 10 SQ. FT. SHALL BE MOUNTED ON TWO POSTS OR ABOVE A TYPE III BARRICADE.
- 5. SIGN POSTS DIRECT BURIED IN SOIL SHALL BE 2 LB. MINIMUM CHANNEL POST OR 4"x4" WOOD POSTS. CHANNEL POSTS SHALL BE PAINTED GREEN. WOOD POSTS SHALL BE PAINTED WHITE. ALL POSTS SHALL BE NEATLY CONSTRUCTED, AND SHALL BE REPLUMBED, CLEANED, OR REPAIRED AS NEEDED FOR THE DURATION OF THE JOB. THERE SHALL NOT BE MORE THAN 2 POSTS IN A 7' PATH FOR WOOD OR CHANNEL POSTS. ANY CHANNEL POST SPLICE SHALL BE IN ACCORDANCE WITH STANDARD DRAWING TC-3.
6. POST MOUNTED SIGNS IN RURAL AREAS SHALL BE CONSTRUCTED WITH THE NEAR EDGE OF THE SIGN FROM 6 TO 12 FEET FROM THE PAVEMENT EDGE. SIGNS IN URBAN AREAS AND BARRICADE MOUNTED SIGNS SHALL BE MOUNTED A MINIMUM OF 2 FEET FROM THE PAVEMENT EDGE.
7. ALL POST AND BARRICADE MOUNTED SIGNS MOUNTED IN URBAN AREAS SHALL BE MOUNTED A MINIMUM DISTANCE OF 7' FROM THE BOTTOM OF THE SIGN TO THE ROADWAY SURFACE. ALL POST AND BARRICADE MOUNTED SIGNS MOUNTED IN RURAL AREAS SHALL BE MOUNTED A MINIMUM DISTANCE OF 7' FROM THE BOTTOM OF THE SIGN TO THE ROADWAY SURFACE, EXCEPT A MINIMUM OF 6' SHALL BE USED WHEN MOUNTING AN ADVISORY SIGN BELOW A WARNING SIGN. TEMPORARY SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS FOR INTERMEDIATE TERM STATIONARY WORK CONDITIONS. THE SIGNS MINIMUM MOUNTING HEIGHT SHALL BE 5'. RETROREFLECTIVE DEVICES SHALL BE USED. TEMPORARY SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS FOR SHORT-TERM, SHORT DURATION, AND MOBILE CONDITIONS. THEY SHALL BE NO LESS THAN ONE (1) FOOT ABOVE THE TRAVELED WAY. LONG-TERM STATIONARY SIGNS SHALL BE DIRECT BURIED IN SOIL, UNLESS CONDITIONS NECESSITATE THE USE OF PORTABLE SIGNS, OR AS APPROVED BY THE ENGINEER. CONCRETE PADS, CONCRETE OR ROCK BALLAST, OR OTHER SOLID MATERIALS SHALL NOT BE UTILIZED WITH PORTABLE SIGN SUPPORTS.
8. FLAGGERS SHALL USE REFLECTORIZED STOP-SLOW PADDLES. FLAGS MAY BE USED ONLY FOR EMERGENCY SITUATIONS.
9. MOST OF THE SIGNS SHOWN ARE ORIENTED TO THE RIGHT, HOWEVER, THIS DOES NOT PRECLUDE THE USE OF MIRROR IMAGES OF THESE SIGNS WHERE THE REVERSE ORIENTATION MIGHT BETTER CONVEY TO MOTORISTS THE PROPER DIRECTION OF MOVEMENT.
10. R55-1 SIGNS SHALL BE PLACED AT LEAST 1500' BUT NOT MORE THAN 1 MILE IN ADVANCE OF THE WORK ZONE. IF A SPEED LIMIT REDUCTION IS IN EFFECT, THE SIGN SHALL BE PLACED A MINIMUM OF 500' IN ADVANCE OF THE "REDUCED SPEED AHEAD" SIGN.

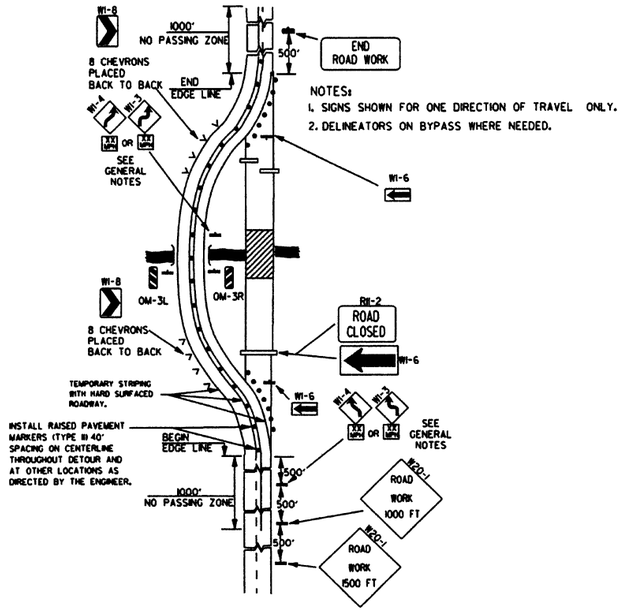
• NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE REQUIREMENTS SHOWN IN NOTES 4 & 5, BUT MEET THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH), WILL BE ACCEPTED. COMPLIANCE WITH THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY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

DATE	REVISION	FILMED
9-2-15	REVISED REDUCED SPEED LIMIT AHEAD SIGNS REVISED ROAD WORK NEXT XX MILES	
12-15-11	REVISED W24-1	
11-17-10	DELETED W8-9a & ADDED W8-9	
10-15-09	ADDED REFERENCE TO MASH & ADDED SIGN W24-1	
4-17-08	REVISED SIGN DESIGNATIONS	
11-18-04	REVISED NOTES	
10-9-03	REVISED NOTE 1	
11-16-01	REVISED NOTE 7	
9-28-00	REVISED NOTE	
11-18-98	ADDED NOTE	
6-26-97	REVISED NOTE 5	
4-03-97	REVISED NOTE 5	
10-18-96	ADDED CONTROLLED ACCESS HWY. SIGN & TO NOTE 7	
10-12-95	ADDED R55-1	
6-8-95	REVISED TO CORRECT SIGN ILLUSTRATIONS	6-8-95
2-2-95	REVISED PER PART VI, MUTCD SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	

ARKANSAS STATE HIGHWAY COMMISSION

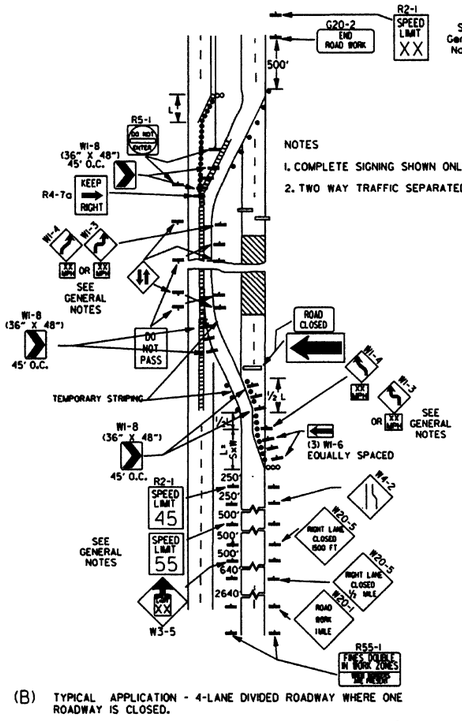
STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-1



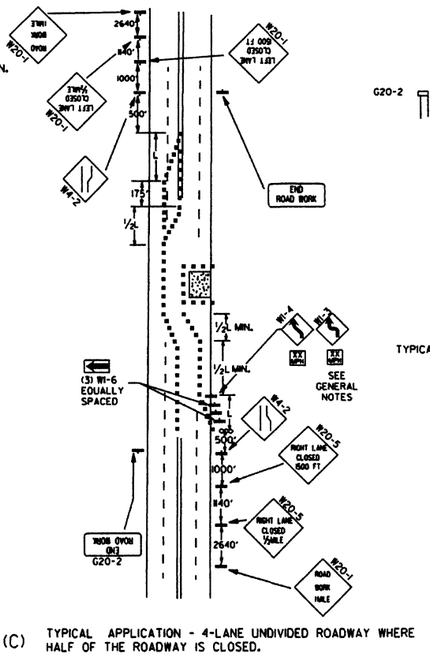
NOTES:
1. SIGNS SHOWN FOR ONE DIRECTION OF TRAVEL ONLY.
2. DELINEATORS ON BYPASS WHERE NEEDED.

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

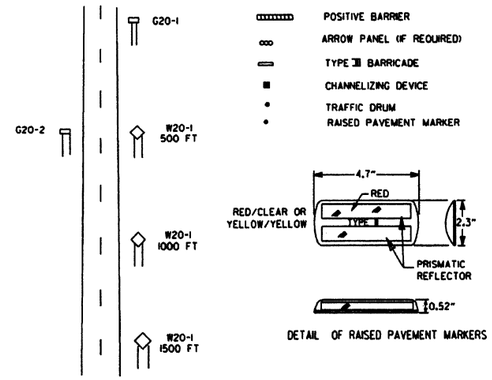


NOTES
1. COMPLETE SIGNING SHOWN ONLY IN CROSSOVER DIRECTION.
2. TWO WAY TRAFFIC SEPARATED WITH POSITIVE BARRIER.

(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.



TYPICAL ADVANCE WARNING SIGN PLACEMENT

DETAIL OF RAISED PAVEMENT MARKERS

TAPER FORMULAE:

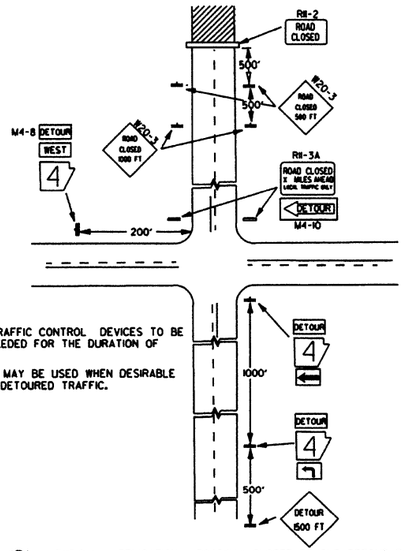
L=SXW FOR SPEEDS OF 45MPH OR MORE.

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

WHERE:
L= MINIMUM LENGTH OF TAPER.
S= NUMERICAL VALUE OF POSTED SPEED LIMIT PRIOR TO WORK OR 85TH PERCENTILE SPEED.
W= WIDTH OF OFFSET.

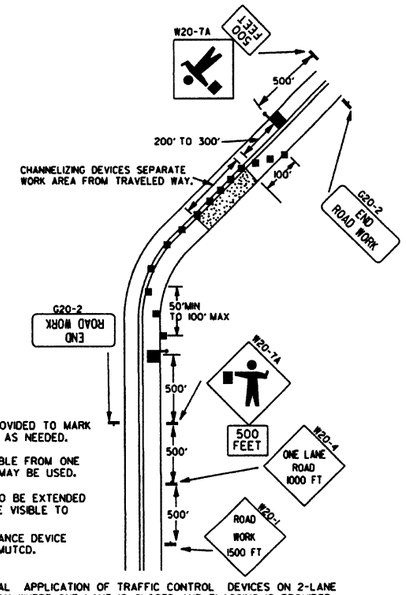
GENERAL NOTES:

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



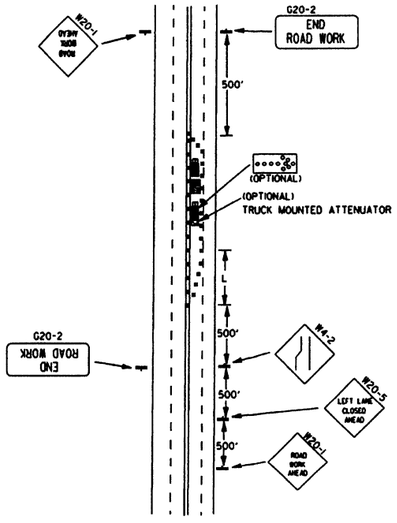
NOTES:
1. REGULATORY TRAFFIC CONTROL DEVICES TO BE MODIFIED AS NEEDED FOR THE DURATION OF THE DETOUR.
2. STREET NAMES MAY BE USED WHEN DESIRABLE FOR DIRECTING DETOURED TRAFFIC.

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



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

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



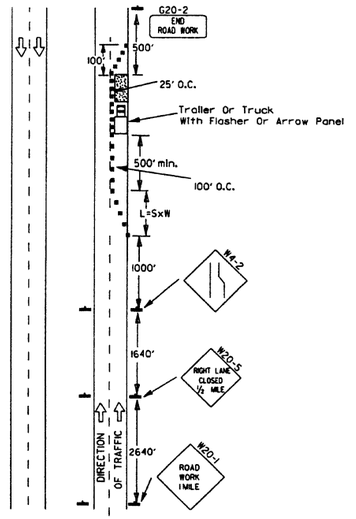
(F) TYPICAL APPLICATION - 4-LANE UNDIVIDED ROADWAY WITH INSIDE LANE CLOSED.

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

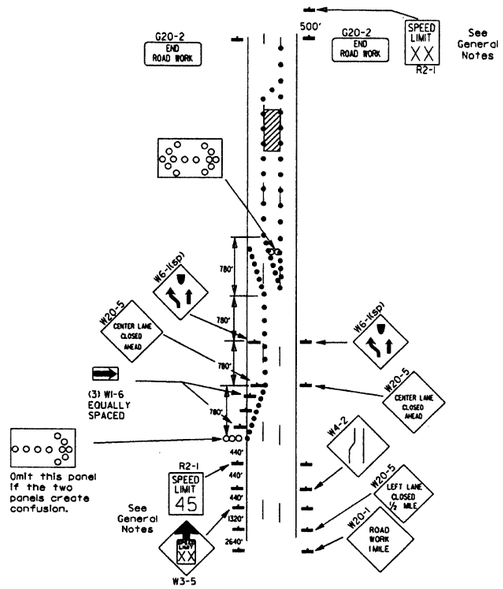
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

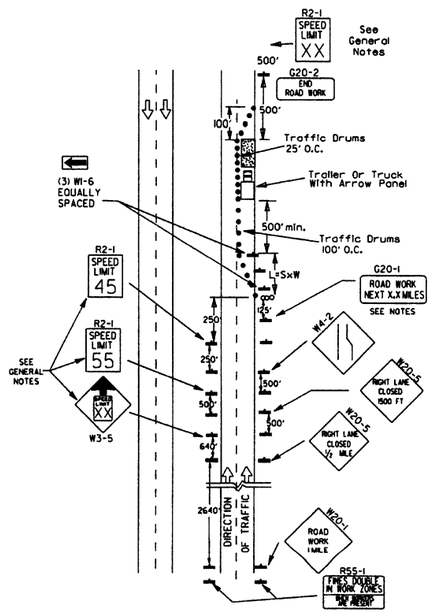
STANDARD DRAWING TC-2



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



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



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

KEY:

ooo Arrow Panel (If Required)

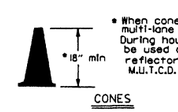
■ Channelizing Device

● Traffic drum

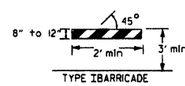
GENERAL NOTES:

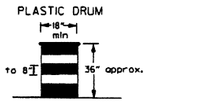
1. A speed limit reduction may be implemented ONLY when designated in the plan or when recommended by the Roadway Design Division.
2. When the existing speed limit is 55mph and the plans require a speed limit of 45mph, the R2-1(55) shall be omitted and the W3-5 shall be installed at that location. Additional R2-1 45mph speed limit signs shall be installed at a maximum of 1 mile intervals. At the end of the work area a R2-1(XX) shall be installed to match original speed limit.
3. When the existing speed limit is 65mph and the plans require a speed limit of 55mph, the R2-1(45) shall be omitted. Additional R2-1 55mph speed limit signs shall be installed at a maximum of 1 mile intervals. At the end of the work area a R2-1(XX) shall be installed to match original speed limit.
4. The maximum spacing between channelizing devices in a taper should be approximately equal in feet to the speed limit. Beyond the taper, maximum spacing shall be two times the speed limit or as directed by the Engineer.
5. Warning lights and/or flags may be mounted to signs or channelizing devices at night as needed.
6. Pavement markings no longer applicable which might create confusion in the minds of vehicle operators shall be removed or obliterated as soon as practicable.
7. The G20-1 sign will be required on jobs of over two miles in length. When the lane closure is not at the beginning of the project, the G20-1 sign shall be erected 125' in advance of the job limit. Additional W20-1 (1 MILE) signs are not required in advance of lane closures that begin inside the project limits.
8. Flaggers shall use STOP/SLOW paddles for controlling traffic through work zones. Flags may be used only for emergency situations.
9. All plastic drums and cones shall meet the requirements of NCHRP-350 or Manual For Assessing Safety Hardware (MASH).
10. Trailer mounted devices such as arrow panels and portable changeable message signs shall be delineated by affixing conspicuity material in a continuous line on the face of the trailer. When placed on or adjacent to the shoulder and not behind a positive barrier, these devices shall be delineated by placing five (5) traffic drums, equally spaced along the traffic side of the device.

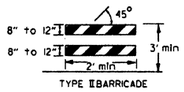
Channelizing devices

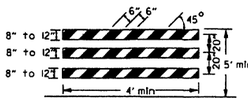


* When cones are used on freeways and multi-lane highways, they shall be 28" min. During hours of darkness, 28" cones shall be used on all roadways, and shall be reflectorized in accordance with the M.U.T.C.D.

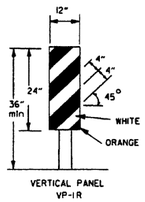








NOTE:
For all road closures, the Type III barricades shall be of sufficient length to extend across entire roadway.

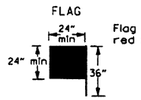


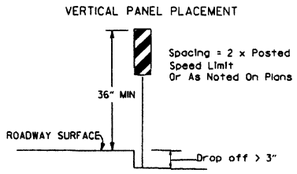
TRAFFIC CONTROL DEVICES
FOR
VERTICAL PAVEMENT DIFFERENTIALS

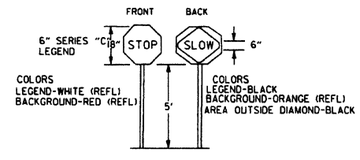
VERTICAL DIFFERENTIAL	LOCATIONS	TRAFFIC CONTROL
1" to 3"	Centerline, lane lines	W8-11
1" to 3"	Edge of shoulder	W8-9
Greater than 3"	Lane lines	Standard lane closure required
Greater than 3"	Edge of traveled lane	*RSP-1 and vertical panels, drums or concrete barrier
Greater than 3"	Edge of shoulder	*Vertical panels, drums or concrete barrier

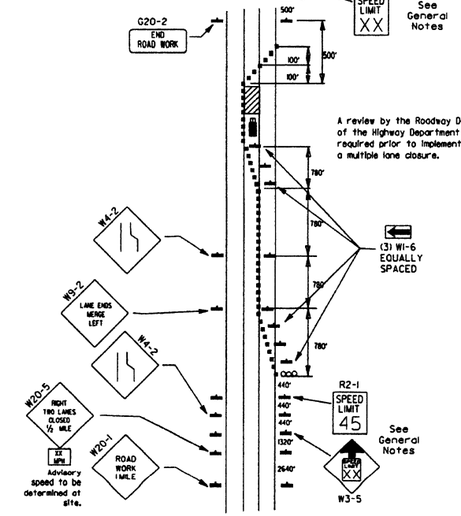
* When shown on the plans concrete barrier will be used.

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

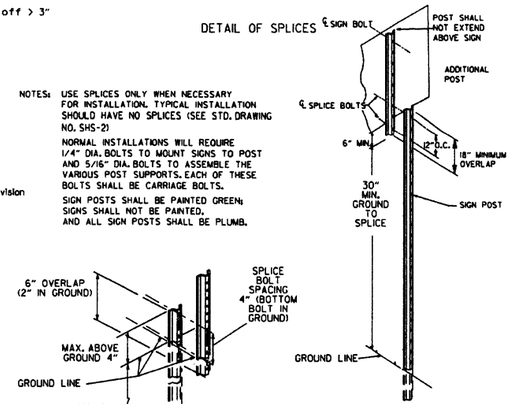








(D) Typical application - closing multiple lanes of a multilane highway.



NOTES: USE SPLICES ONLY WHEN NECESSARY FOR INSTALLATION. TYPICAL INSTALLATION SHOULD HAVE NO SPLICES (SEE STD. DRAWING NO. SHS-2)

NORMAL INSTALLATIONS WILL REQUIRE 1/4" DIA. BOLTS TO MOUNT SIGNS TO POST AND 5/16" DIA. BOLTS TO ASSEMBLE THE VARIOUS POST SUPPORTS. EACH OF THESE BOLTS SHALL BE CARRIAGE BOLTS.

SIGN POSTS SHALL BE PAINTED GREEN; SIGNS SHALL NOT BE PAINTED, AND ALL SIGN POSTS SHALL BE PLUMB.

DATE	REVISION	FILMED
9-2-15	REVISED NOTE 2 & REPLACED R2-5A WITH W3-5	
10-15-09	ADDED REFERENCE TO MASH	
11-20-08	REVISED SIGN DESIGNATIONS	
11-18-04	ADDED NOTE	
10-1-98	ADDED NOTE	
4-03-97	ADDED (SP) TO W6-1 & REVISED TRAFFIC CONTROL DEVICES NOTE	
10-18-96	ADDED R55-1	
10-12-95	MOVED UPPER SPLICE	
6-8-95	REVISED SPLICE DETAIL, TEXT	6-8-95
2-2-95	REVISED PER PART VI, MUTCD, SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	

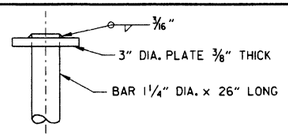
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

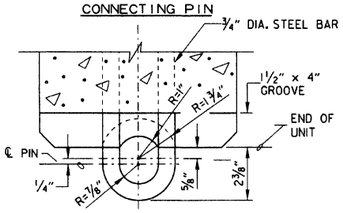
STANDARD DRAWING TC-3

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'-6", 1" MIN. CLEAR TO BAR; 5'-1" BAR W/(4) 1 1/2" R BENDS & MIN. 1'-0" OVERLAP
V-1	VERTICAL IN BARRIER(3) EACH END & (2) AT EACH DRAIN SLOTS	#5	(16)	TOTAL LENGTH 4'-9", 2 3/16" R, 12°, 9 1/2", 2'-1 3/8", 4 3/8"

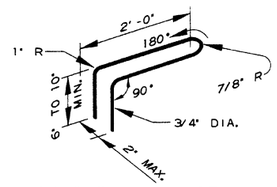


CONNECTING PIN

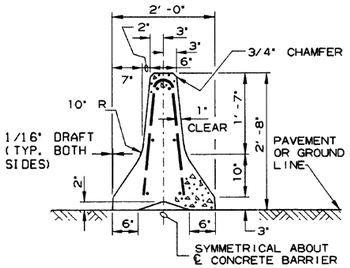


SECTION E-E

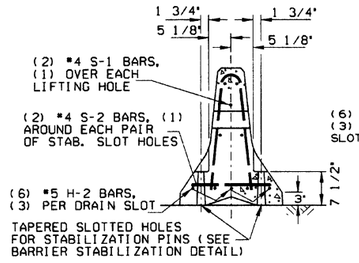
CONNECTION DETAILS



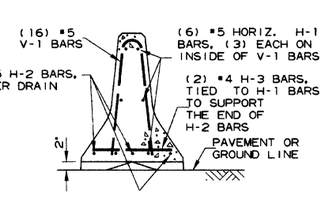
CONNECTION LOOP



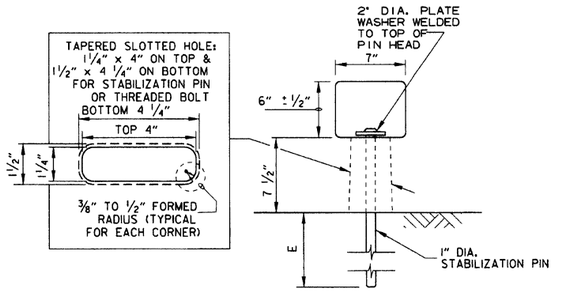
SECTION A-A



SECTION B-B



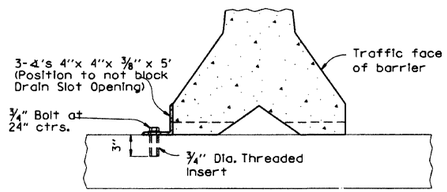
SECTION C-C



BARRIER STABILIZATION DETAIL

ROADWAY SECTION

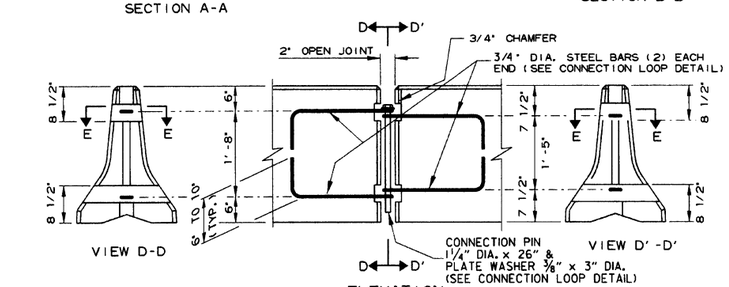
(E) 4" - Concrete Pavement
8" - Asphalt Pavement
12" - Shoulder Areas



NOTE: 3/4" Threaded Inserts shall be cast in place for all new bridge decks and drilled and grouted for existing bridge decks. 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

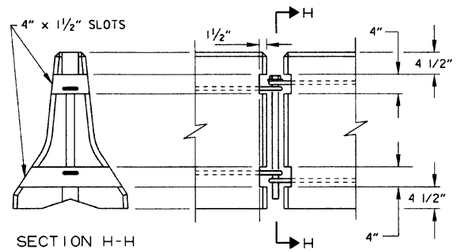
BRIDGE DECKS



VIEW D-D

VIEW D'-D'

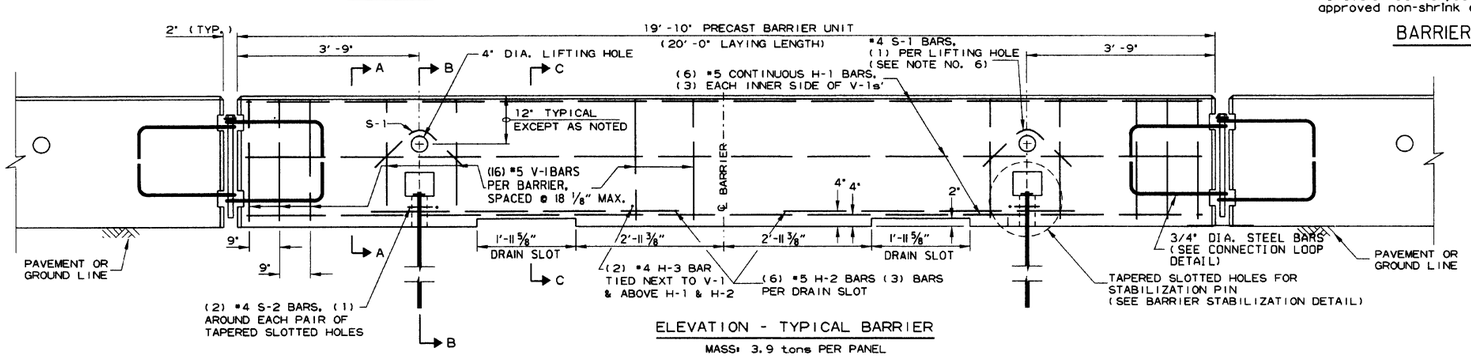
ELEVATION



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.

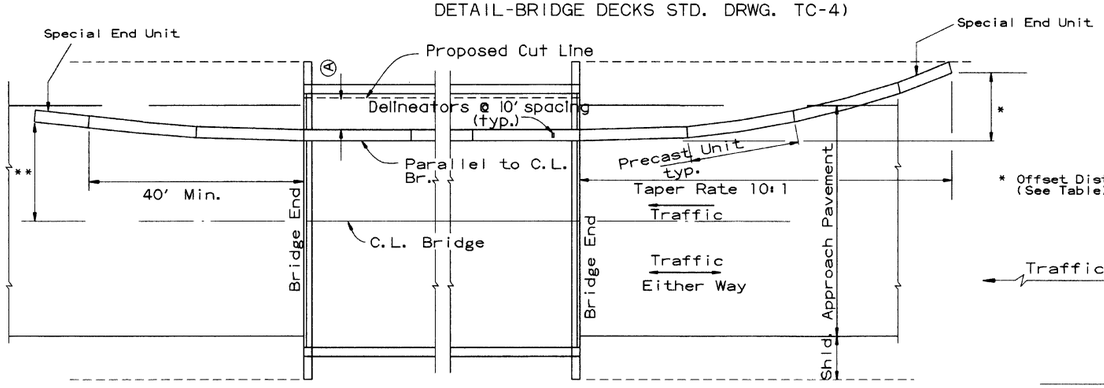
DATE	REVISION	FILMED
2-27-14	REVISED BARRIER STABILIZATION DETAIL	
10-15-09	ADDED REFERENCE TO MASH	
8-5-09	REV. NOTE 3 CONCERNING DRAIN SLOTS	
11-29-07	REVISED NOTE 3	
5-25-06	DELETED GENERAL NOTE 7	
11-18-04	REVISED BARRIER STABILIZATION DETAIL BRIDGE DECKS	
4-10-03	REVISED GENERAL NOTE 2	
8-22-02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

ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION - TEMPORARY PRECAST BARRIER

STANDARD DRAWING TC-4

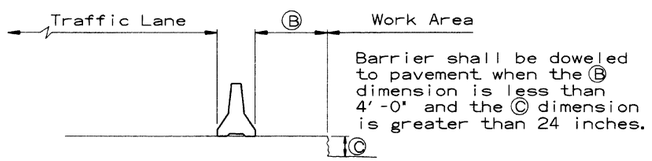
Ⓐ 4 feet or greater preferred. If less than 4 feet, Precast Units shall be connected to slab (SEE BARRIER STABILIZATION DETAIL-BRIDGE DECKS STD. DRWG. TC-4)



* Offset Distance (See Table)

BARRIER PLACEMENT ALONG BRIDGE WITH OFFSET

No Scale

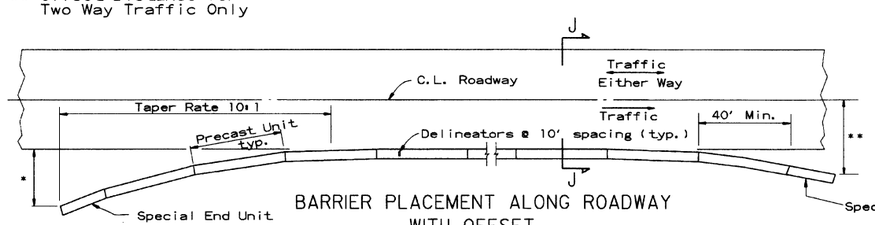


Barrier shall be doweled to pavement when the Ⓑ dimension is less than 4'-0" and the Ⓒ dimension is greater than 24 inches.

SECTION J-J

No Scale

** Offset Distance for Two Way Traffic Only



BARRIER PLACEMENT ALONG ROADWAY WITH OFFSET

No Scale

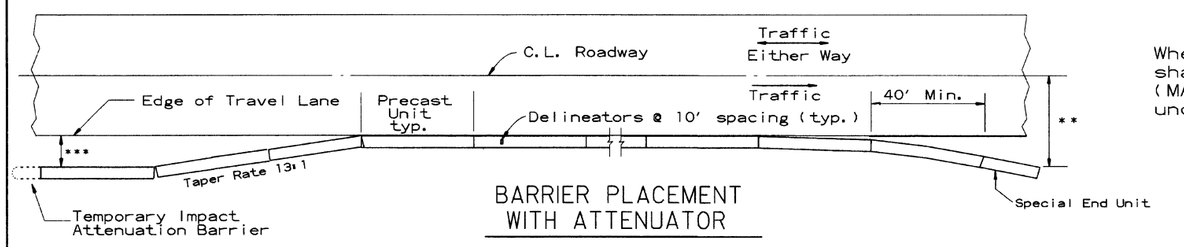
* Offset Distance (See Table)

** Offset Distance For Two Way Traffic Only

Offset Distance Table

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

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

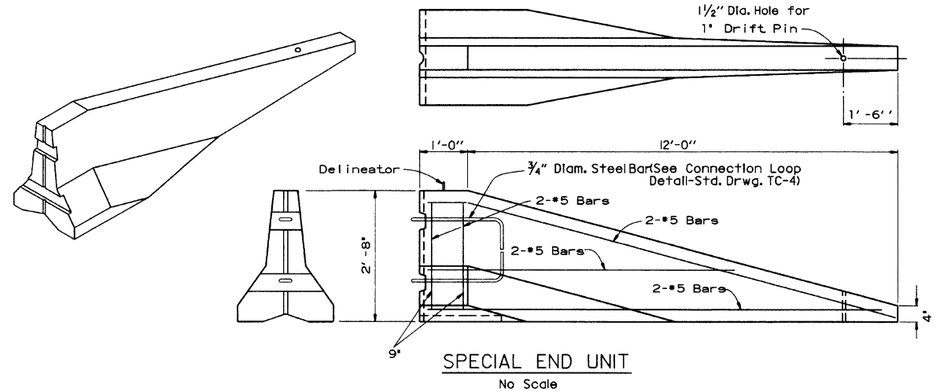


BARRIER PLACEMENT WITH ATTENUATOR

No Scale

** Offset Distance For Two Way Traffic Only

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



SPECIAL END UNIT

No Scale

General Notes

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

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

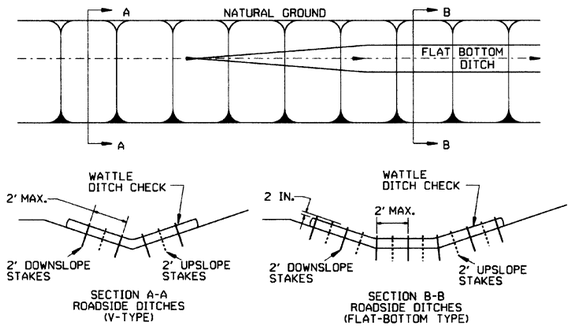
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION - TEMPORARY PRECAST BARRIER

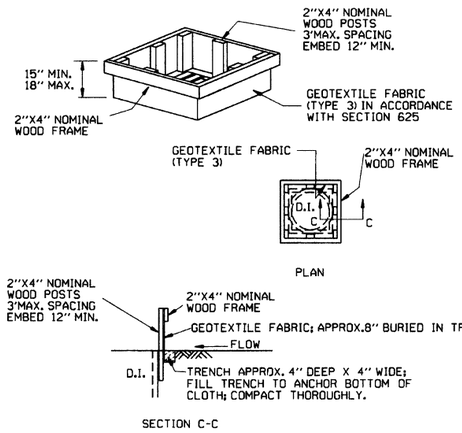
STANDARD DRAWING TC-5

GENERAL NOTES

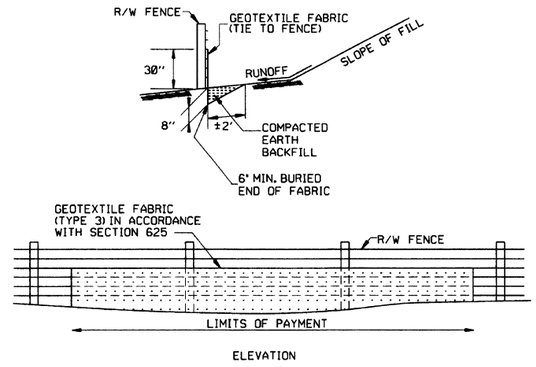
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.



WATTLE DITCH CHECK (E-1)



DROP INLET SILT FENCE (E-7)



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

GENERAL NOTES

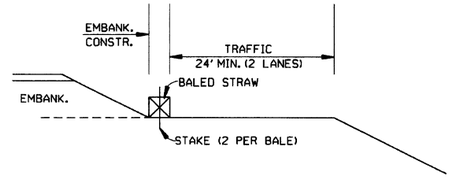
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST, OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

GENERAL NOTES

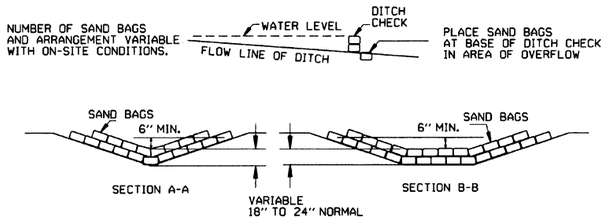
1. STRAW BALES SHALL BE INSTALLED SO THAT THE BINDINGS ARE ORIENTED AROUND THE SIDES RATHER THAN ALONG THE TOPS AND BOTTOMS OF THE BALES. THE BALES SHALL BE A MINIMUM OF 30 INCHES IN LENGTH.

2. NO GAPS SHALL BE LEFT BETWEEN BALES.

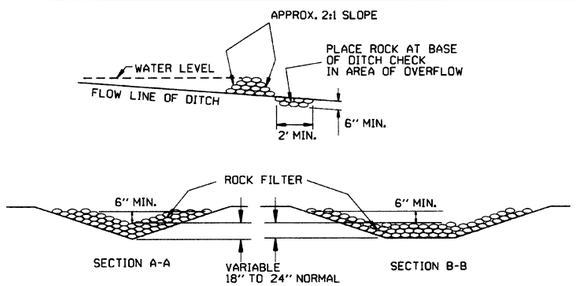
3. BALED STRAW FILTER BARRIERS COMPLETED AND ACCEPTED WILL BE MEASURED BY THE BALE IN PLACE AS AUTHORIZED BY THE ENGINEER AND WILL BE PAID FOR AT THE CONTRACT UNIT PRICE BID PER BALE FOR BALED STRAW DITCH CHECKS.



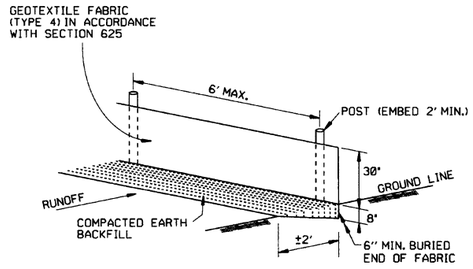
BALED STRAW FILTER BARRIER (E-2)



SAND BAG DITCH CHECK (E-5)



ROCK DITCH CHECK (E-6)



SILT FENCE (E-11)

GENERAL NOTES

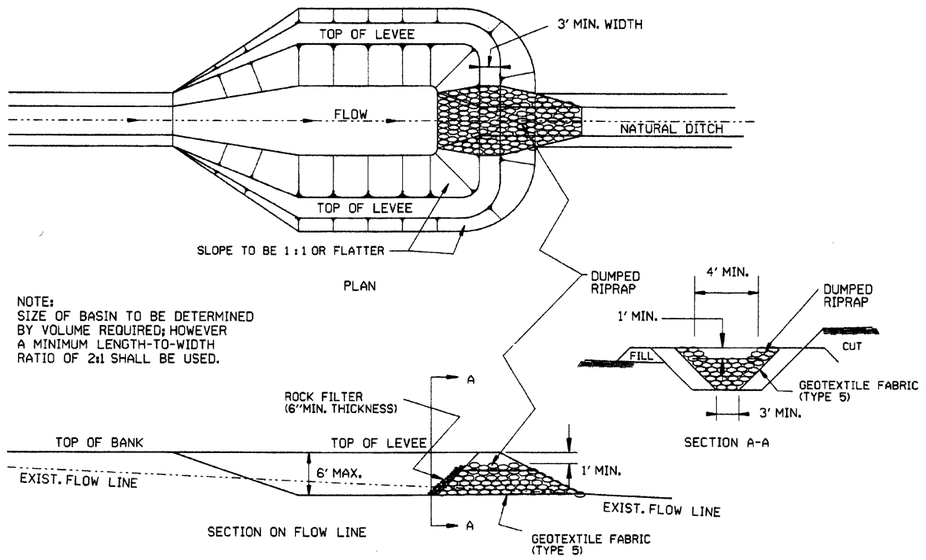
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

DATE	REVISION	FILMED
12-15-11	DELETED BALED STRAW DITCH CHECK & ADDED WATTLE DITCH CHECK	
11-18-98	ADDED NOTES	
7-02-98	ADDED BALED STRAW FILTER BARRIER (E-2)	
7-20-95	REVISED SILT FENCE E-4 AND E-11	7-20-95
7-15-94	REV. E-4 & E-11 MIN. 13" BURIED END OF FABRIC	
6-2-94	REVISED E-1, 4.7 & 11; DELETED E-2 & 3	6-2-94
4-1-93	REDRAWN	
10-1-92	REDRAWN	
8-2-76	ISSUED R.D.M.	298-7-28-76

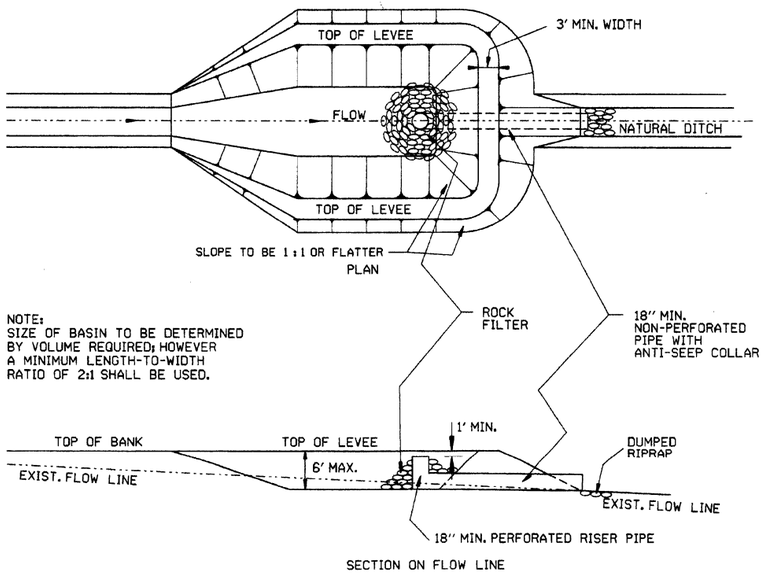
ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

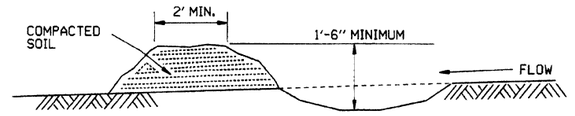
STANDARD DRAWING TEC-1



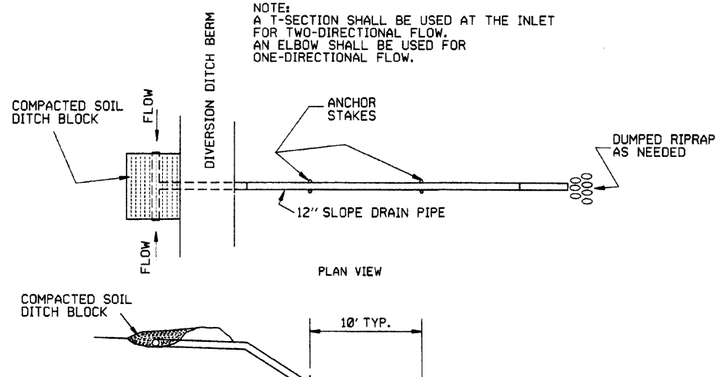
SEDIMENT BASIN WITH RIPRAP OUTLET (E-9)



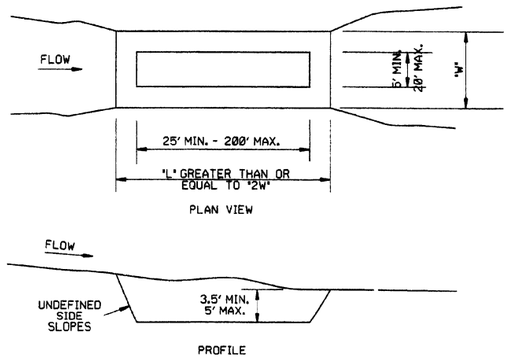
SEDIMENT BASIN WITH PIPE OUTLET (E-10)



DIVERSION DITCH (E-8)



SLOPE DRAIN (E-12)



SEDIMENT BASIN (E-14)

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

ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

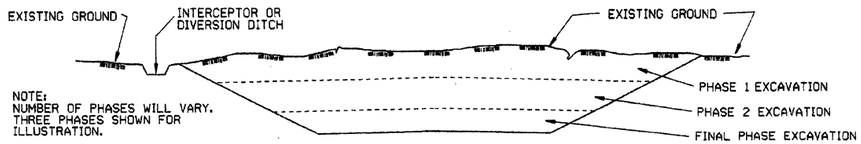
STANDARD DRAWING TEC-2

CLEARING AND GRUBBING

CONSTRUCTION SEQUENCE

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

EXCAVATION



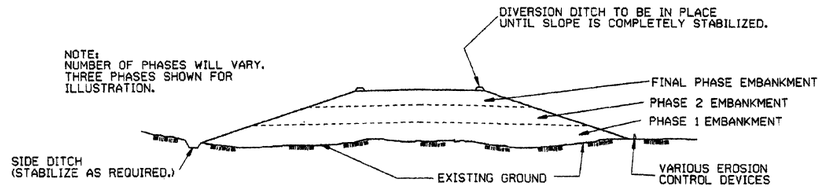
GENERAL NOTE

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

CONSTRUCTION SEQUENCE

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

EMBANKMENT



GENERAL NOTE

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

CONSTRUCTION SEQUENCE

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

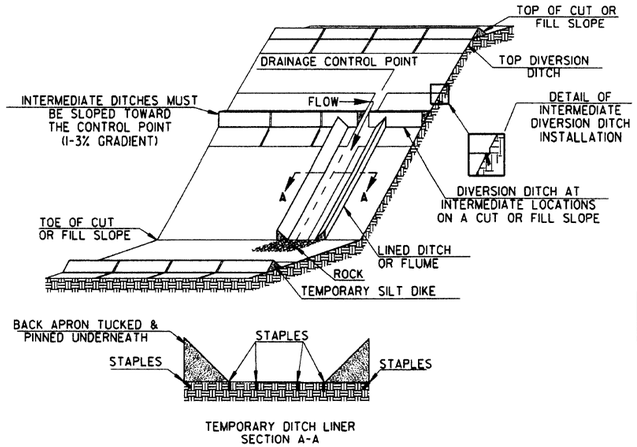
DATE	REVISION	FILMED
11-03-94	CORRECTED SPELLING	
6-2-94	Drawn & Issued	6-2-94

ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

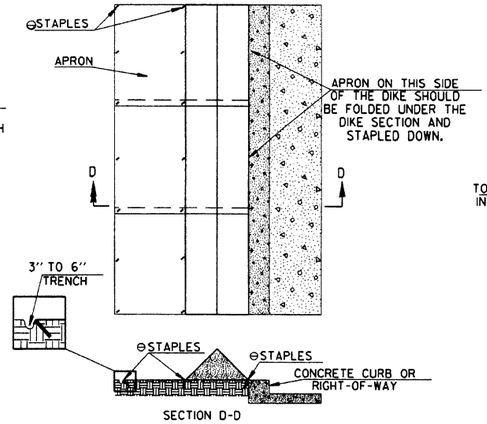
STANDARD DRAWING TEC-3

stdtec3.dgn



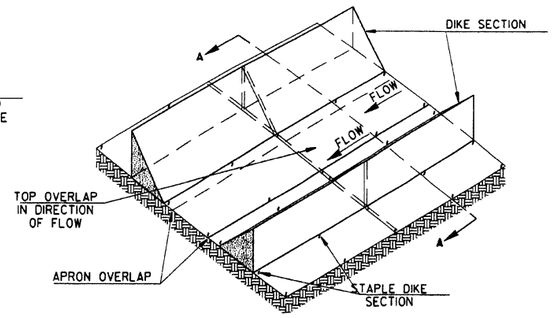
TEMPORARY DITCH LINER
SECTION A-A

TRIANGULAR SILT DIKE INSTALLATION
FOR
DIVERSION DITCH AND/OR DITCH LINER

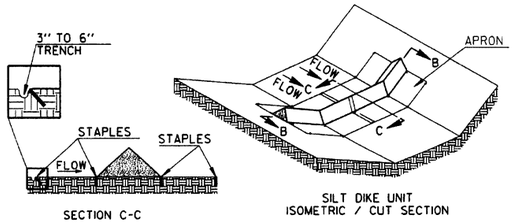


SECTION D-D

TRIANGULAR SILT DIKE INSTALLATION
FOR
CONTINUOUS BARRIER

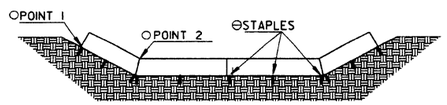


TRIANGULAR SILT DIKE INSTALLATION
FOR
TEMPORARY DITCH LINER



SECTION C-C

SILT DIKE UNIT
ISOMETRIC / CUT SECTION

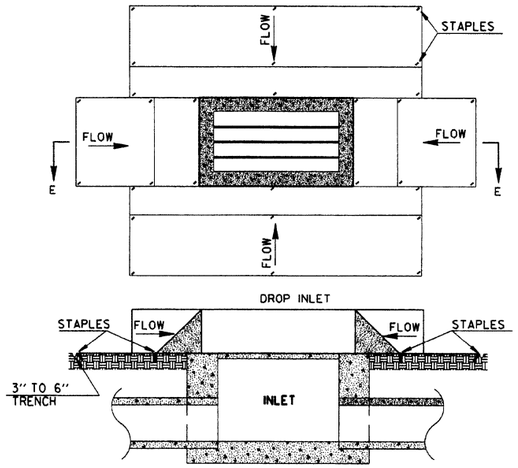


DIKE SECTION
SECTION B-B

TRIANGULAR SILT DIKE INSTALLATION
FOR
ROADWAY DITCH OR DRAINAGE DITCH

○ POINT "1" MUST BE HIGHER THAN POINT "2" TO ENSURE THAT WATER FLOWS OVER THE DIKE AND NOT AROUND THE ENDS.

⊖ STAPLES SHALL BE PLACED WHERE THE UNITS OVERLAP AND IN THE CENTER OF THE UNIT AS SHOWN ON THE DIAGRAM.



SECTION E-E

TRIANGULAR SILT DIKE INSTALLATION
FOR
DROP INLETS

SYMBOLOGY
SYMBOL TO BE USED TO DENOTE DEVICE ON PLANS

NOTE: SILT DIKE SHOULD ONLY BE USED FOR DROP INLETS IN SUMP LOCATIONS.

GENERAL NOTES

1. THIS WORK SHALL CONSIST OF FURNISHING, INSTALLING, AND MAINTAINING THE TRIANGULAR SILT DIKE. THE DIKES SHALL BE USED AS A CONTINUOUS LINE BARRIER AT THE TOE OF SLOPE OR ACROSS THE ROADWAY DITCH TO CONTAIN SEDIMENT AND MINIMIZE EROSION, OR AS DIRECTED BY THE ENGINEER. THESE DIKES SHALL BE INSTALLED AND LOCATED AS SOON AS CONSTRUCTION WILL ALLOW OR AS DIRECTED BY THE ENGINEER.

2. TRIANGULAR SILT DIKE SHALL BE TRIANGULAR SHAPED HAVING A HEIGHT OF AT LEAST 8" TO 10" IN THE CENTER WITH EQUAL SIDES AND A 16" TO 20" BASE. THE TRIANGULAR SHAPED INNER MATERIAL SHALL BE URETHANE FOAM. THE OUTER COVER SHALL BE A WOVEN GEOTEXTILE FABRIC PLACED AROUND THE INNER MATERIAL & ALLOWED TO EXTEND BEYOND BOTH SIDES OF THE TRIANGLE 24" TO 36". THIS FABRIC SHOULD BE MILDEW RESISTANT, ROT-PROOF AND RESISTANT TO HEAT AND ULTRAVIOLET RADIATION MEETING REQUIREMENTS FOR SEDIMENT CONTROL IN AASHTO M288. THE DIKES SHALL BE ATTACHED TO THE GROUND WITH WIRE STAPLES. THE STAPLES SHALL BE NO. 11 GAUGE WIRE AND BE AT LEAST 6" TO 8" LONG. STAPLES SHALL BE PLACED AS SHOWN ON THESE DETAILS.

   THE CONTRACTOR SHALL INSPECT ALL DIKES AFTER EACH RAINFALL EVENT OF AT LEAST 0.5" OR GREATER. ANY DEFICIENCIES OR DAMAGE SHALL BE REPAIRED BY THE CONTRACTOR. ACCUMULATED SILT OR DEBRIS SHALL BE REMOVED AND RELOCATED AS DIRECTED BY THE ENGINEER. IF THE DIKES ARE DAMAGED OR INADVERTENTLY MOVED DURING THE SILT REMOVAL PROCESS, THE CONTRACTOR SHALL IMMEDIATELY REPLACE AFTER DAMAGE OCCURS.

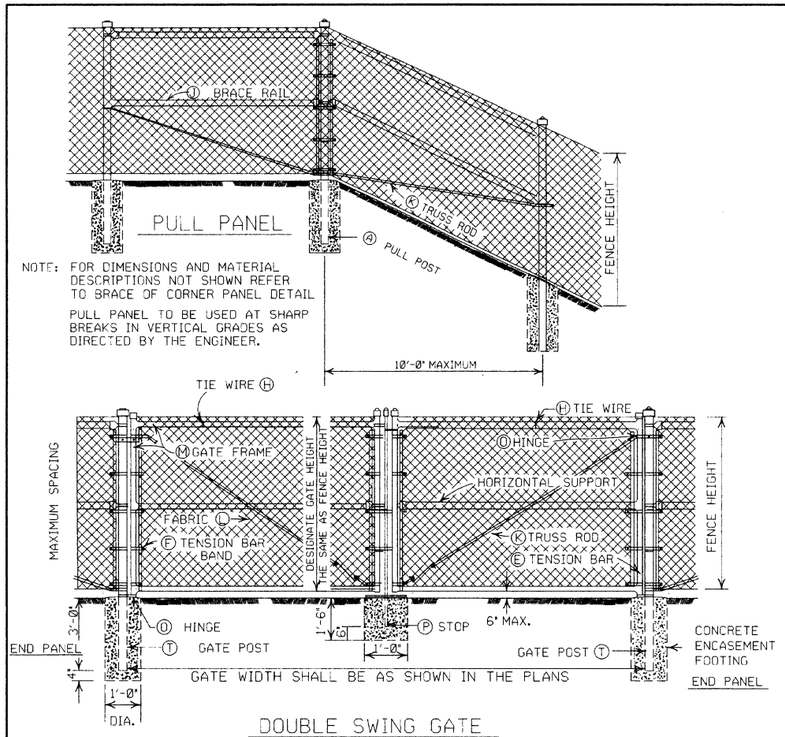
3. ACCEPTED TRIANGULAR SILT DIKE, MEASURED AS PROVIDED ABOVE, WILL BE PAID FOR AT THE CONTRACT UNIT PRICE BID FOR TRIANGULAR SILT DIKE. PRICE BID WILL INCLUDE THE COST OF FURNISHING THE DIKES, INSTALLING, MAINTAINING AND REMOVAL WHEN DIRECTED BY THE ENGINEER.

DATE	REVISION	FILMED
7-26-12	REVISED GENERAL NOTE 2.	
12-15-11	ISSUED	

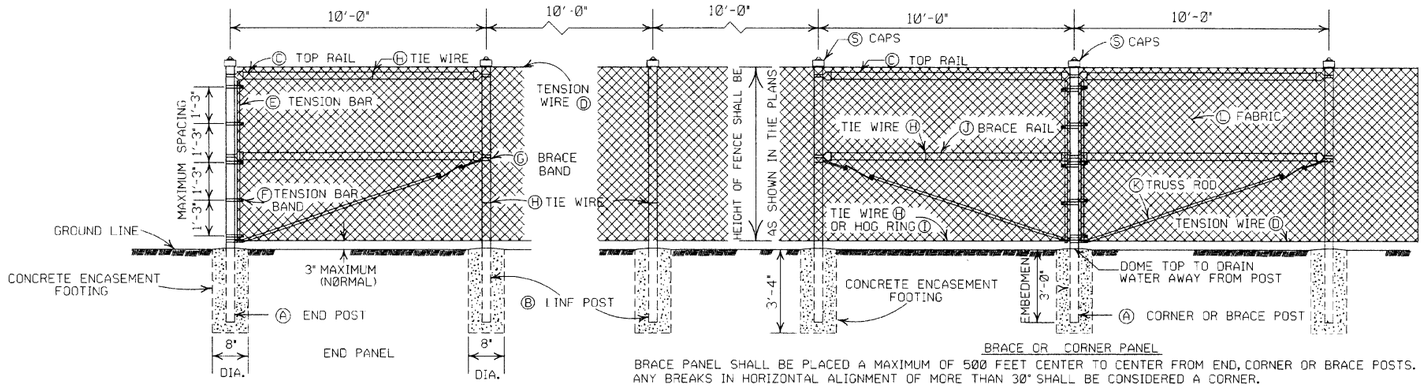
ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

STANDARD DRAWING TEC-4

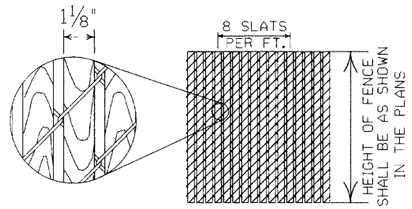


POST SPACING DETAIL



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.

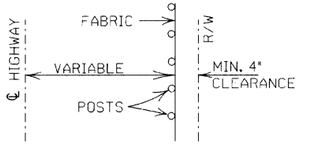
HEIGHT OF FENCE FABRIC	(A) END, PULL CORNER OR BRACE POST	(B) LINE POSTS SIZE	(B) LINE POSTS TIE SPACING	(C) TOP RAIL SIZE	(C) TOP RAIL TIE SPACING	(C) TOP RAIL MIN. LENGTH	(D) TENSION WIRE SIZE	(D) TENSION WIRE TIE SPACING	(E) TENSION BAR SIZE	(E) TENSION BAR LENGTH	(F) TENSION BAR BAND SIZE	(F) TENSION 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 ⅜" 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	0.160	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

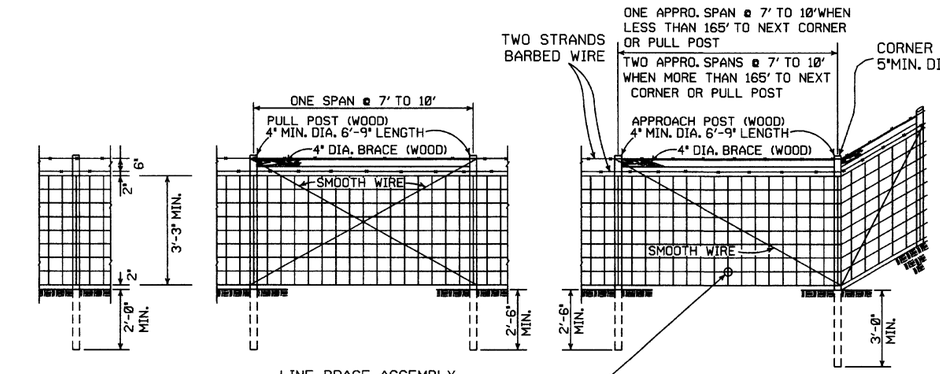
TOLERANCES ON DIMENSIONS AND WEIGHTS ACCORDING TO AASHTO M 181

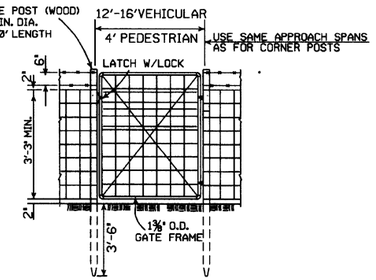
DATE	REVISION	FILMED
11-17-10	REVISED TRUSS ROD	
12-10-09	REVISED POSTS & RAILS TABLE	
5-21-09	ADDED TABLE & GEN. NOTE (C)	
8-22-02	REVISED NOTES, REMOVED TABLE, & REMOVED FENCE ALTERNATE	
4-3-97	REVISED BRACE RAIL NOTE	
10-18-96	REVISED AASHTO & ASTM REF.	
11-3-94	REVISED NOTE (L)	
10-1-92	DELETED ALTERNATE POST	10-1-92
8-15-91	DELETED ROLL FORMED POST DETAIL & ADDED NOTE	8-15-91
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

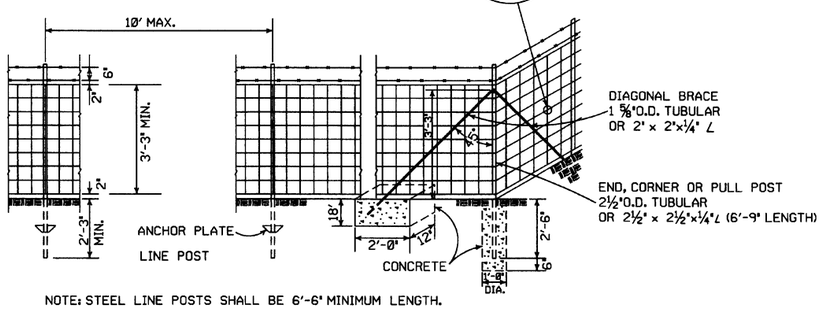
CHAIN LINK FENCE

STANDARD DRAWING WF-3

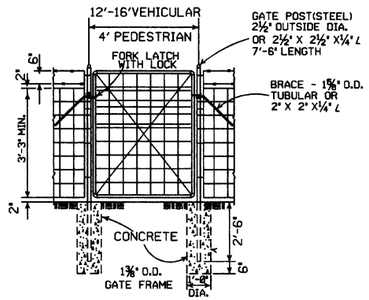


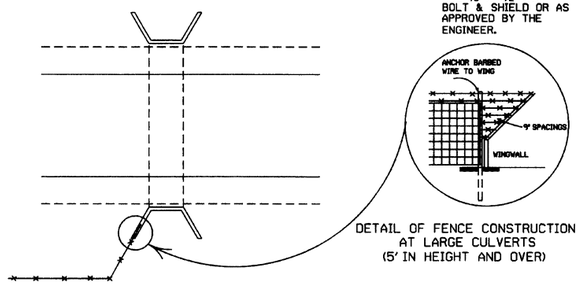


TYPE C FENCE (WOOD POSTS)



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





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

GENERAL NOTES:

STEEL LINE POSTS SHALL BE PAINTED OR GALVANIZED. TUBULAR END, CORNER, PULL, OR DIAGONAL BRACES MUST CONFORM TO THE DIMENSIONS AND WEIGHTS SPECIFIED ON STANDARD DRAWING WF-3 (CHAIN LINK). APPROVED ALTERNATES ARE ACCEPTABLE.
AN ACCEPTABLE TOLERANCE IN LENGTH OF TUBULAR OR WOODEN POSTS SHALL BE - 1" TO +2".
TUBULAR POSTS MUST BE PAINTED OR GALVANIZED.

THE CONTRACTOR SHALL FURNISH AT LEAST 25% OF TIMBER LINE POSTS OF 7 FOOT LENGTHS IN ORDER TO PROVIDE SUFFICIENT SET IN SOFT GROUND OR SMALL DEPRESSIONS.

DRIVEWAY GATES, EITHER SINGLE 12' TO 16' OR DOUBLE 6' TO 8' OPENING OF THE SAME TYPE AS THE PEDESTRIAN GATE, SHALL BE INSTALLED ON THE RIGHT SIDE OF EACH THROUGH LANE ROAD AT LARGE CULVERTS OR BRIDGE CROSS FENCE, FOR USE OF MAINTENANCE EQUIPMENT. LOCATION OF GATES TO BE SHOWN ON PLANS OR AS DESIGNATED BY THE ENGINEER.

AT STREAM CROSSINGS, THE FENCE SHALL NOT BE CONSTRUCTED ACROSS LARGE STREAMS. WHERE CLEARANCE IS SUFFICIENT FROM THE TOP OF THE BANK TO THE BRIDGE STRUCTURE A CROSS CONNECTION SHALL BE CONSTRUCTED BETWEEN THE FENCE ON EACH SIDE OF THE ROAD. WHERE THE CLEARANCE IS NOT SUFFICIENT, THE FENCE SHALL BE TERMINATED WITH CROSS CONNECTIONS AND END POSTS ADJACENT TO BRIDGE ABUTMENTS OR CULVERT WINGWALLS.

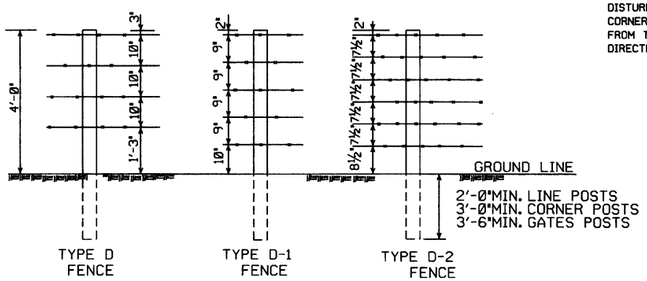
SPLICE FOR BARBED WIRE BETWEEN PULL POST ASSEMBLY SHALL BE BY THE "EYE METHOD" AS DESCRIBED AS FOLLOWS: THE ENDS OF THE BARBED WIRE SHALL BE BENT TO FORM A LOOP. THE LOOPS SHALL BE CONNECTED. AFTER THE LOOPS ARE CONNECTED THE ENDS OF THE WIRE SHALL BE WRAPPED AROUND THE PROJECTING WIRES A MINIMUM OF 4 TIMES FOR EACH WIRE LOOP.

SPLICE FOR WOVEN WIRE BETWEEN PULL POST SHALL BE BY THE "WESTERN UNION METHOD" AS DESCRIBED AS FOLLOWS: THE VERTICAL WIRES FOR EACH END OF THE FENCE FABRIC SHALL BE PLACED SIDE BY SIDE AND THE PROJECTING HORIZONTAL WIRES SHALL BE WRAPPED A MINIMUM OF 4 TIMES AROUND THE HORIZONTAL WIRES OF THE FIRST WEB.

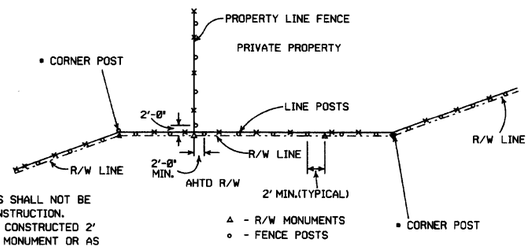
STAPLE AT LEAST TOP, BOTTOM AND ALTERNATE WIRES OF WOVEN FABRIC FOR WOOD LINE POSTS.

TYPE C FENCE (STEEL POSTS)

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

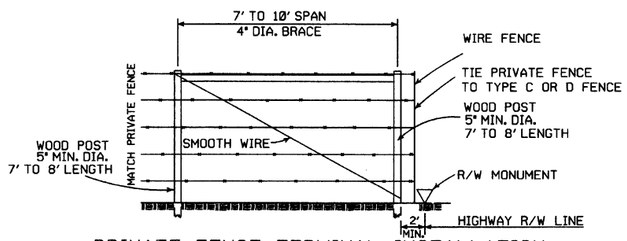


NOTE: SPACING AND SIZE (EXCEPT LENGTH) OF POSTS, APPROACH SPANS, PULL POST ASSEMBLIES, AND CORNER BRACING FOR TYPE D FENCE SHALL CONFORM TO TYPE C FENCE. USE GALVANIZED STAPLES ON WOOD POSTS AND APPROVED FASTENERS ON STEEL POSTS.



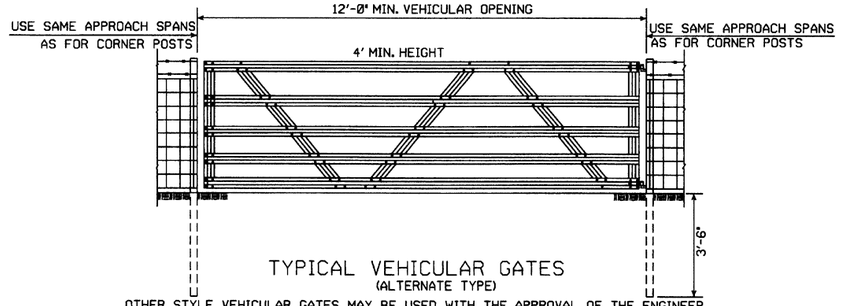
• NOTE: RIGHT-OF-WAY MONUMENTS SHALL NOT BE DISTURBED BY FENCE CONSTRUCTION. CORNER POSTS SHALL BE CONSTRUCTED 2' FROM THE RIGHT-OF-WAY MONUMENT OR AS DIRECTED BY THE ENGINEER.

RIGHT-OF-WAY FENCE LOCATION



PRIVATE FENCE TERMINAL INSTALLATION

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



TYPICAL VEHICULAR GATES
(ALTERNATE TYPE)

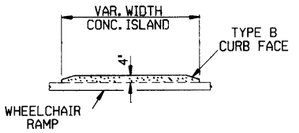
OTHER STYLE VEHICULAR GATES MAY BE USED WITH THE APPROVAL OF THE ENGINEER.
THE METHOD OF SECURING GATE (LATCH AND/OR LOCK) SHALL MEET THE APPROVAL OF THE ENGINEER.

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

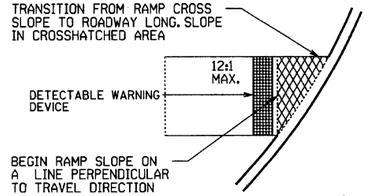
ARKANSAS STATE HIGHWAY COMMISSION

WIRE FENCE TYPE C AND D

STANDARD DRAWING WF-4



CONCRETE ISLAND DETAIL



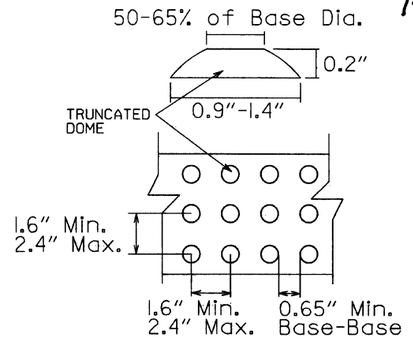
SLOPE TRANSITION DETAILS

TYPE 1 RAMP DIMENSIONS AND QUANTITIES

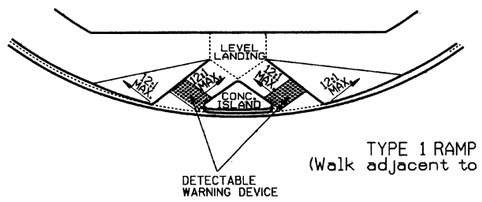
RADIUS "R" FEET	DISTANCE "X" FEET	DISTANCE "Y" FEET	LENGTH "L" FEET	RAMP AREA "A" SQ. YD.
15	11.67	18.82	32.18	26.21
20	11.52	22.28	35.46	30.07
25	11.43	26.60	38.77	33.80
30	11.37	30.26	40.93	36.90
35	11.33	33.51	43.11	39.77
40	11.30	36.45	45.26	42.45
45	11.27	39.16	47.34	44.97
50	11.25	41.69	49.36	47.35
55	11.24	44.07	51.31	49.63
60	11.22	46.33	53.21	51.80

GENERAL NOTES FOR DETECTABLE WARNING DEVICES

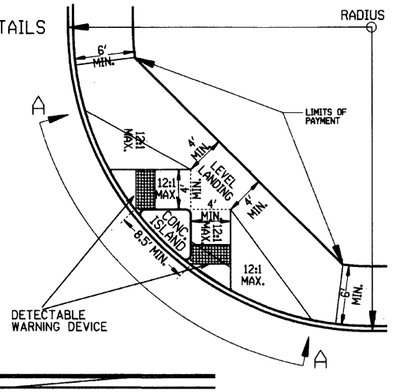
THE DETECTABLE WARNING DEVICE SHALL BE LOCATED SO THAT THE NEAREST EDGE OF THE DEVICE IS 6 TO 8 INCHES FROM THE FACE OF THE CURB.
TRUNCATED DOMES IN THE DETECTABLE WARNING SURFACE SHALL MEET THE REQUIREMENTS OF THE GEOMETRIC CONFIGURATION SHOWN.
DOMES SHALL BE ALIGNED ON A SQUARE GRID IN THE PREDOMINANT DIRECTION OF TRAVEL TO PERMIT WHEELS TO ROLL BETWEEN DOMES.
DETECTABLE WARNING DEVICE SHALL BE 24 INCHES IN THE DIRECTION OF TRAVEL AND EXTEND THE FULL WIDTH OF THE CURB RAMP OR FLUSH SURFACE.
DETECTABLE WARNING DEVICE SHALL BE ON THE AHTD QUALIFIED PRODUCTS LIST FOR CAST-IN-PLACE TACTILE PANELS (ADA DETECTABLE WARNING).

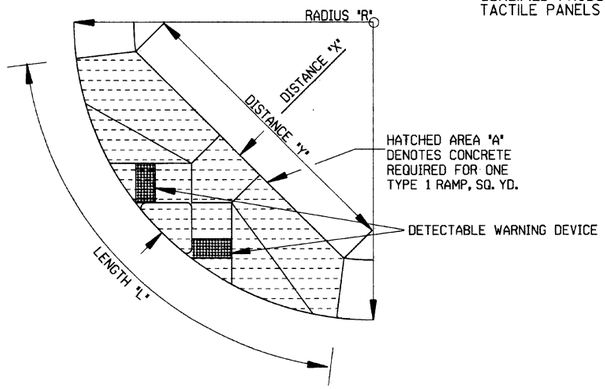


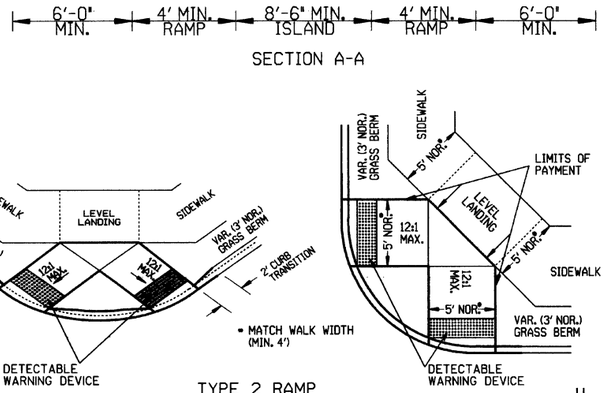
DETECTABLE WARNING DEVICE DETAIL



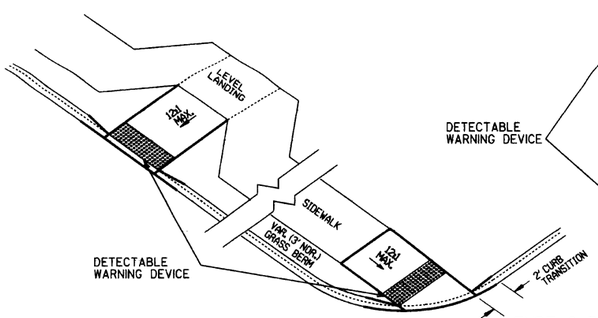
TYPE 1 RAMP
(Walk adjacent to curb)



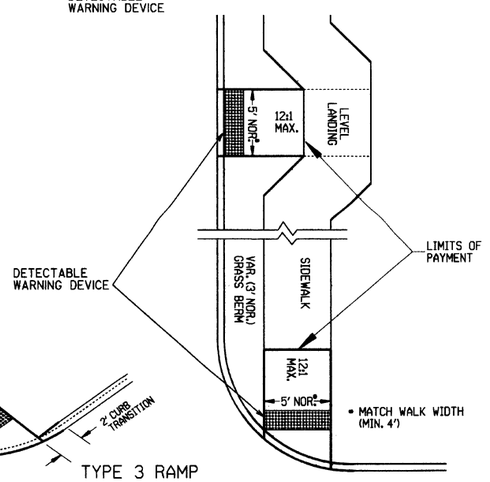


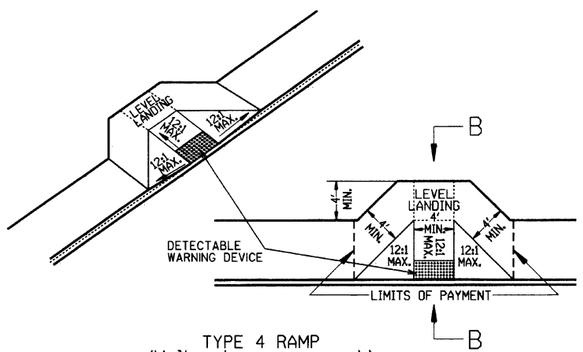


TYPE 2 RAMP

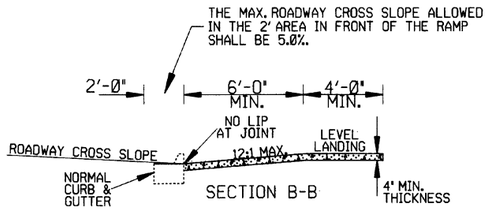


TYPE 3 RAMP

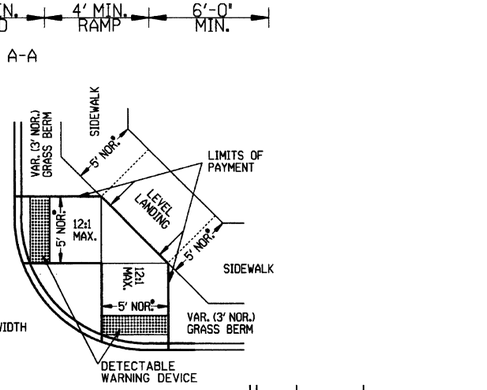




TYPE 4 RAMP
(Walk adjacent to curb)



SECTION B-B



SECTION A-A

NOTE:
THE CROSS SLOPE OF THE RAMPS, LEVEL LANDINGS, AND SIDEWALKS SHALL NOT EXCEED 2.0% UNLESS REQUIRED TO MATCH STREET LONGTITUDINAL GRADE.

GENERAL NOTES:

IN NEW CONSTRUCTION, UNLESS OTHERWISE INDICATED ON THE PLANS, WHEELCHAIR RAMPS ARE TO BE PROVIDED AT ALL CORNERS OF CURBED STREET INTERSECTIONS AND MID-BLOCK CROSSWALK LOCATIONS.
IN ALTERATIONS WHEELCHAIR RAMPS ARE TO BE PROVIDED AT CURBED STREET INTERSECTIONS WITH PEDESTRIAN TRAFFIC AND MID-BLOCK CROSSWALK LOCATIONS.
THE LENGTH OF THE RAMP SHALL BE SUCH THAT THE SLOPE DOES NOT EXCEED 12:1. THE SURFACE TEXTURE OF THE RAMP SHALL CONFORM TO A CLASS 6 FINISH ACCORDING TO SECTION 802.19.
THE NORMAL GUTTER GRADE SHALL BE MAINTAINED THROUGH THE AREA OF THE RAMP.
ALL PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION.
THE MINIMUM THICKNESS OF THE RAMP, WALK, & LANDING SHALL BE 4".
THE MINIMUM WIDTH OF THE RAMPS SHALL BE THE WALK WIDTH OR 36", WHICHEVER IS GREATER.
RAMPS SHALL BE MODIFIED AS NECESSARY TO INSURE THAT THEY ARE PARALLEL TO A LINE DRAWN FROM THE CENTER OF ONE RAMP TO THE CENTER OF THE RAMP ON THE OPPOSITE SIDE OF THE INTERSECTION.
THE DIMENSIONS AND QUANTITIES SHOWN ON THIS DRAWING ARE FOR A 90° INTERSECTION ONLY. DIMENSIONS AND QUANTITIES FOR SKEWED INTERSECTIONS WILL VARY, AND ARE TO BE DETERMINED BY THE ENGINEER.

RAMP SELECTION CRITERIA

FIRST CHOICE	TYPE 1	CORNER LOCATIONS WITH THE WALK ADJACENT TO THE CURB (BOTH NEW CONSTRUCTION AND ALTERATIONS).
	TYPE 2	CORNER LOCATIONS WITH THE WALK OFFSET FROM THE CURB A DISTANCE INSUFFICIENT TO ALLOW THE REQUIRED RAMP SLOPE (BOTH NEW CONSTRUCTION AND ALTERATIONS).
	TYPE 3	CORNER LOCATIONS WITH THE WALK OFFSET FROM THE CURB A DISTANCE SUFFICIENT TO ALLOW THE REQUIRED RAMP SLOPE (BOTH NEW CONSTRUCTION AND ALTERATIONS).
	TYPE 4	TANGENT LOCATIONS (BOTH NEW CONSTRUCTION AND ALTERATIONS).
SECOND CHOICE	TYPE 5	TANGENT LOCATIONS (ALTERATIONS ONLY).
THIRD CHOICE	TYPE 6	CORNER LOCATIONS (ALTERATIONS ONLY). THIS RAMP MAY BE USED ONLY IF THE TYPE 5 RAMPS CANNOT BE PLACED AT THE ENDS OF THE RADIUS.
FOURTH CHOICE		IF SITE CONSTRAINTS PREVENT THE CONSTRUCTION OF ANY OF THE TYPES LISTED, THEN AND ONLY THEN CAN THE 12:1 MAX. SLOPE ON THE RAMP BE EXCEEDED TO PROVIDE ACCESS TO THE STREET LEVEL (ALTERATIONS ONLY). THE SLOPE CAN BE STEEPENED TO A 10:1 MAX. FOR A MAX. LENGTH OF 5' OR A 8:1 MAX. FOR A MAX. LENGTH OF 2'. SLOPES STEEPER THAN 8:1 ARE NOT ALLOWED UNDER ANY CIRCUMSTANCES.

NOTE: IN ALTERATIONS, THE SELECTION OF THE TYPE OF WHEELCHAIR RAMP TO BE CONSTRUCTED SHALL BE BASED ON THE AMOUNT OF RIGHT-OF-WAY AVAILABLE, AND ON THE PRESENCE OF OTHER SITE CONSTRAINTS (UTILITIES, BUILDINGS, ETC.). THE TABLE ABOVE LISTS THE ORDER IN WHICH THE RAMPS ARE TO BE CONSIDERED.

AN ALTERATION IS DEFINED AS A PROJECT THAT CHANGES OR AFFECTS THE USE OF A PEDESTRIAN PATHWAY (OVERLAYS, SIGNALIZATION PROJECTS, ETC.) BUT DOES NOT REQUIRE THE PURCHASE OF ADDITIONAL RIGHT-OF-WAY. ALL PROJECTS THAT REQUIRE THE PURCHASE OF ADDITIONAL RIGHT-OF-WAY WILL USUALLY BE CONSIDERED NEW CONSTRUCTION FOR THE PURPOSES OF THE CHART ABOVE.

DATE	REVISION	DATE FILM
11-10-05	REVISED TO NEW SIDEWALK POLICY	
10-9-03	REVISED GEN. NOTES & ADDED NOTE	
4-10-03	REV. DETECTABLE WARNING DEVICES	
8-22-02	ADD DETECTABLE WARNING DEVICES	
3-30-00	ADD.SLOPE TRANS. & REV. ISL. DIMS.	
9-18-98	REVISED NOTES	
8-12-98	REVISED TEXTURE	
7-02-98	REDRAWN & REISSUED	
10-18-96	CORRECTED DIMENSIONS	10-18-96
5-24-90	FROM@10TO12MAX.SLOPES	5-24-90
7-15-88	ADJUSTED MAX. SLOPE	652-7-15-88
7-14-88	INCLUD."CONC. ISLD."IN PAY ITEM	------
6-02-76	ISSUED-P.H.D.	299-7-28-76

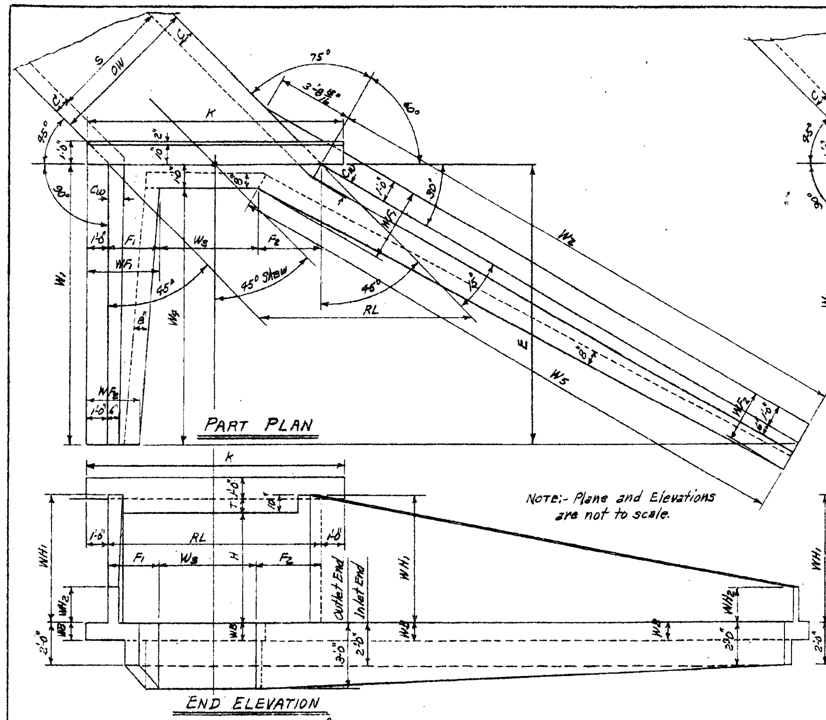
ARKANSAS STATE HIGHWAY COMMISSION

WHEELCHAIR RAMPS
NEW CONSTRUCTION
AND ALTERATIONS

STANDARD DRAWING WR-1

Reshot 3-8-93 21

FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			185	
JOB No.					

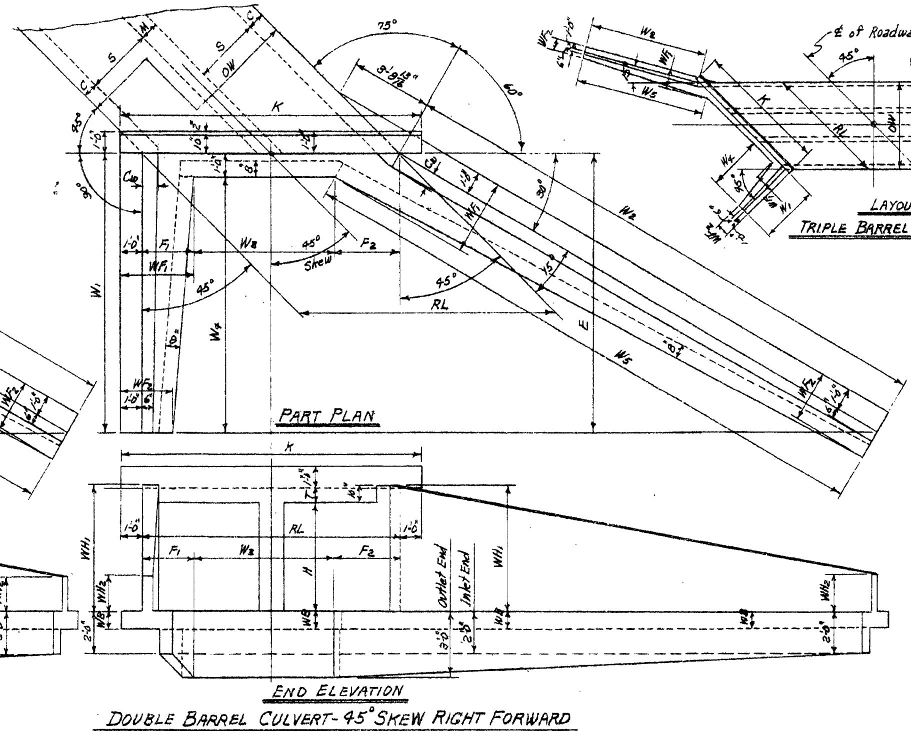


PART PLAN

END ELEVATION

Note:- Plans and Elevations are not to scale.

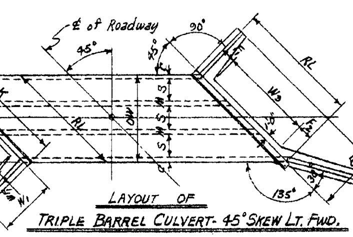
SINGLE BARREL CULVERT - 45° SKEW RIGHT FORWARD.
Details of Culvert with 45° Skew Left Forward is reversed, see Layout below.



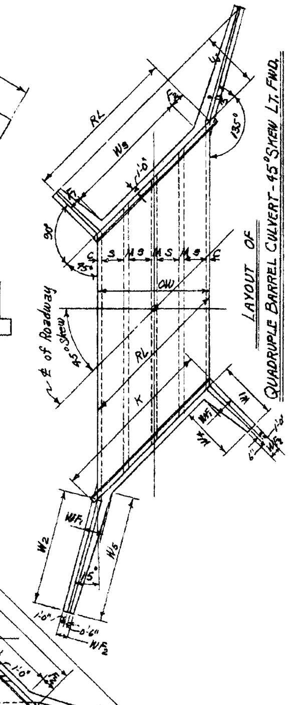
PART PLAN

END ELEVATION

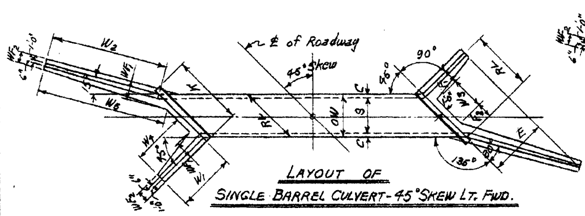
DOUBLE BARREL CULVERT - 45° SKEW RIGHT FORWARD
Details of Culvert with 45° Skew Left Forward is reversed, see Layout below.



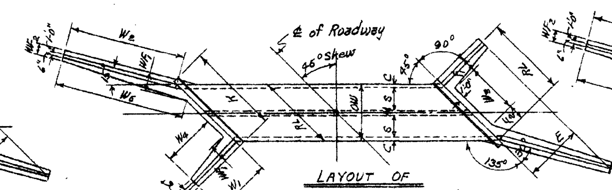
LAYOUT OF TRIPLE BARREL CULVERT - 45° SKEW LT. FWD.



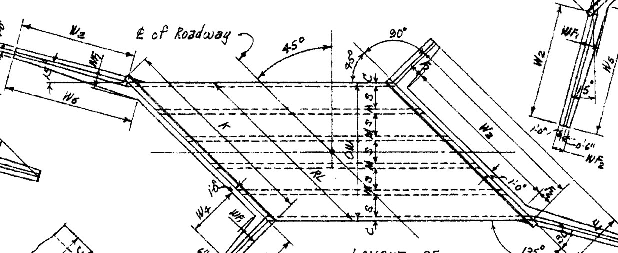
LAYOUT OF QUADRUPLE BARREL CULVERT - 45° SKEW LT. FWD.



LAYOUT OF SINGLE BARREL CULVERT - 45° SKEW LT. FWD.



LAYOUT OF DOUBLE BARREL CULVERT - 45° SKEW LT. FWD.

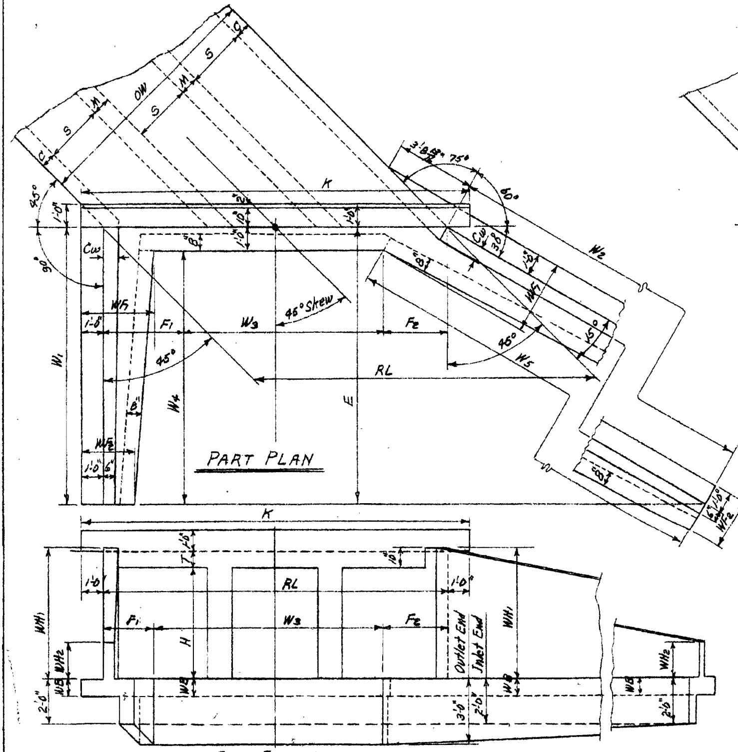


LAYOUT OF QUINTUPLE BARREL CULVERT - 45° SKEW LT. FWD.

ROADWAY LENGTH RL — HEADWALL LENGTH K — APRON DIMENSION W3

$RL = OW \times 1.41421$; $K = RL + (2'0")$; $W_3 = RL - (F_1 + F_2)$

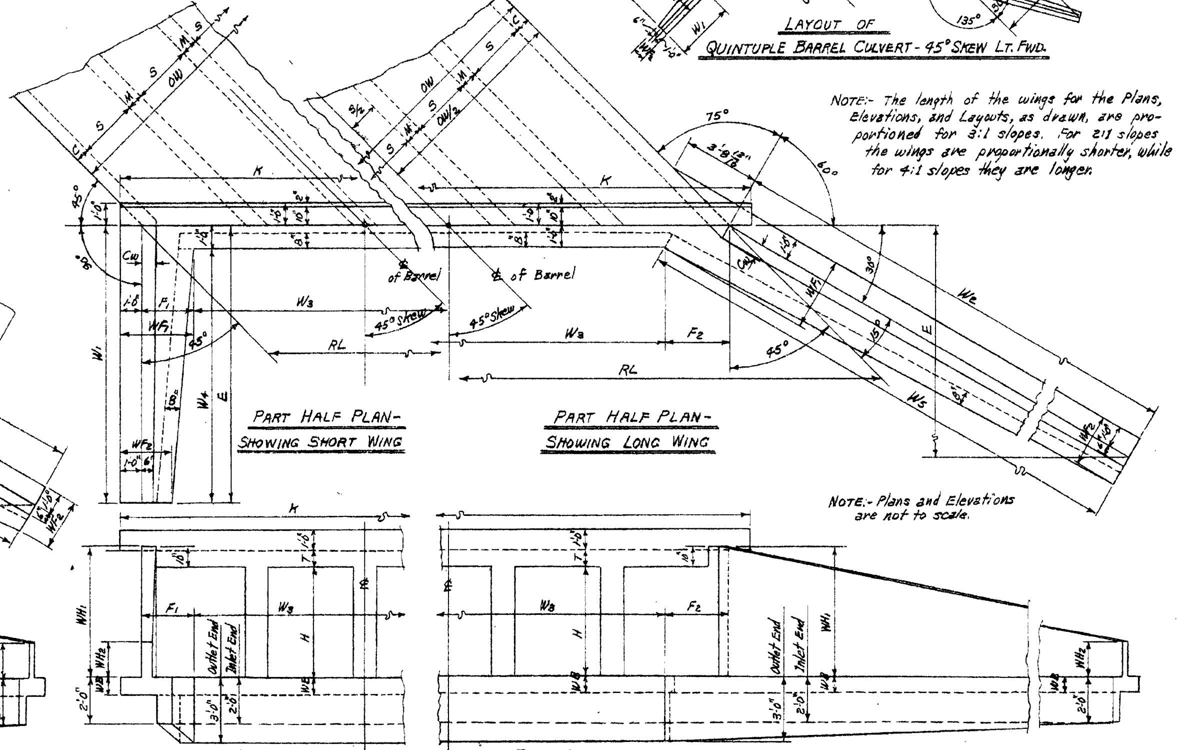
Use with Drawing No.	Clear Span S	Clear Height H	Sum of Footing Dimensions F1 & F2	Single OW	Single RL	Single K	Single W3	Double OW	Double RL	Double K	Double W3	Triple OW	Triple RL	Triple K	Triple W3	Quadruple OW	Quadruple RL	Quadruple K	Quadruple W3	Quintuple OW	Quintuple RL	Quintuple K	Quintuple W3
W-X452-1, W-X453-1 or W-X454-1 (For H=8'0" or less)	4'	2'	2'-3 1/4"	5'-0"	7'-0 7/8"	9'-0 7/8"	4'-9 5/8"	9'-8"	13'-8"	15'-8"	11'-4 7/8"	14'-4"	20'-3 1/4"	22'-3 1/4"	18'-0"	19'-0"	26'-10 1/2"	28'-10 1/2"	24'-7 1/4"	23'-8"	33'-5 5/8"	35'-5 5/8"	31'-2 1/2"
		3'	3'-3 1/4"	5'-0"	"	"	3'-9 5/8"	9'-8"	"	"	10'-4 7/8"	14'-4"	"	"	17'-0"	19'-0"	"	"	23'-7 1/4"	23'-8"	"	"	30'-2 1/2"
		4'	4'-3 1/4"	5'-0"	"	"	2'-9 5/8"	9'-8"	"	"	9'-4 7/8"	14'-4"	"	"	16'-0"	19'-0"	"	"	22'-7 1/4"	23'-8"	"	"	29'-2 1/2"
		5'	5'-3 1/4"	5'-0"	7'-0 7/8"	9'-0 7/8"	1'-9 5/8"	9'-8"	13'-8"	15'-8"	8'-4 7/8"	14'-4"	20'-3 1/4"	22'-3 1/4"	15'-0"	19'-0"	26'-10 1/2"	28'-10 1/2"	21'-7 1/4"	23'-8"	33'-5 5/8"	35'-5 5/8"	28'-2 1/2"
		6'	6'-3 1/4"	5'-2"	7'-3 5/8"	9'-3 5/8"	1'-0 3/8"	9'-11"	14'-0 1/4"	16'-0 1/4"	7'-9 5/8"	14'-8"	20'-8 7/8"	22'-9"	14'-5 5/8"	18'-5"	27'-5 1/2"	29'-5 1/2"	21'-2 1/4"	24'-2"	34'-2 1/8"	36'-2"	27'-10 7/8"
	5'	3'	3'-3 1/4"	6'-0"	8'-5 7/8"	10'-5 7/8"	5'-2 5/8"	11'-8"	16'-6"	18'-6"	13'-2 3/4"	17'-4"	24'-6 1/2"	26'-6 1/2"	21'-3"	23'-0"	32'-6 3/8"	34'-6 3/8"	29'-3"	28'-8"	40'-6 1/2"	42'-6 1/2"	37'-3 1/2"
		4'	4'-3 1/4"	6'-0"	"	"	4'-2 5/8"	11'-8"	"	"	12'-2 3/4"	17'-4"	"	"	20'-3"	23'-0"	"	"	28'-3"	28'-8"	"	"	36'-3 1/2"
		5'	5'-3 1/4"	6'-0"	8'-5 7/8"	10'-5 7/8"	3'-2 5/8"	11'-8"	16'-6"	18'-6"	11'-2 3/4"	17'-4"	24'-6 1/2"	26'-6 1/2"	19'-3"	23'-0"	32'-6 3/8"	34'-6 3/8"	27'-3"	28'-8"	40'-6 1/2"	42'-6 1/2"	35'-3 1/2"
		6'	6'-3 1/4"	6'-2"	8'-8 5/8"	10'-8 5/8"	2'-5 3/8"	11'-11"	16'-10 1/4"	18'-10 1/4"	10'-7"	17'-8"	24'-11 7/8"	27'-0"	18'-8 3/4"	23'-5"	33'-1 3/8"	35'-1 1/2"	26'-10 1/4"	29'-2"	41'-3"	43'-3"	34'-11 3/4"
		7'	7'-9 1/4"	6'-3"	8'-10 1/8"	10'-10 1/8"	1'-0 7/8"	12'-1"	17'-1"	19'-1"	9'-3 3/8"	17'-11"	25'-4"	27'-4"	17'-6 3/4"	23'-9"	33'-7"	35'-7"	26'-9 3/4"	29'-7"	41'-10"	43'-10"	34'-0 3/4"
	6'	3'	3'-3 1/4"	7'-0"	9'-10 3/4"	11'-10 3/4"	6'-7 1/2"	13'-8"	19'-3 7/8"	21'-4"	16'-0 3/4"	20'-4"	28'-9 1/2"	30'-9"	25'-5 3/4"	27'-0"	38'-2 1/4"	40'-2 1/4"	34'-11"	33'-8"	47'-7 3/8"	49'-7 3/8"	44'-4"
		4'	4'-3 1/4"	7'-0"	"	"	5'-7 1/2"	13'-8"	"	"	15'-0 3/4"	20'-4"	"	"	24'-5 3/4"	27'-0"	"	"	33'-11"	33'-8"	"	"	43'-4"
		5'	5'-3 1/4"	7'-0"	9'-10 3/4"	11'-10 3/4"	4'-7 1/2"	13'-8"	19'-3 7/8"	21'-4"	14'-0 3/4"	20'-4"	28'-9 1/2"	30'-9"	23'-5 3/4"	27'-0"	38'-2 1/4"	40'-2 1/4"	32'-11"	33'-8"	47'-7 3/8"	49'-7 3/8"	42'-4"
		6'	6'-3 1/4"	7'-2"	10'-1 3/8"	12'-1 1/2"	3'-10 3/8"	13'-11"	19'-8 1/8"	21'-8 1/4"	13'-5"	20'-8"	29'-2 3/4"	31'-2 3/4"	22'-11 1/4"	27'-5"	38'-9 1/4"	40'-9 1/4"	32'-6"	34'-2"	48'-3 7/8"	50'-3 7/8"	42'-0 1/2"
		7'	7'-9 1/4"	7'-3"	10'-3"	12'-3"	2'-5 3/8"	14'-1"	19'-11"	21'-11"	12'-1 3/4"	20'-11"	29'-7"	31'-7"	21'-9 3/4"	27'-9"	39'-3"	41'-3"	31'-5 3/4"	34'-7"	48'-10 5/8"	50'-11"	41'-1 3/4"
		8'	9'-3 1/4"	7'-4"	10'-4 1/2"	12'-4 1/2"	1'-1 1/4"	14'-2"	20'-0 3/8"	22'-0 1/2"	10'-9 1/4"	21'-0"	29'-8 3/8"	31'-8 1/2"	20'-5 1/4"	27'-10"	39'-4 3/8"	41'-5 1/4"	30'-1"	34'-8"	49'-0 1/4"	51'-0 1/4"	39'-9"
	7'	4'	4'-3 1/4"	8'-0"	11'-3 3/4"	13'-3 3/4"	7'-0 1/2"	15'-8"	22'-1 5/8"	24'-1 3/4"	17'-10 1/2"	23'-4"	33'-0"	35'-0"	28'-8 3/4"	31'-0"	43'-10 1/8"	45'-10"	39'-6 3/4"	38'-8"	54'-8 1/4"	56'-8 1/4"	50'-5"
		5'	5'-3 1/4"	8'-0"	11'-3 3/4"	13'-3 3/4"	6'-0 1/2"	15'-8"	22'-1 5/8"	24'-1 3/4"	16'-10 1/2"	23'-4"	33'-0"	35'-0"	27'-8 3/4"	31'-0"	43'-10 1/8"	45'-10"	38'-6 3/4"	38'-8"	54'-8 1/4"	56'-8 1/4"	49'-5"
		6'	6'-3 1/4"	8'-2"	11'-6 5/8"	13'-6 1/2"	5'-3 3/8"	15'-11"	22'-6 1/8"	24'-6"	16'-2 3/4"	23'-8"	33'-5 5/8"	35'-5 1/2"	27'-2 1/4"	31'-5"	44'-5 1/8"	46'-5 1/2"	38'-2"	39'-2"	55'-4 5/8"	57'-4 5/8"	49'-1 1/4"
		7'	7'-9 1/4"	8'-3"	11'-8"	13'-8"	3'-10 3/4"	16'-1"	22'-9"	24'-9"	14'-11 3/4"	23'-11"	33'-9 7/8"	35'-10"	26'-0 3/4"	31'-9"	44'-10 1/4"	46'-10 3/4"	37'-1 1/4"	39'-7"	56'-1 3/8"	57'-11 3/4"	49'-2 1/4"
		8'	9'-3 1/4"	8'-4"	11'-9 3/8"	13'-9 1/2"	2'-6 1/4"	16'-2"	22'-10 3/8"	24'-10 1/2"	13'-7"	24'-0"	33'-11 1/2"	35'-11 1/2"	24'-8"	31'-10"	45'-0 1/4"	47'-0 1/4"	35'-9"	39'-8"	56'-1 1/2"	58'-1 1/4"	46'-10"
	8'	4'	4'-3 1/4"	9'-0"	12'-8 3/4"	14'-8 3/4"	8'-5 1/2"	17'-8"	24'-11 7/8"	26'-11 3/4"	20'-8 1/4"	26'-4"	37'-2 7/8"	39'-3"	32'-11 3/4"	35'-0"	49'-6"	51'-6"	45'-2 3/4"	43'-8"	61'-9"	63'-9"	57'-5 3/4"
		5'	5'-3 1/4"	9'-2"	12'-11 5/8"	14'-11 1/2"	7'-8 3/8"	17'-11"	25'-4"	27'-4"	20'-0 3/4"	26'-8"	37'-8 1/2"	39'-8 1/2"	32'-5 3/4"	35'-5"	50'-1"	52'-1"	44'-9 3/4"	44'-2"	62'-5 1/2"	64'-5 1/2"	57'-2 1/2"
		6'	6'-3 1/4"	9'-2"	12'-11 5/8"	14'-11 1/2"	6'-8 3/8"	17'-11"	25'-4"	27'-4"	19'-0 3/4"	26'-8"	37'-8 1/2"	39'-8 1/2"	31'-5 3/4"	35'-5"	50'-1"	52'-1"	43'-9 3/4"	44'-2"	62'-5 1/2"	64'-5 1/2"	56'-2 1/2"
		7'	7'-9 1/4"	9'-3"	13'-1"	15'-1"	5'-3 3/4"	18'-1"	25'-6 7/8"	27'-7"	17'-9 3/4"	26'-11"	38'-0 3/4"	40'-0 3/4"	30'-3 1/2"	35'-9"	50'-6 5/8"	52'-6 3/4"	42'-9 1/2"	44'-7"	63'-0 5/8"	65'-0 1/2"	55'-3 1/2"
		8'	9'-3 1/4"	9'-4"	13'-2 1/2"	15'-2 1/2"	3'-11 1/4"	18'-2"	25'-8 1/4"	27'-8 1/4"	16'-5"	27'-0"	38'-2 1/4"	40'-2 1/4"	28'-11"	35'-10"	50'-8"	52'-8"	41'-5"	44'-8"	63'-2"	65'-2"	53'-10 3/4"
	9'	5'	5'-3 1/4"	10'-2"	14'-4 1/2"	16'-4 1/2"	9'-1 1/4"	19'-11"	28'-2"	30'-2"	22'-10 3/4"	29'-8"	41'-11 1/2"	43'-11 1/2"	36'-8 1/4"	39'-5"	55'-8 3/8"	57'-9"	50'-5 3/4"	49'-2"	69'-6 3/8"	71'-6 1/2"	64'-3 1/4"
		6'	6'-3 1/4"	10'-3"	14'-6"	16'-6"	8'-2 3/4"	20'-1"	28'-4 7/8"	30'-4 3/4"	22'-1 1/2"	29'-11"	42'-3 3/4"	44'-3 3/4"	36'-0 1/2"	39'-9"	56'-2 5/8"	58'-2 1/2"	49'-11 1/2"	49'-7"	70'-1 1/2"	72'-1 1/2"	63'-10 1/4"
		7'	7'-9 1/4"	10'-3"	14'-6"	16'-6"	6'-8 3/4"	20'-1"	28'-4 7/8"	30'-4 3/4"	20'-7 1/2"	29'-11"	42'-3 3/4"	44'-3 3/4"	34'-6 1/2"	39'-9"	56'-2 5/8"	58'-2 1/2"	48'-5 1/2"	49'-7"	70'-1 1/2"	72'-1 1/2"	62'-4 1/4"
		8'	9'-3 1/4"	10'-4"	14'-7 3/8"	16'-7 3/8"	5'-4 1/8"	20'-2"	28'-6 1/4"	30'-6 1/4"	19'-3"	30'-0"	42'-5 3/8"	44'-5"	33'-2"	39'-10"	56'-4"	58'-4"	47'-0 3/4"	49'-8"	70'-2 3/8"	72'-3"	60'-11 3/4"
	10'	5'	5'-3 1/4"	11'-2"	15'-9 1/2"	17'-9 1/2"	10'-6 1/4"	21'-11"	31'-0"	33'-0"	25'-8 3/4"	32'-8"	46'-2 3/8"	48'-2 1/2"	40'-11"	43'-5"	61'-4 7/8"	63'-4 7/8"	56'-1 1/2"	54'-2"	76'-7 1/2"	78'-7 1/2"	71'-4"
		6'	6'-3 1/4"	11'-3"	15'-11"	17'-11"	9'-7 3/4"	22'-1"	31'-2 3/4"	33'-2 3/4"	24'-11 1/2"	32'-11"	46'-6 5/8"	48'-6 1/2"	40'-3 1/2"	43'-9"	61'-10 1/2"	63'-10 1/2"	55'-7 1/4"	54'-7"	77'-2 1/4"	79'-2 1/4"	70'-11"
		7'	7'-9 1/4"	11'-3"	15'-11"	17'-11"	8'-1 3/4"	22'-1"	31'-2 3/4"	33'-2 3/4"	23'-5 1/2"	32'-11"	46'-6 5/8"	48'-6 1/2"	38'-9 3/4"	43'-9"	61'-10 1/2"	63'-10 1/2"	54'-1 1/4"	54'-7"	77'-2 1/4"	79'-2 1/4"	69'-5"
		8'	9'-3 1/4"	11'-4"	16'-0 3/8"	18'-0 1/2"	6'-9 1/4"	22'-2"	31'-4 1/8"	33'-4 1/4"	22'-1"	33'-0"	46'-8"	48'-8"	37'-4 3/4"	43'-10"	61'-11 7/8"	64'-0"	52'-8 3/4"	54'-8"	77'-3 3/4"	79'-3 3/4"	68'-0 1/2"
	11'	6'	6'-3 1/4"	12'-4"	17'-5 1/4"	19'-5 1/4"	11'-2 1/8"	24'-2"	34'-2 1/8"	36'-2"	27'-11"	36'-0"	50'-11"	52'-11"	44'-7 3/4"	47'-10"	67'-7 3/4"	69'-7 3/4"	61'-4 1/2"	—	—	—	—
		7'	7'-9 1/4"	12'-4"	"	"	9'-8 1/8"	24'-2"	"	"	26'-5"	36'-0"	"	"	43'-1 3/4"	47'-10"	"	"	59'-10 1/2"	—	—	—	—
		8'	9'-3 1/4"	12'-4"	"	"	8'-2 1/8"	24'-2"	"	"	24'-11"	36'-0"	"	"	41'-7 3/4"	47'-10"	"	"	58'-4 1/2"	—	—	—	—
	12'	6'	6'-3 1/4"	13'-4"	18'-10 1/4"	20'-10 1/4"	12'-7 1/8"	26'-2"	37'-0 1/8"	39'-0"	30'-8 3/4"	39'-0"	55'-1 3/8"	57'-1 1/2"	48'-10 1/4"	51'-10"	73'-3 5/8"	75'-3 3/4"	67'-0 1/2"	—	—	—	—
		7'	7'-9 1/4"	13'-4"	"	"	11'-1 1/8"	26'-2"	"	"	29'-2 3/4"	39'-0"	"	"	47'-4 3/4"	51'-10"	"	"	65'-6 1/2"	—	—	—	—
		8'	9'-3 1/4"	13'-4"	"	"	9'-7 1/8"	26'-2"	"	"	27'-8 3/4"	39'-0"	"	"	45'-10 3/4"	51'-10"	"	"	64'-0 1/2"	—	—	—	—
W-X452-2, W-X453-2 or W-X454-2 (For H=9'0" & over)	7'	9'	10'-9 1/4"	8'-6"	12'-0 1/4"	14'-0 1/4"	1'-3"	16'-5"	23'-2 5/8"	25'-2 1/2"	12'-5 3/4"	24'-4"	34'-5"	36'-5"	23'-7 3/4"	32'-3"	45'-7 1/2"	47'-7 1/2"	34'-10"	40'-2"	56'-9 3/4"	58'-9 3/4"	46'-0 1/2"
	8'	9'	10'-9 1/4"	9'-6"	13'-5 1/4"	15'-5 1/4"	2'-8"	18'-5"	26'-0 1/2"	28'-0 1/2"	15'-3 1/4"	27'-4"	38'-7 7/8"	40'-8"	27'-10 3/4"	36'-3"	51'-3 1/2"	53'-3 1/2"	40'-6"	45'-2"	63'-10 1/2"	65'-10 1/2"	53'-1 1/4"
		10'	12'-3 1/4"	9'-8"	13'-8"	15'-8"	1'-4 7/8"	18'-8"	26'-4 3/4"	28'-4 3/4"	14'-1 1/2"	27'-8"	39'-1 1/2"	41'-1 1/2"	26'-10 1/4"	36'-8"	51'-10 1/2"	53'-10 1/2"	39'-7"	45'-8"	64'-7"	66'-7"	52'-3 3/4"
	9'	9'	10'-9 1/4"	10'-6"	14'-10 1/4"	16'-10 1/4"	4'-1"	20'-5"	28'-10 1/4"	30'-10 1/4"	18'-1 1/4"	30'-4"	42'-10 3/4"	44'-10 3/4"	32'-1 1/2"	40'-3"	56'-11 3/8"	58'-11"	46'-1 3/4"	50'-2"	70'-11 3/4"	72'-11 1/2"	60'-2 1/4"
		10'	12'-3 1/4"	10'-8"	15'-1"	17'-1"	2'-9 3/4"	20'-8"	29'-2 3/4"	31'-2 3/4"	16'-11 1/2"	30'-8"	43'-4 3/4"	45'-4 1/2"	31'-1 1/4"	40'-8"	57'-6 3/8"	59'-6 1/2"	45'-3"	50'-8"	71'-7 3/4"	73'-7 3/4"	59'-4 1/2"
		11'	13'-9 1/4"	10'-10"	15'-3 7/8"	17'-3 3/4"	1'-6 5/8"	20'-10"	29'-5 1/4"	31'-5 1/4"	15'-8 1/4"	30'-10"	43'-7 3/4"	45'-7 3/4"	29'-10"	40'-10"	57'-9"	59'-9"	43'-11 3/4"	50'-10"	71'-10 3/4"	73'-10 3/4"	58'-1 1/2"
	10'	9'	10'-9 1/4"	11'-6"	16'-3 1/8"	18'-3 1/2"	5'-6"	22'-5"	31'-8 3/8"	33'-8 1/2"	20'-11 1/4"	33'-4"	47'-1 5/8"	49'-1 3/4"	36'-4 1/4"	44'-3"	62'-7"	64'-7"	51'-9 3/4"	55'-2"	78'-0 1/2"	80'-0 1/2"	67'-3"
		10'	12'-3 1/4"	11'-8"	16'-6"	18'-6"	4'-2 3/4"	22'-8"	32'-0 5/8"	34'-0 3/4"	19'-9 1/2"	33'-8"	47'-7 5/8"	49'-7 1/2"	35'-4 3/4"	44'-8"	63'-2"	65'-2"	50'-10 3/4"	55'-8"	78'-8 3/4"	80'-8 3/4"	66'-5 1/2"
		11'	13'-9 1/4"	11'-10"	16'-8 7/8"	18'-8 3/4"	2'-11 5/8"	22'-10"	32'-3 1/2"	34'-3 1/2"	18'-6 1/4"	33'-10"	47'-10 5/8"	49'-10 1/2"	34'-1"	44'-10"	63'-4 7/8"	65'-5"	49'-7 3/4"	55'-10"	78'-11 1/2"	80'-11 1/2"	66'-2 1/4"
		12'	15'-3 1/4"	12'-0"	16'-11 5/8"	18'-11 5/8"	1'-8 3/4"	23'-0"	32'-6 3/8"	34'-6 1/2"	17'-3"	34'-0"	48'-1"	50'-1"	32'-9 3/4"	45'-0"	63'-7 5/8"	65'-7 3/4"	48'-4 1/2"	56'-0"	79'-2 3/8"	81'-2 1/4"	68'-11 1/4"
	11'	9'	10'-9 1/4"	12'-6"	17'-8 1/8"	19'-8 1/2"	6'-10 7/8"	24'-5"	34'-6 3/8"	36'-6 1/4"	23'-9 1/4"	36'-4"	51'-4 5/8"	53'-4 1/2"	40'-7 1/4"	48'-3"	68'-2 3/8"	70'-2 1/4"	57'-5 1/4"	—	—	—	—
		10'	12'-3 1/4"	12'-8"	17'-11"	19'-11"	5'-7 3/4"	24'-8"	34'-10 5/8"	36'-10 1/2"	22'-7 1/2"	36'-8"	51'-10 1/2"	53'-10 1/2"	39'-7"	48'-8"	68'-9 7/8"	70'-10"	56'-6 3/4"	—	—	—	—
		11'	13'-9 1/4"	12'-10"	18'-1 3/4"	20'-1 3/4"	4'-4 1/2"	24'-10"	35'-1 3/8"	37'-1 1/2"	21'-4 1/4"	36'-10"	52'-1 1/8"	54'-1"	38'-3 3/4"	48'-10"	69'-0 3/4"	71'-0 3/4"	55'-3 1/4"	—	—	—	—
		12'	15'-3 1/4"	13'-0"	18'-4 5/8"	20'-4 1/2"	3'-1 3/8"	25'-0"	35'-4 1/8"	37'-4 1/4"	20'-1"	37'-0"	52'-3 7/8"	54'-4"	37'-0 3/4"	49'-0"	69'-3 3/8"	71'-3 1/2"	54'-0 1/4"	—	—	—	—
	12'	9'	10'-9 1/4"	13'-6"	19'-1 1/8"	21'-1"	8'-3 7/8"	26'-5"	37'-4 1/4"	39'-4 1/4"	26'-7"	39'-4"	55'-7 5/8"	57'-7 1/2"	44'-10 1/4"	52'-3"	73'-10 3/4"	75'-10 3/4"	68'-1 1/4"	—	—	—	—
		10'	12'-3 1/4"	13'-8"	19'-3 7/8"	21'-4"	7'-0 3/4"	26'-8"	37'-8 5/8"	39'-8 1/2"	25'-5 1/4"	39'-8"	56'-1 1/8"	58'-1"	43'-10"	52'-8"	74'-5 3/4"	76'-5 3/4"	62'-2 1/2"	—	—	—	—
		11'	13'-9 1/4"	13'-10"	19'-6 3/4"	21'-6 3/4"	5'-9 1/2"	26'-10"	37'-11 3/8"	39'-11 1/2"	24'-2 1/4"	39'-10"	56'-4"	58'-4"	42'-6 3/4"	52'-10"	74'-8 5/8"	76'-8 1/2"	60'-11 1/4"	—	—	—	—
		12'	15'-3 1/4"	14'-0"	19'-9 5/8"	21'-9 1/2"	4'-6 3/8"	27'-0"	38'-2 1/4"	40'-2 1/4"	22'-11"	40'-0"	56'-6 7/8"	58'-6 3/4"	41'-3 1/2"	53'-0"	74'-11 1/2"	76'-11 1/2"	59'-8 1/4"	—	—	—	—



PART PLAN

END ELEVATION

TRIPLE BARREL CULVERT - 45° SKEW RIGHT FORWARD
Details of Culvert with 45° Skew Left Forward is reversed, see Layout at top center of sheet.



PART HALF PLAN - SHOWING SHORT WING

PART HALF PLAN - SHOWING LONG WING

PART END ELEVATION

QUADRUPLE BARREL CULVERT - 45° SKEW RT. FWD.
Details of Culvert with 45° Skew Left Forward is reversed, see Layout at above center.

PART END ELEVATION

QUINTUPLE BARREL CULVERT - 45° SKEW RT. FWD.
Details of Culvert with 45° Skew Left Forward is reversed, see Layout above.

Note:- The length of the wings for the Plans, Elevations, and Layouts, as drawn, are proportioned for 3:1 slopes. For 2:1 slopes the wings are proportionally shorter, while for 4:1 slopes they are longer.

Note:- Plans and Elevations are not to scale.

NOTE:- This drawing to be used in conjunction with Standard Wing Drawings for 45° Skews for each slope as listed below.

2:1 Slopes	3:1 Slopes	4:1 Slopes
W-X452-1 or W-X452-2	W-X453-1 or W-X453-2	W-X454-1 or W-X454-2.

NOTE:- This drawing to be used in conjunction with Standard Barrel Sections, Drawing Nos.-

SINGLES	DOUBLES	TRIPLES	QUADRUPLES	QUINTUPLES
R-145X-0	R-245X-01	R-345X-01	R-445X-01	R-545X-01
	R-245X-02	R-345X-02	R-445X-02	R-545X-02
R-145X-1	R-245X-1	R-345X-1	R-445X-1	
	R-245X-2	R-345X-2		

CLASS S CONCRETE

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF STANDARD WINGS FOR REINFORCED CONCRETE BOX CULVERTS 45° SKEW

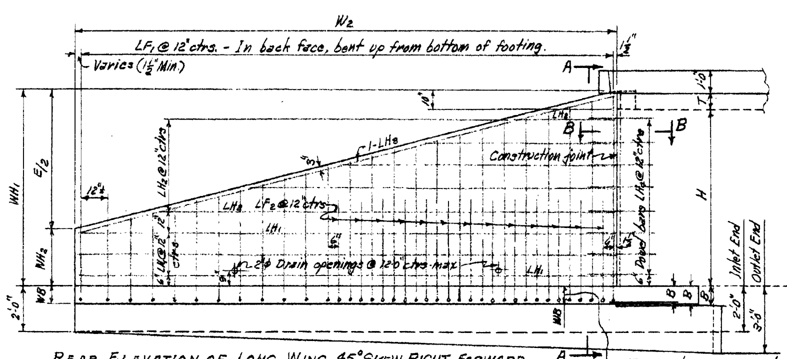
4', 5', 6', 7', 8', 9', 10', 11' & 12' SPANS — 2:1, 3:1 & 4:1 SLOPES
SINGLES, DOUBLES, TRIPLES, QUADRUPLES & QUINTUPLES — ALL DEPTHS OF COVER
H = 2', 3', 4', 5', 6', 7', 8', 9', 10', 11' & 12'

STANDARD DRAWING No. W-X45

Designed by:- W.C.H. 5-16-63 Checked by:-
Drawn by:- W.C.H. 6-15-64 Checked by:- J.E.M. 6-23-64
Quantities by:- Checked by:-

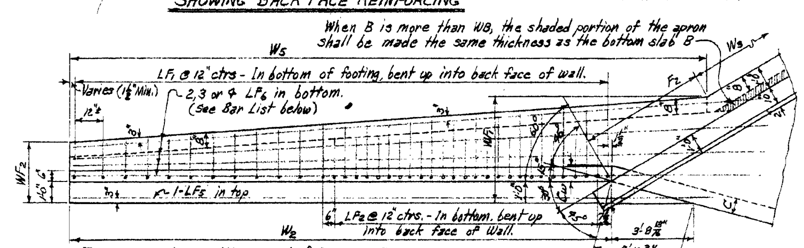
Reshot 3-8-93 427

FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			196	
JOB No.					

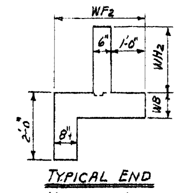


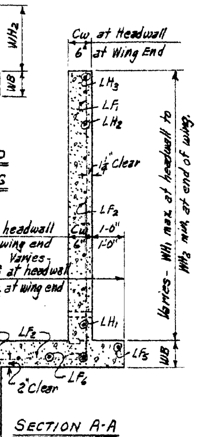
REAR ELEVATION OF LONG WING - 45° SKEW RIGHT FORWARD - SHOWING BACK FACE REINFORCING

When B is more than WB, the shaded portion of the apron shall be made the same thickness as the bottom slab B.

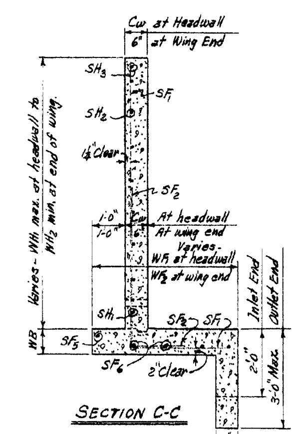


PLAN OF LONG WING - 45° SKEW RIGHT FORWARD - SHOWING FOOTING REINFORCING

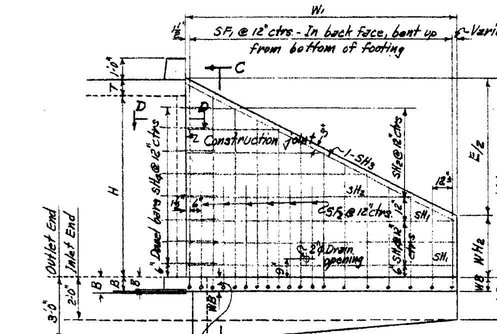

TYPICAL END VIEW OF WING



SECTION A-A



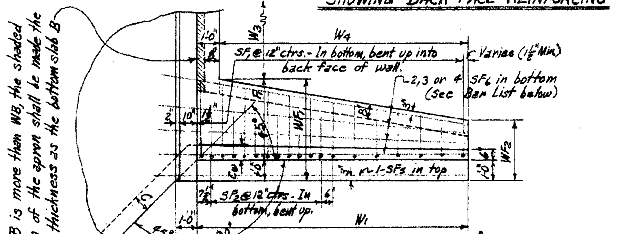
SECTION C-C



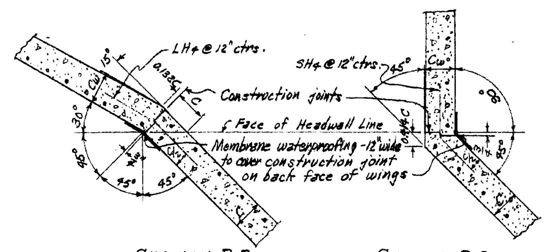
WB may be more, equal to, or less than the bottom slab B

REAR ELEVATION OF SHORT WING - 45° SKEW RT. FWD. SHOWING BACK FACE REINFORCING

When B is more than WB, the shaded portion of the apron shall be made the same thickness as the bottom slab B.



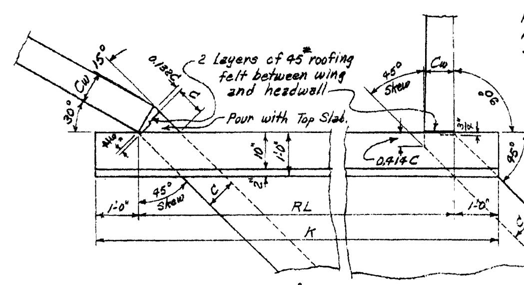
PLAN OF SHORT WING - 45° SKEW RT. FWD. SHOWING FOOTING REINFORCING



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 - 45° SKEW RIGHT FORWARD

REGULAR WING DIMENSIONS - 2:1 SLOPES

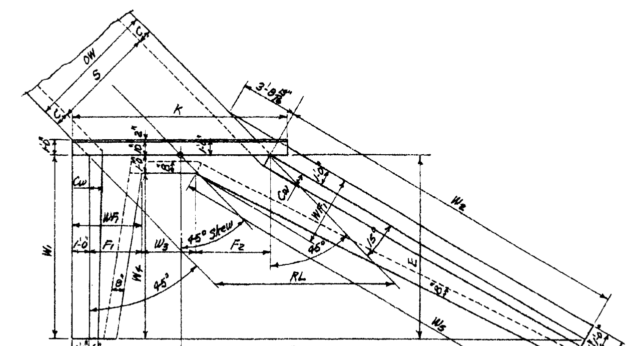
Clear Height of Box	Thickness of Wing Footing	Thickness of Wing at Hdwl. = C	Wingwall Heights: At Headwall	Wingwall Heights: At End of Wing	Widths of Wing Footings: At Headwall	Widths of Wing Footings: At End of Wing	Footing Dimension Parallel with Headwall: Short Wing	Footing Dimension Parallel with Headwall: Long Wing	Perpendicular Dist. from Hdwl. to End of Wing	Lengths of Wingwalls: Short Wing	Lengths of Wingwalls: Long Wing	Inside Footing Dimensions: Short Wing	Inside Footing Dimensions: Long Wing	* Quantity per Wing, Class S Concrete, Inlet End: Short Wing	Inlet End: Long Wing	Outlet End: Short Wing	Outlet End: Long Wing
H	WB	Cw	WH_1	WH_2	WF_1	WF_2	F_1	F_2	E	W_1	W_2	W_4	W_5	Cu.Yd.	Cu.Yd.	Cu.Yd.	Cu.Yd.
2'	7"	6"	2'-10"	0'-8"	2'-4"	2'-0"	1'-4"	0'-11 1/4"	4'-4"	4'-4"	8'-8"	3'-4"	8'-11 3/4"	0.495	1.077	0.553	1.193
3'	7"	6"	3'-10"	1'-0"	2'-8"	2'-1 1/2"	1'-8"	1'-7 1/4"	5'-8"	5'-8"	11'-4"	4'-8"	12'-2 3/4"	0.748	1.619	0.821	1.775
4'	7"	6"	4'-10"	1'-4"	3'-0"	2'-3"	2'-0"	2'-3 1/2"	7'-0"	7'-0"	14'-0"	6'-0"	15'-5 1/2"	1.046	2.254	1.136	2.449
5'	7"	6"	5'-10"	1'-8"	3'-4"	2'-4 1/2"	2'-4"	2'-11 1/2"	8'-4"	8'-4"	16'-8"	7'-4"	18'-8 1/2"	1.391	2.983	1.498	3.219
		7"	5'-10"	1'-8"	3'-4"	2'-4 1/2"	2'-4"	2'-11 1/2"	8'-4"	8'-4"	16'-8"	7'-4"	18'-8 1/2"	1.446	3.110	1.553	3.345
6'	8"	7"	6'-10"	2'-0"	3'-8"	2'-6"	2'-8"	3'-7 1/2"	9'-8"	9'-8"	19'-4"	8'-8"	21'-11 1/2"	1.934	4.132	2.057	4.408
		7 1/2"	6'-10"	2'-0"	3'-8"	2'-6"	2'-8"	3'-7 1/2"	9'-8"	9'-8"	19'-4"	8'-8"	21'-11 1/2"	1.972	4.218	2.095	4.494
		8"	6'-10"	2'-0"	3'-8"	2'-6"	2'-8"	3'-7 1/2"	9'-8"	9'-8"	19'-4"	8'-8"	21'-11 1/2"	2.009	4.305	2.133	4.581
7'	8 1/2"	7 1/2"	7'-10"	2'-4"	4'-2"	2'-7 1/2"	3'-2"	4'-7 1/2"	11'-0"	11'-0"	22'-0"	10'-0"	25'-5 3/4"	2.536	5.411	2.676	5.731
		8"	7'-10"	2'-4"	4'-2"	2'-7 1/2"	3'-2"	4'-7 1/2"	11'-0"	11'-0"	22'-0"	10'-0"	25'-5 3/4"	2.586	5.523	2.726	5.843
8'	9"	8"	8'-10"	2'-8"	4'-8"	2'-9"	3'-8"	5'-7 1/4"	12'-4"	12'-4"	24'-8"	11'-4"	29'-0 1/4"	3.295	6.914	3.403	7.277

* Quantity per wing does not include headwall or that portion of apron or toewall for the length W_3.

QUANTITIES

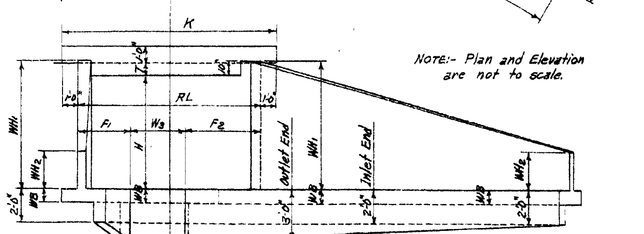
Clear Span	Clear Height	Thickness of Wing at Headwall	Thickness of Wing Footing	Reinforcing Steel ⊕ for 4 Wings	Class S Concrete - 4 Wings (Headwalls, Wingwalls, Footings, Toewalls and Aprons): Single Barrel Culvert	Double Barrel Culvert	Triple Barrel Culvert	Quadruple Barrel Culvert	Quintuple Barrel Culvert
S	H	Cw	WB	Lb.	Cu.Yd.	Cu.Yd.	Cu.Yd.	Cu.Yd.	Cu.Yd.
4'	2'	6"	7"	101	4.59	5.94	7.30	8.66	10.01
	3'	6"	7"	152	6.10	7.45	8.80	10.16	11.52
	4'	6"	7"	233	7.88	9.23	10.59	11.95	13.31
	5'	6"	7"	322	9.95	11.30	12.66	14.01	15.37
	6'	7"	8"	523	13.29	14.67	16.07	17.47	18.86
5'	3'	6"	7"	152	6.40	8.04	9.69	11.33	12.98
	4'	6"	7"	233	8.18	9.82	11.47	13.12	14.77
	5'	6"	7"	322	10.25	11.89	13.54	15.19	16.83
	6'	7"	8"	523	13.59	15.27	16.96	18.65	20.34
	7'	7½"	8½"	1025	17.22	18.93	20.66	22.38	24.10
6'	3'	6"	7"	152	6.69	8.65	10.57	12.52	14.95
	4'	6"	7"	233	8.48	10.43	12.35	14.31	16.23
	5'	6"	7"	322	10.54	12.50	14.42	16.37	18.30
	6'	7"	8"	523	13.87	15.88	17.85	19.84	21.82
	7'	7½"	8½"	1025	17.52	19.54	21.55	23.57	25.59
	8'	8"	9"	1287	21.81	23.85	25.86	27.89	29.92
7'	4'	6"	7"	233	8.78	11.06	13.28	15.56	17.76
	5'	6"	7"	322	10.85	13.12	15.35	17.62	19.83
	6'	7"	8"	523	14.20	16.49	18.75	21.04	23.30
	7'	7½"	8½"	1025	17.83	20.15	22.45	24.77	27.07
	8'	8"	9"	1287	22.13	24.46	26.77	29.10	31.42
8'	4'	6"	7"	233	9.10	11.69	14.23	16.83	19.32
	5'	7"	7"	322	11.57	14.19	16.76	19.38	21.90
	6'	7"	8"	523	14.51	17.13	19.69	22.31	24.83
	7'	7½"	8½"	1025	18.14	20.78	23.38	26.02	28.56
	8'	8"	9"	1287	22.44	25.08	27.67	30.32	32.91
9'	5'	7"	7"	322	11.89	14.84	17.71	20.55	23.44
	6'	7½"	8"	523	15.10	18.07	20.96	23.83	26.74
	7'	7½"	8½"	1025	18.45	21.48	24.32	27.19	30.11
	8'	8"	9"	1287	22.74	25.71	28.61	31.48	34.40
10'	5'	7"	7"	322	12.22	15.48	18.67	21.79	25.00
	6'	7½"	8"	523	15.42	18.71	21.92	25.07	28.30
	7'	7½"	8½"	1025	18.77	22.07	25.28	28.43	31.66
	8'	8"	9"	1287	23.06	26.36	29.57	32.73	35.96
11'	6'	8"	8"	523	16.00	19.65	23.17	26.66	—
	7'	8"	8½"	1025	19.42	23.08	26.60	30.09	—
	8'	8"	9"	1287	23.36	27.02	30.54	34.04	—
12'	6'	8"	8"	523	16.32	20.33	24.16	28.01	—
	7'	8"	8½"	1025	19.75	23.75	27.58	31.43	—
	8'	8"	9"	1287	23.68	27.69	31.52	35.38	—

⊕ For reinforcing steel in Headwalls and Aprons, see Drawing Nos. of Barrel Sections listed below.



PART PLAN

Note:- Plan and Elevation are not to scale.



END ELEVATION

SINGLE BARREL CULVERT - 45° SKEW RIGHT FORWARD

Details of Culvert with 45° Skew Left Forward is reversed, see Drawing No. W-X45.

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-X45.
For values of RL, K and W_3 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 in wings.

REVISIONS:- Membrane Added. 5-10-66 W.C.H.

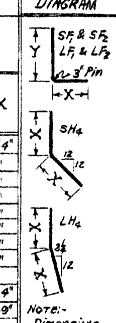
BAR LIST FOR ONE SHORT AND ONE LONG WING - 2 EACH REQUIRED

(SF_1 & LF_1 — Bent — In bottom of footing, bent up into back face of wing. One bar of each length. SF_2 & LF_2 — Bent — In bottom of footing, bent up into back face of wing. Alt. with F_1 bars.)

Clear Height H	Wing Location (Short or Long)	SF_1 & LF_1: Size	Spacing	No. Req'd	Lengths Vary Min.	Lengths Vary Max.	X Min.	X Max.	Y Min.	Y Max.	SF_2 & LF_2: Size	Spacing	No. Req'd	Length	X	Y
2'	Short	#3	12"	5	1'-6"	3'-11"	0'-8"	1'-1"	0'-11"	2'-11"	—	—	—	—	—	—
	Long	#3	12"	9	1'-7"	3'-11"	0'-8"	1'-0"	1'-0"	3'-0"	—	—	—	—	—	—
3'	Short	#3	12"	6	2'-2"	5'-3"	0'-10"	1'-5"	1'-5"	3'-11"	—	—	—	—	—	—
	Long	#3	12"	12	2'-0"	5'-3"	0'-10"	1'-4"	1'-3"	4'-0"	—	—	—	—	—	—
4'	Short	#3	12"	8	2'-3"	6'-7"	0'-11"	1'-9"	1'-5"	4'-11"	—	—	—	—	—	—
	Long	#3	12"	15	2'-4"	6'-6"	0'-11"	1'-7"	1'-6"	5'-0"	—	—	—	—	—	—
5'	Short	#3	12"	9	2'-10"	7'-11"	1'-0"	2'-1"	1'-11"	5'-11"	#3	12"	2	3'-6"	1'-1"	2'-6"
	Long	#3	12"	17	2'-11"	7'-10"	1'-0"	1'-11"	2'-0"	6'-0"	#3	12"	5	3'-6"	1'-1"	2'-6"
6'	Short	#4	12"	10	3'-7"	9'-4"	1'-2"	2'-5"	2'-6"	7'-0"	#3	12"	2	4'-6"	1'-4"	3'-3"
	Long	#4	12"	20	3'-5"	9'-3"	1'-2"	2'-3"	2'-4"	7'-1"	#3	12"	5	4'-6"	1'-4"	3'-3"
7'	Short	#4	12"	12	3'-8"	10'-10"	1'-3"	2'-11"	2'-6"	8'-0"	#4	12"	4	5'-6"	1'-7"	4'-0"
	Long	#4	12"	23	3'-9"	10'-8"	1'-8"	2'-8"	2'-7"	8'-1"	#4	12"	9	5'-6"	1'-7"	4'-0"
8'	Short	#4	12"	13	4'-5"	12'-5"	1'-5"	3'-5"	3'-1"	9'-1"	#4	12"	6	6'-6"	1'-10"	4'-9"
	Long	#4	12"	25	4'-6"	12'-2"	1'-5"	3'-1"	3'-2"	9'-2"	#4	12"	13	6'-6"	1'-10"	4'-9"

(SF_5 & LF_5 — Straight — Longitudinal in top of wing footing heel. SF_6 & LF_6 — Straight — Longitudinal in bottom of wing footing toe. SH_1 & LH_1 — Straight — Horizontal in back face of wing. SH_2 & LH_2 — Straight — Horizontal in back face of wing. One bar of each length. SH_3 & LH_3 — Straight — In back face of wing at top - on slope. SH_4 & LH_4 — Bent — Dowels thru construction joint at headwall. Quantity — Reinforcing Steel per Wing - Lbs.)

H	Short or Long	SF_5 & LF_5: Size	No. Req'd	Length	SF_6 & LF_6: Size	No. Req'd	Length	SH_1 & LH_1: Size	Spacing	No. Req'd	Length	SH_2 & LH_2: Size	Spacing	No. Req'd	Lengths Vary Max.	Lengths Vary Min.	SH_3 & LH_3: Size	No. Req'd	Length	SH_4 & LH_4: Size	Spacing	No. Req'd	Length	X	Quantity: Short Wing	Quantity: Long Wing
2'	Short	#3	1	6'-2"	#3	2	6'-0"	#3	12"	1	4'-1"	#3	12"	1	—	2'-2"	#3	1	4'-6"	#3	12"	2	2'-8"	1'-4"	18.0	32.7
	Long	#3	1	13'-2"	#3	2	11'-2"	#3	12"	1	8'-4"	#3	12"	1	—	4'-4"	#3	1	8'-8"	#3	12"	2	"	"		
3'	Short	#3	1	7'-6"	#3	2	7'-4"	#3	12"	1	5'-5"	#3	12"	2	4'-2"	2'-2"	#3	1	6'-0"	#3	12"	3	"	"	26.4	49.4
	Long	#3	1	15'-10"	#3	2	14'-6"	#3	12"	1	11'-0"	#3	12"	2	8'-4"	4'-4"	#3	1	11'-5"	#3	12"	3	"	"		
4'	Short	#3	1	8'-10"	#3	3	8'-8"	#3	12"	1	6'-9"	#3	12"	3	6'-2"	2'-2"	#3	1	7'-6"	#3	12"	4	"	"	40.5	75.9
	Long	#3	1	18'-6"	#3	3	17'-10"	#3	12"	1	13'-8"	#3	12"	3	12'-4"	4'-4"	#3	1	14'-3"	#3	12"	4	"	"		
5'	Short	#3	1	10'-2"	#3	3	10'-0"	#3	12"	2	8'-1"	#3	12"	3	6'-2"	2'-2"	#3	1	9'-0"	#3	12"	5	"	"	55.1	105.8
	Long	#3	1	21'-2"	#3	3	21'-2"	#3	12"	2	16'-4"	#3	12"	3	12'-4"	4'-4"	#3	1	16'-11"	#3	12"	5	"	"		
6'	Short	#3	1	11'-6"	#3	3	11'-4"	#3	12"	2	9'-5"	#3	12"	4	8'-2"	2'-2"	#3	1	10'-6"	#3	12"	6	"		88.5	172.9
	Long	#3	1	23'-10"	#3	3	24'-6"	#3	12"	2	19'-0"	#3	12"	4	16'-4"	4'-4"	#3	1	19'-8"	#3	12"	6	2'-8"	1'-4"		
7'	Short	#4	1	12'-10"	#4	4	12'-8"	#4	12"	2	10'-9"	#4	12"	5	10'-2"	2'-2"	#4	1	12'-0"	#4	12"	7	3'-6"	1'-9"	174.8	337.8
	Long	#4	1	26'-6"	#4	4	28'-0"	#4	12"	2	21'-8"	#4	12"	5	20'-4"	4'-4"	#4	1	22'-5"	#4	12"	7	"	"		
8'	Short	#4	1	14'-2"	#4	4	14'-0"	#4	12"	3	12'-1"	#4	12"	5	10'-2"	2'-2"	#4	1	13'-6"	#4	12"	8	"	"	218.5	424.7
	Long	#4	1	29'-2"	#4	4	31'-6"	#4	12"	3	24'-4"	#4	12"	5	20'-4"	4'-4"	#4	1	25'-2"	#4	12"	8	3'-6"	1'-9"		



BAR BENDING DIAGRAM

Note:- Dimensions are to bar centers.

NOTE:- Bars for Short wing shall be marked with prefix letter 'S', while those for long wing shall be marked with letter 'L'.

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-145X-0	R-245X-01	R-345X-01	R-445X-01	R-545X-01
	R-245X-02	R-345X-02	R-445X-02	R-545X-02
R-145X-1	R-245X-1	R-345X-1	R-445X-1	
	R-245X-2	R-345X-2		

CLASS S CONCRETE

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF STANDARD WINGS
FOR
REINFORCED CONCRETE BOX CULVERTS
45° SKEW

4', 5', 6', 7', 8', 9', 10', 11' & 12' SPANS — 2:1 SLOPES
SINGLES, DOUBLES, TRIPLES, — ALL DEPTHS OF COVER
QUADRUPLES & QUINTUPLES. — FOR H = 8'-0" OR LESS

STANDARD DRAWING No. W-X452-1

Designed By:- W.C.H. 5-13-63 Checked By:- JEM 7-14-64
Drawn By:- W.C.H. 6-2-64 Checked By:- JEM 7-14-64
Quantities By:-

76

RESHOT 3-9-83

229

BAR LIST FOR BARREL SECTION 60'-0" IN LENGTH - TWO 45° SKEWED ENDS

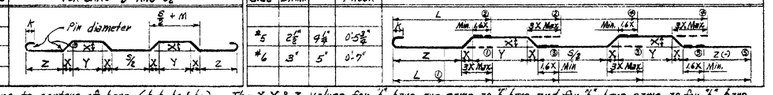
FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			187	
JOB No.					

DEPTH OF COVER	CLEAR SPAN	CLEAR HEIGHT	'a' bars STRAIGHT In Top and Bottom Slab of Barrel.				'a1' bars STRAIGHT In Top and Bottom Slab of Barrel. (Four of Each Length)				'b' bars BENT - See Diagrams below. In Bottom of Top Slab bent up over Division Walls - hooked. Alternate with 'a' and 'c' bars.								'b1' bars BENT - See Diagrams below. In Bottom of Top Slab - some bent up over Division Walls - one end hooked (2 of Each Length). Alternate with 'a1' and 'c' bars.							
						LENGTH				LENGTH				L		L				LENGTH				L		L
D	S	H	SIZE	SPACING	No. REQ'D		SIZE	SPACING	No. REQ'D		SIZE	SPACING	No. REQ'D	LENGTH	X	Y	Z	MAX.	MIN.	MAX.	MIN.	SIZE	SPACING	No. REQ'D		SIZE	SPACING	No. REQ'D	
0'-0" TO 5'-0" MAXIMUM	3 @ 4'-0"	2'	#5	12"	96	14'-1"	#5	12"	44	16'-4"	#5	12"	45	15'-8"	0'-3"	2'-2"	3'-4½"					#5	12"	20	14'-8"	3'-0"	13'-6"	2'-6"
		3'			96	14'-1"			44	" "			45	15'-9"	"	"	"							24	" "	"	"	"
		4'			96	14'-1"			44	" "			45	15'-9"	"	"	"							24	" "	"	"	"
		5'			96	14'-1"			44	" "			45	15'-9"	"	"	"							24	" "	"	"	"
		6'			94	14'-5"			44	16'-5"	2'-5"		45	15'-8"	0'-3"	2'-8"	3'-5⅝"							24	14'-8"	3'-6"	13'-10"	2'-10"
	3 @ 5'-0"	3'			90	17'-1"			54	16'-1"	3'-1"		42	18'-5"	0'-3½"	2'-7"	4'-1½"							30	17'-5"	3'-0"	16'-4"	2'-6"
		4'			90	17'-1"			54	" "	"		42	18'-5"	"	"	"							30	" "	"	"	"
		5'	#6	12"	90	17'-1"	#6	12"	54	" "	"		42	18'-5"	"	"	"							30	" "	"	"	"
		6'			88	17'-5"			60	16'-5"	2'-5"		42	18'-9"	"	2'-8"	3'-10⅝"							30	17'-9"	3'-3"	16'-10"	2'-10"
		7'			88	17'-8"			60	16'-8"	2'-8"		42	19'-0"	0'-3½"	2'-9"	4'-0⅝"							30	18'-0"	3'-7"	17'-1"	3'-1"
	3 @ 6'-0"	3'			90	20'-1"			76	19'-2"	2'-8"		43	21'-6"	0'-4"	3'-0"	4'-10⅝"							38	20'-9"	3'-7"	19'-7"	3'-1"
		4'			90	20'-1"			76	" "	"		43	21'-6"	"	"	"							38	" "	"	"	"
		5'	#6	11"	90	20'-1"	#6	11"	76	" "	"		43	21'-6"	"	"	"							38	" "	"	"	"
		6'			90	20'-5"			76	19'-6"	3'-0"		42	22'-0"	"	3'-1"	4'-11⅝"							40	20'-11"	3'-8"	19'-11"	2'-6"
		7'			90	20'-8"			80	19'-9"	2'-6"		42	22'-3"	"	3'-2"	4'-11½"							40	21'-2"	3'-3"	20'-2"	2'-9"
		8'			90	20'-8"			80	19'-10"	2'-5"		42	22'-2"	0'-9"	3'-2"	5'-0⅝"							40	21'-2"	3'-4"	20'-3"	2'-10"
	3 @ 7'-0"	4'			78	23'-1"			80	22'-1"	3'-1"		36	24'-8"	0'-4½"	3'-5"	5'-7"							38	23'-8"	3'-1"	22'-6"	2'-4"
		5'			78	23'-1"			80	" "	"		36	24'-8"	"	"	"							38	24'-0"	"	"	"
		6'	#6	12"	76	23'-5"	#6	12"	84	22'-5"	2'-5"		36	25'-0"	"	3'-6"	5'-8"					#6	12"	42	24'-6"	3'-5"	22'-10"	2'-10"
		7'			76	23'-8"			84	22'-8"	2'-8"		36	25'-3"	"	3'-7"	5'-8½"							42	24'-8"	3'-8"	23'-1"	3'-1"
		8'			76	23'-9"			84	22'-9"	2'-9"		36	25'-4"	"	"	5'-9"							42	24'-9"	3'-8½"	23'-2"	3'-2"
		9'			76	24'-1"			84	23'-1"	3'-1"		36	25'-8"	0'-4½"	3'-8"	5'-10"							44	24'-8"	3'-11"	23'-6"	2'-6"
	3 @ 8'-0"	4'			78	26'-1"			100	25'-6"	3'-2"		36	27'-9"	0'-5"	3'-10"	6'-4"							52	26'-9"	3'-9"	25'-7"	2'-8"
		5'			76	26'-5"			104	25'-6"	2'-7"		36	27'-4"	0'-7"	3'-9"	6'-5"							52	27'-1"	3'-7"	25'-11"	3'-0"
		6'	#6	11"	76	26'-6"	#6	11"	104	" "	"		36	28'-1"	"	"	"					#6	11"	52	" "	"	"	"
		7'			76	26'-8"			104	25'-9"	2'-8"		36	28'-4"	"	4'-0"	6'-6½"							52	27'-4"	3'-11"	26'-2"	2'-9"
		8'			76	26'-9"			104	25'-10"	2'-9"		36	28'-5"	"	"	6'-6"							52	27'-5"	3'-10"	26'-3"	2'-10"
		9'			76	27'-1"			104	26'-2"	3'-1"		36	28'-9"	0'-5"	4'-2"	6'-8"							52	27'-9"	3'-9"	26'-7"	2'-9"
		10'			74	27'-5"			104	26'-6"	3'-2"		35	29'-1"	0'-5"	4'-2"	6'-8"							52	28'-1"	3'-8"	26'-11"	3'-0"

DEPTH OF COVER	CLEAR SPAN	CLEAR HEIGHT	'b2' bars BENT - See Diagrams below. In Top of Bottom Slab bent down under Division Walls - hooked. Alternate with 'a' and 'c' bars.								'b3' bars BENT - See Diagrams below. In Top of Bottom Slab - some bent down under Division Walls - one end hooked (2 of Each Length). Alternate with 'a1' and 'c' bars.								'c' bars STRAIGHT In Top and Bottom Slab of Barrel. Alternate with 'b2' and 'b3' bars.				'c1' bars STRAIGHT In Top and Bottom Slab of Barrel. Alt. with 'b2' & 'b3' bars. (Four of Each Length)				'd' bars STRAIGHT Longitudinal in Top Slab of Barrel.			'd1' bars STRAIGHT Longitudinal in Sidewalls and Division Walls.			'd2' bars STRAIGHT Longitudinal in Bottom Slab of Barrel.			'e' bars STRAIGHT Verticals in Sidewalls and Division Walls.			'f' bars STRAIGHT			'f1' bars STRAIGHT In Bottom of Headwalls (3 of Each Length per Headwall)				'f2' bars STRAIGHT In Top of Headwalls and Aprons. (2 Each) ※			
						LENGTH		L						LENGTH		L				LENGTH																		LENGTH					
D	S	H	SIZE	SPACING	No. REQ'D		SIZE	SPACING	No. REQ'D	LENGTH	X	Y	Z		MAX.		MIN.	SIZE	SPACING	No. REQ'D		SIZE	SPACING	No. REQ'D	LENGTH	SIZE	SPACING	No. REQ'D	LENGTH	SIZE	SPACING	No. REQ'D	LENGTH	SIZE	SPACING	No. REQ'D		SIZE	SPACING	No. REQ'D		SIZE	SPACING	No. REQ'D		SIZE	No. REQ'D	
0'-0" TO 5'-0" MAXIMUM	3 @ 4'-0"	2'	#5	12"	20	14'-8"												#5	12"	24	14'-3"	3'-0"	13'-6"	2'-6"	#5	12"	104	9'-4"	#5	12"	28	8'-9"	2'-9"	#5	12"	12	#5	12"	22	#5	12"	360	2'-10"	#5	6	—	8	22'-0"
		3'			24	" "														24	" "	"	"	"			104	9'-4"			28	" "	"			18			22			360	3'-11"		6	—	8	"
		4'			24	" "														24	" "	"	"	"			104	9'-4"			28	" "	"			24			22			360	4'-10"		6	—	8	"
		5'			24	" "														24	" "	"	"	"			104	9'-4"			28	" "	"			30			22			360	5'-10"		6	—	8	"
		6'			24	14'-8"														24	14'-7"	3'-4"	13'-10"	2'-10"			102	9'-6"			28	9'-0"	3'-0"			36			22			360	6'-10"		6	20'-4"	8	22'-6"
	3 @ 5'-0"	3'			30	17'-5"														30	17'-6"	3'-0"	16'-6"	2'-6"			102	11'-4"			36	10'-3"	2'-3"			24			25			360	3'-11"		6	26'-1"	8	26'-3"
		4'			30	" "														30	" "	"	"	"			102	11'-4"			36	" "	"			30			25			360	4'-11"		6	"	8	"
		5'	#6	12"	30	" "												#5	12"	30	" "	"	"	"	#5	12"	102	11'-4"	#5	12"	36	" "	"	#5	11½"	24	#5	12"	25	#5	12"	360	5'-11"	#6	6	"	8	"
		6'			30	17'-9"														30	17'-8"	3'-3"	16'-10"	2'-10"			100	11'-8"			36	10'-6"	2'-4"			24			25			360	6'-11"		6	24'-7"	8	26'-9"
		7'			30	18'-0"														30	17'-11"	3'-7"	17'-1"	3'-1"			100	11'-8"			36	10'-8"	2'-8"			24			25			360	7'-11"		6	26'-11"	8	27'-1"
	3 @ 6'-0"	3'			38	20'-9"														38	20'-6"	3'-7"	19'-7"	3'-1"			102	13'-8"			48	12'-1"	3'-0"			30			28			360	4'-2"		6	28'-6"	8	30'-6"
		4'			38	" "														38	" "	"	"	"			102	13'-8"			48	" "	"			30			28			360	5'-0"		6	"	8	"
		5'	#6	11"	38	" "												#5	11½"	38	" "	"	"	"	#5	11½"	102	13'-8"	#5	11½"	48	" "	"	#5	11½"	30	#5	11½"	28	#5	11½"	360	6'-11"	#6	6	"	8	"
		6'			40	20'-11"														40	20'-10"	3'-8"	19'-11"	2'-6"			102	15'-6"			48	12'-11"	2'-8"			30			28			360	7'-10"		6	28'-10"	8	30'-12"
		7'			40	21'-2"														40	21'-1"	3'-8"	20'-2"	2'-9"			102	15'-6"			48	13'-0"	2'-9"			30			28			360	8'-10"		6	29'-2"	8	31'-4"
		8'			40	21'-3"														40	21'-2"	3'-9"	20'-3"	2'-10"			102	15'-6"			48	13'-0"	2'-9"			30			28			360	9'-10"		6	29'-3"	8	31'-5"
	3 @ 7'-0"	4'			42	23'-7"														42	23'-7"	3'-11"	22'-6"	2'-6"			94	15'-4"			52	14'-3"	2'-5"			32			31			360	5'-11"		12	22'-6"	16	18'-0"
		5'			42	" "														42	" "	"	"	"			94	15'-4"			52	" "	"			32			31			360	6'-7"		12	"	16	"
		6'	#6	12"	42	24'-6"												#5	12"	42	23'-11"	3'-5"	22'-10"	2'-10"	#5	12"	94	15'-6"	#5	12"	52	14'-6"	2'-6"	#5	11½"	32	#5	12"	31	#5	12"	360	7'-1"	#7	12	23'-2"	16	18'-9"
		7'			42	24'-8"														42	24'-3"	3'-8"	23'-1"	3'-1"			94	15'-8"			52	14'-8"	2'-8"			32			31			360	8'-1"		12	23'-5"	16	19'-1"
		8'			42	24'-9"														42	24'-3"	3'-8½"	23'-2"	3'-2"			94	15'-8"			52	14'-9"	2'-9"			32			31			360	9'-1"		12	23'-6"	16	19'-2"
		9'			44	24'-8"														44	24'-7"	3'-11"	23'-6"	2'-6"			94	15'-10"			52	15'-0"	3'-0"			32			31			360	10'-1"		12	23'-9"	16	19'-3"
	3 @ 8'-0"	4'			52	26'-9"														52	26'-9"	3'-9"	25'-7"	2'-8"			94	17'-4"			68	17'-2"	2'-6"			36			35			360	5'-2"		12	25'-0"	16	20'-8"
		5'			52	27'-4"														52	27'-3"	3'-7"	25'-11"	3'-0"			92	17'-6"			68	17'-5"	2'-9"			36			35			360	6'-2"		12	26'-0"	16	20'-11"
		6'	#6	11"	52	" "														52	" "	"	"	"			92	17'-6"			68	" "	"			36			35			360	7'-2"		12	" "	16	"
		7'			52	27'-9"														52	27'-8"	3'-11"	26'-2"	2'-9"			96	17'-8"			68	16'-11"	2'-11"			36			35			360	8'-2"		12	26'-2"	16	21'-1"
		8'			52	27'-5"														52	27'-5"	3'-10"	26'-3"	2'-10"			96	19'-5"			68	16'-9"	3'-0"			36			35			360	9'-2"		12	26'-4"	16	21'-2"
		9'			52	27'-9"														52	27'-9"	3'-9"	26'-7"	2'-9"			94	18'-5"			68	17'-3"	2'-7"			36			35			360	10'-2"		12	26'-7"	16	21'-3"
		10'			52	28'-1"														52	28'-1"	3'-8"	26'-11"	3'-0"			94	19'-5"			68	17'-8"	2'-7"			36			35			360	11'-2"		12	26'-11"	16	21'-5"

BAR SIZE	PIN DIAM.	K	ADD FOR 2 HOOKS
#5	2½"	4½"	0'-11⅝"
#6	3"	5"	1'-2"

BENDING DIAGRAM FOR BARS 'b' AND 'b2'

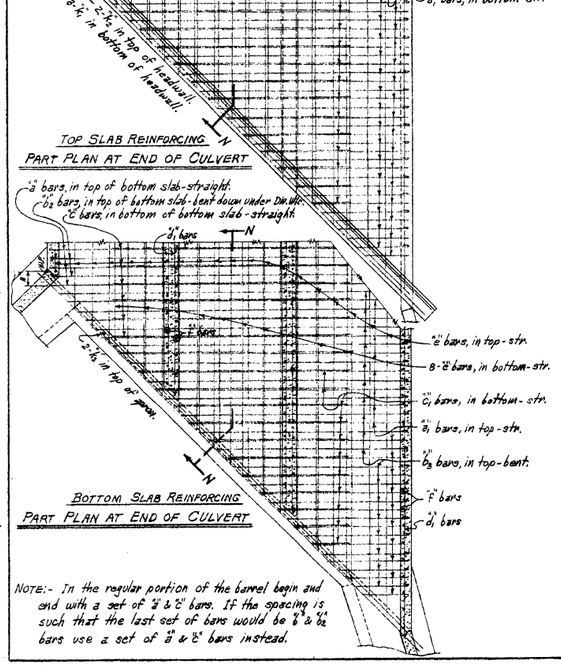


BAR SIZE	PIN DIAM.	K	ADD FOR 1 HOOK
#5	2½"	4½"	0'-5⅝"
#6	3"	5"	0'-7"

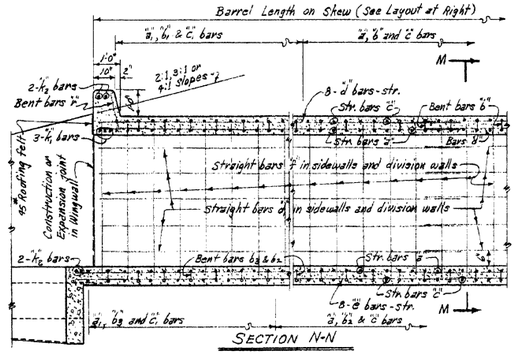
BENDING DIAGRAM FOR BARS 'b1' AND 'b3'

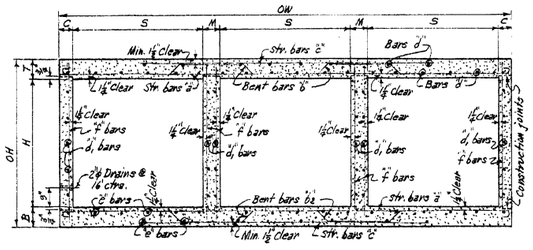
NOTE:- Dimensions are to centers of bars. ('b, b1, b2 & b3'). The X, Y & Z values for 'b1' bars are same as 'b' bars, and for 'b3' bars same as for 'b2' bars.
①①---④⑤ Min. & Max. Lengths of 'L' for bars 'b1' & 'b3' for each type bend

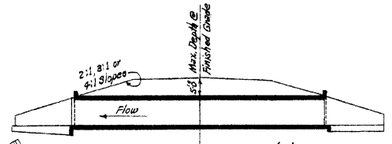
NOTE:- For Details of Standard Wings and bar lists, see Drawing No. W-X452-1 or W-X452-2; W-X395-1 or W-X453-2; and W-X454-1 or W-X454-2. Also W-X45.



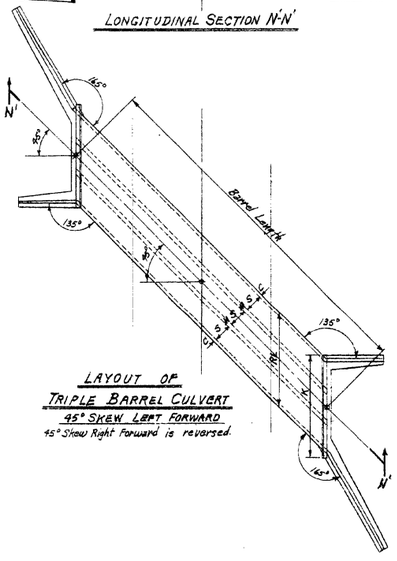
NOTE:- In the regular portion of the barrel begin and end with a set of 'a' & 'c' bars. If the spacing is such that the last set of bars would be 'b' & 'b2' bars use a set of 'a' & 'c' bars instead.







LONGITUDINAL SECTION N-N



LAYOUT OF TRIPLE BARREL CULVERT
45° SKEW LEFT FORWARD
45° Skew Right Forward is reversed.

'a' bars, in top of bottom slab - straight.
'b2' bars, in top of bottom slab - bent down under Div. Wall.
'c' bars, in bottom of bottom slab - straight.
'e' bars, in top - str.
8-'e' bars, in bottom - str.
'c1' bars, in bottom - str.
'a1' bars, in top - str.
'b3' bars, in top - bent.
'f' bars
'd' bars

Designed by:- W.C.H. 1-22-63.
Drawn by:- W.C.H. 7-20-64.
Quantities by:- W.C.H. 10-6-64.
Checked by:- R.H.S. 5-17-43
Checked by:-
Checked by:-

These bars are in the skewed portion of barrel only. The length of 'a1' and 'c1' bars and overall length 'L' of 'b' and 'b3' bars vary by 1'-6" for 12" spacing and 0'-11" for 11" spacing.

※ These bars are spliced to make full length bars; 'f1' bars being spliced at alt. division walls and 'f2' bars at center of center span.

BARREL DIMENSIONS

MAX. DESIGN DEPTH OF COVER	CLEAR SPANS	CLEAR HEIGHT	CLR. OPENING	OVERALL WIDTH	THICKNESS OF TOP SLAB	THICKNESS OF SIDEWALLS	THICKNESS OF DIVISION WALLS	THICKNESS OF BOTTOM SLAB	OVERALL HEIGHT	ROADWAY LENGTH	LENGTH OF HEADWALL
D	S	H	A	OW	T	C	M	B	OH	RL	K
5'-0"	3 @ 4'-0"	2'	24"	16'-4"	6½"	6"	8"	6"	3'-0½"	20'-3½"	22'-3⅝"
		3'	36"	16'-4"		6"	8"		4'-0½"	"	"
		4'	48"	16'-4"		6"	8"		5'-0½"	9'-9"	23'-3⅝"
		5'	60"	16'-4"		6"	8"		6'-0½"	"	"
		6'	72"	16'-5"		7"	9"		7'-0½"	20'-3½"	22'-9"
	3 @ 5'-0"	3'	36"	17'-0"	7"	6"	8"	6½"	4'-1½"	20'-6½"	23'-6"
		4'	48"	17'-0"		6"	8"		5'-1½"	"	"
		5'	60"	17'-0"		6"	8"		6'-1½"	9'-11"	23'-9"
		6'	72"	17'-1"		7"	9"		7'-1½"	20'-11½"	23'-10"
		7'	105"	17'-11"		7½"	10"		8'-1½"	21'-0"	24'-1"
	3 @ 6'-0"	3'	36"	20'-4"	7½"	6"	8"	7"	4'-2½"	20'-9½"	23'-9"
		4'	48"	20'-4"		6"	8"		5'-2½"	"	"
		5'	60"	20'-4"		6"	8"		6'-2½"	10'-1"	24'-0"
		6'	72"	20'-5"		7"	9"		7'-2½"	21'-0"	24'-2"
		7'	126"	20'-11"		7½"	10"		8'-2½"	21'-1"	24'-3"
		8'	144"	21'-0"		8"	10"		9'-2½"	21'-2"	24'-4"
	3 @ 7'-0"	4'	84"	23'-8"	8"	6"	8"	7½"	5'-3½"	33'-0"	35'-0"
		5'	105"	23'-8"		6"	8"		6'-3½"	"	"
		6'	126"	23'-8"		7"	9"		7'-3½"	33'-5"	35'-5"
		7'	147"	23'-11"		7½"	10"		8'-3½"	33'-6"	35'-10"
		8'	168"	24'-0"		8"	10"		9'-3½"	33'-11"	36'-1"
		9'	189"	24'-0"		9"	11"		10'-3½"	34'-5"	36'-5"
	3 @ 8'-0"	4'	96"	26'-4"	8½"	6"	8"	8"	5'-5½"	37'-2"	39'-3"
		5'	120"	26'-8"		7"	9"		6'-5½"	37'-3"	39'-8"
		6'	144"	26'-9"		7"	9"		7'-5½"	"	"
		7'	168"	26'-11"		7½"	10"		8'-5½"	38'-0"	40'-0"
		8'	192"	27'-0"		8"	10"		9'-5½"	38'-2"	40'-2"
		9'	216"	27'-4"		9"	11"		10'-5½"	38'-7"	40'-8"
		10'	240"	27'-8"		10"	12"		11'-5½"	39'-1"	41'-1"

* QUANTITIES — REINFORCING STEEL

CLASS 'S' CONC. OF BARREL	TOTAL FOR 60'-0" LENGTH OF BARREL	PER LIN. FT. OF BARREL	ADDITIONAL PER LIN. FT.
CU.YD.	LB.	LB.	LB.
0.726	8,819	137.76	66.63
0.812	9,804	149.78	71.69
0.899	9,783	153.79	76.15
0.985	10,278	161.81	81.66
1.158	14,904	171.56	86.67
0.981	12,493	195.23	81.10
1.065	12,978	203.25	86.11
1.154	13,963	211.27	91.12
1.329	16,099	221.98	96.13
1.503	19,669	231.27	101.14
1.169	15,085	236.39	90.56
1.256	15,520	244.41	95.57
1.362	16,005	252.92	100.58
1.517	14,667	262.84	105.59
1.698	17,318	272.79	110.60
1.829	18,274	288.48	115.61
1.980	18,175	279.99	101.55
1.566	18,660	288.01	106.56
1.748	19,302	298.53	111.57
1.819	19,958	308.55	116.58
2.056	20,846	328.34	121.59
2.294	22,998	350.27	126.60
1.727	21,371	330.89	111.85
1.893	21,981	341.66	116.86
1.992	22,766	349.65	121.87
2.148	23,135	359.85	126.88
2.304	24,049	375.76	131.89
2.545	25,632	402.04	136.90
2.810	26,774	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 33'-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.

DOWEL BARS FOR TWO HEADWALL

SPAN	SIZE	SPACING	No. REQ'D	LENGTH	X	Dowel Bars 'f' in Two Headwalls.
4'	#5	12"	42	2'-5"	1'-2⅝"	
5'	#5	12"	50	2'-6"	1'-3"	
6'	#5	12"	58	2'-7"	1'-3⅜"	
7'	#5	12"	68	2'-8"	1'-4"	
8'	#5	12"	76	2'-9"	1'-4⅜"	

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-X452-1 or W-X452-2, W-X395-1 or W-X453-2, and W-X454-1 or W-X454-2. Also W-X45.

CLASS S CONCRETE

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF STANDARD BARREL SECTIONS FOR REINFORCED CONCRETE BOX CULVERTS 45° SKEW

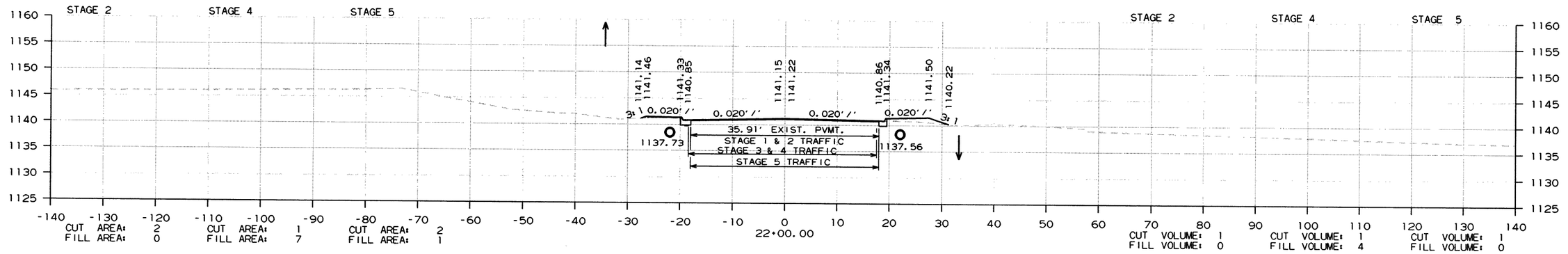
4', 5', 6', 7' AND 8' SPANS — 2:1, 3:1 OR 4:1 SLOPES
TRIPLES — UNDER 5'-0" COVER

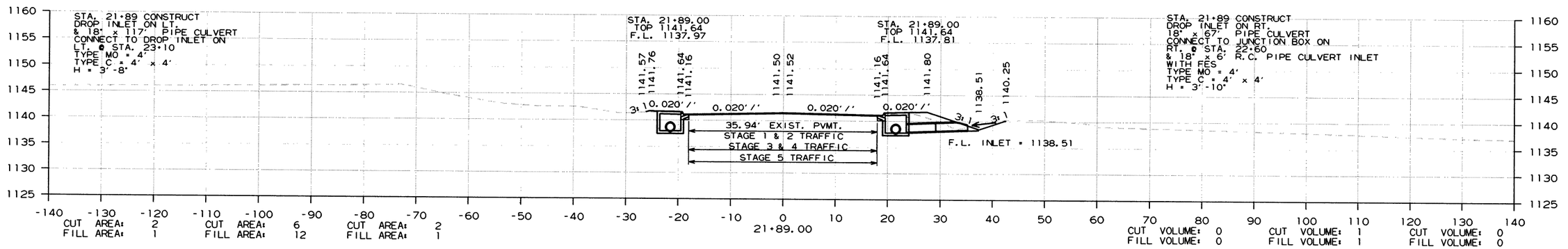
STANDARD DRAWING No. R-345X-01

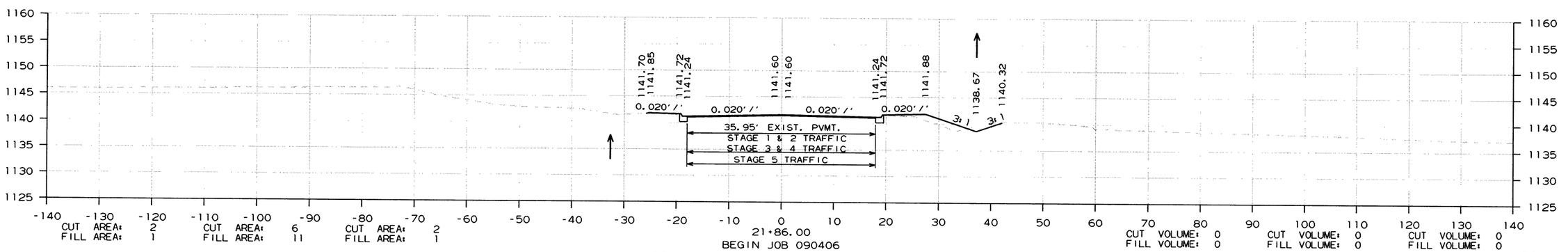
88

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	188	226

(2) CROSS SECTIONS







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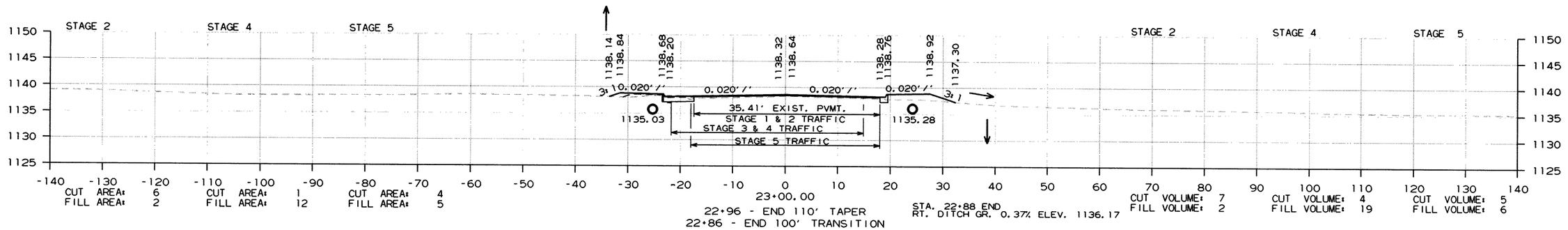
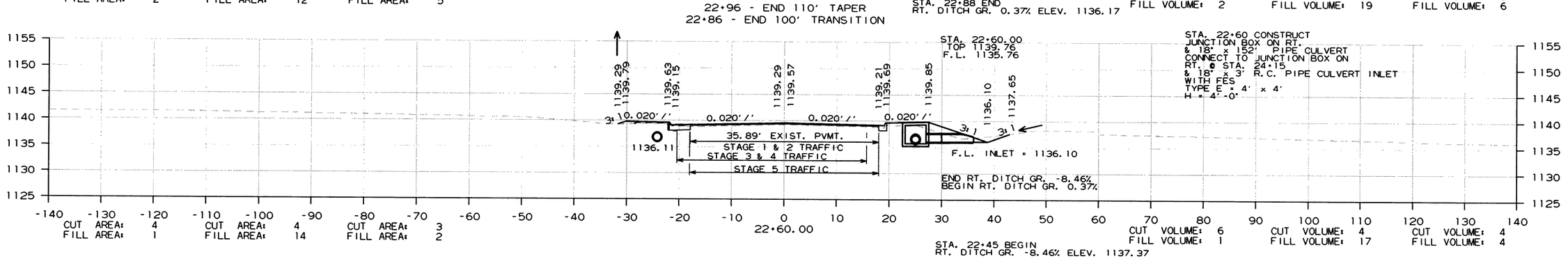
HWY. 43

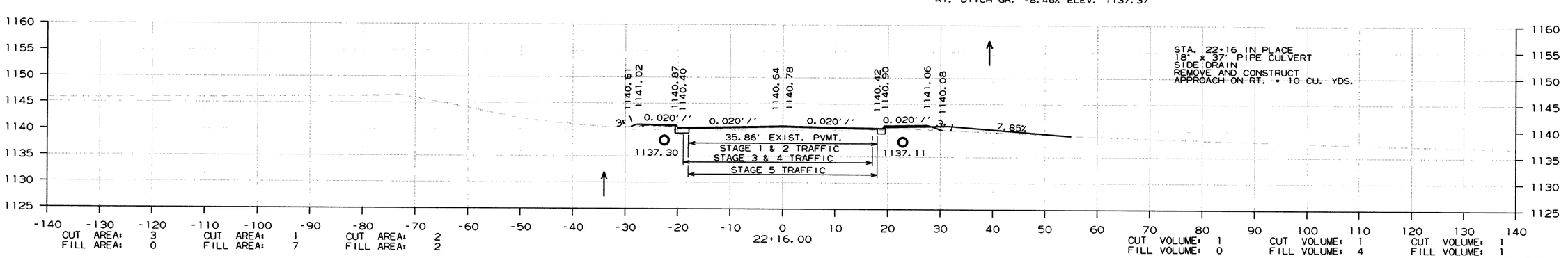
CROSS SECTION STA. 21+86.00 TO STA. 22+00.00

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	189	226

(2) CROSS SECTIONS







HWY. 43

CROSS SECTION STA. 22+16.00 TO STA. 23+00.00

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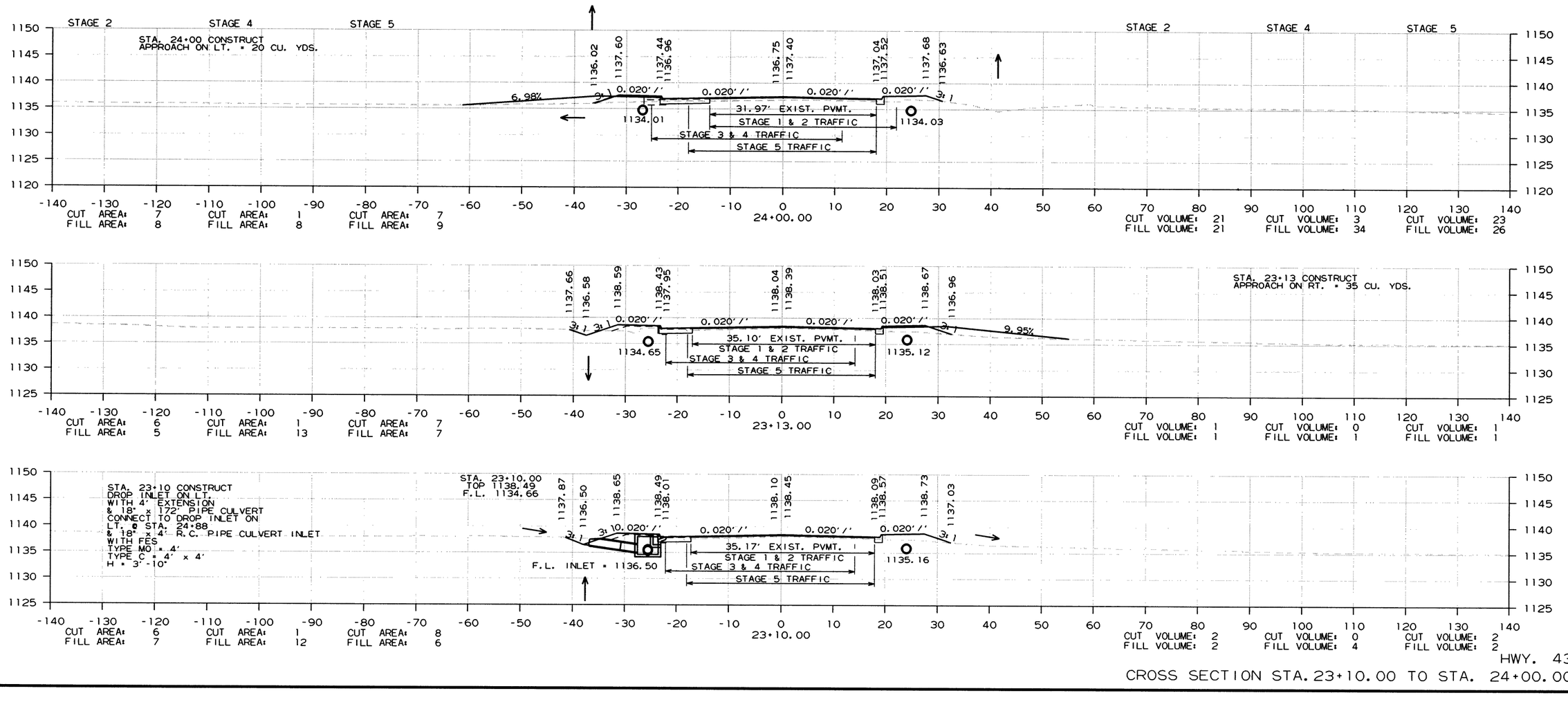
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	190	226

(2) CROSS SECTIONS



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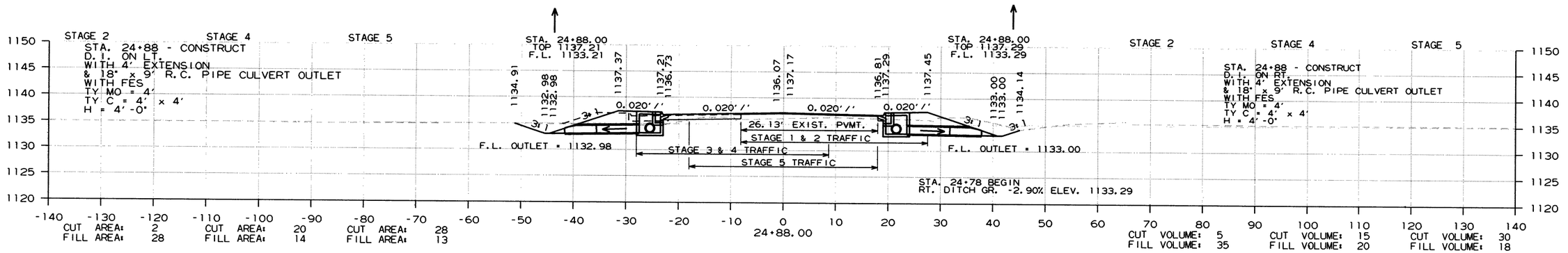
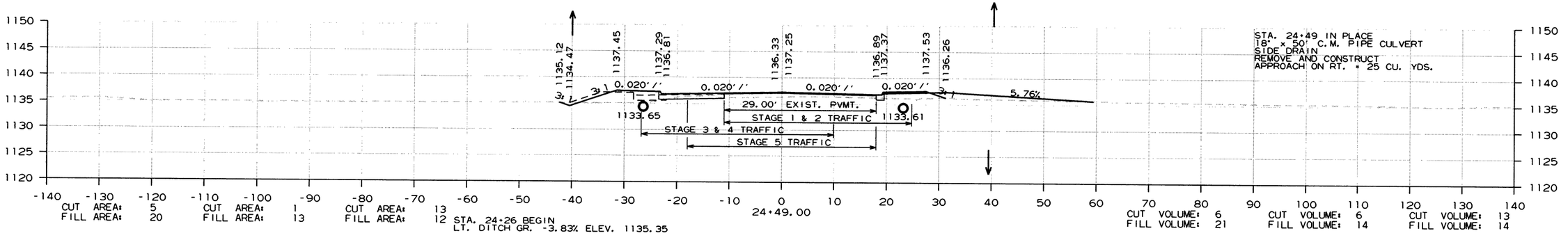
HWY. 43

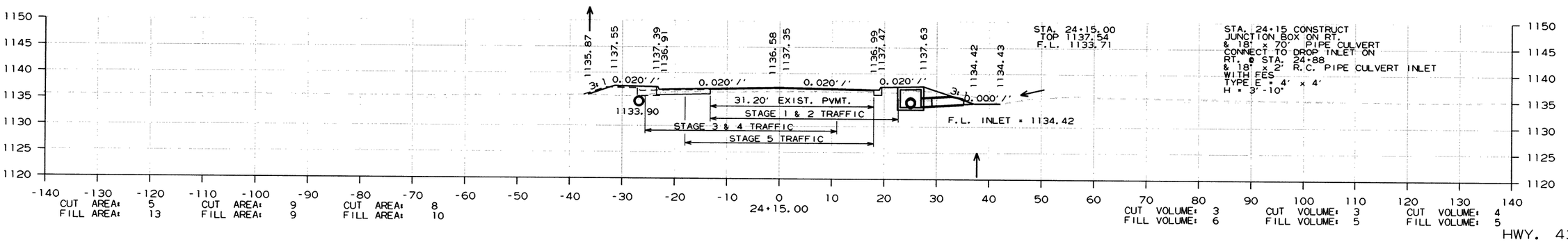
CROSS SECTION STA. 23+10.00 TO STA. 24+00.00

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	191	226

(2) CROSS SECTIONS







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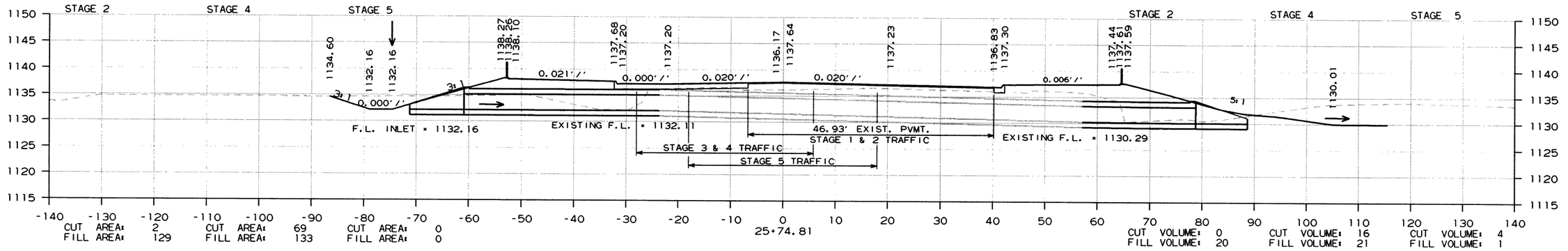
HWY. 43

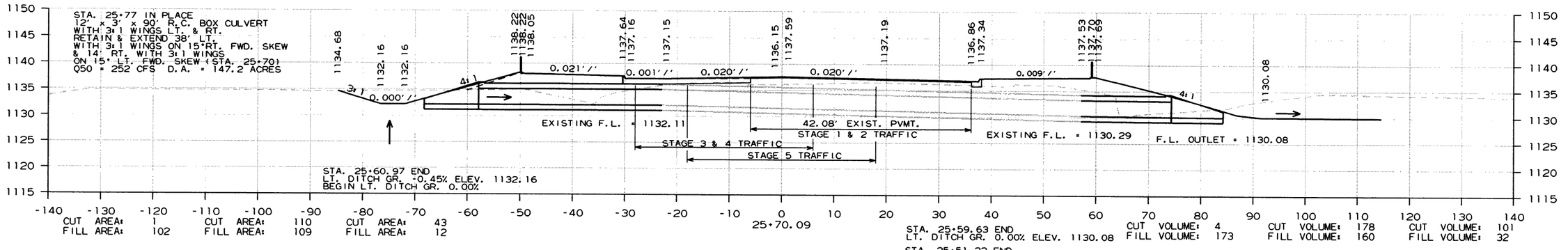
CROSS SECTION STA. 24+15.00 TO STA. 24+88.00

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	192	226

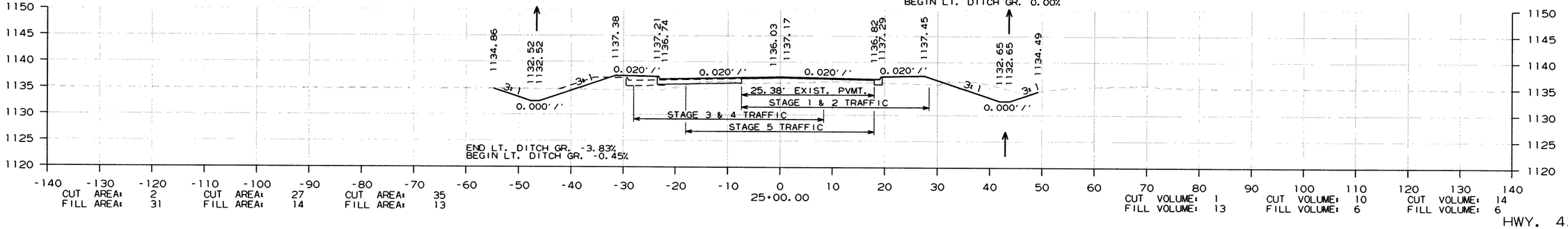
(2) CROSS SECTIONS

STA. 25+86.54 END
LT. DITCH GR. 0.00% ELEV. 1132.16





STA. 25+59.63 END
LT. DITCH GR. 0.00% ELEV. 1130.08
STA. 25+51.22 END
LT. DITCH GR. -2.90% ELEV. 1130.08
BEGIN LT. DITCH GR. 0.00%



HWY. 43
CROSS SECTION STA. 25+00.00 TO STA. 25+74.81

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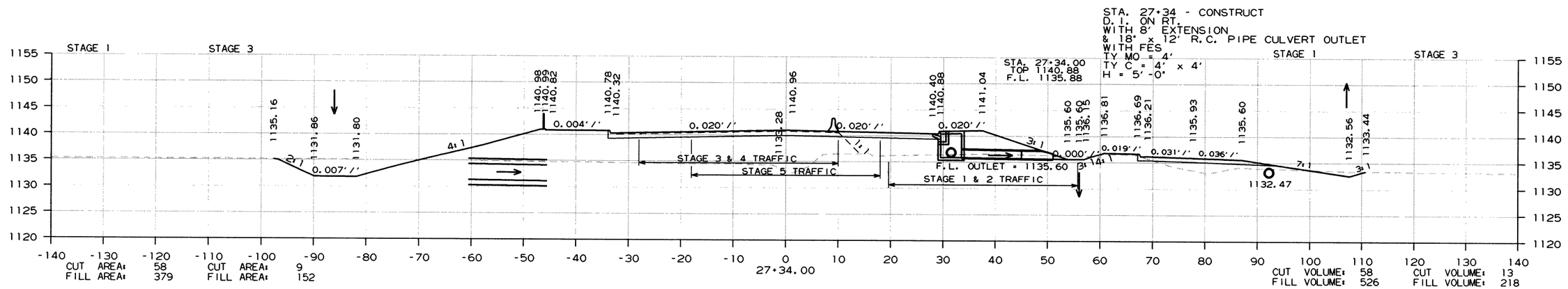
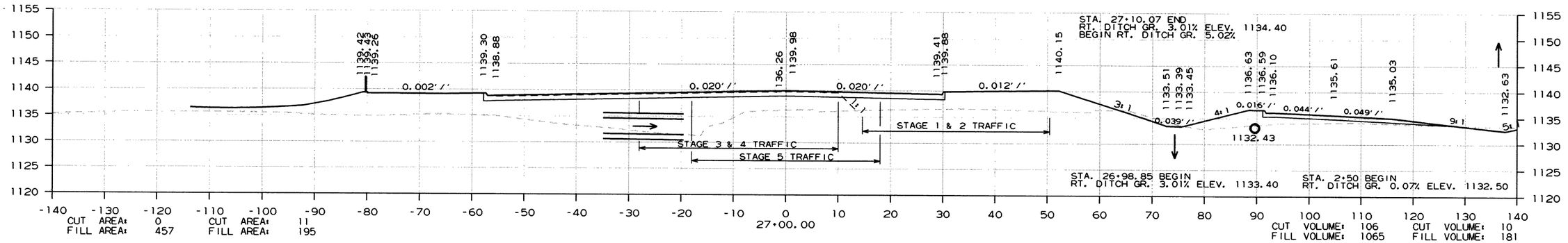
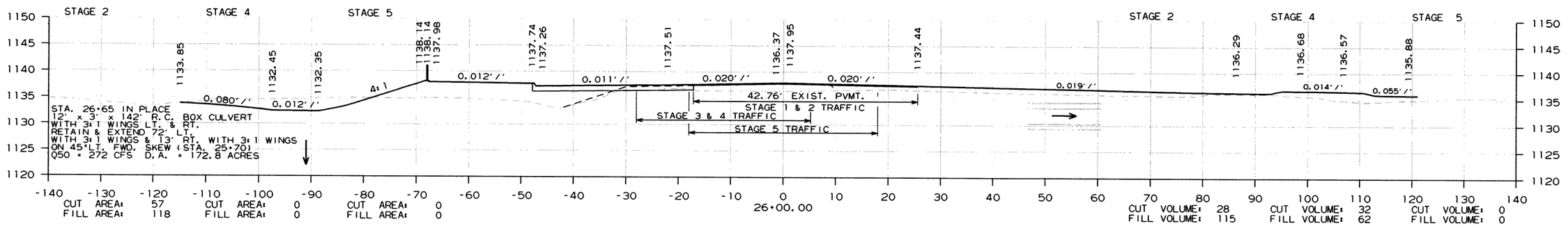
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	193	226

(2) CROSS SECTIONS

STA. 27+48 END
RT. DITCH GR. 5.02% ELEV. 1136.30







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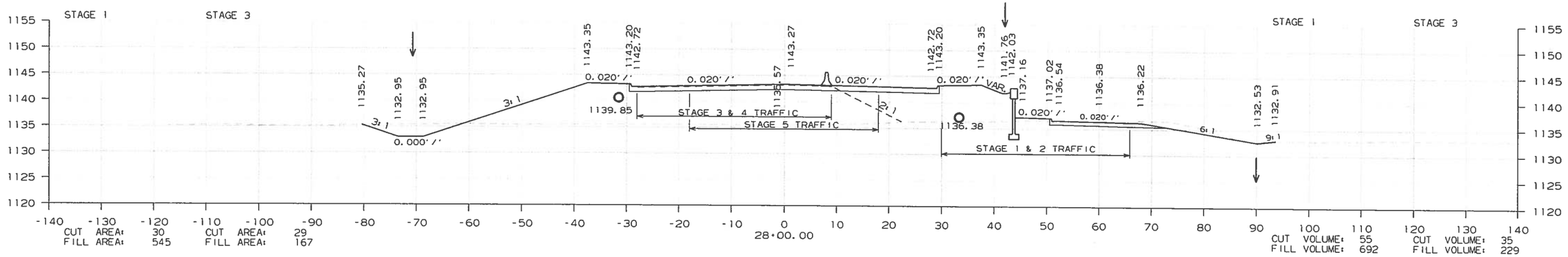
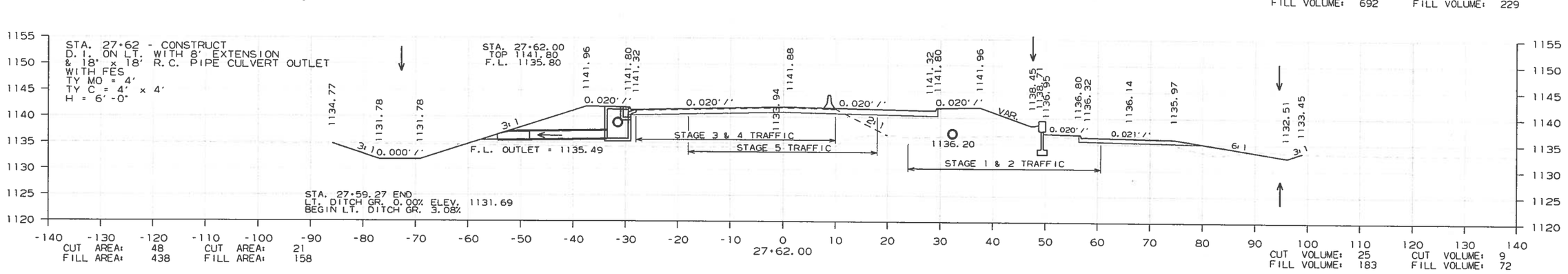
HWY. 43

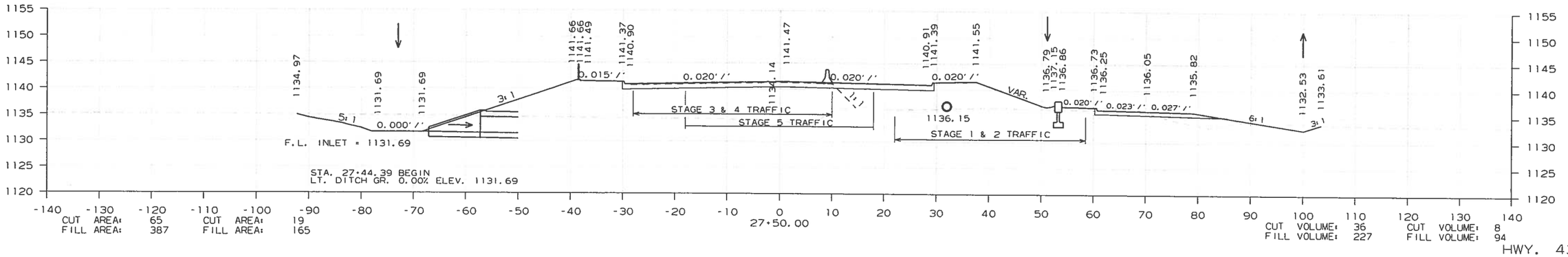
CROSS SECTION STA. 26+00.00 TO STA. 27+34.00

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
10/14/16				6	ARK.			
				JOB NO.		090406	194	226
				(2) CROSS SECTIONS				

STA. 28+90 END
LT. DITCH GR. 3.08% ELEV. 1135.72







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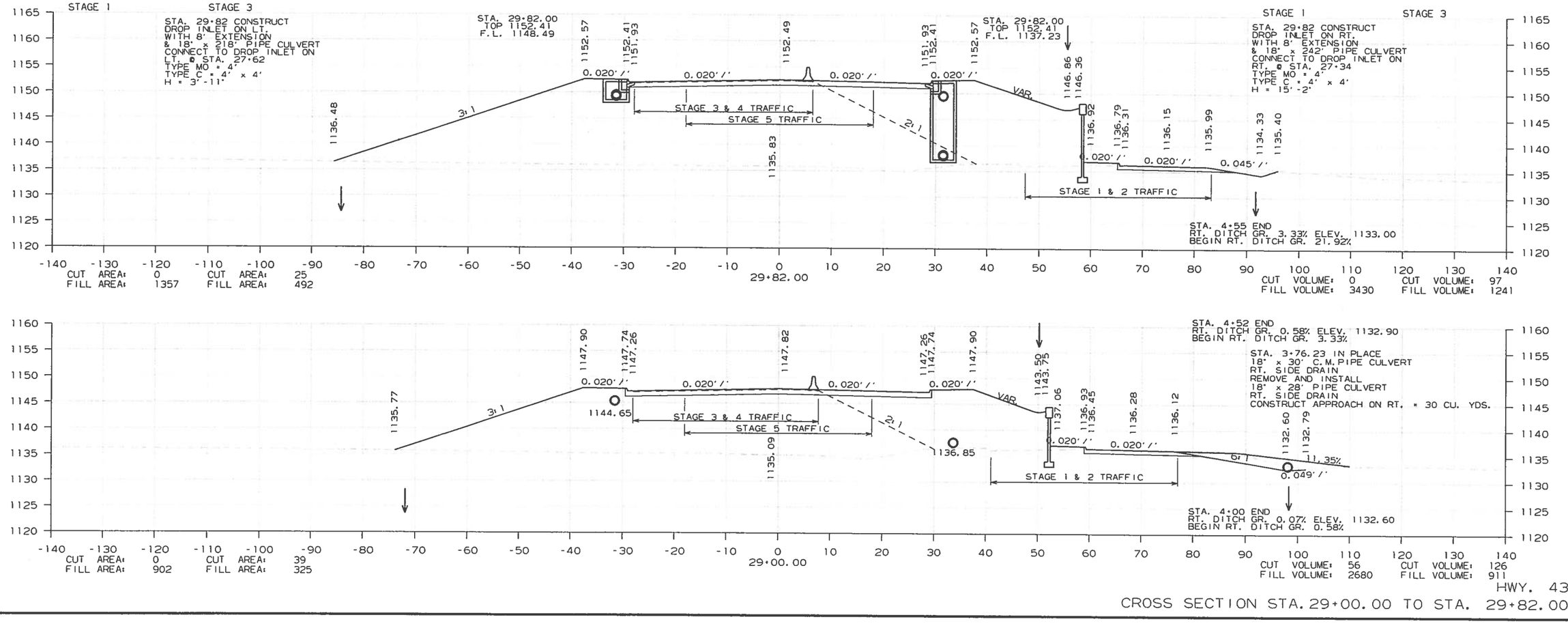
HWY. 43
CROSS SECTION STA. 27+50.00 TO STA. 28+00.00

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
10/14/16				6	ARK.			
				JOB NO.		090406	195	226

(2) CROSS SECTIONS



HWY. 43

CROSS SECTION STA. 29+00.00 TO STA. 29+82.00

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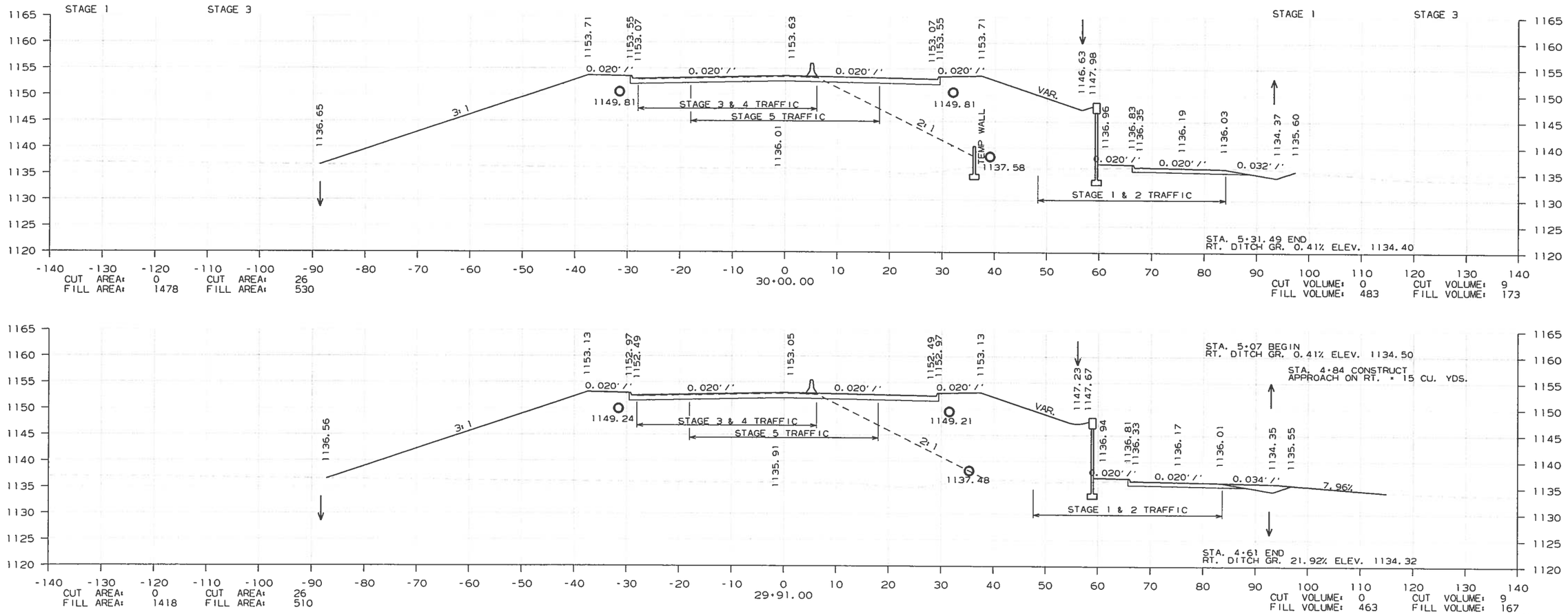
R090406.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
10/14/16				6	ARK.			
				JOB NO.		090406	196	226

(2) CROSS SECTIONS



HWY. 43

CROSS SECTION STA. 29+91.00 TO STA. 30+00.00

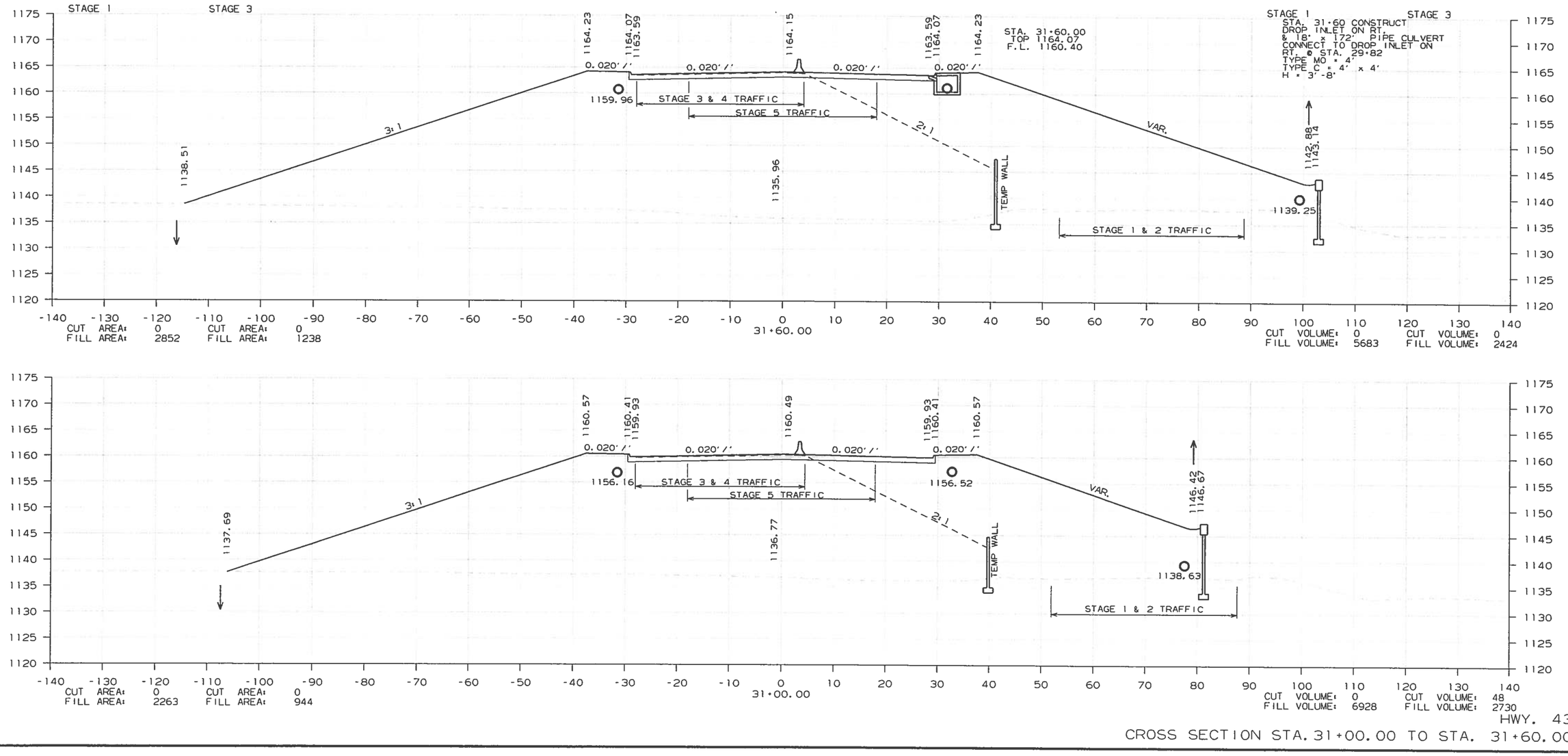
5/28/2015

R090406.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
10/14/16				6	ARK.			
				JOB NO.		090406	197	226

(2) CROSS SECTIONS

STA. 31+80.18 CONSTRUCT JUNCTION BOX ON RT. & 18' x 205' PIPE CULVERT CONNECT TO DROP INLET ON RT. ℄ STA. 29+82
TYPE E = 4' x 2'
H = 2'-3"



HWY. 43
CROSS SECTION STA. 31+00.00 TO STA. 31+60.00

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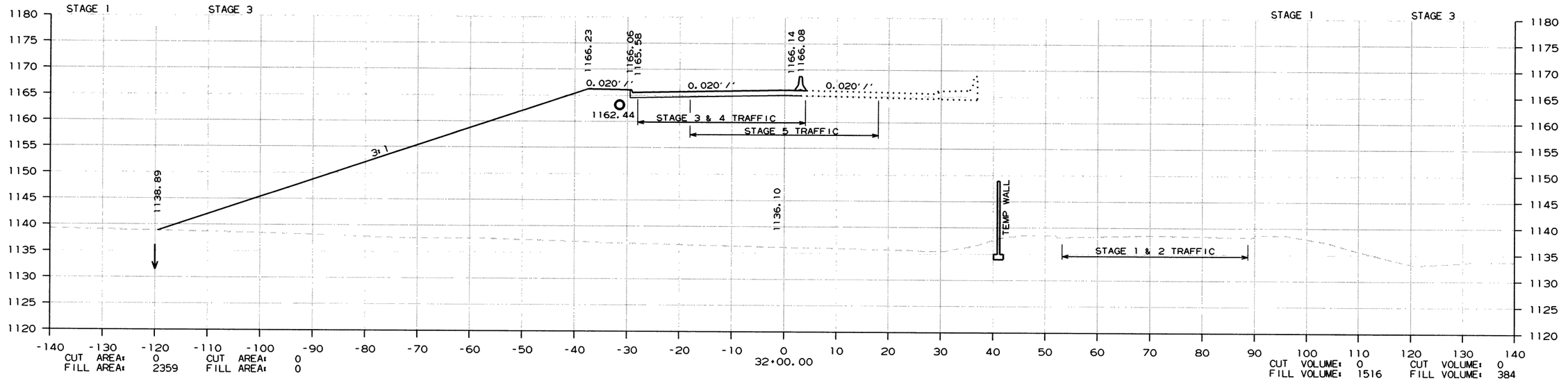
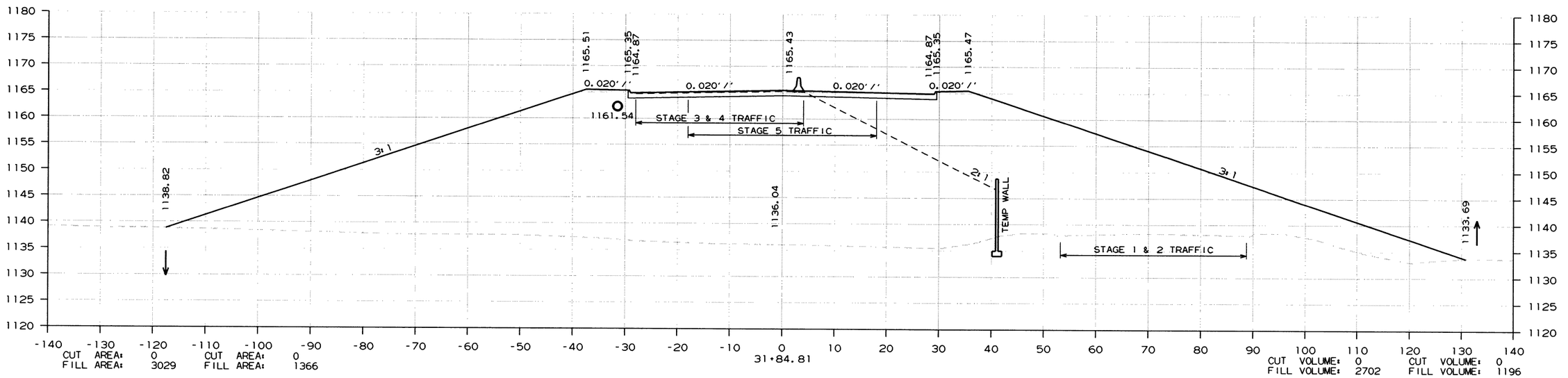
R090406.DGN

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.		090406	198	226

(2) CROSS SECTIONS





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HWY. 43

CROSS SECTION STA. 31+84.81 TO STA. 32+00.00

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	199	226

(2) CROSS SECTIONS

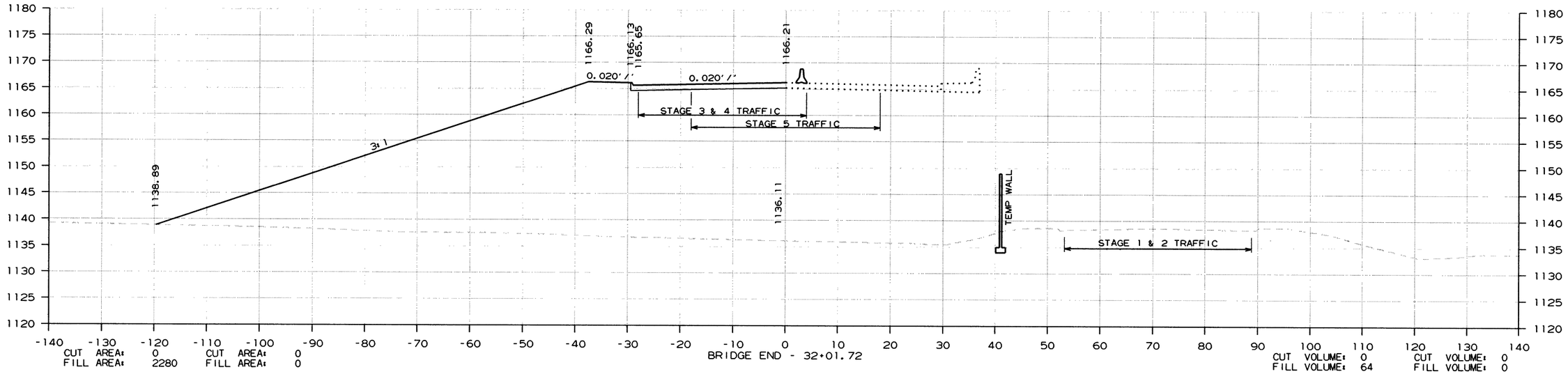
STAGE 1
CUT AREA: 0
FILL AREA: 0

STAGE 3
CUT AREA: 0
FILL AREA: 0

TOE OF SLOPE - 32+53.48

STAGE 1
CUT VOLUME: 0
FILL VOLUME: 2184

STAGE 3
CUT VOLUME: 0
FILL VOLUME: 0

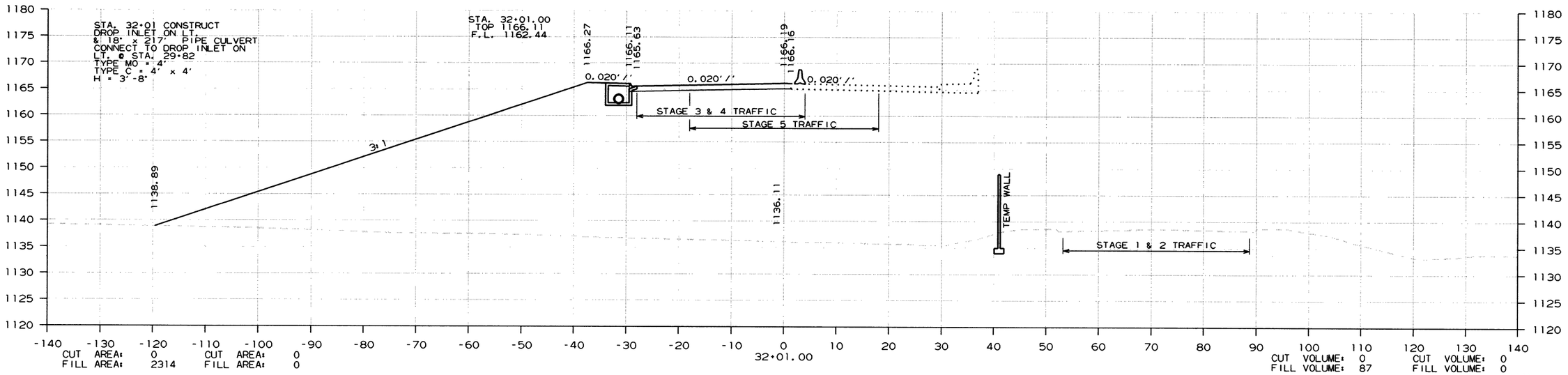


CUT AREA: 0
FILL AREA: 2280

CUT AREA: 0
FILL AREA: 0

CUT VOLUME: 0
FILL VOLUME: 64

CUT VOLUME: 0
FILL VOLUME: 0



CUT AREA: 0
FILL AREA: 2314

CUT AREA: 0
FILL AREA: 0

CUT VOLUME: 0
FILL VOLUME: 87

CUT VOLUME: 0
FILL VOLUME: 0

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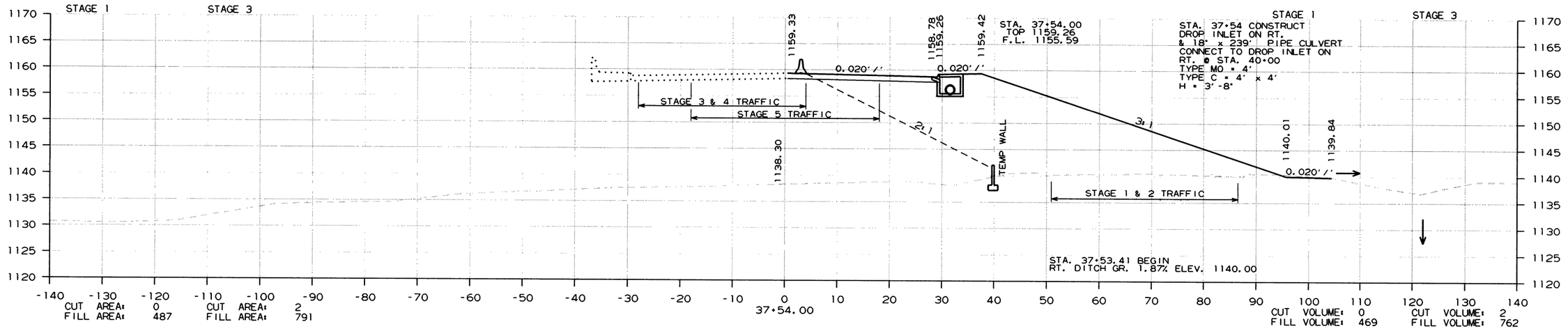
HWY. 43

CROSS SECTION STA. 32+01.00 TO STA. 32+01.72

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	200	226

(2) CROSS SECTIONS



CUT AREA: 0
FILL AREA: 0

CUT AREA: 0
FILL AREA: 0

TOE OF SLOPE - 37+01.98

CUT VOLUME: 0
FILL VOLUME: 0

CUT VOLUME: 0
FILL VOLUME: 0

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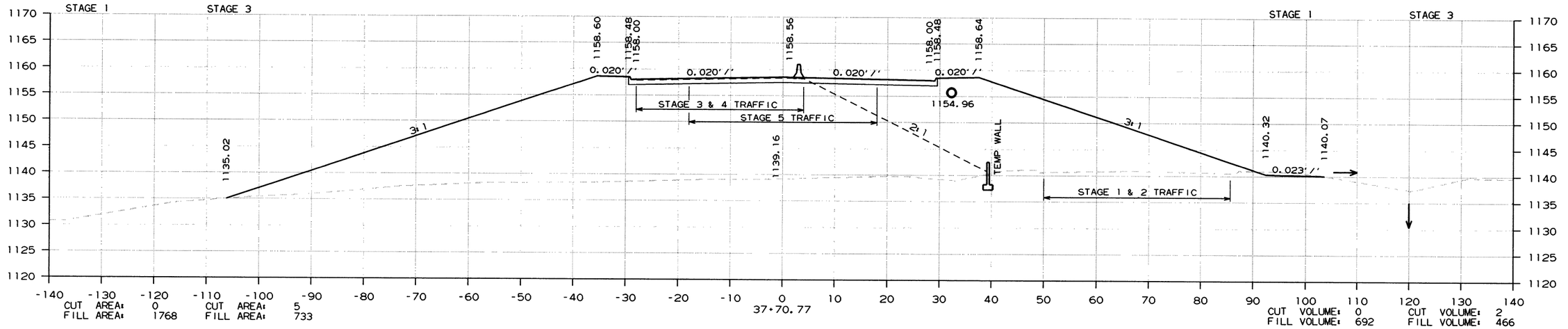
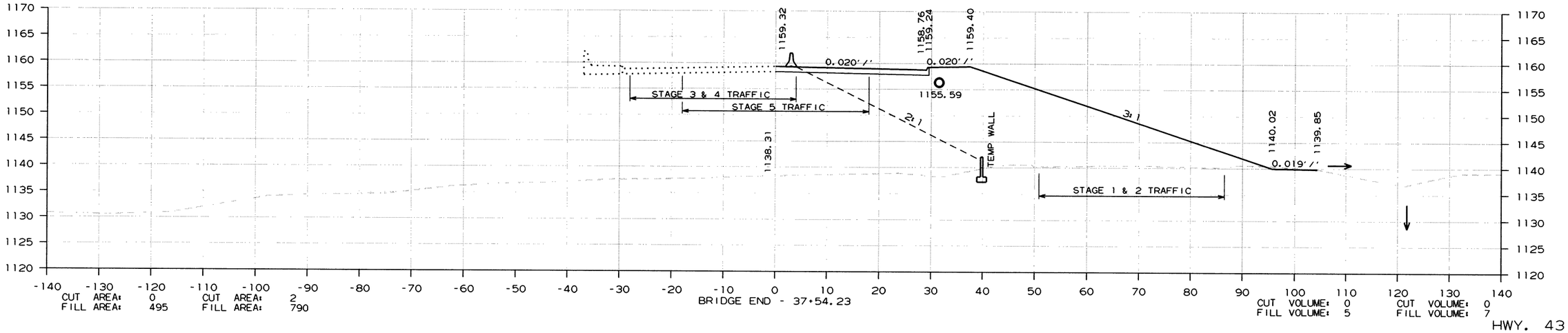
HWY. 43
STA. 37+54.00

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	201	226

(2) CROSS SECTIONS





HWY. 43

CROSS SECTION STA. 37+54.23 TO STA. 37+70.77

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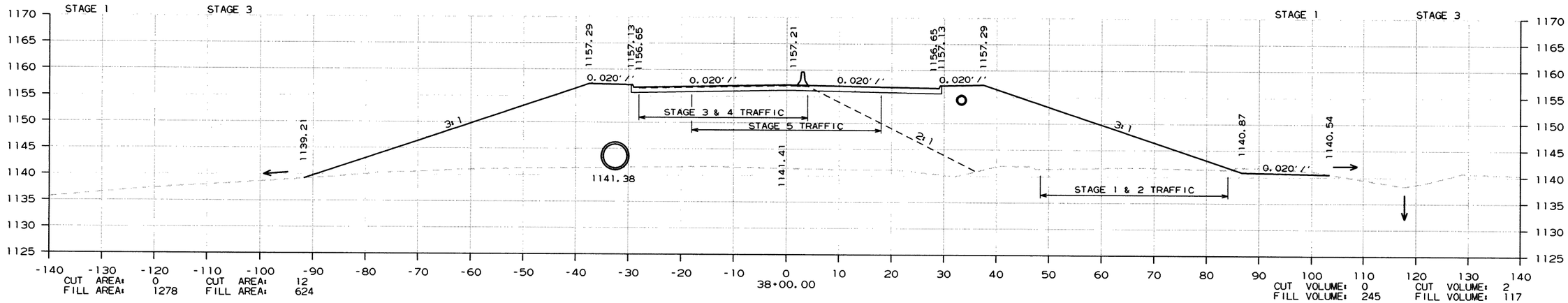
R090406.DGN

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.		090406	202	226

(2) CROSS SECTIONS



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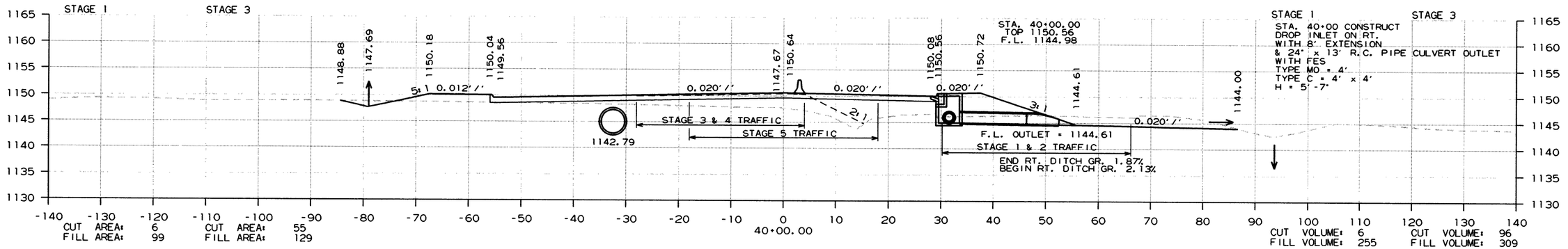
HWY. 43

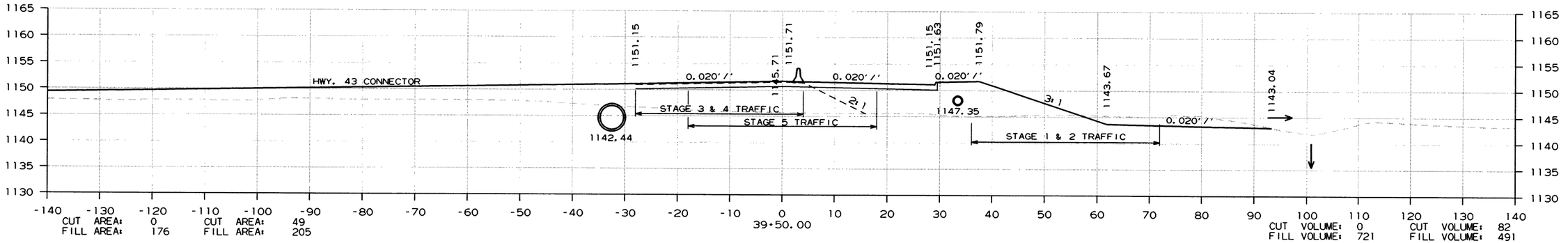
CROSS SECTION STA. 37+95.00 TO STA. 38+00.00

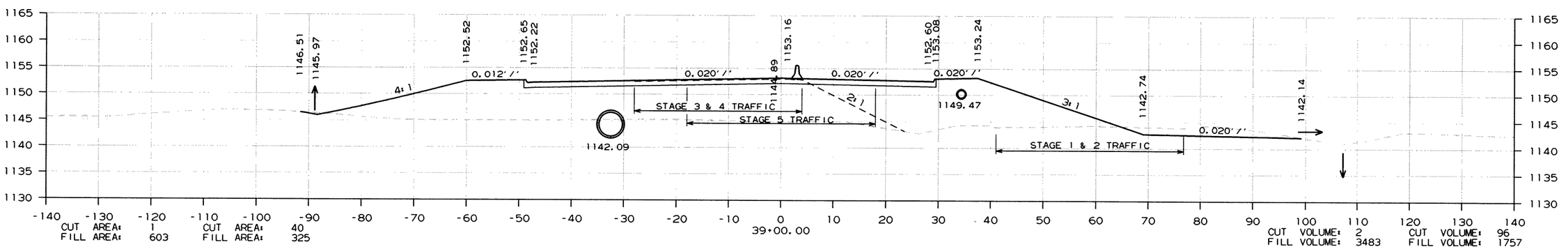
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	203	226

(2) CROSS SECTIONS

STA. 40+09.30 BEGIN
LT. DITCH GR. -1.78% ELEV. 1147.40







HWY. 43
CROSS SECTION STA. 39+00.00 TO STA. 40+00.00

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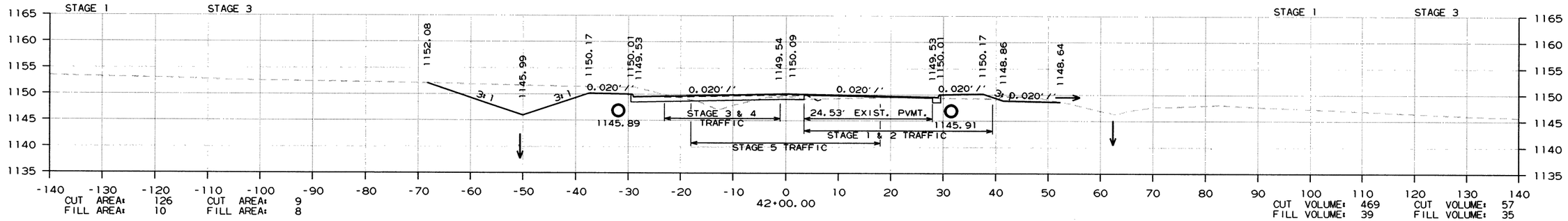
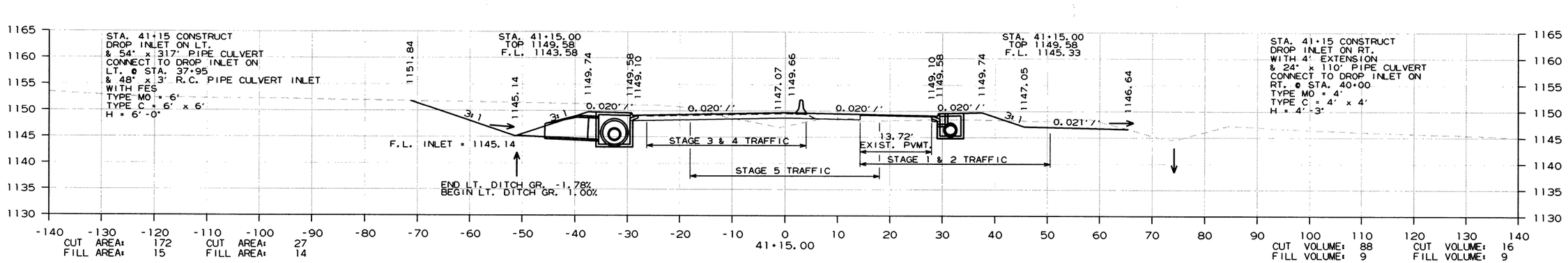
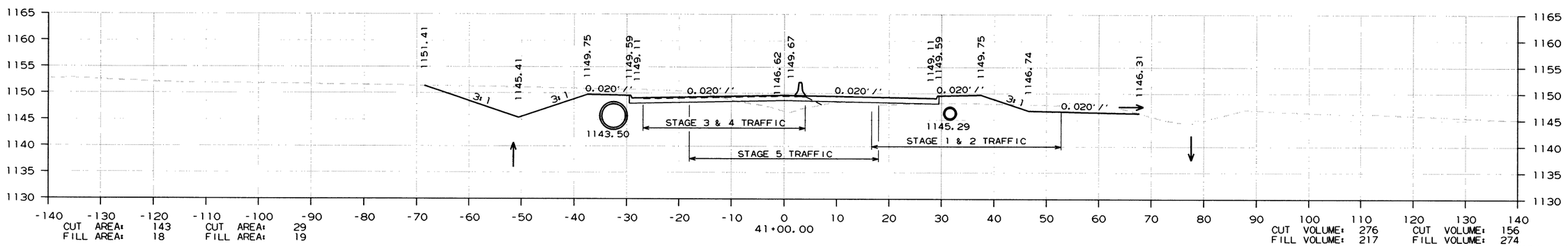
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	204	226

(2) CROSS SECTIONS







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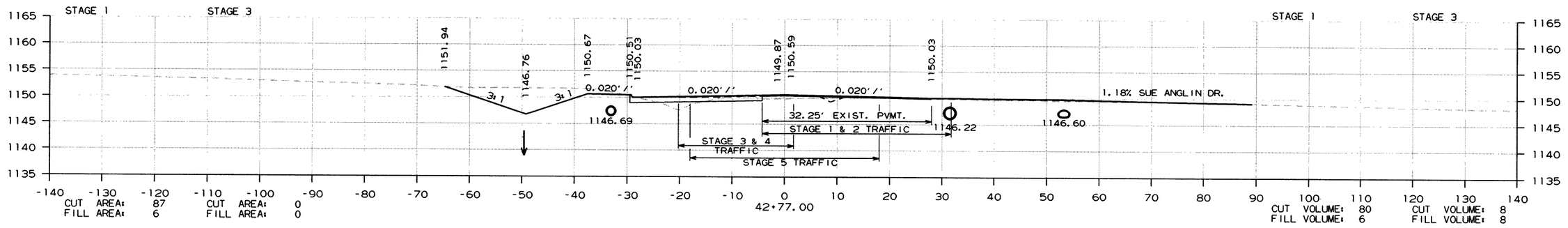
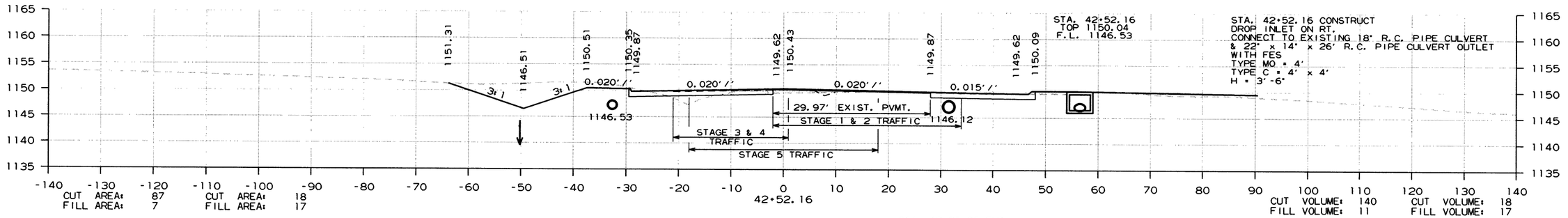
HWY. 43

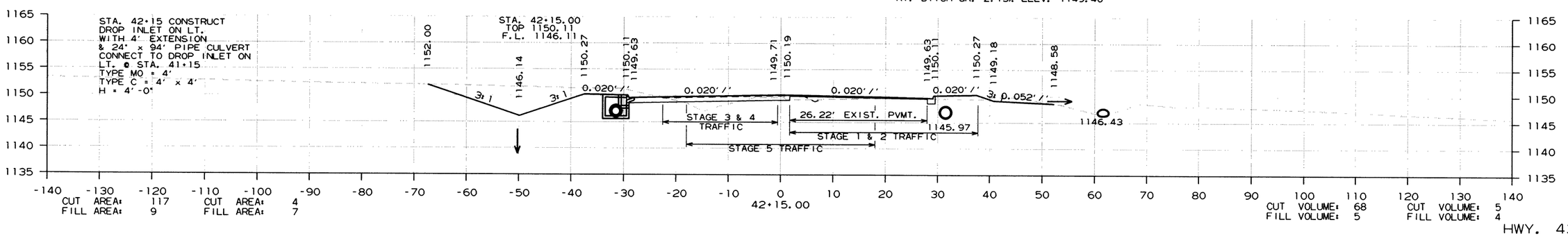
CROSS SECTION STA. 41+00.00 TO STA. 42+00.00

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	205	226

(2) CROSS SECTIONS







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HWY. 43

CROSS SECTION STA. 42+15.00 TO STA. 42+77.00

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	206	226

(2) CROSS SECTIONS

STA. 43+29.87 BEGIN
RT. DITCH GR. 1.89% ELEV. 1146.75

HWY. 43

CROSS SECTION STA. 42+95.22 TO STA. 43+25.00

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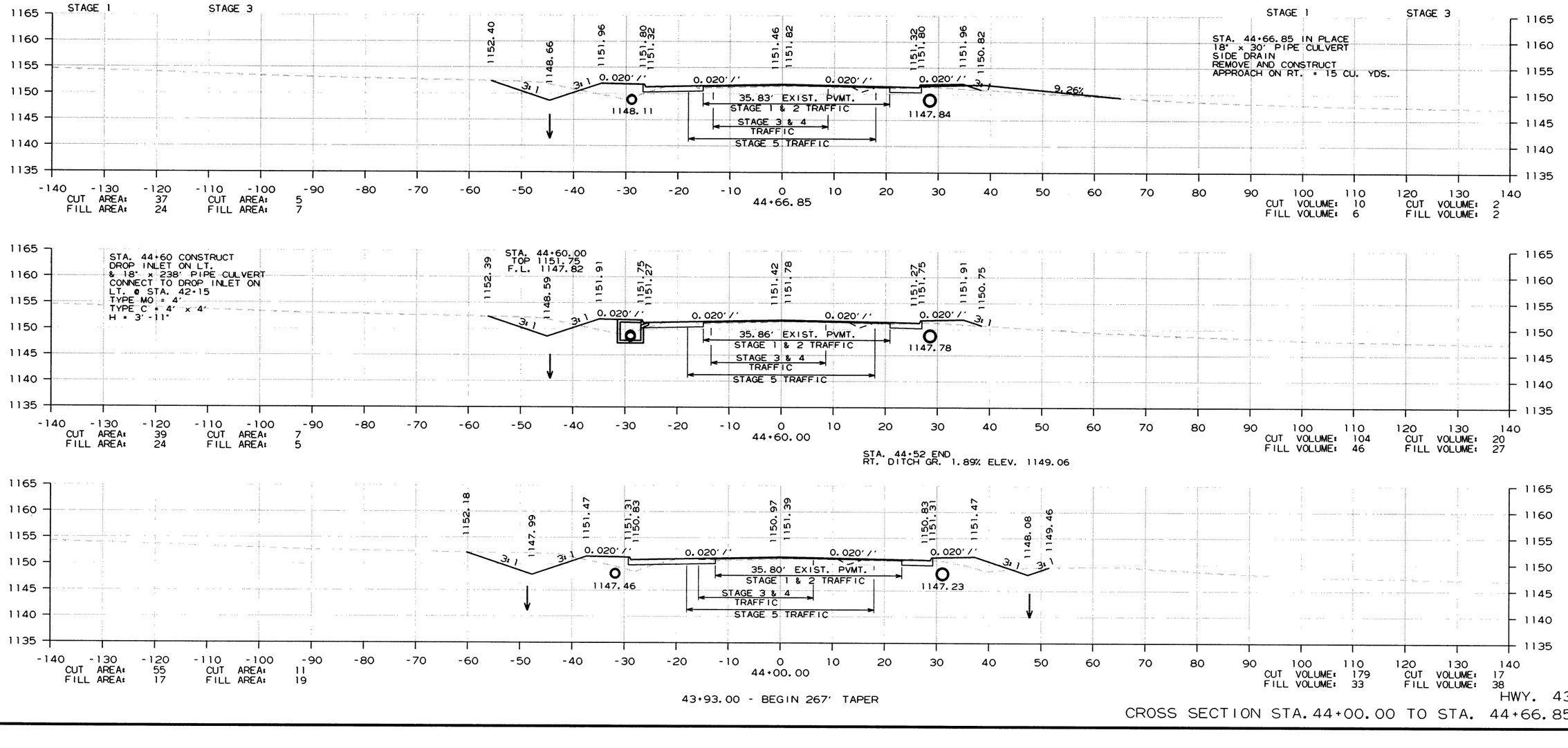
R090406.DGN

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.		090406	207	226

(2) CROSS SECTIONS

STA. 44+80.33 BEGIN
RT. DITCH GR. -1.83% ELEV. 1150.00



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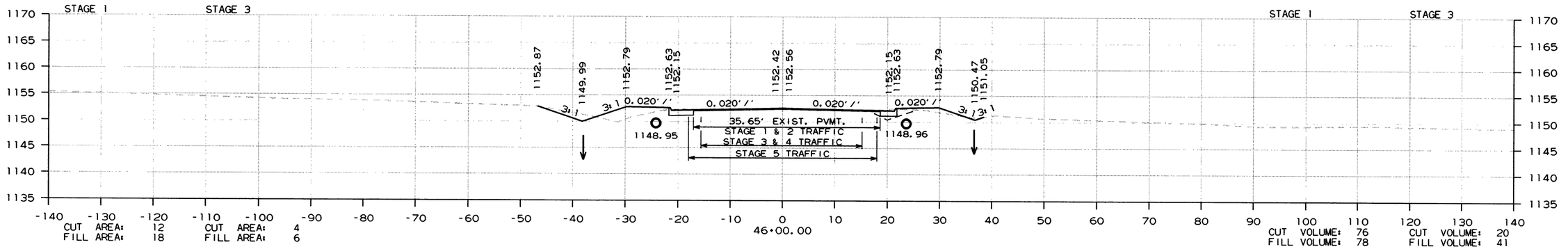
HWY. 43

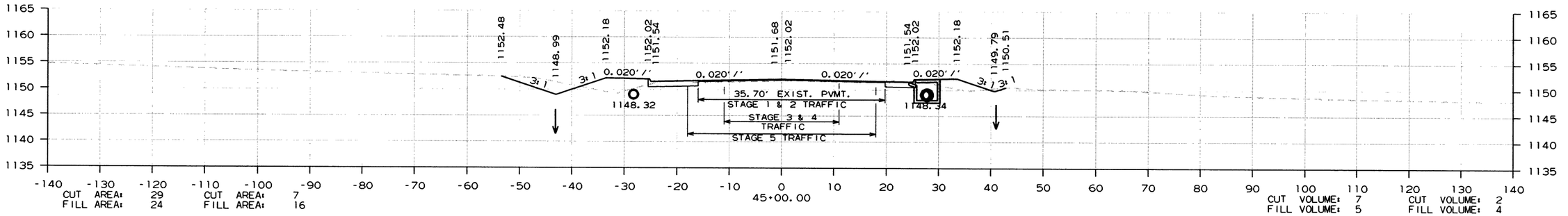
CROSS SECTION STA. 44+00.00 TO STA. 44+66.85

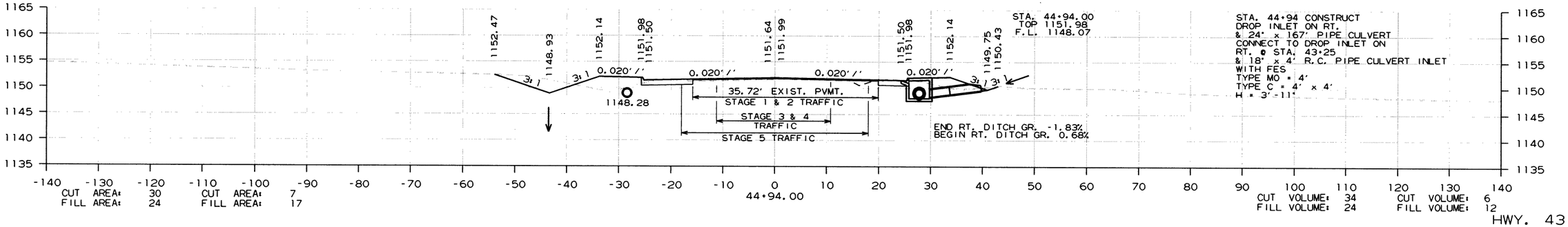
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	208	226

(2) CROSS SECTIONS



45+60.00 - BEGIN 100' TRANSITION





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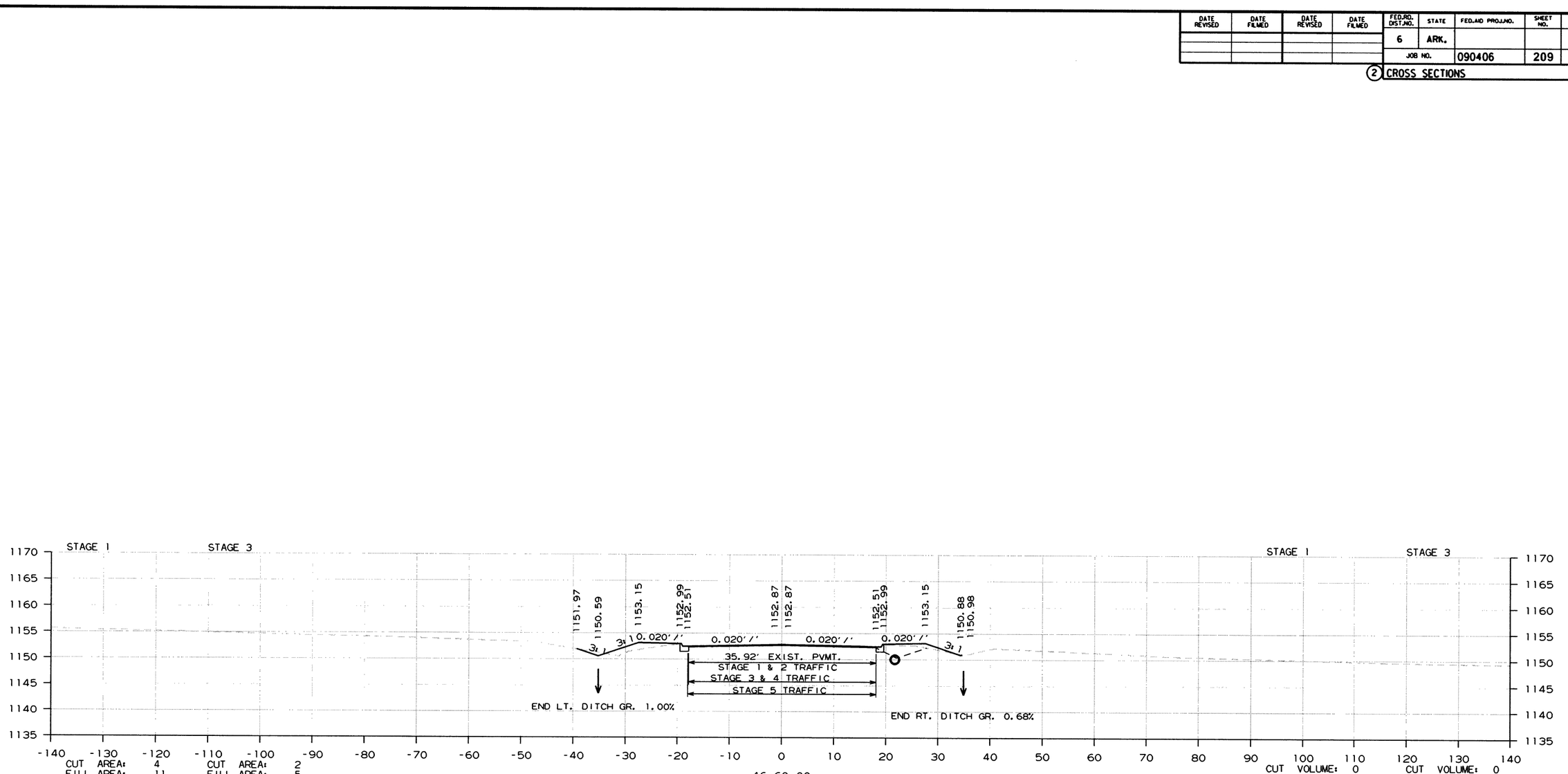
R090406.DGN

HWY. 43

CROSS SECTION STA. 44+94.00 TO STA. 46+00.00

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	209	226

(2) CROSS SECTIONS



HWY. 43

CROSS SECTION STA. 46+57.00 TO STA. 46+60.00

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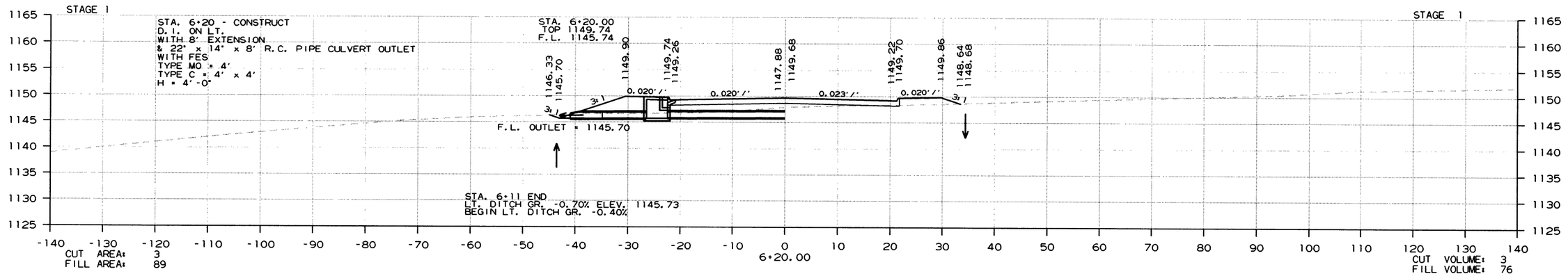
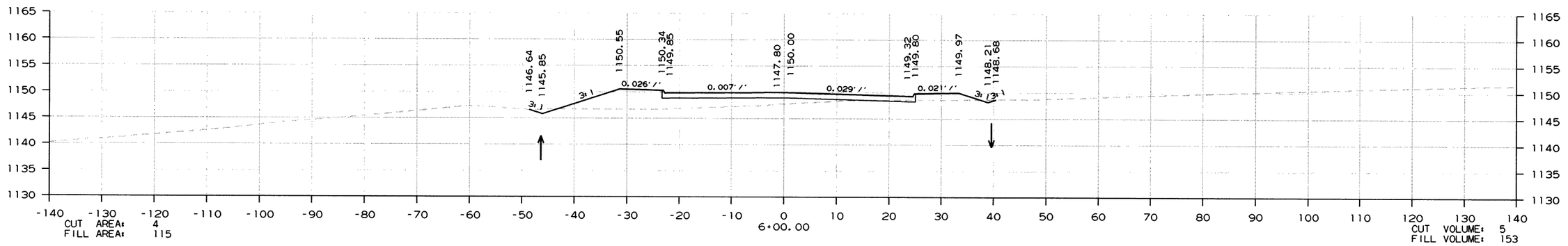
R090406.DGN

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.		090406	210	226

(2) CROSS SECTIONS





STA. 5+81.62 BEGIN
LT. DITCH GR. -0.70% ELEV. 1146.05

STA. 5+68.84 END
RT. DITCH GR. 1.78% ELEV. 1147.40

CUT AREA: 0
FILL AREA: 0

BEGIN HWY. 43 CONNECTOR - 5+28.00

CUT VOLUME: 0
FILL VOLUME: 0

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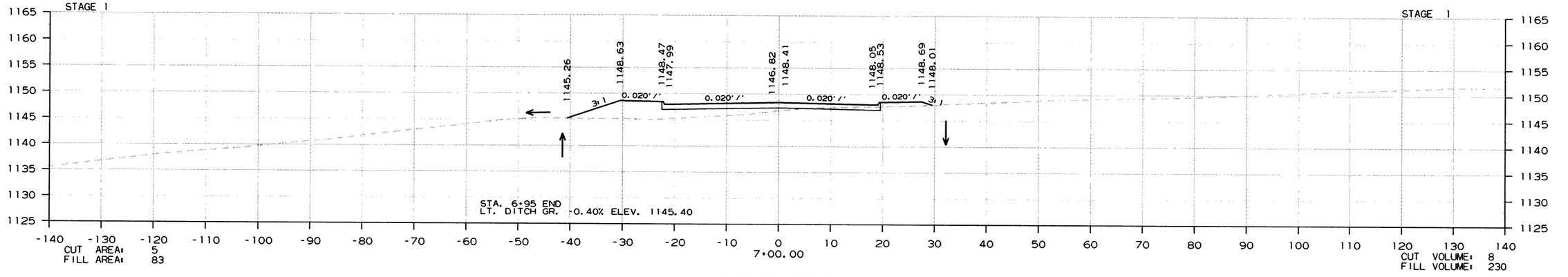
HWY. 43 CONNECTOR
CROSS SECTION STA. 6+00.00 TO STA. 6+20.00

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	211	226

(2) CROSS SECTIONS



HWY. 43 CONNECTOR

CROSS SECTION STA. 6+27.00 TO STA. 7+00.00

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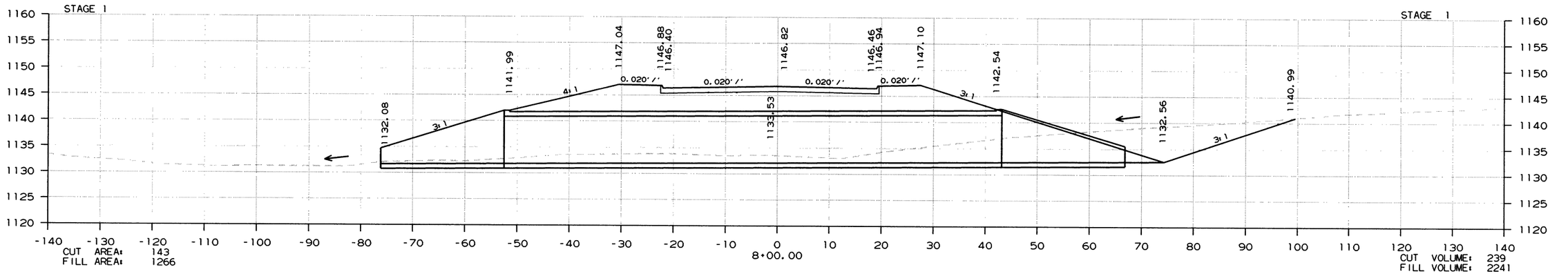
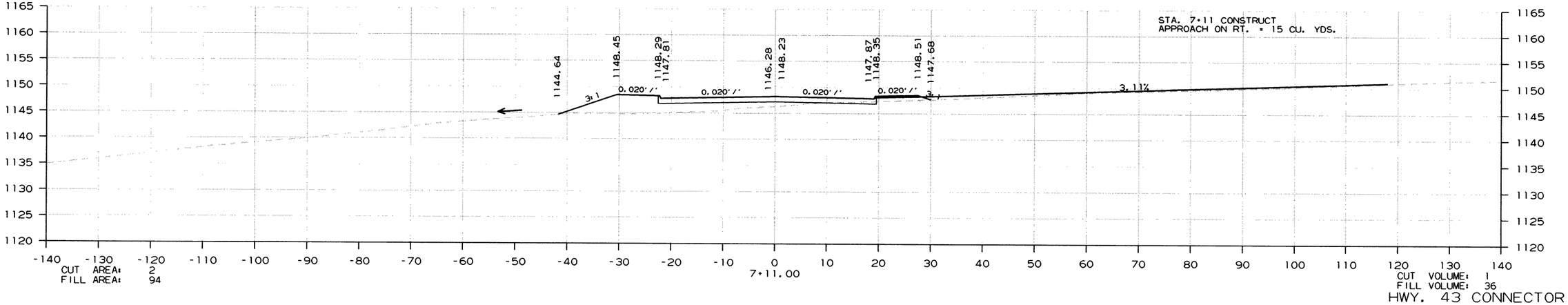
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	212	226

(2) CROSS SECTIONS





STA. 7+11 CONSTRUCT APPROACH ON RT. = 15 CU. YDS.

HWY. 43 CONNECTOR

CROSS SECTION STA. 7+11.00 TO STA. 8+00.00

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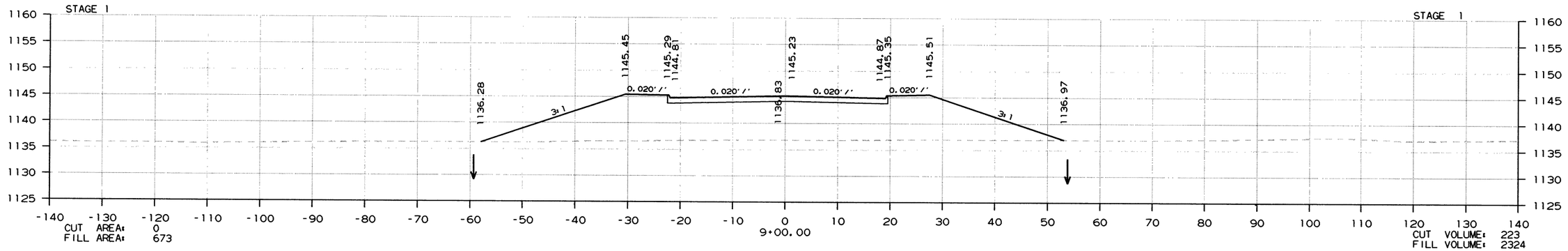
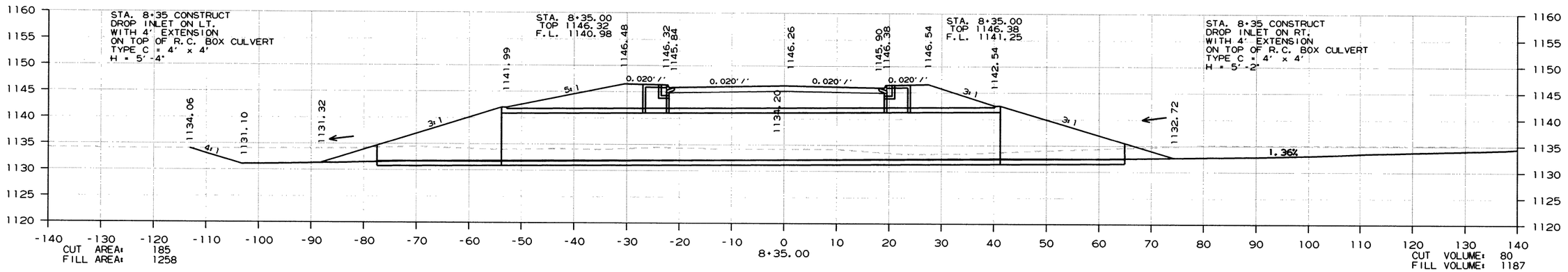
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	213	226

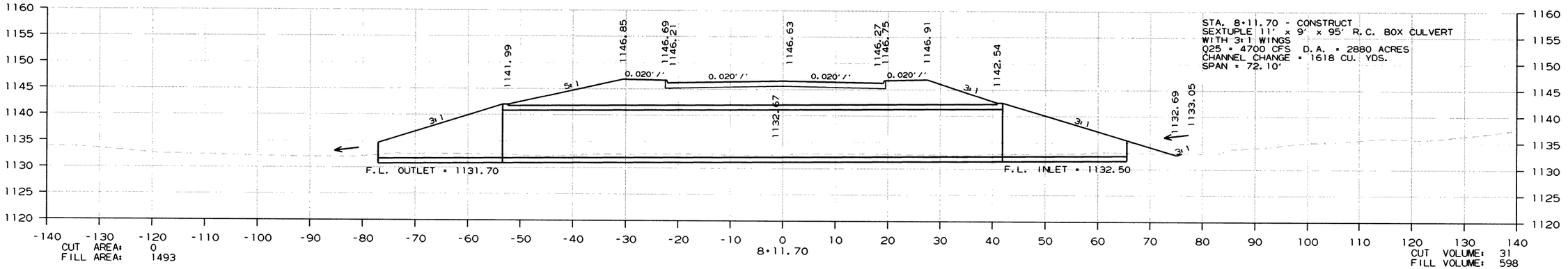
(2) CROSS SECTIONS

STA. 9+83.66 BEGIN
RT. DITCH GR. 0.11% ELEV. 1139.15

9+82.00 - END 75' TAPER
9+07.00 - BEGIN 75' TAPER







HWY. 43 CONNECTOR

CROSS SECTION STA. 8+11.70 TO STA. 9+00.00

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R090406.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.		090406	214	226

(2) CROSS SECTIONS

END HWY 43. CONNECTOR - 10+88.56

STAGE 1

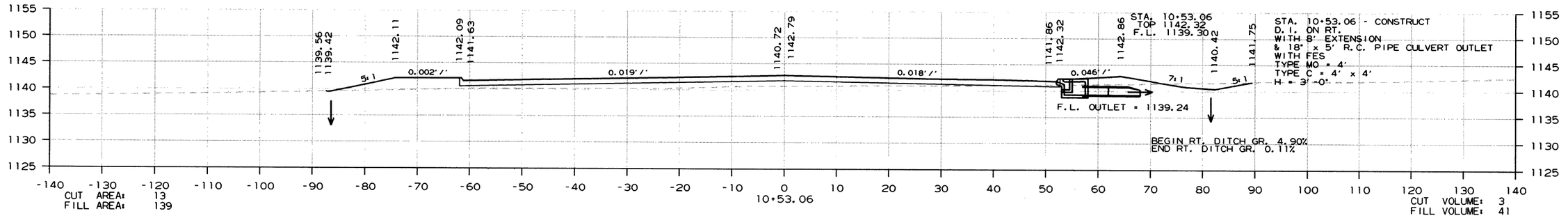
CUT AREA: 0
FILL AREA: 0

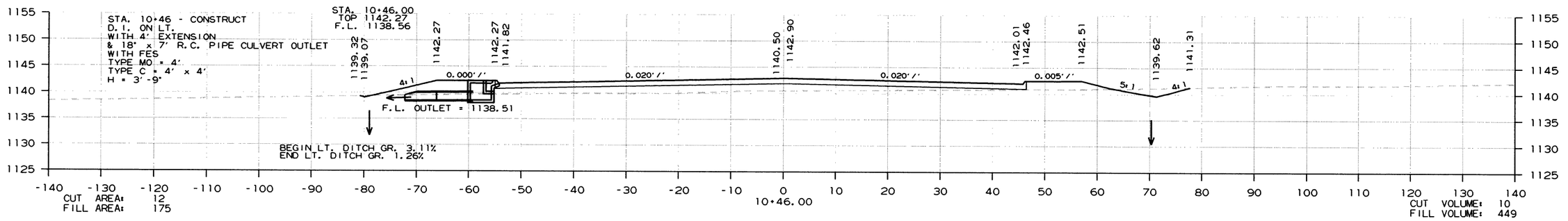
STA. 10+56.33 END
LT. DITCH GR. 3.11% ELEV. 1139.60

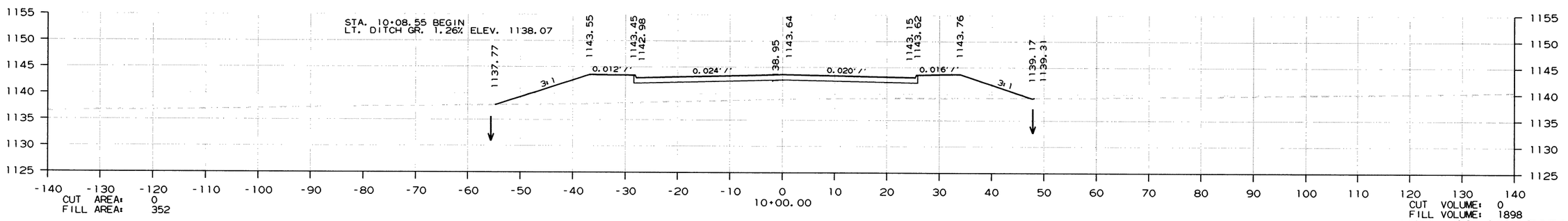
STAGE 1

CUT VOLUME: 9
FILL VOLUME: 91

STA. 10+67.91 END
RT. DITCH GR. 4.90% ELEV. 1142.18







HWY. 43 CONNECTOR

CROSS SECTION STA. 10+00.00 TO STA. 10+53.56

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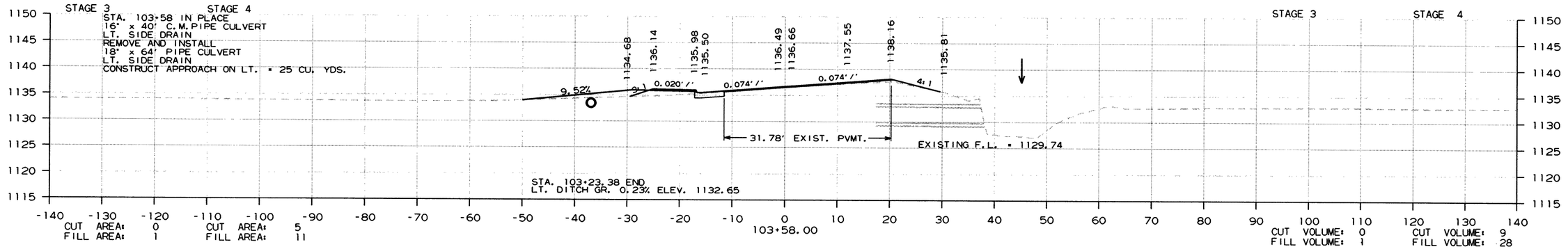
R090406.DGN

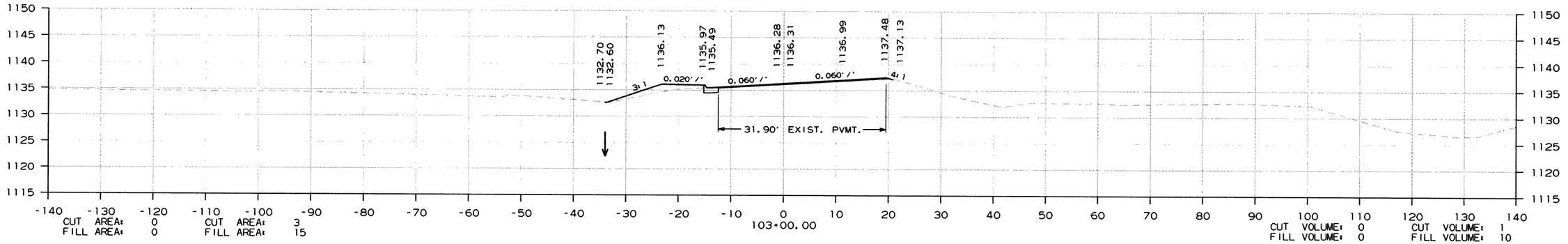
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	215	226

(2) CROSS SECTIONS

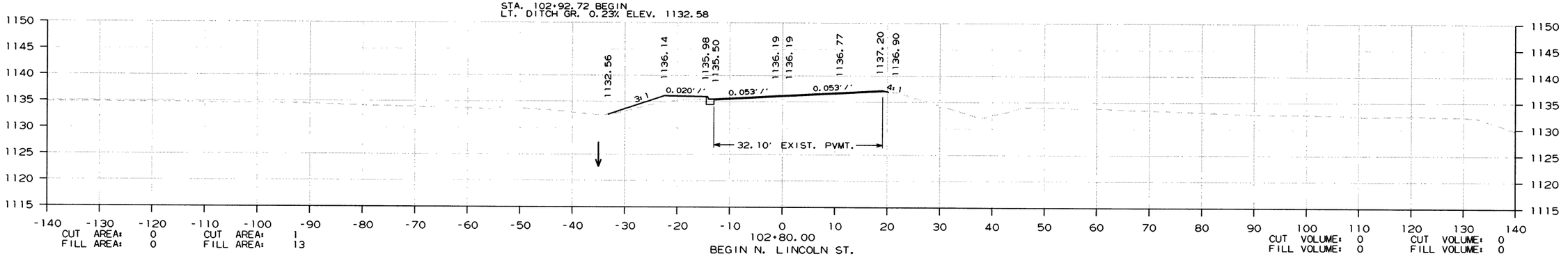
STA. 103+94.80 END
RT. DITCH GR. 0.00% ELEV. 1128.55
BEGIN RT. DITCH GR. 30.28%

STA. 103+92.98 BEGIN
LT. DITCH GR. -23.15% ELEV. 1132.78





STA. 102+92.72 BEGIN
LT. DITCH GR. 0.23% ELEV. 1132.58



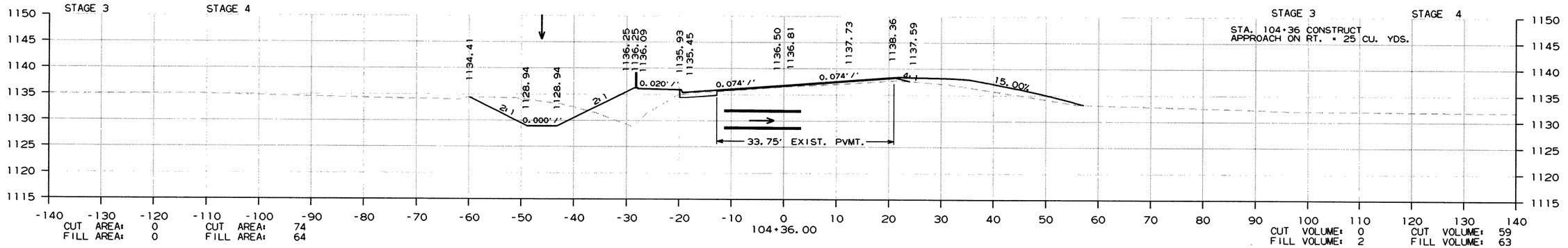
N. LINCOLN ST.
CROSS SECTION STA. 102+80.00 TO STA. 103+58.00

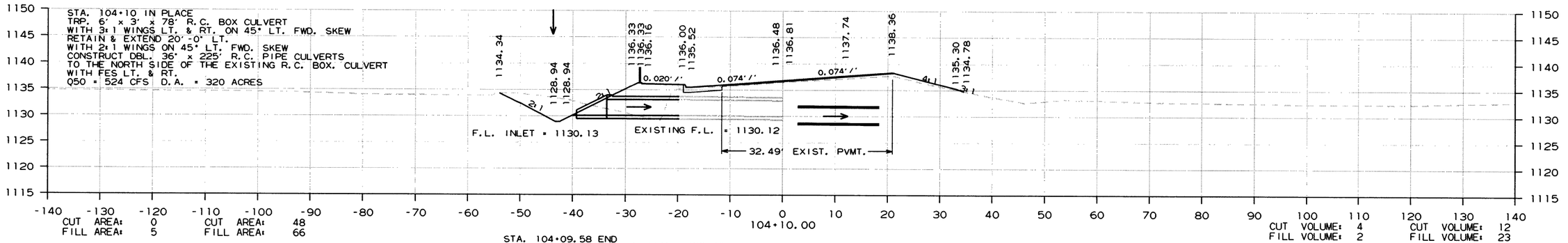
7/29/2015

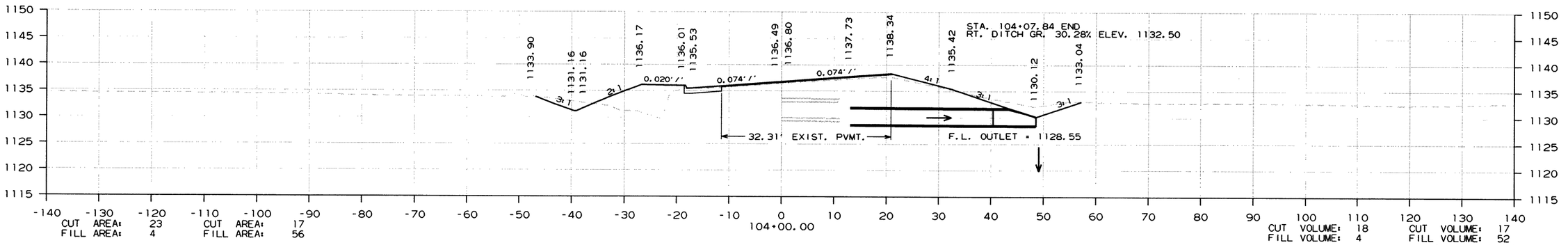
R090406.DGN

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.		090406	216	226

(2) CROSS SECTIONS







N. LINCOLN ST.
CROSS SECTION STA. 104+00.00 TO STA. 104+36.00

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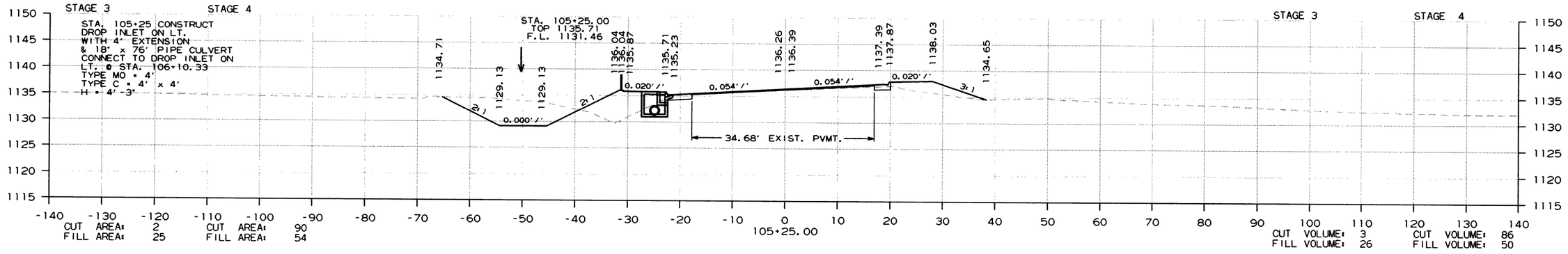
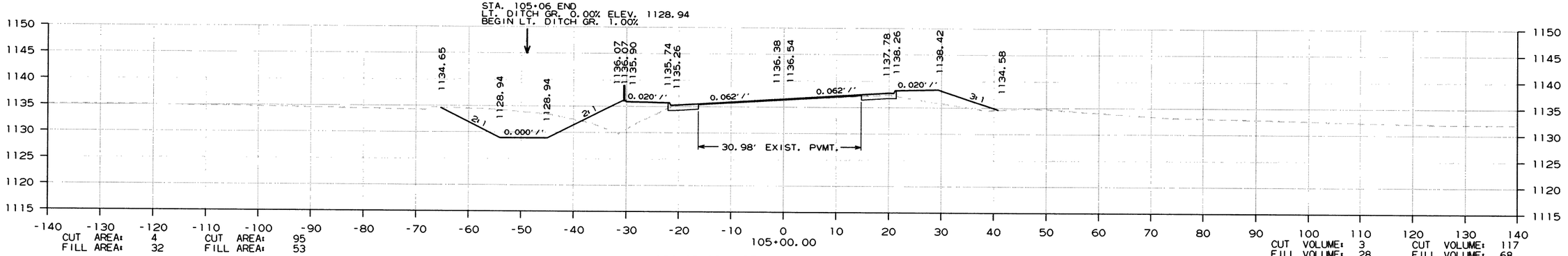
R090406.DGN

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.		090406	217	226

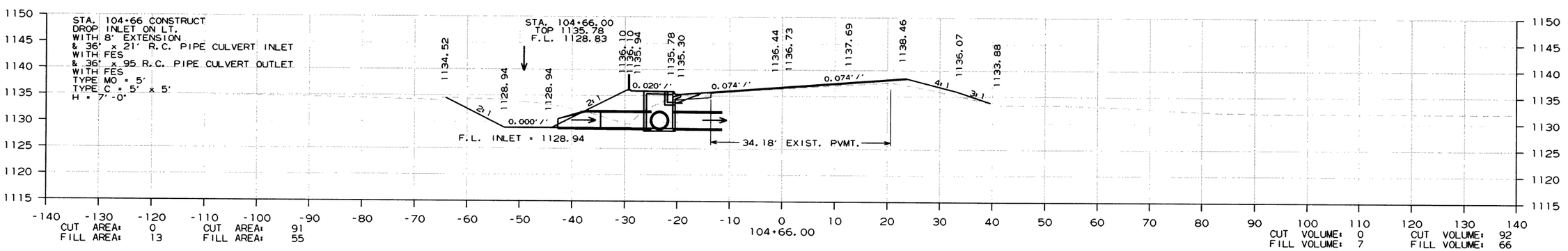
(2) CROSS SECTIONS

105+33.86 - END 50' TAPER ON LEFT





104+83.86 - BEGIN 50' TAPER ON LEFT



N. LINCOLN ST.
CROSS SECTION STA. 104+66.00 TO STA. 105+25.00

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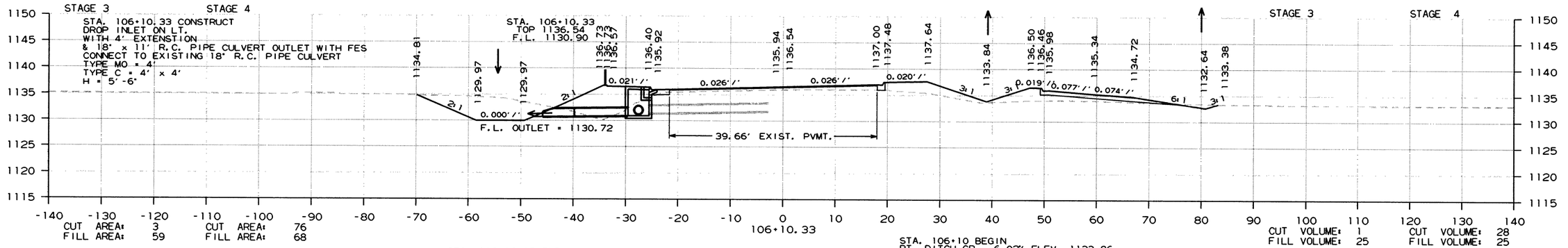
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	218	226

(2) CROSS SECTIONS



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N. LINCOLN ST.

CROSS SECTION STA. 105+81.00 TO STA. 106+10.33

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	219	226

(2) CROSS SECTIONS

END N. LINCOLN ST. - 107+05.35

STAGE 3
CUT AREA: 0
FILL AREA: 0

STAGE 4
CUT AREA: 0
FILL AREA: 0

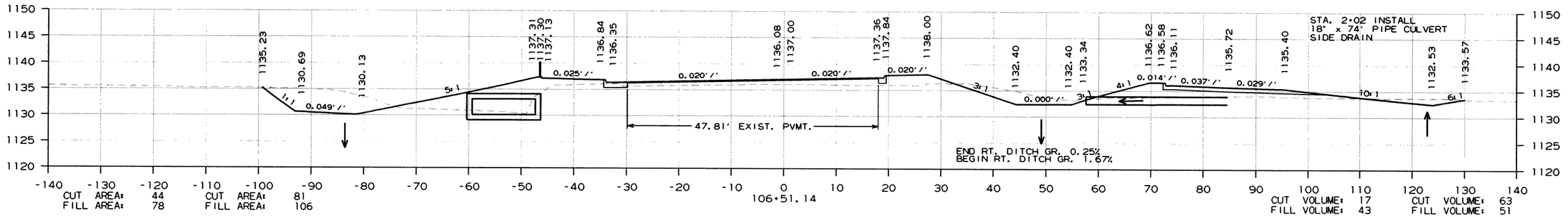
STAGE 3
CUT VOLUME: 44
FILL VOLUME: 78

STAGE 4
CUT VOLUME: 81
FILL VOLUME: 106

STA. 106+51.58 END
LT. DITCH GR. 0.00% ELEV. 1130.08

STA. 106+69.89 END
RT. DITCH GR. 1.67% ELEV. 1133.40

STA. 2+50 END
RT. DITCH GR. -0.14% ELEV. 1132.50

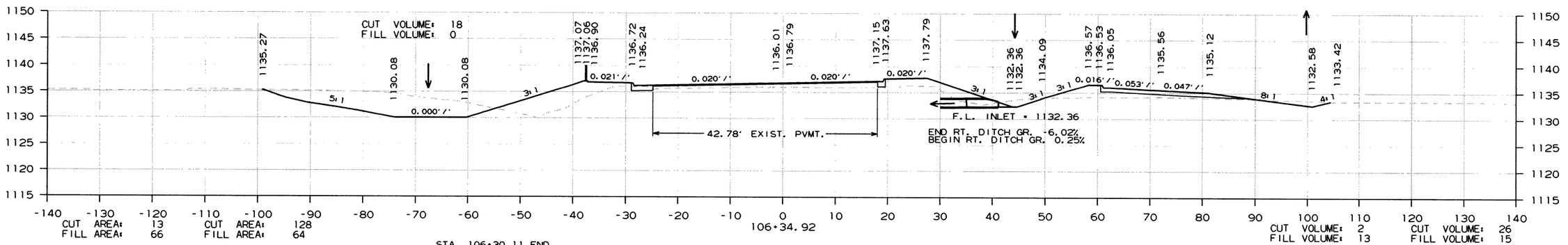


CUT AREA: 44
FILL AREA: 78

CUT AREA: 81
FILL AREA: 106

CUT VOLUME: 17
FILL VOLUME: 43

CUT VOLUME: 63
FILL VOLUME: 51



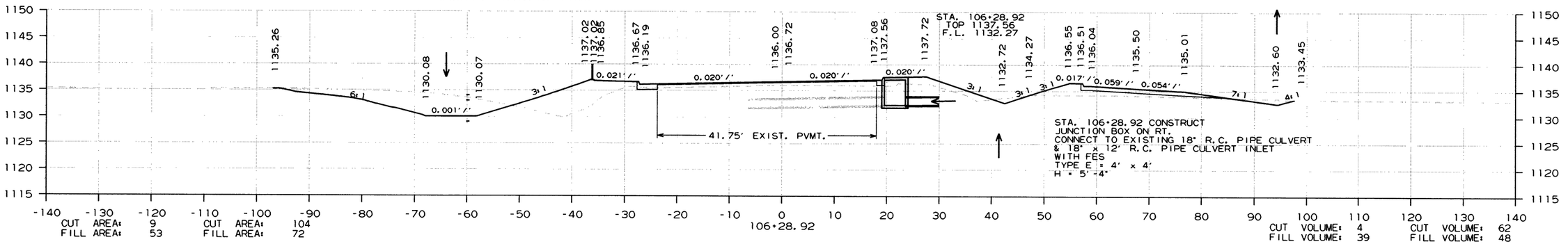
CUT AREA: 13
FILL AREA: 66

CUT AREA: 128
FILL AREA: 64

CUT VOLUME: 2
FILL VOLUME: 13

CUT VOLUME: 26
FILL VOLUME: 15

STA. 106+30.11 END
LT. DITCH GR. 0.41% ELEV. 1130.08
BEGIN LT. DITCH GR. 0.00%



CUT AREA: 9
FILL AREA: 53

CUT AREA: 104
FILL AREA: 72

CUT VOLUME: 4
FILL VOLUME: 39

CUT VOLUME: 62
FILL VOLUME: 48

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N. LINCOLN ST.
CROSS SECTION STA. 106+28.92 TO STA. 106+51.14

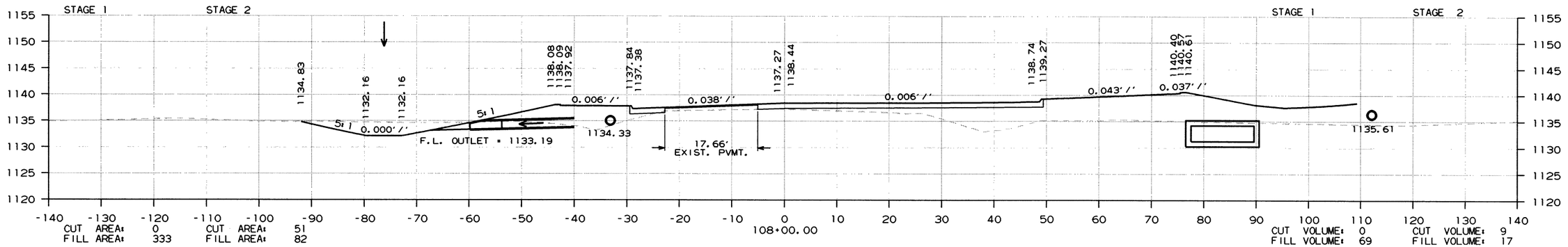
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	220	226

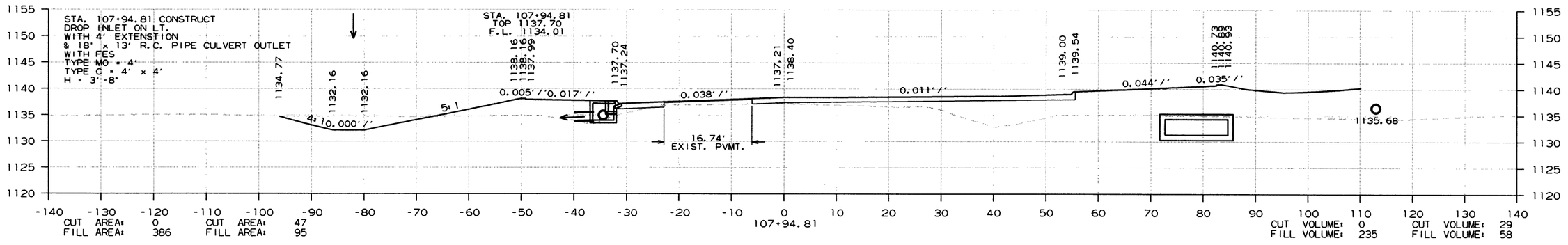
(2) CROSS SECTIONS

STA. 108+43.37 END
LT. DITCH GR. 0.92% ELEV. 1132.70
BEGIN LT. DITCH GR. 1.04%

STA. 108+05.86 BEGIN
LT. DITCH GR. 0.92% ELEV. 1132.16

STA. 108+21.97 BEGIN
RT. DITCH GR. 0.35% ELEV. 1131.69





BEGIN N. LINCOLN ST. - 107+61.87

CUT AREA: 0
FILL AREA: 0
CUT AREA: 0
FILL AREA: 0
CUT VOLUME: 0
FILL VOLUME: 0
CUT VOLUME: 0
FILL VOLUME: 0

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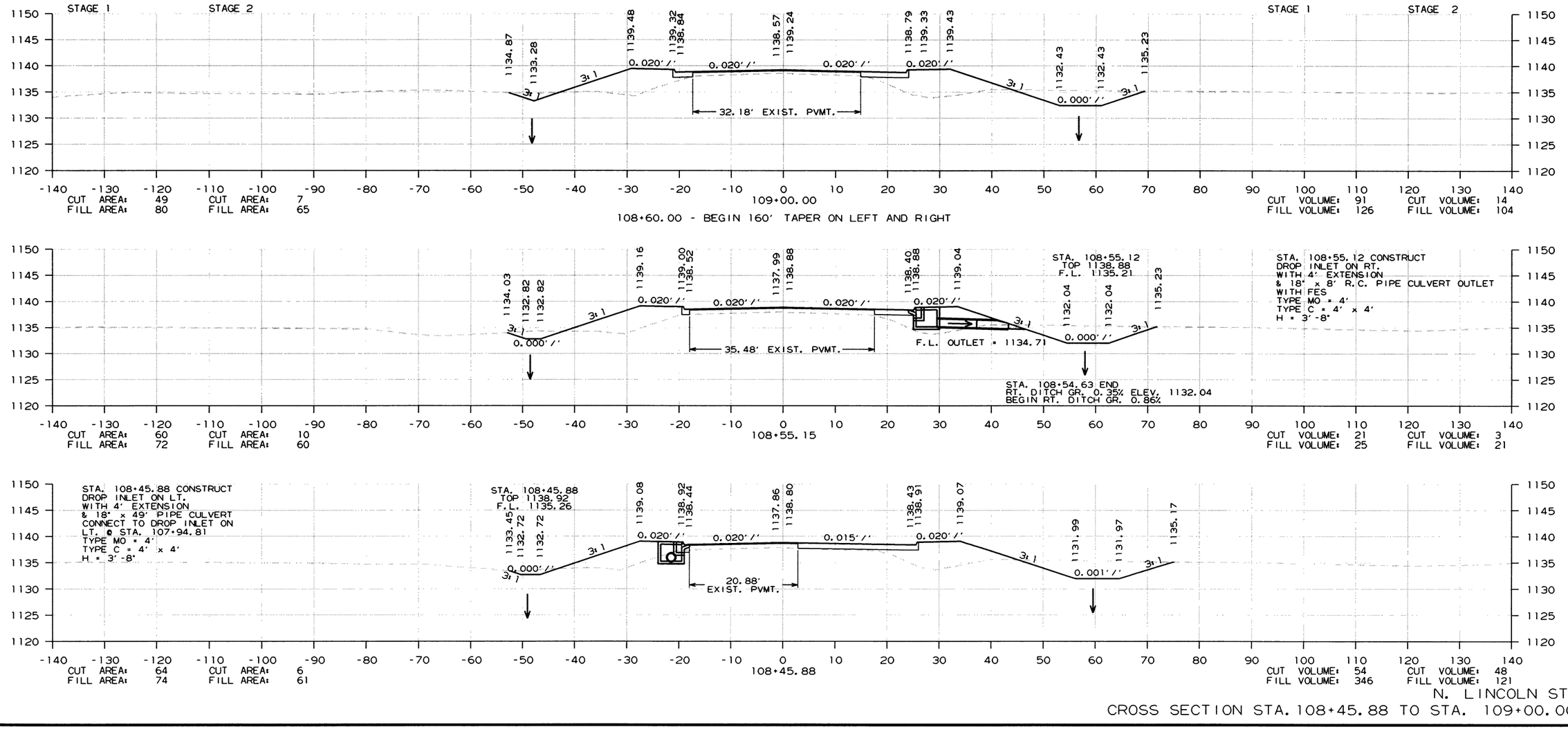
N. LINCOLN ST.
CROSS SECTION STA. 107+94.81 TO STA. 108+00.00

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	221	226

(2) CROSS SECTIONS



N. LINCOLN ST.
CROSS SECTION STA. 108+45.88 TO STA. 109+00.00

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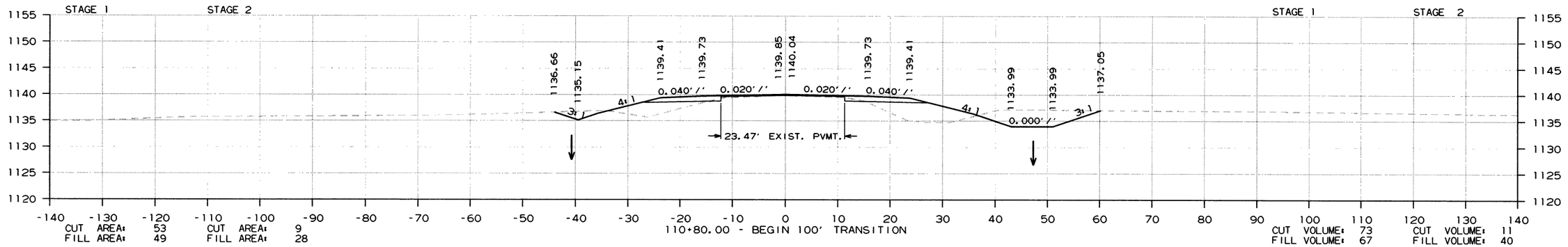
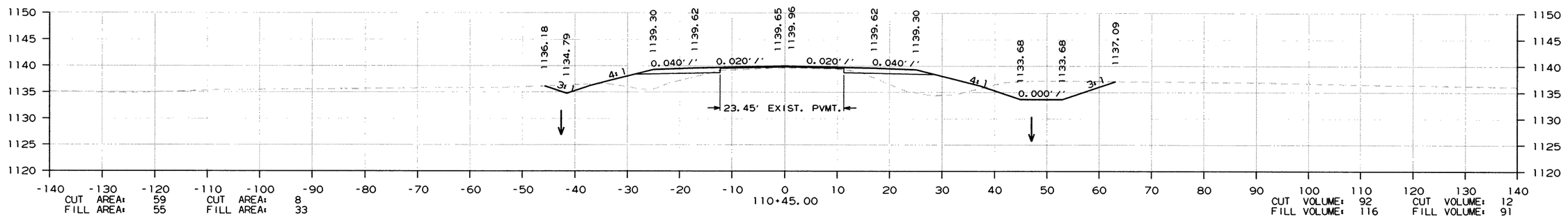
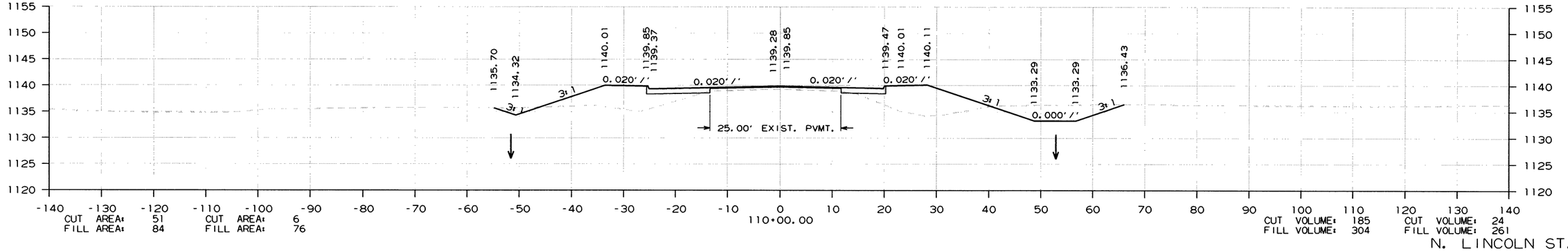
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	222	226

(2) CROSS SECTIONS





110+20.00 - END 160' TAPER ON LEFT AND RIGHT & BEGIN 160' TAPER ON RIGHT



N. LINCOLN ST.
CROSS SECTION STA. 110+00.00 TO STA. 110+80.00

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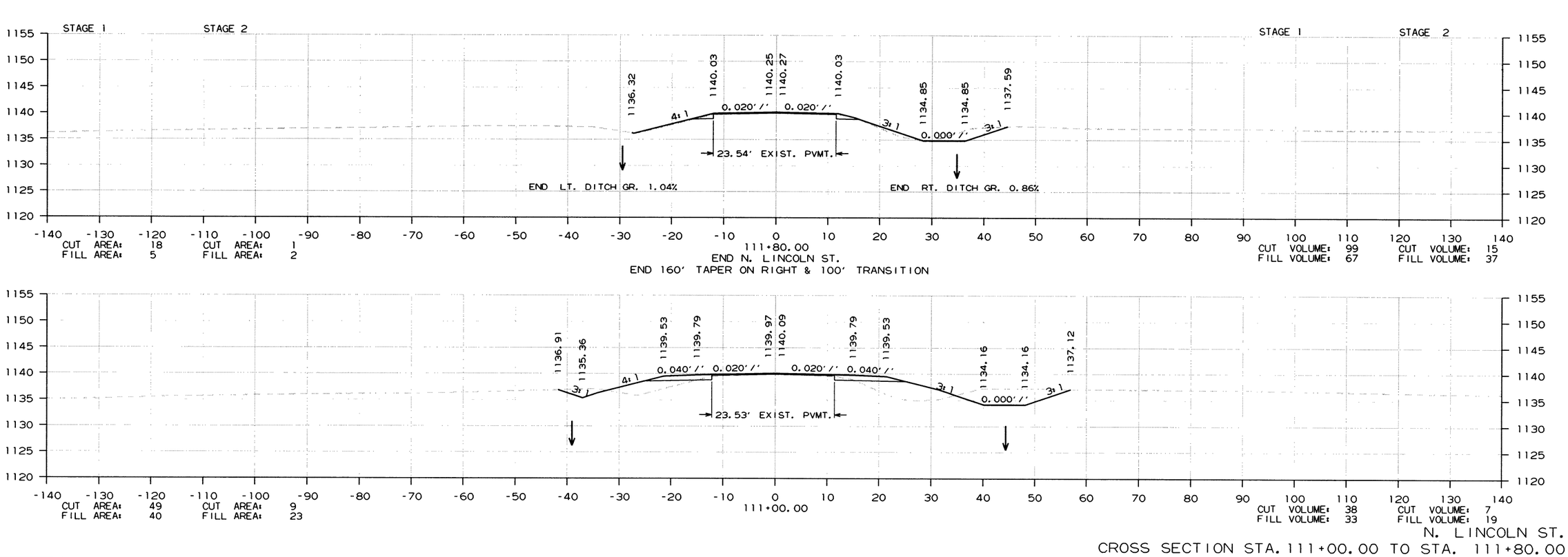
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	223	226

(2) CROSS SECTIONS



N. LINCOLN ST.
CROSS SECTION STA. 111+00.00 TO STA. 111+80.00

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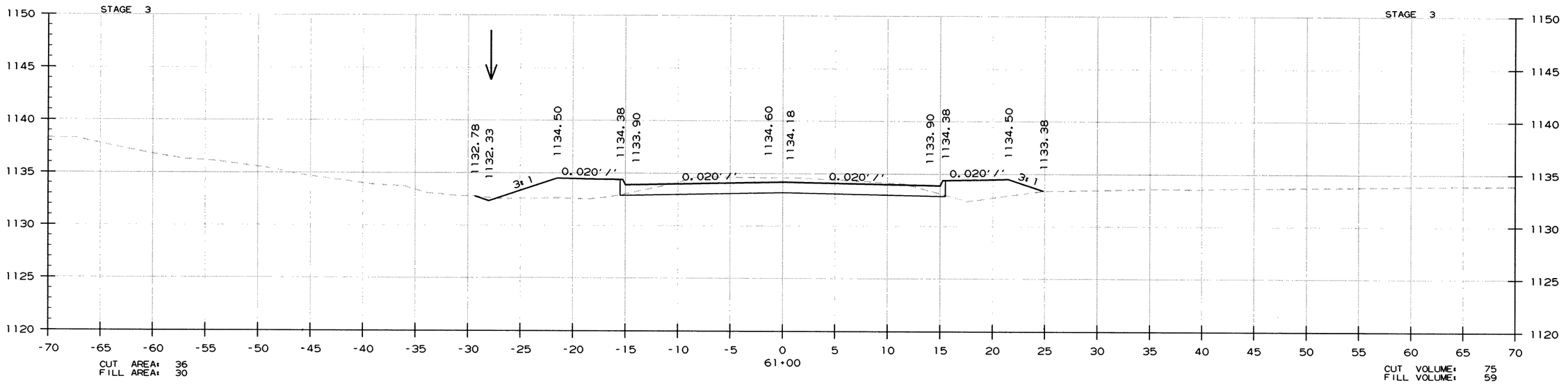
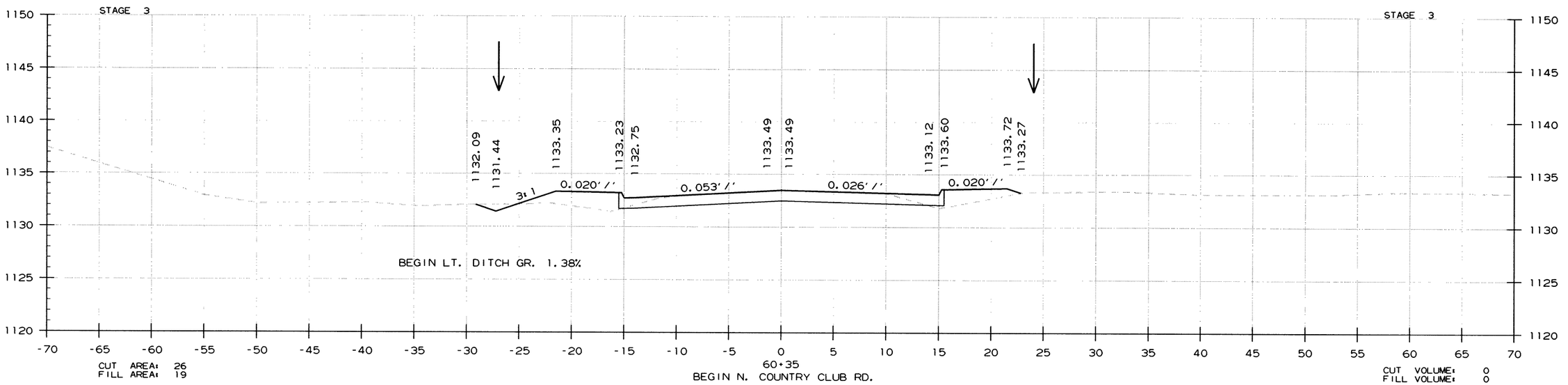
R090406.DGN

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.		090406	224	226

(2) CROSS SECTIONS

NOTE: FOR EXISTING RAILROAD RIGHT OF WAY
REFER TO RIGHT OF WAY PLANS





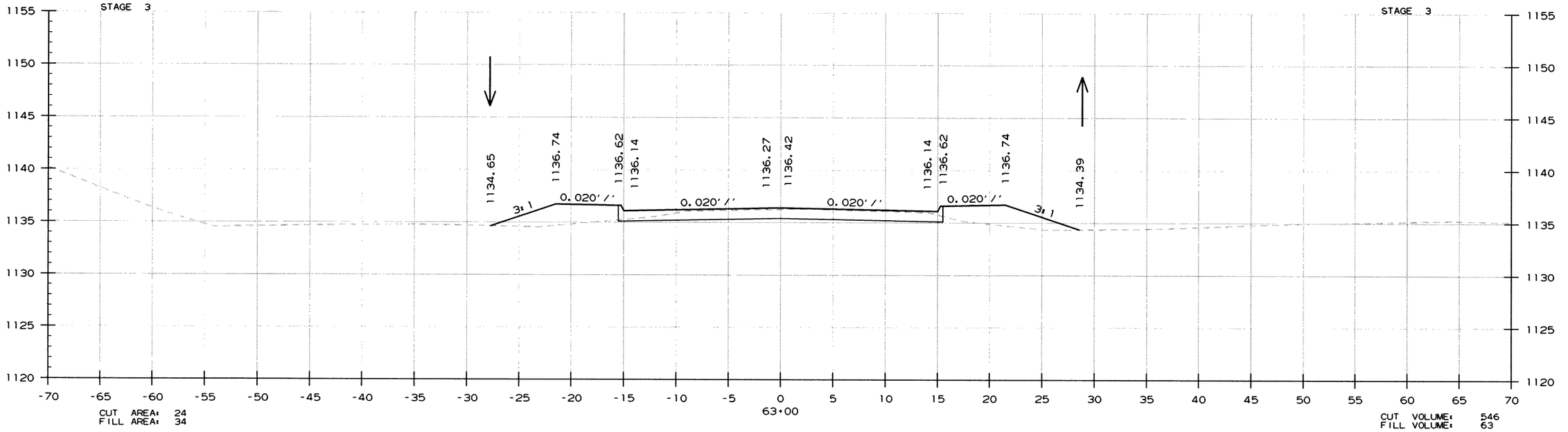
6/4/2015

R090406.DGN

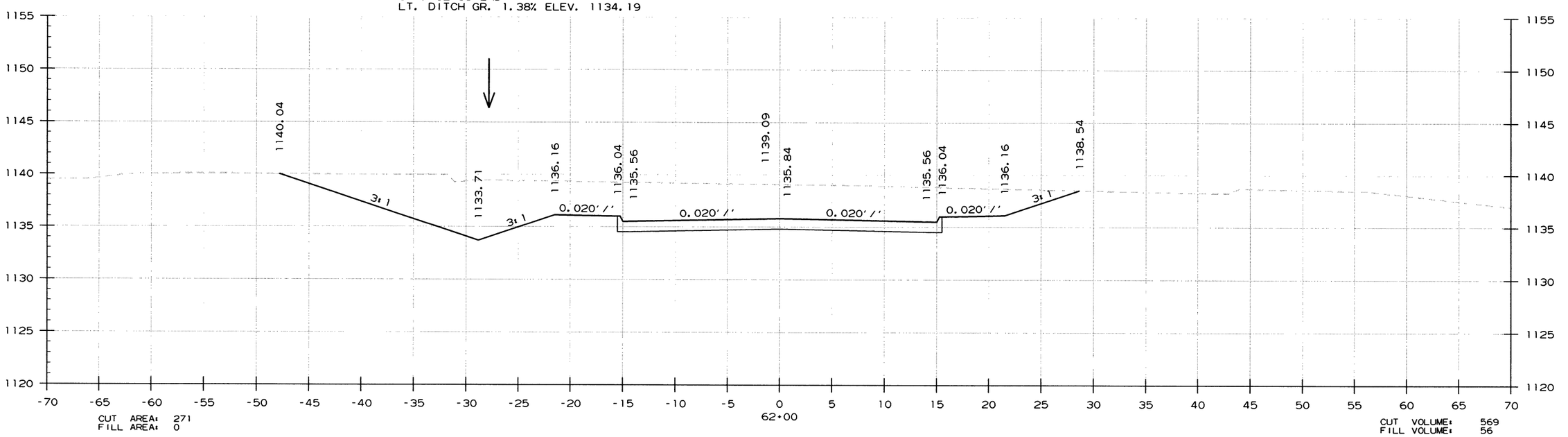
N. COUNTRY CLUB RD.
CROSS SECTION STA. 60+35 TO STA. 61+00

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	225	226

(2) CROSS SECTIONS



STA. 62+35 END
LT. DITCH GR. 1.38% ELEV. 1134.19



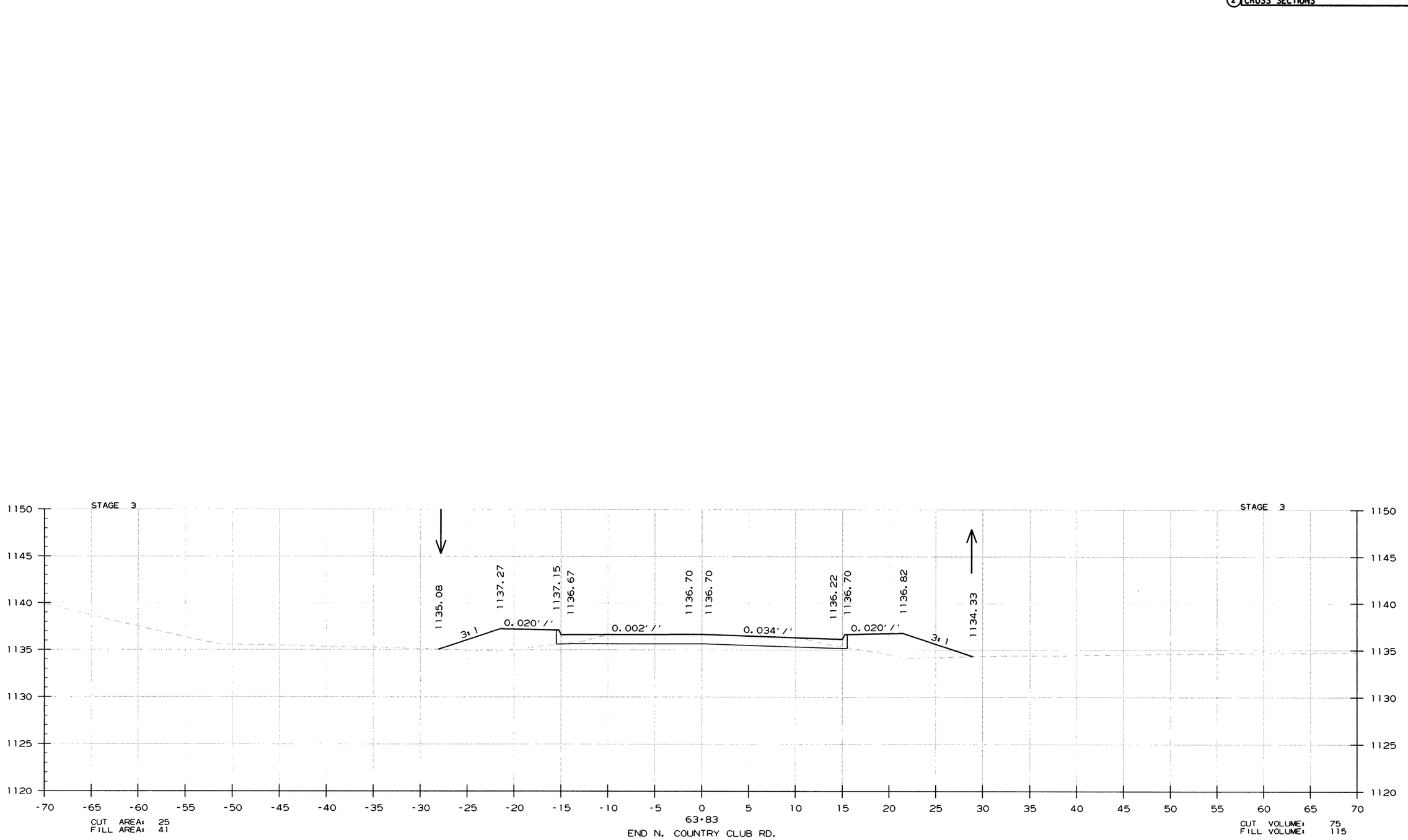
6/4/2015

R090406.DGN

N. COUNTRY CLUB RD.
CROSS SECTION STA. 62+00 TO STA. 63+00

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090406	226	226

(2) CROSS SECTIONS



N. COUNTRY CLUB RD.
CROSS SECTION STA. 63+83 TO STA. 63+83

6/4/2015

R090406.DGN